Albania
Ministry of Environment, Forestry and Water Administration

Bosnia and Herzegovina
Ministry of Foreign Trade and Economic Relations

Croatia
Ministry of Regional Development, Forestry and Water Management

Montenegro
Ministry for Spatial Planning and the Environment

UNDP Project Document

Governments of Albania, Bosnia & Herzegovina, Croatia, and Montenegro

United Nations Development Programme

UNESCO IHP

PIMS 4056

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

The proposed project *Protection and Sustainable Use of the Dinaric Karst Transboundary Aquifer System*, hereinafter called "DIKTAS" Project, is the first ever attempted globally to introduce sustainable integrated management principles in a transboundary karstic freshwater aquifer of the magnitude of the Dinaric Karst System. At the global level the project aims at focusing the attention of the international community on the huge but vulnerable water resources contained in karst aquifers (carbonatic rock formations), which are widespread globally, but poorly understood. The Dinaric Karst Aquifer System, shared by several countries and one of the world's largest, has been identified as an ideal opportunity for applying new and integrated management approaches to these unique freshwater resources and ecosystems. At the regional level the project's objectives are to (i) facilitate the equitable and sustainable utilization and management of the transboundary water resources of the Dinaric Karst Aquifer System, and (ii) protect from natural and man-made hazards, including climate change, the unique groundwater dependent ecosystems that characterize the Dinaric Karst region of the Balkan Peninsula. These objectives, which aim to contribute to sustainable development of the region, are expected to be achieved through a concerted multi-country effort involving improvement in scientific understanding, the building of political consensus around key reforms and new policies, the enhanced coordination among countries, donors, projects and agencies, and the consolidation of national and international support. Outcomes/outputs: the Project will produce a better knowledge of the resource and consensus on the causes of its degradation (TDA), a consultation mechanism among the countries sharing the aquifer, formal agreement on corrective actions including policy, legal and institutional reforms, and investments, to be taken jointly (SAP), and improved awareness and sustained international support. Results will be measured in terms of the achievement of key benchmarks (establishment of national inter-ministry committees, approval of TDA, endorsement of SAP, establishment of a joint permanent consultation mechanism).

Table of Contents

Annexes

Acronyms

APR	Annual Project Report
AWP	Annual Work Plan
CIE	Consultation and Information Exchange Body
CO	Country Office
CTA	Chief Technical Advisor
EEA	European Environmental Agency
EU	European Union
FA	Focal Area
FASRB	Framework Agreement on the Sava River Basin
FSP	Full Sized Project
GEF	Global Environment Facility
GWP	Global Water Partnership
IFI	International Financial Institution
IHP	International Hydrological Programme (UNESCO)
INRM	Integrated Natural Resources Management
INWEB	International Network of Water-Environment Centres for the Balkans
IR	Inception Report
ISARM	Internationally Shared Aquifer Resources Management
ISRBC	International Sava River Basin Commission
IW	GEF International Waters Focal Area
KM	Knowledge Management
M&E	Monitoring & Evaluation
MED EUWI	EU Water Initiative
MED MAP	Mediterranean Action Plan (UNEP)
MOU	Memorandum of Understanding
NEU	National Execution Unit
NFP	National Focal Point
NGO	Non-Governmental Organization
NIC	National Inter-ministerial Committee
NIP	National Implementation Plan
OFP	Operational Focal Point
PCU	Project Coordination Unit
PDF	Project Development Facility
PFD	Project Framework Document
PIF	Project Identification Form
PIR	Project Implementation Review (Annual)
PPG	Project Preparation Grant
PS	Project Specialist
PST	Project Supervision Team
Q	Quarter
RAF	Resource Allocation Framework
RCU	Regional Coordinating Unit
REReP	Regional Environment Reconstruction Programme
SAP	Strategic Action Programme
SC	Steering Committee
SEE	South Eastern Europe
SGP	Small Grant Program (GEF-UNDP)
SRF	Strategic Results Framework
TDA	Transboundary Diagnostic Analysis

TOR	Terms of Reference
TPR	Tripartite Project Review
UN	United Nations
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WFD	Water Framework Directive

SECTION I: Elaboration of the Narrative

PART I: Situation Analysis

1.1 Context and Global Significance

1. The term "karst" is applied to a specific geological landscape and morphology that develops wherever limestone formations, or other carbonatic rocks, constitute the bulk of the geological substratum of a region and outcrop over extensive areas. Due to their solubility, these rock formations develop high permeability along fractures and faults, with the formation of sinkholes, chasms, underground streams, and caves. "Karst" hydrogeology is hence characterized by very high fracture controlled heterogeneous permeability, almost total absence of surface drainage (which has been largely diverted into subterranean routes), high infiltration rates and rapid underground flows of groundwater.

2. Karstic reservoirs, or aquifers, contain large amounts of groundwater, and thanks to their high transmissibility can sustain substantial yields. They also support unique ecosystems very rich in biodiversity (in Croatia alone, karst ecosystems host 3,500 species of flora, 12 species of amphibians, 36 species of reptiles, 200 species of resident birds, 79 species of mammals, and 64 species of freshwater fish).

3. Karstic aquifers and dependent ecosystems however are very fragile, and vulnerable to anthropogenic as well as climatic stresses. Any change in land use (Karstic landscapes under natural conditions are normally densely forested), or in rainfall patterns will rapidly impact water quality, quantity, and even subterranean flows. Karstic landscapes in fact represent in their entirety the recharge areas of the aquifer system, where rain water infiltrates rapidly through sinkholes and fractures, directly impacting groundwater quality, given the absence of a soil and/or fine sediment cover that may filter out contaminants and nutrients before they reach the groundwater table.

4. Karstic aquifers are widespread globally: from Central America, to East Asia and to the Mediterranean region. They are often transboundary and generally contain very large freshwater resources. Their potential and characteristics are however little known, and the general lack of understanding of their vulnerability to land use patterns and water channeling/diversions are threatening their value and long-term sustainability.

5. The UNESCO International Hydrological Programme (IHP) is an intergovernmental scientific cooperative programme in water research, water resources management, education and capacity-building, and the only broadly-based science programme of the UN system in this area. IHP's primary objectives are: to act as a vehicle through which Member States, cooperating professional and scientific organizations and individual experts can upgrade their knowledge of the water cycle, thereby increasing their capacity to better manage and develop their water resources to develop techniques, methodologies and approaches to better define hydrological phenomena to improve water management, locally and globally to act as a catalyst to stimulate cooperation and dialogue in water science and management to assess the sustainable development of vulnerable water resources **,**to serve as a platform for increasing awareness of global water issues. UNESCO's Regional Office in Venice (BRESCE) is developing and implementing activities related to co-management of shared water resources in SEE at regional and national level.

6. Karst studies are part of the UNESCO Science Sector programmes (International Geoscience Programme, IGCP and International Hydrological Programme, IHP) since last three decades. Since 1972 UNESCO has coordinated and conducted a Global Study of Karst Aquifers and Water Resources and supported an array of international activities in the field of Karst Hydrogeology and Karst Water Resources Management in the region. Through these activities UNESCO was instrumental in increasing global understanding of karst hydrogeology and water resources challenges. In 2008 the International Research Centre on Karst was established in Guilin, China, under the auspices of UNESCO. The centre in China is the only international centre on interdisciplinary research on karst in the UN system and will contribute to reach a better understanding of karst systems on a global scale, and to promote sustainable development in karst regions, which are generally regarded as one of the world's most fragile environmental systems. The Centre will further provide advisory activities, technical

information and training as a basis to develop and implement new integrated methods of rehabilitation and ecological restoration for karst regions.

7. The present project aims at addressing the issue of the sustainable management of karstic groundwater ecosystems. It focuses on one of the world's largest karstic geological provinces and aquifer systems: the karst region corresponding to the Dinaric mountain range, which runs from Friuli (NE Italy) through Slovenia, Croatia, Bosnia - Herzegovina, Montenegro, Albania[1]. This region is still largely pristine, with large extensions of densely forested areas, viable populations of large carnivores, many thousands of caves, unique karstic lakes (Ohrid, Prespa, Plitvice, Shkodra and many more) and abundant high yield and quality freshwater springs.

8. In most of the countries sharing the Dinaric Aquifer, karst freshwater constitutes by far the main source of drinking water. The dominant flow of the huge groundwater resources contained in the Dinaric Karst Aquifer System is towards the Adriatic and Ionian Seas, while the Eastern extension of the karstic chain drains to the Sava river basin[2]. The gradient is steep, over 1%, broken in a stepwise fashion by a series of karstic depressions descending from well over 1000 m of altitude, down to 100-200 m asl, creating a very favorable environment for hydropower generation.

9. Groundwater eventually enters the coastal area through few rivers (Neretva, Cetina, Trebisnjica, and others) and more importantly through strong submarine groundwater flows that characterize the coastal areas of Istria and Dalmatia (Figure 1). The total amount of groundwater entering the coastal environment with its load of nutrients and other contaminants is not known, but certainly very large: it is estimated that karstic groundwater is the largest source of freshwater entering the Adriatic Sea.

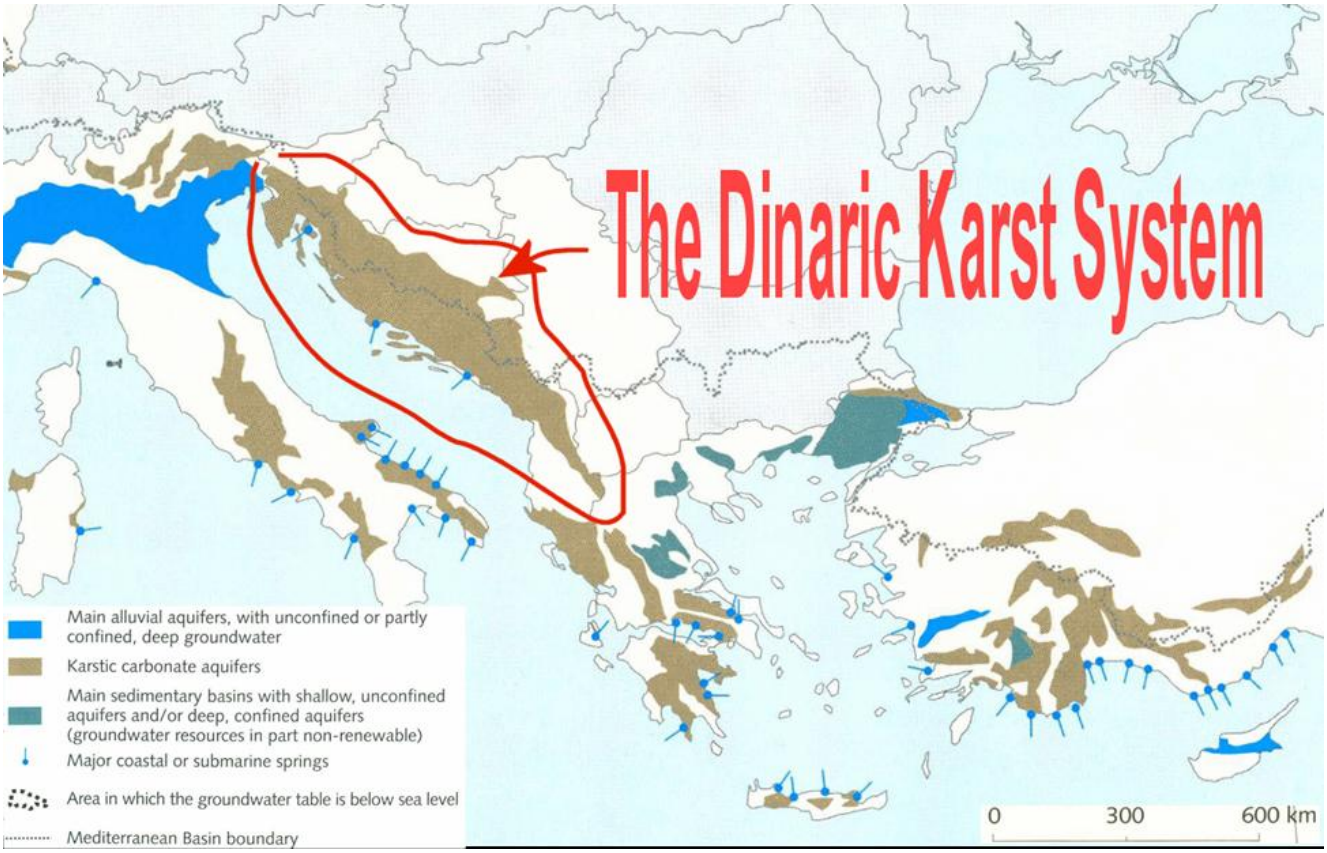

Figure 1. Location of the project area. The many karst aquifers of the eastern Mediterranean region are displayed in brown color.

[1] Karst formations connected with the Dinaric chain outcrop also in Serbia, FYR Macedonia, and possibly in NW Greece.
[2] Minor flows to the Aegean have also been hypothesized.

10. A number of initiatives aimed at facilitating freshwater related cooperation among the countries sharing the Dinaric Karst Aquifer System, have been launched with the support of bi- and multilateral donors.

11. The UNESCO/ISARM (Internationally Shared Aquifer Resources Management) project was launched in 2000 by the Intergovernmental Council of UNESCO-IHP. The Council also invited the Food and Agriculture Organization of the United Nations (FAO), the International Association of Hydrogeologists (IAH) and the United Nations Economic Commission for Europe (UNECE) to cooperate in order to create the inter-agency ISARM initiative to promote studies concerning transboundary aquifer systems. The UNESCO Chair/INWEB (International Network of Water-Environment Centres for the Balkans) in cooperation with UNESCO Venice Office (BRESCE) and the national IHP Committees implemented the ISARM programme in South Eastern Europe (SEE), including the Dinaric Karst Aquifer System. As a first step in improving the understanding of scientific, socio-economic, legal, institutional and environmental issues related to the management of transboundary aquifers, an inventory of shared aquifers in the region was developed. In cooperation with UNECE, 65 transboundary aquifers have been identified and a WEB based interactive meta-database was made available on the Internet to all interested parties, using the Google Earth technology.

12. Two major initiatives that were instrumental in creating consensus among countries on the DIKTAS project were also developed: the "Petersberg Process" on Transboundary Cooperation and Water Management in SEE, and the "Athens Declaration concerning Shared Water, Shared Future and Shared Knowledge" as well as the Process related to the Declaration.

13. The Petersberg Process was initiated in 1998 and is currently in its Phase II, jointly coordinated by the German Government and the World Bank. The Process is intended to provide support to translate into action the current developments and opportunities for future cooperation on transboundary river, lake and groundwater management in SEE.

14. The "Athens Declaration concerning Shared Water, Shared Future and Shared Knowledge" started in 2003 and provides a framework for a long-term process to support cooperative activities for the management of shared water resources specifically in the SEE and Mediterranean regions. The Athens Declaration Process is intended to assist SEE countries, in cooperation with relevant stakeholders, to prepare IWRM and water efficiency plans for major river basins and lakes, including a range of complementary interventions, with a coordinated mechanism to allow for exchange of information and experience between activities.

15. In 2008 the IV International Symposium on Transboundary Waters, was held in Thessaloniki, Greece. The "Thessaloniki Statement", which was formulated by the participants of the Symposium, summarizes recent challenges riparian countries face regarding transboundary surface and groundwater management and provides a guideline on how advantages from cooperation among countries can be maximized.

16. The Petersberg and Athens Declaration processes have been linked in order to generate synergies and maximize the outcomes for the benefit of the SEE region. The Process is jointly coordinated by the German Ministry for the Environment, the Hellenic Ministry and the World Bank. GEF IW:LEARN is supporting synergies and GWP-Med provides technical and administrative assistance. The Process would complement European Union (EU) integration processes, the Stabilization and Association process of the European Union and other ongoing initiatives in the region. It contributes directly to the scope and objectives of the Mediterranean Component of the EU Water Initiative (MED EUWI).

17. A number of other activities, which are directly related to the objectives of the DIKTAS project are ongoing in the region. These are listed and described in chapter 2.3, Output 5.

1.2 Threats, socio-economic root causes and barriers analysis

18. Prior to the 1991-1995 war that ravaged the Dinaric region, the government of Yugoslavia directed the development of the Dinaric region towards mass tourism along the coastal areas, and stimulation of the agricultural production in the interior part of the region by construction of hydrotechnical infrastructure intended for flood protection, irrigation, water supply and hydropower production activities that may impact the quality of the freshwater resources contained in the Dinaric Karst Aquifer System, and the integrity of its dependent ecosystems. Today, while the region is on a fast track of economic growth, spurred, at least for some of the

countries by the opening of EU accession discussions, countries are determined to move towards more sustainable development models and to deal with the main threats to the long term sustainability of the Dinaric Karst Aquifer System and their transboundary implications.

19. These threats include:

(i) The lack of harmonized multi-country policies regulating land-use and physical planning throughout the karstic region in view of the aquifer's high vulnerability to contamination;

(ii) Areas of over-extraction, and lack of a conceptual framework for balancing the various demands on the resources, which indicate very strong seasonal and multi-annual variabilities;

(iii) The need to mitigate/prevent the transboundary negative impacts of hydraulic infrastructure:

(iv) The potential impacts of global changes (development, population growth, migration), including climate change (, such as excessive variability in rainfall patterns, flooding etc.).

(v) The lack of public participation and Integrated Water Resources Management (IWRM) including both transboundary surface and groundwater.

20. Addressing these issues is hence a strategic priority for the new independent states sharing the Dinaric karst aquifer resources that emerged from the collapse of former Yugoslavia, as well as for Albania.

21. The rise of several new sovereign states from what was once one nation determined complex transboundary inter-linkages that impact water use and water sharing for power generation, agricultural, domestic and other purposes between bordering countries. This situation, compounded in the Dinaric chain by the geological complexities of karst environment, is conducive to possible groundwater sharing conflicts, linked to upstream-downstream transboundary abstraction and contamination issues, or to the management of hydropower generation in a transboundary setting, that may hinder efforts to achieve an acceptable level of sustainable exploitation of the resource, and to protect karst ecosystems and their huge touristic potential.

22. In addition to the highly transboundary nature of the resource, other factors represent barriers to be overcome along the way to sustainable management. These include:

- *The lack of full understanding of the characteristics of the resource, and of recognition of the system boundaries* (the Dinaric Karst recognized as just one interconnected transboundary aquifer system) - None of the countries sharing the aquifer fully recognize the interconnected and transboundary nature of the Dinaric Karst Aquifer System as a whole, and their plans and various water utilization policies are necessarily fragmented, and without consideration of transboundary implications or of the need for and cost-effectiveness of harmonized land-water management policies and strategies among countries.

- *The lack of, or limited integration between surface and groundwater management approaches* – Identifying clear distinctions between groundwater and surface water in a karstic geological environment, is hardly feasible and probably meaningless in terms of water resources management. The simple setting up of River Basin Authorities or Agencies in application of international guidelines, or of the EU Framework Directive, will not *per se* allow the integrated surface-groundwater management essential to reach sustainability. To fully take into account the peculiarities of karstic hydro-geology, the differences between hydrographic and hydro-geological basins, and the karstic nature of many rivers and lakes of the region, will require particular efforts in establishing appropriate management frameworks building on and expanding existing traditional surface water management schemes.

- *The lack of intra-institutional coordination among the various institutions in charge for water resources management on national level* – In the countries sharing the Dinaric Karst Aquifer System a number of governmental institutions are involved in the management of surface- and groundwater resources (see Annex 1), including ministries of water, environment, tourism, agriculture, spatial planning, forestry, energy, among others and their subordinate agencies. In the context of often complex administrative structures, coordination among these institutions needs to be further improved in order to facilitate cooperation on a regional level.

- *The lack of coordination and overall optimization among the many relevant ongoing and planned initiatives, including GEF supported ones* – There is a number of activities, some of them GEF funded, directed specifically to the management /protection of water-bodies – rivers and lakes - freshwater ecosystems and coastal resources which may provide tested examples of effective management structures (e.g.: Lake Ohrid, Sava River Basin) on which to build upon. Various other activities and projects in the fields of physical planning, agriculture, energy, infrastructure and others are being designed or implemented within the Dinaric chain region, many of which have implications, often unforeseen or not addressed, for groundwater management and protection.

1.3 The problem to be addressed

23. The project is expected to address effectively all the above barriers that are hindering sustainable management, and to set the basis for reversing present and future degradation trends through a concerted multi-country effort involving:

- improvement of scientific understanding of the system in all countries sharing the aquifer, needed in order to reach an informed consensus on the factors affecting its integrity at the national and at the transboundary level,
- building of political consensus around relevant key priority reforms and new policies in the Dinaric Karst region,
- enhanced coordination among countries, donors, projects and agencies;
- consolidation of national and international support, and
- increased public awareness and stakeholder participation.

1.4 Stakeholder analysis

24. The first step in the process of designing information, communication and stakeholder involvement activities as well as the role of key stakeholders in the Project implementation, consist in the identification of the different actors (groups, institutions and individuals) that could influence/affect or be influenced/affected by the Project at the local/regional, entity (in the case of Bosnia and Herzegovina), national and transboundary/international levels. General categories that the stakeholders may fall into are presented below:

- Political actors (at local and -where appropriate- entity, and national levels);
- Public administration (e.g. competent Ministries, agencies for water management, protected area management bodies, water and sanitation authorities and institutions, etc.);
- Interest groups (e.g. fishers' or industry associations, water user associations etc.);
- Commercial/private actors (e.g. industries, etc.);
- NGOs;
- Academia
- General public,
- International actors (e.g. UN agencies, donors, Project implementing and executing agencies, international river basins commissions etc.);
- etc.

25. The DIKTAS Project focuses on the sustainable management of the karst aquifers in a region extending across a number of countries of the western Balkans. Not all these countries are among the direct beneficiaries of the project. Some of them are not eligible for GEF financing - Italy, Greece[3] and Slovenia; these countries will however be part of the project effort by supporting it through co-financed activities, mostly in the field of

[3] According to scientific information provided by INWEB during the workshops in Podgorica, Montenegro (20-21 November 2008) and Zagreb, Croatia (4-5 March 2009) the Dinaric Arc Aquifer System could extend also to Greece. The scientific evidence of this will be discussed as part of the Systems Boundary Analysis of the TDA.

capacity building. Other GEF eligible countries, while sharing sections of the Dinaric Karst are not included among the full beneficiaries of the Project because of financial constraints. This is the case of Serbia and of the FYR Macedonia. The project will strive to involve these two partner countries in project's activities[4], to capture their substantial patrimony of scientific and technical knowledge on karst, and to open the way to their full participation to the opportunities and developments that will arise from the present project. The engagement in the project of all the countries having a stake in the utilization of the DIKTAS resources will be particularly beneficial for its successful implementation and the long term sustainability of its outcomes.

26. In this respect the Project should identify:

- Stakeholders from the Countries of focus – eligible for GEF financing (Albania, Bosnia & Herzegovina, Croatia, Montenegro). Stakeholders in these 4 countries should be distinguished among the following levels: (i) National, and –where appropriate- entity (ii) Regional and (iii) Local.
- Targeted stakeholders from Italy, Greece, Slovenia, Serbia and FYR Macedonia.
- Stakeholders at the international and transboundary levels (international organizations and donors).

27. The list of stakeholders is a "dynamic" one; it should be revisited in the course of the Project to reflect eventual changes in the institutional and managerial settings and frameworks at all levels as these may affect the accomplishment of the Project's objectives.

28. Further to the listing, a range of information regarding the stakeholders needs to be collected and analyzed in relation to the Project taking into account its objectives; expected outputs and outcomes (see respective sections in Annex 6). Such information may include among others whether the stakeholder is internal or external to the Project, its competences/ responsibilities, function and expertise.

1.5 Baseline analysis: the state of hydro-geological knowledge

29. This chapter summarizes a preliminary hydrogeological characterization of the Dinaric Karst Aquifer in Albania, Bosnia and Herzegovina, Croatia and Montenegro, based on the reports produced during project preparation by the countries experts. The full reports are made available via the project site (http://www.dinaric.iwlearn.org). This work was part of a Preliminary Transboundary Diagnostic Analysis (TDA), and will serve as a basis for a comprehensive TDA, to be conducted as a part of the project execution.

30. One of the main challenges of the project will be to harmonize at the regional level the hydro-geological information presently mostly organized at the country level. Although challenging, this effort is necessary; it will lead to a common regional view of the Dinaric Karst Aquifer System, providing a basis for common actions, such as monitoring, pollution prevention, balancing uses, etc.

Project area

31. The project area consists basically of karst areas in the four project countries (Albania, Bosnia and Herzegovina, Croatia and Montenegro). This area covers most of the Dinaric mountain chain or Dinaric Alps (Figure 1). Named after Dinara mountain in Croatia and Bosnia and Herzegovina, Dinaric Alps stretches (in several separate mountain ranges) from southern edges of the Eastern Alps in Slovenia and Italy further across the western side of the Balkan peninsula, NE of the Adriatic Sea and south of Sava river basin in Pannonian plain, until it touches the westernmost parts of the old Rhodope mountains in central and southern Serbia, and reaches Pindus mountain chain in northern Albania and Sara mountain system near Kosovo, on its SE end along the Drin river[5]. The most southern part of Dinaric mountain chain is in Albania denoted as Albanian Alps.

[4] It is expected that scientists representing Serbia will play a key role in the context of the Science Advisory Panel that will be established by the project; collaboration with the Small Grant Program of the GEF will allow implementing a line of small grant pilots targeting DIKTAS priorities in FYR Macedonia.

[5] The Dinaric Alps make up a united tectonic unit with the southernmost limestone Alps (Julian Alps in Slovenia and Italy) and Sara-Pindus mountain systems (in Albania, FYR Macedonia and Greece). Geologically, this unit and all the ranges in it, developed during

32. Almost all the islands in the eastern Adriatic (as well as all the mountains rising behind the well indented coasts of Croatia and Montenegro) belong to this mountain system because the western parts of the chain were partially submerged by the seawater in earlier geological history.

33. The term Dinaric Karst Aquifer System has been used in this project to emphasize uniqueness and interconnectivity of groundwater in the region[6]. In the following paragraphs, several parts of this system will be described per country, summarizing the country hydrogeological reports.

Hydrogeology of Dinaric Karst in Albania

34. Republic of Albania is located in the southeastern Europe, stretching along the southern part of the Adriatic Sea. Albania covers land territory of about 28748 km^2, with population about 3.6 million (circa 127 inhabitants per km^2). Mountains and hills make the most of the country with relatively small plains along the coast. The country has a continental climate in its high altitude regions with cold winters and hot summers. The three largest and deepest tectonic lakes of the Balkan Peninsula are partly located in Albania, among them the Skadar/Shkodra [7] Lake that is part of the Dinaric Karst (Albanian Alps) in Albania. [8]

35. The Albanian Alps are encountered in the most northern part of Albania and have very clear-cut boundaries with the Drini valley (Fierzë, Vau i Dejës) in the south, the Tropoja basin in the east and northeast and the Mbishkodra plain in the west. In the north, they extend beyond the Albanian territory, in Montenegro. The Alps have a width of 60 km and a length of 64 km and occupy an area of about 2020 km2.

36. The Albanian Alps are characterized by high contrasts in relief, valleys and surrounding alpine crests. Because of the high elevation the climate of the Albanian Alps is mountainous-Mediterranean with severe and humid winters and cool summers. The average annual precipitation in the Alps is 2000-3000 mm. Also because of high precipitations, this region has a very developed hydrographic network. The most important hydrological basins are those of Skadar/Shkodra Lake, Vermoshi River, Shala River and Valbona River.

37. Geology of the region is quite complex and it is extensively described in the full country report. Hydro-geological classification is based on the litho-stratigraphic characteristics of the rocks and the tectonics in the region. The most interesting for this project is the so-called "water bearing complex of carbonates deposits (considering Triassic, Jurassic and Cretaceous deposits as a unique water bearing complex).

38. The hydrogeological units in this water bearing complex are similar in lithology (usually made of limestones and dolomites) and porosity, and all together form an aquifer system. In the lower zone of this carbonate complex, near the Skadar/Shkodra lake, the karst phenomena seems to be very developed. The level of karstification is different in the units of different age, particularly comparing carbonate rocks of Upper Triassic and Jurassic. The most intensive karst development (regardless of sediment age) is encountered in low zone near the Skadar/Shkodra Lake. The Albanian Alps represent the recharge area for parts of the aquifer system in Montenegro, while the recharge zone of the Skadar/Shkodra Lake "basin" lies mostly in Montenegro.

39. The water from the karst aquifers is of good quality. The water is used mainly for drinking water supply and to a lesser extent for the agriculture. Some steps have been made towards the utilization of these water resources for the energy production.

40. There are many private wells in the region drilled without permission and outside of governmental control. The monitoring of both production and observation wells is lacking, also because of very limited infrastructure.

Tertiary thrusting, are sometimes denoted as Dinarides and sometimes distinguished as Dinarides and Hellenides. Nevertheless, Dinarides refers to tectonic unit only, and not to Dinaric Alps mountain chain and Dinaric Karst as known geographically and scientifically.

[6] Strictly speaking an 'aquifer system' consists of a series of two or more aquifers that are hydraulically connected. Most likely, not all the aquifers in the Dinaric Karst region are mutually interconnected. Nevertheless, a number of connections and their regional importance is so high that the term 'aquifer system' seems very appropriate to be used in the context of Dinaric Karst.

[7] Also referred to as (Shkodër, Skadarsko). Throughout the document the term Skadar/Shkodra will be used.

[8] The Albanian country report is completely concentrated on Albanian Alps, i.e. a part of the Dinaric Karst in the Albania.

Hydrogeology of Dinaric Karst in Bosnia and Herzegovina

41. Bosnia and Herzegovina is located in the western part of the Balkan Peninsula, bordering the Republic of Croatia to the north, west and south, the Republic of Serbia to the east and the Republic of Montenegro to the southeast. The area of the country is 51209 km^2, with population about 3.9 million (estimates from 2007) with density of circa 77 inhabitants per km^2.

42. The country is mostly mountainous, encompassing the central Dinaric Alps. The northeastern parts of the country reach into the Pannonian basin, while to the West and South it borders Croatia, and only along a very limited section, reaches the Adriatic Sea. The country has in fact only 20 kilometers of coastline. Bosnia and Herzegovina has mostly a continental climate, except its Southern part where the Mediterranean climate prevails. The precipitations in the continental part range between 700mm and 1400mm, while the Mediterranean part (especially the eastern part of Herzegovina) has one of the highest amounts of precipitation in Europe.

43. Hydrographically, 75.70% of the territory of Bosnia and Herzegovina belongs to the Sava river basin, which is the second largest tributary of the Danube River in terms of area and average flow, while the remaining 24.30% belongs to the Adriatic Sea basin. The major rivers that belong to the Adriatic Sea basin in B&H are: Cetina, Neretva and Trebišnica River.

44. Water resources are very abundant in Bosnia and Herzegovina. Water is used mainly for drinking water supply, industry, hydropower production and to smaller extent for irrigation, fish farming and tourism. The share of groundwater (karst) is very high, amounting to 90-95%.

45. The territory of B&H is divided into four main hydrogeological regions. The Southernmost of these regions belongs to the external Dinarides and it is the region of development of deep karst or holokarst. The carbonate rocks – primarily limestone - are intensively karstified. They are very permeable and usually with high transmissibility. Dolomites are less permeable and – if present in the core of anticlines - they could create a barrier to underground flow.

46. One of the main characteristics of aquifers in this region is the high fluctuation of groundwater levels and spring discharges due to rainfall variations. Groundwater usually discharges though large karst springs having minimum yields often greater than 1 m3/s. Groundwater quality is generally good. The most common problems are high turbidity and bacteriological contamination. Most of the municipalities in B&H have no organized sewage system and no facilities for wastewater treatment. Furthermore, inappropriate solid waste disposals, destroyed installations with hazardous substances, agricultural activities and individual septic pits present serious threats for groundwater quality that may have transboundary implications.

47. The main body of transboundary karst groundwater is shared with Croatia and feeds the rivers Una, Cetina, Neretva and Trebišnjica. Only in the case of the Una basin groundwater flows from Croatia to Bosnia and Herzegovina. Transboundary situations between also exist between Bosnia and Herzegovina and Montenegro (Bilecko Lake and Piva); they cover however relatively small sections of the DIKTAS.

Hydrogeology of Dinaric Karst in Croatia

48. The Republic of Croatia, both a Central European and a Mediterranean country, is bounded by the Danube river basin to the north and by the Adriatic Sea to the south. About 4.4 M inhabitants (78 per km^2) live on its territory of 56538 km^2, less than 50% of them in urban areas. According to its morphology, Croatia can be differentiated in three units:

- Lower Panonian and Peripannonian area in the North,
- Central mountainous area,
- Adriatic coastal area in the South of the country.

49. Both the Central and the he Adriatic coastal areas belong to the Dinaric Karst Aquifer System. Groundwater flow is mostly towards the Adriatic, with minor sections draining to the Sava river. The coast consists of islands and of a narrow continental strip separated from the inland by high mountains. The rock

composition is mostly dominated by carbonate deposits, which form the inland mountainous ranges, peninsulas and islands, whereas the lower inland plateaus are mostly built of flysch deposits and dolomites. The karstic area of Croatia is characterized by low density and length of watercourses, and by significant groundwater flows.

50. Croatia is water-abundant. The average level of population supplied with water from public water supply systems in Croatia is 78% (2007), while a particular problem is the supply of water to the islands. Water is extensively used for the generation of electrical power and all the most suitable locations for construction of reservoirs and dams have been already used. At present, only about 7000 ha are irrigated regardless the high irrigation potential.

51. The hydrogeology of the Dinaric Karst in Croatia is very complex. Within the carbonate deposits, that can be hundreds of meters thick, groundwater percolates quickly through the unsaturated zone and then flows often turbulently through networks of subsurface channels. This aquifer system has large recharge areas located in the mountains and very complex conditions of discharge, usually at the contacts of karstified permeable carbonate deposits and impermeable rocks. Groundwater flow is related to fissure systems, and is characterized by high groundwater velocities (up to 30 cm/s) and emergence through springs with high discharge rates. Due to low retention capabilities of aquifers, spring discharge is usually significantly reduced during the summer periods.

52. The sections of DIKTAS draining to the Sava basin include the Kupa and Una rivers, both of them transboundary. The Adriatic coastal area is usually divided into the Littoral-Istrian river basins (with Gacka and Lika rivers) and Dalmatian river basins (including rivers Zrmanja, Krka, and Cetina). All these rivers are transboundary. The rivers Neretva (whose lower delta belongs to Croatia) and Trebisnjica (that drains partly in Croatia through coastal springs, including Ombla spring with maximum yield of 154m3/s) are also very important for Croatia.

53. The karst aquifer stretches along the entire border between Bosnia and Herzegovina and Croatia with obvious transboundary implications.

54. Groundwater is in general of very good quality. The most common problem of karst springs is a temporary turbidity as a consequence of heavy rainfall, particularly after long dry periods. At some abstraction sites in the Sava basin, micro-bacteriological pollution has been observed. Various pollutants (oils, phenols, nitrogen, etc) have also been observed in karst springs of Dalmatian river basins, however limited and usually on temporary basis. At present, the main pollutants are small settlements without constructed wastewater collection and treatment facilities. In the Dinaric Karst region, agriculture does not pose a large threat to the groundwater because of shortage of arable land.

Hydrogeology of Dinaric Karst in Montenegro

55. Montenegro is an Adriatic-Mediterranean and Dinaric country, covering a land area of 13812 km^2 and having about 620000 inhabitants (in average 44.5 per km^2). It shares borders with Albania, Serbia, Bosnia and Herzegovina and Croatia (only 14 km wide coastal strip).

56. Its relief, mostly mountainous, is dominated by the Dinaric mountain system, stretching parallel to coastline and with peaks above 2500 m. Northern and central parts of Montenegro are made of high mountain ridges and plateaus, intersecting deep and narrow river valleys. Relatively large plains expand in its central part, and in the area of the Lake of Skadar/Shkodra and Zeta River (Index Map in Annex 10).

57. Montenegro is rich in water resources. Approximately half of the territory belongs to the Sava basin and the other half to the Adriatic Sea basin. The most important rivers of the Sava basin within Montenegro are the Piva, Tara, Cehotina and Lim rivers. These rivers are tributaries of Drina River and Ibar is a tributary of Morava River. The major river of the Adriatic Sea basin in Montenegro is Morača River with its tributaries Zeta, Cijevna, Rijeka Crnojevića and Orahovštica. Morača flows into Skadar/Shkodra Lake, and from there to the Adriatic Sea through the Bojana River.

58. Geologically, the territory of Montenegro represents the southeast sections of the outer and inner Dinarides, which have, just like other parts of these macro-tectonic units, a complex structure. The terrain is made of igneous, sedimentary and metamorphic rocks of Paleozoic, Mesozoic and Tertiary age. More than 60 %

of Montenegrin territory is made of carbonate sediments. The major part of the current relief is typically karstic (mostly holokarst) with numerous and diverse karst phenomena: karst plateaus, poljes, sinkholes, caves, caverns and other forms.

59. Karst is the most common aquifer type in Montenegro, formed in the regions of high karstification and sometimes in the predominantly fissured (less cavernous) carbonate rocks (green color). No significant aquifers are developed in the northwestern part of Montenegro.

60. The rocks with fissure-cavernous porosity are the most common and also the most significant water-bearing rock complexes in Montenegro. These rocks have not only significant lateral spreading; their thickness goes up to several thousands of meters. Measured depth of karstification of carbonate rocks varies from dozens of meter (Klikovača plateau) up to over 800 m in the area of Durmitor mountain and some other karst terrains.

61. Karst groundwater exists in all the carbonate rocks from the Adriatic shoreline to the northeast border of Montenegro. With exception of the narrow coastal area, Skadar/Shkodra Lake depression, Bjelopavlici valley and the river valleys or canyons in northern Montenegro, phreatic groundwater levels are regionally located at great depths.

62. Groundwater is in general of good quality, especially outside of major plains and river plains. Urban and industrial development of major settlements in the Skadar/Shkodra Lake watershed (Nikšić, Danilovgrad, Podgorica, Cetinje) has not been accompanied by adequate protection measures, causing the pollution of aquifers and surface water.

63. There are 33 identified point sources of groundwater pollution in Montenegro that require biological purification applying the standard methods. These are usually bakeries, dairy farms, beverage production plants, etc. There are, however, 22 identified point sources of water pollution that require special treatment, such as steel factories, mines, coal power stations, aluminum production plant, etc. The most important diffused sources of pollution in Montenegro are unregulated landfills, agricultural activity, wastewater from urban areas and the fishponds. Karst aquifers in Montenegrin coastal area as are often polluted by communal and industrial wastewater of tourist settlements (Bar, Ulcinj, Kotor, Budva etc.).

64. The following rivers and lakes in Montenegro are considered transboundary: rivers Plavska, Cijevna, Tara, Ćehotina, Lim, Rzav and Drina and lakes Skadar/Shkodra, shared with Albania, and Bilecko, shared with Bosnia and Herzegovina. There is substantial cooperation with Albania about the common assessment and management of waters of Skadar/Shkodra Lake and Bojana River. The most western part of Montenegro toward Bosnia and Herzegovina belongs to the catchment of Trebišnjica River. While in this region the groundwater flows to Bosnia and Herzegovina there is also a flow of limited importance from Bosnia and Herzegovina to Montenegro: water from a surface watercourse in the south-eastern part of Gatačko field (B&H) disappears in two sink holes and re-appears in the large karst spring of Piva in Montenegro.

Preliminary regional remarks

- DIKTAS covers a substantial part of the four project countries. Karst groundwater is shared between Croatia and Bosnia and Herzegovina, Bosnia and Herzegovina and Montenegro and Montenegro and Albania.
- The border between Croatia and Bosnia and Herzegovina is the longest one in the region and it almost continuously intersects transboundary groundwater with obvious and major transboundary implications.
- The main transboundary groundwater interactions between Bosnia and Herzegovina and Montenegro and Montenegro and Albania are related to lakes Bilecko and Skadar/Shkodra, respectively.
- While the quality of karst water in the region is still relatively good, many potential threats from different pressure factors (agriculture, industry, mining, sewage/waste disposal and tourism) to the integrity of these very vulnerable karstic water resources and their dependent ecosystems exist throughout the DIKTAS region.
- Karst groundwater is used extensively and represents the major source of water within the DIKTAS boundaries. It is used mostly for domestic water supply, but also for industry, energy production and to a lesser extent for agriculture and fish farming.

- In some countries in the Dinaric region transboundary karstic groundwater covers between 60 and 100% of total water use.
- The level of available hydrogeological information and monitoring capacity varies substantially from country to country. Monitoring in karst areas is technically and logistically difficult and monitoring networks in the region are in general very scarce.
- Harmonization of information will be necessary in order to assess the state of the regional Dinaric Karst Aquifer System and to be able to implement common management, protection and mitigation measures.
- The harmonization needs to encompass (hydro)-geological classifications, monitoring procedures and standards related to aquifer quality and quantity status, protection zones, usage etc.
- The country experts agreed that the recommendations and results of the Water Framework Directive (WFD) need to be consulted and implemented when applicable (and modified when necessary) for karst. The implementation of the WFD is already on-going in all the countries in the region, however the stage of implementation differs from country to country.
- During the implementation of the Project, more attention will have to be paid to the environmental resources related to the Dinaric Karst Aquifer System, including a mapping of ecologically sensitive area's and dependent ecosystems, including coastal ones.

PART II: Strategy

2.1Institutional, sectoral and policy context

Albania

65. The Ministry of Environment, Forestry and Water Administration (MoEFWA) is the institution responsible for water administration and water quality monitoring in Albania. Within the MoEFWA the Directorate of Nature Protection Policies, Sector for Water Policy, the Directorate of Pollution Prevention Policies, and the Directorate for Environmental Impact Assessment & Permitting deal with water administration and water use, including the issuance of permits and monitoring of water quality. Besides the MoEFWA a number of ministries and their subordinate agencies on national and local level are in charge of specific aspects of water management, such as agriculture, land use planning or energy production.

66. The National Water Council (NWC) is the main inter-institutional body in charge of determining the water policy and major water-related decisions. However, there are gaps related to the coordination among the institutions involved in the management of water resources, especially between the national and the local level.

67. The Albanian law on water resources of 1996 covers both surface and groundwater. However, weak law enforcement and fragmented persecution of non-compliance with existing regulations may result in unauthorized drilling and non-collection of water fees. Several inspectorates have been established which are in charge of law enforcement, but coordination among them remains weak. The River Basin Agencies can relieve the problem, but have no authority to stop illegal activities or to collect the fines or tariffs.

68. For administrative purposes, Albania was divided into six rivers basins in 1998 and River Basin Councils have been established by NWC in each of the basins. The councils serve as local authorities responsible for managing water resources in the respective basins. However, to date no River Basin Management Plans have been elaborated for any of the six basins and River Basin District Management plans have been not adopted yet, mainly due to the lack of staff, office space, and basic office equipment in the River Basin Agencies.

69. While users are largely un-represented in the River Basin Councils, a strong representation of the business community in the councils is a potential risk for conflict of interests; especially with regard to water use permits and concessions.

70. A water monitoring system has been established, but does not cover all river basins. Methodology, indicators and data assessment are not at the contemporary standards and the institutes dealing with water monitoring are not accredited yet.

71. Local authorities are in charge of managing water supply and wastewater treatment, including maintenance of the related technical infrastructure. However, the water tariffs, which were approved by the government in 1998, are not sufficiently high to cover the cost of maintaining the water supply and wastewater treatment systems and for proper management of the resource. Even though the government continues to financially support the water sector, local authorities face a lack of capacities and financial resources to properly fulfill their duty.

72. During the last two years the government of Albania has elaborated the legal and regulatory framework for increasing the energy produced by hydropower plants. In this context around 60 small scale hydropower plants have been approved and some of them have entered into the construction phase. As the increased production of hydropower is poorly coordinated with other sectors, there is a potential risk of conflict between water use for energy production and water user of other sectors on national as well as on transboundary level.

73. According to the National Strategy for Environment Protection, adopted in November 2007, the legal and regulatory framework in Albania shall be elaborated in line with the European legislation. The Government has approved a national plan for legal approximation for each of the sectors. The WFD 2000/60 of October 2000 is the main directive foreseen to be transposed into the national legislation. Several legal acts are foreseen to transpose this directive; the process is expected to be completed by 2014. The work has started with the elaboration of the plan for approximation and with the revising of the basic law on water resources. A draft concept on elaboration of river basin management plan is elaborated and it will be adopted as a by-law by the Council of Ministers.

Bosnia and Herzegovina

74. Bosnia and Herzegovina (B&H) is politically decentralized and comprises two governing entities, the Federation of Bosnia and Herzegovina and Republic of Srpska, with District Brčko as a de facto third entity. The complex administrative structure results in a number of different institutions in charge of water management issues and exacerbates coordination on national level.

75. The State of B&H is the central Authority, but has only limited and specific power with regard to the water sector and environmental protection, whereas two Entities, (Federation of B&H and Republic of Srpska) and Brčko District have political, administrative and legal jurisdictions on water management and environmental protection in their own territories.

76. Furthermore, the Federation of B&H is divided into 10 Cantons which have their own authorities (Ministries) with competences in water sector including adaptation of own relevant laws. The reform of the water sector in B&H, which is still in progress, has lead to the elaboration of new water legislation, harmonized between the two entities in terms of adaptation of new water laws that incorporate elements of the EU Water Framework Directive.

77. Water policy in B&H on national level has not yet been defined and water management strategies as well as river basin management plans have not yet been elaborated. According to the new Water Laws, Entity Ministers are responsible for the preparation of Entity Strategies for water management until 2009. In December 2007 Federation of B&H has commenced the elaboration of a 12 years Strategy, which is not yet adopted. Republic of Srpska has elaborated the "Framework Plan for Development of Water Management" in 2006, which is a step forward towards the elaboration of a Strategy for Water Management in RS. Furthermore, according to the Water laws, Water Agencies are obliged to prepare Water Management Plans for river basins, specifically for Sava river basin and Adriatic Sea basin, by 2012.

78. The water law covers both surface and groundwater, but there is no specific legislation or regulation relevant for groundwater. Limiting values for certain substances for surface water were established through by-laws in both entities, but not yet for groundwater.

79. The major gap in water legal framework presents non-existence of relevant by-laws. Since the adoption of the new water law only a few by-laws were elaborated; it is estimated that about 50 by-laws still need to be elaborated for each entity.

80. Weak inter–sectoral coordination leads to poor consideration of possible impacts of water use on other sectors during the preparation of new legislation. Consequently, water issues are not sufficiently or not at all addressed within other sectors' legislation. An example for this lack of coordination is the legislation for agriculture which is only focused on the protection of agricultural land, not taking into consideration land use legislation and other sectors' water needs.

81. Monitoring of groundwater quality and quantity has never been very well established in B&H. The scattered existing monitoring equipment was almost completely destroyed during the war, so the current activities on water quality monitoring are brought to minimum. The only information currently available covers the quality of effluent, and some quality analyses of surface waters are available. Consequently, there is no clear understanding of the impact on groundwater resources in terms of quality and quantity.

82. Within the framework of the CARDS project "Institutional Strengthening of Water Sector in BiH", B&H has signed a Memorandum on Understanding committing the country to harmonize, finalize and approve the reform of water sector in Bosnia and Herzegovina, based on principles and goals of EU Water Framework Directive. Within this project, new Water Laws for both entities were elaborated, incorporating basic principles of Water Framework Directive. Water Laws of the two Entities are to great extent harmonized with each other, but there are some slight differences. Transposition of WFD into Water Law in Federation is 83%, while in RS it is 97%, as written in "Reports on Progress Monitoring for the countries of South East Europe (pre-candidates)", done by Danish consultant "Cowi" in 2007 year. Since the WFD requires the implementation of other water relevant EU-Directives, their transcription into the entities' Water Laws and regulations is considered crucial. Full implementation of the Directive into FBiH laws and regulations is expected by 2018.

Croatia

83. Institutions responsible for the management of water resources in the Republic of Croatia include the Croatian Parliament, National Water Council, Ministry of Regional Development, Forestry and Water Management and other bodies of national administration, local and regional self-government units as well as Croatian Waters as a legal entity for water management.

84. The Water Act and the Water Management Financing Act, both enacted in 1995 and amended in 2005, define the legal framework of water management in Croatia. The proposal for a new Water Act is under preparation and adoption by Croatian Parliament is expected soon.

85. Gaps have been observed in the implementation of the valid Water Act regarding to lack of terms needed for accurate understanding of the Water Act, clarification of the application of this Act in relation to other environmental laws regulating the irrigation activity and implementation and improving the inspection surveillance. The new Water Act is expected to cover all these topics.

86. In Croatia, the long-term strategic document in the field of water management is the Water Management Strategy (Master Plan) has been adopted in 2008. This Strategy is harmonized with other sectoral strategies, and generally complies with the requirements set in EU Water Framework Directive. Following the guidelines of a new European water policy, the Water Management Strategy promotes the "user/polluter pays principle", and the principle of recovery of the costs of water services. The Water Management Strategy of 2008 has determined the commitment and guidelines of water management development, and represents grounds for promoting the new Water Act and Water Management Financing Act, for expected enactment in 2009.

87. Even though, according to the Water Management Strategy, the water charges should express the value of the water, including charges of activities directly oriented to the protection of water resources, the proposal of the new Water Management Financing Act the revenue from the protection water charges is earmarked for financing the development of water infrastructure.

88. The economic price of water has not yet been reached in the currently applied tariff system. The rates of water protection charges and water use charges, the level of which was determined for the last time about fifteen years ago, today do not reflect the value of real needs they serve for. The local government units in most cases pursue a policy of underestimated rates. The current price for sewerage treatment covers only the maintenance of public sewerage system as well as emergency interventions. This results also in the insufficient level of

construction of the facilities for collecting wastewater and substantially reduces the level of population being connected to the systems of public sewerage. The limitation is made by the provision of the By-law on identifying the zones of sanitary protection of well fields and springs.

89. The integration of economic and environmental objectives into water pricing policies has not yet been reached. The full recovery of financial costs is only partially achieved and environmental and particularly resource costs are not adequately considered.

90. In Croatia water management legislation has been partly harmonized with the EU standards and the requirements of the Water Framework Directive. In this context, a By-law on the Water Management Basis of Croatia was approved in 2003, defining the methodology for the Strategic Base for Water Management in the Republic of Croatia. The harmonization of water legislation with the EU standards continued by the enactment of the amendments to the Water Act and the amendments to the Water Management Financing Act in December 2005. The present Water Act, amended in 2005, provides the foundation for ongoing activities in order to comply with EU Water Framework Directive and other relevant EU directives. In the amended Water Act the water management principles have been harmonized with the principles of the WFD.

Montenegro

91. The main institutions in charge of water management at central level in Montenegro are the Ministry of Agriculture, Forestry and Water Management (MAFWM) with its subordinate Directorate for Waters (DfW) as executive agency, the Ministry of Tourism and Environmental Protection (MTE) and the National Water Council (NWC) as a consultative body.

92. While Groundwater is treated jointly with surface water in new the Law on Water, there is no institution directly in charge for the management and protection of groundwater resources. According to the law, a long-term national water management programme shall be elaborated in the Water Master Plan of Montenegro.

93. Montenegro has partly harmonized the Law on Waters with the principles of the EU Water Framework Directive (WFD). The Law on Water Management Financing Act, adopted in 2008, marks a step forward towards full implementation of WFD provisions. According to the National Strategy for Sustainable Development water management principles are implemented in line with the principles of the WFD.

94. Coordination between the institutions in charge for specific aspects of water resources management is limited. According to the legal system, water use and protection on national level are under the competence of the Ministry of Agriculture, Forestry and Water Management, whereas bilateral/international cooperation is implemented by the Ministry of Tourism and Environment. The tasks of the latter include coordinating the implementation of projects financed by international organizations, and the implementation of regional/international conventions.

95. Both, Ministry of Agriculture, Forestry and Water Management and Directorate for Waters face a lack of human capacities and are seriously understaffed with currently 13 employees in the whole water management sector.

96. Scientific knowledge on groundwater resources is limited due to financial constraints and lack of capacities. Formal cooperation with institutions in charge of groundwater research is only weakly developed.

97. Only few stations for monitoring the quality and quantity of groundwater are in place in Montenegro. These are placed near environmental hotspots, such as the Aluminum plant in Podgorica. Consequently, the current monitoring system does not provide sufficient database for proper planning and management of groundwater resources.

98. Local public enterprises responsible for public water supply and sewerage systems are facing financial constraints due to low water tariffs, which in most cases are sufficient for maintaining basic functions only. The state provides additional financial support when needed. However, the budget restricts the enterprises in properly fulfilling their tasks according to existing regulations.

99. Transboundary cooperation in the water management sector at regional level between Montenegro and other DIKTAS sharing states is rather weak. International cooperation achieved in this sector should be enhanced through involvement of relevant authorities in regional initiatives and projects, as well as through full implementation of international agreements and conventions in this field.

100. Capacities of relevant institutions in charge of water management, for transposition and implementation of relevant European Union and international laws/ regulations/ agreements/ conventions are limited. The same is true for the respective institutions on local level, such as administrations units in the municipalities. Limited capacities and lack of experience with EU water management approaches as well as the weak mechanism for coordination and policy integration need to be further improved.

Preliminary Regional Remarks

101. The following are a few observations relevant to DIKTAS that emerged during the preparation of the preliminary TDA and the comparative overview of the legal, institutional and policy contexts (in Annexes 1 and 9) in the four countries.

102. Coordination mechanisms among institutions - In all project countries water management and protection responsibilities are subdivided among several Ministries and their subordinate agencies. Coordination mechanisms between the responsible institutions are weak or not in place, resulting in a fragmented approach and lack of harmonized legislation and policies at national levels.

103. Legislation on groundwater - While in all four project countries the water law generically relates to both surface and groundwater, there are no specific provisions for groundwater or for karstic aquifers. The legal frameworks include groundwater abstraction as well as quality control in all countries, but implementation of these provisions is fragmentary. Particularly in Bosnia and Herzegovina the lack of relevant By-Laws constrains the transposition of the legislation.

104. Strategies for Water Management - Currently, a Water Management Strategy is in place only in Croatia. Other project countries are preparing to issue water strategies according to the relevant water laws.

105. State of Law enforcement - Albania and Montenegro have relevant by-laws in place regarding Law enforcement. In State of B&H and Croatia relevant By-Laws are only partly in place. In all countries unauthorized drilling of public and private wells is a common practice, and fines for non-compliance with the existing regulations are not always collected. Water protection zones, as foreseen in the legislation, are not always established.

106. Socio-economic incentives and obstacles to effective groundwater management for an eco-system approach - According the WFD principles, the “cost recovery principle” is applied in legislation of Albania, Montenegro and State of B&H but not implemented yet. In Croatia the “cost recovery principle” is anticipated by new water act. The “polluter-pays principle” is included in the legislation of the four countries but also not yet fully implemented.

107. Monitoring of groundwater - None of the project countries dispose of a fully functioning monitoring network for groundwater quantity and quality. There is no groundwater monitoring system in State of B&H while there is limited monitoring of groundwater in Montenegro, Croatia and Albania. The latter is focused mainly on measuring water quantity (abstraction) as well as groundwater quality on selected sites of particular concern. Monitoring of surface water is also somewhat restricted in the project countries.

108. Water related policies and legislation within Land Use and Environmental planning - National Legislation on Land Use is in Montenegro, Croatia, Albania and State of B&H in the framework of Laws on Urban/Physical planning and is dealt with by different spatial plans. In Croatia land use is treated in additional policies: National plan for water protection, Water Management Strategy and Physical Planning strategy.

109. All countries have provisions for the treatment of polluted water of both, domestic and industrial origin as well as regulations for solid waste disposal in place. Liquid waste is mainly covered by water and environmental framework laws while solid waste is dealt with under specific legislation. In Croatia the Waste Act covers both, solid and liquid waste.

110. Provisions for groundwater protection zones/protection of recharge areas are partly included in the water legislation, but not implemented yet. The groundwater protection areas are mainly designated for the abstraction of water intended for human consumption.

111. Hydropower policies - The planned and poorly coordinated increase of hydropower production in all project countries bears a risk of conflict among water users of different sectors as well as with neighboring states.

More detailed information on the countries' legal and institutional frameworks and water related policies is provided in Annex 1 (Table on Legal and Institutional Frameworks and Policies) as well as in Annex 8 (National reports on Legal and Institutional Frameworks and Policies).

2.2 Project Rationale and Policy Conformity

112. The proposed project is the first ever attempted globally to introduce sustainable integrated management principles in a transboundary karstic freshwater aquifer of the magnitude of the Dinaric Karst System. At the global level the project aims at focusing the attention of the international community on the huge but vulnerable water resources contained in karst aquifers (carbonatic rock formations), which are widespread globally, but poorly understood. The Dinaric Karst Aquifer System, shared by several countries and one of the world's largest, has been identified as an ideal opportunity for applying new and integrated management approaches to these unique freshwater resources and ecosystems. 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.

113. To achieve these objectives, the project will implement the Transboundary Diagnostic Analysis – Strategic Action Program (TDA-SAP) process, tested successfully in numerous GEF International Waters projects. The TDA-SAP is a consensus building process based on joint fact finding, available science, stakeholder participation aimed at identifying causes of transboundary degradation and reaching agreement on priority interventions.

114. The project is consistent with the Strategic Objective 1 of the International Waters Focal Area "To foster international, multi-state cooperation on priority transboundary water concerns through more comprehensive, ecosystem based approaches" and is expected to produce the relevant impacts of enhanced multi-state cooperation, stability and water security.

115. The project would be part of the IW Strategic Program 3 "Balancing overuse and conflicting uses of water resources in transboundary surface and groundwater basins" setting a globally replicable and highly innovative example of the use of IWRM principles for balancing conflicting water uses in a karstic environment.

116. The project will result in a more comprehensive and shared understanding of the freshwater resources of the whole Dinaric Karst region. This in turn is expected to enhance the effectiveness of a number of complementary ongoing and planned initiatives (e.g. Ohrid, Prespa and Skadar/Shkodra Lakes, Neretva and Trebišnjica river basin projects) by providing the so far lacking overall ecosystem context and planning framework. A specific activity, with related outputs, is foreseen as part of the project that will establish a mechanism for coordination and exchanges among projects, national agencies, bilateral and multi-lateral donors

2.3 Project Goal, Objective, Outcomes and Outputs/activities

COMPONENT 1. IMPROVING THE UNDERSTANDING OF THE RESOURCE AND OF ITS ENVIRONMENTAL STATUS

OUTCOME 1. COUNTRIES RECOGNIZE THE KARST AQUIFER SYSTEM AS A SHARED AND HIGHLY VULNERABLE RESOURCE, AND AGREE TO TAKE STEPS TO DEAL WITH ITS TRANSBOUNDARY IMPLICATIONS.

Output 1. *A Transboundary Diagnostic Analysis (TDA) prepared and approved by countries: transboundary problems and root causes identified and options for interventions to address national and trans-boundary problems proposed* – **GEF $838k, Co-Financing $950k**

117. Under this output the TDA process will be undertaken, and the TDA document will be prepared and approved, including a causal chain analysis to better identify and prioritize critical areas for interventions, investments, and reforms within the SAP. This process will build upon the preliminary but extensive assessments carried out as part of the PPG process. The causal chain analysis will facilitate assessment of the geographic scope, severity, and environmental and economic consequences of given issues. The TDA will lead to the identification of priority interventions for inclusion in the SAP, which are needed to address underlying/root causes; filling of knowledge gaps; legal, policy, and institutional reforms; investments;

economic instruments; and awareness raising and stakeholder involvement. The TDA will also identify the gaps in the baseline information necessary for the establishment of the SAP monitoring and evaluation framework. The TDA will be prepared by the National Executing Units under the lead of the PCU and with the support of regional and international consultants and guidance from the Science Advisory Panel (see Part III), and approved by the national inter-ministerial committees and the project steering committee. The draft TDA will undergo a rapid consultation process, as appropriate, with key stakeholders to incorporate their views and knowledge and become a common basis in the concerned countries, on which solutions will be planned and cooperation will be built. The final and approved TDA, in English and the five languages spoken in the region (Albanian, Bosnian, Croatian, Montenegrin, and Serbian) will be disseminated widely, both in full and easy access versions, and will inform the SAP development. The project will work closely with the countries to develop the SAP based on the scientific, policy, and institutional assessments contained in the TDA.

The TDA – SAP process

"To produce global environmental benefits, international waters projects must address transboundary water-related environmental concerns" (GEF Strategy 1996). In many cases, like the one of the Dinaric Karst Aquifer, these transboundary concerns, and the actions needed to address them are not adequately defined and an initial international waters project will be undertaken to formulate an agreed Strategic Action Program (SAP) prior to development of a technical assistance, capacity-building, or investment project(s). The countries sharing the aquifer will work together to produce a Transboundary Diagnostic Analysis (TDA) to identify the priority transboundary water-related environmental concerns and the sectoral policy causes of the problems, and then formulate a Strategic Action Program (SAP) to outline the actions needed to resolve the priority problems. The SAP would contain needed baseline actions (including country commitments for implementation); actions addressing transboundary issues that would be funded in the baseline or by other means such as bilateral assistance, loans, or through regular Implementing Agency programs; and additional actions needed to resolve the transboundary environmental concerns that have incremental costs that the GEF might fund. A key element of the SAP is the well-defined baseline case of needed interventions so that there is a clear distinction between actions with simply national benefits and those addressing transboundary concerns with their global benefits. Another key element involves the institutional mechanisms chosen at the regional and national levels for implementing the SAP.

KEY ELEMENTS OF A STRATEGIC ACTION PROGRAM

Transboundary water-related environmental analysis. The process for cooperatively preparing a Strategic Action Program (SAP) among countries should start with an analysis of priority transboundary environmental problems (TDA). Which drivers cause the actual degradation? What sectoral activities cause the degradation and how serious is it? What are the information gaps on the existing environmental state, policy distortions and institutional deficiencies? Stakeholder analysis and public involvement are essential so that economic and social aspects will be included.

Relationship with national environmental planning and economic development documents. Responses included in national environmental documents and plans will provide input in preparing this analysis as well as identifying priorities among environmental concerns. The analysis of the causes of degradation and the needs for capacity building should include examination of national economic development plans and sectoral economic policies (which establish reasonable actions for sustainable development).

Establishment of clear priorities. The SAP should establish clear priorities for actions that are endorsed at the highest levels of government and widely disseminated. Priority transboundary concerns should be identified, as well as sectoral interventions (policy changes, program development, regulatory reform, capacity-building investments, and so on) needed to resolve the transboundary problems as well as regional and national institutional mechanisms for implementing elements of the SAP. Coordination of priorities with those identified under the climate change and biodiversity focal areas could be done during the SAP process. The SAP should provide for a balanced program of preventive and remedial actions, support both investment and capacity-building activities, and identify key activities in the following areas: Priority preventive and remedial actions; Cross-cutting issues and linkages to other focal areas; Institutional strengthening and capacity-building needs; Stakeholder involvement and public awareness activities; Program monitoring and evaluation; Institutional mechanisms for implementation.

Establishment of a realistic baseline. The cooperating countries and the GEF should agree on the baseline environmental commitments (which should be funded domestically or through donors or loans) and what activities are additional for solving the transboundary priority problems. It is important for activities included in the SAP to be realistically costed and consistent with projected availability of domestic and international funding. Donor conferences may be appropriate when the SAP is in the draft stage to facilitate international commitments to action.

118. The production of this output will require five main activities.

1 Hydrogeological and environmental characterization of the DIKTAS, harmonized across the countries sharing the aquifer, and based on existing and accessible information. This regional effort will be focused on the identification of system boundaries, permeability barriers, regional structural asset and neo-tectonic features (active faults and fracture zones with high fracture permeability that might act as preferential pathways for infiltration and karst water movements), and on the inventory and description of main springs, karstic features and dependent ecosystems, including rivers and lakes. The results will be presented synoptically in a suite of thematic maps both at detailed scale (Pilot Maps for replication by the countries) and at regional scale (**Map of the Dinaric Karst Aquifer System**). This map, directed to decision makers at the various administrative levels, will amongst others include indications of the most vulnerable aquifer recharge zones and of the land use capacity and restrictions.

2 Regional assessment of the present environmental conditions of the karst water resource: quality – quantity, including identification of main hot spots of pollution and of over-extraction; vulnerability mapping of karst aquifer formations; health of dependent ecosystems, including rivers, lakes and coastal marine waters and habitats; climatic conditions and variability; distribution of population; existing and planned infrastructure and human activities (reservoirs, tunnels, industry, waste disposal facilities, agricultural activities, etc.) that are impacting or might impact karst groundwater flows and quality.

3 Regional assessment of karst water demand, and of policy context. This will consist in an estimate, consolidated at the regional level, of present and foreseen demand, and in a critical review of the existing policy, legal and institutional conditions related to water and land use management. This work will build on the results achieved at the national level during the PPG (see Annex 1 (Table on Legal and institutional frameworks and policies), and will highlight the threats posed to the resource by excessive or conflicting demands and water uses, and by inadequate, missing, non-harmonized policy and institutional frameworks.

4 Preparation of the Transboundary Diagnostic Analysis and Pilot Demonstration Areas. The work for the preparation and finalization of the TDA will be based on the results of the joint fact-finding Activities 1, 2, 3. Countries, within the context of the facilitating action of the project, will proceed to identify all major issues of concern, or stresses, presently affecting the DIKTAS - or that might affect it in the future under likely scenarios of economic development, EU accession, climate change – and their causes. As a second step, they will discriminate between those concerns/issues of exclusive national responsibility, from those that instead are transboundary in nature, i.e.: negative environmental stresses/impacts that can only be tackled through concerted international action.[9] The TDA will finally lead to the identification of priority interventions which are needed to address underlying/root causes; filling of knowledge gaps; legal, policy, and institutional reforms; investments; economic instruments; and awareness raising and stakeholder involvement. To assist prioritization during SAP development, and the testing of management - cooperation schemes, the TDA preparation process will include *demonstration efforts* on parts of the DIKTAS to be selected among those identified as part of the PPG. The TDA will also identify the gaps in the baseline information necessary for the establishment of the SAP monitoring and evaluation framework.

5 Testing of management models or approaches at the local level with increased awareness, improved management capacity, and knowledge generated and utilized by local communities

119. Local communities around the Dinaric Karst Aquifer are closest to and dependent on the Aquifer ecosystem for generations. The integrity of the ecosystem is critical to the livelihood of the local communities, whose activities pose immediate and direct impact on the ecosystem. Local communities are knowledge holders on the characteristics and features of the ecosystem, and also should be one of the ultimate users of knowledge that will help to rationalize their activities for better environmental management.

[9] Under conditions of high vertical and lateral permeability, and hence vulnerability, such as those prevailing in the DIKTAS, it is evident that even issues like solid waste disposal that are normally considered of only national concern, may become in fact cause of transboundary concern.

120. Based on the initial results of TDA and information collected, the project will pilot some small-scale projects to test and demonstrate management models at the local level. The project will work closely with GEF's well-established local delivery mechanism, GEF Small Grants Program (SGP)[10] implemented by UNDP. Currently, SGP is present in Albania, FYR Macedonia and Slovenia that are relevant to the Dinaric Karst Aquifer. If other participating countries of the project join SGP during the implementation, they should also join the collaboration. In this context UNESCO's Regional Office in Venice (BRESCE) will take care of liaising with UN country teams in Albania, BiH, Croatia and Montenegro and other countries that may participate in the project. Through the collaboration with SGP, the project will enhance the understanding and knowledge about the Dinaric Karst Aquifer among local communities through SGP network, and implement management approaches or models that arise from the development of TDA. The activities include:

1) Involving SGP network in the TDA development process, e.g. inclusion of SGP national coordinators and selected National Steering Committee members in the working group or regional consultation meetings;

2) Providing training and regional networking opportunities to SGP national coordinators and selected National Steering Committee members;

3) Following the priorities identified in TDA, developing and piloting small scale community projects with funding from the project and SGP IW funding;

4) Promoting inter-project learning by facilitating project visits, collecting and sharing experiences and promoting networking.

Output 2. *Baseline conditions identified, and environmental status indicators agreed upon and adopted: Countries agree on a Shared Vision for the DIKTAS, and join forces in a long term monitoring effort* – **GEF $108k, Co-Financing $70k**

121. Once the results of the TDA, describing the present environmental conditions of the Dinaric Karst Aquifer (baseline) will be available and approved, the project will focus on the building of consensus among countries on a Shared Vision of the aquifer system, its optimal desirable standards in terms of quality, priority uses, and level of protection and integrity of dependent ecosystems. This common goal of the countries will represent the conceptual background and informing principle of the SAP elaboration process.

122. Having achieved an acceptable and shared knowledge of the present baseline conditions of the DIKTAS, and taking into consideration the Shared Vision, the project will work to identify feasible indicators that will allow the countries to monitor in an harmonized way and in the long term the evolution of the system and its reaction to the various stress reduction measures and interventions that countries may undertake in the future within the SAP implementation context or otherwise. These indicators are the Environmental Status Indicators recommended by the International Waters focal area of the GEF[11]. They must be simple, comprehensive and feasible given the socio-economic and technical contexts in the countries. The project will identify in each country the institution/department/agency potentially responsible for the long term monitoring of the DIKTAS.

COMPONENT 2. ESTABLISHING COOPERATION AMONG COUNTRIES SHARING THE AQUIFER

[10] GEF Small Grants Programme can be a potential partner as a local outreach and delivery mechanism of the project. SGP has a country presence in Albania and FYR Macedonia, and has gained considerable experiences on local actions to address global environmental concerns. The Joint Evaluation of SGP in 2007 concluded that it is an effective and efficient delivery mechanism, and encouraged full-sized GEF projects to partner with SGP.

[11] "….collaborating countries must harmonize their sampling, laboratory, and analysis methods so that they all agree on what water quality, quantity, or ecosystem parameters (living resources) should be sampled to track progress toward a goal. These agreed environmental status indicators are measures of actual performance or success in restoring and protecting the targeted water body…….Social indicators may also be appropriate here to measure whether communities and stakeholders benefit from the changes in environmental conditions brought about by the project." GEF M&E Working Paper 10, 2002.

OUTCOME 2. THE STRENGTHENED COLLECTIVE KNOWLEDGE AND COORDINATION AMONG DEVELOPMENT PLANS OF COUNTRIES, PROJECTS, AGENCIES AND DONORS, IMPROVES SUSTAINABILITY OF THE RESOURCE.

123. The achievement of this key project outcome will be facilitated by the project by building on the results and political commitment reached in Component 1, and through a number of related activities that will largely rely on communication and stakeholder involvement tools (see Annex 6). The Component will produce three main outputs.

Output 3. *A multi-country consultative body established and operational*. – **GEF $105k, Co-Financing $200k**

124. It is expected that through the joint work for the transboundary diagnostic analysis, the four participating countries will soon reach a level of mutual trust and shared understanding of the DIKTAS and of its transboundary nature sufficient to enable them to commit to some kind of multi-country cooperation mechanism for an improved management of the shared groundwater resource. Any such mechanism at the level of the whole aquifer is lacking at present in the region, while bilateral agreements of limited scope involve sections of the DIKTAS (see Annex 2, Table on International Agreements). A consultative and information exchange (CIE) body of the four countries could be a first step along the way of a systematic commitment to joint management, and a first response to the call of the science community of the region[12] that identified as key priority "... to gain a better mutual understanding of the peculiar properties and functions of the Dinaric Karst Aquifer System, and to adopt policies for its joint management, based on a regional consultative and management mechanism". The CIE shall be open to other countries sharing the aquifer system upon their request and approval from the Project Steering Committee. It shall be ensured that the body formed during the project should continue their work after completion of the project.

125. Such cooperation is required by the provisions of the EU Water Framework Directive (WFD), which the four countries are in the process of implementing in their national legislations13; the UN ECE Water Convention (1992) which the DIKTAS countries have ratified or are in the process of ratifying; and by the UN General Assembly Resolution A/RES/63/124, which represents the only international text related specifically to transboundary aquifers.

126. The EU WFD extends its provisions to provide transboundary or international river basins. According to the Directive groundwater is assigned to the most appropriate river basin. Each Member State will have to find and set the most appropriate administrative arrangements at the level of the river basin. In case of international river basin districts, whether shared by two or more Member States, or extending beyond the territory of the EU, each Member State has the obligation to ensure the administrative arrangements within the portion of his territory that comply with the rules of the Directive. Member States are required to coordinate with non Member States, when it is the case, for meeting the requirements of the Directive.

127. The UN ECE Water Convention provides that Riparian States shall enter into agreements, and establish joint bodies, which will have the responsibility, inter alia to collect and compile data and to elaborate joint monitoring programs.

128. Furthermore, the UN General Assembly adopted recently Resolution A/RES/63/124 on the law of transboundary aquifers. The Resolution acknowledges that the subject of the law of transboundary aquifers is of major importance in the relations of States, and "encourages the States concerned to make appropriate bilateral or regional arrangements for the proper management of their transboundary aquifers", taking into account the provisions of the draft articles prepared by the UN International Law Commission, with the scientific support of UNESCO-IHP. The draft articles are annexed to the Resolution. The draft articles include inter alia provisions

[12] In March 2006, country representatives and scientists participated to a workshop on the Dinaric Karst organized by UNESCO in Belgrade. The workshop was the starting point of the development of this project.
[13] The process is at different levels in each country. Refer to chapter 2.1 for details.

on the cooperation among aquifer States including the regular exchange of data, monitoring (jointly or not), and joint management.

129. In order to reach an agreement on the form of consultation and information exchange mechanism and its structure, operational modalities and level of participation, various options of multi-country cooperation will be reviewed, and lessons learned from SEE (Sava River Commission) and other regions and aquifer systems will be acquired and considered, in particular those of the Guarani Aquifer System, the Plata – Parana' River (where for the first time a large scale attempt is being made to integrate groundwater resources into basin management), and other relevant cases[14]. There are no cases however referring directly to Karstic systems, where the traditional distinction between groundwater and surface water looses meaning, and may even mislead overall water management approaches. The project will be a first step in this direction, and will strive to set a precedent of transboundary cooperation in a large karstic province.

Output 4. *Environmental quality targets adopted and a joint harmonized monitoring program of the environmental status established* – **GEF $56k, Co-Financing $60k**

130. Once the TDA process will be concluded, the CIE, supported by the project, will review and adopt the Shared Vision for the DIKTAS (Output 2) and attempt to translate the proposed "…optimal desirable standards in terms of quality, priority uses, level of protection and integrity of dependent ecosystems" into environmental quality targets to be achieved in a agreed upon lapse of time. The set of Environmental Status Indicators and the modalities for periodic long term monitoring and data exchange identified under Output 2 will be reviewed and adopted by the CIE and submitted to the countries for approval and implementation.

Output 5. *A mechanism for coordination and exchanges with other relevant projects and initiatives, including the GEF supported Mediterranean Partnership and others, established and operational* – **GEF $105k, Co-Financing $60k**

131. It is a requirement of GEF funded projects, and a good practice, to capture the opportunities for synergies among relevant GEF projects in the specific country/region, and to avoid overlaps and repetitions. This development assistance approach can, and should of course be expanded also to other non-GEF multilateral and bilateral initiatives.

132. Within the context of the CIE activities, the project will propose and facilitate contacts with all these parallel initiatives, and will help establish a commitment to periodic (yearly) consultations and exchanges. A first face-to-face meeting of all the key managers of these projects will be organized during the early phases of the project and hosted by the CIE. During the meeting, participants will review options for continuing exchanges and cooperation, including through exchanges of project personnel, electronic forums, meetings etc. The project will assist CIE in preparing the meeting, and all the documentation that might be deemed necessary, as well as the following annual exchanges.

Ongoing relevant projects

133. A number of projects, all of them co-funded by the GEF, are ongoing in the Dinaric region and its vicinity and are relevant for the purposes of the DIKTAS project. They include a project on biodiversity in the coastal karst region (Croatia), three projects on the environmentally sustainable management of the "karstic" lakes of Ohrid, Prespa and Shkodra (Albania, Montenegro, Greece, FYR Macedonia), various pollution reduction investment projects along the Adriatic coast, and an important sub-project on Coastal Aquifers part of the Regional Component of the GEF – UNEP – World Bank Strategic Partnership for the Mediterranean Sea LME, that will cover all the west flank of the DIKTAS and its submarine discharges. Details on the GEF funded projects are provided in

[14] The project will also consider the feasibility of an exchange of experiences with the Edwards Aquifer Authority (Texas). The Edwards Aquifer, although entirely national, is one of the best examples of karst groundwater management.

Table 1

Table 1.

TABLE 1: GEF FUNDED ACTIVITIES IN THE REGION

Name of GEF funded activity	Scope	Project Countries	GEF Implementing Agency	Duration of the activity	Status of implementation
Lake Skadar-Shkoder Integrated Ecosystem Management Project (LSIEMP)	Establishment and strengthening of institutional mechanisms for transboundary cooperation and sustainable management of Skadar-Shkoder Lake	Montenegro, Albania	World Bank	2008-2012	Full Size Project
Integrated Management of Basin Ecosystem of Prespa lake in Albania, FYROM and Greece	The replacement of the traditional way of protection with integral way of protection will decrease the negative impact. The introduction of the integral way of apple production protection enables optimal way of using the compounds for apple plantation treatment. By the reduced use of pesticides, the environment will be protected, the production costs will be reduced - reducing apples' final price and increasing its competitiveness, (to try to satisfy rigorous EU quality criteria)	Albania, FYROM and Greece	UNDP	9/2006-12/2011	Ongoing
Ohrid Lake conservation project	REReP bilateral project with 4 components	Albania, FYROM	World Bank	1998-2001	Completed
Regional Project "Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem"	Leveraging reforms and catalyzing investments that address transboundary pollution reduction and marine and costal biodiversity conservation priorities in Mediterranean Sea region Sub-Project on Coastal aquifer management within Coastal Zone Management	13 GEF-eligible MED coastal countries:	UNEP	2009-2014	Full Size Project, Start in September 2009
Neretva and Trebisnjica River Basin Management Project	The project aims to provide mechanisms for the efficient and equitable water allocation amongst users of the Neretva and Trebisnjica river basin at the transboundary level and for enhancing the health of ecosystems and biodiversity through improved water resources management.	Bosnia and Herzegovina, Croatia	World Bank	2009 - 2013	Starting implementation

134. In addition to these GEF sponsored efforts, other regional initiatives may be relevant, such as

- *International Sava River Basin Commission* (ISRBC), was established in June 2005, as an international organization for the implementation of the Framework Agreement on the Sava River Basin (FASRB), acknowledging the great political, economic and social changes that have taken place in the region. In the Framework Agreement the Parties committed themselves to cooperate in sustainable development,

utilization, protection and management of water resources in the Sava River Basin. The ISRBC is involved in a number of ongoing projects and initiatives aimed at, among others, the establishment of sustainable water management, which includes cooperation on management of the Sava River Basin water resources in a sustainable manner, and integrated management of surface and groundwater resources.

- the *Adriatic-Ionian Initiative (AII)*, which was formally established as a political initiative at a conference held in Ancona, Italy in May 2000;
- *ADRICOSM Project*, supported by the Italian Ministry of Environment, Sea and Territory, aimed at implementing monitoring systems and modeling tools, as well as assessing the impact of climate change on the water cycle in Montenegro and Albania;
- Regional Project "*Pilot River Basin Plan for the Sava River Basin*", in the framework of the EC CARDS Program, aimed at enhancing water management cooperation among countries sharing the Sava River Basin, using an integrated water management approach as outlined in the WFD and ICPDR issue papers**.** Croatia, Bosnia and Herzegovina, Serbia and Montenegro are participating in this activity.
- Several activities supported by the IPA Programme (Instrument for Pre-Accession Assistance) of the European Commission are expected to start during 2009. These activities include a Project on *"Support to Water Policy in Bosnia and Herzegovina"* and *"Support to Implementation of the Integrated Pollution Prevention and Control (IPPC) Directive"***.**
- The Petersberg Phase II / Athens Declaration Process (coordinated by Germany, Greece and the World Bank and facilitated by GWP-Med) has facilitated for a 3 years period, with the support of GEF IW:LEARN, a regional technical dialogue among countries and stakeholders on shared water resources management in South-Eastern Europe.
- In the framework of the *Water Supply and Sanitation Technology Platform (WsTP) Pilot Programme – Mitigation of Water Stress in Coastal Zones* six Implementation Cases (IC) are planned to be implemented in the Southern Adriatic Dinaric Coast (south of Croatia, Bosnia and Herzegovina Montenegro, Albania and Greece). The current economical activities in the region as well as future development plans are based on the further development of tourism and the coastal water aquaculture. This will require high quality freshwater and coastal water as well as water for irrigation and water power generation.

135. A number of projects are implemented at national level with the support of bi- or multilateral donors. These include

- *Improved Water Monitoring and Assessment Program in Albania*, funded by Swedish Environmental Protection Agency; These projects are aimed at enhancing the framework conditions in the countries, in particular with respect to approximation and harmonization to the environmental standards of the European Union.
- In the framework of the EC CARDS Program activities are carried out on national level:
  - Bosnia-Herzegovina: First phase of the project on "*Water quality management at the River Basin Level"* was completed in 2007. The second phase, focusing on "Additional Services to support to Management in B&H" was completed in 2008.
  - Croatia: CARDS 2003 project *Approximation of Croatian water management legislation with the EU ACQUIS* was completed in 2008. The currently ongoing CARDS 2004 project *Capacity Building and Development of Guidelines for the Implementation of the WFD* is twinning project, carried out in collaboration with the German Federal Ministry of Environment, Protection of Nature and Nuclear Security and the Holland Government Bureau for Land and Water Management. The project is aimed at strengthening of institutional and administrative capacities for implementing the Water Framework Directive.

136. An interdisciplinary project on „Valuation and Protection of Groundwater in Croatia“, initiated by ten faculties of Zagreb University and Split University was initiated by Croatian Waters in 2009. The main objective is the development of long-term programmes of investigation, management and utilization of groundwater resources, protection of water sources and supplies of groundwater as well as the remediation of the polluted parts of strategically significant aqueous systems in the Republic of Croatia. In the second phase of the project, two pilot areas will be proposed: the first one in the urban area of the City of Zagreb; the second one might include a transboundary aquifer in the Dinaric Karst Aquifer System.

137. UNESCO's Regional Office in Venice (BRESCE) is developing and implementing activities related to co-management of shared water resources in SEE at regional and national level. These activities are mainly focusing on capacity-building and refer in particular to the Sava, Drava-Mura and Drin River Corridors. In the case of Drava-Mura, the MaB Biosphere Reserves concept will be referred to as a possible scheme for co-management. BRESCE is also part of a MDG-F project in BiH dealing with the development and implementation of Local Environmental Action Plans (with UNDP, UNEP and FAO) in which strong emphasis will be put on participatory co-management processes.

138. The complete list of all projects relevant to the DIKTAS is attached in Annex 3 (Table on international projects and initiatives)

COMPONENT 3. FACILITATING HARMONIZATION OF POLICIES AND PRIORITY REFORMS

OUTCOME 3. POLITICAL COMMITMENT REACHED AMONG COUNTRIES ON IMPLEMENTING PRIORITY LEGAL, INSTITUTIONAL AND POLICY REFORMS FOR THE PROTECTION AND EQUITABLE UTILIZATION OF THE KARST AQUIFER SYSTEM.

Output 6. *Countries establish ad hoc inter-ministerial committees focused on harmonization of existing frameworks, and on priority reforms* – **GEF $86k, Co-Financing: $100k**

139. Participating countries have agreed to create for the purposes of the project, a National Inter-ministerial Committee (NIC), or its equivalent, composed of high level representatives of all the various ministries and agencies that are or should be involved in karst groundwater management (e.g: Treasury, Water, Agriculture, Forestry, Energy, Physical Planning etc.). NICs will be established with the technical support of the project in all four countries in parallel with the creation of the Consultation and Information Exchange Mechanism (CIE). NICs and CIE together will represent the key technical-political interface of the project that will approve the TDA, process the endorsement of the SAP, approve the Environmental Quality Objectives (EQO), Environmental Status Indicators and their long term monitoring.

140. The Committees will meet periodically upon request of the project, and will receive and comment all documentation produced by the project. They will have a particular role in guiding the process of harmonization of existing policy and institutional frameworks.

Output 7. *A Strategic Action Program (SAP) for the DIKTAS, and National Implementation Plans, elaborated and adopted by the country at high ministerial level* – **GEF $ 180k, Co-Financing: $180k**

141. The core of the SAP process is the collaborative formulation and negotiation of a joint and harmonized program of strategic priority actions needed to address key transboundary concerns identified through the TDA process. It will enable stakeholders to translate the Shared Vision for the DIKTAS and its targets into concrete actions and to reach consensus on the interventions needed to sustainably manage the aquifer system through an ecosystem approach that provides for the long-term sustainability of land and water resources. The SAP is a regional, non binding, document crystallizing the commitment of the four countries to undertake a series of agreed actions. The SAP will be translated into National Action Plans (NAPs).

142. The SAP development process will be informed by the TDA and results of the work done in the pilot demonstration areas and will focus on priority transboundary issues identified in the TDA. Through wide technical and stakeholder consultative processes priority issues will be jointly defined, together with the policy, legal and institutional reforms to be implemented at national and regional levels needed to address those issues. The SAP will also include an estimation of the required financial resources and a strategy to mobilize those resources. The objective will be to formulate a financially realistic, government endorsed, sustainable program that effectively responds to local conditions and incorporates lessons learned thereby ensuring its long-term implementation.

143. The DIKTAS SAP will detail policy, legal, and institutional reforms as well as priority investments and actions for the sustainable management of the Dinaric Karst Aquifer. It will be prepared in collaboration by the national inter-ministerial committees and the CIE with the technical support of the project, and will be negotiated and endorsed at the highest ministerial level in all project countries.

144. Following ministerial endorsement, each country will translate the DIKTAS – wide SAP into National Implementation Programs which will define in detail the ways in which the country will implement the actions agreed in the SAP.

Output 8. *A partnership conference consolidates international support for the implementation of the priority actions* – **GEF $ 50k, Co-Financing: $30k**

145. The core of the activity will be the organization, at the conclusion of the project, of a "Partnership Conference". The purpose of this output/activity is twofold:

(1) to enhance the sustainability of the project outcomes by gathering and consolidating international technical and financial support around the SAP implementation process (NIPs);

(2) to disseminate the results achieved by the project and the unique experience on karstic hydrology accumulated by the Dinaric countries beyond the region in order to facilitate replication in other karstic regions of the world.

146. The event will be hosted by one/two of the project countries in a location(s) well representative of karst features, issues and opportunities. The program will include direct field visits, the distribution of easily accessible documentation, media events and discussion forums. Participants will include representatives of all Dinaric countries, GEFSEC, UNESCO and UNDP, project co-financing partners, bilateral and multilateral donors, and selected representatives of karstic regions around the world[15] (a list of notable Karst areas around the world is attached in Annex 5).

COMPONENT 4 COMMUNICATION, DISSEMINATION AND REPLICATION ACTIVITIES

OUTCOME 4. LONG TERM SUSTAINABILITY OF ACHIEVEMENTS ENHANCED THROUGH PUBLIC AND POLITICAL AWARENESS CAMPAIGNS, STAKEHOLDER INVOLVEMENT AND REPLICATION MECHANISMS.

147. Equally important to the linkages between the project activities e.g. the outcomes of the TDA will feed the preparation of the SAP etc., is the multilevel non-linear linkages among the groups of stakeholders, the institutions and the countries, that are by default engaged in the management of the aquifers system and that the project activities concern; who, how, when, at what level is engaged in partnership with whom. The former will define the success of the project in terms of implementation of the activities while the latter will define the success of the project in terms of creating the conditions for sustaining its outcomes and achievements. The

[15] Important transboundary Karst Aquifers are located in the Yunnan Province of China and northern Vietnam, at the border of Iraq and Iran, in Southern Africa, in particular the dolomitic karst systems shared by Botswana and the Republic of South Africa, in the Yucatan peninsula.

structured involvement of the appropriate stakeholders at the appropriate level and time in the different project activities using the appropriate means will secure the creation of these linkages.

148. A range of information and strategic communications, consultation and involvement activities will be integrated in- and run horizontally the Project, its increment activities, and execution in pursue of strengthening the commitment of politicians, decision makers, users and other stakeholders at all levels as well as the public for a sustained cooperative effort among the countries sharing the resource for its sustainable management. A relevant Stakeholders and Public Participation Strategy (SPPS) has been prepared (Annex 6) to guide their implementation throughout the Project Components and execution period. The consultation and stakeholders involvement activities described in the SPPS aim to create a multi-level stakeholder ownership of all stages of the TDA – SAP process, ranging from the identification of the problems and their root-causes to the identification and planning of sustainable solutions.

149. The stakeholders will be involved in consultation process dialogues[16] regarding the:

- Preparation of the TDA. The draft TDA will undergo a consultation process as appropriate with key stakeholders to incorporate their views and knowledge in place and become a common basis on which solutions will be planned and cooperation will be built.
- Development of a vision for the management of the aquifer system and the establishment of the consultation mechanism that will be created through the project.
- Preparation of the SAP (see Output 7).

150. The involvement of stakeholders in the implementation of the activities and/or in consultation processes will encourage/result in:

- Advanced policy development. The TDA will be a widely agreed document that will incorporate all available knowledge and feed into the SAP, which will be the outcome of consultations among stakeholders with different views, perceptions, opinions and interests.
- The creation and strengthening of national partnerships through the establishment of the consultation mechanisms. In addition, the exchange of opinions, knowledge and expertise among the stakeholders through the dialogue processes will facilitate the creation of peer communities at the national and transboundary levels.

151. The consultation and involvement activities will support the implementation of the Components 1 - 3 and the achievement of their envisaged outcomes; therefore their implementation costs will fall under the respective budget category. Their implementation will be supported by the Stakeholder, Public Participation and Communication Facility (see PART III: Management Arrangements).

Output 9. *Stakeholders Analysis, and information and communication activities to highlight project's progress and achievements and support stakeholders involvement*[17]. **GEF $ 215k, Co-Financing: $ 230 k**

152. The SPPS will be revised and adapted at the beginning of the project implementation period on the basis of the prevailing realities at that time and the outcomes of the Stakeholders Analysis (SA) that will be prepared (see PART III: Stakeholder Involvement Plan). The SA will be of key importance since the information obtained through this will guide the precise planning of the activities in terms of content, timeframe and target audience.

153. The information and strategic communication activities will facilitate the engagement of the stakeholders in the implementation of the project, the general public and the users to understand the issues involved and change attitude and their behavior to a more sustainable one, key stakeholders groups to exert pressure for solutions to be planned and implemented, and finally politicians and decision makers to take action. An Information and Strategic Communication Plan that will precisely describe the related activities, the target audience and the related timeframe, will be prepared early in the project implementation period using

[16] For Stakeholder Involvement refer to "Part III Stakeholder Involvement Plan"
[17] for additional details refer to Annex 7

information generated through the SA. The goals and objectives of this plan are described and are part of the SPPS (Annex 6). The SPPS elaborates on types of Activities providing a pool of available tools to be used; among these the most important are briefly described below:

- Publications such as:
  - Brochures, Posters, Flyers, Newsletters for (i) disseminating information about the Project activities, outputs, outcomes etc.; (ii) ad-hock dissemination of information regarding success stories, lessons, learned etc. to achieve specific information and communication objectives,
  - Guides/fact sheets to provide tailored information to targeted audience.

- Annual celebration festivals at national/transboundary level.

- Media tools - videos/films/TV and radio spots- to dynamically "deliver" messages and information related to the project, the resource's baseline conditions and the issues involved, the options made possible through the Project and its activities, developments, knowledge generated about the resource etc.
- Media events - press conferences and press releases- to be organized on the basis of the project's developments and milestones using the opportunity provided by the organization of key events.

Output 10. *Targeted capacity building programs to encourage replication of new practices, behaviors and techniques*[18]. – **GEF $ 155 k, Co-Financing: $ 353.57 k**

154. Face to face and, eventually, distance capacity building programs will be implemented and may focus among others on:

- specific issues to facilitate meaningful stakeholders engagement in the Project's activities e.g. in the TDA and SAP preparation process;
- policy and technical issues related to sustainable management of karst aquifers/ integrated water resources management to facilitate enhanced management of the resources;
- replication of best practices, solutions and techniques identified through the Project implementation period.

155. Additionally, targeted capacity building workshops will focus on key stakeholders that influence decision making (members of the parliaments of the countries, journalists) aiming to enhance their understanding about the resource and the needed action towards sustainable management of shared aquifers.

156. The content of activities each time will be defined on the basis of the knowledge gaps and the capacity building needs of the target audience.

Output 11. *Participation to IW LEARN activities, and establishment of website*[19] – **GEF $ 46 k, Co-Financing: $ 30 k**

157. The, currently planned, new phase of IWLEARN include activities focusing on the Southeastern Europe region. The project will be feeding in the relevant activities and products such as exchange of information and knowledge face-to-face activities, experience notes etc.

158. The Project's Website will use the tools developed under the IW:LEARN Project in the past, to reduce costs and achieve compatibility with the IW:LEARN's portal. This will secure synergies regarding dissemination of information and lessons learned, and communication with actors outside the Project (e.g. international organizations, water practitioners world wide etc.).

159. The website will be an instrument supporting the implementation of the project activities. It will support and incorporate a range of tools such as project's management team working space, information database,

[18] for additional details refer to Annex 7
[19] for additional details refer to Annex 7

interactive maps, forum discussions, and eventually distance learning / online capacity building (CB) modules etc. (see Annex 6).

The project will also actively participate in the GEF IW Biannual conference in 2011 and 2013 and sponsor participation of two countries representatives from governments.

2.4 Project Indicators, Risks and Assumptions

160. The only major risk that may prevent the full success of the project is the lack of sustained political support for this cooperative effort in the countries and states sharing the aquifer, some of which recently emerged from a long and devastating war.

161. The project proponents, fully aware of this challenge, have focused practically all project activities to the strengthening of this commitment through improved science and understanding, exchanges and consultations, awareness campaigns and capacity building, etc. It is also expected that non-GEF recipient countries participating to the project (Germany, Italy, Slovenia and Greece) will exercise leadership and help improve conditions for cooperation. Finally, the EU admission political objective of some of the countries will also help in moving the project successfully forward.

162. Given the nature of the project, oriented at improving science, establishing processes and creating enabling political environments, Climate Change will not have any impact on the project likelihood of success. Climate change and increased climatic fluctuations will have on the other hand to be taken into full consideration as part of the technical components of the project, from the diagnostic analysis, to the identification of needed priority actions, so that future management of the aquifer will include measures and provisions to face this new challenge to sustainability.

Indicators

163. The project is a framework capacity building project. As such, the project is the first stage in a consolidated development pathway. For that reason, the Strategic Results Framework provides a suite of indicators. Given the nature of the project, these are exclusively process indicators[20].

164. The full suite of long-term environmental status indicators will be developed as part of the project and become a SAP commitment.

165. For the FSP, the key indicators of successful project outcomes to be recorded through the

166. M&E framework will include:

-Process Indicators Outcome 1:

- A complete, science based TDA approved by the national inter-ministerial committees;
- Baseline conditions identified, and environmental status indicators agreed upon and adopted by the CIE.

-Process Indicators Outcome 2:

- Multi-country consultative body (CIE) established and operational;
- Environmental quality targets defined and adopted by the CIE;
- Common monitoring program for harmonization of quality targets established;

[20] The establishment of process indicators is essential to characterize the completion of institutional processes on the multi-country level or the single-country national level that will result in joint action on needed policy, legal, and institutional reforms and investments that aim to reduce environmental stress on transboundary water bodies. Traditionally, process indicators have been a measure of progress in project activities involving procurement and production (inputs and outputs) of goods, physical structures, and services. Capacity and human resource development and stakeholder involvement have also been recognized as important to achieving sustainable project outcomes. The complex nature of many GEF international waters projects requires that there be additional process indicators adopted to reflect the extent, quality, and eventual on-the-ground effectiveness of the multi-country, inter-ministerial, and cross-sectoral efforts that are at the heart of the GEF international waters approach. GEF reliance on collaborative processes that result in identifying priorities in a TDA, and seeking reforms and investments to address those priorities in an SAP, demonstrates the need for a broad array of process indicators that may capture the successful completion of those processes.

- Mechanism for coordination and exchanges with other relevant projects and initiatives, established and operational.

-Process Indicators Outcome 3:

- Ad hoc inter-ministerial committees focused on harmonization of existing frameworks, and on priority reforms established in each project Country;
- Strategic Action Program (SAP) for the DIKTAS, and National Implementation Plans, elaborated and adopted by the 4 countries at high ministerial level;
- Partnership conference aimed at consolidating international support for the implementation of the SAP is held with broad participation of the donor community.

-Process Indicators Outcome 4:

- Implementation of selected media events to highlight project's progress and achievements;
- Implementation of targeted capacity building programs to encourage replication of new practices, behaviors and techniques;
- Demonstrated active participation to IW LEARN activities.

2.5 Incremental reasoning and expected global, national and local benefits

167. The project aims at adding the multi-country, regional dimension needed to reform and harmonize present national policies and physical plans, and address the transboundary implications of the shared nature of the resource.

168. This regional dimension will involve and bring about the shared recognition of the system boundaries (in line with the ecosystem approach), the establishment of multi-country mechanisms for cooperation, and the enhancement of regional awareness and stakeholder involvement, all of which is incremental with respect to the "baseline" represented by the fragmented, single-country approach to groundwater exploitation presently adopted by the countries sharing the Dinaric Karst Aquifer System.

169. None of the participating countries is at present ready to fully appreciate the global and the domestic benefits that will eventually be accrued from the integrated management of the Dinaric Karst Aquifer as a whole, and hence will not engage in this initiative. Without the facilitation of the GEF, the countries would continue to implement fragmented and poorly coordinated exploitation policies that would not take into systematic consideration the advancements in scientific understanding of the characteristics of this karst aquifer system, nor the transboundary implications of its interconnected and shared nature, thereby exacerbating conflicts among users, threatening water security and the integrity of groundwater dependent ecosystems and coastal environments.

170. The global, national, local benefits that the project will accrue are threefold:

- the improved protection and sustainability of a globally significant transboundary freshwater resource, the Dinaric Karst Aquifer and its ecosystems, reflecting in improvements in the overall stability and water security in the region;
- the demonstration of globally replicable approaches to the management of karst aquifers and ecosystems;
- the enhancement of the effectiveness of other complementary GEF initiatives in the region (among others: the Ohrid, Prespa and Shkodra Lakes projects, the Croatian Karst Biodiversity Protection project, the Strategic Partnership for the Mediterranean Sea LME and its Investment Fund sub-projects (e.g.: Neretva Basin, Montenegro Tourism, etc.).

2.6 Country Ownership: Country Eligibility and Country Drivenness

171. In March 2006, country representatives that participated to a workshop on the Dinaric Karst organized by UNESCO in Belgrade concurred that the key priority was "... to gain a better mutual understanding of the peculiar properties and functions of the Dinaric Karst Aquifer System, and to adopt policies for its joint management, based on a regional consultative and management mechanism".

172. This remarkable consensus is in part the result of scientific initiatives such as the UNESCO ISARM Program for the Balkans, and of a number of international processes (the Petersburg Process, the Athens Declaration and related consensus building measures), and EU initiatives such as the Stabilization and Association Process that is ongoing in the region, and the Regional Environment Reconstruction Programme for SEE (REReP) initiated by the European Commission. So far in fact, none of the countries sharing the aquifer recognize in their water resources and environmental plans and policies the interconnected and transboundary nature of the aquifer system as a whole, and their plans regarding the management and protection of their karst ecosystems, and various water utilization policies are necessarily fragmented and with mostly local relevance.

173. Only recently has a better geologic understanding coupled with the improvement of environmental sciences started to translate into the realization of the need for a comprehensive management approach. The scientific community of the involved countries is leading the effort to mobilize political interest in the countries on this shared, complex but huge water resource.

2.7 Sustainability

174. The demand for the project originated in the region from the need to enhance the regional cooperation to protect and manage the groundwater resources contained in the Dinaric karstic chain and to create the enabling environment for joint actions towards preventing water use conflicts and enhance water security throughout the region. The project design is based on information from the principal stakeholders, at the national, sub-regional and local levels. As long as the project responds to the priority needs and demands for specific project outputs that originated in the countries and have been further defined by project stakeholders during project formulation, there is commitment of the four governments to support the formulation of the SAP, and the testing of joint approaches to karst aquifer management and protection. The sustainability of project activities and post-project implementation should be facilitated by the continued involvement of key stakeholders during the project activities and by the synergies with the various parallel GEF projects in the region, as well as with the ongoing process (WFD, Petersberg Process, Athens Declaration, UNESCO IHP- ISARM programme, and others). The presence of the UNESCO-BRESCE regional office, which is actively dealing with surface and groundwater management in SEE is seen as a major asset and will further ensure the sustainability of the project outcomes. Project countries will be able to participate to the UNESCO IHP Karst network activities benefitting of the international experience in the topic. Sharing of information and experiences amongst regions trough the UNESCO IHP network is considered as added value to the project sustainability. Further, public awareness activities, targeted at important stakeholders, will be undertaken to build a broad level of support. Sustainability of project results is hence based on the expected strong support of the governments and other stakeholders that will be created during project execution through the building of informed consensus, and through a strong stakeholder participation, communication and awareness -raising component. The project will also strive to attract international attention and donor support. To this end, the project aspires the inclusion of sustainable management of Karst/Groundwater resources into present and future UNDAF priorities in the concerned countries which will result in higher political relevance and increase the possibilities for co-funding by potential donors in a harmonized manner. The project will facilitate continuous communication and dialogue with internal and external development partners to maintain a cooperative environment, to build human and institutional capacities as well as to sensitize these stakeholders to support and maintain consistent management approaches at the respective regional, national and local levels both during and after the completion of the project. The project will also mobilize the support of other donors interested in facilitating cooperative management of shared water resources in SEE Europe by convening at the end of the project a Partnership Conference with broad participation of the donor community, countries of the region and outside the region, Academia, IFIs and major NGOs.

2.8 Replicability

175. This project represents the first GEF project to attempt to develop mechanisms and approaches for the cooperative management of a major transboundary karst aquifer system. While this project will draw on lessons from other GEF transboundary groundwater projects and the UNESCO-ISARM project , the results and lessons learned in the Dinaric region of SEE Europe will benefit other efforts to manage the many other similar karstic transboundary aquifers present in the Mediterranean region and elsewhere (see Annex 5). In this context, efforts will be made to cooperate and share information with other transboundary water management efforts in the Mediterranean and Balkans regions (the Mediterranean Coastal Aquifer Component of the Mediterranean Strategic Partnership – a major GEF, World Bank and UNEP effort; the various investment projects of the GEF-World Bank in the region and the UNESCO International Shared Aquifer Resources Management Programme (ISARM). The UNESCO Karst Network and Centers will provide a framework for dissemination and replicability of the project results in other regions.

176. It is hence expected that the cooperative approaches, and the practices and policies promoted by the project will be disseminated and possibly replicated both within and outside the Dinaric Karst Aquifer System area. On a global scale, then project includes activities to share broadly the experience gained: these include the Partnership Conference, and an active participation to IW LEARN networks and activities. At a local level, the collaboration established with the Small Grant Program of UNDP-GEF will aim at disseminating throughout the region thanks to the SGP capillary work with local communities and Municipalities, the approaches promoted by the project.

PART III: Management Arrangements

177. The project will be implemented by the UNDP-GEF Regional Coordination Unit (RCU) in Bratislava, and executed by UNESCO IHP, whose expertise in groundwater and active engagement in the region through its ISARM program have been instrumental in the identification and eventual finalization of the project design. The project technical and scientific activities will be conducted under the guidance of the UNESCO IHP senior expert responsible for the groundwater and ISARM activities at the IHP Secretariat. UNESCO IHP will have the responsibility to secure the efficient execution of the project, and the establishment and supervision of the Project Coordination Unit (PCU) headed by a Chief Technical Advisor (CTA) that will be located in Croatia, based on the invitation of the Government of Croatia and countries agreement reached during the PPG. The management structure of the project is as follows:

(i) Execution of Project Activities

From the point of view of the fulfilling all contractual obligations, and adherence to GEF, UNDP and UNESCO administrative procedures and general principles, the PCU shall work in coordination with UNESCO IHP and under the guidance of the Project Steering Committee (SC).

178. The Project Steering Committee (SC) will be composed of one senior government official from each country, designated by the Countries' GEF Operational Focal Point (OFP), the UNDP-GEF Regional Technical Advisor for Europe/CIS (or their designated representatives) and UNESCO IHP senior expert responsible for the groundwater and ISARM activities at the IHP Secretariat (or their designated representative). NEU (National Execution Unit) members and other stakeholders may be invited to sit on the Committee as observers upon request of the full members. The SC will set its own operational procedures and approve its own Terms of Reference. It will meet at least once a year and thereafter as frequently as the SC itself deems necessary. The SC will review the Project budget and work programs and provides feedback and policy guidance to the PCU on such matters. The Chairman for each SC meeting will be the OFP of the host country. Funding for SC business will be covered by the Project together with the travel costs of the National Focal Points. The Project CTA will act as secretary of the SC.

The Project Management Team will be composed of:

- UNESCO IHP that will secure the project execution supervision,

- The Project Coordination Unit (PCU), headed by a Chief Technical Advisor (CTA),

- the National Focal Points -head of the National Execution Units (NEU).

The PCU will coordinate with UNESCO IHP that will provide technical and scientific support. It will also be supported by the NEUs. The NEUs consist of the national DIKTAS Focal Point and local experts hired by the project. The PCU will be also supported by regional and international experts hired by the project. The PCU will also receive the support of the Stakeholder, Public Participation and Communication Facility, operated by GWP-Med that will act in concert with UNESCO IHP.

The PCU will host the CTA, secretarial staff and one administrative/finance assistant and will be located in Croatia. The PCU will carry out the day-to-day implementation of the Project and be responsible to UNESCO IHP and UNDP RTA for the project activities, financial accountability, staff welfare and discipline, etc. The PCU will provide UNESCO IHP with a draft budget review and work plan in two weeks time prior to the annual SC meeting.

In terms of regular administrative reporting, the PCU will provide quarterly reports to UNESCO and UNDP. The PCU will be responsible to prepare in coordination with UNESCO the annual Project Implementation Review. Finally there will be a number of management and evaluation activities that will be carried out and supported by the PCU. These will include a midterm and final evaluation together with such other activities as may be requested from time to time by UNESCO IHP and the UNDP-GEF Regional Coordination Unit in Bratislava. In addition to managerial services the PCU will provide library resources, communications, report duplication and translation services, and will organize national and regional meetings as necessary. At all times the PCU will act as the regional secretariat for the SC. As stated before in each participating country there will be a national office - the National Execution Units (NEU) - headed by the National DIKTAS Focal Point.

The Chief Technical Advisor (CTA) as head of the PCU will be appointed by UNDP and UNESCO in consultation with the countries. The CTA will be hired according to UNESCO's procedures.

A National Execution Units (NEU) will be established in each of the four project countries. Office space and administrative assistance will be provided as co-financing contribution from each country. The NEU will be headed by the DIKTAS national focal point and include 2-3 national experts hired by the project. The DIKTAS national focal point will be appointed by the respective government. The national experts will be selected by the PCU in concert with UNDP and UNESCO, based on recommendations from the project countries.

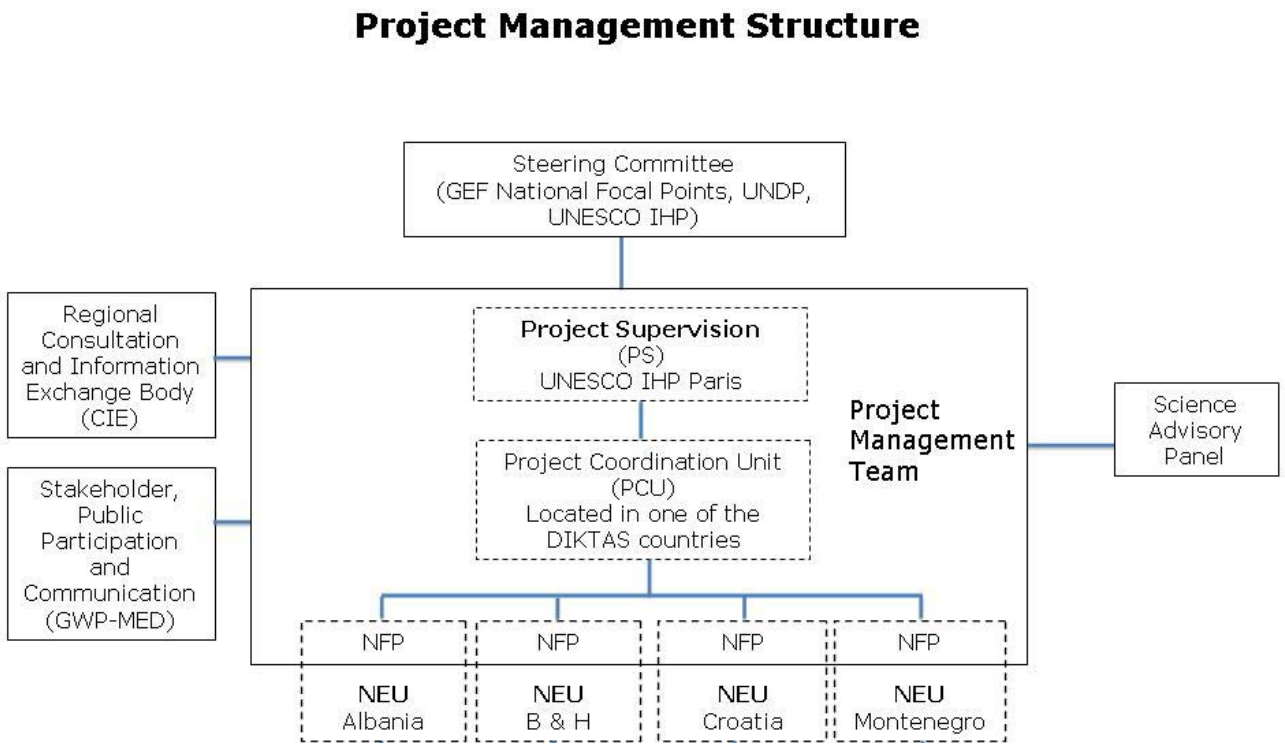

Figure 2: Project management structure

(ii) Sustainable Management of the DIKTAS – Since its early stages, the project will strive to bring about improvements in the management of karst groundwater both at the national and at the regional levels, and to facilitate the establishment of management and consultation structures that will play a fundamental role during project execution, and in time represent the core of future integrated management at both levels. Each country will establish, for the purpose of the project and of karst groundwater management, an **Inter-ministerial Committee (IMC)** composed of high level representatives of all ministries and agencies involved in water resources and land use planning, including treasury. The Committee will meet periodically. It will play a key role in the preparation of the TDA and SAP, and approve national NIPs, and dialogue with the **Regional Consultation and Information Exchange (CIE)** body. This body will be created as part of the project and will represent the center of international cooperation for the DIKTAS within the project's context, and beyond. Its composition, functions and structure will be agreed upon among countries during the early stages of the project. The linkages between the IMCs and the CIE is shown in Figure 3.

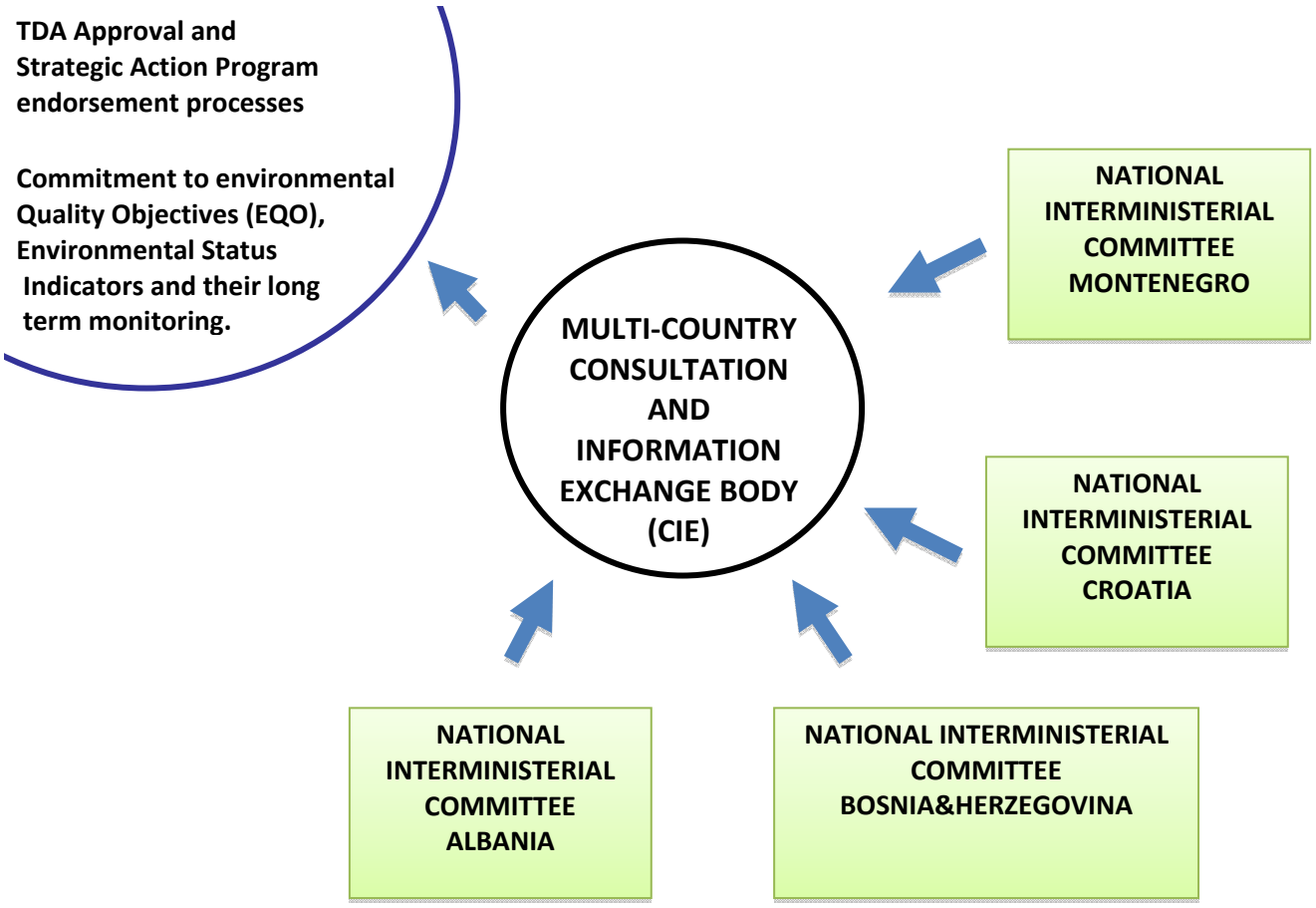

Figure 3: Interlinkages between Inter-ministerial Committees (IMCs) and the Regional Consultation and Information Exchange (CIE) body.

179. One of the first acts of UNESCO will be to establish a **Science Advisory Panel**, comprising a selected group of eminent scientists from the region and outside the region, including scientists from GEF recipient countries not participating to the project as yet (Serbia) and from Slovenia, Italy and Greece (and other Karst countries and inviting contribution from UNESCO Chairs on Karst and UNESCO Category 2 centers from other regions). This Panel will hold meetings upon request of the PCU, e.g.: for the review of the TDA draft, to support CIE activities, for review of the draft SAP, etc. This exchange of best practices and scientific knowledge at regional and international level trough the UNESCO IHP network will set the base for the project results long term sustainability.

180. Finally, in order to accord proper acknowledgement to GEF for providing funding, a GEF logo should appear on all relevant GEF project publications, including among others, project hardware and vehicles purchased with GEF funds. Any citation on publications regarding projects funded by GEF should also accord proper acknowledgment to GEF. The UNDP and UNESCO logos should be more prominent - and separated from the GEF logo if possible, as UN visibility is important for security purposes.

PART IV: Monitoring and Evaluation Plan and Budget

181. Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be provided by the project team and the UNDP/GEF office in Bratislava. The Strategic Result Framework in Annex 1 provides indicators for project implementation along with their corresponding means of verification. These will form the basis on which the project's Monitoring and Evaluation system will be built.

182. The following sections outline the principle components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The project's Monitoring and Evaluation Plan will be presented and finalized at the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

1. MONITORING AND REPORTING

1.1. Project Inception Phase

183. UNESCO will organize the Project Inception Workshop to be conducted with the full project team, including relevant government counterparts, co-financing partners, and representation from the UNDP-GEF Regional Coordinating Unit, as well as UNDP-GEF (HQs) as appropriate.

184. A fundamental objective of this Inception Workshop will be to assist the project team to understand and take ownership of the project's goals and objectives, as well as finalize preparation of the project's first annual work plan on the basis of the project's logframe matrix. This will include reviewing the logframe (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise finalize the Annual Work Plan (AWP) with precise and measurable performance indicators, and in a manner consistent with the expected outcomes for the project.

185. Additionally, the purpose and objective of the Inception Workshop will be to: (i) introduce project staff with the UNDP-GEF and UNESCO IHP which will support the project during its implementation, namely the UNDP CO and responsible UNDP Regional Coordinating Unit staff and responsible UNESCO IHP staff ; (ii) detail the roles, support services and complementary responsibilities of UNESCO, UNDP-CO and RCU staff vis à vis the project team; (iii) provide a detailed overview of UNDP-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation, the Annual Project Report (APR), Tripartite Review Meetings, as well as mid-term and final evaluations. Equally, the Inception Workshop will provide an opportunity to inform the project team on UNDP project related budgetary planning, budget reviews, and mandatory budget rephasings.

186. The Inception Workshop will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed again, as needed, in order to clarify for all, each party's responsibilities during the project's implementation phase.

1.2. Monitoring responsibilities and events

187. A detailed schedule of project reviews meetings will be developed by the PCU, in consultation with UNESCO IHP and stakeholder representatives and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Steering Committee Meetings, and (ii) project related Monitoring and Evaluation activities.

188. Day to day monitoring and implementation progress reports will be the responsibility of the Project PCU, and CTA based on the project's Annual Work Plan and its indicators and will be presented to UNESCO for evaluation. UNESCO IHP will inform the UNDP-CO of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

189. The Project PCU under UNESCO supervision will fine-tune the progress and performance/impact indicators of the project in consultation with the full project team at the Inception Workshop with support from UNDP-CO and assisted by the UNDP-GEF Regional Coordinating Unit. Specific targets for the first year implementation progress indicators together with their means of verification will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Work Plan.

190. Measurement of impact indicators related to global benefits will occur according to the schedules defined in the Inception Workshop.

191. Annual Monitoring will occur through the SC. This is the highest policy-level meeting of the parties directly involved in the implementation of a project. The PCU will prepare an Annual Project Report (APR) and submit it to the UNDP-GEF regional office and UNESCO-IHP at least two weeks prior to the Sc for review and comments.

1.3. Project Monitoring Reporting

192. The PCU will be responsible for the preparation and submission of the following reports that form part of the monitoring process. Items (a) through (f) are mandatory and strictly related to monitoring..

(a) Inception Report (IR)

193. A Project Inception Report will be prepared immediately following the Inception Workshop (one month after the Inception Workshop, to be confirmed during the Inception Workshop). It will include a detailed First Year/ Annual Work Plan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project.

194. When finalized the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries.

(b) Annual Project Report (APR)/Project Implementation Review (PIR)

195. The PIR is an annual monitoring process mandated by the GEF. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, a Project Implementation Report must be completed by UNDP together with the project. The PIR can be prepared any time during the year (July-June) and ideally prior to the TPR. The PIR should then be discussed in the TPR so that the result would be a PIR that has been agreed upon by the project, the executing agency, and the concerned RCU.

196. The individual PIRs are collected, reviewed and analyzed by the RCUs prior to sending them to the focal area clusters at the UNDP/GEF headquarters. The focal area clusters supported by the UNDP/GEF M&E Unit analyze the PIRs by focal area, theme and region for common issues/results and lessons.

197. The focal area PIRs are then discussed in the GEF Interagency Focal Area Task Forces in or around November each year and consolidated reports by focal area are collated by the GEF Independent M&E Unit based on the Task Force findings.

198. The GEF M&E Unit provides the scope and content of the PIR. In light of the similarities of both APR and PIR, UNDP/GEF has prepared a harmonized format for reference.

(c) Quarterly Progress Reports

199. Short reports outlining main updates in project progress will be provided quarterly to the UNDP-GEF regional office by the project team based upon a standard format to be provided by UNDP-GEF.

(d) Periodic Thematic Reports

200. As and when called for by UNDP, UNDP-GEF or UNESCO IHP, the project team will prepare Specific Thematic Reports, focusing on specific issues or areas of activity. The request for a Thematic Report will be

provided to the project team in written form by UNDP and will clearly state the issue or activities that need to be reported on. These reports can be used as a form of lessons learnt exercise, specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered. UNDP is requested to minimize its requests for Thematic Reports, and when such are necessary will allow reasonable timeframes for their preparation by the project team.

(e) Project Terminal Report

201. During the last three months of the project the project team will prepare the Project Terminal Report. This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met, or not achieved structures and systems implemented, etc. and will be the definitive statement of the Project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's activities.

2. INDEPENDENT EVALUATION

202. The project will be subjected to at least two independent external evaluations as follows:-

(i) Mid-term Evaluation

203. An independent Mid-Term Evaluation will be undertaken at the end of the second year of implementation. The Mid-Term Evaluation will determine progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the Project Coordinating Unit and UNDP-GEF. The cost of the evaluation will be covered by the project.

(ii) Final Evaluation

An independent Final Evaluation will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The Terms of Reference for this evaluation will be prepared by the Project Coordinating Unit and UNDP-GEF. The cost of the evaluation will be covered by the project.

Audit Clause

204. The Government will provide the Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

3. LEARNING AND KNOWLEDGE SHARING

205. Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information sharing networks and forums. In addition:

- The project will participate, as relevant and appropriate, in UNDP/GEF sponsored networks, organized for Senior Personnel working on projects that share common characteristics. UNDP/GEF shall establish a number of networks, such as Integrated Ecosystem Management, eco-tourism, co-management, etc, that will largely function on the basis of an electronic platform.

- The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned.

206. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identify and analyzing lessons learned is an on- going process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP/GEF shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned. To this end a percentage of project resources will need to be allocated for these activities.

Table H-1: Indicative Monitoring and Evaluation Work plan and corresponding Budget

Type of M&E activity	**Responsible Parties**	**Budget US$** *Excluding project team Staff time*	**Time frame**
Inception Workshop	▪ UNESCO ▪ PCU-CTA ▪ UNDP GEF	None	Within first two months of project start up
Inception Report	▪ Project Team ▪ UNDP GEF	None	One month after the Inception Workshop (to be confirmed during the Inception Workshop)
Measurement of Means of Verification for Project Purpose Indicators	▪ Project PCU-CTA in coordination with UNESCO	Budget to be defined	Start, mid and end of project
APR and PIR	▪ Project Team ▪ UNDP-GEF	None	Annually
Steering Committee Meetings	▪ Government Counterparts ▪ UNESCO ▪ UNDP-GEF ▪ Project PCU-CTA	None	Every year, upon receipt of APR
Periodic status reports	▪ Project team	5,000	To be determined by Project team
Mid-term External Evaluation	▪ UNESCO and PCU ▪ UNDP-GEF-Regional Coordinating Unit ▪ External Consultants (i.e. evaluation team)	20,000	At the mid-point of project implementation.
Final External Evaluation	▪ UNESCO and PCU ▪ UNDP-GEF Regional Coordinating Unit ▪ External Consultants (i.e. evaluation team)	30,000	At the end of project implementation
Terminal Report	▪ UNESCO and PCU	None	At least one month

	▪ External Consultant		before the end of the project
Lessons learned	▪ UNESCO and PCU ▪ UNDP-GEF-Regional Coordinating Unit (suggested formats for documenting best practices, etc)	12,000 (average 3,000 per year)	Yearly
Audit	▪ UNESCO and PCU	3,000	Yearly
Total Indicative Cost – *Excluding UNESCO, PCU and UNDP staff time and travel expenses*		70,000	

PART V: Legal Context

207. This Project forms part of an overall programmatic framework under which several separate associated country level activities will be implemented. When assistance and support services are provided from this Project to the associated country level activities, this document shall be the "Project Document" instrument referred to in: (i) the respective signed SBAAs for the specific countries; or (ii) in the Supplemental Provisions attached to the Project Document in cases where the recipient country has not signed an SBAA with UNDP, attached hereto and forming an integral part here of

208. This project will be implemented by the United Nations Educational, Scientific and Cultural Organization (UNESCO) ("Implementing Partner") in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

209. The responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP's property in the Implementing Partner's custody, rests with the Implementing Partner. The Implementing Partner shall: (a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried; (b) assume all risks and liabilities related to the Implementing Partner's security, and the full implementation of the security plan. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

210. The Implementing Partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

SECTION II: STRATEGIC RESULTS FRAMEWORK (SRF)

	Objectively Verifiable Indicators				
Goal	*Improve the understanding of the transboundary water resources of the Dinaric Karst Aquifer System, facilitate their equitable and sustainable utilization, and protect the unique groundwater dependent ecosystems that characterize the Dinaric Karst region of the Balkan peninsula.*				
Objectives/Outcomes	**Indicator (Process)**	**Baseline**	**Target**	**Sources of verification**	**Assumptions**
Outcome 1: Countries recognize the Karst Aquifer System as a shared and highly vulnerable resource, and agree to take steps to deal with its transboundary implications.	**1.** The Transboundary Diagnostic Analysis of the DIKTAS completed and approved indicating regional agreement on priority TB issues, immediate and root causes.	Incomplete biophysical and socio-economic information on the aquifer; Inadequate understanding of its shared nature and of the transboundary problems and their socio-economic root causes and impacts.	Approval of TDA by national, inter-ministerial committees by the end of Q4/2011.	Final TDA document. Reports of analyses undertaken as part of the TDA. Meeting minutes and record of approval by inter-ministerial committees. PIRs, midterm and final evaluations. Information available on official websites at UNDP, project website, and national government websites.	Cooperation between multiple technical and scientific working groups is maintained throughout the TDA process. National-level budgets for participating ministries are not significantly reduced. Countries and data owners agree to contribute data and information, and to make data freely available.
	2. Baseline conditions identified, and environmental status indicators agreed upon and adopted.	Fragmented and non-harmonized information on the DIKTAS environmental state as a whole.	By Q1/2011 a Report on Baseline Environmental Conditions containing agreed Environmental Status Indicators is approved by the National Inter-ministerial Committees and published	Report on Baseline Environmental Conditions. See Above	Informed consensus on indicators is strengthened by joint scientific fact-finding and action of Science Advisory Panel. Simple identified indicators will be feasible given the technology available in the countries.
Outcome 2: The strengthened collective knowledge and coordination among development plans and countries, agencies and donors improves sustainability of the resource	**3.** A multi-country consultative body established and operational.	Information and knowledge on karst problems and management responses are fragmented and not sufficiently shared among the countries. There is lack of coordination among planned and on-going activities related	The consultative body established by Q1 2012. At least three meeting held during the project execution	Founding document available including the consultation protocol. The meeting reports (containing the concrete sets of recommendations) produced and distributed to stakeholders on all levels.	Willingness of participating countries to participate and actively engage in work of the consultative body

		to transboundary aquifers			
	4. Environmental quality targets defined and adopted. A common monitoring program for harmonization of quality targets established.	Environmental quality targets differ from country to country hindering establishment of consistent environmental targets for transboundary aquifers	Proposal for harmonized monitoring program developed by the project team by Q4 2011, and approved by inter-ministerial committee by Q4 2012. The multi-country consultative body promotes national commitment on implementation.	Proposal document of the project team Approval document of the inter-ministerial committees Meeting reports of the multi-country consultative body.	Country specialists reach a common view on environmental quality targets Political willingness for harmonization of environmental quality targets
	5. A mechanism for coordination and exchanges with other relevant projects and initiatives, including the GEF supported Mediterranean Partnership and others, established and operational	Lack of coordination among relevant ongoing projects causes duplication of efforts, and prevents synergies.	Coordination Mechanism established by SC in Q3 2011. First Coordination Meeting held within 2011.	Report of the relevant SC meeting. Report of the Coordination Meeting.	Agencies and management responsible for ongoing projects are willing to participate and contribute.
Outcome 3: Political commitment reached among the countries on implementing priority legal, institutional and policy reforms for the protection and equitable utilization of the Karst Aquifer System	**6.** Ad hoc inter-ministerial committees focused on harmonization of existing frameworks, and on priority reforms established in each project Country.	Weak or absent coordination among relevant ministries is hindering action and transboundary cooperation.	Inter- ministerial committees established by Q4 2010.	Founding documents available First meetings held and meeting reports available.	Willingness for cooperation among the relevant ministries.
	7. A Strategic Action Program (SAP) for the DIKTAS, and 4 National Implementation Plans, elaborated and adopted by the countries at high ministerial level	Transboundary concerns related to the sustainability of the karst groundwater resources are nor prioritized or addressed.	DIKTAS SAP endorsed at ministerial level in the four countries by Q4 2012. National Implementation Plans adopted in each participating country by Q3 2013	Endorsed SAP Document. 4 National Implementation Plans documents.	Countries willing to engage and commit to coordinated actions including reforms and investments.

	8. A partnership conference aimed at consolidating international support for the implementation of the SAP is held with broad participation of the donor community.	Fragmented support of donors and lack of overall framework for coordinated development assistance on transboundary groundwater issues.	Conference held by Q4 2013.	Final declaration of Partnership Conference.	International donors are willing to engage in a coordinated action in support of SAP implementation
Outcome 4: Long term sustainability of achievements enhanced through public and political awareness campaigns, stakeholder involvement and replication mechanisms	**9.** Number of media events to highlight project's progress and achievements, implemented.	Public awareness about the transboundary nature and vulnerability of the Dinaric Karst System is scarce or absent. The DIKTAS project, its objectives and achievements is little known by many stakeholders	At least four media events during the project implementation period	Media events have been recorded and are digitally available	National media in the project countries are willing to support the project's objectives and report on the DIKTAS progress and achievements
	10. Number of **t**argeted capacity building programs to encourage replication of new practices, behaviors and techniques, implemented.	Limited capacities and lack of awareness in the project countries pose threats to resource sustainability.	At least three capacity building/training sessions have taken place, focused on (i) legal issues and harmonization of water related legislation; (ii) advanced training on Geographical Information Systems (GIS) and Mapping, and (iii) land use practices in karst areas.	Report/documentation of the training sessions.	Countries recognize importance of improved capacities and assist in the organization of training sessions.
	11. Number of events, contributions to IW LEARN activities.	Expertise on karst issues existing in the region is not part of, or shared with a broader community of practice.	Project website following IW LEARN standards established by Q1 2010. Project participates to IW Biennial Conferences.	Project website operational and frequently visited. Poster and publications prepared for IW Conferences.	Stakeholders in the region engage in distance learning and other ICT activities promoted through the website.

SECTION III: Total Budget and Workplan

Award ID:	00058507
Award Title:	PIMS 4056 Regional IW FSP "Protection and Sustainable Use of the Dinaric Karst Transboundary Aquifer System (DIKTAS)
Business Unit:	HRV10
Project Title:	PIMS 4056 Regional IW FSP "Protection and Sustainable Use of the Dinaric Karst Transboundary Aquifer System (DIKTAS)
Project ID: PIMS no. 4056	00072696
Implementing Partner (Executing Agency)	UNESCO-IHP

Only cash co-financing actually passing through UNDP accounts should be entered here and in Atlas. Other co-financing should NOT be shown here.

GEF Outcome/Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See Budget Note:
OUTCOME 1: Countries recognize the Karst Aquifer System as a shared and highly vulnerable resource, and agree to take steps to deal with its transboundary implications.	**UNESCO-IHP**	**62000**	**GEF**	71200	International Consultants	$124,000	$124,000	$59,000	$39,000	$346,000	**1**
				71300	Local Consultants	$160,000	$160,000	$95,000	$65,000	$480,000	
				71600	Travel	$17,500	$17,500	$17,500	$17,500	$70,000	
				74200	Equipment	$15,000	$15,000	$0	$0	$30,000	
				74500	Miscellaneous	$5,000	$5,000	$5,000	$5,000	$20,000	
					Total Outcome 1	**$321,500**	**$321,500**	**$176,500**	**$126,500**	**$946,000**	
OUTCOME 2: The strengthened collective knowledge and coordination among development plans and countries, agencies and donors improves sustainability of the resource	**UNESCO-IHP**	**62000**	**GEF**	71200	International Consultants	$30,000	$20,000	$10,000	$10,000	$70,000	**2**
				71300	Local Consultants	$17,500	$17,500	$17,500	$17,500	$70,000	
				71600	Travel	$10,000	$60,000	$10,000	$10,000	$90,000	
				74200	Equipment	$5,000	$5,000	$5,000	$5,000	$20,000	
				74500	Miscellaneous	$4,000	$4,000	$4,000	$4,000	$16,000	
					Total Outcome 2	**$66,500**	**$106,500**	**$46,500**	**$46,500**	**$266,000**	

OUTCOME 3: Political commitment reached among the countries on implementing priority legal, institutional and policy reforms for the protection and equitable utilization of the Karst Aquifer System	**UNESCO-IHP**	**62000**	**GEF**	71200	International Consultants	$34,000	$34,000	$34,000	$34,000	$136,000	**3**
				71300	Local Consultants	$20,000	$20,000	$20,000	$20,000	$80,000	
				71600	Travel	$20,000	$20,000	$20,000	$20,000	$80,000	
				74500	Miscellaneous	$5,000	$5,000	$5,000	$5,000	$20,000	
					Total Outcome 3	**$79,000**	**$79,000**	**$79,000**	**$79,000**	**$316,000**	
OUTCOME 4: Long term sustainability of achievements enhanced through public and political awareness campaigns, stakeholder involvement and replication mechanisms	**UNESCO-IHP**	**62000**	**GEF**	71200	International Consultants	$29,000	$34,000	$34,000	$34,000	$131,000	**4**
				71300	Local Consultants	$25,000	$25,000	$25,000	$25,000	$100,000	
				71600	Travel	$17,500	$17,500	$17,500	$17,500	$70,000	
				74200	Audio Visual&Print Prod Costs	$20,000	$20,000	$20,000	$25,000	$85,000	
				74500	Miscellaneous	$8,000	$8,000	$7,000	$7,000	30,000	
					Total Outcome 4	**$99,500**	**$104,500**	**$103,500**	**$108,500**	**$416,000**	
PROJECT MANAGEMENT	**UNESCO-IHP**	**62000**	**GEF**	71200	International Consultants	$40,000	$40,000	$40,000	$40,000	$160,000	**5**
				71300	Local Consultants	$4,000	$4,000	$4,000	$4,000	$16,000	
				71600	Travel	$10,000	$10,000	$10,000	$10,000	$40,000	
					Total Management	**$54,000**	**$54,000**	**$54,000**	**$54,000**	**$216,000**	
					PROJECT TOTAL	**$620,500**	**$665,500**	**$459,500**	**$414,500**	**$2,160,000**	

Budget notes:

1 It is expected that a group of 10 local consultants will be contracted by the project. They will act under the supervision of international consultants in hydrogeology and environment, engineering and ICT, policy and legal aspects. Travel will be mostly within the region. Funds to the amount of $16,000 for Monitoring &Evaluation purposes are included in BL 71200 International Consultants.

2 The Consultation and Information Exchange (CIE) body will be composed of 16 members and will travel on a study tour to Latin America (Montevideo-B. Aires). Legal international consultants will support this effort. The component will fund meetings of the CIE and the support of international and local consultants. Funds to the amount of $16,000 for Monitoring &Evaluation purposes are included in BL 71200 International Consultants.

3 It is expected that 4 local consultants for law will be contracted. They will be supported by water policy and law international consultants. A Partnership Conference of global scope will be implemented. Travel expenses will cover costs related to the organization and attendance to the Conference. Funds to the amount of $16,000 for Monitoring &Evaluation purposes are included in BL 71200 International Consultants.

4 Four Local consultants for stakeholder involvement will be contracted. They will be supported by international communication and public participation experts. The component includes participation to IW LEARN activities, including travel to the IWCs. Funds to the amount of $16,000 for Monitoring &Evaluation purposes are included in BL 71200 International Consultants. The component will be co-executed by GWP-Med that has considerable experience in dealing with stakeholder involvement and was identified during the PPG in having strong comparative advantage for the co-execution of this component.

5 A Chief Technical Advisor (CTA) and a one administrative/finance assistant will be contracted by the project. The CTA will be the head of the Project Coordination Unit (PCU) and as such responsible to UNESCO IHP and UNDP RTA for the project activities, financial accountability, staff welfare and discipline, etc. The CTA will be supported by the administrative/finance assistant.

TABLE 2 SUMMARY BUDGET OF GEF GRANT

Component	Source of funds	Amount (USD) Year 1	Amount (USD) Year 2	Amount (USD) Year 3	Amount (USD) Year 4	Total (USD) All Years
Improving the understanding of the resource and of its environmental status	GEF	334,000	304,000	204,000	104,000	946,000
Establishing cooperation Mechanisms among countries sharing the aquifer	GEF	54,000	84,000	84,000	44,000	266,000
Facilitating harmonization of policies and priority reforms	GEF	54,000	54,000	104,000	104,000	316,000
Communication dissemination and replication activities	GEF	104,000	104,000	104,000	104,000	416,000
Project management	GEF	54,000	54,000	54,000	54,000	216,000
Total Project Costs (GEF)		**600,000**	**600,000**	**550,000**	**410,000**	**2,160,000**

TABLE 3 CO-FINANCING SOURCES

Name of Co-financier (source)	Classification	Type	Amount ($)	%
Albania	Government	In-kind	400,000	11,75%
Bosnia & Herzegovina	Government	In-kind	600,000	17,63%
Croatia	Government	In-kind	600,000	17,63%
Montenegro	Government	In-kind	300,000	8,81%
Greece	Bilateral	In-kind	150,000	4,41%
Italy	Bilateral	In-kind	270,000	7,93%
Slovenia	Bilateral	In-kind	30,000	0,88%
GWP-Med	NGO	In-kind	300,000	8,81%
INFO/RAC	Regional Centre	In-kind	214,285*	6,30%
UNESCO	Multilateral Agency	Cash and in-kind	400,000	11,75%
International Association of Hydrogeologists (IAH) – Commission for Karst	International Association	In-kind	50,000	1,47%
Competence Pool Water, Austria	Bilateral	In-kind	75,000	2,20%
France	Bilateral	In-kind	14,285**	0,42%
Sub-total Co-financing			**3,403,570**	**100%**
Preparatory phase	Multilateral agency	Cash	100,000	
	National Governments	In-kind	150,000	
Total Co-financing			**3,653,570**	

**** stated as 150,000 Euro in the Letter of Commitment***
***** stated as 10,000 Euro in the Letter of Commitment***

Quarterly Workplan

Indicative Quartlerly Workplan	Outputs	2010				2011				2012				2013			
		Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
Outcome 1: COUNTRIES RECOGNIZE THE KARST AQUIFER SYSTEM AS A SHARED AND HIGHLY VULNERABLE RESOURCE, AND AGREE TO TAKE STEPS TO DEAL WITH ITS TRANSBOUNDARY IMPLICATIONS.	Output 1: Transboundary Diagnostic Analysis (TDA) prepard and approved by countries																
	Output 2: Baseline conditions identified, and environmental status indicators agreed upon and adopted																
Outcome 2: THE STRENGTHENED COLLECTIVE KNOWLEDGE AND COORDINATION AMONG DEVELOPMENT PLANS OF COUNTRIES, PROJECTS, AGENCIES AND DONORS, IMPROVES SUSTAINABILITY OF THE RESOURCE.	Output 3: A multi-country consultative body established and operational.																
	Output 4: Environmental quality targets adopted and a joint harmonized monitoring program of the environmental status established																
	Output 5: A mechanism for coordination and exchanges with other relevant projects and initiatives, including the GEF supported Mediterranean Partnership and others, established and operational																
Outcome 3: POLITICAL COMMITMENT REACHED AMONG COUNTRIES ON IMPLEMENTING PRIORITY LEGAL, INSTITUTIONAL AND POLICY REFORMS FOR THE PROTECTION AND EQUITABLE UTILIZATION OF THE KARST AQUIFER SYSTEM.	Output 6: Countries establish ad hoc inter-ministerial committees focused on harmonization of existing frameworks, and on priority reforms. The Committees meet regularly																
	Output 7: A Strategic Action Program (SAP) for the DIKTAS, and National Implementation Plans, elaborated and adopted by the country at high ministerial level																
	Output 8: A partnership conference consolidates international support for the implementation of the priority actions																
Outcome 4: LONG TERM SUSTAINABILITY OF ACHIEVEMENTS ENHANCED THROUGH PUBLIC AND POLITICAL AWARENESS CAMPAIGNS, STAKEHOLDER INVOLVEMENT AND REPLICATION MECHANISMS.	Output 9: Stakeholders Analysis, and information and communication activities to highlight project's progress and achievements and support stakeholders involvement																
	Output 10: Targeted capacity building programs to encourage replication of new practices, behaviors and techniques																
	Output 11: Participation to IW:LEARN activities, and establishment of website.																
Project Management																	
Monitoring & Evaluation																	

SECTION IV: ADDITIONAL INFORMATION

PART I: Letters of Financial Commitment

Letters of Commitment will be provided separately due to the size of the document (UNESCO-IHP letter of commitment is missing)

PART II: Terms of References for Key Project Staff

1. Chief Technical Advisor

The Chief Technical Advisor (CTA) will be appointed by UNESCO IHP and UNDP/GEF according to UNESCO rules and regulations. The CTA shall be responsible for the overall management of all aspects of the UNDP-GEF project. He/she will coordinate at all times with the Project Supervision team established at UNESCO that will provide full support. The CTA shall be responsible for the preparation and implementation of the work-plan in accordance with the allocated budget and timetable. He/she shall liaise with designated officials of the participating countries, other members of the Project Steering Committees (SC), the UNDP Country Offices, and the NEUs. He/she will also liaise with co-financing partners and potential additional project donors, National Focal Points, and others as deemed appropriate and necessary by the SC or by the CTA him/herself. The CTA will be also responsible for the delivery of a number of technical activities by maintaining a productive and harmonious relationship with the Project Specialists in each country and with contractors and stakeholder groups. The budget and associated work plan and annual work plans will provide guidance on the day-to-day implementation of the approved Project Document. The CTA will have general responsibility for ensuring the Project's high quality technical output and will provide oversight of the pilot (SGP) and demonstration activities within the overall project framework, and guidance and orientation with a view to ensuring that these are fully harmonized within the context of the main project and incorporated into the TDA-SAP development process. He/she shall be responsible for delivery of all substantive, managerial and financial reports from and on behalf of the Project. He/she shall provide overall supervision for all staff in the PCU, as well as guiding and supervising all external policy relations, especially those related to other projects within the Project region.

Specific Duties:

- Prepare Annual Work Plans of the project on the basis of the Project Document, under the supervision of the Project Supervision team at UNESCO and following the recommendations of the SC and in consultation and coordination with National Focal Points, GEF Partners and relevant donors;
- Manage the recruitment, coordination, facilitation, and supervision of national-level consultants, including preparation of TORS, stakeholder inputs and draft of contracts;
- Provide technical inputs to, and oversight of, all technical components of the project;
- Coordinate and monitor the activities described in the Annual Work Plans;
- Coordinate, facilitate and supervise the work of the consultants, and NEUs;
- Facilitate the work of the Project Steering Committee and Liaise with the SC chairperson
- Lead on and coordinate the development of the Strategic Action Program;
- Oversee the monitoring and evaluation process;
- Ensure project compliance with all UN and GEF policies, regulations and procedures as well as reporting requirements;
- Ensure consistency and coordination with other projects being implemented in the region;
- Liaise, consult, and network with national and regional stakeholders;
- Ensure consistency between the various program elements and related activities provided or funded by other donor organizations;
- Promote the Project and seek opportunities to leverage additional co-funding; and,
- Represent the Project at meetings and other project-related fora within the region and globally, as required.

PART III: Stakeholder Involvement Plan

211. Stakeholder involvement has been central to the project. The need for action towards sustainable management of shared karst aquifers in the area was underlined during the UNESCO workshop on Transboundary Aquifers in the Mediterranean and SE Europe (Thessaloniki, Greece, 21-23 October 2004). The idea for a project addressing this need was conceived and formulated during the Regional Experts Consultation Meeting for the preparation of a DIKTAS full-size project proposal to be submitted to the UNEP-GEF (Belgrade, 22-23 March 2006). The project's concept was further discussed, and the project proposal was endorsed by the countries during the International Roundtable "Integrated Management of Shared Groundwater in South Eastern Europe" (Brdo, Slovenia, 14-16 November 2007 - organized jointly by the Slovenian Ministry of Environment and Spatial Planning and the GWP-Med). Key stakeholders from the area and representatives of the international community were among the participants in all three events.

212. The involvement of countries representatives and key stakeholders from the area in the preparation of the project has been actively sought during the preparation phase:

- Two meetings have been organized, in Podgorica, Montenegro (20 - 21 November 2008) and in Zagreb, Croatia (4-5 March 2009), to consult on the project aims, objectives and content. The participatory approach and consultative method was tested with success with the country representatives and regional experts in the Zagreb meeting.
- Countries representatives have directly contributed in the preparation of the project document; the baseline analysis of hydrogeological and environmental conditions as well as institutional and legal frameworks and policies in the project countries were prepared with their direct involvement under the coordination of the project management team. The national experts also greatly contributed in the identification of activities to be carried out in the framework of the FSP, which is reflected in chapter 2.3 (*Project Goal, Objective, Outcomes and Outputs/activities) as well as in the SFR (Section II).*

213. Information relevant to the project preparation phase was available in the project's website (established using GEF IW:LEARN portal facilities). The project working documents were available in a virtual (web-based) working space, accessible by the international experts and country experts and representatives engaged in the project preparation phase.

214. Taking into account that the sustainability of the outcomes of the project will depend on the extent and quality of stakeholders engagement, a Stakeholders and Public Participation Strategy (SPPS) has been prepared (see Annex 6) to set the framework for- and (in its final form) guide stakeholders involvement throughout the course of the Project.

215. The identification of the stakeholders groups, necessary for the detailed designing of the SPPS activities, will be made through the Stakeholder Analysis, which will be conducted in the early stages of the project implementation period. The SPPS briefly elaborates on the scope of the Analysis outlining the needed information to be used to define which of the identified stakeholders should be informed, consulted and/or actively involved in the different components, the level of engagement and the timeframe as well as the means to accomplish these. A categorization of stakeholders in the Project that may be used is proposed in Annex 1 of the SPPS (to be discussed and accordingly adjusted prior the initiation of the preparation of the Stakeholders Analysis).

216. Two main groups of activities are described within the SPPS: (i) Information and Strategic Communications activities; (ii) Consultation and Involvement activities. The former is a prerequisite for the successful implementation of the latter. The goals and objectives per activity or group of activities are elaborated, while a preliminary identification of the target audience is being made. Types of Activities are also elaborated providing a pool of available tools to be used. The target audience will be further specified and the decision about the range of activities to be implemented, their exact scope and content as well as the

related timeframe will be made early in the implementation phase of the project, after the conduction of the Stakeholders Analysis.

217. A preliminary work-plan to be followed in the course of the Project implementation is being proposed (see Table 3 of the SPPS) giving the outline of a preliminary Stakeholders Involvement Plan; it will be later reviewed and adapted.

218. Based on these and aiming to prepare the fully-fledged SPPS, the initial steps to be undertaken in an early stage in the Project implementation period are:

- Preparation of a Stakeholders Analysis;
- Preparation of an Information and Strategic Communication Plan;
- Adjustment of the SPPS on the basis of the above, including a Stakeholders Involvement Plan.

SIGNATURE PAGE
[Note : leave blank until preparing for submission for CEO endorsement]

Country: _____

UNDAF Outcome(s)/Indicator(s):
_____
(Link to UNDAF outcome., If no UNDAF, leave blank)

Expected Outcome(s)/Indicator (s):
_____
(CP outcomes linked t the SRF/MYFF goal and service line)
_____

Expected Output(s)/Indicator(s):
_____
(CP outcomes linked t the SRF/MYFF goal and service line)
_____

Implementing partner: UNESCO-IHP
(designated institution/Executing agency)

Other Partners: _____

_____

Total budget: _____
Allocated resources: _____
- Government _____
- Regular _____
- Other:
  - Donor _____
  - Donor _____
  - Donor _____
- In kind contributions _____

Programme Period:_____
Programme Component:

Programme Period:_____
Programme Component:_____
Project Title:_____
Project ID: tbd_____
Project Duration: _____
Management Arrangement: UNESCO
Total budget: _____
Allocated resources: _____
- Government _____
- Regular _____
- Other:

Agreed by (Government): _____
Agreed by (UNESCO-IHP):_____
Agreed by (UNDP):_____

Annex 1 : Table on Legal and Institutional Frameworks and Policies

	Albania	Bosnia Herzegovina		Croatia	Montenegro
		Federation of B&H	Republic of SPCka		
1. Institutional setting/relevant institutions for water legislation and implementation					
Ministries/authorities-institutions in charge of water resources management on national level	- Ministry of Environment, Forestry and Water Administration - Ministry of Agriculture, Food and Consumer Protection - Ministry of Public Works, Transport and Telecommunication - Ministry of Health, - Local Authorities - River basin councils - National Water Council - Institute of Energy, Water and Environment within the polytechnic University. - Institute of Public Health - Agency of Environment and Forestry - Department of Biology within the University of Tirana - Albanian Geological Survey	State Ministry of Foreign Trade and Economic Relations (MoFTER) of Bosnia and Herzegovina – Federal Ministry of Agriculture, Water Management and Forestry - Federal Ministry of Environment and Tourism – Federal Ministry of energetic and mining industry – Federal Ministry of Health – Federal Agency for "Watershed Area of the Sava river Basin" (located in Sarajevo town) and Agency for "Watershed Area of Adriatic Sea Basin" (located in Mostar) – Federal hydro-meteorological institute – Federal geological Institute – Public Health Institute F B&H – Environmental Fund	- Ministry of Agriculture, Water Management and Forestry RS - Ministry of Physical Planning, Civil Engineering and Ecology - Ministry for Economy, Energy and Development - Ministry of Health and Social Protection - Republic Directorate for Water of RS - Republic Hydro-meteorological Institute - Republican Institute for Geological Researches - Agency for Recognizing and Improving the Quality of Health Protection in RS - Environmental Fund	• Ministry of Regional Development, Forestry and Water Management • Croatian Waters • Ministry of Environmental Protection, Physical Planning and Construction • Ministry of the Sea, Transport and Infrastructure • Ministry of Agriculture, Fisheries and Rural Development • Ministry of Culture – Nature Protection Directorate • Ministry of Health and Social Welfare • Ministry of Finance • Units of local and regional self-government	• Ministry of Agriculture, forestry and water Management**,** • Ministry of tourism and environment • Directorate for waters (DfW) • National Water Council (NWC**)** • Local governance, • Public Institutions (Hydro-meteorological Institute, Centre for Eco-toxicological Research, Public Health Institute, Marine Biology Institute, Public Enterprise for costal zone management and National Parks of Montenegro)

Ministries/authorities in charge of groundwater	River basin councils Albanian Geological Survey	Same as above	Same as above	Ministry of Regional Development, Forestry and Water Management and Croatian Waters	• Ministry of Agriculture, forestry and water
Role of geological surveys	In monitoring of ground waters	Geological surveys are being prepared with the purpose of understanding of general geological composition and structure of certain site, trough the positioning of mineral raw material and groundwater. Preparation of the geological maps includes general geologic maps, geo-morphological, hydro-geological and other maps which presents different geological characteristics.	Geological surveys are being prepared with the purpose of discovering general geological composition and structure of certain site, trough the position and concentration of mineral raw materials and groundwater. Preparation of the geological surveys includes general geologic maps, geo-morphological, hydro-geological and other maps which presents different geological characteristics.	Croatian geological survey does not have direct responsibility in creating water legislation, but provides expert knowledge to authorities (from the field of geology and particularly hydrogeology)	• Hydrogeological maps, • Hydrogeological research for the purpose of water-supplying, protection of groundwater and construction of hydro power plants • Documentation for the purpose of granting water concessions
Authority regulating abstraction /granting permissions	River basin councils and agencies and National Water Council	Water permits are issued by entities' Water Agencies (Sava river basin, Adriatic Sea) through three steps: Water regulatory pre-authorization, Water regulatory authorization and final Water regulatory permit.	Water permits are issued by RS Water Directorate –Agency for catchment area of Sava river through three steps: Water regulatory pre-authorization, Water regulatory authorization and final Water regulatory permit.	Croatian Waters	• Ministry of Agriculture, forestry and water (Directorate for Water)
Authority in charge for managing public water supply	The General Directorate of Water Supply and Canalization is the main institution in charge of management of water supply enterprises. These enterprises recently are	Public water supply is under responsibility of Public Water Supply Companies, owned by local authorities (Municipalities, Cantons or towns)	Public water supply is under responsibility of Public Water Supply Companies, owned by local authorities (Municipalities, Cantons or towns)	Utility service suppliers	• Ministry of tourism and environment • Local communities

	transferred to the local authorities, municipalities and communes.				
2. Water Legislation (legislative framework)					
2.1 Surface water					
Year of establishment of water law relevant and most relevant by-laws	1996, Law on Water Resources 2003, Law on Environmental Treatment of Polluted Waters 1988, standards for drinking water quality and treatment; 2008, water tariffs 2005, allowed limits of water discharges and the zoning criteria for the receiving waters	- Water Law («Official Gazette of FB&H», No. 70/06) (20.11. 2006) - Several by-laws in accordance to new Water Law issued after 2006 (listed in "National Report")	- Water Law («Official Gazette of RS», No. 50 /06, - adopted on 11.05. 2006 - Several by-laws in accordance to new Water Law issued after 2006 (listed in "National Report")	Water laws: Water Act and the Water Management Financing Act, both enacted in 1995 and amended in 2005. The proposal of the new Water Act is under preparation (the adoption in Croatian Parliament is expected soon) By laws: By-law on defining the zones of sanitary protection of springs (2002), National Plan for Water Protection (1999), Regulation on dangerous substances in waters (old in 1998, new in procedure)	Law on Waters (Official Gazette of Montenegro 27/07) Law on financing water management (2008) Decree on classification and qualification of waters ("The Official Journal of RM", No 14/96, 19/96 and 15/97); Rulebook on procedures for testing of quantitative and qualitative inflections of water ("The Official Journal of SRM", No 19/82); Rulebook on quality of waste waters and the procedure for their discharge into the public sewerage system and natural recipient , Rulebook on dangerous materials which are forbidden to be discharged into The water ("The Official Journal of SFRY", No 3/66 and 7/66)

Adopts quality standards?	Yes since 1988, standards for drinking water quality and treatment . These standards are now under revision by the Ministry of Health and the General Directorate of Water Supply and Canalization	Yes, thought existing and planned by-laws Rulebook on hygienic regularity of drinking water (Official Gazette RB&H No.2/92; 13/94; Took over from SFRJ Rulebook on hygienic regularity of drinking water, (Official Gazette of SFRJ" No. 33/87, 23/91).	Yes, thought existing and planned by-laws Rulebook on potable water safety («Official Gazette RS», No. 40/03)	Regulation on dangerous substances in waters (old in 1998, new in procedure – for surface waters and groundwater), Regulation on water classification (1998) amended in 2008 – only for surface waters Rulebook on sanitary correctness of drinking water (by law of Food Act) from 2008	Yes Decree on classification and qualification of waters ("The Official Journal of RM", No 14/96, 19/96 and 15/97)
Includes provision for treatment of effluents?	Yes	Water Law («Official Gazette of FB&H», No. 70/06) Rulebook on limited value of dangerous and harmful substances (Official Gazette of FBH, No. 50/07), defines the limited value of dangerous and harmful substances for technological waste water prior its discharge in sewerage system or other recipient, conditions for waste water discharge, as well as way of the quality control of technological waste water.	Water Law (Official Gazette of the RS, No. 50/06) Rulebook on the conditions of discharging waste waters into the public sewage system («Official Gazette RS», No. 44/01)	Water Act and By-law on threshold values of dangerous and other substances in wastewaters	Yes Rulebook on quality of waste waters and the procedure for their discharge into the public sewerage system and natural recipient , Rulebook on dangerous materials which are forbidden to be discharged into The water ("The Official Journal of SFRY", No 3/66 and 7/66)
2.2 Groundwater					
Does the legislative framework include GW?	Yes, the Water Law relates to surface and ground waters	Yes, the Water Law relates to surface and ground waters	Yes, the Water Law relates to surface and ground waters	Yes, the Water Law relates to surface and ground waters	Yes, the Water Law relates to surface and ground waters

Control on quantity_ abstraction (legislation)?	Through the river basin agencies. The GW is a national property. And the right for concession is up to the river basin council and the National water council There are some previsions in the legislation for permitting on drilling.	Law on concessions of Bosnia and Herzegovina ("Official Gazette of *B&H*", No. 32/02, 56/04)		The concessions for abstracting groundwater for the needs of public water supply are assigned according to the provisions of the Water Act and the Regulation on the Conditions and Procedure for Assigning Concessions for Waters and Public Water Estate (being decided about at the state level) Water Act and Rulebook on identifying the zones of sanitary protection of well fields and springs regulate drillings	Under Rulebook on procedures for testing of quantitative and qualitative inflections of water ("The Official Journal of SRM", No 19/82 Decree on methods and terms for granting of concessions for use of water for drinking, agriculture, industry, public utility and similar purposes (Official Journal RCG No. 32/03)
		Law on concessions of F B&H ("Official Gazette of FB&H", No. 40/02, 61/06)	Law on concessions of Republic SPCka ("Official Gazette" of RS, No. 25/02, 91/06)		
Control on quality (legistation)?	Yes through the geological survey and the institute of public health and other monitoring institutes	Yes Drinking water control by Institutes for public health	Yes Drinking water control by Institutes for public health	yes, through the provisions of the Water Act and Rulebook on identifying the zones of sanitary protection of well fields and springs	yes Under Rulebook on procedures for testing of quantitative and qualitative inflections of water ("The Official Journal of SRM", No 19/82)
Water cadastre/inventory included in the legislation? Who is in charge ?	Yes it is included. The National Water Council is in Charge of coordination. The River Basin councils and agencies are responsible for	According to the Water Law («Official Gazette of FB&H», No. 70/06), Water Agencies in F B&H are in charge for	According to the Water Law (Official Gazette of the RS, No. 50/06) Water Agency in RS is in charge for establishing	Yes Croatian waters Water cadastres comprise: cadastar of water with data	Yes Water directorate as pat of ministry of agriculture, forestry and water

	carrying out this duty.	establishing and management of water information system	and management of water information system	on the status of the surface and groundwater and water buildings, cadastar of water use with data on wellfields and springs used for public water supply and cadastar for water protection with data on pollutions sources, sewerage systems, waste water treatments etc.	management
Groundwater management (quantity) policy					
Inventories of wells, concessions	There is a decision of national water council for the inventory of wells. Most of them are drilled in unauthorized way.	Law on concessions of Bosnia and Herzegovina ("Official Gazette of *B&H*", No. 32/02, 56/04)		Yes, see above, also water books, which comprise data on water permits and book on concessions for Waters and Public Water Estate	Rulebook on content and procedure for keeping a registry of water book and water cadastres surface and ground waters, users and polluters, torrent streams and erosion areas and water management facilities and plants ("The Official Journal of RM", No 5/96 and 19/96); (Water directorate)
		Law on concessions of F B&H ("Official Gazette of FB&H", No. 40/02, 61/06)	Law on concessions of Republic SPCka ("Official Gazette" of RS, No. 25/02, 91/06		
Monitoring networks in place and functioning?	Regarding the monitoring in terms of quantity this issue is done by the River basin agencies by measuring the consummation.	No, in the planning phase	No, in the planning phase	Partially	Partially **(**Hydro-meteorological Institute is in charge) but not fully operational Only selected sites are included
Groundwater quality management / groundwater protection					
Protection of wellheads	There are measures taken	Rulebook on the	Rulebook on the	Rulebook on identifying	Rulebook on the procedure

and sites	for protection of the wells through the clauses of the legislation for sanitary protected areas around the wells. It is up to the water supply enterprises and the local authority to define the areas to be protected . there some fencing in the most important sites. Regarding the wellheads, there are fencings and guard service for their safety. There is a joint guideline between Ministry of Public Works and Ministry of Environment for the establishment the sanitary zones	conditions for determining the zones of the sanitary protection and protection measures for the river sources used or planned to be used for drinking («Official Gazette F BiH», No. 51/02)	protection measures, method of determining the sanitary protection zones, areas where water sources are and water management objects and water for human utilization («Official Gazette RS», No. 7/03)	the zones of sanitary protection of well fields and springs (2002)	for definition of sanitary protection of drinking water sources zones maintenance and limitations in those zones "The Official Journal of RM", No 8/97); Rulebook on dangerous materials which are forbidden to be discharged into The water ("The Official Journal of SFRY", No 3/66 and 7/66)
Protection of springs	Springs are monitored by the Geological survey. There are 87 springs under monitoring.	Rulebook on the conditions for determining the zones of the sanitary protection and protection measures for the river sources used or planned to be used for drinking («Official Gazette F BiH», No. 51/02)	Rulebook on the protection measures, method of determining the sanitary protection zones, areas where water sources are and water management objects and water for human utilization («Official Gazette RS», No. 7/03)	By-law on identifying the zones of sanitary protection of well fields and springs (2002)	Rulebook on the procedure for definition of sanitary protection of drinking water sources zones maintenance and limitations in those zones "The Official Journal of RM", No 8/97);
Monitoring networks in place and functioning?	There is a program of monitoring regarding the ground waters quality carried out by the Geological Survey. The monitoring is focusing mainly the biggest groundwater areas which	No - rarely	No-rarely	Partially, mostly on wells and springs used for water supply. Groundwater quality monitoring at the locations of piezometers is functioning in large intergranular aquifer systems in northern	Partially **(**Hydro-meteorological Institute is in charge) but not fully operational. In accordance with National programme for monitoring of state of environment

	are used for municipality supply, around 40 wells and 87 springs			Croatia, but not in line with the WFD requirements	
2.3 State of law enforcement					
Are relevant by-laws in place?	There are legal provisions in place, but clear competencies are not well defined. There are institutions which can decide for sanctions, fines etc, and there are other institutions which are responsible to follow implementation of the punishment.	Only partially	Only partially	Partially. It is expected to be fully in place after the adoption of the new Water Act and new Water Management Financing Act	Decree on Water Pollution Charges Penalties for disrespecting of this law is from 20 - 200 of minimal salaries in Montenegro.
Is non-compliance with regulations persecuted?	It is regulated by the law on Water resources, but fines not always collected	It is regulated by relevant law, but fines not always collected	It is regulated by relevant law, but fines not always collected	It is regulated by relevant law, but fines not always collected	It is regulated by relevant law, but fines not always collected
Are there weaknesses in terms of law enforcement?	Not all drilling are done authorized. Water protection zones not always established Water fees not always collected	Water protection zones not always established Not all non_public water supply wells (agriculture, industry and small private wells) are done authorized.	Water protection zones not always established Not all non_public water supply wells (agriculture, industry and small private wells) are done authorized.	Water protection zones not always established Not all non_public water supply wells (agriculture, industry and small private wells) are done authorized	Not all non_public water supply wells (agriculture, industry and small private wells) are done authorized. Water protection zones not always established
2.4 Socio-economic incentives and obstacles to effective groundwater management					
Water pricing structures and tariff system	There are two tariff structures in place. One for raw waters and one for water supply water	Generally, in all Water Companies, the price structure consists of the following elements: - price of water (KM/m^3), - VAT on water price, - price of sewage (KM/m^3 of water used), - VAT on sewage price, - Internalised resource costs through a "water abstraction fee", - Internalized environmental costs through a		The cubic meter of water is today burdened with at least five and at most nine different expenditures.	Different water pricing regarding different prices of water supply companies

		"water protection fee". Current water prices for water supply range from 0.4 – 1.10 KM/m^3 (1 Euro = 1,9558 KM) for households, and 1.0– 3.50 KM/m^3 for industry. For the agricultural sector the prices are sometimes equal to those for households, and in other cases they are equal to those for industry.			
Is the cost recovery principle applied (according the WFD principles)?	The tariffs are very law and in general the water supply enterprises are not in good financial position. Yes, in legislation, but not yet applied	Yes, in legislation, but not yet fully applied	Yes, in legislation, but not yet fully applied	No, but is anticipated. After the adoption of the new water act it will be	Yes, in legislation, but not yet applied
Is the polluter pays principle applied? What is the state of implementation?	It is defined in the legislation but the ratio of payment collection is very law.	Yes, in environment and water legislation () , but not yet fully applied.	Yes, in environment and water legislation, but not yet fully applied.	The polluter pays principle is embedded in all new water management acts and regulation. The surveillance of implementation is carried out by the National Water Inspection and the inspection at the services in the state administration office in the counties authorized for water management.	Decree for methodology for calculation and paying of charges for pollution of environment (eco-tax) **(just adopted)** Yes, in legislation, but not yet applied
2.5 Known Gaps in the Legislative Framework related to Water Resources					
Known gaps in the legislative framework related to water resources	The coordination among the institutions. Lack of river basin management plan Monitoring program not for all the country. Low level of law enforcement. Low capacities of authorities and especially	Lack of sub – legislation Ground waters are not treated separately from surface waters	Lack of sub – legislation Ground waters are not treated separately from surface waters	– Cost recovery of water services has not yet been reached. – The integration of economic and environmental objectives into water pricing policies has not yet been reached. The full recovery of financial costs is only	• Limited capacities/ lack of experience with EU water management approaches • Underdeveloped mechanism for coordination and policy integration • Economic objectives

	local authorities The issues of ground waters are not covered very much by the legislation			partially achieved and environmental and particularly resource costs are not adequately considered in legislation. – The lack of terms for accurate understanding of the Water Act, clarification of the application of this Act in relation to other environmental laws regulating the irrigation activity and implementation and improving the inspection surveillance (will be covered by new Water Act) – Inefficient implementation of the new Rulebook on zones of sanitary protection around well fields and springs from 2002	often have precedence over environmental • Lack of information and knowledge • Inefficient work of water administration
Integrated Water Resources Management (surface and groundwater) applied (legislative and operational)? What are the root causes for the current state of implementation of IWRM principles?	Until now there is no integrated management plans. The management is being covered under the priorities set up by the Law on water resources	Introduced principles of IWRM through the new water Law, harmonized with WFD, but only some aspects applied (introduction of water management at river basin level)	Introduced principles of IWRM through the new water Law, harmonized with WFD, but only some aspects applied (introduction of water management at river basin level)	Water Management Strategy provides the framework for the establishment of an IWRM principle on the national territory. This principle will be followed in the new Water Act. Root causes for the current state of implementation: – lack of experts,	Some aspects applied Foreseen in National Strategy for Sustainable Development (NSSD), implementations of projects for integrated management of basins of the Tara River and the Lim River and of the Eco-

				knowledge and monitoring data, particularly at the local levels – insufficient financing of scientific and professional projects that should give grounds to decision-makers and legislators for reaching necessary decisions Public awareness of the problems resulting from the water management process is quite lacking or insufficient	system of the Skadar/Shkodra Lake (2006-2009 and onwards)
3. Land Use and Environmental Planning (Water related policies and legislation)					
3.1 Land Use Legislation and Policy					
National	In the national level it is the competencies of the National Council of territorial adjustment. Law of urban planning.	Law on Physical planning and utilization of Land in FB&H («Official Gazette BB&H», No 2/06, 72/07 and 32/08) Policy: Spatial plan of FB&H for the period 2008-2028; - , in preparation	Law on Physical planning RS ((«Official Gazette RS», No 84/02) Policy : Physical Plan of RS until 2015 year	Physical Planning and Construction Act. Policy : National Plan for Water Protection. Water Management Strategy. Physical Planning Strategy of the Republic of Croatia	Law on physical planning Policy: Spatial Plan of Montenegro until 2020
Municipal	In local level, it is the competence of local territorial council	Number of Municipal Spatial Plans exist	Number of Municipal Spatial Plans exist	Number of Municipal Spatial Plans exist	Spatial plan of Municipality , General and detailed urban plans (adopted by local Government)
Provisions for groundwater protection zones/protection	These are set up in the legislation. A joint regulation between two			Rulebook on identifying the zones of sanitary protection of well fields	Partly included in the water law, but not

of recharge areas	ministers have been issued for all River basin councils and water-supply enterprises to define the protection zones.			and springs (2002)	implemented yet
Protected areas according the WFD requirements	Policy planned, requirement not fulfilled yet	Water Law («Official Gazette of FB&H», No. 70/06) Article 65. of this Law defines types of protected areas Article 68. defines sanitary protection zones and protection of springs	Water Law («Official Gazette of RS», No. 50 /06 Article 70. of this Law defines types of protected areas Article 75. defines sanitary protection zones and protection of springs	Strategic groundwater reserves defined and belong to protected areas according to strategy Anticipated delineation of drinking water protection areas, according to WFD requirements	Partly included in the water law, but not implemented yet
3.2 Waste Disposal Legislation and Policy					
Liquid/urban waste	2003 Law on environmental treatment of polluted waters and relevant by-law 2005, allowed limits of water discharges and the zoning criteria for the receiving waters	Water Law («Official Gazette of FB&H», No. 70/06) and relevant Rulebooks are listed in "National report" Environmental Framework Law (Official Gazette of F B&H, No. 33/03)	Water Law («Official Gazette of RS», No. 50 /06, - and relevant Rulebooks are listed in "National report" Environmental Framework Law (Official Gazette of RS, No.53/02)	Waste Act (2004, amended 2006 and 2008), Water Act (waste water) (1995 amended in 2005), Act on Utility Management (2003, amended 2004) Policy: strategy of waste management in the rep. of Croatia – it includes liquid waste Plan of waste management of the Republic of Croatia 2007-2015	Law on communal affairs , Law on waste management, law on water policy: Rulebook on quality of waste waters and the procedure for their discharge into the public sewerage system and natural recipient ("The Official Journal of RM", No 10/97 and 21/97); Master Plan for Waste Water Collection and Treatment for the Coastal Region and Municipality of Cetinje and the Strategic Master Plan for Sewage and Waste Waters of the Central and Northern Region.

Liquid/industrial waste	2003 Law on environmental treatment of polluted waters and relevant by-law 2005, law on hazardous waste, 2005, allowed limits of water discharges and the zoning criteria for the receiving waters (by-law)	Water Law («Official Gazette of FB&H», No. 70/06) and relevant Rulebooks are listed in "National report" Environmental Framework Law (Official Gazette of F B&H, No. 33/03)	Water Law («Official Gazette of RS», No. 50 /06, and relevant Rulebooks are listed in "National report" Environmental Framework Law (Official Gazette of RS, No.53/02)	Waste Act (2004, amended 2006 and 2008), Water Act (waste water) (1995 amended in 2005), Act on Utility Management (2003, amended 2004) Policy: strategy of waste management in the Republic. of Croatia – it includes liquid waste Plan of waste management of the rep of Croatia 2007-2015	Law on communal affairs , Law on waste management law on water Rulebook on dangerous materials which are forbidden to be discharged into the water
Solid waste	Yes 2003 law on environmental administration of solid urban waste and relevant by-laws National plan for waste management	Law on Waste Management (Official Gazette of F B&H, No. 33/03) Environmental strategy with solid waste management component	Law on Waste Management (Official Gazette of RS, No. 53/02)	Waste Act (2004, amended 2006 and 2008), Act on Utility Management (2003, amended 2004) Strategy of waste management of the Republic of Croatia Plan of waste management of the rep of Croatia 2007-2015	Law on communal affairs , Law on waste management Law on water Government of Montenegro adopted the National Waste Management Policy (February 2004), and National Master Plan for Waste Management (December 2004).
3.3 Agriculture Legislation and Policy					
Agricultural use of pesticides (including POPs)	There is legislation for using pesticides. 1999, law on Plant protection service Strategy: Regarding POPS. The government has approved the national plan for phasing out the POPs, 2005	No specific legislation Law on Agriculture (Official Gazette of FB&H, No. 88/07)	No specific legislation Law on Agricultural Land (Official Gazette of RS, No. 93/06, 86/07)	Law on biocidal products (2007) Policy: strategy on agriculture and forestry, regulation on identifying the zones of wellfields and springs, the future new water act	Law on agricultural land, which forbids discharge and disposal of harmful materials, incl pesticides. In the law on water the use of fertilizers and pesticides is banned in the amount that may exceed the limits defined in the water quality categories

					• By-law on trade, export and sampling of pesticides • Law on organic farming Law on financing the management of water has put charges on trade and production of fertilizers and pesticides
Agricultural use of fertilizers	Yes there is the law. On the chemical fertilizer control service	Water Law Law on Agriculture (Official Gazette of FB&H, No. 88/07)	Water Law Law on Agricultural Land (Official Gazette of RS, No. 93/06, 86/07) *Law on organic food production* (Official Gazette of RS, No.75/04)	Law on fertilizers and soil improvers (2007), By-law on fertilizers (2007), By-law on good agricultural practice in fertilizer use (2008) Policy: strategy on agriculture and forestry, regulation on identifying the zones of wellfields and springs, the future new water act	In the law on water the use of fertilizers and pesticides is banned in the amount that may exceed the limits defined in the water quality categories • By-law on trade, export and sampling of fertilizers • Low on organic farming Law on financing the management of water has put charges on trade and production of fertilizers and pesticides
Water saving irrigation techniques supported/promoted?	Not yet , there is the law for irrigation and drainage	No	No	Yes, through National Irrigation Plan and Management of Agricultural Land and Waters	No
3.4 Environmental Legislation and Policy					
Policies on the protection of karst ecosystems, and biodiversity	There is legislation for biodiversity 2006, and for nature protected areas 2002.	Environmental Framework Law (Official Gazette of F	Environmental Framework Law (Official Gazette of RS,	Nature Protection Act (2005) National strategy on	• The Law on Nature protection, • The Law on

	Strategy and action plan for biodiversity conservation in place Strategy for environmental protection 2007	B&H, No. 33/03) Law on Nature Protection (Official Gazette of F B&H, No. 33/03) Federal strategy on environment includes nature conservation component	No.53/02) Law on Nature Protection (Official Gazette of RS, No. 50/02)	environment protection and strategy and action plan on protection of biological and landscape diversity in the rep of Croatia	environmental protection National strategy for sustainable development adopted in January 2007 Biodiversity strategy with action plan (2009-2014)
Policies on the protection of coastal habitats	There are legal acts for protection of coastal areas, lagoons, and lakes, under the law on Protected areas 2002 Coastal areas management plan	Environmental Framework Law (Official Gazette of F B&H, No. 33/03) Law on Nature Protection (Official Gazette of F B&H, No. 33/03) Federal strategy on environment includes nature conservation component	Environmental Framework Law (Official Gazette of RS, No.53/02) Law on Nature Protection (Official Gazette of RS, No. 50/02)	Nature Protection Act (2005), Environment Protection Act (2007) New water act will take into consideration preservation of aquatic and terrestrial ecosystems	• Law on coastal zone management , • Law on Nature protection • Law on water National strategy for sustainable development adopted in January 2007 Biodiversity strategy with action plan (2009-2014)
Policies on protected areas (National Parks, Biosphere Reserves, etc)	12.58 % of the area is protected area according to the IUCN categories. For some protected areas management plans in place	Environmental Framework Law (Official Gazette of F B&H, No. 33/03) Law on Nature Protection (Official Gazette of F B&H, No. 33/03) Federal strategy on environment includes nature conservation component	Environmental Framework Law (Official Gazette of RS, No.53/02) Law on Nature Protection (Official Gazette of RS, No. 50/02)	Nature Protection Act (2005), laws on national parks, park of natures etc. Water management strategy National Strategy of Environment Protection, National Plan of Environment Affecting	• Law on national parks, • Law on nature protection • National strategy for sustainable development adopted in January 2007 • Biodiversity strategy with action plan (2009-2014) • Management plans for National park

3.5 Hydropower Legislation and Policy					
National legislation and strategy on hydropower.	Strategy for energy, priority is given to hydropower	Water Law («Official Gazette of FB&H», No. 70/06) defines the usage of the water power for production of electricity. Law on electrical energy (Official Gazette F B&H, No. 41/02) defines usage of hydropower respecting the environmental protection and water management conditions	Water Law («Official Gazette of RS», No. 50 /06 defines the usage of the water power for production of electricity. *Law on electrical energy* ("Official Gazette *of RS*", No. 66/02, 29/03 and 86/03) defines usage of hydropower respecting the environmental protection and water management conditions	Water management strategy Energetic development strategy Physical planning and construction act dealing with the monitoring of hydropower facilities and accumulations	Declaration on protection of the Tara river (adopted in parliament in December 2004) Energy development strategy (until 2025) in place, focused on small hydropower generation facilities.
Transboundary power and water sharing agreements	Agreement with Albania and Yugosl. In 1956. Efforts to establish bilateral agreements	Article 39. of Water Law law prescribes that coordination of water management plans for international river basins can be additionally regulated by international agreements signed by B&H	Article 33. of Water Law prescribes that coordination of water management plans for international river basins can be additionally regulated by international agreements signed by B&H	Contract between the Government of the Republic of Croatia and the Government of Bosnia and Herzegovina on Water Management Relations Contract between the Government of the Republic of Croatia and the Government of the Republic of Montenegro on Water Management Relations	Montenegrin-Albanian Commission for Waters, Agreement for protection and sustainable development of Skadar-Shkoder Lake, signed in February 2008, Montenegrin-Albanian Commission for Waters, Agreement on mutual relations in the field of water management between the Government of Montenegro and the Government of the Republic of Croatia
4. Alignment with International Instruments/Directives					
EU Water Framework Directive (and groundwater directive)	It is in the process of transposition. A national plan of WFD transposition is elaborated through a project financed by the EU in the framework of IPA	Entity Water Laws are to great extend harmonized with each other, but there are some slight differences. Therefore, WFD transposition into these laws is not completely the same. Transposition of WFD into Water Law in Federation is 83%, while in RS it is 97%, as written in "Reports on Progress Monitoring		Partly harmonization with the EU Water Framework Directive started by adoption of the By-law on making the Water Management	Partly implemented on new Law on the water And new law of financing water management (adopted in 2008) is in line

	funds in January 2009	for the countries of South East Europe (pre-candidates)", done by Danish consultant "Cowi" in 2007 year.	Basis of Croatia in 2003 Harmonization with the EU Acquis -continued by the enactment of the amandements to the Water Act and the amendments to the Water Management Financing Act in December 2005 and by making Water Management Strategy in 2008	with WFD
EU Nitrate Directive	A national plan of Nitrate directive transposition is elaborated through a project financed by the EU in the framework of IPA funds in April 2009	The transposition of the Nitrates Directive (91/676/EEC) in FB&H has not yet been initialized. The definition of groundwater has been transposed in the Federal Water Law, which makes 4% of the transposition. For the remaining definitions and majority of provisions, transposition is foreseen through two Ministerial Orders, one of which is planned to be adopted in 2009, and the other in 2012. Full implementation of the Directive into FB&H laws and regulations is foreseen for 2018. Transposition of Directive in RS is relatively advanced, through the application of the new Water Law and supplementing regulations, and it is 70%. The remaining items are expected to be transposed through a Ministerial Order by the end of 2018. The full implementation is scheduled for 2021.	In the Strategy of Agriculture and Forestry good agricultural practice, according to the provisions of EU Nitrates Directive, is requested The provisions of the Nitrates Directive are applied by the provisions of the Water Act The Water Management Strategy continues the process of harmonizing the legal provisions of the Republic of Croatia with the nitrate directive By-law on good agricultural practice in fertilizer use (2008) follows the provisions of Nitrate Directive The proposal of the map of the areas in Croatia liable to eutrophication	Planned to be implemented in national legislative.

				and also the nitrate vulnerable areas was made by Croatian Waters	
5. International Cooperation					
5.1 Obstacles to International Cooperation					
	Even Albania has ratified several conventions and multilateral and bilateral agreements , still the level of their implementation is low. Is depends on several factor such as, lack of funds, lack of capacities and other resources. National legislation not updated and- or accurate in terms of implementation of international agreements etc. Competences for the implementation are spread over different institutions in a country	Same as transboundary concerns.	Same as transboundary concerns.	Republic of Croatia still lags behind in the achievement of EU standards in water management due to: insufficient financing of scientific and professional projects (scientific knowledge is not effectively transferred to policy makers); lack of experts, particularly planners, geologists, technologists, lawyers and economists at all levels of the water management. Public awareness of the problems resulting from the water management process in the Republic of Croatia is insufficient Small number of stakeholders, which are directly involved in the process of decision making Task 1	Institutional resources (as well as financial), should be allocated for further deepening of cooperation Intra-state cooperation in Montenegro
5.2 Perceived Issues of Transboundary Concern (ranked by priority)					

TB concern # 1	Pollution of trans-boundary waters by ▪ liquid urban waste ▪ industrial and hazardous waste solid waste	International and bilateral cooperation in B&H reflects the deficiencies of the national complex administration. The distribution of competencies regarding international cooperation in B&H is extremely complicated granting the right to international initiatives from national, entities up to Cantonal levels. This results in considerable delays in coordination and difficulties in entering international agreements. Despite strengthening of the state level (Ministry of Foreign Trade and Economic Relations – MOFTER), the weakness of national coordination remains a visible problem. Good management would require a national strategy for international environmental cooperation, setting of priorities in view of the obligations, the estimation of the expected costs of implementation through the years, a cost-benefit analysis prior entering the international obligation, clarification of internal institutional responsibilities, and due reporting to the decision-making and supervisory state and entity bodies	Different water management legislation in neighbouring countries	Pollution of trans-boundary waters
TB concern # 2	Different Water use policy for irrigation , water supply, industrial activities and for energy generation.	International groundwater considerations are the second priority, after surface waters. Shared groundwater aquifers are generally neglected comparing to surface water in trans-boundary river basins. Such situation resulted in very weak activities regarding ground trans-boundary arrangements, programs and projects.	Problems with rights (between neighbouring countries) to the groundwater and surface water abstraction for irrigation and water supply, but also for hydropower generation.	Future use of trans-boundary water resources (in the light of economic growth in all countries)
TB concern # 3	Potential risk on water quantity and quality from urban and tourism development	Human resources capacities and employment: There is a very low number of genuine specialists in any of the environmental fields (waste, air-emissions, noise, nuclear radiation, etc.) Low number of environmentalists (in administration) compared with the number of chiefs. Significant gap between the number of posts established and the number of posts actually filled.	Future economic growth in the region, which might cause: larger impacts of the big urban agglomerations due to the outdated industrial facilities with inadequate wastewater treatment and uncontrolled solid waste deposits; enhanced	Lack of co-operation in research activities in neighbouring countries

			agricultural activities in the region with excessive use of mineral nutrients and pesticides.	
TB concern # 4	Land degradation, forest cutting, lead to soil erosion , landslide and sedimentation.		Lack of co-operation in research activities in neighbouring countries (interdisciplinary approach should be base for cooperation)	
TB concern # 5	Different level of awareness among the stakeholders in TB waters			

Annex 2: Table on International Agreements

Countries	Name of agreement	Scope	Date	Domestic institution in Charge	Main provisions/legal principles of the agreement	Status
Albania, Montenegro	MoU for the cooperation in the filed of environment protection and sustainable development between the Ministry of Environment of the Republic of Albania and the Ministry of Environment and Physical Planning of Montenegro	Environment and sustainable development	09.05.2003	MoEFWA, Albania	Support and cooperation on Sustainable development of the shared natural resources Lake Shkodra/Skadar in particular as well as in the filed on environment in general	Expired on may 2008
Albania, Montenegro	Agreement between the Ministry of Environment, Forests and Water Administration and the Ministry of Tourism and Environment of Montenegro for the protection and Sustainable Development of Shkodra Lake	Lake Shkoder	2008	MoEFWA/ Lake Shkoder PIU	Creation of a new structure that will help in the implementation of common activities for the protection of Shkodra lake and its surrounding ecosystem	In process
Albania, Croatia	MoU on cooperation in the filed of environmental protection between the Ministry of Environmental Protection between the Ministry of Environmental protection and Physical Planning of the Republic of Croatia and Ministry of Environment of the Republic of Albania	Environment protection and Sustainable development	2004 (Croatia : valid from May 2006)	MoEFWA	Cooperation in the field of environment.	In process
Albania, Montenegro	Protocol on the cooperation in the field of water management	Water management of shared water bodies	30.01.2003 (Montenegro)	Government of Montenegro Government of Republic of Albania	Regulation of the water regime of Skadar-Shkoder Lake, Drin and Bojana-Buna Rivers	Scientific researches conducting by Academies of Sciences and Arts of both countries
B&H and Croatia	Agreement on setting up of the water management relations between Bosnia and Herzegovina and Croatia	Agreement relates to the water management activities at the water streams which present the mutual state border between Croatia and Bosnia and Herzegovina, or at the water streams which are cut with state borders. Agreement is also relevant for all areas of interest for improvement of water management of Agreemented Parties (B&H ands R Croatia).	1996	Governments of B&H and Croatia, Ministry of Foreign Trade and Economic Relations	Framework agreement	On -going
B&H and Croatia	Agreement between Croatian	Agreement relates to the	2007	Governments of B&H and		On -going

	Government and Council of Ministers from B&H on common financing of maintenance and operation of regional sewerage system "Komarna- Neum-Mljetski Kanal"	mutual maintanance and operation of regional sewerage system, which cover B&H and Croatian coastal settlements. Regional sewerage system was constructed during a period when Croatia and Bosnia were within the same state.		Croatia, Ministry of Foreign Trade and Economic Relations		
Croatia, Slovenia	Agreement between the Government of the Republic of Croatia and the Government of the Republic of Slovenia on Water Management Relations	Solving water management issues of mutual interest, including activities, which may influence the change of water quality or quantity and require joint coordination of both countries.	Zagreb, 1996	Croatian-Slovenian commission for water management: -Subcommission for the Danube and Mura basin -Subcommission for the Sutla, Sava and Kupa basins -Subcommission for the water basin of the Littoral and Istrian catchment areas and coastal waters -Subcommission for water quality	Provisions of the Agreement are related to all economic relations, measures and activities on the transboundary water bodies.	Work of the Commission, Subcommissions and working groups is still underway
Croatia and Montenegro	Agreement between the Government of the Republic of Croatia and the Government of the Republic of Montenegro on Water Management Relations	Solving of open water related issues, including activities in the field of sustainable water and water building management of mutual interest for both countries. Issues related to all surface and underground waters which constitute or intersect border between Montenegro and the Republic of Croatia and the waters which, due to its downstream influence, are important for both of the states, as well as sea waters	Zagreb, 2007	Permanent Croatian – Montenegro Commission for the Water Management and Subcommissions (Government of Montenegro Government of Republic of Croatia)	Provisions of the Agreement are related to the waters of the mutual interest, interventions, water buildings and activities, which may influence waters, water buildings and water usage equipment.	Work of the Commission and Subcommissions is still underway

Annex 3: Table on International Projects, Initiatives and Activities

Albania **Exact name of the activity**	**Scope**	**Countries involved**	**Funded by**	**Duration of the activity**	**Domestic institution in charge**	**Status of implementation**
Integrated management of Shkodra Lake project	Shkodra Lake ecosystem	Albania, Montenegro	GEF-WB	2008-	World Bank Albania & Shkodra lake PIU & MoEFWA	Ongoing
Integrated management of basin ecosystem of Prespa lakes in Albania, FYROM and Greece	Prespa The replacement of the traditional way of protection with integral way of protection will decrease the negative impact. The introduction of the integral way of apple production protection enables optimal way of using the compounds for apple plantation treatment. By the reduced use of pesticides, the environment will be protected, the production costs will be reduced - reducing apples' final price and increasing its competitiveness, (to try to satisfy rigorous EU quality criteria)	Albania, FYROM and Greece	GEF-UNDP	9/2006-12/2011	UNDP Albania through prespa lake PIU and MOEFWA	Ongoing
Ohrid Lake conservation project	RERePP bilateral project with 4 components	Albania, FYROM	GEF-World Bank	1998-2001	Ohrid Lake PIU and National Environmental Agency	Completed
Strengthening of Environmental Monitoring in Albania (STEMA-Project) chapter 3	CARDS PROGRAM Monitoring equipments and training for the monitoring institutes	Albania	EC	2005-2008	Ministry of Environment, Forestry and Water Administration	Completed
Improved Water Monitoring and Assessment Program in Albania Chapter 3	Training in monitoring and assessment of freshwater and ground water	Albania	Swedish Environmental Protection Agency	2008-2010	Ministry of Environment, Forestry and Water Administration	On going
Bosnia-Herzegovina **Exact name of the activity**	**Scope**	**Countries involved**	**Funded by**	**Duration of the activity**	**Domestic institution in charge**	**Status of implementation**
Project " Managing of Neretva and Trebišnjica rivers".	Project should cover issues of water allocation, preservation of ecosystems and biodiversity, as well as reduction of pollution from sewerage systems in B&H's and Croatia's settlements and industries.	B&H and Croatia	GEF-World Bank		Governments of B&H and Croatia, Ministry of Foreign Trade and Economic Relations	Preparation phase

Croatia **Exact name of the activity**	**Scope**	**Countries involved**	**Funded by**	**Duration of the activity**	**Domestic institution in charge**	**Status of implementation**
The Adriatic-Ionian Initiative (AII), which was formally established as a political initiative at a conference held in Ancona, Italy in May 2000	to link the coastal countries of the two seas for the purpose of cooperating in the development and safety of the whole area	Albania, Bosnia & Herzegovina, Croatia, Greece, Italy, Slovenia, Serbia, Montenegro		2000 -	Ministry of Foreign Affairs and European Integration	Ongoing
Regional project in the field of the water management of the rivers Neretva and Trebišnjica	Implementation of the provisions of the WFD applied to the transboundary catchment area. The following is expected: a) water management of the transboundary water resources of the Neretva and Trebišnjica catchment areas; b) improvement of the management and usage of the wetland ecosystems.	Croatia, Bosnia and Herzegovina	GEF- Worldbank, Croatia, Bosnia and Herzegovina	2009 - 2013	Ministry of Regional Development, Forestry and Water Management	Project commenced
Montenegro **Exact name of the activity**	**Scope**	**Countries involved**	**Funded by**	**Duration of the activity**	**Domestic institution in charge**	**Status of implementation**
Lake Skadar-Shkoder Integrated Ecosystem Management Project (LSIEMP)	Establishment and strengthening of institutional mechanisms for transboundary cooperation and sustainable management of Skadar-Shkoder Lake	Montenegro, Albania	Global Environment Facility (GEF)	2008-2012	Ministry of Tourism and Environment of Montenegro Ministry of Environment, Forestry and Water Administration of Republic of Albania	Full Size Project
ADRICOSM Project	Studying the water cycle of the Montenegro area (Bojana-Buna River area), implementing monitoring systems and modeling tools, as well as assessing the impact of climate change on the water cycle	Montenegro Is Albania involved If not move to chapter 4 (Other Activities)	Ministry of Environment, Sea and Territory of Republic of Italy	2007-2009	Ministry of Tourism and Environment of Montenegro	Implementation phase
Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem	Leveraging reforms and catalyzing investments that address transboundary pollution reduction and marine and costal biodiversity conservation priorities in Mediterranean Sea region	All Mediterranean developing countries	Global Environment Facility (GEF)	2009-2014	Ministry of Tourism and Environment of Montenegro	Full Size Project
Strategic Partnership for the Mediterranean LME; Regional Project Component – Coastal aquifer component (UNESCO/IHP)	*Coastal aquifer management within Coastal Zone Management*	*13 GEF-eligible MED coastal countries: Morocco to Croatia*	*GEF –UNEP; and Co-financing*	*Sept 2009, for five years*	*Ministry of Environment, department of WR, Coastal Zone Agencies*	*Project Start in September 2009*

OTHER ACTIVITIES (ongoing, completed or planned projects and activities on national level, which have a direct link with DIKTAS activities)

Albania **Exact name of the activity**	**Scope**	**Countries involved**	**Funded by**	**Duration of the activity**	**Domestic institution in charge**	**Status of implementation**
Strengthening of Environmental Monitoring in Albania (STEMA-Project)	CARDS PROGRAM Monitoring equipments and training for the monitoring institutes	Albania	EC	2005-2008	Ministry of Environment, Forestry and Water Administration	Completed
Improved Water Monitoring and Assessment Program in Albania	Training in monitoring and assessment of freshwater and ground water	Albania	Swedish Environmental Protection Agency	2008-2010	Ministry of Environment, Forestry and Water Administration	On going
Bosnia-Herzegovina **Exact name of the activity**	**Scope**	**Countries involved**	**Funded by**	**Duration of the activity**	**Domestic institution in charge**	**Status of implementation**
Project "River Basin Management"	Project purpose was to define a clear and largely endorsed reform policy, supported by draft legal documents and financial/costing studies as well as River Basin Authorities. The main achievements of the project were: new institutional set-up of the Water Sector (establishment of entities' Water Agencies for Sava river basin and Adriatic basin); developing a new concept for the financing of sector; a new Entities' Water Laws drafted and adopted in 2006; the concept for a unified Water Information System (WIS) established, and the first modules for this system, based on GIS, were developed and handed over to the beneficiaries (Water Agencies);	B&H	EC CARDS Program	2003-2005	**FB&H**: Ministry of Agriculture, Water Management and Forestry; Ministry of Urban Planning and Environment. **RS:** Ministry of Agriculture, Forestry and Water Management, Ministry of Spatial Planning, Civil Engineering and Ecology. **State:** Ministry of Foreign Trade and Economic Relations (MOFTER)	completed
Project "Pilot River Basin Plan for the Sava River Basin"	Regional project -(Croatia, Bosnia and Herzegovina, Serbia and Montenegro). Project Objective was to enhance water management cooperation among Sava countries using an integrated water management approach as outlined in the WFD and ICPDR issue papers. through: strengthening national capacities on Water Framework Directive (WFD) oriented, transboundary water management (via information, awareness raising and various trainings on WFD guidances); developing pilot projects in selected sub-basin areas (for BiH in the Vrbas river) to test the implementation of the EU WFD, and to develop a harmonised methodological approach for river basin management in the Sava region; B&H pilot project 'Characterisation report for the Vrbas river basin' elaborates characterisation of the surface and underground waters, gives analysis of the pressures	B&H, Croatia, Serbia and Montenegro	EC CARDS Program International	2004 –2007	**FB&H**: Ministry of Agriculture, Water Management and Forestry; Water Agencies ; **RS:** Ministry of Agriculture, Forestry and Water Management, Water Directorate **State:** Ministry of Foreign Trade and Economic Relations (MOFTER)	completed

	and impacts, economic analysis, as well as the risks assessment. Monitoring system has been reviewed in terms of the existing automatic and laboratory monitoring of surface water within the Vrbas river basin.					
Project "Pilot River Basin Plan for the Sava River Basin"	Regional project -(Croatia, Bosnia and Herzegovina, Serbia and Montenegro). Project Objective was to enhance water management cooperation among Sava countries using an integrated water management approach as outlined in the WFD and ICPDR issue papers. through: strengthening national capacities on Water Framework Directive (WFD) oriented, transboundary water management (via information, awareness raising and various trainings on WFD guidances); developing pilot projects in selected sub-basin areas (for BiH in the Vrbas river) to test the implementation of the EU WFD, and to develop a harmonised methodological approach for river basin management in the Sava region; B&H pilot project 'Characterisation report for the Vrbas river basin' elaborates characterisation of the surface and underground waters, gives analysis of the pressures and impacts, economic analysis, as well as the risks assessment. Monitoring system has been reviewed in terms of the existing automatic and laboratory monitoring of surface water within the Vrbas river basin.	B&H, Croatia, Serbia and Montenegro	EC CARDS Program International	2004 –2007	**FB&H**: Ministry of Agriculture, Water Management and Forestry; Water Agencies ; **RS:** Ministry of Agriculture, Forestry and Water Management, Water Directorate **State:** Ministry of Foreign Trade and Economic Relations (MOFTER)	completed
Project "Water quality management at the River Basin Level" (Phase I)	Project Purpose was to support the water sector institutions in BiH in reaching a "good water status" – as defined in the Water Framework Directive, via introduction of water quality management principle according to EC practice.	B&H	EC CARDS Program	2005- 2007	**FB&H:** Ministry of Agriculture, Water Management and Forestry; Ministry of Urban Planning and Environment. **RS:** Ministry of Agriculture, Forestry and Water Management, Ministry of Spatial Planning, Civil Engineering and Ecology. **State:** Ministry of Foreign Trade and Economic Relations (MOFTER)	completed
"Additional Services to support to Management in B&H" (PhaseII)	The main achievements of the project were: drafted Water Protection Plan (WPP) for Urban Waste Waters with an indication of the instruments and measures needed to improve the quality of surface waters in Bosnia and Herzegovina; developed Decision Support System (DSS) for water quality management; conceptualized Water Quality Monitoring Network (MON) and identified scope and set-up of Water Quality Laboratories (LAB).	B&H	EC CARDS program	2008	**FB&H**: Ministry of Agriculture, Water Management and Forestry; Ministry of Urban Planning and Environment. **RS:** Ministry of Agriculture, Forestry and Water Management, Ministry of Spatial Planning, Civil Engineering and Ecology., Water Directorat ; **State:** Ministry of Foreign Trade and Economic Relations (MOFTER)	ongoing
Project Support to BiH Water Policy	Project purpose is to: further support the development and implementation of Entity Water Laws, in accordance with the principles of the	B&H	EC IPA Programme	24 months (starting in 2009)	**FB&H:** Ministry of Agriculture, Water Management and Forestry; Ministry of Urban	Tendering procedure

	European Union's Water Framework Directive and other water sector related directives; to strengthen BiH capacities' for the coordination and implementation of international conventions to which BiH is party to. Project Expected resultes: Water policy and corresponding implementing strategy developed in accordance with Entity Laws harmonized at the level of BiH; ;Secondary legislation to Entity Water Laws developed and in line with the EU acquis communautaire; , Mechanism of public consultation and information exchange is established and public and stakeholders are actively involved in planning procedure				Planning and Environment. Agencies for Sava river Basin and Adriatic basin; **RS:** Ministry of Agriculture, Forestry and Water Management, Ministry of Spatial Planning, Civil Engineering and Ecology., Water Directorat ; **State:** Ministry of Foreign Trade and Economic Relations (MOFTER)	
Project "Support to Implementation of the Integrated Pollution Prevention and Control (IPPC) Directive	Project purpose is to support the integrated approach for sustainable development and compliance control with regards to implementation of the 'Integrated Pollution Prevention and Control' (IPPC) and the 'European Pollutant Release and Transfer Register' (E-PRTR) Directives; Project aims to support the implementation of current and future international obligations of BiH, in particular towards the Aarhus Convention (Kiev Protocol on Pollutant release and Transfer registers), Kyoto Protocol on Climate Change and the Energy Community Treaty.	B&H	EC IPA program	Starting in 2009	Entities Ministries for the Environment etc.	Tendering procedure
Croatia **Exact name of the activity**	**Scope**	**Countries involved**	**Funded by**	**Duration of the activity**	**Domestic institution in charge**	**Status of implementation**
Project „Valuation and Protection of GroundWaters of Croatia", is initiated by ten faculties of Zagreb University and Split University (Faculty of mining, geology and petroleum engineering, Faculties of economics in Split and Zagreb, Faculty of agriculture, Faculty of chemical engineering and technology, Faculty of civil engineering, Faculty of arhitecture, Faculty of food technology and biotechnology, Faculty of political science and Faculty of law)	Development of long-term programmes of investigation, management and utilization of groundwater resources; protection of water sources and supplies of groundwaters and the reconstruction of the polluted parts of strategically significant aqueous systems of the Republic of Croatia. In the second phase of the project, two pilot areas will be proposed: the first one in the urban area of the City of Zagreb; the second one will be in the karst area of Croatia - one transboundary aquifer in the Dinaric karst might be the option. The great consideration will be given to socio-economy of groundwater and ecosystem services and to the key economic and socio-economic indicators used to monitor water (groundwater) management.	Croatia, possible other countries (even those included in DIKTAS project)	The first phase of the project – description of methodology in interdisciplinary research activities will be financed by Croatia Waters; the second phase of the project – research in pilot areas and implementation would need to be financed by several national and international sources (option: possibilities for UNESCO or other agencies to financially support this project)	1. First phase of the project: 6 months – by October 2009. 2. Second phase of the project: 3-5 years, starting by 2010.	Croatian Waters, Ministry of Regional Development, Forestry and Water Management.	The first phase of the project will start in April 2009.
Project "Pilot River Basin Plan for the Sava River Basin"	Regional project -(Croatia, Bosnia and Herzegovina, Serbia and Montenegro). Project Objective was to enhance water management cooperation among Sava countries using an integrated water management approach as outlined in the WFD and ICPDR issue papers. through: strengthening national capacities on Water Framework Directive (WFD) oriented, transboundary	B&H, Croatia, Serbia and Montenegro	EC CARDS Program International	2004-2007	Croatian Waters	completed

	water management (via information, awareness raising and various trainings on WFD guidances); developing pilot projects in selected sub-basin areas (for Croatia in the Kupa river) to test the implementation of the EU WFD, and to develop a harmonised methodological approach for river basin management in the Sava region					
CARDS 2003 project (Approximation of Croatian water management legislation with the EU ACQUIS)	Support efficient implementation of EU water management standards. The project focused on legal analysis, administrative and institutional assessment, impact assessment, and development of compliance plans, in particular the Urban Waste Water Treatment Directive. Preparation of strategy and action plan for approximation of Croatian legislation with the EU water acquis, as part of the wider Master Plan for EU Environmental Law approximation.	Croatia	CARDS 2003	18 months, project ended in 2008	Ministry of Agriculture, Forestry and Water management	Completed
CARDS 2004 project – Capacity Building and Development of Guidelines for the Implementation of the WFD. It is twinning project, carried out in collaboration with the German federal Ministry of Environment, Protection of Nature and Nuclear Security and the Holland Government Bureau for Land and Water Management	Strengthening of institutional and administrative capacities for implementing the Water Framework Directive	Croatia	CARDS 2004	September 2007 until September 2009	Ministry of Regional Development, Forestry and Water Management, Croatian Waters.	Ongoing

Annex 4: Table on relevant Conventions and State of Ratification

Name of the Convention	Countries	Scope
Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki 1992)	Ratified by Albania Croatia, & Slovenia Bosnia & Herzegovina is in the process of ratification Montenegro is planning to ratify	Protection and Use of Transboundary Waters and International Lakes
Protocol on Waters and Health (London 1999).	Ratified by Albania and Croatia	Applies inter alia to surface freshwater; groundwater; enclosed waters generally available for bathing; water in the course of abstraction, transport, treatment or supply; waste water throughout the course of collection, transport, treatment and discharge or reuse.
Convention on Cooperation for the Protection and Sustainable Use of Danube River (the **Danube Convention**, Sofia, 1994)	Bosnia-Herzegovina Croatia Montenegro Slovenia	Protection and Sustainable Use of Danube River Establishes the International Commission
Framework Agreement on the Sava River (Kranjska Gora (Slovenia) 2002)	Bosnia-Herzegovina Croatia Slovenia Serbia	Establishment of an international regime of navigation on the Sava River and its navigable tributaries; Establishment of sustainable water management; and Undertaking of measures to prevent or limit hazards, The Agreement creates the International Sava River basin Commission

Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention 1976, amended in 1995)	Albania Bosnia-Herzegovina Croatia Montenegro Slovenia	To prevent, abate and combat pollution of the Mediterranean Sea area and to protect and enhance the marine environment in that area
Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources and Activities (Athens 1980, amended in Syracuse 1996)	Albania Bosnia-Herzegovina Croatia Slovenia	To prevent, abate, combat and eliminate to the fullest possible extent pollution of the Mediterranean Sea Area caused by discharges from rivers, coastal establishments or outfalls, or emanating from any other land-based sources and activities

Annex 5: Notable Karst Areas on Global Scale

Africa

- Anjajavy Forest, western Madagascar
- Ankarana Reserve, Madagascar
- Madagascar dry deciduous forests, western Madagascar
- Tsingy de Bemaraha Strict Nature Reserve, Madagascar

Asia

- Area around Guilin and Yangshuo in Guangxi Zhuang Autonomous Region, China
- Jiuzhaigou and Huanglong National Park (UNESCO World Heritage Site), Sichuan, China
- Zhi Jin Dong in Gui Zhou Province, China
- Zhangjiajie National Forest park, forming part of the Wulingyuan scenic area, Zhangjiajie Prefecture, Hunan, China
- The Stone Forest (called the South China Karst by UNESCO), Yunnan Province, China
- Arabika Massif (including Voronya Cave—the world's deepest cave), Abkhazia, Georgia
- Bantimurung, Indonesia
- Ofra region, Israel
- Akiyoshi plateau, Japan
- Vang Vieng, Laos
- Gunung Mulu National Park, Malaysia
- Kilim Karst Geoforest Park, Langkawi, Malaysia
- Kinta Valley, Perak, Malaysia
- El Nido, Palawan, Philippines
- Coron, Palawan, Philippines
- Sagada, Mountain Province, Philippines
- Chocolate Hills, Bohol, Philippines
- Negros and Gigante Islands, Negros Oriental, Philippines
- Krabi region, Thailand
- Phangnga Bay Area, southern Thailand
- Kenting National Park, Taiwan
- Taseli plateau, Turkey
- Halong Bay, Vietnam
- Phong Nha-Ke Bang, Vietnam
- Tam Coc - Bich Dong in Ninh Binh Province, Vietnam

Europe

- Eastern region of the Northern Limestone Alps in the provinces of Salzburg, Upper Austria, Styria and Lower Austria, forming huge limestone plateaus such as Steinernes Meer, Hagengebirge, Tennengebirge, Dachstein, Totes Gebirge and Hochschwab, Austria
- Area around Graz, Styria, Austria
- Central Rhodope karst (including Trigrad Gorge), Bulgaria
- Devnya Valley, Varna Province, Bulgaria
- Dragoman marsh, Bulgaria
- Cadí mountain range, Catalonia
- Garraf Natural Park area, Catalonia
- Regions of Dalmatia (including Zagora), Lika, Gorski kotar, Kvarner and the islands in Croatia
- Moravian Karst, Czech Republic
- Bohemian Karst, Czech Republic
- Tuhala karst area, Estonia

- Ares de l'Anie, in the southernmost part of Barétous valley, southwest France
- Causses of the southern Massif Central, France
- Hönnetal at Balve, Germany
- Swabian Alb region in the federal state of Baden-Wuerttemberg, Germany
- Region of the Mecsek Mountains in Hungary
- Bükk, a plateau in northeastern Hungary
- The Burren in County Clare, Ireland
- Murge, in Apulia and Basilicata, southern Italy
- Kras, a plateau in northeastern Italy and southwestern Slovenia
- Herzegovina region of Montenegro and Bosnia-Herzegovina
- Polish Jura Chain (Jura Krakowsko-Częstochowska), Poland
- Holy Cross Mountains (Góry Świętokrzyskie) with the Jaskinia Raj, Poland
- Tatra Mountains including the Jaskinia Wielka Śnieżna (Great Snowy Cave)—the longest cave in Poland
- Apuseni Mountains, Romania
- Slovak Paradise, Slovak Karst and Muránska planina, Slovakia
- Region of Inner Carniola, Slovenia
- Kras, a plateau in southwestern Slovenia and northeastern Italy
- Picos de Europa and Basque mountains, northern Spain
- Ciudad Encantada in the Cuenca province, Castilla-La Mancha, Spain
- El Torcal de Antequera nature preserve, southern Spain
- White Peak of the Peak District, around Matlock, Castleton (including Thor's Cave), England, United Kingdom
- Yorkshire Dales (including Malham Cove), England, United Kingdom
- Assynt, southeast Skye and near Kentallen in Scotland, United Kingdom
- Southern region of the Brecon Beacons National Park, Wales, United Kingdom

North America

- Eastern foothills of Maya Mountains including parts of the Cockscomb Basin Wildlife Sanctuary, Belize
- Great Blue Hole near the center of Lighthouse Reef, Belize
- Nahanni region in the Northwest Territories
- Monkman Provincial Park in the Northern Rockies
- Niagara Escarpment, Ontario
- Wood Buffalo National Park in Alberta and the Northwest Territories
- Marble Canyon, British Columbia
- Northern Vancouver Island, British Columbia
- Mogotes in Viñales Valley
- Los Haitises National Park
- Cockpit Country region
- Cenotes of the Yucatan Peninsula
- Sótanos of the Sierra Gorda, Querétaro
- Cacahuamilpa grottos Guerrero
- Karst forest, Puerto Rico (*see* Geography of Puerto Rico)
- Mountains of northwestern Puerto Rico (*see* Geography of Puerto Rico)

- Kosciusko Island, southeastern Alaska
- Mitchell Plain and uplands of southern Indiana
- Great Valley of Appalachia (Huntsville, Alabama to northeast Pennsylvania)
- Shenandoah Valley, Virginia
- Driftless Area of southwest Wisconsin, southeast Minnesota, northeast Iowa and northwest Illinois, left unglaciated by all three phases of the Wisconsin Stage
- Florida peninsula
- Mammoth Cave area and the Bluegrass region of Kentucky
- Illinois Caverns State Natural Area and Illinois Sinkhole Plain in Monroe County, Illinois
- Ozark Plateau of Missouri and Arkansas
- Kamas Ranch and Alabaster Cavern area of Oklahoma
- Cumberland Plateau in Middle Tennessee
- Grassy Cove Karst Area, Tennessee
- Carlsbad Caverns National Park, New Mexico
- Hill Country of Texas and its northern extensions, including the Palo Pinto Mountains
- Central Pennsylvania
- Presque Isle County near and around Rogers City in northern Michigan
- Germany Valley Karst Area, West Virginia
- Swago Karst Area, West Virginia

Oceania

- Cutta Cutta Caves National Park and Kintore Caves Conservation Park, Katherine, Northern Territory
- Leeuwin-Naturaliste National Park, near Margaret River, south west Western Australia
- Northern Swan Coastal Plain, Perth, Western Australia
- Naracoorte Caves National Park, South Australia
- Jenolan Caves, New South Wales
- Wombeyan Caves, New South Wales
- Mole Creek Karst Conservation Area, Tasmania
- Takaka Hill, South Island
- Waitomo, Oparara regions
- Nakanai Mountains, East New Britain

Annex 6 : Stakeholder Participation and Involvement Strategy

Annex 7 : National Reports on Hydrogeology and Environment

Annex 8 : National Reports on Legal and Institutional Frameworks and Policies