



# GEF GROUNDWATER PORTFOLIO ANALYSIS



*Contribution  
to the GEF Groundwater  
Community of Practice*

**WORKING DRAFT - MARCH 2013**



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The present report represents an attempt to analyze the GEF IW portfolio of groundwater projects with a view to guide the identification of lessons learnt and replicable practices, and to promote a structured exchange of experiences among projects through the establishment and functioning of a facilitated Groundwater Community of Practice. It is intended that other non-groundwater projects that might benefit from being exposed to groundwater issues shall also be involved in the Community in order to achieve an overall advancement in the application of Integrated Water Resources Management (IWRM) principles and of conjunctive surface and groundwater management.

The results of the analysis will:

1. Inform the design of the GEF IW Global Groundwater Community of Practice;
2. Help designing the regional groundwater integration dialogues with river basins, coastal areas, Large Marine Ecosystems;
3. Guide in the identification of lessons learnt to be widely disseminated and best practices to be replicated across the portfolio.

This report is a living document which will continue to be enriched with comments, additions and revisions as new inputs come in from members of the Groundwater Community of Practice.

The first version of the Analysis was prepared for and distributed during the 6th GEF Biennial International Waters Conference (Dubrovnik, Croatia, 17-20 October 2011). Further editions were prepared for the African Regional Consultation of the GEF Groundwater Governance Project (Nairobi, Kenya, May 2012), the first GEF IW Science Conference (Bangkok, Thailand, 24-26 September 2012) the Regional Consultation for the UNECE region of the GEF Groundwater Governance Project (The Hague, The Netherlands, 18-21 March 2013).

The most up-to-date GEF Groundwater Portfolio Analysis is always available at the online space of the Ground water Community of Practice ([www.iwlearn.net/community](http://www.iwlearn.net/community)).

This document was edited by Andrea Merla, Senior Consultant at UNESCO-IHP, and Lucilla Minelli, Project Officer at UNESCO-IHP, in the framework of the GEF IW:LEARN 3 Project 'Strengthening IW Portfolio Delivery and Impact'.



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Groundwater is an integral part of the water cycle, inextricably linked to surface water and ecosystems. It is ubiquitous and represents over 90% of the freshwater resources globally available. It is being exploited aggressively in many regions of the world, and represents in a number of cases the only water available for human uses. A tremendous increase in the utilization of groundwater has occurred in the last decades thanks to the availability of new and cheaper drilling and pumping technologies. Hydrogeologists refer to this drastic change in groundwater utilization as ‘the silent revolution’, since it has occurred in many countries in an unplanned and totally uncontrolled way. It went practically unnoticed. Now we have come to realize that without proper management this huge resource can be rapidly and irreversibly degraded. Pollution of aquifers is hardly reversible; over-exploitation may have permanent impacts on the aquifer resilience and behaviour. We have also realized that many land and water ecosystems depend on groundwater regimes, as is the case for most alluvial plains, wetlands, coastal habitats, even coastal marine environments. Groundwater cuts across basins and landscapes, sustaining ecosystems and biodiversity, mitigating the impacts of climatic fluctuations, contributing to human health and social-economic development.

It is now apparent that groundwater, from the shallowest unconfined aquifers, to the deepest hidden reserves, has a critical role to play in addressing the new challenges of adapting to the realities of a changing climate and of combating desertification.

Since 1999 efforts have been made in the IW Focal Area to fill a major gap in GEF portfolio relative to groundwater and aquifers. In fact, while the 1995 Operational Strategy included multi-country aquifers and groundwater as a target for GEF action, no project relating to this very important area had ever been submitted by the Implementing Agencies. The other Focal Areas of the GEF, with the exception of few wetland biodiversity related projects, did not include consideration of groundwater. This lack of response reflected a general trend in water related development and environmental approaches, which was, and largely still is, affected by a vision privileging surface water - visible, easily quantifiable, in some measure predictable, and lending itself to simple modelling and scenario building exercises. Water present in the subsurface is instead hidden and linked to sometime complex geological settings and processes. The understanding of these processes and settings has been so far the exclusive domain of the hydrogeological community, traditionally somewhat separated from the mainstream water and environmental protection-exploitation-management activities.

During the early 2000’s, the GEF Secretariat and the GEF Implementing Agencies have been working cooperatively to analyse opportunities for projects that would promote a new approach to groundwater management, better integrated with land use planning, ecosystems protection and basin management. Thanks to this cooperation a number of highly representative projects have entered the GEF portfolio, and the GEF has come to the forefront as the leader funding institution in the field of transboundary groundwater. These projects deal with issues ranging from the protection of one of the world’s largest freshwater reserves (the Guarani Aquifer in South America, shared by Brazil, Argentina, Paraguay and Uruguay), to the protection of groundwater dependent ecosystems and drought management in the arid transboundary Limpopo Basin, to building knowledge and capacity in the Sahel and Saharan regions of Africa, where shared aquifers represent the major, and at times the only source of freshwater.

In 2003 the Scientific and Technical Advisory Panel (STAP), in dialogue with the GEF Secretariat, identified groundwater as a priority for its 2003-5 Work Program. This has led to the establishment of a highly successful cooperation with UNESCO's International Hydrological Program (IHP), and with its global long-term initiative to promote assessments and scientific collaboration on transboundary aquifers – the International Shared Aquifer Resources Management Initiative (ISARM). The STAP-UNESCO workshop on 'Strategic Options and Priorities in Groundwater Resources' held in Paris in April 2004 represented a first contact and exchange between the hydrogeologic community of experts, managers and scientists, and the GEF system. The results have been remarkable. STAP has distilled few overarching strategic directions for GEF action in groundwater across all Focal Areas. Groundwater in fact exemplifies, possibly better than any other element of the natural environment, the concept of inter-linkages which STAP has strived to translate into operational guidelines for the GEF for addressing desertification, climate change adaptation and the protection of groundwater dependent ecosystems, such as wetlands.

STAP has called the attention of the GEF on the need for a collective system-wide effort to review the existing portfolio from the perspective of groundwater, identify the missed opportunities, and learn for the future. STAP has also recommended that groundwater considerations be an integral part of the science based diagnostics that should inform GEF project design addressing international water bodies (the TDA process), land degradation, climate adaptation, biodiversity, ecosystem management. Priority areas for action have been singled

## BOX 1

### The UNGA Resolutions on the Law of Transboundary Aquifers and the aft Articles

The UN International Law Commission (ILC), with the technical support of UNESCO-IHP, embarked on the codification of the law of transboundary aquifers in 2002 in order to provide legal regime for the proper management of aquifers. A UN General Assembly Resolution (A/RES/63/124) was adopted in December 2008, including the set of 19 draft articles prepared by the UNILC as an annex and encouraging States sharing an aquifer to consider them when entering an agreement for the proper management of the underground resource.

At its sixty-sixth session in December 2011, the UN General Assembly reaffirmed the importance of transboundary aquifers and the related draft articles. In a new Resolution (A/RES/66/104), states are further urged to make appropriate bilateral or regional arrangements for managing their transboundary aquifers, and UNESCO-IHP is encouraged to continue providing its scientific and technical support to the states concerned.

The aft Articles provide a comprehensive understanding of transboundary aquifers and their adequate management that includes procedures for data exchange, monitoring and cooperation. The articles also consider the existing disparities in capacity and knowledge between countries and the need for international technical cooperation. The articles include requirements on cooperation, including scientific and technical cooperation for developing countries, and regular exchange of data and information between the countries in whose territory the aquifer is located, as well as provisions concerning monitoring and prevention of contamination, with particular attention to groundwater dependent ecosystems.

The first example of the application of the aft Articles (annexed to both resolutions) is the agreement on the Guarani Aquifer signed by the four countries concerned (Argentina, Brazil, Uruguay and Paraguay) in 2009. This is the first international agreement that explicitly refers to the aft Articles as inspiring source/principles for its formulation and implementation.



out, where GEF could lead in demonstrating ways to reverse degradation trends of global concern (e.g.: coastal saline intrusion, particularly in SIDS), and in exploring opportunities to utilize underground ‘space’ for increased sustainability, by testing options of managed artificial recharge of aquifers, and by assessing the state of the art and feasibility of hazardous waste disposal in deep seated impervious geological formations.

STAP has finally urged GEF to catalyze the integration of groundwater issues into the global dialogue on water developed through the World Water Fora and other similar processes, and to encourage the efforts, led by United Nations International Law Commission (UNILC) and UNESCO-IHP, to promote the implementation of the UNGA Resolutions on the ‘Law of Transboundary Aquifers’ and their annexed aft Articles (Box 1).

As a consequence of this sustained effort, the Recommendations of the Fifth Replenishment of the GEF Trust Fund included a **special focus on, and a specific mention of groundwater as part of the first Strategic Objective of the International Waters focal area** (Box 2).

This growing realization of the **critical role of groundwater in sustaining human development and ecosystems**, particularly in times of increasing climatic variability and unpredictability, has led to the inclusion in the third phase of IW LEARN of a substantial effort to strengthen groundwater consideration in the GEF IW portfolio of projects.

## BOX 2

### Fifth Replenishment of the GEF Trust Fund (March 2010)

International Water Strategic Objective One: Catalyze multi-state cooperation to balance conflicting water uses in transboundary surface/groundwater basins while considering climatic variability and change.

This objective relates to GEF assistance to States for implementing agreed Strategic Action Programmes (SAP) for interventions in cross-border surface and groundwater basins. GEF has previously supported such foundational capacity building in almost 30 transboundary freshwater systems. Patterns of intensive and conflicting uses of water resources in transboundary surface and groundwater basins are resulting in significant ecological and economic damage, reduced livelihoods for the poor, and increased political tensions among downstream States.

These impacts become exacerbated with increasing climatic variability. Shallow groundwater over-extraction, saline intrusion, and pollution of groundwater supplies must now be factored into GEF projects, especially for many SIDS where water supply threats are major threats to their viability. Use of IWRM plans/policies at the basin level consistent with WSSD targets has been identified as an answer to balancing conflicting uses of water resources and to inform tradeoffs.

With the low Replenishment scenario, the focus would be on initiating basic implementation of agreed action programmes with work on legal and institutional issues for the transboundary cooperative frameworks, retrofitting understanding of climatic variability and change and groundwater considerations into water management frameworks, national reforms, and modest local demonstrations.

With the intermediate replenishment scenario, only incrementally a few more States and basins would be able to show results with reforms and small demonstrations despite some investments being funded. The Earth Fund water efficiency and foot-printing platform would have little focal area support for achieving on-the-ground results.

# 1. GEF IW:LEARN Project Groundwater Components

## A. Background on the IW:LEARN Project

IW:LEARN is the Global Environment Facility's (GEF) International Waters Learning Exchange and Resource Network. Its objective is to strengthen Transboundary Waters Management (TWM) by facilitating portfolio learning and information management amongst GEF IW projects and partners. It is a global project, encouraging information sharing, collaboration and replication of good practices and experiences in the GEF International Waters portfolio. IW:LEARN provides tools and procedures to assist IW projects better achieve their objectives through the provision of improved knowledge management and guidance on mainstreaming climatic variability and change, gender and public-private co-operation in IW projects. IW:LEARN facilitated the 6th IW Conference (Dubrovnik, Croatia, 17-20 October 2011) and initiated improved involvement between IW projects and the wider science community through the first IW Science Conference (Bangkok, Thailand, 24-26 September 2012).



The third phase of IW:LEARN (2011-2014) has a **strong focus on groundwater and supporting the Middle East and North Africa Development (MENARID) process**, and in the replication and sharing of good practices between transboundary surface and groundwater management (Box 3).

More information on IW:LEARN can be found at [www.iwlearn.net](http://www.iwlearn.net).

Two sub-components of IW:LEARN 3 are specifically dedicated to groundwater and coordinated by UNESCO-IHP:

- **Establishment of a Global Groundwater Community of Practice** (under Project component 2 “*Learning and Replication of Good Practices in Transboundary Surface and Groundwater Management*”)
- **Support to MENARID Integrated Land/Groundwater Management** (under Project component 1 “*MENARID Programme - Support via Land/Groundwater integrated management and Regional Portfolio Learning and Dialogue*”)

## BOX 3

### IW LEARN – Action on Groundwater

- Facilitate exchanges of experiences among practitioners involved in the execution of the cluster of existing GEF IW groundwater projects;
- Distil from these experiences those deserving broader dissemination;
- Create links between projects and all relevant groundwater networks and regional/global expertise;
- Enhance groundwater consideration in the land degradation and sustainable agricultural development projects part of the MENARID Program, and build the capacity of MENARID projects to address groundwater resources utilization and protection.

## B. The GEF Groundwater Community of Practice (CoP)

The objective of the *GEF IW Groundwater Community of Practice (GW CoP)* is to increase capacity of GEF groundwater projects to **exchange and replicate successful groundwater management approaches and practices to address adaptive management.**

The CoP is a collaborative forum (based on an online platform, face-to-face meetings and other ) where GEF IW Project Managers and other relevant stakeholders exchange project results and other information on groundwater resources management.

The GW CoP is formed by all Project Managers of GEF groundwater projects, national experts/policy makers of key Ministries (water, agriculture, environment, land use planning) of project countries, other interested Project Managers or designated focal points of GEF IW Projects as well as water-resources practitioners and scientists beyond the GEF community interested in sharing their knowledge.

The GW CoP is coordinated by UNESCO-IHP and consists in **facilitated, targeted dialogues around main topics related to groundwater management.** Among the “rooms” for discussion there are: **Traditional Knowledge, Impacts of climate change, Governance, Managed Aquifer Recharge, Coastal Aquifers, Transboundary Aquifers,** among others.

UNESCO-IHP, through its vast network of experts, regional offices and centers, promotes the exchange and dissemination of introductory guidelines, documents and learning materials related to groundwater management.

To reach the objectives of the CoP, different activities and exchanges will take place at different levels:

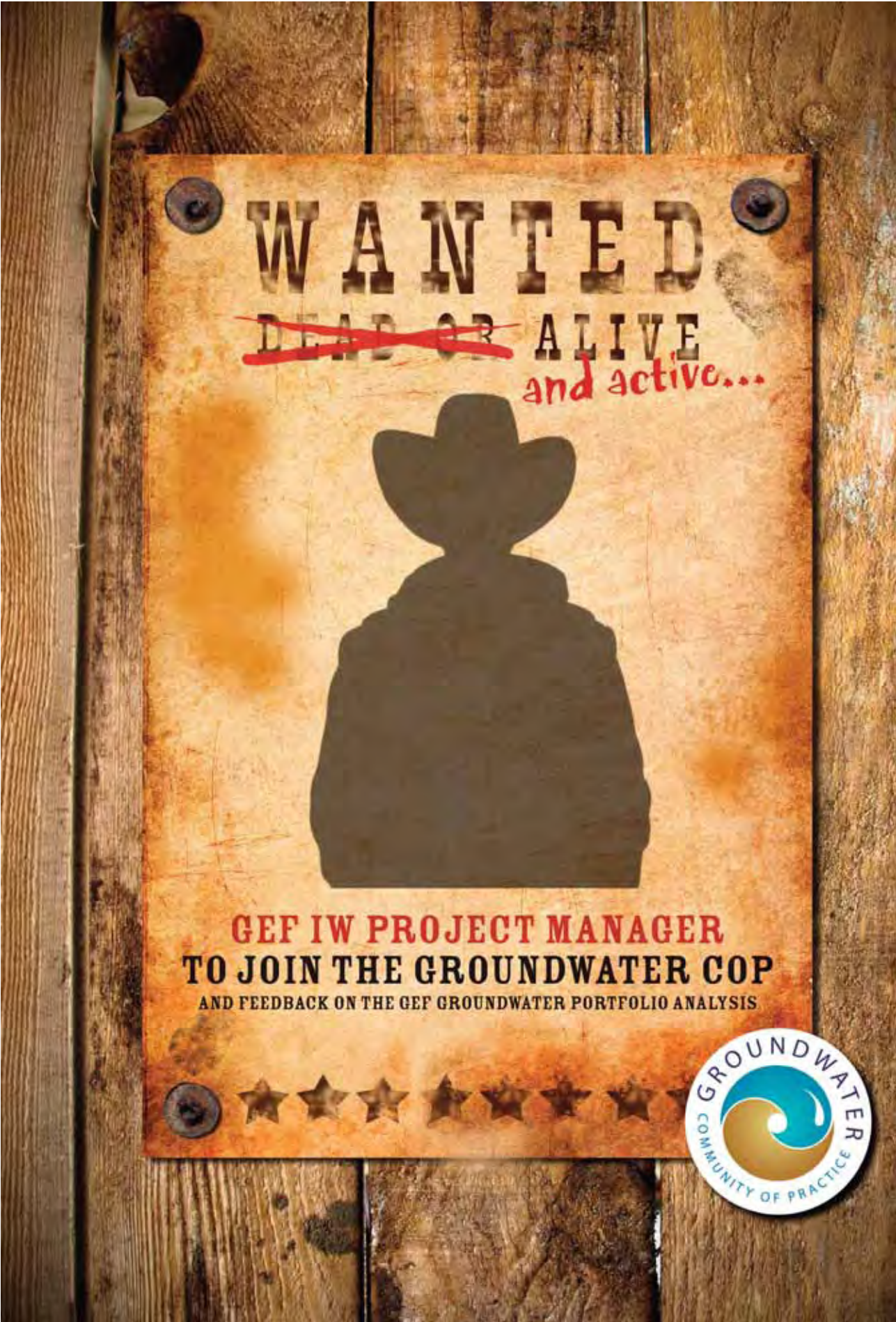
- Through an **online, access-restricted, collaborative space** ([www.iwlearn.net/community](http://www.iwlearn.net/community)) where members can exchange knowledge and project results with the rest of the community (Figure 1).
- Through **face-to-face meetings**, both in conjunction with GEF biennial events (namely the IW Conferences and the IW Science Conferences) and in a series of specific **Groundwater Integration Dialogues.** The Groundwater Integration Dialogues will facilitate regional dia-

logue and enhance the integration of water management addressing freshwaters (both surface and groundwaters) and marine. The groundwater CoP will be linked on a regional basis to selected GEF river basin and LME projects and will engage in structured and facilitated exchanges with surface water managers, coastal zone management practitioners, and relevant UNESCO and other ongoing programs. This experiment, facilitated by UNESCO-IHP regional offices, will be aimed at setting the basis for cooperative approaches and conjunctive management of surface and groundwater within a transboundary setting.

- Through the **analysis of the Groundwater Project Portfolio** (present document). Its objective is to identify and briefly review the experiences being gained by all IW projects directly addressing groundwater as a major theme, or having components dealing with groundwater resources, as well as single out those surface water projects - normally transboundary river basins – where groundwater consideration is presently absent, that should make efforts to unravel the inter-linkages between surface and groundwater and promote conjunctive management. Once finalized, this document will be published as a special UNESCO edited volume on “Lessons from the GEF Groundwater Portfolio”.

**FIGURE 1 . The online face of the Groundwater CoP**

The screenshot displays the GEF IW Community Platform interface. At the top, there is a navigation bar with the GEF IW logo and 'COMMUNITY PLATFORM' text. Below this is a secondary navigation bar with links for HOME, WHAT'S NEW, COMMUNITIES, PEOPLE, and TAG CLOUD, along with a 'My Profile' button. The main content area shows a blog post titled 'New version of the GEF Groundwater Portfolio Analysis (May 2012)' posted by Lucilla Minelli on Monday, June 18, 2012. The post includes a 'Back to Blog' link, 'Edit' and 'Delete' buttons, and a list of tags: governance (1), groundwater (1), and an 'Add' button. The text of the post discusses the Second Consultation for the Sub-Saharan Africa Region and invites participants to share comments. An attached PDF file, 'portfolio-analysis\_may2012.pdf', is listed. Below the post is a comment section with a rich text editor. On the right side, there are two sidebars: 'Tags' with a list of tags and their counts, and 'Archive' with a list of months and years and their respective post counts.



## C. Support to MENARID Integrated Land/Groundwater Management

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The Integrated Nature Resources Management in the Middle East and North Africa Region (MENARID) Program includes 11 investment Projects – co-founded by the GEF and IFAD – that cuts across the following GEF focal areas: Land Degradation, Biodiversity, International Waters, and Climate Change.

The overall objective of MENARID is twofold: (i) to promote integrated natural resource management (INRM) in the production landscapes of the MENA region and (ii) improving the economic and social well-being of the targeted communities through the restoration and maintenance of ecosystem functions and productivity. MENARID addresses the above-mentioned constraints and work towards further mainstreaming INRM, improving the governance of natural and water resources (ground water and trans-boundary water systems), and coordinating investments that will: (i) promote enabling environments to mainstream the INRM agenda at national and regional scales, and (ii) generate mutual benefits for the global environment and local livelihoods through catalyzing INRM investments for large-scale impact.

The purpose of this programme framework is to provide overall guidance in identifying strategic priorities for GEF investments in integrated natural resource management (INRM) in the Middle East and North Africa (MENA) region. These strategic priorities should maximize GEF's impacts in achieving global environmental benefits through selected investments supporting the GEF focal areas for land degradation, international waters, biodiversity, and climate change while contributing at the same time to improving livelihoods and reducing poverty. The operational objectives of MENARID are to promote INRM in the production landscapes of the MENA region and to improve the economic and social well-being of the targeted communities through the restoration and maintenance of ecosystem functions and productivity.

Within this framework objectives, IW LEARN has foreseen a regional sub-component “Support to MENARID Integrated Land/Groundwater Management” whose objective is to **improve effectiveness in combating land degradation in MENARID through an enhanced role of groundwater** and improved subsurface space management.

For its leading position in groundwater research and expertise, UNESCO-IHP was entrusted with the coordination of this sub-component. UNESCO-IHP will build on its projects and networks of specialists (UNESCO water-related centres around the world, Chairs and partners) to provide **assistance and expertise to the GEF MENARID multi-focal area projects in creating dialogue on the role of groundwater in land management and agricultural production**. This includes the sharing of knowledge and best practices on groundwater management techniques in arid and semi-arid zones, such as aquifer recharge management, water harvesting, and the enhancement of traditional knowledge, in MENA countries in order to promote integrated land and groundwater management practices and solutions aimed at increasing the effectiveness of soil conservation efforts and more generally of land degradation mitigation initiatives.

This regional IW LEARN component involves the **organization of a series of structured learning workshops** related to groundwater among all MENARID projects across GEF focal areas. An initial list of subjects for these trainings was outlined at the beginning of the project and

it has been further elaborated and expanded, taking into account project learning needs as singled out by MENARID project managers.

The first learning workshop for GEF MENARID Project Managers took place in early 2012 on the subject of **sustainable water utilization and harvesting practices in dry lands**, with focus on **traditional knowledge**, including rainwater harvesting practices and groundwater catchment systems, such as **qanats**. The workshop “World History of Water Management - Applying Traditional Knowledge in present-day Water Resources Management”, was organized by UNESCO-IHP in February 2012 in Yazd, Iran, seizing the opportunity of scheduling it back-to-back with the International Conference on Traditional Knowledge for Water Resources Management (TKWRM) organized by the UNESCO Category II International Centre on Qanats and Historic Hydraulic Structures (ICQHS), from 21 to 23 February 2012.

The second learning workshop for MENARID Project Managers took place in Amman, Jordan, from 11 to 13 December 2012. The event was organized by UNESCO-IHP in cooperation with the Ministry of Water and Irrigation of Jordan, the International Center for Agricultural Research in the Dry Areas (ICARDA), the UNESCO International Groundwater Resources Assessment Centre (IGRAC), and the International Fund for Agriculture Development (IFAD). It focused on “Opportunities for Managed Aquifer Recharge (MAR)” and featured a mix of lectures, presentations and role plays to present a general overview of MAR, and engage participants in discussing its applicability in the framework of the MENARID portfolio. A field trip to the Wala Dam was organized to showcase a concrete application of MAR techniques.

UNESCO is closely cooperating with IFAD and ICARDA to facilitate communication and exchanges among the MENARID projects and to build a corporate identity for the overall program.

GEF ID	Country	Project Name	Focal Area	GEF Agency	Project Type	GEF Grant	Cofinancing Total
3952	Algeria	MENARID Conservation of Globally Significant Biodiversity and Sustainable Use of Ecosystem Services in Algeria’s Cultural Parks	Multi Focal Area	UNDP	Full Size Project	5,387,142	10,022,858
2732	Iran	MENARID Institutional Strengthening and Coherence for Integrated Natural Resources Management	Multi Focal Area	UNDP	Full Size Project	4,320,000	14,946,000
2631	Jordan	MENARID Mainstreaming Sustainable Land and Water Management Practices	Multi Focal Area	IFAD	Full Size Project	6,445,000	23,139,000
3989	Morocco	MENARID – A Circular Economy Approach to Agro-Biodiversity Conservation in the Souss Massa aa Region of Morocco	Biodiversity	IFAD	Full Size Project	2,647,272	5,500,000

**Table 2. MENARID Portfolio**

<i>GEF ID</i>	<i>Country</i>	<i>Project Name</i>	<i>Focal Area</i>	<i>GEF Agency</i>	<i>Project Type</i>	<i>GEF Grant</i>	<i>Cofinancing Total</i>
2632	Morocco	MENARID Participatory Control of Desertification and Poverty Reduction in the Arid and Semi Arid High Plateau Ecosystems of Eastern Morocco	Multi Focal Area	IFAD	Full Size Project	6,000,000	19,035,165
4035	Tunisia	MENARID Ecotourism and Conservation of Desert Biodiversity	Multi Focal Area	IBRD	Full Size Project	4,272,300	3,300,000
3267	Yemen	MENARID – Adaptation to Climate Change Using Agrobiodiversity Resources in the Rainfed Highlands of Yemen	Climate Change	IBRD	Full Size Project	4,000,000	4,080,000
3628	Regional	MENARID Cross Cutting Monitorig and Evaluation Functions and Knowledge Management for INRM within the MENARID Programme Framework	Land Degradation	IFAD	Medium Size Project	667,270	1,600,000
3645	Regional	MENARID Reducing Risks to the Sustainable Management of the North West Sahara Aquifer System (NWSAS)	International Waters	UNEP	Medium Size Project	960,000	1,641,140
3900	Global	MENARID GEF IW:LEARN: Strengthening IW Portfolio Delivery and Impact	International Waters	UNDP	Full Size Project	3,900,000	4,265,000
<b>Sub totals</b>						<b>43,598,984</b>	<b>110,213,163</b>

**Table 2. MENARID Porfolio (continued)**





## 2. The Portfolio of GEF Groundwater Projects

### A. Overview and rationale

.....

The GEF Groundwater Portfolio, although constituted by a limited number of projects (11+3), addresses a meaningful variety of situations and shows a good balance between *foundational* and *demonstration* projects (see explanation below). The regional projects involve 38 countries in different development regions: Eastern Europe, Central Asia, North Africa and the Mediterranean, Sub-Saharan Africa, Latin America and the Caribbean. The Implementing Agencies of the GEF are leading the effort, assisted by specialized Agencies, in particular UNESCO, and by regional entities and organizations.

In the following pages each project will be shortly reviewed – following the order shown in Table 1 – based on: documentation available through the IW LEARN Platform\*; the draft results of IW Science project; readily available literature; as well as personal contacts and interviews with project staff.

For each project the review will attempt to highlight aspects related to:

- Elements of global environmental relevance
- Achievement of, or progress towards multi-country cooperation
- Progress in conjunctive management of surface and groundwater
- Advancements in science or use of innovative approaches
- Testing of new practices and technologies
- Replication potential within regional or global contexts.

Whenever feasible, elements of interest derived from the results of the **IW:Science Project** will also be highlighted.

The **outstanding aspect(s) and lessons learned of general interest** for dissemination purposes will be highlighted (in green color) for each project. Other information, such as index maps, general groundwater related considerations and project pictures will be added whenever deemed useful.

The following Table shows all the GEF IW projects **addressing groundwater resources management and protection as a main theme, or as a component of a larger project**. They have been grouped into ‘Foundational’ (F) and ‘Demonstration’ (D) projects according to their objective:

- **FOUNDATIONAL:** Enable cooperation among countries sharing an aquifer (foundational), or
- **DEMONSTRATION:** Demonstrate the effectiveness of new groundwater resources management, assessment, utilization or protection practices (demonstrations).

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\* The GEF IW project database (<http://iwlearn.net/iw-projects>) is a searchable and interactive catalog of all GEF IW projects with detailed information on their activities. This includes access profiles, documents, contacts information and other related information on GEF IW Projects.

Title of Project	F	D	Countries	Status (as of 2011)	IA/EA
<i>Integrated Natural Resources Management in the Baikal Basin Transboundary Ecosystem</i>			Russian Federation, Mongolia	Beginning Implementation 09/2011	UNDP/ UNESCO
<i>Protection and Sustainable Use of the Dinaric Karst Aquifer System</i>			Albania, B&H, Croatia, Montenegro	Early Implementation	UNDP/ UNESCO
<i>Protection of the NW Sahara Aquifer System (NWSAS) and related humid zones and ecosystems</i>			Algeria, Libya, Tunisia	Phase 1 completed. Phase 2 starting implementation	UNEP/ OSS
<i>MedPartnership - Regional Component: Mediterranean Coastal Aquifers sub-Component</i>			Albania, Algeria, B&H, Croatia, Egypt, Lebanon, Libya, Montenegro, Serbia, Tunisia, Turkey	Under implementation	UNEP/ UNESCO
<i>Mainstreaming Groundwater Consideration into the Integrated Management of the Nile River Basin</i>			Ethiopia, Egypt, Congo, Burundi, Kenya, Rwanda, Sudan, Uganda, Tanzania	Under implementation	UNDP/ IAEA
<i>Formulation of an Action Program for the Integrated Management of the Shared Nubian Aquifer</i>			Chad, Egypt, Libya, Sudan	Under implementation	UNDP/ IAEA
<i>Groundwater and Ought Management in SADC</i>			Botswana, Mozambique, South Africa, Zimbabwe	Nearing completion	World Bank/ SADC
<i>Integrating Watershed and Coastal Area Management in the Small Island Developing States of the Caribbean</i>			Bahamas, Trinidad & Tobago	Nearing Completion	UNDP- UNEP/ CHEI
<i>Environmental Protection and Sustainable Management of the Guarani Aquifer System</i>			Argentina, Brazil, Paraguay, Uruguay	Completed	World Bank/ OAS
<i>Developing Renewable Groundwater Resources in Arid Lands: A Pilot case - The Eastern Desert of Egypt</i>			Egypt	Completed	UNDP/ Cairo Univ.
<i>Managing Hydrogeological Risk in the Iullemeden Aquifer System</i>			Mali, Niger, Nigeria	Completed	UNEP/ OSS
<i>Groundwater Governance: A Global Framework for Country Action</i>			Global	Under implementation (2012)	FAO/ UNESCO
<i>Transboundary Waters Assessment Programme (TWAP)</i>			Global	Early Implementation (2012)	UNEP/ UNESCO
<i>IW:Science</i>			Global		

Table 1. Overview of the GEF Groundwater Portfolio

## B. Regional Projects

### PROJECT

## Integrated Natural Resource Management in the Baikal Basin Transboundary Ecosystem

To spearhead integrated natural resource management of Baikal Lake Basin and Hövsgöl Lake ensuring ecosystem resilience, reduced water quality threats in the context of sustainable economic development.

<b>GEF ID</b>	4029	
<b>Project Website</b>	<a href="http://baikal.iwlearn.org">http://baikal.iwlearn.org</a>	
<b>Region</b>	Asia, Europe	
<b>Sub-Region</b>	Central Asia, Eastern Europe	
<b>Basin</b>	Baikal	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:vladimir.mamaev@undp.org">Vladimir Mamaev (vladimir.mamaev@undp.org)</a> <i>GEF Regional Technical Advisor, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:elena.armand@undp.ru">Elena Armand (elena.armand@undp.ru)</a> <i>Head of UNDP Environment Unit, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:bunchingiv.bazartseren@undp.org">Bunchingiv Bazartseren (bunchingiv.bazartseren@undp.org)</a> <i>Rural Development Specialist, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:DmitriP@unops.org">Dmitry Popov (DmitriP@unops.org)</a> <i>Project Administration and Logistics Officer, United Nations Office for Project Services (UNOPS)</i></li> <li>• <a href="mailto:SergeyK@unops.org">Sergey Kudelya (SergeyK@unops.org)</a> <i>Project manager, United Nations Office for Project Services (UNOPS)</i></li> </ul>	
<b>General Information</b>	Project Type	Full Size Project
	Start Date	Jun 08, 2010
	End Date	Mar 31, 2014
<b>GEF characteristics</b>	Focal Area	Multiple Focal Areas
	GEF Allocation to the Project	4.07M US\$
	Total Cost of the project	14.75M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Russian Federation, Mongolia</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Development Programme (UNDP)</li> </ul> <b>Executing Agencies</b> <ul style="list-style-type: none"> <li>• United Nations Office for Project Services (UNOPS)</li> <li>• United Nations Educational, Scientific and Cultural Organization (UNESCO)</li> </ul>	

FIGURE 3. The Lake Baikal Basin



### General Considerations regarding the role of groundwater in the sustainability of Lake Baikal ecosystems

#### A - Deep groundwater circulation

Lake Baikal is part of one of the world's largest active continental rifts. The rift is emplaced in extremely ancient rock complexes of crystalline, volcanic and metamorphic nature, which are generally impervious. In such geological environment rainwater infiltrates preferentially along the vertical permeability pathways represented by the many active faults that characterize the rifting process (frequent powerful earthquakes are typical of the Baikal region).

>>>

## General Considerations regarding the role of groundwater in the sustainability of Lake Baikal ecosystems (continued)

<<<

The bulk of this water reaches great depths, increasing its heat content, and feeds the active geothermal systems that since the beginning of the rifting process and of the lake itself have affected water circulation patterns, including within the lake.

The heat pulses due to the uprising of hot fluids along faults within the lake sediments cause dissociation of gas hydrates (CH<sub>4</sub> - the largest continental deposits of hydrates are those of contained in Lake Baikal sediments) within the lake sediments column, and originate hot gas seepages on the bottom of the lake, and associated localized heat flow anomalies. These thermal disturbances within the water column are at the origin of convective circulation, and hence of the total lack of stratification in the lakes water, and possibly of the high transparency of its waters. They control the overall characteristics of the Baikal ecosystem. Because of these unique characteristics lake Baikal is the object of intense international research efforts related to plate tectonics, climate change, and gas hydrates thermodynamics (dissociation of hydrates is possibly the largest natural source of gas emissions to the atmosphere, which global warming could dramatically increase), and also of global ecological interest (see for example the Tahoe - Baikal Institute).

In order to fully understand the functioning of the lake ecosystem, due consideration will have to be given to the aspects related to the geological origins of the lake and to the deep groundwater circulation outlined above. The causes of degradation will have to be assessed within the context of the many interactions occurring within the lake water column.

### B - Shallow groundwater circulation

A large part of the meteoric groundwater recharge however circulates through shallower horizons within the alluvial sediments of the many rivers draining into the lake, and of the limited aquifers represented by sedimentary formations bordering the lake in some sectors. One of them is the Maloye More Strait where karst formations constitute an important aquifer draining into the lake.

The concentration of human activities along valley floors has determined widespread contamination of the unconfined alluvial aquifers of the many rivers constituting the transboundary Selenge river basin, the main tributary of the lake, which includes the Tuul river and the city of Ulan Bator. The sources of pollution are many, including nutrients and PTS, derived from agricultural use of fertilizers and pesticides, mining industry (also artisanal gold mining), industry and urban wastes. The growing pollution of aquifers poses serious threats to human health, since groundwater is the main source of drinking water, and contributes together with surface runoff, to the pollution of the lake in correspondence of the Solenge delta.


It has to be noted that the Solenge Basin includes the Hovsgol lake in Mongolia, an important monitoring site for the impacts of global climate change on forest and steppe: the Hovsgol region represents the southern boundary of continuous permafrost and therefore it is an international monitoring site for the study of changes in permafrost temperature and change in active layer depths.<sup>1</sup>

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1. The lake is the site of a Global Environment Facility study of Climate Change and Nomadic Pastoral use impacts on the regional biodiversity and on permafrost thaw.

## Project review

<b>Elements of global environmental relevance</b>	<p>The project's main objective is the protection of Lake Baikal, one of the largest reserves of freshwater globally, and site of unique ecosystems and biodiversity. The groundwater component will focus on the water quality issues of the rivers draining into the lake (mainly the Selenge River).</p>
<b>Achievement of, or progress towards multi-country cooperation</b>	<p>The project, <b>which will start implementation in September 2011</b>, will strive to strengthen the cooperation of the two riparian countries.</p>
<b>Progress in conjunctive management of surface and groundwater</b>	<p>tbd</p>
<b>Advancements in science or use of innovative approaches</b>	<p>tbd</p>
<b>Testing of new practices and technologies</b>	<p>tbd</p>
<b>Replication potential within regional or global contexts</b>	<p>This is the first lake project of the GEF portfolio, and possibly beyond, that adopts a basin approach fully integrating groundwater resources consideration.</p>

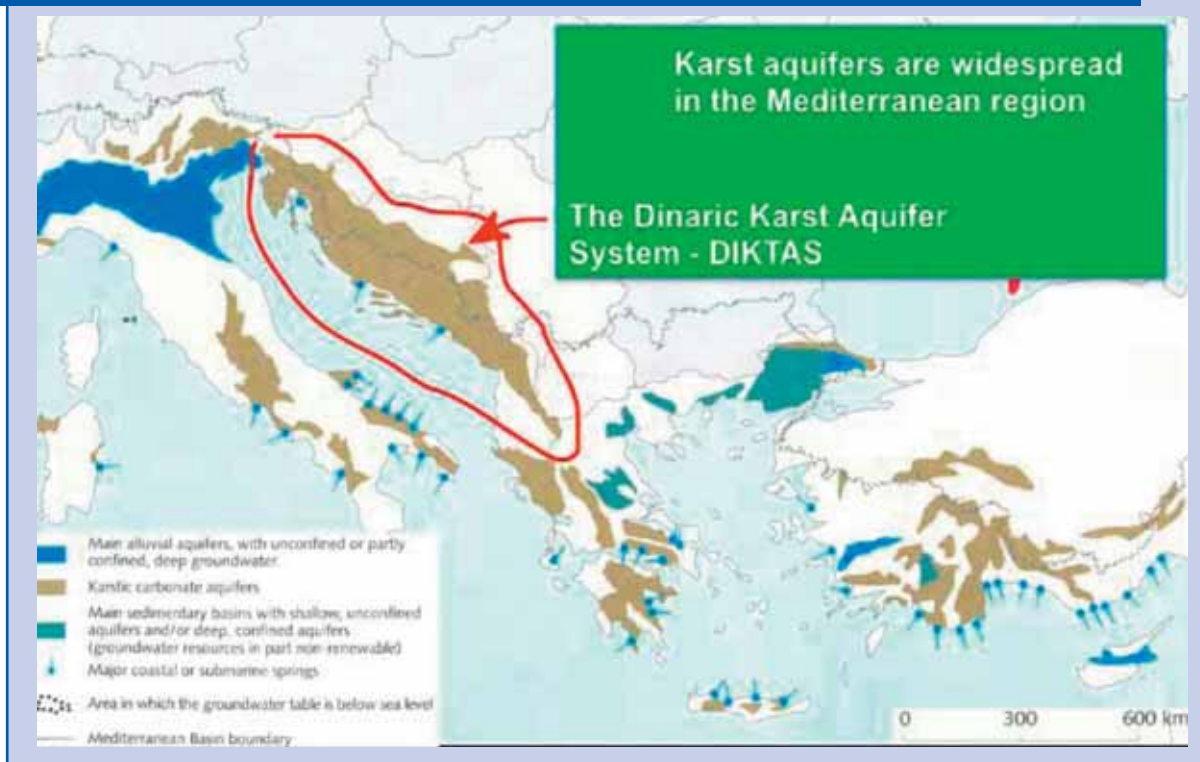
 Outstanding aspects and lessons learned for dissemination purposes.

## Protection and Sustainable Use of the Dinaric Karst Aquifer System

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 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.

<b>GEF ID</b>	3690	
<b>Project Website</b>	<a href="http://diktas.iwlearn.org">http://diktas.iwlearn.org</a>	
<b>Region</b>	Europe	
<b>Sub-Region</b>	Southern Europe	
<b>Basin</b>	Dinaric Littoral (West Coast aquifer)	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:biljana.rajic@mvteo.gov.ba">Biljana Rajic (biljana.rajic@mvteo.gov.ba)</a> <i>Advisor</i></li> <li>• <a href="mailto:petar.mi@eunet.rs">Petar Milanovic (petar.mi@eunet.rs)</a> <i>President</i></li> <li>• <a href="mailto:h.treidel@unesco.org">Holger Treidel (h.treidel@unesco.org)</a> <i>DIKTAS executing agency liaison, Project Coordinator, UNESCO; International Hydrological Programme (UNESCO/IHP)</i></li> <li>• <a href="mailto:madeleine_theochari@yahoo.co.uk">Madeleine Theochari (madeleine_theochari@yahoo.co.uk)</a> <i>DIKTAS information focal point, Programme Officer, Global Water Partnership; Mediterranean</i></li> <li>• <a href="mailto:nenko.kukuric@un-igrac.org">Neno Kukuric (nenko.kukuric@un-igrac.org)</a> <i>DIKTAS Project Manager, Director, International Groundwater Resources Assessment Centre (IGRAC)</i></li> <li>• <a href="mailto:vladimir.mamaev@undp.org">Vladimir Mamaev (vladimir.mamaev@undp.org)</a> <i>DIKTAS implementing agency liaison, GEF Regional Technical Advisor, United Nations Development Programme (UNDP)</i></li> </ul>	
<b>General Information</b>	Project Type	Full Size Project
	Start Date	Jul 28, 2008
	End Date	Jan 31, 2014
<b>GEF characteristics</b>	Focal Area	International Waters
	GEF Allocation to the Project	2.36M US\$
	Total Cost of the project	5.41M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Albania, Bosnia and Herzegovina, Croatia, Montenegro</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Development Programme (UNDP)</li> </ul> <b>Executing Agencies</b> <ul style="list-style-type: none"> <li>• United Nations Education, Scientific and Cultural Organization (UNESCO)</li> </ul>	

FIGURE 4. Karst aquifers in the Eastern Mediterranean Region



### General Considerations regarding the Dinaric Karst Aquifer

The 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. 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.


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. 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 favourable environment for hydropower generation.

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. 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.



## Project review

<b>Elements of global environmental relevance</b>	<p>The first to address karstic water environment in the GEF portfolio, the project will set an example worth disseminating globally.</p>
<b>Achievement of, or progress towards multi-country cooperation</b>	<p>The Dinaric Karst System is highly transboundary, being shared by the various countries and entities that emerged from the collapse of Yugoslavia. The project will strive to re-establish systematic transboundary cooperation with a view to joint management schemes.</p>
<b>Progress in conjunctive management of surface and groundwater</b>	<p>Characteristic of all karstic systems is that the distinction between surface and groundwater becomes irrelevant for management purposes. Hence the project will have to introduce this basic principle at both the national and transboundary levels.</p>
<b>Advancements in science or use of innovative approaches</b>	<p>The project aims to produce an unified and harmonized Map of the Dinaric Karst System that will contain all the information relevant from the point of view of the management and protection of the resource. This science based effort, if successful, will be of general interest in all karstic regions of the world.</p>
<b>Testing of new practices and technologies</b>	<p>tbd</p>
<b>Replication potential within regional or global contexts</b>	<p>The project aims at focusing the attention of the international community on the huge but highly vulnerable water resources contained in karst aquifers, widespread globally and often transboundary. Lessons learned through the project will benefit water managers in many regions of the world.</p>

 Outstanding aspects and lessons learned for dissemination purposes.


## Protection of the North West Sahara Aquifer System (NWSAS) and related humid zones and ecosystems

The project for the Transboundary Aquifer System of the Northern Sahara (Algeria, Libya and Tunisia) has as its objective the protection of this critical resource, and in particular of the recharge areas and humid zones and ecosystems related to the aquifer. It includes two complementary components: (i) improving the knowledge of the aquifer and related ecosystems and (ii) implementing a consultation mechanism at the hydrogeologic basin level. In the three countries concerned – Algeria, Libya and Tunisia – the management of the NWSAS water resources will cover arid and semi-arid areas that are presently affected by desertification. Recent assessments have indicated the partly renewable nature of this aquifer, and hence the opportunity for its sustainable management, which would necessarily include the protection of water quality (recharge areas) and of humid zones, such as oasis, shebkas etc, which are critical from the socio-economic and environmental points of view. The project represents a significant first step in this direction taken by the three countries.

<b>GEF ID</b>	1851	
<b>Project Website</b>	<a href="http://nwsas.iwlearn.org">http://nwsas.iwlearn.org</a>	
<b>Region</b>	Africa	
<b>Sub-Region</b>	Northern Africa	
<b>Basin</b>	Northwest Sahara Aquifer System (NWSAS)	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:abdelkader.dodo@oss.org.tn">Abdel Kader Dodo (abdelkader.dodo@oss.org.tn)</a> Project Manager, The Observatory of the Sahara and Sahel (OSS) Water Resource Programme</li> <li>• <a href="mailto:djamel.latrech@oss.org.tn">Djamel Latrech (djamel.latrech@oss.org.tn)</a> Project Coordinator, The Observatory of the Sahara and Sahel (OSS)</li> </ul>	
<b>General Information</b>	Project Type	Medium Sized Project
	Start Date	May 05, 2003
	End Date	Jun 29, 2006
<b>GEF characteristics</b>	Focal Area	International Waters
	GEF Allocation to the Project	1.00M US\$
	Total Cost of the project	2.64M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Algeria, Libyan Arab Jamahiriya, Tunisia</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul> <b>Executing Agency</b> <ul style="list-style-type: none"> <li>• The Observatory of the Sahara and Sahel (OSS)</li> </ul>	

## Project review

<p><b>Elements of global environmental relevance</b></p>	<p>The project addressed one of the major largely non-renewable deep aquifer systems of Saharan Africa, and the humid zones and oasis ecosystems dependent from it. Being aggressively exploited in all three countries sharing the aquifer, countries joined efforts to enhance their knowledge and management capacity. Results indicate that, while the potential of the aquifer is still largely untouched, the excessive concentration of present exploitation is rapidly damaging the system, and imposing growing exploitation costs.</p>
<p><b>Achievement of, or progress towards multi-country cooperation</b></p>	<p>Countries have agreed to set up a coordination mechanism and to jointly maintain and manage the Aquifer Model developed as part of the project.</p>
<p><b>Progress in conjunctive management of surface and groundwater</b></p>	<p>tba</p>
<p><b>Advancements in science or use of innovative approaches</b></p>	<p>The bulk of the project activities were dedicated to the building of a model of this huge aquifer system as a tool for its more rational exploitation.</p>
<p><b>Testing of new practices and technologies</b></p>	<p>tba</p>
<p><b>Replication potential within regional or global contexts</b></p>	<p>The project experience will be very valuable throughout Saharan Africa and beyond</p>

 Outstanding aspects and lessons learned for dissemination purposes.

## MENARID Reducing Risks to the Sustainable Management of the North West Sahara Aquifer System (NWSAS)

For the purpose of addressing the risks associated with unsustainable exploitation and management of groundwater resources in the North West Sahara Aquifer System (NWSAS), to formulate and initially implement a set of actions, with focus on sustainable agricultural practices and environmental management.

<b>GEF ID</b>	3645	
<b>Project Website</b>	<a href="http://nwsas.iwlearn.org/">http://nwsas.iwlearn.org/</a>	
<b>Region</b>	Africa	
<b>Sub-Region</b>	Northern Africa	
<b>Basin</b>	Northwest Sahara Aquifer System (NWSAS)	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:djamel.latrech@oss.org.tn">Djamel Latrech (djamel.latrech@oss.org.tn)</a> <i>Project Coordinator, The Observatory of the Sahara and Sahel (OSS)</i></li> <li>• <a href="mailto:mirey.atallah@undp.org">Mirey Atallah (mirey.atallah@undp.org)</a> <i>Regional Technical Advisor Land Degradation and International Waters, United Nations Development Programme (UNDP)</i></li> </ul>	
<b>General Information</b>	Project Type	Medium Sized Project
	Start Date	Apr 21, 2009
	End Date	May 31, 2012
<b>GEF characteristics</b>	Focal Area	International Waters
	GEF Allocation to the Project	1.00M US\$
	Total Cost of the project	2.64M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Algeria, Libyan Arab Jamahiriya, Tunisia</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul> <b>Executing Agency</b> <ul style="list-style-type: none"> <li>• The Observatory of the Sahara and Sahel (OSS)</li> </ul>	

## Project review

### Phase 2 (Starting implementation)

<b>Elements of global environmental relevance</b>	The project revolves around 5 pilot areas (oasis and humid zones) located within the high exploitation areas and will test alternative water efficient irrigation schemes and cultivation techniques.
<b>Achievement of, or progress towards multi-country cooperation</b>	The joint coordination mechanism, hosted by OSS, will be maintained and strengthened by legitimization by countries.
<b>Progress in conjunctive management of surface and groundwater</b>	tba
<b>Advancements in science or use of innovative approaches</b>	Practices being tested in the pilot areas may represent innovative approaches in the region.
<b>Testing of new practices and technologies</b>	New groundwater efficient irrigation and cultivation schemes will be tested in critical areas of environmental relevance.
<b>Replication potential within regional or global contexts</b>	Pilot demonstrations will be highly replicable region-wide.


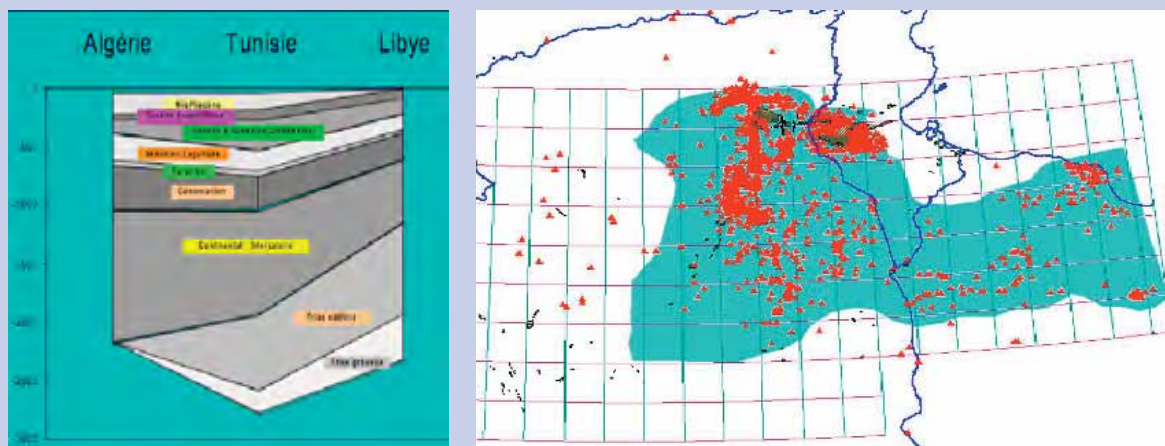
 Outstanding aspects and lessons learned for dissemination purposes.

FIGURE 5. The NWSAS Aquifer System, and present extraction points



### General considerations regarding the Northwest Sahara Aquifer System

This largely non-renewable Aquifer System refers to the superimposition of two thick aquifer layers:

- (i) The Intercalaire Continental (IC) formation, which is the thickest and has the greatest expanse,
- (ii) The Terminal Complex (TC) which is heavily exploited in the Algero-Tunisian Chotts region and in the Gulf of Sirte in Libya.

Potential abstractions from these aquifers are limited first of all by economic constraints although the main constraints at present stem from environmental risks connected to the exploitation and vulnerability of Saharan watertables. The System covers more than a million km<sup>2</sup> (1,800 km E-W, and 900 km N-S) of which 60% is in Algeria, a little less than 10% in Tunisia, and 30% in Libya. The Saharan Aquifer System has been identified and exploited through close to 8,800 water points, wells and sources: 3,500 in the Intercalary Continental and 5,300 in the Terminal Complex. [see: Aexp1]. The breakdown per country is: 6,500 in Algeria, 1,200 in Tunisia, and 1,100 in Libya. During the last twenty years, the number of wells and their abstraction rates have soared, today reaching 2.2 billion m<sup>3</sup>/yr [1.33 in Algeria, 0.55 in Tunisia, 0.33 in Libya].

## PROJECT

## Strategic Partnership for the Mediterranean Large Marine Ecosystem - Regional Component: Implementation of agreed actions for the protection of the environmental resources of the Mediterranean Sea and its coastal areas

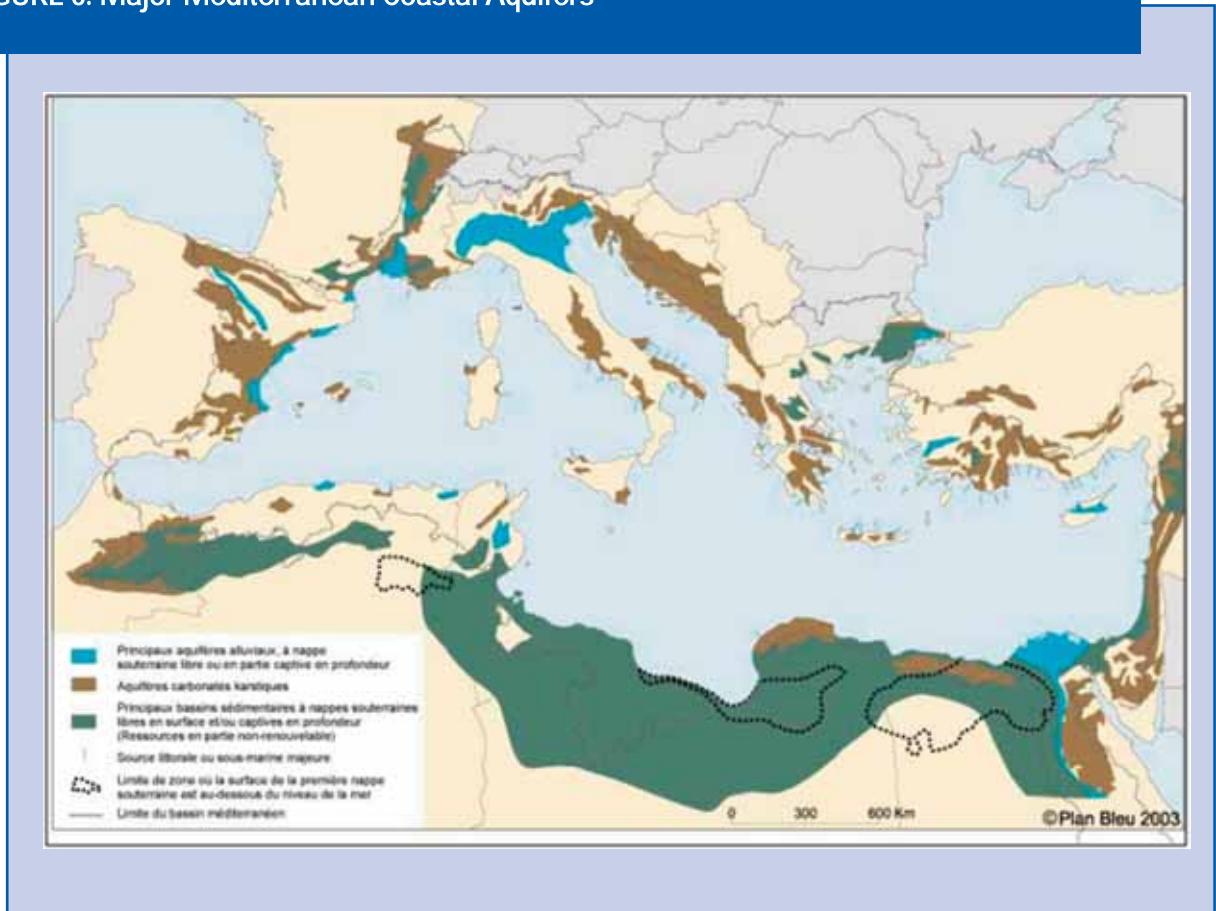
The Strategic Partnership, following the model of the GEF Black Sea Basin Strategic Partnership for Nutrient Reduction, consists of two complementary components:

- a Regional Component: 'Implementation of agreed actions for the protection of the environmental resources of the Mediterranean Sea and its coastal areas' led by UNEP, and the object of the present proposal, and
- a 'Partnership Investment Fund for the Mediterranean Sea Large Marine Ecosystem' led by the World Bank and already approved by the GEF Council in August 2006. [see long?](#)

GEF ID	2600	
Project Website	<a href="http://www.themedpartnership.org/">http://www.themedpartnership.org/</a>	
Region	Africa, Asia, Europe, Global	
Sub-Region	Northern Africa, Western Asia, Southern Europe	
Basin	Mediterranean Sea (LME)	
Project Contacts	<ul style="list-style-type: none"> <li>• <a href="mailto:Ivica.Trumbic@unepmap.gr">Ivica Trumbic (Ivica.Trumbic@unepmap.gr)</a> <i>Project Manager, UNEP/MAP Coordinating Unit (MAP-MEDU)</i></li> <li>• <a href="mailto:info@mio-ecsde.org">Thomais Vlachogianni (info@mio-ecsde.org)</a></li> <li>• <a href="mailto:virginie.hart@unepmap.gr">Virginie Hart (virginie.hart@unepmap.gr)</a> <i>Marine and Coastal Expert, UNEP/MAP Coordinating Unit (MAP-MEDU),</i></li> <li>• <a href="mailto:giorgios.petridis@unepmap.gr">Giorgios Petridis (giorgios.petridis@unepmap.gr)</a> <i>Administrative Assistant, UNEP/MAP Coordinating Unit (MAP-MEDU)</i></li> <li>• <a href="mailto:omerozturkom@gmail.com">Omer Ozturk (omerozturkom@gmail.com)</a> <i>Expert</i></li> <li>• <a href="mailto:info@mio-ecsde.org">Eleana Tsakiri (info@mio-ecsde.org)</a> <i>Communications Officer, Mediterranean Information Office for Environment, Culture and Sustainable Development (MIO-ECSDE)</i></li> <li>• <a href="mailto:habib.elhabr@unepmap.gr">Habib El-Habr (habib.elhabr@unepmap.gr)</a> <i>Deputy Coordinator, UNEP/MAP Coordinating Unit (MAP-MEDU)</i></li> <li>• <a href="mailto:nevia.kruzic@mzopu.hr">Nevia Kruzic (nevia.kruzic@mzopu.hr)</a> <i>Head of Department</i></li> <li>• <a href="mailto:matthewlagod@mac.com">Matthew Lagod (matthewlagod@mac.com)</a> <i>Consultant, UNESCO, International Hydrological Programme (UNESCO-IHP)</i></li> </ul>	
General Information	Project Type	Full Size Project
	Start Date	Apr 08, 2008
	End Date	Aug 01, 2014

GEF characteristics	Focal Area	Multiple Focal Areas
	GEF Allocation to the Project	13.59M US\$
	Total Cost of the project	43.20M US\$
Partners	Countries	<ul style="list-style-type: none"> <li>Albania, Bosnia and Herzegovina, Croatia, Egypt, Lebanon, Libyan Arab Jamahiriya, Serbia and Montenegro, Syrian Arab Republic, Tunisia, Turkey, Algeria</li> </ul>
	Lead Implementing Agency	<ul style="list-style-type: none"> <li>United Nations Environment Programme (UNEP)</li> </ul>
	Executing Agencies	<ul style="list-style-type: none"> <li>UNEP/MAP Coordinating Unit (MAP-MEDU)</li> <li>Food and Agricultural Organization (FAO)</li> <li>United Nations Education, Scientific and Cultural Organization (UNESCO)</li> <li>Mediterranean Environmental Technical Assistance Programme (METAP)</li> <li>World Wildlife Fund (WWF)</li> <li>International Bank for Reconstruction and Development (WB)</li> <li>International Center for Science and High Technology (ICS-UNIDO)</li> </ul>

**FIGURE 6. Major Mediterranean Coastal Aquifers**






## General considerations on the Mediterranean Coastal Aquifers

In the Southern, Eastern and Adriatic Mediterranean basins the surface watercourses are limited and the coastal aquifers dominate the discharges and contributions to the Mediterranean sub-basin water balance and related water transport of Land Base Source (LBS) contaminants into the marine and coastal waters. In this process the coastal aquifers control seawater intrusion and coastal salinization and support coastal fresh- and brackish water ecosystems and habitats for a rich biodiversity. The relatively high importance of coastal groundwater exchange with the coastal and marine water bodies is due to the semi-arid and arid climate in the southern and eastern sections, and on the other hand to the hydrogeological conditions and the predominance of karst aquifer systems along the entire Mediterranean coast. As a result a major share of the freshwater inflows into the Mediterranean Sea are in the form of groundwater discharges from large and dominantly non-renewable regional aquifer systems in the south, and from karst and local coastal aquifers, vulnerable to contamination and LBS transport into the coastal waters.

## Project review

Mediterranean Coastal Aquifers - A component of the Strategic Partnership for the Mediterranean Large Marine Ecosystem / Regional Component: Implementation of Agreed Actions for the Protection of the Environmental Resources of the Mediterranean Sea and its Coastal Areas (Under Implementation)

<p><b>Elements of global environmental relevance</b></p>	<p>Coastal aquifers represent a key resource along coastal areas globally, sustaining valuable ecosystems and biodiversity, and supplying water for human consumption and other uses. They are threatened by over-exploitation and salinization. In the Mediterranean, as well as in all LMEs, coastal aquifers discharge to the sea large quantities of water and pollutants, and sustain coastal biodiversity. This is the first time that coastal aquifers are being considered part of an LME management/protection program.</p>
<p><b>Achievement of, or progress towards multi-country cooperation</b></p>	<p>The coastal aquifer component aims at facilitating the agreement among Barcelona Convention countries on a groundwater addendum to the ICZM protocol.</p>
<p><b>Progress in conjunctive management of surface and groundwater</b></p>	<p>A pilot under this component will test coastal aquifer-river basin-coastal zone joint management practices (Bojana delta)</p>
<p><b>Advancements in science or use of innovative approaches</b></p>	<p>Aquifer Vulnerability mapping will be introduced in the region as an essential land-water management tool</p>
<p><b>Testing of new practices and technologies</b></p>	<p>Several pilots in various countries will demonstrate ways to assess and manage coastal aquifers.</p>
<p><b>Replication potential within regional or global contexts</b></p>	<p>Replication should occur at two levels:</p> <ul style="list-style-type: none"> <li>- Globally, the project will help in bringing to the attention of coastal and marine managers the importance of coastal aquifers as part of the land and sea interface.</li> <li>- In the Mediterranean region, where the lessons learnt through the pilots will be disseminated and good practices replicated.</li> </ul>

 Outstanding aspects and lessons learned for dissemination purposes.

## Mainstreaming Groundwater Considerations into the Integrated Management of the Nile River Basin

The role that groundwater plays in surface water systems (rivers, wetlands, lakes) has not been adequately considered in most transboundary river basin management initiatives, including the Nile basin, supported by the GEF and other donors. Thus, information about the role of groundwater, in particular its contribution to water balances in lakes, rivers, and wetlands is crucial for determining equitable and appropriate water allocations and water resource management strategies. [see long?](#)

GEF ID	3321	
Project Website	-	
Region	Africa	
Sub-Region	Eastern Africa, Middle Africa, Northern Africa	
Basin	Nile	
Project Contacts	<ul style="list-style-type: none"> <li>• <a href="mailto:magzoub_taha@hotmail.com">Elmagzoub Ahmed Taha (magzoub_taha@hotmail.com)</a> <i>Director ?</i></li> <li>• <a href="mailto:a.garner@iaea.org">Andrew Garner (a.garner@iaea.org)</a> <i>Project Coordinator, International Atomic Energy Agency (IAEA)</i></li> <li>• <a href="mailto:mirey.atallah@undp.org">Mirey Atallah (mirey.atallah@undp.org) ?</a> <i>Regional Technical Advisor Land Degradation and International Waters, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:abdoulaye.ndiaye@undp.org">Abdoulaye Ndiaye (abdoulaye.ndiaye@undp.org)</a> <i>Regional Coordinator, West Africa, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:p.aggarwal@iaea.org">Pradeep Aggarwal (p.aggarwal@iaea.org)</a> <i>International Atomic Energy Agency (IAEA)</i></li> <li>• <a href="mailto:elarabinahed@yahoo.com">Nahed el Sayed El Arabi (elarabinahed@yahoo.com)</a> <i>Director, Egypt; National Water Research Centre,</i></li> </ul>	
General Information	Project Type	Medium Sized Project
	Start Date	Jul 03, 2007
	End Date	Dec 31, 2011
GEF characteristics	Focal Area	International Waters
	GEF Allocation to the Project	1.00M US\$
	Total Cost of the project	3.89M US\$
Partners	<p><b>Countries</b></p> <ul style="list-style-type: none"> <li>• Ethiopia, Egypt, Congo, Burundi, Kenya, Rwanda, Sudan, Uganda, United Republic of Tanzania</li> </ul> <p><b>Lead Implementing Agency</b></p> <ul style="list-style-type: none"> <li>• United Nations Development Programme (UNDP)</li> </ul> <p><b>Executing Agency</b></p> <ul style="list-style-type: none"> <li>• International Atomic Energy Agency (IAEA)</li> </ul>	

FIGURE 7. The Sudd Swamps in the Upper Nile basin (South Sudan)




### General considerations on the role of groundwater in the Nile Basin

The role that groundwater plays in surface water systems (rivers, wetlands, lakes) has not been adequately considered in most transboundary river basin management initiatives, including the Nile basin. Groundwater supports perennial water supply to many wetlands and stream base flow, which is critical for providing refuge for fauna and maintaining biodiversity. In addition, large wetland areas, such as the Sudd swamp in South Sudan, are an important component in the local/regional atmospheric water cycle. In the context of the Nile, the Sudd swamps presently considered to be fed by river water and therefore a source of large evaporative water losses. However, recent studies indicate that swamps in the Nile basin may in fact be fed by groundwater. Evaporation from the swamps may, therefore, play a less important role in the water budget of the rivers and lakes. Yet, evaporation from larger swamps such as the Sudd may be a significant source of moisture for regional precipitation such as in the Ethiopian Highlands. Substantial changes in wetland surface area may also impact the atmospheric water cycle and precipitation regime as a result of changes in soil wetness and land-atmosphere interactions. Thus, information about the role of groundwater, in particular its contribution to water balances in lakes, rivers, and wetlands is crucial for determining equitable and appropriate water allocations and water resource management strategies.

## Project review

### Under Implementation

<b>Elements of global environmental relevance</b>	They include improved knowledge of the Nile basin system and its water resources, better understanding of the water balance and of linkages between groundwater and Nile basin wetlands including the Sudd, an ecosystem of global relevance.
<b>Achievement of, or progress towards multi-country cooperation</b>	tba
<b>Progress in conjunctive management of surface and groundwater</b>	tba
<b>Advancements in science or use of innovative approaches</b>	The project will promote consideration of groundwater in all river basin management efforts
<b>Testing of new practices and technologies</b>	The project will utilize cutting edge isotope hydro-geochemical investigations in order to unravel origin of Nile waters and mixing processes Groundwater/ rainfall/surface water
<b>Replication potential within regional or global contexts</b>	Isotopic techniques might prove indispensable management tools globally.

 Outstanding aspects and lessons learned for dissemination purposes.

## Formulation of an Action Programme for the Integrated Management of the Shared Nubian Aquifer

The Nubian Sandstone Aquifer System (NSAS) is one of the largest aquifers in the world covering approximately two million square kilometres of Northeast Africa in Chad, Egypt, Libya, and Sudan. The NSAS is the world's largest fossil aquifer system with its reserves estimated at 375,000 km<sup>3</sup>. In the arid desert areas of those countries that share the aquifer, groundwater is a primary source of water for human populations and the indigenous ecosystems. With growing population pressures, and decreasing water available from other sources, there is increasing pressure to enhance the abstraction of this tremendously valuable resource that, under current climatic conditions and based on current knowledge, appears to be only marginally rechargeable. This increased pressure to use these shared groundwater resources, despite unclear knowledge of the transboundary impacts, represents a potential threat to a precious resource that if unchecked, could lead to deterioration of water quality and/or irrational water use with the potential to harm biodiversity, enhance land degradation processes or even lead to transboundary conflict. [longer](#)

<b>GEF ID</b>	2020	
<b>Project Website</b>	<a href="http://www-naweb.iaea.org/napc/ih/IHS_projects_nubian.html">http://www-naweb.iaea.org/napc/ih/IHS_projects_nubian.html</a>	
<b>Region</b>	Africa	
<b>Sub-Region</b>	Middle Africa, Northern Africa	
<b>Basin</b>	Nubian Sandstone Aquifer System (NSAS)	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:e.cole@iaea.org">Eric Jonathan Cole (e.cole@iaea.org)</a> <i>Project manager, International Atomic Energy Agency (IAEA) [+ other]</i></li> <li>• <a href="mailto:a.garner@iaea.org">Andrew Garner (a.garner@iaea.org) [+ others]</a> <i>Programme Coordinator, International Atomic Energy Agency (IAEA),</i></li> <li>• <a href="mailto:andrew.hudson@undp.org">Andrew Hudson (andrew.hudson@undp.org)</a> <i>Principal Technical Advisor, International Waters, United Nations Development Programme (UNDP), Global Environment Facility</i></li> <li>• <a href="mailto:mirey.atallah@undp.org">Mirey Atallah (mirey.atallah@undp.org)</a> <i>Regional Technical Advisor Land Degradation and International Waters, United Nations Development Programme (UNDP),</i></li> <li>• <a href="mailto:a.allam@iaea.org">Ahmed Ragab Allam (a.allam@iaea.org)</a> <i>Project Manager, International Atomic Energy Agency (IAEA) [+ other]</i></li> </ul>	
<b>General Information</b>	Project Type	Medium Sized Project
	Start Date	Jun 21, 2005
	End Date	Feb 28, 2011
<b>GEF characteristics</b>	Focal Area	International Waters
	GEF Allocation to the Project	1.00M US\$
	Total Cost of the project	7.95M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Chad, Egypt, Libyan Arab Jamahiriya, Sudan</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Development Programme (UNDP)</li> </ul> <b>Executing Agency</b> <ul style="list-style-type: none"> <li>• International Atomic Energy Agency (IAEA)</li> </ul>	

## Project review

Under Implementation

<b>Elements of global environmental relevance</b>	The project addresses the management of one of the world largest aquifers located in an arid area and sustaining livelihoods and humid zones and oasis ecosystems.
<b>Achievement of, or progress towards multi-country cooperation</b>	The project aims at establishing a framework for developing an agreed legal and institutional mechanism towards a NSAS convention for joint four-partite management and rational use of the shared NSAS System.
<b>Progress in conjunctive management of surface and groundwater</b>	tba
<b>Advancements in science or use of innovative approaches</b>	tba
<b>Testing of new practices and technologies</b>	Local capacity in the use of Isotope techniques will be strengthened.
<b>Replication potential within regional or global contexts</b>	The legal institutional framework for the joint management of the aquifer will set an example that other countries in the region and beyond may follow.


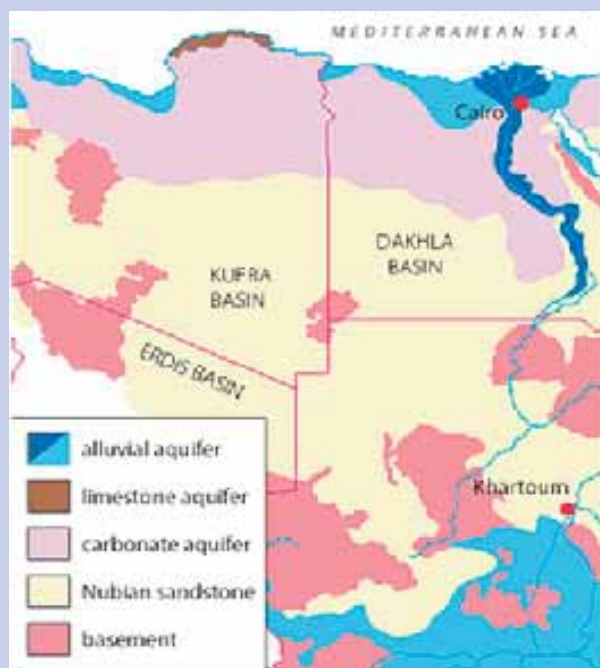
 Outstanding aspects and lessons learned for dissemination purposes.

FIGURE 8. The Nubian Aquifer System



### General considerations on the Nubian Aquifer System

The Nubian Sandstone Aquifer System (NSAS) is one of the largest aquifers in the world covering approximately two million square kilometres of Northeast Africa in Chad, Egypt, Libya, and Sudan. The NSAS is the world's largest fossil aquifer system with its reserves estimated at 375,000 km<sup>3</sup>. In the arid desert areas of those countries that share the aquifer, groundwater is a primary source of water for human populations and the indigenous ecosystems. With growing population pressures, and decreasing water available from other sources, there is increasing pressure to enhance the abstraction of this tremendously valuable resource that, under current climatic conditions and based on current knowledge, appears to be only marginally rechargeable. This increased pressure to use these shared groundwater resources, despite unclear knowledge of the transboundary impacts, represents a potential threat to a precious resource that if unchecked, could lead to deterioration of water quality and/or irrational water use with the potential to harm biodiversity, enhance land degradation processes or even lead to transboundary conflict. This is a region that is wrought with water shortage amidst growing human populations. Destruction of ecosystems is leading to increased desertification and loss of habitat. One challenge in developing an adequate management strategy is the continued lack of sufficient knowledge about the aquifer needed to develop a rational use of the aquifer resources that can benefit the four countries. Further issues include poor management of water currently being exploited from the NSAS including loss of springs due to poor allocation of wells, change in the natural environment including species and habitats, poor understanding of local legislation and water rights, inadequate understanding of interactions between horizons, and impacts of development on the local and regional sustainability of groundwater. In general, there is a lack of a proper database and capacity to synthesize available information as a basis for determining and undertaking future investigations and developing strategies.



The objective of the project is for the SADC member states to develop cooperatively a strategic regional approach to support and enhance the capacity of its member States in the definition of drought management policies, specifically in relation to the role, availability (magnitude and recharge) and supply potential of groundwater resources. This will assist in reconciling the demands for socio-economic development and those of the principal groundwater-dependent ecosystems. Tools will be elaborated for regional cooperative management of transboundary aquifers and to guide sustainable downstream investments in proactive drought mitigation.

<b>GEF ID</b>	970	
<b>Project Website</b>	<a href="http://www.sadc-groundwater.org">http://www.sadc-groundwater.org</a>	
<b>Region</b>	Africa	
<b>Sub-Region</b>	Eastern Africa, Southern Africa	
<b>Basin</b>	-	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:pramoeli@sadc.intg">Phera Ramoeli (pramoeli@sadc.intg)</a> <i>Chief Engineer, Southern African Development Community; Water Sector Coordination Unit (SADC/WSCU)</i></li> <li>• <a href="mailto:mwishart@worldbank.org">Marcus Wishart (mwishart@worldbank.org)</a> <i>Senior Water Resource Specialist, International Bank for Reconstruction and Development (WB), Africa Water Resources Management Unit</i></li> <li>• <a href="mailto:philipB@unops.org">Philip Beetlestone (philipB@unops.org)</a> <i>Project manager, United Nations Office for Project Services (UNOPS)</i></li> <li>• <a href="mailto:BarbaraLO@unops.org">Barbara Lopi (BarbaraLO@unops.org)</a> <i>Communications Officer, Southern African Development Community; Water Sector Coordination Unit (SADC/WSCU)</i></li> </ul>	
<b>General Information</b>	<b>Project Type</b> <b>Start Date</b> <b>End Date</b>	Full Size Project Mar 22, 2004 Dec 31, 2010
<b>GEF characteristics</b>	<b>Focal Area</b> <b>GEF Allocation to the Project</b> <b>Total Cost of the project</b>	International Waters 7.35M US\$ 14.25M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Botswana, Mozambique, South Africa, Zimbabwe</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• International Bank for Reconstruction and Development (WB)</li> </ul> <b>Executing Agency</b> <ul style="list-style-type: none"> <li>• Southern African Development Community; Water Sector Coordination Unit (SADC/WSCU)</li> </ul>	

FIGURE 9. The Limpopo River basin




### General considerations on the role of groundwater in Southern Africa

The high degree of variability in rainfall and the associated water shocks resulting from severe droughts and floods is a factor of constant and unpredictable risk in Southern Africa. Improved management of water resources is at the core of addressing these water shocks that have a severe impact on the economies and the life supporting ecosystems already under stress. The population of the SADC region is expected to double in 25 years and major water and environment crises will occur if decisive and concrete actions are not taken towards sustainable and integrated water resources management to mitigate the effects of droughts and floods. Water scarcity in particular is creating competition and tensions amongst user groups and sectors on local, national and sub-regional levels. The recurring droughts in the region have demonstrated the potential value of groundwater as a more reliable and dependable source of water than surface water. The importance of groundwater in drought management emanates, among others, from its availability in population centers, providing renewable quantities of fresh water. Secondly, most aquifers have enough storage capacity that can be used, if properly managed, to reduce the stress on surface water resources during the dry periods. Using the aquifer's static reserve as a temporary alternative to surface water can therefore be envisaged, provided that a sufficient recovery/replenishment period is allowed for the aquifer. The potential for future exploitation of static reserves in Southern Africa may involve its conjunctive utilization with surface water resources, i.e., artificial recharge in wet periods.

## Project review

Nearing completion

<b>Elements of global environmental relevance</b>	The project addresses the role of groundwater in reducing stresses to the environment and livelihoods during drought periods in semi-arid conditions.
<b>Achievement of, or progress towards multi-country cooperation</b>	The project supports and strengthens the regional organization, SADC, and has established a regional Groundwater Management Institute.
<b>Progress in conjunctive management of surface and groundwater</b>	Conjunctive management is at the core of drought management. The project has addressed the issues in the Limpopo Basin.
<b>Advancements in science or use of innovative approaches</b>	tba
<b>Testing of new practices and technologies</b>	tba
<b>Replication potential within regional or global contexts</b>	Pilot demonstrations in the Limpopo Basin have high replication potential regionally and globally.

 Outstanding aspects and lessons learned for dissemination purposes.

## Integrating Watershed and Coastal Area Management in the Small Island Developing States of the Caribbean (IWCAM)

The overall objective of the proposed project will be to assist participating countries in improving their watershed and coastal zone management practices in support of sustainable development. By implementing the project activities the country of the region will significantly contribute to the protection of globally-significant biodiversity within the Caribbean region through the long-term sustainable management of biological resources and ecosystems, while mitigating or eliminating regional transboundary threats to those resources and ecosystems. **longer**

<b>GEF ID</b>	1254	
<b>Project Website</b>	<a href="http://www.iwcam.org/">http://www.iwcam.org/</a>	
<b>Region</b>	Americas, SIDS	
<b>Sub-Region</b>	Caribbean, SIDS (Americas), Small Island Developing States	
<b>Basin</b>	Caribbean Sea (LME)	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:vincent.sweeney@unep.org">Vincent Sweeney (vincent.sweeney@unep.org)</a> <i>Regional Project Coordinator, UNEP-Division of Environmental Policy Implementation (DEPI)</i></li> <li>• <a href="mailto:isabelle.vanderbeck@unep.org">Isabelle Van der Beck (isabelle.vanderbeck@unep.org)</a> [+other] <i>Task Manager for GEF International Waters Projects , United Nations Environment Programme (UNEP)</i></li> <li>• <a href="mailto:nac@cep.unep.org">Nelson Andrade Colmenares (nac@cep.unep.org)</a> [+other] <i>Coordinator, UNEP; Caribbean Regional Co-ordinating Unit (CAR/RCU); Caribbean Environment Programme</i></li> <li>• <a href="mailto:paula.caballero@undp.org">Paula Caballero (paula.caballero@undp.org)</a> <i>Regional Technical Advisor - International Waters, Land Degradation and Biodiversity, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:ppaquing@cehi.org.lc">Patricia Aquing (ppaquing@cehi.org.lc)</a> <i>Executive Director, Caribbean Environmental Health Institute (CEHI)</i></li> </ul>	
<b>General Information</b>	<b>Project Type</b>	Full Size Project
	<b>Start Date</b>	May 21, 2004
	<b>End Date</b>	Jul 01, 2011
<b>GEF characteristics</b>	<b>Focal Area</b>	International Waters
	<b>GEF Allocation to the Project</b>	13.99M US\$
	<b>Total Cost of the project</b>	112.26M US\$
<b>Partners</b>	<p><b>Countries</b></p> <ul style="list-style-type: none"> <li>• Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago</li> </ul> <p><b>Lead Implementing Agency</b></p> <ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul> <p><b>Executing Agencies</b></p> <ul style="list-style-type: none"> <li>• United Nations Development Programme (UNDP)</li> <li>• Caribbean Environmental Health Institute (CEHI)</li> <li>• UNEP; Caribbean Regional Co-ordinating Unit (CAR/RCU); Caribbean Environment Programme</li> </ul>	

FIGURE 10. The Project area



### General considerations on the environmental relevance of Caribbean SIDS

The watersheds and coastal areas of the Caribbean contain some of the world's most diverse and productive habitats and encompass extensive areas of complex and unique ecosystems. The coastal areas include mangroves, coral reefs, sea grass beds and river deltas, which are an important source of food production and support a variety of economic activities such as fisheries, tourism and the related uses of recreation and transportation.

As a result of their isolation, the Caribbean islands have developed a high level of endemism amongst their flora and fauna. Scientific estimates support evidence that up to 40 percent of the plant life in Caribbean forests is found nowhere else on the planet, and the entire area is renowned as a migratory route for birds moving between North and South America. Endemism and its resultant highly significant biodiversity is the key to the importance of natural habitats in the terrestrial, watershed and coastal environs of these Caribbean Islands, and is directly linked to human health and well-being through priority ecosystem functions (such as clean water, agricultural capacity, availability of food, etc).

## Project review

### Pilot Projects addressing groundwater (Bahamas, St Kitts) - nearing completion

- Bahamas: ~~Andros~~, Land and Sea Use Planning for Water Recharge Protection and Management in Andros, Bahamas
- St. Kitts and Nevis: Rehabilitation and Management of the Basseterre Valley as a Protection Measure for the Underlying Aquifer

<b>Elements of global environmental relevance</b>	SIDS are the sentinels of the global environment, and Caribbean SIDS are an hot spot of both land and marine biodiversity. Ecosystem integrity largely depends on the quality of the water flowing on surface, recharging aquifers and draining to the sea, in the highly interconnected hydrology of the small islands.
<b>Achievement of, or progress towards multi-country cooperation</b>	Information exchanges among countries has been particularly effective.
<b>Progress in conjunctive management of surface and groundwater</b>	tbd
<b>Advancements in science or use of innovative approaches</b>	tbd
<b>Testing of new practices and technologies</b>	Both groundwater pilots in Andros and St Kitts address protection of recharge areas through land use practices.
<b>Replication potential within regional or global contexts</b>	Results of the pilot demonstration on recharge area protection might have relevance for all SIDS.

Outstanding aspects and lessons learned for dissemination purposes.

## Environmental Protection and Sustainable Integrated Management of the Guarani Aquifer

The main objective of the proposed initiative would be to support Brazil, Argentina, Paraguay and Uruguay in jointly elaborating and implementing a common institutional framework for managing and preserving the Guarani Aquifer for current and future generations. The Guarani Aquifer is one of the largest groundwater reservoirs in the world, and was only recently recognized as one interconnected system, extending through the four MERCOSUR countries for a total of 1.2 million km<sup>2</sup>. The project would be of a preventive nature and would include interventions regarding expansion and consolidation of the current knowledge base, creation of collaborative management framework, information for public participation, and monitoring and evaluation. Given the susceptibility of groundwater resources to pollution and the quasi irreversibility of polluted groundwater sources, a management mechanism that would prevent pollution would yield socio-economic and environmental benefits, both at a local and regional transboundary scale.

GEF ID	974	
Project Website	<a href="http://www.sg-guarani.org/">http://www.sg-guarani.org/</a>	
Region	Americas	
Sub-Region	South America	
Basin	Guaraní	
Project Contacts	<ul style="list-style-type: none"> <li>• <a href="mailto:dolson@worldbank.org">Douglas Olson (dolson@worldbank.org)</a> <i>International Bank for Reconstruction and Development (WB)</i></li> <li>• <a href="mailto:kkemper@worldbank.org">Karin Kemper (kkemper@worldbank.org)</a> [+ other] <i>Senior Water Resources Specialist, International Bank for Reconstruction and Development (WB)</i></li> <li>• <a href="mailto:amore@tba.com.br">Luiz Amore (amore@tba.com.br)</a> [+ Rucks OAS] <i>General Secretary, Guarani Aquifer System Project</i></li> <li>• <a href="mailto:sag@sg-guarani.org">Daniel García (sag@sg-guarani.org)</a> [+ others] <i>Technical coordinator, Guarani Aquifer System Project</i></li> </ul>	
General Information	Project Type	Full Size Project
	Start Date	Jun 13, 2002
	End Date	Jan 31, 2009
GEF characteristics	Focal Area	International Waters
	GEF Allocation to the Project	13.94M US\$
	Total Cost of the project	27.24M US\$
Partners	<p><b>Countries</b></p> <ul style="list-style-type: none"> <li>• Argentina, Brazil, Paraguay, Uruguay</li> </ul> <p><b>Lead Implementing Agency</b></p> <ul style="list-style-type: none"> <li>• International Bank for Reconstruction and Development (WB)</li> </ul> <p><b>Executing Agency</b></p> <ul style="list-style-type: none"> <li>• OAS; <b>Unit for Sustainable Development and Environment (OAS/USDE)</b></li> </ul>	

FIGURE 11. The Guarani Aquifer



### General considerations on the Guarani Aquifer System

The Guarani Aquifer, named in honour of the Guarani Indian Nation, is one of the largest groundwater reservoirs in the world. It is located in the sub-surface of the four MERCOSUR countries Argentina, Brazil, Paraguay and Uruguay. Until the relatively recent discovery of the Guarani as one interconnected system the aquifer was also known by the names of Botucatu in Brazil, Tacuarembó in Uruguay and Argentina, and Misiones in Paraguay. The Guarani aquifer has a total surface area of approximately 1.2 million square kilometers (839,800 km<sup>2</sup> in Brazil, 225,500 km<sup>2</sup> in Argentina, 71,700 km<sup>2</sup> in Paraguay and 58,500 km<sup>2</sup> in Uruguay). Its extension in Brazil alone, equivalent to 2/3 of the total area and extending through eight Brazilian states, is equal to the areas of England, France and Spain combined.

15 million people live in the aquifer's area of surface influence. The volume of freshwater reserves stored today is around 40,000 km<sup>3</sup>. Sustainable extraction is estimated to be able to meet the water demands of a population of 360 million people, based on a per capita use of 300 l/hab/day. The reserve volume today would be enough to supply the entire population of Brazil for 3,500 years. The aquifer's depth varies from almost zero in Brazil to more than 1,000 m in Argentina. The aquifer carries potable water in most of the basin (around 90%). Locally (less than 10%), alterations in potability may occur, due basically to an

>>>



## General considerations on the Guarani Aquifer System (continued)


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increase in salinity and fluorine content. Current usage, from deep wells, allows a per unit extraction of up to 1,000,000 l/hour. Despite large surface water reserves, the drinking water supply in this heavily populated region of the MERCOSUR is increasingly dependent on groundwater. Thus, future problems may occur if exploitation does not take place in a sustainable manner or if waters are polluted. In the state of São Paulo in Brazil, estimates are that 60.5% of urban centers are served totally or partially by groundwater sources supplying a population of 5.5 million people. Forecasts for the immediate future are for a growing demand for groundwater (both due to demographic growth and economic expansion) and for a consequent pollution of surface waters.

### Project review

Completed

<b>Elements of global environmental relevance</b>	The Guarani Aquifer System is one of the largest transboundary freshwater resources globally. To protect this immense resource for future generations, the project has aimed at establishing cooperative management frameworks among the four countries sharing the aquifer.
<b>Achievement of, or progress towards multi-country cooperation</b>	After the project closure, the four countries have entered a binding agreement for the protection of the aquifer system.
<b>Progress in conjunctive management of surface and groundwater</b>	tba
<b>Advancements in science or use of innovative approaches</b>	As part of the project, countries have developed an homogenous geological characterization of the aquifer, and produced a hydro-geological map of the aquifer utilized by all four countries, and indispensable tool for joint management.
<b>Testing of new practices and technologies</b>	The project established and operated an University Fund that financed targeted research projects.
<b>Replication potential within regional or global contexts</b>	The Guarani Agreement stands as an example for all transboundary aquifers.

 Outstanding aspects and lessons learned for dissemination purposes.

## Developing Renewable Groundwater Resources in Arid Lands: A Pilot Case - The Eastern Desert of Egypt

(1) Develop reliable techniques for evaluating the extent of renewable groundwater resources in arid lands, with the Eastern Desert of Egypt as a test site. Our preliminary geo-chemical and isotopic data indicated that flash flood waters stored in shallow aquifers during the past 45 years are the source of the shallow (10?100 m) groundwater in Wadi El Tarfa and surrounding areas in the Eastern Desert. (2) Evaluate the source(s) of the groundwater in the alluvial aquifers of the Eastern Desert, the timing of their recharge cycle, and the extent of the renewable groundwater resources recharged by rainwater precipitating over the Red Sea Hills area in the Eastern Desert. (3) Investigate groundwater flow in the alluvial aquifers flooring one of the main valleys of the Eastern Desert. (4) Produce a replicable model in neighboring Middle Eastern and Saharan countries and thus contribute to the preservation of freshwater ecosystems in the area.


<b>GEF ID</b>	985	
<b>Project Website</b>	<a href="http://www.sg-guarani.org/">http://www.sg-guarani.org/</a>	
<b>Region</b>	Africa	
<b>Sub-Region</b>	Northern Africa	
<b>Basin</b>	-	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:mirey.atallah@undp.org">Mirey Atallah (mirey.atallah@undp.org)</a> <i>Regional Technical Advisor Land Degradation and International Waters, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:mohamed.bayoumi@undp.org">Mohamed Bayoumi (mohamed.bayoumi@undp.org)</a> <i>Environment Specialist, Assistant Resident Representative, UNDP Egypt, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:awagdya@yahoo.com">Ahmad Wagdy Abdeldayem (awagdya@yahoo.com)</a> <i>Professor of Hydraulics, Cairo University</i></li> </ul>	
<b>General Information</b>	Project Type	Medium Sized Project
	Start Date	Mar 15, 2001
	End Date	Dec 26, 2008
<b>GEF characteristics</b>	Focal Area	International Waters
	GEF Allocation to the Project	0.83M US\$
	Total Cost of the project	1.83M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Egypt</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Development Programme (UNDP)</li> </ul> <b>Executing Agency</b> <ul style="list-style-type: none"> <li>• Egypt; Environmental Affairs Agency (EEAA)</li> </ul>	



## Project review

Completed

<b>Elements of global environmental relevance</b>	The project aimed at developing and demonstrating ways to integrate renewable groundwater resources into the water budget of watersheds in arid regions, where extreme scarcity poses serious transboundary problems.
<b>Achievement of, or progress towards multi-country cooperation</b>	Exchanges of information and dissemination of results involved a number of countries of the region.
<b>Progress in conjunctive management of surface and groundwater</b>	tbd
<b>Advancements in science or use of innovative approaches</b>	The project has brought about improvements in the understanding of the hydro-geology of the Eastern Desert and of similar geologic/climatic conditions.
<b>Testing of new practices and technologies</b>	The project has successfully utilized technologies novel to the region
<b>Replication potential within regional or global contexts</b>	The techniques developed by the project are highly replicable region-wide.

 Outstanding aspects and lessons learned for dissemination purposes.

## Managing Hydrogeological Risk in the Iullemeden Aquifer System

The Iullemeden sedimentary groundwater basin, composed only by the cretaceous calcareous sandstone Continental intercalaire and the tertiary sandstone Continental Terminal aquifers, is located in Mali, Niger and Nigeria with minor, non-connected sections in Algeria and Benin. Environmental threats/risks to the aquifer and the related ecosystems (land use change in recharge areas and humid zones, climatic change, increase of the water demand, water quality degradation) will be addressed by the project through the establishment of joint mechanism and cooperative frameworks for: 1. identification of transboundary risk and uncertainty issues; 2. formulation of joint risk mitigation and sharing policy; and 3. joint policy implementation through a joint Iullemeden Aquifer System legal and institutional cooperative framework.


<b>GEF ID</b>	2041	
<b>Project Website</b>	<a href="http://iullemeden.iwlearn.org">http://iullemeden.iwlearn.org</a>	
<b>Region</b>	Africa	
<b>Sub-Region</b>	Western Africa	
<b>Basin</b>	Irhazer-Iullemeden Basin	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:chabo@infoweb.abs.net">John Chabo (chabo@infoweb.abs.net)</a> <i>Deputy Director, Hydrology and Hydrogeology, Nigeria; Federal Ministry of Water Resources</i></li> <li>• <a href="mailto:abdelkader.dodo@oss.org.tn">Abdel Kader Dodo (abdelkader.dodo@oss.org.tn)</a> <i>Project Manager, The Observatory of the Sahara and Sahel (OSS) Water Resource Programme</i></li> <li>• <a href="mailto:lamine.babasy@oss.org.tn">Baba Sy Lamine (lamine.babasy@oss.org.tn)</a> <i>IT Officer, Sahara and Sahel Observatory (OSS)</i></li> </ul>	
<b>General Information</b>	<b>Project Type</b> <b>Start Date</b> <b>End Date</b>	Medium Sized Project Mar 30, 2007 Mar 30, 2008
<b>GEF characteristics</b>	<b>Focal Area</b> <b>GEF Allocation to the Project</b> <b>Total Cost of the project</b>	International Waters 0.95M US\$ 1.73M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Mali, Niger, Nigeria</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul> <b>Executing Agency</b> <ul style="list-style-type: none"> <li>• The Observatory of the Sahara and Sahel (OSS)</li> </ul>	



## Project review

Completed

<b>Elements of global environmental relevance</b>	The project addressed the need for transboundary cooperation for the management of this large freshwater resource key for human well-being as well as ecosystem integrity in the Niger Basin.
<b>Achievement of, or progress towards multi-country cooperation</b>	Following project closure, the three countries sharing the aquifer have entered a joint consultation mechanism agreement. Other countries of the region expressed interest in joining the mechanism.
<b>Progress in conjunctive management of surface and groundwater</b>	tbd
<b>Advancements in science or use of innovative approaches</b>	The first simulations run with the IAS mathematical model show with greater precision the zones at high risk of overexploitation. They also allowed to quantify the contribution of groundwater to the annual flows of the Niger river.
<b>Testing of new practices and technologies</b>	tbd
<b>Replication potential within regional or global contexts</b>	Experience gained in the unraveling of the river - groundwater interactions could be applied region-wide.

 Outstanding aspects and lessons learned for dissemination purposes.

## B. Global Projects

### PROJECT

## Groundwater Governance: A Global Framework for Country Action

The project is designed to raise awareness of the importance of groundwater resources for many regions of the world, and identify and promote best practices in groundwater governance as a way to achieve the sustainable management of groundwater resources. The first phase of the project consists of a review of the global situation of groundwater governance and aims to develop a Global Groundwater Diagnostic integrating regional and country experiences with prospects for the future. This first phase builds on a series of case studies, thematic papers and five regional consultations (Latin America, Africa, Arab States, Asia and UNECE Region, including a private sector roundtable). The second phase of the project will develop the main project outcome, a Global Framework for Action consisting of a set of policy and institutional guidelines, recommendations and best practices designed to improve groundwater management at country/local level, and groundwater governance at local, national and transboundary levels.

<b>GEF ID</b>	3726	
<b>Project Website</b>	<a href="http://www.groundwatergovernance.org/">http://www.groundwatergovernance.org/</a>	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:mohamed.bazza@fao.org">Mohamed Bazza (mohamed.bazza@fao.org)</a> <i>Food and Agricultural Organization (FAO), Land and Water Division</i></li> <li>• <a href="mailto:louise.whiting@fao.org">Louise Whiting (louise.whiting@fao.org)</a> <i>Food and Agricultural Organization (FAO), Land and Water Division</i></li> <li>• <a href="mailto:stefanie.neno@fao.org">Stéfanie Neno (stefanie.neno@fao.org)</a> <i>Communication and Information Specialist, Food and Agricultural Organization (FAO), Land and Water Division</i></li> <li>• <a href="mailto:a.aureli@unesco.org">Alice Aureli (a.aureli@unesco.org)</a> <i>UNESCO International Hydrological Programme (UNESCO-IHP), Chief of Groundwater Resources and Aquifer Systems Section</i></li> <li>• <a href="mailto:l.minelli@unesco.org">Lucilla Minelli (l.minelli@unesco.org)</a> <i>Project Officer, UNESCO International Hydrological Programme (UNESCO-IHP), Groundwater Resources and Aquifer Systems Section</i></li> </ul>	
<b>General Information</b>	Project Type	Full Size Project
	Start Date	Sep 22, 2008
	End Date	Nov 30, 2013
<b>GEF characteristics</b>	Focal Area	International Waters
	GEF Allocation to the Project	1.75M US\$
	Total Cost of the project	4.23M US\$
<b>Partners</b>	<b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• Food and Agricultural Organization (FAO)</li> </ul> <b>Executing Agencies</b> <ul style="list-style-type: none"> <li>• UNESCO International Hydrological Programme (UNESCO-IHP)</li> <li>• World Bank</li> <li>• International Association of Hydrogeologists (IAH)</li> </ul>	



## A Transboundary Waters Assessment Programme: Aquifers, Lake/Reservoir Basins, River Basins, Large Marine Ecosystems, and Open Ocean to Catalyze Sound Environmental Management

To undertake a global assessment of transboundary water bodies, through a formalised consortium of partners, to support informed investments by the GEF and other international organizations, and to be sustained through a periodic process in partnership with key institutions aiming at incorporating transboundary considerations into regular assessment programmes.

<b>GEF ID</b>	4489	
<b>Project Website</b>	<a href="http://twap.iwlearn.org/">http://twap.iwlearn.org/</a>	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:h.treidel@unesco.org">Holger Treidel (h.treidel@unesco.org)</a> <i>DIKTAS executing agency liaison, Project Coordinator, UNESCO; International Hydrological Programme (UNESCO/IHP)</i></li> <li>• <a href="mailto:elina.rautalahti@unep.org">Elina Rautalahti (elina.rautalahti@unep.org)</a> <i>Project Manager, United Nations Environment Programme (UNEP), Division of Early Warning and Assessment (DEWA)</i></li> <li>• <a href="mailto:joana.akrofi@unep.org">Joana Akrofi (joana.akrofi@unep.org)</a> <i>Associate Programme Officer, United Nations Environment Programme (UNEP)</i></li> <li>• <a href="mailto:isabelle.vanderbeck@unep.org">Isabelle Van der Beck (isabelle.vanderbeck@unep.org)</a> <i>Task Manager for GEF International Waters Projects, United Nations Environment Programme (UNEP)</i></li> <li>• <a href="mailto:salif.diop@unep.org">Salif Diop (salif.diop@unep.org)</a> <i>Head , Ecosystems Section, United Nations Environment Programme (UNEP)</i></li> </ul>	
<b>General Information</b>	<b>Project Type</b>	Full Size Project
	<b>Start Date</b>	Feb 29, 2012
	<b>End Date</b>	Jun 30, 2014
<b>GEF characteristics</b>	<b>Focal Area</b>	International Waters
	<b>GEF Allocation to the Project</b>	5.00M US\$
	<b>Total Cost of the project</b>	29.07M US\$
<b>Partners</b>	<b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul> <b>Executing Agencies</b> <ul style="list-style-type: none"> <li>• Division of Early Warning and Assessment(UNEP/DEWA)</li> <li>• UNEP, Division of Environmental Policy Implementation(DEPI)</li> <li>• UNEP Collaborating Centre on Water and Environment</li> <li>• UNESCO Intergovernmental Oceanographic Commission (UNESCO-IOC)</li> <li>• UNESCO International Hydrological Programme (UNESCO/IHP)</li> <li>• International Lake Environment Committee (ILEC)</li> </ul>	

## Enhancing the Use of Science (IW Science) in International Waters Projects to Improve Project Results

This Medium Size Project proposes to develop a platform for the assessment, integration, exchange and dissemination of scientific information and findings from GEF IW projects, both past and current. Its goal is to enhance the use of science in planning, developing and implementing of new GEF IW projects, and at the same time, to strengthen water science capacity and science-to-management linkages in developing countries. [longer]

<b>GEF ID</b>	3343	
<b>Project Website</b>	<a href="http://projects.csg.uwaterloo.ca/inweh/index.php/">http://projects.csg.uwaterloo.ca/inweh/index.php /</a>	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:adeelz@inweh.unu.edu">Adeel Zafar (adeelz@inweh.unu.edu)</a> <i>Director, United Nations University, International Network on Water, Environment and Health (UNU-INWEH),</i></li> <li>• <a href="mailto:salif.diop@unep.org">Salif Diop (salif.diop@unep.org)</a> <i>UHead , Ecosystems Section, United Nations Environment Programme (UNEP)</i></li> <li>• <a href="mailto:andrew.dansie@unu.edu">Andrew Dansie (andrew.dansie@unu.edu)</a> <i>Project Manager, United Nations University, International Network on Water, Environment and Health (UNU-INWEH), Freshwater Ecosystem Programme</i></li> <li>• <a href="mailto:daley@inweh.unu.edu">Ralph J. Daley (daleyr@inweh.unu.edu)</a> <i>Director, IW:Science Project, United Nations University, International Network on Water, Environment and Health (UNU-INWEH),</i></li> <li>• <a href="mailto:rivas@ait.asia">Aldrin Rivas (rivas@ait.asia)</a> <i>Expert, Asian Institute of Technology</i></li> </ul>	
<b>General Information</b>	<b>Project Type</b>	Medium Sized Project
	<b>Start Date</b>	Aug 20, 2008
	<b>End Date</b>	May 31, 2011
<b>GEF characteristics</b>	<b>Focal Area</b>	International Waters
	<b>GEF Allocation to the Project</b>	1.00M US\$
	<b>Total Cost of the project</b>	2.03M US\$
<b>Partners</b>	<b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul> <b>Executing Agency</b> <ul style="list-style-type: none"> <li>• United Nations University, International Network on Water, Environment and Health (UNU-INWEH)</li> </ul>	

## 3. GEF IW Surface/Groundwater Dialogues

### A. A proposal

In order to fulfil the objective of enhancing IWRM and conjunctive water management in the IW portfolio, the Groundwater CoP, in cooperation with the Surface Water CoP, will include the participation of practitioners from a number of GEF IW projects, on-going or completed, that might benefit from exposure to groundwater issues and experiences. These projects will be clustered around themes and regions and twinned with relevant groundwater projects. Dialogues will be organized for each cluster with the assistance of UNESCO regional offices, and include the participation of relevant UNESCO science networks.

<i>Cluster Theme</i>	<i>Region</i>	<i>Surface projects</i>	<i>Groundwater regional projects</i>	<i>Groundwater/ Cross-cutting global projects</i>
Karst Systems	Balkan Peninsula	<ul style="list-style-type: none"> <li>• Lake Ohrid,</li> <li>• Lake Prespa,</li> <li>• Lake Skadar.</li> <li>• Neretva River Basin</li> </ul>	<ul style="list-style-type: none"> <li>• Dinaric Karst Aquifer system</li> </ul>	Groundwater Governance Transboundary Waters Assessment Programme (TWAP) IW Science
Arid and Semi-arid regions  Climate Variability and Change (CV&C)	Saharan Africa, Sahel	<ul style="list-style-type: none"> <li>• Senegal, Volta, Niger River Basins</li> <li>• Nile River Basin,</li> <li>• Lake Chad Basin</li> </ul>	<ul style="list-style-type: none"> <li>• Iullemeden Aquifer</li> <li>• NWSAS Aquifer</li> <li>• Nubian Aquifer</li> <li>• Mainstreaming groundwater in the Nile Basin management</li> <li>• Renewable aquifers of the Eastern Desert of Egypt</li> </ul>	
Groundwater Dependent Ecosystems  CV&C	Southern Africa	<ul style="list-style-type: none"> <li>• Okavango River Basin</li> <li>• Orange-Senqu River Basin</li> </ul>	<ul style="list-style-type: none"> <li>• Water Management in SADC region (Limpopo alluvial plains)</li> <li>• Mainstreaming Groundwater in the Nile Basin Management (Sudd Swamps)</li> </ul>	
Coastal Area Management and SIDS	Mediterranean LME and Caribbean SIDS	tbd	<ul style="list-style-type: none"> <li>• IWCAM Groundwater Pilots</li> <li>• Mediterranean Coastal Aquifers</li> </ul>	
Transboundary Management Schemes  CV&C	South America	<ul style="list-style-type: none"> <li>• Plata Parana River Basin</li> <li>• Bermejo River Basin</li> <li>• Upper Paraguay-Pantanal Basin</li> <li>• Amazon River Basin</li> </ul>	<ul style="list-style-type: none"> <li>• Guarani Aquifer System</li> </ul>	

Table 3. Potential GEF IW Surface/Groundwater Twinings

## B. Potential Surface/Groundwater Twinning

### B.1 Karst Systems/Balkan Peninsula

PROJECT

Lake Ohrid Management

This project objective is to conserve and protect the natural resources and biodiversity of Lake Ohrid by developing and supporting an effective cooperation between Albania and Macedonia for the joint environmental management of the Lake Ohrid watershed. Protect the Lake Ohrid basin by establishing an effective international framework for long-term basin management, and by undertaking some priority actions to control the major sources of pollution and watershed degradation.

GEF ID	113	
Project Website	-	
Region	Europe	
Sub-Region	Southern Europe	
Basin	Ohrid	
Project Contacts	<ul style="list-style-type: none"> <li>• Dejan Panovski (<a href="mailto:dejpan11@gmail.com">dejpan11@gmail.com</a>) <i>Secretary, Macedonia; Ministry of Environment &amp; Physical Planning</i></li> <li>• Aleksandar Nacev (<a href="mailto:anacev@worldbank.org">anacev@worldbank.org</a>) <i>Project Task Team Leader, International Bank for Reconstruction and Development (WB)</i></li> </ul>	
General Information	Project Type	Full Size Project
	Start Date	Apr 30, 1997
	End Date	Dec 30, 2004
GEF characteristics	Focal Area	International Waters
	GEF Allocation to the Project	4.28M US\$
	Total Cost of the project	25.58M US\$
Partners	Country	<ul style="list-style-type: none"> <li>• Albania</li> </ul>
	Lead Implementing Agency	<ul style="list-style-type: none"> <li>• International Bank for Reconstruction and Development (WB)</li> </ul>
	Executing Agency	<ul style="list-style-type: none"> <li>• Macedonia; Ministry of Environment &amp; Physical Planning</li> <li>• Albania; National Environmental Agency</li> </ul>

The overall goal of this project is the conservation of globally significant biological diversity and transboundary water resources of the Prespa lakes Basin. The project's objective is to catalyze the adoption of integrated ecosystem management (IEM) in the transboundary Prespa Lakes Basin of FYR-Macedonia, Albania, and Greece to conserve globally significant biodiversity, mitigate pollution of the transboundary lakes, and provide a sustainable basis for the Basin's further social and economic development.

<b>GEF ID</b>	1537	
<b>Project Website</b>	<a href="http://prespa.iwlearn.org/">http://prespa.iwlearn.org/</a>	
<b>Region</b>	Europe	
<b>Sub-Region</b>	Southern Europe	
<b>Basin</b>	Prespa	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:dimitar.sekovski@undp.org">Dimitrija Sekovski (dimitar.sekovski@undp.org)</a> <i>Project manager, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:vladimir.mamaev@undp.org">Vladimir Mamaev (vladimir.mamaev@undp.org)</a> <i>DIKTAS implementing agency liaison, GEF Regional Technical Advisor, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:anita.kodzoman@undp.org">Anita Kodzoman (anita.kodzoman@undp.org)</a> [+other] <i>Head, Environmental Unit, United Nations Development Programme (UNDP), Energy and Environment</i></li> <li>• <a href="mailto:mwebster@worldbank.org">Michael Webster (mwebster@worldbank.org)</a> <i>Water and Sanitation Specialist, International Bank for Reconstruction and Development (WB)</i></li> </ul>	
<b>General Information</b>	<b>Project Type</b> <b>Start Date</b> <b>End Date</b>	Full Size Project Sep 24, 2006 -
<b>GEF characteristics</b>	<b>Focal Area</b> <b>GEF Allocation to the Project</b> <b>Total Cost of the project</b>	Multiple Focal Areas 4.13M US\$ 13.14M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Albania, Greece, Macedonia the former Yugoslavian Republic of</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Development Programme (UNDP)</li> </ul> <b>Executing Agency</b> <ul style="list-style-type: none"> <li>• Macedonia; Ministry of Environment &amp; Physical Planning</li> </ul>	

The overall objective of the project would be to assist the Governments of Albania and Montenegro in achieving a more sustainable use of the natural resources of the Lake Shkoder and its watershed. The global environmental objective of the project is to reduce pollution and conserve the lake and its biodiversity as an internationally important nature habitat for different flora and fauna species, especially for waterfowl birds. The project will achieve its objectives by implementing priority measures as identified in the Lake Shkoder Strategic Action Plan that will be prepared within the framework of the Memorandum of Understanding (MoU) recently signed by the two countries. The MoU commits both countries to conserve the natural resources of the Lake Shkoder in a coordinated and integrated manner, by establishing a bi-national Lake Management Commission and by improving the relevant national level regulatory and institutional capacity. The Memorandum obliges the riparian countries to prepare a Strategic Action Plan (SAP) for the protection of the Lake Shkoder Ecosystem.

GEF ID	2133	
Project Website	<a href="http://lss.iwlearn.org/">http://lss.iwlearn.org/</a>	
Region	Europe	
Sub-Region	Southern Europe	
Basin	Scutari	
Project Contacts	<ul style="list-style-type: none"> <li>• Ilir Kraja (<a href="mailto:ilirkraja@gmail.com">ilirkraja@gmail.com</a>) <i>Secretary</i></li> <li>• Emilia Battaglini (<a href="mailto:ebattaglini@worldbank.org">ebattaglini@worldbank.org</a>) [+other] <i>GEF ECA Regional Coordinator, International Bank for Reconstruction and Development (WB)</i></li> <li>• Viktor Subotić (<a href="mailto:viktors@mn.yu">viktors@mn.yu</a>) [+other] <i>Senior Advisor</i></li> <li>• Agim Shimaj (<a href="mailto:a_shimaj@yahoo.com">a_shimaj@yahoo.com</a>) [+other] <i>Project coordinator</i></li> </ul>	
General Information	Project Type	Full Size Project
	Start Date	Jun 14, 2007
	End Date	Jun 14, 2007
GEF characteristics	Focal Area	International Waters
	GEF Allocation to the Project	4.60M US\$
	Total Cost of the project	20.20M US\$
Partners	<p>Countries</p> <ul style="list-style-type: none"> <li>• Albania, Serbia and Montenegro</li> </ul> <p>Lead Implementing Agency</p> <ul style="list-style-type: none"> <li>• International Bank for Reconstruction and Development (WB)</li> </ul> <p>Executing Agency</p> <ul style="list-style-type: none"> <li>• Ministry of Environment, Albania</li> <li>• Ministry of Environment and Physical Planning, Serbia</li> </ul>	

The goal of the project would be to ensure the effective and environmentally sound management of the transboundary Neretva River Basin. The general project objective is to catalyze a more integrated approach to water resource management in the Neretva River Basin in order to improve the integrity of the ecosystem. The global environmental objective is to conserve the water and land resources, and biodiversity of a globally important watershed. The development objective is to improve the ecosystem functioning of a transboundary river basin. The project aims to demonstrate and measure the benefits of a transboundary ecosystem management approach, utilizing integrated water management principles, in relationship to the improvement of water and land resources use, and biodiversity conservation. The proposed project will develop joint strategies for dealing with common issues and problems; define a mechanism for implementing those strategies; and support implementation of the strategies. The project will establish credibility for regional ecosystem management and prove the value of binational cooperation.

<b>GEF ID</b>	2132	
<b>Project Website</b>	<a href="http://ntmp.iwlearn.org">http://ntmp.iwlearn.org</a>	
<b>Region</b>	Europe	
<b>Sub-Region</b>	Southern Europe	
<b>Basin</b>	Neretva	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• Kornelija Pintaric (<a href="mailto:kornelija.pintaric@min-kulture.hr">kornelija.pintaric@min-kulture.hr</a>) <i>Director</i></li> <li>• Natasa Gecan (<a href="mailto:natasa.gecan@voda.hr">natasa.gecan@voda.hr</a>) [+other] <i>Chief Engineer</i></li> <li>• Vera Dugandzic (<a href="mailto:vdugandzic@worldbank.org">vdugandzic@worldbank.org</a>) [+other] <i>Operations Officer, International Bank for Reconstruction and Development (WB),</i></li> <li>• Jovanka Aleksić (<a href="mailto:ner.treb@mvteo.gov.ba">ner.treb@mvteo.gov.ba</a>) [+other] <i>Project Coordinator, Ministry of Foreign Affairs &amp; International Cooperation, Congo</i></li> </ul>	
<b>General Information</b>	<b>Project Type</b> <b>Start Date</b> <b>End Date</b>	Full Size Project Aug 28, 2006 Dec 31, 2013
<b>GEF characteristics</b>	<b>Focal Area</b> <b>GEF Allocation to the Project</b> <b>Total Cost of the project</b>	Multiple Focal Areas 8.40M US\$ 21.58M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Bosnia and Herzegovina, Croatia</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• International Bank for Reconstruction and Development (WB)</li> </ul> <b>Executing Agency</b> <ul style="list-style-type: none"> <li>• -</li> </ul>	

## B.2 Arid and Semi-arid regions/Saharan Africa, Sahel

### PROJECT

## Senegal River Basin Water and Environmental Management Programme

The Senegal River Basin Water and Environmental Project is a regional GEF grant being implemented in the four riparian countries sharing the Senegal River Basin (Guinea, Mali, Mauritania, and Senegal). At the national level, this component focuses on strengthening national capacities, in OMVS and Guinea, especially on transboundary environmental management aspects. It is worth noting that OMVS is the executing agency of the project on behalf of the four riparian countries although Guinea is not yet a full member of OMVS. This set an unprecedented step forward for blending cooperation between riparian countries. The implementing agencies are the World Bank and UNDP Organisation pour la Mise en Valeur du Fleuve Sénégal (OMVs) on behalf of the national governments of Guinea, Mali, Mauritania and Senegal. [+longer]

<b>GEF ID</b>	1109	
<b>Project Website</b>	<a href="http://ntmp.iwlearn.org">http://ntmp.iwlearn.org</a>	
<b>Region</b>	Africa	
<b>Sub-Region</b>	Western Africa	
<b>Basin</b>	Senegal	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:odione@worldbank.org">Ousmane Dione (odione@worldbank.org)</a> <i>International Bank for Reconstruction and Development (WB)</i></li> <li>• <a href="mailto:omvs-ccc@sunumail.sn">Djibril Sall (omvs-ccc@sunumail.sn)</a> <i>Regional Project Coordinator, Organisation pour la Mise en Valeur du Fleuve Senegal (OMVS)</i></li> <li>• <a href="mailto:mame.diop@undp.org">Mame Dagou Diop (mame.diop@undp.org)</a> <i>Regional Technical Adviser, United Nations Development Programme (UNDP)</i></li> </ul>	
<b>General Information</b>	<b>Project Type</b>	Full Size Project
	<b>Start Date</b>	Oct 27, 2003
	<b>End Date</b>	Jul 30, 2008
<b>GEF characteristics</b>	<b>Focal Area</b>	International Waters
	<b>GEF Allocation to the Project</b>	7.62M US\$
	<b>Total Cost of the project</b>	40.07M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Mali, Mauritania, Senegal, Guinea</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• International Bank for Reconstruction and Development (WB)</li> </ul> <b>Other Implementng Agency</b> <ul style="list-style-type: none"> <li>• United Nations Development Programme (UNDP)</li> </ul>	



The Volta River Basin Region comprises four coastal states (Cote d'Ivoire, Ghana, Togo, and Benin) and two land-locked countries (Burkina Faso and Mali). The project has three main components and their associated objectives identified by the root cause analysis carried out during the project preparation process: (i): Build capacity and create a regional institutional framework for the effective management of the Volta Basin; (ii): Develop regional policy, legal and regulatory frameworks for addressing transboundary concerns in the Volta Basin and its downstream coastal area and (iii) Initiate national and regional measures to combat transboundary environmental degradation in the Volta Basin.

<b>GEF ID</b>	1111	
<b>Project Website</b>	<a href="http://gefvolta.iwlearn.org">http://gefvolta.iwlearn.org</a>	
<b>Region</b>	Africa	
<b>Sub-Region</b>	Western Africa	
<b>Basin</b>	Volta	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:hubert.onibon@unep.org">Hubert Onibon (hubert.onibon@unep.org)</a> <i>Regional Project Coordinator, United Nations Environment Programme (UNEP)</i></li> <li>• <a href="mailto:vrpb@africaonline.com.gh">Yaw Opoku-Ankomah (vrpb@africaonline.com.gh)</a> <i>Ministry of Environment, Science and Technology (MEST), Ghana</i></li> <li>• <a href="mailto:olumidea@unops.org">Olumide Akinsola (olumidea@unops.org)</a> <i>Science and Information Officer, United Nations Office for Project Services (UNOPS)</i></li> </ul>	
<b>General Information</b>	Project Type	Full Size Project
	Start Date	May 22, 2007
	End Date	Dec 01, 2012
<b>GEF characteristics</b>	Focal Area	International Waters
	GEF Allocation to the Project	5.84M US\$
	Total Cost of the project	16.21M US\$
<b>Partners</b>	<p><b>Countries</b></p> <ul style="list-style-type: none"> <li>• Benin, Burkina Faso, Cote d'Ivoire, Ghana, Mali, Togo</li> </ul> <p><b>Lead Implementing Agency</b></p> <ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul> <p><b>Executing Agencies</b></p> <ul style="list-style-type: none"> <li>• United Nations Office for Project Services (UNOPS)</li> <li>• Mali; Direction Nationale de l'Hydraulique</li> <li>• Burkina Faso; Direction Nationale de l'Hydraulique</li> <li>• Benin; Direction de l'Aménagement du Territoire</li> <li>• Cote d'Ivoire; Direction de l'Environnement</li> <li>• Togo; Direction de l'Ecologie Generale et de la Rehabilitation du Milieu</li> <li>• Ghana; Ministry of Environment, Science and Technology (MEST)</li> </ul>	

The Project development objective is to provide the nine riparians an opportunity to define a transboundary framework for the sustainable development of the Niger River Basin, through strengthened capacity and better understanding of the Basin's land and water resources. The six Project components are: 1) Institution Building, 2) Capacity Building and Public Awareness, 3) Data and Knowledge Management, 4) Regional Forum, 5) Demonstration Pilots and Microgrant Program and 6) TDA and SAP Preparation.

<b>GEF ID</b>	1093	
<b>Project Website</b>	<a href="http://gefvolta.iwlearn.org">http://gefvolta.iwlearn.org</a>	
<b>Region</b>	Africa	
<b>Sub-Region</b>	Western Africa	
<b>Basin</b>	Volta	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:odione@worldbank.org">Ousmane Dione (odione@worldbank.org)</a> <i>International Bank for Reconstruction and Development (WB)</i></li> <li>• <a href="mailto:abnsec@intnet.ne">Muhammed Bello Tuga (abnsec@intnet.ne)</a> <i>Executive Secretary, Autorite du Bassin du Niger (ABN)/Niger Basin Authority (NBA)</i></li> <li>• <a href="mailto:abdoulaye.ndiaye@undp.org">Abdoulaye Ndiaye (abdoulaye.ndiaye@undp.org)</a> <i>Regional Coordinator, West Africa, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:olomoda@abn.ne">Engr. Ibraheem A. Olomoda (olomoda@abn.ne)</a> <i>Water Resources Development Engineer, Southern African Development Community; Water Sector Coordination Unit (SADC/WSCU)</i></li> <li>• <a href="mailto:abdou.guero@gmail.com">Abdou Guero (abdou.guero@gmail.com)</a> <i>Technical Director, Autorite du Bassin du Niger (ABN)/Niger Basin Authority (NBA)</i></li> <li>• <a href="mailto:mame.diop@undp.org">Mame Dagou Diop (mame.diop@undp.org)</a> <i>Regional Technical Adviser, United Nations Development Programme (UNDP)</i></li> </ul>	
<b>General Information</b>	<b>Project Type</b> <b>Start Date</b> <b>End Date</b>	Full Size Project May 16, 2003 Aug 30, 2010
<b>GEF characteristics</b>	<b>Focal Area</b> <b>GEF Allocation to the Project</b> <b>Total Cost of the project</b>	International Waters 13.37M US\$ 30.27M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Benin, Guinea, Mali, Niger, Nigeria</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• International Bank for Reconstruction and Development (WB)</li> <li>• Autorite du Bassin du Niger (ABN)/Niger Basin Authority (NBA)</li> </ul>	

The project is designed to achieve the following three specific objectives: (i) build capacity within the Lake Chad Basin Commission (LCBC) and its national committees related to success in its mandate of managing land and water resources, (ii) enhance policy initiatives and transboundary institutional mechanisms to ensure that the member countries jointly develop and manage the Lake Chad basin's resources, and (iii) conduct a transboundary diagnosis analysis (TDA), implements pilot demonstration projects, designs a Strategic Action Program (SAP) for sustainable management of the basin and mobilizes increased donor interest/support for implementing the SAP.

<b>GEF ID</b>	767	
<b>Project Website</b>	<a href="http://www.lakechadbasin.net">http://www.lakechadbasin.net</a>	
<b>Region</b>	Africa	
<b>Sub-Region</b>	Middle Africa, Northern Africa, Western Africa	
<b>Basin</b>	Chad, Lake Chad	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:tiega@ramsar.org">Anada Tiega (tiega@ramsar.org)</a> <i>International Bank for Reconstruction and Development (WB)</i></li> <li>• <a href="mailto:msaadamu@yahoo.com">Muhammad Sani Adamu (msaadamu@yahoo.com)</a> <i>Executive Secretary, Autorite du Bassin du Niger (ABN)/Niger Basin Authority (NBA)</i></li> <li>• <a href="mailto:mahir.aliyev@unep.org">Mahir Aliyev (mahir.aliyev@unep.org)</a> <i>Regional Coordinator, United Nations Environment Programme (UNEP)</i></li> <li>• <a href="mailto:jgrijsen@worldbank.org">Johannes Grijsen (jgrijsen@worldbank.org)</a> <i>Senior Water Resources Management Specialist, International Bank for Reconstruction and Development (WB)</i></li> <li>• <a href="mailto:abdoulaye.ndiaye@undp.org">Abdoulaye Ndiaye (abdoulaye.ndiaye@undp.org)</a> <i>Regional Coordinator, West Africa, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:MohammedB@unops.org">Mohammed Bila (MohammedB@unops.org)</a> <i>Information Technology and Scientific Officer, United Nations Office for Project Services (UNOPS)</i></li> <li>• <a href="mailto:mame.diop@undp.org">Mame Dagou Diop (mame.diop@undp.org)</a> <i>Regional Technical Adviser, United Nations Development Programme (UNDP)</i></li> </ul>	
<b>General Information</b>	Project Type	Full Size Project
	Start Date	Jan 20, 2003
	End Date	Dec 19, 2008
<b>GEF characteristics</b>	Focal Area	International Waters
	GEF Allocation to the Project	10.29M US\$
	Total Cost of the project	13.42M US\$
<b>Partners</b>	<b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul> <b>Executing Agencies</b> <ul style="list-style-type: none"> <li>• International Bank for Reconstruction and Development (WB)</li> <li>• Lake Chad Basin Commission (LCBC)</li> <li>• United Nations Office for Project Services (UNOPS)</li> </ul>	

## B.3 Groundwater Dependent Ecosystems/Southern Africa

### PROJECT

#### Development and Adoption of a Strategic Action Program for Balancing Water Uses and Sustainable Natural Resource Management in the Orange-Senqu River Transboundary Basin

The overall goal of the Project is to improve the management of the Orange Basin's transboundary water resources through Integrated Water Resource Management (IWRM) approaches that remediate threats and root causes. The Project will develop mechanisms to ensure the cooperative and sustainable use of the land and water resources of the Orange River Basin; develop regionally based and agreed upon short, medium, and long term management objectives and strategies for the river basin; build capacity for adaptive management approaches to river basin management; develop and implement measures to sustain and enhance overall environmental health within the basin; create a comprehensive stakeholder involvement program; and strengthen regionally based institutions, particularly the Orange-Senqu River Basin Commission (ORASECOM), to ensure the long term sustainability of interventions. **longer**

<b>GEF ID</b>	2701	
<b>Project Website</b>	<a href="http://www.orasecom.org/">http://www.orasecom.org/</a>	
<b>Region</b>	Africa	
<b>Sub-Region</b>	Southern Africa	
<b>Basin</b>	Orange	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:rapule.pule@orasecom.org">Rapule Jacob Pule (rapule.pule@orasecom.org)</a> <i>Water Resource Specialist</i></li> <li>• <a href="mailto:niekerk@dwa.gov.za">Peter Van Niekerk (niekerk@dwa.gov.za)</a> <i>Water Resources Engineering Expert &amp; ORASECOM Commissioner, South Africa, Guangdong Pearl River Delta Urban Environment Project</i></li> <li>• <a href="mailto:akiko.yamamoto@undp.org">Akiko Yamamoto (akiko.yamamoto@undp.org)</a> <i>Regional Technical Advisor for International Waters/Strategies &amp; Adaptation, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:thamael@dwaf.gov.za">Lenka Thamae (thamael@dwaf.gov.za)</a> <i>Executive Secretary, Orange-Senqu River Commission, Orange-Senqu River Commission</i></li> <li>• <a href="mailto:christoph@mor.at">Christoph Mor (christoph@mor.at)</a> <i>Project manager</i></li> <li>• <a href="mailto:constanceMD@unops.org">Constance Masalila-Dodo (constanceMD@unops.org)</a> <i>Scientific Officer, United Nations Office for Project Services (UNOPS)</i></li> </ul>	
<b>General Information</b>	Project Type	Full Size Project
	Start Date	Apr 24, 2008
	End Date	May 30, 2013
<b>GEF characteristics</b>	Focal Area	International Waters
	GEF Allocation to the Project	7.00M US\$
	Total Cost of the project	37.16M US\$
<b>Partners</b>	<b>Countries</b>	<ul style="list-style-type: none"> <li>• Botswana, Lesotho, Namibia, South Africa</li> </ul>
	<b>Lead Implementing Agency</b>	<ul style="list-style-type: none"> <li>• United Nations Development Programme (UNDP)</li> </ul>
	<b>Executing Agency</b>	<ul style="list-style-type: none"> <li>• United Nations Office for Project Services (UNOPS)</li> </ul>

The Okavango River Basin (ORB) remains one of the least human impacted basins on the African continent. Mounting socio-economic pressures on the basin in the riparian countries, Angola, Botswana and Namibia, threaten to change its present character. It is anticipated that in the long term this may result in irretrievable environmental breakdown and consequent loss of domestic and global benefits. Maintaining these benefits requires agreement over the sharing of both the benefits and associated liabilities (to include those of an environmental and ecological nature) through joint management of the basin's water resources.

longer

<b>GEF ID</b>	842	
<b>Project Website</b>	<a href="http://epsmo.iwlearn.org">http://epsmo.iwlearn.org</a>	
<b>Region</b>	Africa	
<b>Sub-Region</b>	Middle Africa, Southern Africa	
<b>Basin</b>	Okavango	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:monicamorrison@gmail.com">Monica Morrison (monicamorrison@gmail.com)</a> <i>Communications and Information Specialist, Okavango River Basin Commission (OKACOM)</i></li> <li>• <a href="mailto:jacob.burke@fao.org">Jacob Burke (jacob.burke@fao.org)</a> <i>Senior Water Policy Officer, Food and Agricultural Organization (FAO), FAO Regional Office for Europe (REU), Land and Water Division</i></li> <li>• <a href="mailto:akiko.yamamoto@undp.org">Akiko Yamamoto (akiko.yamamoto@undp.org)</a> <i>Regional Technical Advisor for International Waters/Strategies &amp; Adaptation, United Nations Development Programme (UNDP)</i></li> <li>• <a href="mailto:chaminda.rajapakse@fao.org">Chaminda Rajapakse (chaminda.rajapakse@fao.org)</a> <i>Project Manager, Food and Agricultural Organization (FAO)</i></li> <li>• <a href="mailto:trsmolefi@gov.bw">Tracy Molefi (trsmolefi@gov.bw)</a> <i>National Coordinator</i></li> <li>• <a href="mailto:ebenc@okacom.org">Ebenizario Chonguica (ebenc@okacom.org)</a> <i>Executive Secretary</i></li> </ul>	
<b>General Information</b>	<b>Project Type</b> <b>Start Date</b> <b>End Date</b>	Full Size Project Jul 01, 2000 Aug 31, 2010
<b>GEF characteristics</b>	<b>Focal Area</b> <b>GEF Allocation to the Project</b> <b>Total Cost of the project</b>	International Waters 5.76M US\$ 8.19M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Angola, Botswana, Namibia</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Development Programme (UNDP)</li> </ul> <b>Executing Agency</b> <ul style="list-style-type: none"> <li>• Food and Agricultural Organization (FAO)</li> </ul>	

## **B.4 Coastal Area Management and SIDS/Mediterranean LME and Caribbean SIDS**

This section will be completed in next editions of the document.

## B.5 Transboundary Management Schemes/South America

### PROJECT

### Sustainable Management of the Water Resources of the La Plata Basin with Respect to the Effects of Climate Variability and Change

The general objective of the project is to strengthen the efforts of the governments of Argentina, Bolivia, Brasil, Paraguay and Uruguay to implement their shared vision for the environmentally and socially sustainable economic development of the la Plata Basin, specifically in the areas of the protection and integrated management of its water resources and adaptation to climatic change and variability.

GEF ID	2095	
Project Website	<a href="http://cicplata.org/">http://cicplata.org/</a>	
Region	Americas	
Sub-Region	South America	
Basin	La Plata	
Project Contacts	<ul style="list-style-type: none"> <li>• <a href="mailto:srafaelli@gmail.com">Silvia Rafaeli (srafaelli@gmail.com)</a> <i>Technical Coordinator</i></li> <li>• <a href="mailto:jlgenta@cicplata.org">José Genta (jlgenta@cicplata.org)</a> <i>Director</i></li> <li>• <a href="mailto:isabelle.vanderbeck@unep.org">Isabelle Van der Beck (isabelle.vanderbeck@unep.org)</a> [+ Rucks OAS] <i>Task Manager for GEF International Waters Projects , United Nations Environment Programme (UNEP)</i></li> <li>• <a href="mailto:pmarco.cicplata@fibertel.com.ar">Helio De Maceio (pmarco.cicplata@fibertel.com.ar)</a> <i>National Director, <b>Caspian Environment Programme (CEP)</b></i></li> <li>• <a href="mailto:oeasec@oea.com.ar">Maria Fernanda Cavallini (oeasec@oea.com.ar)</a> <i><b>Organization of Eastern Caribbean States (OECS)</b></i></li> </ul>	
General Information	Project Type	Full Size Project
	Start Date	Jun 25, 2009
	End Date	Sep 30, 2014
GEF characteristics	Focal Area	Multiple Focal Areas
	GEF Allocation to the Project	10.73M US\$
	Total Cost of the project	62.02M US\$
Partners	<p>Countries</p> <ul style="list-style-type: none"> <li>• Argentina, Bolivia, Brazil, Paraguay, Uruguay</li> </ul> <p>Lead Implementing Agency</p> <ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul> <p>Other Implementing Agency</p> <ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul> <p>Executing Agency</p> <ul style="list-style-type: none"> <li>• Organization of American States (OAS)</li> </ul>	

Activities \* Conduct an environmental diagnostic survey of the basin to identify priority trans-boundary environmental concerns and related sectoral issues \* Formulate a strategic action program for the binational basin addressing different GEF focal areas and intended to solve priority transboundary environmental issues, while implementing water resource and environmental agreements between the countries \* Assist the national governments to incorporate transboundary environmental concerns, including biodiversity and land degradation protection, into basin development policies, plans, and programs \* Conduct pilot demonstration activities during the process of formulating the strategic action plan to gain information needed for management purposes \* Help both countries to institute a system of public consultation on implementing and developing projects of general interest in the basin, so that they are environmentally sustainable and socially acceptable. longer

GEF ID	176	
Project Website	<a href="http://www.cobinabe.org">http://www.cobinabe.org</a>	
Region	Americas	
Sub-Region	South America	
Basin	La Plata	
Project Contacts	<ul style="list-style-type: none"> <li>• <a href="mailto:hmartinez@iplanmail.com.ar">Hector Martinez(hmartinez@iplanmail.com.ar)</a> <i>Technical Coordinator</i></li> <li>• <a href="mailto:isabelle.vanderbeck@unep.org">Isabelle Van der Beck (isabelle.vanderbeck@unep.org)</a> <i>Task Manager for GEF International Waters Projects, United Nations Environment Programme (UNEP)</i></li> <li>• <a href="mailto:EBello@oas.org">Enrique Bello (EBello@oas.org)</a> <i>Project Manager, Organization of American States (OAS)</i></li> <li>• <a href="mailto:jrucks@oas.org">Jorge Rucks (jrucks@oas.org)</a> <i>Chief, Geographic Group II (Latin America), Unit for Sustainable Development and Environment in America, Organization of American States (OAS)</i></li> </ul>	
General Information	Project Type	Full Size Project
	Start Date	-
	End Date	-
GEF characteristics	Focal Area	International Waters
	GEF Allocation to the Project	3.22M US\$
	Total Cost of the project	5.95M US\$
Partners	<p>Countries</p> <ul style="list-style-type: none"> <li>• Argentina, Bolivia</li> </ul> <p>Lead Implementing Agency</p> <ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul> <p>Executing Agencies</p> <ul style="list-style-type: none"> <li>• Organization of American States (OAS)</li> <li>• Binational Commission for the Dev. of the Upper Bermejo and Grande de Tarija Rivers</li> </ul>	



The project will implement specific strategic activities identified in the GEF-financed strategic action program (SAP), that address the principal root causes of soil degradation as set forth in the transboundary diagnostic analysis (TDA) and, in doing so, will provide the necessary institutional, legal, and informational basis to enhance and restore the environmental functioning of the system, and provide protection to endemic species within the five component ecosystems - montane, humid forest, arid Chaco/savannah, sub-humid Chaco, and humid Chaco. Strengthening of Basin institutions, building of agency and organizational capacity, and integration of environmental concerns into economic development activities on a sustainable basis, and the promotion of the public awareness and participation are key elements of this project.

<b>GEF ID</b>	886	
<b>Project Website</b>	<a href="http://www.cobinabe.org">http://www.cobinabe.org</a>	
<b>Region</b>	Americas	
<b>Sub-Region</b>	South America	
<b>Basin</b>	La Plata	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:hmartinez@iplanmail.com.ar">Hector Martinez(hmartinez@iplanmail.com.ar)</a> <i>Technical Coordinator</i></li> <li>• <a href="mailto:isabelle.vanderbeck@unep.org">Isabelle Van der Beck (isabelle.vanderbeck@unep.org)</a> <i>Task Manager for GEF International Waters Projects, United Nations Environment Programme (UNEP)</i></li> <li>• <a href="mailto:EBello@oas.org">Enrique Bello (EBello@oas.org)</a> (+ <a href="#">JRucks OAS</a>) <i>Project Manager, Organization of American States (OAS)</i></li> <li>• <a href="mailto:peabol@entelnet.bo">Gabriel Gaite Uzqueda (peabol@entelnet.bo)</a> <i>Technical Coordinator, Binational Commission for the Dev. of the Upper Bermejo and Grande de Tarija Rivers</i></li> <li>• <a href="mailto:oeasec@oea.com.ar">Marcela Alicia Di Blasi (oeasec@oea.com.ar)</a> <i>Graphic Designer, Organization of Eastern Caribbean States (OECS)</i></li> <li>• <a href="mailto:cbrieva@fibertel.com.ar">Carlos Alberto Brieva (cbrieva@fibertel.com.ar)</a> <i>Technical Unit staff, Organization of Eastern Caribbean States (OECS)</i></li> </ul>	
<b>General Information</b>	Project Type	Full Size Project
	Start Date	May 01, 2001
	End Date	Mar 01, 2010
<b>GEF characteristics</b>	Focal Area	International Waters
	GEF Allocation to the Project	11.04M US\$
	Total Cost of the project	19.77M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Argentina, Bolivia</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul> <b>Executing Agencies</b> <ul style="list-style-type: none"> <li>• Organization of American States (OAS)</li> <li>• Binational Commission for the Dev. of the Upper Bermejo and Grande de Tarija Rivers</li> </ul>	

## PROJECT

## Integrated Watershed Management of the Pantanal and Upper Paraguay River Basin (GEF Pantanal/Upper Paraguay Project)

This component is essential for the development and implementation of the remedial measures set forth in the subsequent components of the project. Building upon Component I above, the objective of Component II is to implement community-based land management through the identification and demonstration of environmentally-sound practices within the agricultural, mining and urban economic sectors. The objective of Component VI is to synthesize the data and experiences, feasibility assessments and cost analyses developed in the five preceding components. [Longer+]

<b>GEF ID</b>	583	
<b>Project Website</b>	<a href="http://archive.iwlearn.net/www.ana.gov.br/www.ana.gov.br/gefap/">http://archive.iwlearn.net/www.ana.gov.br/www.ana.gov.br/gefap/</a>	
<b>Region</b>	Americas	
<b>Sub-Region</b>	South America	
<b>Basin</b>	La Plata	
<b>Project Contacts</b>	<ul style="list-style-type: none"> <li>• <a href="mailto:benbraga@ana.gov.br">Benedito Braga (benbraga@ana.gov.br)</a> <i>Vice President, Water Agency, Brasil; Water Resources Secretariat (ANA)</i></li> <li>• <a href="mailto:fredfreitas@zaz.com.br">Frederico Luiz de Freitas (fredfreitas@zaz.com.br)</a> <i>Technical Coordinator, United Nations Environment Programme (UNEP)</i></li> <li>• <a href="mailto:nelsonf@oeabrasil.com.br">Nelson da Franca (nelsonf@oeabrasil.com.br)</a> <i>Senior Project Manager, Unit for Sustainable Development and Environment, OAS; Unit for Sustainable Development and Environment (OAS/USDE)</i></li> <li>• <a href="#">Humberto Goncalves</a> <i>Technical Coordinator</i></li> <li>• <a href="mailto:paulovarella@ana.gov.br">Paulo Varella (paulovarella@ana.gov.br)</a> <i>National coordinator, Brasil; Water Resources Secretariat (ANA)</i></li> <li>• <a href="mailto:sandro.araujo@ana.gov.br">Sandro de Oliveira Araujo (sandro.araujo@ana.gov.br)</a> <i>Coordinator, Brasil; Water Resources Secretariat (ANA)</i></li> </ul>	
<b>General Information</b>	Project Type	Full Size Project
	Start Date	Oct 24, 1999
	End Date	Nov 30, 2006
<b>GEF characteristics</b>	Focal Area	International Waters
	GEF Allocation to the Project	6.61M US\$
	Total Cost of the project	16.39M US\$
<b>Partners</b>	Country	<ul style="list-style-type: none"> <li>• Brazil</li> </ul>
	Lead Implementing Agency	<ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul>
	Executing Agencies	<ul style="list-style-type: none"> <li>• Organization of American States (OAS)</li> <li>• Brasil; Water Resources Secretariat (ANA)</li> </ul>

## Integrated and Sustainable Management of Transboundary Water Resources in the Amazon River Basin Considering Climate Variability and Change

The objective of the project is to strengthen, in a coordinated and coherent manner, the institutional framework for planning and executing activities for the protection and sustainable management of the water resources of the Amazon River Basin, endeavoring to realize a shared vision of sustainable development in the region based upon the protection and integrated management of transboundary water resources and adaptation to climatic changes.

<b>GEF ID</b>	2364	
<b>Project Website</b>	<a href="http://www.otca.org.br/gefam/">http://www.otca.org.br/gefam/</a>	
<b>Region</b>	Americas, SIDS	
<b>Sub-Region</b>	South America, Small island developing States, SIDS (Americas)	
<b>Basin</b>	Amazon	
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<b>General Information</b>	Project Type	Full Size Project
	Start Date	Oct 05, 2009
	End Date	-
<b>GEF characteristics</b>	Focal Area	Multiple Focal Areas
	GEF Allocation to the Project	7.70M US\$
	Total Cost of the project	51.48M US\$
<b>Partners</b>	<b>Countries</b> <ul style="list-style-type: none"> <li>• Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, Venezuela</li> </ul> <b>Lead Implementing Agency</b> <ul style="list-style-type: none"> <li>• United Nations Environment Programme (UNEP)</li> </ul> <b>Executing Agency</b> <ul style="list-style-type: none"> <li>• Organization of American States (OAS)</li> <li>• Ministry of Natural Resources and the Environment (SERNA) of Honduras</li> </ul>	



# Conclusion

Conclusions will be drawn at the end of the Project when the analysis of the GEF Groundwater Portfolio will be completed with inputs from all Project Managers of GEF IW Groundwater Projects.



For more information and to join the CoP, please contact:

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