



GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

MONIQUE BARBUT
Chief Executive Officer and Chairperson

1818 H Street, NW
Washington, DC 20433 USA
Tel: 202.473.3202
Fax: 202.522.3240/3245
E-mail: mbarbut@TheGEF.org

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Dear Council Member,

The FAO as the Implementing Agency for the project entitled: ***Global: Groundwater Governance: A Global Framework for Country Action***, has submitted the attached proposed project document for CEO endorsement prior to final Agency approval of the project document in accordance with the FAO procedures.

The Secretariat has reviewed the project document. It is consistent with the project concept approved by the Council in September 2008 and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by the FAO satisfactorily details how Council's comments and those of the STAP have been addressed.

We have today posted the proposed project document on the GEF website at www.TheGEF.org for your information. We would welcome any comments you may wish to provide by October 29, 2010 before I endorse the project. You may send your comments to gcoordination@TheGEF.org.

If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

Attachment: Project Document
Copy to: Country Operational Focal Point, GEF Agencies, STAP, Trustee



REQUEST FOR CEO ENDORSEMENT/APPROVAL

**PROJECT TYPE: FULL-SIZED PROJECT
THE GEF TRUST FUND**

**Submission Date: September 3, 2010
Re-submission Date:**

PART I: PROJECT INFORMATION

GEFSEC PROJECT ID: 3726

GEF AGENCY PROJECT ID: 608795

COUNTRY(IES): Global

PROJECT TITLE: Groundwater Governance: A Global Framework for Action

GEF AGENCY(IES): FAO,

OTHER EXECUTING PARTNER(S): UNESCO, International Association of Hydrogeologists (IAH)

GEF FOCAL AREA(S): International Waters

GEF-4 STRATEGIC PROGRAM(S): IW SP 3

NAME OF PARENT PROGRAM/UMBRELLA PROJECT:

Expected Calendar	
Milestones	Dates
Work Program (for FSP)	June 2008
GEF Agency Approval	November 2010
Implementation Start	December 2010
Mid-term Review (if planned)	May 2012
Implementation Completion	November 2013

A. PROJECT FRAMEWORK (Expand table as necessary)

Project Objective:

The global environment objective (GEO) of the project is to accelerate improved groundwater resource governance at transboundary, national, and local levels.

The project development objective (PDO) is to sustain livelihoods reliant upon groundwater and related aquifer services.

Project Components	Indicate whether Investment, TA, or STA**	Expected Outcomes	Expected Outputs	GEF Financing*		Co-financing*		Total (\$) '000
				(\$)'000	%	(\$)'000	%	
Component 1: Compilation of <u>the state</u> of groundwater governance in relation to groundwater supply and demand (quantity and quality)	TA	Broad agreement on the scientific and economic issues in relation to groundwater management and a consensus on the scope for future action; and enhanced cooperation and synergies among groundwater users and beneficiaries	1.1 Expert meeting report to define groundwater governance 1.2 Case studies reports (from 2 transboundary aquifers, country reports from 11 countries, including SIDS) 1.3 Thematic papers on, inter alia political economy, climate change adaptation, emerging groundwater management, development issues, 1.4. Synthesis report on Groundwater Governance	230	14	1 450	86	1 680
Component 2:	TA	A Global	2.1. 6 Reports from regional	821	45	1 016	55	1 837

<p>Development of a Global/Regional <u>Groundwater Governance Diagnostic</u> integrating regional and country experiences with prospects for the future</p>		<p>Groundwater Diagnostic is informed by regional consultations (including private sector interests) and is disseminated globally by mainstreaming viable groundwater management practice in GEF programs and projects and across focal areas.</p>	<p>consultations (ECA, MENA, Africa, S Asia, E Asia, Pacific, LAC) and 1 private sector roundtable</p> <p>2.2. Global Groundwater Diagnostic, report on the state of governance at national, transboundary and global level</p> <p>2.3. Mainstreaming groundwater in GEF programmes through a GEF Groundwater Conference together with IWLearn that will disseminate the Global Groundwater Diagnostic in the GEF system.</p>					
<p>Component 3: Definition of a Shared Vision and Global Framework for Action on Groundwater Governance</p>	<p>TA</p>	<p>Political awareness raised globally on the urgency for improved groundwater governance through a “Global Framework for Action on Groundwater Governance” based on components 1 and 2, and by disseminating key policy messages fostering precautionary and proactive governance approaches, to prolong the integrity of aquifers and their associated goods and services.</p>	<p>3.1. A shared vision for groundwater governance translated into key policy messages through electronic forums and one meeting</p> <p>3.2. A report , “Global Framework for Action on Groundwater Governance” translated into all official UN languages</p>	<p>226</p>	<p>100</p>	<p>0</p>	<p>0</p>	<p>226</p>

Component 4: Communication Strategy and Dissemination of the Framework for Action on Groundwater Governance	TA	Outcome 4.1: Strengthened public participation and action catalyzed through systematic communication of project's advancements and dissemination of project documents Outcome 4.2: Strategic Action catalyzed and investments leveraged through dissemination of the Framework for Action and of key policy messages at the political level	4.1. A Communication Strategy defined and implemented utilizing ICT technology, audiovisual materials, media and other special events, and published materials. 4.2. Outreach and dissemination of results through high-level Outreach Conferences and Special Events concomitant with with the World Water Forum 6 and other global events	354	83	72	17	426
Component 5: Project Management, Monitoring and Evaluation	TA	Administrative services and budgetary control ensured; planned monitoring and evaluation activities delivered in a timely manner	5.1. Project coordination services delivered 5.2. Monitoring and evaluation planned and coordinated	119	42	162	58	281
Total Project Costs				1 750		2 700		4 450

* List the \$ by project components. The percentage is the share of GEF and Co-financing respectively to the total amount for the component.

** TA = Technical Assistance; STA = Scientific & technical analysis.

B. FINANCING PLAN SUMMARY FOR THE PROJECT (\$)

	<i>Project Preparation*</i>	<i>Project</i>	<i>Agency Fee</i>	<i>Total at CEO Endorsement</i>	<i>For the record: Total at PIF</i>
GEF		1 750 000	175 000	1 925 000	1 925 000
Co-financing		2 700 000		2 700 000	2 480 000
Total		4 450 000	175 000	4 625 000	4 405 000

* Transfer of implementing agency responsibility for the full-sized project has been transferred to FAO from the WB

C. SOURCES OF CONFIRMED CO-FINANCING, including co-financing for project preparation for both the PDFs and PPG. (expand the table line items as necessary)

<i>Name of co-financier (source)</i>	<i>Classification</i>	<i>Type</i>	<i>Amount (\$)</i>	<i>%*</i>
FAO	GEF Agency	in kind	850 000	31.5
IAH	Exec. Agency	in kind	150 000	5.5
UNESCO	Exec. Agency	in kind	850 000	31.5
WORLD BANK	Multilat. Agency	in kind	850 000	31.5
	(select)	(select)		
	(select)	(select)		
	(select)	(select)		
Total Co-financing			2 700 000	100%

* Percentage of each co-financier's contribution at CEO endorsement to total co-financing.

D. GEF RESOURCES REQUESTED BY FOCAL AREA(S), AGENCY(IES) OR COUNTRY(IES)

<i>GEF Agency</i>	<i>Focal Area</i>	<i>Country Name/ Global</i>	<i>(in \$)</i>			
			<i>Project Preparation</i>	<i>Project</i>	<i>Agency Fee</i>	<i>Total</i>
FAO	IW	Global	0	1 750 000	175 000	1 925 000
(select)	(select)					
(select)	(select)					
(select)	(select)					
(select)	(select)					
(select)	(select)					
Total GEF Resources				1 750 000	175 000	1 925 000

* No need to provide information for this table if it is a single focal area, single country and single GEF Agency project.

E. PROJECT MANAGEMENT BUDGET/COST

<i>Cost Items</i>	<i>Total Estimated person weeks</i>	<i>GEF (\$)</i>	<i>Other sources (\$)</i>	<i>Project total (\$)</i>
<i>Local consultants*</i>	112	84,000	162,000	246,000
<i>International consultants*</i>	8	24,000		24,000
<i>Office facilities, equipment, vehicles and communications**</i>		11,000		11,000
<i>Travel**</i>		0	0	0
Total	145	119 000	162,000	281,000

* Provide detailed information regarding the consultants in Annex C.

** Provide detailed information and justification for these line items.

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

<i>Component</i>	<i>Estimated person weeks</i>	<i>GEF(\$)</i>	<i>Other sources (\$)</i>	<i>Project total (\$)</i>
<i>Local consultants*</i>	46.6	70 000	0	70 000
<i>International consultants*</i>	112	264 000	72 000	336 000
Total	158.6	334 000	72 000	406 000

* Provide detailed information regarding the consultants in Annex C.

G. DESCRIBE THE BUDGETED M&E PLAN:

Project monitoring and evaluation will be conducted in accordance with established FAO and GEF procedures and will be provided by the project team and FAO headquarters in Rome. The Strategic Result Framework in Annex A provides indicators for project implementation along with their corresponding means of verification. These will form the basis on which the project's Monitoring and Evaluation system will be built. A full description of monitoring and evaluation activities is provided in Annex 6 of the project document. Monitoring and evaluation will be carried out in accordance with FAO's procedures and will be fully consistent with GEF M&E policy. An itemized budget for monitoring and evaluation activities is given in the table below.

Type of M&E activity	Responsible Parties	Budget US\$ Excluding project team Staff time	Time frame
Inception Workshop	FAO/UNESCO/IAH	Covered under co-finance	Within first two months

	PCU-PC	arrangements	of project start up
Inception Report	Project Team FAO/GEF	Covered under co-finance arrangements	Immediately following workshop
Measurement of Means of Verification for Project Indicators	Project PCU-PC in coordination with FAO, UNESCO, IAH	Covered under co-finance arrangements	Start, mid and end of project
Quarterly project implementation report	Project PCU	Covered under co-finance arrangements	Every quarter
Semi-annual progress report	Project PCU	Covered under co-finance arrangements	Every 6 months
Project Implementation Review (PIR) including co-financing report	Project Team FAO-GEF	Covered under co-finance arrangements	Annually in July
Project Steering Committee Meetings	GEF and funding partners FAO, UNESCO, IAH. Collaborating partners. Project PCU-PC	Covered under co-finance arrangements	Every year
Periodic monitoring of implementation progress and supervision report	FAO – GEF	Covered under agency fee	Annual Project Progress Report
Independent Mid-term Review	FAO (Evaluation Service and the FAO GEF Co-ordination Unit) in collaboration with UNESCO, IAH and PCU	25,000	At the mid-point of project implementation
Independent Terminal Evaluation	FAO (Evaluation Service and the FAO GEF Co-ordination Unit) in collaboration with UNESCO, IAH and PCU	50,000	At the end of project implementation
Total Indicative Cost – <i>Excluding FAO, UNESCO, IAH, and PCU staff time and travel expenses</i>		75,000	

PART II: PROJECT JUSTIFICATION

B. DESCRIBE THE PROJECT RATIONALE AND THE EXPECTED MEASURABLE GLOBAL ENVIRONMENTAL BENEFITS:

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 Operational Strategy included multi-country aquifers and groundwater in all three IW Operational Programs, no project relating to this very important area had ever been submitted by the IAs. 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 sectoral vision privileging surface water – visible, easily quantifiable, in some measure predictable, and lending itself to simple modeling and scenario building exercises. Water present in the subsurface is instead hidden and linked to 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 last decade, the GEF Secretariat, the GEF Agencies and specialized partner agencies such as UNESCO and IAEA have been working cooperatively to analyze 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 has entered the GEF portfolio, and the GEF has come to the forefront as the leader funding institution in the management of large transboundary groundwater basins. 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 water.

STAP, following guidance of the GEF Secretariat, identified groundwater as a priority for its 2004-06 Work Program. This has led to the establishment of a highly successful cooperation with UNESCO's International Hydrologic Program, and with its global long-term initiative to promote assessments and scientific collaboration on transboundary aquifers - ISARM. The series of STAP-UNESCO workshops on Strategic Options and Priorities in Groundwater Resources, Managed Aquifer Recharge, and Groundwater in Small Islands held respectively in Paris, New Delhi, and Port of Spain has represented a first contact and exchange between the hydrogeological community of experts, managers and scientists, and the GEF system. The

results have been remarkable. STAP has distilled few overarching strategic directions that should guide GEF action in groundwater as part of the IW Focal Area, and beyond, across all other Focal Areas.

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 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.

Finally the STAP has urged GEF to catalyze the integration of groundwater governance issues into the global dialogue on water, which is being developed through the World Water Forum and other similar processes. This project responds to this call from STAP, and is in line with the strategic approach to groundwater that the GEF is striving to implement. This overall thrust will be a valuable contribution to Rio +20 discussions that will precede the proposed

The project's global environmental objective (GEO) is to accelerate the accrual of global environmental benefits (goods and services) that are generated through improved groundwater resource governance at transboundary, national, and local levels. This in the face of rising human demand, overall water scarcity and the anticipated impacts of climate change. The project will contribute to the GEF's objectives in the GEF international waters focal area and address Millennium Development Goal 7: to ensure environmental sustainability.

The project is predicated on the observation that water management practice has not caught up with the rate of depletion and degradation of aquifers. Hence the project will attempt to involve and influence a new set of players and researchers and set of beneficiaries that will have had limited exposure to groundwater governance issue – municipalities, agricultural agencies, environmental agencies. This impact will be underpinned by the accumulated technical and scientific knowledge generated by the community of groundwater water resource managers and hydrogeological science.

The project development objective (PDO) is to sustain livelihoods reliant upon groundwater and related aquifer services. This objective is consistent with FAO's mission to raise levels of nutrition, increase agricultural productivity and improve the lives of rural populations. It will also help these countries to meet Millennium Development Goal 1: to eradicate extreme poverty and hunger.

This project will support the development of a global Framework for Action (FA) for enabling good governance of groundwater and for building momentum at the political level to foster change, support policy and institutional reforms to promote sustainable groundwater management at country and local levels. It will thus promote alternative approaches to current groundwater use, and hence, contribute to a major part of the global water challenge related to adaptation to climate change. Specifically, the FA for improved groundwater governance generated (with its country/regional variants in response to inherent hydro-geological and socioeconomic variability) is expected to catalyze policy reform and institutional strengthening at the global and national level in relation to groundwater resources, which in turn will provide an enabling environment for practical advances in groundwater management and protection at the local level, where progress is currently often impeded. It will support realization of much broader benefits of IWRM. In addition, promoting effective linkages between groundwater and all GEF focal areas – international waters, climate change, biodiversity, land degradation, and POPs – will support improved global environmental benefits across focal areas in future GEF projects and programs in its portfolio. The project will also build on the lessons learned from the implementation of the GEF groundwater and learning projects to generate new knowledge, to targeted experience sharing, to accelerate learning between new and existing GEF and FAO projects in the portfolio and to identify and replicate good practices in order to achieve stronger impacts. The project will work with the GEF IW LEARN project to facilitate sharing of and disseminating knowledge, lessons, experiences and best practices to a wide audience.

C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL PRIORITIES/PLANS: N/A

Continued access to groundwater and sustainable management of the aquifers that host it continues to be a national priority in relation to both potable water supply, industrial commercial use and agriculture. A recent FAO inventory of national irrigation statistics reveals that 40% of all equipped irrigated areas (300 million hectares) are supplied by groundwater. In many arid and semi-arid countries, this reliance on groundwater is much higher. Intensive use of groundwater from aquifers that transcend national boundaries, as indicated in UNESCO's International Shared Aquifer Resource Management (ISARM) programme, has produced transboundary challenges.

D. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH [GEF STRATEGIES](#) AND STRATEGIC PROGRAMS:

The project aligns closely to GEF 4 International Waters –Strategic Objective # 2 “ *To play a catalytic role in addressing transboundary water concerns by assisting countries to utilize the full range of technical assistance, economic, financial,*

regulatory and institutional reforms that are needed” and Strategic Programme # 3 – “Balancing overuse and conflicting uses of water resources in transboundary surface and groundwater basins”. Moreover, the project treats groundwater as 'cross-cutting' topic which significantly influences (or is itself significantly influenced by) all other GEF Focal Areas. The project addresses sustainable development challenges faced by national and transboundary surface and groundwater systems, including cross sectoral and cross-border challenges related to over pumping, overuse and conflicts over water use, pollution, loss of critical habitats and biodiversity, and adaptation to climate variability.

This project, will implement the recommendation of the STAP, and fully define and establish the linkages at an operational level between groundwater and the other GEF focal areas. This will cover:

- Groundwater and biodiversity, with emphasis on freshwater, alluvial plain and coastal (wetland) ecosystems;
- Groundwater and land degradation, with focus on strategic uses and delineation and protection of recharge areas;
- Groundwater and climate change adaptation (coastal areas, strategic uses, managed recharge, conjunctive use);
- Groundwater and POPs and PTS (contamination of aquifers); and,
- Groundwater and International Waters, with focus on transboundary aquifer management issues

The project will set aside at least 1% of the GEF project budget to support IWLEARN activities, such as: set up and run a website, set up according to IWLEARN guidance and tool kit, project staff will participate in IWLEARN activities (IWC's and relevant regional conferences) and preparation of 1 to 2 project experience notes.

E. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

The project will build on and draw from the extensive work, knowledge and experience on groundwater policy, law, institutions, management, development, analysis, research carried out by the GEF, FAO, the Bank and other partners. It will draw lessons from the GEF's International Waters program, a recognized leader in promoting innovative transboundary aquifer management (e.g., Guarani, Iullemeden, Nubian aquifers). It will also support the development of operational links between groundwater and other GEF focal areas - biodiversity, climate change, land degradation and POPs.

Since 2001, the World Bank with GW-MATE has developed a wide array of advisory materials on the strategies, instruments and tools for groundwater management and protection, and has been piloting management and protection interventions in selected Bank operations on an opportunistic demand-driven basis at local project level. The Bank has also supported extensive sector work which includes analysis of the important role groundwater plays in several countries. Other partner agencies – UNESCO, IAEA, International Groundwater Resources Assessment Centre (IGRAC), International Union for the Conservation of Nature and Natural Resources (IUCN), FAO, UNEP, WMO and Ramsar Secretariat - too have supported numerous groundwater projects and programs. The IAH, the proposed co-executing agency, is a premier association of professional hydrogeologists with 4000 members with over 50 years of experience globally. The list of the global activities in groundwater management and protection and related publications of partner agencies (including IAEA, IAH, IGRAC, IUCN, International Water Management Institute (IWMI), FAO, GEF, Global Water Partnership (GWP), Ramsar Secretariat, UNDP, UNEP, UNESCO, UNICEF, WHO, WMO, World Water Council (WWC), and the World Bank) has been compiled and will be attached as an Annex to the project document.

The project will complement the past and ongoing actions and activities of these agencies and extend the analysis both to elevate groundwater policy and governance institutional needs to the political level and to generate an enabling climate for sharing, extending, replicating and consolidating existing lessons and experiences and enhance full benefits of IWRM.

The project will establish systematic information exchange and consultation mechanisms with the following global GEF IW projects:

- Development of Methodologies for a GEF Transboundary Waters Assessment (UNEP); the project aims at defining a methodology for the baseline, including indicators for follow up monitoring, assessment of the state of transboundary water bodies: aquifers, lake basins, river basins; large marine ecosystems; open oceans. The FAO project will, in particular, follow the development of the methodology and indicators for groundwater.
- Enhancing the Use of Science in International Waters Projects to Improve Project Results (UNEP); the project will identify and disseminate good scientific practices in the GEF IW portfolio, including groundwater projects. Governance and legal issues are considered part of the “water science”.
- MENARID GEF IW LEARN: Strengthening IW Portfolio Delivery and Impact (UNDP); the project will have a large component dedicated to promoting the integration of groundwater issues and management in land degradation and IW projects in the MENA region.
- Good Practices and Portfolio Learning in Transboundary Freshwater and Marine Legal and Institutional Frameworks (UNDP); this project maybe highly relevant for the purposes of the FAO Groundwater Governance project, and close cooperation will be established.

It will also link with the following regional projects:

- MED Sustainable MED Governance and Knowledge Generation (IBRD); The project will include consideration of coastal aquifers issues, and of their governance.
- 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 (UNEP); this large “regional Sea” initiative will for the first time fully take into consideration the relationship among coastal aquifers, coastal zone management and coastal marine issues, and facilitate the agreement on a coastal aquifer protocol to the Barcelona Convention.
- Protection and Sustainable Use of the Dinaric Karst Aquifer System (UNDP-UNESCO); the project will deal with the management of Karst groundwater resources in a transboundary setting.
- Formulation of an Action Programme for the Integrated Management of the Shared Nubian Aquifer (UNDP); the project deals with the joint management of one of the world’s largest freshwater reserves.
- *MENARID Reducing Risks to the Sustainable Management of the North West Sahara Aquifer System* (UNEP): the project explores tools for the management of this transboundary aquifer, key resource for the Western Sahara region.

Representatives of the above projects will be invited to participate and contribute to the various events and consultations that will be held as part of the groundwater governance project. In turn, the groundwater governance project will provide inputs and share key project documents with the Agencies executing the above projects, and the countries involved.

The project will build upon, and cooperate through consultations and joint activities with major ongoing parallel relevant initiatives, in particular with:

- *The UNDP Water Governance Facility*, established at the Stockholm International Water Institute (SIWI); it was launched by the United Nations Development Programme (UNDP) and the Swedish Agency for International Development Cooperation (Sida). The programme is a mechanism to implement parts of the UNDP Water Governance Programme.; it supports developing countries on a demand basis to strengthen water governance and reduce poverty through policy support and advisory services in multiple thematic areas, including: integrated water resources management, transboundary water, water supply and sanitation, climate change adaptation, South-South collaboration, experience and best practices exchange, gender, and capacity building.
- *The UNESCO IHP - ISARM (Internationally Shared Aquifer Resources Management)*; the worldwide ISARM Initiative is an UNESCO and IAH led multi-agency effort aimed at improving the understanding of scientific, socio-economic, legal, institutional and environmental issues related to the management of transboundary aquifers. The ISARM program is leading in the inventorying and characterization of the world’s major aquifer systems.
- *World-wide Hydrogeological Mapping and Assessment Programme (WHYMAP)*; the programme compiles data on groundwater from national, regional and global sources, and visualises them in maps, web map applications and services. The generated products provide information on quantity, quality and vulnerability of the groundwater resources on earth and help communicating groundwater related issues to water experts as well as decision makers and the general public.
- *IGRAC – International Groundwater Resources Assessment Center (UNESCO – WMO)*; the Center has developed a Global Groundwater Information System (GGIS), envisaged as an interactive publicly accessible portal to groundwater-related information and knowledge, and promotes guidelines and protocols for the assessment of groundwater resources.

The project will add incremental value to FAO’s ongoing programme in water scarcity, which is an explicit Unit Result (F0201) under Strategic Objective F in FAO’s Medium Term Plan 2010-13. This programme is concerned with the impacts of agricultural practice on both water quantity and quality. This unit result has a confirmed FAO budget of USD 2 000 000. In addition a set of specific FAO regional activities in Near East and Asia and Pacific are linked to conjunctive use of groundwater. Across the organization there are several key programmes that are highly complementary. The styles of groundwater access are very much conditioned by land tenure and FAOs programme on land tenure guidelines is expected to contribute highly relevant case studies and principles of practice which will help shape the FA. Equally, the work of the crop protection division (AGPP) on pesticide use reduction and the use of alternatives is proving instrumental in reducing non-point and point source pollution impacts from fertilizers and pesticides.

At country level, results derived from FAO’s nationally executed Andhra Pradesh Farmer Managed Groundwater System (APFAMGS) project in Andhra Pradesh relate directly to local groundwater governance and the scaling of this initiative through a GEF SLM project will be expected to contribute to the project results from one of the most intensively drilled areas of peninsular India.

F. DESCRIBE THE INCREMENTAL REASONING OF THE PROJECT:

The need to address unsustainable groundwater management practices is increasingly being recognized within and outside the “water box”. A recent FAO global inventory of groundwater use in agriculture has noted the sharp rise in groundwater use for agriculture. Globally, groundwater use now accounts for 40% of all agricultural water use. With respect to the baseline related to groundwater governance diagnostic and policy analytical work, the GEF incremental co-funding will help to strengthen ecosystem considerations and integrate ecosystem-based management principles into groundwater management. GEF support will also lead to global dissemination of the policy recommendations emerging from the project, including mainstreaming of viable national and transboundary groundwater management practices into GEF Programs and projects across focal areas.

Without this project, present practices, characterized by the lack of an overall vision and strategy, of a conceptual “aquifer” framework, of monitoring protocols, and of integration with surface water will continue unchanged in the foreseeable future. The project is an attempt to establish a global case for avoiding the environmental risks and foregone development opportunities that will arise if current groundwater exploitation and pollution trends continue. Such a global assessment will necessarily take into account the strategic value of groundwater resources in view of global changes and increased climatic variability. It is expected that the project will contribute to accelerate a global coordinated effort to introduce sound groundwater governance principles both nationally and at the transboundary level, to promote at the country level the necessary legal, policy and institutional reforms, and a substantially increased level of investments in groundwater related infrastructure and monitoring.

The project will offer a set of alternative governance strategies in the Global Framework for Action that are tuned to regional groundwater and institutional contexts. The alternatives will be based on positive groundwater management examples and designed to both pre-empt threats to aquifer vulnerability and reduce existing pressures.

G. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED AND OUTLINE RISK MANAGEMENT MEASURES:

Sound governance of groundwater resources needs to facilitate and ensure effective country/local management and protection of groundwater as necessary and appropriate – but it is not yet widely practiced, appreciated or understood. Developing a pragmatic and acceptable Framework for Action will be challenging since groundwater is normally managed locally in response to diverse socioeconomic influences, differing climatic regimes and distinct hydrogeological situations. For these reasons a set of three critical risks are identified.

Risks	Analysis	Mitigation Strategy
1. Divergent Priorities of Project Partners.	Early divergence identified.	Focus and articulate consensus.
2. Regional Divergence of Policy Needs.	An inherent issue.	Global framework will need regional variants.
3. Vested political interests in land and water resources resist further attempts at global regulation.	Local and national interests in continued access to land and water resources inhibit governance reform.	Public awareness and communications strategy designed to reveal state of representative aquifers.
4. Global Framework for Action not taken up.	Global water agendas dominated by potable water service provision projected at global level with key aquifer resources ignored.	Aquifer state and vulnerability by potable water service provision projected at global level.

Mitigation of these risks is anticipated in the project by implementing a collaborative process designed to agree an early consensus on the definition of groundwater governance; ensuring that regional variants are accommodated and internalized within a global framework document; communication emphasis upon current state of representative aquifers at local and national level ; and stressing the consequences of failing to appreciate aquifer vulnerability.

H. EXPLAIN HOW COST-EFFECTIVENESS IS REFLECTED IN THE PROJECT DESIGN:

The expected project benefits will be significant by fostering good governance of groundwater at country and local levels globally. The USD 1.75 million GEF support for the project is expected to leverage additional co-financing of USD 2.70 million. This USD 4.45 million project is likely to generate benefits of several orders of magnitude globally with only minimal shift in political understanding and awareness to catalyze policy reforms, whereas with modest shift, the global benefits will be even higher. Groundwater can contribute significantly to the resolution of growing world water concerns, including to adaptation options to climate change, if appropriate policies are developed and implemented to protect it from contamination, manage it sensibly and utilize it conjunctively with surface water. The project will also catalyze cross sectoral benefits by strengthening the linkages across the GEF focal areas.

PART III: INSTITUTIONAL COORDINATION AND SUPPORT

A. PROJECT IMPLEMENTATION ARRANGEMENT:

The project will be implemented and executed by FAO, in close collaboration with two main partners, UNESCO and the IAH. Both these agencies expertise in groundwater and active engagement in the promotion of groundwater science and management have been instrumental in the identification and eventual finalization of the project design. UNESCO and IAH will assist with the organization and support of regional consultations and the development of thematic reports. The World Bank will also substantially contribute to project execution through a co-financing arrangement and the involvement of its GWMATE programme. Other partner agencies will also provide their contributions from respective water governance initiatives such as those of UNDP, UNEP and the Global Water Partnership.

A Project Coordination Unit (PCU) will be established to ensure the day-to-day management of the project, A Steering Committee (SC) will guide the PCU, and an Advisory Panel on Groundwater Policy (APGP) will provide expert advice and advocacy leadership.

As the GEF Agency, FAO will be responsible for overall project supervision to ensure consistency with GEF policies and procedures, and will provide guidance on linkages with related FAO and GEF-funded activities. The Land and Water Division in the Natural Resources and Environment Department will be the Lead Technical Unit and provide technical support and guidance. The FAO/GEF co-ordination unit (in TCI) will monitor implementation of activities undertaken during project execution and will be responsible for clearance and submission of progress reports to GEF. The FAO Finance Division will submit financial reports to the GEF Trustee, in accordance to the Financial Procedures Agreement. FAO, in its capacity as Executing Agency, will also provide overall co-ordination and technical and financial management of the project. FAO will see that the necessary human resources and equipment inputs are provided in a timely manner to ensure smooth implementation of the project and delivery of project outputs, and timely preparation and clearance of project progress and financial reports.

PART IV: EXPLAIN THE ALIGNMENT OF PROJECT DESIGN WITH THE ORIGINAL PIF:

The project *Groundwater Governance: A Global Framework for Action* has been prepared at the request of the GEF Secretariat and following recommendations of STAP, in response to the emerging global concerns over increasingly unsustainable use and degradation of groundwater. The preparation of this project has been a cooperative program led initially by the World Bank (PDF-A, PIF) and then taken over by FAO as Implementing Agency with continuing support by the World Bank, and UN Water partners. Also the IAH, IUCN and the Ramsar Secretariat collaborated through extensive consultations.

The Project Document fully reflects the conceptual design presented in the original PIF prepared by the World Bank. In consideration of the goal of the project to influence groundwater governance policies globally and to inform political decision making, FAO has added a particular emphasis on consultative processes, and on communication and dissemination activities and events.

PART V: AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for CEO Endorsement.	
Charles Riemenschneider Director, Investment Centre Division Technical Cooperation Department FAO Viale delle Terme di Caracalla, 00153 Rome, Italy	
Barbara Cooney FAO GEF Coordinator Email: Barbara.Cooney@fao.org Tel: +39 06 57055478	Jacob Burke Project Contact Person Senior Water Policy Officer Food and Agriculture Organization of the United Nations Email: jacob.burke@fao.org Tel: +39 06 57056450
GEF Agency Coordinator	
Date: <i>September 2, 2010</i>	Tel. and Email:

ANNEX A: PROJECT RESULTS FRAMEWORK

STRATEGIC RESULTS FRAMEWORK				
Global Environment Objective(GEO)/ Project Development Objective (PDO)	The global environment objective (GEO) of the project is to accelerate improved groundwater resource governance at transboundary, national, and local levels. The project development objective (PDO) is to extend the life set of livelihoods reliant upon groundwater and related aquifer services.			
Indicator (GEO)	GEF 6 Strategies will give full consideration to groundwater governance issues across focal areas, and the Framework for Action will inform decision makers at World Water Council and World Water Forum.			
Component	Outcomes	Outputs	Activities	Indicator (Process)
Component 1: Compilation of <u>the state</u> of groundwater governance in relation to groundwater supply and demand (quantity and quality)	Outcome 1: Broad agreement on the scientific and economic issues in relation to groundwater management and a consensus on the scope for future action; and enhanced cooperation and synergies among UN Water Agencies, major IFIs and key NGOs professional associations and client countries.	1.1 Expert meeting report to define groundwater governance and assess its significance at global level. (<i>GEF OK: FAO 25K</i>) 1.2 Case studies reports (prepared and reviewed in consultations with key stakeholders at the national and/or transboundary levels, that will inform the overall global diagnostic. Case studies will exemplify the relationship between various socio-economic, geologic and climatic conditions both at the aquifer level (single country and transboundary), and at the national level. 1.3 Thematic Papers The Papers will summarize present knowledge and experience on key economic, policy, institutional, environmental and technical aspects of groundwater management together with emerging issues and innovative approaches, and (B) address the issue of hydraulic status and groundwater quality transitions in deep aquifers with the participation and assistance of the oil and mining industry. 1.4 Synthesis Document A review of groundwater governance in relation to	1.1 Organization of Expert meeting structured to examine application of ‘commons’ governance in relation to groundwater and define a governance framework. 1.2 – Preparation of Case Studies To include aquifer cases from the GEF IW portfolio (e.g.: NW Sahara Aquifer, Guarani Aquifer), and the following countries: India*, Kenya*, Peru*, Morocco*, Paraguay, Tunisia*, Bosnia&Herzegovina, South Africa*, two SIDS (including one atoll or low lying carbonatic island), and Tanzania* 1.3 Preparation of thematic papers. To include (<i>inter alia</i>): Political economy*; CC adaptation options*; Emerging groundwater management and development issues*; 8 more to be chosen among the following topics: <ul style="list-style-type: none"> • Macro-economic trends that influence demand for groundwater and related aquifer services • The habit of groundwater pollution; trends in loss of groundwater quality and related aquifer services (inc. ecosystems); • Social adoption of groundwater pumping technology and the development of groundwater cultures • Local groundwater management institutions/user partnerships; • The legal basis for groundwater management through land and water use rights regimes • Conjunctive use and management of groundwater and surface water within existing irrigation commands; • Urban-rural tensions and opportunities for co-management • Management of recharge/discharge processes and aquifer equilibrium states; • Management of the deep groundwater frontiers; a possible partnership with the private sector. 1.4 . Review document to be produced by the Steering Committed UN Water Agencies, major IFIs and key NGOs and professional	1.1. Expert meeting report 1.2 Approval of Case Studies selection and reports by the Steering Committee. 1.3 Thematic Papers validated by STAP/ISC 1.4 Review Document endorsed by Steering

		hydrogeological settings with opportunities for action in view of global trends identified. (GEF 0K: FAO 25K)	associations.	Committee
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Component	Outcomes	Outputs	Activities	Indicator (Process)
<p>Component 2: Development of a Global/Regional <u>Groundwater Governance Diagnostic</u> integrating regional and country experiences with prospects for the future.</p>	<p>Outcome 2 A Global Groundwater Diagnostic is informed by regional consultations (including private sector interests) and is projected globally by mainstreaming viable groundwater management practice in GEF Programs and projects and across focal areas.</p>	<p>2.1 Regional Consultation and Private Sector Roundtable reports The consultation process will consist of 6 regional workshops (ECA, MENA, Africa, S Asia, E Asia and Pacific, LAC) through which groundwater issues emerging from the Case Studies and Thematic Papers and the Global Groundwater Diagnostic will be evaluated in the regional circumstances, and a Private Sector Roundtable.</p> <p>2.2 Global Groundwater Diagnostic, a Report The report will present an analysis of the state of groundwater governance at regional and global level. It will examine the prospects for reducing the impacts of human use of aquifers and improving management practice to obtain global environmental benefits.</p> <p>2.3 Mainstreaming Groundwater in GEF Programs In line with GEF 5 IW Strategy, and with STAP guidance, a special event focused on groundwater governance in view of global changes and climatic variability will disseminate the findings of the Global Groundwater Diagnostic in the GEF system and will promote the need for action at transboundary and national/local levels across GEF projects and programs.</p>	<p>2.1 Organization of Regional and Private Sector Consultations and Reporting It is planned that 6 Regional Workshops will be held to consider the regional/local variations in the priority of the identified thematic foci. While these fora will be held on a regional geographic' basis their agenda will be focused around key groundwater thematic areas (with the emphasis put on a given theme varying by region). These events would be organized through the corresponding FAO and UNESCO-IHP Regional Offices or Regional Offices of other partner agencies, with support from the IAH Regional Vice Presidents, in association with recognized groundwater centres or related institutions in the corresponding region, and would each involve 40 – 50 representatives of responsible governments officials (water, environment, finance, agriculture etc.), stakeholder interests and regional specialists, together with members of the Project Team and Partner agencies (including GEF projects in the region). The partner agencies will play a prominent role in co-hosting selected workshops on the basis of their comparative advantages or regional significance. The Private sector Roundtable will involve the oil industry, the geothermal industry and the Bottled water and soft drinks industry.</p> <p>2.2 Preparation of the Global Groundwater Diagnostic To be based on (i) the review of existing documents and experiences, including reports from IAH, UNEP, FAO, the World Bank, GEF, UNESCO IHP, and other UN Water agencies and partner agencies, (ii) the Case Studies and Thematic Papers produced as part of the project.</p> <p>2.3 Organization of GEF Groundwater Conference This activity, which is key for the achievement of the project objectives, will consist in the organization of a one-day GEF Groundwater Conference, with the participation of all GEF Agencies, the GEF Secretariat, STAP and those responsible for key relevant GEF projects/programs in all focal areas. It is proposed that the Conference, organized with the support of IW LEARN communication platform could be held back-to-back with the GEF IW Biennial Conferences in 2011/2013.</p>	<p>2.1 Workshop reports including recommendations for the global diagnostic and visioning process.</p> <p>2.2 . The Global Groundwater Diagnostic” prepared and endorsed by the Project Steering Committee and Advisory Board</p> <p>2.3 GEF Groundwater Conference Conclusions inform visioning process.</p>
<p>Component</p>	<p>Outcomes</p>	<p>Outputs</p>	<p>Activities</p>	<p>Indicator (Process)</p>
<p>Component 3:</p>	<p>Outcome 3</p>	<p>3.1 A shared vision for groundwater governance translated into key policy</p>	<p>3.1 Organization of shared vision consultations</p>	<p>3.1 Minutes of the Final Meeting confirming</p>

<p>Definition of a Shared Vision and <u>Global Framework for Action</u> on Groundwater Governance</p>	<p>A “Global Framework for Action on Groundwater Governance” based on Components 1 and 2 will raise political awareness globally on the urgency of improved groundwater governance, and by disseminating key policy messages fostering precautionary and proactive governance approaches, to prolong the integrity of aquifers and their associated goods and services.</p>	<p><i>messages</i></p> <p>The Vision will consist in a set of key policy messages consistent with an overall vision for groundwater governance, at the global, regional, and country levels.</p> <p>3.2 The “Global Framework for Action on Groundwater Governance”, a document.</p> <p>This short document will consist of (a) the overall vision, and (b) the key policy messages. The document will be accompanied and supported by the Global Groundwater Diagnostic, the Case Studies Reports, the Thematic Papers and the conferences/workshop reports.</p>	<p>All project partner agencies, the SC, STAP, the Advisory Panel on Groundwater Policy, regional experts and agencies, and the private sector will contribute, by participating to electronic forums and a final face to face meeting, to the visioning process aimed at identifying and building consensus around a shared vision for groundwater governance, organized at regional level and around selected themes, and to its translation into a set of key policy messages.</p> <p>3.2 Preparation of the “Global Framework for Action”</p> <p>The project team will consolidate the results of Activity 3.1 in a short summary document, and supporting documentation. The document will be translated into all UN languages, while the supporting documentation will be in English.</p>	<p>consensus on key messages.</p> <p>3.2 The document “ Global Framework for Action on Groundwater Governance” published and validated by the SC</p>
Component	Outcomes	Outputs	Activities	Indicator (Process)
<p>Component 4: Communication Strategy and <u>Dissemination of the Framework for Action</u> on Groundwater Governance</p>	<p>Outcome 4.1: Systematic communication of project’s advancements and dissemination of project documents will strengthen public participation and catalyze action</p> <p>Outcome 4.2: Strategic dissemination of the Framework for Action and of key policy messages at the political level will leverage action and investments on groundwater governance.</p>	<p>4.1 A Communication Strategy defined and implemented.</p> <p>The entire project will be communication oriented. All the issues and interactions between partners and the public at large will be recorded and incorporated. The strategy will inform all consultation and public participation activities of the project. (GEF 250K: FAO 100K)</p> <p>4.2 Outreach and results dissemination of results</p> <p>The communication and dissemination of the “Framework for Action” will occur through high level Outreach Conferences and Special Events in coincidence with World Water Forum 6, and other global events.</p>	<p>4.1 Definition of a Communication and Strategy, and its implementation.</p> <p>A Communication Team, with the help of Country/Partner Agencies will define the communication strategy including communication approach and media mix to be adopted. Communication will utilize ICT technology (a groundwater portal?), audiovisual materials, media and other special events, and published materials. The implementation will be responsibility of the same Team, acting in concert with the Implementing and Executing Agencies.</p> <p>4.2 Organization of side-events at Outreach Conferences</p> <p>Special emphasis will be placed into reaching out to the political arena and disseminating the key groundwater policy messages. The message will be packaged for dissemination through high-level Outreach Conferences which will form a major platform for dissemination project outputs and final results.</p>	<p>4.1. Website established and functioning; published materials and record of communication and public participation events.</p> <p>4.2. Record of outreach conferences, and listing of media coverage.</p>
Component	Outcomes	Outputs	Activities	Indicator (Process)
<p>Component 5: Project Management and Monitoring and Evaluation.</p>	<p>Outcome 5.1: The project is executed within budget and according to an agreed workplan</p>	<p>5.1 Project coordination services delivered</p>	<p>5.1 Administrative services and budgetary control</p> <p>The PMU will undertake the preparation of all recruitment actions, disbursement of field expenses, contracts and letters of agreement.</p> <p>5.2 Planning and coordination of project monitoring and evaluation</p>	<p>5.1. Annual and quarterly implementation and financial reports submitted on time</p>

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF)

In response to the STAP review (5 August 2008);

“STAP welcomes this important initiative on "Groundwater Governance: A Global Framework for Country Action". At the request of the GEF, STAP led a workshop series on groundwater between 2004 – 2006 that developed the priorities that this proposal addresses, including groundwater integration into the GEF focal areas. (The STAP reports are available on the STAP website, www.unep.org/stapgef, and in the GEF website under the GEF Council Documents.)

STAP welcomes very much the opportunity, therefore, to advise on the linkages between groundwater and the other focal areas, as well as on other scientific and technical aspects of the project as requested by the Implementing Agency, and/or International Steering Committee. In this regard, STAP wishes to become part of the International Steering Committee, and it would be grateful if the World Bank could formalize this request by writing to the STAP Secretary.”

The STAP will be formally invited to become a member of the Steering Committee

“ STAP also has the following suggestions to help strengthen the proposal:

“1. STAP questions whether the correct approach is to embark on a top down normative format (the framework for action) when much local/national/regional variation is needed in approaches. The groundwater management problems are already well known to fit within that large set of NRM problems to which there are no panaceas (Ostrom et al 2007), including other types of water management, (Meinzen-Dick 2007). The proposal should make sure that much more attention is given to getting this project better "grounded" in the countries of interest, with all their great complexities and differences. Among the project proponents should be sufficient knowledge of country conditions to pose some key hypotheses to be tested in country level work”

The project addresses the STAP comments by explicit consideration of the Ostrom CPR principles for institutional design.

“2. Risk of countries lacking specific local groundwater knowledge is not addressed, and yet this is a critical determinant as to whether any sound policy can be formulated (see recent Nature papers on importance of this understanding (Harvey 2008, and Polizzotto et al 2008).”

The risk that countries lack specific local groundwater knowledge is being addressed by UNESCO-IHP ISARM country profiles. The national groundwater information compiled at district level in the FAO Aquastat database is due to be updated in 2010 as a result of a global inventory of groundwater use for irrigation. Aquastat

In response to GEF Secretariat Review (29 July 2008), responses to relevant comments are listed below:

“6. Will the project deliver tangible global environment benefits?

This project would develop a global framework for country action that is aimed at fostering improved governance of groundwater resources, playing vital role in the provision of water services and for halting loss of biodiversity. The project will also explore a full range of opportunities for harnessing the optimal benefits of groundwater as adaptation options for water supply and irrigation. The project will complement the past and ongoing actions and activities of other agencies and extend the analysis both to elevate groundwater policy and governance institutional needs to the global political level and to generate an enabling climate for sharing, extending, replicating and consolidating existing lessons and experiences and enhance full benefits of IWRM.”

Comment 6: The project gives comprehensive account of agency involvement and makes provision for an inception event to convene all relevant agencies involved in analyzing and projecting groundwater related information

“8. Is the project design sound, its framework consistent sufficiently clear (in particular for the outputs)?

The project design is sound and its framework of components and outputs is clear and addresses the key issues of global groundwater governance. One of key project components would assist as an outreach tool for public and political discourse on importance of groundwater and should include a groundwater policy panel. The agency is kindly asked, during the project preparation, to develop the advisory panel on groundwater policy to make it operational outside of the International Steering Committee. The title of component 2 (Implementation Teams), which actually represents by its outcomes and outputs the project management is quite misleading. Proper title and placing it at the end of the table A would increase the clarity of the components structure, therefore the agency is, during the project preparation, kindly asked to rearrange and rename this component according to its core function.”

Comment 8: An advisory panel on groundwater policy is included in the project design and reporting process, but is independent from the project steering committee. The project results framework is now adjusted and an explicit project management component included as Component 5.

*“9. Is the project consistent with the recipient country’s national priorities and policies?
Although this a global project aimed at elevation of awareness of the increasingly unsustainable use and degradation of groundwater, improving its governance and understanding its potential for climate change adaptation it is envisaged that national and transboundary studies will follow individual national priorities/plans to extend possible.”*

Comment 9: The project makes provision for national cases studies and regional fora to reflect diverse approaches to groundwater governance.

*“10. Is the project consistent and properly coordinated with other related initiatives in the country or in the region?
According to available results of the PDF A work the agency extensively developed the cooperative programme with all agencies active at global stage in groundwater management and protection, which is documented in relevant PIF annex.”*

Comment 10: The process of agency collaboration will be re-set at project inception to convene all agencies that have maintained an interest. Most UN agencies were convened and the project strategic results framework reviewed at the GEF IW Biennial Meeting, Cairns, October 2009.

*“14. Does the project take into account potential major risks, including the consequences of climate change and includes sufficient risk mitigation measures?
Although the key risks and mitigation strategies are indicated in the PIF, more specific measures need to be elaborated within the project preparation.”*

Comment 14: Critical risks and mitigation measures are proposed in the CEO Endorsement and Project Document. Main risk mitigation measures focus on early consensus building and effective public relations strategies.

*“15. Is the value-added of GEF involvement in the project clearly demonstrated through incremental reasoning?
The value-added of GEF involvement in this project is described accordingly to the global goal of the project. No one organisation has been able to catalyse collaboration among agencies on groundwater to elevate the issue to the global agenda.”*

Comment 15: Incremental reasoning is predicated on the projection of viable, regionally tuned alternatives to groundwater governance

*“17. Is the GEF funding level of project management budget appropriate?
The GEF funding of management budget represents less than 10% of the GEF project grant, which is appropriate. The agency is kindly asked, during the project preparation, to provide more clarity on division of the GEF funds between the project management itself and the funding of the work of the technical secretariat.”*

Comment 17: A clearly budgeted Component 5 for project management and evaluation is included and amounts to 8.4% of GEF finance

ANNEX C: CONSULTANTS TO BE HIRED FOR THE PROJECT

<i>Position Titles</i>	<i>\$/ person week</i>	<i>Estimated person weeks</i>	<i>Tasks to be performed</i>
For Project Management			
Local			
Operations Clerk	1,500	84	Day to day administration of travel, letters of agreement and contracts. Preparation of all formal correspondence and monitoring of project income and expenses
International			
Finance and Budget Officer	2,667	8	Preparation of financial reporting and requests for finance. Submission of reporting in required FAO-GEF formats.
For Technical Assistance			
Local			
Consultation Organizer	1,500	28	Preparation and facilitation of regional for a including reporting of outcomes and decisions.
Advisory Panel Member	1,500	18.6	Attend and participate at Advisory Panel meetings. Preparation of technical notes in field of expertise.
International			
Project Coordinator	3,214	56	Overall technical direction and liaison with project partners. Preparation of workplans and associated budgets. Review and clearance of all technical reports
Communications Officer	3,000	48	Preparation of all reporting templates and designs in consultation with the project team.. Preparation of poster and video material for web distribution. Preparation of information kits and associated educational material
Legal Expert	3,000	8	Review of current groundwater governance practice including both domestic and international jurisprudence. Lead and preparation of substantive material for legal and regulatory aspects of groundwater governance in thematic papers and global diagnostic.
Economist	3,000	8	Review of current economic regulation of groundwater. Lead and preparation of substantive material for economic aspects of groundwater governance in thematic papers and the global diagnostic.
Sociologist	3,000	8	Review of current social practice in relation to groundwater use.. Lead and preparation of substantive material for social and community based practice in relation to groundwater use in thematic papers and the global diagnostic.
Institutions Specialist	3,000	8	Review of current institutional arrangements and trends in relation to groundwater use.. Lead and preparation of substantive material for institutional analysis of groundwater management in thematic papers and the global diagnostic.
Evaluation Specialist	3,000	4	Undertake mid-term and terminal evaluations. Provide specific recommendations on any mid-term

			course corrections and produce a final assessment of project outputs and outcomes.
Publication Design Consultant	3,000	12	Prepare web and print material on the basis of design templates and specifications prepared by the Communications Officer.
Advisory Panel Member	3,000	16	Attend and participate at Advisory Panel meetings. Preparation of technical notes in field of expertise.

ANNEX D: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS

- A. EXPLAIN IF THE PPG OBJECTIVE HAS BEEN ACHIEVED THROUGH THE PPG ACTIVITIES UNDERTAKEN. N/A
- B. DESCRIBE IF ANY FINDINGS THAT MIGHT AFFECT THE PROJECT DESIGN OR ANY CONCERNS ON PROJECT IMPLEMENTATION. N/A
- C. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES AND THEIR IMPLEMENTATION STATUS IN THE TABLE BELOW:

<i>Project Preparation Activities Approved</i>	<i>Implementation Status</i>	<i>GEF Amount (\$)</i>				<i>Co-financing (\$)</i>
		<i>Amount Approved</i>	<i>Amount Spent To-date</i>	<i>Amount Committed</i>	<i>Uncommitted Amount*</i>	
	(Select)					
	(Select)					
	(Select)					
	(Select)					
	(Select)					
	(Select)					
	(Select)					
	(Select)					
Total						

* Uncommitted amount should be returned to the GEF Trust Fund. Please indicate expected date of refund transaction to Trustee.



FAO/GLOBAL ENVIRONMENT FACILITY
PROJECT DOCUMENT



Countries:	Global
Project Title:	Groundwater Governance: A Global Framework for Action
GEF Project ID:	3726
FAO Project ID:	608795
FAO Project Symbol:	GCP/GLO/277/GFF
GEF Agency:	Food and Agriculture Organization of the United Nations (FAO)
Other Executing Partners:	UNESCO International Hydrological Programme (UNESCO-IHP), International Association of Hydrogeologists (IAH)
GEF Focal Area:	International Waters, IW
GEF Strategic Programme:	IW SP-3: Balancing overuse and conflicting uses of water resources in transboundary surface and groundwater systems
Duration:	3 years
Estimated Starting Date:	December 2010
Estimated Completion:	November 2013
Financing Plan:	GEF allocation: USD 1 750 000
	Co-financing:
	FAO USD 850 000
	World Bank USD 850 000
	UNESCO USD 850 000
	IAH USD 150 000
	Subtotal co-financing USD 2 700 000
	Total Project Budget: USD 4 450 000

EXECUTIVE SUMMARY

The project *Groundwater Governance: A Global Framework for Action* has been prepared at the request of the GEF Secretariat and following recommendations of the GEF STAP, in response to the emerging global concerns over increasingly unsustainable use of groundwater and degradation of aquifers. The preparation of this project has been a cooperative program led initially by the World Bank (PDF-A, PIF) in the International Waters Focal Area of GEF-4. The responsibility for formulating and submitting the project document was then taken over by FAO as GEF Agency with continuing support by the World Bank and UN Water partners. Also the International Association of Hydrogeologists (IAH), International Union for the Conservation of Nature (IUCN) and the Ramsar Secretariat collaborated through extensive consultations.

The overall project objective is to influence political decision making by achieving a significantly increased level of awareness of the paramount importance of sustainable groundwater resources management in averting the impending water crisis. The project will develop a global "Framework of Action" (FA), consisting of a menu of country specific policy, institutional and investment options, that are representative of international best practices and whose application would facilitate improved management at the country/local level, and better governance at the local, national and transboundary levels. The FA will foster the recognition of the value of groundwater as a critically important natural resource, and of the social, economic and ecological opportunities that sustainable groundwater development and management might provide. The FA will also bring to the forefront of political attention the growingly important and strategic role of groundwater in ensuring water supply for human uses and the ecosystems as we face increasing climate variability and change. The FA will be delivered and disseminated through an ad hoc communication and outreach strategy designed to convey key messages at the political level and to reach across all those sectors that use, depend upon, and impact water resources, including the environment.

The project, while being consistent with the criteria and strategies of the International Waters focal area of the GEF, will also develop linkages between groundwater and all other GEF focal areas (Climate Change, Biodiversity, Land Degradation, and POPs) in order to promote a more systematic incorporation of the principles of good groundwater governance across the entire GEF portfolio of projects.

The Project implementation approach will revolve around three main lines of action:

Building on Existing Knowledge Base and Initiatives - This project will build on the knowledge base, management experience and good practices developed in selected countries particularly dependent on groundwater and highly visible internationally. A particular focus of the project will be to draw lessons and experiences from ongoing and past projects and programs supported by partner agencies and to consolidate and synthesize knowledge and experience on the governance framework for groundwater at country level¹.

Strengthening Partnerships - The proposed project will strengthen existing partnerships. During project formulation and implementation, FAO and the executing agencies UNESCO and IAH will collaborate closely with, and draw on the experience of the UN Water and its member agencies and programs (among them in particular IAEA, the World Bank, UNEP, UNDP, WHO, UNICEF, World Water Assessment Program (WWAP), the CGIAR organizations (in particular IWMI) and national geological surveys, bureaux and associations with a history of international cooperation on groundwater. It is expected that other partnership will be forged during the life of the project particularly with NGOs and especially in developing societal and community aspects of groundwater management policy. In addition, IUCN, the World Water Council (WWC) and Ramsar Secretariat have expressed support for improved groundwater governance and they would be invited to input to the project along with other expert bodies such as International Water Management Institute (IWMI) and International Groundwater Resources Assessment Centre (IGRAC).

Mainstreaming Groundwater in the GEF Programs and Projects - The GEF is keen to elevate the profile of groundwater management in its project portfolio. In helping to achieve this goal, the project will partner with the GEF groundwater related projects in the IW focal area, both ongoing and under preparation, as well as review a selected number of land degradation, biodiversity, climate change and POPs projects. Integrated approaches to groundwater management and groundwater related investments would be promoted globally by mainstreaming groundwater in GEF Programs and projects across all focal areas.

¹ A preliminary list of key documents, reports and ongoing projects has been compiled in Annex 7.

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GLOSSARY OF ACRONYMS

APGP	Advisory Panel on Groundwater Policy (this project document)
APPR	Annual Project Progress Report
AWP	Annual Work Plan
BD	Biodiversity GEF Focal Area
BH	Budget Holder
BRGM	Bureau de Recherches Géologiques et Minières
CGIAR	Consultative Group on International Agricultural Research
ECA	Europe and Central Asia
FA	Framework for Action (this project document)
FAO	Food & Agricultural Organization of the United Nations (see Annex 7)
GEF	Global Environment Facility
GEO	Global Environmental Objective
GRAPHIC	Groundwater Resources Assessment under the Pressures of Humanity and Climate Change (UNESCO-IHP)
GWMATE	Groundwater Management Advisory Team (World Bank)
GWADI	Water and Development Information for Arid Lands (UNESCO-IHP)
GWES	Groundwater for Emergency Situations (UNESCO-IHP)
GWP	Global Water Partnership (see Annex 7)
IAEA	International Atomic Energy Agency (see Annex 7)
IAH	International Association of Hydrogeologists (see Annex 7)
IGRAC	International Groundwater Resources Assessment Centre (see Annex 7)
IHP	International Hydrological Programme (UNESCO)
INBO	International Network of Basin Organizations
INWEB	International Network of Water-Environment Centres for the Balkans
IOC	International Oceanographic Commission (UNESCO)
IR	Inception Report
ISARM	International Shared Aquifer Resource Management (UNESCO-IHP)
IUCN	International Union for the Conservation of Nature (see Annex 7)
IW	International Water (GEF Focal Area)
IWC	International Waters Conference
IW-LEARN	International Waters Learning Exchange and Resource Network
IWMI	International Water Management Institute (see Annex 7)
IWMR	Integrated Water Resources Management
LAC	Latin America and the Caribbean
LD	Land Degradation GEF Focal Area
MAB	Man and the Biosphere Programme (UNESCO)
MAR	Management of Aquifer Recharge (UNESCO - IHP)
MDGs	Millennium Development Goals
MENA	Middle East and North Africa
NEPAD	New Partnership for Africa's Development
NGO	Non-governmental Organization
OAS	Organization of American States
PC	Project Coordinator
PCU	Project Coordinating Unit
PDO	Project Development Objective
PIR	Project Implementation Review
PSC	Project Steering Committee
POPs	Persistent Organic Products (GEF focal area)
PTS	Persistent Toxic Substance
SA	South Asia
SADC	Southern Africa Development Community
SIDA	Swedish Agency for International Development Cooperation
SC	Steering Committee (this project document)

SIDS	Sustainable Development of Small Island Developing States
SPPR	Semi Annual Project Progress Report
STAP	Scientific and Technical Advisory Panel (GEF)
TDA	Transboundary Diagnostic Analysis
ToR	Terms of Reference
TWAP	Transboundary Water Assessment Programme (GEF)
UNDP	United Nations Development Programme (see Annex 7)
UNEP	United Nations Environment Programme (see Annex 7)
UNESCO	United Nations Educational, Scientific and Cultural Organization (see Annex 7)
UNESCO-IHP	UNESCO International Hydrological Programme
UNICEF	United Nations Children's Fund (see Annex 7)
UN-ILC	(United Nations) International Law Commission
WB	The World Bank
WHO	World Health Organization (see Annex 7)
WHYMAP	World-wide Hydrogeological Mapping and Assessment Programme
WMO	World Meteorological Organization (see Annex 7)
WSSD	World Summit on Sustainable Development
WWAP	World Water Assessment Program
WWC	World Water Council (see Annex 7)
WWV	World Water Vision

1 BACKGROUND

1.1 General and sectoral context

The international debate on climate change has made evident that many countries of the world are approaching or have gone beyond the limits of their renewable water resources. As a consequence, the groundwater storage that provides the ultimate resource buffer² is threatened with a double jeopardy - depletion and degradation³. Over the past 50 years, rapid population growth, increased urbanization and unsustainable water use practices have placed an enormous pressure on water resources. With greater climate variability, competition for water resources between agriculture, livestock, energy, mining, industrial sectors and domestic supply is an increasing threat to economic development, food security, livelihoods, integrity of ecosystem services, and poverty reduction in many countries. Growing water demand is contributing to abstraction of groundwater beyond sustainable levels. In addition, un-regulated land use and consequent land degradation are impacting recharge areas of aquifers, and together with pollution of groundwater, are contributing to decreased productivity of water services, the loss of biodiversity, impoverished livelihoods and ill health. Climate change is expected to impact the entire hydrological cycle - precipitation, evaporation, infiltration and runoff - affecting water availability and use at all levels: regional (transboundary), national, and local, with significant effects on ecosystems, livelihoods and economic growth especially in developing countries. Sea level rise from global warming poses greater risks of salinization for coastal water supplies, particularly in SIDS. Yet solutions to the water crisis already affecting many countries and the emerging global concerns over climate change have given little recognition or weight to the wide availability and vital function of groundwater in the global water cycle, its unique characteristics, and the immense benefits provided by its proper protection, management and development. In addition, the degree to which the full spectrum of groundwater use and abuse is amenable to the Ostrom set of design principles⁴ used to inform experiments in more adaptive 'common pool resource' management⁵ has yet to be determined. In this respect, the body of evidence⁶ coming from some of the most intensively developed aquifers needs to be understood by a broader audience of decision makers.

1.1.1 Groundwater and Climate Change

Groundwater has a critical, yet not fully realized, role in adaptation to climate change. Groundwater (from shallow unconfined aquifers to deep reserves) is already playing a critical role in economic growth and in addressing the emerging challenge of adapting to changing climate, especially in the urban and agriculture sectors. *Because of its unique characteristics – vast resource, wide availability, natural storage, natural protection, long retention time and slow aquifer response – groundwater (compared to surface water) is naturally buffered against seasonal variability in ambient temperatures and rainfall.* The key lies in understanding and operationally harnessing its unique characteristics and unlocking its huge potential for optimal benefits for drinking, livestock and irrigation water supply, an area of inquiry that has received little serious attention in the global water and adaptation discourse.

1.1.2 Groundwater contribution to macro-economic

Groundwater: highly under-valued water resource. Groundwater, which is over 98% of the global freshwater resource, has a pervasive influence across river basins and landscapes, sustaining important ecosystems whilst contributing enormously to human health and socioeconomic development through low-cost, drought-secure and high-quality (rural, urban and irrigation) water supplies. In many arid regions, groundwater is the only water source available for people and wildlife.

² Burke, J.J and Moench, M. (2000) Groundwater and Society. Resources, Tensions and Opportunities. United Nations in collaboration with ISET. New York. 170pp.

³ Morris, B L, Lawrence, A R L, Chilton, P J C, Adams, B, Calow R C and Klinck, B A. (2003) Groundwater and its Susceptibility to Degradation: A Global Assessment of the Problem and Options for Management. Early Warning and Assessment Report Series, RS. 03-3. United Nations Environment Programme, Nairobi, Kenya

⁴ Ostrom, E (2005) Understanding Institutional Diversity. Princeton University Press. Princeton. 355pp.

⁵ Ostrom, E (2007) The challenge of crafting rules to change open access resources into managed resources. Paper presented at the International Economic Association roundtable on the Sustainability of Economic Growth, Beijing, China. July 13-14, 2007.

⁶ Shah, T. (2009) Taming the Anarchy. Groundwater Governance in South Asia. Resources for the Future Press. Washington DC. 310pp.

1.1.3 The state of groundwater management

The evidence of effective groundwater management that can sustain a set of social, economic and environmental services is thin. An unprecedented increase in the utilization of groundwater (both in urban areas and for agricultural irrigation) has occurred in the last few decades and this drastic change has been called ‘the silent revolution’ of water-supply, since it has occurred virtually unnoticed, unplanned and uncontrolled in many national as well as transboundary aquifers. Scientific and technological advances in drilling technologies, cheaper and powerful pumps and sector policies with perverse incentives (e.g., energy subsidies), together with decreasing access to surface water of acceptable quality, have encouraged rapid development and pumping of groundwater in many parts of the world. This pervasive and vital water resource remains seriously undervalued in relation to its instrumental value. Accordingly, the level of political consideration and financial investment that go into resource governance and management are not commensurate. Consequently, agencies charged with the mandate of managing groundwater often remain weak (or non-existent) and poorly funded and, with few exceptions, support from development agencies has also focused mainly on resource development and not on management and protection.

Lost opportunities to realize full benefits of IWRM. Although scientific and technical knowledge of groundwater has improved considerably in recent decades, the governance of this resource (sometimes, considered quasi private) has failed to feature prominently in water policy dialogue and management of the resources at the local level. Water policies at national and transboundary levels remain focused almost exclusively on surface water issues. Groundwater and surface water, although part of the same water cycle, behave on very different spatial and time scales and require approaches to resource management that are quite distinctive and often not fully understood, appreciated and incorporated within the principles of Integrated Water Resources Management (IWRM). For example, the links between land use changes and aquifer recharge, between over abstraction and groundwater dependent ecosystems, between surface water use and groundwater levels (and vice versa), or the resiliency of aquifers as buffers against seasonal variability in rainfall and temperature due to climate change are poorly understood. As a consequence, important opportunities are being lost for utilizing groundwater resources sustainably, strategically, or conjunctively with surface water

Management of groundwater is rarely amenable to direct water administration predicated on allocation and regulation of surface water use. While most groundwater recharge and discharge can be accommodated within the system limits of national and transboundary river basins, extensive aquifers and associated flows can transcend surface water basins. This adds another dimension of governance that may not be explicitly addressed through existing hydraulic administration. Models of natural resource governance through public administration or user based self regulation (such as water user associations) have tended to fail when applied to sets of groundwater users. Governance of groundwater use and protection of the aquifers that furnish the resource calls for a markedly different policy approach at the national level and differentiated levels and styles of management and regulation at the local level.

1.2 Project background

The need to identify practical strategies and prioritize actions to develop and manage water resources in an environmentally responsible, socially acceptable and economically efficient manner has been recognised for several decades. But the precise role and function of groundwater in these approaches receives little recognition in relation to the set of services it provides. This project is predicated on the assumption that groundwater and the aquifers that host it will play an essential role in providing solutions as a whole set of socio-economic demands and environmental pressures build. This will include adaptation to climate change. Hence incorporating the linkages between groundwater and GEF focal areas would enhance the synergies and opportunities in GEF programmes and offer a platform for the accrual of global environmental benefits related to groundwater use.

Low levels of investment in groundwater management as opposed to surface water management can be attributed to the low ‘visibility’ of the resource, but other factors are important considerations. First, while using groundwater at the individual level is relatively simple if no individual use impacts another user, the collective management of groundwater is inherently complex given the wide variety of geological and

hydrological conditions under which it occurs. Second, the set of groundwater users and managers have generally been unable to influence public decision makers about the impending crisis on groundwater management. For instance, there is inadequate attention to developing a sound economic rationale for collective management of groundwater resources and hence establish effective governance structures and regulations of the resource. Third, politicians (and even funding agencies) have also tended to be both biased towards more visible and larger infrastructure investments (dams, canals, water supply treatment plants) whose impacts maybe larger and benefits more easily defined and popularly justified. Fourth, there is a general reluctance to embrace difficult reforms, including cross subsidies in other sectors (such as energy) which create perverse incentives, rights regimes related to common property resource that maybe poorly understood and defined except in highly regulated societies.

Alternative approaches to groundwater policy development and implementation are needed to ensure that the contributions of groundwater to resolving intense competition for global freshwater resources are sustainable and equitable. More coherent policies are required to shape the development of effective and flexible institutions and the development and adoption of approaches to groundwater governance at national and local level. Such policies can maintain the availability of high quality groundwater resources to meet human, economic and ecosystem needs. Over recent decades, scientific advances have created a solid platform of technical knowledge and information, but this has yet to strongly influence public policy, management institutions and decision making. Hence, there is an urgent requirement for new enabling strategies in groundwater governance that both reflect the political economy of groundwater and take advantage of advanced knowledge and data. But such strategies also need broad support if they are to be implemented. Without concerted action at the political level, critical opportunities for sustainable use of limited groundwater resources will be lost as well as prime opportunities for poverty reduction, economic development and ecosystem management.

Effective groundwater governance needs to be based on sound science and local knowledge and be participatory. At the outset this entails understanding the economics and the political economy of groundwater management. Improving groundwater management requires the collection, analysis, use and dissemination of reliable information, adequately trained human capacity and suitably sensitized institutions and enabling legislation, that are effective at a range of scales - from users at the community level to sound policies at the national and transboundary levels. One defining feature of groundwater use is the lack of centralized infrastructure and the perceived public good nature of the resource. Individuals or groups of individuals use the resource directly. This not only complicates the collective management of groundwater, but it means that any management approach will need a set of incentives and approaches to social inclusion that may not occur in more conventional natural resource management. In addition, because of an emphasis on groundwater development rather than management, there has been a worrying lack of attention to the interrelationships between groundwater management and land use planning and management. Thus, to protect the ongoing viability of investment in groundwater dependant development, governance needs to incorporate land use management which is sympathetic to the preservation (and where necessary improvement) of the quantity and quality of groundwater.

1.3 Rationale for GEF intervention

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 Operational Strategy included multi-country aquifers and groundwater in all three IW Operational Programs, no project relating to this very important area had ever been submitted by the IAs. 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 sectoral vision privileging surface water – visible, easily quantifiable, in some measure predictable, and lending itself to simple modeling and scenario building exercises. Water present in the subsurface is instead hidden and linked to 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 last decade, the GEF Secretariat, the GEF Implementing Agencies and specialized partner agencies such as UNESCO and IAEA have been working cooperatively to analyze 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 management of large transboundary groundwater basins. 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 water.

In 2004 the GEF Secretariat, in its proposal for the STAP Work Program, noted that: *“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 all 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 few 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 semi-arid 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. As interlinkages among GEF focal areas are presently being debated, it has also become clear that this subject may best be approached through surface-subsurface waters interactions with land, climate, and biodiversity. Groundwater in fact exemplifies, possibly better than any other element of the natural environment, the concept of interlinkages which STAP is striving 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, following guidance of the GEF Secretariat, identified groundwater as a priority for its 2004-06 Work Program. This has led to the establishment of a highly successful cooperation with UNESCO's International Hydrologic Program (IHP), and with its global long-term initiative to promote assessments and scientific collaboration on transboundary aquifers - ISARM. The series of STAP-UNESCO workshops on Strategic Options and Priorities in Groundwater Resources, Managed Aquifer Recharge, and Groundwater in Small Islands held respectively in Paris, New Delhi, and Port of Spain has represented a first contact and exchange between the hydrogeological community of experts, managers and scientists, and the GEF system. The results have been remarkable. STAP has distilled few overarching strategic directions that should guide GEF action in groundwater as part of the IW Focal Area, and beyond, across all other Focal Areas. It should also be stressed that there are many components of the UNESCO IHP which will be able to contribute to the project. These include GRAPHIC, GWADI, GWES together with the related work of UNESCO Category 2 centres and chairs now located in Portugal, Cape Town and .

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 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.

Finally, the STAP has urged GEF to catalyze the integration of groundwater governance issues into the global dialogue on water, which is being developed through the World Water Forum and other similar processes. This project responds to this call from STAP, and is in line with the strategic approach to groundwater that the GEF is striving to implement. This overall thrust will be a valuable contribution to Rio +20 discussions that will precede the proposed Earth Summit in 2012.

1.4 GEF eligibility criteria

1.4.1 Programme and policy conformity

The project aligns closely to GEF 4 International Waters –Strategic Objective # 2 “*To play a catalytic role in addressing transboundary water concerns by assisting countries to utilize the full range of technical assistance, economic, financial, regulatory and institutional reforms that are needed*” and Special Programme # 3 – “*Balancing overuse and conflicting uses of water resources in transboundary surface and groundwater basins*”. Moreover, the project treats groundwater as 'cross-cutting' topic which significantly influences (or is itself significantly influenced by) all other GEF Focal Areas. The project addresses sustainable development challenges faced by national and transboundary surface and groundwater systems, including cross sectoral and cross-border challenges related to over pumping, overuse and conflicts over water use, pollution, loss of critical habitats and biodiversity, and adaptation to climate variability.

2 RATIONALE

2.1 Problems and issues to be addressed

This project, consistent with the strategic programming for GEF-4, will play a catalytic role in strengthening the role of groundwater in the discourse on water policy reforms on national and transboundary groundwater management. The Steering Committee and the Advisory Panel on Groundwater Policy, both to be established by the Project, and other appropriate forums will be used both to elevate groundwater management issues in the public and political discourse on water policy and to mobilize additional resources for promoting sustainable groundwater governance, management and development. The global Framework of Action will be used to encourage countries to adopt a broad option of policy, regulatory, institutional, economic, and financial reforms and technical assistance for benefiting fully from the opportunities of effectively integrating groundwater as part of IWRM.

This project, will implement the recommendation of the STAP, and fully define and establish the linkages at an operational level between groundwater governance and the other GEF focal areas. This will cover:

- Groundwater and biodiversity, with emphasis on freshwater, alluvial plain and coastal (wetland) ecosystems;
- Groundwater and land degradation, with focus on strategic uses and delineation and protection of recharge areas;
- Groundwater and climate change adaptation (coastal areas, strategic uses, managed recharge, conjunctive use);
- Groundwater and POPs and PTS (contamination of aquifers); and,
- Groundwater and International Waters, with focus on transboundary aquifer management issues

However, the main areas of focus of the project are the social and institutional circumstances that condition groundwater use and impact aquifer state. To this extent, the project will build on and draw from the extensive work, knowledge and experience on groundwater policy, law, institutions, management, development, analysis, research carried out by the GEF, FAO, the Bank and other partners. In particular, the contingent influence of land tenure on groundwater access and use will be examined and principles of common property management sought. The project will draw lessons from the GEF's International Waters program, a recognized leader in promoting innovative transboundary aquifer management (e.g., Guarani, Illumenden, Nubian aquifers). It will also support the development of operational links between groundwater and other GEF focal areas - biodiversity, climate change, land degradation and POPs.

Since 2001, the World Bank with GW-MATE has developed a wide array of advisory materials on the strategies, instruments and tools for groundwater management and protection, and has been piloting management and protection interventions in selected Bank operations on an opportunistic demand-driven basis at local project level. The Bank has also supported extensive sector work, which includes analysis of the important role groundwater plays in several countries.

Other partner agencies – UNESCO, IAEA, IGRAC, IUCN, FAO, UNEP, WMO and Ramsar Secretariat - too have supported numerous groundwater projects and programs. The list of the global activities in groundwater management and protection and related publications of partner agencies (including IAEA, IAH, IGRAC, IUCN, IWMI, FAO, GEF, GWP, Ramsar Secretariat, UNDP, UNEP, UNESCO, UNICEF, WHO, WMO, WWC, and the World Bank) has been compiled in Annex 7.. The project will complement the past and ongoing actions and activities of these agencies and extend the analysis both to elevate groundwater policy and governance institutional needs to the political level and to generate an enabling climate for sharing, extending, replicating and consolidating existing lessons and experiences and enhance full benefits of IWRM.

2.2 Project justification and Incremental reasoning

This project will support the development of a global FA for enabling good governance of groundwater and for building momentum at the political level to foster change, support policy and institutional reforms to

promote sustainable groundwater management at country and local levels. It will thus promote alternative approaches to current groundwater use, and hence, contribute to a major part of the global water challenge related to adaptation to climate change.

Specifically, the FA for improved groundwater governance generated (with its country/regional variants in response to inherent hydro-geological and socioeconomic variability) is expected to catalyze policy reform and institutional strengthening at the global and national level in relation to groundwater resources, which in turn will provide an enabling environment for practical advances in groundwater management and protection at the local level, where progress is currently often impeded. It will support realization of much broader benefits of IWRM.

In addition, promoting effective linkages between groundwater and all GEF focal areas – international waters, climate change, biodiversity, land degradation, and POPs – will support improved global environmental benefits across focal areas in future GEF projects and programs in its portfolio.

The project will also build on the lessons learned from the implementation of the GEF groundwater and learning projects to generate new knowledge, to targeted experience sharing, to accelerate learning between new and existing GEF, FAO, UNESCO IHP and WB projects in the portfolio and to identify and replicate good practices in order to achieve stronger impacts. Specific links with GEF projects involving groundwater management will be built to test and validate management and governance practice. Examples will include the FAO India-SLEM project and the links to land degradation and biodiversity focal areas (and SPA), the MENARID programme (LD, BD, IW) and the Climate Change CC-LULUCF.

Finally, the project will work with the GEF IW LEARN project to facilitate sharing of and disseminating knowledge, lessons, experiences and best practices to a wide audience.

2.3 Without/with project scenarios

Without the project, it is likely that current unsustainable groundwater management practices, characterized by the lack of an overall vision and strategy, of a conceptual “aquifer” framework, of monitoring protocols, and of integration with surface water will continue unchanged in the foreseeable future. The project is an attempt to establish a global case for avoiding the environmental risks and foregone development opportunities that will arise if current groundwater exploitation and pollution trends continue. Such a global assessment will necessarily take into account the strategic value of groundwater resources in view of global changes and increased climatic variability. It is expected that the project will contribute to accelerate a global coordinated effort to introduce sound groundwater governance principles, to promote at the country level the necessary legal, policy and institutional reforms, and a substantially increased level of investments in groundwater related infrastructure and monitoring.

2.4 Stakeholders and target beneficiaries

The project is designed to extend the range of engagement of the technical and scientific groundwater community with a much more comprehensive set of groundwater users including municipalities and rural development agencies, water resource managers, environmental regulators, and planners. Ultimately, the project results have to resonate strongly among parliamentarians and policy makers to make alternative groundwater management solutions ‘stick’ and reverse trends in groundwater depletion and degradation. With the level of GEF and co-finance input specified in the project, it will not be possible to determine specific aquifer remediation, but it will be possible to set an informed agenda for the implementation of management alternatives adapted to regional typologies in resources and governance. These agendas will have to be relevant to users, the diverse groups of rural and urban communities that depend upon groundwater. The messages and communication products will need to be suitably scaled and targeted if they are to have effect.

3 PROJECT FRAMEWORK

3.1 Project Impact

The project is predicated on the observation that that much thinking about water management has not caught up with the rate of depletion and degradation of aquifers. Hence the project will attempt to involve and influence a new set of players and researchers and set of beneficiaries that will have had limited exposure to groundwater governance issue __ municipalities, agricultural agencies, environmental agencies. This impact will be underpinned by the accumulated technical and scientific knowledge generated by the community of groundwater water resource managers and hydrogeological science.

The project's global environmental objective (GEO) is: to accelerate the accrual of global environmental benefits (goods and services) that are generated through improved groundwater resource governance at transboundary, national, and local levels. This is in the face of rising human demand, overall water scarcity and the anticipated impacts of climate change. This will contribute to the GEF's objectives in the GEF international focal area focal area and address Millennium Development Goal 7: to ensure environmental sustainability.

The project development objective (PDO) is to extend the life set of livelihoods reliant upon groundwater and related aquifer services. This objective is consistent with FAO's mission to raise levels of nutrition, increase agricultural productivity and improve the lives of rural populations. It will also help these countries to meet Millennium Development Goal 1: to eradicate extreme poverty and hunger. The emphasis on this objective will largely come from national Ministries of Water, Health and Agriculture and the related World Bank and UN agency projects that will co-finance this GEF project, but the relevance of this objective to the GEF will be the efforts to increase the environmental sustainability of activities in productive sectors that this project will support.

3.2 Summary of Project components, outputs and outcomes

The project has been structured into five major components, with each component covering a different technical area and roughly corresponding to a specific GEF Strategic Programme. Each component is designed to produce a specific outcome or set of outcomes.

The five components and related outputs are as follows:

Component 1. Compilation of the global state of groundwater governance in relation to groundwater supply and demand (quantity and quality)

- 1.1. Conceptual Framework report
- 1.2. Case studies
- 1.3. Thematic papers
- 1.4. Synthesis report

Outcome 1:

Broad agreement on the scientific and economic issues in relation to groundwater management and a consensus on the scope for future action; and enhanced cooperation and synergies among UN Water Agencies, major IFIs and key NGOs professional associations and client countries.

Component 2. Development of a global/regional groundwater diagnostic integrating regional and country experiences with prospects for the future

- 2.1. Regional Consultations and Private Sector Roundtable
- 2.2. Global Groundwater Diagnostic, a report
- 2.3. Mainstreaming groundwater in GEF Programmes

Outcome 2

A Global Groundwater Diagnostic is informed by regional consultations (including private sector interests) and is projected globally by mainstreaming viable groundwater management practice in GEF Programs and projects and across focal areas.

Component 3. Definition of a Shared Vision and Global Framework for Action on Groundwater Governance

- 3.1. A shared vision for groundwater governance translated into key policy messages
- 3.2. A report, "Global Framework for Action on Groundwater Governance".

Outcome 3

A "Global Framework for Action on Groundwater Governance" based on Components 1 and 2 will raise political awareness globally on the urgency of improved groundwater governance, and by disseminating key policy messages fostering precautionary and proactive governance approaches, to prolong the integrity of aquifers and their associated goods and services.

Component 4. Communication Strategy and Dissemination of the Framework for Action on Groundwater Governance

- 4.1. A Communication Strategy defined and implemented
- 4.2. Outreach and dissemination of results

Outcome 4.1:

Systematic communication of project's advancements and dissemination of project documents will strengthen public participation and catalyze action.

Outcome 4.2:

Strategic dissemination of the Framework for Action and of key policy messages at the political level will leverage action and investments on groundwater governance.

Component 5. Project Management, Monitoring and Evaluation

5.1. Project coordination services delivered

5.2. Monitoring and evaluation planned and coordinated

Outcome 5:

The project will have ensured administrative services and budgetary control for the project duration. All monitoring and evaluation activities will have been planned and delivered by the project

3.3 Detail of Project Components, Outputs and Activities

Component 1: Compilation of the state of groundwater governance in relation to groundwater supply and demand (quantity and quality) (GEF USD 230K; CF-in kind USD 1,450K)

1

Output 1.1: The conceptual framework

Through an expert group meeting, the concept of groundwater governance, and its significance at the global level, will be defined.

Activity 1.1 Organization of Inception Meeting

The purpose and objective of the Inception meeting will be to: (i) introduce project staff with the FAO-GEF, UNESCO, and IAH structures and procedures which will support the project during its implementation; (ii) detail the roles, support services and complementary responsibilities of UNESCO, IAH staff vis à vis the project team; (iii) provide a detailed overview of FAO-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation, the Annual Project Report (APR), as well as mid-term and final evaluations. Equally, the Inception Workshop will provide an opportunity to inform the project team on FAO project related budgetary planning, budget reviews, and mandatory budget rephrasing. The Inception Workshop will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed again, as needed, in order to clarify for all, each party's responsibilities during the project's implementation phase.

Activity 1.2 Organization of Specialist Group Meeting

Immediately following the inception meeting a facilitated specialist group meeting will be held at FAO HQ to arrive at a workable definition of groundwater governance, particularly in relation to the body of 'commons' research. Of particular interest will be a discussion on the general applicability of Ostrom's⁷ set of eight design principles and whether the range of groundwater occurrences and their patterns of use are generally amenable to polycentric resource governance systems as opposed to rules set by central authorities or outcomes produced by purely individual behaviour. The meeting will produce a report which will inform the conceptual framework from the outset.

Output 1.2: Case studies reports

The reports will be prepared and reviewed in consultations with key stakeholders at the national and/or transboundary levels that will inform the overall global diagnostic. Case studies will exemplify various socio-economic, geologic and climatic conditions. They will consider groundwater status and management issues both at the aquifer level (single country and transboundary), and at the national level.

Activity 1.2 Preparation of Case Studies

The economics and the political economy of groundwater resources will also be analyzed in selected countries and aquifers to identify and develop key policy and governance issues (including cross-sectoral linkages) and to propose activities to support management needs under different socioeconomic and hydrogeological settings. Each case study will review and identify the nature and characteristics of groundwater resources, its use in rural and urban water supply, industry and irrigation, emerging issues and the best practices, threats, and knowledge gaps regarding good groundwater governance. The case studies will tentatively include:

- Two aquifer cases from the GEF IW portfolio (e.g.: NW Sahara Aquifer, Guarani Aquifer);
- The following countries: India, Kenya, Morocco, Peru, Tunisia, South Africa, Tanzania, to be prepared by the World Bank under a co-financing arrangement;
- The following countries: Bosnia & Herzegovina, Paraguay, two SIDS (including one atoll or low lying limestone island), to be prepared by other project partners.

The final choice of the case studies and execution arrangements will be made by the SC at its first meeting, based on proposals made by SC members.

The Case Studies will represent a diverse set of groundwater issues and conditions. They will be prepared with the participation of local experts and will be reviewed by key stakeholders and international experts. Annex 3 contains the draft terms of reference for preparing the case studies, which will be refined after a review of the existing information related to groundwater management and development in those countries.

Output 1.3: Thematic Papers

⁷ Ostrom, E. (2005) op. cit.

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The Papers will synthesize present knowledge and experience on key economic, policy, institutional, environmental and technical aspects of groundwater management together with emerging issues and innovative approaches, and address the issue of hydraulic status and groundwater quality transitions in deep aquifers with the participation and assistance of the oil and mining industry.

Activity 1.3 Preparation of thematic papers.

Together with the Case Studies, the Thematic Papers will provide key inputs to the Global Groundwater Diagnostic (see following Component). They will distil current knowledge on a number of relevant aspects related to groundwater governance, exploration and exploitation, monitoring, strategic uses. The World Bank will prepare three of them. They are:

- Groundwater Political Economy.
- Adaptation Options for Climate Change Impacts on Groundwater Resources.
- Emerging issues in groundwater management and development.

Another set of 8 papers, to be prepared by other partners (FAO, IAH, UNESCO) may include:

- Macro-economic trends that influence demand for groundwater and related aquifer services
- The habit of groundwater pollution; trends in loss of groundwater quality and related aquifer services (inc. ecosystems);
- Social adoption of groundwater pumping technology and the development of groundwater cultures
- Local groundwater management institutions/user partnerships;
- The legal basis for groundwater management through land and water use rights regimes
- Conjunctive use and management of groundwater and surface water within existing irrigation commands;
- Urban-rural tensions and opportunities for co-management
- Management of recharge/discharge processes and aquifer equilibrium states;
- Management of the deep groundwater frontiers; a possible partnership with the private sector.

The final choice of Thematic Papers and execution arrangements will be made by the SC at its first meeting, based on a proposal made by the PC.

Component 2: Development of a global/regional Groundwater Governance Diagnostic integrating regional and country experiences with prospects for the future (GEF 821K USD; CF in-kind 1.016K USD).

Output 2.1: Regional Consultation and Private Sector Roundtable Reports -

The consultation process will consist of:

- (i) 6 regional consultation workshops (ECA, MENA, Africa, S Asia, E Asia and Pacific, LAC) through which groundwater issues emerging from the Case Studies, Thematic Papers and the Global Groundwater Diagnostic will be evaluated in the regional circumstances, and
- (ii) 1 event dedicated to the private sector, aimed at exploring opportunities for partnerships, information sharing, and support.

Activity 2.1 Organization of Regional and Private Sector Consultations

Once Outputs 1-3 will have been produced, 6 Regional Workshops will be held to consider the regional/local variations in the priority of the identified thematic foci. These events would be organized through the corresponding FAO and UNESCO-IHP Regional Offices (including UNESCO Category 2 centres and chairs and the UNESCO IHP National Committees) or Regional Offices of other partner agencies, with technical support from the IAH Regional Vice Presidents, in association with recognized groundwater centers or related institutions in the corresponding region, and would each involve representatives of responsible governments officials (water, environment, finance, agriculture etc.), stakeholder interests and regional specialists, together with members of the Project Team and Partner agencies (including GEF projects in the region). The partner agencies will play a prominent role in co-hosting selected workshops on the basis of their comparative advantages or regional significance.

These regional consultative workshops will be an important component of the project. They will be designed to acquire first-hand knowledge of regional issues from local groundwater experts, resource managers and stakeholders at all levels, and to test the validity, and regional variations of the identified priority issues. They will serve to:

- Raise awareness and promote the global groundwater agenda
- Allow multi-sectoral role players to engage on groundwater issues.
- Discuss issues that arise from the Global Groundwater Diagnostic, Case Studies and Thematic Papers
- Strengthen ownership of the project results and eventual Framework for Action throughout different regions
- Build partnerships among the collaborating project agencies, cross-sectoral stakeholders, decision-makers and specialists

While these workshops will be held on a regional geographic basis their agenda will include focus around key groundwater thematic areas examined in Component 1, with the emphasis put on a given theme varying by region:

In addition to the regional consultation process described above, the project will convene a Private Sector Roundtable, with the participation of representatives from the Oil Industry (exploration, drilling, geophysics, reservoir engineering, re-injection and storage), from the Geothermal Industry (low and high enthalpy resources exploration and exploitation), and the bottled water and soft drinks industry (Danone, Nestle, Coca Cola, etc.). Purpose of the Roundtable will be to explore opportunities for collaboration in defining key messages, disseminating the FA, sharing information.

The outcomes of each consultation event will be captured in a specific report that will be used for the visioning process, and also widely distributed as part of Component 4 activities.

Output 2.2. Global Groundwater Diagnostic, a Report -

The purpose of this report is twofold:

(i) It will serve as a technical basis for the visioning process, and for the definition of the Framework for Action.

(ii) It is intended to compile and translate best available present scientific and technical knowledge on groundwater resources and their governance, which is often highly specialized, into simpler language and synoptic representations, accessible to a large public of policy and decision makers across development sectors.

Activity 2.2__ Preparation of the Global Groundwater Diagnostic

The report will draw exclusively from available knowledge and assessments (UNESCO, ISARM, WHYMAP, GW MATE, WWAP, IWMI etc.), expertise of the partner agencies, GEF and other projects, and from the Thematic Papers and Case Studies. The UNESCO Category 2 centres and UNESCO chairs will also contribute. It will be prepared according to a simple methodological approach to be applied across continents/development regions. The report will be structured by continent/development region (ECA, MENA, Africa, S Asia, E Asia, LAC, SIDS), and will cover the following aspects:

Hydro-geologic characterization of the resource __ Groundwater supply

The characterization of the resource will adopt the simple hydro-geological categories/provinces of WHYMAP (UNESCO-IHP). It will provide a synthetic overview of the typology of aquifer systems⁸ present in each hydro-geological category/province, including their three-dimensional geometry, hydraulic state, estimated exploitable reserves, physical (T, resistivity) and chemical (salinity, levels of nutrient content, PTS) characteristics of the water, dependent ecosystems, and linkages with surface waters.

Groundwater present uses and future demand

For major aquifers systems, the report will provide a summary of their present uses in rural and urban water supply, energy, industry, irrigation and ecosystem health, together with an assessment of the sustainability of the level of present exploitation when compared with present recharge rates and likely water demand, socio-economic and climate scenarios.

Governance

The report will provide an overall assessment of the level of governance in place in major aquifer systems based on an overview of existing knowledge of groundwater entitlement and management systems, including policies, institutions, legislation, financing; information, resource monitoring, technology and investment, in the countries owning or sharing the resource.

Emerging issues and innovations

Against a background of threats posed by global changes, notably climatic uncertainty, the report will try to capture regional experiences in managing groundwater better and more sustainably at the local, national and transboundary level, increasing the efficiency of use, managing recharge, creating new water, monitoring, implementing decision support systems, and building management and business skills.

Output 2.3: Mainstreaming Groundwater in GEF Programs

In line with GEF 4 IW Strategies, and with STAP guidance, a special event will disseminate the findings of the Global Groundwater Diagnostic within the GEF system, promote adoption of integrated approaches and conjunctive surface and groundwater management in GEF projects and programs dealing with basin management, freshwater and coastal ecosystem management, land degradation and climate change adaptation, and draw lessons learnt through GEF International Waters projects and strategic approaches.

Activity 2.3__ Organization of GEF Groundwater Conference

This activity will consist in the organization of a GEF Groundwater Conference, with the participation of all GEF Agencies, the GEF Secretariat and its Focal Areas, STAP and those responsible for key relevant GEF projects/programs in all focal areas. The event is closely complementary to activities planned for IW LEARN 3, and will be organized in coordination with IW LEARN, and its results and documentation will be disseminated through the IW LEARN website and activities.

Particular links will be established with the GEF-UNEP global projects which have relevant groundwater components: "Development of Methodologies for GEF Transboundary Waters Assessment" and "Enhancing the Use of Science in International Waters Projects to Improve Project Results".

⁸ In this context, the term "aquifer system" covers 1) the permeable host rock formation independently of its hydraulic state, 2) the water contained in it and moving through it, and 3) the recharge and discharge zones.

Component 3: Definition of a shared vision and global framework for action on groundwater governance (GEF US\$226K; CF in-kind 0K USD).

Output 3.1: A shared vision for groundwater governance translated into key policy messages

Back in the year 2000, the World Water Vision stated: "...the productivity of water use must be dramatically improved. Our Vision relies on meeting about half the increased demand for agricultural water use in 2025 by increasing water productivity, taking many opportunities for improving the management of water. The other half of increased demand for water will have to be met by developing additional water supplies. It is imperative that we find ways to develop water supplies ___ that is, store water for later use, with lower economic, social, and environmental costs". According to the World Water Vision "...an additional 150 cubic kilometres of storage will be required for irrigation by 2025. Another 200 cubic kilometres of storage might be required to replace the current overconsumption of groundwater."

A dramatic improvement in groundwater governance together with greatly increased levels of investments in groundwater⁹ will be needed to meet these requirements which are made even more pressing by global changes and climatic variability.

The vision for groundwater governance that will be developed by the project will indicate ways to respond to these imperatives. It will be consistent with the MDGs and with the WWV overall goal to provide to all people "...safe and sufficient water resources to meet their needs, including food, in ways that maintain the integrity of freshwater ecosystems". It will consist in a set of key policy messages and recommendations coherent with an overall vision for groundwater governance, at the global, regional, and country levels.

Activity 3.1__ Organization of shared vision consultations

The visioning process will be aimed at identifying and building consensus around a shared vision for groundwater governance, organized at regional level and around selected themes, and at translating it into a set of policy messages and recommendations. It will be developed in three steps:

- (i) First formulation of the vision framework and of the key messages and recommendations; this task will be responsibility of the PC, the Steering Committee and of the Advisory Panel on Groundwater Policy.
- (ii) Consultations; this task will consist in the circulation of the draft Vision among a broad group of stakeholders, regional experts and agencies, and in a series of electronic forums and video-teleconferences that will allow them to contribute with their perspectives and recommendations to the process.
- (iii) Finalization of the document "A Vision for Groundwater Governance", which will incorporate the results of the consultation process.

Output 3.2: The "Global Framework for Action on Groundwater Governance", a document

This short and synthetic document is directed to leaders in government, the private sector and civil society.

It will consist of (a) an executive summary of the overall vision, and (b) selected key policy messages and recommendations. The document will be accompanied and supported by the full Vision Document, the Global Groundwater Diagnostic, the Case Studies Reports, the Thematic Papers and the conferences/workshop reports.

Activity 3.2__ Preparation and dissemination of the "Global Framework for Action"

The project team will consolidate the results of Activity 3.1 in a short summary document, and supporting documentation. The document will be translated into all UN languages, while the supporting documentation will be in English. It will consist of (a) an executive summary of the overall vision, and (b) selected key policy messages and recommendations. The document will be accompanied and supported by the full Vision Document, the Global Groundwater Diagnostic, the Case Studies Reports, the Thematic Papers and the conferences/workshop reports.

Component 4: Communication strategy and dissemination of the framework for action on groundwater governance (GEF USD 354K ; CF in-kind 72K USD).

Output 4.1: A Communication Strategy defined and implemented.

The entire project will be communication oriented. The success of the project, and the achievement of the key expected outcomes will in fact largely depend upon the ability of the project itself to effectively communicate its key messages, reaching out beyond the water sector, to leaders in government, the private sector and civil society, and to involve regional organizations, development agencies, IFIs and major NGOs.

All the issues resulting from the interactions between partners and the public at large will be recorded and incorporated. The strategy will inform all consultation and public participation activities of the project.

Activity 4.1__ Definition of a Communication Strategy, and its implementation.

A Communication Team that together with Partner Agencies will define the communication strategy including communication approach and media mix to be adopted will support project management. Particular focus of activities will be in supporting the organization of regional consultations, the Private Sector Roundtable, the GEF Groundwater Conference, and the final Outreach Conferences including participation to the WWF6 and other special events. Communication will utilize ICT technology

⁹ Investments will be needed for the development of management tools, artificial recharge infrastructure, deep well drilling, and conjunctive management schemes. Investment in management tools can result in a reliable and stable source of water for economic development, drought alleviation, and an effective and economic water supply complement to surface water. Little of the water stored in aquifers is lost through evaporation. Use of groundwater therefore has significantly less impact on river systems and riparian and lacustrine habitats than does the use of surface water. It provides a reliable buffer to cyclical or annual shortages of surface supplies; recharge during wet years and extraction during dry years can limit the impact of cyclical droughts. Groundwater can provide a reliable source of water for small users to help alleviate rural poverty (World Bank, Investment Note).

(a groundwater portal?), audiovisual materials, media and other special events, and published materials. The implementation will be responsibility of the same Team, acting in concert with the Implementing and Executing Agencies.

The detailed plan of communication and dissemination activities will be designed by the Communication Team on a six months basis, and discussed and approved by the project management.

Output 4.2: Outreach and dissemination of results

Special emphasis will be placed into reaching out to the political arena and disseminating the key groundwater policy messages. The message will be packaged for dissemination through high-level Outreach Conferences that will form a major platform for dissemination project outputs and final results.

Activity 4.2 _ Organization of side events at outreach conferences

The communication and dissemination of the "Framework for Action" will occur through high level Outreach Conferences and Special Events in coincidence with World Water Forum 6, G20 Summits, GEF Assembly, GEF IW Conferences, COPs, etc. Specific side events will be organized where possible.

Component 5: Project Management and Monitoring and Evaluation (GEF USD 119K; CF USD 162K USD)

Output 5.1: Project Management Support across the life of the project

Activity 5.1 _ Administrative services and budgetary control

The PCU will undertake the preparation of all recruitment actions, travels, meetings, disbursement of field expenses, contracts and letters of agreement. The PMU will prepare financial reports and implementation reports as specified in section 4.3.3 and Annex 6.

Activity 5.2 _ Planning and coordination of project monitoring and evaluation

The PMU will be responsible for planning and administering the monitoring and evaluation process of the project, as specified in Annex 6.

3.4 Sustainability

The project will address issues of sustainability at three distinct levels. First at national level through the project's regional consultations and links with World Bank (GWMATE programme) and UN agency country level support. Second at transboundary aquifer level through the ongoing UNESCO-IHP ISARM programme; and globally, in the context of ongoing discussions about freshwater which is supported by FAO's Organizational Result F2 "Countries address water scarcity in agriculture and strengthen their capacities to improve water productivity of agricultural systems at national and river-basin levels including transboundary water systems."

For each case study taken up in the project activities is to improve groundwater management at national level across the set of national managed aquifers. This will be supported through the regional multi-stakeholder meetings that will be the primary method for compiling representative information for the individual case studies. These meetings will offer an opportunity to identify practical measures to continue and intensify dialogue, to develop or refine a vision or strategy for groundwater management and monitor a strategic action plan. Improved management at the aquifer level will be promoted through sharing of lessons from other comparable groundwater management cases. There is now a substantial body of evidence that such experience sharing can reduce by years the time required to identify optimal solutions.

The contributions of FAO, UNESCO and IAH and other partners to the sustainability of the project will be assured to the extent these are independent organizations that are governed and funded by diverse sources and with specific charters. The ongoing activities of these organizations are consistent with those undertaken under this project. They are committed to continuing work throughout the foreseeable future long after the project is completed. In particular the UNESCO-IHP work on groundwater processes and aquifer management can be expected to underpin the project outcomes in the long term.

For the GEF, its implementing agencies, and other multilateral institutions, the sustainability of the project will depend on the extent to which the FA makes a persuasive case that groundwater is both a vital element of the hydrological cycle and it needs to be managed properly, and where appropriate, conjunctively with surface water in order to reap optimal benefits. This would influence the GEF and its agencies to continue and increase funding projects that would improve groundwater management.

At the global level, the sustainability of the project's results will depend on the extent to which it is able to influence authoritative documents such as the WWDRs, the agenda's of global events such as the 6th World Water Forum. The APGP will provide the platform for developing the political discourse at and beyond the 6th World Water Forum.

3.5 Cost Effectiveness

The expected project benefits will be significant by fostering good governance of groundwater at country and locals levels globally. The \$ 1.75 million GEF support for the project is expected to leverage additional co-financing of 2.70 million. This \$ 2.7 million project is likely to generate benefits of several orders of magnitude globally with only minimal shift in political understanding and awareness to catalyze policy reforms, whereas with modest shift, the global benefits will be even higher. Groundwater can contribute significantly to the resolution of growing world water concerns, including to adaptation options to climate change, if appropriate policies are developed and implemented to protect it from contamination, manage it sensibly and utilize it conjunctively with surface water. The project will also catalyze cross sectoral benefits by strengthening the linkages across the GEF focal areas.

The project will use the existing programme arrangements in each agency to maximise synergy and cost-savings on basic administrative tasks in organizing joint meetings, consultation and disseminating products. Since the project is not generating any stand-alone events or products but simply applying the incremental cost of focusing existing programmes, the overall cost-effectiveness of this global project will be assured. Experience gained from global GEF projects such as TWAP will be put to good effect to ensure efficient timing, location and participation in regional workshops and the main project conference event.

The proposed global GEF Groundwater project not only focuses on the governance of a vital water resource, it will also be implemented through a cooperative program supported by a number of multilateral and bilateral agencies. Lessons from the design and implementation of this global GEF groundwater project will also benefit future global programs. The mainstreaming of the project results both in the GEF portfolio of projects and the programmes of key UN, CGIAR, international NGOs and related institutions.

3.6 Assumptions and risks

Sound governance of groundwater resources needs to facilitate and ensure effective country/local management and protection of groundwater as necessary and appropriate but it is not yet widely practiced, appreciated or understood. Developing a pragmatic and acceptable Framework for Action will be challenging since groundwater is normally managed locally in response to diverse socioeconomic influences, differing climatic regimes and distinct hydrogeological situations.

<u>Risk</u>	<u>Analysis</u>	<u>Mitigation Strategy</u>
1. Divergent Priorities of Project Partners	Early divergence identified	Focus and articulate consensus
2. Regional Divergence of Policy Needs variants	An inherent issue	Global framework will need regional
3. Global Framework for Action not taken up	Global water agendas dominated	Aquifer vulnerability stressed by water service provision

4 IMPLEMENTATION AND MANAGEMENT ARRANGEMENTS

4.1 Implementation Strategy

This global project has no GEF precedents, while Component 1 will undertake a global review of groundwater governance, the setting of a framework for action will constitute an experiment. The demand for such a framework is implicit in many natural resource debates over water in general, but it has not hitherto been articulated with a regional consensus, particularly among the developing countries that have most to gain or lose. Hence this project will bring on board a distinctly new set of players, not usually tied to groundwater management. For this reason emphasis is placed upon a validation of the project strategy at inception.

FAO will organize the Project Inception Workshop to be conducted with the full project team, including Executing Agencies (UNESCO, IAH) and other collaborating agencies and organizations, co-financing partners, and representation from GEFSEC and other GEF Agencies. A fundamental objective of this Inception Workshop will be to assist the project team to understand and take ownership of the project's goals and objectives, as well as finalize preparation of the project's first annual work plan on the basis of the project's logframe matrix. This will include reviewing the logframe (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise finalize the Annual Work Plan (AWP) with precise and measurable performance indicators, and in a manner consistent with the expected outcomes for the project.

4.2 Consultation, coordination and collaboration with other initiatives

4.2.1 Linkage with GEF supported programmes

The project will establish systematic information exchange and consultation mechanisms with the following global GEF IW projects:

- Development of Methodologies for a GEF Transboundary Waters Assessment - TWAP (UNEP); the project aims at defining a methodology for the baseline, including indicators for follow up monitoring, assessment of the state of transboundary water bodies: aquifers, lake basins, river basins; large marine ecosystems: open oceans. The project will in particular follow the development of the methodology and indicators for groundwater executed by UNESCO-IHP-UNWWAP as part of the TWAP.
- Enhancing the Use of Science in International Waters Projects to Improve Project Results (UNEP); the project will identify and disseminate good scientific practices in the GEF IW portfolio, including groundwater projects. Governance and legal issues are considered part of the "water science" through a component executed by UNESCO-IHP.
- MENARID GEF IW LEARN: Strengthening IW Portfolio Delivery and Impact (UNDP); the project will have a large component dedicated to promoting the integration of groundwater issues and management in land degradation and IW projects in the MENA region as executed by UNESCO-IHP.
- Good Practices and Portfolio Learning in Transboundary Freshwater and Marine Legal and Institutional Frameworks (UNDP); this project maybe highly relevant for the purposes of the FAO Groundwater Governance project, and close cooperation will be established.

It will also link with the following regional projects:

- MED Sustainable MED Governance and Knowledge Generation (IBRD); The project will include consideration of coastal aquifers issues, and of their governance.
- 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 (UNEP); this large "regional Sea" initiative will for the first time fully take into consideration the relationship among coastal aquifers, coastal zone management and coastal marine issues, and facilitate the agreement on a coastal aquifer protocol to the Barcelona Convention.
- Protection and Sustainable Use of the Dinaric Karst Aquifer System (UNDP-UNESCO); the project will deal with the management of karst groundwater resources in a transboundary setting.
- Formulation of an Action Programme for the Integrated Management of the Shared Nubian Aquifer (UNDP); the project deals with the joint management of one of the world's largest freshwater reserves.
- MENARID Reducing Risks to the Sustainable Management of the North West Sahara Aquifer System (UNEP); the project explores tools for the management of this transboundary aquifer, key resource for the Western Sahara region.

Representatives of the above projects will be invited to participate and contribute to the various events and consultations that will be held as part of the Groundwater Governance project. In turn, the Groundwater Governance project will provide inputs and share key project documents with the Agencies executing the above projects, and the countries involved.

4.2.2 Linkages with other related initiatives

The project will build upon, and cooperate through consultations and joint activities with major ongoing parallel relevant initiatives, in particular with:

- The UNDP Water Governance Facility, established at the Stockholm International Water Institute (SIWI); it was launched by the United Nations Development Programme (UNDP) and the Swedish Agency for International Development Cooperation (Sida). The programme is a mechanism to implement parts of the UNDP Water Governance Programme; it supports developing countries on a demand basis to strengthen water governance and reduce poverty through policy support and advisory services in multiple thematic areas, including: integrated water resources management, transboundary water, water supply and sanitation, climate change adaptation, South-South collaboration, experience and best practices exchange, gender, and capacity building.
- The UNESCO IHP - ISARM (Internationally Shared Aquifer Resources Management); the worldwide ISARM Initiative is an UNESCO and IAH led multi-agency effort

aimed at improving the understanding of scientific, socio-economic, legal, institutional and environmental issues related to the management of transboundary aquifers. The ISARM program is leading in the inventorying and characterization of the world's major aquifer systems.

- World-wide Hydrogeological Mapping and Assessment Programme (WHYMAP); the programme compiles data on groundwater from national, regional and global sources, and visualises them in maps, web map applications and services. The generated products provide information on quantity, quality and vulnerability of the groundwater resources on earth and help communicating groundwater related issues to water experts as well as decision makers and the general public.
- IGRAC (International Groundwater Resources Assessment Center) UNESCO (WMO); the Centre has developed a Global Groundwater Information System (GGIS), envisaged as an interactive publicly accessible portal to groundwater-related information and knowledge, and promotes guidelines and protocols for the assessment of groundwater resources.

4.2.3 Linkages with related FAO programs and projects

The project will add incremental value to FAO's ongoing programme in water scarcity which is an explicit Unit Result (F0201) under Strategic Objective F in FAO's Medium Term Plan 2010-13. This programme is concerned with the impacts of agricultural practice on both water quantity and quality. This Strategic Objective has a planned FAO budget of USD 2 000 000 over the period of the project of which some 40% will be directly linked to groundwater management. The programme is also supported by two further elements in FAO. In addition a set of specific FAO regional activities in Near East and Asia and Pacific are linked to conjunctive use of groundwater. Across the organization there are several key programmes that are highly complementary. The styles of groundwater access are very much conditioned by land tenure and FAO's programme on land tenure guidelines (under FAO Strategic Objective F0204) is expected to contribute highly relevant case studies and principles of practice which will help shape the FA. These considerations of natural resource allocation are supported in detail by the work of the Natural Resource Law Service (LEGN). Equally the work of the crop protection division (AGPP) on pesticide use reduction and the use of alternatives are proving instrumental in reducing non-point and point source pollution impacts from fertilisers and pesticides.

At country level, results derived from FAO's nationally executed APFAMGS project in Andhra Pradesh relate directly to local groundwater governance and the scaling of this initiative through a GEF SLM project will be expected to contribute to the project results from one of the most intensively drilled areas of peninsular India.

4.3 Implementation and institutional arrangements

Figure 1 Proposed management structure for the project

4.3.1 Project Executing Agencies

The project will be executed by FAO, in close collaboration with two main partners, UNESCO and the IAH. Both these agencies expertise in groundwater and active engagement in the promotion of groundwater science and management have been instrumental in the identification and eventual finalization of the project design. UNESCO and IAH will assist with the organization and support of regional consultations and the development of thematic reports. The World Bank will also substantially contribute to project execution through a co-financing arrangement and the involvement of its GWMATE programme. Other partner agencies will also provide their contributions from respective water governance initiatives, such as those of UNDP, UNEP and the Global Water Partnership.

A Project Coordination Unit (PCU) will be established to ensure the day-to-day management of the project, A Steering Committee (SC) will guide the PCU, and an Advisory Panel on Groundwater Policy (APGP) will provide expert advice and advocacy leadership.

As the GEF Agency, FAO will be responsible for overall project supervision to ensure consistency with GEF policies and procedures, and will provide guidance on linkages with related FAO and GEF-funded activities. The Land and Water Division in the Natural Resources and Environment Department will be the Lead Technical Unit and provide technical support and guidance. The FAO/GEF Co-ordination Unit (in TCI) will monitor implementation of activities undertaken during project execution and will be responsible for clearance and submission of progress reports to GEF. The FAO Finance Division will submit financial reports to the GEF Trustee, in accordance to the Financial Procedures Agreement. FAO, in its capacity as Executing Agency, will also provide overall co-ordination and technical and financial management of the project. FAO will see that the necessary human resources and equipment inputs are provided in a timely manner to ensure smooth implementation of the project and delivery of project outputs, and timely preparation and clearance of project progress and financial reports.

4.3.2 Project Steering Committee

The Steering Committee (SC) will be composed of representatives of the funding partners and of executing agencies (GEF Secretariat, FAO, World Bank, UNESCO, IAH etc.). The SC will set its own operational procedures and approve its own Terms of Reference. It will meet at least once a year and thereafter as frequently as the SC itself deems necessary. The SC will review the Project budget and work programs and provides feedback and policy guidance to the PCU on such matters. Funding for SC business will be covered by the Project

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The Project Steering Committee will be responsible for providing general oversight of the execution of the Project and will ensure that all inputs and activities agreed upon in the project document are adequately prepared and implemented. In particular, it will:

- provide overall guidance to the Project Coordination Unit in the execution of the project;
- approve the annual project work plan;
- ensure that all project activities and outputs are in accordance with the project document;
- identify, agree and facilitate any multi-country activities that would assist with the execution of activities or meeting project objectives; and
- facilitate the dissemination of relevant project findings and recommendations globally.

4.3.3 Project Coordination Unit

The **Project Coordination Unit (PCU)** will be headed by a PC (Project Coordinator) and will include secretarial staff, one administrative assistant and a Communication Team. The PCU, located in FAO's Headquarters, will carry out the day-to-day administration of the Project and be responsible to the SC for the project activities, financial accountability, staff welfare and discipline, etc. The PCU will provide the SC with a draft budget review and work plan in sufficient time prior to the annual SC meeting. In terms of regular administrative reporting, the PCU will provide periodic reports to FAO management. The PCU will also assist FAO/GEF in preparing the annual Project Implementation Review. Finally there will be a number of management, monitoring and evaluation activities that will be planned and supported by the PCU, including the independent midterm review and final evaluation. In addition to managerial services the PCU will provide library resources, communications, report duplication and translation services and will organize outreach and communication activities, including the creation and maintenance of website, with the full support of the Communication Team. At all times, the PCU will act as the secretariat for the SC. The PCU will be supported throughout the duration of the project by the Communication Team, which will be operated in concert with UNESCO, IAH, and the PC. This Team will be responsible for the design and operation of the website, for the organization of consultation and outreach conferences, workshops, and special events and for the production of dissemination materials and publications. It will operate according to periodic work plans.

4.3.4 Advisory Panel on Groundwater Policy

Leading international experts on water policies and advocates of sustainable development will form the **Advisory Panel on Groundwater Policy (APGP)**, which will also include high-level government and civil society leaders. The Panel will provide policy guidance throughout the project, and some of its members will participate to outreach events and conferences. The Panel will participate to the definition of the Vision and Framework for Action.

4.3.5 Permanent Consultation Mechanism

Regular consultations will be held with key relevant agencies, programs and projects (see 3.1). These consultations will be organized by the Communication Team of the PCU, with the purpose to create synergies among similar and complementary initiatives, and share experiences. In particular the Vision and the Diagnostic developed by the Groundwater Governance Project will be circulated through the consultation mechanism for comments and contributions. The Consultation Mechanism will have a dedicated space in the project's website; special consultation events will be held at key moments during the project through face to face and/or teleconferences.

4.4 Provisional Workplan

The provisional workplan is presented in Annex 2. Three main phases can be identified: inception and compilation, regional consultation and diagnosis and consolidation of the FA. These phases are briefly explained below and presented in more detail in Annex 2.

Inception and compilation (Component 1)

This primary phase will set the scope of depth of the Project and provide the basis for regional consultations and diagnosis. Much of the technical and policy direction will derive from the overview of evidence presented in case studies and thematic papers.

Regional Consultation and Diagnosis (Component 2)

The regional consultation and diagnosis component can only commence on the basis of agreed definitions of groundwater governance and the results of a representative set of case studies. The results of the regional consultations will be validated at a GEF Groundwater Governance conference.

Consolidation of a Global Framework (Component 3)

Project document: Global Groundwater Governance; A Framework for Action

The consolidation of a Global Framework For Action (FA) can only proceed on the basis of the Diagnostic (including feedback from regional consultations and the GEF Groundwater Conference). The consolidation of the FA will set a milestone for related GEF groundwater initiatives but more importantly, set an agenda for groundwater management that is evidence based, adapted to broad regional context and predicated on principles of management that are relevant and have been shown to work.

It is important to note that all three phases will be underpinned by Component 4 and 5. Component 4 will work on the outputs from each phase to facilitate technical exchange between project partners and the projection of key messages. Component 5 will provide overall project management services throughout the life of the project.

5 FINANCING PLAN

5.1 Financial planning

The project cost excluding co-financing by component and subcomponent is summarised below in Table 1 and a complete FAO Oracle budget for the project and provisional work-plan for the 2.5 year duration of the project is given in Annex 2.

5.2 GEF input and confirmed co-financing

The GEF input is specified in Table 1 and the co-financing in Table 2

Table 1 Project cost by component and subcomponent (excluding co-financing)		
Component and subcomponent	Total	
	%	(USD '000)
Component 1: Compilation of the global state of groundwater governance in relation to groundwater supply and demand (quantity and quality)		
- 1.1 Expert meeting report	0	0
- 1.2 Case studies reports	0	115
- 1.3 Thematic Papers	0	115
- 1.4 Synthesis Document	0	0
Subtotal	12	230
Component 2: Development of a Global/Regional Groundwater Governance Diagnostic: regional and country experiences; prospects for the future		
- 2.1 Regional Consultation and Private Sector Roundtable reports	0	400
- 2.2 Global Groundwater Diagnostic, a Report	0	221
- 2.3 GEF Groundwater Conference	0	200
Subtotal	46	821
Component 3: Definition of a Shared Vision and Global Framework for Action on Groundwater Governance		
- 3.1 A shared vision for groundwater governance translated into key policy messages	0	120
- 3.2 The “Global Framework for Action on Groundwater Governance”, a document	0	106
Subtotal	12	226
Component 4: Communication Strategy and Dissemination of the Framework for Action on Groundwater Governance		
- 4.1 A Communication Strategy defined and implemented	0	254
- 4.2 Outreach Conferences	0	100
Subtotal	20	354
Component 5: Project Management, Monitoring and Evaluation		
- 5.1 Administrative Services and Budgetary Control	0	72
- 5.2 Planning and coordination of project monitoring and evaluation	0	47
Subtotal	8	119
TOTAL PROJECT COST	100	1 750

Table 2 Sources of confirmed co-financing				
Source of co-financing	Classification	Type	Amount (in USD)	(%)
FAO	Executing Agency	In kind	850,000	30
IAH	Executing Agency	In kind	150,000	10
UNESCO	Executing Agency	In-kind	850,000	30
World Bank	Executing Agency	In-kind	850,000	30
TOTAL CO-FINANCE			2,700,000	100

5.3 FAO inputs

The FAO contribution to the project will amount to 850,000 USD or 30% percent of the total co-financing. This contribution will cover the following:

- Co-financing of staff input to service Component 5 (162K)
- 50% co-financing of professional staff input to service the Component 4 (72K)
- Short-term consultant inputs to work on legal and institutional topics under Component 1 of the project (approximately 4 weeks in total).
- In kind contribution of FAO Water Scarcity Programme institutional outputs related to groundwater governance (466K)
- Itemised contributions from FAO include funding of activities from the following FAO projects:
 - NERC region groundwater management review (50K)
 - Asia programme in conjunctive use management (50K)

FAO Co-financing by component and subcomponent		
Component and subcomponent	Total	
	%	(USD '000)
Component 1: Compilation of the global state of groundwater governance in relation to groundwater supply and demand (quantity and quality)		
- 1.1 Specialist meeting report	0	25
- 1.2 Case studies reports	0	0
- 1.3 Thematic Papers	0	25
- 1.4 Synthesis Document	0	0
Subtotal	6	50
Component 2: Development of a Global/Regional Groundwater Governance Diagnostic: regional and country experiences; prospects for the future		
- 2.1 Regional Consultation and Private Sector Roundtable reports	0	100
- 2.2 Global Groundwater Diagnostic, a Report	0	466
- 2.3 GEF Groundwater Conference	0	0
Subtotal	67	566
Component 3: Definition of a Shared Vision and Global Framework for Action on Groundwater Governance		
- 3.1 A shared vision for groundwater governance translated into key policy messages	0	0
- 3.2 The “Global Framework for Action on Groundwater Governance”, a document	0	0
Subtotal	0	0
Component 4: Communication Strategy and Dissemination of the Framework for Action on Groundwater Governance		
- 4.1 A Communication Strategy defined and implemented	0	72
- 4.2 Outreach Conferences	0	0
Subtotal	8	72
Component 5: Project Management		
- 5.1 Administrative Services and Budgetary Control	0	100
- 5.2 Planning and coordination of project monitoring and evaluation	0	62
Subtotal	19	162
TOTAL COFINANCING	100	850

5.4 IAH inputs

The IAH in-kind contribution to the project will amount to 150,000 USD or 10% percent of the total co-financing. This contribution will cover both case studies and the thematic papers.

IAH Co-financing by component and subcomponent		
Component and subcomponent	Total	
	%	(USD '000)
Component 1: Compilation of the global state of groundwater governance in relation to groundwater supply and demand (quantity and quality)		
- 1.1 Specialist meeting report	0	0
- 1.2 Case studies reports	0	75
- 1.3 Thematic Papers	0	75
- 1.4 Synthesis Document	0	0
Subtotal	100	150
Component 2: Development of a Global/Regional Groundwater Governance Diagnostic: regional and country experiences; prospects for the future		
- 2.1 Regional Consultation and Private Sector Roundtable reports	0	0
- 2.2 Global Groundwater Diagnostic, a Report	0	0
- 2.3 GEF Groundwater Conference	0	0
Subtotal	0	0
Component 3: Definition of a Shared Vision and Global Framework for Action on Groundwater Governance		
- 3.1 A shared vision for groundwater governance translated into key policy messages	0	0
- 3.2 The “Global Framework for Action on Groundwater Governance”, a document	0	0
Subtotal	0	0
Component 4: Communication Strategy and Dissemination of the Framework for Action on Groundwater Governance		
- 4.1 A Communication Strategy defined and implemented	0	0
- 4.2 Outreach Conferences	0	0
Subtotal	0	0
Component 5: Project Management		
- 5.1 Administrative Services and Budgetary Control	0	0
- 5.2 Planning and coordination of project monitoring and evaluation	0	0
Subtotal	0	0
TOTAL COFINANCING	100	150

5.5 UNESCO inputs

The UNESCO contribution to the project will amount to 850,000 USD or 30% percent of the total co-financing. This contribution will cover in-kind contributions from the following UNESCO-IHP

- WHYMAP (50k)
- IGRAC database (100K)
- Cooperation with SIG Africa mapping project (50K)
- GRAPHIC regional mix – 10 case studies (100K)
- GWES (50K)
- GWADI (50k)
- Regional Assessment of ISARM Programme in the Americas, Africa, Asia (450K)

UNESCO Co-financing by component and subcomponent		
Component and subcomponent	Total	
	%	(USD '000)
Component 1: Compilation of the global state of groundwater governance in relation to groundwater supply and demand (quantity and quality)		
- 1.1 Specialist meeting report	0	0
- 1.2 Case studies reports	0	400
- 1.3 Thematic Papers	0	0
- 1.4 Synthesis Document	0	0
Subtotal	47	400
Component 2: Development of a Global/Regional Groundwater Governance Diagnostic: regional and country experiences; prospects for the future		
- 2.1 Regional Consultation and Private Sector Roundtable reports	0	450
- 2.2 Global Groundwater Diagnostic, a Report	0	0
- 2.3 GEF Groundwater Conference	0	0
Subtotal	53	450
Component 3: Definition of a Shared Vision and Global Framework for Action on Groundwater Governance		
- 3.1 A shared vision for groundwater governance translated into key policy messages	0	0
- 3.2 The “Global Framework for Action on Groundwater Governance”, a document	0	0
Subtotal	0	0
Component 4: Communication Strategy and Dissemination of the Framework for Action on Groundwater Governance		
- 4.1 A Communication Strategy defined and implemented	0	0
- 4.2 Outreach Conferences	0	0
Subtotal	0	0
Component 5: Project Management		
- 5.1 Administrative Services and Budgetary Control	0	0
- 5.2 Planning and coordination of project monitoring and evaluation	0	0
Subtotal	0	0
TOTAL COFINANCING	100	850

5.6 World Bank inputs

The World Bank in-kind contribution to the project will amount to 850,000 or 30% percent of the total co-financing. This contribution will cover both case studies and thematic papers

World Bank Co-financing by component and subcomponent		
Component and subcomponent	Total	
	%	(USD '000)
Component 1: Compilation of the global state of groundwater governance in relation to groundwater supply and demand (quantity and quality)		
- 1.1 Specialist meeting report	0	0
- 1.2 Case studies reports (BB-ETWWA and WPP trust funds)	0	600
- 1.3 Thematic Papers (TFESSD trust funds)	0	250
- 1.4 Synthesis Document	0	0
Subtotal	100	850
Component 2: Development of a Global/Regional Groundwater Governance Diagnostic: regional and country experiences; prospects for the future		
- 2.1 Regional Consultation and Private Sector Roundtable reports	0	0
- 2.2 Global Groundwater Diagnostic, a Report	0	0
- 2.3 GEF Groundwater Conference	0	0
Subtotal	0	0
Component 3: Definition of a Shared Vision and Global Framework for Action on Groundwater Governance		
- 3.1 A shared vision for groundwater governance translated into key policy messages	0	0
- 3.2 The “Global Framework for Action on Groundwater Governance”, a document	0	0
Subtotal	0	0
Component 4: Communication Strategy and Dissemination of the Framework for Action on Groundwater Governance		
- 4.1 A Communication Strategy defined and implemented	0	0
- 4.2 Outreach Conferences	0	0
Subtotal	0	0
Component 5: Project Management		
- 5.1 Administrative Services and Budgetary Control	0	0
- 5.2 Planning and coordination of project monitoring and evaluation	0	0
Subtotal	0	0
TOTAL COFINANCING	100	850

6 OVERSIGHT, MONITORING, MANAGEMENT INFORMATION AND REPORTING

6.1 Indicators and means of verification

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

6.2 Project monitoring, reporting and evaluation

The following sections outline the principle components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The project's Monitoring and Evaluation Plan will be presented and finalized at the Project's Inception Meeting following a collective fine-tuning of indicators, and means of verification. A full account of all reports and standard provisions of FAO and GEF included as Annex 6.

6.2.1 Project monitoring

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

Day-to-day monitoring and preparation of project progress reports will be the responsibility of the Project PCU and PC based on the project's Annual Work Plan and its indicators and will be presented to FAO for evaluation. The Project PCU will fine-tune the progress and performance/impact indicators of the project in consultation with the full project team at the Inception Workshop with support from FAO. Specific targets for the first year implementation progress indicators together with their means of verification will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Work Plan.

The measurement of impact indicators related to global benefits will occur according to the schedules defined in the Inception Workshop. Annual Monitoring will occur through the SC. This is the highest policy-level meeting of the parties directly involved in the implementation of a project. The PCU will prepare an Annual Project Report (APR) and submit it to the FAO.

6.2.2 Project reporting

The PCU will be responsible for the preparation of the draft reports listed below, which form an important part of the monitoring process, for submission to the Lead Technical Unit (Land and Water Division (NRLW)). Items (a) through (f) are mandatory and strictly related to monitoring.

Inception Report (IR)

A Project Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed First Year/ Annual Work Plan divided in quarterly time frames detailing the activities and progress indicators that will guide implementation during the first year of the project. When finalized the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries.

Semi-annual Project Progress Reports (PPRs)

One month before the mid-point of each project year (June, December), the PC, in consultation project partners, will prepare a draft semi-annual project progress report (PPR) and submit this to FAO Lead Technical Unit and Budget Holder. This will contain the following: an account of actual implementation of project activities compared to those scheduled in the AWP (including a report on project expenditure in the six months plus an estimate of co-financing contributions received);¹⁰ an account of the achievement of outputs and progress towards achieving the project objectives (based on the indicators contained in the results framework shown in Annex 1, or any agreed modifications to this); identification of any problems and constraints (technical, human, financial, etc.) encountered in project implementation and the reasons for these constraints; clear recommendations for corrective actions in addressing key problems resulting in lack of progress in achieving results; lessons learned; and a revised work plan for the final six months of the project year. The draft PPR will be reviewed and cleared by FAO (Lead Technical Unit, Budget Holder and GEF Coordination Unit (TCU)). The approved PPRs will be submitted by the Project Coordinator to the PSC.

Project Implementation Review (PIR)

The PIR is an annual monitoring process mandated by the GEF. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, a Project Implementation Report must be completed by FAO. The focal area PIRs are then discussed in the GEF Interagency Focal Area Task Forces in or around November each year and consolidated reports by focal area are collated by the GEF Independent M&E Unit based on the Task Force findings. The GEF M&E Unit provides the scope and content of the PIR. In light of the similarities of both APR and PIR, FAO/GEF has prepared a harmonized format for reference.

¹⁰ This should include, as far as practicable, details of how in-kind contributions were estimated and from who/where this information was obtained (for the purpose of possible future auditing or evaluation).

Project Terminal Report

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

6.2.3 Project Evaluation

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

Independent Mid-term Review

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

Final Evaluation

An independent Final Evaluation will take place three months to six months prior to the completion of the project and will focus on the same issues as the mid-term review. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The Project Coordinating Unit in consultation with the FAO Evaluation Service and FAO-GEF Coordination Unit will prepare the Terms of Reference for this evaluation.

6.2.4 Monitoring and evaluation plan and budget

An itemised budget for monitoring and evaluation activities is given in Table 3 below.

Table 3 Monitoring and Evaluation Work plan and corresponding Budget			
Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team Staff time</i>	Time frame
Inception Workshop	FAO/UNESCO/IAH PCU-PC	Covered under co- finance arrangements	Within first two months of project start up
Inception Report	Project Team FAO/GEF	Covered under co- finance arrangements	Immediately following workshop
Measurement of Means of Verification for Project Indicators	Project PCU-PC in coordination with FAO, UNESCO, IAH	Covered under co- finance arrangements	Start, mid and end of project
Quarterly project implementation report	FAO Budget Holder	No cost	Every quarter
Semi-annual progress report	Project PCU, LTU, BH, GEF Coordination Unit	No cost	Every 6 months
Project Implementation Review (PIR) including co-financing report	Project Team GEF Coordination Unit	No cost	Covers the period 1 July to 30 June
Project Steering Committee Meetings	PCU, FAO, UNESCO, IAH. Collaborating partners. Project PCU- PC	Covered under co- finance arrangements	Every year
Periodic monitoring of implementation progress and supervision report	FAO GEF Coordination Unit	Covered by Agency fee	Annual
Independent Mid-term Review	FAO (Evaluation Service and the FAO GEF Co-ordination Unit) in collaboration with UNESCO, IAH and PCU	25,000	At the mid-point of project implementation
Independent Terminal Evaluation	FAO (Evaluation Service and FAO GEF Co-ordination Unit) in	50,000	At the end of project implementation

	collaboration with UNESCO, IAH and PCU		
Total Indicative Cost – <i>Excluding FAO, UNESCO, IAH, and PCU staff time and travel expenses</i>		75,000	

6.3 Communication and visibility

The main means to support project communication and visibility will be through the project's communications and dissemination component. The objective of the component is to increase awareness among institutional stakeholders, decision-makers and the public at large of the state of global groundwater governance and the solutions that can lead to long-term sustainability of groundwater resource use. Under this component, the Project would support the following: (i) equipment, (ii) technical assistance, (iii) preparation of education and public awareness materials and (iv) workshops. In terms of specific means of communication the project will support the production of posters, leaflets, newsletters, videos, and the production of related educational materials.

ANNEXES

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ANNEX 1: STRATEGIC RESULTS FRAMEWORK

STRATEGIC RESULTS FRAMEWORK				
Global Environment Objective(GEO)/		The global environment objective (GEO) of the project is to accelerate the accrual of global environmental benefits (goods and services) that are generated through improved groundwater resource governance at transboundary, national, and local levels. This in the face of rising human demand, overall water scarcity and the anticipated impacts of climate change.		
Project Development Objective (PDO)		The project development objective (PDO) is to extend the life set of livelihoods reliant upon groundwater and related aquifer services.		
Component	Outcomes	Outputs	Activities	Indicator (Process)
<p>Component 1: Compilation of <u>the state</u> of groundwater governance in relation to groundwater supply and demand (quantity and quality)</p>	<p>Outcome 1: Broad agreement on the scientific and economic issues in relation to groundwater management and a consensus on the scope for future action; and enhanced cooperation and synergies among UN Water Agencies, major IFIs and key NGOs professional associations and client countries.</p>	<p>1.1 Expert meeting report to define groundwater governance and assess its significance at global level. (<i>GEF OK: FAO 25K</i>)</p> <p>1.2 Case studies reports (prepared and reviewed in consultations with key stakeholders at the national and/or transboundary levels that will inform the overall global diagnostic. Case studies will exemplify the relationship between various socio-economic, geologic and climatic conditions both at the aquifer level (single country and transboundary), and at the national level.</p> <p>1.3 Thematic Papers The Papers will summarize present knowledge and experience on key economic, policy, institutional, environmental and technical aspects of groundwater management together with emerging issues and innovative approaches, and (B) address the issue of hydraulic status and groundwater quality transitions in deep aquifers with the participation and assistance of the oil and mining industry.</p> <p>1.4 Synthesis Document A review of groundwater governance in relation to hydrogeological settings with opportunities for action in view of global trends identified. (<i>GEF OK: FAO 25K</i>)</p>	<p>1.1 Organization of Expert meeting structured to examine application of 'commons' governance in relation to groundwater and define a governance framework.</p> <p>1.2 – Preparation of Case Studies To include aquifer cases from the GEF IW portfolio (e.g.: NW Sahara Aquifer, Guarani Aquifer), and the following countries: India*, Kenya*, Peru*, Morocco*, Paraguay, Tunisia*, Bosnia Herzegovina, South Africa*, two SIDS (including one atoll or low lying carbonatic island), and Tanzania*</p> <p>1.3 Preparation of thematic papers. To include (<i>inter alia</i>): Political economy*; CC adaptation options*; Emerging groundwater management and development issues*; 8 more to be chosen among the following topics:</p> <ul style="list-style-type: none"> • Macro-economic trends that influence demand for groundwater and related aquifer services • The habit of groundwater pollution; trends in loss of groundwater quality and related aquifer services (inc. ecosystems); • Social adoption of groundwater pumping technology and the development of groundwater cultures • Local groundwater management institutions/user partnerships; • The legal basis for groundwater management through land and water use rights regimes • Conjunctive use and management of groundwater and surface water within existing irrigation commands; • Urban-rural tensions and opportunities for co-management • Management of recharge/discharge processes and aquifer equilibrium states; • Management of the deep groundwater frontiers; a possible partnership with the private sector. <p>1.4 Review document to be produced by the Steering Committed UN Water Agencies, major IFIs and key NGOs and professional associations.</p>	<p>11. Expert meeting report</p> <p>1.2 Approval of Case Studies selection and reports by the Steering Committee.</p> <p>1.3 Thematic Papers validated by STAP/ISC</p> <p>1.4 Review Document endorsed by Steering Committee</p>

Project document: Global Groundwater Governance; A Framework for Action

Component	Outcomes	Outputs	Activities	Indicator (Process)
<p>Component 2: Development of a Global/Regional Groundwater Governance Diagnostic integrating regional and country experiences with prospects for the future.</p>	<p>Outcome 2 A Global Groundwater Diagnostic is informed by regional consultations (including private sector interests) and is projected globally by mainstreaming viable groundwater management practice in GEF Programs and projects and across focal areas.</p>	<p>2.1 Regional Consultation and Private Sector Roundtable reports The consultation process will consist of 6 regional workshops (ECA, MENA, Africa, S Asia, E Asia and Pacific, LAC) through which groundwater issues emerging from the Case Studies and Thematic Papers and the Global Groundwater Diagnostic will be evaluated in the regional circumstances, and a Private Sector Roundtable.</p> <p>2.2 Global Groundwater Diagnostic, a Report The report will present an analysis of the state of groundwater governance at regional and global level. It will examine the prospects for reducing the impacts of human use of aquifers and improving management practice to obtain global environmental benefits.</p> <p>2.3 Mainstreaming Groundwater in GEF Programs In line with GEF 5 IW Strategy, and with STAP guidance, a special event dealing with the integration of groundwater in (transboundary) basin management, freshwater and coastal ecosystem management, and climate change adaptation, will disseminate the findings of the Global Groundwater Diagnostic in the GEF system, and promote adoption of integrated approaches and conjunctive management in GEF projects and programs.</p>	<p>2.1 Organization of Regional and Private Sector Consultations and Reporting It is planned that 6 Regional Workshops will be held to consider the regional/local variations in the priority of the identified thematic foci. While these fora will be held on a regional geographic basis their agenda will be focused around key groundwater thematic areas (with the emphasis put on a given theme varying by region). These events would be organized through the corresponding FAO and UNESCO-IHP Regional Offices or Regional Offices of other partner agencies, with support from the IAH Regional Vice Presidents, in association with recognized groundwater centres or related institutions in the corresponding region, and would each involve 40 – 50 representatives of responsible governments officials (water, environment, finance, agriculture etc.), stakeholder interests and regional specialists, together with members of the Project Team and Partner agencies (including GEF projects in the region). The partner agencies will play a prominent role in co-hosting selected workshops on the basis of their comparative advantages or regional significance. The Private sector Roundtable will involve the oil industry, the geothermal industry and the Bottled water and soft drinks industry.</p> <p>2.2 Preparation of the Global Groundwater Diagnostic To be based on (i) the review of existing documents and experiences, including reports from IAH, UNEP, FAO, the World Bank, GEF, UNESCO IHP, and other UN Water agencies and partner agencies, (ii) the Case Studies and Thematic Papers produced as part of the project.</p> <p>2.3 Organization of GEF Groundwater Conference This activity will consist in the organization of a GEF Groundwater Conference, with the participation of all GEF Agencies, the GEF Secretariat, STAP and those responsible for key relevant GEF projects/programs in all focal areas. The event will be organized with the support of IW LEARN, and its results and documentation will be disseminated through the IW LEARN website.</p>	<p>2.1 Workshop reports including recommendations for the global diagnostic and visioning process.</p> <p>2.2 . The Global Groundwater Diagnostic” prepared and endorsed by the Project Steering Committee and Advisory Board</p> <p>2.3 GEF Groundwater Conference Conclusions inform visioning process.</p>

Project document: Global Groundwater Governance; A Framework for Action

Component	Outcomes	Outputs	Activities	Indicator (Process)
Component 3: Definition of a Shared Vision and <u>Global Framework for Action</u> on Groundwater Governance	Outcome 3 A “Global Framework for Action on Groundwater Governance” based on Components 1 and 2 will raise political awareness globally on the urgency of improved groundwater governance, and by disseminating key policy messages fostering precautionary and proactive governance approaches, to prolong the integrity of aquifers and their associated goods and services.	3.1 A shared vision for groundwater governance translated into key policy messages The Vision will consist in a set of key policy messages consistent with an overall vision for groundwater governance, at the global, regional, and country levels. 3.2 The “Global Framework for Action on Groundwater Governance”, a document. This short document will consist of (a) the overall vision, and (b) the key policy messages. The document will be accompanied and supported by the Global Groundwater Diagnostic, the Case Studies Reports, the Thematic Papers and the conferences/workshop reports.	3.1 Organization of shared vision consultations All project partner agencies, the SC, STAP, the Advisory Panel on Groundwater Policy, regional experts and agencies, and the private sector will contribute, by participating to electronic forums and a final face to face meeting, to the visioning process aimed at identifying and building consensus around a shared vision for groundwater governance, organized at regional level and around selected themes, and to its translation into a set of key policy messages. 3.2 Preparation of the “Global Framework for Action” The project team will consolidate the results of Activity 3.1 in a short summary document, and supporting documentation. The document will be translated into all UN languages, while the supporting documentation will be in English.	3.1 Minutes of the Final Meeting confirming consensus on key messages. 3.2 The document “ Global Framework for Action on Groundwater Governance” published and validated by the SC
Component 4: Communication Strategy and <u>Dissemination of the Framework for Action</u> on Groundwater Governance	Outcome 4.1: Systematic communication of project’s advancements and dissemination of project documents will strengthen public participation and catalyze action Outcome 4.2: Strategic dissemination of the Framework for Action and of key policy messages at the political level will leverage action and investments on groundwater governance.	4.1 A Communication Strategy defined and implemented. The entire project will be communication oriented. All the issues and interactions between partners and the public at large will be recorded and incorporated. The strategy will inform all consultation and public participation activities of the project. (GEF 250K; FAO 100K) 4.2 Outreach and results dissemination of results The communication and dissemination of the “Framework for Action” will occur through high level Outreach Conferences and Special Events in coincidence with World Water Forum 6, and other global events.	4.1 Definition of a Communication and Strategy, and its implementation. A Communication Team, with the help of Country/Partner Agencies will define the communication strategy including communication approach and media mix to be adopted. Communication will utilize ICT technology (a groundwater portal?), audiovisual materials, media and other special events, and published materials. The implementation will be responsibility of the same Team, acting in concert with the Implementing and Executing Agencies. 4.2 Organization of side-events at Outreach Conferences Special emphasis will be placed into reaching out to the political arena and disseminating the key groundwater policy messages. The message will be packaged for dissemination through high-level Outreach Conferences which will form a major platform for dissemination project outputs and final results.	4.1. Website established and functioning; published materials and record of communication and public participation events. 4.2. Record of outreach conferences, and listing of media coverage.
Component 5: Project Management and Monitoring and Evaluation.	Outcome 5.1: The project is executed within budget and according to an agreed workplan	5.1 Project coordination services delivered	5.1 Administrative services and budgetary control The PMU will undertake the preparation of all recruitment actions, disbursement of field expenses, contracts and letters of agreement. 5.2 Planning and coordination of project monitoring and evaluation	5.1. Annual and quarterly implementation and financial reports submitted on time

ANNEX 2: PROVISIONAL WORKPLAN

Components and subcomponents	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
PHASE 1: INCEPTION AND COMPILATION												
Component 1: State of Groundwater Governance												
<i>Output 1.1:</i>												
Inception meeting												
Expert Group Meeting												
<i>Output 1.2.:</i>												
Selection of Case Studies												
Analysis of Case Studies												
<i>Output 1.3:</i>												
Selection of Thematic Papers												
Preparation of Thematic Papers												
<i>Output 1.4:</i>												
Preparation of Synthesis Report												
PHASE 2: REGIONAL CONSULTATION AND DIAGNOSIS												
Component 2: Global Diagnostic												
<i>Output 2.1: Diagnostic</i>												
Design of Global Groundwater Diagnostic												
Preparation of Global Groundwater Diagnostic												
<i>Output 2.2: Consultations</i>												
Regional Consultations												
Preparation of Regional reports												
<i>Output 2.3: GEF Groundwater Conference</i>												
GEF Conference Preparation												
GEF Conference												
PHASE 3 CONSOLIDATION OF A GLOBAL FRAMEWORK												
Component 3: Shared Vision and Global Framework for Action												
<i>Output 3.1: Shared Vision</i>												
Formulation of a Vision document												
Regional consultations												
Preparation of Vision document												
<i>Output 3.2; Global Framework for Action</i>												
Preparation of Global Framework for Action												
Preparation of whole project package												
COMMUNICATION AND DISSEMINATION												

Component 4: Communication												
<i>Output 4.1: Strategy</i>												
Definition of communications strategy												
Regional consultations												
Private Sector roundtable												
<i>Output 4.2: Outreach</i>												
Outreach conferences and special events												
Dissemination of key results/documents												
<i>Component 5: Project Management</i>												
<i>Output 5.1: A fully functional PMU</i>												
Administrative services and budgetary control												
Planning and coordination of project M&E												

ANNEX 3: PROJECT BUDGET

					EXPENDITURE BY COMPONENT								EXPENDITURE BY YEAR			
Oracle code (Budget)	Oracle code (Parent/Child)	Description (Oracle)			1	2	3	4	5	Unit price	% GEF share	Total GEF	2010	2011	2012	Total
5300	5011	Salaries Professional			no	unit										
		Project Coordinator	12	month	17,000	17,000	17,000	17,000		15,000	50	68,000	20,000	50,000	20,000	68,000
		Communications Officer	12	month				72,000		12,000	50	72,000	10,000	40,000	22,000	72,000
		Finance and Budget Officer	1	month					24,000	12,000	100	24,000	8,000	8,000	8,000	24,000
5300		Subtotal Salaries Professional (Budget)										164,000	34,000	94,000	46,000	164,000
5500	5012	Salaries - General Service (Budget)			no	unit										
		Operations Clerk	28	month					84,000	6,000	50	84,000	24,000	24,000	24,000	84,000
5500		Subtotal Salaries GS (Budget)			28	month	0	0	0	84,000	6,000	84,000	24,000	24,000	24,000	84,000
5570	5013	Consultants			no	unit										
		<i>International consultants</i>														
	5542	Legal expert	2	month	12000	12,000				12,000	100	24,000	12,000	12,000	0	24,000
	5542	Economist	2	month	12000	12,000				12,000	100	24,000	12,000	12,000	0	24,000
	5542	Sociologist	2	month	12000	12,000				12,000	100	24,000	12,000	12,000	0	24,000
	5542	Institutions specialist	2	month	12000	12,000				12,000	100	24,000	12,000	12,000	0	24,000
	5542	Evaluation specialist	1	month			6,000	6000		12,000	100	12,000	0	0	12,000	12,000
	5542	Publication design consultant	3	month				36,000		12,000	100	36,000	0	18,000	18,000	36,000
	5542	Advisory Panel members	4	month		24,000	24,000			12,000	100	48,000	12,000	24,000	12,000	48,000
	5542	Subtotal international consultants	16	month	48,000	72,000	30,000	42,000				192,000	60,000	90,000	42,000	192,000
		<i>National consultants</i>														
	5543	Consultation organizers	6	month		42,000				7,000	100	42,000	14,000	14,000	14,000	42,000
	5543	Advisory Panel members	4	month		14,000	14,000			7,000	100	28,000	7,000	14,000	7,000	28,000
	5543	Subtotal national consultants	10	month		56,000	14,000	0				70,000	21,000	28,000	21,000	70,000
5570		Subtotal Consultants (Budget)			26	month	48,000	128,000	44,000	42,000		262,000	81,000	118,000	63,000	262,000

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Oracle code (Budget)	Oracle code (Parent/Child)	Description (Oracle)		1	2	3	4	5	Unit price	% GEF share	Total GEF	2010	2011	2012	Total
5650	5014	Contracts													
	5571	Thematic Papers (LoA – IAH)	sum	120,000					sum	100	120,000	120,000			120,000
	5571	Regional consultations(LoA- IAH)	sum		200,000				sum	100	200,000		200,000		200,000
	5571	Vision document (LoA-IAH)				50,000			sum	100	50,000			50,000	50,000
	5571	Regional consultations(LoA- UNESCO-IHP)			100,000				sum	100	100,000				100,000
	5571	Private Sector Roundable (LoA)	sum		25,000				sum	100	25,000	7,000	18,000		25,000
	5571	Design and Printing (Contract)	sum				75,000		sum	100	75,000	5,000	20,000	50,000	75,000
	5571	GEF Conference (Contract)	sum		50,000		75,000		sum	100	125,000		50,000	75,000	225,000
	5571	Public Information Supplies					20,000		sum	100	20,000	5,000	5,000	10,000	20,000
5650		Subtotal Contracts (Budget)		120,000	375,000	50,000	170,000				715,000	137,000	393,000	185,000	715,000
5900	5021	Travel - Duty													
	5661	Duty travel	sum	10,000	20,000	20,000	10,000		sum	100	60,000	20,000	20,000	20,000	60,000
	5684	Travel - Consultants - International	sum	25,000	35,000	35,000	25,000		sum	100	120,000	40,000	40,000	40,000	120,000
	5684	Regional Consultations (6 + GEF conf)	sum		200,000	50,000			sum	100	250,000		200,000	50,000	250,000
	5685	Travel - Consultants - National	sum	10,000	20,000	10,000	10,000		sum	100	50,000	10,000	20,000	20,000	50,000
5900		Subtotal Travel (Budget)		45,000	275,000	115,000	45,000		sum		480,000	70,000	280,000	130,000	480,000
6300	5028	General Operating Expenses (GOE)													
	6152	Meeting Rooms Rental (consultations)			16,000		8,000		sum	100	24,000		16,000	8,000	24,000
	6152	Regional Consultation – Other Supplies			10,000				sum	100	10,000	4,000	4,000	2,000	10,000
	6152	GOE - Misc. supplies & operating costs- HQs						10,400	sum	100	12,400	3,000	6,000	3,400	12,400
6300		Subtotal GOE (Budget)		0	26,000	0	8,000	10,400			44,400	7,000	26,000	13,400	44,400
6400	5040	General Overhead Expenses													
		Pouch costs & DHL						600	sum	100	600	200	200	200	600
6400		Subtotal General Overhead Exp (Budget)		0	0	0	0	600			600	200	200	200	600
		Subtotal - Component 1		230,000											
		Subtotal - Component 2			821,000										
		Subtotal - Component 3				226,000									
		Subtotal - Component 4					354,000								

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		Subtotal - Component 5						119,000								
		GRAND TOTAL			230,000	821,000	226,000	354,000	119,000			1,750,000	361,200	919,200	469,600	1,750,000

ANNEX 4: PROJECT CO-FINANCING REPORT TEMPLATE**Format for Report on CO-FINANCING**

Source of Cofinance	IN-KIND CONTRIBUTIONS				
	Budget original (at time of approval by GEF) (in USD '000)				
	FAO	IAH	Unesco	WB	Total
Component 1: Definition of a Shared Vision and Global Framework for Action on Groundwater Governance					
- 1.1 Specialist meeting report	25	0	0	0	
- 1.2 Case studies reports (BB-ETWWA and WPP trust funds)	0	75	0	600	
- 1.3 Thematic Papers (TFESSD trust funds)	25	75	400	250	
- 1.4 Synthesis Document	0		0	0	
Subtotal	50	150	400	850	1,450
Component 2: Development of a Global/Regional Groundwater Governance Diagnostic: regional and country experiences; prospects for the future					
- 2.1 Regional Consultation and Private Sector Roundtable reports	100	0	450	0	
- 2.2 Global Groundwater Diagnostic, a Report	466	0	0	0	
- 2.3 GEF Groundwater Conference		0	0		
Subtotal	566	0	450	0	1,016
Component 3: Definition of a Shared Vision and Global Framework for Action on Groundwater Governance					
- 3.1 A shared vision for groundwater governance translated into key policy messages	0	0	0	0	
- 3.2 The “Global Framework for Action on Groundwater Governance”, a document	0	0	0	0	

Subtotal	0	0	0	0	0
Component 4: Communication Strategy and Dissemination of the Framework for Action on Groundwater Governance					
- 4.1 A Communication Strategy defined and implemented	72	0	0	0	
- 4.2 Outreach Conferences	0	0	0	0	
Subtotal	72	0	0	0	72
Component 5: Project Management					
- 5.1 Administrative Services and Budgetary Control	100	0	0	0	
- 5.2 Planning and coordination of project monitoring and evaluation	62	0	0	0	
Subtotal	162	0	0	0	162
TOTAL Co-Financing	850	150	850	850	2,700

ANNEX 5: TERMS OF REFERENCE FOR COMMITTEES, PANELS AND LONG-TERM CONSULTANTS

Project Steering Committee

Role: The Project Steering Committee (PSC) will be responsible for providing general oversight of the execution of the Project and will ensure that all inputs and activities agreed upon in the project document are adequately prepared and implemented. In particular, it will: provide overall guidance to the Project Coordinator(PC) in the execution of the project; ensure that all project activities and outputs are in accordance with the project document; review, amend (if appropriate) and endorse all AWP's of the project for submission to GEF and FAO; identify, agree and facilitate any multi-country activities that would assist with the execution of activities or meeting project objectives (including reviews and evaluations by members of the APGP); and facilitate the dissemination of relevant project findings and recommendations globally.

The Project Steering Committee (SC) will be responsible for providing general oversight of the execution of the Project and will ensure that all inputs and activities agreed upon in the project document are adequately prepared and implemented. In particular, it will:

- provide overall guidance to the Project Coordination Unit in the execution of the project;
- ensure that all project activities and outputs are in accordance with the project document;
- identify, agree and facilitate any multi-country activities that would assist with the execution of activities or meeting project objectives; and
- facilitate the dissemination of relevant project findings and recommendations globally.

Membership: The Steering Committee will be composed of representatives of the funding partners and of executing agencies (GEF Secretariat, STAP, FAO, World Bank, UNESCO, IAH). The SC will adapt its operational procedures and Terms of Reference. The SC will review the Project budget and work programs and provides feedback and policy guidance to the PCU on such matters. Funding for SC business will be covered by the Project

Meetings: SC meetings will normally be held annually, but the chairperson will have the discretion to call additional meetings if this is considered necessary (e.g. for significant modifications to the AWP).¹¹ No more than 13 months may elapse between SC meetings.

Chairperson: At the start of the first SC meeting, a chairperson will be selected from among the representatives on the SC by a simple vote. The chairperson will serve for one year, finishing his/her term upon the completion of the SC meeting held closest to one year after selection. At this point a successor chairperson shall be chosen by the SC voting members in a similar manner. In liaison with the SC members, the chairperson shall be responsible for determining the date, site and agenda of the SC meeting(s) during his/her period of tenure, as well as the chairing of such meetings. He/she will ensure circulation of all relevant documents by the PC to SC members and will keep in regular contact with PC during the year. He/she will also sign endorsed AWP's and any subsequent proposed amendments submitted to FAO.

Secretariat: The PC will act as the Secretary to the SC and will be responsible for providing SC members with all required documents in advance of SC meetings, including: the agenda and meeting details, logistic arrangements, etc.; draft project progress reports and AWP's; independent reviews and evaluations of activities, proposals or analyses; and any other significant technical reports produced by project participants. The PC will prepare written minutes of all SC meetings and be responsible for logistical arrangements for the SC meetings.

Compensation: Travel and associated travel costs incurred by SC members attending SC meetings shall be requested to travel in accordance with FAO rules and regulations. No honorarium shall be paid to any person for their participation in SC business or meetings.

Project Coordinator

Role: The Project Coordinator (PC) will be responsible for project management and reporting and will also have the primary responsibility for coordination of all technical aspects of the project. The PC is expected to perform the following tasks:

- act as Secretary to the SC and liaise with the SC chairperson;
- serve as the main contact point between project partners and the BH and LTU in FAO;
- prepare the project inception report, progress reports and terminal report (as outlined in Annex 6);
- contribute to the development of ToRs, selection and evaluation of short-term consultants and contracts for project activities;
- provide technical advice to project partners, consultants and contractors, by drawing upon own knowledge and experience and/or requesting further assistance from FAO (the LTU);
- provide technical advice and assistance to the mid-term and final evaluations of the project;
- design, develop and implement any technical activities (such as workshops and training events) implemented at the regional level;
- develop and supervise independent reviews and assessments of project activities by members of the APGP, when requested by the SC;
- represent the project at relevant meetings and conferences and facilitate the coordination and integration of project activities into other efforts where appropriate and beneficial to the achievement of the project's objectives;

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Interim sessions of the SC could be by telephone conference rather than a physical meeting.

- Project management will account for approximately 2 months of the PC's time each year and the remaining time will be used for technical activities.

Requirements: The PC should have the following skills, experience and qualifications:

- a university degree in water resources management or related field;
- five years of relevant professional experience, including experience in groundwater management/governance;
- excellent oral and written communication skills in English.
- experience in preparing technical, financial and administrative reports for donors;
- familiarity with project monitoring and evaluation activities;
- experience with the management of global projects;
- proven capacity as a team leader;
- proven capacity to work with and establish working relationships with medium to high-level government and non-government representatives;
- familiarity with the policies, procedures and work of FAO and the GEF.

Duration of appointment: The PC will be contracted for a probationary period of one year, which will be extended annually until the completion of the project (assuming satisfactory performance).

Advisory Panel on Groundwater Policy (APGP)

Role: The role of the APGA will be to provide independent advice and comments on the technical and scientific content of any major proposed activities, evaluations, assessments and technical reports. Members of the RSAP will engage in such activities at the request of the SC and their inputs will be organized and supervised by the PC. Requests for APGA inputs and/or reports of their peer reviews will be a standing agenda item for the meetings of the SC.

Membership: The APGA will consist of six internationally recognized experts, normally trained to Ph.D level, with substantial experience in the following areas:

- policy, legal and institutional aspects of water management;
- economic aspects of groundwater management;
- social and local biodiversity assessment and monitoring;
- financing strategies for water management services;
- marketing of environmental goods and services;

Members of the APGA should have experience or knowledge groundwater management in specific regions Experts serving on the APGA will not be eligible for membership of the SC and may not be employed as short-term consultants or contractors on the project.

Selection: The PC will call for nominations to the APGA from the SC, GEF Operational Focal Points, co-financing institutions and FAO, within six months of the start of the project. The PC will assess and rank prospective members, then the final selection will be discussed and endorsed by the SC and approved by FAO.

Compensation: The members of the APGA are not expected to meet and their work will be mostly desk-studies although, in exceptional cases, travel to the countries may be required and approved. Experts selected for membership of the APGA will be technically cleared by FAO (as part of the selection process) and will be contracted by FAO on an 'as-and-when-employed' basis, with an honorarium following FAO's normal procedures. The PC, in consultation with the SC and FAO, will determine the amount of time required for each review.

ANNEX 6: PROJECT REPORTING, MONITORING AND EVALUATION

Monitoring of project activities and the ensuing evaluation of their impact will serve a dual function. First, it will facilitate tracking of progress toward the achievement of the project's development and global environmental objectives. Second, it will facilitate learning and generation of knowledge that will be useful for follow-up activities in countries, and transboundary aquifers and river basins

Project reporting, monitoring and evaluation will be conducted in accordance with standard FAO procedures, while at the same time respecting GEF guidelines and requirements. The results framework in ANNEX 1 provides performance indicators and targets with the data sources that will be used for verification. All technically cleared reports will be copied to the FAO GEF Coordination Unit (for monitoring purposes) and TC-FPMIS-DataQuality@fao.org (for uploading into FAO's Field Programme Management Information System - FPMIS).

Project reporting

For the purpose of monitoring and evaluation, the following reports will be produced.

Project inception report (IR)

Within two weeks of the start of project implementation, the PC will prepare a draft Project Inception Report (IR) in close collaboration with FAO (LTU and BH), and project partners. The IR will include a detailed Annual Work Plan (AWP) divided into months, detailing the proposed activities and progress indicators that will guide implementation during the first year of the project. The AWP should include proposals for the following:

- dates and locations of specific field visits;
- dates and locations of national and regional meetings;
- dates and locations of PSC and other key decision-making meetings;
- dates and locations of workshops and training sessions to be organized;
- requirements for procurement, short-term contracts and consultancies, materials and operating expenses, technical support and review missions; and
- outputs to be produced.

The AWP will also include the detailed project budget for the first full year of implementation, including any specific monitoring and evaluation activities required to measure performance. The IR will include a description of the institutional roles and responsibilities and co-ordinating actions of project partners, progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation. It will also include proposals to collect any data or other information that may be required for the purpose of monitoring the project's outcomes and impact (e.g. baseline data required to show progress against the indicators shown in the framework in Annex 1). The draft IR will be circulated for two weeks to the PSC (for endorsement) and other project partners (for review and comments) and a final version will be cleared by FAO (LTU and BH) within another week. The final IR will be circulated by the BH to all project partners.

Quarterly project implementation reports

At the end of every three months during each project year, Quarterly Project Implementation Reports (QPIR) will be prepared by the BH and submitted to the LTU and GEF Coordination Unit. The QPIR is used to identify constraints, problems or bottlenecks that impede implementation so that appropriate remedial action can be taken. The QPIR is based on a comparison of performance against the AWP, primarily through examination of planned expenditure and disbursement in each quarter. Based on each QPIR, the BH, in consultation with the LTU, will provide feedback and recommendations for action to the PC.

Semi-annual project progress reports

One month before the mid-point of each project year (June, December), the PC, in consultation project partners, will prepare a draft semi-annual project progress report (PPR) and submit this to FAO (LTU and BH). The PPR will follow the standard FAO format, which has been be tailored to address GEF objectives and concerns. This will contain the following: an account of actual implementation of project activities compared to those scheduled in the AWP (including a report on project expenditure in the six months plus an estimate of co-financing contributions received);¹² an account of the

¹² This should include, as far as practicable, details of how in-kind contributions were estimated and from who/where this information was obtained (for the purpose of possible future auditing or evaluation).

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achievement of outputs and progress towards achieving the project objectives (based on the indicators contained in the results framework shown in Annex 1, or any agreed modifications to this); identification of any problems and constraints (technical, human, financial, etc.) encountered in project implementation and the reasons for these constraints; clear recommendations for corrective actions in addressing key problems resulting in lack of progress in achieving results; lessons learned; and a revised work plan for the final six months of the project year. The draft PPR will be reviewed and cleared by the FAO Lead Technical Unit and Budget Holder for submission to the GEF Coordination Unit (TCU) in June and December each year. The Project Coordinator will circulate the final approved PPR to the PSC.

Annual Report on Co-Financing

Within 60 days of the reporting period (1 July to 30 June), the PC shall prepare a yearly co-financing report for the project for inclusion in the Project Implementation Review (PIR) which would include, to the extent possible, the following information:

1. Amount of co-financing realized compared to the amount of co-financing committed to at the time of project approval, and
2. Co-financing reporting by source and by type:
 - Sources include the agency's own co-financing (in-kind and cash), government counterpart commitments (in kind and cash); contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.
 - Types of co-financing. Cash include grants, loans, credits and equity investments. In-kind resources are required to be:
 - i. dedicated uniquely to the GEF project
 - ii. valued as the lesser of the cost and the market value of the required inputs they provide for the project, and
 - iii. monitored with documentation available for any evaluation or project audit undertaken by FAO.
3. With regards to reporting on in-kind co-financing provided by government and other institutions, FAO will encourage the partners to provide the information in a timely manner and the information will be made available upon request and without certification to the GEF Secretariat and GEF Evaluation Office.

Project Implementation Review - PIR:

The Project Implementation Review (PIR) is an annual monitoring process mandated by the GEF. Is an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing project. The PIR will reflect progress achieved in meeting the project's Annual Work Plan and to assess performance of the project in contributing to intended outcomes through outputs and partnership work. The format will include: (i) an analysis of project performance over the reporting period, including outputs produced and, where possible, information on the status of the outcome; (ii) the constraints experienced in the progress towards results and the reasons for these; (iii) the three (at most) major constraints to achievement of results; (iv) annual Work Plans and other expenditure reports; (v) lessons learned; (vi) clear recommendations for future orientation in addressing key problems in lack of progress.

One month before the end of the reporting period (1 July to 30 June), the PC will prepare a draft PIR. This will contain an AWP for the next year (containing the same details and prepared in the same way as described above for the IR) and a progress report for the whole year (containing the same material as described above for the SPPR). It will also contain information about any communication activities, specific monitoring and evaluation activities and scientific and technical reviews produced during the previous year. The draft PIR will be circulated for two weeks to the PSC (for comments and endorsement of the AWP) and other project partners (for review and comments) and a final version will be cleared by the FAO Lead Technical Unit and Budget Holder within another week and submitted to the GEF Coordination Unit (TCU) for finalization and submission to the GEF Secretariat and GEF Evaluation Office. The final PIR will be circulated by the BH to the PSC and all project partners.

Project Terminal Report

In the concluding months of the project and not later than six months before the end of the project, the PC, will prepare a draft Project Terminal Report (PTR) for technical clearance, finalisation and submission to the participating countries, FAO and other executing partners and the GEF. The draft PTR should be made available to the final project evaluation mission. The PTR will assess in a concise manner, the extent to which the project's scheduled activities have been carried out, its outputs produced, progress made towards the achievement of the developmental and global environmental objectives (based on objectively verifiable project progress and impact indicators), institutional structures and coordination arrangements implemented and lessons learned. It will also present recommendations for any future follow-up action arising out of the project. Upon conclusion of the project, it will be finalised and submitted to the participating countries, technical officers in the FAO regional and subregional offices and FAO headquarters, other executing partners and the GEF.

GEF tracking tools

As required by GEF, the applicable International Waters tracking tools will be used. These will be completed by the PC and submitted to the GEF by the GEF Coordination Unit (TCU). The tracking tool which has the purpose of measuring the progress in achieving the impacts and outcomes established at the portfolio level under the International Waters focal area. It needs to be submitted at three moments, following GEF procedures: (i) with the project document at CEO endorsement; (ii) at the project's mid-term review; and (iii) with the project's terminal evaluation or final completion report.

Technical Reports and Case Studies:

Technical Reports and Case Studies are detailed documents covering specific areas of analysis or scientific specializations within the overall project. As part of the Inception Report, the project team will prepare a draft Reports List, detailing the technical reports that are expected to be prepared on key areas of activity during the course of the project, and tentative due dates. Where necessary this Reports List will be revised and updated, and included in subsequent Annual Project Reports. Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework of the project and its sites. These technical reports will represent, as appropriate, the project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at local, national and international levels.

Project Publications

Project Publications will form a key method of crystallizing and disseminating the results and achievements of the project. These publications may be scientific or informational texts on the activities and achievements of the project, in the form of journal articles, multimedia publications, etc. These publications can be based on Technical Reports, depending upon the relevance, scientific worth, etc. of these reports, or may be summaries or compilations of a series of Technical Reports and other research.

The project team will determine if any of the Technical Reports merit formal publication, and will also (in consultation with FAO, the government and other relevant stakeholder groups) plan and produce these publications in a consistent and recognizable format. Project resources will need to be defined and allocated for these activities as appropriate and in a manner commensurate with the project's budget.

All technically cleared reports should be copied to TC-FPMIS-DataQuality@fao.org so that they can be uploaded and maintained in the corporate project database under the Field Programme Management Information System (FPMIS).

Monitoring and Evaluation

Monitoring arrangements

Monitoring of project progress and outcomes will be the responsibility of the PC, with support from the project Partners. Indicators for monitoring purposes will be drawn from the Results Framework (see ANNEX 1), adjusted where necessary and justified. Specific monitoring tasks will be identified in the technical and disbursement plans contained in the AWP, broken down by quarter (see below). Each AWP will contain a monitoring programme for the proposed activities, indicating what information will need to be collected, whether this will require activities in the field to gather data and who will be responsible for implementing monitoring activities. Each APPR will contain a section on monitoring and evaluation, describing the results of monitoring activities in the previous year.

Monitoring of project progress (inputs and activities)

Project progress will be monitored largely through the recording and verification of inputs, including financial disbursements and the amount of project activities completed. Financial inputs (disbursements) will be taken from FAO's financial management system and reported quarterly (in the QPIR). Co-financing contributions to the project will be recorded and reported separately each and every year (in the APPR). Monitoring of activities will be the responsibility of the PC and the completion of activities will be recorded on an ongoing basis on the project website. The monitoring system will specifically compare financial disbursements and the completion of activities with what was programmed in the AWP and it will identify and assess any significant discrepancies between the two.

Monitoring of outputs and outcomes

The monitoring system will also record and report on the production of outputs and outcomes. The monitoring of outputs will be relatively simple, as these are mostly linked directly to the completion of activities and they will be recorded and reported on an ongoing basis (see above).

Evaluation

Project evaluations will include an assessment of the quality of the coordination between the various entities involved in managing project activities (the PSC, PC, and Partners) and the effectiveness of the whole in providing timely financial and technical assistance to the participating countries.

Project Impact

The project will not directly attempt to evaluate project impact, as this is more appropriately undertaken by external assessors during the project's mid-term review and final evaluation (see below). However, where necessary and appropriate, baseline data and information required to assess project impact will be collected in the first year of the project. The PC will have the responsibility for collecting this information, drawing on the advice of the PSC and members of the APGP if required. Data and information may also be collected later on during project implementation where this is specifically requested by FAO or, more commonly, by the project's mid-term review or final evaluation missions (prior to their arrival or during their mission).

Independent Mid-term review

An independent mid-term review will be undertaken at the end of the second year of project implementation. The mid-term review will determine progress being made towards achievement of outcomes and will identify corrective actions if necessary. Specifically, it will:

- review the effectiveness, efficiency and timeliness of project implementation;
- analyse effectiveness of implementation and partnership arrangements;
- identify issues requiring decisions and remedial actions;
- identify lessons learned about project design, implementation and management;
- highlight technical achievements and lessons learned; and
- propose any mid-course corrections and/or adjustments to the work plan as necessary.

The terms of reference for this mid-term review will be prepared in close consultation with FAO's Evaluation Service and the FAO GEF Co-ordination Unit, following FAO's evaluation procedures and taking into consideration evolving guidance from the GEF Evaluation Office. The terms of reference will also be discussed with the project's partners and endorsed by the PSC.

Final evaluation

An independent final evaluation will take place three months before the scheduled end of the project. It will focus on the same issues as the mid-term review. In addition, the final evaluation will review the project's impact, analyse the sustainability of results and assess whether the project has achieved its development and global environmental objectives. It will also provide recommendations for follow-up actions by project partners. As with the mid-term review, the terms of reference for the final evaluation will be prepared in close

consultation with the FAO Evaluation Service and the FAO GEF Co-ordination Unit, following FAO's evaluation procedures and taking into consideration evolving guidance from the GEF Evaluation Office. The terms of reference will also be discussed with the project partners and endorsed by the PSC.

Dissemination of Results

Results from the project will be disseminated through a number of existing information sharing networks and fora. In addition: (i) the project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation through lessons learned; (ii) the project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identifying and analyzing lessons learned is an on-going process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. FAO shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned.

ANNEX 7: CASE STUDY ANALYSIS FRAMEWORK

The case studies (to be developed in two parts) will describe national groundwater systems in seven developing countries - India, Kenya, Mexico, Morocco, Tunisia, South Africa, and Tanzania - in arid, temperate and tropical settings; deep and surficial systems; in fractured rock and carbonate geologies; fossil and active systems.

Part 1 Characteristics and Use of Groundwater

The first part of each case study will describe the nature and characteristics of groundwater resources, including its:

- extent.
- recharge characteristics.
- water quality.
- connectivity with other aquifers and surface waters and
- geological setting.

Current uses of groundwater will also be described for urban and rural water supply, industry and irrigation, storage through MAR schemes and maintenance of groundwater dependent ecosystems. The importance of the groundwater resource to different groups, especially the poor and the highly dependent (such as nomadic herders) will be described. This section will also contain a description of current and emerging issues, such as direct and indirect (i.e. extractions from connected rivers, lakes and wetlands) over-use, contamination from agricultural, human and industrial uses, degradation of recharge zones, and vulnerability to (including reduced recharge from) climate change.

Part 2 Groundwater Governance

The second part will focus on governance arrangements.¹³ Governance looks at the balance of power and the balance of actions at different levels of authority¹⁴. It translates into policies, legislation and regulations, institutions, participation and representation, knowledge and capacity, and financial mechanisms. This section will be organized around these six components, describing in detail how they operate in the case study.

While groundwater and surface waters share many common features, there are also significant features that affect the management of groundwater and that should be reflected in the governance arrangements. These features will be specifically included in the analysis. They include the common perception that groundwater is an unlimited resource (accentuated by its invisibility); the greater private sector investment in infrastructure with the related belief that the groundwater is a private (or a quasi private) good; the absence of large infrastructure investments for groundwater extraction; the linkage between land use and recharge, the sensitivity of groundwater dependent ecosystems to the watertable height and hence to extractions; the long time constants for groundwater systems to reach equilibrium; and the difficulty of reversing water quality degradation of groundwater systems as well as land subsidence due to overdraft.

Policy development is central for rationale resource allocation and use and resource management

Policies for water resources management state the government's intended position and so define the principles and act as an umbrella for the other components of water resources governance. Water resources policies will be examined for their inclusion of groundwater concerns, including

- types of property rights
- ownership of rights to water and land
- access to and allocation of groundwater resources;
- recognition of management of multiple, privately financed wells and boreholes;
- provisions for maintenance of water quality and recharge zone protection;
- recognition of climate change impacts on groundwater and opportunities for adaptation;
- conjunctive management with surface waters;
- provisions for stakeholder participation;
- monitoring requirements;
- compliance regimes; and
- charging and financing provisions.

Because the drivers for groundwater development and degradation often arise from external drivers (other sectors), policies for water supply/sanitation, irrigation, land use, and environment will be examined for their potential impacts on groundwater in terms of both effects on demands for groundwater and degradation of quality and recharge areas. Energy policies sometimes provide energy subsidies for fuel used for groundwater pumping and these cross-sectoral effects will also be examined.

Legislation and regulations are essential for promoting equitable access and use of and for protecting the resource against degradation

¹³ The case study analysis framework draws from several sources including the 2002 World Development report - Building Institutions, for Markets, the 2005 GEF Lake Basin Management Initiative Report - Managing Lakes and their Basins for Sustainable Use, the GWP's (2002) work on Water Governance, and the 2008 work supported by the German Development Institute on institutional aspects of groundwater governance.

¹⁴ Effective Water Governance: Learning from the Dialogues. GWP

Legislation provides the formal enforceable mandates and requirements for water resources management. Not all countries have specific water resources legislation- the case studies will describe the extent to which the countries have such legislation including its inclusion of specific groundwater requirements. Other relevant legislation__ environment, energy, rural development, urban development __ will also be examined for groundwater impacts. The case studies will describe the extent to which these legislations are harmonized across sectors.

In some cases, legislation refers to provisions for institutions that have not been established; conversely, institutions for water resources management may lack the legislative backing for proper functioning.

The analysis will specifically examine provisions in both legislation and regulations for

- Regulations for use, including control of groundwater use in light of the “private” nature of groundwater extractions
- Regulations for well construction
- Wastewater discharge licensing
- Controls over development in recharge and discharge zones, and controls over groundwater pollution (including land use planning, protections and zoning requirements)
- Provisions for enforcement of these controls, accounting for the dispersed nature and lack of monitoring of most groundwater extractions
- Recognition of traditional ownership and management arrangements for groundwater

Institutions (formal and informal) are at the core of good groundwater management

The capacity and skills of water resources departments responsible for groundwater management will be examined in each case study. This examination will assess:

- The level of skills and experience available for groundwater management
- The extent to which the groundwater sections are integrated with surface water and other relevant sections of the departments;
- The devolution of responsibilities to regions where the aquifers exist;
- The inclusion of communities and community based organizations (traditional structures) for managing groundwater
- Whether the institutions have access to adequate funding for their responsibilities
- The links between groundwater management institutions and other sectoral agencies through IWRM arrangements
- The role of NGOs and other sources of assistance in developing institutional capacity will be examined where relevant.

Participation and representation leads to better management

Managing relationships between formal state institutions and the local level is even more important for groundwater management than for surface water because of the dispersed nature and investments in private infrastructure for groundwater use. This section of the analysis will examine:

- Mechanisms by which local stakeholders have opportunities to engage in groundwater planning and management
- The level of authority accorded to representative groups
- Opportunities for women (who often bear the responsibility for water use) and ethnic groups to be represented in decisions
- The role of the private sector in groundwater exploration and development
- Opportunities to educate local groundwater users about the finite nature of the resource and mutual dependence of all users of aquifers

Knowledge and capacity improves decision making, and technologies can contribute to efficient resource planning, development and management

Typically less is known about the characteristics of groundwater systems than surface waters. Yet it is important to have a good technical understanding of the resource in order to manage it sustainably. This includes

Knowledge about technical aspects such as water levels and tables, aquifer characteristics__ permeabilities and transmissivities, recharge areas and rates, water abstraction rates, water quality, pollution from agricultural chemicals, human wastes and industry, and connectivity to surface waters, other aquifers, and seawater and wetland systems.

The extent of monitoring and analysis and the use of these data in management

The presence of groundwater dependent ecosystems, their level of dependence on confined and unconfined aquifers and the services that they provide to dependent communities

Given the misconceptions that often exist at local level, the case studies will examine the extent to which a basic appreciation of the groundwater resource is shared by local communities. This section will also detail the capacity that exists amongst local management groups and the contributions of NGOs and other sources of assistance to building capacity.

Technologies can sometimes have a dramatic impact on increasing access to groundwater and in addressing some types of problems. New drilling and pumping technologies and the use of oil and gas exploration methods and hydro-geological assessment techniques have both contributed to the Silent revolution as well as to innovations - the discovery of new groundwater aquifers. The case studies will include a review of groundwater models that have been used to support informed management decisions, including responses to emerging threats to the resource, and other technologies contributing to improved exploration, assessment and development of groundwater and to improved knowledge about the fate and transport of contaminants in groundwater.

Establishing local sources of funding is essential for sustainable resource development and management

Project document: Global Groundwater Governance; A Framework for Action

Successful governance needs to include provision for access to sufficient funds for management and development. Often other components of governance are hamstrung by an inability to carry out basic management functions and responsibilities. In addition, groundwater users sometimes pay a fee for using the resource in recognition of its scarcity value and to encourage careful use of the resource. The case studies will describe:

- Sources and extent of funds (direct and indirect fees) for managing groundwater resources
- Charging regimes__ flat license, volumetric, areal, none?
- Retention of levies and charges at the local level
- Subsidies and taxes
- Provisions for access by the poor and disadvantaged to groundwater

The final section of each case study will summarize the findings that emerge from this analysis of groundwater governance. This section will also summarize good practice examples of groundwater management that may offer lessons for wider adoption.

ANNEX 8: MAJOR RELATED PROGRAMMES

**GLOBAL ACTIVITY IN GROUNDWATER MANAGEMENT & PROTECTION
& RELEVANT PUBLICATIONS**

IMPLEMENTING/EXECUTING AGENCY

	Food And Agriculture Organization Of The United Nations – FAO
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Aim

FAO's mandate is to raise levels of nutrition, improve agricultural productivity, better the lives of rural populations and contribute to the growth of the world economy.

Main programs related to water

AQUASTAT is FAO's global information system of water and agriculture developed by the Land and Water Development Division of FAO. The objective of AQUASAT is to provide users with comprehensive information on the state of agricultural water management across the world, with emphasis on developing countries and countries in transition.

Global Network on Integrated Soil Management for Sustainable Use of Salt-affected Soils. Soil salinisation has been identified as a major process of land degradation. The greatest technical causes of decreasing production on many irrigated projects, particularly in arid and semi-arid areas, or failure of large areas in rainfed agriculture, are waterlogging, salinisation and sodication. It was estimated from various available data that the world is losing at least three hectares of arable land every minute because of soil salinity.

Hydrological services in watershed management. This programme explores to what extent different land use systems and practices affect hydrological regime and water quality, and at which scales and contexts the impacts are of importance

Groundwater related interests

Groundwater is intrinsically related with FAO's main objectives, once this resource is important and fundamental for food security, improvement of agricultural productivity, raising of live standard of rural population. In some agricultural-export countries, groundwater contributes strongly for the national economy adding value for fruits and other products. FAO has long realised the economic potential of groundwater-based irrigation, but have also been concerned about issues of the physical sustainability of the resource for this purpose in the more arid climates – and have often worked in collaboration with the World Bank in this area. Through their work worldwide FAO have taken the lead in the drafting and promulgation of modern groundwater resource law, and through their projects in South Asia in particular have moved in recent years to promote participative groundwater management by the irrigation community.

Relevant Publications

Moench, M. Burke, J. Moench, Y. 2003. *Rethinking the Approach to Groundwater and Food Security*. FAO; Institute for Social and Environmental Transition Boulder. Water Reports 24 ISSN 1020-1203. Rome.

FAO. 2003. *Groundwater management - The search for practical approaches*. FAO; IAEA; UNDESA; UNESCO; Institute for Social and Environmental Transition Boulder; IAH Rome.

Cornish G; Perry, C; Bosworth, P; Burke, J. 2004. *Water charging in irrigated agriculture: An analysis of international experience*. FAO, Rome. <http://www.fao.org/documents/>

FAO. 2003. *World Agriculture: towards 2015/2030. An FAO Perspective*. Earthscan. London.

Kenneth K. Tanji & Neeltje C. Kielen. 2003. *Agricultural Drainage Water Management in Arid and Semi-Arid Areas* FAO Irrigation and drainage Paper 61. Rome

Burchi, S. 1999. *National regulations for groundwater*. FAO Legal Papers. FAO Development Law Service. Vol. 5. Rome.

Burchi, S. 2006. *The interface between customary and statutory water rights – a statutory perspective*. FAO Legal Paper on line 45. Rome.

Burchi, S & Mechlem, K. 2005. *Groundwater in international Law. Compilation of treaties and other legal instruments*. FAO Legislative Study 86. 566pp. Rome.

EXECUTING AGENCIES

–	United Nations Educational, Scientific and Cultural Organization – UNESCO
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Aim

UNESCO is working to create the conditions for genuine dialogue based upon respect for shared values and the dignity of each civilization and culture. This role is critical, particularly in the face of terrorism, which constitutes an attack against humanity. The world urgently requires global visions of sustainable development based upon observance of human rights, mutual respect and the alleviation of poverty, all of which lie at the heart of UNESCO’s mission and activities.

Main programs related to water

International Hydrological Programme – IHP - UNESCO's intergovernmental scientific cooperative programme in water resources. The IHP is a vehicle through which Member States can upgrade their knowledge of the water cycle and thereby increase their capacity to better manage and develop their water resources.

UNESCO-IHE Institute for Water Education - The mission is to contribute to the education and training of professionals and to build the capacity of sector Organizations, knowledge centres and other institutions active in the fields of water, the environment and infrastructure, in developing countries and countries in transition.

WWAP - World Water Assessment Programme - This UN-wide programme seeks to develop the tools and skills needed to achieve a better understanding of those basic processes, management practices and policies that will help improve the supply and quality of global freshwater resources.

Groundwater related interests

Worldwide, two billion people are dependent of groundwater. Groundwater is crucial for improving life quality for developing and in transit countries also in rural and urban areas. On the other hand, it is noted that water quality is still a big issue for the majority of countries. The occurrence of water borne diseases is largely the result not only for the natural limitation of water or lack of appropriate technology, but rather from lack of good education and basic information for the people. UNESCO-IHP has been the leader in promoting scientific understanding of groundwater and applying this knowledge in the developing world context, and has paid particular attention to regional and climatic variations. In recent years in collaboration with other Organizations (FAO, IAEA, WMO, World Bank-GW.MATE, etc) it has turned attention to the foundation of groundwater resource management (e.g. for internationally-shared aquifers, for non-renewable groundwater resources, on managed aquifer recharge, and groundwater quality protection).

Relevant Publications

Foster S & Loucks P (eds.) 2006 Non-renewable groundwater resources – a guidebook on socially-sustainable management for policy makers. UNESCO-IHP VI Series on Groundwater 10.

Howard, K.W.F., 2004. Groundwater for socio-economic development – the role of science. UNESCO IHP-VI series on Groundwater. No. 9. published as CD. ISBN 92-9220-029-1.

Shiklomanov I A 1998 World water resources – a new appraisal and assessment for the 21st century. UNESCO-IHP Publication (Paris, France).

UNESCO 2001. Internationally Shared Aquifer Resources Management, Framework Document, Paris 2001.

UNESCO 2004 Proceedings of the “International Workshop on Managing Shared Aquifer Resources in Africa”, Tripoli, 2-4 June 2002.

UNESCO 2006. Urban Water Conflicts – An analysis on the origins and nature of water-related unrest and conflicts in the urban context. 182pp.

UNESCO 2004/2 (forthcoming) Notebook on Non-Renewable Groundwater Resources
 UN-ECE 1989. Charter on Ground-Water Management;
http://www.internationalwaterlaw.org/RegionalDocs/Groundwater_Charter.htm

Zektser I (2003) Groundwater resources of the world and their use. UNESCO-IHP Monograph (Paris, France).

–	International Association of Hydrogeologists – IAH
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Aim

IAH is a scientific and educational Organization whose aims are to promote research into and understanding of the proper management and protection of groundwater for the common good throughout the world. IAH has over 3,500 members in 135 countries.

Groundwater related interests

IAH - “the World-Wide Groundwater Organization has, through the work of its Commissions (and in many cases in collaboration with UNESCO-IHP) promoted numerous books dealing with the scientific foundation for groundwater management and protection.

Relevant Publications

Management of Aquifer Recharge for Sustainability Proceedings of the 4th International Symposium on Artificial Recharge of Groundwater, Adelaide, 22-26 September 2002 Edited by P.J. Dillon 2002: 240x170: 580 pp HB: ISBN 90-5809-527-4:

New Approaches Characterizing Groundwater Flow. Proceedings of the 31st IAH Congress, Munich, Germany, 10-14 September 2001. Edited by K.-P. Seiler & S. Wohnlich, 2001: 240x170: 1352 pp, 2 volumes, HB: ISBN 90-265-1848-X:

Groundwater Intensive Use. Edited by Andres Sahuquillo, J. Capilla, L. Martínez-Cortina, X. Sánchez-Vila June 2005: 240x170: 410 pp HB: ISBN 0-415-36444-2:

Groundwater and Human Development Edited by Emilia Bocanegra, Mario Hernández, Eduardo Usunoff. April 2005: 240x170: 278 pp HB: ISBN 0-415-36443-4:

Nitrates in Groundwater Edited by Lidia Razowska-Jaworek, Andrzej Sadurski 2005: 240x170: 312 pp HB: ISBN 90-5809-664-5:

Intensive Use of Groundwater - Challenges and Opportunities Edited by M.R. Llamas & E. Custodio 2002: 240x170: 484 pp HB: ISBN 90-5809-390-5:

Urban Groundwater Pollution Edited by David N. Lerner 2004: 240x170: 296 pp HB: ISBN 90-5809-629-7:

Urban Groundwater – Meeting the Challenge Edited by Ken Howard Publication planned September/October 2006, approx. 300 pages

Hydrogeology Journal Issue: Volume 14, Number 3 March 2006 (2006 theme issue)

Social and Economic Aspects of Groundwater Governance Guest editors: M. Ramon Llamas, Aditi Mukherji, Tushaar Shah

Hydrogeology Journal Issue: Volume 12, Number 1 February 2004 (2004 theme issue) Groundwater—from development to management Guest editor: Karin Kemper

CO-FINANCING AGENCIES

_	The World Bank
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Aim

Global poverty reduction and the improvement of living standards.

The World Bank Projects

The World Bank carries out projects (including water) and provides a wide variety of analytical and advisory services to help meet the development needs of individual countries and the international community.

Groundwater related interests

Finances and supervises the implementation of major country-level projects (as negotiated by clients with increasing emphasis on groundwater in some countries) and through its Water Sector Policy and Country Assistance Strategies identifies policy needs and approaches. The World Bank, in association with the GWP, formed GW-MATE in 2000 in an advisory capacity on groundwater management and protection in support of World Bank country projects & GWP networks.

Relevant Publications

Foster S, Lawrence A; Morris B. 1997 Groundwater in urban development: assessing management needs and formulating policy strategies. World Bank Technical Paper 390.

Foster, S; Chilton, J, Moench, M; CARDY W; SCHIFFLER M. 2000. Groundwater in rural development: facing the challenges of supply and resource sustainability. World Bank Technical Paper 463.

Foster S & Kemper K eds 2002-04 GW-MATE Briefing Note Series : Sustainable Groundwater Management – Concepts & Tools nos 0-15. World Bank & GWP websites.

Marino, M. and K. Kemper. 1999. Institutional Frameworks in Successful **Water** Markets. World Bank Technical Paper, No. 427, Washington, D.C.

S. Salman (ed.), GROUNDWATER - LEGAL AND POLICY PERSPECTIVES, p.55- 67, World Bank Technical Paper No. 456, Washington, D.C. 1999.
 Foster, S.; Hirata, R; Gomes, D.; D’Elia, M.; Paris, M. 2002. Groundwater quality protection. The World Bank. Washington, 106pp.

OTHER POTENTIAL PARTNERS

_	United Nations Children’s Fund – UNICEF
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Aim

To advocate for the protection of children’s rights, to help meet their basic needs and to expand their opportunities to reach their full potential

Main programs related to water

Water, Environment and Sanitation Programme (WES) - Children's rights to an adequate standard of living and to the highest attainable standard of health are enshrined in the Convention on the Rights of the Child. The fulfilment of these rights is central to UNICEF's objectives for water and sanitation programmes.

Monitoring the situation of children and women

Statistical databases with country-detailed information

Joint Monitoring Programme (with WHO)

Website includes a large range of water and sanitation data

Groundwater related interests

Access to potable water is one of the biggest concerns of UNICEF since there is a strong relationship between good water quality and child illness and mortality. Groundwater is normally a safe source of water which can play a fundamental role for improving sanitation conditions for maintaining an adequate potable supply, but the increasing cost of successful waterwell construction in numerous countries represents a major challenge to achieving the UN-MDGs. This situation arises to significant degree as a result of inadequate national expertise and databases with which to undertake scientifically-based planning and execution of low-cost rural water-supply schemes, with subsequent difficulties in obtaining adequate well yields and/or acceptable groundwater quality.

Relevant Publications

WHO-UNICEF 2005. Water for life. Making it happen. Joint Monitoring Programme for Water Supply and Sanitation. WHO and UNICEF. Geneve. ISBN 92 4 156293 5.

UNICEF-WHO 2006. Meeting the MDG drinking water and sanitation target: a mid-term assessment of progress. UNICEF AND WHO. www.unicef.org/wes/mdgreport

_	United Development Programme – UNDP
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Aim

To help countries in their efforts to achieve sustainable human development by assisting them to build capacity to design and carry out development programmes, giving fist priority to poverty eradication.

Main programs related to water

Water governance. One of the focus areas of UNDP related to Energy and Environment. Water governance refers to the range of political, social, economic, and administrative systems that are in place to develop and manage water resources and the delivery of water services at different levels of society.

Drylands Development Centre

Public Private Partnerships for the Urban Environment (PPPUE)

The core goal of PPPUE is to increase the access of the urban poor to basic urban services by promoting collaboration between the private and public sectors

Global Environment Facility (GEF) - A join initiative with UNEP and The World Bank. It supports the development of projects in the environmental focal areas of biodiversity, climate change, international waters, land degradation, persistent organic pollutants and ozone depletion.

Global Environment Facility (GEF) – The UNDP was designated by GEF as one of its three Implementing Agencies. The GEF helps developing countries fund projects and programmes that protect the global environment. GEF Grants support projects related to the environmental focal areas of biodiversity, climate change, international waters (including transboundary aquifers), land degradation, persistent organic pollutants and ozone depletion.

GEF IW-LEARN aims to strengthen International Waters Management (IWM) by facilitating structured learning and information sharing among stakeholders. In pursuit of this global objective, IW:LEARN improves GEF-IW projects' information base, replication efficiency, transparency, stakeholder ownership and sustainability of benefits. Global Water Partnership (GWP). GWP provide information and links to ongoing events and relevant actors in Integrated Water Resources Management.

Groundwater related interests

Groundwater is an important resource for the development of many countries – and especially fundamental for agricultural and urban activities in arid areas. In many cases, groundwater is the only source in periurban areas of cities and poor settlements. There is a serious lack of knowledge and lack of good practices related to groundwater governance in developing and in transitional countries, and UNDP is keen to work in partnership with other more specialised Organizations to promote improved understanding and effective governance of this resource. Some of its Regional Social & Economic Commissions have also been especially active in this regard.

Relevant Publications

Burke J J & Moench M H 2000 Groundwater and society: resources, tensions and opportunities. United Nations Publication ST/ESA/205 (New York, USA)

UN- Economic Commission for Europe (ECE) 1989. Charter on Ground-Water Management; http://www.internationalwaterlaw.org/RegionalDocs/Groundwater_Charter.htm

Foster S & Lawrence A R 1995 Groundwater quality in Asia: an overview of trends and concerns. UN-ESCAP Water Resources Journal Series C: 184: 97-110.

UNDP/GEF 2nd Groundwater Workshop on the Implementation of WFD in the Danube River Basin 12-13th May 2003, Budapest, Hungary http://www.undp-drp.org/pdf/EU%20WFD%20Implementation%20-%20phase%201/Groundwaters%20Characterisation_final_draft.pdf

ESCWA. 2005. Regional cooperation in the management of water resources. Case studies of selected ESCWA member states. E/ESCWA/SDPD/2005/15

ESCWA. 2005. Water development Report 1. vulnerability of the region to socio-economic drought. E/ESCWA/SDPD/2005/9

_	World Health Organization – WHO
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Aim

WHO's objective, as set out in its Constitution, is the attainment by all peoples of the highest possible level of health. Health is defined in WHO's Constitution as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

Main programs related to water

Water Sanitation and Health (WSH) - Our aim is the reduction of water- and waste-related disease and the optimization of the health benefits of sustainable water and waste management.

Protecting groundwater for health is included in the plan of work of the rolling revision of the WHO Guidelines for Drinking-water Quality.

WSPortal: health through water - A collection of web-based practical guidance on Water Safety Plans

Groundwater related interests

Poor water quality is a key cause of poor livelihood and health. Globally, diarrhoeal diseases and malaria killed about 3.1 million people in 2002. Ninety percent of these deaths were children under the age of five. An estimated 1.6 million lives could be saved annually by providing access to safe drinking water, sanitation and hygiene. Groundwater is a safe and low cost alternative for potable water, and could be used more frequently to reduce problems related to water supply. Moreover, through its environmental health activities WHO plays a pivotal role in setting standards and assessing problems of groundwater quality used for potable water-supply, and in promoting local protection of potable groundwater supply sources. It also works in collaboration with UNICEF on the promotion of improved drinking-water access especially in the rural and peri-urban environment, which usually involves groundwater sources

Relevant Publications

Schmoll, O; Howard, J; Chilton, J; Chorus, I. 2005. Protecting Ground Water for Health – Managing the quality of Drink-water. WHO Drinking-water Quality Series – 2005 ISBN 92 4 154668 9

Bartram, J. & Balance, R. 1996. Water quality monitoring: A practical guide to the design and implementation of freshwater quality studies and monitoring programmes ISBN 0-419-22320-7. UNEP/WHO

Foster, S. & Hirata, R. 1988. Groundwater contamination risk assessment. WHO/PAHO CEPIS Technical Report, Lima, 98 pp.

Foster, S.; Ventura, M; Hirata, R. 1987. Groundwater pollution: an executive overview of the Latin America- Caribbean situation in relation to potable water-supply. WHO/PAHO CEPIS Technical Report, Lima

_	United Nations Environment Programme - UNEP
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Aim

Provide leadership and encourage partnership in caring for the environment by inspiring, informing and enabling nations and people to improve their quality of life without compromising that of future generations.

Main programs related to water

International Environmental Technology Centre (IETC) - Water and Sanitation Currently, the focus is more devoted to water and sanitation looking at areas where ESTs could make a difference in terms of their application i.e. wastewater management and freshwater augmentation based on the 4Rs concept (reduce, recycle, recuperate and recovery).

GIWA means the Global International Waters Assessment.

Assessment of Vulnerability of Water Resources to Environmental Change in Africa

United Nations GEMS/Water Programme provides scientifically-sound data and information on the state and trends of global inland water quality required as a basis for the sustainable management of the world's freshwater to support global environmental assessments and decision-making processes.

Surficial aquifers and urban pollution in Africa - Network On Urban Groundwater Vulnerability In Africa

Global Environment Facility (GEF) – The UNEP was designated by GEF as one of its three Implementing Agencies. The GEF helps developing countries fund projects and programmes that protect the global environment. GEF Grants support projects related to the environmental focal areas of biodiversity, climate change, international waters (including transboundary aquifers), land degradation, persistent organic pollutants and ozone depletion.

Groundwater related interests

Groundwater represents 97% of the planet's accessible freshwater reserves and can play a leading role in providing solutions to the emerging water crisis, including that associated to climatic changes, if it is managed effectively and responsibly. Groundwater is an intrinsic part of water cycle and takes part of the maintenance of many ecological environmental, as wetlands and lakes. Groundwater flowing to rivers keeps their water during dry periods and it is fundamental to guaranty the water quality in urban areas, because of capacity of dilution of domestic and industrial effluents. Through the GEMS Program (in association with Who and WMO) it has promoted groundwater quality monitoring and status overviews. More recently, UNEP working with UNESCO and IAH has implemented a groundwater management in internationally shared aquifers and confronted the issue of urban groundwater supply in Africa.

Relevant Publications

Clarke R, Lawrence A R & Foster S S D 1996. *Groundwater - a threatened resource*. UNEP Environment Library 15.

McGrahahan, G. & Satterthwaite, D. 2006. Governance and getting the private sector to provide better water and sanitation services to the urban poor. International Institute for Environment and Development. Human Settlements Discussion Paper Series (Water 04).

McGranahan, G. & D.L. Owen., 2006. Local water and sanitation companies and the urban poor. International Institute for Environment and Development. Human Settlements Discussion Paper Series (Water 04).

UNEP / UNESCO 2006 (in press) Proceedings of International Workshop: Groundwater Protection In Africa. University of the Western Cape. 28-30 November, 2005.

_	World Meteorological Organization – WMO
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Aim

Under WMO leadership and within the framework of WMO programmes, National Meteorological and Hydrological Services contribute substantially to the protection of life and property against natural disasters, to safeguarding the environment and to enhancing the economic and social well-being of all sectors of society in areas such as food security, water resources and transport.

Main programs related to water

Hydrology and Water Resources Programme (HWRP) is concerned with the assessment of the quantity and quality of water resources in order to meet the needs of society, to permit mitigation of water-related hazards, and to maintain or enhance the condition of the global environment. It includes standardization of all aspects of hydrological observations and the organized transfer of hydrological techniques and methods.

Groundwater related interests

WMO has been acting together with WHO, UNESCO and UNEP in programmes that involve groundwater as a part of water cycle, basically monitoring quality and quantity.

Relevant Publications (included on other listings)

_	International Atomic Energy Agency - IAEA
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Aim

It is to serve as the world's central inter-governmental forum for scientific and technical cooperation in the nuclear field.

Main programs related to water

Isotope Hydrology Section - The International Atomic Energy Agency aims to improve the availability and use of hydrological information through the application of isotope techniques. The Agency's programme in water resources supplements global efforts for sustainable resource management by assisting its Member States in hydrological data gathering and analysis, such as the origin, occurrence, and replenishment of water resources, training and capacity building, information exchange, and technical cooperation.

Groundwater related interests

The practical development and successful application of isotope techniques for groundwater has become much more successful and widespread worldwide largely thanks to IAEA. Through the application of an increasingly comprehensive set of mainly natural environmental isotopes they have facilitated major advances in the quantitative assessment of aquifer flow systems and pollution processes as a rational basis for groundwater management and protection, and have been very pro-active in collaborating with many other international and national Organizations in this regard, and as acting as a focal point for the discussion of pressing groundwater issues.

Relevant Publications

- IAEA. 2001. Isotope Based Assessment of Groundwater Renewal in Water Scarce Regions IAEA TECDOC Series No. 1246IAEA-TECDOC-1246
- IAEA. 2001. Characterization of Groundwater Flow for Near Surface Disposal Facilities IAEA TECDOC Series No. 1199IAEA-TECDOC-1199
- IAEA. 1998. Application of Isotope Techniques to Investigate Groundwater Pollution IAEA TECDOC Series No. 1046IAEA-TECDOC-1046
- IAEA 2002. Application of isotope techniques to the assessment of aquifer system in major urban areas. IAEA TECDOC Series No 1298. Vienna

_	International Water Management Institute - IWMI
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Aim

Improving water and land resources management for food livelihoods and nature.

Main programs related to water

The CGIAR Challenge Program on Water and Food (CPWF) - The Challenge Program is working towards achieving **food security** for all at household level; **poverty alleviation** through increased sustainable livelihoods in rural and peri-urban areas; **improved health** through better nutrition, lower agriculture-related pollution and reduced water-related diseases; **environmental security** through improved water quality as well as maintenance of water-related ecosystems and biodiversity.

The Comprehensive Assessment of Water Management in Agriculture critically evaluates the benefits, costs, and impacts of the past 50 years of water development, the water management challenges communities are facing today, and solutions people have developed.

Global Water Partnership Advisory Center.

IWMI-Tata Water Policy Program.

Groundwater related interests

The problems related to water are largely the result not only from the intrinsic/natural limitations of the water supply or lack of financing and appropriate technologies, but rather from profound failures in water governance. An integrated superficial and groundwater management is necessary to overcome the problems related to the lack of water governance.

Relevant Publication to Groundwater Management and Protection

Shah, T.; D. Molden, R. Sakthivadivel, D. Seckler. 2000. The global groundwater situation: Overview of opportunities and challenges. Colombo, Sri Lanka: International Water Management Institute.
 IWMI. 2005. Planning groundwater use for sustainable rural development. Water Policy Briefing. Issue 14.
 IWMI. 2005. Reducing poverty through integrated management of groundwater and surface water. 2005. Water Policy Briefing. Issue 13.

–	International Union for the Conservation of Nature and Natural Resources - IUCN
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Aim

The Union’s mission is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.

Main programs related to water

Water and Nature Initiative is the mainstreaming of an ecosystem approach into catchment policies, planning and management.

Water for Schools delivers a powerful combination of supplying water and education to ensure that healthy children live with healthy rivers. Water takes care of them, and they learn how to take care of water, so that their children will also have a healthy future.

Groundwater related interests

There has been little recognition of the vital function groundwater plays in the global water cycle and the immense benefits proper management of groundwater can provide. IUCN recognises that groundwater is vital in many cases for maintaining the sustainability of many dependent biodiversity ecosystems.

Relevant Publications

IUCN. 2003. Pangani Basin: A Situation Analysis. IUCN Eastern Africa Programme. Gland.
 IUCN-EARO. 2004. Dialogues Towards Sustainable **Water** Management in the Pangani Basin, Tanzania, Internal Review. Gland.
 IUCN. 2006. Sustainable financing of protected areas: a global review of challenges and options. Best Practice Protected Area Guidelines Series n. 13. Gland.
 Bergkamp, G.; Orlando, B; Burton, I. 2003. Change: adaptation of water management to climate change. UICN, Gland.

–	Ramsar Secretariat
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Aim

It provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

Main programs related to water

The Convention on Wetlands is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

Groundwater related interests

Most wetlands are intimately connected to aquifer systems. Responsible aquifer management has pivotal importance for maintaining fragile groundwater dependant ecosystems.

Relevant Publications

RAMSAR. 2005. Guidelines for the management of groundwater to maintain wetland ecological character. The Ramsar Convention on Wetlands.
 Barbier, E; Acreman, M; Knowler, D. 1997. Economic valuation of wetlands. A guide for policy makers and planners. RAMSAR. ESNB 2-940073-24-4.
 Hails, J. (Ed) 1996. Wetlands, Biodiversity and the Ramsar Convention: The Role of the Convention on Wetlands in the Conservation and Wise Use of Biodiversity,. ISBN 2-940073-22-8

–	World Water Council – WWC
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Aim

The World Water Council's mission is "to promote awareness, build political commitment and trigger action on critical water issues at all levels, including the highest decision-making level, to facilitate the efficient conservation, protection,

development, planning, management and use of water in all its dimensions on an environmentally sustainable basis for the benefit of all life on earth."

Main programs related to water

Water for Development – The minimum level of water services and infrastructure is necessary to trigger development. Water is essential for development and is critically important for many sectors (health, industry, agriculture, energy, transport etc).

Water Monitoring Alliance - Its objectives are to enhance a greater exchange and sharing of information amongst the Organizations and programmes involved in the collection and dissemination of water data and to provide a better access to the information for the decision makers, the media and the public at large.

Associated Programmes - Water Cooperation Facility (WCF), Cooperative Programme on Water and Climate (CPWC)

Other areas of focus - Water and Politics, Virtual Water, Water and the Media

Groundwater related interests

WW recognises that 2 billion people around the world depend on groundwater, that the reserve of fresh groundwater is immense (98% of all liquid-fresh water on the planet) and that the correct use of this resource can lever up the economic development in a large number of countries, mainly in Asia, Africa and Latin America.. By promoting dialogue on groundwater importance and governance at their World Water Fora, they have made a significant contribution to mobilising political interest in the resource and have a continuing interest in this challenge.

Relevant Publications

WWC; WWF, GWP. 2003. Report of the water panel on financing water infrastructure. Financing water for all. Michel Camdessus (Ed). WWC, 3WWF, GWP.

_	Global Water Partnership – GWP
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Aim

The mission of the GWP is to support countries in the sustainable management of their water resources.

Main programs related to water

Integrated Water Resource Management (IWRM) is an approach initiated by the GWP that seeks to balance human, industrial, agricultural and environmental needs.

The Ground Water Management Advisory Team (GW-MATE)

Groundwater related interests

GWP recognises that groundwater has many cross-cutting inter-sectoral linkages and the an integrated approach to its management is essential, but is aware that all too often there has been inadequate national recognition of the vital function groundwater plays in economic development and the immense benefits proper management of groundwater can provide.

Relevant Publications

GWP. 2006. Building awareness and overcoming obstacles to water management. Guideline for river basin and catchment management Organizations. IUCN/GWP.

GWP. 2003. Effective water governance: learning from the dialogues. www.gwpforum.org/gwp/

GWP. 2006. Water and sustainable development: lesson from Chile. Policy brief 2. Technical Committee (TEC). www.gwpforum.org/gwp/

_	International Groundwater Resources Assessment Centre – IGRAC
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Aim

The overall objective of IGRAC is to include groundwater fully in the assessment of freshwater resources of the world in order to encourage and enhance the conjunctive and sustainable utilisation of both groundwater and surface water.

Main programs related to water

Global Groundwater Information System - It contains a world map of countries and a set of aggregated groundwater-related attributes for each of the countries.

Development and promotion of guidelines and protocols for the assessment of groundwater resources. This activity aims to stimulate the proper acquisition of sufficient and comparable groundwater data world-wide. It pays special attention to monitoring of time-dependent groundwater data.

Groundwater related interests

IGRAC was recently established to act as an international reference centre for groundwater monitoring, assessment and information, and is encouraging countries to be more proactive and better focused in their groundwater monitoring activities.

Relevant Publication to Groundwater Management and Protection

IGRAC. 2006. Excel-based tool for off-line viewing and data editing in Global Overview (version 23). www.igrac.nl

IGRAC. 2006. Inventory Report. Inventory of existing guidelines and protocols for groundwater assessment and monitoring. www.igrac.nl

IGRAC. 2006. Monitoring Report. World-wide review on groundwater monitoring practice based on data from the questionnaire. www.igrac.nl

IGRAC. 2006. Questionnaire. Questionnaire on world wide groundwater monitoring . www.igrac.nl.

IGRAC. 2006. Guideline on Groundwater Monitoring for General Reference Purposes. www.igrac.nl

	North Atlantic Treaty Organization – NATO
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Aim

The fundamental role of NATO is to safeguard the freedom and security of its member countries by political and military means. NATO is playing an increasingly important role in crisis management and peacekeeping.

Main programs related to water

Committee on the Challenges of Modern Society - The NATO Committee on the Challenges of Modern Society (CCMS) was created in 1969 by the North Atlantic Council with the initial aim of addressing problems affecting the environment of the nations and the quality of life of their peoples.

Advanced Study Institute - Overexploitation and Contamination of Shared Groundwater Resources: Management, (Bio)technological, and Political Approaches to Avoid Conflicts

Groundwater related interests

NATO's Science Programme has a reputation for high standards of scientific excellence and over years has supported numerous research workshops and advanced study institutes, the majority of which have published proceedings.

Relevant Publications

Howard, K.W.F. & Israfilov, R. (eds.). 2002 Current problems of hydrogeology in urban areas, urban agglomerates and industrial centres . NATO Science Series: IV Earth and Environmental Sciences 8, 504 pp. Kluwer.

Baba, A., Howard, K.W.F. and Gündüz, O. (eds.), 2006 (in press). Groundwater and Ecosystems. NATO Science Series IV Earth and Environmental Sciences Vol. 42. Springer.

Tellam, John H.; Rivett, Michael O.; Israfilov, Rauf G. (Eds.). 2006. Urban Groundwater Management and Sustainability. Proceedings of the NATO Advanced Study Institute on Management and Sustainable Development of Urban Groundwater Systems, Baku, Azerbaijan, 6-15 August 2004. Series: Nato Science Series: IV: Earth and Environmental Sciences , Vol. 74, Hardcover.

Vogtmann, Hartmut; Dobretsov, Nikolai (Eds.) 2005. Transboundary Water Resources: Strategies for Regional Security and Ecological Stability. Proceedings of the NATO Advanced Research Workshop on Transboundary Water Resources: Strategies for Regional Security and Ecological Stability. Novosibirsk, Russia, 25-27 August 2003. Series: Nato Science Series: IV: Earth and Environmental Sciences , Vol. 46, VII, 198 p.

Teaf, Christopher M.; Yessekin, Bulat K.; Khankhasayev, Mikhail Kh. (Eds.) 2004. Risk Assessment as a Tool for Water Resources Decision-Making in Central Asia. Proceedings of the NATO Advanced Research Workshop, Almaty, Kazakhstan, September 23-25, 2002. Series: Nato Science Series: IV: Earth and Environmental Sciences , Vol. 34. 338p.

Arsov, R.; Marsalek, J.; Watt, W.E.; Zeman, E. (Eds.) 2003. Urban Water Management Science Technology and Service Delivery. Proceedings of the NATO Advanced Research Workshop, held in Borovetz, Bulgaria, 16-20 October 2002 Series: Nato Science Series: IV: Earth and Environmental Sciences , Vol. 25 .2003, 348pp

ANNEX 9: SECTOR BACKGROUND

1) Agriculture

The world's food production has met the demand of a growing population through the development of improved strains of cereals during the so-called 'green revolution' leading to increased crop yields in much of South Asia, and so preventing large scale famine. However, the world will need 55 percent more food by 2030 and this translates to an increasing demand for irrigation, which already claims nearly 70 percent of all freshwater consumed for human use.

Of the major countries, India has over 50 percent of its area irrigated from groundwater, followed by the USA (43 percent), China (27 percent) and Pakistan (25 percent). Globally, the equipped areas serviced by groundwater account for some 40% of the total area (3 million ha.). Key points are

- The expansion of irrigated areas during the last 10 years is mostly taking place in the Asian region.
- The quantity of groundwater used for irrigation for a set of 17 countries that together represent about 150 million hectares (or 57 percent of the total irrigated area worldwide) is of the order of 1240 billion m³ per year.
- About 10 percent of the world's agricultural food production depends on using mined groundwater. Water tables are dropping in fossil aquifers, including those in the Western United States.
- The inexorable growth in groundwater withdrawal to support agriculture in the last few decades, the so-called 'silent revolution', is a serious threat to global food security through the over-exploitation of groundwater resources and the waterlogging and salinisation of soils.
- Over-exploitation of groundwater resources in some semi-arid regions is causing water tables to fall at a rate of often 1 to 3 m per year. These regions include some of the world's major grain producing areas such as the Punjab and the North China Plain.
- In India, the total area affected by waterlogging as a result of both groundwater rise and poorly controlled irrigation is estimated to be 8.5 million ha.
- In terms of food security, estimates indicate that irrigation-induced salinity and waterlogging reduce crop yields in Pakistan and Egypt by 30 percent.
- Land-use changes can have a significant impact on groundwater levels. Forest and vegetation cover have long been recognized as major factors influencing runoff, infiltration and evapotranspiration from shallow water tables.
- In much of New South Wales, Australia, removal of forest cover has caused water levels to rise significantly with major environmental consequences.
- In many developing countries, the use of agricultural chemicals use has been low in comparison to industrialized countries but this may no longer be the case, particularly in countries such as India and China where irrigation and fertilizer use is extensive. Nitrate and other nutrient pollution in groundwater is also related to agricultural practices where animal wastes are concentrated, such as at feedlots or poultry farms. In addition to nutrients, pesticides and herbicides are other major sources of groundwater pollution related to agriculture.

The good governance of groundwater in supporting sustainable food production requires:

- Development of policy and regulatory instruments to promote effective management of groundwater resources by facilitating communication and action between farmers at the local level and water regulators at the regional level.
- Development of water-efficient irrigation technologies and the promotion of appropriate land use methods to sustain natural resources, for example wetlands, and avoid the waterlogging and salinisation of soils caused by the over-exploitation of land and water.
- Development of information resources and monitoring capability to limit non-point and point source pollution of groundwater by agricultural activities.

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FAO (2003) Issues Paper 4. *The irrigation challenge: increasing irrigation contribution to food security through higher water productivity from canal irrigation systems.*

FAO (2003) Water Reports 25. *Groundwater management: the search for practical approaches.* A joint publication of the FAO Land and Water Development Division, the International Atomic Energy Agency, the United Nations Department of Economic and Social Affairs and the United Nations Educational, Scientific and Cultural Organization.

2) The Environment

Groundwater is integral to the environment at various scales. Excluding the ice caps, globally groundwater accounts for 97% of freshwater resources. In continental-scale groundwater systems such as the Great Artesian Basin of

Australia, the Guarani Sandstone aquifer of South America and the North China Plain Quaternary aquifer, the flow of groundwater is integral to entire drainage basins. Many land and water ecosystems depend on groundwater regimes, such as semi-arid alluvial plains, wetlands, coastal habitats, and even coastal marine environments. Hence, groundwater has a pervasive influence across basins and landscapes, sustaining ecosystems and biodiversity.

Groundwater plays a critical, but often poorly understood role in the natural environment, with discharge from aquifers on land and at sea as springs and seeps. Groundwater provides baseflow to wetlands and rivers, and so maintaining aquatic ecosystems during dry months.

Over-exploitation of groundwater resources is detrimental to the freshwater environment and threatens biodiversity, landscape, livelihood and amenity benefits. Added to this, water quality is declining in most regions and the evidence indicates that the diversity of freshwater species and ecosystems, for example wetlands, is deteriorating rapidly, often faster than terrestrial and marine ecosystems. Wetlands are ecosystems that provide numerous goods and services that have an economic value, not only to the local population living in its periphery but also to communities living outside the wetland area. The annual value of wetlands using the Ramsar Convention's global wetland area estimate of 12.8 million km² is estimated to be US\$70 billion. Already half the world's wetlands have disappeared due to drainage and water resources exploitation. According to the Millennium Ecosystem Assessment Synthesis report, wild caught fisheries and freshwater are exploited well beyond sustainable levels. A significant challenge for good governance of groundwater to protect the environment is the achievement of a sustainable balance in which societal, economic and environmental demands for water are met. Governments need to recognize environmental requirements for groundwater, for both aquatic and terrestrial ecosystems, and establish legislation that ensures:

- Water managers acknowledge potential impacts on ecosystems when allocating groundwater resources.
- Catchment managers balance the benefits derived by direct use of groundwater with the goods and services provided by groundwater-dependent ecosystems.
- Hydrological and ecological scientists monitor groundwater-dependent ecosystems to establish environmental requirements for groundwater.

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- Shah, T., Molden, D., Sakthivadivel, R. & Seckler, D. (2000) *The global groundwater situation: overview of opportunities and challenges*. International Water Management Institute, Colombo, Sri Lanka.
- WWF (2004) *Living waters: conserving the source of life. The economic value of the world's wetlands*. World Wildlife Fund and Swiss Agency for the Environment, Forests and Landscape. Gland/Amsterdam.

3) Urban Water Supply and Sanitation

Sustainable cities demand safe, clean drinking water. Over half the world's population currently live in cities and the number of urban dwellers is expected to increase by between 30 and 50% over the next 25 years. Groundwater has played a major role in the development of many of these cities; it is less affected by climatic variations and can be brought on-line incrementally as demand increases. However, urban groundwater resources are becoming increasingly stressed by contamination and the excessive demands being placed upon it, demands that will serve to increase water-supply costs and, if left unresolved, will compromise human health and lead to socio-economic and environmental decline. Specific issues (Howard and Israfilov, 2002; Howard, 2006 (in press), Lerner, 2004; Tellam et al., 2006, in press) include as follows:

- Explosive population growth in cities throughout the world is creating an unprecedented demand for water. Half of humanity will be living in towns and cities by 2007. By 2030, this will have risen to nearly two thirds, resulting in drastic increases in water demand. An estimated two billion of these people will be living in squatter settlements and slums. It is the urban poor who suffer the most from lack of clean water and sanitation.
- Groundwater is a fundamental component of the water supply system in urban areas world-wide. Although, no comprehensive statistics exist on the proportion of urban dwellers are dependent on groundwater, it is estimated that more than 1.1 billion people in Asia and 175 million in Latin America probably depend directly or indirectly upon ground water resources, including also twelve of 23 megacities (cities with more than 10 million inhabitants) in the world.
- The use of groundwater for industrial activities is also increasing mainly in poor and developing countries due

to the low-cost and natural high-quality water. Another reason is the frequent interruption of water supply from mains public system, which has become the groundwater one of the most reliable alternative for industries in many countries.

- Poor water quality is a key cause of poor livelihood and health. Globally, diarrhoeal diseases and malaria killed about 3.1 million people in 2002. Ninety percent of these deaths were children under the age of five. An estimated 1.6 million lives could be saved annually by providing access to safe drinking water, sanitation and hygiene.
- In many cases, groundwater often represents the only source of potable water for poor people living in peripheral areas of many cities. These communities often use poorly-constructed excavated wells or springs from shallow aquifers for their water supply, which are located nearby to cesspools and latrines.

The core challenge for good governance of urban water supply and sanitation includes an urgent need to identify and prioritise the courses of action required if continued growth of the world's cities is to be sustained. Ultimately, as succinctly suggested by Sharp (1997), we have three options: increase water supply; decrease water demand; and use available water more efficiently. Effecting one or more of these solutions will require:

Development of national and municipal policies for groundwater resource development and land use occupation in urban areas in order to prevent problems of over-exploitation, water salinization and/or pollution, land subsidence, ecological damage to wetland habitats and mobilization of naturally occurring contaminants.

Development of effective regulation to meet escalating water demand in the face of competing political, societal and economic issues and limited financial resources for technological development and essential infrastructure.

Development of information resources for water users on the vulnerability of aquifers to anthropogenic contamination and the need to define protection zones around wells or springs.

Development of practical measures of proper groundwater management in order to avoid aquifer over-exploitation, even when excessive groundwater extraction has reduced baseflow to rivers and wetlands, caused subsidence, or induced saltwater intrusion.

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Howard, K.W.F. & Israfilov, R. (eds) (2002) *Current problems of hydrogeology in urban areas, urban agglomerates and industrial centres*. NATO Science Series: IV Earth and Environmental Sciences 8. Kluwer, 504 pp.

Lerner, D.N. (ed.). 2004. *Urban Groundwater Pollution*. Contributions to Hydrogeology. 296 pp.

Howard, K.W.F. 2006 (in press) *Urban Groundwater – Meeting the Challenge*. IAH Selected papers Series. September/October 2006, approx. 300 pages.

Sharp, J.M. Jr. (1997) Ground-water supply issues in urban and urbanizing areas. In J. Chilton et al. (eds), *Groundwater in the Urban Environment: Volume 1: Problems, Processes and Management*; Proc. of the XXV11 IAH Congress on Groundwater in the Urban Environment, Nottingham, UK, 21-27 September 1997. Balkema, Rotterdam, 67-74.

Tellam, J.H., Rivett, M.O., Israfilov, R.G. (eds) (2006) *Urban Groundwater Management and Sustainability*. Proceedings of the NATO Advanced Study Institute on Management and Sustainable Development of Urban Groundwater Systems, Baku, Azerbaijan, 6-15 August 2004. Series: NATO Science Series: IV: Earth and Environmental Sciences, Vol. 74.

4) Transboundary Aquifers

Worldwide there are 261 transboundary river basins that cover 45.3% of the global landmass. Over 40% of the world's population relies on transboundary water resources for their secure and stable livelihoods. Transboundary aquifers are as important a component of global water resource systems as are transboundary rivers; however, their recognition in international water policy and legislation is very limited (Puri and Aureli, 2005). There is an urgent need to map and analyze transboundary aquifer systems and to encourage riparian states to work collaboratively to develop a mutually beneficial approach to sustainable aquifer management. Ongoing work through the ISARM Programme (IAH / UNESCO's International Hydrological Programme) is building scientific, legal, environmental, socioeconomic, and institutional guidelines and recommendations to aid sharing nations in the management of their transboundary aquifers. Specific issues include as follows:

- Water (especially groundwater), ignores political / administrative boundaries, evades institutional classification, and eludes legislative generalizations
- Despite the recent publication of a “world transboundary aquifer systems map” as part of the World-wide Hydrogeological Mapping and Assessment Programme (WHYMAP) series, the global inventory of

transboundary aquifers is incomplete. Many countries, particularly in outside North America and Europe, understand little about their aquifers beyond their territorial boundaries and of the implications this has for resource management. This lack of awareness leaves transboundary aquifers at risk and can lead to international conflict. Many transboundary aquifers are located in semi-arid to arid regions of the world where surface water is limited and the supply unreliable.

- To date there is very little experience in the joint management of transboundary aquifers, yet some of them contain huge quantities of water. In one example, member countries of the drought-prone Southern African Development Corporation manage transboundary groundwater resources for drinking water for humans and livestock, as well as for maintaining many ecosystems and wildlife (GEF 2004).
- Aquifers containing non-renewable fossil water pose special management concerns.
- The 1997 UN Convention on Non Navigational Uses of International Watercourses, although still not ratified, insufficiently addresses the peculiarities of transboundary aquifers. These gaps need to be filled to avoid future potential conflicts.

The challenges for good governance of transboundary aquifers include:

- A need to map and analyze transboundary aquifer systems and complete the worldwide inventory of significant transboundary aquifers.
- A need to adapt existing international regulation to multifarious aquifer conditions.
- The encouragement of riparian states to work collaboratively to develop a mutually beneficial approach to sustainable aquifer management.
- The development of appropriate rules for strengthened governance of transboundary aquifers accomplished by building institutional capacity, further developing guidelines and conventions.
- The strengthening of transboundary groundwater resources management strategies in drought prone areas in order to meet human development needs while protecting groundwater-dependent ecosystems.
- Making governments and financing agencies aware of the significance of aquifers that are shared with neighbours, such that the implementation of economic development plans considers the wise use of aquifer resources, the slow response of aquifers, and accounts for the sustainability of ecosystems dependent on transboundary groundwaters.
- International financial support for transboundary water management is piecemeal and scattered. Governments and financing agencies need to be made aware of the significance of aquifers that are shared with neighbours, so that when they implement economic development plans then aquifers resources are wisely used, the slow response of aquifers is accounted for and sustainability of ecosystems dependant on transboundary groundwaters is ensured.
- While international donors are beginning to promote regional cooperation in water policy and management of transboundary waters, the type of investment needed remains under financed. This is true for both coordinated national investments as well as those targeted to one country, but bringing benefits to sharing riparians. Some financing suggestions such as basin specific Trust Funds or an International Shared Water Facility have been made and need serious consideration.

References:

GEF (2004) Protection and Strategic Uses of Groundwater Resources in the Transboundary Limpopo Basin and Drought Prone Areas of the SADC Region. Global Environment Facility, Project ID: 070547, Focal Area: IW – International Waters, 78 pp.

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UNESCO 2001. Internationally Shared Aquifer Resources Management, Framework Document , Paris 2001

5) Rural Water-Supply & Livelihoods

In the developing world, rural inhabitants are amongst the most destitute (IFAD, 2001) and the provision of groundwater represents a major opportunity for escaping poverty. Because of its relative ease of extraction, almost ubiquitous extent, negligible treatment requirements, low susceptibility to drought (Calow et al., 2002), and minimal infrastructure costs in comparison to surface water (Llamas et al., 1998), it can provide the rural poor with the prospect

of generating income as well as meeting consumption and sanitation needs. Although agriculture is commonly assumed to be the main livelihood for rural inhabitants, most rural areas support an important service industry, together with small scale manufacturing or handicrafts, trading, and processing, that depend directly or indirectly on an adequate source of water (Ellis et al., 2004). Economic advancements will contribute little, however, without concurrent improvements in sanitation and health.

Many obstacles must be overcome if rural inhabitants, and particularly the rural poor, are to gain access to adequate supplies of groundwater:

- Rural communities face a strong competing demand for groundwater from urban, industrial and agricultural users, and groundwater dependent ecosystems. The economic and power dynamics of this competition puts rural inhabitants at the bottom of the priority list because they cannot generate comparable financial returns or are less represented in positions of power (lobby groups, politics etc.) and unable to influence water allocation. Studies have shown that water exported from rural areas to urban centers and associated industries leads to food insecurity and unemployment (Diwakara et al., 2003; IFAD, 2001; Rosegrant et al., 1999).
- Contamination of groundwater represents the greatest threat to rural livelihoods. The main causes of pollution are sub-surface releases of human and industrial effluent and the impacts of over-pumping and agriculture. Over-pumping often invites groundwater salinization, and agriculture frequently leads to contamination by fertilizers, pesticides and herbicides. Many rural groundwater supplies are obtained from shallow dug wells which are never monitored for water quality and are used regardless of the pollutant levels. Groundwater used in rural areas on the periphery of cities is particularly susceptible to contamination by urban runoff or leaching of contaminated water from urban pollutant sources (Nagaraj, 2005).
- The rural populace is underrepresented in government or by other interest groups and is often too isolated, poor, or uneducated to manage groundwater resources responsibly. Rural inhabitants are often exposed to the ill effects of groundwater pollution until the problem has been identified by external parties who eventually decide the best means of mitigation.
- The rural poor are required to utilize natural resources for a livelihood because they lack any alternative. Although groundwater is viewed as a community resource, in many countries a social hierarchy dictates access to water and in particular to wells. For example, casteism in India strongly dissuades lower caste people from accessing community wells, which leaves the poorest of the poor bound to an austere existence. Only the wealthy can afford to drill their own wells which exacerbates the problem by increasing the gap in wealth.
- Outside of agriculture, women are the main front-line users of rural groundwater resources in developing countries and suffer disproportionately from the challenge of securing adequate water supplies. Long hours spent traveling to and from community wells prevent women from performing their other household duties, and female children are often obliged to share their mothers' responsibilities. These children often remain uneducated, perpetuating the cycle of rural poverty and women's marginalization.
- Regulation of groundwater is difficult because of the number of actors involved. NGOs, foreign government assistance programs and private companies often act independently and work with different government ministries when implementing their agendas. The lack of co-ordination prevents responsible resource management and promotes depletion of aquifers. Individual rural users who typically use their shallow wells for domestic supply and small-scale livelihoods are the first to be affected by lowered water tables.

Systems of governance for the management of rural groundwater supply for domestic and livelihood purposes could consider the following:

- Groups need not be marginalized from a lack of representation and governance must involve all stakeholders. Local institutions and women need to be enabled with the capacity to monitor and manage village wells, and their activities must be integrated with programs managed by regional offices, and national institutions for a broad situational understanding.
- Unregulated expansion of groundwater can be discouraged and management strategies must be defined that include sufficient monitoring so as to avoid over-abstraction and pollution.
- Equitable distribution of available water resources should be ensured and modern technologies should be made available that can allow secure access to safe potable supplies.
- Sufficient flexibility must be provided in the water supply system to ensure rural inhabitants have access to adequate groundwater supplies during periods of drought (Calow et al., 2002).

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ANNEX 10: PROJECT REVIEWS (STAP, GEF SECRETARIAT, GEF COUNCIL) AND TEAM RESPONSE STAP SCIENTIFIC AND TECHNICAL SCREENING OF THE PROJECT IDENTIFICATION FORM (PIF)

Scientific and Technical Advisory Panel

The Scientific and Technical Advisory Panel, administered by UNEP, advises the Global Environment Facility (Version 5)



STAP Scientific and Technical screening of the Project Identification Form (PIF)

Date of screening: 5 August 2008

Screeners: Guadalupe Duron

Panel member validation by: Meryl Williams

I. PIF Information

PART I: PROJECT IDENTIFICATION

GEFSEC PROJECT ID: 3726

GEF AGENCY PROJECT ID: P098613

COUNTRY(IES): Global

PROJECT TITLE: *Groundwater Governance: A Global Framework for Country Action*

GEF AGENCY(IES): World Bank

OTHER EXECUTING PARTNER(S): International Association of Hydrogeologists (IAH)

GEF FOCAL AREA (S): International Waters

GEF-4 STRATEGIC PROGRAM(S): IW SO # 1 and SP # 3

NAME OF PARENT PROGRAM/UMBRELLA PROJECT: N/A.

Full size project GEF Trust Fund

II. STAP Advisory Response (see table below for explanation)

1. Based on this PIF screening, STAP's advisory response to the GEF Secretariat and GEF Agency(ies):
Consent

III. Further guidance from STAP

2. STAP welcomes this important initiative on "Groundwater Governance: A Global Framework for Country Action". At the request of the GEF, STAP led a workshop series on groundwater between 2004 - 2006 that developed the priorities that this proposal addresses, including groundwater integration into the GEF focal areas. (The STAP reports are available on the STAP website, www.unep.org/stapgef, and in the GEF website under the GEF Council Documents.)

STAP welcomes very much the opportunity, therefore, to advise on the linkages between groundwater and the other focal areas, as well as on other scientific and technical aspects of the project as requested by the Implementing Agency, and/or International Steering Committee. In this regard, STAP wishes to become part of the International Steering Committee, and it would be grateful if the World Bank could formalize this request by writing to the STAP Secretary.

STAP also has the following suggestions to help strengthen the proposal:

1. STAP questions whether the correct approach is to embark on a top down normative format (the framework for action) when much local/national/regional variation is needed in approaches. The groundwater management problems are already well known to fit within that large set of NRM problems to which there are no panaceas (Ostrom et al 2007), including other types of water management, (Meinzen-Dick 2007). The proposal should make sure that much more attention is given to getting this project better "grounded" in the countries of interest, with all their great complexities and differences. Among the project proponents should be sufficient knowledge of country conditions to pose some key hypotheses to be tested in country level work.
2. Risk of countries lacking specific local groundwater knowledge is not addressed, and yet this is a critical determinant as to whether any sound policy can be formulated (see recent Nature papers on importance of this understanding (Harvey 2008, and Polizzotto et al 2008).

The complete list of the references cited above is as follows:

In response to the STAP review:

1. The STAP will be formally invited to become a member of the Steering Committee
2. The project addresses the STAP comments by explicit consideration of the Ostrom CPR principles for institutional design.
3. The risk that countries lack specific local groundwater knowledge is being addressed by UNESCO-IHP ISARM country profiles. The national groundwater information compiled at district level in the FAO Aquasta database is due to be updated in 2010 as a result of a global inventory of groundwater use for irrigation. Aquasta

ANNEX 11. FINANCIAL REPORTING

Financial Records

FAO shall maintain a separate account in United States dollars for the project showing all income and expenditures. Expenditures incurred in a currency other than United States dollars shall be converted into United States dollars at the United Nations operational rate of exchange on the date of the transaction. FAO shall administer the project in accordance with its regulations, rules and directives

Financial Reports

FAO shall prepare six-monthly project expenditure accounts and final accounts for the project, showing amount budgeted for the year, amount expended since the beginning of the year, and separately, the unliquidated obligations as follows:

1. Details of project expenditures on an activity-by-activity basis, reported in line with project budget codes as set out in the Project Document, as at 30 June and 31 December each year.
2. Final accounts on completion of the project on an activity-by-activity cumulative basis, reported in line with project budget codes as set out in the Project Document.
3. A final statement of account in line with FAO Oracle project budget codes, reflecting actual final expenditures under the project, when all obligations have been liquidated.

These financial reports are prepared for review and monitoring by the budget holder of the project and the FAO GEF Coordination Unit.

Financial reports for submission to the donor will be prepared in accordance with the provisions in the GEF Financial Procedures Agreement.

Budget Revisions

Semi-annual budget revisions will be prepared in accordance with FAO standard guidelines and procedures.

Responsibility for Cost Overruns

Upon prior approval from the FAO GEF Coordination, the Budget Holder can be authorized to enter into commitments or incur expenditures up to a maximum of 20 percent over and above any budget sub-line during the project cycle provided the total cost of the project budget is not exceeded.

Any cost overrun (expenditure in excess of the budgeted amount) on a specific budget sub-line over and above the 20 percent flexibility should be discussed with the FAO GEF Coordination Unit with a view to ascertaining whether it will involve a major change in project scope or design. If it is deemed to be a minor change, the budget holder shall prepare a budget revision in accordance with FAO standard procedures. If it involves a major change in the project's objectives or scope, a budget revision and justification should be prepared by the Budget Holder for discussion with the GEF Secretariat.

Savings in one budget sub-line may not be applied to overruns of 20 percent in other sub-lines even if the total cost remains unchanged, unless this is specifically authorized by the FAO GEF Coordination Unit upon presentation of the request. In such a case, a revision to the project document amending the budget will be prepared by the Budget Holder.

Under no circumstances can expenditures exceed the approved total project budget or be approved beyond the NTE date of the project. Any over-expenditure is the responsibility of FAO.

Audit

The project shall be subject to the internal and external auditing procedures provided for in FAO financial regulations, rules and directives and in keeping with the Financial Procedures Agreement between the GEF Trustee and FAO.

The audit regime at FAO consists of an external audit provided by the Auditor-General (or persons exercising an equivalent function) of a member nation appointed by the governing bodies of the Organization and reporting directly to them, and an internal audit function headed by the Inspector-General who reports directly to the Director-General. This function operates as an integral part of the Organization under policies established by senior management, and furthermore has a reporting line to the governing bodies. Both functions are required under the Basic Texts of FAO which establish a framework for the terms of reference of each. Local audits of imprest accounts, records, bank reconciliation and asset verification take place at FAO field and liaison offices.

Report on co-financing

Within 60 days of the reporting period, FAO shall prepare a yearly co-financing report for the project for inclusion in the "project implementation report (PIR) which would include, to the extent possible, the following information:

- a. Amount of co-financing realized compared to the amount of co-financing committed to at the time of project approval, and
- b. Co-financing reporting by source and by type. Sources include the agency's own co-financing (in-kind and cash), government counterpart commitments (in kind and cash); contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries. Types of co-financing include cash (grants, loans, credits and equity investments) or in-kind resources, which are required to be:
 - dedicated uniquely to the GEF project;
 - valued as the lesser of the cost and the market value of the required inputs they provide for the project, and
 - monitored with documentation available for any evaluation or project audit undertaken by FAO.

With regards to reporting on in-kind co-financing provided by government and other institutions, FAO will encourage the partners to provide the information in a timely manner and the information will be made available upon request and without certification to the GEF Secretariat and GEF Evaluation Office. **Co-financing will be reported in the annual Project Implementation Review.**

ANNEX 12: LEGAL CONTEXT

The present Agreement shall be governed by general principles of law, to the exclusion of any single national system of law.

Privileges and Immunities

Nothing in this Agreement or in any document relating thereto, shall be construed as constituting a waiver of privileges or immunities of FAO, nor as conferring any privileges or immunities of FAO on any other institution or its personnel.

Settlement of Disputes

The present Agreement shall be governed by general principles of law, to the exclusion of any single national system of law. Any dispute, controversy or claim arising out of or in connection with this Agreement or any breach thereof, shall, unless it is settled by direct negotiation, be settled by arbitration in accordance with the UNCITRAL Arbitration Rules in force on the date when this Agreement takes effect. The parties hereto agree to be bound by any arbitration award rendered in accordance with this Section as the final adjudication of any dispute.

Intellectual Property

All intellectual property rights in the work to be performed under this Agreement shall be vested in FAO, including without limitations, the right to use, publish, translate, sell or distribute, privately or publicly, any item or part of thereof.

Project Revisions

The following types of revisions may be made to this project document with the approval of FAO GEF Coordination Unit only, provided he or she is assured that the other signatories of the project document have no objection to the proposed changes:

- Minor revisions that do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of inputs already agreed to or by cost increases due to inflation. These minor amendments are changes in the project design or implementation that could include, *inter alia*, changes in the specification of project outputs that do not have significant impact on the project objectives or scope, changes in the work plan or specific implementation targets or dates, renaming of implementing entities, or reallocation of grant proceeds not affecting the project's scope.
- Revisions in, or addition of, any of the annexes of the project document (with the exception of the Legal Context).
- Mandatory annual revisions which rephrase the delivery of agreed project inputs or take into account agency expenditure flexibility.

All minor revisions shall be reported in the annual Project Implementation Review (PIR) report that will be submitted by FAO to the GEF Evaluation Office.