Countries: Global
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-IHP, IAH
GEF focal area: International Waters, IW
GEF strategic programme: IW SP-1

Duration: 3 years
Estimated starting date: 25 January 2011
Estimated completion: 24 January 2014 (36 months after starting date)

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 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 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 level.\(^1\)

**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, 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 WWF 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 IWMI and 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.
TABLE OF CONTENTS

1 BACKGROUND ............................................................................................................................................................ 7
   1.1 General and sectoral context ............................................................................................................................ 7
   1.2 Project background ........................................................................................................................................... 8
   1.3 Rationale for GEF intervention .......................................................................................................................... 9
   1.4 GEF eligibility criteria ....................................................................................................................................... 10

2 RATIONALE ............................................................................................................................................................... 11
   2.1 Problems and issues to be addressed ............................................................................................................. 11
   2.2 Project justification and Incremental reasoning ............................................................................................. 11
   2.3 Without/with project scenarios ...................................................................................................................... 12
   2.4 Stakeholders and target beneficiaries ............................................................................................................. 12

3 PROJECT FRAMEWORK ............................................................................................................................................ 13
   3.1 Project Impact ................................................................................................................................................. 13
   3.2 Summary of Project components, outputs and outcomes ............................................................................. 13
   3.3 Detail of Project Components, Outputs and Activities.................................................................................... 15
   3.4 Sustainability ................................................................................................................................................... 21
   3.5 Cost Effectiveness ........................................................................................................................................... 21
   3.6 Assumptions and risks ..................................................................................................................................... 22

4 IMPLEMENTATION AND MANAGEMENT ARRANGEMENTS ..................................................................................... 23
   4.1 Implementation Strategy ................................................................................................................................ 23
   4.2 Consultation, coordination and collaboration with other initiatives .............................................................. 23
   4.3 Implementation and institutional arrangements ............................................................................................ 25
   4.4 Provisional Workplan ...................................................................................................................................... 26

5 FINANCING PLAN ..................................................................................................................................................... 28
   5.1 Financial planning............................................................................................................................................ 28
   5.2 GEF input and confirmed co-financing ............................................................................................................ 28
   5.3 FAO inputs ....................................................................................................................................................... 29
   5.4 IAH inputs ........................................................................................................................................................ 30
   5.5 UNESCO inputs ................................................................................................................................................ 31
   5.6 World Bank inputs ........................................................................................................................................... 32

6 OVERSIGHT, MONITORING, MANAGEMENT INFORMATION AND REPORTING ....................................................... 33
   6.1 Indicators and means of verification ............................................................................................................... 33
   6.2 Project monitoring, reporting and evaluation ................................................................................................. 33
   6.3 Communication and visibility .......................................................................................................................... 35
**ANNEXES**

<table>
<thead>
<tr>
<th>Annex</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annex 1</td>
<td>Strategic Results Framework</td>
<td>36</td>
</tr>
<tr>
<td>Annex 2</td>
<td>Provisional Project Workplan</td>
<td>37</td>
</tr>
<tr>
<td>Annex 3</td>
<td>Project Budget</td>
<td>35</td>
</tr>
<tr>
<td>Annex 4</td>
<td>Co-financing table by component</td>
<td>41</td>
</tr>
<tr>
<td>Annex 5</td>
<td>Terms of reference for committees, panels and long-term consultants</td>
<td>41</td>
</tr>
<tr>
<td>Annex 6</td>
<td>Standard FAO Provisions for Project Reporting, Monitoring and Evaluation</td>
<td>46</td>
</tr>
<tr>
<td>Annex 7</td>
<td>Case Study Analysis Framework</td>
<td>49</td>
</tr>
<tr>
<td>Annex 8</td>
<td>Major Related Programmes</td>
<td>48</td>
</tr>
<tr>
<td>Annex 9</td>
<td>Sector Specific Issues</td>
<td>52</td>
</tr>
<tr>
<td>Annex 10</td>
<td>Project reviews (STAP, GEF Secretariat, GEF Council) and team response</td>
<td>52</td>
</tr>
<tr>
<td>Annex 11</td>
<td>Financial Reporting</td>
<td>52</td>
</tr>
<tr>
<td>Annex 12</td>
<td>Legal Context</td>
<td>52</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>APGP</td>
<td>Advisory Panel on Groundwater Policy (this project document)</td>
<td></td>
</tr>
<tr>
<td>APPR</td>
<td>Annual Project Progress Report</td>
<td></td>
</tr>
<tr>
<td>AWP</td>
<td>Annual Work Plan</td>
<td></td>
</tr>
<tr>
<td>BD</td>
<td>Biodiversity GEF Focal Area</td>
<td></td>
</tr>
<tr>
<td>BH</td>
<td>Budget Holder</td>
<td></td>
</tr>
<tr>
<td>BRGM</td>
<td>Bureau de recherches géologiques et minières</td>
<td></td>
</tr>
<tr>
<td>CGIAR</td>
<td>Consultative Group on International Agricultural Research</td>
<td></td>
</tr>
<tr>
<td>ECA</td>
<td>Europe and Central Asia</td>
<td></td>
</tr>
<tr>
<td>FA</td>
<td>Framework for Action (this project document)</td>
<td></td>
</tr>
<tr>
<td>FAO</td>
<td>Food &amp; Agricultural Organization of the United Nations (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>GEF</td>
<td>Global Environment Facility</td>
<td></td>
</tr>
<tr>
<td>GEO</td>
<td>Global Environmental Objective</td>
<td></td>
</tr>
<tr>
<td>GRAPHIC</td>
<td>Groundwater Resources Assessment under the Pressures of Humanity and Climate Change (UNESCO-IHP)</td>
<td></td>
</tr>
<tr>
<td>GWMATE</td>
<td>Groundwater Management Advisory Team (World Bank)</td>
<td></td>
</tr>
<tr>
<td>GWADI</td>
<td>Water and Development Information for Arid Lands (UNESCO-IHP)</td>
<td></td>
</tr>
<tr>
<td>GWES</td>
<td>Groundwater for Emergency Situations (UNESCO-IHP)</td>
<td></td>
</tr>
<tr>
<td>GWP</td>
<td>Global Water Partnership (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>IAEA</td>
<td>International Atomic Energy Agency (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>IAH</td>
<td>International Association of Hydrogeologists (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>IGRAC</td>
<td>International Groundwater Resources Assessment Centre (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>IHP</td>
<td>International Hydrological Programme (UNESCO)</td>
<td></td>
</tr>
<tr>
<td>INBO</td>
<td>International Network of Basin Organizations</td>
<td></td>
</tr>
<tr>
<td>INWEB</td>
<td>International Network of Water-Environment Centres for the Balkans</td>
<td></td>
</tr>
<tr>
<td>IOC</td>
<td>International Oceanographic Commission (UNESCO)</td>
<td></td>
</tr>
<tr>
<td>IR</td>
<td>Inception Report</td>
<td></td>
</tr>
<tr>
<td>ISARM</td>
<td>International Shared Aquifer Resource Management (UNESCO-IHP)</td>
<td></td>
</tr>
<tr>
<td>IUCN</td>
<td>International Union for the Conservation of Nature and Natural Resources (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>IW</td>
<td>International Water (GEF Focal Area)</td>
<td></td>
</tr>
<tr>
<td>IWCF</td>
<td>International Waters Conference</td>
<td></td>
</tr>
<tr>
<td>IW-LEARN</td>
<td>International Waters Learning Exchange and Resource Network</td>
<td></td>
</tr>
<tr>
<td>IWMI</td>
<td>International Water Management Institute (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>IWMR</td>
<td>Integrated Water Resources Management</td>
<td></td>
</tr>
<tr>
<td>LAC</td>
<td>Latin America and the Caribbean</td>
<td></td>
</tr>
<tr>
<td>LD</td>
<td>Land Degradation GEF Focal Area</td>
<td></td>
</tr>
<tr>
<td>MAB</td>
<td>Man and the Biosphere Programme (UNESCO)</td>
<td></td>
</tr>
<tr>
<td>MAR</td>
<td>Management of Aquifer Recharge (UNESCO - IHP)</td>
<td></td>
</tr>
<tr>
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<td>Millennium Development Goals</td>
<td></td>
</tr>
<tr>
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<td>Middle East and North Africa</td>
<td></td>
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<tr>
<td>NEPAD</td>
<td>New Partnership for Africa’s Development</td>
<td></td>
</tr>
<tr>
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<td>Non-governmental Organization</td>
<td></td>
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<td>PIR</td>
<td>Project Implementation Review</td>
<td></td>
</tr>
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<td>PSC</td>
<td>Project Steering Committee</td>
<td></td>
</tr>
<tr>
<td>POPs</td>
<td>Persistent Organic Products (GEF focal area)</td>
<td></td>
</tr>
<tr>
<td>PTS</td>
<td>Persistent Toxic Substance</td>
<td></td>
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<tr>
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<td>South Asia</td>
<td></td>
</tr>
<tr>
<td>SADC</td>
<td>Southern Africa Development Community</td>
<td></td>
</tr>
<tr>
<td>SIDA</td>
<td>Swedish Agency for International Development Cooperation</td>
<td></td>
</tr>
<tr>
<td>SC</td>
<td>Steering Committee (this project document)</td>
<td></td>
</tr>
<tr>
<td>SIDS</td>
<td>Sustainable Development of Small Island Developing States</td>
<td></td>
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<tr>
<td>Abbreviation</td>
<td>Full Name</td>
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<tr>
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<tr>
<td>SPPR</td>
<td>Semi Annual Project Progress Report</td>
<td></td>
</tr>
<tr>
<td>STAP</td>
<td>Scientific and Technical Advisory Panel (GEF)</td>
<td></td>
</tr>
<tr>
<td>TDA</td>
<td>Transboundary Diagnostic Analysis</td>
<td></td>
</tr>
<tr>
<td>ToR</td>
<td>Terms of Reference</td>
<td></td>
</tr>
<tr>
<td>TWAP</td>
<td>Transboundary Water Assessment Programme (GEF)</td>
<td></td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environment Programme (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>UNESCO-IHP</td>
<td>UNESCO International Hydrological Programme</td>
<td></td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>UN-ILC</td>
<td>(United Nations) International Law Commission</td>
<td></td>
</tr>
<tr>
<td>WB</td>
<td>The World Bank</td>
<td></td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>WHYMAP</td>
<td>World-wide Hydrogeological Mapping and Assessment Programme</td>
<td></td>
</tr>
<tr>
<td>WMO</td>
<td>World Meteorological Organization (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>WSSD</td>
<td>World Summit on Sustainable Development</td>
<td></td>
</tr>
<tr>
<td>WWAP</td>
<td>World Water Assessment Program</td>
<td></td>
</tr>
<tr>
<td>WWC</td>
<td>World Water Council (see Annex 7)</td>
<td></td>
</tr>
<tr>
<td>WWV</td>
<td>World Water Vision</td>
<td></td>
</tr>
</tbody>
</table>
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 buffer\(^2\) is threatened with a double jeopardy - depletion and degradation\(^3\). 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, unregulated 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 principles\(^4\) used to inform experiments in more adaptive ‘common pool resource’ management\(^5\) has yet to be determined. In this respect, the body of evidence\(^6\) 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.

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

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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 dependent 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 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.

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 behavior. 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, 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 and Cape Town.

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 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, 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. Governance definition meeting 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

**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)**

**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 Governance Definition 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’s\(^7\) 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, 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.

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\(^7\) Ostrom, E. (2005) op. cit.
The final choice of the case studies and execution arrangements will be made by the SC at its first meeting, based on a proposals made 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**

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.
- .

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 USD 821K; CF in-kind USD 1,016K).

Output 2.1: Regional Consultation and Private Sector Roundtable Reports

The consultation process will consist of:
(i) 5 regional consultation workshops (- IHP regional mechanism) 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.

<table>
<thead>
<tr>
<th>Regional Consultation</th>
<th>Thematic focus</th>
<th>IHP – Regional Focal Point</th>
<th>IAH focal contact</th>
<th>FAO regional office</th>
<th>Invited Regional Organization</th>
<th>Provisional Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>Governance in localized aquifers</td>
<td>IHP- Africa (Nairobi)</td>
<td></td>
<td>Accra</td>
<td>AMCMOW</td>
<td></td>
</tr>
<tr>
<td>Asia (East/South East)</td>
<td>Governance in alluvial plains</td>
<td>IHP- Asia (Jakarta/Beijing)</td>
<td></td>
<td>Bangkok</td>
<td>ESCAP</td>
<td></td>
</tr>
<tr>
<td>Americas</td>
<td>Governance in river basins</td>
<td>IHP- Americas (Montevideo)</td>
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<td></td>
<td></td>
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<tr>
<td>Near East/Middle East</td>
<td>Governance in coastal</td>
<td>IHP- Arab States (Rabat/Cairo)</td>
<td></td>
<td>Cairo?</td>
<td>UN ESCWA</td>
<td>1st regional consultation - early 2012</td>
</tr>
<tr>
<td>Europe (including SEE and Former Soviet Union countries in Central Asia)</td>
<td>Governance under federated systems</td>
<td>IHP-Europe (Paris, Venice, Almaty)</td>
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<td>UN ECE</td>
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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. But 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 systems 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

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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.
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”.

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

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 groundwater would 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 daft 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.

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).
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 USD 72K).

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.

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 (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 in-kind USD 162K)

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.

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

- **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.

- **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 2 000 000 USD 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 FAOs 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 is 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 Agency

The project will be implemented by FAO, and executed by the FAO Headquarters in Rome with the collaboration of two main partners, UNESCO and the IAH, whose 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. Other partner agencies will also provide their contributions. The World Bank will also substantially contribute to project execution through a co-financing arrangement.

From the point of view of fulfilling all contractual obligations, and adherence to GEF and FAO administrative procedures and general principles, the project execution will be the responsibility of the Project Coordination Unit (PCU) established by FAO. A Steering Committee (SC) will guide the PCU, and an Advisory Panel on Groundwater Governance (high level experts and leading advocates) will provide expert advice and advocacy leadership.

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.

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;
• 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 a midterm 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 these 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)
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)

<table>
<thead>
<tr>
<th>Component and subcomponent</th>
<th>Total</th>
<th>%</th>
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<td>230</td>
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<td>- 1.4 Synthesis Document</td>
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<td>Subtotal</td>
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<td>- 3.1 A shared vision for groundwater governance translated into key policy messages</td>
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<td>Component 5: Project Management, Monitoring and Evaluation</td>
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<td>- 5.1 Administrative Services and Budgetary Control</td>
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<td>TOTAL PROJECT COST</td>
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Table 2 Sources of confirmed co-financing

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<tr>
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<th>Classification</th>
<th>Type</th>
<th>Amount (in USD)</th>
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</table>
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

<table>
<thead>
<tr>
<th>Component and subcomponent</th>
<th>Total</th>
<th>%</th>
<th>(USD '000)</th>
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<tr>
<td><strong>Component 1: Compilation of the global state of groundwater governance in relation to groundwater supply and demand (quantity and quality)</strong></td>
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</table>
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

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<thead>
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<th>%</th>
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<tr>
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<td>- 2.2 Global Groundwater Diagnostic, a Report</td>
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<td><strong>Component 3:</strong> Definition of a Shared Vision and Global Framework for Action on Groundwater Governance</td>
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<td>- 4.1 A Communication Strategy defined and implemented</td>
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<td><strong>Component 5:</strong> Project Management</td>
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<td>- 5.1 Administrative Services and Budgetary Control</td>
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</table>
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)

<table>
<thead>
<tr>
<th>UNESCO Co-financing by component and subcomponent</th>
<th>Total</th>
<th>%</th>
<th>USD '000</th>
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<td>- 1.2 Case studies reports</td>
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<td>- 3.1 A shared vision for groundwater governance translated into key policy messages</td>
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<td><strong>Component 5: Project Management</strong></td>
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<td>- 5.2 Planning and coordination of project monitoring and evaluation</td>
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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.

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<th>Total</th>
<th>%</th>
<th>(USD '000)</th>
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<td><strong>Component 1: Compilation of the global state of groundwater governance in relation to groundwater supply and demand (quantity and quality)</strong></td>
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<td>- 1.1 Governance definition meeting report</td>
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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 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 implementation 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 and submission of the following reports that form part of the monitoring process. 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.

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.

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 prior to the terminal tripartite review meeting, 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>
<thead>
<tr>
<th>Type of M&amp;E activity</th>
<th>Responsible Parties</th>
<th>Budget US$ Excluding project team Staff time</th>
<th>Time frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inception Workshop</td>
<td>FAO/UNESCO/IAH PCU-PC</td>
<td>Covered under co-finance arrangements</td>
<td>Within first two months of project start up</td>
</tr>
<tr>
<td>Inception Report</td>
<td>Project Team FAO/GEF</td>
<td>Covered under co-finance arrangements</td>
<td>Immediately following workshop</td>
</tr>
<tr>
<td>Measurement of Means of Verification for Project Indicators</td>
<td>Project PCU-PC in coordination with FAO, UNESCO, IAH</td>
<td>Covered under co-finance arrangements</td>
<td>Start, mid and end of project</td>
</tr>
<tr>
<td>Quarterly project implementation report</td>
<td>Project PCU</td>
<td>Covered under co-finance arrangements</td>
<td>Every quarter</td>
</tr>
<tr>
<td>Semi-annual progress report</td>
<td>Project PCU</td>
<td>Covered under co-finance arrangements</td>
<td>Every 6 months</td>
</tr>
<tr>
<td>Project Implementation Review (PIR) including co-financing report</td>
<td>Project Team FAO-GEF</td>
<td>Covered under co-finance arrangements</td>
<td>Annually in July</td>
</tr>
<tr>
<td>Project Steering Committee Meetings</td>
<td>GEF and funding partners FAO, UNESCO, IAH, Collaborating partners. Project PCU-PC</td>
<td>Covered under co-finance arrangements</td>
<td>Every year</td>
</tr>
<tr>
<td>Periodic monitoring of implementation progress and supervision report</td>
<td>FAO – GEF</td>
<td>Covered under agency fee</td>
<td>Annual Project Progress Report</td>
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<tr>
<td>Independent Mid-term Review</td>
<td>FAO (Evaluation Service and the FAO GEF Co-ordination Unit) in collaboration with UNESCO, IAH and PCU</td>
<td>25,000</td>
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<tr>
<td>Independent Terminal Evaluation</td>
<td>FAO (Evaluation Service and FAO GEF Co-ordination Unit) in collaboration with UNESCO, IAH and PCU</td>
<td>50,000</td>
<td>At the end of project implementation</td>
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<tr>
<td><strong>Total Indicative Cost – Excluding FAO, UNESCO, IAH, and PCU staff time and travel expenses</strong></td>
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<td>75,000</td>
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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, the production of related educational materials.
ANNEXES

Annex 1: Strategic Results Framework .................................................................................................................... 36
Annex 2: Provisional Project Workplan .................................................................................................................... 37
Annex 3: Project Budget .......................................................................................................................................... 40
Annex 4: Co-financing reporting template ............................................................................................................... 41
Annex 5: Terms of reference for committees, panels and long-term consultants .......................................................... 41
Annex 6: Standard FAO Provisions for Project Reporting, Monitoring and Evaluation ................................................. 46
Annex 7: Case Study Analysis Framework ................................................................................................................... 49
Annex 8: Major Related Programmes .......................................................................................................................... 48
Annex 9: Sector Background .................................................................................................................................... 52
Annex 10: Project reviews (STAP, GEF Secretariat, GEF Council) and team response .................................................. 52
Annex 11: Financial Reporting ................................................................................................................................... 52
Annex 12: Legal Context ........................................................................................................................................... 52
### ANNEX 1: STRATEGIC RESULTS FRAMEWORK

<table>
<thead>
<tr>
<th>Global Environment Objective (GEO) / Project Development Objective (PDO)</th>
<th>STRATEGIC RESULTS FRAMEWORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>The project development objective (PDO) is to extend the life set of livelihoods reliant upon groundwater and related aquifer services.</td>
<td></td>
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<table>
<thead>
<tr>
<th>Component</th>
<th>Outcomes</th>
<th>Outputs</th>
<th>Activities</th>
<th>Indicator (Process)</th>
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<tbody>
<tr>
<td><strong>Component 1: Compilation of the state of groundwater governance in relation to groundwater supply and demand (quantity and quality)</strong></td>
<td><strong>Outcome 1:</strong> 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.</td>
<td><strong>1.1 Governance definition meeting report</strong> to define groundwater governance and assess its significance at global level. (<em>GEF 0K: FAO 25K</em>)</td>
<td><strong>1.1 Organization of governance definition meeting</strong> structured to examine application of ‘commons’ governance in relation to groundwater and define a governance framework.</td>
<td><strong>11. Governance Definition meeting report</strong></td>
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<td><strong>1.2 Case studies reports</strong> (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.</td>
<td><strong>1.2 – Preparation of Case Studies</strong> To include aquifer cases from the GEF IW portfolio (e.g.: NW Sahara Aquifer, Guaraní Aquifer), and the following countries: India*, Kenya*, Peru*, Morocco*, Paraguay, Tunisia*, BosniaHerzegovina, South Africa*, two SIDS (including one atoll or low lying carbonatic island), and Tanzania*</td>
<td><strong>1.2 Approval of Case Studies selection and reports by the Steering Committee.</strong></td>
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<td><strong>1.3 Thematic Papers</strong> 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.</td>
<td><strong>1.3 Preparation of thematic papers.</strong> To include (inter alia): Political economy*; CC adaptation options*; Emerging groundwater management and development issues*; 8 more to be chosen among the following topics:</td>
<td><strong>1.3 Thematic Papers validated by GEF STAP</strong></td>
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<td><strong>1.4 Synthesis Report</strong> A review of groundwater governance in relation to hydrogeological settings with opportunities for action in view of global trends identified. (<em>GEF 0K: FAO 25K</em>)</td>
<td><strong>1.4 . Synthesis report</strong> to be produced by the Steering Committed UN Water Agencies, major IFIs and key NGOs and professional associations.</td>
<td><strong>1.4 Synthesis Report endorsed by GEF STAP and Advisory Panel</strong></td>
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<td>Component</td>
<td>Outcomes</td>
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<td><strong>Component 2: Development of a Global/Regional Groundwater Governance Diagnostic integrating regional and country experiences with prospects for the future.</strong></td>
<td><strong>Outcome 2</strong> 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.</td>
<td><strong>2.1 Regional Consultation and Private Sector Roundtable reports</strong> 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.</td>
<td><strong>2.1 Organization of Regional and Private Sector Consultations and Reporting</strong> 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.</td>
<td><strong>2.1 Workshop reports including recommendations for the global diagnostic and visioning process.</strong></td>
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<td><strong>2.2 Global Groundwater Diagnostic, a Report</strong> 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.</td>
<td><strong>2.2 Preparation of the Global Groundwater Diagnostic</strong> 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.</td>
<td><strong>2.2 The Global Groundwater Diagnostic prepared and endorsed by the Project Steering Committee and Advisory Panel</strong></td>
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<td><strong>2.3 Mainstreaming Groundwater in GEF Programs</strong> 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.</td>
<td><strong>2.3 Organization of GEF Groundwater Conference</strong> 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.</td>
<td><strong>2.3 GEF Groundwater Conference Conclusions inform visioning process.</strong></td>
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### Component 3: Definition of a Shared Vision and **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.

**Outputs:**

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.

**Activities:**

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.

**Indicator (Process):**

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 Dissemination of the Framework for Action 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.

**Outputs:**

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.

**Activities:**

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 the 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.

**Indicator (Process):**

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.

**Outcome 5.2:** Management responses to Evaluation reports

**Outputs:**

5.1 Project administration services delivered

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

**Activities:**

5.1 Administrative services and budgetary control

5.2 Evaluation reports

**Indicator (Process):**

5.1 Annual and quarterly implementation and financial reports submitted on time. Project Steering Committee minutes issued

5.2 Evaluation reports
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Project document: Global Groundwater Governance; A Framework for Action
## ANNEX 2: UPDATED WORKPLAN

<table>
<thead>
<tr>
<th>COMPONENTS AND SUBCOMPONENTS</th>
<th>Year 1 - 2011</th>
<th>Year 2 - 2012</th>
<th>Year 3 - 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q1</td>
<td>Q2</td>
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<td><strong>PHASE 1: INCEPTION AND COMPILATION</strong></td>
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<td><strong>COMPONENT 1: STATE OF GROUNDWATER GOVERNANCE</strong></td>
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<td><strong>Output 1.1:</strong></td>
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<td>Organization of inception/governance definition meeting</td>
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<td>Inception/Governance definition meeting</td>
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<td><strong>Output 1.2:</strong></td>
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<td>Selection of Case Studies</td>
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<td>Analysis of Case Studies</td>
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<td><strong>Output 1.3:</strong></td>
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<td>Selection of Thematic Papers</td>
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<td>Preparation of Thematic Papers</td>
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<td><strong>Output 1.4:</strong></td>
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<tr>
<td>Preparation of Synthesis Report</td>
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<td><strong>PHASE 2: REGIONAL CONSULTATION AND DIAGNOSIS</strong></td>
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<td><strong>COMPONENT 2: GLOBAL DIAGNOSTIC</strong></td>
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<td><strong>Output 2.1: Consultation (Year 2)</strong></td>
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<td>Preparation of Regional Consultations</td>
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<td>Regional Consultations</td>
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<td>Private Sector roundtable</td>
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<td>Preparation of Regional reports</td>
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<td><strong>Output 2.2: Global Diagnostic</strong></td>
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<td>Design of Global Groundwater Diagnostic</td>
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<td>Preparation of Global Groundwater Diagnostic</td>
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<td><strong>Output 2.3: GEF Groundwater Conference</strong></td>
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<td>GEF Conference Preparation</td>
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<td><strong>PHASE 3 CONSOLIDATION OF A GLOBAL FRAMEWORK</strong></td>
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<td><strong>COMPONENT 3: SHARED VISION AND GLOBAL FRAMEWORK FOR ACTION</strong></td>
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<td><strong>Output 3.1: Shared Vision</strong></td>
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<td>Formulation of a Vision document</td>
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<td>Regional shared vision consultations</td>
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<tr>
<td>Preparation of Vision document</td>
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<td><strong>Output 3.2: Global Framework for Action</strong></td>
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<td>Preparation of Global Framework for Action</td>
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<td>Preparation of whole project package</td>
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### COMPONENT 4: COMMUNICATION

**Output 4.1: Strategy**
- Definition of communications strategy
- Implementation of strategy

**Output 4.2: Outreach**
- Outreach conferences and special events
- Dissemination of key results/documents

### COMPONENT 5: PROJECT MANAGEMENT

**Output 5.1: A fully functional PMU**
- Administrative services and budgetary control

**Output 5.2: Evaluation**
- Planning and coordination of project monitoring and evaluation

### Schedule of Regional Consultations
- IHP- Africa (Nairobi)
- IHP- Asia (Jakarta/Beijing)
- IHP- Americas (Montevideo)
- IHP- Arab States (Rabat/Cairo)
- IHP-Europe (Paris, Venice, Almaty)

### Schedule of Relevant Global Meetings
- Inception Workshop UNESCO Paris (April/May 2011)
- Stockholm Water Week 21-27 August 2011
- IAH Conference Pretoria (19 - 21 Sept 2011)
- 6th GEF IW Biennial October 2011
- World Water Forum March 2012 (Water and Peace)
- Irvine Conference (30 November – 3 December 2011)
- London Conference Planet Under Pressure (26-29 March 2012)
- Earth Summit Rio +20 4-6 June 2012
- 7th GEF IW Biennial October 2013
ANNEX 4: PROJECT CO-FINANCING REPORT TEMPLATE
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;  
- 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). Interim sessions of the SC could be by telephone conference rather than a physical meeting.  

**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 AWPs 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 AWPs; 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);  

Interim sessions of the SC could be by telephone conference rather than a physical meeting.
• 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;
• 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 APGP 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 APGP inputs and/or reports of their peer reviews will be a standing agenda item for the meetings of the SC.
Membership: The APGP 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 APGP should have experience or knowledge groundwater management in specific regions. Experts serving on the APGP 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 APGP 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 APGP 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 APGP 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 report
At the end of every three months during each project year, Quarterly Project Implementation Reports (QPIR) will be prepared by the BH. 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 report
One month before the mid-point of each project year, the PC, in consultation project partners, will prepare a draft semi-annual project progress report (SPPR) and submit this to FAO (LTU and BH). The SPPR will follow the standard FAO format, which will 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);\(^{11}\) an account of the achievement of outputs and progress towards achieving the project objectives (based on the indicators contained in

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\(^{11}\) 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).
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 SPPR will be reviewed and cleared by FAO (LTU and BH) by the mid-point of each project year and the final SPPR will be circulated by the BH 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 FAO (LTU and BH) within another week. The final PIR will be circulated by the BH to all project partners and will be copied to the GEF Secretariat.

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 FAO GEF focal point. 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 evaluation; 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 though 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. Governance looks at the balance of power and the balance of actions at different levels of authority. 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;

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12 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.

13 Effective Water Governance: Learning from the Dialogues. GWP
• 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*

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 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, 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

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 |

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 AQUASTAT 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
EXECUTING AGENCIES

United Nations Educational, Scientific and Cultural Organization – UNESCO

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
http://www.internationalwaterlaw.org/RegionalDocs/Groundwater_Charter.htm
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
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

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**


**OTHER POTENTIAL PARTNERS**

**United Nations Children’s Fund – UNICEF**

**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**
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 first 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 joint 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 I W: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


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

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 were 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 guarantee 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**


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**World Meteorological Organization – WMO**

**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)

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**International Atomic Energy Agency - IAEA**

**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**

**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 Publications to Groundwater Management and Protection:**
**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**

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**Ramsar Secretariat**

**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**
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

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.
**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 worldwide. 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

**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**
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 Unites 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.

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

References:

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 worldwide. Although, no comprehensive statistics exist on the proportion of urban dwellers that 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 groundwater 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.

References:


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 groundwater.
- 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 groundwater 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:

Waters, 78 pp.


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, castism 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 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).

References:


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.
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.