GEF

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April 9, 2008

Dear SCCF Council Member:

The UNDP as the Implementing Agency for the project entitled ***Ecuador: Adaptation to Climate Change through Effective Water Governance***. has submitted the attached proposed project document for CEO endorsement prior to final Agency approval of the project document in accordance with UNDP procedures.

The Secretariat has reviewed the project document. It is consistent with the proposal approved by the SCCF Council in June 2007 and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by UNDP satisfactorily details how Council's comments and those of the STAP have been addressed. I am, therefore, endorsing the project document.

We have today posted the proposed project document on the GEF website at www.TheGEF.org. If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

Monique Barbut
Chief Executive Officer and Chairperson

Attachment: Project Document

cc: Alternates, GEF Agencies, STAP, Trustee

REQUEST FOR CEO ENDORSEMENT/APPROVAL

PROJECT TYPE: Full-sized Project
THE Special Climate Change Fund (SCCF)

Submission Date: November 14, 2007

Re-submission Date:

PART I: PROJECT INFORMATION

GEFSEC PROJECT ID:
GEF AGENCY PROJECT ID: 3520
COUNTRY: Ecuador
PROJECT TITLE: Adaptation to Climate Change through Effective Water Governance in Ecuador
GEF AGENCY: UNDP
OTHER EXECUTING PARTNER: Ministry of Environment
GEF FOCAL AREA: Climate Change

Expected Calendar	
Milestones	**Dates**
Work Program (for SCCF FSP)	June 2007
GEF Agency Approval	May 2008
Implementation Start	July 2008
Mid-term Review (if planned)	July 2010
Implementation Completion	July 2012

A. PROJECT FRAMEWORK

Project Objective: To increase adaptive capacities to address climate change risks in water resource management							
Indicate whether Investment, TA, or STA**	**Expected Outcomes**	**Expected Outputs**	**LDCF/SCCF Financing***		**Co-financing***		**Total ($)**
			($)	%	($)	%	
TA	1. Climate change risk to the water sector integrated into key relevant plans and programs.	1.1 Practical guidance on the integration of climate risks into relevant water management plans and programmes 1.2 Relevant plans and programmes incorporate climate risks in the water sector	452.531,10	17,91 %	2.073.685,90	82,09 %	2.526.217,00
Investment, TA. STA	2. Strategies and measures that will facilitate adaptation to climate change impacts on water resources implemented at the local level	2.1: Measures, technologies and practices to improve the adaptive capacity of water resources management introduced and implemented in pilot systems. 2.2: Information management systems reflecting climate change impacts on the water sector	1.777.508,40	12,85 %	12.060.005,29	87,15 %	13.837.513,69

TA	3. Institutional and human capacity strengthened, and information/ lessons learned disseminated.	3.1: Improved institutional and technical capacities to support the mainstreaming of climate risks and implementation of adaptation measures in the water sector 3.2 Knowledge and lessons learned to support implementation of adaptation measures compiled and disseminated 3.3: Guidance documents for GEF and MoE on climate change adaptation programming in the water resource sector	629.960,50	26,82 %	1.718.892,90	73,18 %	2.348.853,40
TA	4. Project management (details in Table E)		140.000,00	29,61 %	332.848,08	70,39 %	472.848,08
	Total Project Costs		**3.000.000,00**		**16.185.432,16**		**19.185.432,16**

* $ by project components. The percentage is the share of LDCF/SCCF and Co-financing respectively to the total amount for the component, ie., the percentage for each component will be added up horizontally to 100%.

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

B. FINANCING PLAN SUMMARY FOR THE PROJECT ($)

	Project Preparation*	***Project***	***Agency Fee***	***Total at CEO Endorsement***	***For the record At PIF***
Grant	350.000,00	3.000.000,00	335.000,00	3.685.000,00	
Co-financing	150,000.00	16,185,432.16		16,335,432.16	
Total	500,000.00	19,185,432.16	335,000.00	20,020,432.16	

***** Status of implementation and use of funds for project preparation in Annex D.

C. SOURCES OF CONFIRMED CO-FINANCING, including co-financing for project preparation

Name of co-financier (source)	***Classification***	***Type***	***Amount ($)***	***%****
Ministry of the Environment, Ecuador	Exec. Agency	Cash	108.100,00	0,67%
UNDP Country Office	Impl. Agency	Cash	20.000,00	0,12%
Swiss Foundation for Development and International Cooperation INTERCOOPERATION	International NGO	In kind/parallel	808.000,00	4,99%
Azuay Provincial Council	Local Gov't	In kind	1.538.000,00	9,50%
Commonwealth of the Jubones River Watershed MCRJ	Local Gov't	In kind/parallel	144.000,00	0,89%
Water Management Council, Paute River Watershed - CG Paute Azuay, Cañar, Morona Santiago	Local Gov't	In kind/parallel	9.000.000,00	55,61%

City of Cuenca Public Municipal Facility for Telecommunications, Water, and Sanitation ETAPA	Public Facility	In kind/parallel	715.170,00	4,42%
Loja Provincial Council	Local Gov't	In kind	2.100.000,00	12,97%
Social and Productive Infrastructure Program for the provinces of Loja and Zamora Chinchipe PROLOZA - Sustainable water management subprogram PROHIDRICO	Other (EU-funded project)	In kind/parallel	437.162,16	2,70%
Los Rios Provincial Council	Local Gov't	In kind	315.000,00	1,95%
Manabi Provincial Council	Local Gov't	In kind	1.000.000,00	6,18%
Total Co-financing			16.185.432,16	100,00%

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

D. LDCF/SCCF RESOURCES REQUESTED BY AGENCY OR COUNTRY*

None

E. PROJECT MANAGEMENT BUDGET/COST

Cost Items	*Total Estimated person weeks*	*GEF ($)*	*Other sources ($)*	*Project total ($)*
*Local consultants**	208	140.000,00	57.873,08	197.873,08
*International consultants**				0,00
*Office facilities, equipment, vehicles and communications***		0,00	196.175,00	196.175,00
*Travel***		0,00	78.800,00	78.800,00
Total	**350**	**140.000,00**	**332.848,08**	**472.848,08**

* Detailed information regarding the consultants in Annex C

** Detailed information and justification for these line items in text

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Estimated Staff Weeks	GEF ($)	Other Sources ($)	Project Total ($)
Local consultants*	530	530,000.00	10,000.00	540,000.00
International consultants*	162	405,000.00	6,000.00	411,000.00
Total	**692**	**935,000.00**	**16,000.00**	**951,000.00**

***** Detailed information regarding the consultants in Annex C

G. BUDGETED M&E PLAN: Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures, which will involve the UNDP Country Office (UNDP-CO) for country-level monitoring, and the MoE at the project level. The Logical Framework Matrix provides performance and impact 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 finalized during the inception meeting for this project.

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

verification, and the full definition of project staff M&E responsibilities.

4.1 Monitoring and Reporting

Project Inception Phase

A Project Inception Workshop will be conducted with the PMU, members of the MSG, the CNC and of the water resources and climate change workgroup of the CNC, representatives from the participating provinces, other relevant government counterparts, co-financing partners, the UNDP-CO and other relevant stakeholders including from other agencies involved in complementary projects (e.g. World Bank).

A fundamental objective of this Inception Workshop (IW) will be to assist the entire 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 log frame 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.

Additionally, the purpose and objective of the IW will be to provide a detailed overview of UNDP-GEF reporting and M&E requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation, the Annual Project Report (APR), Tripartite Review Meetings, as well as mid-term and final evaluations. Equally, the IW will provide an opportunity to inform the project team on UNDP related budgetary planning, budget reviews, and mandatory budget rephrasing.

The IW 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 (ToR) for project staff and decision-making structures will be formulated prior to CEO endorsement.

Monitoring responsibilities and events

A detailed schedule of project review meetings will be developed by the Project Management Unit (PMU) in consultation with the National Steering Committee and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Tripartite Reviews, Management Support Group, and (ii) project related Monitoring and Evaluation activities.

Day to day monitoring of implementation progress will be the responsibility of the National Coordinator based on the Annual Work Plan and its indicators. The National Coordinator will inform the UNDP-CO and MoE of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

MoE will fine-tune the progress and performance/impact indicators of the project in consultation with the MSG at the IW. 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 AWP. The local implementing partners will also take part in the IW in which a common vision of overall project goals will be established. Targets and indicators for subsequent years will be defined annually as part of the internal evaluation and planning processes undertaken by the MoE and the MSG.

Measurement of impact indicators related to global benefits will occur according to the schedules defined in the IW and tentatively outlined in the indicative Impact Measurement Template. The measurement of these will be undertaken through subcontracts or retainers with relevant institutions to be determined during the IW or through specific studies that are to form part of the projects' activities or periodic sampling.

Periodic monitoring of implementation progress will be undertaken by the UNDP-CO through quarterly meetings with the National Coordinator, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

UNDP CO and the MoE, as appropriate, will conduct yearly visits to field sites, or more often based on an agreed upon scheduled to be detailed in the projects' Inception Report / AWP to assess progress. Any other member of the National

Steering Committee can also accompany, as decided by the MSG. A Field Visit Report will be prepared by the CO and circulated no less than one month after the visit to the project team, all MSG members, and MoE.

Annual Monitoring will occur through the Tripartite Review (TPR). This is the highest policy-level meeting of the parties directly involved in the implementation of the project. The project will be subject to TPR at least once every year. The first such meeting will be held within the first twelve months of the start of full implementation. The National Coordinator will prepare reports that will be compiled into APR by the MoE at least two weeks prior to the TPR for review and comments.

The APR will be used as one of the basic documents for discussions in the TPR meeting. The CNRH will present the APR to the TPR, highlighting policy issues and recommendations for the decision of the TPR participants. The MoE also informs the participants of any agreement reached by stakeholders during the APR preparation on how to resolve operational issues. Separate reviews of each component may also be conducted if necessary.

Terminal Tripartite Review (TTR)

The TTR is held in the last month of operations. The MoE is responsible for preparing the Terminal Report and submitting it to UNDP and the GEF Secretariat. It shall be prepared in draft at least two months in advance of the TTR in order to allow review, and will serve as the basis for discussions in the TTR. The TTR considers the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation of formulation.

The TPR has the authority to suspend disbursement if project performance benchmarks are not met. Benchmarks will be developed at the IW, based on delivery rates, and qualitative assessments of achievements of outputs.

Project Monitoring Reporting

MoE will be responsible for the preparation and submission of the following reports that form part of the monitoring process.

Inception Report (IR)

A Project IR will be prepared immediately following the IW. It will include a detailed First Year/ AWP divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project. This Work Plan would include the dates of specific field visits, support missions from the UNDP-CO or the MoE or consultants, as well as time-frames for meetings of the MSG. The Report will also include the detailed budget for the first full year of implementation, prepared on the basis of the AWP, and including any monitoring and evaluation requirements to effectively measure performance during the targeted 12 months time-frame.

The IR will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may effect project implementation.

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.

Annual Project Report (APR)

The APR is a UNDP requirement. It is a self -assessment report by project management to UNDP and provides input to the TPR. An APR will be prepared on an annual basis prior to the TPR, to reflect progress achieved in meeting the project's AWP and assess performance of the project in contributing to intended outcomes through outputs and partnership work.

The format of the APR is flexible but should include the following:

- An analysis of project performance over the reporting period, including outputs produced and, where possible, information on the status of the outcome

- The constraints experienced in the progress towards results and the reasons for these

- The three (at most) major constraints to achievement of results

- AWP, CAE and other expenditure reports (ERP generated)

- Lessons learned

- Clear recommendations for future orientation in addressing key problems in lack of progress

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 the MoE, in cooperation with National Coordinators. The PIR can be prepared any time during the year (July-June) and ideally prior to the TPR. The PIR should then be discussed in the TPR so that the result would be a PIR that has been agreed upon by all partners.

Quarterly Progress Reports

Short reports outlining main updates in project progress will be provided quarterly to the local UNDP CO and the MoE by National Coordinators.

Periodic Thematic Reports

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

Project Terminal Report

During the last three months of the project MoE 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, and will, thus provide an assessment of the project's performance during its lifetime. It will place emphasis on the analysis of the water governance scheme adopted to manage water resources in the context of a changing climate, highlighting the potential contribution of such scheme to national development in relevant areas. It will also provide recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's activities.

Independent Evaluation

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

Mid-term Evaluation

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

Final Evaluation

An independent Final Evaluation will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The ToR for this evaluation will be prepared by MoE based on guidance from UNDP's Office of Evaluation.

PART II: PROJECT JUSTIFICATION

Project rationale and expected measurable adaptation benefits: Ecuador faces multiple hazards and presents a wide range of vulnerabilities to climate change. The impact of recurrent El Niño events demonstrates the widespread effects of climate variability in the country. In the past, Ecuador has suffered the impact of recurrent drought, periodic flooding and associated losses in productive sectors. The effects of climate change are expected to intensify these impacts over the coming years and decades. As the distribution and availability of water resources is projected to change over time as climate changes, governance structures and water use practices will need to adapt. Much of the requisite adaptation will be local in nature and will occur spontaneously. However, deliberate and anticipatory adaptation to climate change requires an iterative and multi-tiered approach that enables the adoption of sound development choices that will increase climate resilience of the water sector. It will also require involving different sectors and levels of society. Future public and private investment in productive uses of water, particularly in irrigation and hydro energy—two very large consumers of water resources, will need to factor in changes in the reliability of rainfall and the availability of surface water. Incremental investments will be needed to increase water storage, introduce water-saving technology and protect settlements and productive assets. Sturdy institutions and adequate water governance schemes are required to tackle the growing threats of climate change impacts in the availability and quality of water resources. A single project cannot hope to address the entire spectrum of climate change risks on the water sector in Ecuador. For this reason, the scope of the project has been purposefully circumscribed. Based on consultations conducted during the project preparation phase, this project will address priority capacity development and institutional change necessary to address climate change risks on water resources. It will also implement specific responses at the local level in two important economic activities so that lessons and best practices can emerge. Programming for adaptation through this project will promote climate-resilient development of the water sector. As the project will seek to integrate climate change risks into the water sector, it will directly contribute to the achievement of the Millennium Development Goals, particularly Goal 1 (poverty eradication) and Goal 7 (environmental sustainability). The project will work with the relevant stakeholders in the mainstreaming of climate risks into national water policies. It will strengthen monitoring capacities for changes in water resources linked to climate change as a means to support the design of appropriate water management responses in light of anticipated vulnerabilities. At local level, pilot activities will seek to improve experience in implementing anticipatory adaptation responses, thereby increasing local awareness of climate related risks, improving adaptive capacity of vulnerable groups, and providing valuable information for future policy formulation. Special attention will be given to the implementation of adaptation measures on the ground with the participation of local communities and provincial and municipal governments.

CONSISTENCY OF THE PROJECT WITH NATIONAL PRIORITIES/PLANS: Ecuador ratified the UNFCCC through a Congressional Resolution dated January 6th 1993, which was published as Executive Decree No. 565 in the Official Journal No. 148, March 16th 1993. The Kyoto Protocol was also signed and ratified by Ecuador in December 1999 (Official Journal No. 342, December 20th, 1999). The technical focal point for the UNFCCC and the Kyoto Protocol is the Under-Secretary of Environmental Quality at the Ministry of Environment of the Republic of Ecuador. The GEF Operational Focal point has been consulted during the preparatory phase and is fully up to date on the details of the proposed project. The project has been endorsed by the GEF Operational Focal Point.

In recent country studies such as the National Communications to the UNFCCC and the NCSA, water governance has emerged as a growing public concern and the impact of climate change has been defined as a critical cross cutting issue affecting the most vulnerable sectors of the economy.

Faced with heightened policy debate surrounding the management of water resources, the GoE is aiming at strengthening the National Council on Water Resources (CNRH) by giving leadership over it to the National Secretariat of Planning (SENPLADES) and by adopting integrated water resources management as the basis for water related policies and strategies. Thus, major watersheds will be defined as territorial units for water management. Thanks to technical support provided by the project during the PDF B phase, climate change considerations form part of the reasoning and justification for this new institutional arrangement. Water is also a very important issue in the recently launched National Development Plan.

C. CONSISTENCY OF THE PROJECT WITH LDCF/SCCF ELIGIBILITY CRITERIA AND PRIORITIES: The project is consistent with the eligibility criteria for the SCCF, as laid out in "Programming to Implement the Guidance for the Special Climate Change Fund Adopted by the Conference of the Parties to the United Nations Framework Convention on Climate Change at its Ninth Session" (Council paper GEF/C.24/12; October 15, 2004). Consistent with the Council Paper (paragraph 40), the project is country-driven, cost-effective and integrated into national sustainable development and poverty-reduction strategies; and takes into account national communications and other relevant studies and information. The project will also serve as a catalyst to leverage additional resources, and efforts have been made to maximize co-financing from other sources (GEF/C.24/12, paragraph 25). The selected sector is one of the priorities outlined in paragraph 44 of the GEF document, namely water resources management. The project will support capacity building, including institutional capacity, for preventive measures, planning, preparedness and management of disasters relating to climate change, including contingency planning for droughts and floods in areas prone to extreme weather events (GEF/C.24/12, paragraph 46), and support strengthening existing centres and information networks for rapid response to extreme weather events, utilizing information technology as much as possible (GEF/C.24/12, paragraph 47). Furthermore, as described earlier, the costs of water resources use falls disproportionately on the poor, and the project therefore recognizes the link between adaptation and poverty reduction (GEF/C.24/12, paragraph 41).

D. **COORDINATION WITH OTHER RELATED INITIATIVES:** This project will ensure linkages with relevant initiatives, including: (1) the Second National Communication (SCN), whose objective is to report to the UNFCCC on national efforts to address climate change, to formulate a national strategy, and to identify priorities for mitigation and adaptation, including potential projects for funding in these areas. The SNC will carry out vulnerability and adaptation assessments, and will identify priority measures and polices to build resilience in different sectors. Given the high complimentarity between the SNC and this project, especially as both will be housed at MoE, close coordination among the project managers and the technical teams will be established from the beginning. The SNC is expected to generate impact studies that will feed into the design of adaptation strategies, and has already established a climate steering committee which will form part of the project's consultation strategy; (2) The GEF-World Bank Regional Adaptation Project (Bolivia, Ecuador, Peru), whose objective is to implement adaptation measures to meet the anticipated impacts of catastrophic glacier retreat induced by climate change. The Project is centred on interactions between high-altitude ecosystems, tropical glaciers and the production of water in the Andean Region. In Ecuador, the project will address the impacts on production of drinking water for the city of Quito. Local interventions will aim at fostering adaptation in the management of small watersheds forming part of the Antizana volcano. Key partners of the project include the Municipality and water facility of Quito. Both projects will take advantage of climate information and scenarios, as well as use similar tools such as the WEAP model. The fact that the MoE is the executing agency in both projects has already facilitated agreements with national institutions like INAMHI and CNRH. MoE will ensure that information is shared between projects and that both projects provide information and feedback to the CNC. The UNDP-GEF project outcomes do not overlap with the World Bank project. Both projects, however, will complement one another. (3) United Nations Peace and Development Programme in the Northern Border Zone of Ecuador (PDP) represents an integral and territory-based approach to address the specific challenges of the Northern Border Zone of Ecuador (NBZ). The PDP strategy seeks to diminish the vulnerability of the northern border zone through strengthened and increasingly strategic inter-agency coordination that links humanitarian to development concerns and, as such, provides a coherent conflict sensitive framework that guides numerous UN programmes and projects from 12 different UN agencies in the NBZ. The PDP's main focus is to strengthen national and local capacity of Ecuadorian counterparts and, as a strategy, to build sustainability. The PDP prioritizes support and institutional strengthening of both governmental and civil society counterparts at different levels, and promotes the strengthening of linkages within and between these distinct levels. Amongst its activities, the project will support bi-national watershed management, specifically in the Carchi-Guaitara basin which has been prioritized both by the governments of Ecuador and Colombia. (4) The Los Rios Early Recovery project, executed by UNDP with co-financing by BCPR, seeks to support the recovery capacity of municipalities particularly vulnerable to seasonal floods. The project has established links with the PDF B, providing support in identifying partnerships and synergies. This and the PDP project above will provide valuable lessons on how development priorities can be strategically linked with environmental concerns. They will also be used to learn about the approaches adopted to involve municipalities and organised communities in active participation to ensure ownership of project activities and thus longer-term sustainability.

E. **ADDITIONAL COST REASONING:** The project alternative scenario is a water resource sector in Ecuador where climate risks are mainstreamed into relevant plans and programmes at the national level and in four provinces. Local stakeholders are informed about current climate vulnerability conditions and climate change risk factors, and incorporate this information into local policies and decisions. The project will provide a practical framework to guide the process of integrating water climate change risks and adaptation into relevant water management plans. The guidance will serve as a comprehensive and practical reference on how local water governance institutions can conduct the integration of climate change risks into ongoing strategies and plans more effectively. SCCF funds will contribute towards ensuring that climate change risks are mainstreamed from specialized forums on climate change to national and local institutions, particularly those involved in regional and local water resource planning and management. Funds will be used to establish a practical framework to guide the process of integrating water climate change risks and adaptation into relevant water management plans. The guidance will serve as a comprehensive and practical reference on how local water governance institutions can conduct the integration of climate change risks into ongoing strategies and plans more effectively. Key stakeholders, both at the central level (MoE, Ministry of Agriculture, CNRH and SENPLADES) and at the provincial and local levels (Provincial Councils, Water Agencies, Municipal governments, NGOs), will be involved in the formulation of practical measures, taking into account the evolving needs of the institutions and the policy context for the water sector. More importantly, the guidelines will target the needs of the on-going planning efforts mentioned earlier to ensure that this integration will be established as a learning exercise. Thus, the ultimate goal of the guidelines is to effectively assist policy makers in setting up a framework for the integration of climate risk in the water sector. With GEF support, climate change risks in the water sector will be integrated into the relevant programmes described above at the national and particularly at the local level.

The focus of this project will be on activities in provinces participating in the project, namely Manabi, Los Rios, Azuay, and Loja. Specific interventions will include revision of key water governance plans described below to incorporate climate change risks in water management: (i) Climate change risks included in National Water Management: Given that the National Water Management plan is already available in draft, form, this project will ensure that the revision process incorporates the basic principles of climate risks to water availability and are adequately addressed. The objective is to create the conditions for more effective initiatives of adaptation in the water sector. The plan itself does not intend to cover all aspects of adaptation but rather to bring the priority needs for adaptation interventions at the higher institutional level within the water sector. The project will coordinate with CNRH to assist in the review process, by advising on the climate issues to be considered and providing information on adaptation requirements; (ii) National Development Plan: The project will take advantage of the fact that key national institutions are part of the Management Support Group of this project. These institutions are key participants in the current elaboration of the National Development Plan, including the National Secretariat of Planning (SENPLADES), the MoE, CNRH, and CONCOPE. These partners will promote the consideration of climate change issues into the National Development Plan. This will ensure that climate risks in the water sector do not become an obstacle to the achievement of related development objectives. Concretely, the project will ensure that the National Development Plan incorporates climate change concerns regarding water resources by acknowledging (a) the threat posed by climate change and (b) creating an enabling environment (e.g. through legislative changes) that will promote adaptation.; (iii) National Risk Management Plan. The project will work with SEMPLADE to assist in the process of updating this plan so that considerations of climate change risk management in the water sector are also included. Given that this National Risk Management Plan provides overall guidance on risk management, SCCF funds will be used to ensure that adequate consideration is given to climate change impacts and adaptation needs on water resources. At the local level, provinces and municipalities have development plans, and some of them also include risk management plans. However, these plans do not take into account risks from climate change. Currently, these plans are implemented based on public priorities and potential investment opportunities by public and private stakeholders. In some selected provinces, actions taken to improve water management and conservation are driven by negative water balance effects, which are partly the result of climate-induced factors. Although there is insufficient public awareness, some actions are undertaken already in important watersheds such as Paute, Jubones, Catamayo and others which are within the boundaries of the project. To guarantee the inclusion of climate change risks criteria into provincial and local development plans, the project will develop, with appropriate stakeholder input, an implementation strategy to apply the guidelines. The execution of this strategy will result in the integration of climate change concerns into key provincial and local development plans. This will help to facilitate a systematic adoption of climate change adaptation actions related to water

management which, together with baseline development programmes, will contribute towards more efficient water use and reduced water supply vulnerability. With SCCF support, the project will co-finance technical aspects and specific pilot interventions in four provinces. The pilot interventions in this project will address climate risks affecting water availability for different uses (e.g. agricultural production and/or energy provision). The project will integrate climate change information into the planning and management of a hydro-power facility, and also (with the support of co-financing) in community-based water management measures (among small holder farmers). Technologies and practices will be modified and/or introduced to increase the resilience of these activities to anticipated changes in the water supply and rain intensity and frequency. The project will partner with ongoing initiatives including existing funding mechanisms (FAN, FONAG, Paute Watershed fund). The project will promote collaboration among governmental and non-governmental stakeholders associated with water governance, with the objective of ensuring that climate change risks are appropriately incorporated into the policy making process. Given the lack of understanding and experiences on how climate risks and relevant policy frameworks can be integrated into the water sector, the project will develop a practical approach to facilitating this integration and educate policy makers in the process. The project will result in modified national and local water policies that will in turn facilitate an increase in the flexibility and resilience of the resource. At the national level, monitoring capacities for environmental changes linked to climate change will be strengthened, which will provide the means to assess vulnerability to the impacts of climate change and to design appropriate responses. Decision makers at all levels and the general public will be more aware of the impacts of climate change and options for increasing capacity to deal with those impacts in the water sector. At the local level, provincial authorities and community-based organizations will have the capacity to integrate climate changes issues into local development planning, and will be able to design locally appropriate solutions to the impacts of climate change. They will have recourse to lessons learnt from demonstrations of adaptations affecting irrigation and hydro-power, and they will also have access to financing for pilot activities to implement local solutions. Agricultural activities in selected provinces and one hydro-power plant will be more resilient to the impacts of climate change, thus supporting sustainable economic development.

F. **RISKS THAT MIGHT PREVENT THE PROJECT OBJECTIVE FROM BEING ACHIEVED AND RISK MITIGATION MEASURES:** Key assumptions underlying the project design include: Stakeholders are able to perceive reductions in vulnerability over the time-scale determined by project duration; Stakeholders are able to distinguish vulnerability to climate change from baseline weaknesses in water resources management; The government remains supportive of improved water resource management; Turnover of staff does not negate the benefits of training; Selected pilot provinces are best placed to demonstrate the benefits of measures to adapt to climate change; Communities are sufficiently homogeneous to support broadly consensus based community action; Provincial and local development plans are implemented; Projects are under implementation long enough for lessons to be transferred to other projects before the end of the project; ALM becomes operational and effective in time to document best practices from the project. Risks that might affect the success of the project include: A series of unusually wet years might weaken the resolve of key stakeholders in addressing water resources issues; The slow pace of policy modification may mean that identified policy changes are not implemented in a timely fashion; The demonstration projects fail to influence capacity development and policy modification. None of these risks are considered to be "high". The most serious risk, rated "Moderate", concerns the slow pace of policy modification. The mitigation strategy to address this risk involves early and consistent application of an awareness programme for policy makers, and engagement of senior levels of government in monitoring project implementation. All other risks are considered to be "Low", and do not warrant a mitigation strategy.

G. **COST-EFFECTIVENESS PROJECT DESIGN:** In general, evaluations of community-based projects such as this one have consistently found that community-based projects are more cost-effective than larger scale initiatives. The project will operate with participation and collaboration of different stakeholders. This will avoid redundancy and promote complementarities among different projects, thus contributing to cost effectiveness. In addition, the communities' willingness to participate in the project with their labor and in-kind contribution also contributes to cost effectiveness. The project will also undertake intensive capacity-building interventions as an investment in human capital, producing a viable capacity to adapt to drought and climate change, which is a cost effective way of ensuring sustainability. The project has raised considerable interest and commitment from local stakeholders, expressed in an important volume of leveraged resources.

PART III: INSTITUTIONAL COORDINATION AND SUPPORT

A. PROJECT IMPLEMENTATION ARRANGEMENTS: The project will be implemented through a National Execution modality. Implementation arrangements seek to establish a bridge between national authorities responsible for formulating and integrating Climate Change policies, and national, regional and local authorities and practitioners of water resource management. Knowledge and information provided through monitoring institutions and best practices and lessons learned through the implementation of pilot projects will be the tools to ensure effective coordination and follow up among the institutions involved in the project. The executing agency of the project will be the MoE, which is also the GEF national focal point. At the time of the approval of the PDF B resources, it was suggested that an institution with on-the-ground experience and mandate for water management, (such as the National Council on Water Resources - CNRH) should be the executing agency of this project, However, it is important to note that the new Government is modifying the water institutional framework and CNRH is actually undergoing important structural changes. New options are currently being considered for the water institutional structure at the national level. Thus CNRH may be placed either under the leadership of the national planning agency, SENPLADES, which has been strengthened under the new government, or under the MoE, which is also playing a more important role in natural resources management. The changes in the institutional structures are expected to be consolidated in the coming months. Discussions among the main stakeholders during the PDF phase of the project took into account the different scenarios for the future institutional structure in the water sector in order to identify the most suitable institution for a successful implementation of the project. The discussions concluded that MoE is best suited in the current political context, to execute the project, given its broader mandate to guarantee that environmental concerns and development priorities are closely interlinked at the policy level. In addition, MoE forms part of the board of CNRH, and its role in the water sectors will be strengthened as part of the restructuring of water management structures. The execution arrangements, however, will favour a multi-institutional approach led by MoE. This approach seeks to build on the technical water expertise already available in the country, such as in CNRH, and the political momentum for a broader national planning effort that is currently talking place in Ecuador. Besides, coordination mechanisms will be established with CONCOPE, the association of Provincial Councils, and AME, the Association of Ecuadorian Municipalities, in order to secure the dissemination of information amongst all the provinces and cities of the country. MoE will assume an important role in the elaboration of the National Development Strategy that will be led by SENPLADES. The formal linkages of MoE with these two institutions will ensure the necessary coordination with the key stakeholder in the water sector and will facilitate an expedited initiation of the project. MoE is also well placed to coordinate and lead the process of mainstreaming adaptation to climate change in the national agendas. MoE will closely work with SENPLADES during the formulation of the National Development Strategy, as it will represent a unique opportunity to mainstream adaptation to climate change in water management - a critical element for the success and sustainability of the project. As CNRH completes its planned transition, MoE, through this project, will bring significant support and guidance to assist CNRH in incorporating climate change considerations into water management. In its capacity as Executing Agency, the MoE will be responsible for the technical and financial execution following UNDP procedures. It will be responsible for: (i) directing the project, (ii) meeting its stated outcomes and projected outputs in a timely manner, and (iii) making effective and efficient use of the financial resources allocated in accordance with the Project Document. The Under-secretariat of Environmental Quality would be the official institutional focal point. The Executing Agency will request from UNDP all financial funds and the accomplishment of selection and bidding processes in accordance with UNDP procedures. As part of the activities and budget monitoring, UNDP will present annual financial statements relating to the status of UNDP/GEF funds (CDR) as registered in the ATLAS system. These statements will be certified by the Executing Agency. In addition, UNDP will be in charge of selecting a recognized independent auditor to conduct an annual audit of project execution, according to procedures set out in relevant UNDP manuals. The cost of these audits will be charged to the project budget. Overall guidance and support for the project will be provided by a National Steering Committee (NSC), with the participation of MoE, SENPLADES, CNRH, INAMHI, UNDP and a representative of the water users. The National Steering Committee will have the following responsibilities and objectives: (i) To take part in the selection of the project coordination team; (ii)To approve annual reports and operative plans presented by the project team; (iii) To agree on a common monitoring system, and a minimal set of indicators; (iv) To serve as a platform for exchange of experiences and lessons learnt; (v) To provide a key inter-institutional coordination platform, to define the basic project implementation rules and the roles and responsibility of each executing agency and to allow for the resolution of disputes between different project partners. A project management unit (PMU) will be established in the Under-secretariat. The Project Coordinator, who will be hired through a competitive selection process following UNDP procedures, will head this unit. The PMU will receive specific

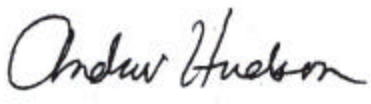
training on UNDP procedures upon its establishment. The unit will co-ordinate, supervise, assist, control, monitor and report on project execution and budget, and is responsible for reporting to the Undersecretary and UNDP on a regular basis. The Project Coordinator, in accordance with UNDP formats and guidelines, will prepare the Annual Work Plan (AWP) reflecting project activities and outcomes. In addition to the AWP a detailed activity work plan will indicate the implementation periods of each activity and the parties responsible for carrying them out. The Project Coordinator will also be the registered signatory under delegation by the Ministry of Environment. The Project Coordinator will be responsible for the implemenation of the project preparation process and for the completion of the project brief and other expected products. The Project Coordinator will work under the direct supervision of the MoE, and will be accountable to the National Steering Committee.

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

The proposal was modified in order to define more precisely the boundaries of the project and its proposed activities, and to allow for a clear distinction between baseline and project activities. The expected outcomes were modified as follows:

Approved PIF	*Modified Project Design*
Outcome 1: Strengthened policy environment and governance structure for effective water management through the integrating of adaptation to climate change in water governance structures.	**Outcome 1: Climate change risk on the water sector integrated into key relevant plans and programmes**. – this formulation allows for a continued mainstreaming effort in the water governance institutionality, that will undoubtedly change during the anticipated political changes that the country will sustain during the formulation of a new constitution.
Outcome 3: Application of sustainable water management and water-related risk management practices to withstand the effects of climate change by on-the-field sustainable development organizations (NGOs, technical cooperation, Ministry of Agriculture), local governments and communities.	**Outcome 2: Strategies and measures that will facilitate adaptation to climate change impacts on water resources implemented at the local level**. This outcome replaces original Outcome 3 because it defines more clearly the boundaries of planned interventions: hydropower generation and agricultural practices. Also, the creation and funding of an adaptation initiatives fund was reformulated in order to take advantage of already-existing funds for watershed management in the provinces of intervention.
Outcome 2: Improved information and knowledge management on climate risks in Ecuador by strengthening the capacity of institutions that monitor key resources and improving the use of climate information and data in national and local decision-making	**Outcome 3: Institutional and human capacity strengthened, and information/lessons learned disseminated.** This formulation defines a clearer boundary between baseline and additional capacities.

PART V: AGENCY CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the LDCF/SCCF criteria for CEO Endorsement.	
 Andrew Hudson Office-In-Charge	Project Contact Person Yamil Bonduki Climate Change Specialist (through Bo Lim, Principal Technical Adviser, Climate Change Adaptation Cluster, UNDP/GEF
Date: November 13, 2007	Tel. and Email (212) 906-6659; yamil.bonduki@undp.org

ANNEX A: PROJECT RESULTS FRAMEWORK

Project Strategy	Indicator	Baseline value	Target and benchmarks	Sources of verification	Risks and Assumptions
Goal	Mainstream adaptation to climate change into water management practices in Ecuador.				
Objective: To reduce vulnerability to climate change through effective water resource management.	Number of references to vulnerability of the water sector to climate risks in policies, plans and projects.	Climate change risks in the water sector are not acknowledged in relevant policies, plans and projects both at the national and local level.	By the end of the project, national and regionally relevant plans include climate change risk considerations for the water sector.	Surveys/interviews /plans	There is political willingness to integrate climate change related risks into water sector management plans, policies and strategies
Outcome 1: Climate change risk to the water sector integrated into key relevant plans and programmes.	Number of references to climate change risks to the water sector in relevant plans and programmes.	Relevant development and risk management plans do not include climate change risks to the water sector.	By the end of the project, climate change risks in the water sector are addressed in three national plans and at least two provincial development plans.	Revised national and provincial water management plans.	Political will to review the plans is ensured and maintained throughout the life of the project.
Output 1.1: Practical guidance to integrate water climate risk into relevant plans and programmes.	Guidelines applied in national and sub-national water related plans and programmes	No guidelines to mainstream climate risk into the water sector exist.	By the end of year 1, practical guidance to mainstream water climate risk has been made available to, and adopted by, relevant stakeholders in the context of key water management plans and programmes.	Review of relevant programming documents in the water sector	Relevant stakeholders adopt the guidelines.
Output 1.2: Relevant plans and programmes incorporate climate risks in the water sector	Number of plans that integrate climate change risk issues related to water management.	Relevant development and risk management plans, both at the national and the local level, do not address climate change risk in the water sector.	By the end of the project, the National Water Management Plan, National Development Plan, National Risk Management Plan, and at least two Provincial /Risk management Plans include climate change risk and adaptation measures for the water sector.	Revised plans	Political will to review the plans is ensured and maintained throughout the life of the project.
Outcome 2: Strategies and measures that facilitate adaptation to climate change impacts on water resources are implemented at the local level.	Number of adaptation measures implemented at the local level	Adaptation measures are ad hoc. No long term adaptation measures implemented.	By the end of the project, adaptation measures to address climate risks in the water sector have been adopted by local stakeholders.	Evaluation reports	Local stakeholders support the adoption of adaptation measures.

Project Strategy	Indicator	Baseline value	Target and benchmarks	Sources of verification	Risks and Assumptions
Output 2.1: Measures, technologies and practices to improve the adaptive capacity of water resources management introduced and implemented in pilot systems.	Number of communities undertaking adaptation measures	Adaptation measures are ad hoc. No long term adaptation measures implemented.	By the end of the project, at least 10 communities implementing adaptation measures-	Field Surveys	Selected pilot province is best placed to demonstrate the benefits of measures to adapt to climate change.
	Number of farmers adopting water saving measures	None	By the end of the project, at least 50% of farmers participating in the project apply water saving measures.	Field Surveys	Baseline number of farmers in project site estimated and tracked thereafter during project lifetime
	Number of climate risk management strategies/measures in Hydropaute's risk management plan	Hydropaute's water management plan does not include climate induced risk management criteria	By the end of the project, Hidropaute's risk management plan incorporates measures that address the impact of climate change in the water inflow to the Paute hydroelectric project.	Revised risk management plan for Hydropaute	
Output 2.2: Information management systems reflecting climate change impacts on the water sector	Number of institutional agreements to improve climate information sharing	Information networks on water resource management at the local level do not currently account for data on the climate change impacts on water resources	By the end of the project, a water management network that also includes climate change information on impacts on water resources is operational in at least two provinces	Reports of CNRH, INAMHI, and field inspection	INAMHI designates technical counterparts to support the hydro meteorological network. Local governments contribute to the implementation of the monitoring network Basic hydro meteorological data is compiled in a regular basis.
Outcome 3: **Institutional and human capacity strengthened, and information/lessons learned disseminated**	Number of relevant staff trained on climate change risk management (as it relates to water resources) Number of awareness campaigns implemented	None	At least 300 personnel from relevant institutions in selected provinces are trained.	Training and Evaluation reports	Relevant institutions permit staff to receive training on climate change risk management (including coverage of costs)

Project Strategy	Indicator	Baseline value	Target and benchmarks	Sources of verification	Risks and Assumptions
Output 3.1: Improved institutional and technical capacities to support the mainstreaming of climate risks and implementation of adaptation measures in the water sector	Number of relevant staff trained in climate risk management	Only specialized staff in the MoE has some knowledge of concrete adaptation measures.	At least 300 personnel from relevant institutions in selected provinces are trained.	Training and Evaluation reports	
Output 3.2 Knowledge and lessons learned to support implementation of adaptation measures	Number of lessons learned systematized	No web site exists for document lessons No lessons learned compiled	Within 6 months of the start of implementation, a publicly accessible web-site will be created to share lessons and findings based on implementation. At the time of project completion, at least 3 examples of lessons learned a year have been compiled and disseminated.	Website, Documentation, Knowledge products	Local stakeholders implement adaptation measures on the ground; systematic tracking of development and adaptation benefits; analysis and synthesis of lessons learned
Output 3.3: Guidance documents for GEF and MoE on climate change adaptation programming in the water resource sector provided	Number of case studies submitted to the ALM	No cases of best practices recorded	At the time of project completion, at least 3 examples of best practice per year generated through the project will be accessible through the ALM. At the time of project completion, documents will be prepared to guide future GEF and MoE support for interventions on adaptation to climate change including variability .	Documentation, Knowledge products	ALM becomes operational and effective in time to document best practices from the project GEF and MoE continue to target adaptation to climate change including variability in the water resource sector

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

a) COUNCIL

Council Comments	UNDP Response
NONE	

b) GEF SECRETARIAT

GEF COMMENTS	**RESPONSES**
Both the first section (Project rationale, objectives, outputs and activities, pages 2 - 4) and Annex A (Additional cost analysis, page 17 - 19) include several conceptual issues:	
1. List of outcomes 1-4: text focuses mostly on capacity building, where is the action?	Three instead of four outcomes have been identified in the revised proposal. Capacity building activities have been limited to one outcome while the other two outcomes focus on demonstration activities and improving water governance frameworks (i.e. legislation, national plans, etc) to integrate climate change risks.
2. List of outcomes 1-4 (with description) text focuses mostly on process, where is the action? In this case outcomes 3 and 4 may generate some action, please clarify.	The outcomes now provide a description of their scopes as well as more detailed description of the activities to be implemented.
3. Key indicators; again, outcome 3 and 4 may generate some benefits on the ground; please clarify through which actions;	Outcome 2 is now focused on adaptation measures at the local level and identifies specific interventions. A distinction has been made between baseline and additional interventions to address climate change issues across all outcomes.
4. The baseline is too vague. In these kinds of projects it s not acceptable to say that the baseline does not include adaptation. The baseline must include specific development activities that will be "climate-proofed" through this project;	The baseline section has been clarified, and we have provided substantial detail on the direct contribution of baseline activities to the proposed activities funded by SCCF. Each outcome provides a description of the relevant baseline issues as well as additionality.
5. Baseline overambitious (practically includes any sector and any activity in it); 10 billion would not be enough to climate proof it.	The project is focused on one sectoral intervention. As explained above, the baseline provides a clear description of relevant activities under the 3 project outcomes, namely: 1) integration of climate change risk into the water sector and key relevant plans; 2) adaptation strategies and measures for the water sector on the ground, and strengthening of human and institutional capacity. It is important to note that more than 2/3 of the SCCF funds are allocated to achieve concrete results at the local level. The scope of the interventions is redefined following discussions at the bilateral.
6. Please define a more realistic baseline including limited activities and a more limited climate proofing activities in the water sector, as originally planned at project concept stage.	The baseline descriptions for each outcome has been improved in the text.
7. The budget must be modified as the GEF cannot be the only source of financing for M&E -- co-sharing must be sought.	Co-financing for M&E activities has now been included. This is based on the follow up of baseline activities that the key institutions will commit to do in their respective capacities. Such commitment will help to ensure that project activities will not be at risk because of lack of appropriate monitoring of the baseline activities.
8. Please provide a justification of the $6 million co-financing including the specific sources of co-financing (letters of commitments are not necessary at this	Specific sources of co-financing have been added. Letter of commitments will be submitted at CEO endorsement.

stage) and for which baseline activities.	

Response to GEF SEC comments, 20 december 2007

Recommended action:	Steps taken:
A. Eligibility **2. Has the operational focal point endorsed the project?** Recommended action: Please provide an up-to-date endorsement letter from the national focal point.	An updated endorsement letter is attached as Annex 1.
C. Project Design **7. Is the global environmental benefit measurable?** Recommended action: Please provide a Project Results Framework including specific indicators and benchmarks for each project output.	An updated version of the Project Document is provided. The Project Results Framework is included on page 53.
D. Justification for GEF Grant **15. Is the value-added of GEF involvement in the project clearly demonstrated through incremental reasoning?** Recommended action: Please provide a quantified estimate of baseline and additional costs at least to the level of outcomes, thus making an argument for the level of SCCF funding.	An updated version of the Project Document is provided. The Incremental Cost Analysis is included on page 51.
17. Is the GEF funding level of project management budget appropriate? Recommended action: Management costs should be covered at a pro-rata basis compared to the full project cost distribution. (i.e. as the co-financing ratio of the present project is close to 85%, this should also be the approximate co-financing ratio of its management costs)	After securing additional cash commitment from the Ministry of the Environment and re-programming other parallel funding committed by other partners, a co financing ratio of 80% for the PMU has been achieved. See Table A of the CEO endorsement request.
18. Is the GEF funding level of other cost items (consultants, travel, etc.) appropriate? Recommended action: Reconsider travel costs and/or provide a clear justification for the higher than average travel needs of the proposed project management	Travel costs were reconsidered and the amount represents now approximately 11% of all administrative costs. All travel costs will be covered with cash cofinancing coming from the MoE and by other local partners. As the project will implement interventions in four provinces of the country, frequent monitoring trips from Quito to the provinces will take place. Also, a provision for international trips of the Project Manager has been made in order to secure opportunities to share experiences with other interventions in the region.
20. Are the confirmed co-financing amounts adequate for each project component? Recommended action: All co-financing must be confirmed by signed endorsement letters to be considered at the CEO endorsement stage. Please provide signed endorsement letters for ALL co-financing claimed in table C.	Co financing letters were originally provided; a new copy is attached as Annex 2. An additional cofinancing letter from the MoE is included.
21. Does the proposal include a budgeted ME Plan that monitors and measures results with indicators and targets? Recommended action: Please refer to comment under 7.	Please see Comment 7.
24. Is CEO Endorsement being recommended? Recommended action: Please attach the PDF-B completion report to the resubmission. The data in annex D of the CEO endorsement document does not replace a full completion report.	The RCU confirmed that the PDF B completion report is not needed as pertinent information is included in Annex D of the CEO endorsement request.

c) REVIEW BY EXPERT FROM STAP ROSTER (IF REQUIRED)

STAP Reviewer Main Concern	**Response**
While the project proposal focuses on vulnerable regions and sectors, no quantitative information on past losses from extreme weather events has been furnished. This deficiency could be easily corrected by citing average annual losses (especially in agriculture and energy sectors) with inclusion of some extreme years. A graphical representation is appreciated.	The proposal has been modified to explicitly cite quantitative information on past losses from extreme weather events. See section on Economic impacts of extreme events, paragraph 28 and 29, including table and figures on pages 11 and 12 of the Project Document. Description of the vulnerability in the agriculture and hydro-energy sectors in relation to climate impacts on water, have been summarized in boxes on pages 16 and 17.
The proposal appropriately applied 'vulnerability-based approach' because of high uncertainty in future climate change scenarios due to geographical location, terrain and complex climatic process. A range of coping mechanisms could be introduced to tackle a variety of climatic futures. However, in the proposal, categorically these mechanisms have not been mentioned. It is therefore suggested to include a list of measures in the revised proposal.	The proposal has been edited in different sections as a response to this comment. However, further analysis will included at the time of CEO endorsement.
The project proposal discusses long-term planned response strategies, policies and measures to enhance resilience of the two key economic sectors in question. However, it does not discuss the short-term coping mechanisms that are in place in response to extreme climatic hazards. This deficiency in the proposal could be rectified by incorporation of information available on short-term measures that are in practice in the two economic sectors in the vulnerable regions in Ecuador.	The proposal has been modified to include a section on short-term coping mechanisms that are in place in response to extreme climatic hazards. As a result of an extreme event, the Government of Ecuador has put in place some measures to strengthen the organization of farmers, including the establishment of seed banks and train communities how to make better use of the available meteorological data to prepare for floods. Reactive measures also include campaigns on how to improve agriculture practices to face droughts experienced in high lands. Other measures include improvement of flood zoning. In the energy sectors, public campaigns for energy saving have been implemented.
Additional cost reasoning has clearly been discussed in pages 25-31 under four major project outcomes. (items 96-111). Cost estimates for 'baseline', 'alternative scenario' and 'additional cost' due to climate change are presented in 'Additional Cost Matrix' in Section II. I have difficulty in understanding the basis of these estimates which could have been spelled out in detail. For example, in several places in the text, the issue of weak and insufficient hydro-meteorological stations have been cited but I do not see any specific breakdown (perhaps included in the total cost of a component) of costs for the hydro-meteorological networks. I strongly suggest a detailed breakdown of the estimates and explanations for arriving to such estimates in an 'Annexure'.	The costs of the hydro-meteorological network are included in the costs for Outcome 2 (Output 2.2). As noted in the text, these costs will be provided through co-financing. Breakdown of co-financing is provided in the table Additional Cost Matrix in the Annex Section.
The financing/cost sharing mechanism looks OK. The GEF contribution that sought is 33% of the 'Additional Cost'. If successfully implemented (by avoiding or handling the risks), the lessons to be generated could be used to develop good practices for incorporating adaptation measures to climate change into broader development planning in Ecuador.	We agree with the STAP reviewer comment

Management co-modality: The proposal included a co-management of the project with the involvement of Ministry of Environment and UNDP local office in Ecuador. Stakeholders/experts to be involved will be managed by the 'Project Management' Unit and shall be responsible for reporting to the UNDP on a regular basis. This co-management structure is designed in accordance with the lessons learned in other GEF funded projects. In my view this management structure should work but the GEF may ask the executing agency for conflict resolution plans in case of arise of any potential management problems during execution of the project.	This is the normal management structure for UNDP projects (not only GEF-funded projects). In the event of conflicts arising, UNDP has a well-established process to resolve such conflicts. (see Paragraph 160 of the Project Document.
Project Monitoring and Evaluation: A plan for project monitoring and evaluation has been presented in Part IV of the proposal. As stated, the plan has been devised according to the established UNDP and GEF procedures. The Plan will involve UNDP Country Office for country level monitoring and MoE at the project level. Monitoring responsibilities have also been spelled out. The presented 'monitoring plan' seems to be adequate but I do not see any contingency plan in case of spill over of the project beyond the project life and possible cost-over run. In addition, the annual monitoring has been proposed through a Tripartite Review. In the context of complex structure of water governance in Ecuador, in my view, instead of 'Annual Tripartite' review, 'half-yearly' review will enhance project implementation efficiency and will help sorting out any inherent problem.	There will be no spill-over in the project duration. UNDP-GEF projects apply the principles of adaptive management. If unexpected costs are encountered, the project monitoring process will identify the likelihood of cost over-runs and consider an appropriate management response. There is a well-established process for modifying the project, if required due to unforeseen circumstances. Depending on the scale of modification, a decision may be made by the project team, by the UNDP CO, by UNDP-GEF, or by the GEF. Regarding the frequency of tripartite reviews, the trend in UNDP has been for these to be discarded, rather than an increase in frequency. Experience has shown that a well-designed and well-functioning Steering Committee obviates the benefits of Tripartite reviews.
Fitness of the Project in the context of the goals of the GEF and the specific objectives and priorities of the SCCF: The project fits within the areas identified in SCCF created in 2001[1] (see footnote below). Adaptation is one of the major eligible areas for funding. One of the project objectives is to set up pilot program that fits within the recent decision of the UNFCCC to support pilot and demonstration projects in the field of adaptation. This project will provide benefits to the stakeholders in agriculture and energy and will mainstream adaptation measures in the water sector policies. This broad objective fits within the funding criteria of the GEF.	Agree with the STAP reviewer comment.
Regional and Sectoral Context: The project is focused on vulnerable regions and sectors. It did mention about Ecuador's first National Communications	See the previous response to the comment requesting additional information, which has been inserted into the document.

[1] …that a special climate change fund shall be established to finance activities, the resources allocated to the climate change focal area of Global Environment Facility and by
bilateral and multilateral funding, in the following areas:
(a) Adaptation, in accordance with paragraph 8 of decision 5/CP.7;
(b) Transfer of technologies, in accordance with decision 4/CP.7;
(c) Energy, transport, industry, agriculture, forestry and waste management

The Special Climate Change Fund adaptation program focuses on the following area: water resources, agriculture, health, infrastructure, integrated coastal zone management, and fragile ecosystems, including mountain ecosystems (http:// www.GEF.org).

(submitted in November 2000; see www.unfccc.de) which identified "climate change as a critical cross cutting issue affecting most vulnerable sectors of the economy." Although the Paute hydropower`project identified in the National Communication has been included in the case study of the proposal, I strongly feel that more information on vulnerability of: water, agriculture and energy sectors could have been drawn from the National Communications and a linkage with the mainstreaming objective could also have been established.	
The proposal did not establish linkage with NAPAs. I have scanned through the UNFCCC website, but could not find reference of any ongoing NAPA projects in Ecuador. It did mention about some other projects which include: (a) A Dutch funded project on the impact of climate change on the coastal region. UNITAR's Climate Change Training Program - Ecuador (climate change Train). UNEP's Program for Offsetting of GHG emissions in Ecuador (UNEP-RISO). UNDP-GEF technical support for Stages I and II of Ecuador's National Communication to the UNFCCC. However, linkages with lessons learnt from these projects are rather weak and there is a scope to strengthen this.	Ecuador is not under the category of Least Developed Countries and thus not eligible for NAPA funding. Ecuador therefore does not have a NAPA document. These other projects mentioned by the STAP reviewer provide the basis and key lessons for the consolidation of climate change initiatives in Ecuador. For instance, following UNITAR's climate change Training program, the government of Ecuador created the Climate Change Unit, hosted by the Under-Secretary for Environmental Quality in the MoE and the CNC. The CNC has functioned as the main forum for discussing climate policy in Ecuador, and conducted the Initial National Communication (INC) to the UNFCCC in 2000. The CNC guarantees the conditions for a broad-based national ownership of the process leading to the SNC. These processes and studies have in turned provided substantive technical expertise, information and lessons learned on the climate change institutional processes, which have helped in shaping the scope, approach and design of institutional arrangements of the proposed project.

The major objective of the project is to mainstream adaptation to climate change into water management practices in Ecuador through: targeted capacity development; information management and knowledge brokering. In the LFA, the proposal did mention (indirectly) some of the adaptation interventions in the form of upgrading forecasting/measurement stations, data archive and dissemination, reducing water losses, introduction of new technologies, reduction of uncertainty in forecast, etc. However, few other issues need to be addressed: In the text, retrofitting of physical structures has been mentioned so that they will remain functional in the wake of climate change and extremes. But how this target will be achieved need to be addressed. Retrofitting could be very expensive, for example, capacity increase of a hydropower dam/reservoir and that could have many spill-over impacts. For the new infrastructure, the design criteria need to be updated by taking into account climate change as well as uncertainties surrounding it. In the LFA, it has been mentioned that at least 50% of the farmers would use new water saving technology. -But what kind of technology? -How the diffusion will take place? -How the functionality and efficiency of these technologies will be monitored? It has also been stated that water use efficiency will be improved by 15%. How that will take place? "The uncertainty of the forecast water availability is reduced by 75%". How this could be achieved? and in my view this is at a high end.	Concerning sustainability of the project benefits, the project document does not mention retrofitting of physical structures, only retrofitting of projects, by which it is meant that projects which fail to take account of climate change will be modified through the contributions of this project. We agree that the design criteria for any new infrastructure need to take account of the impacts of climate change – this is indeed a major contribution of the project, though GEF funding will not be used for new infrastructure. Regarding the water-saving technologies to be introduced through the project, there are numerous potential "technologies", both "hard" technologies such as drip irrigation, and "soft" technologies such as improved understanding of crop-water interactions, so that irrigation is applied only when necessary. The project will consider any such technologies, but is not prescriptive – the implementation strategy will depend on local conditions and institutional capacity. The indicators have been modified to respond to this comment. Success of indicators will be measured through the project's monitoring system. In this regard, as part of standard UNDP project management practice, the structure and target values of all indicators will be reviewed during the inception workshop. Diffusion of lesson generated by the project will take place though activities under Outcome 3.
Developmental Benefits: Implementation of the projects will certainly generate developmental benefits in terms of higher agricultural production, improved living standards, revenues from electricity production, and irrigation water, etc. Future sustainability depends on a number of factors such as: continuation of the pilot scheme, revenue earning and expenses and strong institution and political will.	We agree with the STAP reviewer.
Behavioral changes, social learning and institutional development: Yes, the project aims at these issues and can be achieved.	We agree with the STAP reviewer.

Replicability of the Project: Successful completion of this project will certainly enable policymakers, professionals and donor agencies to replicate and scaling up the results in elsewhere. However, methodologies, tools and outputs of this project could be replicated in other parts of Ecuador with similar socio-economic, climatic and environmental conditions. This point should be taken into account in the revised proposal. However, caution should be taken to replicate the model in other parts of the region with different ground and political conditions and water governance. But the project outcomes will certainly carry a lot of values while developing some similar programmes in other countries in the region.	The proposal has been edited as a response to this comment.
Linkages to other focal areas/beneficial and damaging effects: The project may have spill-over effect (positive) on socio-economic sectors and human settlement. Retrofitting of reservoirs/dams may inundate (if capacity increased) forest areas. Risk of failure (in case of capacity exceeded by future abrupt climate change) can threaten human settlements and infrastructures at the downstream areas. The revised proposal should address these issues. A figure showing linkages with other economic sectors is appreciated.	Ensuring appropriate water supply through improved management under climate change scenarios will bring benefits to other important economic sectors. Industrial activities and production have suffered economic losses due to energy rationing that has taken place in periods of extreme droughts. This in turn has affected trade. Reduction in agriculture outputs has a direct effect in exporting of cash crops, reducing incomes of farming communities and inflow of hard currency. As climate risks are increasingly influencing these key sectors, addressing water issues will have direct positive socio-economic effects, including improved health and food security. A figure showing the linkages with other socio-economic sectors will be included prior to CEO endorsement.
Linkages with other programmes and action plans at regional and sub-regional levels: The proposal lacks information on how this project is: -connected with other regional and sub-regional programmes -bilateral and technical assistance -building on other ongoing initiatives on climate change	The proposal has been modified to include a section on linkages with other programmes and action plans at regional and sub-regional levels. See section under paragraph 149 of the Project Document.

Degree of involvement of stakeholders: The project proposal has assessed the degree of stakeholders' involvement in the project. Twelve key players in the agriculture, water and energy sector included as stakeholders and listed in Annex 2. I have a few concerns: -low level (only one) representation of the NGOs and Civil Societies in the stakeholders' list -No indication of grassroots level stakeholders' association or integration with the project -involvement of political and legal forces is necessary for successful completion of the project and extending it beyond the project cycle. -gender balance is not clear at this stage -a clear statement is required about how coordination among the stakeholders will be maintained.	The National Water Resources Forum (FRH) represents the civil society and NGOs. This forum includes small and community water users and is the most representative group related with water. Through the Forum, the project will ensure a broad participation of the relevant NGO and civil societies that will contribute to and benefit from the project. Local organizations will play an important role in the implementation of some of the project's activities, especially those related to Outcome 3 (Provincial and local planning and community action demonstrate adaptation to climate change). Additional explanation was added in the project document on how grassroots participation will be ensured. The National Steering Committee of this project is compounded by the institutional, political and legal forces relevant to the water sector. Given the long-term nature of the adaptation strategies, the project's institutional arrangements have been designed to ensure that mainstreaming of adaptation to climate change become an integral part of planning and decision making. The Adaptation Local Fund would include criteria to prioritize projects which promote women participation in adaptation activities in the context of the project. The criteria and the approach to encourage gender balance will be defined during the design phase of the fund. Coordination between stakeholders will be defined during the inception workshop.
Capacity building aspects: The proposed capacity building through training, field level work, seminars/workshops. A statement is required about how the build capacity would possibly be used to train up professionals in other sectors where climate change is a key concern.	An explanation was added to outcome 3 to respond to this comment.
Innovativeness of the Project: In terms of innovativeness, the project proposed to introduce effective governance in the water sector in Ecuador. Effective governance requires transparency and accountability. While these are true for governance of any economic sector, it is necessary to spell out how transparently the adaptation governance will be executed in the water sector.	The project proposes the development of a follow-up approach to ensure that decision-making regarding the water sector is conducive to the mainstreaming of adaptation in the relevant programmes at the national and local levels. The key stakeholders will play a pro-active role in this process during the duration of the project. The appropriation of the project results by these stakeholders will ensure that activities will be carried out beyond the life of the project. Thus, rather than having one institution solely responsible for all the project's activities, the proposed institutional arrangements is based on the participation of a number of key partners, with specific responsibilities according to expertise and competitive advantage. The coordination mechanism under MoE as the Execution Agency, and with the support by UNDP, will enhance the transparency of the project and its implementation beyond its lifetime.

ANNEX C: CONSULTANTS TO BE HIRED FOR THE PROJECT

Position Titles	*$/ Person week*	*Estimated person weeks*	*Tasks to be performed*
For Project Management			
Local Coordinator	450.00	208	• Set up and manage the project office, including staff facilities and services, in accordance with the project work plan; • Prepare and update project workplans, and submit these to the NPD and UNDP-GEF and UNDP-CO for clearance and ensure their implementation consistent with the provisions of the project document. • Act as a principal representative of the project during review meetings, evaluations and in discussions and, hence, be responsible for preparation of review and evaluation reports such as the Annual Project Report (APR) for the consideration of the NPD. • Ensure the timely mobilization and utilization of project personnel, subcontracts, training and equipment inputs: o identify potential candidates, national and international, for posts under the project o prepare the ToR, in consultation with the implementing agent and subcontractors; o prepare training programmes (in consultation with the implementing agents) designed for staff, with particular emphasis on developing an overall training plan. o draw up specifications for the equipment required under the project; procure such equipment according to Government and UNDP rules and procedures governing such procurement.

Position Titles	*$/ Person week*	*Estimated person weeks*	*Tasks to be performed*
			• Assume direct responsibility for managing the project budget on behalf of the NPD, ensuring that: • project funds are made available when needed, and are disbursed properly; • accounting records and supporting documents are kept; • required financial reports are prepared; • financial operations are transparent and financial procedures/regulations for NEX projects are applied; and • the project is ready to stand up to audit at any time. • Exercise overall technical and administrative oversight of the project, including supervision of national and international personnel assigned to the project. 1. Report regularly to and keep the RPM and UNDP-GEF and UNDP-CO up-to-date on project progress and problems, if any. 2. Ensure timely preparation and submission of required reports, including technical, financial, and study tour/fellowship reports; 3. Perform other coordinating tasks as appropriate for the successful implementation of the project in accordance with the project document.

Position Titles	*$/ Person week*	*Estimated person weeks*	*Tasks to be performed*
Financial Assistant	223.08	208	• Prepare all payment requests, financial record-keeping and preparation of financial reports required in line with NEX financial rules and procedures • Assistance to the recruitment and procurement processes, checking the conformity with UNDP and the Government rules and procedures • Act as administrative liaison between the Ministry of the Environment, the PMU, UNDP, subcontractors and consultants as needed • Take notes and draft minutes of meetings of the Steering Committee and other meetings, as required • Assistance to the organization of in-country training activities, ensuring logistical arrangements • Preparation of internal and external travel arrangements for project personnel • Maintenance of equipment ledgers and other data base for the project • Drafting of correspondence as required • Act as a Petty Cash custodian • Maintain project filing, including registers of holidays, sick leaves and other absences of members of the PMU and consultants • Other duties which may be required
For Technical Assistance	**Budget total**		
Local			
National Consultants for Technical Input	530,000.00	N/A	• Technical knowledge of adaptation to climate change and integrated management of hydric resources • Monitoring and Evaluation Expertise based on UNDP Practices for GEF projects • Knowledge of national policy relevant to adaptation • Experience with project and programme design • Capacity to engage with multiple levels of stakeholders, including communities, civil society, government, and the private sector
International	Budget total		

Position Titles	*$/ Person week*	*Estimated person weeks*	*Tasks to be performed*
International Consultants for Technical Inputs	405,000.00	N/A	• Prepare technical documents that will support the implementation of Outcomes listed in the UNDP Project Document • Participate and provide technical advice in Project Steering Committee and technical group meetings as required; • Provide technical guidance based on previous experiences in the development of demonstration measures as identified in the project document and as they relate to the identified project sites; • Prepare methodologies and tools, based on international best practices, for use in the implementation of project components • Guide the monitoring and evaluation activities as they relate to the project and the approved Vulnerability Reduction Approach for measuring improvements in adaptive capacity • Guide the preparation of knowledge products and contribute towards the effective dissemination of KM products at national level; • Provide technical input at capacity development fora as outlined in the project document; • Review and revise inputs provided by national institutions; • Provide technical backstopping to the Project as required and as requested by the Project Coordinator; • Assist the facilitation of lessons learned into the UNDP-GEF Adaptation Learning Mechanism • Facilitate cross-country knowledge transfer • Develop papers and briefs highlighting successful case studies and lessons learned from the project

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

THE PPG OBJECTIVE HAS BEEN ACHIEVED THROUGH THE PPG ACTIVITIES UNDERTAKEN. During the implementation of the PDF-B phase of the project the following outcomes and related outputs have been achieved:

Outcome 1: Final Project Document agreed with all local stakeholders, endorsed by the GEF Operational Focal Point, and submitted to the GEF.

- Final project document produced. The original approach was maintained but outcomes were reformulated in order to establish clear boundaries for the interventions.

Outcome 2: Project Institutional Framework defined in agreement with local stakeholders.

- An institutional framework that is flexible enough to allow for future institutional changes designed, with agreement of all concerned national and local stakeholders.
- In order to improve the definition of project's approach and methods, stakeholders received training in basic tools for adaptation: Adaptation Policy Framework (APF) and the Water Evaluation and Planning System (WEAP). The project promoted discussions and meetings, both bilateral and multilateral, amongst key stakeholders, which allowed them to understand the approach and value of the project for fulfilling their missions.
- Together with IUCN and CNRH, the project co-organized a national workshop on the new institutional framework for Integrated Water Resources Management in Ecuador. A Latin American hidrologist with extensive work in the application of the WEAP model and who has worked with climate change adaptation measures in the water management sector in Mexico took part in the discussions.
- Two critical vulnerable sectors linked to water resources identified and pilot interventions centered in addressing issues related to these sectors.
- A thorough characterization of key water governance issues produced, and technical support provided to national stakeholders during the debate of proposals to reform the institutional arrangements for water governance currently in place.

Outcome 3: Financial plan for the full size project developed and co-financing commitments secured.

- Cofinancing commitments secured mainly as parallel execution, as most stakeholders are willing to mainstream climate change adaptation into their ongoing activities.
- The original activity of creating and funding an adaptation initiatives fund was reformulated in order to take advantage of already-existing funds for watershed management in the provinces of intervention.

Outcome 4: Partnerships established with local, national, and international institutions and agencies

- Aside from cofinancing commitments, letters of support and interest from a series of institutions and agencies secured, proving widespread interest in the issues covered by the project.
- A network of regional academic entities, international climate change think-tanks, regional research institutions and other climate regional initiatives and adaptation to climate change projects has been established.

A. DETAILED FUNDING AMOUNTS OF THE PPG ACTIVITIES AND THEIR IMPLEMTATION STATUS IN THE TABLE BELOW:

Project Preparation Activities Approved	*Implementation Status*	*LDCF/SCCF Amount ($)Approved*	*Amount Spent To-date*	*Amount Committed*	*Uncommitted Amount**	*Co-financing budget ($)*
Outcome 1: Final Project Document agreed with all local stakeholders, endorsed by the GEF Operational Focal Point, and submitted to the GEF .	Completed	223,750.00	95,416.02	139,550.41	-11,216.43	38,578.29
Outcome 2: Project Institutional Framework defined in agreement with local stakeholders.	Completed	63,750.00	9,857.96	13,178.06	40,713.98	681.32
Outcome 3: Financial plan for the full size project developed and co-financing commitments secured	Completed	23,750.00	10,783.60	33,096.06	-20,129.66	235.81
Outcome 4: Partnerships established with local, national, and international institutions and agencies	Completed	38,750.00	39,037.27	8,178.06	-32,999.51	9,540.82
Total		350,000.00	155,094.85	194,002.59	902.56	49,036.24

* Uncommitted amount will be returned to the LDCF/SCCF Trust Fund.

UNDP Project Document

Government of Ecuador

United Nations Development Programme

PIMS 3520 - Adaptation to Climate Change through Effective Water Governance in Ecuador

The project objective is to reduce Ecuador's vulnerability to climate change through effective water resource management. The project will mainstream climate change adaptation into water management practices in Ecuador through the integration of climate change risk of the water sector into key national and local development plans, the implementation of adaptation measures, and information management and knowledge brokering.

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Acronyms

ALM	Adaptation Learning Mechanism
AME	Association of Ecuadorian Municipalities
APF	Adaptation Policy Framework
APR	Annual Project Report
AWP	Annual Work Plan
CAMAREN	Consortium to Capacitate in Natural Renewable Resources Management
CBA	Community-Based Adaptation Programme
CC	Climate Change
CCCS	Country Climate Change Study
CC:TRAIN:	Training Programme in Climate Change
CDR	Regional Development Corporations
CG-PAUTE	Water Management Council for the Paute Watershed
CEDENMA	Ecuadorian Committee for the Defense of the Environment
CEDEX	Spanish Center for Public Works Studies and Research (Centro de Estudios y Experimentación de Obras Públicas de España)
CIIFEN	International Center for Research on the El Niño Phenomenon
CNC	National Climate Committee
CNRH	National Council of Hydrologic Resources
CO	Country Office
CONCOPE	Consortium of Provincial Council of Ecuador
CONESUP	National Council of Higher Education
CORDELIM	National Clean Development Mechanism Promotion Office
GDP	Gross Domestic Product
ENSO	El Nino-Southern Oscillation
EPA	Ecuador Climate Change Country Study
ESPOL	Coastal Polytechnic School
FNC	First National Communication to the UNFCCC
FRH	Water Resources Forum
FONAG	The Water Fund
GEF	Global Environment Facility
GWP	The Global Water Partnership
IDB	Inter-American Development Bank
INAMHI	National Institute of Meteorology and Hydrology
INERHI	National Institute of Hydrologic Resources
INOCAR	Navy's Oceanographic Institute
IR	Inception Report
IRD	Institute for Research and Development
IW	Inception Workshop
LDCF	Least Developing Countries' Fund
MEC	Ministry of Education
MoA	Ministry of Agriculture
M&E	Monitoring and Evaluation
MEM	Ministry of Energy and Mines
MMRREE	Ministry of External Affairs
MoE	Ministry of Environment
MSP	Medium-sized Project
NCSA	National Capacity Self Assessment
NGO	Non-Governmental Organizations
PCCE	Climate Change Process in Ecuador Project
PIR	Project Implementation Review
PMRC	Coastal Resources Management Project Phase II

PNRHE	National Plan for Water Resources
RING	Regional and International Networking Group
SCCF	Special Climate Change Fund
SEI	Stockholm Environment Institute
SENPLADES	National Secretary for Planning and Development
SIGAGRO	Farming and Geographical Information System
SNC	Second National Communication to the UNFCC
SPA	Strategic Priority on Adaptation
STAP	Scientific and Technical Advisory Panel
ToR	Terms of Reference
TPR	Tri-partite Review
TTR	Terminal Tri-partite Review
UN	United Nations
UNDP	United Nations Development Programme
UNDAF	United Nations Development and Assistance Framework
UNEP	United Nations Environmental Programme
UNEP-RISO	UNEP's Programme for Offsetting of Greenhouse Gases emissions in Ecuador
UNFCCC	United Nations Framework Convention on Climate Change
UNITAR	United Nations Institute for Training and Research
VRA	Vulnerability Reduction Analysis

SECTION I: ELABORATION OF THE NARRATIVE

PART I: Situation Analysis

1.1 Introduction

1. Because of its geographical location and rugged topography, Ecuador is highly vulnerable to anticipated impacts of climate change on water resources (UNFCCC First National Communication, Quito, 2000). Periodic El Niño events, particularly those of 1982-83 and 1997-98, have already demonstrated the likely magnitude of catastrophic effects from climatic perturbations (refer to the Project Document for details). Due to the cross-cutting nature of water resources, increased mean temperature, recurrent droughts and floods, retreating glaciers, and more intense and infrequent rainfall patterns will have a wide ranging set of impacts on water. These heightened vulnerabilities to climate hazards will compound current water governance problems in Ecuador.

2. The project goal is to "mainstream climate change risks into water management practices in Ecuador." As a contribution to this goal, the project objective is "to increase adaptive capacities to address climate change risks in water resource management at the national and local level." Towards this end, three outcomes will be realized including the integration of climate change risks into key national and local water development and management plans, implementation of adaptation measures, and information management and knowledge brokering (see below for details).

3. The project focuses on interventions at the national and local level. At the national level, the project will improve water governance by incorporating climate risks consideration into water management and decision making processes. At the local level, interventions will be in specific provinces that have been identified based on climate change vulnerability assessments and stakeholder consultations completed during the preparatory phase. These provinces which host key watersheds have shown a political willingness to implement adaptation measures to climate change to improve the governance and management of water resources in the face of climate change. The participation of provincial authorities and local communities is an integral component of this project and will ensure the sustainability of the interventions beyond the lifetime of SCCF support. The provinces where pilot measures will be implemented include Los Rios, Manabi, Loja, and Azuay.

1.2 Context and global significance

4. Given its geographical location and rugged topography, Ecuador is a highly vulnerable country to impacts of climate change (UNFCCC First National Communication, Quito, 2000). Periodic El Niño events, particularly those of 1982-83 and 1997-98, have demonstrated the catastrophic effects of climate variability in the country. This high degree of exposure, combined with the vulnerability of key economic sectors such as agriculture, health, energy, water resources, coastal resources, fisheries, infrastructure and tourism, reinforces the notion that Ecuador is a country particularly vulnerable to climate change.

5. Characterized by extreme diversity of climate zones, Ecuador boasts an extraordinary array of geographical systems that range from high altitude glaciers to tropical rain forests in the Amazon upper tributaries to dry tropical forest on the Pacific Coast, as well as an insular outpost in the Pacific with the Galapagos Islands, a World Heritage Site. Some of these systems show a greater sensitivity to climate change, or at least are considered most likely to undergo rapid changes as a result of climate change, including variability. As highlighted in the Millennium Ecosystem

Assessment Summary Report, such ecosystems provide a range of environmental services that are critical to rural livelihoods and urban welfare. As these systems deteriorate due to various direct and indirect factors, including climate change, the quality of environmental goods and services also decreases.

6. The UNDP country programme (CPO/CPD) in Ecuador (2004-2008) supports the new government's efforts to reinforce citizen participation and democratic dialogue, combat corruption, reduce poverty and exclusion, and reactivate the economy to create jobs and wealth, as well as improve the environmental security. The natural endowment of Ecuador is summarized in an important natural resource base, an extremely diverse environment, rich and diversified culture and traditions, favourable climatic conditions and a potential access to world markets. This contrasts with the cycle of exclusion and inequality, forcing a majority of Ecuadorians into poverty. UNDP is assisting Ecuador combat poverty by strengthening social protection networks and technical and other resource support for expanding livelihood opportunities.

7. Given high vulnerability to natural disasters, Ecuador needs to implement anticipatory measures in order to avoid recurrent costly climate induced hazards. Populations with limited resources are the most vulnerable to natural phenomena in terms of exposure to the risk of losing assets. The impact on infrastructure is another serious concern. By working with government institutions at the local and central levels, it is possible to contribute to the implementation of a range of risk reduction measures. UNDP will work closely with international financial institutions as well as with other United Nations Agencies and national authorities to support both the prevention and responses to natural disasters. The United Nations system contingency plan and the United Nations Emergency Team for Ecuador represent an invaluable asset to be utilized in this regard.

8. The country programme of UN agencies in Ecuador is articulated around three UNDAF objectives: (i) poverty reduction through improved access to basic social services and employment; (ii) democratic governance and transparency through strengthening of government institutions and decentralisation process; and (iii) sustainable environment through equitable access to natural resources.

9. The proposed project, which aims to address climate change risks confronting the water sector, will contribute directly to outcomes under two of these objectives:

UNDAF objective 1: poverty reduction through access to quality basic social services and productive activities

Public awareness and policy dialogue on sustainable human development. This project will contribute through promoting awareness on climate change risks on water resources and therefore on livelihood opportunities. It will contribute to the policy dialogue on sustainable human development by focusing on climate change issues relevant to human development.

Capacity of and partnership between local authorities and civil society organizations. This project will contribute by focusing on developing partnerships between government, the private sector and civil society to manage climate change risks.

Access to basic social services and systems for risk management. The project will contribute through establishing information systems that can support climate change risk management strategies.

Capacity development to manage and reduce risk of natural disasters. This project will contribute by focusing on capacity development of key stakeholders to manage climate change risks.

UNDAF objective 2: environmentally sustainable development to reduce poverty

National policy, legal and regulatory framework for environmentally sustainable development. The project's focus on policy instruments to manage climate change risks will promote environmentally sustainable development.

Institutional framework for sustainable environmental management and energy development. The development of institutional structures to better manage climate change risks will be an important contribution to sustainable environmental management.

10. This project aims to address climate change risks in the water sector. The project will mainstream climate change adaptation into water management practices in Ecuador through the integration of climate change risk of the water sector into key national and local development plans, the implementation of adaptation measures, and information management and knowledge sharing.

11. The project is designed to address a range of considerations that are a priority for improved management of climate risks. For one, the project will integrate climate change concerns into planning and policy formulation processes for water resources, including day-to-day practices of planners and other stakeholders (i.e. a "top-down" approach). The project will also train local and regional water resources managers in government agencies, grassroots organizations and NGOs on innovative approaches to mainstream climate change adaptation to water management practices (i.e. a "bottom-up" approach).

12. The project focuses on interventions at the national and local levels. At the national level, the project will improve water governance by incorporating climate risks consideration into water management and decision making processes. At the local level, interventions will be in specific provinces that have been identified based on climate change vulnerability assessments and stakeholder consultations. These provinces which host key watersheds have shown a political willingness to implement adaptation measures to climate change to improve the governance and management of water resources in the face of climate change with the participation of provincial authorities and local communities. The provinces where pilot measures will be implemented include Los Rios, Manabi, Loja and Azuay.

1.3 Threats, root causes and barriers analysis

13. Ecuador faces a variety of potential climate change risks associated with changes in temperature and precipitation, as well as possible alterations to ocean currents. Climate change impacts are difficult to predict and model for Ecuador due to its complex geographical and climatic situation associated with the existence of coastal, highland and forest regions, Ecuador's situation in the Inter-Tropical Convergence Zone (ITCZ), as well as the influence of the Humboldt Current and warm equatorial current, which converge off the coast. Nonetheless, it is possible to identify a range of plausible climate change scenarios for Ecuador and its regions, with relevance for planning in the water sector. These scenarios may be used to develop plans that will enable Ecuador to prepare for a range of possible outcomes of climate change, increase the resilience of the water sector, and avoid maladaptation.

Temperature and Precipitation Projections

14. Country-level data from the Tyndall Centre Country Scenarios (University of East Anglia, Norwich, UK), representing projections in average seasonal temperature and precipitation from a number of global climate models (GCMs), suggest increases in temperature of between 0.5º C and 6º C throughout the year by the latter half of the 21st century (2070-99), relative to the 1961-

90 mean (Figure 1). Projected changes in precipitation range from about -15 to +15 percent, with the most coherent signal evident for the period June-August, when most simulations indicate a modest increase in rainfall of a few percent, although values range from about -2 to +12 percent. These simulations should be treated with caution due to the coarse resolution of the GCMs used to generate them, and because of the country-level aggregation inherent in the values, which neglects spatial variations in impacts. For example, a very small change in rainfall data aggregated at the national level may mask extreme variations of opposite signs in different regions. Nonetheless, the projections provide a range of values around which planning can take place.

Coastal Region and El Niño

15. The climate of Ecuador's southern coastal region is dominated by the cold Humboldt Current, which flows north along the coasts of Chile, Peru and southern Ecuador, generating the arid conditions and coastal fog characteristic of the Atacama and Sechura deserts[i]. The northern coastal region of Ecuador is affected by the warm equatorial current, which delivers moist air and rainfall as it flows south along the northern coast before meeting the Humboldt Current near the Equator. The southward extension of this warm current from December to April is associated with a single wet season. In El Niño years, up-welling associated with the Humboldt current weakens and the normally cool offshore waters associated with arid conditions on land are replaced by warmer waters and rainfall in the normally dry coastal region of southern Ecuador, which often leads to severe flooding. A study of the 1991/2 El Niño found that the centres of precipitation were restricted to the coastal plain below altitudes of 1000 m. Local rainfall maxima were observed over the Amazon region near the Peru-Bolivia border; however, rainfall over the Amazon region of Ecuador was reduced, a pattern also observed during other El Nino years[ii].

16. A tendency towards more El Niño and fewer La Niña events became evident in the final three decades of the twentieth century, and there are suggestions that this change in the frequency and duration of El Niño conditions may be consequence of anthropogenic climate change that will persist or intensify in the coming decades. However, there is still considerable scientific uncertainty regarding the likely future evolution of El Niño. It might be noted that the periodicity of El Niño has varied over the past few millennia Results from paleoclimatic c studies of the last period when global temperatures were comparable with those predicted for the latter half of the 21st century (some 3 million years ago) are contradictory, although studies over a wide geographical area suggest that El Niño like conditions dominated in the Pacific during this period[iii].

17. In the absence of a clear scientific consensus on this matter, and given these results, it would seem sensible to adopt a flexible planning approach that accommodates the possibility of more frequent and protracted El Niño events, with higher rainfall in the coastal regions, but which does not preclude alternative scenarios. It must also be recognised that El Niño is a complex phenomenon, and different El Niño events in the past have not resulted in identical impacts on rainfall and water availability[iv]. The water sector will therefore benefit from improved scientific capacity to monitor and forecast El Niño events.

Andean Region

18. Glaciers and ice caps in the Andean region of Ecuador are already being affected by atmospheric warming associated with climate change, and this will continue and accelerate as global temperatures increase by some 2º C by around 2050 and at least 3º C by the end of the 21st century. Between 1939 and 1998 air temperature increased by 0.11º C per decade in the Andean highlands, compared with a global 0.06º C per decade. Ice masses are already declining rapidly and glacier retreat is underway in all Andean countries. Climate models predict that maximum

temperatures will increase in the Ecuadorian highlands, and increases in temperature in highland regions across the globe are expected to be greater than average. These trends may lead to an initial increase in water availability due to increased melting, but water stress will increase dramatically as glaciers and ice sheets shrink and disappear. Many Andean glaciers are likely to disappear completely within the next few decades[v], with severe consequences for high altitude cities which depend on them for their water supplies. Quito currently receives part of its drinking water supply from the Antisana glacier, which is reported to have shrunk 7-8 times faster during the 1990s than during previous decades[vi]. A study in Columbia using high-resolution regional climate simulations indicates that projected temperature increases and changes in rainfall patterns have the potential to disrupt water and power supplies for significant numbers of the population even at low altitudes[vii].

19. Dry conditions associated with negative mass balance in glaciers and ice sheets on the eastern Andean slopes of Ecuador occurred during the 1982/3 and 1991/2 El Niño events[viii]. Other research suggests that glacier retreat in the Andean region is broadly associated with warm El Niño conditions and increased sea-surface temperatures in the eastern tropical Pacific, with glaciers responding rapidly to changes in ocean temperature on timescales of months to years[ix]. Below average rainfall occurs during El Niño years in the north-western part of the Andes during December-February and in the eastern Cordillera during June-August.[x] Climate change may therefore further exacerbate water stress in certain highland areas through changes in El Niño, although, as noted above, there is at present no consensus on the likely future evolution of El Niño.

Amazon Region

20. A number of studies suggest that climate change may result in a widespread drying of the Amazon region resulting in a loss of forest cover[xi]. While the most vulnerable regions are thought to be those in the northeast of the Amazon basin, in the longer term (i.e. by 2100) the impacts of climate change on the entire Amazon region could be severe. Warmer sea-surface temperatures during past El Niño events have been associated with anomalously dry conditions over northern Amazonia, as the ITCZ shifts north and subsidence occurs over the Amazon region of Ecuador[xii]. Coupled with reduced water availability from ice melting on the eastern slopes of the Ecuadorian Andes, a significant reduction in water availability in Amazonian Ecuador is a real possibility, particularly in the event the El Niño conditions become more common. In the lowland Amazonian region of eastern Ecuador, strong El Niño events are associated with more marked dry seasons, during which river levels drop.

21. Climate change will lead to increased stress on the water sector in those parts of Ecuador which depend on melt water from glaciers and ice sheets, as these shrink and disappear over the coming decades as a result of increased atmospheric temperatures. Changes in highland melt water and runoff may also affect lowland river systems. The water sector should prepare for reduced water availability in the Andean region immediately.

22. A key challenge for the water sector is to decouple variability in water supply, and risks in the water sector, from climatic variability, which is strongly associated with El Niño and La Niña. At present it would be premature to plan for either an increase or a decrease in El Niño events, given the uncertainty regarding past and future impacts on El Niño of warmer average global surface temperatures and related changes in atmospheric and oceanic circulation. While high uncertainty remains in this area, capture and storage of water in extreme rainfall years associated with El Niño could play a major role in decoupling variability in water supply from climatic variability.

23. Planners in the water sector should have a broad scientific understanding of El Niño, and keep up-to-date with scientific developments in this field, including research into past El Niño

variability, which may give an indication of the likelihood that El Niño activity will increase with anthropogenic climate warming. As more research results become available over the coming years it might be possible to identify emerging or likely trends in El Niño, which can form the basis for planning decisions.

24. It should be acknowledged at this stage that, despite the uncertainties described above, an increase in El Niño events is a real possibility. The water sector in Ecuador should therefore develop advance plans to cope with such changes should they materialise. In addition to an increase in water stress in the Andean region, these plans should focus on reduced water availability in the Amazonian region, coupled with an increase in water availability (largely in the form of extreme rainfall events) in the coastal region. Such plans should not be implemented immediately, but should take the form of contingency plans pending improved understanding of the likely future evolution of El Niño. Improved monitoring and forecasting of El Niño events will greatly improve preparedness for year-to-year climatic variations within the water sector, and may help to identify emerging trends that can be used for planning purposes. General measures to increase resilience in the water sector in the face of increased year-to-year climatic variability should be developed and implemented immediately.

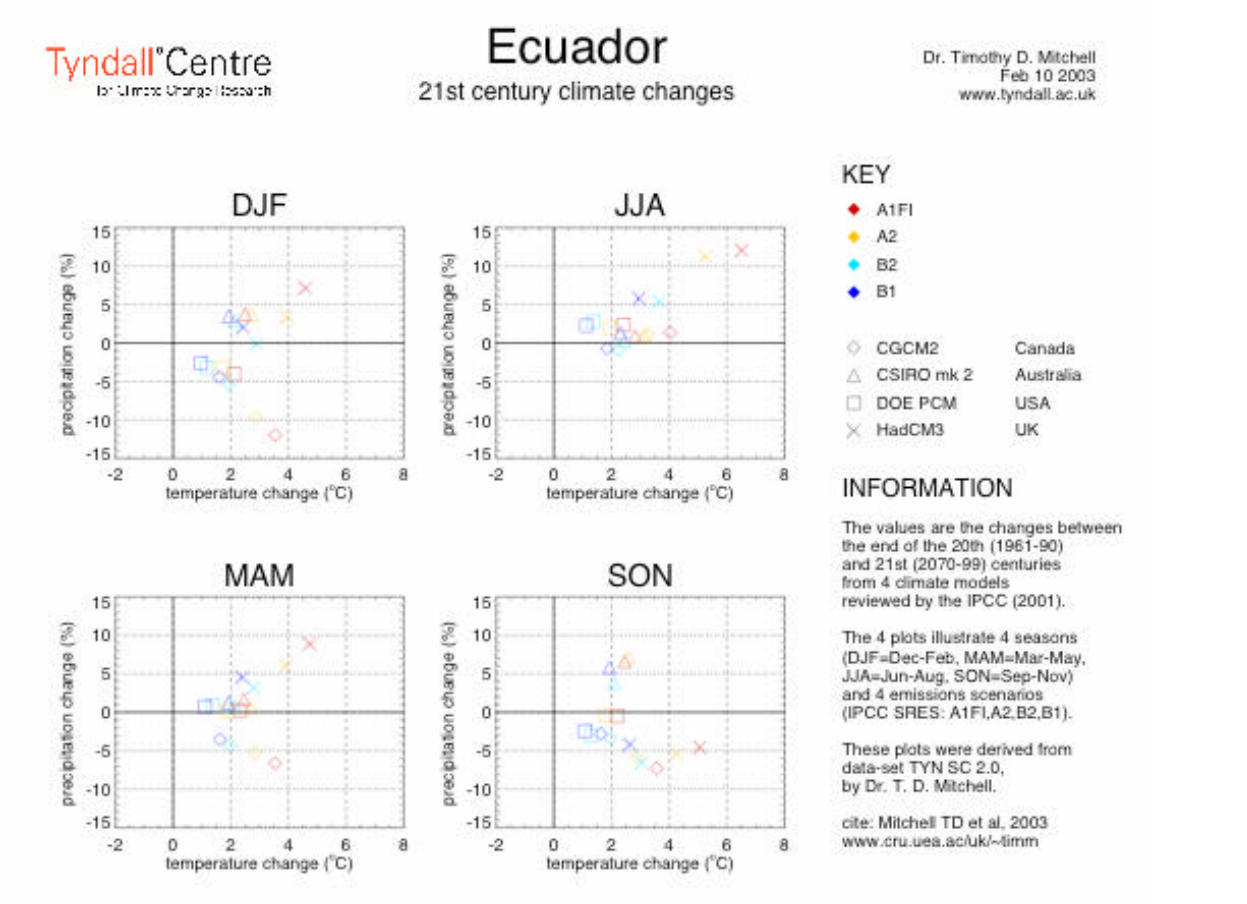


Figure 1. Projections of changes in seasonal mean precipitation against temperature for Ecuador averaged at the national scale, from a variety of GCM simulations.

25. Under Ecuadorian legislation, water is considered a public resource and its use is authorized by the State through the concession of rights. Dispersion and overlapping of roles have evolved during the last two decades because of lack of a national policy to promote an integrated

management of the resource. National laws regulating several aspects of water management but with sectoral biases have been introduced in approximately 27 legal instruments[1].

26. There is currently no updated assessment of the state of water resources in Ecuador. The last available study dates back to 1989, and was commissioned by the former Instituto Ecuatoriano de Recursos Hidráulicos (INERHI) and the Centro de Estudios y Experimentación de Obras Públicas de España (CEDEX). This assessment served as a basis for the formulation of the National Plan for Water Resources (PNRHE), which inventoried surface waters and compared supply and demand for consumptive and non-consumptive uses of water. Fewer studies still exist regarding the state of groundwater supplies in Ecuador.

27. In year 1989, total surface water availability in Ecuador was 146,798 hm^3/year. Ninety percent of this total was found in the Eastern Lowlands, which are part of the Upper Amazon Basin. This total runoff should theoretically supply 43,500 m3/capita/year for all water consumption - four times the world average (10,800 m3). In real terms, the assessment estimated that Ecuadorians had some 1,300 m3 /capita/year at their disposal with values varying from one region to another, as the country has a sharp precipitation gradient between the Amazon Basin, the high Andes and the dryer Pacific Coast. End use of water in Ecuador was estimated at 9.700 hm3, of which irrigation constituted 82.1% of consumption needs, followed by domestic use with 12.3% and industrial use with 5.6%. Still, these figures have not been updated, and projections of supply have not factored-in the impact of climate variability and climate change on water supplies in Ecuador.

28. According to Ecuador's First National Communication to the UNFCCC, among the current climate risks that are set to increase over time with climate change, the disruption of adequate water supplies are considered the most critical, particularly in highland Ecuador. Due to the cross-cutting nature of water resources, increased mean temperatures, recurrent drought, retreating glaciers and more intense and concentrated rainfall will have a wide ranging set of impacts on agriculture, energy and water supply. These heightened vulnerabilities to climate hazards will also compound current water governance problems in Ecuador.

29. Certain provinces on the coast and in the Andean region, such as Loja, Manabí and El Oro, have already suffered intense droughts that have put these regions on the verge of desertification. In some cases, aquifers have descended from 15 to 20 meters to 80 to 100 meters. Many wells already do not provide water and small communities lack the resources to perforate deeper wells.

30. In the province of Loja, to the South of the country, water flows seasonally through the main rivers and remote communities depend on small creeks and shallow wells that have almost dried up since the drought began. In the province of Manabí water must be transported in trucks at a very high cost. **Economic impacts of extreme events.**

31. During 1982-83, floods in Ecuador left 600 dead and $650 million in economic losses. The information available for the period, 1997-1998 indicates that the El Niño phenomenon caused a total of $112.3 million in damages, which is 4.7% of the agricultural GDP and 0.6% of the total GDP. In the energy sector, the greatest damages affected the Paute hydroelectric power station, whose repair costs amounted to $17 million.[2]

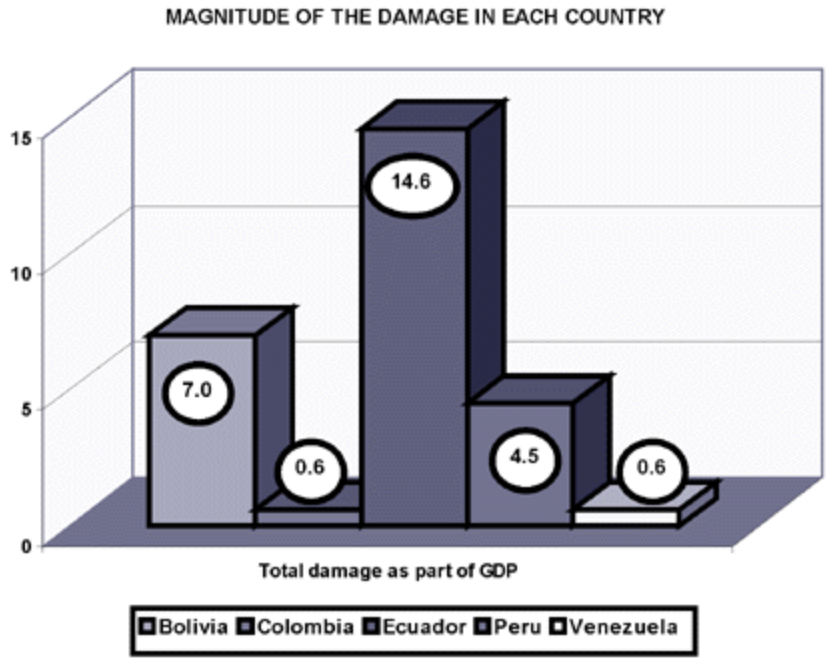
[1] National Water Resources Forum, "Policies Proposal", Ecuador, 2003.
[2] CEPAL, 1998

Estimation of the Overall Direct Cost of the Damages Caused by El Niño, 1997-8

Sub-sector	1997-8 (until June 1998) (Millions of US dollars)		
	Costs	Benefits	Net Costs
Agriculture	182.3	15.3	167.0
Farmers-owners	50.8	6.7	44.1
Agricultural workers	73.9		73.9
Domestic traders	57.6	8.6	49.0
Livestock	7.7		7.7
Livestock farmers-owners	2.4		2.4
Wage-earners in livestock	2.7		2.7
Shrimp farming	7.5	75.5	-68.
Fishing	12.4	6.7	5.7
Traditional fishing	12.4		12.4
Industrial fishing boats	6.7		6.7
Total Agriculture, Livestock and Fishing	209.9	97.5	112.3
(% of agricultural GDP)	8.8%	4.1%	4.7%
(% of total GDP)	1.1%	0.5%	0.6%

Sources: Vos, Velasco and De Labastida (1998).

32. A study carried out by the Andean Development Corporation estimated that the total economic impact of the damage caused by the El Niño phenomenon in the Andean region between 1997 and 1998 was US$7.5 billion. Ecuador's bill came to 14.6% of its Gross Domestic. The figure below provides a breakdown of the cost of this climatic event as part of the GDP by country.3



[3] ISDR, 2001

33. As a result of El Niño, the Ecuadorian coast is frequently impacted and bears significant costs. For example, the coastal area that was mainly affected by flooding during the most recent El Niño event was the Central Coastal Zone of Manabí, which includes the river basins of Chone, Portoviejo, Jipijapa and Zapotal. Measures have been proposed to strengthen the organization of farmers to take better measures such as the establishment of seed banks and learn to make better use of the available meteorological data to prepare for the floods.

34. Among other recommended measures are improved flood zoning, reforestation of watersheds, a reduction in pasturing, and the construction of check dams. In parallel, measures to improve the capacity of local populations include training in interpretation of meteorological data, control of disease vectors, and organization of safe water supplies, including the rehabilitation of water-treatment plants.

1.4 Institutional, sectoral and policy context

35. At present, a policy framework for water management has not been formulated in Ecuador. Only general declarations have been issued as part of government state reform plans, but these are not detailed enough to implement strategies to be considered effective policies. Of all the key sub-sectors such as irrigation, hydroelectric generation and water for human consumption, only the latter sector has a strategic plan which was formulated in 2003. Moreover, several hydroelectric projects have been approved over the last years without due consideration to an explicit development strategy for water in the context of other current and emerging threats such as climate change.

36. A National Water Resources plan was written in the eighties by the National Institute of Water Resources (INERHI) and the National Development Council (CONADE) which was then the planning agency of the Ecuadorian government. This plan included the first and only inventory of water resources that has been elaborated in Ecuador. Subsequent institutional reform suspended its execution. Another plan, elaborated in 1990 with cooperation from the World Bank, was not even published. In 2003, the National Council of Water Resources (CNRH) issued a document called "Water Resource Management in Ecuador: Policies and Strategies", which reviews the situation of water management, pinpoints problems and defines strategies, including an institutional reform that would, among other things, place CNRH under the leadership of the Ministry of the Environment (MoE). This strategy has not been implemented, as control over water use concessions is a very sensitive issue[4].

37. A sectoral plan has been formulated for energy generation and a strategic water and sanitation plan has also been developed. Other sectors have not gone through such planning processes. As a result of this lack of coherent planning, water is managed through ad hoc projects implemented without an integrated vision.

Institutions

38. In 1994, Decree 2224, which modified the institutional and legal framework with regards to water management in Ecuador, was issued. INERHI was replaced by the National Council of Hydrologic Resources (CNRH) and five additional CDRs (added to the four CDRs already in existence). CDRs are responsible for constructing and managing public irrigation systems and

[4] Implementation arrangements for this project will ensure that all relevant ministers, the provincial governments of selected provinces, and the relevant organizations at the local level, participate in a coordinate fashion to ensure the necessary support throughout the life of the project. MoE will establish a pro-active follow up to keep the stakeholders engaged and to provide a platform for conflict resolution.

general constructions associated with water; as well as, flood & water quality control, inventories and assessments of the water resources on their area of competence.

39. The CNRH is mandated to define policies and strategies for the water sector, as well as manage the concession of water rights for all uses. Its regional water agencies are the prime agents of water governance, and key actors in the attribution of water rights and the resolution of conflicts between end users. However, the management capacities of CNRH are limited in order to maintain an accurate, updated register of concession rights (which are granted after a lengthy, bureaucratic process that does not use updated information on the real availability of water). Additionally, CNRH has assumed responsibilities in irrigation policies and infrastructure.

40. The institutional framework for the management of water resources has evolved during the years according to the needs of key sub-sectors (irrigation, hydro-energy, water for human consumption). Thus planning, regulatory, controlling and execution roles assigned to institutions from the national to the local level have witnessed a number of changes. A more detailed description of these institutional changes is provided in Annex 1. A critical issue is the fact that the main institution in charge of regulating the uses of water and issuing concessions for water rights and use, the CNRH, is hosted and presided by the Ministry of Agriculture. This is perceived as one of the reasons for a bias in water allocation rights towards the agriculture sector, favouring the use of water for irrigation systems.

41. The institutional developments that have taken place have not accomplished the desired results, that is, to improve coverage, quality, and efficiency in water-related services including the elimination of pricing policies that do not promote the sustainable use of scarce water resources. Operation and maintenance costs are not covered by the existing tariff structure and, partly as a result, drinking water systems, particularly in rural areas, have been neglected.

42. Water for irrigation is a particularly politically sensitive sector. The National Water Resources Institute (INERHI) has been responsible for the management of irrigation water for over 30 years. INERHI had a mandate to build irrigation systems but neglected the formulation of policies and development plans. At the same time, irrigation systems and infrastructure were also built by the Regional Development Corporations (CDRs), created to manage natural resources and infrastructure in several regions of the country. The latter weakened the effectiveness of INERHI.

The regulatory framework for water management

43. The Water Resources Forum (FRH), which groups users' organizations, states that 27 legal instruments regulate different aspects of the management of water. These include the last Constitution (issued in 1998), the Water Law (1972), the Environmental Management Law, the Preservation and Contamination Control Law, the Civil Code, and other regulations including those issued by municipalities.

44. The Water Law (1972) establishes two basic principles: a) water is a public resource, its use being authorized by the State (through CNRH's Local Water Agencies); and b) the concession of use rights follows a pre-determined order of importance: (1) human consumption (cities and people) and cattle raising (2) irrigation (agriculture), (3) hydropower, industrial and mining and (4) other uses (spring waters, spa). As a result, water concessions are assigned through a pre-defined order of priority and by a simple administrative decision of the Water Agency. Social and/or economic efficiency and actual availability of the resource are not taken into account. This arrangement promotes the issuing of excessive concessions and the concentration of water in the hands of a few powerful users (bigger farmers, industries). Environmental considerations do not influence the decision. Conflicts between users are solved through legal processes.

45. The Water Law clearly states that INERHI (now CNRH) should dictate policies and take care both of the conservation of watersheds and of the quality of water. However, to complicate matters, other laws give similar roles to a series of other institutions: the Ministries of Health and the Environment, Provincial Councils, and Municipalities. This leads to conflict and delays actions when needed.

46. Regarding tariffs for the concession of water rights, the Water Law excludes from any payment to water for human consumption and for electricity generation provided to public service. In practice, users of water for irrigation pay the most for their water: 0.0015 USD per litre/sec. In contrast, bottlers of water pay only 0.0008 USD per litre/sec.

47. The Water Law also states that the cost of infrastructure to provide services, such as domestic water supply should be recovered through tariffs. This responsibility has been delegated to Regional Development Corporations, Provincial Councils, Municipalities, hydroelectricity generation companies, among others. In practice, investments and operating and maintenance costs are not recovered. Services are subsidized by the Government, Provincial Councils and Municipalities. The infrastructure built is expensive, water consumption is high and subsidies benefit wealthier households. In contrast, the poor do not have access to drinking water, or irrigation facilities and are forced to purchase water from a combination of sources— which leads to disproportionate burden on household incomes relative to wealthier households.

Water and climate-related measurements and infrastructure

48. This situation is compounded by the lack of accurate data on water production and usage. INAMHI, the National Institute of Meteorology and Hydrology is in charge of gathering and analyzing hydrologic and meteorological information. Before their dissolution in the nineties, INECEL and INERHI had a well-developed information-gathering network that complemented INAMHI´s network. However, INAMHI faces serious difficulties in maintaining its network, mainly due to the lack of appropriate funding. As a result, key maintenance activities have been ignored and some hydro-meteorological stations have been lost or are not in operation. Other institutions like the Aeronautical Direction, Regional Development Corporations, the Navy's Oceanographic Institute (INOCAR), and the International Centre for Research on the El Niño Phenomenon (CIIFEN), which are based in Guayaquil, have some information-gathering capacity. In spite of this capacity, networks have been generally neglected. Several water resource projects have been planned and implemented based on inaccurate estimations of available water resources.

49. According to the INAMHI, there are 125 water stations across the country. However, most stations have old equipment; some are located in sparsely populated areas, and additional stations are needed to complete the network. Most existing stations measure only water level, although some also measure flow. The country also has more than 193 meteorological stations of several kinds that measure rainfall, and others record additional meteorological variables. These stations are supported by different agencies, but INAMHI centralizes the data. Information about water availability and the impacts of climate change and variability on water resources that is produced by a host of institutions, especially the INAMHI, is not useable or readily available to improve water management.

50. Irrigation represents 82.1%, of the water consumed in Ecuador. However, irrigation infrastructure is extremely inefficient, resulting in large volumes of wastage. According to GWP, several studies have determined that the efficiency of public irrigation infrastructure is 30%; while the efficiency of private irrigation varies between 16% and 50%. Only private users growing crops for export have water-saving irrigation technologies. Most private irrigation channels are not

waterproofed; public irrigation channels are, but water is frequently wasted in distribution to small plots that do not have appropriate water-saving technologies.

Water and the agriculture sector

51. Ecuador has traditionally been an agricultural country. In 1998, according to projections by the SICA World Bank Project, 31% of the country's territory was used for agriculture and livestock. The sector contributes about 17% of the country's GDP, and 31% of the labour force is involved in agricultural activities.

52. National farming and livestock production growth has relied on expanding the agricultural frontier rather than on improving productivity. Land use for farm and livestock has increased 5.7% per year since 1990. The country's staple diet includes rice, potatoes, and corn. Soybean is used to manufacture oil and vegetable shortening. These crops are concentrated in certain regions of the country, for example rice in the provinces of Guayas and Los Ríos (94%), corn in the provinces of Manabí, Los Ríos, and Guayas (70%), potatoes in the central and Northern provinces of the country's sierra (87%), and soybean in the province of Los Ríos (97%).

53. According to Ecuador's Initial National Communication, agriculture is the most vulnerable sector to climate change. Along the central and southern parts of the coast, in the basin of the Guayas River, floods annually cause severe damage to agricultural, commercial and residential sectors. Climate change is likely to result in more severe flood events. This basin is home to 40% of the country's population and a major agricultural centre. Flood control in this area would increase enormously the agricultural production of rice, corn and bananas. Some preliminary studies suggest that flood control infrastructure in the high part of the basin would help to reduce floods, but local protection in the lower part of the basin between the rivers Babahoyo and Cañar is also needed.

54. The assessment considered food security for years 2010 and 2030 on the basis of two climate change scenarios (CCS2 = temperature: +1.0° C, rainfall: +20% and CCS3 = temperature: +2.0° C, rainfall: -15%) Under CCS2, the supply of rice, corn, soybean, and potato would surpass the projected population's needs in year 2010. If CCS3 were assumed, the supply of soybean and corn would still be somewhat higher than projected demand while the opposite will occur with rice and potato. These two crops would show a deficit of 49% and 17% respectively. For year 2030 and under scenarios CCS2 and CCS3, supplies of rice and soybean would not meet demand, whereas for potatoes and corn, the situation would be the opposite.

55. At the same time, non-climatic factors also contribute to the vulnerability of the agriculture sector. In recent decades, deforestation has exacerbated the likely impacts of climate change in the hydrological regimes of the basins, increasing the risk of floods. Industrial, residential and agricultural development has attracted settlers to the high-risk areas in the alluvial low plains. Efforts to address deforestation and promote reforestation are on going, and outside the scope of this project, but important work is still needed to implement flood early warning systems.

56. Adaptation measures that have proven to be most valuable are agro-ecological zoning and modifying the timing of sowing and harvesting, the introduction of different varieties, the installation of irrigation systems, the appropriate use of fertilizers, and the implementation of a system for controlling pests and disease.

57. Water also plays a key role in energy production. Ecuador has a total installed energy generation capacity of 3,819 MW of which 45.2% comes from hydropower and 46.6% from thermal generation. However, in terms of energy actually generated, the annual averages are 52.1% from hydropower generation, 36.4% from thermal generation (mainly through the burning of imported

and subsidized diesel) and 11.5% is imported from Colombia [5]. The theoretical potential for hydropower generation was measured in year 1997 and estimated to be at approximately 73,390 MW6.

58. Due to the lack of rains during September to December, Ecuador frequently implements emergency measures to avoid possible blackouts. The effects of low rainfall are most evident in the area where the main hydroelectric plant, Paute is located. During these months, the rivers that feed the Paute dam are at its lowest levels. As Paute provides 35% of the energy needs of Ecuador, it is crucial that the plant operates at its full capacity on a regular basis. The energy rationing during the low rain months has negatively impacted the economy while causing annoyances to the general public. Successive governments have proposed solutions to remedy the situation, but to date there have been no effective measures taken.

Water and the energy sector

59. Most hydropower projects are located mostly in the Amazon basin; the most important ones currently operating are:
    - Paute (Amazon basin, province of Azuay): 1,075 MW
    - Marcel Laniado (Pacific basin, province of Guayas): 213 MW
    - Agoyán (Amazon basin, province of Tungurahua): 156 MW
    - Pucará (Amazon basin, province of Tungurahua): 68 MW
    - Saucay (Amazon basin, provinces of Cañar and Azuay: 24 MW

60. The costs of disruptions have significant impacts in the national economy. Power generation is vulnerable to climate change, including variability. Seasonal droughts affect the Amazon basin and cause yearly "electric emergencies". The Paute hydropower project is particularly affected by yearly seasonal droughts, which leads to energy rationing and blackouts with enormous losses for key economic sectors[7]. New hydropower projects are under development but none take into account climate change scenarios in their projections of power generation. The most important planned projects are Coca-Codo Sinclair, which would produce more than 800 MW, San Francisco (212 MW), Mazar (190 MW, to improve the capacity of the Paute project) and Sopladora (312 MW, to improve the capacity of the Paute project), all in the Amazon basin. Only Baba (45 MW) and Toachi-Pilatón (190 MW), will be developed in the Pacific basin.

61. When considering the two climate scenarios that predict a decline in rainfall, the Agoyán Project (Pastaza river basin) would suffer a 23% drop in inflows, basically during the low-water period, while the Paute Project (Paute river basin) would only be able to provide between 43% and 45% of average power capacity, meaning a deficit of about 27% compared to energy production under current conditions. For the case of the scenarios that predict a rise in rainfall, there would be an improvement in the supply of water resources for hydropower generation; thus, the Agoyán Project would meet 100% of its needs and the Paute Project would improve by about 79%, on the basis of which energy production could increase by about 48%, without making any additional investments, since the station has installed capacity. One shortcoming of this study was that although it examined river flows for the river basins, detailed impacts in each lower river basin needs further analysis.

[5] CONELEC: "Estadística del Sector Eléctrico Ecuatoriano", 2005
[6] Neira, Van Den Berg, De la Torre, F.: "El Mecanismo de Desarrollo Limpio en Ecuador", Quito, 2006
[7] An Internet search identified more than 200 references to the yearly electric crisis caused by seasonal drought in the Paute region, see Annex 3.

The institutional framework for addressing climate change concerns in Ecuador

62. Climate-related institutional and governance issues have undergone major changes during the last decade. The Climate Change Unit of Ecuador's Ministry of Environment, created in 2000, and has been very active since its inception. Despite limited staff and other resources, it has been successful in taking advantage of funding opportunities in the last decade. MoE has obtained funding for 8 projects which formed the basis for the "climate change process" initiated in 1993. The Climate Change Unit currently hosts the coordination and preparation of the Second National Communication (SNC) to the UNFCCC.

63. The Minister of the Environment is also the head of the National Climate Committee (CNC), which has the mandate for directing and leading the policy process and development of strategies regarding climate change mitigation and adaptation. The CNC is a collegiate body composed of representatives from several ministries (environment, energy and mines, foreign affairs, planning), as well as from the business sector, the NGO sector and the academic sector. While the MoE presides over the CNC, the INAMHI has a secretarial role.

64. Under the auspices of the MoE and the CNC, the country produced its First National Communication to the UNFCCC and is implementing the SNC. In 2006, a National Climate Change Strategy was produced, which evaluated the degree of institutionalization of climate change considerations in the national institutions. The evaluation concluded that further efforts were needed in order to strengthen the national capacity to cope with climate change. The National Capacity Self Assessment (NCSA) report also states that considerable opportunities for integrating climate change adaptation into the policy arena are being lost due to lack of inter-institutional coordination and insufficient national and local capacities in this area.

65. The SNC proposes to develop a National Adaptation Strategy to Climate Change, and to adopt a very aggressive communications strategy to educate both policy makers and the general public. This project would apply and expand the guidelines provided by the National Adaptation Strategy to the water resources sector, thus informing the SNC while at the same time making use of the multi-sectoral view, political momentum and support created by the SNC.

66. Except for INAMHI and MoE, no other public or private institutions have specialized units for climate change-related issues. The production of data for the National Communications is usually carried out by ad-hoc teams or by staff from other agencies.

67. Despite the publication of the First National Communication to the UNFCCC, a considerable body of information on climate change remains dispersed. There is a clearly identified need for knowledge brokering between core stakeholders in the climate change community and an outreach strategy to mainstream adaptation policies across various sectors, which would benefit from timely, accurate and accessible information on climate trends and risks in Ecuador. While there are centres of scientific excellence located in Ecuador, and institutions such as INAMHI, INOCAR and recently CIIFEN, have contributed to monitoring climate variability and long term changes in climate patterns in Ecuador, much of the scientific information is not readily available or in a useful form for national and local decision making processes.

1.5 Stakeholder analysis

68. The project will rely on a wide range of key partners to mainstream climate change and adaptation concerns into the water sector in Ecuador. In this sense, participation will be the key to success of the project. Key stakeholders to be involved in the project, and who have been consulted during the preparatory phase of this project, are described below:

69. Comité Nacional del Clima (CNC)- the National Committee for Climate- is a collegiate body composed of representatives from several ministries (environment, energy and mines, foreign affairs, planning), as well as from the private sector, the NGO environmental sector and the academic sector.

70. Ministry of the Environment (MoE) is the GEF operational focal point. The technical focal for the UNFCCC is also located in the Under Secretary for Environmental Quality. The MoE presides over the National Climate Committee (CNC). The MoE will chair the National Steering Committee of this project (see section on implementation arrangements).

71. The Planning and Development National Secretary (SENPLADES), which is in charge of planning and management of strategies for the development of the country. SENPLADES has formulated general and sectoral risk management plans (health, transport, drinking water and sewage systems.

72. The National Council of Hydrologic Resources (CNRH) was created in 1994, to replace the INERHI, with responsibility for monitoring the state of water resources and managing the concession of water rights. Created in conjunction with Regional Development Corporations (CRD), such as CEDEGE, the regional water agencies of the CNRH are the prime agents of water governance, and a key actor in the attribution of water rights and the resolution of conflicts between end users.

73. The INAMHI is the National Institute for Meteorology and Hydrology of Ecuador. It has a key role in climate affairs in Ecuador, with a network of monitoring stations and overall supervision of official forecasting. INAMHI will have a lead role in climate data and observation, early warning system, along with the Navy's Oceanographic Institute (INOCAR) and the International Centre for Research of El Niño phenomenon (CIIFEN). Coordination with the World Meteorological Organization, through its Global Climate Observation Systems Programme (GCOS) and United Nations Environment Programme (UNEP) will be established given the expertise and relevant initiatives of these organisations in climate data around the world.

74. The Water Resources Forum (FRH), a water users association, represents the views of the small consumers, peasants and NGOs. This Forum has become an important public arena for discussions on water policies.

75. The provincial and municipal authorities, regional development corporations and watershed-management authorities, all in charge of water-related infrastructure investments and/or of the care of key watersheds in the selected provinces (Manabí, Los Ríos, Azuay and Loja).

76. Other entities in charge of meteorological monitoring of water flow in watersheds, sea level, marine currents and related issues and ENSO events such as, CDRs, INOCAR, CIIFEN, amongst others.

77. Other institutions that group provincial/local governments such as the Consortium for Provincial Governments of Ecuador (CONCOPE). This Consortium comprises of all the provincial councils of Ecuador and the Association of Municipalities of Ecuador (AME). It also consolidates funds created to manage environmental and water management projects (i.e. FONAG, FAN). CONCOPE, supported by the Sweden Technical Cooperation, is currently executing a project that seeks to strengthen the watershed management in Provinces.

78. The technical teams and institutional structure in place for the Second National Communication (SCN). The SNC team reports to the UNFCCC on national efforts to address climate change, to

formulate a national strategy, and to identify priorities for mitigation and adaptation, including potential projects for funding in these areas.

79. The technical teams and institutional structure for the GEF-World Bank Regional Adaptation Project (Bolivia, Ecuador, Peru), whose objective is to implement adaptation measures to meet the anticipated impacts from the catastrophic glacier retreat induced by climate change. The Project is centered in interactions between high-altitude ecosystems, tropical glaciers and the production of water in the Andean Region. In Ecuador, the project will address the impacts in the production of drinking water for the city of Quito. Local interventions will aim at foster adaptation in the management of small watersheds originated in the Antizana volcano. Key partners of the project include the Municipality and the water facility of Quito. Both projects will take advantage of synergies, mainly climate information and scenarios, the use of similar tools such as the WEAP model. The fact that the MoE is the executing agency in both projects has already facilitated agreements with national institutions like INAMHI and CNRH. MoE will ensure that information is shared between projects and that both projects provide information and feedback to the CNC.

80. The list of key stakeholders for project implementation is presented in Annex 2. The following organizations played a pivotal role in the design of the project proposal:

- Ministry of Environment: Lead the process of project formulation by providing a coordination role in the formulation of the project and the consultation process and bilateral discussions with experts and key institutions. MoE was responsible for the analysis of the information provided and the preparation of the project proposal for submission to the GEF Secretariat through UNDP.
- National Council of Water Resources: It provided key information on the water baseline and water polices, and participated directly in the project formulation.
- National Secretary of Planning and Development: Assisted in the definition of priorities for the project by providing key inputs to the project design. It also contributed with key information such as risk maps, policies for the national development plans, among others.
- National Institute of Meteorology and Hydrology: Provided information for the baseline and assisted in the identification of key issues to be improved at the provincial level (e.g. strengthening of climate information)
- The Water Resources Forum: It contributed to the discussions from the perspective of small water users. Its participation confirmed the need to include the local communities in the design and implementation of adaptation measures on the ground. It reinforced the strategy to ensure adequate linkage between the policies to address climate risks in the water sector and the needs of the vulnerable community.
- The Consortium for Provincial Governments of Ecuador: Assisted in the selection of the Provinces to be included in the project, through an analysis of vulnerable areas, including the identification of identify key actors in the vulnerable areas.
- United Nations Development Programme: As the Implementing Agency for the project, UNDP facilitated the preparation of the
- Other institutions: Other institutions included SG Paute, Hidro Paute, FONAG, Intercooperacion, among others.

1.6 Baseline analysis

81. At present, the water sector in Ecuador is characterized by unclear institutional coordination mechanisms for relevant policy makers, the absence of strategies for effective water resource management that take into account climate change risks, and limited stakeholder participation. In spite of on-going initiatives of relevance for the development of the water sector, there is a lack of solid understanding of how climate change would impact water supply and demand. Thus many

plans and programmes that affect water resources are being designed or implemented without considering the need to address climate change risks on water resources. Under the business-as-usual scenario, on-going initiatives will continue to ignore the threats of climate change including variability on water resources. In turn, the long term viability and sustainability of such plans and programmes will be compromised.

82. At the local level, water management practices do not take into account risks associated with climate change and variability. In light of expected climate change impacts on water, populations are unlikely to cope with anticipated risks. Adaptation will continue to be reactive and occur on an ad hoc basis. It is likely that responses will typically be after extreme events generate significant impacts on key economic activities (such as agriculture and energy production). Furthermore, adaptation interventions in Ecuador will be limited to assessments and general description of adaptation measures, rather than lessons from implementing specific response measures that can be replicated in different scales. As a result, stakeholders and national institutions will not be able to learn from experiences and update national and local planning to address climate risks on water resource management.

83. National capacity to address adaptation to climate change in the water sector is currently weak. On-going efforts to strengthen it are described in the Second National Communication. However, the SNC only covers descriptions of necessary adaptation responses. The SNC process does not addresses the capacity needed for implementation of adaptation measures on the ground, nor the strengthening of institutional capacity to mainstream climate change risks into the water sector.

84. At the local level, neither provincial authorities nor community-based organizations are currently able to design and implement locally appropriate solutions to increases resilience against the impacts of climate change in the water sector. This is primarily due to lack of appropriate training, and the absence of practical approaches from which local solutions could be adapted to facilitate the participation of local stakeholders to address climate change risks.

GEF Alternative Scenario

85. The project alternative scenario is a water resource sector in Ecuador where climate risks are mainstreamed into relevant plans and programs at the national level and in four select provinces. Local stakeholders will be informed about current climate vulnerability and climate change risks, and these concerns will be incorporated into local policies and decision-making processes. With this in mind, the project will provide a practical framework to guide the process of integrating climate change risks and adaptation into relevant water management plans. The guidance will serve as a comprehensive and practical reference on how local water governance institutions can integrate climate change risks into ongoing water management strategies and plans more effectively.

86. The project will result in modified national water policies that increase the flexibility and resilience of productive sectors to climate change, specifically those that rely heavily on water resource availability and usage. At the national level, monitoring capacities for environmental changes linked to climate change impacts on water resources will be strengthened. This in turn will provide the means to assess vulnerability and to design appropriate responses. Decision makers involved in water management at all levels and the general public will be more aware of the impacts of climate change and options for increasing capacity to deal with expected impacts.

87. At the local level, provincial authorities and community-based organizations will have the capacity to integrate climate changes concerns into local water development planning processes, and will be able to design locally appropriate solutions to address anticipated impacts of climate

change. They will have recourse to lessons learnt from demonstrations of adaptation responses implemented through this project.

PART II: Strategy

2.1 Project Rationale and Policy Conformity

88. The project will build upon the momentum created by the SNC in Ecuador. Ecuador faces multiple hazards and presents a wide range of vulnerabilities to climate change. The impact of recurrent ENSO events demonstrates the widespread effects of climate variability in the country. In the past, Ecuador has suffered the impact of recurrent drought, periodic flooding and associated losses in productive sectors. The effects of climate change are expected to intensify these impacts over the coming years and decades.

89. As the distribution and availability of water resources is projected to change over time as climate changes, governance structures and water use practices will need to adapt. Much of the requisite adaptation will be local in nature and will occur spontaneously. However, deliberate and anticipatory adaptation to climate change requires an iterative and multi-tiered approach that enables the adoption of sound development choices that will increase climate resilience of the water sector. It will also require involving different sectors and levels of society.

90. Future public and private investment in productive uses of water, particularly in irrigation and hydro energy—two very large consumers of water resources, will need to factor in changes in the reliability of rainfall and the availability of surface water. Incremental investments will be needed to increase water storage, introduce water-saving technology and protect settlements and productive assets. Sturdy institutions and adequate water governance schemes are required to tackle the growing threats of climate change impacts in the availability and quality of water resources.

91. A single project cannot hope to address the entire spectrum of climate change risks on the water sector in Ecuador. For this reason, the scope of the project has been purposefully circumscribed. Based on consultations conducted during the project preparation phase, this project will address priority capacity development and institutional change necessary to address climate change risks on water resources. It will also implement specific responses at the local level in two important economic activities so that lessons and best practices can emerge.

92. Programming for adaptation through this project will promote climate-resilient development of the water sector. As the project will seek to integrate climate change risks into the water sector, it will directly contribute to the achievement of the Millennium Development Goals, particularly Goal 1 (poverty eradication) and Goal 7 (environmental sustainability).

93. The project will work with the relevant stakeholders in the mainstreaming of climate risks into national water policies. It will strengthen monitoring capacities for changes in water resources linked to climate change as a means to support the design of appropriate water management responses in light anticipated vulnerabilities. At the local level, pilot activities will seek to improve experiences in implementing anticipatory adaptation responses thereby increasing local awareness of climate related risks and improving adaptive capacity of vulnerable groups. Special attention will be given to the implementation of adaptation measures on the ground with the participation of local communities and provincial and municipal governments.

2.2 Consistency with the objective of the GEF Operational Strategy, Focal Area(s), Operational Programme, and Strategic Priority.

94. The project is consistent with the eligibility criteria for the SCCF, as laid out in "Programming to Implement the Guidance for the Special Climate Change Fund Adopted by the Conference of the Parties to the United Nations Framework Convention on Climate Change at its Ninth Session" (Council paper GEF/C.24/12; October 15, 2004). Consistent with the Council Paper (paragraph 40), the project is:

- country-driven, cost-effective and integrated into national sustainable development and poverty-reduction strategies; and
- takes into account national communications and other relevant studies and information

95. The project will also serve as a catalyst to leverage additional resources, and efforts have been made to maximize co-financing from other sources (GEF/C.24/12, paragraph 25). The selected sector is one of the priorities outlined in paragraph 44 of the GEF document, namely water resources management.

96. The project will support capacity building, including institutional capacity, for preventive measures, planning, preparedness and management of disasters relating to climate change, including contingency planning for droughts and floods in areas prone to extreme weather events (GEF/C.24/12, paragraph 46), and support strengthening existing centres and information networks for rapid response to extreme weather events, utilizing information technology as much as possible (GEF/C.24/12, paragraph 47). Furthermore, as described earlier, the costs of water resources use falls disproportionately on the poor, and the project therefore recognizes the link between adaptation and poverty reduction (GEF/C.24/12, paragraph 41).

2.3 Fit with GEF portfolio

97. This project will pilot the mainstreaming of adaptive measures to climate change in water management and policies in Ecuador. Its objectives are complemented with another SCCF project to devise measures for adaptation to glacier retreat in the Andean Region, implemented by the World Bank, whose objective is to implement adaptation measures to meet the anticipated impacts from the catastrophic glacier retreat induced by climate change in Ecuador, Peru and Bolivia. Both projects will take advantage of synergies, mainly climate information and scenarios and the use of similar tools such as the WEAP model.

98. The project is important to the GEF portfolio for several reasons. First, it will provide lessons in how to effectively mainstream adaptation measures at all levels, from the policy design to in the field interventions. Second, it will provide valuable lessons on how to improve adaptive capacity and/or reduce vulnerability to climate change drivers in the water sector.

2.4 Project Goal, Objective, Outcomes and Outputs/activities

99. The project Objective is "to increase adaptive capacities to address climate change risks in water resource management". This will contribute to the broader Goal of "mainstreaming climate change risks into water management practices in Ecuador". The project Objective also corresponds to the third of the four global objectives identified under TA2 (Water Resources and Quality) in UNDP's global "Monitoring and Evaluation Framework for Adaptation", namely Adaptive Capacity: Institutional capacity of water sector including supply and demand management to respond to long-term climate and change. The project will contribute to the MDG Goal 7, Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources. A better management of climate change risks and water management practices at the local level will also contribute to achieving MDG Goal 1, Eradicating extreme poverty and hunger.

100. The formulation of the project strategy (outcomes and activities outlined below) is based on the guidance of UNDP-GEF's Adaptation Policy Frameworks document[8]. A vulnerability-based approach was utilized by applying criteria by which climate change risks on water resources is assessed, taking into consideration the probability of exceeding a threshold level of risk.

101. The approach adopted seeks to answer questions that are relevant to identification and adoption of policies that address climate risks in the context of national development priorities. For instance, some of the key questions that the project will address include: To what extent are the expected benefits from existing development projects or initiatives sensitive to climate risks? How should current climate variability be taken into account to build climate resilience of the systems or sectors? How should future climate change be incorporated into the design of development initiatives or into national planning processes?

102. The Project's Expected Outcomes, the details of which are outlined below, are:

1. Climate change risk on the water sector integrated into key relevant plans and programs.

2. Strategies and measures that will facilitate adaptation to climate change impacts on water resources implemented at the local level.

3. Institutional and human capacity strengthened, and information/lessons learned disseminated.

103. Achieving these Outcomes requires sustainable institutional arrangements that will ensure the adoption of the project's results in the short and long terms. The project, implemented through a National Execution arrangement, will seek to establish a bridge between national authorities responsible of formulating and integrating Climate Change policies, and national, regional and local authorities and practitioners of water resource management. Knowledge and information provided through monitoring mechanisms, strengthened institutional structures, and pilot projects that will produce information on best practices, will be the key tools to bridge the gap.

104. During the project, strong partnerships will be sought and established with:

105. Public, private and international institutions that monitor and produce information related to climate change and water, in order to mainstream climate change considerations in the production and communication of information. Mechanisms for the timely delivery of climate change-related information to specific stakeholders will be designed and implemented.

106. Regional and local governments and watershed authorities, NGOs, international technical cooperation bodies, and communities in the selected provinces and watersheds, in order to mainstream adaptation to climate change into national/local planning. This includes the identification and treatment of climate hazards, vulnerability and the design of watershed management policies, productive and sustainable development projects, and the retrofitting of existing projects.

107. Basic knowledge and best practices will be compiled, consolidated and translated into educative material and training courses. The executing parties will be competitively selected amongst numerous water-related NGOs and consultancy firms that have been identified during the PDF B phase.

108. A group of stakeholders not directly involved in the CNC will be among the project partners. A number of such stakeholders have declared their interest in partnering with national institutions in

[8] UNDP, 2005, Adaptation Policy Frameworks for Climate Change: Developing strategies, policies, and measures.

enforcing national environmental policies and legal frameworks. Some of provincial and local authorities have under their responsibility the management of water resources, for irrigation and domestic use. As such, they constitute key partners for the project to strengthen the adaptation baseline in Ecuador.

Outcome 1: Climate change risk on the water sector integrated into key relevant plans and programs.

109. This Outcome corresponds with Outcome 4 in UNDP's draft global "Monitoring and Evaluation Framework for Adaptation", namely "New plans and policies based on plausible climate change impacts on water availability and use developed and piloted"

110. At present, the water sector in Ecuador is characterized by unclear institutional coordination mechanisms for policy makers, the absence of a clear water resources strategy that takes into account climate change risks, and limited stakeholder participation in decision-making processes. The assessment carried out under the PDF-B phase found that, in spite on a number of on-going relevant initiatives, there is a lack of solid understanding of how climate change would impact water supply and demand. Thus many plans and programmes that affect water resources are being designed or implemented without considering the need to address climate change risks on neither water resources nor adaptation requirements in the water sector. Under this business-as-usual scenario, these on-going initiatives will continue to ignore the threats of climate change including variability in water availability. In turn, the viability of such plans and programmes will be compromised. For instance, Ecuador has developed a National Water Management Plan (*Gestion de los recursos hidricos del Ecuador, politicas y estrategias* – currently in a draft form), which does not even acknowledge the climate risks that will have direct impacts in the water sector. Similarly, the National Risk Management Plan, under the Coordination of SENPLADES and published in 2005, makes only brief references to adaptation needs and does so in a generic fashion.

111. However, these ongoing plans and programmes also represent an opportunity to integrate climate change concerns into water management plans and strategies at different levels. Coordination among different government institutions is expected to take place under the new Government to move forward a water development agenda at different institutional levels (national, provincial, etc). This includes the finalization of the national water management plan and the development of a new framework to guide the development of Ecuador.

112. Over the last few years, in the context of state modernization Ecuador has been implementing a policy of decentralization. Ecuador's decentralization law allows for local governments to request the transfer of responsibilities from the central to the provincial and municipal levels. This includes several attributions with respect to water governance and has resulted in strong demands for decentralization. Within a decentralized framework, provincial councils and municipalities will thereby assume an important role in (among others) water resource management by developing public policies, creating an enabling environment for development and participatory processes, and providing support in financial and human resources.

113. Current measures that are being implemented or planned to improve institutional frameworks that are of relevance to adaptation to climate change in the water sector include:

National water management plan. The proposed plan is currently in draft form. A review process will take place to improve the plan and involve a wider range of stakeholders. The review process will establish the basis for a more comprehensive water management plan and will represent an

opportunity to open the debate on how the plan could incorporate adaptation to climate change in the water sector.

National Development Plan. Government has initiated the process of defining Ecuador's development plan for the period 2001-2010, and for formulating a sustainable human development strategy for the 2008- 2020 period. Policy makers at different levels and across sectors are expected to play a key role in the definition of the new development plan. This project will build on the details on the structure and institutional framework for such a plan, as it is developed by working in collaboration with the relevant institutions. The Government has placed a high priority to water governance in the new plans.

National Risk Management Plan. The objective of this plan is the formulation of policy guidance to reduce exposures to disasters, with some consideration to climate risks. SENPLADES will be establishing a consultation process with the relevant stakeholders in the water sector to identify ways on how this plan can be operationalized.

Provincial development plans and risk management proposals. The provinces that this project will focus on have developed water development plans and risk management proposals. These provide an overall framework for decision-making across sectors, including the water sector, and some general principles for risk management. Neither the provincial plans nor the risk management proposals take into account climate change risk on the water sector. However, they provide a sound basis for the inclusion of such risks (and adaptation needs) into the governance of water at the provincial level.

114. The above baseline activities are expected to provide key contributions to the process of integrating water-related climate risk into relevant national initiatives. However, substantive inputs from the proposed project are required to ensure that the baseline activities are successfully achieved. In this sense, the project is expected to play a catalytic role in bringing climate change concerns in the water sector to the attention of policy makers through practical and effective actions. These are described in the section below.

115. Without GEF intervention, water management schemes that address climate change concerns will not be introduced systematically. Responses to address climate change concerns with regards to water resources will likely be adopted on an ad hoc basis, and in response to extreme climatic events that affect water availability and allocation. Currently, there are neither concrete measures nor sufficient institutional capacity to ensure that climate change issues in the water sector are addressed. This project will meet the additional costs of addressing key gaps including i) developing practical guidance to assist relevant water management institutions integrate climate change concerns into the water sector, and ii) incorporating climate risks into relevant water management plans and programmes.

116. SCCF funds will contribute towards ensuring that climate change risks are mainstreamed from specialized forums on climate change to national and local institutions, particularly those involved in regional and local water resource planning and management. With GEF support, climate change risks in the water sector will be integrated into the relevant programmes described above at the national and particularly at the local level. The focus of this project will be on activities in provinces that will covered under the project, namely Manabi, Los Rios, Azuay, and Loja. These provinces were selected on the basis of a consultative-based vulnerability and capacity assessment undertaken during the preparatory phase.

117. The project will promote collaboration among governmental and non-governmental stakeholders associated with water governance, with the objective of ensuring that climate change risks are appropriately incorporated into the policy making process. Given the lack of understanding and experiences on how climate risks and relevant policy frameworks can be integrated into the water sector, the project will develop a practical approach to facilitating this integration and educate the policy makers along the process.

118. The expected project outputs from the integration of climate change risks issues related to water management plans and programmes include:

Output 1.1: Practical guidance on the integration of climate risks into relevant water management plans and programmes developed

119. This output will provide a practical framework to guide the process of integrating water climate change risks and adaptation into relevant water management plans. The guidance will serve as a comprehensive and practical reference on how local water governance institutions can conduct the integration of climate change risks into ongoing strategies and plans more effectively. Key stakeholders both at the central level (MoE, Ministry of Agriculture), the CNRH and SENPLADES) and at the provincial and local levels (Provincial Councils, Water Agencies, Municipal governments, NGOs) will be involved in the formulation of practical measures, taking into account the evolving needs of the institutions and the policy context for the water sector. More importantly, the guidelines will target the needs of the on-going planning efforts mentioned earlier to ensure that this integration will be established as a learning exercise. Thus, the ultimate goal of the guidelines is to effectively assist policy makers in setting up a framework for the integration of climate risk in the water sector. The proposed activities in support of this outcome include:

- Review of the gaps and opportunities in existing plans to identify viable approaches to the development of the guidance.
- Set up a consultative process to include key stakeholders in the process of integrating climate concerns into water management plans.
- Review experiences from other regions and, if available, in Ecuador on similar initiatives to facilitate integration of climate risks concerns in development plans.

Output 1.2: Relevant plans and programmes incorporate climate risks in the water sector

120. Informed by the details in output 1.1, output 1.2 will focus on the integration of climate risk in the water sector into the relevant planning process at the national and the provincial level. At the national level, the proposed activities in support of this output include:

- Revision of key water governance plans described below to incorporate climate change risks in water management:

  National Water Management: Given that the National Water Management plan is already available in draft form, this project will ensure that the revision process will seek to ensure that the basic principles of climate risks on water availability are adequately addressed. The objective is to create the conditions for more effective initiatives of adaptation in the water sector. The plan itself does not intend to cover all aspects of adaptation but rather to bring the priority needs for adaptation interventions at the higher institutional level within the water sector. The project will coordinate with CNRH to assist in the review process, by advising on the climate issues to be considered and providing information on adaptation requirements.

  National Development Plan: The project will take advantage of the fact that relevant institutions are part of the National Steering Committee of this project. These institutions are key participants in the current elaboration of the national development plan, including the National Secretariat of Planning (SENPLADES), the MoE, CNRH, and CONCOPE. These partners will promote the consideration of climate change issues into the National Development Plan. This will ensure that climate risks in the water sector do not become an obstacle to the achievement of related development objectives. Concretely, the project will ensure that the National Development Plan

incorporates climate change concerns on water resources by acknowledging (a) the threat posed by climate change and (b) creating an enabling environment (e.g. through legislative changes) that will promote adaptation.

National Risk Management Plan. The project will work with SENPLADES to assist in the process of updating this plan so that considerations for climate change risk management in the water sector are also included. Given that this National Risk Management Plan provides overall guidance on risk management, SCCF funds will be used to ensure that adequate consideration is given to climate change impacts and adaptation needs on water resources.

121. At the local level, provinces and municipalities have development plans, and some of them also include risk management plans. However, these plans do not take into account risks from climate change. Currently, these plans are implemented based on public priorities and potential investment opportunities by public and private stakeholders. In some selected provinces, actions taken to improve water management and conservation are driven by negative water balance effects, which are partly the result of climate-induced factors. Although there is insufficient public awareness, some actions are undertaken already in important watersheds such as Paute, Jubones, Catamayo and others which are within the boundaries of the project. Reforestation and slope stabilization are the most common action taken.

122. To guarantee the inclusion of climate change risks criteria into provincial and local development plans, the project will develop, with appropriate stakeholder input, an implementation and follow-up strategy to apply the guidelines from output 1.1. The execution of this strategy will result in the integration of climate change concerns into key provincial and local development plans. This will help to facilitate a systematic adoption of climate change adaptation actions related to water management which, together with baseline development programmes, will contribute towards more efficient water use and reduced water supply vulnerability.

123. At the local level, the proposed activities in support of this output include:

- Insertion of climate risk management criteria in the provincial and local water sector plans. The guidelines resulted from output 1.1 will be implemented in at least two of the four provinces of intervention to guarantee the inclusion of climate risks in the water sector into provincial and local development and risk management plans.

- Preparation of a follow up mechanisms to monitor the climate change adaptation actions in the implementation of the development plans.

- Updating and improvement of provincial and local development plans and provincial risk management plans will be funded through co-financing (as they focus on baseline (non-climate) related risks), but the incorporation of climate change risk information into these plans represent additional interventions that will be supported with SCCF funds. Additional SCCF funding will be used to further strengthen local capacity to mainstream climate change adaptation issues into water management policies and practices.

124. These efforts are essential for facilitating the integration of climate change risks into the national water development agenda. Two national agencies with key roles both in water governance and planning will lead the production of this output: CNRH, which presides over the Water Resources group of the CNC, and SENPLADES, the national planning secretariat. At the local level, Adaptation Councils will be created in the four provinces to lead the integration process in provincial development and risk-management plans.

Outcome 2: Strategies and measures that will facilitate adaptation to climate change impacts on water resources implemented at the local level.

125. This Outcome corresponds with Outcome 1 in UNDP's global "Monitoring and Evaluation Framework for Adaptation", namely "Development plans/specifications informed by or revised to account for potential impact of climate change on future water resources" and Outcome "2 (or 3)" in UNDP's global "Monitoring and Evaluation Framework for Adaptation", namely "Water saving measures (e.g. rainwater harvesting, micro dams, efficient technologies) introduced"

126. The outcome focuses on practical solutions to impending problems at the local level. In the absence of the project, responses to climate change would be reactive and adaptive capacity constrained by lack of a coherent strategy that addresses long-term climatic conditions. Without access to tools to build resilience and the means to put in place appropriate response measures, local organizations and communities will be constrained in their abilities to address specific climate threats on water resources. Field-based adaptation provides opportunities to obtain practical experience and develop best practices. The project will pilot interventions that integrate climate risks into activities which rely heavily on water.

127. The consultative process during the preparatory phase revealed that adaptation measures could be implemented in four provinces, two in the Pacific Coast and two in the Andean region: Manabí, Los Ríos, Azuay and Loja. The selection was based on the following criteria: (i) the existence of some institutional capacity to mainstream adaptation in existing activities; (ii) past history of extreme climactic events coupled with social vulnerability, (iii) experiences in spontaneous adaptation that could be identified and further developed, and (iv) interest and motivation of local authorities and other stakeholders. The four provinces are also in the process of implementing emergency response plans and risk management measures to improve their preparedness to confront extreme climate events. As such, this project will catalyze substantial baseline co-financing towards the achievement of this outcome.

128. The two pilot interventions implemented by this project focus on integrating climate change risks into water management in activities of strategic importance to Ecuador, namely in agriculture and hydroelectric power. Case 1 refers to the Paute Hydropower plant, located in the province of Azuay. HidroPaute, the company that manages the plant, is currently investing US$320 millions in incrementing generation with the construction of two additional hydropower plants in the same river: Mazar (190 MW) and Sopladora (312 MW). Case 2 refers to introducing water adaptation measures and technologies in agricultural practices in the provinces of Los Rios, Manabi and Loja.

129. There are a number of baseline development issues that are of relevance for this outcome and which will form the foundation of the proposed interventions.

Development of water resources inventories and provincial information systems. Local authorities in the selected provinces are carrying out various activities with the objective of putting in place a more effective management scheme for water resources. The most advanced is the Province of Azuay, where the provincial council and other entities such as the Council for the Paute Watershed (CG Paute) and the water utility ETAPA completed the first phase of a water inventory at a cost of US$125,000. A second phase will be implemented at a cost of approximately of US$325,000.

Local water management initiatives: Climate extremes on the water sector (i.e. floods and droughts) in the selected provinces have caused significant impacts on local livelihoods. Over the last few years, several NGOs and international/bilateral cooperation programmes have implemented projects to improve local management of natural resources, including the creation of

watershed committees. Specific measures include reforestation programmes, building of water reservoirs, and protection of water sources, promoted by provincial entities, municipalities, and community organizations.

Local funds for the conservation of water sources in strategic watersheds: Several trust funds support local actions that promote environmental sustainability. The National Environmental Fund (FAN) represents an important and useful instrument to finance local initiatives in natural resource management. Over the last few years, similar instruments have been developed for water resources, particularly the Water Fund for Quito (FONAG), which represents a significant initiative to mobilize local resources to support actions for the protection of water sources in the Quito Valley. Based on this experience, Cuenca's water utility (ETAPA) and an energy producer company (Elec Austro) have agreed to establish a water fund (with approximately $410,000 as seed capita) for the Paute watershed. Additional partners, such as other energy utilities, partners in the industrial sector, and Hidropaute are expected to materialize over the coming months. Other entities are exploring the feasibility of adopting a similar mechanism for the Province of Loja. These funds represent an opportunity to support adaptation intervention at the local level. The GEF project will build on these local initiatives to include adaptation criteria in the funding of projects by the local funds.

130. This outcome will be achieved by building on the efforts of three critical stakeholders: a) Regional Development Corporations, Provincial and Municipal authorities, and watershed-management authorities, all in charge of water-related infrastructure investments and/or of the care of key watersheds; b) International organizations and NGOs involved in technical cooperation and sustainable development institutions, microfinance, and risk management initiatives and projects; c) Communities and local NGOs. Particular attention will be paid to the latter group to facilitate strong involvement of local communities in the design and implementation of this component from the beginning of the project. In each province, the Adaptation Councils (see Outcome 1) will secure the participation of relevant stakeholders and will lead a public awareness strategy to target the relevant groups.

131. With SCCF support, the project will promote, complement and co-finance technical aspects and concrete measures in four provinces. Interventions will focus on implementation of climate change adaptation strategies in water resources management in two activities (hydropower generation and agricultural practices), provision of financial mechanisms to support adaptation responses in strategic watersheds.

Output 2.1: Measures, technologies and practices to improve the adaptive capacity of water resources management introduced and implemented in pilot systems.

132. The pilot interventions in this project will address climate risks affecting water availability for different uses (e.g. agricultural production and/or energy provision). The project will integrate climate change information into the planning and management of a hydro-power facility, and also (with the support of co-financing) in community-based water management measures. Technologies and practices will be modified and/or introduced to increase the resilience of these activities to anticipated changes in the water supply and rain intensity and frequency. Funding for these local adaptation measures will be provided by already-existing funds (FAN, FONAG, Paute Watershed fund) that will receive technical support of the project to help them incorporate climate risk considerations when deciding on which interventions to finance. The project will provide additional funding to help local stakeholders in the elaboration of proposals of concrete adaptation measures. The actual funding of these proposals will be provided through cofinancing by these funds.

133. Anticipated activities include:

2.1.1. Case 1: Improve water management practices in the agricultural sector of selected provinces. The project will support improvements such as:

- Implement agricultural practices that lead to water conservation and efficient use. This includes changes in crop patterns, selection of drought-tolerant crops, improving land management techniques, implementing changes in land use.
- Incorporation of water saving technologies for irrigation such as drip irrigation, adjusting timing and volumes of water application in irrigated land, etc;
- Identification and implementation of economic incentives to promote the adoption of climate change adaptation measures by small producers;
- Designing insurance mechanisms to protect producers from the impacts of harvest failures.
- Improving the existing mechanisms for the allocation of water use rights, considering future variations in water supply due to climate change, as well as the need to rationalize water consumption.
- Develop and implement criteria for project formulation and selection, to be funded by the funds described above (FAN, FONAG). The objective of these criteria is to secure that funding for watershed management promotes adaptation to climate change and discourages maladaptation in the water sector.
- Elaboration of a list of prioritized adaptation interventions to be funded with local resources (for instance by FAN and FONAG).

2.1.2. Case 2: Integrate climate risks into water management practices in a hydroelectric project.

134. In partnership with a private company, HIDROPAUTE S.A., the project will support the application of planning models such as WEAP (Water Evaluation and Planning), which will include details of national climate change scenarios. Such models will help managers to decide upon the allocation of water resources between different sectors, and to consider supply and demand, water quality and ecological needs when planning. Key information on hydro meteorological information of the basin, different uses of water in the area, and systems that are able to forecast the most likely climate change scenarios will be incorporated to enable improved planning of water usage for hydropower production by this plant.

135. Implement concrete adaptation measures to improve water inflow to the Paute reservoir. This includes improvement of land management practices in the upper parts of watershed to address seasonal droughts which are becoming more unpredictable and prolonged. These measures will complete ongoing efforts by HidroPaute, such as increasing reservoir capacity, efficiency of turbines and energy efficiency.

Output 2.2: Information management systems reflecting climate change impacts on the water sector developed

136. Existing institutional arrangements do not promote the efficient transfer of information between climate information providers and users. This results in problems such as water use permits being administered without any foresight of likely water supply pressures, water development planning failing to account for future water resources availability, and the lack of useful hazard maps. In turn, faulty or insufficient information contributes to the limited awareness of the risks associated with climate change among policy makers, officials in key water management agencies at the central government level and in vulnerable provinces and the general public. This is a serious limitation for the interpretation of climate risks into the design of appropriate policy responses.

137. Without GEF intervention, climate information for water planning and management will not address climate risks and will fail to provide accurate and timely data. Furthermore, the weak capacity to design and put in place appropriate information and knowledge management schemes will represent a key barrier to water management in the context of climate change.

138. SCCF funds will be used to complement ongoing local initiatives to improve the monitoring of water resources by integrating climate information. This includes improving the currently sub-standard hydrological monitoring network (through co-financing), using downscaled climate change scenarios to detect vulnerabilities, producing updated hazard maps in flood-prone regions, especially in the Los Rios and Manabi provinces, and providing support to policy makers in charge of taking decisions about land use and long-term adaptation measures.

139. The project will contribute to the improvement of information management systems through the following activities:

2.2.1. Include climate change considerations in provincial hydrological inventories (water balances)

140. Local authorities in the provinces of intervention have advanced in the compilation of hydrological inventories. The project would finance the incorporation of climate change impacts on inventories, to identify vulnerability of water resources at a scale appropriate to support the design of policies and strategies on water resources management and climate change adaptation at the local level. National institutions like CNRH and INAMHI, and regional entities with responsibilities in water management will be the relevant actors of these processes.

2.2.2. Strengthen the hydrological and meteorological information networks at the provincial level.

141. The project will establish an integrated information system taking into account climate risk and impacts in the water sector in the selected provinces. The current agreements and inter-institutional arrangements will be improved in order to ease the flow of relevant climate-water resources risk information for decision makers, the monitoring of climate risks on water resources and the articulation of information systems with national and regional hydro-meteorological data. Common procedures to collect, archive and manage climate data and climate risk information for the water sector will be designed and implemented. These procedures will strengthen existing early warning systems for floods and droughts.

Outcome 3: Institutional and human capacity strengthened, and information/lessons learned disseminated

142. This Outcome corresponds with Outcome 3.1 in UNDP's global "Monitoring and Evaluation Framework for Adaptation" (see Annex 3, Table 2: Adaptation Goals, Objectives and Indicative Outcomes and Indicators for Water Resources and Quality).

143. In the absence of the project, institutional capacity to address climate risk in water management will continue to be weak. On-going efforts to strengthen national capacity on CC adaptation are circumscribed to the Second National Communication, which covers generic adaptation issues but neither addresses the capacity needed for implementation of adaptation measures on the ground, nor the strengthening of institutional capacity to mainstream adaptation in the water sector. Similarly, no lessons on adaptation to climate change would be generated. The lack of successful and practical adaptation intervention in Ecuador continues to hinder the possibilities of innovative adaptation policy frameworks at the national or local level. Adaptation interventions in Ecuador have been limited to assessments and general description of adaptation measure, which have not produced lessons that can be replicated in different scales. As a result, stakeholders and national institutions have not been able to learn from relevant experiences that can feed into national and local planning to address climate risks in the broader development context.

However, the Government is currently developing a strategy to inform the stakeholders on the need to address environmental concerns in the context of human development. For instance, with funding from the Bureau of Crisis Prevention and Recovery, UNDP is working with the Provincial Council and four municipal governments of the Province of Los Rios, to create local capacity for early recovery after seasonal floods.

144. Integration of climate change concerns into water management plans and strategies, as well as implementation of adaptation measure on the ground is not a trivial task. They require a comprehensive understanding of the steps needed to prepare the enabling environment, identify specific measures that need to be implemented, information to support the integration process and application of adaptation measures, and the appropriate follow up mechanisms to assess progress and take corrective actions (monitoring and evaluation).

145. SCCF funds will be used to develop institutional capacity to design and implement a more comprehensive and strategic approach to address climate-related risks in the water sector. As a result, incorporation of climate risks into water planning and management is more likely to succeed.

146. All interventions supported by the project will generate lessons of relevance not only to Ecuador but also to other countries facing similar hazards. Consequently, all the costs associated with codifying and disseminating such lessons are eligible for GEF funding. This includes project management and M&E costs.

147. Learning is an important goal of the GEF adaptation portfolio. This project, like others, will implement a significant learning component, using monitoring and evaluation good practices. Rigorous evaluation will enable the GEF and other agencies to measure progress and the GEF to learn how to strengthen and widen its portfolio. The UNDP/ GEF's Adaptation Learning Mechanism (ALM) facilitates this learning process.

148. The ALM is designed to contribute to the integration of adaptation to climate change within development planning of non-Annex I countries, and within the GEF's portfolio as a whole. From the GEF family perspective, sharing knowledge among users will ensure that the GEF portfolio, as a whole, can benefit from the comparative strengths and experience of the various Implementing Agencies. Outputs of this component will include:

Output 3.1: Improved institutional and technical capacities to support the mainstreaming of climate risks and implementation of adaptation measures in the water sector

149. Training of personnel in key agencies is essential to build institutional capacity to ensure adoption of appropriate measures and appropriation of the above mainstreaming process. Given the broad range of technical, institutional and policy issues that will be involved in this mainstreaming process, capacity-building activities will target staff at different institutional levels. Ultimately, staff responsible for overseeing the mainstreaming process at different stages and levels, should be able to advise decision makers and other stakeholders to ensure effective integration of climate risks into key water management plans and strategies. Target agencies will include central government agencies such as MoE, MoA, CNRH, INAMHI, SENPLADES; CONCOPE, and FRH as well as the local water agencies of CNRH. Capacity building activities will include training on targeted approaches for mainstreaming climate change risks through information management, knowledge brokering, and mechanisms to promote local innovation in sustainable adaptation measures in water management. The overall capacity building approach will include follow-up procedures to assess impacts and ensure sustainability beyond the life of the project.

150. The proposed activities in support of this output include:

- Develop and implement a comprehensive capacity strengthening approach addressing among others: (a) use of climate change-water resources risk information in decision making process in the water sector; (b) linkages between climate risks and development issues for more effective planning and management of water resources; (c) development of follow up mechanism to assess progress of measures adopted as a result of the mainstreaming of climate risks and implementation of adaptation measures on the ground. Training will be conducted both at the national level, targeting policy makers and staff of relevant ministries/institutions, and at the local level, targeting the main stakeholders of the four provinces, including the local communities involved.

- Identify learning experiences from other relevant initiatives so that capacity strengthening initiatives build on and coordinate with other climate change projects, such as the Second National Communication to the UNFCCC and the Regional Adaptation Project in Ecuador, Bolivia, and Peru (led by the World Bank).

- Develop a public awareness campaign to increase support for adaptation measures in the water sector. Awareness of the risks associated with climate change is low among all segments of society. A public awareness campaign, targeted at a number of different audiences, including government officials, schools, and the general public will emphasize the potential impacts of climate change, factors increasing vulnerability, and potential solutions. Cooperation with the education departments of the MoE and the Ministry of Education will also be established, in order to mainstream climate change contents into their ongoing educational programmes.

Output 3.2 Knowledge and lessons learned to support implementation of adaptation measures compiled and disseminated

151. The project will provide key information on climate change adaptation in a user-friendly way to all relevant local water users and authorities. Once (a) hydrology inventories have been compiled and systems established to continuously reflect and update projections with evolving climate change information, and (b) mechanisms to harmonize climate change adjusted water resources information systems at provincial level are established (under outcome 2), the project will support measures to improve the access to the information by key stakeholders. In cooperation with provincial governments, NGO´s and other local interested entities, the project will oversee the creation of a public "observatory" for informing on water management in the context of climate change. This public forum will provide essential information on adaptation options, and serve as a mechanism for dissemination of state of the art knowledge on climate change and water resources. It will serve as a host of periodic meetings to sensitize local stakeholders with relevant information on climate change impacts on water resources and the contribution that key constituents can do to adapt to impending impacts. The project will make use of the UNDP template for compiling lessons learned (see Annex 5), which will be reviewed and adjusted in the context of the project, during the preparatory phase, after the inception workshop.

152. To achieve this activity, the following actions will be supported:

- *Insert climate change information into training and courses* directed at local water users (for example: this will build on an existing course on integrated water management of CAMAREN)
- *Create a forum* for the exchange of experiences on integrating climate risks concerns between water users and authorities of different provinces.
- *Establishment of a project web site*. The site will facilitate exchange of information and dissemination of project experiences and lessons learned. The site will include both public access and restricted-access areas, and will also be linked to the ALM web-site, which will serve as a

hub for the GEF's adaptation learning programme. This Internet based tool will be the main instrument of project information and communication. It will be designed trough a wide innovative vision in order to share project's experiences, studies, and documents on a friendly, dynamic and attractive way. The site will include a knowledge network on Climate change and water resources, at provincial level.

- *Compilation of lessons learned with the participation of key stakeholders*. The project will provide analytical descriptions of experiences, including interim results that will be systematically compiled to provide inputs to the ALM and its learning process.

Output 3.3: Guidance documents for GEF and MoE on climate change adaptation programming in the water resource sector provided.

153. The project will highlight possible future areas of investment for the GEF and for the MoE, to improve the quality of policy advice available to water resource sector. The activities that will be developed under this output are:

- Initial workshops on the intervention sites
- Periodical visits to monitor on the ground actions
- Recurrent meetings with all involved actors
- Reports, statements and briefs of successful and also not successful activities
- Final report of activities of each intervention site, highlighting recommendations relevant to GEF activities on adaptation
- Identification of new sites for intervention on climate change and water resources adaptation measures, with recommendation to MoE on replication of experiences, as appropriate.

154. All the outputs referred will need to have GEF financing to guarantee the succeed of the implementation of the capacity building activities, sharing information and lessons learned, contribution to the ALM, and providing inputs to the GEF on policy issues in the adaptation area, including the monitoring of adaptation activities to measure success on adaptation interventions on the ground. Co-financing for this outcome are related to (i) the monitoring activities by the relevant institutions of the plans and programmes that provide the foundation for mainstreaming water CC issues; (ii) staff cost allocated to ensure sustainability of information dissemination activities and (iii) related capacity building activities to ensure effective implementation of project activities.

2.5 Project Indicators, Risks and Assumptions

Indicators

155. At the level of the project Objective, the indicator will rely on the Vulnerability Reduction Assessment (VRA) methodology, piloted in other GEF adaptation projects, such as the Community-based Adaptation Programme. This is also the recommended indicator in UNDP's global "Monitoring and Evaluation Framework for Adaptation"[9] for Objective 3 (Adaptive Capacity: Institutional capacity of water sector including supply and demand management to respond to long-term climate variability and change enhanced). The advantages of the VRA are:

156. It is participatory, incorporating the views of key stakeholder groups, regarding changes in their capacity to respond to climate-induced water resource sector issues.

[9] See Annex 3 for more detailed description of UNDP Monitoring and Evaluation Framework for Adaptation;

157. It generates a unit-less index, which can therefore be used to measure and compare progress at different sites within each country. This allows the project management team globally and within each country to practice adaptive management, utilizing regular assessments of changes in VRA to identify required modifications in the project strategy to maximize impact.

158. At the level of the three Outcomes, indicators are:

Outcome 1: (i) Number of reference to water climate change risks in relevant plans and programmes; (ii) Number of plans and programmes that apply Guidelines; (iii) Number of plans that integrate Climate change risk issues related to water management. The target figures for this indicators are: (i) By the end of year 1, practical guidance to mainstream water climate risk has been made available to relevant stakeholders; (ii) By the end of the project, the National Water Management Plan, National Development Plan, National Risk Management Plan, and at least two Provincial /Risk management Plans include climate change risk and adaptation measures for the water sector.

Outcome 2: (i) Number of adaptation measures implemented at the local level; (ii) Number of communities undertaking adaptation measures; (iii) Number of farmers adopting water saving measures; (iv) Number of climate-induced inflow disruptions in the Paute hydroelectric plant; (v) Number of institutional agreements to improve climate information networks. The target figure for this indicator is: i) By the end of the project, four provinces adopt adaptation measures to address climate risks in the water sector; (ii) By the end of the project, a climate network that includes climate change information is operational in at least two provinces.

Outcome 3: (i) Number of lessons learned systematized; (ii) Number of staff trained on incorporation of climate risks in the water sector into the relevant plans; number of small farmer trained on implementation of adaptation intervention on the ground; number of staff trained at the provincial level on the measurements of impacts of adaptation interventions; (iii) Number of cases included in the ALM. The target figures for these indicators are: (i) Within 6 months of the start of implementation, a publicly accessible web-site will be created; (ii) At the time of project completion, at least 3 examples of lessons learned have been compiled and disseminated; (iii) At the time of project completion, at least 3 examples of best practice generated through the project will be accessible through the ALM.; (iv) At the time of project completion, draft documents will be prepared to guide future GEF and MoE support for interventions on adaptation to climate change including variability; (v) Survey of heads and technical officers of key national and local agencies.

Risks and sustainability

159. Key assumptions underlying the project design include:

- Stakeholders are able to perceive reductions in vulnerability over the time-scale determined by project duration
- Stakeholders are able to distinguish vulnerability to climate change from baseline weaknesses in water resources management
- The government remains supportive to improved water resource management.
- Turnover of staff does not negate the benefits of training.
- Selected pilot province is best placed to demonstrate the benefits of measures to adapt to climate change.
- Communities are sufficiently homogeneous to support community action.
- Provincial and local development plans are implemented.
- Projects are under implementation long enough for lessons to be transferred to other projects before the end of the project
- ALM becomes operational and effective in time to document best practices from the project.

160. Risks that might affect the success of the project include:

- A series of unusually wet years might weaken the resolve of key stakeholders in addressing water resources issues.
- The slow pace of policy modification may mean that identified policy changes are not implemented in a timely fashion.
- The demonstration projects fail to influence capacity development and policy modification

161. None of these risks are considered to be "high". The most serious risk, rated "Moderate", concerns the slow pace of policy modification. The mitigation strategy to address this risk involves early and consistent application of an awareness programme for policy makers, and engagement of senior levels of government in monitoring project implementation.

162. All other risks are considered to be "Low", and do not warrant a mitigation strategy.

2.6 Expected global, national and local benefits

163. Adaptation to climate change projects must take into consideration on the ground interventions at the local level, since in Ecuador, after all the success of adaptation policy, measures and strategies will be measured in terms of increased awareness, preparedness and resilience to climate hazards in local communities. Field-based activities in adaptation are important because they provide opportunities to obtain practical experiences which could be improved. Adaptation opportunities can also be found in on-going initiatives.

164. The project will focus it's on the ground interventions on water management in the sensitive areas and vulnerable populations. This capacity development component will be devised to raise awareness of climate risks, and increase preparedness and prevention policies at the local level.

165. The project will benefit local communities in the pilot provinces and regions, by improving the reliability of water supply for agricultural production, especially for small farmers, and for a key hydropower project. More reliable water supplies will also improve agricultural yields, thus increasing average incomes and improving nutrition. Also, the production of energy for the country as a whole will be more reliable in the long term. The replication of interventions in the pilot provinces will extend these benefits to other rural communities in Ecuador. Lessons learned from the intervention in the Paute Hydropower project will be shared with the Ministry of Energy and the CONELEC (National Council of Electrification), in order to mainstream climate change adaptation into the design of hydropower projects, and also will improve planning to meet future energy needs.

Country Ownership: Country Eligibility and Country Drivenness

166. Ecuador ratified the UNFCCC through a Congressional Resolution dated January 6th 1993, which was published as Executive Decree No. 565 in the Official Journal No. 148, March 16th 1993. The Kyoto Protocol was also signed and ratified by Ecuador in December 1999 (Official Journal No. 342, December 20th, 1999). The technical focal point for the UNFCCC and the Kyoto Protocol is the Under-Secretary of Environmental Quality at the Ministry of Environment of the Republic of Ecuador. The GEF Operational Focal point has been consulted during the preparatory phase and is fully up to date on the details of the proposed project. The project has been endorsed by the GEF Operational Focal Point.

167. In recent country studies such as the National Communications to the UNFCCC and the NCSA, water governance has emerged as a growing public concern and the impact of climate change has been defined as a critical cross cutting issue affecting the most vulnerable sectors of the economy.

168. Climate Policy in Ecuador dates back to the early 1990s, as it became clear the country was particularly vulnerable to the effects of climate change. Following the UNFCCC ratification in 1993, the INAMHI led the Climate Change Process in Ecuador Project (PCCE). This initiative brought for the first time the issue of climate change to the attention of public policy makers in Ecuador. This initiative generated a flurry of other projects including:

- The Ecuador Climate Change Country Study (EPA).
- A Dutch funded project on the impact of CC on the coastal region.
- UNITAR's Climate Change Training Programme - Ecuador (CC Train).
- UNEP's Programme for Offsetting of GHG emissions in Ecuador (UNEP-RISO).
- UNDP-GEF technical support for Stages I and II of Ecuador's National Communication to the UNFCCC.

169. Following a training programme by UNITAR, the Government of Ecuador created the Climate Change Unit, hosted by the Under-Secretary for Environmental Quality in the MoE and the CNC. The MoE chairs the CNC, and the INAMHI serves as its secretariat. Other institutions taking part in it are the Ministry of Energy and Mines, the Ministry of Foreign Affairs, and representatives from the National Council of Higher Education (CONESUP), the NGO community, and the private sector. It has functioned as the main forum for discussing climate policy in Ecuador, and conducted the First National Communication (FNC) to the UNFCCC in 2000. The CNC guarantees the conditions for a broad-based national ownership of the process leading to the SNC.

170. Faced with heightened policy debate surrounding the management of water resources, the CNRH, produced in 2002 a policy position document, proposing a decentralized water governance structure, in the form of a National Policy and Strategy for Water Resources in Ecuador. The new policy establishes 9 major watersheds as territorial units for water management. Each watershed would have an authority which would issue water rights concessions (water is a public property in Ecuador) and permits for liquid waste disposal. The authority would also plan and control the use of water resources. Local and regional stakeholders would be part of the authority. This proposal also seeks to strengthen the CNRH, which would be presided by the Ministry of the Environment, and not the MoA as is now the case.

171. The NCSA process stresses that considerable opportunities for integrating climate change adaptation into the policy arena are being lost due to lack of inter-institutional coordination and insufficient national and local capacities in this area. The NCSA process provided an opportunity to engage a wide range of stakeholders at the national and regional level.

172. In 2001, the First Forum on Water Resources laid the foundation of what has become an important public arena for discussions on water policy. The Fourth National Forum on Water Resources was held in 2006 and brought together over 1,800 participants from around the country to discuss issues related to water governance and national policy. This forum offers a unique framework through which to mainstream climate change concerns into the emerging agenda on water in Ecuador.

2.8 Sustainability

173. The concept of sustainability differs for adaptation to climate change projects, compared with other types of GEF-funded projects. This is because adaptation projects seek to raise the adaptive capacity to long-term climate change. Consequently, raised adaptive capacity automatically

implies sustainability. Of greater concern is the risk that the raised adaptive capacity is eroded over time such that as the impacts of climate change are experienced, the benefits secured through the GEF project are not realized. To avoid this situation, the project design relies on the following elements:

- A commitment to long-term planning at all levels, from strategies (such as promotion of inter-sectoral decision-making through inter-sectoral fora), to policies (such as projection of water supply for hydropower projects), to specific measures (such as pre-defined action plans for dealing with floods).
- Building of multi-sectoral teams, to allow climate-change adaptation to be integrated into planning in a wide range of sectors;
- Explicit consideration of costs and benefits, with endorsement of strategies, policies and measures only if they can be expected to provide overall net benefits to sustainable development;
- Commitment to continuous monitoring and regular evaluation of interventions over time; and inclusion of awareness-building and fund-raising amongst national and international agencies and donors as a core activity.

174. In the case of Ecuador, project sustainability turns on the initiative's effectiveness influence over existing water governance structures and integrating adaptation into national policies. In the context of decentralization, it will also require the project to be rooted in regional and local institutions. Successful mainstreaming of climate change concerns into national and regional development planning will facilitate sustainability of the climate change agenda in the long-term. Activities in support of the adaptation agenda to climate change will be integrated into the mainstreaming of planning, as decision support mechanisms, and this is expected to facilitate its long-term sustainability. Public awareness and outreach activities will also help to build the institutional and political support needed to facilitate mainstreaming after project completion.

175. The concept document establishes that the project will focus on capacity development of local actors and institutional building through existing networks. This will constitute an important step to insure sustainability beyond the project term. Securing support from key political and other leaders for adaptation and the water resources management is crucial. The CNRH, the head of the water authority, and leaders of businesses (i.e. agro industry representatives) and non-governmental organizations (i.e. the National Water Resources Forum) can play a critical role in defining and communicating the set of core values that will guide adaptation and catalyse the process. Combined with on the ground-experiences with local water boards and municipal authorities, it is hoped that the project will develop long-term capacities to manage future climate risks at the local level.

176. Finally, the global flow of information on climate change has markedly increased national consciousness about climate change, its causes and impacts[10]. A positive attitude towards "doing something" to address climate change can be noticed at all levels. This will improve the chances of success of the proposed adaptation measures.

2.9 Replicability

177. Climate change adaptation is at an early stage of development both in Ecuador and in the region. This project is therefore explicitly designed to pilot adaptation in Ecuador subject to the broadest possible range of climatic vulnerabilities to different kinds of water governance issues, but which have reasonable capacity in terms of infrastructure and human resources. By

[10] An internet search of national newspapers showed a marked increase of references to climate change (see Annex 3 for a list of articles and references in the media.)

developing systemic capacity while demonstrating adaptation measures on the ground, the project will establish the conditions necessary for replication and scale up.

178. The project will seek to show practical results that can be immediately applied. The projections of water supply in the face of climate change for the Paute Hydropower project will enable its management to immediately design and adopt adaptation measures. Lessons learned can be immediately applied in other major hydropower projects, like Agoyan and Daule-Peripa, and in medium-sized and small hydropower projects like Abanico, Sibimbe, and Rio Calope. New projects, like the Coca-Codo Sinclair (approx. 859 Megawatts), Mazar and Sopladora, will benefit from the conclusions reached in this project.

179. The identification of vulnerable zones has taken into account the geographic location in relation to dimatic conditions and risks to which it is exposed: Manabí is a coastal zone which is particularly susceptible to droughts and floods. The lessons learned from the pilot projects will be especially valuable for replication in other areas of the country.

180. Further, the design and eventually lessons learnt from the project will contribute to further adaptation learning, and implementation of effective climate change adaptation in other vulnerable countries. The project will make use of the GEF Adaptation Learning Mechanism, to ensure that the lessons learnt from the project contribute to, and benefit from, experience in adapting to climate change across the whole of the GEF portfolio.

PART III: Management Arrangements

181. The project will be implemented through a National Execution arrangement. Implementation arrangements seek to establish a bridge between national authorities responsible of formulating and integrating Climate Change policies, and national, regional and local authorities and practitioners of water resource management. Knowledge and information provided through monitoring institutions and best practiced and lessons learned through the implementation of pilot projects will be the tools to ensure effective coordination and follow among the institutions involved in the project.

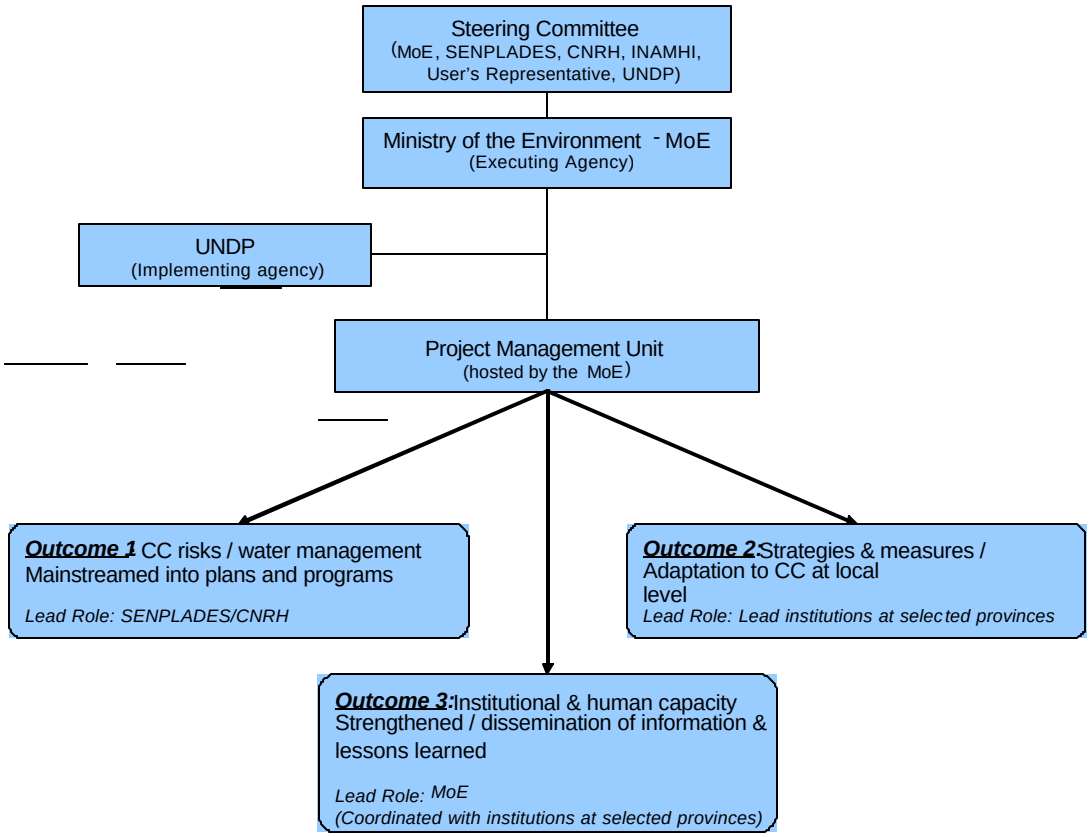
3.1 Implementing Agency

182. UNDP will be the implementing agency of the project. In Ecuador, UNDP supports national efforts towards meeting the Millennium Development Goals by sharing knowledge and best practices learned from UNDP global knowledge network. UNDP contributes actively towards the establishment of alliances between central government agencies, local governments, social organizations, agencies of the UN System and other multi- and bilateral donors. UNDP has supported the development of national capacities to develop climate change mitigation and adaptation policies since the elaboration of Ecuador's First National Communication to the UNFCCC and through the execution of the NCSA – Phase 1 project. Through the Small Grants Programme, UNDP has acquired direct on-the-field experience in the implementation of community-level climate change projects such as passive solar heating and cooking, alternative transportation systems, and production of biogas. UNDP is the implementing and coordinating agency for a major multi-stakeholder project for the re-electrification of the Galapagos Islands with renewable energies, where an investment of 5 million dollars by GEF has been met with more than 25 million dollars in co-financing. UNDP has capacities that constitute true comparative advantages in the context of cooperation in Ecuador. UNDP is also currently initiating a process to mainstream climate change concerns into development initiatives supported by UNDP Ecuador. Among other comparative advantages that UNDP has in the context of the project, the following stand out:

- The provision of flexible, effective, opportune technical assistance focused toward strengthening institutional capacities both at the national and local level.
- A well-established capacity to mobilize resources for development at the national and local level in Ecuador.
- Access to global information networks, experience and knowledge that can be used to strengthen the implementation of the project.
- Neutrality, credibility and social trust aimed at facilitating agreements and prevention and mediation of social conflicts. Given the number of government and institutions at the central and provincial level, as well as the local communities and other agencies to be involved, UNDP is well place to mediate in potential conflicts among these stakeholders.

3.2 Executing Arrangements

183. The proposed governance structure for the project and the division of responsibilities among the key institutions are represented in the figure below:



184. The executing agency of the project will be the MoE, which is also the GEF's national focal point. At the time of the approval of the PDF B resources, it was suggested that an institution with on-the-ground experience and mandate for water management, (such as the National Council on Water Resources -CNRH) should be the executing agency of this project, However, it is important to note that the new Government is modifying the water institutional framework and CNRH is actually undergoing important structural changes. New options are currently being considered for the water institutional structure at the national level. Thus CNRH may be placed

either under the leadership of the national planning agency, SENPLADES, which has been strengthened under the new government, or under the MoE, which is also playing a more important role in natural resources management. The changes in the institutional structures are expected to be consolidated in the coming months.

185. Discussions among the main stakeholders during the PDF phase of the project took into account the different scenarios for the future institutional structure in the water sector in order to identify the most suitable institution for a successful implementation of the project. The discussions concluded that MoE is best suited in the current political context, to execute the project, given its broader mandate to guarantee that environmental concerns and development priorities are closely interlinked at the policy level. In addition, MoE forms part of the board of CNRH, and its role in the water sectors will be strengthened as part of the restructuring of water management structures.

186. The execution arrangements, however, will favour a multi-institutional approach led by MoE. This approach seeks to build on the technical water expertise already available in the country, such as in CNRH, and the political momentum for a broader national planning effort that is currently talking place in Ecuador. Besides, coordination mechanisms will be established with CONCOPE, the association of Provincial Councils, and AME, the Association of Ecuadorian Municipalities, in order to secure the dissemination of information amongst all the provinces and cities of the country

187. MoE will assume an important role in the elaboration of the National Development Strategy that will be lead by SENPLADES. The formal linkages of MoE with these two institutions will ensure the necessary coordination with the key stakeholder in the water sector and will facilitate an expedited initiation of the project. MoE is also well placed to coordinate and lead the process of mainstreaming adaptation to climate change in the national agendas. MoE will closely work with SENPLADES during the formulation of the National Development Strategy, as it will represent a unique opportunity to mainstream adaptation to climate change in water management - a critical element for the success and sustainability of the project. As CNRH completes its planned transition, MoE, through this project, will bring significant support and guidance to assist CNRH in incorporating climate change considerations into water management.

188. In its capacity as Executing Agency, the MoE will be responsible for the technical and financial execution following UNDP proceedings. It will be responsible for: (i) directing the project, (ii) meeting its stated outcomes and projected outputs in a timely manner, and (iii) making effective and efficient use of the financial resources allocated in accordance with the Project Document. The Under-secretariat of Environmental Quality would be the official institutional focal point. The Executing Agency will request from UNDP all financial funds and the accomplishment of selection and bidding processes in accordance with UNDP proceedings. As part of the activities and budget monitoring, UNDP will present annual financial statements relating to the status of UNDP/GEF funds (CDR) as registered in the ATLAS system. These statements will be certified by the executing Agency. In addition, UNDP will be in charge of selecting a recognized independent auditor that will conduct an annual audit of the project execution, according the procedures set out in relevant documents. The cost of these audits will be charged to the project budget.

189. Overall guidance and support for the project will be provided by a National Steering Committee (NSC), with the participation of MoE, SENPLADES, CNRH, INAMHI, UNDP and a representative from water users.

190. The National Steering Committee will have the following responsibilities and objectives:

- To take part in the selection of the project coordination team.

- To approve annual reports and operative plans presented by the project team;
- To agree on a common monitoring system, and a minimal set of indicators;
- To serve as a platform for exchange of experiences and lessons learnt;
- To provide a key inter-institutional coordination platform, to define the basic project implementation rules and the roles and responsibility of each executing agency and to allow for the resolution of disputes between different project partners.

191. A project management unit (PMU) will be established in the Under-secretariat. The Project Coordinator, who will be hired through a competitive selection process following UNDP procedures, will head this unit. The PMU will receive specific training on UNDP procedures upon its establishment. The unit will co-ordinate, supervise, assist, control, monitor and report on project execution and budget, and is responsible of reporting to the Undersecretary and UNDP on a regular basis. . The Project Coordinator, in accordance with UNDP formats and guidelines, will prepare the Annual Work Plan (AWP) reflecting project activities and outcomes. In addition to the AWP a detailed activity work plan will indicate the implementation periods of each activity and the parties responsible for carrying them out. The Project Coordinator will also be the registered signatory under delegation of the Ministry of Environment. The Project Coordinator will be responsible for the conduction of the project preparation process and for the completion of the project brief and of the other expected products. The Project Coordinator will work under the direct supervision of the MoE, and will be accountable before the National Steering Committee.

Execution Arrangements by Outcomes

192. As explained earlier, MoE will be the executing agency of the project and will have a coordinating role of the entire project. However, project outcomes will be executed by leading institutions best placed to achieve the results sought by the project. CNRH and SENPLADES will be responsible for Outcome 1: Climate change risk on the water sector integrated into key relevant plans and programs.

193. The provincial governments of Manabí, Los Ríos and Loja will lead the execution of activities of Outcome 2: Strategies and measures that will facilitate adaptation to climate change impacts on water resources implemented at local level. In the province of Azuay, the Water Management Council for the Paute Watershed (CG Paute) will lead the intervention in the Paute basin. CG Paute is a multistakeholder entity that includes: (i) representatives of the MoE in the province of Azuay, (ii) local governments (e.g. the provincial government of Azuay, municipalities located in the Paute watershed), (iii) universities, (iv) main water users (e.g. Hidropaute S. A., Elecaustro, ETAPA), (v) private sector (e.g the Production Chambers).

194. In implementation of the Outcome 3: Generation and dissemination of information on climate change and impacts and water resources generated and disseminated among water planners, the MoE will facilitate the flow of information between project participants, as well as the dissemination of studies, data and lessons learned generated by the project activities. Building networks amongst project participant will be a key issue to meet this outcome.

195. The National Institute of Meteorology and Hydrology (INAMHI) will have a lead role in climate data and observation, early warning system, along with the Navy's Oceanographic Institute (INOCAR) and the International Center for Research of El Niño phenomenon (CIIFEN). Coordination with the World Meteorological Organization, through its Global Climate Observation Systems Programme (GCOS) and United Nations Environment Programme (UNEP) will be established given the expertise and relevant initiatives of these organisations in climate data around the world.

196. The above national institutions will be instrumental in designing and implementing an information management system that meets stakeholders' needs. The National Secretary of Planning and Development (SENPLADES) will play a key role in leading the process of mainstreaming climate change issue into the National Agenda, and provide technical expertise in risks and planning. The project will work closely with the Bureau for Crisis Prevention and Recovery of UNDP in order to build on the tools and expertise already available for risk management. Details of the implementation arrangements are outlined in the relevant section below.

PART IV: Monitoring and Evaluation Plan and Budget

197. Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures, which will involve the UNDP Country Office (UNDP-CO) for country-level monitoring, and the MoE at the project level. The Logical Framework Matrix provides performance and impact 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.

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

4.1 Monitoring and Reporting

Project Inception Phase

199. A Project Inception Workshop will be conducted with the PMU, members of the MSG, the CNC and of the water resources and climate change workgroup of the CNC, representatives from the participating provinces, other relevant government counterparts, co-financing partners, the UNDP-CO.

200. A fundamental objective of this Inception Workshop (IW) will be to assist the entire 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 log frame 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.

201. Additionally, the purpose and objective of the IW will be to provide a detailed overview of UNDP-GEF reporting and M&E requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation, the Annual Project Report (APR), Tripartite Review Meetings, as well as mid-term and final evaluations. Equally, the IW will provide an opportunity to inform the project team on UNDP related budgetary planning, budget reviews, and mandatory budget rephrasing.

202. The IW 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 (ToR) for project staff and decision-making structures will be formulated prior to CEO endorsement.

Monitoring responsibilities and events

203. A detailed schedule of project review meetings will be developed by the Project Management Unit (PMU) in consultation with the National Steering Committee and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Tripartite Reviews, Management Support Group, and (ii) project related Monitoring and Evaluation activities.

204. Day to day monitoring of implementation progress will be the responsibility of the National Coordinator based on the Annual Work Plan and its indicators. The National Coordinator will inform the UNDP-CO and MoE of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

205. MoE will fine-tune the progress and performance/impact indicators of the project in consultation with the MSG at the IW. 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 AWP. The local implementing partners will also take part in the IW in which a common vision of overall project goals will be established. Targets and indicators for subsequent years will be defined annually as part of the internal evaluation and planning processes undertaken by the MoE and the MSG.

206. Measurement of impact indicators related to global benefits will occur according to the schedules defined in the IW and tentatively outlined in the indicative Impact Measurement Template. The measurement of these will be undertaken through subcontracts or retainers with relevant institutions to be determined during the IW or through specific studies that are to form part of the projects' activities or periodic sampling.

207. Periodic monitoring of implementation progress will be undertaken by the UNDP-CO through quarterly meetings with the National Coordinator, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

208. UNDP CO and the MoE, as appropriate, will conduct yearly visits to field sites, or more often based on an agreed upon scheduled to be detailed in the projects' Inception Report / AWP to assess progress. Any other member of the National Steering Committee can also accompany, as decided by the MSG. A Field Visit Report will be prepared by the CO and circulated no less than one month after the visit to the project team, all MSG members, and MoE.

209. Annual Monitoring will occur through the Tripartite Review (TPR). This is the highest policy-level meeting of the parties directly involved in the implementation of the project. The project will be subject to TPR at least once every year. The first such meeting will be held within the first twelve months of the start of full implementation. The National Coordinator will prepare reports that will be compiled into APR by the MoE at least two weeks prior to the TPR for review and comments.

210. The APR will be used as one of the basic documents for discussions in the TPR meeting. The CNRH will present the APR to the TPR, highlighting policy issues and recommendations for the decision of the TPR participants. The MoE also informs the participants of any agreement reached by stakeholders during the APR preparation on how to resolve operational issues. Separate reviews of each component may also be conducted if necessary.

Terminal Tripartite Review (TTR)

211. The TTR is held in the last month of operations. The MoE is responsible for preparing the Terminal Report and submitting it to UNDP and the GEF Secretariat. It shall be prepared in draft at least two months in advance of the TTR in order to allow review, and will serve as the basis for discussions in the TTR. The TTR considers the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation of formulation.

212. The TPR has the authority to suspend disbursement if project performance benchmarks are not met. Benchmarks will be developed at the IW, based on delivery rates, and qualitative assessments of achievements of outputs.

4.2 Project Monitoring Reporting

213. MoE will be responsible for the preparation and submission of the following reports that form part of the monitoring process.

Inception Report (IR)

214. A Project IR will be prepared immediately following the IW. It will include a detailed First Year/ AWP divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project. This Work Plan would include the dates of specific field visits, support missions from the UNDP-CO or the MoE or consultants, as well as time-frames for meetings of the MSG. The Report will also include the detailed budget for the first full year of implementation, prepared on the basis of the AWP, and including any monitoring and evaluation requirements to effectively measure performance during the targeted 12 months time-frame.

215. The IR will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may effect project implementation.

216. 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.

Annual Project Report (APR)

217. The APR is a UNDP requirement. It is a self-assessment report by project management to UNDP and provides input to the TPR. An APR will be prepared on an annual basis prior to the TPR, to reflect progress achieved in meeting the project's AWP and assess performance of the project in contributing to intended outcomes through outputs and partnership work.

218. The format of the APR is flexible but should include the following:

- An analysis of project performance over the reporting period, including outputs produced and, where possible, information on the status of the outcome
- The constraints experienced in the progress towards results and the reasons for these
- The three (at most) major constraints to achievement of results
- AWP, CAE and other expenditure reports (ERP generated)

- Lessons learned
- Clear recommendations for future orientation in addressing key problems in lack of progress

Project Implementation Review (PIR)

219. 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 the MoE, in cooperation with National Coordinators. The PIR can be prepared any time during the year (July-June) and ideally prior to the TPR. The PIR should then be discussed in the TPR so that the result would be a PIR that has been agreed upon by all partners.

Quarterly Progress Reports

220. Short reports outlining main updates in project progress will be provided quarterly to the local UNDP CO and the MoE by National Coordinators.

Periodic Thematic Reports

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

Project Terminal Report

222. During the last three months of the project MoE 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, and will, thus provide an assessment of the project's performance during its lifetime. It will place emphasis on the analysis of the water governance scheme adopted to manage water resources in the context of a changing climate, highlighting the potential contribution of such scheme to national development in relevant areas. It will also provide recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's activities.

4.3 Independent Evaluation

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

Mid-term Evaluation

224. An independent Mid-Term Evaluation will be undertaken at the end of the second year of implementation. The Mid-Term Evaluation will determine progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as

recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The ToR for this Mid-term evaluation will be prepared by MoE based on guidance from UNDP's Office of Evaluation.

Final Evaluation

225. An independent Final Evaluation will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The ToR for this evaluation will be prepared by MoE based on guidance from UNDP's Office of Evaluation.

Audit Clause

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

4.4 Learning and Knowledge Sharing

227. Results from the programme will be disseminated within and beyond the programme intervention zone through a number of existing information sharing networks, in particular, the ALM. The ALM lessons learned template will be adapted to be used by the project.

228. Learning is an important goal of this GEF pilot phase on adaptation. Each adaptation project should incorporate a significant learning component in its project design, using monitoring and evaluation good practices. Rigorous evaluation will enable the GEF and other agencies to measure progress and the GEF to learn how to strengthen and widen its portfolio. The UNDP/GEF's ALM has been launched to facilitate this learning process.

229. ALM will help maximize global learning from GEF's Strategic Priority on Adaptation (SPA), Least Developed Countries Fund (LDCF), and SCCF. It will contribute to incorporating adaptation into planning and provide good practices for adaptation. Developed as a new "knowledge base", the ALM will provide tools and establish a learning platform. It will be designed as a collaborative, open-source knowledge network with Southern institutions in the lead. Partners include the Stockholm Environment Institute (SEI) and the Regional and International Networking Group (RING).

230. The ALM is designed to contribute to the integration of adaptation to climate change including variability within development planning of non-Annex I countries, and within the GEF's portfolio as a whole. To support this goal, adaptation-related activities should generate knowledge that can help guide implementation of the GEF's adaptation to climate change initiatives. From the GEF family perspective, sharing knowledge among users will ensure that the GEF portfolio, as a whole, can benefit from the comparative strengths and experience of the various Implementing Agencies.

231. Lessons learned from projects should be classified into the following criteria.

(1)Does the adaptation response address:

- Climate change including variability (inter-annual and/or multi-decadal) risks?
- Single sectoral and/or socio-economic issues?
- Ecosystems?

(2) What are the best practices in:

- Integrating adaptation into national and local development policy?
- Project design and implementation mechanisms?

232. The above should include lessons on how to prioritise adaptation options (strategies/policies or operations), the scope of the adaptation project (local, sub-regional, national to sub-regional scales), and capacity development approaches on adaptation, including engaging key stakeholders on adaptation. This will also include lessons on project-level impact indicators.

(3) Share knowledge and experiences on adaptation, especially lessons learned on the following:

- Which are the most common barriers to adaptation, at the information supply or uptake end? (What lessons emerge that has relevance to the role of UNDP, GEF and/or local partners with respect to designing and implementing adaptation project)?
- What are the conditions for success (or failure), including replication and scaling up?
- When do current coping strategies become 'off-limit', and over what time scales?

233. 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. UNDP shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned. To this end a percentage of project resources will need to be allocated for these activities.

Indicative Monitoring and Evaluation Work Plan and Corresponding Budget

234. At the preparation IW, a detailed M&E plan will be developed and approved which will specify arrangements for M&E of each of the indicators at the level of objectives, outcomes, and outputs listed in the logical framework matrix. However, the following table provides the outline of the M&E framework.

Type of M&E activity	Responsible Parties	Budget US$ Excluding project team Staff time	Time frame
Inception Workshop	Project Coordinator UNDP CO UNDP GEF	$20,000	Within first two months of project start up
Inception Report	Project Team UNDP CO	None	Immediately following Inception Workshop
Measurement of Means of Verification for Project Purpose Indicators	National Coordinators will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members	To be finalized in Inception Phase and Workshop. Indicative cost $30,000	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance (measured	Oversight by MoE Measurements by field officers and local IAs	To be determined as part of the Annual Work Plan's preparation. Indicative	Annually prior to APR/PIR and to the definition of annual work plans

on an annual basis)		cost $20,000	
APR and PIR	MoE UNDP-GEF	None	Annually
TPR and TPR report	Government Counterparts MoE Executing Agency	None	Every year, upon receipt of APR
National Steering Committee Meetings	MoE National Coordinators	None	Following Project Inception Workshop and subsequently at least once a year
Periodic status reports	MoE National Coordinators	10,000	To be determined by Project team and UNDP CO
Technical reports	MoE Hired consultants as needed	15,000	To be determined by Project Team and UNDP-CO
Mid-term External Evaluation	MoE National Coordinators External Consultants (i.e. evaluation team)	16,000	At the mid-point of project implementation.
Final External Evaluation	MoE National Coordinators External Consultants (i.e. evaluation team)	40,000	At the end of project implementation
Terminal Report	MoE National Coordinators External Consultant	20,000	At least one month before the end of the project
Lessons learned	MoE National Coordinators	10,000	Yearly
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	UNDP CO MoE Government representatives	20,000 (average one visit per year)	Yearly
TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses		US$ 201,000	

PART V: Legal Context

235. This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of Ecuador and the UNDP, signed by the parties on January 19, 2005. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

236. The UNDP Resident Representative in Ecuador is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by the UNDP-GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

- Revision of, or addition to, any of the annexes to the Project Document;

- Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;

- Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and

- Inclusion of additional annexes and attachments only as set out here in this Project Document.

SECTION II : STRATEGIC RESULTS FRAMEWORK AND GEF INCREMENT

PART I: Incremental Cost Analysis

237. Co-financing for this project is based on the principle of the sliding scale. As outlined in para 56 of GEF/C.24/12 (Oct 15, 2004) the sliding scale allows a project to move forward without negotiations on the determination of additional costs of adaptation if the requested SCCF financing and proposed co-financing fell within the agreed scale. This condition is satisfied in the context of this project. The total cost of the SCCF alternative is estimated to be US$19,185,432.16. Of this total, the costs of the baseline scenario are estimated to be US$7,242,980.89, and the additional costs of the alternative are U$ 11,942,451.26. Sources of co-financing, including the national and local governments (in-kind support), UNDP, and bilateral donors will contribute with US$16,185,432.16. These contributions are listed in the table below. The contribution requested from the SCCF amounts to $3,000,000.00, which represents the costs associated with activities necessary to build capacity to adapt to long-term climatic changes. SCCF funds will be applied primarily in relation to activities designed to ensure the integration of climate risks into relevant plans and programmes at the national level and in four provinces, and also to cofinance pilot interventions that seek to adapt the management of water resources to climatic risks. The project will integrate climate change information into the planning and management of a hydro-power facility, and also in community-based water management measures.

SOURCES OF CONFIRMED CO-FINANCING

Name of co-financier (source)	*Classification*	*Type*	*Amount ($)*
Ministry of the Environment, Ecuador	Exec. Agency	Cash	108,100.00
UNDP Country Office	Impl. Agency	Cash	20,000.00
Swiss Foundation for Development and International Cooperation INTERCOOPERATION	International NGO	In kind/parallel	808,000.00
Azuay Provincial Council	Local Gov't	In kind	1,538,000.00
Commonwealth of the Jubones River Watershed MCRJ	Local Gov't	In kind/parallel	144,000.00
Water Management Council, Paute River Watershed - CG Paute Azuay, Cañar, Morona Santiago	Local Gov't	In kind/parallel	9,000,000.00
City of Cuenca Public Municipal Facility for Telecommunications, Water, and Sanitation ETAPA	Public Facility	In kind/parallel	715,170.00
Loja Provincial Council	Local Gov't	In kind	2,100,000.00
Social and Productive Infrastructure Program for the provinces of Loja and Zamora Chinchipe PROLOZA - Sustainable water management subprogram PROHIDRICO	Other (EU-funded project)	In kind/parallel	437,162.16
Los Rios Provincial Council	Local Gov't	In kind	315,000.00
Manabi Provincial Council	Local Gov't	In kind	1,000,000.00
Total Co-financing			16,185,432.16

PART II: Logical Framework Analysis

Project Strategy	Indicator*	Baseline value	Target and benchmarks	Sources of verification	Risks and Assumptions
Goal	Mainstream adaptation to climate change into water management practices in Ecuador.				
Objective: To reduce vulnerability to climate change through effective water resource management.	Number of references to vulnerability of the water sector to climate risks in policies, plans and projects.	Climate change risks in the water sector are not acknowledged in relevant policies, plans and projects both at the national and local level.	By the end of the project, national and regional relevant plans include climate change risk considerations for the water sector.	Surveys/interviews /plans	There is political willingness to integrate climate change related risks into water sector management plans, policies and strategies
Outcome 1: Climate change risk of the water sector integrated into key relevant plans and programmes.	Number of reference to water climate change risks in relevant plans and programmes.	Relevant development and risk management plans do not include climate change risks on the water sector.	By the end of the project, climate change risks in the water sector are addressed in three national plans and at least two provincial development plans.	Revised national and provincial water management plans.	Political will to review the plans is ensured and maintained throughout the life of the project.
Output 1.1: Practical guidance to integrate water climate risk into relevant plans and programmes, developed.	Guidelines applied in national and sub-national water related plans and programmes	No guidelines to mainstream water climate risk exist.	By the end of year 1, practical guidance to mainstream water climate risk has been made available to, and adopted by, relevant stakeholders in the context of key water management plans and programmes.	Review of relevant programming documents in the water sector	Relevant stakeholders adopt the guidelines.
Output 1.2: Relevant plans and programmes incorporate climate risks in the water sector	Number of plans that integrate Climate change risk issues related to water management.	Relevant development and risk management plans, both at the national and the local level, do not address climate change risk in the water sector.	By the end of the project, the National Water Management Plan, National Development Plan, National Risk Management Plan, and at least two Provincial /Risk management Plans include climate change risk and adaptation measures for the water sector.	Revised plans	Political will to review the plans is ensured and maintained throughout the life of the project.
Outcome 2: Strategies and measures that facilitate adaptation to climate change impacts on water resources implemented at the	Number of adaptation measures implemented at the local level	Adaptation measures are ad hoc. No long term adaptation measures implemented.	By the end of the project, adaptation measures to address climate risks in the water sector have been adopted by local stakeholders.	Evaluation reports	Local stakeholders support the adoption of adaptation measures.

Project Strategy	Indicator*	Baseline value	Target and benchmarks	Sources of verification	Risks and Assumptions
local level.					
Output 2.1: Measures, technologies and practices to improve the adaptive capacity of water resources management introduced and implemented in pilot systems.	Number of communities undertaking adaptation measures	Adaptation measures are ad hoc. No long term adaptation measures implemented.	By the end of the project, at least 10 communities implementing adaptation measures-	Field Surveys	Selected pilot province is best placed to demonstrate the benefits of measures to adapt to climate change.
	Number of farmers adopting water saving measures	None	By the end of the project, at least 50% of farmers participating in the project apply water saving measures.	Field Surveys	Baseline number of farmers in project site estimate and tracked thereafter during project lifetime
	Number of climate risk management strategies/measures in the Hydropaute's risk management plan	Hydropaute's water management plan does not include climate induced risk management criteria	By the end of the project, Hidropaute's risk management plan incorporates measures that address the impact of climate change in the water inflow to the Paute hydroelectric project.	Revised Hydropaute's risk management plan	
Output 2.2: Information management systems reflecting climate change impacts on the water sector developed	Number of institutional agreements to improve climate information sharing	Information networks on water resource management at the local level do not currently account for data on the climate change impacts on water resources	By the end of the project, a water management network that also includes climate change information on impacts on water resources is operational in at least two provinces	Reports of CNRH, INAMHI, and field inspection	INAMHI designates technical counterparts to support the hydro meteorological network. Local governments contribute to the implementation of the monitoring network Basic hydro meteorological data is compiled in a regular basis.
Outcome 3: **Institutional and human capacity strengthened, and information/lessons learned disseminated**	Number of relevant staff trained on climate change risk management (as it relates to water resources)	None	At least 300 personnel from relevant institutions in selected provinces are trained.	Training and Evaluation reports	Relevant institutions permit staff to receive training on climate change risk management (including coverage of costs)

Project Strategy	Indicator*	Baseline value	Target and benchmarks	Sources of verification	Risks and Assumptions
	Number of awareness campaigns implemented				
Output 3.1: Improved institutional and technical capacities to support the mainstreaming of climate risks and implementation of adaptation measures in the water sector	Number of relevant staff trained in climate risk management	Only specialized staff in the MoE has some knowledge of concrete adaptation measures.	At least 300 personnel from relevant institutions in selected provinces are trained.	Training and Evaluation reports	
Output 3.2 Knowledge and lessons learned to support implementation of adaptation measures compiled and disseminated	Number of lessons learned systematized	No web site exists for document lessons No lessons learned compiled	Within 6 months of the start of implementation, a publicly accessible web-site will be created to share lessons and findings based on implementation. At the time of project completion, at least 3 examples of lessons learned a year have been compiled and disseminated.	Website, Documentation, Knowledge products	Local stakeholders implement adaptation measures on the ground; Systematic tracking of development and adaptation benefits; Analysis and synthesis of lessons learned
Output 3.3: Guidance documents for GEF and MoE on climate change adaptation programming in the water resource sector provided	Number of case studies submitted to the ALM	No cases of best practices recorded	At the time of project completion, at least 3 examples of best practice per year generated through the project will be accessible through the ALM. At the time of project completion, documents will be prepared to guide future GEF and MoE support for interventions on adaptation to climate change including variability .	Documentation, Knowledge products	ALM becomes operational and effective in time to document best practices from the project GEF and MoE continue to target adaptation to climate change including variability in the water resource sector

* In line with the Results Based Management Approach, impact indicators (guided by UNDP's monitoring and evaluation framework for adaptation projects, which has received support by GEF) will be formulated with inputs from Regional Technical Advisor on Climate Change Adaptation, and national / local partners prior to the commencement of activities, at the inception phase. The Steering Committee (Project Board)

overseeing the implementation of this project will ensure that this is done. The participatory construction of the indicators will be an additional opportunity to educate national stakeholders and secure their commitment with the objective and outcomes of the project.

SECTION III: TOTAL BUDGET AND WORK PLAN

The following budget will be finalized following the inception meeting of this project, as per standard practices.

Award ID: 00048331 (ECU10) **Project ID:** 00058409 (ECU10)

Award Title: PIMS 3520 CC FSP - Adaptation to Climate Change through Effective Water Governance in Ecuador

Project Title: PIMS 3520 CC FSP - Adaptation to Climate Change through Effective Water Governance in Ecuador

Executing Agency: Ecuador's Ministry of the Environment

GEF Outcome/Atlas Activity**	Responsible Party	Donor name	Fund ID	Atlas Budgetary Account Code	ATLAS Budget Description	Amount (USD) Year 1	Amount (USD) Year 2	Amount (USD) Year 3	Amount (USD) Year 4	Total (USD) All Years
Outcome 1: Climate change risk on the water sector integrated into key relevant plans and programs.	NEX	GEF	62180	71200	Intl Cnslt	15,000.00	20,000.00	30,000.00	20,000.00	85,000.00
			62180	71300	Lcl Cnslts	20,000.00	40,000.00	30,000.00	20,000.00	110,000.00
			62180	71600	Travel	15,000.00	13,584.37	13,806.00	8,774.00	51,164.37
			62180	72500	Supplies	15,000.00	15,000.00	20,000.00	10,000.00	60,000.00
			62180	74200	Print & Publ, Transl	20,000.00	25,000.00	25,360.33	30,000.00	100,360.33
			62180	74500	Misc Exp	11,001.60	12,254.80	12,000.00	10,750.00	46,006.40
			Subtotal GEF			96,001.60	125,839.17	131,166.33	99,524.00	452,531.10
		TOTAL OUTCOME 1				**96,001.60**	**125,839.17**	**131,166.33**	**99,524.00**	**452,531.10**
Outcome 2: Strategies and measures that will facilitate adaptation to climate change impacts on water resources implemented at the local level.	NEX	GEF	62180	71200	Intl Cnslt	40,000.00	50,000.00	60,000.00	60,000.00	210,000.00
			62180	71300	Lcl Cnslts	50,000.00	70,000.00	90,000.00	60,000.00	270,000.00
			62180	71400	Contractual Services - Ind	50,000.00	45,000.00	80,000.00	50,000.00	225,000.00
			62180	71600	Travel	30,000.00	50,000.00	30,000.00	40,000.00	150,000.00
			62180	72100	Contr-Cmpy	130,000.00	160,000.00	180,000.00	150,000.00	620,000.00
			62180	72500	Supplies	30,000.00	35,000.00	40,000.00	20,000.00	125,000.00
			62180	74200	Print & Publ, Transl	30,000.00	26,000.00	25,000.00	30,000.00	111,000.00
			62180	74500	Misc Exp	14,101.68	18,402.52	19,802.94	14,201.26	66,508.40
		UNDP	04000	71300	Lcl Cnslts	10,000.00				10,000.00
			04000	71200	Intl Cnslt	6,000.00				6,000.00
			04000	71600	Travel	4,000.00				4,000.00
		Subtotal GEF				374,101.68	454,402.52	524,802.94	424,201.26	1,777,508.40
		Subtotal UNDP				20,000.00	0,00	0,00	0,00	20,000.00

		TOTAL OUTCOME 2				**394,101.68**	**454,402.52**	**524,802.94**	**424,201.26**	**1.797.508.40**
Outcome 3: Institutional and human capacity strengthened, and information /lessons learned disseminated	NEX	GEF	62180	71200	Intl Cnslt	10,000.00	30,000.00	30,000.00	40,000.00	110,000.00
			62180	71300	Lcl Cnslts	30,000.00	40,000.00	40,000.00	40,000.00	150,000.00
			62180	71400	Contractual Services - Ind	12,592.10	28,888.15	22,036.18	9,444.08	72,960.50
			62180	71600	Travel	15,000.00	15,000.00	20,000.00	20,000.00	70,000.00
			62180	72100	Contr-Cmpy	15,000.00	15,000.00	15,000.00	15,000.00	60,000.00
			62180	72500	Supplies	20,000.00	17,000.00	22,000.00	8,000.00	67,000.00
			62180	74200	Print & Publ, Transl	20,000.00	20,000.00	20,000.00	20,000.00	80,000.00
			62180	74500	Misc Exp	5,000.00	5,000.00	5,000.00	5,000.00	20,000.00
			Subtotal GEF			127,592.10	170,888.15	174,036.18	157,444.08	629,960.50
		TOTAL OUTCOME 3				**127,592.10**	**170,888.15**	**174,036.18**	**157,444.08**	**629,960.50**
Outcome 4: Project Management Unit (*)	NEX	GEF	62180	71300	Contractual Services - Ind	35,000.00	35,000.00	35,000.00	35,000.00	140,000.00
		Subtotal GEF				35,000.00	35,000.00	35,000.00	35,000.00	140,000.00
		TOTAL OUTCOME 4				**35,000.00**	**35,000.00**	**35,000.00**	**35,000.00**	**140,000.00**
SUBTOTALS					GEF	632,695.38	786,129.84	865,005.45	716,169.34	3,000,000.00
					UNDP	20,000.00	0.00	0.00	0.00	20,000.00
TOTAL PROJECT						**652,695.38**	**786,129.84**	**865,005.45**	**716,169.34**	**3,020,000.00**

(*):The GEF contribution for the overall management and coordination structure (outcome 4) does not exceed the normal 10-20% of the total GEF contribution (it is estimated at about 4.6%). Please see Budget Notes below for further explanation of the above budget.

Summary of Funds:	**Amount (USD) Year 1**	**Amount (USD) Year 2**	**Amount (USD) Year 3**	**Amount (USD) Year 4**	**TOTAL**
GEF	632,695.38	786,129.84	865,005.45	716,169.34	3,000,000.00
UNDP (cash)	20,000.00	0.00	0.00	0.00	20,000.00
National Government (cash)	27,025.00	27,025.00	27,025.00	27,025.00	108,100.00
International NGO (parallel/In kind)	202,000.00	202,000.00	202,000.00	202,000.00	808,000.00
Local Government (parallel/in kind)	4,229,100.00	5,638,800.00	2,114,550.00	2,114,550.00	14,097,000.00
Public Facility (parallel/in kind)	178,792.50	178,792.50	178,792.50	178,792.50	715,170.00
Other (Parallel/in kind)	109,290.54	109,290.54	109,290.54	109,290.54	437,162.16
Total Cash	679,720.38	813,154.84	892,030.45	743,194.34	3,128,100.00

Total parallel/ in kind	4,719,183.04	6,128,883.04	2,604,633.04	2,604,633.04	16,057,332.16
Grand total	**5,398,903.42**	**6,942,037.88**	**3,496,663.49**	**3,347,827.38**	**19,185,432.16**

A detailed workplan will be outlined during the inception meeting.

Budget Notes

OUTCOME 1	
Budget Line	**Comments**
71200 International Consultants	Although there is considerable development of national capacity regarding risk management, the consideration of climate change as an originator of risk has not been incorporated into the formulation of development plans both at the national and local levels. Climate change scenarios, as well as evaluations of vulnerability, resilience and adaptive capacity, have to be considered by planners at all levels. Consultancies over the whole project period requiring specific and specialized expertise (not currently available in Ecuador) will be needed for training national personnel from local institutions, NGOs and universities in the application of specific analysis tools to understand the potential impacts of climate change and for providing technical support for the incorporation of considerations into development plans. Specific support will be given during the Inception Workshop. ESTIMATED CONSULTANT WEEKS: 34
71600 Travel **Note:** *IA staff travel will not be charged against project funds*	Local and national authorities will meet several times in order to attend training workshops and also in planning exercises or for the retrofitting of existing plans and programs. International consultants will attend some of the workshops, especially the Inception Workshop. Travel expenses have been considered for: - DSA and Travel linked to training and planning workshops both in the provinces and in Quito. - DSA and tickets for International Consultants planned during the 4 years of the project Estimated numbers of trips: 28
OUTCOME 2	
Budget Line	**Comments**
71200 International Consultants	Although adaptation measures have been implemented by local stakeholders spontaneously, there is little experience in the purposeful design, implementation and monitoring of adaptation measures. International consultants will bring their knowledge of best practices and lessons learned and share it with stakeholders at all levels. Consultancies over the whole project period requiring specific and specialized expertise (not currently available in Ecuador) for the following: - Training of national personnel from the central government and local partners in the formulation, implementation and monitoring of adaptation measures. - Monitoring and Evaluation (Mid-term and Final evaluations). ESTIMATED CONSULTANT WEEKS: 84
	This project will promote the adoption of adaptation measures in specific watersheds in four provinces, two in the south of the country (Loja

71600 Travel **Note:** *IA staff travel will not be charged against project funds*	and Azuay), and two in the coastal region (Manabi and Los Rios), working also with provincial authorities stationed at the provinces' capitals. Air travel between Quito and these cities, both by local personnel working in the beneficiary institutions, and by consultants hired by the project, will be frequent and necessary to achieve the project objectives and ensure efficient implementation of the project activities. Travel for exchange of experiences at local levels, between actors belonging to the same sectors in different provinces, will take place. Travel will be required to bring international consultants to the country, as well as to consolidate the capacities of national institutions. Partial financial support will be provided by local counterparts, especially Hidropaute (which operates the Paute Hydroelectric project) in order to facilitate the transportation of national participants to attend strategic and key meetings. The PMU travel expenses will be covered with funds from the Ministry of the Environment. Travel expenses have been considered for: - DSA and Travel linked to project monitoring within the project intervention areas. - DSA and Travel for national stakeholders to meetings in different intervention sites. - DSA and tickets for International Consultants planned during the 4 years of the project - Training of national specialists. - APPROXIMATE NUMBER OF TRIPS: 129
72100 Contractual Services	Contracts with international and national service providers will be paid according to existing UNDP rates, rules and regulations in the country and according to the field of work. Except for those professional services contracts financed by national counterparts. Services provided will include: - Service contracts with consulting firms for detailed studies on the feasibility and environmental impact of adaptation measures. - Service contracts with consulting firms for implementation of adaptation measures. - Service contracts with consulting firms for specific training on adaptation through sound water management practices. ESTIMATED WEEKS: 124
71400 Contractual Services - Individuals	Contracts with international and national service providers will be paid according to existing UNDP rates, rules and regulations in the country and according to the field of work. Except for those professional services contracts financed by national counterparts. Specific technical support for the design and monitoring of adaptation measures will be contracted with individual consultants.
OUTCOME 3	
Budget Line	**Comments**
71200 International Consultants	International expertise will be needed to help establishing a sound mechanism to share the lessons and findings of the project.
71600 Travel	This project will promote the adoption of adaptation measures in specific watersheds in four provinces, two in the south of the country (Loja and Azuay), and two in the coastal region (Manabi and Los Rios), working also with provincial authorities stationed at the provinces' capitals. Air travel between Quito and these cities, both by local personnel working in the beneficiary institutions, and by consultants hired by the project, will be frequent and necessary to achieve the project objectives and ensure efficient implementation of the project activities.

Note: *IA staff travel will not be charged against project funds*	Travel for exchange of experiences at local levels, between actors belonging to the same sectors in different provinces, will take place. Travel will be required to bring international consultants to the country, as well as to consolidate the capacities of national institutions. Partial financial support will be provided by local counterparts, especially Hidropaute (which operates the Paute Hydroelectric project) in order to facilitate the transportation of national participants to attend strategic and key meetings. The PMU travel expenses will be covered with funds from the Ministry of the Environment. Travel expenses have been considered for: - DSA and Travel linked to project monitoring within the project intervention areas. - DSA and Travel for national stakeholders to meetings in different intervention sites. - DSA and tickets for International Consultants planned during the 4 years of the project - Training of national specialists. - APPROXIMATE NUMBER OF TRIPS: 60
72100 Contractual Services	Contracts with international and national service providers will be paid according to existing UNDP rates, rules and regulations in the country and according to the field of work. Except for those professional services contracts financed by national counterparts. Services provided will include: - Service contracts with consulting firms for detailed studies on the feasibility and environmental impact of adaptation measures. - Service contracts with consulting firms for implementation of adaptation measures. - Service contracts with consulting firms for specific training on adaptation through sound water management practices. ESTIMATED WEEKS: 124
71400 Contractual Services - Individuals	Contracts with international and national service providers will be paid according to existing UNDP rates, rules and regulations in the country and according to the field of work. Except for those professional services contracts financed by national counterparts. Specific technical support for the design and monitoring of adaptation measures will be contracted with individual consultants.
OUTCOME 4	
Budget Line	**Comments**
71400 Contractual Services - Individuals	All contracts will be national and paid according to existing UNDP rates, rules and regulations in the country and according to the field of work. Except for those professional services contracts financed by national counterparts. ESTIMATED STAFF WEEKS: 350

SECTION IV: ADDITIONAL INFORMATION

PART I : Other agreements

Letters of financial commitment have been added in Annex 4.

PART II : Organigram of Project

Refer to section on Management Arrangements

PART III : Terms of References for key project staff and main sub-contracts

The TORs for key project staff have been included in Annex 3.

PART IV: Stakeholder Involvement Plan

238. The project will rely on a wide range of key partners to mainstream climate change and adaptation concerns into the water sector in Ecuador. In this sense, participation will be the key to success of the project. Key stakeholders to be involved in the project, and who have been consulted during the preparatory phase of this project, are described below:

239. Comité Nacional del Clima (CNC)- the National Committee for Climate- is a collegiate body composed of representatives from several ministries (environment, energy and mines, foreign affairs, planning), as well as from the private sector, the NGO environmental sector and the academic sector.

240. Ministry of the Environment (MoE) is the GEF operational focal point. The technical focal for the UNFCCC is also located in the Under Secretary for Environmental Quality. The MoE presides over the National Climate Committee (CNC). The MoE will chair the National Steering Committee of this project (see section on implementation arrangements).

241. The Planning and Development National Secretary (SENPLADES), which is in charge of planning and management of strategies for the development of the country. SENPLADES has formulated general and sectoral risk management plans (health, transport, drinking water and sewage systems.

242. The National Council of Hydrologic Resources (CNRH) was created in 1994, to replace the INERHI, with responsibility for monitoring the state of water resources and managing the concession of water rights. Created in conjunction with Regional Development Corporations (CRD) such as CEDEGE, the regional water agencies of the CNRH are the prime agents of water governance, and a key actor in the attribution of water rights and the resolution of conflicts between end users.

243. The INAMHI is the National Institute for Meteorology and Hydrology of Ecuador. It has a key role in climate affairs in Ecuador, with a network of monitoring stations and overall supervision of official forecasting. INAMHI will have a lead role in climate data and observation, early warning system, along with the Navy's Oceanographic Institute (INOCAR) and the International Centre for Research of El Niño phenomenon (CIIFEN). Coordination with the World Meteorological Organization, through its Global Climate Observation Systems Programme

(GCOS) and United Nations Environment Programme (UNEP) will be established given the expertise and relevant initiatives of these organisations in climate data around the world.

244. The Water Resources Forum (FRH), a water users association, represents the views of the small consumers, peasants and NGOs. This Forum has become an important public arena for discussions on water policies.

245. The provincial and municipal authorities, regional development corporations and watershed-management authorities, all in charge of water-related infrastructure investments and/or of the care of key watersheds in the selected provinces (Manabí, Los Ríos, Azuay and Loja).

246. Other entities in charge of meteorological monitoring of water flow in watersheds, sea level, marine currents and related issues and ENSO events such as, CDRs, INOCAR, CIIFEN, amongst others.

247. Other institutions that group provincial/local governments such as the Consortium for Provincial Governments of Ecuador (CONCOPE). This Consortium comprises of all the provincial councils of Ecuador and the Association of Municipalities of Ecuador (AME). It also consolidates funds created to manage environmental and water management projects (i.e. FONAG, FAN). CONCOPE, supported by the Sweden Technical Cooperation, is currently executing a project that seeks to strengthen the watershed management in Provinces.

248. The technical teams and institutional structure in place for the Second National Communication (SCN). The SNC team reports to the UNFCCC on national efforts to address climate change, to formulate a national strategy, and to identify priorities for mitigation and adaptation, including potential projects for funding in these areas.

249. The technical teams and institutional structure for the GEF-World Bank Andean Region Adaptation Project, whose objective is to implement adaptation measures to meet the anticipated impacts from the catastrophic glacier retreat induced by climate change.

250. The list of key stakeholders for project implementation is presented in Annex 2. The following organizations played a pivotal role in the design of the project proposal:

- Ministry of Environment: Lead the process of project formulation by providing a coordination role in the formulation of the project and the consultation process and bilateral discussions with experts and key institutions. MoE was responsible for the analysis of the information provided and the preparation of the project proposal for submission to the GEF Secretariat through UNDP.
- National Council of Water Resources: It provided key information on the water baseline and water polices, and participated directly in the project formulation.
- National Secretary of Planning and Development: Assisted in the definition of priorities for the project by providing key inputs to the project design. It also contributed with key information such as risk maps, policies for the national development plans, among others.
- National Institute of Meteorology and Hydrology: Provided information for the baseline and assisted in the identification of key issues to be improved at the provincial level (e.g. strengthening of climate information)
- The Water Resources Forum: It contributed to the discussions from the perspective of small water users. Its participation confirmed the need to include the local communities in the design and implementation of adaptation measures on the ground. It reinforced the strategy to ensure adequate linkage between the policies to address climate risks in the water sector and the needs of the vulnerable community.

- The Consortium for Provincial Governments of Ecuador: Assisted in the selection of the Provinces to be included in the project, through an analysis of vulnerable areas, including the identification of identify key actors in the vulnerable areas.
- United Nations Development Programme: As the Implementing Agency for the project, UNDP facilitated the preparation of the
- Other institutions: Other institutions included CG Paute, Hidro Paute, FONAG, Intercooperacion (Swiss Foundation), among others

Part V to X : OTHER ADDITIONAL INFORMATION AS REQUIRED BY THE SPECIFIC FOCAL AREA, OPERATIONAL PROGRAM, AND STRATEGIC PRIORITY .

None

SIGNATURE PAGE

Country: Ecuador

UNDAF Outcome(s)/Indicator(s):
_____UNDAF IN REVIEW PROCESS_____
(Link to UNDAF outcome., If no UNDAF, leave blank)

(CP outcomes linked to the SRF/MYFF goal and service line)
MDG: ensuring sustainable development
Goal: Promotion of energy services and environment protection for sustainable development
Service Line: frameworks and strategies for sustainable development
Outcomes: Creation of sub-regional/national/local capacities for sustainable development
Core results: National Strategies for Sustainable Development for integrating of economic, social and environmental issues adopted and implemented

Expected Output(s)/Indicator(s): (Indicated below)

Outputs	Indicators
Output 1.1: Practical guidance to integrate water climate risk into relevant plans and programmes, developed.	Number of plans and programmes that apply Guidelines.
Output 1.2: Relevant plans and programmes incorporate climate risks in the water sector	Number of plans that integrate Climate change risk issues related to water management.
Output 2.1: Measures, technologies and practices to improve the adaptive capacity of water resources management introduced and implemented in pilot systems.	Number of communities undertaking adaptation measures
	Number of farmers adopting water saving measures
	Certainty of the inflow to the Paute hydroelectric project under a climate change scenario
Output 2.2: Information management systems reflecting climate change impacts on the water sector developed	Number of institutional agreements to improve climate information networks
Output 3.1: Improved institutional and technical capacities to support the mainstreaming of climate risks and implementation of adaptation measures in the water sector	Number of staff trained.
Output 3.2 Knowledge and lessons learned to support implementation of adaptation measures compiled and disseminated	Number of lessons learned systematized

Outputs	Indicators
Output 3.3: Guidance documents for GEF and MoE on climate change adaptation programming in the water resource sector provided	Number of cases included in the ALM

Implementing partner: Ecuador Ministry of the Environment
(designated institution/Executing agency)

Other Partners: _____

Programme Period: 2008-2012
Programme Component:_____
Project Title: PIMS 3520 - Adaptation to Climate Change through Effective Water Governance in Ecuador
Project: Award 00048331
Project 00058409 (ECU10)
Project Duration: 4 years
Management Arrangement: NEX

GEF (cash)	3.000.000,00
UNDP (cash)	20.000,00
National Government (cash)	108.100,00
International NGO (parallell/in kind)	1.245.162,16
Local Government (parallel/in kind)	14.097.000,00
Public Facility (parallel/in kind)	715.170,00
Total cash	**3.128.100,00**
Total Parallel / in kind	**16.057.332,16**
Grand total	19.185.432,16

Agreed by Government of Ecuador:_____

Agreed by UNDP Ecuador __________

List of Annexes

Annex 1: Evolution of National Institutions and their Mandates in Water Resources Management

Name of the institution	Main responsibility	Year of creation	Year of elimination	Comment
National Irrigation Chamber (Caja Nacional de Riego)	Design, build and operate public irrigation systems	1944	1966	
Ecuadorian Institute of Water Resources (INERHI)	Those of the Caja Nacional de Riego + flood management infrastructure + evaluation, management, protection of water resources	1966 Merging of the Caja Nacional de Riego with the Undersecretary of Irrigation, Ministry of Agriculture	1994	In practice, continued centred in building irrigation systems
National Council of Water Resources (CNRH)	Created after the elimination of the INERHI. Should elaborate a National Water Resources Plan, regulate the use of water in governmental projects, the management of irrigation systems and its transfer to users, water quality control and the management of watersheds; establish cost recovery policies.	Since 1994		The Technical Secretariat is hosted by the Ministry of Agriculture. Considerations about the protection of sources and water quality are given little importance. Understaffed, under financed.
Regional Development Corporations	Design, build and operate water and flood control infrastructure in different regions of the country	1966 and 1994		
Ministry of Agriculture	Should develop irrigation infrastructure, give technical support to peasants.			In practice does not act, relying in CNRH. Irrigation infrastructure built during the last 30 years (worth approximately 30 million USD) is neglected.
National Institute of Meteorology and Hydrology (INAMHI)	Meteorological monitoring, monitoring of water flow in watersheds, monitoring of sea level.	Since 1970		Depends on the Ministry of Energy and Mines. Has lost an important fraction of monitoring equipment, understaffed.
Ecuadorian Institute of Sanitary Works (IEOS)	Water for human consumption and sanitation – policies and building of sanitary systems and distribution networks	1970	1992	

Undersecretary of Sanitation, Ministry of Urban Development and Housing (MIDUVI)	Created after the elimination of IEOS. Policy formulation.	Since 1992		
Municipalities	The building and operation of wastewater systems and drinking water treatment and distribution networks were transferred to municipalities after the elimination of IEOS.	1992		In practice, few municipalities have the capacity to fulfil these responsibilities. Only one municipality treats wastewater.
Ecuadorian Institute for Electrification (INECEL)	Elaborating a national electrification strategy, generating, transmitting and distributing energy	1962	1996	Executed hydro power projects without paying attention to the management of water resources. Dissolved in order to allow for the participation of private investors in energy generation, transmission and distribution.
National Electrification Council (CONELEC)	Regulation of energy generation, fixation of tariffs, environmental permits for generation and transmission projects.	Since 1996		
Ministry of the Environment	Forms part of the Board of CNRH, management of protected areas (which host important watersheds)	Since 1996		No concrete responsibilities in the management of water resources.
Other institutions: Undersecretary of fishing (Ministry of Industries and Commerce), Merchant Navy Direction (DIGMER, in the Ministry of Defence), etc…	Other uses of water: fishing, aquaculture, tourism and recreation, navigation			

Source: GWP, 2003

Annex 2: List of stakeholders

Institution	Contact person	Main responsibility	Role in Project
National Climate Change Committee (CNC)	Ing. Roberto Urquizo Subsecretario de calidad ambiental	Collegiate body composed of representatives from several Ministries (Environment - permanent president - Energy and Mines, Foreign Affairs) as well as, private sector - represented by the Production Chambers-, the National Council for University Education (CONESUP), the Ecuadorian Committee for the Nature and Environment (CEDENMA) - an umbrella NGO entity - and the INAMHI - secretary of the CNC - The Committee operates through technical multi-sectoral Working Groups; which are leaded by public entities. For example, CNRH - Water Resources and climate change, Ministry of Energy and Mines - Energy and climate change.	Be a key political project counterpart for supporting the mainstreaming climate change criteria through national institutions.
Ministry of the Environment (MoE)	Ing. Roberto Urquizo Subsecretario de calidad ambiental	National Environment Authority, management of protected areas (which host important watersheds) Forms part of the Board of CNRH. Lead the CNC.	Be part of the Management Support Group for this project. Is the GEF operational focal point. Could collaborate in result #2, Public awareness campaign increasing support for adaptation measures. Policy development and enforcement.
National Council of Water Resources (CNRH)	Ing. Víctor Mendoza Secretario General	National Authority of Water in Ecuador. Should elaborate a National Water Resources Plan, regulate the use of water in governmental projects, the management of irrigation systems and its transfer to users, water quality control and the management of watersheds; establish cost recovery policies. Part of the CNC; be in charge of the Working Group on water	As National Authority, CNRH will be responsible for the completion of outcome 1 and will form part of the Management Support Group of the project. Be responsible for the result #1: Improved systemic capacity supports effective water management under

		resources and climate change.	conditions of climate change. Policy development and enforcement.
National Secretary of Planning and Development (SENPLADES)	Ec. Blanca Fiallos	In charge of planning and managements of strategies for the development of the country. Formulate of sectoral risk management projects.	Key partner to introduce the climate change issue into the National Agenda, considering the opportunity of the new government arrangements. Technical expertise in risks and planning.
National Institute of Meteorology and Hydrology (INAMHI)	Dr. Laureano Andrade Director ejecutivo	Meteorological monitoring, monitoring of water flow in watersheds INAMHI has a secretarial role in the CNC; has lost an important fraction of monitoring equipment, understaffed	Key role in climate data and observation, early warning system. It will be useful to work with these institutions to obtain good results in the output #2, information management system that meets stakeholder's needs.
Navy's Oceanographic Institute (INOCAR) International Center for Research en the El Niño Phenomenom (CIIFEN).	Capitán de Fragata de Estado Mayor Mario Proaño Silva Rodney Martínez Güingla Oceanógrafo Coordinador Científico	Monitoring of sea level, marine currents and related issues. Monitoring of ENSO and related issues	Key role in climate data and observation, early warning system. It will be useful to work with these institutions to obtain good results in the output #2, information management system that meets stakeholder's needs.
The Consortium for Provincial Councils of Ecuador (CONCOPE)	Gustavo Abdo / Raúl Egas	Group all the provincial councils of Ecuador.	Facilitate the approach to provincial councils in which the project will be working.
The Association of Municipalities of Ecuador	Lorens Olsen Pons Presidente	Federates all the municipal government of Ecuador. Building and operation of	Facilitate the approach to municipal government in which the project will be

(AME)	Dr. Guillermo Tapia Secretario General	wastewater systems and drinking water treatment and distribution networks.	working.
The Water Resources Forum (FRH)	Aline Arroyo Castillo Coordinadora Antonio Gaybor Secretario Ejecutivo	This Forum has become an important public arena for discussions on water policies	A water users association, represents the views of the small consumers, peasants and NGOs Technical secretariat CAMAREN
Regional Development Corporations (CDR's)		Created at the same time than CNRH. In charge of design, build and operate water and flood control infrastructure in different regions of the country.	If this project decides to work in an specific region, it would help to coordinate with the corresponding CDR, in order to do not duplicate efforts. It would be possible to mainstreaming the climate change criteria into their projects.
National Electrification Council (CONELEC)	Patricio Oliva	Regulation of energy generation, fixation of tariffs, environmental permits for generation and transmission projects.	The project plans to work with hydroenergy tasks, so we could coordinate with CONELEC in order to take into account climate change criteria into their approvals for hydroenergy projects.

ANNEX 3: Terms of Reference for Project Management

NATIONAL PROJECT DIRECTOR (NPD)

251. The National Project Director (NPD), is an officer appointed by the Ministry of the Environment who is responsible for supporting implementation of the project. The NPD serves as the project focal point on the part of the government and as such ensures effective communication between the government and other relevant national stakeholders/actors and monitors the progress towards expected outputs and strategic results under the project. Specifically, the NPD's major responsibilities, in close collaboration with UNDP CO and the Project Management Unit (PMU) are:

- Undertake project advocacy at the policy level (high officials of the congress, ministries, government agencies and other public sector institutions, civil society, private sector and the donor community) to ensure national commitment and contribution to the project objectives;
- Undertake policy level negotiations and other activities to facilitate effective and efficient project implementation and maximize its impact;
- Ensure that the project document revisions requiring Government's approval are processed through the Executing Agency, in accordance with established procedures;
- Participate in the finalization and approve the Project Annual and Quarterly Work Plans and budget, in close discussion with the UNDP, to maximize the leverage of the project resources in order to achieve the desired overall state of development and immediate objectives set out in the project document; s/he may also approve individual payments on a day-to-day basis unless s/he delegates this function to the Project Coordinator.
- Approve individual payments of the Project Coordinator and other staff of the PMU.
- Supervise and approve the project budget revision and NEX delivery report;
- Review jointly with the PMU success indicators and progress benchmarks against expected project outputs so that progress can be assessed, and review and clear Annual Project Progress and Terminal Reports;
- Conduct regular monitoring sessions with UNDP and the PMU, including Project Appraisal Committee (PAC) Meeting, Annual and Terminal Tripartite Review Meetings to measure progress made or achieved towards the project objectives, and comment on Project Review and Evaluation Reports;
- Report regularly to the Project Steering Committee on the project progress, in conjunction with the PMU staff;
- Assess on regular basis staff work performance in the PMU, including that of National Project Manager, Administrative & Finance Assistant and other staff;
- Establish close linkages with other UNDP and UN supported as well as other donor or nationally funded projects/programmes in the same sector

PROJECT COORDINATOR (PC)

252. A Project Coordinator (PC) will be competitively selected by a joint Ministry of the Environment – UNDP panel, in line with UNDP rules. The PC will act as head of the PMU and will work in close coordination with the National Project Director and will ensure appropriate linkages with other relevant Government structures. The PC will support the NPD in the timely conformation of the Steering Committee and will act as secretary of the Committee.

253. The PC, under supervision of the NPD, will be responsible for achieving the outputs and, hence, objectives of the project, and ensuring the co-operation and support from the implementing agent.

254. The PC will be responsible for managing the implementation of the project, which includes personnel, subcontracts, training, equipment, administrative support and financial reporting keeping the NPD aware of all relevant factors which could impact on project implementation. The specific responsibilities of the PC will be to:

- Set up and manage the project office, including staff facilities and services, in accordance with the project work plan;
- Prepare and update project workplans, and submit these to the NPD and UNDP-GEF and UNDP-CO for clearance and ensure their implementation consistent with the provisions of the project document.
- Act as a principal representative of the project during review meetings, evaluations and in discussions and, hence, be responsible for preparation of review and evaluation reports such as the Annual Project Report (APR) for the consideration of the NPD.
- Ensure the timely mobilization and utilization of project personnel, subcontracts, training and equipment inputs:

  a) identify potential candidates, national and international, for posts under the project
  b) prepare the ToR, in consultation with the implementing agent and subcontractors;
  c) prepare training programmes (in consultation with the implementing agents) designed for staff, with particular emphasis on developing an overall training plan.
  d) draw up specifications for the equipment required under the project; procure such equipment according to Government and UNDP rules and procedures governing such procurement.

  Assume direct responsibility for managing the project budget on behalf of the NPD, ensuring that:

  a) project funds are made available when needed, and are disbursed properly;
  b) accounting records and supporting documents are kept;
  c) required financial reports are prepared;
  d) financial operations are transparent and financial procedures/regulations for NEX projects are applied; and
  e) the project is ready to stand up to audit at any time.
- Exercise overall technical and administrative oversight of the project, including supervision of national and international personnel assigned to the project.
- Report regularly to and keep the RPM and UNDP-GEF and UNDP-CO up-to-date on project progress and problems, if any.
- Ensure timely preparation and submission of required reports, including technical, financial, and study tour/fellowship reports;
- Perform other coordinating tasks as appropriate for the successful implementation of the project in accordance with the project document.

<u>Responsibilities on project completion and follow-up</u>

255. In order to ensure the efficient termination of project activities, the PC will:

- Prepare a draft Terminal Report for consideration at the Terminal Tripartite Review meeting (NPSC Meeting), and submit a copy of this report to the UNDP Resident Representative and designated Implementing Agency for comments at least 12 weeks before the completion of the project;
- Make a final check of all equipment purchased under the project through a physical inventory, indicating the condition of each equipment item and its location; discusses and agrees with the

UNDP and the implementing agent(s) the mode of disposition of such equipment and follow up on the exchange of letters among the UNDP, Government and implementing agent(s) on the agreed manner of disposition of project equipment; take action to implement the agreed disposition of equipment in consultation with the project parties.

- Ensure all terminal arrangements relating to project personnel are completed at the final closure of the project.

Accountability

256. The PC will work under the general guidance of and report to the National Project Director. The PC is accountable to UNDP for the manner in which he/she discharges the assigned functions.

257. The PC shall discharge his/her duties in line with the rules and procedures set forth in the UNDP User Guide on Programming for Results and other project management guidelines including, where applicable, the provisions of the agreements concluded with cost-sharing donors. The PC acts as the Certifying Officer. As such, he/she is responsible for the actions taken in the course of his/her official duties. The PC may be held personally responsible and financially liable for the consequences of actions taken in breach of the prevailing financial rules and regulations.

Skills and Expertise

1. Knowledge and Experience with Adaptation to Climate Change Projects
2. Management Experience for: Budget Management, Delivery of Field Projects, Ability to Meet Deadlines
3. Regional Network and Multi-Stakeholder processes;
4. Strong Communication and Interpersonal-Skills;
5. Institutional Capacity to Manage the project: Time, Guidance, Budget Management System, Infrastructure, In-kind contribution

General qualifications

Education: Post-graduate level (preferable academic background)
Experience: At least 5 years work experience in the relevant area;
Demonstrated management experience and organizational capacity;
Previous experience/ familiarity with UNDP (or other donors) an asset.
Skills: Good analytical skill
Good interpersonal and communication skills
Good computer skill
Language: Fluent in English and Spanish

NATIONAL ADMINISTRATIVE AND FINANCE ASSISTANT

Organizational setting

258. The Administrative and Finance Assistant will work under the direct supervision of the Project Coordinator and provide assistance to project implementation in the mobilization of inputs, the organization of training activities and financial management and reporting.

Job content

259. The Administrative and Finance Assistant will be responsible of the following duties:

- Prepare all payment requests, financial record-keeping and preparation of financial reports required in line with NEX financial rules and procedures

- Assistance to the recruitment and procurement processes, checking the conformity with UNDP and the Government rules and procedures
- Act as administrative liaison between the Ministry of the Environment, the PMU, UNDP, subcontractors and consultants as needed
- Take notes and draft minutes of meetings of the Steering Committee and other meetings, as required
- Assistance to the organization of in-country training activities, ensuring logistical arrangements
- Preparation of internal and external travel arrangements for project personnel
- Maintenance of equipment ledgers and other data base for the project
- Drafting of correspondence as required
- Act as a Petty Cash custodian
- Maintain project filing, including registers of holidays, sick leaves and other absences of members of the PMU and consultants
- Other duties which may be required

General Qualifications
Education: University Degree, some training in business and/or administration desirable (finance or accounting)
Experience: At least five years administrative experience;
Skills: Good organizational skills;
Good computer skills, including spread-sheets and database
Languages: Fluent in English and Spanish

D. INTERNATIONAL CONSULTANTS FOR TECHNICAL INPUTS (ICTS)

260. UNDP will competitively recruit International Consultants consistent with standard UNDP procedures. The ICTs will provide technical guidance for the execution of project activities as described in Outcomes 1-3 (see log-frame).

261. The incumbents will provide technical backstopping to the PMU. The incumbents will work from his/her usual place of work but will undertake several missions in the course of the project implementation.

262. Duties

Under the supervision of the NPD and UNDP and in close cooperation with the Project Coordinator, the International Consultants will provide technical backstopping and in particular:

- Prepare technical documents that will support the implementation of Outcomes listed in the UNDP Project Document
- Participate and provide technical advice in Project Steering Committee and technical group meetings as required;
- Provide technical guidance based on previous experiences in the development of demonstration measures as identified in the project document and as they relate to the identified project sites;
- Prepare methodologies and tools, based on international best practices, for use in the implementation of project components
- Guide the monitoring and evaluation activities as they relate to the project and the approved Vulnerability Reduction Approach for measuring improvements in adaptive capacity
- Guide the preparation of knowledge products and contribute towards the effective dissemination of KM products at national level;
- Provide technical input at capacity development fora as outlined in the project document;

- Review and revise inputs provided by national institutions;
- Provide technical backstopping to the Project as required and as requested by the Project Coordinator;
- Assist the facilitation of lessons learned into the UNDP-GEF Adaptation Learning Mechanism
- Facilitate cross-country knowledge transfer
- Develop papers and briefs highlighting successful case studies and lessons learned from the project

Accountability

263. The ICTs are accountable to UNDP for the manner in which they discharge the assigned functions.

Skills and Expertise

- Knowledge and Technical Experience with Adaptation to Climate Change and Coastal Management Projects,
- Ability to review, prepare and present methodological material
- Regional Network and Multi-Stakeholder processes;
- Strong Communication and Interpersonal-Skills;

General qualifications

Education: Post-graduate level (preferable academic background)
Experience: At least 10 years work experience in the relevant area;
Demonstrated management experience and organizational capacity;
Ample previous experience/ familiarity with UNDP/UNESCO/GEF projects;
Skills: Good analytical skill
Good interpersonal and communication skills
Good computer skill
Language: Fluent in English and Spanish

D. NATIONAL CONSULTANTS FOR TECHNICAL INPUTS (NCT)

Location: In the respective project country
Responsible unit: UNDP CO / NEX Agency
Supervisor(s): NEX Agency/ Project Manager

Overall Objective:

264. The consultants will, under the supervision of the Project Coordinator, develop and/or strengthen the technical aspects of the country specific project activities. Detailed Terms of Reference will be developed by the Project Manager and selection of the consultant should be in line with UNDP established procedures.

- Develop technical input and provide guidance in lieu of for Outcomes 1, 2, and 3
- Implementation and Coordination Arrangements
- To be determined pending project implementation.

265. Qualifications and Experience

- Technical knowledge of adaptation to climate change and integrated management of hydric resources
- Monitoring and Evaluation Expertise based on UNDP Practices for GEF projects

- Knowledge of national policy relevant to adaptation
- Experience with project and programme design
- Capacity to engage with multiple levels of stakeholders, including communities, civil society, government, and the private sector

Annex 4: Cofinancing letters – Please refer to separate file

Annex 5: Template on lessons learned for ALM.

Completed by: ate:

Project Data

Name of the project:

PIMS:

Project funding source: SPA/SCCF/LDCF

Project priority:
Agricultural practices or policies
Water availability or management
Health prevention or planning
Disaster risk management
Coastal zone management or planning
Natural resource management
Global environmental benefits (select) – BD, LD, IW, CC

Climate change risk:
Disaster-related (flood, drought, storm)
Resource constraint (shifting viability of agriculture, water availability, etc)
Other:

Timescale of risk:
Short term (seasonal and inter-annual)
Long term (decadal and multi-decadal)
Both

Timescale of response benefits:
Short term (seasonal and inter-annual)
Long term (decadal and multi-decadal)
Both

Target exposure unit:
Ecosystem/single area
Multiple sector/geographic areas

Project scope:
Local/national/sub-regional/regional/global

Please share lessons learned through the project in your responses to the following questions. Please keep your responses to 100 words.

Lessons on Process

Stakeholder Involvement
1. Describe how the project has succeeded or struggled to engage stakeholders (methods for engagement and participation, mechanisms for transparency and information sharing, etc.)

Policy dialogue
2. Describe how the project succeeded or struggled to undertake effective policy dialogue (achieving national ownership, relevance of policy dialogue: departmental, ministerial, local authority, etc.)

Institutional and individual capacity building
3. Describe how the project succeeded or struggled to build capacity for adaptation.

Tools and approaches for mainstreaming
4. Describe successful or unsuccessful entry points and methods for mainstreaming climate change and adaptation.

Lessons on Outcomes
Design
5. Describe successes and/or failures to deliver the project's combination of outcomes: policy level integration; hard measures to reduce risk; vulnerability reduction; improved adaptive capacity; capacity building; and/or risk transfer.

Impact
6. Describe successes and barriers to success in achieving impact targets.

Sustainability
7. Describe initial evidence of successes or failures of the project in achieving sustainability of adaptation benefits and relevant factors.

Innovation
8. Describe any successes or failures of the project in introducing innovations to support adaptation in the following categories: project design, implementation of adaptation measures, building adaptive capacity, policymaking to facilitate adaptation, adaptation mainstreaming, risk transfer/financial measures, others.

Replication
9. How does the project capitalize on the ALM? What other mechanisms for replication are incorporated into the project?

Lessons on Operations
Execution modality
10. Describe how the project's execution modality has been effective or ineffective.

Project implementation infrastructure
11. Describe how the project implementation structure been advantageous or disadvantageous.

Overall
12. Key recommendations for future adaptation projects:

Annex 6: GEF Secretariat and other Agencies' comments and IA/ExA response

GEF COMMENTS

Both the first section (Project rationale, objectives, outputs and activities, pages 2 - 4) and Annex A (Additional cost analysis, page 17 - 19) include several conceptual issues:	
1. List of outcomes 1-4: text focuses mostly on capacity building, where is the action?	The project's outcomes have been modified to provide a more substantive discussion on what the project is expected to achieve. Three instead of four outcomes have been identified in the revised proposal. Capacity building activities have been limited to one outcome while the other two outcomes focus on demonstration activities and improving water governance frameworks (i.e. legislation, national plans, etc) to integrate climate change risks.
2. List of outcomes 1-4 (with description) text focuses mostly on process, where is the action? In this case outcomes 3 and 4 may generate some action, please clarify.	The outcomes now provide a description of their scopes as well as more detailed description of the activities to be implemented.
3. Key indicators; again, outcome 3 and 4 may generate some benefits on the ground; please clarify through which actions;	Outcome 2 is now focused on adaptation measures at the local level and the text provides elaborates on specific intervention. A distinction has been made between baseline and additional interventions to address climate change issues across all outcomes.
4. The baseline is too vague. In these kinds of projects it s not acceptable to say that the baseline does not include adaptation. The baseline must include specific development activities that will be "climate-proofed" through this project;	The baseline section has been clarified, and we have provided substantial detail on the direct contribution of baseline activities to the proposed activities funded by SCCF. Each outcome provides a description of the relevant baseline issues as well as additionality.
5. Baseline overambitious (practically includes any sector and any activity in it); 10 billion would not be enough to climate proof it.	The project is focused on one sectoral intervention. As explained above, the baseline provides a clear description of relevant activities under the 3 project outcomes, namely: 1) integration of climate change risk on the water sector integrated into key relevant plans; 2) Adaptation strategies and measures for the water sector on the ground, and strengthening of human and institutional capacity. It is important to note that more 2/3 of the SCCF funds are allocated to achieve concrete results at the local level. The scope of the interventions is redefined following discussions at the bilateral.
6. Please define a more realistic baseline including limited activities and a more limited climate proofing activities in the water sector, as originally planned at project concept stage.	The baseline descriptions for each outcome has been improved in the text.
7. The budget must be modified as the GEF cannot be the only source of financing for M&E -- co-sharing must be sought.	Co-financing for M&E activities has now been included. This is based on the follow up of baseline activities that the key institutions will commit to do in their respective capacities. Such commitment will help to ensure that project activities will not be at risk because of lack of appropriate monitoring of the baseline activities.
8. Please provide a justification of the $6 million co-financing including the specific sources of co-financing (letters of commitments are not necessary at this stage) and for which baseline activities.	Specific sources of co-financing have been added. Letter of commitments will be submitted at CEO endorsement.

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