

**Implementation Status & Results  
Andean Countries  
Adaptation to the Impact of Rapid Glacier Retreat in the Tropical Andes (P098248)**

Operation Name: Adaptation to the Impact of Rapid Glacier Retreat in the Tropical Andes (P098248)      Project Stage: Implementation      Seq.No: 9      Status: ARCHIVED      Archive Date: 27-Oct-2012

Country: Andean Countries      Approval FY: 2008  
Product Line: Global Environment Project      Region: LATIN AMERICA AND CARIBBEAN      Lending Instrument: Specific Investment Loan  
Implementing Agency(ies): Secretaria General de la Comunidad Andina

**Key Dates**

Board Approval Date	27-May-2008	Original Closing Date	30-Sep-2012	Planned Mid Term Review Date	Last Archived ISR Date	16-Feb-2012
Effectiveness Date	12-May-2006	Revised Closing Date	30-Sep-2013	Actual Mid Term Review Date	10-Oct-2010	

**Global Environmental Objectives**

Global Environmental Objective (from Project Appraisal Document)

**The broad development objective of the proposed project is to contribute to strengthening the resilience of local ecosystems and economies to the impacts of glacier retreat in the Tropical Andes, through the implementation of specific pilot adaptation activities that illustrate the costs and benefits of adaptation. The specific objectives of the project, in support of this broad objective, are: a) the effective integration of the implications of glacier retreat into the regional and local planning in glacierized basins; b) the inclusion of glacier retreat impacts in local, sector development projects; and c) generation of data on glacier dynamics.**

Has the Project Development Objective been changed since Board Approval of the Project?

Yes       No

**Component(s)**

Component Name	Component Cost
Development of climate change scenarios and glacier-fed basin impact maps and models	0.32
Design and implementation of pilot adaptation measures	5.81
Monitoring of glacier retreat in the region	0.35
Project Management	0.70
Development of regional activities	0.75

**Overall Ratings**

	Previous Rating	Current Rating
Progress towards achievement of GEO	Moderately Satisfactory	Moderately Satisfactory
Overall Implementation Progress (IP)	Moderately Satisfactory	Moderately Satisfactory
Overall Risk Rating	Moderate	Moderate

**Implementation Status Overview**

The project has been extended for one year. The current closing date is September 30, 2013.

During this period there has been steady progress in the three participating countries:

Bolivia. All pieces of equipment have been purchased and delivered. The implementation phase of two irrigation schemes, for Batallas and Palca is expected to begin before end of year. A consultancy to reduce water losses and improve EPSAS's capacity to increase water distribution efficiency is currently being implemented, and has already yielded positive results. Another key consultancy, aimed at identifying water supply options for La Paz and El Alto in the short-medium term to adapt to water shortages caused by climate change, has been contracted, and is being implemented. The glacier inventory is finalized, and, using ALOS satellite images, the inventory of high-mountain lagoons and paramos is currently being conducted. The third pilot project, "Mainstreaming Adaptive River Defence for Huayhuasi & El Palomar Settlements", has been finalized, and a closing workshop took place at the La Paz's Institute of Hydrology and Hydraulics on May 30.

If no unexpected situations take place (such as constant, negative weather conditions that would prevent working on irrigation systems), all project investments are expected to be finalized before the end of project closing date.

Ecuador. There has been substantial progress in this period. A process for the acquisition of meteorological monitoring equipment is well advanced. A small water supply and sanitation pilot system in Papallacta is expected to begin the construction phase before end of the year. Another key activity, related to paramo conservation and cattle management, is about to begin. The vulnerability assessment study for the Pita basin is ongoing, and its scope has been increased to also include natural protected areas in the Antisana. The design of an activity related to paramo restoration has been finalized.

Peru has seen the resignation of its National Technical Expert (the person who coordinated all activities in the country), and this might have created some slight delays. However, a new person has been hired and has started working. Most of the activities in Peru have been finalized (with some minor purchases of seedlings for reforestation activities in Shullcas still pending). The work being performed in Piura, related to paramo, is being conducted from two complementary angles: one for the modeling of paramo functions and climate change impacts, which is already being implemented; the other, on paramo monitoring, is expected to begin before end of the year.

A new technical coordinator has been hired. Her main attribution is to implement activities under the regional component. Workshops are being held amongst the various actors of the countries, and terms of reference to prepare documents on lessons learnt are finalized.

All eight high-mountain monitoring stations are installed and functioning properly.

**Locations**

Country	First Administrative Division	Location	Planned	Actual
Andean Country	Not Entered	Cantón Quito		
Andean Country	Not Entered	Quito		
Andean Country	Not Entered	Río Quijos		
Ecuador	Provincia de Pichincha	Provincia de Pichincha		✓
Andean Country	Not Entered	Río Papallacta		
Ecuador	Provincia de Napo	Provincia de Napo		✓
Andean Country	Not Entered	Río Antisana		
Andean Country	Not Entered	Río Tuní		

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Country	First Administrative Division	Location	Planned	Actual
Andean Countrie	Not Entered	Departamento de Tarija		
Andean Countrie	Not Entered	Departamento de Potosi		
Andean Countrie	Not Entered	Departamento de Oruro		
Bolivia	Departamento de La Paz	Rio La Paz		
Bolivia	Departamento de La Paz	Departamento de La Paz		
Andean Countrie	Not Entered	Guayguasi		
Bolivia	Departamento de La Paz	El Palomar		
Bolivia	Departamento de La Paz	El Alto		
Andean Countrie	Not Entered	Rio Condoriri		
Andean Countrie	Not Entered	Departamento de Cochabamba		
Andean Countrie	Not Entered	Departamento de Chuquisaca		
Andean Countrie	Not Entered	Altiplano		
Andean Countrie	Not Entered	Río Vilcanota		
Andean Countrie	Not Entered	Río Urubamba		
Andean Countrie	Not Entered	Río Shullcas		
Andean Countrie	Not Entered	Río Mantaro		
Peru	Departamento de Junin	Departamento de Junin		✓
Andean Countrie	Not Entered	Huancayo		
Peru	Departamento de Cusco	Departamento de Cusco		✓
Andean Countrie	Not Entered	Río Santa Teresa		
Andean Countrie	Not Entered	Laguna Lazo Huntay		

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**Results**

**Global Environmental Objective Indicators**

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Indicator Name	Core	Unit of Measure		Baseline	Current	End Target
Information/data on CC scenarios and glacier retreat contribute to the definition of local/ regional governments' adaptation strategies to CC and/or integrated water resources management plans.	<input type="checkbox"/>	Text	Value	There are no climate change (CC) adaptation strategies or plans for the selected basins that incorporate the implications of CC or glacier retreat.	Project continues to deliver relevant information for adaptation strategies in the participating countries.	Development of at least one adaptation strategy/plan per country that incorporates the information generated by the project on the implications of CC and glacier retreat.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	This indicator has been adjusted as per approved project restructuring.		
Design and implementation of pilots generates lessons delivered to relevant institutions which could be incorporated into planning and implementation of public/private investment programs and projects	<input type="checkbox"/>	Text	Value	There is no systematization of lessons learnt from what could be considered adaptation activities.	On-going. An experienced technical coordinator has been hired, and activities are progressing as more results become available.	All adaptation investment activities implemented by the PRAA generate relevant information on adaptation which is collected and elaborated to be used as input in the planning and implementation of public/private investment programs and projects.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	This indicator has been adjusted as per approved project restructuring.		
Strengthened national meteorological services capacity to monitor glacier dynamic in Bolivia Ecuador and Peru.	<input type="checkbox"/>	Text	Value	Limited availability of high-mountain meteorological stations (only those administered by the IRD of France). Limited availability of satellite images/data.	8 stations are fully operational. Meteorological equipment is being purchased in Ecuador. A new batch of ALOS images has been requested	Information on glacier behavior in the region is available and 8 high-mountain meteorological stations provide useful data for modeling, and for CC impact and glacier retreat studies in the selected basins. ALOS images have been processed.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	This indicator has been adjusted as per approved project restructuring.		

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Increase in the national and local awareness of the impacts of rapid tropical glacier retreat as measured through mentions in written media of mass circulation.	<input type="checkbox"/>	Text	Value	No mentions in written media.	Dissemination at different levels continues in all participating countries.	At least 8 press articles in the local written media.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	Unchanged after project restructuring.	Indicator achieved	
Contribute to strengthening Andean region integration by supporting implementation of Andean Env Agenda, through generation of tools to assess impacts and design and implement adapt measures	<input type="checkbox"/>	Text	Value	The Andean Environmental Agenda establishes the need to work on these topics at the sub-regional level, but this has not fully materialized.	The SGCA is fully engaged in the process of assessing project results and lessons learnt. Ongoing projects and strategies are generating useful information for the Andean region.	The results of the different studies, and design and implementation of adaptation activities in all countries has been systematized. Good practices at the community, national and Andean sub-regional levels have been identified and disseminated in participating countries.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	New indicator resulting from the inclusion of a new component (Comp 5) through the restructuring.		

**Intermediate Results Indicators**

Indicator Name	Core	Unit of Measure		Baseline	Current	End Target
Number of water utilities that the project is supporting	<input checked="" type="checkbox"/>	Number	Value	0.00	3.00	3.00
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	No water utilities supported by project	Achieved. EPMAPS in Ecuador, EPSAS in Bolivia, SEDAM in Huancayo (Peru).	At least 3 water utilities involved with project activities and supported by it.
Climate change scenarios developed using data from a high-resolution global circulation model (Earth Simulator, MRI Japan) in participating countries generating useful information for selected basins.	<input type="checkbox"/>	Text	Value	Availability of some scenarios based on other global circulation models with less resolution.	Peru and Ecuador finalized. Bolivia expected to finalize by end of the year.	The three countries have generated CC scenarios with MRI data for the selected basins. This constitutes an input for assessing CC impacts on water balances on those basins.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	Indicator modified through project restructuring.		

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<p>Generation of models and/or impact maps to the effects of climate change and glacier retreat in the selected basins in Bolivia, Ecuador and Peru.</p>	<input type="checkbox"/>	<p>Text</p>	<p>Value</p>	<p>There are no impact maps due to the effects of CC and glacier retreat for the selected basins.</p>	<p>Three countries generating different products, with different resolutions and time scales, that provide a measure of impacts at basin level.</p>	<p>At least one model or impact map has been developed by each country.</p>
			<p>Date</p>	<p>15-Oct-2008</p>	<p>26-Sep-2012</p>	<p>30-Sep-2013</p>
			<p>Comments</p>	<p>New indicator introduced through project restructuring.</p>		
<p>Participatory development at the regional/local level of CC adaptation strategies and/or plans (e.g. integrated water management plan or zoning plan that considers CC and glacier retreat implications)</p>	<input type="checkbox"/>	<p>Text</p>	<p>Value</p>	<p>There are no CC adaptation strategies or plans for the selected basins. Also, the coordination among water users is very limited.</p>	<p>Plans and strategies are being developed, and the draw on lessons from the different pilots in the three countries. As pilots are finalized, strategies will be more defined.</p>	<p>At least one strategy and/or plan has been developed for each participating country.</p>
			<p>Date</p>	<p>15-Oct-2008</p>	<p>26-Sep-2012</p>	<p>30-Sep-2013</p>
			<p>Comments</p>	<p>New indicator introduced through project restructuring.</p>		
<p>Sets of adaptation measures designed for the selected basins.</p>	<input type="checkbox"/>	<p>Text</p>	<p>Value</p>	<p>No adaptation activities have been designed in the selected basins.</p>	<p>All adaptation measures in the three participating countries have been designed.</p>	<p>At least two adaptation activities have been designed under each pilot. Each design includes its own M&amp;E system able to generate information, beyond project closure.</p>
			<p>Date</p>	<p>15-Oct-2008</p>	<p>26-Sep-2012</p>	<p>30-Sep-2013</p>
			<p>Comments</p>	<p>Indicator unchanged, target value adjusted through project restructuring.</p>	<p>Indicator achieved.</p>	
<p>Implementation of adaptation activities to promote integrated water resources management in the selected basins in Ecuador.</p>	<input type="checkbox"/>	<p>Text</p>	<p>Value</p>	<p>No specific activities on fragile high-mountain ecosystems in Ecuador, which contribute to water regulation at the basin level, have been designed or implemented as an adaptation response to CC.</p>	<p>Activities are ongoing. A pilot on small water supply and sanitation for El Tambo is in the final stage of procurement. A number of other activities in the Papallacta area are finalized or being finalized as planned.</p>	<p>At least one adaptation measure implemented under each pilot in Ecuador, with its own M&amp;E system.</p>
			<p>Date</p>	<p>15-Oct-2008</p>	<p>26-Sep-2012</p>	<p>30-Sep-2013</p>
			<p>Comments</p>	<p>Indicator modified through project restructuring.</p>		

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Implementation of adapt activities to promote integrated water resources mgment, including demo activities for CC resilient agriculture in the selected basins (Sta Teresa, Shullcas) in Peru	<input type="checkbox"/>	Text	Value	There is no water resources planning that considers the impact of glacier retreat in any of the two selected sub-basins, and limited knowledge on climate change resilient agriculture practices amongst local farmers.	Infrastructure and works at the two basins is finalized. Technical assistance and demonstrations are ongoing. The end target value of the indicator has thus been achieved.	At least one adaptation activity has been implemented and tested in each sub-basin under each pilot in Peru, with their own M&E system. At least one of the activities includes demonstration pilot showcasing good agricultural practices and water efficiency.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	Indicator modified through project restructuring.		
Implementation of adaptation activities to promote integrated water resources management in the cities of La Paz and El Alto, and in the selected sub-basins in Batallas and Palca in Bolivia.	<input type="checkbox"/>	Text	Value	Water distribution systems in La Paz and El Alto register unaccounted-for water (UFW) loses of more than 30%. There are no local level plans that include CC and glacier retreat considerations.	The UFW consultancy is almost concluded. Two irrigation schemes in Batallas and Palca are in final stages of procurement.	A proposal to reduce UFW and improve efficiency is delivered to EPSAS. At least one adaptation activity is implemented in Palca and one in Batallas, with their own M&E system.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	Indicator modified through project restructuring.		
Increase knowledge about the economic implications of glacier retreat in the region.	<input type="checkbox"/>	Text	Value	There is no economic information about the impacts of rapid glacier retreat in the region.	Colombia has concluded its study. Peru, Ecuador and Bolivia have agreed on a combination of in-country training and real examples of valuation of impacts caused by glacier retreat. TDRs are ready for the procurement phase.	Studies on the economic impacts of glacier retreat have been finalized in all countries based on the methodology agreed by all.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	New indicator introduced through project restructuring.		
Availability of a methodological guide to formulate baselines and adaptation measures in high-mountain ecosystems.	<input type="checkbox"/>	Text	Value	There are several methodologies but none specifically designed for high-mountain ecosystems.	This activity, led by a Swiss consortium, is proceeding, with some minor delays due to difficulties in finding consensus amongst participating countries.	Methodological guide is available.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013

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			Comments	New indicator to reflect newly created comp. 5 through project restructuring.		
Systematization and analysis of the different methodologies used for glacier monitoring in the Andean sub-region.	<input type="checkbox"/>	Text	Value	Each country applies its own methodology and generates data, but there is no exchange of information generated by the project among countries.	This activity, led by a Swiss consortium, is proceeding, with some minor delays due to difficulties in finding consensus amongst participating countries.	At least one workshop to exchange know-how on CC scenarios development and glacier monitoring has taken place. A document that systematizes the experiences of Bolivia, Ecuador and Peru on this topic is also available.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	New indicator to reflect newly created comp. 5 through project restructuring.		
Number of high-mountain meteo stations installed in glacier and high-mountain ecosystems, generating consistent data through time to monitor glacier evolution and meteo conditions in the basins.	<input type="checkbox"/>	Text	Value	Limited availability of high-mountain meteorological data in the tropical Andes.	All stations are installed and working properly.	8 meteorological stations installed and operational, generating accessible data to all relevant stakeholders in the 4 countries (Bolivia, Colombia, Ecuador and Peru).
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	Indicator modified through project restructuring.	Indicator achieved.	
Availability and use of satellite images and/or aerial photographs to characterize glacier surface, assess the dynamic of glaciers and high-mountain ecosystems in the 4 countries.	<input type="checkbox"/>	Text	Value	ALOS images are not being used and very few photogrammetric analyses are being done to assess glacier behavior in the region.	All countries have used ALOS images, and aerial photographs, to characterize glacier dynamics. A new batch of ALOS images has been requested for further analyses.	Each country has at least generated one study on glacier cover evolution, using ALOS images and/or aerial photos obtained by the Project.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	Indicator modified through project restructuring.	Indicator achieved.	
Development of capacity to analyze and monitor high-mountain ecosystems' (paramos) behavior to CC, in reference to the water cycle and their role in fixing carbon.	<input type="checkbox"/>	Text	Value	There is no knowledge about the impacts of CC on paramos.	Procurement of services to monitor paramos behavior in Ecuador and Peru is advanced.	The studies on the role of the paramos on the water and carbon cycle in Peru and Ecuador have been finalized.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	Indicator modified through project restructuring.		

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Systematization and analysis of the different adaptation processes applied in the different pilots financed by the project.	<input type="checkbox"/>	Text	Value	There is no or very limited regional exchange on this topic, and if done, is not formal.	The recently hired technical coordinator is leading the implementation of these activities, and draft TORs are being discussed within the participating countries.	At least one workshop to exchange know-how on adaptation processes. A document that systematizes the experiences of Bolivia, Ecuador and Peru on this topic is also available.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	New indicator to reflect newly created comp. 5 through project restructuring.		
Dissemination among the communities, local governments involved, specialized institutions and other stakeholders of the participatory working experiences and results on the topic of adaptation to CC.	<input type="checkbox"/>	Text	Value	Limited formal understanding by the communities of the problematic of CC, glacier retreat and the role of the high-mountain ecosystems on the eater cycle. Very few press articles and publications at the community level on this topic in the Andean region.	Dissemination is ongoing, and expected to increase as more results become available.	Project web page that integrates information about the topic, experiences, and results at the local and sub-regional level is operational. Project closing workshop and Report.
			Date	15-Oct-2008	26-Sep-2012	30-Sep-2013
			Comments	Indicator modified through project restructuring.		

**Data on Financial Performance (as of 11-Oct-2012)**

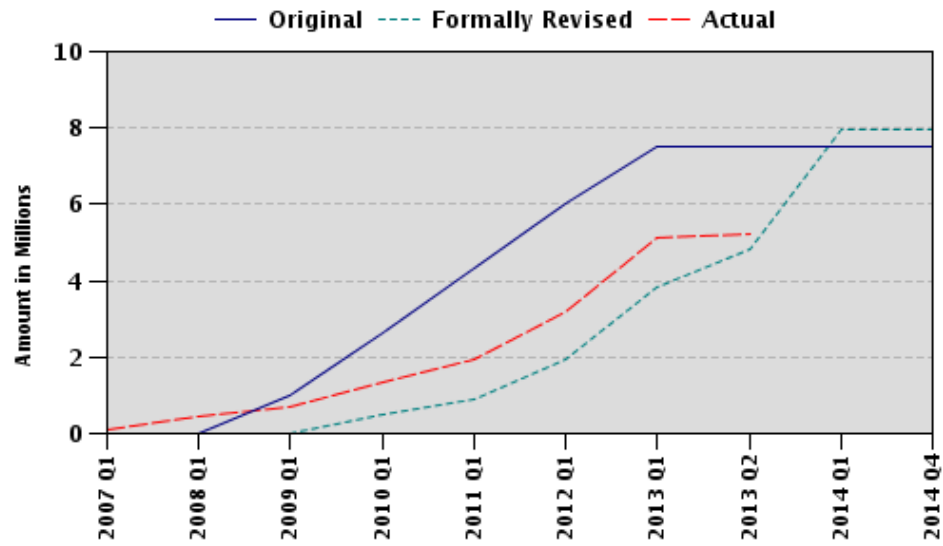
**Financial Agreement(s) Key Dates**

Project	Ln/Cr/Tf	Status	Approval Date	Signing Date	Effectiveness Date	Original Closing Date	Revised Closing Date
P098248	TF-56694	Closed	12-May-2006	12-May-2006	12-May-2006	30-Mar-2007	12-Dec-2007
P098248	TF-90328	Effective	31-Oct-2007	31-Oct-2007	31-Oct-2007	31-May-2011	31-Jan-2013
P098248	TF-91712	Effective	11-Jul-2008	11-Jul-2008	11-Jul-2008	30-Sep-2012	30-Sep-2013

**Disbursements (in Millions)**

Project	Ln/Cr/Tf	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	% Disbursed
P098248	TF-56694	Closed	USD	0.59	0.58	0.01	0.58	0.00	100.00
P098248	TF-90328	Effective	USD	0.87	0.87	0.00	0.70	0.16	81.00
P098248	TF-91712	Effective	USD	7.49	7.94	0.00	3.93	4.01	50.00

**Disbursement Graph**



**Key Decisions Regarding Implementation**

The project has been extended until September 30, 2013.

**Restructuring History**

Level two Approved on 21-Mar-2012, Level two Approved on 03-Apr-2012

**Related Projects**

P119725-Adaptation to the Impact of Rapid Glacier Retreat in the Tropical Andes Additional Financing