Solid steps forward on Andean Glacier Monitoring– an SCCF Achievement on Adaptation and Technology Transfer

With the successful installation of the first out of eight glacier monitoring stations in the Andes region, the project "Adaptation to the Rapid Impact of Glacier Retreat in the tropical Andes," financed by the Special Climate Change Fund (SCCF) is on the track of becoming the **first regional network of glacier monitoring stations** in the Andes. This regional project is implemented by the World Bank in Ecuador, Peru, and Bolivia with funding from the SCCF and the Japanese government, and it is also expected to mobilize 4 million Euros in co-financing from the Nordic Development Fund. The first installation was successfully concluded on 30 November 2010, in the Huaytapallana Glacier in Junin, Peru. The other seven stations have been tested and are ready for delivery.

The stations are to be installed at the glacier basins of Peru, Ecuador, and Bolivia to serve as state-of-the-art monitoring equipment to provide a comprehensive understanding of the effects of climate change on glaciers. The meteorological and hydrological information generated will be used to plan and design adaptation measures, especially with respect to the use and management of water resources. Pilot adaptation measures such as soil restoration in the Andean highlands, climate-resilient irrigation techniques, alternative crops and best practices in agriculture, improved water use efficiency in urban areas, and the prevention of landslides and flash floods due to climate change-induced accelerated glacier melting, will be implemented in this sub-basin. The project has also achieved the scientific and technical capacity improvement of national meteorological and hydrological institutes' staff.

Andean glaciers are retreating at an alarming rate. Recent measurements show catastrophic declines in glacier volumes (i.e., Bolivia's Chacaltaya glacier has lost 82% of its surface area since 1982, and may disappear by 2013[1]) which are likely to result in substantial impacts on water flows to Andean valleys. At lower altitutes, observed effects of climate change include a deterioration of watersheds and a decline in water recharge, increased likelihood of flash fires, and biotic changes in ecosystem composition.

In addition to these general negative impacts of glacier retreat, Peru, Ecuador, and Bolivia experience unpredictability in hydropower installed capacity; a renewable source of energy on which they heavily rely. Peru accounts for approximately 4% of the world's annual renewable water resources (*World Bank, 2006*). Two recent hydroelectric power plants, *Poechos II* in Peru and *Topo* plant in Ecuador, added another 32.7 MW of hydroelectric capacity[2]. The share of hydropower in Bolivia is 40%, with an installed capacity of 480 MW[3]. The average share of hydro in the region is 50%[4]. However, hydropower will decline in areas where basins are dependent on glaciers. The economic consequences of this reduction were assessed by the World Bank in 2007. Incremental investment costs due to the impacts of climate

[1] Vergara, Walter et.al. "Economic Impacts of Rapid Glacier Retreat in the Andes", EOS, Vol. 88, No. 25. 19 June 2007.
[2] http://www.ecoseed.org/en/water-power/large-hydropower/article/65-large-hydropower/3287-peru-ecuador-add-32-7mw-of-hydropower-to-south-america
[3] http://en.wikipedia.org/wiki/Electricity_sector_in_Bolivia
[4] http://en.wikipedia.org/wiki/Electricity_sector_in_Bolivia

change were estimated at US $1.5 billion in Peru and about $100 million in Ecuador.[5] Unless adaptation measures are taken, climate change will entail rationing costs, higher operation and maintenance costs, as well as costs associated with a potential shift to fossil fuel-based alternatives. Therefore, by implementing adaptation measures that address this issue, this project also provides significant mitigation benefits, as it will prevent these countries from reverting from a renewable energy source to fossil fuels.

It was during COP 10 in Buenos Aires, that the Andean countries representatives came together, to discuss and agree in principle to develop a proposal for funding from the GEF, the SCCF and other possible sources. Now, the adaptation measures currently planned are significantly bolstered by SCCF support. SCCF finance helps cover the additional costs of achieving climate resilient and sustainable development in Peru, Bolivia, and Ecuador. Thanks to its regional approach, the project takes advantage of economies of scale and contributes to global knowledge, while operating in diverse cultural and socioeconomic settings in three countries.

[5] The economic assessment was made under hypotheses of a 50% reduction in melting rate and of no melting.