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Climate change – Bolivia

Efficient irrigation in agriculture

Retreating glaciers, crop losses associated with the effects of El Niño, extreme weather events including hail and frost – the impacts of climate change increase water stress for Bolivian agriculture. According to World Bank studies, the conditions for agricultural production will worsen further with the growing uncertainty of when, how long and how heavily it will rain. The Bolivian government is making efforts to counteract this with an irrigation programme in the departments of Cochabamba and Chuquisaca, two regions which are particularly vulnerable to climate risks. This is intended to better equip around 4,000 predominantly poor families to adapt their smallholder production to climate change and ensure their livelihoods. KfW Development Bank is supporting the project professionally and financially.

Context

Bolivian farmers are at a clear advantage wherever they can become more independent from unpredictable rainfall levels. Around 300,000 hectares of land are currently used in agriculture, mainly in irrigated areas characterised by the presence of smallholders. However, the irrigation methods used here are inefficient to a large extent: this traditional surface irrigation process only utilises 20 to 40 per cent of available water. The rest drains off, unused.

As a result, the government's national irrigation plan is pursuing the ambitious goals of expanding the irrigated area by 275,000 hectares by 2030 and, most importantly, of increasing the efficiency of the irrigation systems. This is intended to improve 200,000 families' productivity and competitiveness. The plan has been supported

by a range of internationally-financed programmes for a number of years, including German Financial and Technical Cooperation. This close cooperation between KfW and GIZ continues within the current Water and Climate Change irrigation plan, which includes complementary studies on the issue of climate change or at the local level, for instance, in production and marketing consultancy services.

Project approach

The project regions in Cochabamba and Chuquisaca are some of the poorest in the country and are particularly susceptible to the impacts of climate change. On behalf of the BMZ, KfW is financing the expansion and modernisation of the irrigation infrastructure here. In addition, the water users are being trained in the operation and maintenance of the new irrigation systems.

Project name	"Water and Climate Change" irrigation programmes I and II
Commissioned by	German Federal Ministry for Economic Cooperation and Development (BMZ)
Country/Region	Bolivia
Project partner	Vice-Ministry of Water Resources and Irrigation (VRHR) within the Bolivian Ministry of Environment and Water.





Thanks to irrigation: profitable flower farming in Cochabamba. Source: KfW photo archive, photographer

KfW's project partner is the Vice-Ministry of Water Resources and Irrigation within the Bolivian Ministry of Environment and Water. To enable the state actors to take the risks and consequences of climate change into consideration as early as the planning phase for new irrigation projects, a supplementary accompanying measure is being undertaken for their training.

A dedicated unit in the Ministry for the Environment and Water is responsible for the execution of the project. The programme is geared towards constructing or rehabilitating small dams, building new irrigation channels and micro-irrigation systems, and, in particular, towards introducing more efficient irrigation practices such as sprinkler and drip irrigation in the fields. It also takes account of the risk of significant sand accretion in water storage systems due to the expected increase in heavy rain. To date, feasibility studies have been conducted for around 50 projects of this type.

The programme places particular focus on the situation of women. Women play an important role in agricultural production and marketing, though they traditionally face structural inequalities with regard to accessing land and water. Consequently, workshops with female farmers are part of the planning phase. They can share their specific interests at these sessions, ensuring that these are taken into account in the project design. Furthermore, in the case of married couples, water rights are registered for the husband *and* the wife. In addition, the programme encourages and demands stronger representation of women in the committees of the irrigation associations. Financing from KfW is covering EUR 20 million of the approximately EUR 27.2 million in overall investment costs. The departmental govern-

ments, local authorities and water users themselves are covering the rest.

Impact

Irrigation is being improved on around 5,200 hectares in the region, thus lowering the risk of crop failures. The retention basins and small dams are also helping to stabilise water discharge and reduce the risk of floods and landslides. Altogether, around 4,000 families benefit from the project. Thanks to the increased irrigation opportunities, smallholders can significantly increase their self-sufficiency as well as surplus production for marketing, including cultivation of crops such as vegetables and flowers which have a higher market value. On part of the land, it is even possible to have two cultivation periods a year. Sowing can be scheduled so that the harvest can take place early, at exactly the time when market prices are high. This is expected to at least double the incomes of families on average – which will not only secure the families' livelihood and sustenance but, beyond that, also foster economic development at large in the region.



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