

HUMBOLDT-UNIVERSITÄT ZU BERLIN



SLE Publication Series - S237 -



SLE

**30 Años de Cooperación entre
Bolivia y Alemania en el Sector
de Riego. Impactos Logrados
y Lecciones Aprendidas**

HUMBOLDT-UNIVERSITÄT ZU BERLIN



SLE Serie de publicaciones –S237–

Centro de Formación Superior para el Desarrollo Rural (SLE)
por encargo del KfW Entwicklungsbank en cooperación con la GTZ

30 Años de Cooperación entre Bolivia y Alemania en el Sector de Riego Impactos Logrados y Lecciones Aprendidas

Autores

Ina Dupret (coordinadora), Anna Heinrich, Christian Keil, Fabian Kienle, Caroline Schäfer, Felix Wagenfeld

Berlin, Diciembre 2009



Resumen en inglés (Summary)

Context

The aim of irrigation projects carried out as part of Development Cooperation is to reduce rural poverty by increasing and securing the agricultural productivity of small-scale farmers. A main factor limiting agricultural production particularly in the Andes Highlands and in the Chaco is water scarcity. The effects of climate change may well further increase the problem of water shortages or uneven water distribution in the future. German Development Cooperation has been supporting the Bolivian government ever since the 1970s in implementing programmes and projects in the irrigation sector. German commitment in the last 30 years has covered improvement of irrigation infrastructure, strengthening of local irrigation organisations, advising farmers on irrigation, consolidating state institutions and the legal base as well as developing technical capacities in this sector.

Aims and procedures

This study aims to extract lessons learned from the experience of 30 years of German Development Cooperation and use this as the basis of recommendations for future interventions. To this end, the approaches adopted by German Development Cooperation in previous decades and the impacts achieved by selected project interventions are analysed. The focus lies primarily on interventions to provide irrigation infrastructure and to strengthen local water user associations (WUA). The emphasis is on the issues of reducing poverty, regional development, strengthening WUAs, water distribution efficiency and sustainable management of natural resources.

An analysis of the project documents provided, of 25 guided interviews at the national level and a further 94 at the regional and local level as well as 284 partly standardised questionnaires aiming at the target group in nine selected case studies constitute the basis for the results.⁴ In the case of the latter, the studied irrigation projects covered a wide spectrum ranging from organisation and period of implementation to size and geographical location.

⁴ Financial cooperation projects: Comarapa, Culpina, Incahuasi; Technical cooperation projects: Camatindi, Guerrahuayco, Puesto García, San Pedro de Sola (PRONAR), Sacaca, San Pedro de Buena Vista (PGRSAP).

Learning processes and insights from 30 years of German Development Cooperation in Bolivia's irrigation sector

An experience that has essentially shaped German Development Cooperation and led to the development of innovative approaches was the implementation of the Programa de Riego Altiplano Valles (PRAV) and the follow-up project Proyecto de Riego Intervalles (PRIV). Both interventions were carried out jointly by the KfW development bank and the GTZ (German Agency for Technical Cooperation) between 1975 and 1993. The main objective was to achieve an increase in agricultural production by building and extending irrigation systems in the Altiplano and in the Valle Alto of Cochabamba. A predominantly technical approach that did not give adequate consideration to the existing water rights of the target group led, however, to some negative experiences in these projects. In the light of this, approaches were adapted to the traditional mechanisms of managing irrigation systems.

The acquired knowledge led to a development in technical cooperation in the 1990s that – in addition to different forms of intervention regarding capacity development, concept development, promotion of institutions and creation of a normative basis in the Bolivian irrigation sector – concentrated on improving the existing irrigation infrastructure and strengthening WUAs through its PROSANA, PMO and CAT-PRONAR programmes designed to implement concrete irrigation projects. As previous experiences (PRAV and PRIV) had shown spreading “technology packages” was not appropriate given the complexity and diversity of the small farmer survival strategies in Bolivia, measures to provide advice on agriculture were largely dispensed within the 1990s.

At the same time, traditional irrigation systems were modernized and expanded in the dam projects co-financed by financial cooperation, pursuing the aim of increasing agricultural productivity. Here too the projects focused on services to build infrastructure combined with strengthening WUAs. However, in contrast to the projects promoted by technical cooperation, existing water rights and water distribution mechanisms were modified in close cooperation with the farmers, making it possible to achieve an increase in **water distribution efficiency**.

A further approach promoted by the implementing organisations, namely KfW, GTZ and DED (German Development Service), in the course of the last 15 years was the construction of water storage basins in unfavourable areas to ensure production and thus food security.

The current programmes, namely SIRIC (KfW, irrigation) and PROAGRO (GTZ, sustainable agriculture including irrigation and watershed management) are characterised by more integrated approaches and greater coordination within German development cooperation. The priority strategy paper entitled “Sustainable

agricultural development in Bolivia” constitutes the basis of joint work and sees aspects of irrigation, sustainable management of resources and an increase in agricultural productivity as a unit. Ultimately, German Development Cooperation is also seeking realisation of the Integrated Water Resources Management concept (IWRM).⁵ According to the national and international experts who were interviewed in the context of the study, realisation of this approach in Bolivia is certainly desirable; however, for reasons that include the high level of agreement needed between state institutions and actors in civil society it cannot be implemented at present. At the same time it is emphasised that at least **sustainable management of natural resources** is indispensable in irrigation projects as this could have a direct influence on the lifespan of the irrigation infrastructure – a view that was confirmed by the results of the case studies: While sediment introductions were certainly taken into consideration when projects were planned, no systemic steps were taken to reduce them. As a consequence, representatives of the WUAs and project experts in Comarapa and Culpina identified sediment introduction into the catchment basin as a problem. There is potential conflict both regarding distribution of irrigation water between upstream and downstream riparians, as well as in at least three of nine case studies on rival uses (e.g. irrigation versus potable water). Interviewed experts are of the opinion that both factors could exacerbate as the issue of water as a resource increasingly becomes a political instrument while at the same time being in ever shorter supply.

According to project experts, the continuous involvement of the target group already in the planning phase and throughout the quality control phase of the construction process have positive consequences for the effectiveness and sustainability of a project. An analysis of the projects studied made clear that the approaches to strengthening the **water user associations**, based on what was learnt from PRAV/PRIV, have been continuously and successfully further developed. Viable WUAs were found in nearly all examples. However, in a number of cases it was observed that a contribution of users to both the investment costs and to operation and maintenance remains a challenge. In the case studies, only little attention was paid to the specific interests of women.

Generally speaking, the data provided by the case studies shows that the underlying impact chains have proved their worth in the past. The irrigation projects studied make an effective contribution to the **reduction of poverty** by contributing to securing harvests and increasing productivity. 58% of the irrigation farmers interviewed stated that their harvests had increased as a result of greater availability

⁵ As anchored in the guidelines of the Federal Ministry of Economic Cooperation and Development (BMZ) (cf. BMZ 2006a and BMZ 2006b: 16ff).

of water. Of these, 78% also stated that their income had increased. However, these positive effects can – according to experts and the target group – be reduced by disruptions such as decreased harvest due to weather factors and pest epidemics as well as sales problems resulting from price fluctuations or weak marketing structures. In addition, the dam projects co-financed by financial cooperation showed that they make a positive contribution to the **region's economic development**. For example, there was both increased demand for and supply of loans, agricultural means of production and consumer goods. Equally, an increase in the transport of goods and persons as well as positive employment effects resulting from improved production conditions were confirmed in the three project areas studied.

Recommendations for future irrigation projects of German development cooperation

Despite the negative experience of linking irrigation and agriculture consultation in the 1980s, the study reveals the necessity of adopting approaches that consider irrigation in the sense of the priority on “sustainable agriculture” as a part of an **integrated rural development** strategy. Unlike in the past, this is not a question of “technology packages” but of adapted measures and demand-orientated solutions. These recommendations do not have to and cannot be put into practice exclusively by the German organisations responsible for implementing the projects. Greater efforts are to be made with a view to bringing other actors in – state, private, civil society and German and international Development Cooperation agencies – in order to achieve synergy effects and raise the necessary funding.

Advice on agricultural production and marketing is a suitable approach to counteracting the above-mentioned adverse factors within the impact chain in order to reduce poverty, and increase the effectiveness of the interventions. The Ministry of Rural Development (Ministerio de Desarrollo Rural y Tierras - MDRyT) should also be brought in to play a greater role. In this context, the possibilities of working with German and international technical cooperation agencies can be tapped in the financial cooperation projects. In order to increase water use efficiency, the positive experience financial cooperation has had with restructuring existing water distribution mechanisms could be utilised alongside further technical measures. Further potential measures aim at optimising the use of agricultural means of production, conserving soil fertility and identifying new arable crops adapted to the local climate and market demand.

On the subject of marketing, it is recommended that existing producer organisations be provided with advisory services. Market analyses should also include supraregional markets and the market studies ought to be updated in the follow-up

phase of the irrigation projects. Anyhow it is recommendable that after the project has got underway, this phase of support be adapted to the needs of the target group in terms of time in order to give it even greater preparation for the challenges of the future. A further helpful instrument is the introduction of price monitoring – a task that local Non Governmental Organisations (NGOs), municipal authorities or the producer organisations could carry out well.

A suitable means of strengthening the sustainability of the projects could take the form of **sustainable resources management** at the project level as a local contribution to a national IWRM strategy. This should be taken into consideration starting in the project planning phase. A review is recommended whether funds from other areas of work, for example environment protection or adjustment to climate change, can be mobilised to finance concrete measures. These measures could, for example, be carried out by the DED (German Development Service) or CIM (“Centrum für internationale Migration und Entwicklung”), national NGOs or state institutions. In this regard, it is important to strengthen or establish local structures that have a permanent presence and can take on this responsibility on a long-term basis. Local management committees for the sustainable management of natural resources and handling of any use conflicts could thus be an option. The principle of compensation for environmental services could also be introduced.

In order to further improve the capacities of the WUAs, an even more comprehensive **organisation development approach** is recommended in the context of the support measures already in place. Incentives for those in leadership positions, continuity and financial compensation in the case of demanding tasks, regular rotation of those responsible in small-scale systems and overlapping of terms of office (to prevent the loss of knowledge) are suitable measures. Here – as has already been the practice in the German Development Cooperation projects implemented since the 1990s – a review of each specific irrigation system is required to establish the extent to which the standard instruments to develop organisation can be adapted to the largely indigenous structures of the WUAs. If possible, repayment of the user contributions to the investment costs should begin during the construction phase – however, greater differentiation reflecting the economic capacities of users is to be made here on the part of the project executing organizations (Municipalities or Prefectures). The possibility of subsequent flexible adaptation both in the form of the individual contribution as well as the repayment period could be an additional factor that strengthens contribution morale. Further, the WUAs should be given even greater support on the matter of estimating the costs of operation and maintenance as part of the accompanying measures already in place so that membership contributions will cover future expenses. The responsibility the WUAs themselves have in discharging their obligations could also be strengthened if good maintenance of infrastructure and

organisation of the WUAs were to be made a prerequisite of further technical and financial support (provided by Development Cooperation or the municipalities, respectively the prefectures).

Within the approaches to strengthen WUAs, the Development Cooperation cross-cutting issue of gender equality needs to be implemented by enhancing strategies which give consideration to furthering the interests of women in the specific context of irrigation. To this end, an analysis of previous endeavours to achieve equality of women should be made before concrete measures are developed. This task lies with the individual German organisations responsible for implementation as does that of the second cross-cutting issue of **conflict sensitivity** within the irrigation projects. With regard to the latter, it is recommended that a do-no-harm approach be adopted for future projects. This continuous conflict monitoring can be supported by confidence-building measures such as the increased involvement of local experts and a conflict-preventative communication strategy.

Outlook

The Bolivian Government has ambitious aims in terms of irrigation. With the 2007 National Plan to Develop Irrigation (PNDR) it has responded to the heavy demand on the part of Municipalities and Provinces.⁶ An additional 40,000 hectares are to be provided with irrigation between 2007 and 2011, benefiting 30,000 families (cf. MDA 2007:7). The international donor community has provided basket funding to support watershed management in Bolivia. This indicates that inter-sector, programme-orientated approaches in line with the policies of the partner country as well as coordination among the donors will increase in importance in the future. A prerequisite for this is also that the consolidation process of the Bolivian partner structures currently in progress will continue successfully (cf. SCHULZ-HEISS & WOLFF 2008). As a central international actor in the Bolivian irrigation sector, German Development Cooperation - with SIRIC, PROAGRO and its other commitments – is currently well positioned in the field of watershed management. In this way it can support its partner Bolivia in particular on its way to achieving integrated approaches and implementing national development goals.

⁶ In total, there were enquiries regarding 3,760 projects intended to irrigate an additional 276,254 hectares and benefit 208,492 families. It is assumed that the financing requirements will be USD 1.18 billion (Cf. PRONAR 2002).