Valleys region

The Valley region with temperate climate conditions covers areas within the departments of Cochabamba, Chuquisaca, Tarija and Santa Cruz, and is characterized by an uneven physiography, with a yearly rainfall of 400 to 800 mm, and soil losses due to erosion. Under these conditions, agricultural production is possible only if permanent or, at least, complementary irrigation systems are available. In addition to this, preventive measures against erosion are also important. If optimal conditions are achieved in terms of soil fertility, irrigation and access to markets, the agricultural production oriented to such markets allows the farmers to have a high profitability.

In this context, the *Valleys UR*, with strategic partners at both local and regional levels, supports market-oriented traditional productive systems innovated with irrigation systems. It also implements *Integral Management of Watersheds* projects designed to reduce erosion effects and to preserve watersheds as agricultural production zones, useful not only for the conservation of the natural resources but also as areas that can contribute to the water reservoirs in the region.

Reforestation in the Kuyoj Qhocha Watershed (Cochabamba).

Chaco region

The Bolivian Chaco region is characterized by very diverse conditions: the *foothills* sub-region has sufficient water to establish permanent irrigation systems and yet presents a high risk of erosion; the *plains* sub-region, where a high proportion of indigenous population lives, is an ecosystem of open and fragile forests (monte[11]) exposed to droughts and also threatened by inadequate soil use and climate change risks.

In the foothills sub-region, the *Chaco UR* supports in the implementation of efficient irrigation systems and in improving market-oriented agricultural production. This UR also implements the MdG *Integral Management of Watersheds*. These actions are carried out in alliance with local and regional governments, as well as national programs and institutions. In the plains sub-region, PROAGRO promotes the adequate management of forests (with silvopastoral systems), along with other sustainable forms of soil use, appropriate to coexist with droughts and to take full advantage of the scarce water resources available, without putting underground water resources at risk.

Silvopastoral systems in the Chaco region.

[11] In the Chaco, *monte* refers to an area of dry forests that are scarcely inhabited

North Potosí and South Cochabamba region

The region that comprises the northern part of the department of Potosí (NP) and the southern part of Cochabamba (SC) is characterized by water scarcity, a very rough and harsh topography, and difficult access to markets. In consequence, this region is one of the poorest in Bolivia and its population is highly vulnerable to climate change. While agricultural production is one of the pillars of the local peoples' subsistence, it often is not enough to guarantee their food security.

In this context, and in a partnership with the local governments since 2008, the *NP/SC UR* supports the implementation of *Integral Projects for Water Harvesting*[12] that take full advantage of the rain and other small, semi-permanent sources of water, in order to store this natural resource. Hereby, the benefited families have water for at least temporary irrigation, which in turn ensures harvests even in times of drought.

In Phase II, these successful ways to improve food security are complemented by encouraging a more efficient use of water, by diversifying the range of crops (including more drought resistant varieties), and, if possible, by supporting the sale of agricultural production surplus.

Water reservoirs (Atajados) in the village of Berenguela (North Potosi)

Local farmers in a traditional festivity of North Potosi

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Sustainable Agricultural Development Program
(Programa de Desarrollo Agropecuario Sustentable - PROAGRO)

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[12] In Spanish *Proyectos Integrales de Cosecha de Agua* (PICA).

PROAGRO II

Food Security and Agricultural Development in Times of Climate Change

Estado Plurinacional de Bolivia
SUECIA
cooperación alemana DEUTSCHE ZUSAMMENARBEIT
PROAGRO es ejecutado por:
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

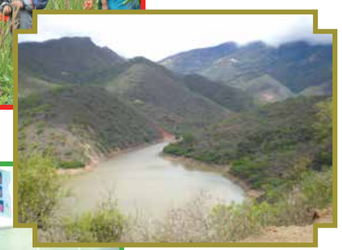
Background

In Bolivia, poverty is mainly concentrated in rural areas and, particularly, in arid and semi-arid regions. In these regions, access to, and availability and distribution of water for agricultural production determines the basic needs and the livelihood of small-scale farmers. Many depend on a subsistence economy, lack access to resources and services to assist them, and do not have diversified income sources. This situation, aggravated by the effects of climate change, is a major risk to food security and the basic needs of the Bolivian population in rural and urban areas. Therefore, they need a sustainable agricultural production, resilient to the effects of climate change.

Against this background, in 2005 the governments of Bolivia and Germany agreed to concentrate their cooperation efforts on the agriculture sector to improve the productive conditions of the population in rural areas and to contribute to food security in Bolivia. In this context, the then German Technical Cooperation (GTZ) was engaged to implement the Sustainable Agricultural Development Program (PROAGRO[1]).

In Phase I (2005 - 2010), PROAGRO, understood as a collective effort between the German cooperation and several Bolivian counterpart institutions – particularly the Vice Ministry of Water Resources and Irrigation (VRHR)[2] and the Vice Ministry of Rural and Agricultural Development (VDRA)[3] – promoted, among other activities: (i) access to water for irrigation systems for more than 12,000 families (ii) protection and equitable distribution of water resources in 12 watersheds, and (iii) agricultural production and commercialization. Hereby, during this phase, PROAGRO has contributed to increase the income of the farmer families and producer organizations that participated in the program by an average 300%.

Diversified production with irrigation (Cochabamba)



Comarapa Watershed (Santa Cruz)

Processing of hot peppers (ají) in the Bolivian Chaco (Villa Montes)

[1] T.N.: The name in Spanish is *Programa de Desarrollo Agropecuario Sustentable*. Given there is no specific term for *Agropecuario* in English, we have chosen to use only the word *Agriculture* to refer to both activities involved in the Program, i.e. agriculture and livestock farming. Hereby, we maintain consistency with the translation used in the GIZ, Germany (see www.giz.de), and in other PROAGRO publications in English.
[2] VRHR is the acronym for *Viceministerio de Recursos Hídricos y Riego* (Vice Ministry of Water Resources and Irrigation).
[3] VDRA is the acronym for *Viceministerio de Desarrollo Rural y Agropecuario* (Vice Ministry of Rural and Agricultural Development).

PROAGRO Phase II

In the framework of the cooperation between the governments of Bolivia, Sweden, and Germany, in January 2011, PROAGRO began its second phase (2011 – 2014), with activities in all its components and regions.

This phase, PROAGRO II, on the one hand, is based on the valuable experiences and results of its first phase. Therefore, it continues working in the same thematic areas (components) and focal regions of Phase I, seeking to establish a close link between the issues of water protection, availability and distribution, as well as a more efficient use of the water resources in agricultural production systems. These systems should not only be oriented to subsistence farming but also to local, national and international markets, due to their potential to generate additional income.

On the other hand, Phase II introduces three new thematic and methodological approaches:

- ***Adaptation to Climate Change (ACC)*** is integrated as a central and strategic aspect of PROAGRO II. Together with concrete measures to improve the information, awareness, and close cooperation with all institutions allied to the ACC, the program aims its support measures – in all its components and regions – to reduce the vulnerability of the rural population and increase the resilience of the agricultural production against the effects of climate change.

- ***Capacity Development (DdC)***[4]**,** understood as learning by doing, is the core methodological approach of PROAGRO II. Based on the experiences of the first phase and in cooperation agreements with more than 30 partner institutions at local, regional and national levels, the program seeks to strengthen individual, institutional and cooperation capacities. However, the DdC approach is only a means to reach an end; the aim here is to improve the support services that various partner institutions offer to the rural population, specifically regarding the efforts made by small-scale farmers to improve their agricultural production profitability and resilience.

- ***Management Models (MdG)***[5], understood as successful local practices for sustainable agricultural development, are another core methodological approach, through which local innovations and tangible impacts are promoted. At the same time, these models are linked to DdC through the improvement of the support services and their respective replication in other regions. PROAGRO II is currently implementing seven MdG and initiating five new experiences that will also become MdG in the future. Hereby the program promotes innovations, improvements of the traditional systems, and validated alternatives to face risks caused by the effects of climate change.

[4] DdC is the acronym in Spanish for *Desarrollo de Capacidades* (Capacity Development).
[5] MdG is the acronym in Spanish for *Modelos de Gestión* (Management Models).

The thematic areas (components) and their integration in PROAGRO II

In order to promote sustainable agricultural development, PROAGRO II continues concentrating its efforts on three thematic areas or components. Even though these components are diverse and have different counterparts at the national level, it is very important to ensure and strengthen the links between these counterparts. In consequence, PROAGRO II faces the following central challenges:

- To search for synergies between its thematic areas.
- To strengthen the collaboration between the water and agricultural sectors and their institutions.
- To identify successful inter-institutional strategies to promote sustainable agricultural development in times of climate change.

Water for Agricultural Production (APA)[6]:

The *APA component* supports improvements in the access to irrigation water and in the efficient use of water resources for small-scale farmers. One part of the component is dedicated to assisting national programs in the expansion and modernization of irrigation infrastructure. The other part of APA encourages innovations for a more efficient use of water, including an improved use of rainwater (water harvesting), and also to strengthen the individual, organizational and institutional capacities required to construct a sustainable and self-managed institutional framework.

Drip Irrigation

[6] APA is the acronym in Spanish for *Agua para la Producción Agropecuaria* (Water for Agricultural Production).

Integrated Management of Watersheds (GIC)[7]

The *GIC component* promotes concrete local measures for the protection of natural resources – mainly water – as well as the establishment of functional organizational structures for a transparent and participative management of the watershed resources. This component also continues supporting national programs and policies to provide the adequate inputs (resources, services, legal regulations) to ensure the availability, equitable distribution and protection of the water resources. In times of climate change and in light of a possible water scarcity, in terms of both quantity and quality, PROAGRO II concentrates on the efficient use of water, including close cooperation between all water users (urban and rural) in the framework of the Integrated Management of Water Resources (GIRH)[8].

Training on GIC in North Potosí

Agricultural Production and Commercialization (PyC)[9]

Together with counterparts and strategic partners, the *PyC component* implements measures designed to improve the production of crops that are profitable and sustainable due to their resilience to the changing climatic conditions. This component also: (i) provides advisory services to the governmental entities on technological innovations, (ii) strengthens rural productive organizations, (iii) encourages the establishment of commercialization agreements at local and regional levels, and (iv) supports the improvement of agricultural advisory and development services. All this is guided by the goals of improving the income and food security of small-scale farmers, as well as promoting the use of soil practices to guarantee the conservation of the productive bases in the context of climate change.

"Exposemillas 2011" (Seed exposition)

[7] GIC is the acronym in Spanish for *Gestión Integral de Cuencas* (Integral Management of Watersheds).
[8] GIRH is the acronym for *Gestión Integrada de los Recursos Hídricos* (Integrated Water Resources Management).
[9] PyC is the acronym for *Producción y Comercialización Agropecuaria* (Agricultural Production and Commercialization).

The levels of intervention and regional units (UR)[10] of PROAGRO II

PROAGRO's target group is small-scale farmers in arid and semi-arid rural areas in Bolivia, particularly in North Potosí and South Cochabamba, the Chaco and the Valleys with temperate climate. Hence, PROAGRO's starting point and main focus is still concentrated on these regions and on the improvement of their specific conditions to move towards a sustainable agricultural development. It is in these regions where the capacities of farmers and partner institutions must be strengthened, and where successful innovations must be implemented, which will also be replicated elsewhere in Bolivia.

Therefore, it is from the perspective of these regions and their needs that the support measures for national programs and policies are identified and put in practice, as well as the institutional alliances in the regional, national and international contexts. Hence, it is a central characteristic of PROAGRO II, to work both at e local, regional and national levels, directing its efforts towards meeting the needs of the local agricultural producers to ensure their basic needs and improve their productivity. In this way, PROAGRO II is contributing to food security in Bolivia.

[10] UR is the acronym for *Unidad Regional* (Regional unit).