1. Country and Sector Background

A. Country Context

1. With a population of 9.7 million, Bolivia is one of the poorest countries in Latin America. In 2008, the annual income per capita was US$ 1,173 which was only 15% higher than that in 2000. Almost 40% of the population continues to live in extreme poverty. In addition, Bolivia is one of the most unequal countries in the continent with a Gini coefficient of income distribution of about 0.6 and 10% of the population holding 45% of the total income (in 2007), illustrating that the majority of the population has limited resources to improve their quality of life.

2. Economic growth in Bolivia has been increasing in recent years (with an annual growth rate of 6% in 2008), but it has remained more volatile relative to that in the rest of Latin America. Traditionally, the key economic sectors of the Bolivian economy are manufacturing, agriculture and transport. This however has been changing over time with the hydrocarbons sector becoming an important contributor to the economy (IMF, 2006).
B. Sector and Institutional Context

3. Agriculture continues to be one of the most important sectors in the economy of Bolivia (second to manufacture), accounting for about 13% of GDP in 2007. The contribution of agriculture is even larger if agro-industry is accounted for, reaching close to 27% of GDP. The vast majority of the rural population employed in agriculture is poorly educated, poor (85%) and living in extreme poverty (75%). Agriculture provides 59% of total (direct and indirect) employment in the Bolivia’s export sector. Agricultural productivity in Bolivia is low, irrespective of the indicator used to measure it. Use of inputs (fertilizers and machinery) is the lowest in Latin America. Worker productivity is also among the lowest and cereal yield is stagnant. Figure 1 shows yields for a number of key products in comparison with Bolivia’s neighboring countries. Yields are usually substantially lower in Bolivia than in its neighbors, caused by lower levels of input use, inferior agricultural technology and lower average skills levels of Bolivian farmers.

4. Bolivia’s forestry sector accounts for 7% of agricultural GDP. Concentrated in the northern lowlands of Santa Cruz, Beni and Pando, there are some 41 million hectares in permanent forest, but with deforestation rates of over 250,000 ha per year. While in large parts of the country forest clearing is prohibited, the country has not been able to stop forest encroachment. The forest frontier is mainly moving in response to agricultural options (soybean), but the absence of sustainable forest management systems and of tree seed for replanting have also contributed to forest encroachment.

5. Public spending in agriculture has historically been low in Bolivia (around 5%), similar to more urbanized LAC countries and most public institutions in support of agriculture are weak. The contribution of the sector to the economy (15% in 2001), however, exceeds that of the cluster of LAC countries, and it is more in tone with the transitional economies in the region. The agricultural sector represents around 2.5% of the nation’s budget, which comprises an average of central administration budget of 1.5% and sub-national budget of 1%.

C. Policy Context

6. The National Development Plan (PND) 2006-2010 has set the framework for the new development pattern of Bolivia. The Plan is developed around four focal areas: Social and Community aspects (Bolivia Digna), Decentralization (Bolivia Democratica), Productive aspects (Bolivia Productiva) and External relations (Bolivia Soberana). The Plan describes a development pattern, characterized by inward looking, redistributive, State orchestrated, natural resource-based, participatory strategies. Its ultimate goal is the reduction of poverty, inequality and social exclusion and improvement of the well-being of all Bolivians (Vivir Bien). The Government Plan for 2010-2015 is a continuation of the PND and recognizes that despite its potential, the agricultural sector has important limitations. Among them are low productivity and technological development, weak institutional organization and dependency on other productive sectors and internal demand. To meet these challenges, the Bolivian Government has introduced different interventions dealing among others with rural infrastructure, access to markets, rural finance and agricultural education. The Government Plan also calls for the creation of the National Institute for Agricultural and Forestry Research (INIAF).
D. Institutional Context

7. Bolivia’s research and extension system has experienced a discontinuous evolutionary process. In 1975, a national research organization - IBTA (Instituto Boliviano de Tecnología Agropecuaria) - was established. In 2000 IBTA was substituted by SIBTA (Sistema Boliviano de Tecnología Agropecuaria), a decentralized model based on four Agricultural Technology Development Foundations, one for each of the four main agro-ecological regions of the country. SIBTA was mainly funded through international development cooperation and relied principally on competitive funds to manage technology generation and dissemination. In 2007 however, the government abolished SIBTA because it did not allow it to fulfill its public mandates such as management of gene banks or long term research programs on priority food crops. Also SIBTA had high transaction costs and little coordination at the national level.

8. Bolivia now finds itself at a new start. The Ministry of Rural Development and Land (in Spanish MDRyT), wishes to establish an innovation system in agriculture and forestry (SNIAF), led by the public sector, with a focus on public goods, and in line with Bolivia’s new development policy. So far the following actors have been mapped to the SNIAF: 15 public entities, 6 universities, 11 private or mixed entities and 3 of producers’ organizations.

9. In 2008, the National Institute for Innovation in Agriculture and Forestry (in Spanish INIAF) was created (by Legal Decree no. 29611). Its mandate is to lead research policy, knowledge generation and transfer and dissemination of agricultural and forestry technology in Bolivia. While INIAF depends on the Ministry of Rural Development and Land, its Director General is appointed by the President and its Board has representatives of several other Ministries. INIAF’s goal is to contribute to the food security and sovereignty of small and medium producers in Bolivia. INIAF will be responsible for the SNIAF and will also act as its Technical Secretariat.

10. INIAF has developed a 5-year Institutional Development Plan (in Spanish PDI) describing its objectives, main functions and organizational structure. INIAF’s PDI follows the objectives outlined in the Government Plan of 2010 and takes account of the transformation of the public sector as prescribed by the new Law of Autonomies, placing greater emphasis on sub-national responsibilities. Several international cooperation agencies (DANIDA, FAO, COSUDE, GTZ, World Bank) have agreed to support INIAF’s development. A summary of INIAF’s responsibilities is provided in the following Table.

<table>
<thead>
<tr>
<th>Function</th>
<th>Level of responsibility</th>
<th>INIAF’s main activities</th>
<th>INIAF’s partners</th>
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<td>Coordination of SNIAF</td>
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<td>- Convening and coordinating the SNIAF</td>
<td>- Other research organizations</td>
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<td>- Facilitating research alliances</td>
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<td>- Departmental Governments</td>
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<td>- NGOs</td>
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<td>Agricultural research</td>
<td>National and subnational</td>
<td>- Leading priority research alliances</td>
<td>- Other research organization</td>
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<td>- Universities</td>
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<tr>
<td>Genetic Resource</td>
<td>National</td>
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<td>- Other research organizations</td>
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<tr>
<td>management</td>
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2. Objectives

PDO
11. The proposed development objective is to strengthen INIAF and Bolivia’s Agricultural and Forestry Innovation system. This is expected to contribute to productivity growth, rural development and the income-earning potential of Bolivian families dependent on agriculture and forestry. This objective will be achieved by (1) supporting the Agricultural and Forestry Innovation System; (2) strengthening core INIAF activities and (3) supporting INIAF’s institutional development.

Project Beneficiaries

12. The direct beneficiaries of the project will be INIAF and the participants in the agricultural and forestry innovation system (universities, other research organizations, departmental and municipal extension systems, NGOs involved in agricultural extension). Eventually the project will contribute to increased food production and the welfare of the rural population.

13. The rural population depending on the Agricultural and Forestry sector for their livelihood is estimated at around 2.7 million. The project activities will be targeted towards small and medium producers. The estimates are that many agricultural activities are undertaken by women and that more than 60% of INIAF’s target audience is indigenous. The proper targeting and consultation of indigenous population, and the women among them, are important elements of the PISA project, requiring mainstreaming rather than safeguarding.

14. While the support to INIAF and the innovation system will lead to improved availability of productivity, sustainability and income enhancing technologies for the agricultural population of Bolivia, the emphasis during the project period will by necessity be on pursuing the institutional benefits more than on the eventual livelihood and productivity benefits to the rural population.

PDO Level Results Indicators

15. The achievement of the Project Development Objective will be measured by the following main results indicators:

- Bolivian agricultural research and technical assistance organizations participate actively in National Agricultural and Forestry Innovation System, as characterized by an increased average number of partnerships by organization.
- Through the PISA project, Bolivian farmers have started to adopt 20 agricultural innovations (new production systems, newly released varieties, certification systems for new crops, new processing methods);
Participants in the SNIAF widely and positively recognize INIAF as the institute that leads the system.

2. Project Description

16. The project has four components: (1) strengthening the Agricultural and Forestry innovation System; (2) strengthening core INIAF activities; (3) supporting INIAF’s institutional development, and (4) project management. Agriculture and forestry oriented activities have been identified in the different components, and these activities will be implemented using the same modalities.

3. Rationale for Bank Involvement

17. PISA’s focus on developing the national agricultural innovation system and on strengthening the role of INIAF in applied research, technical assistance and seed production reflect the multifaceted nature of innovation and the need for simultaneous progress. The emphasis on collaborative models (partnerships for the competitive research fund, alliances for the research on priority products, technical assistance pilots with departmental governments) is recognition that the required expertise is hardly ever available in a single organization. It also recognizes the low current capacity of INIAF and the need for a strategy that allows INIAF to strengthen itself while still making progress in research and technical assistance. Finally it considers the implications of the decentralization process that is taking place in Bolivia.

18. With INIAF being a nascent organization, the PISA project will be as much about institutional development as about technology generation and technical assistance. The project design has identified three priorities in this respect: INIAF’s internal technical capacity; INIAF’s capacity to reach out through partnerships and the leadership of the system; and the development of the national agricultural innovation system itself. Since INIAF’s success will not be instant, the conditions for sustainability must be defined. First and foremost this requires a strong and lasting commitment by the Bolivian government as expressed by its presence in INIAF’s board, but also by its financial engagement. Secondly it requires that INIAF be supported by the main stakeholder groups in the sector, through their presence in the Board and their participation in the partnership schemes that INIAF will operate. Thirdly it requires that INIAF establishes itself as a technical based organization, loyal to the government, but with a horizon that goes beyond the next election cycle.

4. Description

Component 1: Strengthening the National Agricultural and Forestry Innovation System (SNIAF) (US$5.9 million)

19. The National Agricultural and Forestry Innovation System (SNIAF) is a group of interrelated and complementary actors that work to generate and apply agricultural innovations. The SNIAF is composed of three types of actors: (i) knowledge generation and dissemination: public and private universities, research institutes, laboratories, experimental stations and NGOs;
(ii) productive actors: producers, agribusinesses and producer organizations; and (iii) public sector-policy makers: the Ministries of Rural Development and Land and of Science and Technology, and Departmental and Local Governments. Component 1 will strengthen the information and technology flows between people and institutions in the SNIAF, and promote the interaction and participation of research and innovation actors in the SNIAF. This will be achieved through two subcomponents:

(a) Developing policies, strategies and governance of the SNIAF (US$0.4 million). Here the following activities will be carried out: (i) the formulation of policies for SNIAF to address topics such as: national versus sub national financing and implementation responsibilities; collaboration incentives; intellectual property management, technological foresighting; and incentives for private sector innovation. (ii) The development of a communication and information strategy to bring together the actors of the innovation system through annual events, discussion meetings, databases; and a Web portal. (iii) the further development of a governance framework by establishing a National Council of Agriculture and Forestry Innovation (composed by representatives of the public and private sector).

(b) Establishment of a competitive Research Fund (US$5.5 million). A competitive Research Fund will be established to support strategic collaborations among national and international research entities and producers’ groups. The Fund will finance applied research on eco-regional and climate change issues outside of the products prioritized for the INIAF led research alliances (see component 2).

Component 2: Strengthening core INIAF activities (US$ 27.5 million)

20. The objective of Component 2 is to strengthen INIAF’s research, technical assistance, seed and genetic resource management programs. There are four sub-components: (a) improving INIAF’s research programs; (b) improving INIAF’s technical assistance services; (c) consolidating the national seed system and (d) managing Bolivia’s genetic resources.

(a) Improving INIAF’s research programs (US$15.9 million) will support research in 6 strategic areas: wheat, potato, quinoa, dual purpose cattle, horticulture, and forestry, through strategic research alliances. Each alliance will develop a 4-year work program identifying activities and responsibilities of each partner, setting out the activities and responsibilities of each partner. Working in alliances will also allow INIAF to develop its own capacities and obtain impacts more rapidly than if it would work alone.

(b) Improving INIAF’s technical assistance services (US$3.6 million) will support the development of the national technical assistance system, as implemented by subnational authorities and NGOs, and as supported by INIAF. Departmental agricultural and forestry innovation councils will be established; capacity building programs will be designed and implemented; with the leadership of departmental governments two technical assistance pilot programs will be implemented. The design of the subcomponent reflects that the primary responsibility for technical assistance is with the subnational government, with INIAF in a supporting and coordinating role. In two pilot departments the Departmental
government with the support of INIAF will carry out the technical assistance and rural extension program identified by the Departmental Councils.

(c) **Consolidating the National Seeds System (US$5.1 million)** supports the consolidation of the national seed system in Bolivia. It will focus on: increasing the use of quality seed in the western departments of the country; improving the quality of the INIAF seed program laboratories; and strengthening the laws, norms, and standards in seed commercialization. The program will expand the coverage of Andean upland and valley commodities where INIAF’s seed program has had little presence up to now, and will include native crops, fruits, medicinal plants, and forestry products.

(d) **Managing national genetic resources (US$2.9 million)** will establish a national network of germplasm banks: The network will be made up of base banks, active banks and work banks.

**Component 3: Supporting INIAF’s institutional development (US$18.3 million)**

21. Component 3 aims to strengthen INIAF’s institutional and organizational capacity. It has two subcomponents.

(a) **Improving the organizational and internal capacities of INIAF (US$17.5 million)** focuses on consolidating an institutional management model that takes into account INIAF’s national and sub-national roles. Special attention will be given to Human Resource Management policies, especially to the adoption of a recruitment, personal development and reward policy that will allow INIAF to compete with universities and other knowledge based organizations. This component will also finance personnel and operational costs of INIAF, mainly from government contributions.

(b) **Developing external leadership and collaboration capacities (US$0.8 million)** will promote the institutional strengthening of INIAF as a sectoral leader and convener. Training programs will be established to strengthen simultaneously the technical and the social capacity of INIAF’s leadership and professional staff, and to promote outreach to other public institutions, private sector and civil society, as well as international contacts. INIAF’s Board will be strengthened both for overseeing the institute as well as the SNIAF.

**Component 4: Project Management (US$1.6 million)**

22. For transparency and management purposes project funded activities to support INIAF in the implementation of PISA have been organized in a separate component.

(a) **Support to INIAF for implementing PISA subcomponent (US$0.6 million)**, concerns the strengthening of the INIAF organization for the duration of the project in order to implement the ambitious program of work and to comply with fiduciary, safeguards and accountability standards.
(b) **Developing an information and M&E system for INIAF subcomponent (US$1.0 million),** will support project implementation, but will be maintained within INIAF after project closure. The M&E system will serve to monitor the progress and evaluate the impact of proposed projects activities as well as that of other INIAF’s programs. The M&E system will help INIAF to strengthen its orientation towards impact and results. In the longer run, it will allow INIAF to highlight its added value to the agricultural and forestry innovation system.

5. **Financing**

23. The proposed project will be financed through a five-year Sector Investment Credit (SIC) of USD 32M. The credit will be directed to the Government of Bolivia. The financial terms of the credit will be IDA. Further to the IDA SIC, financial contributions have been ensured from the Danish Government (USD 2.3M). The GoB will make a contribution of USD 8M through resources from the Treasury. INIAF’s own income (from seed certification activities) is estimated at USD 6M. The GoB’s and INIAF’s own financial contributions will be directed to paying salaries and day to day operations. The engagement of the GoB will enhance the sustainability of INIAF beyond the span of the project.

**PROJECT FINANCING TABLE**
(in US$ ‘000)
6. Implementation

24. **Project Oversight.** The Board of Directors of INIAF, led by the Minister of Agriculture, will act as the Project Steering Committee (*Comité Directivo*). Its duties will include: (a) approval of the Operational Manual, (b) selection of the Project Coordinator, (c) approval of the Annual Operating Plans (POAs), (d) oversight of project performance, (e) approval of subprojects for the competitive research fund as selected by the Evaluation Committee, and (f) suggesting necessary project adjustments based on results of the monitoring and evaluation (M&E) system.

25. **Project management and implementation** will be the responsibility of INIAF. Within INIAF, the following units will play an active role in the execution of project activities: Executive Directorate, Technical Coordination, Research Fund Management, directorates of Research (DNI), Seeds (DNS), Technical Assistance (DNAT), and Finance and Administration (DAF).

26. **Project Executive Structure.** The Executive Director of INIAF will be the national director of the PISA project. He will be assisted by a project coordinator, located in the Technical Coordination Unit who will be in charge of the day to day management of the project.
The project coordinator will then delegate implementation responsibilities to the Research Fund Management Unit, DNI, DNS, DNAT, and DAF.

27. **Project Coordination.** INIAF’s Technical Coordination Unit will coordinate the three project components. The project will be led by a Coordinator assisted by (a) a cadre of specialists in each of the technical directorates and the Research Fund Management unit of INIAF to carry out the project’s activities and the M&E system; (b) the staff of the Executive Directorate and DAF for the preparation of the POAs, budget monitoring, and all project reports as agreed with the Steering Committee and the Bank; and (c) the staff of DAF which will conduct overall project financial management, procurement, disbursements, and audits.

28. **Implementing component 1: Strengthening the SNIAF.** Within the Research Fund Management Unit a small team will be established to manage the competitive fund and to undertake the other innovation policy activities.

29. **Implementing component 2: Strengthening core INIAF activities.** The research alliances on the priority products will be formed and coordinated by staff in the Directorate of Research by means of an open invitation to be part of the alliances and a competitive selection process of the strongest organizations. Based on a four year work program, terms of references for the different partners in the alliance will be written and annual work plans will be mutually agreed. The technical assistance activities will be led out of the Department of Technical Assistance. Seed activities and germplasm management activities will be managed within the confines of INIAF, respectively from the seed and the research directorates.

30. **Implementing component 3: Supporting INIAF’s institutional development.** The Technical Coordination unit will be responsible for the implementation of component 3, in coordination with the Communications Unit and the Directorate for Administration and Finance. The Technical Coordination Unit will be strengthened with Capacity and Institutional Development specialists.

31. **Component 4. Project Management.** Safeguards management specialists will be added to the Technical Coordination Unit. Fiduciary staff will be added to the Directorate for Administration and Finance. The M&E system will be implemented from the Planning and Systems unit, which will be strengthened for this purpose.

7. **Sustainability**

32. The focus of PISA is on establishing and nurturing a national institute for agricultural and forestry innovation in Bolivia. In other countries of the region (Brazil, Uruguay, Chile) such institutes have had major impacts on agricultural growth. Both the Government of Bolivia and the Bank are in full agreement that INIAF is being established for the long haul and that PISA is meant to allow INIAF a strong start.

33. To further improve the sustainability of INIAF project support staff will be integrated into the regular INIAF structure and project governance will be through the INIAF governance
structure (the INIAF board). The project has been carefully designed in ways and at funding levels that are sustainable within the Bolivian context.

34. A further challenge to INIAF’s sustainability stems not from its financial feasibility but its political feasibility. It is key that INIAF, while loyal to each government, survives the transitions. This requires that INIAF is recognized as an organization with a technical more than a political mandate. The attention to communication activities and to the development of the national agricultural innovation system will help INIAF to establish itself as a stable element in the agricultural sector.

8. Lessons Learned from Past Operations in the Country/Sector

35. The past experiences with IBTA (a typical, centralized, national agricultural research organization) and SIBTA (a highly decentralized system with little coordination) provided several lessons for the design of the PISA project. First of all it is crucial that the central government has a substantial stake in any new organization to lead the country’s agricultural innovation system. At the same time it is key that those responsibilities that are better left to the departmental or lower levels of government are not the responsibility of INIAF.

36. Secondly, it is important that INIAF is able to survive the changes in government and the different political agendas associated. Agricultural innovation is a slow process, often requiring more than five years and organizations such as INIAF need to have a long horizon. To ensure INIAF’s ability to survive government changes, the design of INIAF emphasizes shared governance between public agencies and INIAF’s expected beneficiaries and the design focuses on establishing a technically sound organization.

37. Thirdly it is essential; that INIAF counts with financial support from the government and should be able to be sustained from the Treasury and other public sources by the time that the World Bank withdraws from it. In the current project design the World Bank and the other donors are responsible for the investments that INIAF requires to become effective, but not for most of the salary and administrative costs of the institute.

9. Safeguard Policies (including public consultation)

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Safeguard Policies Triggered by the Project

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Projects in Disputed Areas (OP/BP 7.60)* [ ] [X]
Projects on International Waterways (OP/BP 7.50) [ ] [X]

10. List of Factual Technical Documents

11. Contact point
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* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas