

3.4 The Reality of Rural Areas in the Eastern Region: The Environmental Challenge

The Eastern Region of Paraguay is a mosaic of different ecosystems due to the influence of different soil types, topography, climate and water systems. The environmental situation of the area is seriously compromised by careless exploitation of natural resources sustainably, caused by the current production models in the country. The main issues identified include deforestation, erosion, soil degradation, water degradation and loss of biodiversity.

There is a growing consensus about the importance of the environmental dimension in the country. On the one hand, international relations have been strengthened, both in its economic and political aspects. This increased regional integration, such as MERCOSUR and other regional and global integration initiatives, has also encouraged a greater commitment to fulfilling responsibilities on environmental sustainability.

The national environmental policy¹²¹, which is stipulated in *Law No. 1561/00* and *Forestry Law No. 422/73*,¹²² provides mechanisms for regulating the use of natural and environmental resources. However, this policy has yet to fully articulate the appropriate policy framework in order to bring changes toward sustainable development.

Against this background, seven most important issues are discussed in the following, from the perspectives of conservation and sustainable use of natural resources and biodiversity.

3.4.1 Change in Land Use

The change in land use is caused mainly by the conversion of natural areas to the use of productive activities, and the change of purposes and methods of land use as human activities change over time. In Paraguay the change in land use has been taking place through converting natural areas to pastures for livestock, and native forests to farming, in particular, for soybean production.¹²³

The economy of Paraguay is mainly based on agricultural and livestock production. To a lesser extent, forestry also forms the basis of the economy. Therefore, economic growth of Paraguay has been achieved through the major change of land use for agriculture, livestock and forestry.

¹²¹ Política Ambiental Nacional.

¹²² Ley N° 1561/00; Ley Forestal N° 422/73.

¹²³ The change in land use of this kind has been observed frequently until Law N° 2524/73 that ban destruction of forests in the Eastern Region, and Law 3663/06 that extend articles 2 and 3 of Law N° 2524/73.

The change in land use is a complex problem. There are a variety of reasons for the change in land use, and they are inter-related. Also, the change in land use has a repercussion effect on the land use as well. Recent developments of large-scale farming have helped enhance productivity of agriculture and pasture production through improved technology. Prior to this development, however, the only way to increase production used to be expanding cultivated areas, and resulted in destruction of forests. The small-scale farmers, who could not offset the loss of soil fertility through improved production techniques, sought new farming land through forest clearing, and earned revenues by selling logs and charcoal. Combined with population growth, the demand for land is increasing.

3.4.2 Deforestation

Forest is the major environmental foundation for rural development, but forest destruction is progressing unfortunately. In particular, the last fifty years have witnessed massive deforestation in Paraguay. Changes in land use are recognized as one of the most direct causes for the deforestation.

Table 3.4-1 Forest area by departments in 2008
and the loss of forest area after 1986

Department	Forests 2008 (ha)	Deforestation 1986-2008 (ha)
Concepción	391.760	205.388
San Pedro	307.345	554.334
Cordillera	16.299	17.338
Guairá	42.555	34.317
Caaguazú	155.635	323.939
Caazapá	136.352	170.389
Itapúa	191.016	308.508
Misiones	11.010	10.312
Paraguarí	68.034	38.160
Alto Paraná	211.814	449.154
Central	11.978	6.573
Ñeembucú	23.650	1.052
Amambay	276.622	316.793
Canindeyú	419.843	561.517
Total	2.263.920	2.997.781

Source: GUYRA Paraguay y WWF (2008) Monitoring of
Deforestation of the Atlántico del Alto Paraná Forest

Until 1945, the eastern half of the Eastern Region was almost entirely covered by vast forests that formed the so-called Upper Parana Atlantic Forest. Later, as a result of overexploitation of groundwater, mainly for agricultural purposes, the woodlands have been lost rapidly. Table 3.4.1 shows the forest area lost since 1986. A large area of forest was lost in the departments of

San Pedro, Alto Paraná, Canindeyú, among others. For the Eastern Region as a whole, the area lost between 1986 and 2008 (2,997,700 hectares) exceeds the remaining area in 2008 (2,264,000 hectares).

According to a study in 2005, the deforestation between 1999 and 2003 in five departments in the Eastern Region (Concepción, San Pedro, Caaguazú, Caazapá and Canindeyú), which had the largest coverage of forest and with low income levels, is due almost entirely to the advancement of soybean cultivation and pasture by medium- and large-scale producers.¹²⁴ According to the CAN 2008, the soybean crop areas increased from 552,657 hectares in 1991 to 2,464,510 in 2008. It is difficult to deny that the economic growth in this period took place at the expense of massive deforestation resulting from the expansion of soybean and pasture areas.

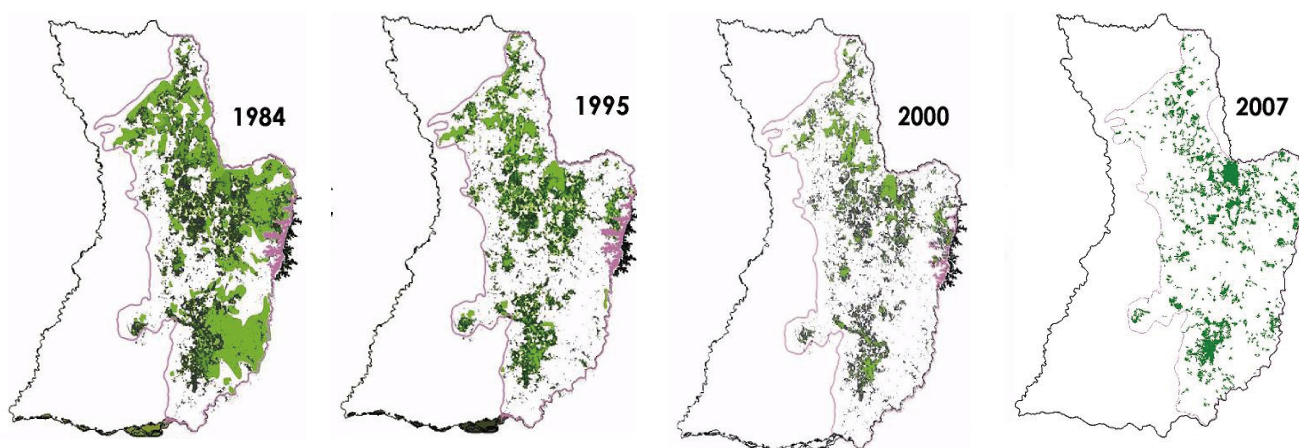


Figure 3.4-1 Forest area 1984 - 2007

The deforestation that brought economic growth was driven by mechanisms for the increase in agricultural and livestock production, expansion of settlements, and production of timber and charcoal. Another cause of the deforestation was logging of trees with high sales values. In particular, if young trees are logged, forests lose their commercial values.

A major reason why sustainable forestry development has not been practiced is the lack of incentives provided by the state.¹²⁵ Another reason is the lack of recognition that forestry activities can contribute to solving many problems that hinder rural development in the country. For instance, if forests are managed and used sustainably, it will contribute to reducing unemployment and creating opportunities for new income generation. Combining natural forest management, reforestation and agro-forestry with agricultural production will increase the

¹²⁴ Proyecto de Desarrollo Rural Sostenible (PRODERS) by MAG with support of the World Bank.

¹²⁵ See Chapter “*La base de recursos forestales y su sostenibilidad*” in the Diagnóstico y Base de la Estrategia Nacional de Financiamiento Forestal (Vidal, 2006).

productivity of their lands, ensure food security, and secure firewood for rural construction and timber for rural population. There is a clear need to emphasize those economic and environmental benefits by adopting the sustainable uses of forests.

The virgin forest in the Eastern Region still has a great potential to meet the need of rural communities for woods and energy, and the need of forestry industry. It is therefore important that these resources are managed rationally to ensure sustainability.

The main effects of deforestation on environment and economy of the region are summarized below:

- Shortage of raw materials for forest industries;
- Shortage of firewood. Firewood remains the most important energy source for local industries and domestic use;
- Pressure on remaining forests in production units. In particular, large pressures are felt on the forests located on fragile soils or near springs and streams; and
- Decline of wildlife habitats.

3.4.3 Soil Erosion

Soil erosion is caused mainly by the change of land use without appropriate land management practices, and the advances of deforestation. It is also caused by heavy rainfall in plowing and sowing seasons in the Eastern Region.

The problems of soil erosion often take place in traditional agriculture practiced by small producers. Soil erosion is also observed in natural and cultivated pastures, mainly due to the effects of excessive grazing.

In the case of intensive mechanized farming, 90% of them use direct seeding and therefore few cases of soil erosion are reported. However, the erosion of farm road is an issue to be addressed.

In the case of farms without using direct seeding, it is possible that the loss of soil structure is causing soil erosion. According to some recent studies, by the United Nations Program for Development (UNDP)¹²⁶, United Nations Food and Agriculture Organization (FAO)¹²⁷ and

¹²⁶ Programa de las Naciones Unidas para el Desarrollo (PNUD).

¹²⁷ Organización de las Naciones Unidas para la Alimentación y la Agricultura.

National Forestry Service (NFS)¹²⁸, the estimated minimum loss of soil in cultivated areas were 30 ton/ha/year, and could reach greater than 50 ton/ha/year in some cases.¹²⁹

The most significant effects of soil erosion caused by water are degradation of soil productive capacity and silting up of springs and streams.

3.4.4 Decline of Soil Productive Capacity

The lack of appropriate soil management practices is recognized as one of the main causes of the decline of soil productive capacity. The decline of soil productive capacity has a direct impact on soil erosion.

The loss of soil productive capacity often takes place in traditional agriculture, but not much in mechanized agriculture. This is because, in mechanized agriculture, fertilizers are used and crop rotation is practiced in large cultivated areas.

Cotton, tobacco and beans comprise the crop items produced mainly by small producers. 90% of the area planted of these items is filled by the production units with less than 50 hectares. If the average yields of these three crops are compared using the data from the CAN 1991 and 2008, it became clear that the yield (=soil productivity) declined by 33.3% in cotton, 10.5% in tobacco, and 5.8% in bean. By contrast, in the crops produced mainly by large producers such as soybean, the yield actually increased by 36.8% from 1.9 tons in 1991 to 2.6 tons in 2008.

The horizontal coordinate in figure 3.4-2 shows the percentage of production units with less than 50 hectares in total production units for the seven major crops: soybean, corn, sugarcane, peanuts, cotton, beans and tobacco. The vertical coordinate shows the percentage change of yield between 1991 and 2008 for those crops. It can be observed from this figure that the percentage reduction of yield in the last 17 years is greater in the crops which are produced by the larger percentage of small producers (the down-ward slope from the left to the right).

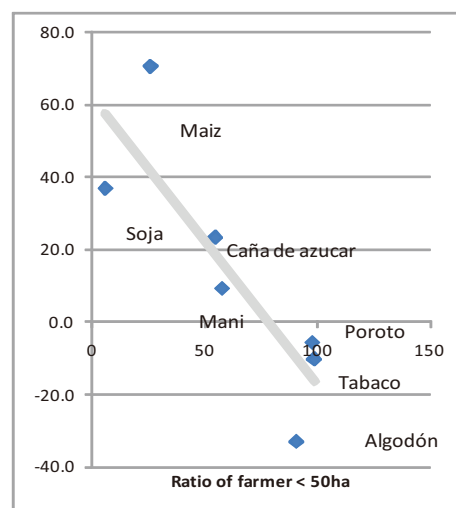


Figure 3.4-2 Change of yield (1991-2008) (%)

¹²⁸ Servicio Forestal Nacional (SFN).

¹²⁹ "Clasificación y Uso Apropiado de la Tierra en el Área del Proyecto de Desarrollo Rural Itapúa". PNUD/FAO/PAR/76/005 - Informe Técnico N° 10. Asunción, 1981.

In general, small farmers engaged in traditional agriculture do not have sufficient financial resources and information, access to inputs, and technical knowledge, resulting in the low use of fertilizers, green manures and pH-corrective materials, and insufficient practices of crop rotation, no-till or semi-no-till farming. As a result, their soil loses more and more nutrients, resulting in the reduction of soil productivity.

The problems of the decline of soil productive capacity are also observed in cultivated and natural pastures. This is mainly due to the effects of monoculture practiced for a long period of time, excessive grazing, and the lack of rotation of extensive grazing.

Among the most significant effects of the decline of soil productive capacity are listed below:

- The increase in fallow land;
- Reduced soil productivity of rural farms;
- Increased number of producers looking for new cultivable land, trying to convert natural areas and forests into farm land for productive activities;
- The increase in production costs by increased demand for chemical fertilizers and pesticides; and
- Increased use of land for less productive activities.

3.4.5 Pollution and Poor Drainage of Water Courses

Pollution and poor drainage of water courses are caused mainly by deforestation near headwaters and streams, water erosion, inflow of sediment and pollutants into waterways including agrochemicals, and malpractice of washing agricultural implements in streams.

In the area of intensive mechanized agriculture, cleaning of water tanks is practiced properly, and materials such as chemical fertilizers are diluted before flowing into aquifers.

The contamination of waterways and groundwater caused by industrial and human waste is very common in urban and suburban population centers, mainly caused by the lack of sewage treatment plants and improper management of landfills and garbage dumps.

Among the most significant impacts of pollution and poor drainage are listed in the following:

- Degradation of quality and quantity of free and confined ground water;
- Increase in treatment costs of diseases caused by polluted drinking water;
- Increase in demand for public works for water and sewerage facilities and services;

- Decrease in wildlife, especially fish fauna; and
- Increased flood, and diminished capacity of infrastructures such as roads, bridges, and dams.

3.4.6 Hunting and Trading of Wildlife Species

Illegal hunting, consumption and trading of wildlife are a serious problem in Paraguay. This is particularly pronounced in still undeveloped natural areas and wildlife protected areas. Excess fishing, consumption and smuggling to neighboring countries are also very common. Wild plants, mainly for ornamental or medicinal purposes, are illegally collected and sold without control.

The government authorities with tasks to manage those natural resources have not been receiving necessary tools and means to fulfill their responsibilities, unable to carry out proper management in order to improve the situations described earlier.

The loss of biodiversity is also of concern and is directly related to the disappearance of native forests. Since the 1990s, the government made progress to enact new environmental laws and create the National System of Protected Areas (SINASIP) for conservation of natural resources.¹³⁰ The main problem affecting the conservation efforts is the lack of regularization of land tenure, which result in undetermined border areas. This makes it difficult for the authority to enforce those laws on the ground.

Among the most significant effects of hunting and trading of wildlife species are listed in the following:

- Loss of biodiversity; and
- Loss of productive capacity (fishing) of rivers

3.4.7 Climate Change

The climate change in Paraguay started being felt as a result of a number of factors, including the increase in population and changes in land use, deforestation through which forests have been turned into agricultural land and pastures, and the increase in industrial facilities and vehicles. A UNDP report warned that deforestation has been having a major adverse effect on

¹³⁰ Protected Areas Act, Wildlife Act, Wildlife Act, Environmental Assessment Act and the Fisheries Act

climate change, via the changes in surface water balance and biodiversity, the increase in the levels of greenhouse gases (GHG) emissions, and the spread of diseases and epidemics.

The *First National Communication of the Climate Change Program* (PNCC) of Paraguay noted that there would be a latitudinal increase in temperature from south to north, and the annual rainfall would increase in the South (Itapúa, Misiones, Ñeembucú, Caazapá, Guairá and Alto Paraná) and decrease in the North (Concepción, San Pedro, Amambay and Canindeyú) in the 22nd century.¹³¹

In Paraguay, reliable and accurate data of GHG emissions has yet to be developed. Although the data currently used are only estimates extrapolated from existing statistics in different sectors, the GHG Emissions Inventory in 1990 and 1994 have been developed, and an inventory of GHG emissions in 2000 is being processed.

The Inventory of GHG emission in 1994 published in 2001 revealed that the agricultural sector is the largest contributor to GHG emissions, accounting for 65% of total emissions, the change in land use for 30%, the energy sector for 3.6%, and the industrial sector for 0.89%.

The Five-Year Plan 2008—2012, which was in line with the first PNCC, formulated a set of strategies under the themes of *adaptation and vulnerability, mitigation, research and education*, as well as *cross-cutting strategies* that permeate the action lines of all the strategies.¹³² Each of the strategies has its *institutional objectives, functional strategies, and expected results* with their corresponding performance indicators. As a next step, the Action Plan 2009—2010 was developed, based on the Five-Year Plan 2008—2012, in which international and national priorities are set. Both the Five-Year Plan 2008—2012 and the Action Plan 2009—2010 made clear the position of Paraguay in the international agreements on global warming.

Despite the efforts to strengthen institutional capacity to implement the Kyoto Protocol and other mechanisms toward achieving the objectives of “The United Nations Framework Convention on Climate Change (UNFCCC)”, a tangible progress has yet to be made to propose projects that take advantage of funding sources and financing mechanisms.¹³³

¹³¹ Programa Nacional de Cambio Climático (PNCC).

¹³² Plan Quinquenal 2008—2012.

¹³³ La Convención Marco sobre el Cambio Climático (CMNUCC).

The initiative for the Clean Development Mechanism (CDM)¹³⁴ is translated into actions with the following projects: Project for GHG Emission Reduction of the Company SA CERVEPAR¹³⁵; Falls Hydroelectric Project¹³⁶; Reforestation Project in Occupied Land Crops and Grassland¹³⁷; and Cardboard Project of Jaguar S.A. and Kartotec S.A.¹³⁸

Currently, a new calculation method of carbon accounting is defined to contribute to mitigating climate change. One of them is the Program of Reducing Emissions from Deforestation and Degradation (UN - REDD), which is a mechanism to promote the reduction of emissions from forest deforestation and degradation.¹³⁹ Paraguay was selected as one of the 9 selected countries that implement this program.

The Forest Conservation Project of Paraguay¹⁴⁰ is a REDD project developed within the framework of “voluntary market¹⁴¹”, through partnership between the NGOs¹⁴², aimed to protect 12,000 hectares of forests of the Chaco and 300 hectares of the Upper Parana Atlantic Forest in the Eastern Region.

The Spanish Agency for International Development¹⁴³ is cooperating in the conservation and sustainable management of biodiversity and vulnerable ecosystems. In this area, the Araucaria XXI Project is implemented to promote economic, social and sustainable management of ecosystems in the region the “Upper Parana Atlantic Forest”, comprising the Guairá, Caazapá and Itapúa departments.

Through its facility program, the FAO supported the Development of the National Profile of the Carbon Market Project.¹⁴⁴ The facility program also worked with MAG in the development of

¹³⁴ The Clean Development Mechanism is an agreement at the Kyoto protocol, which allows governments and/or companies in industrialized countries to invest in emission reduction of greenhouse gases (GHG) in developing countries as an alternative to purchase certified emission reductions (CERs) to lower costs in their markets.

¹³⁵ Proyecto de reducción de emisiones de GEI de la Empresa CERVEPAR S.A.

¹³⁶ Proyecto hidroeléctrico Iguazú.

¹³⁷ Project submitted by owners of scarce resources in the Department of Paraguari and developed by Japan Green Resources Agency (J-Green). Expected environmental benefit is the reduction of CO₂ emissions by total 365,762 tons in 20 years, which is the period of accreditation.

¹³⁸ Proyecto de Cartones Yaguareté S.A. y Kartotec S.A..

¹³⁹ Programa de Reducción de Emisiones por Deforestación y Degradación (ONU-RREDD).

¹⁴⁰ Proyecto de Conservación de Bosques de Paraguay.

¹⁴¹ Mercado Voluntario.

¹⁴² Guyrá Paraguay and Climate Community Biodiversity Alliance.

¹⁴³ Agencia Española de Cooperación Internacional (AECI).

¹⁴⁴ Proyecto Araucaria XXI.

the strategic axis of sustainable forestry development and environmental services for inclusion in the Agricultural Strategic Framework 2009 -2018.

Furthermore, UNDP is supporting the government to prepare National Communications on Climate Change.¹⁴⁵ In addition, it is expected to support projects for SEAM within the Work Plan for 2011, preparing a development strategy for reducing carbon emissions, with the aim of reducing climate change impacts on the country.

As described above, there are a number of opportunities for Paraguay to take advantage of many funding sources and financing mechanisms for projects in the framework of climate change. The Clean Development Mechanism (CDM) provides opportunities for financing projects through more active participation in the trading market for allowances. Paraguay's wealth in natural resources gives it competitive advantages over other nations, and is particularly attractive to generate additional funding as a result of the provision of environmental services.

It is important that the private sector is also involved in the emissions trading market. The private sector can participate in the market in two ways: direct participation and indirect participation via the government. In both cases, it is important to well understand the current situations, needs, and available financial resources to properly design a portfolio of projects.

The program to reduce emissions from deforestation and degradation also offers a great opportunity for forest conservation and biodiversity. However, it will be required to share information and continuously update the key actors, especially those dependent on forests.

With regard to the "payment for environmental services," the forestry sector possesses the best conditions for environmental services that contribute largely to reduction of greenhouse effects of CO₂ emission. The forestry sector is therefore the most suitable through forest conservation and deforestation projects. Paraguay has developed different mechanisms of political and legal regulations on the subject for the purpose of providing security and confidence to domestic or foreign investors, but has yet to develop appropriate funding mechanisms for its effective implementation.

Moisés Bertoni Foundation has focused on this issue, and is working on the creation of a Trust Fund to facilitate its implementation.¹⁴⁶

¹⁴⁵ Comunicaciones Nacionales sobre Cambio Climático.

¹⁴⁶ Fundación Moisés Bertoni.

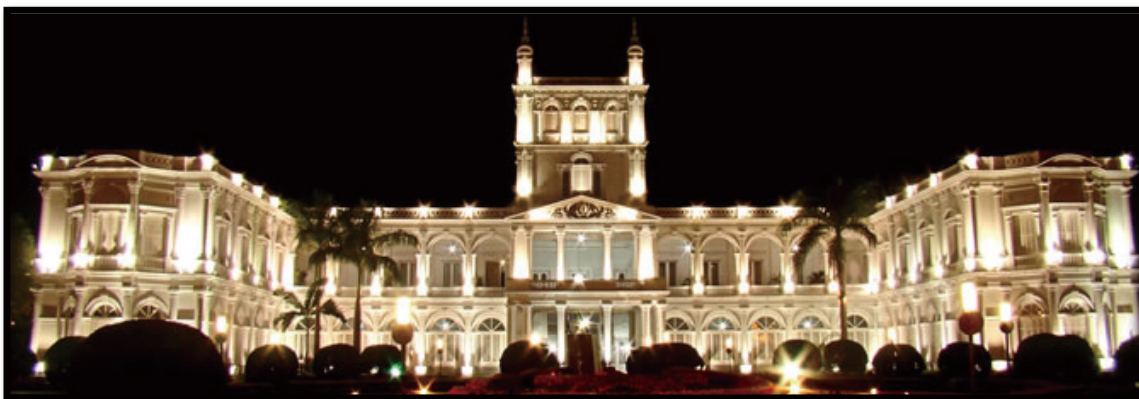
The United States declared that Paraguay was eligible for the Exchange of External Debt for Nature, and included in the agreement the establishment of a Fund for Tropical Forest Conservation and a Council of the Tropical Forest Conservation. This is applied in the following areas: San Rafael National Park, Caazapá National Park, Ybytyruzú Managed Resources Reserve, Private Reserve Tapyta, Ypetí and Ybycuí. Since those areas are part of sub-region 3 (Guairá and Caazapá) and sub-region 4 (Itapúa), small producers in the areas of intervention can be qualified to participate in this program. Currently 16 projects in forest conservation are being implemented in those areas.

There are other agencies in the country, including organizations and foundations that support programs, projects and activities related directly or indirectly to global warming and climate change in Paraguay. Among the most active include: the Japan International Cooperation Agency (JICA); Institute of American Agricultural Co-operation; World Bank; Inter-American Development Bank; USAID; and GTZ.

In summary, it can be concluded that global warming and climate change are very important issue that should involve not only the national government but also the private sector. Since there are potential environmental risks for the country in the future, there is a clear need to strengthen coordination among the government, international agencies and the private sector and capacity development of institutions involved.

The agricultural and forestry sector in Paraguay has a comparative advantage for the mitigation of climate change for their high rates of plant growth and carbon sequestration through forest plantations. It has the great potential to offer competitive environmental services, attract capital, solve environmental problems, create jobs, and develop new sources of income especially in the rural area.

3.5 Policy and Institution



There are two important topics in the formulation of the current Guidelines: (1) institutional and organizational reforms of the government of Paraguay; and (2) decentralization. These are the main prerequisites for democratic development in Paraguay and therefore, an important venture for the central government. The Guidelines must therefore be prepared in accordance with them. Below is a brief overview of the current situations on each topic. Furthermore, the current situation and challenges of the management capacity of government institutions at the central and local levels is presented, based on a series of studies conducted in the process of preparation of the Guidelines.

3.5.1 Institutional and Organizational Reforms of the Government

A. Institutional reform in the process of democratization

The process of rebuilding democracy in Paraguay began in 1989, marking the end of a long period of the authoritarian rule. In 1992 the new constitution was promulgated which guarantees the basic principles and structure of a democratic state, under which the country has embarked on political, economic, administrative and financial reforms to this date. The institutional reform of Paraguay is the process to give shape to the democratic rule proposed by the new constitution, a process driven carefully to respond to short-term needs arising from globalization and to seek harmony between domestic and external policies of the country, sometimes accompanied with confusions. The Guidelines should help advance the reform process, taking into account that this gradual process of reform is in itself a manifestation of democracy, the opposite extreme political form of dictatorship.

B. Political system reform

Initial reforms

After the fall of dictatorship, the provisional government launched a democratization policy with commitment to promoting political participation and implementation of presidential and

parliamentary elections within three months. During this period, new political parties were officially recognized and registered, the state of emergency that had long restricted civil liberty was lifted, and freedom of the press and expression of opinions were restored.

With a political consensus, the government of Andrés Rodríguez was legitimately established by democratic election, and developed an action plan for the implementation of political reform. The new agenda under the reform included the adoption of a new Electoral Code (1990), the first municipal elections for mayors (1991), and the Convention of a National Constitutional Assembly to amend the 1967 Constitution (1992).¹⁴⁷ Another significant milestone was the creation of the Southern Common Market (MERCOSUR) composed of Paraguay, Brazil, Argentina and Uruguay, following the signing of the Treaty in Asuncion in 1991.

Law 1/90, the new electoral code, introduced substantial changes in the electoral system, such as: easing requirements to form political parties; recognizing independent candidates to run for the office and direct election of party candidates; adopting the D'Hondt system to allocate seats for collegial bodies; creating a new permanent electoral register (electoral roll); introducing referendum; and prohibiting the military to participate in politics.

The Electoral Justice was also created as a means to ensure laws and electoral rights of citizens, and allowed to allocate public fund to political parties and independent candidates from state, for the first time.

The new Constitution promulgated in 1992 established institutional and political guarantees for a new democratic political regime, adopting the social state of law and representative, participatory and pluralistic democracy as the form of government. The new Constitution reduced the powers of the President of the Republic that used to be given disproportionate powers in relation to other state bodies, and introduced new mechanisms that strengthened the capacity of parliamentary political control and expanded its scope of decision making. Extra powers¹⁴⁸ were created, and relevant state bodies that are constitutional¹⁴⁹ were defined. Decentralization was advanced with the creation of governors and departmental boards whose officials are elected by popular vote. Moreover, the mechanisms for citizen participation were determined, such as referendum and popular initiative.

¹⁴⁷ General Andres Rodriguez led the cour d'etat and won against the dictator Alfredo Stroessner. He was elected at the presidential election, served as the President for the period 1989-1993.

¹⁴⁸ The Vice President's Office, the General Comptroller of the Republic, the Ombudsman, the Public Ministry, the Judicial Council, the Jury Trial judges, and the Central Bank of Paraguay.

¹⁴⁹ The Ministers of the Executive, the Attorney General's Office, the Constitutional Chamber of the Supreme Court, the Court of Auditors, congressional committees, the National Armed Forces, and the National Police.

It also recognized the fundamental rights inherent to human dignity, the respect for free development of personality, the establishment of a system of guarantees for protection, legal protection, and the principle of separation of powers.

Powers of the state

In order to guarantee the rights enshrined in the 1992 Constitution, the Paraguayan state is separated into three mutually independent branches of powers: the legislative, the executive, and the judiciary.



The executive power is exercised by the President, who is the head of state, prime minister, and commander-in-chief of the National Armed Forces. The presidential term lasts five years without possibility of reelection. The presidential election is direct and by simple majority vote, conducted simultaneously with elections for vice president, senators and deputies and regional authorities (governors and departmental boards). The two-round system is not arranged.

The executive branch of the government maintains their functions, along with the power to veto all or part of the laws passed by the congress, the initiative for the passage of annual budget law, the functions of head of state, and the management and organization of the cabinet. On the other hand, some powers are limited, such as its powers to declare a state of siege, dissolve the congress, govern by decrees, and veto by congressional majority the presidential veto.

The National Congress consists of the Senate, composed of 45 senators of national representation and the Chamber of Deputies, composed of 80 members of departmental representation. Among the powers of the legislative branch, the mechanisms of political control are mentioned, such as summons, interpellation, vote of censure, and commissions of inquiry. As ultimate means, the legislative branch is given powers of impeachment trial, overriding the presidential veto by absolute majority of the votes in Congress, the enactment of general budget law, ratification of treaties and international agreements.

The justice administration is in charge of the judiciary, exercised by the Supreme Court, courts and judges. The independence of the judiciary is guaranteed.

C. Public financial management reforms

Along with the democratization policy, economy policy was geared toward greater openness and liberalization of the economy, with greater powers and participation of the private sector in

the production process. According to Borda (2009), the economic policy reforms have gone through two phases. The first phase was in the early 1990s when the government faced accelerating inflation, increasing fiscal deficits, and delay in debt payment. The second phase was at the beginning of 2003 when those problems in the early 1990s resurfaced again.

Tax Reform

The reform that started in 1991 was materialized by the enactment of a new tax law that changed the tariff structure, simplified the tax system, and broadened the base of taxpayers.¹⁵⁰ Based on the new tax law, the Value Added Tax (VAT) was introduced to replace other taxes. This helped clarify the tax system, lower the tax burden for taxpayers, increase tax revenues for the state, and somewhat reduce administrative costs. Through this tax reform, the lines of taxes were significantly reduced from total 75 to only 7.¹⁵¹

The average collection of tax revenues under the new tax law never exceeded 11% of GDP until 2003. This was due to the presence of many tax exemptions, weak administrative capacity, and widespread corruption in public institutions responsible for tax collection. Another reason is that the reform failed to include taxes on personal income, capital gain, and corporate income of agriculture and livestock firms.

The second wave of public financial reform started in 2004, aiming at the deeper and more fundamental reform than the first wave in the 1990s. This included the enactment of the Fiscal Adjustment Act,¹⁵² the reform of tax system (public pensions), and the adoption of a new Customs Code.

Administrative Reform and Fiscal Adjustment were aimed to formalize the economy¹⁵³, correct the low tax collection rate, expand the tax base, and introduce new taxes¹⁵⁴ such as individual income taxes while maintaining low tax rates. This reform was meant to simplify the tax system by applying the 10-10-10 formula (that is, apply the 10% rate on major tax items, 10% of VAT on all goods and services,¹⁵⁵ and 10% of personal and corporate income taxes on individuals and firms above certain levels. The personal income tax is to be imposed on personal income that exceeds ten times the minimum wage, and has yet to be enacted.

¹⁵⁰ Law No.125/91.

¹⁵¹ Naffa, A. CEPAL, Serie Politica Fiscal 91.

¹⁵² Law No.2421.

¹⁵³ "Formalization of the economy" is meant to change an informal economy into the ones that private economic entities and the government can figure out their situations.

¹⁵⁴ Corporate income tax, income tax on agriculture and livestock, small taxpayers income tax, personal income tax, value added tax, and exemptions.

¹⁵⁵ Under the current tax law, 5% of VAT is applied for some goods and services.

The tax reform has made progress and tax revenues have increased. However, the current tax system is supported mostly by indirect taxation, and the adoption of personal income tax has been postponed a number of times. Since the tax burden of indirect taxes is relatively high for low income people, the current tax system is characterized as a regressive one.

The reform of tax system improved the pension system in the public sector that used to generate a growing operating deficit. With the new Customs Code, the customs rules were updated to satisfy international standards, customs administration was modernized, and the professionalization of human resources were undertaken. The revenues of the national government increased sustainably through those reforms, as shown in table 3.5-1.

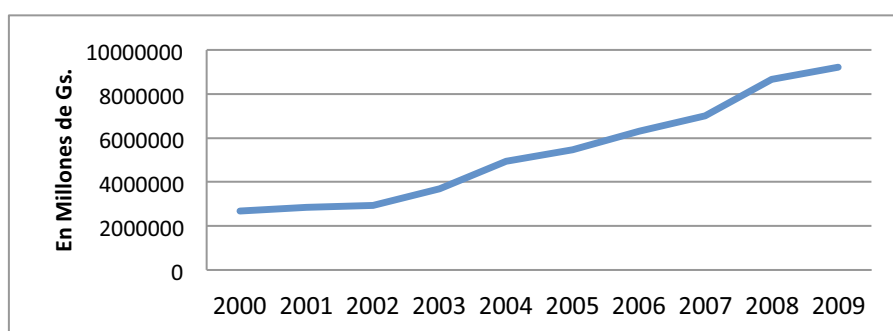


Figure 3.5-1 Tax revenues of the national administration. Period 2000 - 2009
(In Millions of Guarani) ¹⁵⁶

Financial sector reform

The program of economic recovery and stabilization, which started in the early 1990s, pushed through a package of financial liberalization and fiscal austerity measures. In this context, foreign exchange and interest rates were liberalized, reserve requirements were reduced, the discount was phased out, and portfolio classifications were defined. With the adoption of a new foreign exchange regime, the multiple exchange rate system was replaced with a free single exchange regime with managed float system. Under this new system, the foreign exchange market determines the rates of foreign exchange within a certain range set by the Central Bank of Paraguay.

Between 1995 and 1998 Paraguay experienced a serious and grave financial crisis, resulting in a large-scale intervention by the government in more than 50% of banks and financial

¹⁵⁶ Source: Data from CADEP-OFIP, 2010.

institutions.¹⁵⁷ According to Pelozo (2000), the main causes of this serious crisis was bad banking practices of the system, including: the concentration of loans to affiliates without proper credit analysis; inadequate information systems since published accounts did not reflect appropriately the situation of the entities; and ineffective monitoring and control systems. In the same period and as a result of what happened, the regulatory framework was modernized and adopted prudential norms for risk management that fulfills international standards, through the enactment of a new Charter of the Central Bank of Paraguay¹⁵⁸, Banking Law,¹⁵⁹ and Insurance Law,¹⁶⁰ besides new laws related to the capital market.¹⁶¹

In the second phase of financial reforms which started in 2003, a Deposit Insurance Fund¹⁶² was created in order to partially protect the savings of the public in the event of bankruptcy of a financial institution. In this period the public banking reform was a priority for the new administration of the government, and therefore was submitted to the Congress a law to establish a public retail bank (first tier) and a public wholesale bank (second tier). Initially, the establishment was stipulated in a single bill, but was eventually separated into two bills under the initiative of Ministry of Finance. Law No. 2640, which was enacted in June 2005, created the AFD as a second tier bank, merging three existing funds, namely the Small Farmer Development Fund, the Industrial Development Fund, and the Global Microcredit. However, the establishment of retail banks, including the BNF, the CAH and Livestock Fund, were delayed for political reasons.

Public procurement reform

In 2003, Paraguay began reforming the public procurement system through a new legal framework¹⁶³ that specifically enunciated principles of economy and efficiency, equality and free competition, transparency of process and information disclosure. This measure sought to reassure suppliers, contractors and the general public all information related to public procurement management. The Law sought to introduce substantive changes in the operation of public procurement, establishing a legal framework common to the contracting processes of the

¹⁵⁷ According to Borda (2009), there were 34 banks and 63 financial institutions in 1995. After a series of the financial crises, the numbers reduced to 23 banks and 36 financial institutions in 1998, and further went down to only 13 banks and 13 financial institutions in 2005.

¹⁵⁸ Law No.489/95

¹⁵⁹ Law No.861/95

¹⁶⁰ Law No.827/96

¹⁶¹ Law No.210/93, amending legal provisions and expanding tax incentives for the Capital Market Law No.811/96, which created the Wealth Management Investment Funds, Law No.921/96; Business Trust, Law No.1056/97; which creates and regulates Risk Rating Companies, Law No.1163/97, which regulates the establishment of commodity exchanges; Law No.1036/97, which creates and regulates the Securitization Company; Law No.1284/98 of Securities Market, which replaces the Law No.94/91 of Capital Markets.

¹⁶² Law No.2334/03

¹⁶³ Law No.2051/03 of Public Procurement

different national entities¹⁶⁴, including municipalities, governments, autonomous entities and subsidiaries of the three branches of government.

Moreover, the General Directorate of Public Procurement (CMPD) was created, which operates under a system of regulatory centralization and operational decentralization.

D. Reforms to fight against poverty

The social institutions in Paraguay have experienced significant changes during the 1990s. At the institutional level, several ministerial secretariats and other agencies of social functions were created to address deficiencies and gaps in the social field. Those include: the Office of Charity and Social Assistance (DIBEN)¹⁶⁵ as a subordinate institution under the Ministry of Finance (MH); the Secretariat of Women (SM)¹⁶⁶; the Secretariat of Development of Returnees and Refugees Compatriots (SDRRC)¹⁶⁷; the Secretariat of Social Affairs (SAS)¹⁶⁸; and the National Secretariat for Children and Adolescents (SNNA)¹⁶⁹. In 1996, the National Strategy to Combat Poverty (ENREPD)¹⁷⁰ was formulated with three lines of action: protection, promotion and social inclusion.

In 2003 the government formed the Social Cabinet of the Presidency of the Republic¹⁷¹ in order to coordinate social policy programs and fight against poverty, consisting of the ministers of the SAS, the Ministries of Education and Culture, Agriculture, Health and Welfare, and Finance, as well as Vice President. In the following year, the Social Cabinet and the SAS in cooperation with the UNDP formulated “The National Strategy to Combat Poverty, Inequality and Social Exclusion,” and the Directorate of Strategy to Combat Poverty¹⁷² was created to coordinate, control and monitor activities in this area.

In 2005 the functions of the Social Cabinet were expanded to coordinate actions to reverse the increasing trend of poverty through the social fund created in the same year.¹⁷³ The members of the Social Cabinet were also expanded to include 14 administrative units¹⁷⁴, including the Binational Itaipu and Yacyreta.

¹⁶⁴ There are 310 entities each comprising more than 1,000 operating units of recruitment.

¹⁶⁵ Decree - Law No.10 of April 18, 1989.

¹⁶⁶ Law No. 34/92.

¹⁶⁷ Law No. 227/93.

¹⁶⁸ Decree No.9235/95

¹⁶⁹ Law No. 1680/01.

¹⁷⁰ Presidential Decree No.8152/96

¹⁷¹ Decree No.401 of September 19, 2003.

¹⁷² Decree No. 2934 of July 26, 2004.

¹⁷³ Decree No. 6601 November 15, 2005.

¹⁷⁴ Ministry of Finance, Ministry of Public Health and Social Welfare, Ministry of Education and Culture, Ministry of Agriculture, Secretariat of Social Action, Secretariat of Planning, Secretariat of National Emergency, Secretariat of

Soon after his inauguration, President Fernando Lugo reaffirmed the validity and continuation of the Social Cabinet, issuing two decrees in order to attach the Cabinet under the Interior Ministry¹⁷⁵, and include as new members of the Cabinet the heads of the Secretariats of Development for Returnees and Refugees, Sports and Culture, the National Housing Council, and the National Institute of Handicapped People.¹⁷⁶

The renewed Social Cabinet is defined as “a technical body of the Political Office of the President working on a set of actions to respond to the needs of the population giving priority to the fulfillment of the rights of citizenship.”¹⁷⁷ The main activities of the Social Cabinet include: the formulation of a national policy document, “Paraguay for all: policy proposal for social development 2010-2020”; the construction of a single register of beneficiaries eligible for social programs; and United Nations access to the System of State Financial Administration (SIAF). Currently, the Social Cabinet implements the project “Structural Innovation of the Executive” with support of the UNDP and the OAS.

In late 2010, the bill to create the Ministry of Social Development was submitted to the legislature, aimed to bring together various secretariats and agencies (such as DIBEN¹⁷⁸, the SAS, the SEN¹⁷⁹, the Ministry of Children and Adolescents, the Ministry of Women, among others) under one ministry. This bill was rejected in December 2010.

Although Paraguay has been making progress to modernize the institutions and improve allocation of social spending, there remains a wide scope for improvement to address overwhelmingly many challenges. The critical challenges include: improve efficiency and effectiveness in management, improve quality and ensure equity of public services.

E. Ongoing organizational and institutional reforms

The Economic and Social Strategic Plan 2008-2013¹⁸⁰, the national development plan of the current government, includes the modernization of public administration and the improvement of efficiency of public enterprises in its strategic pillars, and a set of organizational and

Environment, Secretariat of Women, National Secretariat of Children and Adolescents, Itaipu Binational Entity, Yacyretá Binational Entity, Department of Charity and Social Welfare, Department of Planning and Poverty Reduction.

¹⁷⁵ Decree No. 212 of September 4, 2008.

¹⁷⁶ Decree No. 1799 of April 14, 2009.

¹⁷⁷ Taken from: <http://www.presidencia.gov.py/gabinetesocial/>

¹⁷⁸ Dirección de Beneficencia y Ayuda Social (DIBEN)

¹⁷⁹ Secretaría de Emergencia Nacional (SEN)

¹⁸⁰ Plan Estratégico Económico y Social 2008-2013 (PEES)

institutional reforms in the axes of the Plan. However, in reality, those reforms are in many cases the products of sectoral and institutional policies implemented since 1992 under the last five administrations, and therefore are not necessarily designed within a comprehensive framework of institutional design that is common among organizations.

In the following, the institutional reforms in key sectors that are closely related to the Guidelines are reviewed.

Organizational and institutional reform of the agricultural sector

Immediately after the restructuring of its charter in 1992, the MAG started formulating the Modernization Program for the Development of Agriculture and Forestry (PROMODAF¹⁸¹) with IDB support. This Program proposed a new institutional regime for the agricultural public sector through reorganization of the MAG. The MAG originally consisted of three Vice Ministries: Agriculture, Livestock and Natural Resources and Environment. This Program proposed to: create six new public utilities and a secretariat with the rank of ministry in the areas of rural development, research, animal and plant health, cooperatives, and natural resource management; reallocate highly trained experts; de-concentrate the management of five agricultural schools to offices of department governor.¹⁸² The reform under the PROMODAF was not ratified by the congress, but became a roadmap for reorganization of the MAG between 2000 and 2009.

In a sense, all these reforms the reforms were innovative because they have been implemented to streamline public services delivery, aiming to make them accessible to users and respond to their needs efficiently (i.e., “demand driven”). On the other hand, there were concerns such as the presence of duplication or vacuum of functions, and weaker administrative capacity to manage sector policies in an integrated and efficient manner, because the coordinating functions between the MAG and the new institutions were not fully institutionalized.

To remedy this situation, the current government created the Integrated Management System for Agricultural and Rural Development (SIGEST) in 2008 at the national and local levels, which aims to coordinate inter-agency activities to implement the policies.¹⁸³ The SIGEST is chaired

¹⁸¹ Programa de Modernización para el Desarrollo Agropecuario y Forestal (PROMODAF)

¹⁸² 1) Secretariat of the Environment – SEAM is under the Presidency of the Republic: Law No. 1561/00; 2) National Institute of Cooperatives – INCOOP, Law No.2157/03; 3) Rural Development and Land Institute – INDERT: Law No. 2378/04; 4) National Service for Animal Quality and Health – SENACSA, Law No.2426/04; 5) National Service of Quality and Plant Health and Seeds – SENAVE, Law No.2459/04; 6) National Forestry Institute – INFONA, Law No.3464/08; 7) Paraguayan Institute of Agricultural Technology – IPTA, Law No. 3788/09; 8) Agricultural schools were de-concentrated to the respective governors.

¹⁸³ Sistema Integrado de Gestión para el Desarrollo Agrario y Rural (SIGEST). The Executive Decree No. 169/08 created SIGEST.

by the Minister of Agriculture and Livestock, and consists of representatives of ten participating institutions¹⁸⁴, and a representative of departmental governments and a representative of municipal governments. At the departmental level, the system is chaired by the Secretariat of Production of the respective department government, and with the participation of representatives of the delegations of the government, municipalities and NGOs, among others.

Another is the Executive Coordination Committee for Agrarian Reform (CEPRA)¹⁸⁵, whose main objectives are to coordinate key stakeholders, solve urgent problems of settlements, and promote the participation of new actors. The CEPRA consists of representatives of government agencies, farmer organizations, sector organizations and departmental governments.¹⁸⁶ Its secretariat is established under the INDERT.

The SIGEST is implementing the National Plan for Sovereignty and Security of Food and Nutrition in Paraguay (PLANAL), under which it supports the revival or creation of departmental coordination committees in 5 of the 14 departments in the Eastern Region, with financial and technical cooperation of IFAD and

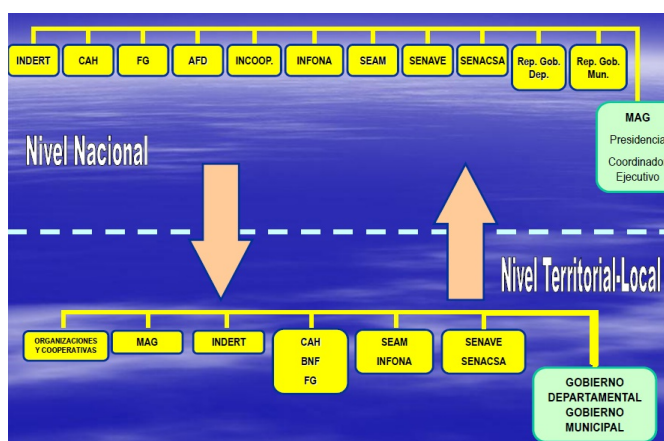


Figure 3.5-2 SIGEST structure¹⁸⁷

FAO.^{188,189,190,191,192} At the municipal level there are also 13 district coordinating committees in three departments with support from the GTZ and Action against Hunger.^{193,194,195,196,197}

¹⁸⁴ 1) INDERT, 2) CAH, 3) FG, 4) AFD, 5) INCOOP, 6) INFONA, 7) SEAM, 8) SENAVE, 9) SENACSA, 10) BNF

¹⁸⁵ Coordinadora Ejecutiva para la Reforma Agraria (CEPRA). In accordance with Decree No. 838/2008.

¹⁸⁶ SENASA, CONAVI, ANDE, STP, MOPC, MSP y BS, SEN, SAS, IMPRO, DIBEN, MEC, CAH, MAG, INDERT, MJT – SINAFOCAL, INC, INFONA, COPACO, MI, SEAM, SENAVE, MIC, MH, Secretariat of Women, Secretariat of Children, Attorney General, departmental and municipal governments, rural producer organizations, sector organizations.

¹⁸⁷ Source: M.A.G http://www.mag.gov.py/SIGEST_BASES.pdf

¹⁸⁸ Plan Nacional de Sobernia Alimentaria y Nutricional del Paraguay (PLANAL).

¹⁸⁹ Five departments are Concepción, San Pedro, Guairá, Caazapá and Caaguazú.

¹⁹⁰ International Fund for Agricultural Development (IFAD).

¹⁹¹ Under the framework of the Support Program for Management of Agricultural Development and Rural Territorial Approach. Rural Paraguay. IFAD, and FAO's support in San Pedro department for PLANAL..

¹⁹² Concepción, San Pedro, Guairá, Caazapá and Caaguazú.

¹⁹³ German Technical Cooperation (GTZ).

Since those units have been recently created, it is premature to assess their performances. The reasons behind their establishment, however, provide important suggestions to develop the Guidelines. That is, the integrated, participatory management of policies is the key for successful strategic alliances and cooperation among various actors. This will avoid duplication of efforts, enable collaboration, create complementarities among resources and information, and overcome sector and administrative boundaries between central and decentralized levels and between the public and private sectors.

Organizational and institutional reform in other sectors

During the period from the 1990s until the early 2000s, several laws were passed to amend and update the charters governing five out of ten ministries, including Ministries of Finance, Agriculture and Livestock, Public Works and Communications, Foreign Affairs and Trade and Industry.^{198,199,200,201} New organs under the executive branch were also created, notably some Secretariats at ministerial ranks under the President of the Republic, aimed to meet certain policy areas under strong influences of domestic and international commitments.

In 2000, Law 1615 on General Reorganization and Transformation of Decentralized Public Entities and Reform and Modernization of Central Administration Bodies was enacted, and the Ministry of State Reform was created.

In 2004 the Presidential Council for the Modernization of Public Administration (CPMAP) and its secretariat, Technical Unit for Modernization of Public Administration, were created to guide state modernization in the government program 2003-2008.²⁰² In addition, auxiliary bodies were also created to support the management of the executive branch, notably the Economic Cabinet²⁰³, the National Council of Science and Technology (CONACYT)²⁰⁴, the Council to Promote the National Integrity System (CISNI)²⁰⁵, and the Council of Public Enterprises²⁰⁶.

¹⁹⁴ Belén, Concepción y Horqueta in Concepción. Caaguazú, San Joaquín and Sta. Rosa Mbutuy in Caaguazú. Avaí, Buena Vista, Dr. M. Bertoni, Gral. H. Morínigo, Maciel, San Juan Nepomuceno and Tavaí in Caazapá.

¹⁹⁵ Acción contra el Hamre.

¹⁹⁶ Decentralized Governance Programme and Reduction of Poverty by GTZ.

¹⁹⁷ Results of interviews conducted under EDRIPP.

¹⁹⁸ Law No.109/91.

¹⁹⁹ Law No.2961/06.

²⁰⁰ Law No.1635/00.

²⁰¹ Law No.167/93.

²⁰² Decree No. 2577 of May 14, 2004. Creates the CPMAP composed of the President of the Republic, Ministers of Finance, Agriculture, Public Works and Communications, Industry and Trade, Economic Adviser, Minister Secretary General, Foreign Affairs, Education and Culture, Legal Adviser, Private Secretary to the President and Executive Secretary for the Civil Service.

²⁰³ Decree No. 162/08. Chaired by the Minister of Finance and consisting of 3 other ministers and the President of the BCP.

²⁰⁴ Law No. 1028/97, partially amended by Law No. 2279/03 and Decree 8146/06 which establishes the organizational structure of CONACYT.

²⁰⁵ Decree No. 14778/01.

²⁰⁶ Decree No.163 of August 25, 2008.

The Ministry of Finance initiated a series of internal reforms aimed at strengthening existing institutions to improve their management²⁰⁷, the creation of new units to strengthen the management and control²⁰⁸, the development of e-government²⁰⁹ to gain efficiency and transparency and improve inter-institutional coordination.

The Lugo administration re-organized the Presidential Council for the Modernization of Public Administration (CPMAP) with a presidential decree, and is implementing a Structural Innovation Project of the Executive.²¹⁰

Privatization of public enterprises

In Paraguay, privatization was not undertaken in a large scale, unlike other countries that went through a wave of privatizations of public enterprises. There were two waves of privatization, one in the early 1990s and the other at the beginning the 2000s, supported primarily by the World Bank and International Monetary Fund.

A privatization law was enacted in 1991, which was followed by the establishment of a Privatization Council in 1992.²¹¹ This Council enlisted five public companies to be privatized, and the following four public companies were actually privatized:

- ⇒ State Merchant Fleet (FLOMERES) was privatized to become FLOMEPARSA, Inc.;
- ⇒ Paraguayan Airlines (LAP) transferred the assets and liabilities to LAPSA, Inc.;
- ⇒ Paraguay Steels (ACEPAR) was transformed to ACEPAR, Inc., and later privatized to COSIPAR, Inc.; and
- ⇒ Paraguayan Alcohol Administration was privatized to become CAPASA, Inc.;
- ⇒ The Central Railroad “Carlos Antonio Lopez” was not privatized.

In this first stage, 7 silos and the Fertilizer Plant of Paraguay (FERTIPAR) were privatized.

The controversies surrounding the privatization process of those companies and allegations of mismanagement raised widespread opposition to the privatization program, resulting in the suspension of the privatization process.

²⁰⁷ Sub-secretariats of State for Financial and Tax Administration, Customs Department, Advocacy Treasury Multi Directorate General of Budget, Internal Audit, National Cadastre.

²⁰⁸ i) Technical Unit Budget Results (2004), ii) the Central Public Investment Unit (2003) (2004), ii) the Central Public Investment Unit (2003); iii) Decentralization Technical Unit (2004); iv) Unit Business Environment; v) la Transparency and Citizen Participation Unit (2003); and vi) the Academic Unit (2005).

²⁰⁹ The creation of the Computer Centre (2004) that centralized computer systems to manage resources of the state (Integrated Financial Management System (SIAF), National Human Resources (SINARH), Retirement and Pension System (JUPE) Accounting System (SICO), and System of Management and Public Debt Management (DMFAS)), and put into operation new servers for the Metropolitan Public Sector Network) and the Electronic Public Procurement Portal.

²¹⁰ Decree No. 5327 of 28/10/10.

²¹¹ Law No. 126/91. Establishing a system of privatization of state enterprises.

In the 2000s, however, the second wave of privatization initiative emerged, prompted by the establishment of the National Secretariat of State Reform (SRNS) under the Office of the President of the Republic, and by the promulgation of Law No. 1.615/00, the legal framework for privatization. The ANTELCO, public utility for telecommunications, was privatized to become a private company with 100% state capital, and was renamed as the Paraguayan Communications Corporation (COPACO).

According to Masi (2009), 8 state-owned enterprises continue to operate. Two of these companies operate as oligopolies in electricity (ANDE) and communications (COPACO). The PETROPAR, state-owned oil company, remains under management of the state for strategic reasons. The remaining five are held as public companies that do not fall under any of the above categories – ESSAP (sanitation service), Paraguay Postal Service, Paraguay Cement (INC), ANNP (public ports), and Paraguay Railroads (currently inactive). These companies face major challenges in terms of technology, management and financing.

In 2006 a comprehensive strategy of public enterprises was adopted to improve efficiency of service delivery, with the establishment of the Supervisory Council, the introduction of performance management, and the establishment of supervisory committees of respective public enterprises.²¹² Currently, the Public Enterprise Council supervises public enterprises with support of the monitoring unit under the Council.^{213 214} The bill to establish the Public Enterprise Council is under review of the Congress.

3.5.2 Decentralization

A. Basic Law

The Article 1 of the 1992 Constitution stipulates that Paraguay is a unitary and decentralized state. As of today, there is no legal clarification on this Article. Moreover, the powers, budget and coordination system of the three levels of the government, which are indicated in the 1992 Constitution, have yet to be determined by law.

The promulgation of the basic law and the rearrangement of powers of the three levels of the government is a major challenge for the coming years. Municipalities (districts) were

²¹² Consejo Supervisor, Law No.8713/06.

²¹³ Consejo de Empresas Publicas, Law No.163/08, Law No.1432/09.

²¹⁴ Unidad de Monitoreo, Law No.955/08.

established under the Municipalities Act in 1872,²¹⁵ and its powers were defined by the municipal organic laws 1954, 1987 and 2009.²¹⁶ The municipalities in Paraguay have thus the longest history of local government institutions. On the other hand, departmental governments are new administrative units created by the 1992 Constitution.

Since there is no basic law that comprehensively defines the powers at three administrative levels, considerable ambiguity remains in the demarcation of powers among them. The Framework of Decentralization in Paraguay developed in 2008 establishes the structural framework for the three levels of the state: 1) central state administration; 2) decentralized administration of the state including the Central Bank, national universities, state companies, and others; 3) 17 departments; d) 236 municipalities; and e) the National Decentralization Council that is responsible for managing decentralization policies.²¹⁷

However, the reorganization of powers at the three levels has yet to be enacted, since the bill was rejected by the Senate in December 2009. The Senate rejected the bill because they posed some questions and pointed out some shortcomings in the bill.

B. Administrative decentralization

In the absence of the basic law discussed above, administrative decentralization is driven by institutions and sectors. For instance, the Ministry of Finance set up the Technical Unit of Decentralization in 2004 to enhance accountability and transparency on the distribution of royalties and compensation transferred to departments and municipalities in accordance with Law No. 1309/98.²¹⁸ In 2010, the Departments and Municipalities Unit (UDM) was created under the Secretary of State for Financial Management.²¹⁹ The creation of the UDM was aimed to: centralize support services to the departments and municipalities; reduce bureaucracy in the transfer process of financial resources; streamline the procedure and management of fiscal transfer to departments and municipalities through Financial Management Unit (UAF); and enhance coordination between the three levels of the government to promote territorial development.

Besides the above initiatives, the Ministry of Finance established a designated office to respond to departments and municipalities. Moreover, the Ministry provided training for financial

²¹⁵ Law No.1872.

²¹⁶ Law No. N° 915, Law No. N° 222/54, Law No. 1.294/87 and Law No. 3966/09 “Municipal Organic”.

²¹⁷ Proyecto de Ley para Marco de Descentralización en Paraguay.

²¹⁸ Law 1309 on the distribution and deposit of royalties and compensation for territories transferred to departments and municipalities.

²¹⁹ Secretaría de Estado de Administración Financiera.

officials of departments and municipalities, with a view to speeding up the application procedures for projects funded by royalty, and supporting timely submission of financial statements required for departments and municipalities.²²⁰

The STP created the General Directorate for Territorial Development and Regional Integration to support the process of decentralization in the country.²²¹ Under the framework of the National Planning System (SISPLAN), the STP supports departmental and municipal governments to conduct institutional assessments and formulate development plans.²²²

The SEAM²²³, which was established in 2000 by Law 1561,²²⁴ created their offices in respective departments within the framework of decentralization of powers and functions, in order to strengthen environmental conservation and natural resource management. Based on the National Health System in 1996²²⁵, the Ministry of Health started de-concentration of basic health services to the departmental and municipal government levels. This Law was amended in 1998 and 2006, to strengthen the powers of health councils at departments and municipalities and transfer financial resources.^{226,227}

Moreover, the number of departments that have formulated development plan, the guideline for local administration, is 5 out of 14 in the Eastern Region,²²⁸ and the number of municipalities that formulated development plan is 15 out of 236 in the whole nation.²²⁹ The formulation of those development plans were supported by the STP.

C. Fiscal decentralization

Fiscal decentralization in Paraguay has been making progress gradually through the increase in the transfer of financial resources to local governments. The 1992 Constitution guaranteed the right of departments and municipalities to have their own financial resources, and established the basic framework for allocation of real estate tax to local governments. The Organic Law of

²²⁰ Government of Paraguay 2010. *Second Annual Report of Lugo Administration*, March.

²²¹ Dirección General de Desarrollo Territorial e Integración Regional.

²²² Sistema Nacional de Planificación (SISPLAN).

²²³ Secretaría del Ambiente (SEAM).

²²⁴ Law No.1561 to create Environment Secretariat.

²²⁵ Law No. 1032, Sistema Nacional de Salud/96.

²²⁶ Regulation of Law No. 1032/98.

²²⁷ Law No.3007 to modify and extend Law No.1032/2006.

²²⁸ Five departments: San Pedro, Cordillera, Caazapá (in progress), Paraguari, Canindeyú.

²²⁹ Belén, Concepción, Loreto, Yby Yáu, Caaguazú, Dr. Cecilio Báez, Ele y Torés, Corrales, San Joaquín, Yhu, Abai, Buena Vista, Dr Moisés Bertoni, General Higinio Molínigo, San Juan Nepomuceno, Paraguari, Horqueta (Source: Interviews conducted by the study team, October 2010)

1994 determined the allocation rates to departments and municipalities of value added tax, local taxes, real estate tax, and tax on gambles, thereby strengthened local revenues.²³⁰ In the Law 1309/98 in 1998, the distribution of royalties from the two binational entities Yacyretá and Itaipu to the central government, departments and municipalities was established.²³¹ Additionally, in 2006, the use of royalties was limited to ensure that this fund is used for development (investment) purposes.²³² Since then the royalties have become important sources of financing for local governments, and the amount is increasing year after year, as shown in figure 3.5-3. Within this context, the strengthening of the administrative functions is increasingly important to ensure the proper and fair use of the royalties. The assistance for administrative decentralization by the Ministry of Finance is aimed to meet those needs.

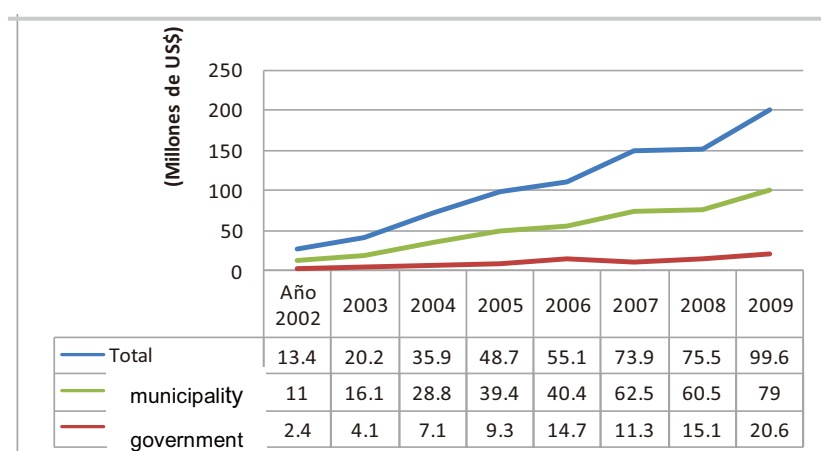


Figure 3.5-3 Transfer of Royalties to Departments and Municipalities²³³

Thus, the MH is promoting local development for which the royalties are properly used. To achieve this, a series of measures for reforms and institutional strengthening was launched in 2010 and 2011. First, it started the PROCADDEM²³⁴ to strengthen administrative capacity of departmental and municipal governments with MH Regulation No.246 in July 2010. Next, MH Regulation No.410 created the Departments and Municipalities Unit (UDM) under the control of the Secretary of State for Financial Administration (SSEAF) in December 2010, building on the Decentralization Unit for PROCADDEM. Moreover, Law No.4249/2011 and Presidential

²³⁰ Organic Department Law No.426/94.

²³¹ Law No. 1309 of the distribution and deposit of Royalties and Compensation for Territories flooded to the Departmental and Municipalities/98

²³² Law No. 2279/2006.

²³³ Source: CADEP-OFIP with data from the Fiscal Policy Office, M.H. 2.011.

²³⁴ By Resolution of M.H. No. 246 dated July 2010. The PROCADDEM includes institutional strengthening in the areas of financial management, planning, implementation of projects and programs, provision of public services, community development initiatives, civic participation, gender, social inclusion, environmental sustainability, among others

Order No.6071/2011²³⁵ strengthened UDM's powers to coordinate technical assistance and other services offered by the Ministry of Finance to departments and municipalities.²³⁶ Besides these, departments and municipalities are required to submit financial statements to the MH as part of the requirements to grant transfer of royalties²³⁷; and the UDM is given power to suspend transfer of royalties^{238,239} Furthermore, the concentration of the management of project fund and royalties in a single Financial Management Unit (UAF)²⁴⁰ simplified the process of disbursement.²⁴¹

These reforms aim to undertake institutional strengthening of the MH to improve transparency and efficiency of management of fiscal transfer, promote local development, and support capacity development of local governments. This will prepare the ground for future full-fledged decentralization through capacity development of local governments intensively and efficiently led by the MH, under the current circumstances in which administrative capacity of local governments is not sufficient to take up more functions through decentralization.

3.5.3 Current Situation and Challenges of Administrative Capacity

There are various issues at central and local levels that should be addressed in terms of management capacity of government agencies. This study analyzed and evaluated 10 central government agencies, one department and one municipality in each region, totaling four departments²⁴² and four municipalities.²⁴³ The criteria for the assessment were: a) development plans; b) budget management according to goals; c) financial management; d) management of project implementation; e) monitoring and evaluation of routine operations; and f) human resource management. Administrative capacity of respective institutions was assessed according to the five-grade system. The results of this study as well as other studies and workshops are summarized below.

²³⁵ Article 271 of Presidential Order No.6071/2011

²³⁶ Law No. 4249/2011 and Decree No.6071/2011.

²³⁷ In accordance with Article 159 of Law 4249/2011, all municipalities were obliged, since February 28, 2011, to deliver to the SSEAF of the Ministry of Finance the results and the financial statements in the previous fiscal year the established format. In the event of default by the Ministry of Finance may temporarily suspend the granting of royalties.

²³⁸ According to information obtained from the Ministry of Finance, only 199 of the 236 municipalities delivered accounting reports.

²³⁹ Decree No. 6071/2011, Art. 258.

²⁴⁰ Decree 6071/2011, Art. 274.

²⁴¹ According to the JICA adviser of the UDM of MH, the approval processes were simplified from fifteen to five steps. As for the rigidity of public sector budget, government institutions themselves pointed out during the study on public sector capacity EDRIPP that the speed-up of processes and the flexibility to modify its application in the middle of the fiscal year are future challenges to be addressed.

²⁴² Four departments: Cordillera, Itapúa, Concepción y Caazapá.

²⁴³ Four municipalities: Arroyo y Esteros, Obligado, Horqueta and Caazapá.

General assessment of administrative capacity at the three levels

The administrative capacity of ten central government agencies is on average higher than the averages of four departments and four municipalities studied. The capacity gap between agencies is also lower in central government agencies than in departments and municipalities. The average of the six general criteria was 3.2 point at the central level, 2.2 point at the departmental, and 1.6 point at the municipal level. The average administrative capacity of the departments falls between those of the central and municipal level. There is a considerable variation of capacity among departments, that is, some departments have the capacity comparable to that of the central agencies, whereas others have lower capacity than those of some municipalities. Indeed, the variation is 0.7 point at the central level (between 2.7 and 3.4 point), 1.9 point at the departmental level (between 1.4 and 3.3 point) and 1.7 point at the municipal level (between 0.9 and 2.6 point). Although a relatively large variation of capacity is observed among municipalities, their capacity is less than that of the central agencies in general.

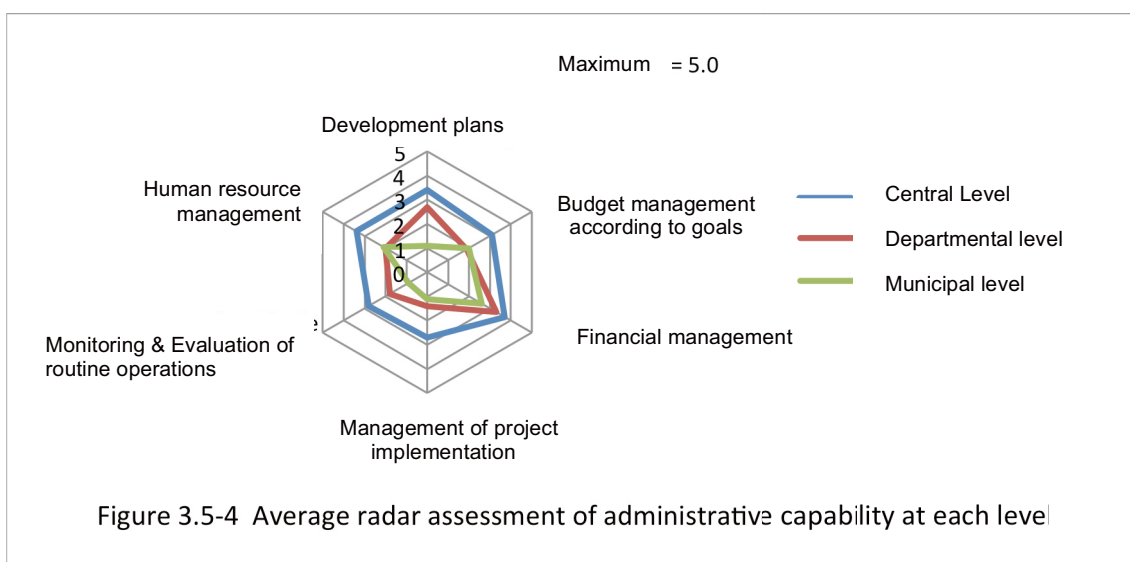


Figure 3.5-4 Average radar assessment of administrative capability at each level

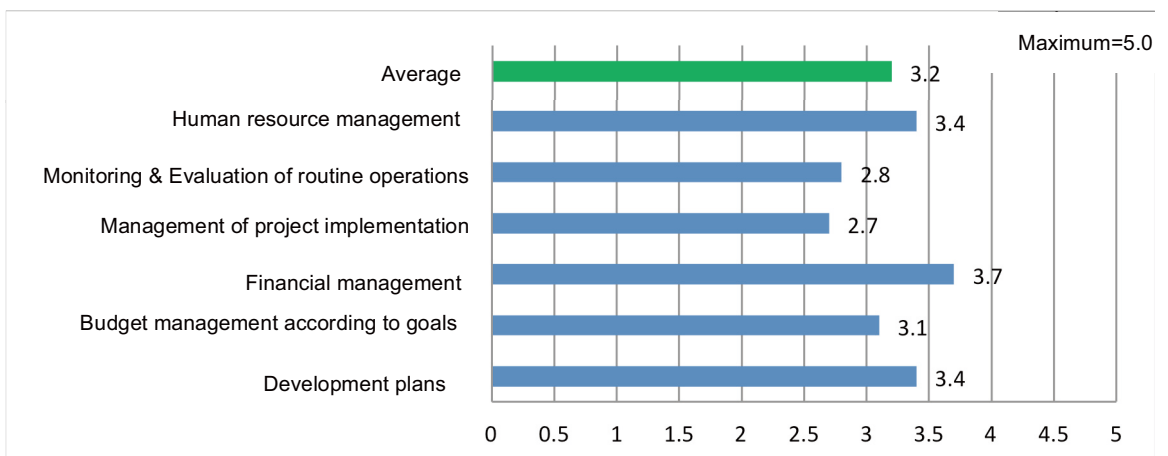


Figure 3.5-5 Assessment of administrative capacity of institutions at the central level

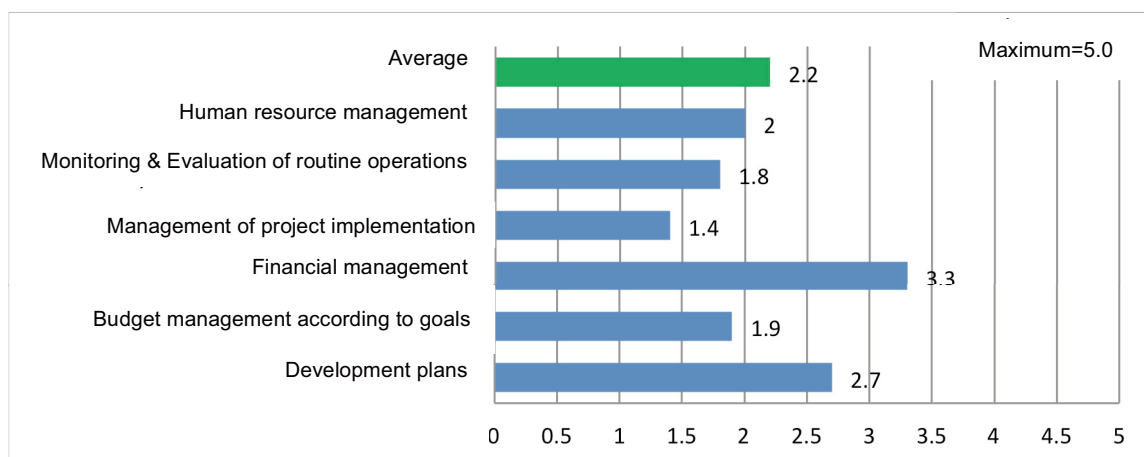


Figure 3.5-6 Assessment of administrative capacity of departmental governments

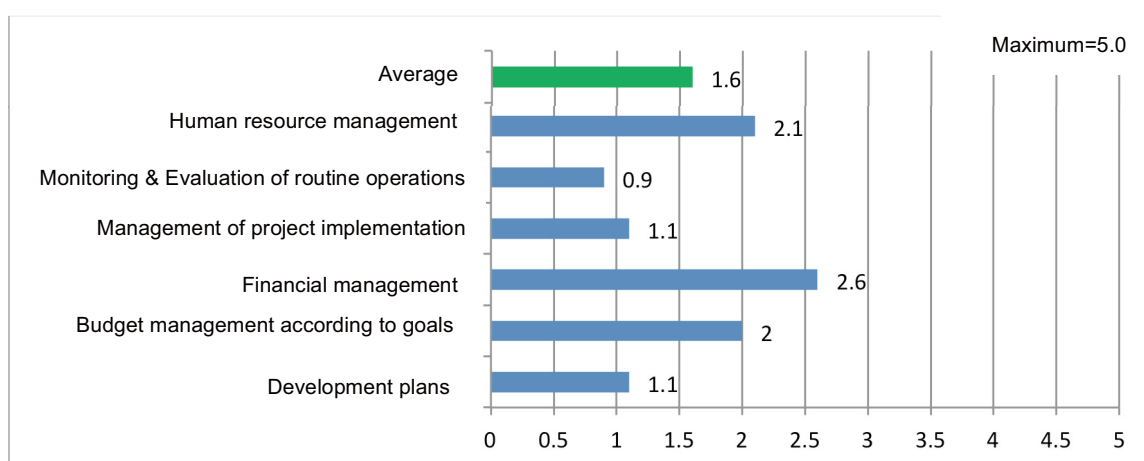


Figure 3.5-7 Assessment of administrative capacity of departmental governments

Disaggregated by criteria, the highest capacity is observed in the “financial management” at both central and local levels. This is primarily due to the efforts by the MH to strengthen financial management capacity. These efforts include: the reform of the tax system²⁴⁴; greater transparency in the management of royalties²⁴⁵; standardization of procurement and procedures for budget applications²⁴⁶; systematization of information for financial management²⁴⁷; and implementation of capacity building program²⁴⁸.

The low levels of capacity at both central and regional levels are observed in the following criteria: d) implementation of project management; and e) monitoring and evaluation of routine

²⁴⁴ Law No 2421 of Fiscal Adjustment of 2004, among others.

²⁴⁵ In accordance with Article 159 of Law 4249/2011, all municipalities were obliged, since February 28, 2011, to deliver to the SSEAF of the Ministry of Finance the results and the actual state of balance in the previous fiscal year the established format. In the event of default by the Ministry of Finance may temporarily suspend the granting of royalties.

²⁴⁶ Método de Estandarización de Control de Institución Pública (MECP)

²⁴⁷ Sistema Informático de Administración Financiera (SIAF), Sistema de Contabilidad (SICO)

²⁴⁸ Training for departments and municipalities by Programa de Capacitación y Asistencia Técnica para Departamentos y Municipios (PROCADEM).

operations. One of the reasons reported is the lack of legislation requiring systematic management of projects and operations in general, because these actions are performed only for projects supported by foreign donor agencies. The projects supported by foreign donor agencies are subject to systematic monitoring and evaluation using the criteria established by the respective donors, whereas the projects implemented by the government alone are only subject to the procedures of evaluation and monitoring on budget by MH and audit agencies.

The capacity to manage development plan of local governments is not sufficient. The average planning capacity of development plans is ranked from the central level (3.4 point), the departmental level (2.7 point) and the municipal level (1.1 point). IN central ministries and agencies, there are groups of officials who have knowledge and skills of planning on participatory development and logical frameworks, and some ministries such as MAG and STP have facilitators of participatory development. Also, seven out of ten ministries studied have developed comprehensive national or sector development plans with their own efforts. This indicates that they have certain planning capacity.

Table 3.5-1 Development Plan of the Central Government

Institutions Name	National Plans	Sectoral Plans	Institutional Plans	POA/PAI
Social Cabinet	PPDS ²⁴⁹			<input type="checkbox"/>
STP			PEI ²⁵⁰	<input type="checkbox"/>
SEAM		PAN ²⁵¹		<input type="checkbox"/>
MH	PEES ²⁵²			<input type="checkbox"/>
MOPC		PE ²⁵³ PNSV ²⁵⁴		<input type="checkbox"/>
MEC		PNE ²⁵⁵		<input type="checkbox"/>
MAG		MEA ²⁵⁶		<input type="checkbox"/>
MSP y BS		PNSIN ²⁵⁷		<input type="checkbox"/>
MIC				<input type="checkbox"/>
INDERT				<input type="checkbox"/>

Source: Table prepared by the JICA Study Team for EDRIPP based on the information obtained in government institutional web pages of Paraguay, in January, 2011.

At the local level, 11 departments have institutional strategic plans (PEI) that indicate overall directions and strategies,²⁵⁸ whereas only 5 out of 14 departments of the Eastern Region (35%)

²⁴⁹ Public Policy Proposal for Social Development 2010-20 (La Propuesta de Política Pública para el Desarrollo Social 2010-2020).

²⁵⁰ Institutional Strategic Plan 2007-2012 (Plan Estratégico Institucional 2007-2012).

²⁵¹ National Environmental Policy (Política Ambiental Nacional).

²⁵² Economic - Social Strategic Plan 2008/2013 (Plan Estratégico Económico-Social 2008-2013).

²⁵³ Strategic Plan 2008-2013 (Plan Estratégico 2008-2013).

²⁵⁴ National Road Safety Plan 2008-2013 (Plan Nacional de Seguridad Vial 2008-2013)

²⁵⁵ National Education Plan 2024 (Plan Nacional de Educación 2024).

²⁵⁶ Agricultural Strategic Framework 2009/2018 (Marco Estratégico Agrario 2009/2018).

²⁵⁷ National Health Plan of Children 2008-2012 (Plan Nacional de Salud Integral de la Niñez 2008-2012).

²⁵⁸ 11 departments: Concepción, San Pedro, Cordillera, Caaguazú, Itapúa, Misiones, Alto Paraná, Ñeembucú, Amambay, Canindeyú and Caazapá.

developed Departmental Development Plans (PDD), a detailed planning document for socioeconomic development.²⁵⁹ On the other hand, some departments possess high capacity of development plans. For example, Cordillera department, which has both the PEI and the PDD, and Itapúa department obtained relatively high score of capacity to manage development plans, 3.2 and 4.3 point, respectively. Both departments have been strengthening their development planning through various projects implemented by international donor agencies.²⁶⁰

Table 3.5-2 Departmental development Plans

Governorates	Departmental Development Plans (PDDs)	Strategic Institutional Plans (PEIs)	Annual Operation Plans (POAs)
Concepción		✓	✓
San Pedro	✓	✓	✓
Cordillera	✓	✓	✓
Caaguazú		✓	✓
Caazapá	✓	✓	✓
Itapúa		✓	✓
Misiones		✓	✓
Paraguarí	✓		✓
Alto Paraná		✓	✓
Ñeembucú		✓	✓
Amambay		✓	✓
Canindeyú	✓	✓	✓
Central			✓
Guaira			✓

Source: Table prepared by the EDRIIP Study Team based on the information obtained through interviews. October 2011. (*) In process

Table 3.5-3 Municipalities with their own development plan

Municipality	Belén, Concepción, Loreto, Yby Yaú, Caaguazú, Dr. Cecilio Báez, R.I. 3 Corrales, San Joaquín, Yhú, Abaí, Buena Vista, Dr. Moisés S. Bertoni, General H. Morínigo, San Juan Nepomuceno, Paraguarí, Horqueta, Jesús, Bella Vista*, Hohenau*, Obligado* (20 municipalities in total)
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*The set of the 3 municipalities of Bella Vista, Hohenau and Obligado have done a Territorial Development Plan of Colonias U July 2008.

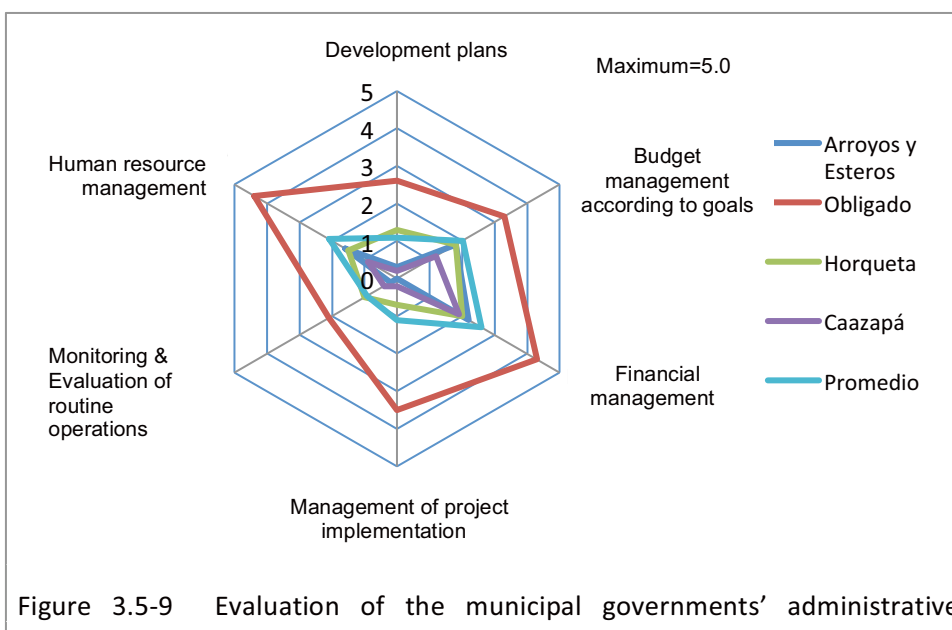
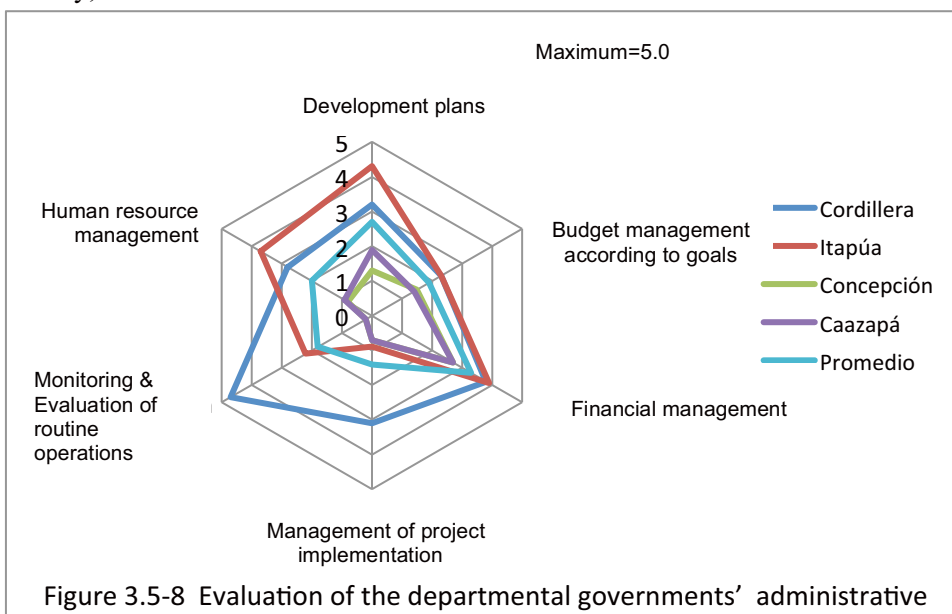
Source: Table prepd for the JICA Study Team for EDRIIP based on the information obtained through interviews October 2011.

The average point of the four municipalities on the capacity to manage development plans is only 1.1 point. Indeed, only 20 out of 215 municipalities in the Eastern Region (approximately 9%) have municipal development plans (PDM). This clearly indicates the area facing a major challenge in the years to come. On the other hand, there are some highly competent municipalities, and there is a considerable variation of capacity among municipalities. For example, the Obligado municipality obtained the high score 2.6 point, because it has a territorial development plan that was developed with two adjacent municipalities. This municipality holds community meetings with participation of various stakeholders to develop annual operating plan

²⁵⁹ 5 departments: San Pedro, Cordillera, Paraguarí, Canindeyú, Caazapá (in process).

²⁶⁰ Information was provided by complementary interviews at those departmental governments.

and annual budgets and to report the actions taken each year.²⁶¹ It has been making great efforts to establish a mechanism that permits direct dialogue with civil society, participation of civil society, and information disclosure.



A. Challenges to be addressed at each administrative level

The following summarizes the main challenges of central and local administrative levels, based on the results of administrative capacity assessment and interviews conducted in this study.

²⁶¹ Participation of educational centers, civil bodies, community health committees, community educational committees, producer's associations, etc.

Central level

Insufficient participation of stakeholders in the planning process

The following areas has scope for improvement: Intra-institutional coordination; participation and coordination among responsible units and the Ministry of Finance in planning and budgeting processes; interagency coordination for complementarities; and the opportunities for citizen participation in the preparation of development plans. To promote decentralization and territorial approach, it is extremely important to introduce institutions and mechanisms that enable participation of citizen and diverse social actors (industry, public and academic), ensure coordination of views and actions of local governments, ministries and agencies.

Lack of flexibility in budgetary procedures

The powers relating to the budgetary system in Paraguay are concentrated in the MH. The budget procedures are cumbersome and complex within respective ministries and agencies.²⁶² In addition, because of the vertical structure within each agency, budget approval process tends to be delay in the absence of controllers. For these and other reasons, modification of the budget within a fiscal year requires excessively long time, preventing timely implementation of necessary measures and strategies.²⁶³ Currently, under the leadership of the MH, the government is strengthening public financial management and financial management capacity of local governments²⁶⁴ as a necessary preparation for future fiscal decentralization. These initiatives include the streamline of the approval procedures within the Ministry of Finance.²⁶⁵ The improvement of budget procedures needs to be proceeded prudently within the context of decentralization, taking full account of financial management capacity of various ministries, agencies and local governments. It is necessary to rationalize budget procedures in harmony with institutional capacity building initiatives under the MH, while avoid premature transfer of powers to local governments.

Lack of monitoring and evaluation system of public investment projects

The projects with support of international donor agencies are subject to monitoring and evaluation, following the methodology established by each agency. Information is shared between the organizations involved and released to the public through the website or documents. The MH created the Public Investment Unit, making effort to build capacity on feasibility study and risk management.²⁶⁶ On the other hand, in public investment projects implemented only with the resources of the government of Paraguay, monitoring and evaluation focuses primarily

²⁶² An extreme case was found in which the procedures for approval of royalty expenses consisted of approximately 15 steps just inside the MH, according to the JICA advisor in the Ministry.

²⁶³ To extend the resources of the extension technicians of the DEAg-MAG, the budget needed was recently approved when the growing cycle of the items selected was over (according to information obtained by extension of the DEAG at a workshop held by the EDRIPP).

²⁶⁴ Ministerial resolution No.246 of MH, July 2010

²⁶⁵ Decree No. 6071/2011, Article 274.

²⁶⁶ Unidad Central de Inversión Pública.

on the oversight of budget,²⁶⁷ since the monitoring and evaluation under a comprehensive approach²⁶⁸ is not required legally. These two instruments will not only ensure greater effectiveness and transparency of project implementation, but also strengthen cooperation between different actors to share information or to make projects more effective.

As an effective measure to remedy this situation, the government launched the Planning System (SISPLAN).²⁶⁹ The STP developed the SISPLAN in 2008 to standardize the management of all development plans at the national, departmental, municipal, and sector levels as well as major public investment projects, using the concept of project cycle that consists of planning, contracting, implementation, budget management, monitoring and evaluation. The STP launched support for departmental and municipal governments in the process of monitoring and evaluation, using the SISPLAN. Many of the departmental and municipal development plans developed as of today were developed with the support of the STP and the MH under the SISPLAN.²⁷⁰ This could become an effective tool to achieve mutual cooperation of the various development plans including projects, strengthen coordination of plans and budget, and centralize information on development plans that have been managed in isolation and independently. However, inter-agency coordination is still very limited because of several reasons, including the lack of institutionalization of SISPLAN through legislation.²⁷¹

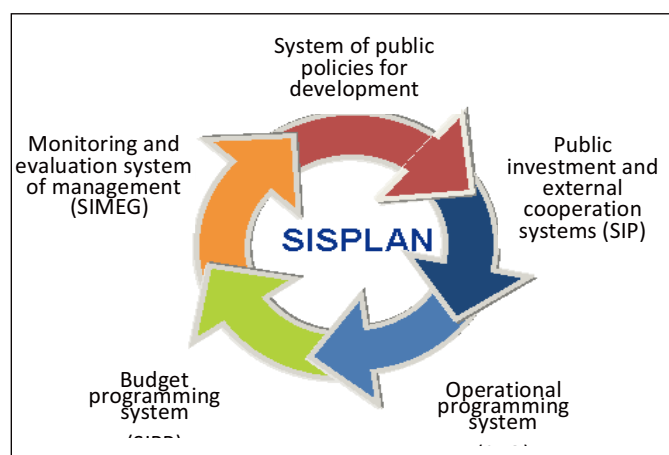


Figure 3.5-10: Simplified scheme of the National Planning System²⁷²

²⁶⁷ The budget evaluation system implemented under the Program Training and Technical Assistance to Departments and Municipalities (PROCADEM) pursuant to Decree No. 246 of Ministry of Finance issued in July 2010 with the aim of strengthening the administrative capacity departmental and municipal governments, is one of them.

²⁶⁸ Usually the evaluation criteria established by DAC (OEEC) are used. Those criteria are: relevance, efficiency, effectiveness, sustainability, and impact.

²⁶⁹ Sistema de Planificación (SISPLAN). http://www.stp.gov.py/sisplan_que

²⁷⁰ Pre Investment Program 1143 OC/PR (Programa de Preinversión 1143 OC/PR).

²⁷¹ For example, the Website of SISPLAN, agencies make public the plans and other relevant documents are only the different directions of the STP, the National Council of Science and Technology (CONACYT), and other directions Military Cabinet of the Presidency.

²⁷² Source: STP 2008.

Lack of human resource management system based on capacity and performance

The current evaluation system of human resource in central ministries and agencies focuses on controlling work hours and holidays, and is not a system based on capacity and performance in which the achievements of goals of staff and units are used as one of main criteria for promotion and salary increase. Furthermore, although the pay and allowance system based on positions, years of work, qualifications are institutionalized, the hiring, promotion and reallocation are influenced heavily by political forces, including the change of government. In addition, respective ministries and agencies hire public employees separately without a standardized competitive exam for recruitment common across ministries and agencies. Although these factors may not always be a limitation of Paraguayan society, it is at least clear that the current system has scope of improvement toward a more democratic system that ensures fair and equal opportunities and provides incentives for higher capacity and performance among staff.

Weak coordination among ministries and agencies²⁷³

In the six evaluated aspects of administrative capacity, activities with effective inter-ministerial coordination are very limited. The first case is the SIGEST²⁷⁴ that just started operational with nine institutional bodies in 2008, and the second is the CEPRA²⁷⁵ that started coordination among the institutions²⁷⁶ related to the settlements in 2008. There is no other coordination mechanism that has been institutionalized with other ministries and agencies.

Departmental and municipal levels

Lack of medium-term departmental and municipal development plans

Among 14 departments of the Eastern Region, 11 departments or 79% have their strategic and institutional plans (PEI).²⁷⁷ However, only 5 departments or 36% have developed their departmental development plans, the five-year plan of socio-economic development.²⁷⁸ At the municipal level, only 20 out of 221 municipalities in the Eastern Region or its 9% have their municipal development plans.

²⁷³ Inter-agency coordination at the department and municipal levels is also a critical issue. EDRIPP started a pilot project in Caazapá. One of the objectives is to investigate the current situations of coordination functions at the department and municipality level, and validate appropriate methods to strengthen their functions. This pilot project started strengthening the inter-agency coordination committee in Caazapá through the introduction of potato, a new strategic crop item in Caazapá. For details, see Appendix 4.

²⁷⁴ Integrated Management for Agricultural and Rural Development (Sistema Integrado de Gestión para el Desarrollo Agrario y Rural). Executive Power decree No. 169/2008. <http://www.mag.gov.py/index.php?pag=sigest.html>

²⁷⁵ Coordinadora Ejecutiva para la Reforma Agraria (CEPRA). Law N° 838 / 2008.

²⁷⁶ SENASA, CONAVI, ANDE, STP, MOPC, MSP y BS, SEN, SAS, IMPRO, DIBEN, MEC, CAH, MAG, INDERT, MJT – SINAFOCAL, INC, INFONA, COPACO, MI, SEAM, SENAVE, MIC, MH, Women Secretariat, Children Secretariat, General Attorney, Governorates and municipalities, rural producer organizations, sectoral organizations.

²⁷⁷ Concepción, San Pedro, Cordillera, Caaguazú, Itapúa, Misiones, Alto Paraná, Ñeembucú, Amambay, Canindeyú and Caazapá

²⁷⁸ San Pedro, Cordillera, Paraguari, Canindeyú and Caazapá (in process)

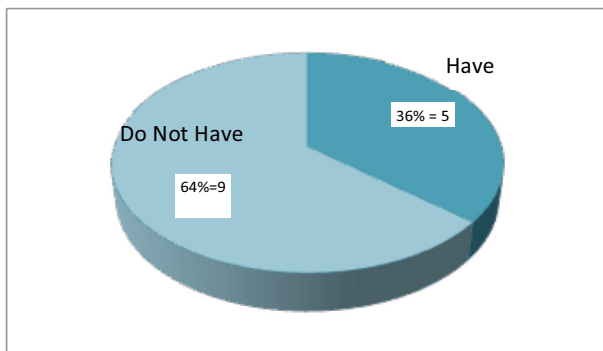


Figure 3.5-11 Percentage of departments which have PEI

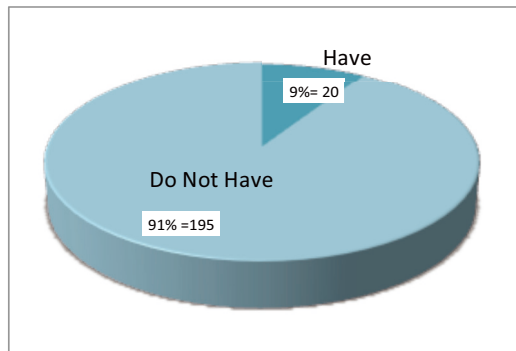


Figure 3.5-12 Percentage of municipalities which have PEI

Limited capacity to manage development plans at the departmental and municipal levels

Most of the departments and municipalities with the PDD and PDM received assistance from the STP or international donor agencies. There is a clear need for them to develop capacity to manage medium-term development plans and strengthen organizations and human resources to monitor and evaluate implementation of the plans.

It is particularly important to strengthen capacity of municipalities, one of the key actors in future decentralization. The average capacity to manage development plans of the four municipalities was 1.1 point, well below the average of the four departments 2.7 point.²⁷⁹ Although two of four municipalities studied have the PDM, none of them has a unit to manage implementation of development plans. This means that the plan supported by the central government is not monitored regularly, indicating the need to establish a system and organization to manage PDMs. On the other hand, there is a department²⁸⁰ and a municipality²⁸¹ that convened community meetings to review the drafts of annual operational plans and budget. It is possible to develop planning capacity using the good practice of civil participation in those local governments.

Poor linkage between development plans and budget

Among the departments and municipalities with their respective PDDs and PDMs, there are still no development plans that are linked with the budget plan. It is true that the formulation of development budget is not an easy task because a high percentage of development budget depends on fiscal transfer of royalties and compensations from the central government with single-year budget system. But even so, the linkage between budget and development plan constitutes one of prerequisites for sound local administration and development.

²⁷⁹ Evaluation of four criteria: presence of development plans; coordination between planning and implementation of projects and budget in the short and medium term; strength and breadth of participation of civil society in public administration; and performance management of plans.

²⁸⁰ Department of Itapúa.

²⁸¹ Horqueta Municipality.

Political change and management of development plans

In Paraguay, a fairly major change of technical personnel takes place after political election or leadership change in public institutions. The offices of departments and municipalities are not an exception. On the other hand, the planning period of medium-term development plans is usually five years in Paraguay. Since the development plans are not necessarily formulated at the beginning of a new leadership, there are cases in which the planning cycle of development plan does not match the political cycle. In this case, if the transfer of operations and tasks from the current to new personnel is not held properly, there is a risk that the development plan is abandoned after the change of personnel.²⁸² It is inevitable that departmental and municipal development plans are influenced by political change. However, these development plans would no longer hold any values as a medium-term plan and end up being merely one of political propaganda if they are not implemented with certain degree of continuity. Thus, it is essential, if not easy, to develop the management systems of development plans that are not severely affected by the change of government and technical personnel.

Lack of a medium-term budget framework

Neither of the four departments studied have a medium-term framework of municipal budget (three years), nor had any linkages with the medium- and long-term expenditure framework of the MH. Considering the challenges indicated above, it is clear that local medium-term development plans such as PDD and PDM are prepared independently and in isolation from budget frameworks.

Limited incentives to improve efficiency in budget allocation process

In all four departments and municipalities studied, they manage the budget of programs and projects of the MH.²⁸³ However, none of them has a budget allocation mechanism²⁸⁴ that incorporates the institutional incentives to promote efficient accomplishment²⁸⁵ of the goals in the units responsible for the implementation of projects or programs.²⁸⁶ Possible causes of this problem include not only the budget system itself, but the absence of the monitoring and evaluation of programs and projects, and the absence of internal evaluation of efficiency of budget execution,²⁸⁷ which together constitute a problem of overall administrative management.

²⁸² For example, in the EDRIPP it was found that some departments' employees did not know about the PDD.

²⁸³ The average score for this criterion was 3.3, with a range between 2.0 and 4.8 point. Two departments responded that they manage 100% of program-based budget management.

²⁸⁴ A budget allocation system based on performance, such as raising allocation for the next fiscal year to those components that have met financial targets efficiently.

²⁸⁵ Achieve greater, with less budget.

²⁸⁶ The four departments have self-identified "zero," while the three municipalities except the obligations have self-identified "zero".

²⁸⁷ Internal evaluation is performed only in 1 of 4 departments, and external evaluation in 2 of 4 departments.

Low level of civic participation and information disclosure

The PDDs and PDMs have been developed with technical assistance from the STP with the participation of public and private sectors and civil society, and are published on the website of the STP.²⁸⁸ In the area of financial management, the government is making progress in information disclosure, as the monitoring of budget execution is carried out under the State Financial Administration Act²⁸⁹, and the information on the budgets of various ministries, departments and municipalities is published on the website of the MH. However, in terms of projects and public services offered by departments and municipalities, the disclosure to the public is not yet sufficient because monitoring and evaluation are not performed.

Weak information technology infrastructure

The average level of financial management capacity was 3.3 point at the department level, and 2.6 point at the municipality level. The difference of these two levels arises from the presence of IT environments to operate the financial management information system (SIAF) on the website of the MH, and the capacity of personnel responsible for financial management to operate the SIAF. A PC is used in all departments and municipalities, but internet accessibility varies, depending on the place. In the departments and municipalities with poor internet connection, they cannot have access to the SIAF to enter necessary data for financial report or the request of royalties. They also need to hand carry the digital data to the MH directly. This is one of the reasons for the delay in the processing of financial management. Furthermore, technical capacity of financial management personnel is higher in the departments and municipalities with good access to the internet, since they can have access to demonstration operation and direct inquiry in the training on the operation of SIAF.

Monitoring and evaluation of public investment projects are not conducted

None of the departments and municipalities studied conducts evaluation (ex-ante, intermediate, final or ex-post) of the projects funded by departmental or municipal budget or feasibility study. The priority of those projects are reportedly determined under the following criteria: 1) consistency with the annual policy goals adopted in the Annual Operation Plan (POA)²⁹⁰; 2) feasibility within the allocated budget²⁹¹; 3) consistency with the policy goals established by the governor of the department²⁹²; and 4) the request of units within the department office.²⁹³ There

²⁸⁸ <http://stp.gov.py/descentralización> index

²⁸⁹ Law No. 1535/99 of State Financial Administration.

²⁹⁰ Department of Cordillera.

²⁹¹ Department of Itapúa.

²⁹² Department of Concepción. They give greater priority to public investment in four areas: education, health, public infrastructure and production.

²⁹³ Department of Caazapá.

are limited opportunities to conduct monitoring and evaluation under the frameworks of international donor agencies, because they rarely become the core counterpart of donor agencies unlike central government ministries and agencies.

Monitoring and evaluation of routine operations are not conducted regularly

The monitoring and evaluation of daily operations such as public services and customer services at the departmental and municipal level constitute another challenge in the coming years. The average level in this area was 1.5 at the department level, whereas the level at the municipal level was 0.9 point, an extremely low level. The department of Cordillera is an exception in since it conducts monitoring and evaluation with its own framework, aiming to establish a performance-based administration. However, the others conduct an internal evaluation about the achievements of the POA. Some likely causes are: the lack of technical skills to design the monitoring and evaluation indicators for routine work since this is not an easy task; and the difficulty of estimating the costs according to services since most of the costs are disbursed under current expenditures.

Lack of human resource management based on capacity and performance

This problem is common at all levels of the government. The average level on this topic was 2.0 point at the department level, and 2.1 point at the municipal level. There is little difference between both levels. The replacement of personnel under temporary contract is a routine practice at the change of the head of department or municipality.

Limited training opportunity and capacity

First of all, it is difficult to recruit well trained personnel, both number and quality, in remote areas. Besides, In addition, most of the seminars and training courses that the central government offers on the new policies and institutions are often held in Asunción. For the departments and municipalities that do not have their own training program, these seminars constitute valuable opportunities to train their personnel. However, the number of personnel and the opportunities for training are limited because of the shortage of budget or personnel in the departments and municipalities away from Asunción. Besides the lack of opportunities and the difficulties for recruitment, the change of personnel for political reasons impedes continued human resource development. The lack of a personnel management system based on capacity and performance, the lack of a monitoring and evaluation system and other institutional and organizational deficiencies are causing the lack of motivation of personnel.²⁹⁴

²⁹⁴ On the other hand there are some municipalities such as Obligado where the headquarters of the Colonias Unidas Cooperative is located. They implemented the system of recruitment and assignment of personnel based on performance and capacity with the high potential for employment of labor, and are providing regular training for staff with own resources, or through contracts with universities, exploiting the high potential of the region and making a

B. Challenges of civil society



Need to consolidate basic principles of democratic development

A wide gap between the demand for and actual supply of public investment and services was stressed at the sub-regional and regional participatory workshops conducted for this study. On the other hand, the sense of duties and responsibilities as citizen appears to be weak, as indicated by the fact that only 62.5 % of the population hold identity card,²⁹⁵ and that not a small number of people in rural areas drive motor cycles and cars without vehicle registration.²⁹⁶ While some people claim their rights as beneficiaries of public goods and services, they do not appear to hold a strong sense of fulfilling their responsibilities and obligations as citizen.

To further advance the process of democratic decentralization as expressed by the 1992 Constitution of Paraguay, it is fundamental that local people themselves are well aware of the problems facing their territories as promoters of local development, find solutions, provide technical and physical resources, and in some cases, provide public goods and services by themselves to improve their situations. The key factor in this process is not only a high level of awareness among citizen about their rights as promoters of development, but also a high level of commitment to engaging in the development process of the territory as stakeholders.

Democratic decentralization is aimed to transfer powers, responsibilities and resources (financial, goods and human capital) to local governments that are closer to people, empower local people through participation and involvement in decision making processes, and strengthen autonomous governance by local people and other stakeholders. In this process, it is necessary to establish a system of democratic local governance, develop capacities of local governments and people, raise awareness among local people about the basic principles of democracy, and deepen their understanding about the concept of democratic local development.

strategic investment for human development.

²⁹⁵ Dirección Nacional de Estadística, Encuestas y Censos. *Censo Nacional de Población y Viviendas 2002*. Asunción, 2002.

²⁹⁶ Opinions expressed by the residents who participated in several workshops of EDRIPP. Some expressed their desire to benefit from agricultural credit, but cannot meet the requirements for these causes.

It would not be possible to achieve democratic decentralization by strengthening local administrative power and capacity as provider of public goods and services, unless this is accompanied by increased awareness and capacity of local people about democratic decentralization.

Besides establishing basic institutional infrastructure for democratic decentralization, the territorial approach to sustainable development of rural territories (DSTR) also aims to promote sustainable natural resource management, strengthen territorial and social cohesions among diverse social actors including civil society, and make the most use of various potentials for local economic development. Finally, awareness raising activities among all social actors are absolutely needed to share common understanding about the basic concept of DSTR.

3.6 Characteristics and Potentials of Sub-regions

3.6.1 Sub-regional Grouping of Eastern Region

The previous sections in this chapter presented the overall characteristics of the Eastern Region, analyzing the current situations and issues in rural territories from the four dimensions of the territorial approach. This section analyzes the characteristics of departments in the Eastern Region, and makes a proposal of some sub-regions, the groups of departments that share similar characteristics. The objective of this analysis is to formulate differentiated strategies according to the characteristics of respective sub-regions, make full use of the potentials of respective sub-regions, and thereby achieve Vision 2030 effectively and efficiently. Furthermore, the analysis is aimed to set the overall directions of respective sub-regions toward sustainable development of rural territories (DSTR in Spanish), align and harmonize sector policies of the central government to the characteristics and needs of respective sub-regions, promote coordination of social actors and capacity development in respective sub-regions, and thereby promote social management with participation of social actors.

At the first stage of this study, a cluster analysis was conducted using indicators of 14 departments in the Eastern Region on 10 subjects (population, poverty, human development, education, civil rights, health, economy, infrastructure, environment, institution and governance). In this cluster analysis, data was drawn from national population census (1992, 2002), household surveys in 2000, and administrative data collected by concerned ministries and agencies.²⁹⁷ Based on the cluster analysis, it was proposed that the Eastern Region be grouped into five sub-regions.

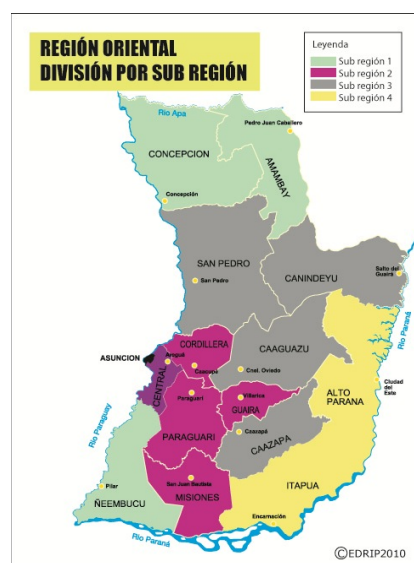


Figure 3.6-1 presents the results of cluster analysis. The overall characteristics of each sub-region could be succinctly summarized such as follows: Sub-region 1 (Extensive production area); sub-region 2 (Traditional rural area); sub-region 3 (Transition area); sub-region 4 (Export agriculture area); and sub-region 5 (Metropolitan area).

While the departments in a sub-region have their respective unique characteristics, the cluster analysis made clear that they also share many similar characteristics as a whole. The result of the cluster analysis was compared with a land use map

²⁹⁷ For the details of the methodology and data used for the luster analysis, see Appendix A1.

(production of soybean, corn, wheat, sunflower seed, and sesame) in Figure 3.2-30, and confirmed that both have similar patterns and relationships.

However, some shortcomings of the first-stage analysis above were recognized. First, this analysis does not consider apparent differences of regional characteristics within a department, because the indicators for the first-stage cluster analysis employed the data at the department level. Second, it was not obvious which indicators have more influences than the other ones on the result of the cluster analysis, since more than 60 indicators were used at the first stage. Furthermore, there is technical difficulty in conducting cluster analysis with the indicators on environment, since these indicators are typically not available by department or by district.

To respond to the shortcomings above, the second-stage cluster analysis was conducted. In this analysis, three key indicators were selected that characterize economy and production on the one hand, and society and culture on the other, aiming to reflect differences within a department by using district level data. The following three indicator were used: (1) “the percentage of the land area for large-scale, mechanized agriculture in total land area of a district,” as an indicator representing large-scale mechanized agriculture; (2) “the percentage of livestock land area in total land area of a district, as an indicator representing livestock area; and (3) “the percentage of producers residing for more than ten years in total number of producers in a district,” as an indicator representing transition. By significantly limiting the number of indicators into those three key indicators, the result of the cluster analysis can be interpreted intuitively. Furthermore, the result of the above analysis is layered by an environmental map to review the sub-regional grouping of the Eastern Region. In this step-by-step method, the relevance of the cluster analysis at the first stage was assessed.

Based on the two-stage cluster analyses, it is proposed that the rural area of the Eastern Region be grouped into 4 sub-regions as presented in Table 3.6-1. An important point to note is that although three departments in sub-region 1 share common

Table 3.6-1 Sub-regional grouping

Name	Departments
Sub-region 1	1A: Concepción, Amambay
	1B: Ñeembucú
Sub-region 2	Cordillera, Paraguari, Guaria, Misiones
Sub-region 3	San Pedro, Canindeyú, Caaguazú, Caazapá
Sub-region 4	Alto Paraná, Itapúa

characteristics, there is substantial differences in the environmental dimension. As a result, it is proposed that sub-region 1 be further grouped into two sub-groups: sub-region 1A (Concepción, Amambay) and sub-region 1B (Ñeembucú). Sub-region 5 (Metropolitan area) is excluded from this grouping since the large part of it hold the characteristics of urban areas.

Following the sub-regional grouping discussed thus far, the next few sections from 3.6.2 to 3.6.5 summarize the characteristics and potentials of respective sub-regions. The tables and figures indicated in those sections are attached at the end of section 3.6.5.

3.6.2 Characteristics and Potentials of Sub-Region 1

Sub-region 1 consists of three departments – Concepción and Amambay that are located at the northern part of the Eastern Region and bordering Brazil (sub-region 1A), and Ñeembucú that is positioned in the southwestern part of the Eastern Region and bordering Argentina (sub-region 1B). The total land area of sub-region 1 is 4,260,175 km², among which sub-region 1A and 1B occupy 3,105,704 km² and 1,154,471 km², respectively

In the following, the characteristics and potentials of sub-region 1 is summarized from the four dimensions of the territorial approach – society and culture, economy and production, environment, and policy and institution.

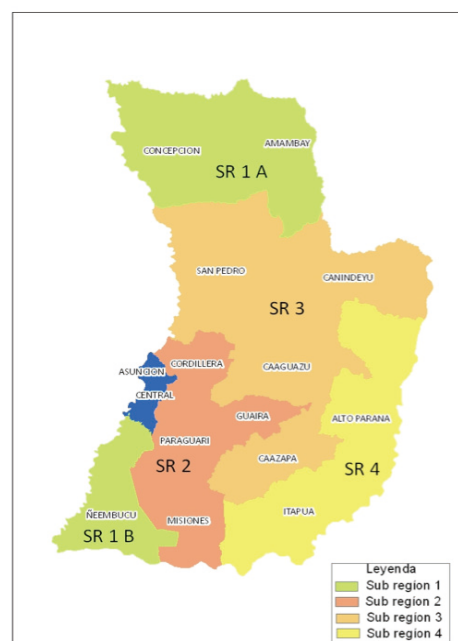


Figure 3.6-2 Sub-region

A. Society and culture

The dimension of society and culture focuses on people in sub-region 1, analyzing basic characteristics of demography and its long-term trends, and living conditions of people (poverty, income inequality, human development, education, health, nutrition, and food self-sufficiency).

Demographic trend According to the estimation of the National Statistics Bureau²⁹⁸, sub-region 1 is the least populated among all sub-regions, with its total population around 0.4 million people and its population density the average 9.0 person/km² (table 3.6-2). Looking at the demographic trend, the population of sub-region 1 grew only 1% on average in 1992-2009, substantially lower than the average population growth in the Eastern Region. Furthermore, the agricultural population occupied about 50% of the total population in 2002, the average level in the Eastern Region.

The traditional rural areas should have the characteristics of the larger number of producers who have settled in the areas long time ago, whereas the transitional area tend to consist of the larger number of producers who settled only recently and bring social changes in those areas. Figure 3.6-3 presents the number of residential years of producers by sub-region in 2008. Looking at

²⁹⁸ Dirección General de Estadísticas, Encuestas y Censos (DGEEC).

this figure, the proportion of producers living in the production site more than 10 years in total producers was 72.5%, ranking in the middle among all sub-regions. This level is lower than the average 75% among total sub-regions, indicating a low movement of population in sub-region 1.

Poverty and income inequality Figure 3.6-4 illustrates the incidence of poverty (the proportion of the poor in total population) by sub-region in 2002. According to this figure, the incidence of poverty is 44.4%, the second highest next to sub-region 3. However, the Gini coefficient (an indicator of income inequality) is 0.50, which is slightly lower than the average of all sub-regions (figure 3.6-5). Figure 3.6-6 compare the “quality of life” among sub-regions, measured by human development indicator in 2002. According to this comparison, sub-region 1 is 0.729, indicating the lowest quality of life among all sub-regions.

Education The improvement in the access to education is essential to promote sustainable rural development and improve the quality of life.

Figure 3.6-7 presents the insufficiency of educational needs (NBI in Spanish) by sub-region in 2002. Looking at this figure, it is clear that the NBI is the highest among all sub-regions. Above all, the average NBI is the highest 38.6% in rural households of sub-region 1, reaching twice the level of sub-region 5 (Central department). Furthermore, the average years of schooling of sub-region 1 in 2002 was 6.1 years, the second lowest level after sub-region 3 (figure 3.6-8).

Public health and medicine The importance of public health and medicine cannot be under-emphasized if the quality of life of residents is to be improved.

First, figure 3.6-9 presents the average life expectancy at birth in 2002 is presented by sub-region. According to this figure, the average life expectancy at birth of sub-region 1 is 68.9 years, the lowest figure similar to sub-region 4. In addition, figure 3.6-10 shows maternal and child mortality rates by sub-region in 2005. According to this figure, the child mortality rate of sub-region 1 is the highest among all sub-region, 18.4 per 1000 birth. The maternal mortality rate of sub-region 1 is also the high 18.8 person per 100 birth, following the highest 29 persons in sub-region 3.

The factors that could affect life expectancy at birth, child mortality rate and maternal mortality rate are diverse, including life style, weather, and climates. However, it is reasonable to infer that the access to health and medical services of residents is one of those critical factors.

Figure 3.6-11 presents the access to medical services by sub-region in 2003. According to this figure, the access to medical services in sub-region 1 is rather higher than that in the other

sub-regions. For example, the number of doctors per 10,000 populations is 3.1 persons, the second highest after sub-region 5 (Central department). There might be a need to understand why sub-region 1 has the high life expectancy at birth and the high maternal and child mortality rates, despite the relatively better access to medical services.

Nutrition and food self sufficiency According to the survey on the situations of farm households in 2010, the average calorie intake per person per day in Concepción department was 1,537 kcal, and the intake of gross protein was 45g (figure 3.6-12, 3.6-13). The highest among department studied was 2,198 kcal and 62g, respectively, in Itapúa department. In general, the levels of nutritional intake in Itapúa largely satisfies the basic requirements, but not sufficient in the level of Concepción department. Looking at the food self-sufficiency rates, Concepción department recorded 22% in calorie, and 13% in gross protein, indicating clearly a high dependence of nutritional intake on purchased foods.

B. Economy and production

The dimension of economy and production focuses on producers and production units in sub-region 1, analyzing the characteristics and potentials in the aspects of population by industry, land use, farms, land ownership, volume of production, and basic infrastructure.

Economically active population According to the Census 2002, the economically active population²⁹⁹ of sub-region 1 was around 135,000 people, or 36.5% of its total population (table 3.6-3).

According to the economically active population by industry, the primary industry (e.g., livestock, forestry, agriculture) in sub-region 1 comprises 38.4%, the secondary industry (e.g., manufacturing) 16.5%, and the tertiary industry (e.g., commerce, services) 43.5% (table 3.6-3). Comparing sub-regions, the proportion of primary industry population in sub-region 1 (38.4%) was relative low compared with that in sub-region 2 (40.3%) and sub-region 3 (59.5%). Especially, Amambay department had a very low proportion of primary industry population, whereas that of tertiary industry population was a very high 51.2%.

Land use Next, let us analyze the economic activities of sub-region 1 from the perspective of land use. Figure 3.6-14 shows the classification of land use in 2008, according to the agriculture, livestock, forestry and other purposes. According to this figure, the proportion of land area for livestock occupied average 73.8% in sub-region 1, the highest among all sub-regions. Using the vast areas for livestock, 0.89 million heads of cows were bred in Concepción department, 0.82

²⁹⁹ According to the National Statistics Bureau, economically active population is defined as: “the population who was 10 years old or older, and were working on or looking for job in the last four weeks before the census date.”

million heads in Amambay, and 0.59 million in Ñeembucú. As discussed in the previous section, the volumes of beef production in Concepción and Amambay are the second and third largest in the Eastern Region, next to San Pedro department, constituting the major center of beef production in the Eastern Region.

By contrast, the proportion of agricultural land in total land area in sub-region 1 was average 8.4%, the lowest among all sub-regions. This is also a characteristic of this sub-region. Looking into the departments in sub-region 1, each department has its unique characteristics. For instance, Concepción department is the second largest producer of sesame, after sub-region 3. Also, large-scale mechanized agriculture has been progressing in Amambay department, where the production of cash crops such as soybean, corn and wheat has been increasing rapidly. In contrast, Ñeembucú department is not involved in large-scale mechanized agriculture due to its soil quality. On the other hand, the textile and clothing industries have been developed in and round Pilar district of Ñeembucú department, utilizing cotton supply in this department.

The presence of the forestry industry is another important characteristic of sub-region 1, in which the average 17.7% of total land areas are used for the forestry industry. The forest coverage of sub-region 1 was around 0.69 million ha in 2008, the second largest after that of sub-region 3, around 1.03 million ha (table 3.6-4). However, the fact that the forest coverage of sub-region 1 has been lost by 43% in 22 years from 1986 to 2008 should not be overlooked.

In addition, sub-region 1 possesses the potentials of the fishery industry that make full use of abundant water resources. Concepción department is surrounded by the Paraguay River on the west side and the Apa River on the north side, and has a number of rivers in its inland, which are endowed with abundant fishery resources. In Concepción department, fishermen form six fishery cooperatives. Ñeembucú department are also surrounded by the Paraguay River on the west side and the Parana River on the south, and has the Negro and Yacaré Rivers in its inland. In Concepción and Ñeembucú departments, fishery is one of important economic activities, and there are great potentials to develop sports fishing for tourists.

Land ownership Land ownership by regional residents provides the basis of their stable life and enable to access credit. Figure 3.6-15 summarizes the land ownership ratio by sub-region. This figure makes clear that the land ownership rate in sub-region 1 is the lowest among all sub-regions. Although this data does not inform us of administrative services to issue land property rights, there is a possibility that the variation of these services might have an impact on the differences of land ownership rates among sub-regions.

Production and income The analysis of the values of production and income by region requires the national economic account disaggregated by department. This has yet to be

developed in Paraguay. To fill the gap of the official data, the current study conducted a survey on the situations of agricultural households in the departments of Concepción, Cordillera, Caazapá and Itapúa.³⁰⁰ The result of this survey is reported below as reference information.

This study revealed the average household cash income of the four departments studied as presented in figure 3.6-16. The average household income of Concepción department (sub-region 1) was 15.11 million Guarani, the lowest next to that of Caazapá department. The highest average income was observed in Itapúa department, 21.4 million Guarani. In the frequency distribution, 79% of households in Concepción department are included in the income cohorts less than 20 million Guarani. Since only 53% of households in Itapúa fall under the same cohorts, the low average income in Concepción is clearly revealed.

Figure 3.6-17 presents the income structure of households in four departments. According to this figure, 45% of cash income in Concepción was earned from labor income and 10% from cash transfer, whereas that from small businesses in three sectors – (1) cash crops, (2) livestock, and (3) food processing – remains only 45% of total income. Although the land for livestock occupies a substantial part of land use in Concepción, the main actors in the livestock industry are large producers. Indeed, it is important to pay attention to the fact that, for small producers, the income from crop production comprises much larger than that from livestock.

Access to credit The presence of financing agencies is essential to support producers through finance, and thereby develop rural areas. Figure 3.6-18 presents the average number of branch offices of Agricultural Credit Agency (CAH in Spanish), cooperatives, National Development Bank (BNF in Spanish) and other financial institutions. According to this figure, the average number of branch offices of CAH and cooperatives are 1.3 and 9.0 in Concepción, the lowest among all sub-regions. Also, the branch offices of BNF are next to the lowest after sub-region 5.

Looking at the actual situations of credit by those financing institutions based on the data from CAN 2008, the production units (farms) which received credit occupied only 10.8% in sub-region 1, the lowest among all sub-regions, and far below the average 17.4% of the Eastern Region (table 3.6-5). In particular, the proportion of production units which received credit was only 5.8% in Amambay department, the lowest figure among 14 departments of the Eastern Region.

³⁰⁰ The households with less than 50 ha of land were randomly selected from the departments of Concepción (sub-region 1), Cordillera (sub-region 2), Caazapá (sub-region 3), and Itapúa (sub-region 4). The interview was conducted to estimate cash income of the households by asking incomes in five categories - agriculture, livestock, small businesses, employment, and cash transfer. In the interviews, enumerators asked not the income directly, but the sales and expenses of respective items, and then the real cash income was calculated. 250-270 households in respective departments responded to the interviews. The interview period was from December 2010 to January 2011.

Which financing institutions provide credit to production units in sub-region 1? According to the CAN 2008, the production units which received credit from CAH accounted for the highest 40.2%, followed by 15.4% from merchants/collectors (table 3.6-5). The credit from cooperatives is the lowest among the four sub-regions. This may reflect the fact that the affiliation rate of production units to any organizations is relatively low in sub-region 1 compared with the other sub-regions.

Basic infrastructure The basic infrastructures such as road, water, electricity and telecommunication support economic, social and cultural activities of rural people. The analysis below reveals that sub-region 1 is the least equipped with basic infrastructures.

Table 3.6-6 summarizes the situation of road networks in 2007. Total road network was 80.8 km per unit area (1,000km²), among which paved roads consists of only 8.2 km, the least equipped among all sub-regions.

The rate of access to piped water of sub-region 1 was 52.1% in 2002 (table 3.6-7). This is the second highest rate after sub-region 4 (57.5%). However, looking at the rural area, the rate of access to piped water dropped to 24.7%, which is less than half of the same rate of the entire sub-region 1, and is the lowest among four sub-regions.

The electrification rate of sub-region 1 was 78.5% in 2002, the lowest among four sub-regions (table 3.6-8). Looking at the rural area, the gap of the electrification rate between sub-region 1 and the other sub-regions is even larger, with at least 20% lower than the highest 83.9% of sub-region 2.

The rates of access to telecommunication in rural area were the lowest in sub-region 1 in terms of TV (41.4%), ground phone (1.1%), mobile phone (4.8%), and internet (0.0%) (table 3.6-9). However, it is worth noting that the telecommunication infrastructures have been improving rapidly since 2002, according to the household survey by the National Statistics Bureau in 2009. This survey does not report the data by department, and yet the access to telecommunication has increased in TV (86%), ground phone (20.2%), mobile phone (85.6%), and internet (11.1%) throughout the nation.

C. Environment

Sub-region 1A

Eco-region Sub-region 1A consists of four eco-regions, namely, Aquidabán (1/2 of total land area), Amambay (26%), Selba Central (22%), and Litoral Central (2%).

Climate The average annual rainfall of this sub-region is around 1,500mm, with two clearly distinguished seasons – rainy season (October-May) and dry season (July-September). The average temperature over a year is 23 °C, and the lowest temperature is 3°C. There are some days of frosts in winter. Those climate conditions affect on soil erodibility, in particular of uncovered soils in rainy seasons.

Topography The topography of sub-region 1A is from flat to moderately sloped. The height above sea level of the northwest part is the highest in sub-region 1A.

Soil The sandy soil is predominant in sub-region, except argillaceous or calcic soil in the western part, and granite soil in the north. Soil erosion and degradation of soil fertility are observed, due to inappropriate agricultural methods.

Vegetation Forest comprises the main vegetation of sub-region 1A. The forest consists of deciduous trees reaching 25 meters (semi-deciduous trees in the southern part), flooded trees, and scrubs that are in transition to natural savanna (including areas with or without trees). However, many forests have been seriously affected by reckless deforestation. Without law on deforestation, the situations have been deteriorating.³⁰¹

Biodiversity Sub-region 1A is inhabited by some endangered species unique in this area.³⁰² Biodiversity of fauna and flora are under threat even though many public and private lands are specified as natural reserves under the national system of protected forest areas.³⁰³ The fishes inhabiting the Paraguay River are also declining because of mass catching for commercial purposes.

Water resources Degradation of water quality is observed because of sediment deposition, discharge of sewage water from the Brazilian side, and the inflow of pesticides used in agricultural land on the Paraguayan side. However, the degree of pollution is reportedly low, according to water quality tests.

Sub-region 1B

Eco-region Sub-region 1B consists entirely of Ñeembucú eco-region.

Climate The average annual rainfall of this sub-region is around 1,500mm, with rainy season (October-May) and dry season (July-September). The average temperature over a year is 22-23

³⁰¹ Ley de deforestación.

³⁰² Gua'ã hovy (*Anadorhinchus spp.*), Yacupetí (*Pipile pipile*)

³⁰³ Sistema Nacional de Áreas Silvestres Protegidas (SINASIP).

^oC. The temperature in summer could go up very high, and there are a few days of frosts in winter.

Topography The topography of sub-region 1B is mostly flat. There are large areas of wetlands formed by seasonal floods of the Parana River and the Paraguay River. This area is located in a transitional area from humid climates in Chaco to forests and pampa (grassland) in the eastern part of the Eastern Region, possessing high values for aquatic resource conservation. This sub-region includes the vast 0.92 million hectares of the Ipoá National Park, including the Ipoá wetlands.

The people in sub-region 1B occupy, use and manage wetlands to meet their needs. For example, in the case of livestock farms, farmers are trying to expand their farms to wetland areas. The land use of this type had been sustainable for decades without people who brought considerable changes in environment. However, the situations have been changing for the following man-made causes³⁰⁴:

- When the water level of pasture has changed rapidly, farms cannot graze livestock until toxins are excreted from reed by rain. Those excreted toxins bring the decline of functions of the Yacyreta dam. In addition, the ecology of river fishes has changed after the construction of this dam;
- Construction of waterways by livestock farms;
- Deforestation for the purpose of collecting industrial wood and the conversion of forests to pasture that exceed the rates of forestry renewal; and
- Embankment, the resulting change of drainage patterns of wetlands, and the formation of new river channels.

Soil The quaternary alluvial is spread in sub-region 1B.

D. Policy and institution

The dimension of policy and institution focuses on social actors of sub-region 1, analyzing the characteristics and potentials of public institutions, the private sector and civil society organizations.

Public institutions The departmental and district governments are expected to play much more important roles to promote sustainable development of rural territories. Few would disagree that the public investment and the provision of public services by the offices of governors and mayors should be improved to address the needs of local people, and make them more effective and efficient.

³⁰⁴ Ramón Fogel, UNP / CERI, 2008.

Furthermore, in the new framework of DSTR, it is expected that offices of governors and mayors promote participation, coordination and cooperation among the private sector and civil society organizations, and develop rural territories by making best use of local potentials.

In this section, the characteristics of local public institutions in sub-region 1 are analyzed using some fiscal indicators, based on the data from financial statements of district governments in 2009.

- Fiscal autonomy—The more the district governments raise their own tax revenues, the more financial resources become available for public investment and provision of public services for residents. As an indicator of fiscal autonomy, the proportion of own tax revenues in total district revenues was constructed. The higher proportion of tax revenues implies higher own source revenues, and thereby higher fiscal autonomy.

Figure 3.6-19 presents the indicator of fiscal autonomy by sub-regions. According to this figure, sub-region 1 is 15.3%, the second lowest level among four sub-regions, indicating that its fiscal autonomy is not necessarily high compared to the other sub-regions.

If the proportion of fiscal transfer from the central to district governments is higher, the districts are more dependent on the central government, and therefore their fiscal autonomy is lower. An indicator was created that shows the proportion of the fiscal transfer in total revenues of districts. Figure 3.6-20 shows this indicator by sub-region. The dependency on fiscal transfer of sub-region 1 is 59%, slightly higher than the average of all sub-regions, 55%, and ranking in the middle among all sub-regions.

- Public investment capacity—In order to assess the capacity of public investment of districts, an indicator that shows the proportion of public investment in total expenditures of districts. The higher this indicator is, the higher is the capacity of districts to implement public investment. Looking at figure 3.6-21, the capacity of public investment is 31.5%, about the same level as the average 31.1% of all sub-regions.

As another indicator to look at public investment capacity, the amount of public investment of district per capita was constructed. Figure 3.6-22 compare this indicator by sub-region. According to this indicator, the public investment per capita of sub-region 1 is 87,715 Guarani, the highest among all sub-regions.

Finally, the ratio of public investment over personnel expenditure was constructed as an indicator of public investment capacity of district governments. The higher this ratio is, the

higher is public investment expenditures per unit personnel cost, thereby indicating the higher tendency to allocate more budgets for public investment. Figure 3.6-23 shows this indicator by sub-region. The ratio of sub-region 1 is 1.21, the second highest among all sub-regions, although the variation of this ratio among sub-regions is small.

Private sector The private sector in rural areas of Paraguay consists of not only private enterprises, but also many other types of organizations such as agricultural cooperatives, producer cooperatives and associations, financial institutions and agencies. It is important that the management of rural territories will be promoted with participation and cooperation of those private sector organizations together with public institutions and civil society organizations.

To what extent are small producers affiliated with producer organizations in the private sector? Using the data of CAN 2008, the affiliation rate of producers by sub-region was constructed (figure 3.6-24). Looking at this figure, it is clear that the affiliation rate of producers in sub-region 1 is the lowest among all sub-regions. In particular, the affiliation rate with agricultural cooperatives of sub-region 1 is merely 4.5%, less than a half of the highest affiliation rate in sub-region 2.

3.6.3 Characteristics and Potentials of Sub-Region 2

Sub-region 2 is relatively closer to the metropolitan area, consisting of the departments of Cordillera, Paraguairí, Guairá, and Misiones. The total land area of sub-region 2 is 2,588,387 km², the smallest among four sub-regions. And yet it has the highest population density similar to that in sub-region 4 (32.5 person/ km²). Sub-region 2 is also characterized by the presence of many small producers who settled in this area early in the history and have been engaging in family farming. It also has mechanized agricultural areas which co-exist with traditional ones.

A. Society and culture

The dimension of society and culture focuses on people in sub-region 2, analyzing basic characteristics of demography and its long-term trends, and living conditions of people (poverty, income inequality, human development, education, health, nutrition, and food self-sufficiency).

Demographic trend According to the estimation of the National Statistics Bureau, the total population of sub-region 2 is around 0.82 million people and its population density is the average 36.5 person/km² (table 3.6-2). Among four sub-regions, sub-region 2 is the area with the third highest population, and the second highest population density after sub-region 4 (Itapúa, Alto Paraná). Looking at the demographic trend, the population of sub-region 2 grew relatively slowly in 1962-1992, but shows a growing tendency after 1992. Furthermore, the

proportion of agricultural population in total population was 67.3% in 2002, the second highest level after sub-region 3.

Sub-region 2 is characterized as the ‘traditional rural area,’ because producers settled in this area long time ago in the history, and has been involved in family farming. Since CAN 2008 includes the data on years of residence of producers, this study constructed an indicator – the proportion of producers living in the production site for 10 or more years in the total numbers of producers – was constructed. Figure 3.6-3 presents this indicator by sub-region. Looking at this figure, this indicator of sub-region 2 reaches the highest 80%, which is 15% higher than the lowest level of sub-region 3. It is thus clear that sub-region 2 has the characteristic of traditional rural area.

Poverty and income inequality What are the income levels of people in sub-region 2? The incidence of poverty of sub-region 2 in 2002 was 36.4%, the second lowest after sub-region 4 (figure 3.6-4). The Gini coefficient, an indicator of income inequality, is 0.482, the lowest among all sub-regions (figure 3.6-5). This is likely to be associated with the presence of many small family farmers who settled in this area long time ago. The “quality of life” of sub-region 2, which is measured by human development indicator in 2002, is 0.753, the highest level among all sub-regions, except sub-region 5 (figure 3.6-6).

Education The improvement in the access to education is essential to promote sustainable rural development and improve the quality of life. The insufficiency of educational needs (NBI in Spanish) of sub-region 2 in 2002 was 21.7% in all households and 25.9% in rural households, both of which rank the lowest among all sub-regions, except sub-region 5 (figure 3.6-7). This indicates that the access to education is the best among four sub-regions. However, it should be pointed out the fact that the average years of schooling of sub-region 2 in 2002 was 6.2 years, ranking the middle among all sub-regions (figure 3.6-8).

Public health and medicine Improved public health and medicine is essential to enhance the quality of life of residents. The average life expectancy at birth of sub-region 2 in 2002 is 70.5 years, the highest figure among all sub-regions (figure 3.6-9). However, the child mortality rate (person/1000 births) of sub-region 2 in 2005 is 19.1, ranking the middle among sub-regions, and the maternal mortality rate (person/100 births) is 15.2 (figure 3.6-10). Regarding the access to medical services, the number of doctors and dentists per 10,000 populations of sub-region 2 is 2.3 and 0.4 persons, respectively, about the average level of all sub-regions (figure 3.6-11). The above analysis indicates scope for improvement in health and medical services in sub-region 2.

Nutrition and food self sufficiency According to the survey on the situations of farm households in 2010, the average calorie intake per person per day of sub-region 2 was 2,089

kcal, and the intake of gross protein was 72g (figure 3.6-12, 3.6-13). The average calorie intake is the second highest after Itapúa department, and the intake of gross protein is the highest among all sub-regions. Looking at the food self-sufficiency rates, sub-region recorded 27% in calorie, and 22% in gross protein, indicating the dependence of nutritional intake on purchased foods.

B. Economy and production

The dimension of economy and production focuses on producers and production units in sub-region 2, analyzing the characteristics and potentials in the aspects of population by industry, land use, farms, land ownership, volume of production, and basic infrastructure.

Economically active population According to the Census 2002, the economically active population of sub-region 2 was around 260,000 people, or 35.4% of its total population (table 3.6-3).

Looking at the economically active population by industry, the primary industry (e.g., livestock, forestry, agriculture) in sub-region 2 comprises 40.3%, the secondary industry (e.g., manufacturing) 20.3%, and the tertiary industry (e.g., commerce, services) 37.9% (table 3.6-3). Comparing sub-regions, sub-region 2 is characterized as the area with the least bias among the three industries. The proportion of primary industry population in sub-region 2 was 40.3%, the second highest after sub-region 3 (59.5%). Furthermore, the proportion of economically active population of four departments is the smallest 33.6% (Cordillera department) and the largest 46.1% (Guairá department). The variation among the four departments is relatively small, indicating similar population structures among them.

Land use Next, let us analyze the economic activities of sub-region 2 from the perspective of land use. The proportion of land area for livestock occupied average 68.5% in sub-region 2, the second highest after sub-region 2, followed by the area for agriculture 24.2% and the area for forestry 4.9% (figure 3.6-14).

Using the appropriate topography for livestock, 0.25 million heads of cows were bred in Cordillera department, 0.24 million heads in Guairá, 0.48 million in Misiones, and 0.43 million in Paraguari. In addition, Misiones department is the largest producer of sheep in the nation.

Reflecting a large number of small producers, the main cash crops produced in sub-region 2 are sugar cane, cassava, corn, cotton, and poroto bean. In addition, the large land areas for soybean production can be found in Guairá and Misiones departments. Furthermore, using its

topographical characteristics, Misiones department produces upland rice whose cultivated land area is the second largest after soybean.

The manufacturing industry in sub-region 2 is worth noting since the food processing industry is well developed using agricultural crops produced locally. Guairá department is the largest producing area of sugar cane, and there are general facilities for the processing of sugar cane. In Cordillera department, in particular the districts of Aroyos y Esteros, Piribebuy, and Valenzuela, some progressive cooperatives exports organic sugar using locally produced organic sugar cane. They constitute an important part of Paraguayan exports as one of the leading exporting countries of sugar cane.

Sub-region 2 is also known as an active area to produce handicrafts. For instance, around 50% of the population in Cordillera is estimated to earn supplementary revenues from production of jewelry, wood products, leather products, and pottery. Paraguairí department maintains a high level of technology in a broad variety of traditional handicrafts, producing, for example, linen products, traditional clothes such as *aopoi*, ornaments such as *ñanduti*, basketwork, leather products, pottery, and silver products.

The presence of mining industry should be noted as another characteristic of sub-region 2. Embosucada district in Cordillera department is famous for quarrying; and many of its population are engaged in quarrying and stone processing. The districts of Nueva Colombia, Atyra, and Santa Elena are famous for construction stone, whereas Itacurubi district is known for the production of sulfur. In Paso Yobai district in Guairá department, gold mining was approved in 2003, and 2,000 workers are involved in gold mining in 50 processing centers. Paraguairí department also produces diverse stones, such as basalt, granite, rhyolite, quartzite, and sandstone. Also, clay deposits for the production of brick and tile were discovered recently.

The proportion of land areas for forestry in sub-region 2 is the average 5.9%, the lowest among four sub-regions. The forest coverage of sub-region 2 was around 0.14 million hectares in 2008, the smallest among four sub-regions (table 3.6-4). It should be noted that the forest coverage of sub-region 2 has been lost by 42% in 22 years from 1986 to 2008.

Land ownership Land ownership by regional residents provides the basis of their stable life and enable to access credit. The land ownership rate in sub-region 2 is 69%, that same as that in sub-region 3, and the second highest after sub-region 5 (figure 3.6-15).

Production and income According to a survey on the situations of agricultural households in the departments of Concepción, Cordillera, Caazapá and Itapúa in 2010, the average household income of Cordillera was 16.94 million Guarani, the second highest next to Itapúa (figure

3.6-16). Looking at the frequency distribution, 69% of households in Cordillera department are included in the income cohorts less than 20 million Guarani, lower than that in Concepcion and Caazapá, but higher than that in Itapúa (53%).

Looking into the income structure of Cordillera, cash income from labor and transfer is the highest among four departments studied (figure 3.6-17). The total of labor income structure and transfer accounted for the average 8,616,000 Guarani, much higher than 6,221,000 Guarani of Itapúa. This is perhaps because Cordillera department is closer to the metropolitan area and therefore the residents have more employment opportunities than the other departments.

Access to credit The presence of financing agencies is essential to support producers through finance, and thereby develop rural areas. Figure 3.6-18 presents the average number of branch offices of rural financial institutions. According to this figure, the average number of branch offices of CAH, cooperatives and BNF are 3.8, 18.5 and 2.3, respectively in sub-region 2. Since this is the second lowest after sub-region 1, there is a need to improve the access to credit in sub-region 2.

Next, let us look at the actual situations of credit by those financing institutions. According to the data from CAN 2008, the production units (farms) which received credit comprised 13.7% in sub-region 2, the second lowest among all sub-regions, and below the average 17.4% of the Eastern Region (table 3.6-5). Looking at the departments in sub-region 2, the proportion of production units which received credit was the lowest 12.1% in Cordillera, followed by 12.9% in Paraguairí, 15.4% in Guairá, and 15.6% in Misiones.

Which financing institutions provide credit to production units in sub-region 2? According to the CAN 2008, the production units which received credit from CAH accounted for the highest 37.3%, followed 33.7% from cooperatives and 10.2% from BNF (table 3.6-5).

Basic infrastructure This section summarizes the situation of basic infrastructures such as road, water, electricity and telecommunication. In overall, sub-region 2 is better equipped with the basic infrastructures, and yet there remain scope for improvement as discussed below.

First, total road network in 2007 was 169.4 km/1000km², ranked the third among four sub regions, and paved roads are 36.2 km//1000km², the best equipped among all sub-regions (table 3.6-6). However, the improved road ratio, including paved roads, in sub-region 2 is 39.2%, indicating the need to improve the road network.

Next, the access to piped water of sub-region 2 was 51.5% in 2002, ranked the third after 57.5% in sub-region 4 and 52.1% in sub-region 2. As in the other sub-regions, the access to piped

water was 81.9% in urban area, whereas 35.6% in rural area, indicating a major difference of the access more than twice as much. There is a clear need to improve the access to piped water, particularly in rural area (table 3.6-7).

The electrification rate of sub-region 2 was 87.8% in 2002, the second highest after 92.2% in sub-region 4 (table 3.6-8). Looking at the rural area, the electrification rate sub-region 2 was 83.9%, the highest among the rural areas of all sub-regions.

Next, let us look at the rates of access to telecommunication in rural area in 2002 (table 3.6-9). The access in rural area of sub-region 2 was the highest 65.5% in TV. The access to ground phone and mobile phone of sub-region 2 was 1.9% and 18.5%, respectively, the second highest after sub-region 4. The access to internet was 0.0%, indicating virtually no access to internet. The household survey by the National Statistics Bureau in 2009, however, reported much improved access to telecommunication in sub-regions 3 and 4. It can thus be inferred that the access in sub-region 3 has been improved after 2002.

C. Environment

Eco-region Sub-region 2 consists of four eco-regions, namely, Ñeembucú, Litoral Central, Selva Central, and floodplain of the Paraguay River, and the respective land areas occupy 50%, 25%, 20% and 1%.

Climate The average annual rainfall of this sub-region fluctuates between 1,400 and 1,600mm from the west to the east. The average temperature over a year fluctuates between 23 and 22 °C as well. The highest temperature in summer is around 40 °C, and the lowest could go below 0 °C with frosts for a short period.

Topography The topography of sub-region 2 is mostly flat along the Parana River and the Paraguay River plain. There are some hilly areas including steep slopes in the north and the northeast areas.

Soil The agricultural methods that do not consider sustainability of natural resources, especially the production potentials of soil resources, is observed in this sub-region. Due to the inappropriate tilling and the excessive use of pesticides, the decline of soil productivity is observed.

Vegetation Sub-region 2 is mostly the savannah area with trees, in which woody vegetation is spread in the vast grasslands. In its northern part, warm moist forests, flooded forests, and semi-deciduous forests are spread.

Forest resources The land ownership of sub-region 2, in particular Cordillera and Paraguarí, resulted from the typical, traditional pattern of land occupation, in which old small farmers have been gradually expanding their farmlands. In the southern part of sub-region 2, however, corporate farms have been trying to expand their farmlands, often accompanied by problems such as environmental degradation, illegal occupation of land, and invasion of property rights.

The expansion of farmlands resulted not so much from crop production as the expansion of pasture through deforestation, causing negative impacts on environment.

Water resources Water resources have been most severely affected by pollution. For example, the Tebicuary-mí River is considered as one of the most important rivers for its voluminous water flow and beautiful natural landscape, attracting many tourists and sports fishing. However, many agro-processing factories such as starch, absolute alcohol, and sugar have been built along the upstream and midstream of this river, discharging industrial waste water, and adversely affecting fishes inhabiting in the downstream of the river. People in the downstream area are engaged in fishery.

D. Policy and institution

The dimension of policy and institution focuses on social actors of sub-region 2, analyzing the characteristics and potentials of public institutions, the private sector and civil society organizations.

Public institutions The departmental and district governments are expected to play much more important roles to promote sustainable development of rural territories. It was noted earlier that the public investment and the provision of public services by the offices of governors and mayors should be improved to address the needs of local people, and make them more effective and efficient. Furthermore, in the new framework of DSTR, it is expected that offices of governors and mayors promote participation, coordination and cooperation among the private sector and civil society organizations, and develop rural territories by making best use of local potentials.

In this section, the characteristics of local public institutions in sub-region 2 are analyzed using some fiscal indicators, based on the data from financial statements of district governments in 2009. The analysis below indicates that the capacity of public investment of sub-region 2 is the highest among four sub-regions, although there remains scope for improvement in fiscal autonomy measured by the ratio of tax revenue over total revenues.

- Fiscal autonomy—The more the district governments raise their own tax revenues, the more financial resources become available for public investment and provision of public services for residents. As an indicator of fiscal autonomy, the proportion of own tax revenues in total district revenues was constructed. The higher proportion of tax revenues implies higher own source revenues, and thereby higher fiscal autonomy. Looking at figure 3.6-19 that presents the indicator of fiscal autonomy by sub-regions, sub-region 2 is 14.0%, the lowest level among four sub-regions.

If the proportion of fiscal transfer from the central to district governments relative to total district revenues is higher, the districts are more dependent on the central government, and therefore their fiscal autonomy is lower. An indicator was created that shows the proportion of the fiscal transfer in total revenues of districts and presented in figure 3.6-20. The dependency on fiscal transfer of sub-region 2 is 60.9%, the second highest next to sub-region 3. It is clear that fiscal autonomy of sub-region 2 is low relative to the other sub-regions.

- Public investment capacity—In order to assess the capacity of public investment of districts, an indicator that shows the proportion of public investment in total expenditures of districts. The higher this indicator is, the higher is the capacity of districts to implement public investment. Looking at figure 3.6-21, the capacity of public investment is 38.8%, the highest among all sub-regions.

As another indicator to look at public investment capacity, the amount of public investment of district per capita was constructed. Figure 3.6-22 compare this indicator by sub-region. According to this indicator, the public investment per capita of sub-region 2 is 63,205 Guarani, ranking in the middle among the sub-regions.

Finally, the ratio of public investment over personnel expenditure was constructed as an indicator of public investment capacity of district governments. The higher this ratio is, the higher is public investment expenditures per unit personnel cost, thereby indicating the higher tendency to allocate more budgets for public investment. Figure 3.6-23 shows this indicator by sub-region. The ratio of sub-region 2 is 1.36, the highest among all sub-regions.

Private sector The private sector in rural areas of Paraguay consists of not only private enterprises, but also many other types of organizations such as agricultural cooperatives, producer cooperatives and associations, financial institutions and agencies. It is important that the management of rural territories will be promoted with participation and cooperation of those private sector organizations together with public institutions and civil society organizations.

To what extent are small producers affiliated with producer organizations in the private sector? Using the data of CAN 2008, the affiliation rate of producers by sub-region was constructed. Figure 3.6-24 presents the indicator by sub-region. It is clear that the affiliation rate of producers in sub-region 2 is 26.7% with all production organizations and 11.8% with agricultural cooperatives; both are the highest among all sub-regions. This clearly indicates one of the important characteristics of sub-region 2, namely, the organization of producers is more advanced in sub-region 2 than the other sub-regions.

3.6.4 Characteristics and Potentials of Sub-Region 3

Sub-region 3 consists of the departments of San Pedro, Canindeyú, Caaguazú, and Caazapá that are located in the central part of the Eastern Region. The total land area of sub-region 3 is 5,811,831 km², the largest among four sub-regions.

The four departments in sub-region 3 can be characterized as the ‘transitional area’ where export-oriented, mechanized agriculture has been introduced into traditional rural areas. A diverse set of socioeconomic situations are observed with the introduction of the large-scale mechanized agriculture. In addition, there are some areas in which conflicts have been occurring in the process of transition.

In the following, the characteristics and potentials of sub-region 3 is analyzed according to the four dimensions of the territorial approach – society and culture, economy and production, environment, and policy and institution.

A. Society and culture

The dimension of society and culture focuses on people in sub-region 3, analyzing basic characteristics of demography and its long-term trends, and living conditions of people (poverty, income inequality, human development, education, health, nutrition, and food self-sufficiency).

Demographic trend According to the estimation of the National Statistics Bureau, the total population of sub-region 3 is around 1.2 million people, the second largest after sub-region 4 (table 3.6-2). Its average population density is 21.9 person/km², ranking the third after sub-region 4 (40.8%) and sub-region 2 (36.5%).

Looking at the demographic trend, the population of sub-region 3 grew rapidly for 30 years during 1962-1992, but its growth has been gradually slowing down after 1992. Furthermore, the

proportion of agricultural population in total population was 75.5% in 2002, the highest level among all sub-regions.

How the demographic structure has been changing in the last ten years? Since CAN 2008 includes the data on years of residence of producers, this study constructed an indicator – the proportion of producers living in the production site for 10 or more years in the total numbers of producers. Figure 3.6-3 presents this indicator by sub-region. Looking at this figure, the proportion of producers living in the production site for less than years in sub-region 3 was about 35%, the highest level among four sub-regions. Sub-region 3 is thus characterized as the ‘transitional area,’ in which a large number of immigrants settled in the last 50 years, and its society and economy have been changing dynamically.

Poverty and income inequality What are the income levels and distribution of people in sub-region 3? The incidence of poverty of sub-region 3 in 2002 was 47.6%, the highest among all sub-regions (figure 3.6-4). The Gini coefficient, an indicator of income inequality, is 0.551, close to the highest level of sub-region 4 (figure 3.6-5). Thus sub-region 3 is characterized by the presence of the high incidence of poverty and the highly unequal income distribution. This seems to indicate the possibility that a large number of settlers in the last 50 years have not been able to benefit sufficiently from economic development. However, the quality of life of sub-region 3 measured by human development indicator in 2002 is 0.743, the middle level among four sub-regions, indicating that the quality of life in sub-region 3 is not necessarily low (figure 3.6-6).

Education The improvement in the access to education is essential to promote sustainable rural development and improve the quality of life. The insufficiency of educational needs (NBI in Spanish) of sub-region 3 in 2002 was 28.1% in all households, the lowest among all sub-regions (figure 3.6-7). The average year of schooling of sub-region 3 in 2002 was 6.2 years, ranking the lowest among all sub-regions (figure 3.6-8). This clearly indicates that there is a critical need of education, in particular to enhance the primary and secondary education.

Public health and medicine Improved public health and medicine is essential to enhance the quality of life of residents. The average life expectancy at birth of sub-region 3 in 2002 is 69.7 years, the middle level among four sub-regions (figure 3.6-9). However, the child mortality rate (person/1000 births) of sub-region 3 in 2005 is 18.1, ranking the highest among all sub-regions, and the maternal mortality rate (person/100 births) is 29, a fairly high level as well (figure 3.6-10). Regarding the access to medical services, the number of doctors and dentists per 10,000 populations of sub-region 3 is 1.2 and 0.2 persons, respectively, the lowest level among all sub-regions (figure 3.6-11). The above analysis indicates that, as in education, there is large scope for improvement in health and medical services in sub-region 3.

Nutrition and food self sufficiency According to the survey on the situations of farm households in 2010, the average calorie intake per person per day of sub-region 3 was 1,742 kcal, the highest among all sub-regions (figure 3.6-12). However, the intake of gross protein in sub-region 3 was 49g, the middle level among the sub-regions (figure 3.6-13). Looking at the food self-sufficiency rates, sub-region 3 recorded 21% in both calorie and gross protein, indicating the highest dependence of nutritional intake on purchased foods.

B. Economy and production

The dimension of economy and production focuses on producers and production units in sub-region 3, analyzing the characteristics and potentials in the aspects of population by industry, land use, farms, land ownership, volume of production, and basic infrastructure.

Economically active population According to the Census 2002, the economically active population of sub-region 3 was around 340,000 people, or 32.7% of its total population (table 3.6-3).

Looking at the economically active population by industry, the primary industry (e.g., livestock, forestry, agriculture) in sub-region 3 comprises 59.5%, the secondary industry (e.g., manufacturing) 10.7%, and the tertiary industry (e.g., commerce, services) 28.9% (table 3.6-3). Comparing sub-regions on the primary industry, sub-region 3 is characterized as the highest proportion of the primary industry population among them. Furthermore, the proportion of economically active population of the primary industry is the lowest 46.1% in Caaguazú department, and exceeds 60% in the other three departments.

Land use Next, let us analyze the economic activities of sub-region 3 from the perspective of land use. The proportion of land area for livestock occupied average 42.7% in sub-region 3 and that for agriculture was 24.2%, totaling nearly 84% for livestock and agriculture (figure 3.6-14). The area for forestry is 15.6%. The urban area and waterways occupy merely 1%.

Sub-region 3 consists of the vast areas suitable for livestock. In particular, San Pedro department is the largest production center of beef in the Eastern Region. This is followed by 0.68 million heads of cows in Canindeyú, 0.42 million heads in Caaguazú, and 0.3 million heads in Caazapá.

One of the main characteristics of agriculture in sub-region 3 is a mix of the traditional agriculture primarily by small-scale producers and the large-scale mechanized agriculture by medium- and large-size producers. The main crops of small-scale producers are cotton, sugar

cane, sesame (particularly in San Pedro), followed by corn, cassava, bean and peanuts mainly for self-consumption. On the other hand, medium- and large-scale producers employ methods of mechanized agriculture to produce soybean, wheat and corn (hybrid). In particular, the cultivated area of soybean is vast, for example, occupying three quarters of total cultivated areas in Caazapá department.

The manufacturing industry in sub-region 2 consists of food processing based on agriculture and livestock, and construction materials using raw materials produced locally. In Caaguazú department, milling, silo, and dairy processing are the main industries, and there are some small-scale industries of ceramics and construction materials. Caaguazú department used to have a large cotton industry using cottons locally produced. However, many factories have been closed or converted to other industries due to the shortage of raw materials. In Canindeyú department, there are industries of sugar and distilling using sugar cane, tobacco, meat packing (e.g., sausage), and herb products. It should be pointed out that many silos in Canindeyú are owned by multinational firms financed by Brazilian capital. The most important manufacturing in San Pedro department is the cotton industry using locally produced cottons, but there are other industries such as milling, herb products, dairy products, and tobacco. Caazapá department does not have the large manufacturing base, but industries such as construction materials, organic brown sugar, and refractory ceramics.

The proportion of land areas for forestry in sub-region 3 is the average 15.6%, the second highest next to sub-region 1. The forest coverage of sub-region 3 was around 1.02 million hectares in 2008, the largest among four sub-regions (table 3.6-4). However, it should be noted that the forest coverage of sub-region 3 has been lost by 61% in 22 years from 1986 to 2008, resulting in the decline of the then prosperous wood processing industry due to the shortage of raw materials.

Land ownership Land ownership by regional residents provides the basis of their stable life and enable to access credit. The land ownership rate in sub-region 3 is 69%, that same as that in sub-region 2, and the second highest after sub-region 5 (figure 3.6-15).

Production and income According to a survey on the situations of agricultural households in the departments of Concepción, Cordillera, Caazapá and Itapúa in 2010, the average household income of Cordillera was 13,259,000 Guarani, the lowest among four sub-regions (figure 3.6-16). Looking at the frequency distribution, 79% of households in Caazapá department are included in the income cohorts less than 20 million Guarani.

One of the characteristics of the income structure of Caazapá department is that cash income from livestock is relatively small among four departments studied (figure 3.6-17). The total of income from livestock in Caazapá department accounted for the average 717,000 Guarani,

which is the lowest after 5,535,000 Guarani in Itapúa, 1,128,000 Guarani in Concepción, and 1,682,000 Guarani in Cordillera. The differences of cash income from agriculture are smaller than that from livestock, but still the lowest among four sub-regions.

Access to credit The presence of financing agencies is essential to support producers through finance, and thereby develop rural areas. Figure 3.6-18 presents the average number of branch offices of rural financial institutions. According to this figure, the average number of branch offices of CAH, cooperatives and BNF are 5.3, 24.3 and 4.0, respectively in sub-region 3. Since this is the second highest after sub-region 4, the access to credit is relatively better in sub-region 3 than the others.

Next, let us look at the actual situations of credit by those financing institutions. According to the data from CAN 2008, the production units (farms) which received credit comprised 18.3% in sub-region 3, the second highest after 24.4% in sub-region 4 (table 3.6-5). Looking at the departments in sub-region 3, the proportion of production units which received credit was the highest 21.6% in Caaguazú department, followed by 19.1% in Canindeyú, 16.4% in Caazapá, and the lowest 16.2% in San Pedro.

Which financing institutions provide credit to production units in sub-region 3? According to the CAN 2008, the production units which received credit accounted for 29% and 29.6% from CAH and cooperatives, respectively (table 3.6-5). These are followed by 18.6% from banks and financing agencies, which is the highest among all sub-regions.

Basic infrastructure This section summarizes the situation of basic infrastructures such as road, water, electricity and telecommunication. In overall, the equipment of basic infrastructure in sub-region 3 is low as in sub-region 1, indicating large scope for improvement as discussed below.

First, total road network in 2007 was 191.3 km/1000km², ranked at the middle level among four sub regions. However, paved roads are only 18.4 km//1000km², the level less than a half of the best in sub-region 2 (table 3.6-6). The improved road ratio, including paved roads, in sub-region 3 is 19.5%, the lowest among all sub-regions, indicating a high need to improve the road network.

Next, the access to piped water of sub-region 3 was 41.4% in 2002, ranked the lowest among all sub-regions. Especially, the access to piped water in rural area was 30.4%, the second lowest after 24.7% in sub-region 1. There is therefore a high need to improve the access to piped water, in particular in the rural area (table 3.6-7).

The electrification rate of sub-region 3 was 79.7% in 2002, the second lowest after 78.5% in sub-region 1 (table 3.6-8). Looking at the rural area, the electrification rate sub-region 3 was 74.8%, the second lowest after sub-region 1.

Next, let us look at the rates of access to telecommunication in rural area in 2002 (table 3.6-9). The access in rural area of sub-region 3 was 45% in TV, 1.2% in ground phone, and 9.4% in mobile phone, the second lowest after sub-region 1. The access to internet was 0.0%, indicating virtually no access to internet.

However, the household survey by the National Statistics Bureau in 2009 reported much improved access to telecommunication San Pedro and Caaguazú departments in sub-regions 3. In particular, the access to mobile phone improved from 6.4% in 2002 to 66.8% in 2009 in San Pedro, and from 22% in 2002 to 78% in 2008 in Caaguazú. Furthermore, the access to internet in Caaguazú improved from 0.1% in 2002 to 5.3% in 2009.

C. Environment

Eco-region Sub-region 3 consists of six eco-regions — Selva Central (about 60%), Litoral Central (15%), Ñeembucú (11%), dense forest of Alto Paraná (9%), Amambay (7%), and floodplain of the Paraguay River (1%).

Sub-region 3 also includes two major watersheds in Paraguay, namely, the Parana River and the Paraguay River. Those diverse eco-regions provide food and herbs, and their natural resources have not been well known or studied in detail. Their extinctions mean the loss of precious natural resources for the next generations.

Climate The average annual rainfall of this sub-region is the highest among all sub-regions, reaching 1,600mm and even 2,000mm in some areas. There is no clear distinction between raining and dry seasons. The highest temperature in summer is around 40 °C, and the lowest could go below 0 °C. The number of days with frosts does not exceed 5 days in a year.

Topography The topography of sub-region 3 is mostly sloped, including steep valleys in some parts of the northern area.

Soil Sub-region 3 is located in the watersheds of the Parana River (part of Canindeyú, Caaguazú, and Caazapá), with fertile red soils full of organic matters. Currently a large part is used for soybean production. However, the degradation of soil quality and the sedimentation of disposition have been considerably alleviated by the adoption of no-tilling farming methods.

In the watershed areas of the Paraguay River (San Pedro, and the western part of Canindeyú, Caaguazú and Caazapá), the rainfall is relatively light even in winter, and soils are shallow and sandy. Because of these characteristics, the natural resources in this area tend to deteriorate easily, and therefore require adopting appropriate management methods for agriculture, livestock and forestry.

Vegetation The vegetation of sub-region 3 includes warm moist forests (evergreen forests), semi-deciduous forests, and flooded forests (including savanna and wetlands), inhabited by useful species such as cedar, and with rich biodiversity.

Forest resources The Alto Parana Atlántico forests that occupy most part of sub-region 3 have been recently experiencing accelerated deforestation, due to the expansion of soybean production, and the unsustainable forestry practices by small farmers, leading to the degradation of forests.

The Alto Parana Atlántico forests are directly related to the Guaraní Aquifer whose values are recognized in the world. It is therefore critical to conserve the forests.

The firewood from forests constitutes an important source of energy for rural people. However, their understanding about the importance of efficient use of the energy resources is generally low, and they lack knowledge about the rational use of forestry resources.

Biodiversity The fauna inhabiting the Alto Parana Atlántico forests alone include 500 species of birds, and many endemic species of insects and amphibians. Among them, there are many endangered and vulnerable species threatened by the expansion of human activities.

The flora inhabiting depends on the environment and soil conditions of areas. Sub-region 3 consists of diverse flora such as riparian forests (consisting of diverse vegetations that also serve as feeding ground for wild animals), bamboo groves, and palm forests. These are also threatened by development activities of human beings.

D. Policy and institution

The dimension of policy and institution focuses on social actors of sub-region 3, analyzing the characteristics and potentials of public institutions, the private sector and civil society organizations.

Public institutions The departmental and district governments are expected to play much more important roles to promote sustainable development of rural territories. It was noted earlier that

the public investment and the provision of public services by the offices of governors and mayors should be improved to address the needs of local people, and make them more effective and efficient. Furthermore, in the new framework of DSTR, it is expected that offices of governors and mayors promote participation, coordination and cooperation among the private sector and civil society organizations, and develop rural territories by making best use of local potentials.

In this section, the characteristics of local public institutions in sub-region 3 are analyzed using some fiscal indicators, based on the data from financial statements of district governments in 2009. The analysis below indicates that the fiscal autonomy of sub-region 3 is relative low among four sub-regions measured by the fiscal transfer from the central government, indicating large scope for improvement. Its capacity of public investment is also weak in terms of the proportion of public investment in total expenditures, public investment per capita, and the ratio of public investment over personnel costs.

- Fiscal autonomy—The more the district governments raise their own tax revenues, the more financial resources become available for public investment and provision of public services for residents. As an indicator of fiscal autonomy, the proportion of own tax revenues in total district revenues was constructed. The higher proportion of tax revenues implies higher own source revenues, and thereby higher fiscal autonomy. Looking at figure 3.6-19 that presents the indicator of fiscal autonomy by sub-regions, sub-region 3 is 17.0%, the average level among four sub-regions.

If the proportion of fiscal transfer from the central to district governments relative to total district revenues is higher, the districts are more dependent on the central government, and therefore their fiscal autonomy is lower. An indicator was created that shows the proportion of the fiscal transfer in total revenues of districts and presented in figure 3.6-20. The dependency on fiscal transfer of sub-region 3 is 64.2%, the highest among four sub-regions. It is therefore clear that fiscal autonomy of sub-region 3 is low relative to the other sub-regions.

- Public investment capacity—In order to assess the capacity of public investment of districts, an indicator that shows the proportion of public investment in total expenditures of districts. The higher this indicator is, the higher is the capacity of districts to implement public investment. Looking at figure 3.6-21, the capacity of public investment in sub-region 3 is 31.3%, the lowest among all sub-regions.

As another indicator to look at public investment capacity, the amount of public investment of district per capita was constructed. Figure 3.6-22 compare this indicator by sub-region.

According to this indicator, the public investment per capita of sub-region 3 is 48,000 Guarani, ranking in the lowest among the sub-regions.

Finally, the ratio of public investment over personnel expenditure was constructed as an indicator of public investment capacity of district governments. The higher this ratio is, the higher is public investment expenditures per unit personnel cost, thereby indicating the higher tendency to allocate more budgets for public investment. Figure 3.6-23 shows this indicator by sub-region. The ratio of sub-region 3 is 1.11, the lowest among all sub-regions.

Private sector The private sector in rural areas of Paraguay consists of not only private enterprises, but also many other types of organizations such as agricultural cooperatives, producer cooperatives and associations, financial institutions and agencies. It is important that the management of rural territories will be promoted with participation and cooperation of those private sector organizations together with public institutions and civil society organizations.

To what extent are small producers affiliated with producer organizations in the private sector? Using the data of CAN 2008, the affiliation rate of producers by sub-region was constructed. Figure 3.6-24 presents the indicator by sub-region. It is clear that the affiliation rate of producers in sub-region 3 is 22.2% with all production organizations, the second highest among four sub-regions. The affiliation rate with agricultural cooperatives is 8.7%, the third after sub-regions 3 and 4, but close to 8.9% of sub-region 4. This indicates the organization of producers is advanced to a certain degree in sub-region 3, if not the highest level of sub-region 2.

3.6.5 Characteristics and Potentials of Sub-Region 4

Sub-region 4 is located in the east part of the Eastern Region, consists of the departments of Alto Parana and Itapua that are bordered with Brazil and Argentina along the Parana River. The total land area of sub-region 4 is 2,982,780 km².

The population of this sub-region is the second largest after the metropolitan area (Asunción Capital and Central department). Sub-region 4 is the granary that supports the export of Paraguay, producing main export crops such as soybean, wheat and corn.

In the following, the characteristics and potentials of sub-region 4 is analyzed according to the four dimensions of the territorial approach – society and culture, economy and production, environment, and policy and institution.

A. Society and culture

The dimension of society and culture focuses on people in sub-region 4, analyzing basic characteristics of demography and its long-term trends, and living conditions of people (poverty, income inequality, human development, education, health, nutrition, and food self-sufficiency).

Demographic trend According to the estimation of the National Statistics Bureau, the total population of sub-region 4 is around 1.27 million people, and its average population density is 21.9 person/km² (table 3.6-2). In both the population and its density, sub-region 4 is the highest among four sub-regions. Looking at the demographic trend, the population of sub-region 4 grew rapidly around annual 4-5% for 30 years during 1962-1992. Its growth has been gradually slowing down, but remained around 2-3% a year even after 1992. Furthermore, the proportion of agricultural population in total population was only 49.7% in 2002, the lowest level among all sub-regions.

How the demographic structure has been changing in the last ten years? Since CAN 2008 includes the data on years of residence of producers, this study constructed an indicator – the proportion of producers living in the production site for 10 or more years in the total numbers of producers. Figure 3.6-3 presents this indicator by sub-region. Looking at this figure, the proportion of producers living in the production site for less than years in sub-region 4 was about 28.2% (14.2% for 0-4 years; 14.2% for 5-9 years), the second highest level after 34.5% in sub-region 3. This indicates that a large number of immigrants settled in the last 50 years.

Poverty and income inequality Figure 3.6-4 shows the poverty rate by sub-region in 2002. According to this figure, the incidence of poverty of sub-region 4 was 35.1%, the lowest among all sub-regions. The quality of life of sub-region 4 measured by human development indicator in 2002 is 0.741, the second highest after sub-region 2 (figure 3.6-6).

However, it should be pointed out that the Gini coefficient in sub-region 4 in 2002 is 0.55, the highest level among all sub-regions (figure 3.6-5). The expansion of export crops through large-scale capital investment and mechanized agriculture has been achieved successfully, and yet the income inequality remains at high levels. There is a clear need of capacity development of the poor by incorporating them in diverse opportunities in this sub-region.

Education The improvement in the access to education is essential to promote sustainable rural development and improve the quality of life. The insufficiency of educational needs (NBI in Spanish) of sub-region 4 in 2002 is 24.4% in all households, 31.6% in rural households, indicating the second lowest after sub-region 2 (figure 3.6-7). The average year of schooling of sub-region 4 in 2002 was 6.9 years, ranking the highest among all sub-regions (figure 3.6-8).

This clearly indicates that the access to education in sub-region 4 is relatively better than that in the other sub-regions.

Public health and medicine Improved public health and medicine is essential to enhance the quality of life of residents. The average life expectancy at birth of sub-region 4 in 2002 is 68.8 years, the level similar to the other sub-regions (figure 3.6-9). The child mortality rate (person/1000 births) of sub-region 4 in 2005 is 18.1, ranking the lowest among all sub-regions (figure 3.6-10). The maternal mortality rate (person/100 births) is 9.7, the lowest among all sub-regions (figure 3.6-10).

By contrast, the access to medical services was 2.3 doctors and 0.3 dentists per 10,000 populations in sub-region 4, the second lowest among the sub-regions (figure 3.6-11). This is rather a paradoxical result, because child and maternal mortality rates are low, whereas the number of doctors and dentists, and the average life expectancy at birth are low as well.

Nutrition and food self sufficiency According to the survey on the situations of farm households in 2010, the average calorie intake per person per day of sub-region 4 was 2,198 kcal, the highest among all sub-regions, and the intake of gross protein was 62g, the second highest after sub-region 2 (figure 3.6-12; figure 3.6-13). The intakes of nutrition at those levels are sufficient. A notable characteristic of Itapúa department is the high level of self-sufficiency of nutritional intakes. Looking at the food self-sufficiency rates, sub-region 4 (Itapúa department) recorded 55% in calorie, far exceeding the average 25% in the other sub-regions. The self-sufficiency in gross protein of sub-region 4 is 29%, the highest among four sub-regions, although the differences are not as large as self-sufficiency rates by calorie intakes.

B. Economy and production

The dimension of economy and production focuses on producers and production units in sub-region 4, analyzing the characteristics and potentials in the aspects of population by industry, land use, farms, land ownership, volume of production, and basic infrastructure.

Economically active population According to the Census 2002, the economically active population of sub-region 4 was around 380,000 people, or 37.7% of its total population (table 3.6-3).

Looking at the economically active population by industry, the primary industry (e.g., livestock, forestry, agriculture) in sub-region 4 comprises 32.4%, the secondary industry (e.g., manufacturing) 14.3%, and the tertiary industry (e.g., commerce, services) 50.4% (table 3.6-3). Comparing sub-regions on the primary industry, sub-region 4 is characterized as the lowest

proportion of the primary industry population, and the highest proportion of the tertiary industry population. The advancement of the industrial structure can be clearly observed in sub-region 4. Particularly, the proportion of economically active population of the tertiary industry in Alto Parana department is 58.6%, the second highest after 66.6% in Central department in sub-region 5.

Land use Reflecting the center of large-scale mechanized agriculture, the proportion of land area for agriculture was the highest 55.4% in sub-region 4 (figure 3.6-14). The main crops are soybean, wheat and corn (hybrid), which comprise more than 90% of total cultivated agricultural area in sub-region 4. The production of soybean in Alto Parana and Itapúa departments are ranked the first and the second in the Eastern Region, respectively, and that of wheat in Itapúa is the highest in winter season. In addition, many small producers produce cassava, sugar cane, poloto bean, peanuts, and sesame (particularly in Itapua) as cash crops. Furthermore, sub-region 4 uses large land areas for the production of mate tea, citrus, and macadamia nuts. Itapúa department in sub-region 4 is also known for the production area of upland rice, utilizing its topographical characteristics.

The land area for livestock in sub-region 4 consists of 33% of the total land area, the lowest proportion among all sub-regions. However, sub-region 4 is active in livestock as well, for example, 250,000 heads of cows in Alto Parana, and 390,000 heads in Itapúa. Furthermore, Itapúa department is also the largest producer of pig in Paraguay in which 48,000 heads of pigs are raised.

The manufacturing sector in sub-region 4 is primarily based on agriculture and livestock processing industries. The industries such as milling, feed production, such as edible oil refinery have been growing rapidly in Alto Parana department. In addition, the manufacturing industry has been growing in the export processing zone (Maquiladora in Spanish) in Alto Parana, where many industrial firms such as textile, wood products, leather, tobacco filter, and electronic products operate, after Asuncion. In Itapúa department, the agro-processing industries such as soy source, milling, oil refinery, mate tea, and dairy products are growing.

Sub-region 4 has important tourism resources as well. For instance, the historic sites of the Jesuit missions in the districts of Jesús and Trinidad have been identified as one of the UNESCO World Heritage Sites. In addition, the forest of Cordillera de San Rafael is full of biodiversity. Moreover, the fall at a tributary of the Parana River has the potential to develop as an important tourism resource. Alto Parana department also has Itapu dam, business districts in Ciudad del Este, and tourism shopping centers at Three Borders where the national borders of Argentina, Brazil, and Paraguay meet.

Land ownership Land ownership by regional residents provides the basis of their stable life and enable to access credit. The land ownership rate in sub-region 4 is 68.5%, about the same level as those in sub-region 2 and 3 after sub-region 5 (figure 3.6-15).

Production and income According to a survey on the situations of agricultural households in the departments of Concepción, Cordillera, Caazapá and Itapúa in 2010, the average household income of Itapúa was around 21,40,000 Guarani per household and 6,010,00 Guarani per capita, both the highest among four sub-regions. Looking at the frequency distribution in figure 3.6-16, only 53% of households in Itapúa department are included in the income cohorts less than 20 million Guarani, much lower rates than those in the other sub-regions. Looking at figure 3.6-17 in which the income structure of household is compared, 65% of income in Itapúa department were earned by (1) crops, (2) livestock, and (3) small businesses such as agro-processing, which is higher the average 40% in the other sub-regions in which more than half of their income were earned by labor and transfer. It can be therefore concluded that Itapúa department has more active economic activities in rural areas in which people can be settled autonomously. The case of sub-region 4 can offer a good reference in which rural development is the most advanced among all sub-regions.

Access to credit The presence of financing agencies is essential to support producers through finance, and thereby develop rural areas. According to the data in 2009, the average number of branch offices of the CAH, cooperatives and BNF are 7.5, 53.5 and 5.5 in sub-region 4, respectively, the highest among all sub-regions (figure 3.6-18).

Next, let us look at the actual situations of credit by those financing institutions. According to the data from CAN 2008, the production units (farms) which received credit comprised 24.4% in sub-region 4, the highest among all sub-regions (table 3.6-5). Looking at the departments in sub-region 4, the proportion of production units which received credit in Itapúa department was 25.3%, followed by 22.9% in Alto Parana department.

Which financing institutions provide credit to production units in sub-region 4? According to the CAN 2008, it is clear that the production units which received credit from CAH and cooperatives accounted for 28.7% and 26.0%, respectively, the highest among all financial institutions (table 3.6-5).

Basic infrastructure This section summarizes the situation of basic infrastructures such as road, water, electricity and telecommunication. First, total road network in 2007 was 204.7 km/1000km², ranked the highest level among four sub regions (table 3.6-6). The paved roads are 24.6 km/1000km², ranking the second after 36.2 km/1000km² in sub-region 2. The improved

road ratio, including paved roads, in sub-region 4 is 23.8%, less than those in sub-regions 2 and 3.

Next, the access to piped water of sub-region 4 was 57.5% in 2002, ranked the highest among all sub-regions (table 3.6-7). The access to piped water in rural area was 38.4%, the highest among four sub-regions. However, there remains a large gap with those in Asunción and Central department, 95.2% and 83.7%, respectively. Since sub-region 4 has been growing rapidly in recent years, the time has come for sub-region 4 to aim at the levels of Asunción and Central department.

The electrification rate of sub-region 4 was 92.2% in 2002, the highest among four sub-regions (table 3.6-8). However, looking at the rural area, the electrification rate sub-region 4 was 81.6%, the second lowest after sub-region 2.

Next, let us look at the rates of access to telecommunication in rural area in 2002 (table 3.6-9). The access in rural area of sub-region 4 was 59.5% in TV, 2.6% in ground phone, and 23.4% in mobile phone, the highest among four sub-regions, except TV. The access to internet was 0.2%, indicating virtually no access to internet as in the other sub-regions.

However, the household survey by the National Statistics Bureau in 2009 reported much improved access to telecommunication in sub-regions 4. In particular, the access to mobile phone improved from 22.0% in 2002 to 86.1% in 2009 in Itapúa, and from 25.8 in 2002 to 87.9% in 2008 in Alto Parana. Furthermore, the access to internet in Alto Parana improved from 0.4% in 2002 to 15% in 2009.

C. Environment

Eco-region Sub-region 4 consists of 3 eco-regions — Alto Paraná (62%), Selva Central (22%), and Ñeembucú (16%).

Climate The average annual rainfall of this sub-region is 1,700mm, and there is a distinction between the rainy season (October-May) and the dry season (July-September). The highest temperature in summer reaches around 40 °C, and the lowest could go below 0 °C. The number of days with frosts is at most 5 days in a year.

Topography The topography of sub-region 4 is mostly sloped, including some areas with steep slopes.

Natural reserves Sub-region 4 includes San Rafael Natural Reserve Area in Itapúa, the natural reserves of Itaipu dam (biological reserves of Limoy, Itabó, Pikyry y Tatí Yupí), Ñacunday National Park, and Scientific Heritage of Moisés S Bertoni in Alto Parana.

Soil The coefficient of surface water flowing is high in sub-region 4 because of the high intensity of rainfall and a clear pattern of rainfall in rainy season. In addition, soil erosion is intense because of rapid deforestation. This problem is particularly serious in the highly vulnerable areas such as the riverside.

However, mechanized agricultural firms started introducing no-tilling farming, and were able to control soil erosion (except the erosion of roads). The effective methods such as no-tilling farming need to be disseminated and promoted among small-scale producers.

Vegetation The vegetation of sub-region 4 includes warm moist forests, semi-deciduous forests, flooded forests, and hoop pine forests. The height of those trees reaches 25-30m. Those forests are inhabited by useful species such as cedar. The forests in sub-region 4 form the precious ecological system inhabited by the most diverse fauna and flora in the nation.

Forest resources The lack of effective guidelines and regulations regarding sustainable use and management of soil and natural resources has led to serious environmental changes, such as the conversion of virgin forests in the Alto Parana Atlántico Forests to farmlands.

The deforestation in Itapúa and Alto Parana departments since 1990s accounted for 0.75 million hectares, or 40% of total forests in the Eastern Region. This implies the decline of forests by annual 55,000 hectares, which has already had irreversible effects, for instance on the biodiversity of fauna and flora and the balances of soil and hydrology systems. However, the adoption and implementation of the law called 'zero deforestation' has alleviated deforestation. In the future, there is a need to implement programs such as the reforestation of agricultural and livestock lands for the purpose of commerce and environmental conservation, and the reforestation for watershed conservations.

Water resources In Itapua department, there are numerous rapids and streams originating from the San Rafael Mountains, which flow into the Parana River. These streams consist of countless secondary and tertiary small watersheds. The small watersheds of secondary rivers within the Parana River watersheds account for 39.

The rapid expansion of farmlands, in particular the introduction of mechanized agriculture, has caused major changes in the hydrological systems in sub-region 4, such as the sedimentation of tributaries and the devastation of small watersheds.

The Guarani Aquifer, which occupies large part of sub-region 4, is used as a source of water for drinking and sewage in the urban areas. The conservation of the Alto Parana Atlántico Forests is strategically critical to conserve the Guarani Aquifer. Sustainable management of this large scale aquifer comprises the most important environmental challenge in Paraguay.

D. Policy and institution

The dimension of policy and institution focuses on social actors of sub-region 4, analyzing the characteristics and potentials of public institutions, the private sector and civil society organizations.

Public institutions The departmental and district governments are expected to play much more important roles to promote sustainable development of rural territories. It was noted earlier that the public investment and the provision of public services by the offices of governors and mayors should be improved to address the needs of local people, and make them more effective and efficient. Furthermore, in the new framework of DSTR, it is expected that offices of governors and mayors promote participation, coordination and cooperation among the private sector and civil society organizations, and develop rural territories by making best use of local potentials.

In this section, the characteristics of local public institutions in sub-region 4 are analyzed using some fiscal indicators, based on the data from financial statements of district governments in 2009.

- Fiscal autonomy—The more the district governments raise their own tax revenues, the more financial resources become available for public investment and provision of public services for residents. As an indicator of fiscal autonomy, the proportion of own tax revenues in total district revenues was constructed. The higher proportion of tax revenues implies higher own source revenues, and thereby higher fiscal autonomy. Looking at figure 3.6-19 that presents the indicator of fiscal autonomy by sub-regions, sub-region 4 is 17.9%, the highest level among four sub-regions.

If the proportion of fiscal transfer from the central to district governments relative to total district revenues is higher, the districts are more dependent on the central government, and therefore their fiscal autonomy is lower. An indicator was created that shows the proportion of the fiscal transfer in total revenues of districts and presented in figure 3.6-20. The dependency on fiscal transfer of sub-region 3 is 57.7%, the lowest among four sub-regions,

except sub-region 1. It is therefore clear that fiscal autonomy of sub-region 4 is relative high compared with that of the other sub-regions.

- **Public investment capacity**—In order to assess the capacity of public investment of districts, an indicator that shows the proportion of public investment in total expenditures of districts. The higher this indicator is, the higher is the capacity of districts to implement public investment. Looking at figure 3.6-21, the capacity of public investment in sub-region 4 is 33.7%, the second highest after sub-region 1.

As another indicator to look at public investment capacity, the amount of public investment of district per capita was constructed. Figure 3.6-22 compare this indicator by sub-region. According to this indicator, the public investment per capita of sub-region 4 is 75,048 Guarani, the second highest after sub-region 1.

Finally, the ratio of public investment over personnel expenditure was constructed as an indicator of public investment capacity of district governments. The higher this ratio is, the higher is public investment expenditures per unit personnel cost, thereby indicating the higher tendency to allocate more budgets for public investment. Figure 3.6-23 shows this indicator by sub-region. The ratio of sub-region 4 is 1.18, the average level among four sub-regions.

Private sector The private sector in rural areas of Paraguay consists of not only private enterprises, but also many other types of organizations such as agricultural cooperatives, producer cooperatives and associations, financial institutions and agencies. It is important that the management of rural territories will be promoted with participation and cooperation of those private sector organizations together with public institutions and civil society organizations.

To what extent are small producers affiliated with producer organizations in the private sector? Using the data of CAN 2008, the affiliation rate of producers by sub-region was constructed. Figure 3.6-24 presents the indicator by sub-region. It is clear that the affiliation rate of producers in sub-region 4 is 16.6% with all production organizations, the lowest among four sub-regions. The affiliation rate with agricultural cooperatives is 8.9%, the second highest after sub-regions 2. This indicates that the agricultural cooperatives play an important role in organizing producers in sub-region 4.