

**PARIS21: *PAR*tnerships In Statistics for the 21st Century**

**Task Team: Improved Statistical Support for Monitoring Development Goals**

**Country Case Study**

**BOLIVIA**

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## ACRONYMS AND ABBREVIATIONS

CELADE	Latin-American Demographic Centre ( <i>Centro Latinoamericano de Demografía</i> )
CHS	Continuous Household Survey ( <i>Encuesta Continua de Hogares, ECH</i> )
CISE	Inter-institutional Council for Monitoring and Evaluation ( <i>Consejo Inter-institucional de Seguimiento y Evaluación de la EBRP</i> )
DHS	National Demographic and Health Survey ( <i>Encuesta Nacional Demográfica y de Salud, ENDSA</i> )
EBRP	Bolivian Poverty Reduction Strategy ( <i>Estrategia Boliviana de Reducción de Pobreza</i> )
EC	European Commission
ENDSA	National Demographic and Health Surveys ( <i>Encuesta Nacional de Demografía y Salud</i> )
EU	European Union
EUROSTAT	Statistical Office of the European Communities
FAO	Food and Agriculture Organization
FONSA	Health Fund ( <i>Fondo para Salud</i> )
GDDS	General Data Dissemination System
GTZ	German Agency for Technical Cooperation ( <i>Deutsche Gesellschaft für Technische Zusammenarbeit</i> )
HIPC	Heavily Indebted Poor Countries Debt Initiative
IDA	International Development Association
IDB	Inter-American Development Bank
IHS	Integrated Household Survey ( <i>Encuesta Integrada de Hogares, EIH</i> )
IMF	International Monetary Fund
INE	National Statistical Office ( <i>Instituto Nacional de Estadística</i> )
LSMS	Living Standards Measurement Studies
MCS	Social Control Mechanism ( <i>Mecanismo de Control Social</i> )
MDGs	Millennium Development Goals
MECOVI	Regional Program of Improvement of the Surveys and Measurement of Living Conditions ( <i>Programa Regional de Mejoramiento de las Encuestas y Mediciones de las Condiciones de Vida</i> )
MNCS	National Social Control Mechanism ( <i>Mecanismo Nacional de Control Social</i> )
MOE	Ministry of Education
MOH	Ministry of Health
NBI	Unmet Basic Needs ( <i>Necesidades Básicas Insatisfechas</i> )
PAI	Expanded Program of Immunization ( <i>Programa Ampliado de Inmunizaciones</i> )
PARIS21	Partnership in Statistics for Development in the 21st Century
PHS	Permanent Household Survey ( <i>Encuesta Permanente de Hogares, EPH</i> )
PPP	Purchasing Power Parity
PRSC	Poverty Reduction Support Credit
PRSP	Poverty Reduction Strategy Paper
PSI	Integrated Health Program ( <i>Programa Integrado de Salud</i> )
PSUs	Primary Sampling Units
ROSC	Report on the Observance of Standards and Codes
SEDUCA	Departmental units for Education ( <i>Servicio Departamental de Educación</i> )
SIE	Education Information System ( <i>Sistema de Información en Educación</i> )
SIGMA	Governmental Information and Administration Reform System ( <i>Sistema de Información Gubernamental y Modernización Administrativa</i> )
SMIE	<i>Sistema Municipal de Información Estadística</i> (Municipal Statistical Information System)

SNIE	National Statistical Information System ( <i>Sistema Nacional de Información Estadística</i> )
SNIS	National Health Information System ( <i>Sistema Nacional de Información en Salud</i> )
STATCAP	World Bank Statistical Capacity Building Program
UDAPE	Economic and Social Policy Analysis Unit ( <i>Unidad de Análisis de Políticas Económicas y Sociales</i> )
UBN	Unmet Basic Needs ( <i>Necesidades Básicas Insatisfechas</i> )
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UN-ECLAC	United Nations Economic Commission for Latin America and the Caribbean
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
USAID	U.S. Agency for International Development

## 1. INTRODUCTION

### 1.1 *Background and Objectives*

In spite of significant political, economic, and social progress during the 1990s following major structural reforms of the late 1980s, Bolivia remains one of the poorest countries in Latin America, with per capita income of \$890 in 2003. As part of the Heavily Indebted Poor Countries (HIPC) Initiative, Bolivia's Poverty Reduction Strategy Paper (PRSP), known in Spanish as *la Estrategia Boliviana de Reducción de Pobreza* (EBRP), was issued in April 2001. Implementation of the PRSP was guided by the national dialogue, which was carried out in a participatory and bottom-up manner to set the agenda for poverty reduction with HIPC resources, the targets, and the process of monitoring progress.<sup>1</sup> Bolivia is also committed to recognizing and achieving the Millennium Development Goals (MDGs).

Monitoring the progress of implementation of PRSP and MDGs requires a comprehensive set of statistical indicators that are relevant, timely, and of high quality.<sup>2</sup> A comprehensive assessment of the set of monitoring indicators and the capability of the statistical system that underpins them is the subject of this study.

This Country Case Study is one of six prepared by the PARIS 21 Task Team to identify changes in national statistical systems that will improve the availability and use of data for monitoring development goals. The case studies aim to document the existing capacity and current practices of national statistical systems in relation to key development indicators, and give options for improvement. The results will feed into various global initiatives that use data for monitoring. These include the European Commission's work with European Union (EU) member-states on defining a coherent approach for the use of indicators, the enhanced measurement system of the International Development Association (IDA), the World Bank's Statistical Capacity Building program (STATCAP), and the country reporting process for the Millennium Development Goals (MDGs). The other five countries studied were Burkina Faso, Cambodia, Malawi, Moldova, and Yemen.

In general, the statistical system of Bolivia that produces, processes, and disseminates statistical information to support and underpin policy decisions deserves serious consideration by and support from the international development community to continue to perform its missions.

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<sup>1</sup> Bolivia's Poverty Reduction Strategy Paper covered the period 2001--03. The strategy was validated through the Law of National Dialogue. Implementation of the 2001--03 PRSP was carried out with proceeds from the Heavily Indebted Poor Countries Debt Initiative (HIPC). The government is currently working on preparation of an updated version of the PRSP for 2004--07.

<sup>2</sup> The PRSP targets and MDG goals in Bolivia diverge significantly for some indicators. For instance, while both the PRSP and MDG targets for reduction of extreme poverty is from 36 percent to 17 percent by 2015, the PRSP target for maternal mortality rate (MMR) is a reduction from 390 to 200 maternal deaths per 100,000 live-births, whereas the MDG target is a more ambitious reduction of MMR to 100 by 2015.

## **1.2 Method**

This case study was initially conducted by a European Commission (EC) consultant with a desk-study of relevant documents provided by the World Bank and publicly available in different websites (appendix 1). Fieldwork was carried out from December 9 to 18, 2003 in La Paz to visit with the National Statistical Office (Instituto Nacional de Estadística, or INE) and other stakeholders in the national statistical system that were producers and users of the MDG indicators (a full list of persons met during the mission appears in appendix 2).

The Task Team, drawn from four institutions, consisted of the following members:<sup>3</sup>

- Haeduck Lee, Senior Economist, the World Bank (Team Leader)
- José Cervera-Ferri, European Commission Consultant
- Walter Castillo, Deputy Director, National Statistical Office, Bolivia
- Eduardo Zepeda, Program Officer, United Nations Development Programme

This report describes the main sources of information; documents concrete development indicators, demand from national and international users, the statistical system that exists in Bolivia for monitoring the PRSPs and MDGs; and discusses the support it receives from the government and different donors.

## **2. REVIEW OF KEY ISSUES AND CURRENT CAPACITY**

### **2.1 Sources and Methods for Estimating Key Indicators**

This section reviews the main sources of data for monitoring the key MDG indicators (poverty, education, and health). In particular, it examines the 2001 Population and Housing Census, two household survey programs (National Demographic and Health Survey and Living Conditions Survey), and two administrative registers (Health Information System and Education Information Systems). Other ad hoc surveys have been carried out with the support of international donors. They are often embedded in specific development projects. The topics and geographical coverage are fragmented and unpredictable, which makes them ill suited to being considered as continuous and reliable sources of information for monitoring the MDGs.

#### **2.1.1 Population and Housing Census of 2001**

Initially planned for the year 2000, the Population and Housing Census was finally carried out in 2001, in a single day. The census data are a valuable source of information on key aspects of living conditions of the Bolivian population at the disaggregated geographical level, thanks to the universal coverage of the census.

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<sup>3</sup> The team benefited from the assistance of World Bank office in La Paz and the kind collaboration from National Statistical Office (INE) of Bolivia. The team members wish to acknowledge these and other institutions that provided useful information for the report.

The census information has been used to produce estimates of the conditions of poverty according to the methodology of Unmet Basic Needs (UBN) or *Necesidades Básicas Insatisfechas* (NBI):

- The NBI methodology aims at measuring the structural aspects of poverty, rather than monetary or income poverty, which may suffer cyclical variations in shorter periods of time. NBI takes into account census information about dwelling characteristics such as building materials and space, access to services, education, and health.
- With this methodology, minimum satisfaction levels are assigned to several variables of the census questionnaire (table 1). The minimum levels are based either on qualitative considerations or on the modal (most frequent) values. Individual indices for each variable are calculated according to fixed scores, before aggregation for each household. These are classified in five poverty levels (including non-poor) from which a combined indicator of incidence of poverty is calculated as the number of households in the three poorest levels, divided by the total number of households.
- The NBI is well documented by the National Statistical Office (INE) and the Economic and Social Policy Analysis Unit (*Unidad de Análisis de Políticas Económicas y Sociales*, UDAPE), a government think tank under the Ministry of Economic Development. The methodologies for scoring the values of selected variables were specifically tailored to the Bolivian census data. Therefore, while the 1992--2001 inter-census comparability of the NBI data has been maintained, it was not possible to compare the Bolivian results with those of other countries.

**Table 1. Components of the Unmet Basic Needs (NBI)**

HOUSING	Housing materials	Wall
		Roof
		Floor
	Availability of room space	Rooms per person
		Multi-purpose rooms per person
		Kitchen
ACCESS TO BASIC SERVICES	Basic sanitary and water service	Access to water
		Access to sanitary service
	Energy	Electric energy
		Combustible fuel for cooking
EDUCATION	School attendance	
	Years of schooling	
	Literacy	
HEALTH	Medical assistance	

The census also includes questions on education level (highest education level attained) and current attendance to school, as well as on health (see section 2.2).

### 2.1.2 Household surveys

Bolivia has been running a system of household survey programs covering most issues related to the MDGs. There is some degree of overlap among these programs. Thanks to a long tradition of collecting household survey data, INE has built up a fairly competent body of technical capability to plan and implement the surveys.

Donors have expressed a keen interest in and demand for sample household surveys in Bolivia, because they can produce a snapshot of household characteristics, status, behavior, income and consumption, and poverty and living conditions for a nationally representative sample population, and generate the statistical information that donors need to assess the impacts and efficacy of the public policy and development programs and projects that they fund. However, the Government of Bolivia has not always had the willingness or capacity to budget the survey operations appropriately. Thus surveys in Bolivia have relied heavily on external financing, which tends to be uncertain and unsustainable in the long run.

#### (a) Household survey of living conditions

Before 1999, Bolivia had no household survey of multi-topic living conditions with national coverage. From 1979 to 1988, the Permanent Household Survey (*Encuesta Permanente de Hogares*) collected information on urban employment. From 1989 to 1995, the Integrated Household Survey (*Encuesta Integrada de Hogares*) was introduced with a Living Standards Measurement Studies (LSMS)-type questionnaire. This survey program suffered from unstable funding and frequent changes in questionnaire design, rendering time-series comparison of the data difficult. Moreover, the Integrated Household Survey (IHS) was limited to urban areas. In 1996 and 1997, INE implemented the National Employment Survey (*Encuesta Nacional de Empleo*, ENE), with urban and rural coverage and with a focus on employment rather than living conditions. In 1998, INE was not able to secure the funding for the ENE, so the ENE program was terminated.

#### (b) MECOVI survey

In 1998, a joint team from Inter-American Development Bank (IDB), the World Bank, and the United Nations Economic Commission for Latin America and the Caribbean (UN-ECLAC) worked with other donors to incorporate Bolivia in the Regional Program for Improvement of the Surveys and Measurement of Living Conditions (*Mejoramiento de las Encuestas y Medicion de Condiciones de Vida*, MECOVI).<sup>4</sup> The MECOVI program for Bolivia was launched in 1999 with the objectives of providing INE with the financial and technical assistance to strengthen institutional capacity for improved survey design and implementation; promote wide use of the survey, analysis, and dissemination; and strengthen the capacity of policy analysis, so that timely and high-quality poverty data could be produced on a sustainable basis.

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<sup>4</sup> As of December 2003, cumulative commitments to the MECOVI program in Bolivia amounted to \$2.4 million from the following donors: the World Bank, IDB, Canada, Germany, Sweden, and UNDP. Some 72 percent of that amount had been executed.

The first MECOVI Survey of Living Conditions with national coverage was carried out in November/December 1999. Three more surveys were conducted annually from 2000 to 2002 for a nationally representative sample of households. They were also carried out in November/December, to ensure comparability. Sample stratification limited the scope of making statistical inference at a highly disaggregated geographical level with the survey data alone. For instance, the 2002 MECOVI survey selected sample 6,000 households from 670 Primary Sampling Units (PSU). The stratification of the population was done according to town size (Department capitals and the town of El Alto; towns with more than 10,000 inhabitants; 2,000 to 10,000 inhabitants; 250 to 2,000 inhabitants; and fewer than 250 inhabitants). Thus statistical inference is possible only for the urban--rural dichotomy or at the level of Department capitals, El Alto, major urban areas, semi-urban settlements, and rural areas. A study by UDAPE and INE with technical assistance from the World Bank demonstrated that generating small-area poverty estimates was possible using the econometric method that combined the MECOVI data from the 2001 Population and Housing Census.<sup>5</sup>

The MECOVI survey data are sources of several MDG indicators---assessed by the users as being of a higher quality---on income and consumption poverty, infrastructure, education, and health MDGs. An academic exercise has used the MECOVI survey data to produce estimates of the availability of food among Bolivian households according to the methodology of DAFNE (Data Food Networking initiative, financed by the European Commission).<sup>6</sup> But the study stopped short of estimating the proportion of undernourished population.

Comprehensive thematic coverage in survey design proved to be an essential feature for the MECOVI data to be utilized as the tool for monitoring living conditions, and for providing indicators for the Millennium Development Goals and the Bolivian Poverty Reduction Strategy.<sup>7</sup> Survey results are widely disseminated, in hard copy and on the web. MECOVI data are used intensively in national and international studies on poverty. This is the result of conscious efforts made by INE to carry out data dissemination activities, and additional capacity building and outreach activities for data use in such areas as organization and dissemination of MECOVI survey data, production of updated indicators, implementation of small grant sub-program for research and studies that utilize the MECOVI data for policy analysis, and publication of research and study results.

(c) *The 5<sup>th</sup> MECOVI Survey/2003-04 Continuous Household Survey*

In 2003, INE introduced a new sample design and a new questionnaire for the MECOVI survey program with a view to overcoming the shortcomings of previous MECOVI surveys. The 5<sup>th</sup> MECOVI survey was dubbed the Continuous Household Survey (CHS) (*Encuesta*

<sup>5</sup> UDAPE and INE. 2003. “*Pobreza y desigualdad en municipios de Bolivia: Estimación de gasto de consumo combinado en Censo 2001 y las Encuestas de hogares.*” La Paz, Bolivia.

<sup>6</sup> Pérez Cueto. 2003. “*Encuestas MECOVI para estimar la disponibilidad de alimentos en hogares bolivianos.*” *Revista de Estudios Económicos y Sociales* No. 3 (November). La Paz.

<sup>7</sup> At the same time, the survey will provide a basket of goods and services needed to update the Consumer Price Index, which was last built in 1990.

*de Hogares, ECH*). Fieldwork of the MECOVI/CHS survey was initiated in October 2003, with the plan to complete the data collection by September 2004.

Among the key modifications were continuous data collection over the period of a year, increase of the sample size from 6,000 household in previous surveys to 10,000 households, modification of sample design to expand sample representation by urban/rural area and by Department, and an introduction of household budget survey component. The household budget survey component with the diary method would yield detailed consumer expenditure data for constructing the consumption component of the national accounts and updating the weights for the Consumer Price Index. On the other hand, combining the living conditions survey with the household budget survey implies substantial challenges, technical and logistical. In weighing the pros and cons, INE concluded that INE built up its technical and managerial capability in survey planning and execution to a sufficient level to handle the technical challenges.

The questionnaire includes the core module of general household characteristics, as well as the household budget component and modules on subjective poverty and incomes generated from agricultural activities. The recorded general household characteristics include household composition, ethnicity, access to sanitary and health services, fertility, education, employment, household equipment, and status of housing tenure. Once completed, the 5<sup>th</sup> MECOVI/CHS survey will allow estimation of the distribution of key variables by urban/rural area and Department. The resulting CHS data would make it possible to construct an updated Consumer Price Index (CPI) weights by key regional cities, produce a snapshot of poverty profile by Department, and serve as the baseline data for other surveys that will follow.

*(d) Municipal MECOVI pilot*

The sample-based survey data, useful as they are for producing aggregate statistics, cannot produce statistical information at the municipal level. This is the level where the government's decision-making for distributing HIPC funds is made, and therefore the level at which monitoring and evaluation of the public policies in general and of the results of implementation the PRSP should be made. INE has put together a pilot project called Municipal MECOVI to generate the data on living conditions and access to local public goods and services at the municipal level. Data collection is carried out with the Personal Digital Assistance (PDA) and customized software. This pilot survey generates qualitative information on subjective perception of poverty, and quantitative data to compute indicators of employment, poverty, and living conditions at the municipal level. Currently a report is being prepared to evaluate what did and did not work with the data collected from 15 pilot municipalities.

*(e) National Demographic and Health Survey (ENDSA)*

With the support of USAID (through the U.S.-based company Marco International), the INE carried out National Demographic and Health Surveys (*Encuesta Nacional de Demografía y Salud, ENDSA*) in 1989, 1994, and 1998.

The last completed ENDSA, in 1998, is based on a stratified, two-stage sample of 821 census enumeration districts (1992 Population Census) as Primary Sampling Units (PSUs). A total of 13,136 households were surveyed, of which 11,831 returns were answered by women and 4,382 returns were administered specifically to men. The response rates were quite high, at around 90 percent, which is an indication of high reliability and good quality of the data. Design of the sample took into account the different poverty levels of municipalities based on the Unmet Basic Needs method.

The survey allows the calculation of demographic and health indicators such as maternal mortality, maternal health, morbidity, mortality, immunization, family planning, and nutrition among the Bolivian population. It also includes questions on education, providing alternative estimates for education levels and attendance to school for household members older than 6.

While the anonymous individual data are downloadable (in SPSS format) from INE's website, there is no integrated publication on the ENDSA. Results and methodologies are well documented in the websites of Macro International and in other foreign and international organizations.

The 2003 round of ENDSA has been largely financed by the World Bank (\$1.1 million), with co-financing (\$0.2 million) and technical cooperation from the United Nations Population Fund (UNFPA), the World Food Program (WFP), the United Nations Children's Fund (UNICEF), the Integrated Health Program (PSI) supported by the U.S. Agency for International Development (USAID), and the Health Fund (FONSA) supported by the Canadian Agency for International Development (CIDA). INE has completed the fieldwork for the 2003 ENDSA. This 2003 ENDSA has national coverage, with a sample size of about 20,000 households.

*(f) Multiple Indicators Cluster Survey (MICS) 2000*

The Ministry of Health (National Directorate for Epidemiology) carried out a Multiple Indicators Cluster Survey (MICS) in 2000 with the support and methodological guidance of UNICEF.

The MICS sample is a sub-sample of the 1998 ENDSA. Some 268 Primary Sampling Units were selected, including about 4,400 households. The response rate exceeded 90 percent. Three questionnaires (household, women, and children under 5) were applied.

The universe of the survey consists of women of childbearing age, children under 17 (surveyed with the household questionnaire), and children under 5.

The MICS survey provides estimates on infant and child mortality, access to improved water and sanitation, primary education completion rate, school attendance, literacy, pregnant women assisted by skilled staff, contraceptive prevalence, immunization, and HIV/AIDS. In relation to MDG indicators, MICS provides estimates for a large number of

them (see appendix 4 for details). As in many other countries, the MICS is not considered part of the official statistical information system.

### *2.1.3 Vital registration system and other administrative records*

In Bolivia, there are three systems for generating administrative records as part of their functions to deliver public services: the Population Registry (*Registro Civil*) for recording births, marriage, and deaths; the National Health Management Information System; and the Education Management Information System. Each system has some distinctive characteristics and defects that compromise generation of complete and accurate basic data to underpin the production and ongoing monitoring of the MDG indicators.

The Population Registry suffers from severe under-coverage, which renders it useless for production of key vital statistics among MDG indicators. To enhance the efficiency of the delivery of essential services to benefit the poor, serious reform efforts are called for to change the system for the Population Registry.

In the case of the information systems for health and education, the data collection system is linked to the operational arms for the service delivery of the relevant ministries. This ensures universal coverage of the population groups that are being served, but introduces the possibility of incentives for overestimating certain positive results and underestimating negative results, since allocation of budgets and other resources are linked to the size of population that is being served by the ministries.

#### *(a) Population Registry*

The national Population Registry (*Registro Civil*) is managed by the National Electoral Court in a decentralized manner and recently began computerizing the keeping of vital records.

Bureaucratic obstacles and onerous fees for obtaining birth and death certificates may be causes for under-registration. Moreover, the absence of doctors in many health institutions (who are the only staff authorized to produce the death certificate) and the existence of a network of non-official cemeteries that do not require such certificate may explain the under-coverage. Bolivia's second largest city, Santa Cruz de la Sierra, for example, has 15 official and 17 non-official cemeteries.

The Population Registry in Bolivia operates as a concession industry. The Population Registry comes under the Electoral Court, which issues limited licenses to those university graduates with law degrees who apply for it. Lawyers licensed for the Population Registry normally charge fees of 30 Bolivian pesos for a birth certificate or a death certificate. Even though the fees for such services might not be onerous for the average Bolivian household, they seem to be sufficiently high to keep the poor from obtaining certificates---and thus from being counted in vital statistics. In particular in rural areas, the long distance that people must travel to the Population Registry, combined with lack of information on how the Registry functions, means the poor often do not seek to register births and deaths in the

vital record system. In rural areas, the school system routinely accepts children without birth certificates for enrollment. It is when families migrate to urban centers that they have difficulties enrolling their children in school. The existence of clandestine cemeteries that do not require death certificates to entomb the deceased also encourages avoiding the Registry system.

The result is dismal coverage of vital statistics. Only about a third of deaths (36 percent) are recorded, according to studies of the Pan-American Health Organization. There is substantial under-reporting of births, according to MICS 2000. Some 60 percent of children under 5 are registered in the system, but only 41 percent of infants under 6 months. On average, only about two-thirds (63 percent) of births are estimated to be reported.

As a result, the Population Registry cannot generate the necessary data to produce most vital statistics for the MDG indicators. Therefore, INE utilizes the estimates of fecundity and mortality rates from the MECOVI and DHS survey data, and combines them with the assumptions of zero internal and internal migration to carry out inter-census interpolation of the Bolivian population structure.

(b) *National Health Management Information System*

The Ministry of Health, through the National Health Information System (*Sistema Nacional de Información en Salud*, SNIS) provides extensive statistical information, disseminated through the website <http://www.sns.gov.bo/bolsns/principal.htm>.

The SNIS collects performance indicators of the different health institutions of the public system (including *Cajas de Salud*, an insurance-like public health system) and the private system (including non-governmental and non-profit institutions) (table 2). However, coverage of private system is negligible. Health institutions send their individual data to the departmental offices of the Ministry, which do not disseminate data.

Level I	Level II	Level III
Health posts: Only auxiliary sanitary staff (n=1,371)	Basic hospitals: Assistance is provided on gynecology, obstetrics, pediatrics, internal medicine and surgery (n=125)	General hospitals: Assistance is provided in all medical specialties (n=61)
Health centers: Include a doctor, a nurse, auxiliary staff and in some cases, laboratory technicians (n=918)		

A detailed measure of the coverage of indicators by type of health institution and sector is available and updated monthly in the web page of the Ministry of Health [http://www.sns.gov.bo/bolsns/PRODUCCION/rep2001\\_mes.asp](http://www.sns.gov.bo/bolsns/PRODUCCION/rep2001_mes.asp).

The coverage differs by sector. The public sector and churches and NGOs are almost fully covered, but the coverage of the *Cajas de Salud* is in the range of 70 to 80 percent, and the percentage is even smaller for private health institutions. The Ministry of Health is fully aware of this limitation. The inclusion of SNIS as a part of the Statistical System, and therefore the compulsory response to applicable statistical questionnaires, provides reasons for optimism about its future performance.

Historical information is available since 1990. Average delay for management information is currently about 1.5 months. The geographical detail is high, making it possible to obtain monthly estimates at the municipal level. However, the local capacity for analysis is weak, at both the municipal and inter-municipal level. According to reports on coverage by the Committee for Information Analysis (CAI) produce reports on coverage, there is significant undercoverage of health services delivery in the northern Departments of Beni and Pando.

There are difficulties in data collection with respect to immunization of children. Forms are not available in all health institutions, while those of the Widened Immunization Programme (*Programa Ampliado de Inmunizaciones*, PAI) that address the early immunization of Bolivian children are more widely disseminated. The statistics for immunization coverage are somewhat problematic, since they could be measuring the targets rather than the actual coverage.

As regards HIV/AIDS, the disease is not widespread in Bolivia (prevalence is less than 1 percent); thus there has been no great interest in developing a full monitoring system (cases are necessarily reported). Not all controls during pregnancy include HIV/AIDS tests. Only risk groups (pregnant mothers, sexual workers, and workers in the food sector) have been studied in several hospitals in Cochabamba, Santa Cruz de la Sierra, and El Alto (see section 2.2.5 on HIV/AIDS indicators).

### (c) *Education Management Information System*

The Ministry of Education, and in particular the Directorate for Education Information and Directorate for Analysis, provide extensive statistical information through the Education Information System (*Sistema de Información en Educación*, SIE). The information is disseminated principally on the website <http://www.minedu.gov.bo/> and in CD-Rom format. This information system was in place through the Educational Reform of 1994. The indicators related to education it produces are more quantitative than qualitative.

The educational system in Bolivia, both private and public, includes an Initial Education level (children 4 to 5 years old) and a Primary Education level (children 6 to 13 years old). The Poverty Reduction Strategy (EBRP) establishes the goal of providing complete coverage of primary education by increasing the demand and improving the quality of supply. To these ends, the EBRP considers as specific objective full-time school attendance of boys and girls until the eighth grade of primary education, the development of the educational infrastructure, and capacity building for teachers.

The SIE records input variables of the educational system (number of pupils, number of teachers, infrastructure, and costs) and produces output variables that feed into the decision-making and reporting processes. Statistical results are available since 1996, and the Directorate for Analysis is responsible for reporting to UNESCO and other international organizations

The Ministry of Education's capacity for analysis of MDG indicators is high, especially in its Directorate for Analysis (which houses seven analysts, three of whom are statistician-economists). Nevertheless, the large amount of special processing of data required by international organizations and donors to monitor specific educational projects represents an important workload for the unit. The Ministry of Education perceives the need for the rationalization of data requests from these users.

The capacity for analysis of the departmental units for education (*Servicio Departamental de Educación, SEDUCA*) remains weak.

In relation to MDG indicators, Bolivia has switched from focusing on enrollment rates to focusing on completion rates, as proposed by the World Bank and other international organizations. Unfortunately, the indicator of completion until grade 8 is not easily available.

In calculating rates, the lack of yearly population estimates makes it necessary to work with population projections; these are based on the 1992 and 2002 censuses. Other statistical sources such as household surveys and the Population Census provide alternative estimates for education indicators (see methodological notes on individual indicators in appendix 4).

Educational infrastructure and human resources in education are considered as monitoring indicators for the EBRP. A very comprehensive set of indicators on the Education For All (EFA) initiative is disseminated through the website <http://www.minedu.gov.bo/estads/efa/efa.html>. Data are disaggregated at the departmental level.

The academic course starts in January each year, so that management indicators at the beginning of the course are ready before the end of the calendar year (answers to questionnaires on the situation at the beginning of the course are ready in July/August). A second data collection of the final management indicators is ready in June of the following year. Schooling indicators are available through 2002.

## ***2.2 Assessment of Data Sources in Relation to Key Indicators***

This section reviews the different subsets of MDG and PRSP indicators, in relation to the availability of sources to estimate them.

### *2.2.1 Poverty indicators*

Main source: MECOVI  
Census

*Non-monetary measures of poverty* are derived from the Population Census according to the methodology of Unsatisfied Basic Needs. This allows households to be classified into five poverty levels.

*Monetary measures of poverty* are based on the poverty line method. Poverty lines are used as the poverty thresholds to classify those households and individuals whose disposable incomes or consumption expenditures fall short as the poor. Consumption baskets made up of basic food items that reflect the actual consumption patterns of low-income families are used to define poverty lines separately for rural and urban areas. The monetary value of the basic food basket is interchangeably called the food poverty line, extreme poverty line, or the indigent line. Addition of non-food consumption items yields the poverty line. Poverty lines were established separately for rural and urban areas, and for each Department. They were calculated from a priced basket of basic goods and services, obtained from the Household Budget Survey of 1990 (urban) and EVI-FIS survey of 1997 (rural). Home production for self-consumption (*autoconsumo*) or the gifts are valued by the price estimates of such products by respondents on the basis of market reference prices, in estimating the total household consumption.

Juxtaposition of the poverty thresholds with the distribution of income/consumption in the MECOVI sample household survey gives the poverty rate, which is one of the most popular monetary measures of poverty.

### *2.2.2 Malnutrition*

Main source: ENDSA

*Height-for-age, weight-for-age, and weight-for-height measurements* were made in the Demographic and Health Surveys (ENDSA), which took physical measurements of children.

### *2.2.3 Education*

Main sources: Administrative records (SIE)  
MECOVI  
Census

## MICS

*Enrollment and completion rates.* Due to lack of annual data from the Population Registry, the Education Information System, SIE, calculates the enrollment rates based on the registered number of pupils and population projections produced by INE. For 2001 indicators, the Population Census was used. To calculate the completion rate, the numerator is defined as the number of children enrolled in grade  $n+5$  in year  $t+5$  and the denominator is defined as the number of children enrolled in grade  $n$  in year  $t$  for each year and grade. (It is calculated for the sixth and eighth grades of primary education and the fourth grade of secondary education.)

The MECOVI surveys records enrollment in the different education levels for each interviewed person older than age 5, the highest education level attained, and attendance.

The 2001 MICS provides estimates of the proportion of children who attend “any organized programme of education” from 36 to 59 months, the proportion of children 6 to 15 years old that attend primary education (grades 1 to 8), and estimates of the proportion of pupils starting grade 1 that reach grade 5, based on the product of rates of transition from one grade to the next. Denominators for the proportions are always based on the total number of children surveyed (with weighting factors).

*Literacy rates.* The MECOVI surveys, 2001 Population Census, and the 2001 MICS provide estimates of the literacy rate for 15 to 24-year-olds, based on self-declaration. The census also provides estimates of functional illiteracy as the proportion of population with less than three years of schooling.

### 2.2.4 Gender

Main sources: Administrative records (SIE)  
Census  
MECOVI  
MICS

All indicators calculated from the number of pupils in the SIE are broken down by gender.

The household surveys that record education (Census, MECOVI, and MICS) allow calculations of different *literacy rates by gender*.

The MECOVI surveys include a module on employment recording the economic sector that allows estimating the number of *salaried women in the non-agricultural sector*. The definition of occupied is according to international (ILO) standards.

*The number of parliamentary seats occupied by women* is easily obtained from the National Parliament.

### 2.2.5 Health

Main sources: ENDSA  
 SNIS  
 Multiple Indicator Cluster Survey  
 Administrative records  
 Sentinel surveillance operations

*Infant mortality and under-5 mortality* are probably underestimated by administrative sources if the denominator is based on the figures from the Population Registry, which suffer from undercoverage (see section 2.1.3).

MDG estimates for mortality are produced by INE according to a methodology proposed by CELADE, based on a population pyramid not specifically designed for Bolivia.

The MICS 2001 provides estimates of child and infant mortality, calculated as the proportion of child and infant deaths among the number of live births from women 15 to 49 years old, grouped in five-year intervals. These rates are considered estimates of the probability of death.

The mortality estimates given by the ENDSA surveys are calculated from mortality tables for infants in age groups 0, 1--2, 3--5, 6--11, 12--23, 24--35, 36-- 47, and 48--59 months, transformed to survival probabilities that are multiplied and then transformed again in non-survival probabilities (direct method of estimation).

*Immunization.* The administrative records of the Health Monitoring System (SNIS) record the number of babies 12 to 23-months old immunized against *measles, DPT, polio, and other diseases* in the collaborating institutions (see notes on coverage in section 2.1.3). These data are used as numerator of MDG indicators, while denominators are calculated by the SNIS using population projections of INE and CELADE. The use of the continuous population register for denominators may prove inadequate because of undercoverage.

Immunization against measles is calculated in ENDSA 1998 two ways: by examination of the vaccination card ("*carnet de vacunación*") (40 percent of children); and by the declaration of mothers (60 percent of children). For MICS 2000, examination of the vaccination card was possible for 54 percent of children; for the other 46 percent, declaration by mothers was used. In both surveys, children who were surveyed through their vaccination card had higher immunization rates.

MECOVI records immunization against *polio and DPT*, but not against measles.

*Contraception.* The use and knowledge of contraceptive methods is recorded in ENDSA 1998 for women and men. Past and current use is recorded. However, there is no definition of high-risk groups that may allow calculation of Indicator 19A.

*HIV/AIDS prevalence.* Since 1993, several operations of epidemiological surveillance (sentinel surveillance) have been organized under the National AIDS Programme (Ministry of Health), with the collaboration of different institutions and donor aid. The last exercises were addressed to particular risk populations such as sexual workers, STD patients, pregnant women, and food-industry workers in selected institutions in Cochabamba, Santa Cruz, La Paz, and El Alto. The specific design of the studies does not allow estimation of statistical results for the entire population or extrapolations to subpopulations (such as pregnant women). The observed HIV/AIDS prevalence was less than 1 percent in all the cases. However, the methodology on ENDSA 1998 mentions that only about 1,000 people may be infected from HIV in 2000 and that propagation could increase rapidly.

The 1998 ENDSA and 2001 MICS also estimate the knowledge about HIV/AIDS by women, but have no measures of its prevalence.

*The proportion of births attended by skilled staff* is estimated retrospectively in ENDSA 1998 and MICS (births in 2000) and by the monthly activity reports of the institutions collaborating in SNIS. While MICS defines skilled staff as doctors, nurses, and assistant nurses, the Health Management Information System SNIS counts the number of births in specialized institutions. INE has also developed estimates of the number of expected births to be used as denominator.

### 2.2.6 Housing

Main sources: Census  
MECOVI  
MICS

*Housing materials.* The Population Census records variables on housing materials to calculate non-monetary poverty measures.

*Access to improved water and sanitation.* Data are available from the MECOVI and MICS 2001 and the Population Census with the standard definitions. Improved water sources are piped water, public tap, borehole or pump, protected well, protected spring or rainwater, and their availability is defined by at least 20 liters/person per day in a source less than 1 km from the dwelling. While the estimates for access to improved water sources are fairly coincident, the disseminated estimates for access to sanitation facilities differ (74 percent of households according to 2001 MICS; 66 to 68 percent, according to the Census and MECOVI).

The MECOVI provides also estimates of the *proportion of households using solid fuels* (wood, kerosene, crop residues and dung, but not specifically coal) as the primary source of domestic energy for cooking and heating. It includes a question on the *secure tenure* (ownership, purchasing, renting) of the dwelling.

## 2.3 Demand for and Access to Indicators, Particularly by Policymakers

This section reviews the demand for indicators to monitor development policies, at both the national and the international levels. The national demand for indicators derives mainly from the preparation of the Poverty Reduction Strategy Paper and from the monitoring needs for the projects implemented by donors in the country. The international demand for indicators analyzed in this report is that derived from monitoring the MDGs.

### 2.3.1 Monitoring and evaluation of implementation of the Poverty Reduction Strategy Paper

*2000--03 PRSP.* The 2000--03 Poverty Reduction Strategy Paper (PRSP; *Estrategia Boliviana de Reducción de la Pobreza*, EBRP) was a key framework document for using statistical evidence to set the ground rules for allocating HIPC resources to fight poverty and provide essential social services. As such, it endorsed evidence-based policymaking. Key poverty indicators and other statistical information were utilized to prepare the report. The 2000--03 PRSP was validated in a participatory political process by the Government of Bolivia and civil society, and was given legal force by the Law on National Dialogue 2000.

The 2000--03 PRSP proposed the transfer of public resources generated from the HIPC initiative to municipalities based on a funding allocation formula. This has generated demand for development indicators at the local level. Indeed, the Law on National Dialogue elevated poverty indicators to a central role by linking explicitly the transfer of HIPC resources to the 314 local administrations proportionally to the values of population, enrolled children, and an indicator called “recalculated population.”<sup>8</sup> The latter is obtained as a weighted combination of the population classified into five poverty groups: non-poor, at the poverty threshold, moderate poor, indigents, and marginal:

$$\begin{aligned} \text{Recalculated population} = & (-1) \times \text{Non-poor} + (0) \times \text{At the poverty threshold} \\ & + (1) \times \text{Moderate poor} + (2) \times \text{Indigents} + (3) \times \text{Marginal} \end{aligned}$$

where poverty groups are defined by the lack of one or several basic needs related to housing materials, availability of room space, access to safe water and sanitation, access to energy, education, and health (that is, poverty is measured by the Unsatisfied Basic Needs methodology).

However, as noted earlier, the only information source providing municipal detail on poverty is the Population Census, which takes place only once in a decade. The updating of the information for inter-census years was not stipulated by the Law on National Dialogue, and would be possible only at the departmental level through the Municipal MECOVI household surveys. Unless an updating procedure is carried out the indicators will remain based on the 2001 census, and thus become rapidly obsolete for those municipalities experiencing changes in poverty levels

*Revision of the PRSP for 2004--07.* Revision of the PRSP for 2004--07 has not yet been finalized. The 2003--2004 National Dialogue is scheduled for mid-2004 and is intended to follow a bottom-up approach from municipalities to regions to the national level. The

<sup>8</sup> Ministerio de Desarrollo Sostenible y Planificación. 2002. *Ley del Diálogo: Avances a seis meses de su Implementación*, II Reunión Informativa, La Paz (Febrero).

Directory of the National Dialogue includes governmental organizations and civil society, including representatives of the municipalities.

In October 2003, the Government of Bolivia released a draft revision of the PRSP for the period of 2004--07. It still had not been validated by key stakeholders. Table 3 shows the goals, indicators, and the numerical targets for a limited sample of monitoring indicators.

**Table 3. Numerical Targets for the Preliminary 2004--07 PRSP Indicators**

Goals	Indicators	Numerical targets for 2015
Goal 1. Eradicate extreme poverty and hunger	Incidence of moderate poverty	41%
	Incidence of extreme poverty	20%
Goal 2. Achieve Universal Primary Education	Rate of completion of primary education	89%
Goal 3. Promote gender equality and empower women	Gap between girls and boys in primary education	0%
Goal 4. Reduce child mortality	Infant mortality (%)	45 per 1,000
Goal 5. Improve maternal health	Maternal mortality (%)	200 per 100,000 births
Goal 6. Combat HIV/AIDS, malaria, and other diseases	Number of municipalities with infestation rate by Chagas disease greater than 3%	0 municipalities
Goal 7: Ensure environmental sustainability	Access to treated water	84.5%
	Access to basic sanitary services	64%

Source: the Government of Bolivia. *Revisión de la Estrategia Boliviana de Reducción de la Pobreza 2004-2007*. Presented at the XVth Consultative Group, Paris, October 2003.

*A monitoring and evaluation system of PRSP.* The Government of Bolivia established by law an Inter-institutional Council for Monitoring and Evaluation (*Consejo Inter-institucional de Seguimiento y Evaluación de la EBRP*, or CISE) composed of key government institutions: the National Statistical Institute (INE), the Social and Economic Policy Analysis Unit (UDAPE), the Ministry for People's Participation, the Ministry for Sustainable Development, and the National Mechanism of Social Control (MNCS), which represents civil society.

The National Statistical Office has been involved in the monitoring process of PRSP from the very beginning to document and produce most monitoring and evaluation indicators. The PRSP monitoring system includes a set of indicators that can be compared to the MDG indicators. In terms of correlation of national and international development, and according to the draft PRSP policy document 2004--07,<sup>9</sup> the selected evaluation indicators of the draft 2004-07 PRSP are linked specifically to the MDG list. However, few MDG indicators are specifically selected in the PRSP, as shown in table 4.

<sup>9</sup> The definition of national goals addresses the strategic vision of the Bolivian PRSP, related with the achievement of the Millennium Development Goals subscribed by Bolivia in the Millennium Declaration of the UN Conference of 2000, and incorporates goals in the productive sector, as described in *Revisión de la Estrategia Boliviana de Reducción de Pobreza 2004-2007* (Government of Bolivia 2003).. Presented at the XVth Consultive Group, Paris, October 2003.

**Table 4. Comparison of MDG and PRSP Indicators**

	<b>2001--03 PRSP and 2004--07 PRSP</b>	<b>Non-PRSP indicators</b>
<b>MDG Indicators</b>	<b>Poverty and hunger</b>	
	1. National poverty headcount ratio  Proportion of population classified as moderate poor Proportion of population classified as extremely poor	2. Poverty gap ratio 3. Share of poorest quintile in national consumption 4. Prevalence of underweight children under 5 5. Proportion of population below minimum level of dietary energy consumption
	<b>Universal primary education</b>	
	7B. Primary completion rate (proportion of children that have completed grade 8)	6. Net enrollment ratio in primary education (through grade 8) 7A. Proportion of pupils starting grade 1 who reach grade 5 8. Adult literacy
	<b>Gender equality</b>	
	9. Ratio of girls to boys in primary education (secondary and tertiary not considered)	10. Ratio of literate women to men 15--24 years old 11. Share of women in wage employment in the non-agricultural sector 12. Proportion of seats held by women in national parliament
	<b>Child mortality</b>	
	13. Under-5 mortality rate 14. Infant mortality rate	15. Proportion of 1-year-old children immunized against measles
	<b>Maternal health</b>	
	16. Maternal mortality ratio	17. Proportion of births attended by skilled health personnel
	<b>HIV/AIDS, malaria, and other diseases</b>	
		18. HIV prevalence among 15--24 year old pregnant women 19. Condom use rate of the contraceptive prevalence rate 19A. Condom use at last high-risk sex 19B. Percentage of population aged 15--24 with comprehensive correct knowledge of HIV/AIDS 19C. Contraceptive prevalence rate 20. Ratio of school attendance of orphans to school attendance of non-orphans aged 10--14 21. Prevalence and death rates associated with malaria 22. Proportion of population in malaria risk areas using effective malaria prevention and treatment measures 23. Prevalence and death rates associated with tuberculosis 24. Proportion of tuberculosis cases detected and cured under directly observed treatment short course (DOTS)

	<b>2001--03 PRSP and 2004--07 PRSP</b>	<b>Non-PRSP indicators</b>
	<b>Environmental sustainability</b>	
	30. Proportion of population with sustainable access to an improved water source, urban and rural 31. Proportion of urban and rural population with access to improved sanitation	25. Proportion of land area covered by forest 26. Ratio of area protected to maintain biological diversity to surface area 27. Energy use (kg oil equivalent) per \$1 GDP (PPP) 28. Carbon dioxide emissions (per capita) and consumption of ozone-depleting CFCs (ODP tons) 29. Proportion of population using solid fuels  32. Proportion of households with access to secure tenure

	<b>2001--03 PRSP and/or 2004--007 PRSP</b>	<b>Non PRSP indicators</b>
<b>Non MDG indicators</b>	Indicators of Unsatisfied Basic Needs Children with low birth weight (%)	---
	Population with 8 or more years of schooling (%)	
	Academic delay (%)	
	Student at risk in academic performance (%)	
	Pneumonia cases of children under 1 treated in health services (%)	
	Residential infestation by Chagas disease (%)	
	Pregnant women with adequate prenatal check-ups (%)	
	Women with identity card (%)	
	Women with access to basic health insurance (%)	
	Life expectancy at birth	
Income levels due to sustainable wildlife management programs (% increase)		
Microenterprises and small businesses headed by women (%)		

Source: the Government of Bolivia, *Revisión de la Estrategia Boliviana de Reducción de Pobreza 2004-2007*, Presented at the XVth Consultive Group, Paris, October 2003; and <http://www.worldbank.org/data/prsp/indicadores.xls>

Meanwhile, the draft revised PRSP introduces a new set of monitoring indicators that also include economic and financial variables that are mainly unrelated to MDG indicators, since the main thrust of the revised PRSP is economic growth.

**Table 5. Monitoring Indicators for EBRP 2004--07**

		<b>Social</b>	<b>Productive</b>
Intermediate results	Trend indicators	<i>Net and gross enrollment in primary education</i> <i>Rate of child malnutrition</i> <i>Institutional attendance to births (% of births attended by skilled health staff)</i> <i>Access to safe water</i> Per capita income	Increase in product Exports Creation of employment in the productive sector Per capita income
	Subjective indicators	Subjective indicators of poverty Perception of benefits from sanitary services	Subjective poverty Perception on investment climate
Input indicators	Physical and infrastructure indicators	Education and health infrastructure Human resources in education and health Basic sanitary infrastructure	Productive infrastructure (km of roads, irrigated land, electricity in rural houses) Treated and redistributed land area
	Financial indicators	% of execution of public investment programs % of execution of HIPC II resources	% of execution of public investment programs Transfers of the Productive Promotion Fund

Note: MDG indicators are displayed in Italics.

Source: the Government of Bolivia, *Revisión de la Estrategia Boliviana de Reducción de Pobreza 2004-2007*. Presented at the XVth Consultative Group, Paris, October 2003.

### 2.3.2 Demand from foreign and international development agencies

Besides the demand for indicators from the national institutions, bilateral development agencies operating in Bolivia generally include a list of indicators for monitoring and evaluation of each project, according to the recommendations of the Logical Framework Approach. In addition, some projects have linked continued financing to the achievements measured by indicators. International organizations are also important users of development indicators from Bolivia. For instance, the World Bank has set up decision models to identify

the causal links between policies and results in the fight against malaria; these use statistical indicators intensively.<sup>10</sup>

Unfortunately, as noted by the staff of the unit for cooperation projects in the Ministry of Finance, some development projects lack relevant indicators (for example, on nutritional facts), the definition of indicators is not always clear, the selection of indicators across projects is not consistent, and their sustainability after the termination of the project is not always guaranteed.

The demand for indicators translates into an extra workload for the government departments that must produce specific data. The General-Directorate for External Financing of the Ministry of Finance, which coordinates the different international projects, has the capacity for starting a process to rationalize the demand for indicators, and advocates for financial support to the organizations that produce them. This process of rationalization has not been started

Bolivia has numerous international technical cooperation projects with overlapping program objectives; thus it is not always possible to monitor the performance of international initiatives in a comprehensive manner. The problem stems not only from the failure of the government but also of the donor community to have a coordinated approach to strengthen the statistical system.

## **2.4 Statistical Capacity**

An initial assessment of statistical capacity has been made using the PARIS21 Indicators of Statistical Capacity Building. INE has reviewed this assessment and agreed with it (see appendix 3).

### *2.4.1 Prerequisites: Legal Framework and Planning of Statistical Activity*

The Bolivian Statistical System is founded on the Law on the National Statistical Information System (*Sistema Nacional de Información Estadística*, SNIE) (D.L. 14100) of 1976,<sup>11</sup> which establishes the National Statistical Institute (INE), the National Council for Statistics, and the Technical Committees for Statistical Coordination.

The National Council for Statistics approves the national statistical programs and the annual budget for statistics, and authorizes legislative and organizational modifications of the statistical system. It is chaired by the Minister of Planning and Coordination, the Minister of Finance, and representatives of the Ministry of Defense, the Central Bank, the Association of Private Entrepreneurs, and the Executive Director of INE.

Line ministries except those responsible for planning and coordination, finance, and defense are not represented in the National Statistical Council. The Law allows for their

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<sup>10</sup> John Newman and others. 2003. "A System Dynamics Approach to Monitoring and Evaluation at the Country Level: an Application to the Evaluation of Malaria-control Programs in Bolivia." World Bank, Washington, D.C.

<sup>11</sup> A new Statistical Law is under preparation.

participation in the Technical Committees for Statistical Coordination, which include representatives of different institutions. Other organizations that produce statistical data may belong to the National Statistical Information System. However, according to INE sources, neither the National Council for Statistics nor the Technical Committees have worked effectively since their creation in 1976.

Recently, the Health Information System (*Sistema Nacional de Información en Salud*, SNIS) has been included in SNIE—while official incorporation of the Education Information System (*Sistema de Información en Educación*, SIE) has yet to take place. Even though the SNIS and SIE should coordinate closely with INE to carry out their program activities within the SNIE, there is little technical coordination between SNIS and SIE, on the one hand, and INE, on the other.

The INE reports to the Ministry of Planning and Coordination and prepares the national statistical program to be submitted to the National Council for Statistics. It also coordinates the statistical activities of all the organizations producing public statistics and is entitled to dictate methodological norms for all of them and to initiate statistical legal acts. The INE maintains a repository of all statistical forms and questionnaires, as well as relevant maps.

A new law under preparation defines new components of the statistical system: namely, the National Consultative Council for Statistics and Informatics (COCNEI); the Departmental Consultative Council for Statistics and Informatics (COCDEI); and the Municipal Consultative Council for Statistics and Informatics (COCMEI). This new system aims to gather representatives of the executive, legislative, and judicial branches and social agents (universities, associations of entrepreneurs, and others) at the different national, departmental, and municipal levels of the Bolivian administration.

#### 2.4.2 Staffing

The total number of INE's permanent employees has decreased from 327 in 2001 to 221 in 2004. Staff reduction was brought about by the interplay of budget cuts, competition from the private sector, and inability for INE to be able to pay competitive salaries to retain qualified staff. Table 6 presents the composition of staff by qualification level for the latest three years; the across-the-board reduction of the staff profile is clear.

**Table 6. Staffing of INE by Qualification Level, 2002--04**

	2002		2003		2004	
Specialist	93	35.4%	86	37.1%	81	36.7%
Superior	28	10.6%	22	9.5%	27	12.2%
Vocational	84	31.9%	72	31.0%	64	29.0%
No special studies	41	15.6%	36	15.5%	34	15.4%
Non-specialist	17	6.5%	16	6.9%	15	6.8%
Total	263		232		221	

The reduction of staff was accompanied by a reduction of the salary level. For instance, staff at the technical director level received a monthly salary of \$1,700 in 2001, but \$1,250 in 2004, with the same level of responsibility. Staff at the middle management level and technical level also suffered salary cuts, but to a lesser extent. The average monthly salary for the technical and administrative staff is currently \$450, which is considered lower than adequate. Given the constraints on the current financial resources in the public budget, there is limited possibility to increase salaries. It is a common practice for INE to utilize externally funded statistical projects to retain qualified consults/specialists who could, in parallel, contribute to the INE's routine activities.

Many of the staff who left INE for other jobs possesses valuable professional experience in statistical development, and therefore their departure represents a significant brain drain. Once staff gains statistical and professional competency, INE can no longer offer competitive remuneration to retain the staff; the result is a reduced human resource base.

#### *2.4.3 Capacity for data collection*

INE collects data directly in censuses, households and enterprise surveys, and indirectly through the sectoral management systems in place (education and health), as well as through other administrative and fiscal registers (from the Auditor General, or *Contaduría*, and the Fiscal Planning Unit).

The capacity for collecting data from administrative sources is hampered by a lack of coordination, even among institutions belonging to the SNIE. In particular, the capacity for data collection at the local level is weak. Reasons that were mentioned are the lack of technical devices to collect and transmit data and the lack of qualified staff interested in the analysis of such information at the local level.

A project for developing a Local Statistical Information System (SMIE) is being prepared by INE. As described in section 2.1.2, the pilot exercise for a Municipal MECOVI was carried out to test the suitability of data collection and transcription technique using the PDA instruments. The project promises to produce statistical information on the living conditions at the level of local jurisdictions.

#### *2.4.4 Capacity for data analysis and dissemination*

The capacity of INE and other institutions of the Bolivian statistical system for data dissemination is considered weak by that institution (which estimates that only 60 percent of the collected information is adequately disseminated). Even less information is disseminated at the departmental and local level.

One factor hampering dissemination is the deterioration of performance of INE's in-house publishing unit. In the past, this unit had produced publications at affordable prices for the general public.

UDAPE (*Unidad de Análisis de Políticos Sociales y Economics*), a government think tank under the Ministry of Economic Development, collaborates closely with INE in carrying out

poverty analysis, policy research, elaboration of PRSP Monitoring Indicators, and preparation of the PRSP document. While INE is mainly a collector, processor, and provider of statistical data for PRSP indicators, it also has developed substantial in-house analytic capability to carry out methodological improvements in statistical work.

The capacity for data analysis, particularly for MDG indicators, is illustrated by the process of preparing the national MDG reports. The first MDG Report of UNDP was prepared by eight consultants hired by UNDP, one for each group of eight MDGs. INE played key roles as the data provider and in the definition of proxy indicators, since not all the underlying data were available.

The second MDG report was prepared jointly by INE, UDAPE, and UNDP-Bolivia. The role of INE was to calculate the indicators (in some cases, collecting the necessary administrative data) and to prepare a technical description for each indicator. UDAPE's role was to analyze those indicators and assess the trends toward achieving the MDGs. UNDP coordinated all preparation steps and was responsible for the dissemination activities.

The institutions participating in the second MDG report assessed the analytic capacity for monitoring and evaluating progress toward the goals. Their assessment is summarized in table 7.

**Table 7. Capacities for Statistical Monitoring of MDGs**

Goals	Data collection	Quality of surveys information	Capacity for statistical monitoring	Capacity for statistical analysis	Use of statistics for public policies	Monitoring and evaluation mechanisms
Reduce poverty	GOOD	HIGH	GOOD	HIGH	GOOD	HIGH
Primary education	HIGH	GOOD	HIGH	HIGH	HIGH	GOOD
Gender equity	GOOD	GOOD	WEAK	WEAK	WEAK	WEAK
Infant mortality	GOOD	GOOD	GOOD	GOOD	WEAK	WEAK
Maternal health	WEAK	GOOD	WEAK	WEAK	GOOD	WEAK
HIV/AIDS and other diseases	WEAK	WEAK	WEAK	WEAK	WEAK	WEAK
Environment sustainability	WEAK	WEAK	WEAK	GOOD	WEAK	GOOD

Shaded boxes=Weak areas

Source: Segundo Informe. Progreso de los Objetivos de Desarrollo del Milenio, Bolivia 2002.

The analytic capacity must be strengthened, particularly in the field of health and gender indicators, according to this evaluation.

It is also INE's perception that the monitoring of international goals (MDGs and goals of international conferences) does not strengthen the statistical capacity, since no new

information is produced (some indicators are estimated by proxies) and thus the national statistical systems are not improved.

## **2.5 Government and Donor Support**

### *2.5.1 Government support to strengthen the information system for PRSP monitoring*

Against a backdrop of severe financial constraints, with an external debt of about \$4.8 billion and a fiscal deficit of about 8 percent of GDP, the Government of Bolivia has only limited resources to support the statistical system. Thus the system relies heavily on international cooperation to cover critical needs in several areas.

INE is supposed to have the following sources of funding, according to the Statistical Law of 1976:

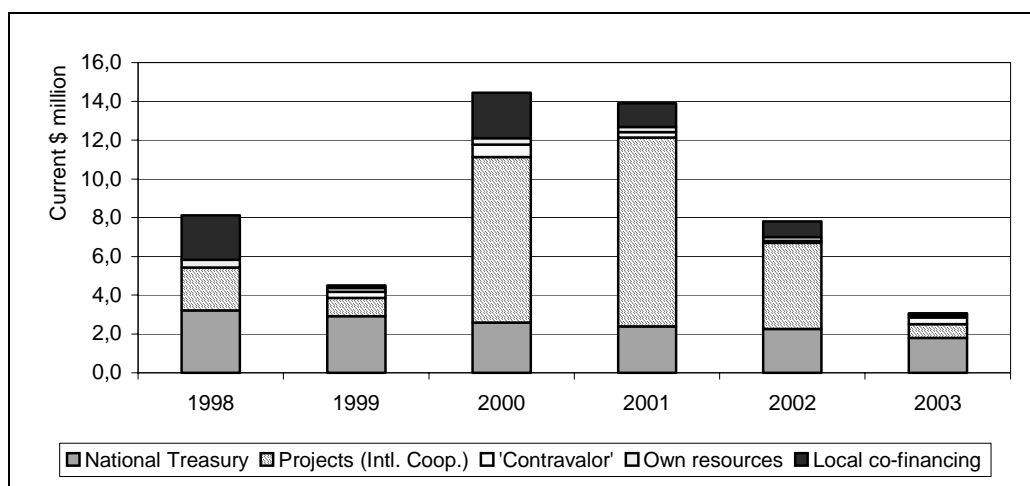
- annual assignments of the national budget
- sales of publications by the organizations in the statistical system
- funds specifically provided by national and international organizations
- income generated by services to public and private national and foreign institutions
- 2 percent of the contracts of consulting firms and organizations in the field of statistics, appropriated by the Directorate General for the Budget of the Ministry of Finance.

The Task Team could not find evidence of funds generated under the last category.

According to the new law, the revenues of the National Statistical Institute will also include the sales of new products such as databases and maps, proceeds from the penalties levied for non-response, loans and credits, and donations.

The budget from the national treasury for INE has been decreasing recently, while higher proportions of the statistical production has been supported by international cooperation projects. Notably, the Population and Housing Census took place in 2001 with an infusion of international funding, after being postponed in 2000. Some of the international cooperation funding is in the form of *contravalor*, which is a government budget item that was originated as the debt relief initiative but is being used as the government's counterpart funds for the international cooperation projects.

### **Figure 1. Composition of INE's Budget, 1998--2003**



Source: INE 2004.

Two recent developments underscore the government's growing support for the statistical system and give reason for optimism. First, as recently as December 2003, a memorandum for the Institutional Reform of the Public Service included INE as one of the organizations where the reform will occur.

Second, the Revision of PRSP for 2004--07 (which is a working document and does not correspond to the final approved proposals) explicitly identifies the following operations as instruments for implementing the strategy. These would strengthen the Bolivian statistical system:

- a) New information sources
  - Surveys on public perceptions on the progress toward poverty reduction
  - Monitoring system for the of the productive sectors
  - Local (municipal) management registers
  - Continuous labor force surveys
  - Indicators on the impact of social and economic programs
  - Monthly consumer and production prices
  - Quarterly Employment Surveys
  - Local (municipal) surveys
- b) Improvement of existing statistical operations
  - Updating the base year for national accounts
  - Guaranteeing the continuity of household surveys
  - Guaranteeing the continuity of economic surveys (manufacturing, oil and gas, mining, construction, and services)
- c) Development of the Local Statistical Information System (*Sistema Municipal de Información Estadística, SMIE*)

However, no budget has been explicitly committed for the above-mentioned operations.

INE is preparing an integrated medium-term program for strengthening the entire statistical system. It is to be presented to the government and the donors in 2004. The specific objectives of this program are:

- Institutional building
- Implementation of the professional career in official statistics
- Preparation and dissemination of methodological norms
- Creation of statistical literacy
- Development of technological infrastructure
- Development of the statistical production

The agreement on the need for indicators is not reflected in the current budget for the National Statistical Institute; however, the prospects for support give grounds for some optimism.

#### *2.5.2 Support from international and bilateral development agencies and organizations*

International and bilateral cooperation has been a constant support to Bolivia's statistical system. INE has benefited disproportionately (in relation to national funding) from international technical cooperation projects, which have been approximately 2.5 times greater than the national budget for INE. INE's dependency on external funding has created a risk for the stability and sustainability of statistical operations needed for the national development process.

The main international organizations contributing to the development of a monitoring system of development goals are the World Bank, the Inter-American Development Bank (IDB), and the United Nations Development Programme (UNDP). Bilateral agencies of Canada, Denmark, Sweden, Japan, and the United States are also active. The European Union will play an important role with the launching of the regional Andean-European statistical cooperation program, although this is focused on economic statistics.

International support to the statistical system to monitor MDGs includes the following:<sup>12</sup>

- The financing of important surveys, registers, and other statistical operations

The World Bank and the IDB have been key actors in the establishment of household surveys in Bolivia through the MECOVI Program of Household Surveys. As noted, MECOVI surveys provide many of the indicators required for monitoring development goals. The local office of UNDP has also managed the financial support for MECOVI.

IDB and the World Health Organization (WHO) have supported the Epidemiological Alert system, included in the SNIS.

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<sup>12</sup> The listing of projects and international or bilateral agencies supporting the Bolivian statistical system in this section is not intended to be exhaustive.

The U.S. Agency for International Development (USAID) has provided continuous support for the implementation of the National Demographic and Health Survey (*Encuesta Nacional de Demografía y Salud*, ENDSA), which, as noted, provides many of the health-related MDG indicators. USAID support in Bolivia, as in many other countries, is channeled exclusively through the U.S.-based company Macro International, which provides technical assistance in all the survey phases. The ENDSA has also received financial support from UNICEF, UNFPA, the World Food Program, the World Bank, and the national organization *Programa de Salud Integral* (PROSIN).

The Health Management Information System (SNIS) has also benefited from U.S. technical assistance under a project on decentralization of the Bolivian health system called Data for Decision Making/Harvard. Together with UNICEF, USAID has been supporting the printing of data collection instruments.

- The financing of pilot statistical operations

The World Bank, INE, and UDAPE are currently running a pilot exercise of data collection with hand computers at the municipal level; 15 municipalities were selected. The potential use of this tool to obtain local-level indicators---both from the local authorities and administration and from households---that could serve as a basis for monitoring the management of transferred HIPC funds and updating census information is still to be fully assessed.

A project to evaluate the quality of the health registers has been funded by the Spanish Cooperation Agency (AECI).

- The preparation of MDG reports

With the support of the local office of UNDP, Bolivia (through UDAPE and INE) has produced poverty maps,<sup>13</sup> as well as regional Human Development (HD) Reports (for the Departments of Tarija, Oruro-La Paz, Santa Cruz, and Amazonian); a gender-based HD report, and two MDG reports.<sup>14</sup>

- Capacity building, including training of users

UNDP has a project in pipeline to support training activities for the users of MDG indicators (such as ministry staff, the parliament, the media and NGOs). It is in the process of setting up the MDG Trust Fund to fund the training activities.

The World Bank has a new lending instrument called the Statistical Capacity Building Program (STATCAP) to support statistical capacity building in developing countries. STATCAP is designed to make investment in statistical capacity easier and more effective. Preparation of STATCAP operations hinges on comprehensive diagnostics of the strengths

<sup>13</sup> Bolivia: Mapa de Pobreza 2001; Censo de Población y Vivienda 2001, INE – UDAPE, 2002.

<sup>14</sup> INE received support only for the second report.

and weaknesses of the statistical system. The process of preparing a STATCAP operation starts with preparation of the National Strategies for Development of Statistics (NSDS) and/or the Statistical Master Plan (SMP), as a comprehensive roadmap for developing a long-term statistical capacity.

A grant program of the Trust Fund for Statistical Capacity Building (TFSCB) is available to assist the government in preparing the STATCAP loan. Other donors can participate in STATCAP operation by co-financing certain components of the NSDS/SMP.

### **Box 1. Strengthening the Sustainability of Bolivia's Statistical System to Monitor Development Indicators**

The statistical system of Bolivia, and in particular the three main organizations providing measurements for the MDGs---INE, the Ministry of Education, and the Ministry of Health--have the technical capacity to monitor the development indicators. Indeed, a great number of statistical projects such as household surveys on living conditions, poverty maps and analyses, and health and education management information systems (registers) have been carried out, including a Housing and Population Census in 2001. In recent years, however, international cooperation to provide funding and technical assistance has been intensive, raising the issues of dependency and donor bias.

New financial instruments---including the MDG Fund and the STATCAP Program---may be of great help in supporting the continuing activity of the statistical system. Moreover, a general consensus exists about the need to provide funding for statistical activities (as a fixed percentage) in any development project.

However, the time is ripe for a strategic, EBRP-oriented, integrated institution building program, avoiding duplication, financing gaps, and a patchwork approach to meeting the informational needs of the many donors. In particular, the sustainability of the Household Surveys on Living Conditions, an essential tool for the monitoring of MDGs that has been put in place by the MECOVI project, should be guaranteed through a medium-term program of statistical production.

A great gap exists between the agreement and desire of the development community about the need for statistical information, and its translation into a concrete, time-bound, and resourced plan of action to strengthen the capacity to produce and process the statistical information needed to monitor progress toward the MDGs.

## **3. OPTIONS FOR IMPROVEMENT**

In general, Bolivia presents a solid framework for monitoring the National Development Goals, as well as the Millennium Development Goals, because of their close link to the national goals.

However, some actions could strengthen the capacity to produce, analyze, and disseminate the statistical data needed. These improvements are classified as institution building of the statistical system, methodological improvements, and improvements in dissemination, including users' training.

### **3.1 Identification of actions to improve statistical capacity**

The plethora of development indicators used to implement, monitor, and evaluate development policies in Bolivia (including the transfer of funds to local administrations) requires a strong statistical system. Some improvements are outlined below.

#### *3.1.1 Improvement of strategic planning of statistical development*

There is an urgent need for the Government of Bolivia to recognize that long-term strategic development calls for diagnostics of the current statistical system, assessment of the demands for statistical information, and design of a concrete action plan to upgrade the system capacity and finding resources to execute such a plan of action.

The identification of a medium-term program (say, five years) for the statistical system could provide options for “basket funding” from the Bolivian government and external donors. The program should be inclusive of all statistical producers and validated by the relevant institutions, such as the Statistical Council and the Consultative Group.

Donors might consider supporting a comprehensive program of official statistics, instead of funding one-off surveys. This would ensure the ownership of the approved methodology by the organizations in the statistical system. For its part, the Bolivian government should make a continuous budgetary commitment to official statistics and activate a representative Statistical Council.

#### *3.1.2 Improvement of the survey program*

The continuity of important work programs in social statistics (MECOVI surveys, health and education information systems) should be ensured by the budgetary commitment of the government and donors. A fixed percentage of every cooperation project could be directed to the maintenance of the information system.

The multi-donor MECOVI program is due to expire in October 2004, when financial support from donors will end. With the Government of Bolivia not showing serious signs of fully funding the MECOVI survey program, the MECOVI program is on the brink of expiration without a clear exit strategy. Insertion of the survey program within a long-term strategy for statistical development is urgently called for; otherwise, Bolivia risks losing a credible system to monitor poverty and living conditions on an ongoing basis.

A Local Statistical Information System should be put in place to implement policies at the local level and evaluate them. The Local Statistical Information System could integrate data from the population census, administrative registers, and ad hoc surveys at the local level, to update the census information. The commitment of local authorities to provide human resources is fundamental. This can be encouraged by linking the transfer of funds to the availability of high-quality statistical information. The Local Statistical Information System

should be considered as a horizontal component of the national statistical system, permeating all statistical topics.

### *3.1.3 Improvement of collection of statistics from administrative sources*

*Vital statistics.* It is vitally important to increase the percentage of population covered by the Population Registry. It is also necessary that low coverage of vital records in Bolivia be remedied in a structural and systematic manner. One option is to transfer the function of the National Population Registry from the Electoral Court, where it is now managed, to the Ministry of Health, which has an operational arm that can reach even the remotest part of the country. Since many poor in rural and urban areas are unable to afford the registration fees, the service should be provided at negligible or no cost, at least for birth and death certificates.

It is also important that improvement of the Population Registry be carried out in a coordinated manner among the Ministry of Health, the Ministry of Education, and INE. For instance, the Ministry of Health could widely publicize the fact that birth certificates could be obtained conveniently from health posts at low or no cost to households. The Ministry of Education could enforce submission of birth certificates as a requirement for children's enrollment in the education system in rural as well as urban areas.

If the coverage of the Population Registry is not improved, the mortality and fertility rates will still need to be estimated by indirect methods applied to such data as the MECOVI or ENDSA surveys or population censuses.

Special care also must be taken in the codification of causes of death on the death certificates, to improve their accuracy of mortality analysis.

*Education statistics.* The coordination of the Educational Services (SEDUCA) under the departmental authorities and the Ministry of Education should be strengthened in order to reduce the burden placed of collecting education statistics.

The existence of informal education establishments (such as programs run by NGOs) was acknowledged by Ministry of Education experts during the Task Team's field visit. These establishments fall outside the measurement system. An effort has to be made to assess the coverage of informal establishments to enhance the comparability of administrative registers and the data from household surveys.

The use of IT tools such as Optical Character Recognition (OCR) software could improve the timeliness of data collection. This in turn could improve the feedback to departmental and local levels. Some capacity for data analysis and dissemination at the departmental level should be created.

Coordination with INE is crucial for data collection on the educational system.

*Health statistics.* The Ministry of Health should improve the collection of information from private institutions, which under-report data, as recorded in the monthly activity reports. To increase the coverage of the private sector, the license for private centers may be linked to the submission of statistical information.

The Ministry of Health, in coordination with departmental authorities (and with the support of international donors, if needed), should update the IT solutions for collection and transmission of information.

Also, increasing the use of these administrative data by local health user groups (*Comités de Análisis de la Información, CAI*) would create incentives for improving data collection procedures. This could be achieved by training the users and providing ad hoc software solutions for analysis at the local level.

It will be highly desirable that the Ministry of Health coordinate closely with INE to ensure that the collected health data conform to official statistical norms and methodologies.

### **3.2 Improvements in Dissemination, including User Training**

Users at the local level within the government, civil society, and the media are an important focus for improvement in dissemination of the statistical information. In particular, the 314 municipal governments are accounting units for measuring and monitoring the development units of HIPC initiative, since a significant portion of HIPC resources is transferred directly to them and is at their disposal for local development projects.

The dissemination of development indicators could be improved by increasing the availability of statistical data at the local level, and by improving the capacity of local data users to analyze the data. The accessibility of local data could be increased by:

- Producing specific dissemination products at the local level, allowing the establishment of comparison and benchmarks with neighbors and municipalities that are similar in size.
- Processing, at the departmental level, administrative registers on health (from SNIS) and education (from SIE), instead of depending on their processing and dissemination at the national level. Before aggregation, certain quality control from the central level nevertheless should be established (through training, preparing common software, and drafting manuals for data processing).

At the same time, the improvement of the statistical literacy of users may increase the perception of statistics as an important tool for decision-making. In parallel, particular user groups should be trained in the use and analysis of indicators:

- While the existing capacity for analysis of development indicators in the main central government units (particularly UDAPE) is good, the capacity of the regional and local administrations (departmental health and education institutions) should be

improved through staff training. The existing local *Comités de Análisis de Información* of the SNIS should be especially considered.

- Local authorities and the control groups of the civil society established by the Law on National Dialogue (*Comités de Vigilancia*) should be empowered to play an effective role in the use of indicators to decide upon and monitor the use of local resources in a participatory way.
- The analytical capacity of members of parliament could be improved. The Law on National Dialogue emphasizes the importance of building the analytical capacity of this target group.
- The mass media could be trained in the interpretation of development indicators. This need was stressed by some stakeholders during the field visit.

Resources for training local users may be available through the UNDP MDG Fund, in coordination with the Regional Office of UNDP for Latin America and the Caribbean.

### **3.3 Methodological Improvements**

The quality of development indicators in Bolivia could be improved in different dimensions:

- Timeliness

The processing of administrative registers (education and health) would benefit from the use of OCR (Optical Character Recognition software) at the departmental level and the revision of forms to enhance automatic reading. While the technological infrastructure in the central offices is sufficient, the Department and local institutions would benefit from improvements.

INE should put in place a calendar for data dissemination, to increase the confidence of users, particularly donor organizations, in the reliability of the statistical system.

- Completeness

Data collection may improve as the Statistical Law is implemented; the law calls for compulsory participation in official statistical operations. In particular, the inclusion of the National Health Information System (SNIS) in the national statistical system will improve collection of data from the private sector, which currently provides only about 10 percent of the required information. This would enhance the coverage of health-related development indicators.

An assessment of the coverage of education-related indicators is recommended, because in some cases, the inclusion of the private education sector is based on estimates.

One of the most spectacular failures to generate complete information relates to the Population Registry, recording births, deaths, and marriages, and divorces. Its low coverage (only 36 percent of deaths and 76 percent of births, estimated by surveys) keeps the information collected with the Population Registry from being utilized to produce reliable vital statistics.

- Coherence

The Internet-based dissemination of updated monthly reports of activity from the Health System should document the modification in estimates as new administrative registers are recorded to improve the coherence between the different sources (SNIS and INE).

In relation to poverty estimates, there is a critical need to update the basic basket of goods and services used for establishing poverty lines in both urban and rural areas. These currently have different reference years. The collection of price information should be also used to verify the adequacy of the PPP estimates, currently obtained directly from the Penn World Tables.

#### **Box 2. Actions to Improve MDG Monitoring in Bolivia**

To adequately monitor the progress achieved in meeting the EBRP and MDGs, the statistical system and the analytic capacities in Bolivia must be strengthened. A good starting point is the practical coincidence between EBRP and MDG indicators.

From the supply side, the Bolivian statistical system needs an integrated framework for development. This should be strongly coordinated by INE and include the major stakeholders (the Ministries of Education and Health). Both the government and donor organizations should provide financial support in the medium term. The framework must be built on the existing—and promising—capacities and experiences in the field of household surveys (especially insuring the sustainability of living conditions surveys) and administrative registers (generally improving the Civil Register, widening coverage of the health management information system to the private sector). The development of a system of local statistics is required because they are needed to manage HIPC funds, as those funds are increasingly directed to the local level.

From the demand side, the analytic capacities of local actors (administrations, authorities, social control groups) must be built from a very weak level. This stands in contrast to the very strong needs of national and international users.

Donors should seriously consider the possibility of coordinating the funding of the statistical system and activities, such as training of users. It will be highly desirable for them to be involved (as prescribed by the participation analysis of the Logframe approach) in INE's design of the integrated program of official statistics—not only as donors, but also as users.

#### 4. REVIEW OF DATA AVAILABILITY

Table 8 indicates the availability of data related to MDG, by sources of information. It is not possible to assess the future availability of surveys because of uncertainties about funding.

Indeed, INE is not sure of the sustainability of the main household survey (MECOVI), and ENDSA and MICS are depending entirely on international donors (USAID, UNICEF, and others).

**Table 8. Household Survey Timeline**

Past													Future												
90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
		PC							LC	LC MI	PC LC	LC	LC	LC	?						PC?				
				DH				DH					DH					?							

- LC: Living Conditions Survey (MECOVI)  
 DH: Demographic and Health Surveys (ENDSA)  
 PC: Population Census  
 MI: UNICEF Multiple Indicator Cluster Survey

Administrative registers are based on monthly reports, aggregated annually. They are not indicated in the table above.

## Appendix 1. Documents Consulted

- Canavire, G. J. 2003. *Perfiles y probabilidad de pobreza en Bolivia*. “Revista de Estudios Económicos y Sociales, Estadísticas & Análisis” (October).
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**Appendix 2. People Interviewed during the Field Visit**

## National Statistical Office (INE)

José Luis Carvajal, Executive Director

Walter Castillo, Deputy Director

Adhemar Guzman, MECOVI Program Coordinator

Javier Monterrey Arce, MECOVI Consultant

Gustavo B. Canavire, Poverty Specialist

## Ministry of Education

Orlando Murillo, Directorate of Analysis

## Ministry of Health

Charles Pedregal, National System of Health Information

## Ministry of Finance

Claudia A. Cáardenas, General Directorate of External Financing, Vice-Ministry of Public Investment and External Financing, Ministry of Finance

## European Commission Delegation in Bolivia

Christine Ortiz, Cooperation Section

Guillermo Vivado, Economic Advisor

## Social and Economic Policy Analysis Unit (UDAPE)

Roberto O. Rivero, Economist

Wilson Jiménez, Sector Economist

## UNDP-Bolivia

Vivian Arteaga, Project Analyst

## World Bank

John Newman, Resident Representative

### Appendix 3. PARIS21 Statistical Capacity Building Indicators

Country: Bolivia		Population: 8.3 million			
Reporting Year: 2004					
System-wide indicators					
Data produced and published (Please provide <u>latest year of reference</u> to which the data apply, and provide name of principal data producing agency)					
Data category	Ref. Year	Agency Name	Data category	Ref. Year	Agency Name
National accounts	2003	INE	Industry	2003	INE (economic survey)
Price statistics	2003	INE	Energy	2003	INE (economic survey)
Balance of payments	2003	Central Bank	Communication	2003	INE (economic survey)
Money, finance and insurance	2003	Central Bank	Transport	2003	INE (economic survey)
International trade	2003	INE	Tourism	2002	INE (economic survey)
Population	2001	INE	Culture	N/A	N/A
Household income/expenditure	2002	INE	Natural resources and environment	2003	Ministry of Environment
Health	2003	Ministry of Health	Other (specify) <i>Government finance</i>	2003	Central Bank
Education	2002	Ministry of Education			
Labor statistics	2002	INE			
Agriculture, forestry, and fisheries	2001	Ministry of Agriculture			
Distributive trade	2001	INE (economic survey)			

**Appendix 3. PARIS21 Statistical Capacity Building Indicators (cont.)**

<b>Agency-related indicators</b>				
<b>Agency producing statistics on:</b>	<b>1. GDP</b>	<b>2. Population (Report if the agency is different from #1)</b>	<b>3. Household income/expenditure (Report if the agency is different from #1, 2)</b>	<b>4. Total</b>
<b>Agency name</b>	INE/ Cuentas Nacionales	INE/ Encuestas y Censos / Estadísticas e Indicadores	Same as #2	---
<b>Government funding</b>				
Current (amount, currency)	4.7 million (Bolivian peso)			4.7 million (Bolivian peso)
Capital (amount, currency)				
<b>Donor funding</b>				
Funds (Amount, currency)	585.631 (US\$)			585.631 US\$
TA expert working days	N/A		N/A	
<b>Donor agency (name)</b>				
#1			IDB, CAF, Canada, GTZ, Sweden, UNDP, World Bank	
#2				
#3				
<b>Statistical staff</b> (regular staff, full-time equivalent)				
Number	324			324
Turnover (%)	17%			17%
<b>ICT equipment</b>				
Main frame Yes/No				
Internal network (Yes/No)				
Internet dissemination (Yes/No)	Yes		Yes	
PCs in use (number)	400			
Website (address)				
<b>Source data used (number)</b> (a monthly survey/administrative source counts as 1 source not 12; a quarterly counts as 1 source not 4)				
Household surveys/censuses	0	2	4	5
Other surveys/censuses	9	0		9
Administrative sources	0	0		0
<b>Data releases</b> (a monthly counts as 12 releases; a quarterly counts as 4 releases)				
Publications/Yearbooks	18 (pub.)/4 yearbooks)	9 (publications)	3 (publications)	34
Other releases	250-300	0		250-300

### Appendix 3. PARIS21 Statistical Capacity Building Indicators (cont.)

Rating scale: 1. Undeveloped; 2. Largely undeveloped; 3. Developed; 4. Highly developed

<b>Data-related indicators</b>			
	<i>1. GDP</i>	<i>2. Population</i>	<i>3. Household Income/Expenditure</i>
<b>Agency name:</b>	<b>INE/SNA unit</b>	<b>INE/Demographic-social unit</b>	<b>INE/Demographic-social unit</b>
<b>0. Prerequisites</b>			
0.1 Collection of information and preservation of confidentiality guaranteed by law and effective	3	3	---
0.2 Effective coordination of statistics	2	3	---
0.3 Staff level and expertise adequacy	3	3	---
0.4 Buildings and equipment adequacy	3	3	---
0.5 Planning, monitoring and evaluation measures implemented	2	2	---
0.6 Organizational focus on quality	2	3	---
<b>1. Integrity</b>			
1.1 Independence of statistical operations	3	3	---
1.2 Culture of professional and ethical standards	3	3	---
<b>2. Methodological soundness</b>			
2.1 International/regional standards implemented	2	4	---
<b>3. Accuracy and reliability</b>			
3.1 Source data adequacy	2	3	---
3.2 Response monitoring	3	3	---
3.3 Validation of administrative data	2	2	---
3.4 Validation of intermediate and final outputs	3	2	---
<b>4. Serviceability</b>			
4.1 User consultation	3	3	---
4.2 Timeliness of statistical outputs	3	3	---
4.3 Periodicity of statistical outputs	2	3	---
<b>5. Accessibility</b>			
5.1 Effectiveness of dissemination	3	3	---
5.2 Updated metadata	3	3	---
<b>Contact person: Mr. Oscar Lora Rocha, Executive Director; Institution: INE Bolivia; Telephone no: (591 2) 2-222333; Fax no: (591-2) 2-222693; Email address: <a href="mailto:olora@ine.gov.bo">olora@ine.gov.bo</a></b>			
<b>Name of national statistical office (if any): Instituto Nacional de Estadísticas</b>			
<b>Does the NSO have a strategic plan?</b>	<b>No</b>	<b>Date of Production _____</b>	



**Appendix 4. MDG Indicators (cont.)**

Indicator (and component, if relevant)	Historical availability 1990--2002	Next likely available data, and future frequency	Data sources	Primary data components and methods	Comments
<b>Education</b>					
6. Net enrollment ratio in primary education	1996--2002	2003	SIE, INE	Number of pupils by grade as numerator. Population projections from INE for denominator	Since MICS is based on household surveys, denominators are the number of households in the sample.
	1999--2002	2003	MECOVI	Number of children above 5 currently enrolled in primary education	
	2000	---	MICS	Proportion of children 3 to 5 years old that attend any organized educational program.	
7A. Proportion of pupils starting grade 1 who reach grade 5	1996--2002	2003	SIE, INE	Number of pupils enrolled in grade $n$ in year $t$ Number of pupils enrolled in grade $n+5$ in year $t+5$	Indicators are available for the 6 <sup>th</sup> and 8 <sup>th</sup> grades of primary education.  Same as 6 for MICS
	2000	---	MICS	Product of estimate probabilities of transition for each grade up to grade 5 (UNESCO methodology)	
7B. Primary completion rate (proportion of children who complete primary schooling)	1999--2002	2003	MECOVI	Number of persons with complete primary schooling by age	---

**Appendix 4. MDG Indicators (cont.)**

<b>Indicator (and component, if relevant)</b>	<b>Historical availability 1990--2002</b>	<b>Next likely available data, and future frequency</b>	<b>Data sources</b>	<b>Primary data components and methods</b>	<b>Comments</b>
8. Adult literacy graduates	2001	---	Census	Number of people 15 years and above who declare to able to read and write/Total number of people 15 years and above	Self-declaration of literacy
	1999--2002	2003	MECOVI	Number of people older than 5 that declare themselves as able to read and write	Same as census
	2000	---	MICS	Proportion of population able to read a letter or a journal	Same as 6 for MICS
<b>Gender equality</b>					
9. Ratio of girls to boys in primary, secondary and tertiary education	1996--2002	2003	SIE	Number of pupils by grade and sex	---
10. Ratio of literate women to men 15--24 years old	2001	---	INE (Census)	Number of men and women self-declaring ability to read and write	---
11. Share of women in wage employment in the non-agricultural sector	1999-2002	2003	MECOVI	Number of women declaring paid employment by economic activity	---
12. Proportion of seats held by women in national parliament	---	Yearly	National parliament	Number of seats occupied by women  Total number of seats in the parliament	Each Department is assigned a number of seats in the parliament

**Appendix 4. MDG Indicators (cont.)**

<b>Indicator (and component, if relevant)</b>	<b>Historical availability 1990--2002</b>	<b>Next likely available data, and future frequency</b>	<b>Data sources</b>	<b>Primary data components and methods</b>	<b>Comments</b>
<b>Health</b>					
13. Under-5 mortality rate	1994, 1998 2001	2003	ENDSA & MICS	Number of under-5 deaths by age groups of mothers Number of births by age groups of mothers	Mother's age-specific infant mortality rates are combined to estimate the indicator
14. Infant mortality rate	1994, 1998 2001	2003	ENDSA & MICS	Number of infant deaths by age groups of mothers Number of births by age groups of mothers	Mother's age-specific infant mortality rates are combined to estimate the indicator
15. Proportion of 1-year-old children immunized against measles	1995-1998, 2003  1994, 1998 2000	Annual  2003 ---	SNIS  ENDSA & MICS	Number of children immunized in collaborating institutions  Proportion of children between 12 and 23 months old vaccinated (immunization calendar according to diseases)	Under-coverage in several Departments  Data are collected from vaccination cards and from mothers' declarations
<b>Maternal health</b>					
16. Maternal mortality ratio	1995	2003	SNIS	Number of deaths by causes related to pregnancy  Total number of women 15 to 49 years old	Denominator is based on census results for 2001

**Appendix 4. MDG Indicators (cont.)**

<b>Indicator (and component, if relevant)</b>	<b>Historical availability 1990--2002</b>	<b>Next likely available data, and future frequency</b>	<b>Data sources</b>	<b>Primary data components and methods</b>	<b>Comments</b>
17. Proportion of births attended by skilled health personnel	1999--2002 (provisional)  1995--98, 2003  2001  1994,1998	Annual  Annual  ---  2003	MECOVI  SNIS, INE  MICS  ENDSA	Total number of women 13 to 50 years old  Number of births attended last year  Total number of births in specialized medical institutions  Number of births attended last year by skilled staff  Number of births attended last year by skilled staff	Skilled staff includes doctors, nurses, and assistant nurses    Under-coverage in several Departments  Same definition for skilled staff  Same definition for skilled staff
<b>HIV/AIDS, malaria, and other diseases</b>					
18. HIV prevalence among 15--24 year old pregnant women	1997, 1998, 2000, 2001, 2002	Annual ---	Ministry of Health, sentinel surveillance	Number of HIV positive cases among the pregnant women attending specific institutions	The Sentinel Surveillance considers some particular risk populations (including pregnant women) but in specific institutions of the large cities (La Paz, Cochabamba, Santa Cruz, El Alto)
19. Condom use rate of the contraceptive prevalence rate	1998	2003	ENDSA	Proportion of men and women with past and current use of condom	---
19A. Condom use at last high-risk sex	---	----	---	----	---
19B. Percentage of population aged 15--24 with comprehensive correct knowledge of HIV/AIDS	2001	---	MICS	Proportion of women that identify ways of preventing infection, wrong ideas about HIV/AIDS, transmission ways from mother to child, where to test.	---

**Appendix 4. MDG Indicators (cont.)**

<b>Indicator (and component, if relevant)</b>	<b>Historical availability 1990--2002</b>	<b>Next likely available data, and future frequency</b>	<b>Data sources</b>	<b>Primary data components and methods</b>	<b>Comments</b>
19C. Contraceptive prevalence rate	1994, 1998	2003	ENDSA	Proportion of men and women with past and current use of different methods	---
20. Ratio of school attendance of orphans to school attendance of non-orphans aged 10–14	---	---	---	---	---
21. Prevalence and death rates associated with malaria	---	---	Programa Nacional de Control de la Malaria	Number of malaria cases for 10.000 inhabitants  Number of deaths from malaria	No cases of death from malaria were recorded
22. Proportion of population in malaria risk areas using effective malaria prevention and treatment measures	---	---	---	---	---
23. Prevalence and death rates associated with tuberculosis	1995--2002	Annual, based on monthly reports	SNIS	Number of TB cases assisted  Number of deaths from TB	Undercoverage in several Departments
24. Proportion of tuberculosis cases detected and cured under directly observed treatment short course (DOTS)	1995--2002	Annual, based on monthly reports	SNIS	Number of cases treated under DOTS  Number of cases detected	Undercoverage in several Departments

#### Appendix 4. MDG Indicators (cont.)

Indicator (and component, if relevant)	Historical availability 1990--2002	Next likely available data, and future frequency	Data sources	Primary data components and methods	Comments
<b>Environmental sustainability</b>					
25. Proportion of land area covered by forest	2001	---	Superintendencia Agraria	Area with forests Total area of the country	---
26. Ratio of area protected to maintain biological diversity to surface area	2001	---	SERNAP	Area protected Total area of the country	---
27. Energy use (kg oil equivalent) per \$1 GDP (PPP)	---	---	---	---	---
28. Carbon dioxide emissions (per capita) and consumption of ozone-depleting CFCs (ODP tons)	2000	---	Latino-American & Caribbean; lower middle income countries	---	---
29. Proportion of population using solid fuels	1999--2002	2003	MECOVI	Proportion on households using different energetic inputs	Does not include specifically coal
30. Proportion of population with sustainable access to an improved water source, urban and rural	1999--2002		MECOVI	---	Improved water sources are: piped water, public tap, borehole or pump, protected well, protected spring or rainwater  Availability is defined by at least 20 l. /person-day in a source less than 1 km far away the dwelling.
	2000		MICS	Proportion of households with at least one improved source of water	Same as MECOVI

**Appendix 4. MDG Indicators (cont.)**

Indicator (and component, if relevant)	Historical availability 1990--2002	Next likely available data, and future frequency	Data sources	Primary data components and methods	Comments
31. Proportion of urban and rural population with access to improved sanitation	2001  1999--2002  2000	---  2003	CENSUS  MECOVI  MICS	---  Proportion of households with bathroom or latrine, connected to an elimination method  Proportion of households with access to at least one method of elimination	---  Elimination methods include sewerage, septic tanks and pit  Sewers or septic tanks, poor-flush latrines and simple pit or ventilated improved pit latrines are assumed to be adequate
32. Proportion of households with access to secure tenure		2003	MECOVI	Proportion of households by different tenure categories	---

### Appendix 5. Nationally Representative Data Sources Related to Key Indicators

Data sources	Latest year & institution responsible	Periodicity	Concepts, methods, definitions relevant to indicators (including coverage)	Level of disaggregation (sex, geography, etc.)
<b>Nationally representative household/social surveys</b>				
<b>Censo de Población</b> Population Census	2001, INE	Every 10 years (last, 1992 and 2001)	<p><b>Poverty:</b> Allows the calculation of Poverty as Unsatisfied Basic Needs using the following variables: <i>Housing materials, access to sanitation and water, energy inputs, literacy, access to health services</i></p> <p><b>Education:</b> Includes variables on highest education level and current attendance to school.</p> <p><b>Health:</b> % of mothers that gave birth last year assisted by skilled staff</p>	<p>Census sections (intra-municipal)</p> <p>Urban/rural</p> <p>Gender of the head of household</p> <p>Dynamic tables are available in <a href="http://www.ine.gov.bo">www.ine.gov.bo</a></p>
<b>Encuesta Nacional de Demografía y Salud (ENDSA)</b>  (National Demographic and Health Survey)	1998, INE Carried out with technical assistance of Macro International Inc.  Ongoing: 2003	4--5 years (1989, 1994)	<p><b>Coverage:</b> Women between 15 and 49 years old. The 1998 survey includes a module on male health.</p> <p><b>Infant and child mortality:</b> Both numerator and denominator are estimated from the ENDSA sample, with retrospective data (last 5 years).</p> <p><b>Contraception:</b> Use of different contraceptive methods</p> <p><b>Maternal health:</b> Includes questions on prenatal check-ups, assistance to births by skilled staff</p> <p><b>Immunization:</b> Includes questions on types of vaccination for the two last born children</p> <p><b>Underweight:</b> Includes questions on birth weight for last newborns</p> <p><b>Education:</b> Includes questions on the education level and attendance to school to all members older than 6</p> <p><b>Access to safe water:</b> Includes questions on access to water by type of connection</p> <p><b>Other variables:</b> Includes questions related to energy inputs, housing materials, and others that may be used to define Unsatisfied Basic Needs.</p>	<p>Urban/rural for each Department, region: <i>Valle, Llano, Altiplano.</i></p> <p>Microdata are available on the Internet (<a href="http://www.ine.gov.bo">www.ine.gov.bo</a> and <a href="http://www.measuredhs.com">www.measuredhs.com</a> of Macro International)</p>

### Appendix 5. Nationally Representative Data Sources Related to Key Indicators (cont.)

Data sources	Latest year & institution responsible	Periodicity	Concepts, methods, definitions relevant to indicators (including coverage)	Level of disaggregation (sex, geography, etc.)
<p><b>MECOVI - Encuesta de Hogares</b></p> <p>Household surveys</p>	<p>2002, INE Carried out under the Program for Improving Surveys on Living Conditions (MECOVI)</p> <p>A complete methodological document is included in the publication of 2002 results</p>	<p>Annual since 1999</p>	<p><b>Poverty:</b> The Foster-Greer-Thorbecke Index is obtained by using Income (in the urban area) and Expenditure (in the rural area), and a poverty line calculated by UDAPE that reflects the price of a basket of goods and services.</p> <p><b>Education</b> (HH members &gt; 5 years old). Includes questions on level of education, current enrollment, attendance to school, causes of non-attendance</p> <p><b>Health:</b> Specific questions for age groups..</p> <ul style="list-style-type: none"> <li>• Diarrhea, respiratory diseases (&lt; 5 years old)</li> <li>• Immunization (&lt; 3 years old)</li> <li>• Maternity, access to maternal care services (women between 13 and 50 years old)</li> <li>• Health status, access to health services (all members).</li> </ul> <p><b>Access to safe water:</b> Classification by the type of connection to water. No direct information about water treatment.</p>	<p>Strata: Urban (capital cities + El Alto; towns &gt; 10,000 inhab., towns 2,000--10,000 inhab.); Rural (towns 250-2,000 inhab.; towns &lt; 250 inhab.)</p> <p>Regions: <i>Valle, Llano, Altiplano</i></p> <p>Results can be disaggregated by sex of head of household</p> <p>Micro-data are available on the internet (<a href="http://www.ine.gov.bo">www.ine.gov.bo</a>)</p>
<p><b>Multiple Indicator Cluster Survey (MICS)</b></p>	<p>2000, carried out by Ministry of Health with support of UNICEF</p>	<p>---</p>	<p>Standardized international survey on a sub-sample of the ENDSA 1998 survey. Addressed to fertile women, children under 5, and children under 17 (in the household questionnaire).</p> <p>Topics included are infant and child mortality, access to improved water and sanitation, primary education completion rate, school attendance, literacy, pregnant women assisted by skilled staff, contraceptive prevalence, immunization, and HIV/AIDS.</p>	<p>---</p>

### Appendix 5. Nationally Representative Data Sources Related to Key Indicators (cont.)

Data sources	Latest year & institution responsible	Periodicity	Concepts, methods, definitions relevant to indicators (including coverage)	Level of disaggregation (sex, geography, etc.)
<b>Administrative systems</b>				
<b>Sistema Nacional de Información en Salud (SNIS)</b>  National Health Information System	November 2003, Ministry of Health	Monthly reports, with 1--2 month delay for dissemination through annual aggregation (available 1996--2002)	<b>Immunization:</b> % of children immunized against measles (12 to 23 month-old), DPT, polio, other. Rates are calculated using population projections as denominator (estimates by INE and CELADE).  <b>Maternal health:</b> % of births attended in health institutions, prenatal check-ups  <b>Treatment of diarrhea and pneumonia:</b> Number of children under 5 treated of diagnosed diarrhea and pneumonia. <i>Undercoverage for certain Departments and private establishments</i>	Municipal level, type of establishment.
<b>Informes de Vigilancia Epidemiológica</b>  Epidemiological reports	November 2003, Ministry of Health	Monthly reports, with 1--2 month delay for dissemination through Internet	Includes incidence of measles, AIDS, and other epidemics.	Municipal level, type of health establishment, month.
<b>Sistema de Información en Educación (SIE)</b>  Education MIS	Ministry of Education	Annual 1996--2002	<b>Enrolment rates:</b> Numerators are provided by the EMIS, denominators are based on population projections by INE and CELADE  <b>Completion rate:</b> Numerator = number of children enrolled in grade $n+5$ in year $t+5$ ; Denominator = number of children enrolled in grade $n$ in year $t$	Data by gender, Department and type of establishment Data are available on the Internet: <a href="http://www.minedu.gov.b">www.minedu.gov.b</a>
<b>Registro Civil</b>  Vital registration system	Ministry of Interior ( <i>Corte Electoral Nacional</i> )	Continuous administrative activity	Register of vital facts: births, deaths, and marriages. <i>Undercoverage has been estimated at 63% for deaths and 34% for births (Pan-American Health Organization, 1999)</i>	Municipal level

## Appendix 6. Estimation of Costs and Levels of Support for the Statistical System

In the absence of the Strategic Statistical Development Plan and the Statistical Master Plan to translate the strategic vision into concrete actions plans, it is difficult to draw up the list of existing statistical activities and new investment activities to upgrade the capacity of the statistical system and associated costs for doing so.

During the past six years, there has been large fluctuations in the funding level for the National Statistical Office (INE), with lumpy projects such as the population census (\$13 million, 2000--02) constituting a large component of the changes. The MECOVI program also was instrumental in mobilizing more than \$2 million to collect the surveys of living conditions during the past five years. Implemented every five to six years, the ENDSA also is a big ticket item in the INE's statistical activities. In all three undertakings, donors support has been crucial to carrying out the projects.

In the meantime, INE's budget from the national treasury has been declining throughout the period, both in terms of the budget share and in absolute amount. Downward trends of the allocation from the national treasury combined with volatility of international cooperation projects makes it difficult to project the necessary costs for upgrading the statistical capacity in a sustainable manner without heroic assumptions on the desired statistical upgrading.

One proposal that has been floated among the donor community calls for earmarking of about 2 percent of the HIPC resources to be invested in upgrading the statistical capacity to monitor and evaluate the PRSP performance. The proposal will be accompanied with a strategic statistical plan to install and maintain the statistical system that would respond to the needs of the users of the statistical information, and will be translated into a multi-year integrated plan with corresponding budgets to ensure stability and predictability of the statistical work programs.

A six-year simple average of the INE's resources by sources of funding yields the baseline budget data that is made up of \$2.5 million from the national treasury and approximately \$3.5 million from the donors per year. This exercise assumes spreading out of the population census cost over 10 years, but did not include the costs for rolling out the Municipal MECOVI data collection.

### Funding Sources of Bolivia's National Statistical Office, 1998--2003 (\$millions)

	1998	1999	2000	2001	2002	2003
National treasury	3.2	2.9	2.6	2.4	2.2	1.8
<i>Contravalor</i>	0	0.3	0.7	0.3	0.1	0.3
Own resources	0.4	0.2	0.3	0.2	0.2	0.1
Local co-financing	2.3	0.1	2.3	1.2	0.8	0.1
Subtotal	5.9	3.6	5.9	4.2	3.3	2.4
Projects (intl. coop.)	2.2	0.9	8.5	9.7	4.5	0.7
% of total	27.4%	25.9%	144.6%	233.6%	133.1%	29.9%
<b>Total</b>	<b>8.1</b>	<b>3.6</b>	<b>5.9</b>	<b>4.2</b>	<b>3.3</b>	<b>2.4</b>