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# NICARAGUA

## GENERAL SITUATION AND TRENDS

### Socioeconomic, Political, and Demographic Overview

Nicaragua is located in the middle of the Central American isthmus and has a surface area of 130,682 km<sup>2</sup>. The country is divided topographically into three regions: Pacific, Atlantic, and central. The population is unevenly distributed. The majority is concentrated in the Pacific region, which occupies 15.3% of the national territory but has 61.5% of the total population (with poverty levels ranging from 5% to 24%) and 76.4% of the urban population. The central region, with 33.9% of the total area, has 32.6% of the population (with poverty levels ranging from 15% to 35%), with most inhabitants living in rural areas. The Atlantic region, which occupies 50.9% of the national territory, has only 5.9% of the total population (with poverty levels ranging from 35% to 45%).

The Government that was elected in 1990 inherited a country recovering from war, with a divided and polarized society. It had to address three major problems that demanded rapid solutions: putting a definitive end to the war, curbing hyperinflation, and laying the foundation for sustainable economic growth, which entailed resolving property ownership disputes and promoting private sector investment.

In addition to pursuing stabilization of the exchange rate and a restrictive monetary and credit policy, the core of the Government's economic adjustment program sought to reduce overall spending in the public sector to a level that could be financed out of regular revenues, foreign donations, bilateral loans, and credits from multilateral institutions. The adjustment plan also called for privatization of State-run enterprises, reduction in the number of public officials, and liberalization of international trade.

As of 1996, the Nicaraguan economy was continuing to grow at a sustained rate, as it had since 1994. This growth is a reflection of government efforts to consolidate stabilization

programs with economic growth. In this context, the gross domestic product (GDP) rose for the third consecutive year, increasing 5.5% in 1996, the highest growth rate in 17 years. At the same time, the GDP per capita grew 2.3%.

Several factors contributed to growth of the GDP during 1996; the principal ones are macroeconomic stability, opening the economy to foreign investment, and the dynamics of the investment process in the private sector. The sectors that experienced the greatest growth were agriculture, fishing, manufacturing, construction, commerce, and services.

In 1996, the economically active population increased by 3.1%, similar to the previous year's growth. The employed population increased by 5.8%, and open unemployment decreased 8.8%, a trend that was consonant with the growth in the GDP. This was possible thanks to the program of public investment, the boom in industrial free trade, temporary employment programs implemented by the Fund for Emergency Social Investment, and creation of jobs in the agricultural sector.

During the first half of 1996, the average monthly inflation rate was 0.92%, higher than during the same period the previous year (0.77%). The rise in inflation began to slow in July, and by the third quarter it had dropped to an average of 0.13%; nevertheless, in the month of October the inflation rate was 2.6%, basically because of increases in the prices of beans, rice, and butane gas. In late 1996, the cost of the basic urban market basket of 53 products in the city of Managua was C\$ 1,225.60—13.6% higher than in 1995.

In 1996 the wage policy in the public sector continued to be determined by the process of structural adjustment and reduction of spending that has been under way since 1991; salaries in the public sector have remained frozen. In the private sector, on the other hand, employers continued to apply a policy of market determination of wages, except for the legal minimum wage. The average nominal wage increased 9.1% at the national level with respect to the previous year, although for central government employees the increase was only 2.8%. Wages in the Nicaraguan Social Security Institute

(INSS) increased 7.6%, mainly because of adjustments in the private sector. The sectors in which wages increased the most were transportation, agriculture, and mining (23.4%, 14.7%, and 12.5%, respectively).

The volume of exports increased from an annual average of US\$ 282 million in 1985–1989 to over US\$ 500 million in 1995. That same year, the value of imports amounted to US\$ 18 million. The per capita debt (US\$ 2,600) exceeds annual per capita income (US\$ 407).

The most important changes stemming from the economic policy applied during the period 1990–1996 include reduction of the foreign debt from US\$ 10,220 million to US\$ 5,517 million; elimination of hyperinflation, which ranged from 3.5% in 1992 to 11.1% in 1995; renewal of economic growth, which was 3.3% in 1994 and 4.2% in 1995; a fixed exchange rate with a 1% monthly margin of fluctuation; reduction of current spending in the nonfinancial public sector, from 42.5% of GDP in 1990 to 21% of GDP in 1994; growth of public investment as a percentage of GDP, from 2.5% in 1990 to 14.2% in 1994; privatization of foreign trade; reduction in the number of public employees by up to 60% in 1994; simplification of the tax system and reduction of tax rates in order to stimulate domestic and foreign public investment; completion of the privatization of State-run enterprises in 1995; opening of private banks in 1991; and establishment of a stock exchange.

The country's social policies have been guided by its economic adjustment policies and therefore have prioritized mechanisms to optimize social spending. Emergency social funds have been established to compensate for the reduction in earnings of the poorest groups, self-help activities have been promoted, and community efforts have become an important strategy for combating poverty. The Government has designed several programs to alleviate poverty, among them the Social Investment Fund, the National Reconciliation and Rehabilitation Program, the Action Fund for Oppressed Sectors, the Community Employment Fund, and the Cooperative Production Program.

Nicaragua is subdivided into 16 departments, 2 autonomous regions, and 145 rural or semiurban *municipios*. Starting in 1990, in the context of State reforms, a process of decentralization was launched with a view to strengthening the *municipios* as the principal managers of local socioeconomic development and providers of basic services. According to the 1995 census, the population totaled 4,139,486 and women made up 52% of the total. As for age structure, 45.4% of the population belonged to the group aged 0–14 years, 51.8% to the group aged 15–64, and 2.8% to the group 65 and over. The results of a quality-of-life survey carried out by the National Statistics and Census Institute (INEC) in 1993 indicated that 75% of Nicaraguan households had one or more unmet basic needs and 44% lived in conditions of extreme

poverty. In rural areas, the proportion of households in extreme poverty was 60%.

In 1996 the economically active population numbered 1,534,100 (34% of the total population), of which 58% were male and 42% were female. The unemployed population totaled 245,600 inhabitants (16.1%), of which 45% were male and 55% were female.

Life expectancy at birth increased from 48.5 years in the period 1960–1965 to 66.2 years in 1990–1995. In rural areas, life expectancy is almost 10 years lower, although females have a higher life expectancy than males. The estimated birth rate for the period 1990–1995 was 40.5 per 1,000, and the fertility rate was 5.0 children per woman.

Until the 1940s, the population grew at a moderate rate, but then the country entered a phase of demographic transition, characterized by a steady decline in total mortality, which fell from 22.7 per 1,000 in 1950–1955 to 6.8 per 1,000 in 1990–1995, and a considerable decrease in fertility, which dropped from 7.3 children per woman in 1950–1955 to 5.0 in 1990–1995. As a consequence of these changes, the natural population growth rate accelerated and remained at an annual average rate of around 3% until the end of the 1980s. Hence, the size of the national population tripled between 1950 and 1990, rising from 1.1 million people in 1950 to 3.6 million in 1990 and to 4.1 million in 1995.

Between 1940 and 1995, as a result of a steady migration from the country to the cities, the percentage of the population living in urban areas gradually increased from 30% to 57%. Nicaragua has thus become a predominantly urban country, although a large proportion of the population in the capital city is of rural origin.

Internal migration takes place, for the most part, from rural to urban areas. The department of Managua receives almost 40% of internal migrants, but it attracts fewer migrants than it did 20 years ago. In rural areas, internal migration flows toward new agricultural areas. According to INEC, 80% of these migrants lack any type of public health care services. It is estimated that in the period 1985–1995 more than 350,000 people migrated from one area of the country to another.

Most migrants to urban areas are women (60% of all migrants and 67% in the 15–29 age range, according to the 1995 census). In 1995, 59% of all migrant women worked in the commerce and service sectors, and 27% were unemployed. As a consequence of diminishing economic activity in the country starting in 1990, especially agricultural exports, the volume of migration to Costa Rica began to exceed that of internal seasonal migration. It is estimated that there are currently some 350,000 illegal Nicaraguan immigrants in Costa Rica and that 20,000–30,000 people emigrate there annually. The departments of Chontales, Boaco, Matagalpa, Estelí, León, and Granada generate more than 65% of all migration, internal as well as international.

## Mortality Profile

Of all the variables of population growth, the reduction in mortality is the demographic component that has had the greatest impact on the size and age structure of the population. Underregistration of mortality in 1995 was estimated at 56%. Based on the Sociodemographic Survey of 1985 (ESDENIC-85), the total mortality rate was estimated at 10.1 per 1,000 population. The leading causes of death in the period 1990–1995 were diseases of the circulatory system, intestinal infectious diseases, and certain conditions originating in the perinatal period. The number of deaths reported by the National Vital Statistics System (SINEVI) has shown a decrease since 1985, which may indicate an increase in underreporting. However, in the groups aged under 1 year, 1–4 years, and over 45 years, the rates have remained more or less stable. For the period 1990–1995, the annual crude death rate is estimated at 6.8 per 1,000 population, with an average of 28,000 deaths annually. The percentage of deaths certified by a doctor is 50%, and the percentage of deaths attributed to “signs, symptoms, and ill-defined conditions” is 5%.

In 1984, the official statistics on maternal mortality indicated a rate of 47 per 100,000 live births, a figure that reflects significant underregistration. In 1988, based on indirect evaluations, the real rate was estimated at 87 per 100,000 live births, and in 1990 it was estimated at around 100 per 100,000. The statistical yearbooks and time series of the Ministry of Health reveal only hospital death rates, which ranged from 95 maternal deaths per 100,000 live births in 1983 to 73 in 1987, with a high of 106 in 1985. Since 1988, the reported rates have included deaths occurring in health care institutions as well as at home.

In 1991, under the Master Health Plan, it was estimated that maternal mortality was around 150 per 100,000 live births. This figure was derived on the basis of data from SINEVI, after correcting for underregistration and adjusting for the total mortality rates estimated by INEC. An analysis done in 1995 of the period 1991–1995 indicates that maternal mortality increased from 93 to 155 per 100,000 live births. This increase reflects the effort to improve data collection at the local level, but it also shows that much remains to be done in this area. The causes of maternal death are associated with conditions that generally develop in the last half of pregnancy, including hemorrhage, hypertension, and sepsis, although abortion is also an important cause. High maternal mortality rates are linked to the prevalence of several reproductive risk factors in the female population, notably the large number of children per woman and high specific fertility rates in women under 19 and over 35 years of age. Adolescent pregnancy accounts for almost 28% of all pregnancies.

## SPECIFIC HEALTH PROBLEMS

### Analysis by Population Group

#### *Health of Children*

The ESDENIC-85 survey estimated the infant mortality rate at 71.8 per 1,000 live births; for 1996, the rate was estimated at 58 per 1,000 live births. Infant mortality rates in the departments of Matagalpa, Jinotega, León, and Chinandega are higher than the national average; the departments of Madriz, New Segovia, Estelí, Masaya, Rivas, Chontales, and Boaco have moderately high rates, around the national average; and the department of Managua has rates below the national average.

Deaths of children under 1 year of age constituted 28.7% and 30.8% of all deaths in 1988 and 1990, respectively, and 24.1% in 1991. The trend has been downward, and for 1996 it is estimated that the proportion decreased to about 21%. The leading causes of death among children under the age of 1 year are intestinal infectious diseases, certain conditions originating in the perinatal period, acute respiratory infections, congenital anomalies, and malnutrition.

In 1995, children under 5 accounted for 5% of all deaths. In 1995, the population aged 5–14 made up about 30% of the total population and accounted for 3.5% of all registered deaths. Several communicable diseases—which are associated with poverty and unmet basic needs—continue to account for a significant proportion of mortality (31.3%), and the proportion of deaths due to accidents and violence (30.2%) and to degenerative diseases (10%) is increasing.

#### *Health of Adolescents*

The adolescent population includes the group aged 10–19 years, which makes up 25.6% of the total population. It is estimated that 38.8% of adolescents aged 15–19 are employed and that the specific fertility rate for adolescents is the highest in Central America. Normal childbirth was associated with most of the discharges among female adolescents; among males the main causes are appendicitis and fractures resulting from accidents. The main causes of death for both sexes are accidents, drowning, suicide, and self-inflicted injuries.

#### *Workers' Health*

The number of workers registered by the Department of Occupational Risks within the INSS decreased from 214,675 in 1992 to 203,489 in 1995; 3,430 and 3,275 work-related ac-

cidents were reported in those two years, respectively. The number of deaths recorded in the Registry of Work-Related Accidents maintained by the Ministry of Labor decreased from 27 in 1992 to 11 in 1996.

Responsibility for health care for workers has been transferred from the Ministry of Labor to the Ministry of Health, which has a special occupational health program within the Department of Public Health, but the program lacks an operational plan. As of the 1995 census, all persons over the age of 10 years are considered members of the economically active population (EAP). This decision reflects the economic reality of the country—which is predominantly agricultural—and the fact that many children work. Some 24,000 children aged 10–14 work in the informal sector and 6,000 work in the formal sector.

Eighty percent of chemical products used in the country are pesticides. In 1996 the rate of acute pesticide poisoning was 58 per 100,000 population, although it is estimated that up to 9.6% of cases are unreported.

## Analysis by Type of Disease or Health Impairment

### Communicable Diseases

**Vector-Borne Diseases.** Malaria cases, which had decreased from 35,785 in 1990 to 27,653 in 1991 and to 26,866 in 1992, increased to 47,798 in 1993 and to 70,235 cases in 1995, a national record. The number of cases of malaria due to *Plasmodium falciparum* also increased that year (2,926 cases and 16 deaths). The parasite distribution in 1995 was 4.41% *P. falciparum* and 95.6% *Plasmodium vivax*. One of every four cases of malaria in the country occurs in the city of Managua. Transmission is favored by factors such as rural-to-urban migration; the emergence of squatter settlements in unsanitary areas; an increase in rainfall during recent years, with the consequent formation of immense swamps in Managua's coastal areas; high turnover of the personnel who work in vector control activities; shortage of resources, including transportation and supplies; and a lack of intra- and interinstitutional coordination.

Dengue has been endemic in Nicaragua since 1985, and outbreaks of the illness have occurred in various areas of the country. As of 15 October 1994, vector control measures have been centralized and activities aimed at eliminating breeding sites in the city of Managua have been stepped up, with a view to reducing transmission of the disease. Serotype 4 was introduced into the country in 1992–1993, and serotype 3 followed in 1994, causing an epidemic with 20,469 reported cases, 1,511 hospitalizations, and 6 deaths; the departments of León and Managua were most heavily affected. In 1995, a total of 19,260 cases of dengue were reported, but the number

dropped to 2,792 in 1996 (a reduction of 82%). Only 10% to 15% of the dengue cases reported are laboratory confirmed. One of the components of epidemic surveillance that is most in need of improvement is laboratory confirmation through a system of sampling.

On 19 October 1995 the epidemiological surveillance system of León reported the death of six people who resided in the *municipio* of Achuapa, all from an acute febrile illness that quickly evolved into a severe respiratory disorder. On 6 November, the Minister of Health, with support from the United States Centers for Disease Control and Prevention, identified the causal agent and reported that the disease was leptospirosis. During the months of October and November, in the *municipios* of Achuapa and El Sauce, 17,847 patients were examined and 1,904 suspected cases of leptospirosis were detected. Between October and November the total number of probable deaths due to leptospirosis reached 48 in the country as a whole. The ages of the victims ranged from 4 to 60 years; the average age was 18. The male/female ratio of cases was 1.4:1. A large-scale study of the animal population is currently under way; preliminary results of pathological-anatomical studies indicate that 90% of the rats captured in Achuapa had leptospores in their renal tissue. In addition, serologic tests in dogs have shown high titers of antibodies to the *canicola* serovar.

Between 1994 and 1996, a total of 2,723 cases of leishmaniasis were reported: 2,605 cases of cutaneous leishmaniasis, 76 of the mucocutaneous form, and 42 of visceral leishmaniasis. Between 1988 and 1996, the parasitology laboratory of the National Diagnosis and Reference Center diagnosed 44 cases of visceral leishmaniasis in the country. The magnitude of underreporting of information was demonstrated by a study conducted by the nongovernmental organization Médicos del Mundo [Doctors of the World] of Spain, which carried out active case finding over three months in coordination with the integrated local health system (SILAIS) of Río San Juan and found 1,140 cases of cutaneous and mucocutaneous leishmaniasis in only three *municipios*. That figure was higher than the 946 cases registered by the national reporting system in 1996 for the entire year. In addition, several cases of atypical cutaneous leishmaniasis, a clinical variant of cutaneous leishmaniasis, were detected for the first time in the country in 1996.

Between 1992 and 1996 the National Blood Center of the Nicaraguan Red Cross detected 358 donors who were seropositive for *Trypanosoma cruzi*; 249 of them could not be confirmed externally because of a lack of resources.

**Rabies and Other Zoonoses.** An average of two cases of urban human rabies occurred per year during the 1970s, three cases per year in the 1980s, and one case per year in 1990–1996 period. The incidence of canine rabies was 150

cases per year in the 1970s, 83 cases per year in the 1980s, and 39 cases per year in the period 1990–1996. The departments of Managua, León, Masaya, Granada, and Chinandega have the highest incidence of the disease.

**Vaccine-Preventable Diseases.** The incidence of vaccine-preventable diseases (poliomyelitis, measles, whooping cough, diphtheria, and tetanus) has shown a downward trend in recent years as a result of the increase in vaccination coverage, which in 1996 was 94% for polio vaccine, 83% for DTP, 83% for measles vaccine, and 100% for BCG among children under 1. The last case of poliomyelitis was reported in 1982, and eradication of the disease was certified in 1994.

The last measles epidemic occurred in 1990, when 18,225 cases (37% in persons over the age of 10) and 772 deaths were reported. That year, measles accounted for 6% of all deaths from all causes at the national level. In recent years, the incidence has diminished, thanks to the implementation of elimination strategies, and it has been more than three years since a case was confirmed in the laboratory. In 1994, 587 suspected cases were reported; in 1995, 195; and in 1996, 302. However, measles was ruled out in all these cases.

The last case of diphtheria was reported in 1987. Whooping cough remains endemic, but the number of reported cases decreased from 242 in 1990 to 14 in 1996.

The number of reported cases of neonatal tetanus fell from 90 in 1980 to 17 in 1990 and to 1 in 1996. Since 1990, efforts have been under way to increase the coverage of vaccination with two doses of tetanus toxoid among women of childbearing age throughout the country and especially in known high-risk areas.

**Cholera and Other Intestinal Diseases.** According to SINEVI, 2,166 deaths from diarrhea were registered in 1990, 75.6% among children under 1 year old. In 1991, the cholera control campaign yielded a reduction of 45% in deaths in the various age groups compared with 1990; among children under 1, the reduction was 48%. In 1993 and 1994, the surveillance system registered 255,000 and 264,366 cases of diarrhea, respectively. Up to 1990, the number of deaths exceeded 2,000 annually; in the period 1991–1996, the number of deaths decreased to an average of 1,000 annually. In the period 1993–1995, an average of 7,677 cases of cholera and 172 deaths were reported annually. In 1996, 2,979 cases and 82 deaths were reported (a reduction of 61% with respect to the average number of cases during the period 1993–1995 and a reduction of 52% in relation to the average number of deaths during the same period).

**Chronic Communicable Diseases.** In the 1990–1995 period, an average of 2,836 cases of tuberculosis and 230 deaths were registered each year. The cure rate increased to 81%, and

the treatment abandonment rate dropped to 7%. In 1995, the number of deaths decreased to 185, compared to the average for the period 1990–1995, with a mortality rate of 4.5 per 100,000 and an incidence of 69 per 100,000. To date, no representative studies on the prevalence of HIV infection and AIDS among tuberculosis patients have been conducted.

As of 1995, the reported prevalence of leprosy was 0.997 case per 10,000 population. There were 413 cases of the disease, distributed in 11 SILAIS, of which 45% were in Managua, 27% were in Chinandega, and 10% were in León.

**Acute Respiratory Infections.** During the period 1993–1995, an average of 1 million cases of acute respiratory infections were reported annually; the average number of deaths during that period was 1,200.

**AIDS and Other STDs.** Between 1987 and the first half of 1995, a total of 96 cases of HIV infection and 114 cases of AIDS were detected. Of the AIDS patients, 71 died during that period; 91% of those affected were under 44 years of age. Of the total number of cases, 86% were in males and 14% were in females, with a male/female ratio of 6:1. Sexual transmission accounted for 94% of the cases; 54% were in heterosexuals, 25% in homosexuals, and 15% in bisexuals. With regard to geographic distribution of cases, 54% occurred in the department of Managua; 6% each in the departments of Chinandega, León, and Rivas; 5.2% in New Segovia; and fewer than 3% in the rest of the country.

In 1995, 9 cases of congenital syphilis and 490 cases of acquired syphilis were reported, making the incidence 0.2 per 100,000 live births and 11.8 per 100,000 population, respectively.

#### *Noncommunicable Diseases and Other Health-Related Problems*

Between 1992 and 1995, mortality from cardiovascular diseases increased from 64.0 to 71.0 per 100,000 population; mortality from malignant neoplasms, from 26.6 to 28.5; mortality from hypertensive disease, from 3.1 to 10.8; and mortality from diabetes mellitus, from 8.9 to 9.6 per 100,000 population.

**Nutritional Diseases and Diseases of Metabolism.** According to the National Survey on Micronutrient Deficiencies carried out in Nicaragua in 1993, the caloric intake of Nicaraguan children was only 88.9% of the recommended daily allowance. The survey found that almost one of every three children suffers from vitamin A deficiency and iron-deficiency anemia; two of every three preschool children suffer from, or are at risk for, vitamin A deficiency; and one of every

three adult women suffers from anemia, caused mainly by iron deficiency. The deficiencies in intake of calories, iron, and vitamin A can be attributed to insufficient availability and access, both geographic and economic, as well as to cultural attitudes that may limit the consumption of available vegetables. High rates of morbidity, especially from infectious diseases (diarrheal diseases and acute respiratory infections), also contribute to the prevalence of micronutrient deficiencies in children.

## RESPONSE OF THE HEALTH SYSTEM

### National Health Plans and Policies

The mission of the Ministry of Health is to ensure that the population has access to health services that respond to their real and perceived needs and that the health system emphasizes health promotion and prevention of disease through an integrated and humane approach. The major challenges that the Ministry of Health must address in order to fulfill its mission and advance the process of institutional reform are to incorporate new modalities of organization and administration, adopt new financing alternatives, modernize hospitals, promote the protection of investments in infrastructure and equipment, establish and provide a basic package of essential services, prioritize high-risk areas and groups, promote health and prevent diseases, achieve efficiency in the use of resources, and improve management control systems. Work is under way to develop a new health care model that will approach health problems through a preventive, integrated, interprogrammatic, and participatory strategy that addresses risk factors. The country's health profile indicates that priority should continue to be assigned to women and children and that greater attention should be given to adolescents and the elderly. The emphasis in health care for women is on the reproductive stage of life, and the services offered focus on family planning; care during pregnancy, childbirth, and the puerperium; and timely detection of cervical cancer and breast cancer. Health care for children includes monitoring of growth and development, diet and nutritional status, and difficult circumstances that affect child health. For adolescents, prevention of drug addiction and of early and unwanted pregnancy is stressed. Health care for the elderly emphasizes self-care, prevention, and timely treatment of complications as well as solidarity and the responsibility of society for the elderly.

The Constitution of the Republic, the law creating the Unified National Health System, and the provisions contained in various international agreements and instruments form the basic legal and conceptual framework for health care in Nicaragua. However, many laws and legal provisions have become obsolete as a result of the developments that have taken

place in the health sector, heightened concern for the environment, the need for regulation of foods and drugs, and increased attention to patients' rights.

### Organization of the Health Sector

The Ministry of Health is the main provider of health services. It is estimated that the social security system covers 5% of the population and the private sector covers 4%. The Ministry of Health has 873 primary health care units, with potential coverage of approximately 3 million people. Despite the progress made in enhancing the organization of the public health services system, problems persist, notably the shortage of medical and nonmedical supplies, infrastructure and equipment deficiencies, unplanned growth of the units, lack of technical-administrative guidelines, unmet demand for some services, saturation of hospital capacity, and low productivity and inadequate distribution of human resources.

During the 1980s, the infrastructure of the Nicaraguan Social Security Institute and its health resources were transferred to the State and came under the control and administration of the Ministry of Health.

Since 1992, health insurance plans funded by workers, employers, and the State have purchased health services for the insured and their dependents from organized service providers. This model has permitted greater participation by the private sector in the health services market. The INSS continues to play its traditional role as collector of insurance fees, but it has transferred responsibility for health care activities to the 32 health insurance companies. The INSS serves as facilitator and supervisor of health activities in order to assure adherence to minimum quality standards in the delivery of services. The establishment of this health insurance model has made it possible to extend coverage at the national level to 110,269 active plan participants nationwide. The INSS provides 71.3% of the total insurance coverage, reaching 290,000 persons nationwide.

Although the exact magnitude of the private subsystem is unknown, it is estimated that it covers approximately 4% of the total population. The private health care infrastructure consists of 7 hospitals with 200 beds, 200 outpatient clinics, and an unknown number of laboratories and pharmacies.

In the context of State reform, the principal institutions that make up the health sector (the Ministry of Health, the INSS, the nonprofit and for-profit private sector, the Military Health Service, and the various training institutions) are re-examining their strategies with a view to finding better responses to the health problems of the population. The Ministry of Health has introduced needed changes and has decentralized functions to its intermediate structures—the integrated local health care systems (SILAIS)—although further change is required in order to achieve equity, efficiency,

and effectiveness. The social security system has been reoriented toward financing and regulating the medical insurance companies, from which it purchases a basic package of services for its affiliates. The Ministry of Health, through its health care units, provides free care for conditions not covered by the basic package. At present, no services are being provided under the health insurance model to pensioners or retirees, who continue to be covered by the Ministry of Health.

Private medicine has suffered from the country's economic crisis, competition from nonprofit centers, and the development of private services in public hospitals. This situation is exacerbated by the lack of alternative forms of organization for private health care, such as cooperatives, private medical insurance, or prepaid plans. Recently, the number of nongovernmental organizations that provide health services has grown, mainly in the fields of women's reproductive health and health education. These nongovernmental organizations coordinate their activities with the local health systems, although no official coordination mechanism exists. Both the Ministry of Health and the INSS finance services for those they insure, and both institutions regulate the operation of health establishments.

Hospitals currently face two main types of problems: shortages in the supply of basic products (drugs, materials that must be periodically replaced, and linens and clothing), a problem associated with deterioration of the physical infrastructure, and lack of motivation on the part of doctors because of extremely low salaries.

## Health Services and Resources

### *Organization of Services for Care of the Population*

**Water Supply and Sewerage Systems.** The water available for human consumption is sufficient to meet the population's needs. In 1996, 82.4% of the urban population and 30.1% of the rural population had drinking water service. In rural areas, the coverage level has not increased since 1992 because the services and the population have grown at about the same rate. Although much of the urban population continues to be served through household connections, 23.4% receive water from public hydrants. The number of urban and municipal water supply systems has remained at 148. In 1990, 70% of these systems obtained water from underground sources; the remaining 30% used surface sources.

The Nicaraguan Institute of Water Supply and Sewerage Systems (INAA) administers 19 sewerage systems, of which only 7 have their own treatment facilities (stabilization ponds). Lack of treatment and improper final disposal of wastewater pose a serious risk to the environment and to

human health. In the city of Managua, for example, domestic and industrial wastewater is discharged on the banks of Xolotlán Lake without any treatment.

During the 1981–1992 period, the percentage of the population with sewerage services in urban areas decreased from 32% to 29.9%. However, in 1996 the proportion rose again to 32.6%.

The estimated number of housing units in the country, as of 1992, was 621,926, of which 46.6% received drinking water from water supply systems administered by INAA, 21.5% from excavated wells, 12.7% from rivers and ponds, 15.5% from public hydrants, and 3.9% from cistern trucks. As for disposal of excreta and wastewater, 21.9% of the housing units were connected to sewerage systems, 8.1% had cesspools or septic tanks, 55.7% had latrines, and 14.2% had no system.

**Solid Waste Disposal.** Urban sanitation services for collection and final disposal of solid waste are supplied in 69 of the 143 municipal city seats, which, in terms of urban population coverage, represents approximately 35%. With a daily per capita production of solid waste equivalent to 0.5 kg, it is estimated that the urban population produces 1,272.5 metric tons of waste per day; if only about 35% of that amount is collected and eliminated, then there are 827 metric tons of waste in urban areas that are not being properly removed. The waste collected is not being properly disposed of because appropriate environmental impact assessment criteria and techniques are not being applied for selection of sites for municipal waste dumps. In addition, waste disposal is largely unregulated, and only 13% of waste dumps have been certified as sanitary sites. Solid waste is disposed of in open-air dumps, with no planning or control, and no treatment, recovery, or recycling methods are applied.

**Environmental Protection.** There has been a progressive deterioration of natural resources in rural areas, mainly because of aggressive development of new agricultural lands, use of forest lands for agricultural purposes, felling trees for fuel, lack of legislation on use of land and natural resources, and inappropriate farming techniques. It is estimated that deforestation affects some 100,000 hectares of forest per year.

### *Organization and Operation of Personal Health Care Services*

With the exception of some remote areas, the coverage of health services is adequate. The health center is the most frequent source of outpatient care. Health posts, which were designed to be the first point of contact at the primary care level, are used very little, probably because of a lack of personnel and insufficient drugs.

For operation of the SILAIS, the country has 873 service provider units at the primary care level, including 708 health posts, 165 health centers, and 589 beds. At the secondary care level, there are 24 hospitals with 3,930 beds for acute cases and 4 hospitals with 407 beds for chronic cases, for a total of 4,337 hospital beds (1 bed per 968 population).

During the five-year period between 1991 and 1995, the number of patient visits to primary and secondary health care facilities rose from 4.9 million (1.2 visits per person) in 1991 to 6.5 million (1.5 visits per person) in 1995, an increase of 30%. During the first three years of that period, the primary care level accounted for 70% of the total care provided, and in 1995 it accounted for 75%, which appears to indicate greater use of this level; the remaining 25% of care was provided at the secondary level and includes emergency care.

Maternal and child health care showed an increase in absolute figures, consistent with the growth in the target population. Although the number of first prenatal visits decreased 4% overall, the number of first prenatal visits in the first trimester of pregnancy increased 3%, and total prenatal visits showed an upward trend, with relative growth of 29%.

The percentage of hospital deliveries was 45.0% in 1995, lower than the figure of 46% registered in 1991. The highest percentage during the period was achieved in 1993, when 49% of births took place in health care institutions.

In 1995, visits to monitor growth and development increased 20% for children under the age of 1 year and 48% for children aged 1–5 years, as compared to 1991.

Inpatient services (as measured by hospital discharges) increased from 228,000 in 1991 to around 278,000 in 1995. In 1995, acute-care hospitals accounted for 87% of total discharges. The use of bed resources in these hospitals has improved markedly, as evidenced by the fact that the occupancy rate increased from 63.7% in 1991 to 74.2% in 1995, with no increase in the number of beds in these centers since 1992. Hospital discharges per 100 population rose from 5.6 in 1991 to 6.2 in 1995; childbirth was associated with approximately 30% of all discharges.

An increase in major surgeries took place as a result of improvements in operating rooms in 16 hospitals in the country. A noteworthy development was the introduction of outpatient surgery services in hospitals. Previously, the vast majority of surgical procedures were carried out in operating rooms, but beginning in 1991–1992 some procedures began to be performed in delivery and emergency rooms. The most common procedures are laparoscopies for sterilization and ophthalmologic surgeries, but cesarean sections, appendectomies, and herniorrhaphies are also performed.

The number of laboratory tests increased from 3.4 million in 1991 to 5.0 million in 1995, including tests performed at both the primary and secondary levels of care, although the

secondary level accounts for a greater proportion (59% of the total number).

Geographic access to health services is acceptable in urban areas. In Managua, only 13% of the population lives more than 30 minutes' walking distance from a health unit. The figure is 8% in other urban areas of the country. In rural areas, the situation is radically different: the percentage of the population that lives more than two hours' walking distance from a health unit is 33% in the case of hospitals, 22% for health centers, 10% for health posts, and 26% for private physicians.

A growing market of private services exists, but the Ministry of Health continues to be the main provider of services for the Nicaraguan population as a whole. A study of health care financing options identified a sizable private sector that provides care that is more costly but of better quality. Although the social security system offers medical services to approximately 5% of the population, its resources are insufficient and the basic basket of services that it provides is limited. Social security affiliates who have more serious health problems must seek care in health facilities of the Ministry of Health, but there are no agreements for the transfer of funds, so delivery of these services constitutes a de facto subsidy of the social security system.

A study demonstrated that many users pay directly for a significant proportion of the total cost of health services, even in the public sector. Widespread payment for private services, direct payment to public health care providers, and frequent purchases of drugs and supplies by users of public services result in significant out-of-pocket expenditures, which are an important source of health care financing without which the public sector would face tremendous fiscal pressure and users would receive even fewer services. The weight of these economic contributions, however, is not distributed evenly or equitably. In poor rural areas of Nicaragua, families tend to suffer more illness but seek less medical attention than those in urban areas who have higher incomes. In the rural population, the increase in payment for services in public facilities has led to a significant reduction in the use of these services, which has been only slightly offset by patients seeking care from other sources. In the urban population, on the other hand, especially in Managua, similar relative increases have led to changes in the mix of the public services used as well as greater substitution of care from other sources and only a small reduction in overall use of services.

### *Inputs for Health*

The country's policies on pharmaceutical products promote the best possible use of low-cost generic drugs. The essential drugs list contains 234 products; 137 essential drugs

are specified for health centers and 19 for health posts. Often, however, these essential drugs are not available in health centers, which leads to inefficiency in the delivery of care and tends to discredit the health services. Medical prescriptions are required for the dispensing of drugs.

In principle, drugs for the care of mothers and children and drugs used in the treatment of diseases targeted by public health programs, such as tuberculosis, malaria, dengue, and sexually transmitted diseases, can be obtained free of charge in health centers. Nevertheless, these drugs are not always available.

Recent studies indicate that the availability of drugs ranges from 60% to 70% of need. The average amount spent on drugs per episode of illness is C\$ 30.00 for children aged 0–5 years and C\$ 65.00 for those over the age of 6 years. Self-medication and irrational use of drugs are common. Government spending on drugs totaled US\$ 32.2 million in 1989 and US\$ 14.2 million in 1993.

#### *Human Resources*

The sector has 16,642 health professionals and technicians: 4,551 physicians, 4,817 nursing auxiliaries (with one year of training), 2,577 nurses, 2,499 technicians, 1,099 dentists, and 1,099 pharmacists. In 1990 there were 1 professional nurse and 2.57 nursing auxiliaries per doctor; in 1995, the ratios were 0.38 and 1.66 per doctor, respectively. The ratio of other health technicians per doctor decreased from 4.08 in 1990 to 0.69 in 1995. While the number of doctors has risen steadily,

the numbers of nurses, nursing auxiliaries, and technicians are declining. The Ministry of Health no longer assumes responsibility for training health personnel, and severe budgetary constraints have limited the capacity of universities and technical schools to offer such training.

Although, in general, medical and paramedical personnel are well trained, 32% of Ministry of Health personnel have only a primary-school education or basic reading and writing skills. Low wages and inappropriate policies on promotion and retention of personnel, together with physical and financial limitations, result in high personnel turnover.

#### *Expenditures and Sectoral Financing*

Resources for health come from six main sources: grants to the Government (which finance 30.1% of total health spending), expenditures of private companies (21.2%), taxes (16.1%), loans to the Government (15.8%), expenditures by households (11.9%), and grants to nongovernmental organizations (4.9%). The uninsured population accounts for 66.1% of total health spending; the insured population, for 27%; and the population with purchasing power in the private sector, for 6.9%. By institution, Ministry of Health facilities account for 61.3% of the total; the medical insurance companies, for 27%; private hospitals, for 6.9%; and nongovernmental organizations that provide health services, for 4.8%. In 1995, health spending represented 6.6% of GDP and 16.2% of total public spending. Current spending consumes 97% of the resources, and investment accounts for only 3%.