



POPULATION, HEALTH, AND ENVIRONMENT ISSUES IN THE PHILIPPINES

A Profile of Calabarzon (Region 4-A)

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Linking population, health, and environment (PHE) issues is becoming increasingly important for the Philippines, where natural resources, public health, and well-being are often negatively affected by factors such as population pressures and poverty. Understanding these connections—including the economic and social context in which they occur—and addressing PHE issues in an integrated manner is critical for achieving sustainable development.

This regional profile highlights key population, health, and environment indicators and important development challenges for the Calabarzon Region (Region 4-A). It is designed to help educators, policymakers, and community leaders identify key threats to sustainable development and explore possible approaches to addressing them. This profile is part of a series covering select regions of the Philippines, and is intended as a companion publication to the Population Reference Bureau's 2006 data sheet, *Making the Link in the Philippines: Population, Health, and the Environment*.¹

Overview of Calabarzon Region

The Calabarzon region² is located in the south-western part of the island of Luzon and has a total land area of 16,560 square kilometers.³ Calabarzon is the second most densely populated region in the country, principally because it is the closest region to metro Manila. Because of its close proximity to Manila and the industrial and economic opportunities that exist there, Calabarzon is experiencing rapid urbanization. As of the year 2000, 67 percent of its population lives in urban areas.⁴

The Calabarzon Region is also one of the country's leading regions for economic investment and growth. With the influx of people and rapid industrial growth, environmental issues such as pollution, solid waste management, conservation, and natural resource management will increasingly



become major concerns (see Figure 1, page 2). Additionally, the rapid growth in population will require increased investments in infrastructure and services in order to maintain the relatively high living standards that residents of Calabarzon currently enjoy.

SOCIOECONOMIC CONTEXT

- The incidence of poor families is one of the lowest in the country at 17 percent, compared to the national level of 27 percent. Poverty levels within Calabarzon vary considerably, with Rizal having the lowest incidence of poor families (6 percent) and Quezon having the highest (38 percent). Only Quezon has a higher incidence of poor families than the national average (see Figure 2, page 2).⁵

- As of 2006, Calabarzon's per capita gross regional domestic product at constant 1985 prices was 14,437 pesos, very close to the national average of 14,676 pesos.⁶
- Calabarzon has an unemployment rate of 9.4 percent, the second highest in the Philippines next to the National Capital Region (NCR).⁷
- The net enrollment ratio in primary education for Calabarzon is 98 percent, the highest in the nation.⁸
- Eighty-five percent of families in Calabarzon have access to safe drinking water, higher than the national average of 80 percent. Most Calabarzon families (91 percent) also have sanitary toilets, compared with only 86 percent of families in the Philippines overall.⁹

Figure 1

PHE INDICATORS FOR REGION 4-A

Population (2007)	11,743,110 ^a
Population density (2007)	709 people per sq. km. ^b
Annual population growth rate (2000-2007)	3.2% ^c
Average births per woman (total fertility rate) (2003)	3.2
Married women ages 15-49 using contraception (2003)	33% (any method) 48% (modern method) ^d
Unmet need for family planning (2003)	16%
Infant mortality rate (2006)	20 infant deaths per 1,000 live births ^e
Forest cover (2002)	55%
Number of threatened animal species (2004)	35
Protected areas (2004)	75,167 hectares ^f
Per capita gross regional domestic product at constant 1985 prices (2006)	14,437 pesos ^g

^a National Statistics Office (NSO), "2007 Census of Population", accessed online at www.census.gov.ph/census2007/index.html, on April 14, 2008.

^b Calculated by PRB.

^c NSO, "2007 Census of Population," accessed online at www.census.gov.ph/data/census2007/index.html, on May 20, 2008.

^d NSO and ORC Macro, *Philippines National Demographic and Health Survey 2003*.

^e Department of Environment and Natural Resources, NSO, "2006 Family Planning Survey".

^f Department of Environment and Natural Resources "Summary of Protected Areas in the Philippines by Region: 2004," accessed online at www.denr.gov.ph/section-facts-figures, on Nov. 27, 2007

^g National Statistical Coordination Board, "Regional Accounts", accessed online at www.nscb.gov.ph/grdp/2006/2006concap.asp, on April 14, 2008.

SOURCE: Except where noted, data are taken from Population Reference Bureau, *Making the Link in the Philippines: Population, Health, and the Environment* (Washington, DC: Population Reference Bureau, 2006).

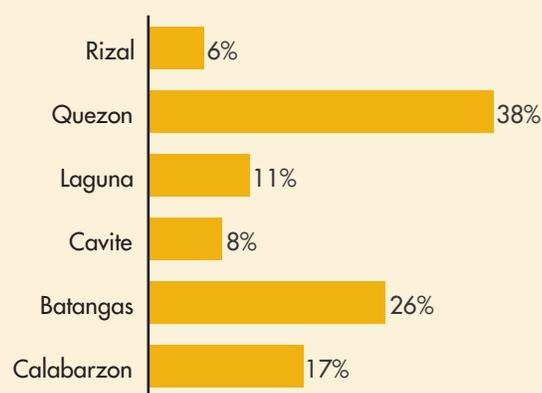
DEMOGRAPHIC AND HEALTH TRENDS

With a population of 11.7 million, the Calabarzon Region now has the largest population in the country, surpassing the NCR since the 2000 Census. The region is also the second most densely populated region, with 709 people per square kilometer.

- By the year 2025, the Calabarzon region is expected to grow to approximately 16 million people.¹⁰ The province of Cavite is projected to have the largest share of the region's population since it will absorb the spillover of population from NCR (see Figure 3, page 3).
- The percentage of Calabarzon's population living in urban areas is now 67 percent and rapidly increasing due to its growing economy and in-migration. The province of Rizal has the largest urban population at 96 percent, while Quezon has the smallest at 22 percent.¹¹
- Married women in Calabarzon have 3.2 children on average, slightly less than the national total fertility rate of 3.5. There is a consistent gap between wanted and actual fertility in Calabarzon. On average, women are having about one child more than they would like (actual fertility 3.2 vs. wanted fertility 2.3).¹²
- Forty-eight percent of married women in Calabarzon use some form of contraception, while one-third of married women in Calabarzon use modern contraception. This is comparable to the

Figure 2

INCIDENCE OF POOR FAMILIES, 2006



SOURCE: National Statistical Coordination Board, *Population Projections* (www.nscb.gov.ph/secstat/d_popnProj.asp, accessed Nov. 27, 2007).

national level of modern contraceptive prevalence at 33 percent. Within Calabarzon, modern contraceptive prevalence ranges from 28 percent in the province of Batangas to 44 percent in Laguna (see Figure 4).

- Sixteen percent of married women in Calabarzon have an unmet need for family planning, meaning they would like to wait before having more children or would prefer to have no more children but are not using any method of family planning.
- The infant mortality rate in Calabarzon, a key indicator of health status, is one of the lowest in the Philippines at 20 deaths per 1,000 live births. The national rate is 24 infant deaths per 1,000 live births.

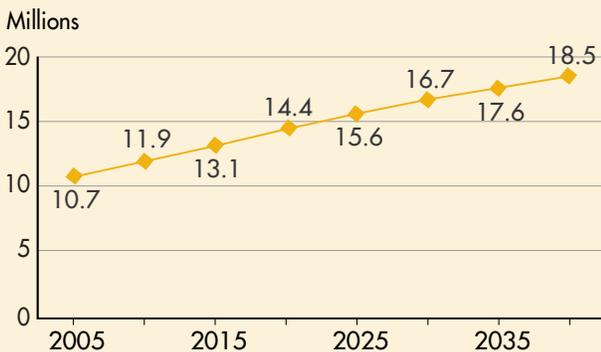
NATURAL RESOURCES AND BIODIVERSITY ISSUES

The Calabarzon region has one of the most varied landscapes in the country. The topographical features consist of flat coastal area and upland interior areas of plains, rolling hills, and mountains. Rich in biodiversity and attractive natural environments, the region is a favorite destination of local tourists from nearby metro Manila.

- Based on Department of Environment and Natural Resource (DENR) data, there are 24 protected areas in Calabarzon with a total area of 74,378 hectares.¹³ Although these areas represent a small portion of the region's overall land area, they help ensure the survival of rare species and maintain the ecosystem's services, such as the provision of clean water.

Figure 3

PROJECTED POPULATION OF REGION 4-A, 2005-2040

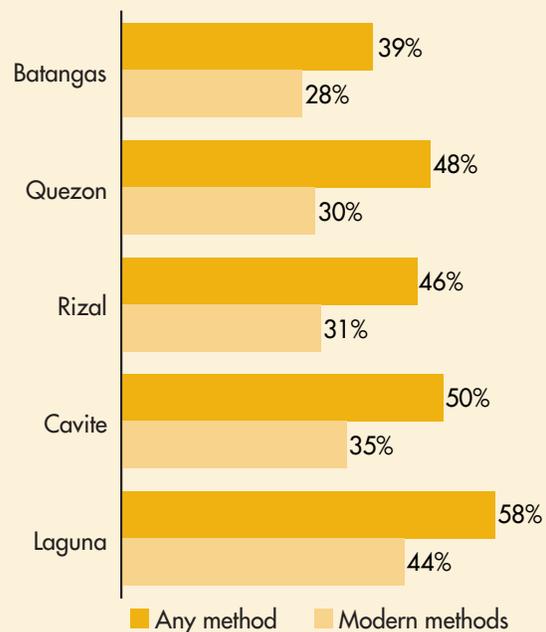


SOURCE: National Statistical Coordination Board, *Population Projections* (www.nscb.gov.ph/secstat/d_popnProj.asp, accessed Nov. 27, 2007).

- Calabarzon has 55 percent of its area covered in forest, including remote areas, urban forests, plantations, and mangroves. Mangroves (salt-tolerant trees) are important breeding and spawning grounds of fish and shellfish. Forest cover in general is important for climate regulation, watershed protection, and preventing soil erosion.
- The Philippines has more than 20,000 species found nowhere else in the world. As of 2004, there were a total of 35 threatened animal species found in the region. A few examples include Tamaraw (*Bubalus mindorensis*), Visayan spotted deer (*Cervus alfredi*), white-winged flying fox (*Pteropus leucopterus*), and Visayan warty pig (*Sus cebiformis*), each endemic to the Philippines.¹⁴ Due to centuries of hunting and deforestation, and more recently urban development, large animals are now rare and wild species are confined to the remote forest and mountain areas in the region.
- The region includes two of the 10 major lakes in the Philippines: Laguna de Bay, the largest freshwater lake in the Philippines with an area of 90,000 hectares; and the Taal Lake in Batangas with an area of 23,400 hectares.¹⁵

Figure 4

MARRIED WOMEN AGES 15-49 USING CONTRACEPTION, 2003



SOURCE: National Statistics Office and ORC Macro, *Philippines National Demographic and Health Survey* (2003).

- Laguna de Bay supports agriculture, industry, recreation, and ecosystem services. Fisheries production from the lake is on the magnitude of 7.3 million pesos per year. The Kalayaan Hydroelectric Power Station in Laguna produces 600 megawatts of electricity.¹⁶
- Laguna de Bay water quality is categorized as a class C—a “good” fishery and industrial water supply—based upon criteria for oxygen levels, organic compounds and chemicals, water clarity, and other factors. The Laguna Lake Development Authority has maintained this water quality class over the past few years, a success considering the increased use of the lake.
- In 2006, the World Bank reported that the rivers along the *barangays* in Laguna Province, located at the west bay of Laguna de Bay, pose a risk to public health.¹⁷
- According to the National Solid Waste Management Commission, 70 percent of solid waste is collected in urban areas of the Philippines, whereas only 40 percent is collected in rural areas. Solid waste management is necessary to reduce ground and surface water contamination, the spread of disease, and exposure to toxins.¹⁸ Wastes that are not collected or are disposed of improperly, such as in open dumpsites, pose a public health threat and contribute to river and coastal water pollution. In Calabarzon, there are 35 open dumpsites, out of more than 200 waste management facilities.¹⁹
- In 2002, agricultural land accounted for approximately 36 percent of the region’s total land area. Between 1991 and 2002, the number of farms and agricultural land area decreased by 12 percent and 16 percent, respectively.²⁰ The decrease in agricultural lands is attributed to the conversion to residential or commercial use accompanying the region’s population growth.
- Most of the region’s productive agricultural lands are already utilized at full capacity. Batangas and Cavite provinces have surpassed capacity levels; that is, crop production activities are utilizing marginal lands, including upland areas in these provinces.
- The Calabarzon Region has 22 operating economic zones—one government-owned and 21 private zones. The most active economic zones, hosting thousands of workers, are within Cavite and Laguna. This high level of economic activity is close to two major bodies of water, Laguna Lake and Taal Lake, making them vulnerable to industrial pollutants.
- The quantity of dissolved oxygen (DO) present in water is a key measurement of water quality (fish and other

aquatic life need at least 5 milligrams per liter (mg/L) of oxygen to survive). In 2003, the Imus River had a DO level of 3.0 mg/L, but by 2005, DO levels had improved to 5.3 mg/L, an increase of 77 percent. In 2003, the Ylang-Ylang River had a DO level of 4.5 mg/L, which increased only slightly to 4.6 mg/L in 2005. Low DO levels are the result of the discharge of domestic and industrial wastes from communities and industrial sites in the area.²¹

- Air pollution contributes to cardiovascular and respiratory diseases. A key measurement of air pollution is total suspended particulates (TSP), small solid and liquid particulates such as dust, smoke, soot, and acid fumes. These particulates are usually produced by motor vehicles and fuel-burning facilities. The acceptable level of TSP is 90 µg/Ncm (micrograms per normal cubic meter). Batangas, a city with high air pollution based on the DENR standard, had a one-year exposure level of 127 µg/Ncm in 2004, down from 144 µg/Ncm in 2003. For Cavite City, the one-year exposure of TSP was 79 µg/Ncm in 2004.²²

RESPONDING TO CHALLENGES

Calabarzon is confronted by a host of environmental problems that threaten the health of the population. The aggressive implementation of the Calabarzon Master Plan supports continued economic and industrial growth in the region. It primarily aims to catalyze development in Calabarzon to help decongest the urban NCR. The increase in the number of industrial and technological parks, commercial complexes, and residential subdivisions are indicative of the urban expansion in the region.

Given the trends in economic development and urbanization, two major challenges in the region are pollution and solid waste disposal. Recognizing the interconnections between people and their environment is therefore critical for achieving sustainable economic development, while also maintaining a healthy environment and ensuring the well-being of Calabarzon’s population. Four initiatives are highlighted below as models of success.

Laguna Lake Development Authority

Based on water quality monitoring data, a key challenge for improving the Laguna de Bay resource is solid waste and sanitation management. The Laguna Lake Development Authority manages the Laguna de Bay Region and is building partnerships with multiple stakeholders throughout the region to protect the lake and its watershed. Partnerships range in scale from small river cleanups and tree plantings to large-

scale projects with international partners. For example, the Global Environment Facility of the World Bank is financing a \$5 million grant to support sewer and sanitation treatment. Even with improvements in scientific assessments of water quality, educational outreach, and several other activities, cleaning up Laguna de Bay will continue to be an enormous task.²³

Pollution Control Officers Initiative

Since industries are one of the major sources of pollutants in Calabarzon, the Department of Environment and Natural Resources (DENR) ventured into a partnership with the private sector, designating pollution control officers (PCOs) for the major industries operating in the region. The PCOs work closely with DENR to implement effective environmental management and protection strategies. Specifically, the PCOs are responsible for ensuring that each company's environmental program is designed and implemented in accordance with environmental regulations and standards. A total of 115 company PCOs located in economic zones in Cavite, Laguna, Batangas, Rizal, and Quezon provinces participate in efforts to incorporate air quality management, water quality management, and massive information, education, and communication campaigns into their company environmental programs.

Ecological waste management systems and toxic chemical and hazardous waste management have also been implemented in the economic zones. As of 2005, there are 34 treatment, storage, and disposal facilities for toxic chemicals and hazardous wastes in Calabarzon's economic zones.²⁴

Solid Waste Management Project

The Ecological Solid Waste Management Act of 2000, and the Local Government Code assigned responsibility of solid waste management to municipalities and city governments. Unfortunately, not all localities have the resources to comply with the law. For instance, in Calamba City, the local government could not provide solid waste management infrastructure that meets the social and environmentally sustainable standard. In response, a DENR-United Nations Development Programme Solid Waste Management Project involving both the public and the private sectors was implemented. Three contiguous economically challenged *barangays* in the city were chosen as the project site due to severe solid waste management problems

and their proximity to Laguna de Bay. By 2004, the project achieved its main objective and established the first fully functional cluster-*barangay* Material Recovery Facility in the country through a public-private partnership.²⁵

This example highlights just one of numerous achievements since the passage of the Solid Waste Management Act in 2000. Despite these successes, many opportunities remain for better management of solid waste throughout the region.

World Wildlife Fund (WWF)-Philippines Marine Conservation Project

Successful initiatives have not focused solely on pollution, but have also worked on the protection of biodiversity in marine ecosystems. Two local government units in Batangas, in collaboration with WWF-Philippines, have organized a coastal resources project financed almost entirely by marine user fees. The Marine Law Enforcement Campaign was launched in 2003 and has reduced illegal fishing and restored coral cover and fish populations. Since its inception, the system has continuously supported the protection of biodiversity in the area and has benefited local fishermen and divers through increased fish catches and enhanced diving experiences. In this system, multiple stakeholders decide on the use of funds and provide oversight to ensure transparency and accountability.²⁶

The cases described above illustrate the need for collaboration between national and local governments, civil society, and the private sector to ensure effective and sustainable projects. An increased understanding of the connections between population, health, and the environment will lay the foundation for more effective, participatory development efforts that increase human well-being and sustain healthy environments.

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