Access to clean and adequate water remains an acute seasonal problem in urban and coastal areas in the Philippines. The National Capital Region (Metro Manila), Central Luzon, Southern Tagalog, and Central Visayas are the four urban critical regions in terms of water quality and quantity. The Government’s monitoring data indicates:

* Just over a third or 36 percent of the country’s river systems are classified as sources of public water supply;
* Up to 58 percent of groundwater sampled is contaminated with coliform and needs treatment;
* Approximately 31 percent of illnesses monitored for a five-year period were caused by water-borne sources; and
* Many areas are experiencing a shortage of water supply during the dry season.

Nearly 2.2 million metric tons of organic pollution are produced annually by domestic (48 percent), agricultural (37 percent), and industrial (15 percent) sectors. In the four water-critical regions, water pollution is dominated by domestic and industrial sources. Untreated wastewater affects health by spreading disease-causing bacteria and viruses, makes water unfit for drinking and recreational use, threatens biodiversity, and deteriorates overall quality of life. Known diseases caused by poor water include gastro-enteritis, diarrhea, typhoid, cholera, dysentery, hepatitis, and more recently, severe acute respiratory syndrome (SARS). The number of water-related health outbreaks including deaths reported in newspapers is going up. However, awareness regarding the need for improved sanitation and water pollution control, reflected by the willingness-to-pay and connection to a sewerage system where they are easily available, is very low.

The annual economic losses caused by water pollution are estimated at PHP 67 billion (US$ 1.3 billion). These include PHP 3 billion for health, PHP 17 billion for fisheries production, and PHP 47 for tourism. Losses due to environmental damage in terms of compensation and claims are on the rise in the Philippines. To guard against environmental impacts of water pollution, the Philippines has many water-related laws, but their enforcement is weak and beset with problems that include inadequate resources, poor database, and weak cooperation among different agencies and Local Government Units (LGUs).

A Clean Water Act is now being deliberated in the Congress. There is considerable under-investment by the Government in sanitation and sewerage, indicating a low spending priority, though ranked as a high priority in the Philippines Agenda 21 of 1996. Only seven percent of the country’s total population is connected to sewer systems and only a few households have acceptable effluent from on-site sanitation facilities. Estimates show that over a 10-year period, the country will need to invest PHP 250 billion (nearly US$ 5 billion) in physical infrastructure.

There are, however, signs of encouragement. The Environmental Management Bureau (EMB) published the Guidelines for Wastewater Management in Urbanized areas and Tourist Centers (1998) and the Wastewater Infrastructure Guidelines (1999). The Environmental Management Bureau (EMB) states that there are more than 30 Local Government Units (LGUs) that have adopted wastewater treatment systems when appropriate; investing significantly in wastewater management in urbanized and tourist centers, which is more cost effective, by expanding user base, promoting intermediate solutions and using smaller and decentralized collection and treatment systems when appropriate; stimulating revenues and incentives to attract private sector participation in financing wastewater infrastructure by increasing wastewater fees, industrial pollution charges, and providing access to credit; and providing effective regulations and incentives through the enactment of the Clean Water Act with clear implementing rules and regulations.
Aerobic Bacteria: Bacteria that will live and reproduce only in an environment containing oxygen that is available for their respiration (breathing), namely atmospheric oxygen or oxygen dissolved in water.

Anaerobic Bacteria: Bacteria that live and reproduce in an environment containing no "free" or dissolved oxygen. Anaerobic bacteria obtain their oxygen supply by breaking down chemical compounds that contain oxygen such as sulfite.


Biological Oxygen Demand (BOD): The rate at which organisms use the oxygen in water or wastewater while stabilizing and decomposing organic matter under aerobic conditions. BOD measurements are used as a measure of the organic strength of wastes in water. The greater the BOD, the greater the degree of organic pollution.

Coliform: A type of bacteria. The presence of coliform-group bacteria is an indication of possible pathogenic bacteriological contamination. The human intestinal tract is one of the main habitats of coliform bacteria and may also be found in the intestinal tracts of warm-blooded animals, and in plants, soil, air, and the aquatic environment. Fecal coliforms are those coliforms found in the feces of various animals.

Commerical Fisheries Production: Fishing with the use of fishing vessels of more than three gross tons.

Effluent: Wastewater or other liquid - raw (untreated), partially or completely treated - flowing from a basin, treatment process, or treatment plant.

Gross Domestic Product: The value of all goods and services produced domestically by a country.

Gross Regional Domestic Product: Aggregate of the gross value added or income from each industry or economic activity of the regional economy.

Gross Value Added: The difference between gross output and intermediate inputs.

Inorganic Waste: Material such as sand, salt, iron, and other mineral materials that are only slightly affected by the action of organisms. Inorganic wastes are chemical substances of mineral origin, whereas organic wastes are chemical substances usually of animal or plant origin or sources. Bacteria and other small organisms generally can consume organic wastes.

Municipal Fisheries Production: Fishing done in coastal and inland waters with or without the use of boats of three gross tons or less.

Nutrients: Substances that are required to support living plants and organisms. Major nutrients are carbon, hydrogen, oxygen, sulfur, nitrogen, and phosphorus. Nutrients are chemicals of mineral origin; whereas organic nutrients are chemicals of living organisms.

Pathogenic Organisms: Bacteria, viruses, or cysts that can cause disease (typhoid, cholera, dysentery) in a host such as a person. There are many types of organisms that do NOT cause disease and which are NOT pathogenic. Many beneficial bacteria are found in wastewater treatment processes that actively clean organic wastes.

Per Capita Annual Renewable Water Resources: The amount of available annual renewable water resources over the total population.

Receiving Water: A river, stream, lake, ocean, or other surface of groundwater into which treated or untreated wastewater is discharged.

Septic: A condition produced by anaerobic bacteria. If severe, the wastewater produces hydrogen sulfide, turns black, gives off foul odors, contains little or no dissolved oxygen, and the wastewater has a high oxygen demand.

Sludge: The settleable solids separated from liquids during processing or the deposits of foreign materials on the bottoms of streams or other bodies of water. Sludge is primarily composed of bacteria, organic matter, and inorganic matter.

50% Dependability: The maximum limit to which the water resources should be exploited through provision of storage-type dams for regulating flow in each region. 80% Dependability: Corresponds to the probability of hydrologic conditions, based on which the maximum capacity of a water resources development project under the run-of-the-river type is usually determined.

Water Resources Region: The maximum limit to which the water resources should be exploited through provision of storage-type dams for regulating flow in each region.

Water Resources Region: The maximum limit to which the water resources should be exploited through provision of storage-type dams for regulating flow in each region.

Watershed: The basin of a river has a drainage area of at least 40 km², while a major river basin has a drainage area of more than 1,400 km².

Incidence Rate: Number of cases of a particular disease in a certain area per unit population.

Influent: Wastewater or other liquid - raw (untreated), partially or completely treated - flowing into a basin, treatment process, or treatment plant.

Bacteria that will live and reproduce only in a environment containing no "free" or dissolved oxygen. Anaerobic bacteria obtain their oxygen supply by breaking down chemical compounds that contain oxygen such as sulfite.
The Philippines Environment Monitor series has been providing a snapshot of key environmental trends and indicators in the country for the past four years. Its aim is to inform stakeholders of key environmental changes and challenges in a simple and easy-to-understand format. The 2000 Monitor was the first attempt at benchmarking general environmental indicators and subsequent Environment Monitors addressed solid waste management (2001) and air quality (2002). The 2003 Monitor focuses on water quality.

The Philippines Environment Monitor 2003 is the result of a joint exercise involving national agencies, academia, civil society, and researchers. The concept of the 2003 Monitor was discussed at a consultation workshop on November 21, 2002, and a draft was discussed at various forums between June and August 2003. Information contained in this Monitor has been obtained from published and unpublished data, reports of government agencies, universities, non-governmental organizations, individuals, and the World Bank and its international partners.

Population growth, urbanization, and industrialization reduce the quality of Philippine waters, especially in densely populated areas and regions of industrial and agricultural activities. The discharge of domestic and industrial wastewater and agricultural runoff has caused extensive pollution of the receiving water-bodies. This effluent is in the form of raw sewage, detergents, fertilizer, heavy metals, chemical products, oils, and even solid waste. Each of these pollutants has a different noxious effect that influences human livelihood and translates into economic costs. The adverse impact of water pollution costs the economy an estimated PNP 67 billion annually (more than US $1.3 billion). The Government continues its fight against worsening water pollution by espousing and including among its priorities, environment policies, legislation, and decrees that address the growing need to control water pollution. In the last few years, the Government has also employed economic instruments such as pollution fines and environmental taxes.

The pending Clean Water Act proposes an integrated, holistic, decentralized and participatory approach to abating, preventing and controlling water pollution in the country. This monumental step, taken collectively by various stakeholders, is the first attempt to consolidate different fragmented laws and provide a unified direction and focus to fighting water pollution.

The Philippines Environment Monitor 2003 comprises eight sections: (i) an overview of the country’s water quality and availability status, and water pollution conditions of surface, ground and coastal waters by region; (ii) the sources of water pollution, including various types of effluents, their generation, and the effects of wastewater discharges to human health and the environment; (iii) the four critical regions that were found to have unsatisfactory rating for water quality and quantity; (iv) the effects and economic losses due to polluted waters, health cost, and costs to fishery and tourism sectors; (v) a description of the water policies, institutional arrangements in water resources management, and enforcement of standards and economic instruments; (vi) urban sanitation and sewerage program and performance; (vii) pollution control requirements in water pollution control; and (viii) the challenges in implementing an integrated water resources management program.

This Environment Monitor 2003 on water quality is a joint effort of several government agencies and private sector and civil society organizations at both the national and local levels. The valuable contributions of people who provided assistance in the preparation of this Monitor are acknowledged. The contribution, cooperation, and participation of the following are appreciated.

**Government Agencies**
- Department of Environment and Natural Resources
- Protected Areas and Wildlife Bureau
- Ecosystem Research and Development Bureau
- Department of Health
- Bureau of Fisheries and Aquatic Resources
- National Economic Development Authority
- Department of Tourism
- Metropolitan Waterworks and Sewerage System
- Manila Waterworks and Sewerage System
- Land Bank of the Philippines
- Department of Agriculture
- Department of Environment and Natural Resources
- Protected Areas and Wildlife Bureau
- Ecosystem Research and Development Bureau
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- Metropolitan Waterworks and Sewerage System
- Land Bank of the Philippines

**International and Non-Governmental Organizations**
- United Nations Development Program
- World Bank
- Asian Development Bank
- International Finance Corporation
- International Monetary Fund
- World Health Organization
- United Nations Environment Programme
- Organisation for Economic Co-operation and Development
- United Nations Conference on Sustainable Development
- United Nations Framework Convention on Climate Change
- United Nations Convention to Combat Desertification
- United Nations Convention to Combat Desertification
- United Nations Convention to Combat Desertification
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- United Nations Convention to Combat Desertification
Philippines Environment Monitor 2003

PHILIPPINES - AT A GLANCE

GEOGRAPHY

Area:
- total: 300,000 km²
- land: 298,170 km²
- water: 1,830 km²

Boundaries:
- North: Bashi Channel
- South: Sulu and Celebes Seas
- East: Philippine Sea, Pacific Ocean
- West: South China Sea

Coastlines:
- total: 36,289 km
- coastline: 264,900 km
- land: 184,690 km²
- Continental shelf area: 148,500 km²
- Economic Zone: 2,200,000 km²
- Maritime claims: 36,289 km

Elevation:
- lowest point: Philippine Sea, 0 m
- highest point: Mt. Apo, 2,954 m

Natural resources:
- timber, nickel, cobalt, silver, gold, salt
- copper, petroleum
- arable land: 19%, permanent crops: 12%, permanent pastures: 4%, forest & wetlands: 46%

Environment - international agreements:
- party to: Climate Change, END, FAO, FATF, IOR, ISPRG, IPY, MARPOL 73/78, MARPOL 95, MB, MAB, MAB, NAPA, OSPAR, Ramsar, SPC,SPC, STF, STF, Sud, UNESCO (1972), UNESCO (1974), WHO, WETT

ECONOMY / SOCIETY

GDP:
- 4,022.78B (2002)

GDP growth rates (2002):
- agriculture: 14.1%
- industry: 32.5%
- services: 32.6%

Inflation rate - consumer price index: 3.1%
Unemployment rate: 11.4%

Gross Domestic Product (GDP):
- 2001 Philippine Fisheries Profile, Bureau of Agricultural Statistics, 2000 Philippines Statistical Yearbook-National Statistical Coordination Board,
Source: National Statistics Office, National Economic and Development Authority, Medium Term Philippine Development Plan 2001-2004

Land use:
- arable land: 19%
- forest & wetlands: 46%
- permanent pastures: 4%
- permanent crops: 12%

Natural resources:
- timber, nickel, cobalt, silver, gold, salt
- copper, petroleum

Elevation:
- lowest point: Philippine Sea, 0 m
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