

TABLE OF CONTENTS

Preface	i
Abbreviations and Acronyms	ii
Executive Summary	iii
Water Quality Hot Spots	iv
Philippines Water Quality at a Glance	v
Water Resources, Quality, and Availability	1
Sources of Water Pollution	7
Critical Regions	10
Effects and Economic Losses	17
Policies and Institutions	21
Urban Sanitation and Sewerage	24
Investment Requirements for Sewerage and Sanitation	28
Challenges	32
Annex 1: Hot Spots and Methodology for Rating	34
Water Quality and Quantity Scorecards	35
Relevant Websites	39
Glossary of Terms	40
Acknowledgements	41
Philippines at a Glance	42



PREFACE

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 Information contained in this Monitor has been obtained from published and unpublished data, reports of government agencies, universities, non-governmental organizations, individuals, and the World Bank and its international partners.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 PHP 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) investment requirements in water pollution control; and (viii) the challenges in implementing an integrated water resources management program.

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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank	MSSP	Manila Second Sewerage Project
BFAR	Bureau of Fisheries and Aquatic Resources	MTDP	Medium Term Philippine Development Plan
BOD	Biochemical Oxygen Demand	MTPIP	Medium Term Philippine Investment Plan
BRL	Bureau of Research and Laboratories	MWCI	Manila Water Company, Inc.
BRS	Bureau of Research and Standards	MWSI	Maynilad Water Services, Inc.
BSWM	Bureau of Soils and Water Management	MWSS	Metropolitan Waterworks and Sewerage System
BWSA	Barangay Waterworks and Sanitation Association	NCR	National Capital Region
CAR	Cordillera Autonomous Region	NDHS	National Domestic and Housing Survey
CHED	Commission on Higher Education	NEDA	National Economic and Development Authority
CRMP	Coastal Resource Management Project	NEUF	National Environmental User Fee
DA	Department of Agriculture	NIA	National Irrigation Administration
DAO	Department Administrative Order	NMTT	Navotas-Malabon-Tenejeros-Tullahan
DENR	Department of Environment and Natural Resources	NPC	National Power Corporation
DILG	Department of Interior and Local Government	NRW	Non-revenue waters
DO	Dissolved Oxygen	NSCB	National Statistical Coordination Board
DOH	Department of Health	NTU	Nephelometric Turbidity Unit
DOST	Department of Science and Technology	NWRB	National Water Resources Board
DOT	Department of Tourism	PAB	Pollution Adjudication Board
DWF	Dry-Weather Flow	PAGASA	Philippine Atmospheric, Geophysical and Astronomical Services Administration
DPWH	Department of Public Works and Highways	PD	Presidential Decree
EGF	Environmental Guarantee Fund	PDTS	Placer Dome Technical Services
EHS	Environmental Health Services	PhP	Philippines Peso
EMB	Environmental Management Bureau	PIA	Philippine Information Agency
EO	Executive Order	PNSDW	Philippine National Standards for Drinking Water
EUFS	Environmental User Fee System	PPP	Polluters Pay Principle
GDP	Gross Domestic Product	PRRC	Pasig River Rehabilitation Commission
GRDP	Gross Regional Domestic Product	PSP	Private Sector Participation
GVA	Gross Value Added	PTA	Philippine Tourism Authority
HABs	Harmful Algal Blooms	Phil USS-NASAP	Philippines Urban Sewerage and Sanitation - National Strategy and Action Plan
HBP	Haul Back Plan	RWSA	Rural Waterworks and Sanitation Association
IEC	Information, Education and Communication	SMICZMP	Southern Mindanao Integrated Coastal Zone Management Project
JBIC	Japan Bank for International Cooperation	SS	Suspended Solid
JICA	Japan International Cooperation Agency	STD	Submarine Tailings Disposal
Km²	Square kilometers	STP	Sewage Treatment Plant
LGU	Local Government Unit	TDS	Total Dissolved Solids
LLDA	Laguna Lake Development Authority	USAID	United States Agency for International Development
Lpcd	Liters per capita per day	USGS	U.S. Geological Survey
LWUA	Local Water Utilities Administration	WD	Water District
m³	Cubic meter	WHO	World Health Organization
MBI	Market Based Instrument	WPCF	Water Pollution Control Federation
MCM	Million Cubic Meters	WQAP	Water Quality Association of the Philippines
MDG	Millennium Development Goals	WRR	Water Resources Region
Mfg	Manufacturing	WTP	Willingness to Pay
MGB	Mines and Geosciences Bureau		
mg/l	Milligrams per liter		
MMC	Metro Manila Commission		
MPN	Most Probable Number		

Exchange Rate 1 USD = 55.75 Philippine Peso, January 7, 2004

EXECUTIVE SUMMARY

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.

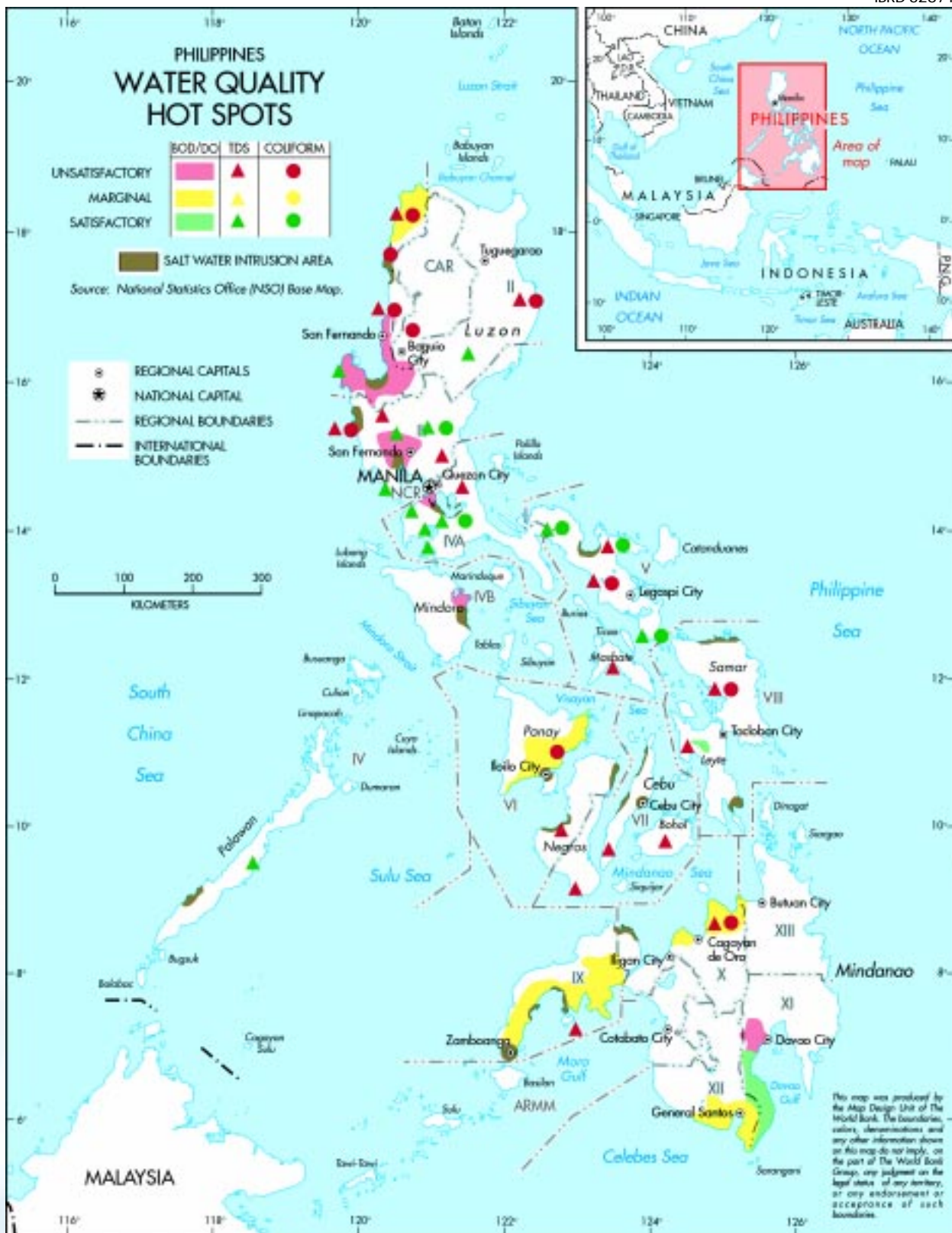
There is considerable under-investment by the Government in sanitation and sewerage, indicating a low spending priority, though ranked as a high priority in the Philippines Agenda 21 of 1996. Only seven percent of the country's total population is connected to sewer systems and only a few households 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. While LGUs recognize emerging water quality problems, they are constrained by high investment and operating costs, limited willingness-to-pay, and restricted space available in the low-income urban areas where sewage is disposed of indiscriminately. Some of the Government budget, which is directed mostly towards water supply (97 percent of the total), needs to be diverted to sewerage and sanitation. Individuals are not yet aware and willing to pay for these services and Government incentives are justified in the short-term for the larger community-wide benefits.

The four main challenges faced by the Philippines to improve the quality of its surface, ground, and coastal waters and provide healthy living conditions for all Filipinos include:

- Public disclosure, raising awareness about health impacts of poor water quality, and beach eco-watch program to increase stakeholder participation;
- 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.












WATER QUALITY HOT SPOTS

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PHILIPPINES WATER QUALITY AT A GLANCE

Issues/Topics	Status/Contribution/ Critical Areas	Priority
Pollutants/Parameters		
Biochemical Oxygen Demand (BOD)	<ul style="list-style-type: none"> 64% of the river Biochemical Oxygen Demand (BOD) exceeded public water supply criterion. Critical areas are Metro Manila, Southern Tagalog, and Central Luzon. BOD levels of Pasig River from 1998 to 2001 show improvement. Laguna Lake meets BOD for fishery, but half of the rivers that feed the lake have high BOD values. 	
Coliform, Heavy Metal, Pesticides, Toxics, and Others	<ul style="list-style-type: none"> Development of database for most parameters needed. Preliminary groundwater data indicate coliform contamination requiring treatment. Heavy metals and toxic pollutants from industrial sources contribute to pollution in Metro Manila, Central Luzon, Southern Tagalog, Cebu and mining sources in Cordillera Autonomous Region and CARAGA. Pesticide pollution in rural areas is from agricultural runoff. 	
Salt-Water Intrusion	<ul style="list-style-type: none"> 60% of the groundwater extraction without permit resulting in indiscriminate withdrawal and salt-water intrusion in coastal areas. Localized impacts around the coastal areas need countermeasures to limit further intrusion. Critical areas are Cebu, Iloilo, Dagupan, Cavite, Zamboanga and coastal Metro Manila, and Luzon. 	
Water Quantity/Availability	<ul style="list-style-type: none"> Ground and surface water resource potential is large and generally sufficient (84,734 MCM). Basins of Agusan and Mindanao have the highest amount of water while Cebu Island has the lowest. Water deficit would be experienced by year 2025 by some of the areas. Critical areas are Pasig-Laguna, Pampanga and Agno, Bicol, Cagayan, Luzón, Jalaur, Ilog-Hilabangan, and island of Cebu. 	
Sources of BOD Loading and other Pollutants		
Domestic	<ul style="list-style-type: none"> Metro Manila: 58 percent; Central Luzon and Southern Tagalog: 51 percent of the total BOD for the region (330,000 metric tons). Metro Manila, Southern Tagalog, and Central Luzon are critical areas. 	
Industrial	<ul style="list-style-type: none"> Metro Manila 42 percent of the total BOD for the region. Mining areas of CAR and CARAGA contribute pollution to the receiving bodies of water. Toxic pollution and contributions are not monitored routinely. 	
Agricultural	<ul style="list-style-type: none"> Southern Tagalog: 35 percent; Ilocos Region: 58 percent; and Central Visayas: 46 percent of the total for the region. Contributions of pesticides and fertilizer residues need to be better quantified and controlled. 	
Solid Waste/Garbage	<ul style="list-style-type: none"> Contribution to BOD and other pollutants not quantified or well regulated. Open dumpsites are still operated in Metro Manila and all over the Philippines in spite of the laws. Metro Manila: BOD contribution is over 150,000 Metric tons per year. 	
Responses		
Monitoring and Analysis	<ul style="list-style-type: none"> Strategic and focused monitoring for critical areas is needed. Monitoring and analysis of data from agencies need improvement. Public access to information is limited and participation is generally during crisis situations only. 	
Enforcement	<ul style="list-style-type: none"> Inadequate allocation of Government resources. Weak enforcement of water-related legislation and regulations. Constraints in capacity. 	
Policies and Interagency Coordination	<ul style="list-style-type: none"> Delineation/clarification of function for many agencies. Operation of effective regulatory framework for urban sanitation. Clean Water Act is proposed but not passed. 	



High



Medium



Low



V