



# Viet Nam

## Environmental Health Country Profile

### World Health Organization

As of March 10, 2005



## 1 Development, Environment and Health Status

### 1.1 *Development Pattern of the Country*

#### 1.1.1 Maps / geography / demography / urban-rural trends

Viet Nam lies along the western shore of the South China Sea and stretches some 3,260 km along the Eastern coast of the Indochina peninsula. Viet Nam's borders are with China in the north, Laos and Cambodia in the West, and the Pacific Ocean in the east. It lies in the centre of South-East Asia. It has a total surface area of 331,900 sq. km. Approximately 80 per cent of Viet Nam's land area is mountains, high plateaus and jungles; only 20 per cent is flat land. The capital city is Hanoi in the north and other major cities are Ho Chi Minh City (formerly Saigon), Hai Phong, and Da Nang.

The 2003 total population is estimated at 81,300,000. About 25 percent live in urban areas and majority of the population, 75 per cent, lives in rural areas. The population growth rate is estimated at 1.2 per cent per annum. The population distribution shows that 30.29 percent are less than 14 years old and 6.3 percent are over 65 years old. National literacy is high at 94 percent with equal rate for male and female. In 2003, the infant mortality rate was reported to be 26 per 1,000 live births while under-five mortality rate was 35 per 1,000 live births. Most of the newborn infants (93 percent) weighed at least 2.5 kg in 2002.

There are distinct climatic variations between the north, the center and the south of the country. The Southern part of Viet Nam is tropical, always above 25 °C with the cooler part in the North with temperatures less than 20 °C starting October. It is monsoonal in the north, bringing a hot, rainy season from mid-May to mid-September and a warm, dry season from mid-October to mid-March. Occasional typhoons from May to January bring extensive flooding to the middle regions of Viet Nam.

#### 1.1.2 General economy of the country

Viet Nam is rich in natural resources such as coal, crude oil, zinc, copper, silver, gold, manganese, and iron. From a country facing chronic food shortages in the early 1980s, Viet Nam rose to become the second-largest rice exporter in the world. Its principal export in 2003 was rice followed by coffee, tea, rubber, and fisheries products. Agriculture and forestry contributed 21.8 percent of GDP (2003) with principal products such as rice, maize, sweet potato, peanut, soya bean, cotton, coffee, and cashews. Around 29 percent of its total land area is used for agriculture. Industry and construction contributed 40 percent of GDP in 2003 in mining and quarrying, manufacturing, electricity, gas, water supply, cement, phosphate, and steel. In 2003, the per

capita GDP at current market prices was US\$ 485. It was estimated that the government spent about 1.35 percent of GDP on health expenditure in 2002.

Rapid urbanization, increasing industrial pollution and changes in life styles, together with a greater reliance on motorized vehicles and new technologies in agriculture and in industrial and commercial activities have also brought about new health problems including threats to the quality of air and water in urban areas. Therefore a major challenge for policy makers and planners is to integrate more effectively environmental sustainability and health concerns into investment planning.

### 1.1.3 Development priorities

The overall goals of the 2001-2010 ten-year strategy prepared by the Ministry of Planning and Investment are to bring Viet Nam out of underdevelopment; improve noticeably the people's material, cultural and spiritual life; and lay the foundations for making a modern-oriented industrialized country by 2020 through the development in

- Agriculture, forestry, fishery and rural economy
- Industry and construction (heavy industry and high-technology)
- Infrastructures (roads, communication network, energy)
- Services

Viet Nam society is in positive transition towards a modern market economy. While the pace of change and reform is slow, there is a steady determination of purpose reflected in a series of liberalizing economic, financial, and social decrees and laws. Government encourages foreign investment in infrastructure, oil and gas, hotel and tourism, foreign currency earning, export-oriented and/or import-substitution, labor- and local raw material-intensive, and high technology industries.

### 1.1.4 Human Development Index

This is a composite index based on three indicators: longevity, as measured by life expectancy at birth; educational attainment, as measured by adult literacy and total primary, secondary and tertiary enrolment ratio; and standard of living, as measured by GDP per capita. The 2004 Human Development Report indicates that Viet Nam is now in the medium HDI level with an HDI of 0.691 in 2002, ranking 112 out of 177 countries.

## 1.2 Existing Service Levels

### 1.2.1 Proportion of population (national) with existing utilities (water supply, sanitation, solid waste collection, drainage, sewerage, electricity)

In Viet Nam, urban water supply and sanitation is the responsibility of both the central and provincial governments. Central government agencies are chiefly responsible for policymaking, standards, and development. Provincial and local governments are responsible for construction, supervision, and operation and maintenance of water supply systems. In 2004, only about 56

percent of the population are provided with safe water with less than half (44 percent) having sanitation facilities. There is higher coverage in urban areas.

In major cities, almost all households are connected to electricity while in the rural areas, it was estimated that there is less than half coverage in 2000.

#### 1.2.2 Proportion of urban population served by piped water, sewers, electricity, municipal solid waste collection

About 24 percent of households are connected to piped water facilities. In major cities, almost all households are connected to electricity while in the rural areas, it was estimated that half of the population are connected in 2000. More than half of total waste generated is collected with about 60 percent of the urban population served by municipal solid waste collection. In the four large cities of Viet Nam, about 20 to 60 percent are connected to the sewerage system and the rest have onsite facilities such as septic tanks or latrines. None of the provinces within Viet Nam currently possess a domestic wastewater plant.

#### 1.2.3 Presence of other basic services such as fire fighting and emergency management (flood, earthquake, chemical emergency, etc.)

There are firefighting equipment and emergency response systems for natural hazards but there is no capacity for chemical emergency.

#### 1.2.4 Housing: presence of building regulations, proportion of people living in informal settlements

Buildings and houses require permits in Viet Nam prior to construction. There is no data on informal settlements but half of the population is below the poverty line.

#### 1.2.5 Transport related: number of vehicles registered, number of motorcycles registered, rate (number per 100,000 population)

There is an overwhelming increase in motorized transport in Viet Nam. As of 2003, there were 12,054,000 registered vehicles of which 675,000 are cars and 11,379,000 are motorcycles. With a limited road network, this has resulted in more traffic jams and increased road traffic accidents.

#### 1.2.6 Capacity for monitoring environmental quality (drinking water, water resources, ambient air, noise, radiation, etc)

There is capacity in Viet Nam in both private and government sectors to monitor drinking water, water resources, ambient air, noise, and radiation.

### 1.2.7 Capacity for data collection and processing

There is some capacity within various agencies of the government to collect and process environmental quality data but there is no system in place for use of information for decision-making and planning especially for environmental health.

## 1.3 *Environmental Quality*

### 1.3.1 Air pollution (percentage of population using solid fuels, proportion of vehicles using diesel and unleaded gasoline, frequency of exceeding national air quality standards)

In 2000, more than 95 percent of the population was using solid/biomass fuels for cooking especially in the rural areas. Much of Viet Nam's large population relies heavily on non-commercial biomass energy sources such as wood, dung, and rice husks. Viet Nam's per capita commercial energy consumption is among the lowest in Asia. Among the existing power plants, hydropower accounts for 60 percent, coal-fired 17 percent, gas and fuel fired 23 percent.

Around 25 percent of the vehicles use diesel and about 75 percent use unleaded gasoline. Only the parameter total suspended particulates (TSP) exceeds the standard levels occasionally. There is monitoring for particulates, lead, oxides of nitrogen and sulfur and carbon monoxide mostly from motor vehicles, factories, power plants and households.

A national monitoring network was established to monitor various environmental parameters in 1994. From 1994-2000, this monitoring system was expanded from seven to 19 stations, including six monitoring stations to monitor air quality automatically in Hanoi and Ho Chi Minh City.

### 1.3.2 Water pollution (frequency of exceeding national water quality standards, drinking water quality standards)

There are national water quality standards in Viet Nam. Two parameters (biological oxygen demand and suspended solids) have been found to exceed the standards occasionally. There is increasing evidence of pollution of surface water and coastal water, which should be closely monitored. Industrial firms discharge wastewater into the environment without treatment. Many industrial enterprises lack resources to install their own wastewater treatment facilities.

### 1.3.3 Solid waste (generation of municipal solid waste, proportion of recyclables)

It is estimated that waste generation is about 0.5-0.7 kg/capita/day for large cities and 0.3-0.4 kg/capita/day for small towns. Only about 53.4 percent of households are served by collection services with moderate recycling at 13-15 percent. It is estimated that solid waste generation is less than seven million tons per year.

#### 1.3.4 Hazardous waste (generation of toxic chemicals, hazardous materials, health-care waste, nuclear waste)

In 2002, there were 439 establishments causing serious environmental pollution out of a total of 4,295 polluting establishments, including 284 production and business establishments, 52 rubbish dumps, and 84 hospitals. In 1999, the reported toxic and hazardous waste in Viet Nam was 158,000 tons per year although there are other estimates much higher than this. Hospital wastes contribute about 21,000 tons per year with a rate of 0.75 kg/patient/day.

### 1.4 *Public Health Statistics*

#### 1.4.1 Ten leading causes of mortality and morbidity

The top ten causes of morbidity in Viet Nam are pneumonia, acute pharyngitis/tonsillitis, acute bronchitis, diarrhea/gastroenteritis, transport accident, primary hypertension, influenza, appendicitis, gastritis and fracture of the limbs.

The top ten causes of mortality in Viet Nam are intracranial injury, transport accident, pneumonia, intracerebral hemorrhage, HIV/AIDS, intentional self-harm, tuberculosis, stroke, heart failure, and diarrhea.

#### 1.4.2 Diseases associated with agricultural and irrigation development (proportion of undernourished people, schistosomiasis, pesticide poisoning)

Since the Vietnamese people have great culinary skills, malnutrition is only 29 percent in children below five years old. Since Viet Nam is very active in agriculture, these figures are expected to decrease over time. However, it is expected that inputs such as pesticides and fertilizers will also increase. In 2002, there were 7,170 cases of pesticide poisoning in Viet Nam.

#### 1.4.3 Respiratory diseases related to outdoor air pollution from energy, transport and industry sectors

Respiratory diseases are still the main causes of illness in Viet Nam, which have been associated with poor air quality and congestion.

#### 1.4.4 Traffic crashes (mortality due to traffic accidents, rate: deaths /100,000 population, injuries due to traffic accidents, rate: injuries/100,000 population)

Transport accident ranks fifth in the morbidity table (126,848 cases) and second (1,499 deaths) in the mortality table. The Health Statistics Yearbook reported 12,956 deaths in 2002 with 29,827 injuries. Although figures in traffic accidents vary, they indicate an alarm to improve road safety programs in the country.

#### 1.4.5 Diseases relating to poor housing (including pulmonary diseases, tuberculosis)

Tuberculosis is the seventh cause of death (718) in Viet Nam with about 95,577 cases reported. Rheumatic fever and rheumatic heart diseases had about 20,000 cases with 275,554 persons with acute respiratory infections in 2002. These diseases are associated with poor housing conditions.

#### 1.4.6 Water supply and sanitation-related diseases (such as diarrheal diseases, hepatitis, cholera, typhoid)

Reports of diarrheal diseases in 2002 had 1,055,178 cases while less than 20,000 cases were reported for hepatitis, cholera and typhoid fever. About 6,936 illnesses are due to typhoid fever, 8,421 cases due to hepatitis, and 321 cases due to cholera. All of these are preventable diseases with provision of adequate water supply and sanitation facilities and proper hygiene practices.

#### 1.4.7 Vector-borne diseases (such as malaria, plague, dengue fever and dengue hemorrhagic fever)

Malaria has caused 163,465 ill persons in 2002 while dengue/DHF was reported with 49,751 cases. Dengue is preventable by eliminating the habitat of the mosquito *Aedes aegypti* that breeds in urban and semi-urban environment such as man-made containers like earthenware jars, metal drums and concrete cisterns used for domestic water storage, as well as discarded plastic food containers, used automobile tires and other items that collect rainwater.

## 2 Legal, Policy, and Institutional Structure

### 2.1 *Legislative and Policy Framework*

#### 2.1.1 National policies, plans or strategies for environmental health

Viet Nam has prepared the National Action Plan for Environmental Health (2001-2010), which embodies the plans and strategies for the various programs for environmental health. In addition, there is also the National Plan for Environment and Sustainable Development (1991-2000) and the National Strategy for environmental protection until 2010 and vision toward 2020.

Viet Nam has policies to reduce exposure to tobacco smoke especially in public places and it has numerous successful projects within the healthy settings.

#### 2.1.2 Relevant legislation addressing environmental health issues

Environmental impact assessment had been a government requirement for development projects since 1994. Although health impact assessment is not yet a requirement, guidelines have already been prepared in 2003, which are awaiting approval.

About 18 relevant legislations related to environmental health are the following:

- a) Decree No. 67/2003/ND-CP of June 13, 2003 on Environmental Protection Charges for Waste Water

- b) Decision No. 64/2003/QĐ- TTG of April 22, 2003 Approving the Plan for Thoroughly Handling Establishments Which Cause Serious Environmental Pollution
- c) Resolution No. 41-NQ/TW of 15 January 2004 on Environment Protection in the Period of Industrialization and Modernisation
- d) Instruction on Environmental Assessments 1998
- e) Decree No. 121/2004/ND-CP of May 12, 2004, of the Government promulgating the Regulation on Sanctions against Administrative Violations in the field of protection of the environment
- f) Law on Minerals 1996
- g) Decree 84/CP on Petroleum 1996
- h) Decree No. 02/CP on Toxic Chemicals and Radioactive Substances 1995
- i) Decree No. 175/CP on Providing Guidance for the Implementation of the Law on Environment Protection 1994
- j) Regulation No. 1807/QĐ-Mtg on Regulations and Organizations of the Appraisal Council on Environmental Impact Assessment Reports and Issuing of Environmental Licenses 1994
- k) Instruction No. 1420/QĐ-Mtg for Guiding Environmental Impact Assessment to the Operating Units 1994
- l) Decree 09/CP of the Government on Organizing and Managing the Tourist Enterprise 1994
- m) Law on Environmental Protection 1993
- n) Decree No. 22/CP on Responsibilities, Authority and Organization of the Ministry of Science, Technology and Environment 1993
- o) Law on Petroleum 1993
- p) Law on Land 1993
- q) Decree 14/CP on Administrative Fines in the Management and Protection of Forests 1992
- r) Decree 18-HĐBT of the Council of Ministries Determining the List of Precious and Rare Wild Plants and Animals and Regulating Their Management and Protection 1992

### 2.1.3 Decentralization and / or privatization policies dealing with environmental health

Under the Government's decentralization initiatives, the provincial authorities are becoming more active in project development, including environmental health services.

## 2.2 *Institutional Structure for Environmental Health*

### 2.2.1 Administrative / organizational set-up of the country

Within the Ministry of Health, environmental health functions rest with the Department of Environmental Health within the General Department of Preventive Medicine and HIV/AIDS Control. MOH also has specialized institutes such as the National Institute of Occupational and Environmental Health, which is a WHO Collaborating Centre for Occupational Health.

### 2.2.2 Role of other agencies and partners other than government

There are many partners as civil society organizations and nongovernmental organizations active in Viet Nam such as the following:

- a) Association Biosciences VN

- b) Association Des Géographes Vietnamiens (AVG)
- c) Société D'Ecologie Du Viet Nam 1985
- d) Zoologie Society Vietnam 1986

### 2.2.3 Agencies involved and their respective functions

The following agencies have responsibilities related to environmental health especially for the water and sanitation sector:

- a) Ministry of Health, which is responsible for promoting health education and for water quality testing;
- b) Ministry of Natural Resources and Environment, which is responsible for setting standards for drinking water and wastewater discharge;
- c) Ministry of Agriculture and Rural Development, which is responsible for regulating and monitoring surface water
- d) Ministry of Construction, which is responsible for urban and rural planning and policies, construction standards, evaluation of construction projects, and human resources development for urban infrastructure development and maintenance
- e) Viet Nam Women's Union, a government-funded mass organization, with offices down to district level, which plays a major role in community mobilization and health education; and
- f) Viet Nam Water Supply and Sewerage Association, a nongovernment business and professional organization, with members from WSCs and related companies

### 2.3 *Relevant International Conventions and Agreements Ratified or Signed*

Viet Nam is a party to about 20 international agreements such as the following:

- a) Convention on Wetlands of International Importance Especially as Waterfowl Habitat (RAMSAR) [20 September 1988].
- b) Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons, and on their Destruction.
- c) Convention on International Trade in Endangered Species of Wild Fauna and Flora [20 January 1994].
- d) MARPOL Convention for the Prevention of Pollution from Ships [29 August 1991].
- e) UN Environmental Modification Convention (ENMOD) [26 August 1980].
- f) United Nations Convention on the Law of the Sea [25 July 1994].
- g) FAO International Code of Conduct on the Distribution and Use of Pesticides.
- h) Vienna Convention for the Protection of the Ozone Layer [26 April 1994].
- i) IAEA Convention on Early Notification of a Nuclear Accident [29 September 1987].
- j) IAEA Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency [29 September 1987].
- k) Montreal Protocol on Substances that Deplete the Ozone Layer [26 January 1994].
- l) London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London, 1990.
- m) Copenhagen Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Copenhagen, 1992.

- n) Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal [13 March 1995].
- o) United Nations Framework Convention on Climate Change [16 November 1994].
- p) Convention on Biological Diversity [16 November 1994].
- q) International declaration on cleaner production [22/9/1999]
- r) Kyoto Protocol 1998
- s) Stockholm Convention (POPs) 2001
- t) Framework Convention on Tobacco Control 2004

### 3 Human Resources Development Programs

#### 3.1 *Environmental health workforce, professionals and their skills*

In 2004, it was estimated that there are about 700 public health staff in Viet Nam including public and industry hygiene workers.

#### 3.2 *Formal and informal training programs for environmental health*

There are good universities in Viet Nam that offer tertiary degrees related to environmental health. Short-term training courses are also available for specific topics,

#### 3.3 *Government certification*

Passing of government examination is required to be able to work as an environmental health professional and licensing for some allied professions is compulsory.

#### 3.4 *Professional associations*

There are professional associations in Viet Nam such as the

- a) Association of Preventive Medicine
- b) Association of Occupational Health
- c) Association of Public Health
- d) Association of Clean Water and Sanitation

### 4 Priority Environmental Health Issues

Viet Nam is keen to improve its socio-economic status for the next 10 years. Its development priorities are geared towards heavy industries and massive development, with anticipated adverse health impacts. Although it has an extensive set of laws, regulations, and directives for environmental protection and natural resource conservation, the environmental staff are inadequate and over extended with too much work.

The following priority issues had been identified in various discussions and reports:

- a) Low agricultural land-population ratio
- b) Deforestation

- c) Watershed degradation
- d) Water pollution
- e) Air pollution
- f) Over fishing
- g) Degradation of mangrove forests
- h) Flooding
- i) Lack of EIA procedures
- j) Rapid urban population growth
- k) Urban and Industrial waste water.

In addition emerging concerns have been raised on the following:

- a) Road injury and transportation
- b) Oil spillage, chemical releases, traffic noise and pollution
- c) Pesticides and food poisonings increasing
- d) Lack of national regulations on environmental health, technical tools, knowledge
- e) Lack of international guidelines on how to integrate environment and health

4.1 *Agriculture Sector* such as pesticide poisoning, irrigation runoff laden with fertilizer and pesticides, contamination of water resources, pesticide residues on vegetables

4.2 *Energy Sector* such as air pollution, noise, thermal pollution, fly ash and sludge disposal, nuclear wastes

4.3 *Industry Sector* such as air and water pollution, chemical emergencies, hazardous waste management

4.4 *Transport Sector* such as road safety, traffic crashes, ambient air pollution, noise

4.5 *Urban /Rural Development Sector* such as water supply systems, sanitary facilities, sewerage system, safe and adequate drinking water, solid waste management, drainage and flood control, good housing design and location, safe recreational waters

4.6 *Cross-cutting issues* such as health care waste, infectious / communicable diseases, vector-borne diseases, effects of climate change

## 5 Areas Requiring Improvement

The Viet Nam Development Report 2000 stated four points that need to be addressed:

- a) Create incentives for changing behavior
- b) Involve communities more fully
- c) Improve the effectiveness of institutions
- d) Diversify financial sources to implement priority programs

For the water sector, the Viet Nam Environment Monitor 2003 identified the following issues for improvement:

- a) Strengthen the policy and institutional framework for integrated water resources management
- b) Expand and diversify investment in infrastructure for the water sector
- c) Improve compliance and enforcement
- d) Encourage more public participation

5.1 *Specific policies and legislation for environmental health* (where absent in the country)

5.2 *Institutional development and intersectoral collaboration* (strategies forging partnerships)

5.3 *Human resources development* (especially preparedness and response)

5.4 *Monitoring and surveillance* (including management of information)

5.5 *Integration of health and environment in international/regional agreements*

5.6 *Others*

References

Appendix

**VIET NAM**  
**Environmental Health Data Sheet**  
**As of March 10, 2005**

	<b>Indicators</b>	<b>Data</b>	<b>Year</b>	<b>Source</b>
<b>1</b>	<b>Development, Environment and Health</b>			
1.1.1	Area (1000 km <sup>2</sup> )	331.900	2004	23
1.1.1	Estimated population ('000)			
	- Total	81 300	2004	23
	- Male	39 775	2003	12
	- Female	41 147	2003	12
1.1.1	Annual population growth rate (%)	1.2	2003	22
	Percentage of population			
	0-14 years	30.29	2002	1
	65+ years	6.30	2002	1
1.1.1	Urban population (%)	25.80	2003	12
1.1.1	Adult literacy rate (%)			
	- Both sexes	94	2004	23
	- Male	94.50	2002	4
	- Female	90.90	2002	4
1.1.1	Infant mortality rate (per 1000 live births)	26	2004	23
1.1.1	Under-five mortality rate (per 1000 live births)	35	2002	1
1.1.1	Newborn infants weighing at least 2500g at birth (%)	93	2002	1
1.1.2	General economy: narrative report (separate sheet)			
1.1.2	Per capita GDP at current market prices (US\$)	485	2003	12
1.1.2	Total expenditure on health as % of GDP	1.35	2002 est	1
1.1.3	Development priorities: narrative report (separate sheet)			
1.1.3	Land area for agriculture (as percentage of total land area)	29.1	2001	6
1.1.4	Human development index (Highest = 1)	0.691	2002	4
	Human development index Rank (out of 177 countries)	112	2002	4
1.2.1	Population with access to safe water (%)			
	- Total	56	2004	23
	- Urban	64	2003	15
	- Rural	56	2003	16

1.2.1	Population with adequate excreta disposal facilities (%)			
	- Total	44	2004	23
	- Urban	80	2003	15
	- Rural	41	2003	16
1.2.1	Solid waste collection (% of total waste generated)	53.4	2001	9
1.2.1	Proportion of urban population served by municipal solid waste collection (%)	60	2003	15
1.2.2	Proportion of urban population served by sewerage system (%) - 4 large cities	20-60	2000	9
1.2.1	Proportion of population with electricity (%)			
1.2.2	Urban	100	2004est	15
	Rural	50	2000est	16
1.2.3	Poison center service (Y/N list, year)			
1.2.3	Chemical emergency preparedness (Y/N list, year)			
1.2.4	Proportion of population living in informal settlements (%)	...		
1.2.4	Presence of building regulations and inspection (Y/N list, year)	Y		
1.2.5	Number of registered vehicles	12, 054,000	2003	14
	Rate (number per 100,000 population)			
	Number of registered motorcycles	11, 379,000	2003	14
	Rate (number per 100,000 population)			
1.2.6	Presence of government/private laboratories and equipment for monitoring	Y		
	Drinking water (Y/N; G/P)	Y; G/P		
	Water resources (Y/N ; G/P)	Y; G/P		
	Ambient air (Y/N ; G/P)	Y ; G/P		
	Noise (Y/N ; G/P)	Y ; G		
	Radiation (Y/N ; G/P)	Y ; G		
1.2.7	Presence of government/private system for data collection and processing (Y/N; G/P)	Y		
1.3.1	Proportion of population using solid/biomass fuels for cooking or heating (%)	>95	2000	3
1.3.1	Proportion of vehicles using diesel (%)	25	2001	9
1.3.1	Proportion of vehicles using unleaded gasoline (%)	75	2001	9
1.3.1	Average number of times national air quality standards are exceeded in a year Only TSP exceeded	...		
1.3.2	Average number of times national water quality standards are exceeded in a year Only BOD and SS exceeded	...		
1.3.2	Industries generating wastewater (number) Large companies	90	2004 est	10
1.3.3	Solid waste generated (kg/per capita/day)	0.45	2000	7

1.3.3	Solid waste generated (tons per year)	15,000,000	2004	23
1.3.3	Percent recycling of solid waste (%)	13-15	1999	9
1.3.4	Toxic and hazardous wastes generated (tons/year)	158 000	2004	23
1.3.4	Industries generating toxic and hazardous wastes (number)	439	2002	19
1.3.4	Health-care waste generation (tons per year)	18 250 – 27 375	1998	9
	Kg/patient-day	0.75	1992	18
1.3.4	Nuclear waste generation (tons per year)	...		
1.4.2	Cases of pesticide poisoning (number)	7 170	2002	1
1.4.2	Proportion of undernourished population (%)	19	2001	4
1.4.2	Prevalence of underweight children under five years of age (%)	29	2002	4
1.4.4	Motor and other vehicle injuries (number)	126 848	2002	1
1.4.4	Road traffic crashes:			
	Number of accidents (within a year)	26 522	2002	1
	12,956 deaths			
	29, 827 injuries			
	Rate (Accident per 100,000 population)			
	Rate (Deaths per 10,000 motor vehicles)	11	2002	14
	Rate (Injuries per 10,000 motor vehicles)			
	Rate (deaths per 100,000 population)			
1.4.1- 1.4.7	Ten leading causes of morbidity	Number	Rate per 100 000 population	
	1. Pneumonia	237 479	297.83	2002
	2. Acute pharyngitis/ tonsillitis	200 450	251.39	2002
	3. Acute bronchitis / bronchitis	171 291	214.82	2002
	4. Diarrhoea/ gastroenteritis	167 077	209.54	2002
	5. Transport accident	126 848	159.08	2002
	6. Primary hypertension	97 741	122.58	2002
	7. Influenza	85 116	106.75	2002
	8. Disease of appendix	76 014	95.33	2002
	9. Gastritis / duodenitis	72480	90.90	2002
	10. Fracture of other limbs	66 738	83.70	2002
1.4.1- 1.4.7	Ten leading causes of mortality	Number	Rate per 100 000 population	
	1. Intracranial injury	2129	2.67	2002
	2. Transport accident	1499	1.88	2002
	3. Pneumonia	1405	1.76	2002
	4. Intracerebral hemorrhage	1130	1.42	2002
	5. HIV/AIDS	788	0.99	2002
	6. Intentional self harm	779	0.98	2002
	7. Respiratory TB	718	0.90	2002
	8. Stroke not specified as (haemorrhage or infarction)	666	0.84	2002
	9. Heart failure	663	0.83	2002

	10. Diarrhoea/gastroenteritis presumed infectious in origin	607	0.76	2002	1
		Number of cases	Number of deaths		
1.4.5	Tuberculosis (All types)	95 577	...	2002	8
1.4.5	Rheumatic fever and rheumatic heart diseases	20 014	53	2002	1
1.4.6	Acute respiratory infections	275 554	167	2002	1
1.4.6	Hepatitis viral	8,421	4	2002	1
1.4.6	Cholera	321	0	2002	20
1.4.6	Encephalitis	1634	42	2002	1
1.4.6	Typhoid fever (and paratyphoid fever)	6,936	3	2002	20
1.4.6	Diarrhoeal diseases	1,055,178	607	2002	20
1.4.7	Plague	5	0	2002	1
1.4.7	Malaria	163,465	50	2003	21
1.4.7	Dengue/DHF	49,751	52	2003	21
<b>2</b>	<b>Legal, Policy, and Institutional Structure</b>				
2.1.1	National environmental health policy (Y/N list, year) National Action Plan for Environmental Health (2001-2010)	Y			
2.1.1	National environmental policy (Y/N list, year) <ul style="list-style-type: none"> <li>National Plan for Environment and Sustainable Development 1991-2000</li> <li>National Strategy for environmental protection until 2010 and vision toward 2020</li> </ul>	Y	1991 2004	5, 7 24	
2.1.1	Policies/legislation to reduce exposure to environmental tobacco smoke (Y/N list, year)	Y			
2.1.1	National policies for healthy settings (such as healthy cities) (Y/N list, year)	Y			
2.1.2	Environmental / Health Acts promulgated:				5, 7
	<ul style="list-style-type: none"> <li>Decree No. 67/2003/ND-CP of June 13, 2003 on Environmental Protection Charges for Waste Water</li> </ul>		2003		
	<ul style="list-style-type: none"> <li>Decision No. 64/2003/QD- TTG of April 22, 2003 Approving the Plan for Thoroughly Handling Establishments Which Cause Serious Environmental Pollution</li> </ul>		2003		
	<ul style="list-style-type: none"> <li>Resolution No. 41-NQ/TW of 15 January 2004 on Environment Protection in the Period of Industrialization and Modernisation</li> </ul>		2004	25	
	<ul style="list-style-type: none"> <li>Instruction on Environmental Assessments</li> </ul>		1998		

	<ul style="list-style-type: none"> <li>Decree No. 121/2004/ND-CP of May 12, 2004, of the Government promulgating the Regulation on Sanctions against Administrative Violations in the field of protection of the environment</li> </ul>		2004	25
	<ul style="list-style-type: none"> <li>Law on Minerals</li> </ul>		1996	
	<ul style="list-style-type: none"> <li>Decree 84/CP on Petroleum</li> </ul>		1996	
	<ul style="list-style-type: none"> <li>Decree No. 02/CP on Toxic Chemicals and Radioactive Substances</li> </ul>		1995	
	<ul style="list-style-type: none"> <li>Decree No. 175/CP on Providing Guidance for the Implementation of the Law on Environment Protection</li> </ul>		1994	
	<ul style="list-style-type: none"> <li>Regulation No. 1807/QD-Mtg on Regulations and Organizations of the Appraisal Council on Environmental Impact Assessment Reports and Issuing of Environmental Licenses</li> </ul>		1994	
	<ul style="list-style-type: none"> <li>Instruction No. 1420/QD-Mtg for Guiding Environmental Impact Assessment to the Operating Units</li> </ul>		1994	
	<ul style="list-style-type: none"> <li>Decree 09/CP of the Government on Organizing and Managing the Tourist Enterprise</li> </ul>		1994	
	<ul style="list-style-type: none"> <li>Law on Environmental Protection</li> </ul>		1992	
	<ul style="list-style-type: none"> <li>Decree No. 22/CP on Responsibilities, Authority and Organization of the Ministry of Science, Technology and Environment</li> </ul>		1993	
	<ul style="list-style-type: none"> <li>Law on Petroleum</li> </ul>		1993	
	<ul style="list-style-type: none"> <li>Law on Land</li> </ul>		1993	
	<ul style="list-style-type: none"> <li>Decree 14/CP on Administrative Fines in the Management and Protection of Forests</li> </ul>		1992	
	<ul style="list-style-type: none"> <li>Decree 18-HDBT of the Council of Ministries Determining the List of Precious and Rare Wild Plants and Animals and Regulating Their Management and Protection</li> </ul>		1992	
2.1.2	Environmental impact assessment as an official requirement (Y/N list, year) Guidelines for EIA since 1994	Y		5, 9
2.1.2	Health impact assessment as part of EIA (Y/N list, year) HIA guidelines already prepared in 2003	N		
2.1.3	Policies for decentralization such as for environmental health and monitoring (Y/N list, year)	Y		
2.1.3	Policies for privatization such as for environmental health and monitoring (Y/N list, year)	Y		
2.2.1	Organizational structure for environmental health separate sheet			

2.2.2	<p>List of agencies and partners for environmental health other than government (separate sheet)</p> <ul style="list-style-type: none"> <li>• Association Biosciences VN</li> <li>• Association Des Géographes Vietnamien (AVG)</li> <li>• Société D'Ecologie Du Viet Nam 1985</li> <li>• Zoologie Society Viet Nam 1986</li> </ul>	Y		5
2.2.3	<p>List of relevant government agencies and their functions</p> <ul style="list-style-type: none"> <li>• Ministry of Natural Resources and Environment (MONRE)</li> <li>• Ministry of Construction</li> <li>• Ministry of Agriculture and Rural Development</li> <li>• Ministry of Construction</li> <li>• Viet Nam Women's Union</li> <li>• Viet Nam Youth's Union</li> <li>• Viet Nam Farmers' Union</li> <li>• Viet Nam Water Supply and Sewerage Association</li> <li>• Provincial Environment Committees</li> </ul>	Y		5
2.3	<p>Relevant international conventions/agreements (List, year signed/ratified)</p> <ul style="list-style-type: none"> <li>• Convention on Wetlands of International Importance Especially as Waterfowl Habitat (RAMSAR) [20 September 1988].</li> <li>• Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons, and on their Destruction. Convention on International Trade in Endangered Species of Wild Fauna and Flora [20 January 1994].</li> <li>• MARPOL Convention for the Prevention of Pollution from Ships [29 August 1991].</li> <li>• UN Environmental Modification Convention (ENMOD) [26 August 1980].</li> <li>• United Nations Convention on the Law of the Sea [25 July 1994].</li> <li>• FAO International Code of Conduct on the Distribution and Use of Pesticides.</li> <li>• Vienna Convention for the Protection of the Ozone Layer [26 April 1994].</li> <li>• IAEA Convention on Early Notification of a Nuclear Accident [29 September 1987].</li> <li>• IAEA Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency [29 September 1987].</li> </ul>			5, 7

	<ul style="list-style-type: none"> <li>• Montreal Protocol on Substances that Deplete the Ozone Layer [26 January 1994]</li> <li>• London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London, 1990.</li> <li>• Copenhagen Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Copenhagen, 1992.</li> <li>• Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal [13 March 1995].</li> <li>• United Nations Framework Convention on Climate Change [16 November 1994].</li> <li>• Convention on Biological Diversity [16 November 1994].</li> <li>• International declaration on cleaner production [22/9/1999]</li> <li>• Kyoto Protocol 1998</li> <li>• Stockholm Convention (POPs) 2001</li> <li>• Framework Convention on Tobacco Control 2004</li> </ul>			
<b>3</b>	<b>Human Resources Development Programs</b>			
3.1	Environmental Health workforce			
	- Environmental Health Officers			
	- Health / Sanitary Inspectors			
	- Assistant Sanitarians			
	- Environmental Engineers			
	- Sanitary Engineers			
	- Pollution Control Officers			
	- Public Health Staff	700	2004 est	17
3.2	Tertiary degrees related to environmental health (Y/N list)	Y	2004	17
3.2	Short courses and duration related to environmental health (Y/N list)	Y	2004	17
3.3	Government certification for environmental workforce (Y/N list)	Y	2004	17
3.4	Professional associations related to environmental health (Y/N list, memberships)	Y	2004	17
3.4	International associations' local affiliates (Y/N list, memberships)	N	2004	17
<b>4</b>	<b>Priority Environmental Health Issues</b>			
4.1	Soil erosion (mm/year)	...		
4.1	Fertilizer consumption (metric tons/year)	1 975 200	2002	6
4.1	Pesticide consumption (metric tons/year)	...		
4.1	Banned pesticides used (number)	28	2003	13
4.1	Water resources withdrawal for irrigation	86	2000	7

	(annual withdrawal as percentage of total water resources)			
4.1	Irrigated agricultural area (1000 ha)	3000	2001	6
4.2 - 4.6	Inputs from Chapter 1			
4.6	Carbon dioxide emissions (per capita metric tons)	0.6	1999	2
4.6	Consumption of ozone-depleting CFCs (ODP metric tons)	243	2001	2

**Notes:**

- ... Data not available.
- NR Not relevant.
- p Preliminary
- Est Estimate

**Sources:**

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- 2 Asian Development Bank Statistics 2004 - <http://www.adb.org/statistics/>
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- 6 Food and Agriculture Organization Statistics 2002 -<http://apps.fao.org/default.jsp>
- 7 Greater Mekong Subregion ATLAS of the Environment, Asian Development Bank 2004
- 8 Tuberculosis Cases 2002, data provided by Stop TB and Leprosy Unit, WHO Regional Office for the Western Pacific; Tuberculosis Control in the WHO Western Pacific Region 2003 Report; Malaria and Dengue cases and deaths, data provided by Malaria, Vector-borne and Parasitic Diseases Unit, WHO Regional Office for the Western Pacific, 10 March 2004
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