



Lao People's Democratic Republic

Environmental Health Country Profile

World Health Organization

As of 19 May 2005



1 Development, Environment and Health Status

1.1 Development Pattern of the Country

1.1.1 Maps / geography / demography / urban-rural trends

Lao People's Democratic Republic (Lao PDR) is a small landlocked country in South East Asia sharing its borders with five nations namely; Thailand to the west, Vietnam to the east, China and Myanmar to the north and Cambodia to the south. Lao PDR has a land area of 236 800 kms², a little larger than Great Britain. It stretches more than 1,700 km from north to south and about 100 to 400 km from east to west. Topography is predominantly mountainous with cultivated floodplains along some reaches of the Mekong River and larger tributaries. The climate is typically tropical monsoon. Rainy season starts from April to October, with average annual rainfall of 1, 600 mm.

In 2003, the estimated total population is 5, 679, 000 with an almost equal ratio between male and female. It is one of the fastest growing populations with a projected 2.40 percent increase annually. About 42 percent of the population is below 15 years old while a small fraction 3.50 percent is above 65 years old. Most people (72 percent) live in the rural areas, although in recent years some rural to urban shifts have started to occur. Lao PDR has the lowest population density in Asia, about 21 per km² in 2000. Vientiane, the capital city, is the densest area (149 per km²) while the least dense is in the Xaysomboun Special Zone at 8 per km².

Because of poor education, adult literacy is relatively low compared to other Asian countries with an average of 66.40 percent. Child mortality indicators in Lao PDR, though gradually improving are still among the poorest in the region. Between 1990 and 2002 infant mortality fell from 134 to 87 per 1, 000 live births and under-five mortality fell from 170 to 100 per 1, 000 live births. The rates however are much higher in the rural and remote areas. Most children die from communicable diseases like malaria and diarrhea and epidemics like dengue fever and measles.

1.1.2 General economy of the country

The country's annual per capita income in 2002 was US\$304. Its economy is essentially agrarian, with the agriculture sector contributing 52.10 percent to the GDP while the industry and services sector contributing 21.70 and 25.10 percent respectively. The industrial sector on the other hand has enjoyed rapid expansion, particularly in manufacturing. Nonetheless, the economy remains predominantly agricultural, diversifying in crop production, livestock and fisheries, and forestry. Approximately 80 percent of the population depends on agriculture and the rearing of livestock for their livelihood. Government health expenditure in 2001 was 3.10 percent of the total expenditure. This was more than twice the rate in 1999 (1.50 percent of GDP).

1.1.3 Development priorities

Lao PDR's long-term national development goal is to achieve sustained economic growth and social development while safeguarding the country's social, cultural, economic and political identity. Lao PDR has been moving towards a market-oriented economy, building of infrastructure throughout the country and improving the well being of the people through greater food security, extension of social services and environment conservation while enhancing the spiritual and cultural life of the Lao multi-ethnic population.

Lao PDR's long-term development strategy includes the following objectives:

- a. To sustain economic growth with equity at an average rate of about 7 per cent, considered as the necessary rate for tripling per-capita income of the multi-ethnic Lao population by 2020
- b. To halve poverty levels by 2005 and eradicate mass poverty by 2010.
- c. To eliminate opium production by 2005 and phase-out shifting cultivation by 2010.
- d. To attain these objectives, the government has outlined the following strategic priorities:
 - Maintain an appropriate level of economic growth for the medium and long-term period in response to demographic trends.
 - Enhance human resource development through education, particularly basic education at all levels and including the formal and informal sector as well as vocational training.
 - Develop and modernize social and economic infrastructure in order to facilitate economic development in each region of the country and to accelerate the Lao PDR's regional and international economic integration.
 - Facilitate access to electricity for people in all areas and regions of the country in order to foster integrated economic development.
 - Promote industries utilizing domestic natural resources, and actively promote small and medium-sized enterprises (SMEs) and handicrafts production.
 - Develop and promote all economic sectors, particularly the private sector, including foreign direct investment (FDI) in order to expand business opportunities, placing emphasis on export-oriented sectors that have a comparative advantage.
 - Enhance market linkages and trade facilitation.
 - Strengthen existing legal and regulatory frameworks.
 - Create favorable conditions and mechanisms for improving financial institutions and further capital market development;
 - Promote economic co-operation with all partners and countries.

1.1.4 Human Development Index

This is a composite index developed by the United Nations Development Programme (UNDP) 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. Lao PDR is classified by UNDP as

a medium human development country with an HDI of 0.534 in 2003 and ranks 135 out of 177 countries, below all its Southeast Asian neighbors.

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 2000, about 52 percent of the total population had access to safe water, 75.5 percent in the urban areas and 37.60 percent in the rural areas. According to a 1998 study, only 8 percent of households had a water faucet in the house while 37 percent relied on rivers, dams, lakes and shallow wells. Only about 37.30 percent of the total population has adequate excreta disposal facilities.

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

Most provincial capital towns currently have or are in the process of constructing a piped water supply system to distribute treated water. Over 60 percent of the households are connected to the system.

There is no sewerage facility in the urban centers of Lao PDR. Disposal of human waste occurs on site. Large facilities and modern properties use septic tanks with an overflow usually draining to roadside drains. There are also no interconnected networks for storm drainage in any areas.

Almost all the electricity generated in Lao PDR is from hydropower. The population with access to electricity is only 31 percent, a high 91 percent in the urban areas and a low 19 percent in the rural areas. The rest of the population especially in the rural communities uses traditional fuels like wood and charcoal for cooking and lighting.

Solid waste collection is only in Vientiane and other major towns in the five big provinces. In Vientiane, a combination of state and private firms take up the task of waste collection. About 60 percent of the total waste generated is collected. The Vientiane Municipality Government sets the collection frequency as well as the solid waste charges per household. Besides Vientiane, only five other major towns have some sort of collection system. The rest of the towns dispose their waste just about anywhere.

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

There is no poison center service or capacity for chemical emergency response in Lao PDR. There are firefighters who could be trained for HazMat.

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

Several building regulations are in place but are not strictly implemented. It is not known how much of the population live in informal settlements but some of the large hydropower projects have caused people to relocate and resettled to areas unsuitable for cultivation.

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

There is higher preference for motorcycles over vehicles in Lao PDR since motorcycles are more affordable. In 2003, there were 52,648 registered vehicles, which translates to 994 vehicles per 100,000 population. There are more registered motorcycles with about 201,760 motorcycles or 3,806 per 100,000 population.

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

Some government and private laboratories are capable of monitoring selected environmental quality parameters for drinking water, water resources and ambient air but would need upgrading and quality control.

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 systematic way of using the data for planning or decision-making.

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)

Energy use in the country is dominated by household consumption of traditional fuels, mainly wood and charcoal. In 2001, approximately 81.60 percent of the population used solid/biomass fuels for cooking or heating. It was estimated that around 70 percent of the vehicles still use diesel and 30 percent use unleaded gasoline.

In general, air quality in Lao PDR is considered very good. Results of an air quality study carried out around Vientiane from March to April 2004 showed that particulate matter levels were high during the period of study and that PM₁₀ levels exceeded the international 24-hour standard most of the days. Sulfur and nitrogen dioxide levels were relatively low. Wind speed was found to be low during the measurement period indicating poor ventilation around the Vientiane area. Pollution is therefore trapped in the areas where they are generated, such as along roadsides where many people are affected.

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

According to the Ministry of Industry and Handicraft, there are about 112 industries generating wastewater. Most of these industries have no wastewater treatment facilities and discharge their effluent directly to rivers.

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

Around 91,250 tons of solid waste was generated in 2001. The average solid waste production in Vientiane is 0.75 kg per capita per day with a total daily generation of 250 tons. The waste generally consists of 30 percent organic matter, 30 percent plastic, 15 percent paper and 25 percent glass, cans and other metals. Of the total wastes discarded 50 percent is recyclable.

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

Hazardous and toxic wastes are often mixed with municipal wastes and no segregation is required. There is currently no available data on the volume of hazardous wastes generated by industries. In 1996, it was estimated that hospitals and health centers in Vientiane produced approximately 183 tons of health-care waste per day. The Minister of Health has approved regulation on Health Care Solid Waste Management in July 2004.

1.4 *Public Health Statistics*

1.4.1 Five leading causes of morbidity and mortality

The five leading causes of morbidity are malaria, pneumonia, gastritis, influenza and diarrhea. Nearly 85 percent of villages claim malaria as their major health problem with about 104,434 cases in 2000. Communities living in or near forested and hilly areas along streams are most at risk. The poor health conditions reflect the inadequacies of the health care system and the failures of the government to provide basic social services including access to safe drinking water and adequate environmental sanitation.

The five leading causes of mortality are malaria (996 deaths), pneumonia, diarrhea, heart failure and injury. All causes except heart failure are preventable.

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

About 22 percent of the population is undernourished with child malnutrition rates remaining high at 40 percent in 2002. Food security is the major concern of Lao PDR. Malaria associated with water resources development including irrigation projects, has been the top cause of morbidity and mortality in 2000.

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

Respiratory diseases such as pneumonia, influenza, and tuberculosis are promoted by poor air quality such as elevated particulate matters from motor vehicles, thermal power plants, and industrial pollution. These diseases and risk factors are significant in Lao PDR as they comprise the top causes of morbidity and mortality.

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)

In 2003, there were 5,177 reported cases of road traffic accidents. This is about 97.68 accidents per 100 000 population and 203.46 accidents per 10, 000 vehicle registration, which are considered high in this region.

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

Tuberculosis (2,621 cases in 2002) and respiratory infections are still important diseases in Lao PDR. These diseases have been associated with congestion and poor housing design especially when solid/biomass fuels are used for cooking.

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

In 2000, there were 12, 334 cases of diarrhea with 34 deaths. In 2002, there were 1272 cholera cases and 632 cases of hepatitis. Diarrhea, hepatitis, and cholera are all associated with poor drinking water quality and unsafe food and could be eliminated with proper hygiene and adequate water supply and sanitation facilities.

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

An estimated 104, 434 cases and 996 deaths due to malaria were reported in 2002 with about 9,192 cases and 22 deaths due to dengue/DHF. Dengue is caused by viruses transmitted by 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

The constitution of the Lao PDR stipulates that "All organizations and citizens must protect the environment and natural resources: land, underground resources, forests, fauna, water resources

and atmosphere." In 1993, an Environmental Health Action Plan was drafted. There are national policies on healthy settings since 1996.

2.1.2 Relevant legislation addressing environmental health issues

Significant legislations related to environmental health are the Environmental Protection Law 2001 and the Decree on the Implementation of the Environmental Protection Law 2002. Environmental impact assessment is required by the Regulation on Environmental Assessment in Lao PDR 2003. Health impact assessment is not yet considered in development planning although there are HIAs made for large projects such as dams. Relevant legislations are the following:

- a) PM's Decree on Vientiane Urban Development and Administration Authority 2000
- b) President's Decree Urban Planning Law 1999
- c) Mining Law 1997
- d) PM's Decree on Urban Development and Administration Authority 1997
- e) PM's Decree on Management and Use of Forest and Forest Land 1993
- f) Land Law 1997
- g) Decree on Logging Ban 1991
- h) Decree on Adoption of Tropical Forestry Programme 1991
- i) Decree of Wild Animals, Fisheries, Hunting, and Fishing 1989
- j) Provisions on Discharge of Wastewater from Factories 1994
- k) Decree on Implementation of the Environment Protection Law 2001
- l) Decree on Implementation of the Water and Water Resources Law 2001
- m) Regulation of Environmental Assessment in Lao PDR 2000
- n) Decree on Implementation of the Land Law 1999

2.1.3 Decentralization and / or privatization policies dealing with environmental health

There is a mixture of government and private sector involvement for environmental monitoring but it is still predominantly the public agencies in charge of monitoring and surveillance.

2.2 *Institutional Structure for Environmental Health*

2.2.1 Administrative / organizational set-up of the country

Within the Ministry of Health are two divisions under the Department of Hygiene and Prevention: Division of Health Promotion and Division of Environmental Health. There are also environmental health offices in the local governments.

2.2.2 List of agencies and partners for environmental health other than government

There are at least 35 agencies (outside of government) that were reported to be involved in environmental health activities. These are:

Environnement Et Developement Lao, Worldview International Foundation, UNICEF, SIDA, JICA, GTZ, World Bank, Action Contre la Faim (ACF), ADRA, CIDSE, Action Nord-Sud, SCFCK, CAA, EU, AUSAID, Lao America, Quaker, MCC, IFAD, EED, HCR, Lao Red Cross,

World Vision, ADB, IUCN, Menonite, FHI, Care. Denmark Red Cross, EDI, Enfants d'Ailleurs, UNDP, Thailand Associations, NAWACOP, Concern Worldwide, SCA

2.2.3 Agencies involved on environmental health and their respective functions

A number of other government agencies also have environmental health functions. These are the following:

- a) Science Technology and Environment Agency (STEA)
- b) Ministry of Agriculture and Forests, Department of Forestry
- c) Ministry of Industry and Handicrafts
- d) Division of Environmental Management
- e) Division of Mineral Resource Management
- f) Electricite du Laos
- g) Ministry of Communication, Transport, Post and Construction
- h) Ministry of Public Health
- i) Local Authorities

2.3 *Relevant International Conventions and Agreements Ratified or Signed*

Lao PDR is a party to a number of international agreements such as

- a) Convention on Biological Diversity
- b) UN Framework Convention on Climate Change (Kyoto Protocol)
- c) Convention to Combat Desertification
- d) Environmental Modification
- e) Law of the Sea, Nuclear Test Ban
- f) Vienna Convention for the Protection of the Ozone Layer
- g) Cartagena Protocol on Biosafety
- h) Participation in International Environmental Treaties:
 - i) Framework Convention on Tobacco Control
 - j) Montreal Protocol on CFC Control
 - k) Framework Convention on Climate Change
 - l) Cooperation for the Sustainable Development of the Mekong River Basin
 - m) Plant Protection Agreement for Asia and the Pacific Region
 - n) Convention on Road Traffic
 - o) International Plant Protection Convention

3 Human Resources Development Programs

3.1 *Environmental health workforce, professionals and their skills*

In 2003, it was estimated that there were 510 rural water supply and sanitation officers throughout the country. Around 150 are environmental staff working for the government environment agency. However, their capacity still needs upgrading.

3.2 *Formal and informal training programs for environmental health*

There are no tertiary degrees on environmental health in Lao PDR.

3.3 *Government certification*

There is no need for any government examination prior to working for environmental health jobs in Lao PDR.

3.4 *Professional associations*

There are no professional associations in Lao PDR on environmental health.

4 **Priority Environmental Health Issues**

The following have been identified to be important environmental health issues in Lao PDR:

- a) Deforestation and degradation of forests;
- b) Lack of enforcement and controls mechanism;
- c) Degradation of biodiversity;
- d) Encroachment of lowland farmers in neighbouring uplands;
- e) Catchment degradation;
- f) Inadequate urban waste water treatment;
- g) Overflow of drainage canals;
- h) Low coverage of rural water supply and sanitation;
- i) Industrial pollution;
- j) Lack of leadership in environmental affairs

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**

5.1 *Specific policies and legislation for environmental health*

Develop specific policies, strategies, legislation and long term plan for environmental health.

5.2 *Institutional development and intersectoral collaboration*

5.3 *Human resources development*

5.4 *Monitoring and surveillance*

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

5.6 *Others*

References

Appendix

LAO PEOPLE'S DEMOCRATIC REPUBLIC
Environmental Health Data Sheet
As of 19 May 2005

	INDICATORS	DATA	Year	Source
1	Development, Environment and Health			
1.1.1	Area (1000 km ²)	236.80	1985	23
1.1.1	Estimated population ('000)			
	- Total	5679	2003 est	23
	- Male	2806	2003 est	23
	- Female	2872	2003 est	23
1.1.1	Annual population growth rate (%)	2.40	2002	1
	Percentage of population			
	- 0-14 years	42	2002	12
	- 65+ years	3.5	2002	12
1.1.1	Urban population (%)	28	2003	24
1.1.1	Adult literacy rate (%)			
	- Both sexes	66.40	2002	12
	- Male	77.40	2002	12
	- Female	55.50	2002	12
1.1.1	Infant mortality rate (per 1000 live births)	87	2002	12
1.1.1	Under-five mortality rate (per 1000 live births)	100.00	2002	12
1.1.1	Newborn infants weighing at least 2500g at birth (%)	82.00	98.00	8
1.1.2	General economy: narrative report (separate sheet)			
1.1.2	Per capita GDP at current market prices (US\$)	304.00	2002	12
1.1.2	Total expenditure on health as % of GDP	3.10	2001	1
1.1.3	Development priorities: narrative report (separate sheet)			
1.1.3	Land area for agriculture (as percentage of total land area)	8.0	2001	7
1.1.4	Human development index (Highest = 1)	0.534	2002	12
	Human development index Rank (out of 175 countries)	135	2002	12
1.2.1	Population with access to safe water (%)			

	INDICATORS	DATA	Year	Source
	- Total	52.00	2000	6
	- Urban	75.50	2000	6
	- Rural	37.60	2000	6
1.2.1	Population with adequate excreta disposal facilities (%)			
	- Total	37.30	2000	6
	- Urban	67.10	2000	6
	- Rural	19.00	2000	6
1.2.1	Solid waste collection (% of total waste generated) Vientiane	60	2001	9
1.2.1	Proportion of urban population served by municipal solid waste collection (%)	...		
1.2.2	Proportion of urban population served by sewerage system (%) National or major city	0	2004	20
1.2.1	Proportion of population with electricity (%)			
1.2.2	- Total	31	2001	22
	- Urban	91	2001	22
	- Rural	19	2001	22
1.2.3	Poison center service (Y/N list, year)	N		
1.2.3	Chemical emergency preparedness (Y/N list, year)	N		
1.2.4	Proportion of population living in informal settlements (%)	...		
1.2.4	Presence of building regulations and inspection (Y/N list, year)	Y	2000	3
	1997 Decree of Prime Minister of Lao PDR : Organization of Urban Development and Administration Authority			
	1999 Decree of the President of Lao PDR : Urban Planning Law			
	2000 Decree of Prime Minister of Lao PDR: Vientiane Urban Development and Administration Authority			
1.2.5	Number of registered vehicles	52,684	2003	18
	Rate (number per 100,000 population)	994	2003	18
	Number of registered motorcycles	201,760	2003	18
	Rate (number per 100,000 population)	3 806	2003	18
1.2.6	Presence of government/private laboratories and equipment for monitoring			
	Drinking water (Y/N; G/P)	Y; G/P	2004	11

	INDICATORS	DATA	Year	Source
	Water resources (Y/N ; G/P)	Y; G/P	2004	11
	Ambient air (Y/N ; G/P)	Y; G/P	2004	11
	Noise (Y/N ; G/P)	N	2004	11
	Radiation (Y/N ; G/P)	N	2004	11
1.2.7	Presence of government/private system for data collection and processing (Y/N; G/P)	Y; G/P	2004	11
1.3.1	Proportion of population using solid/biomass fuels for cooking or heating (%)	81.6	2001	12
1.3.1	Proportion of vehicles using diesel (%)	70	2004	18
1.3.1	Proportion of vehicles using unleaded gasoline (%)	30	2004	18
1.3.1	Average number of times national air quality standards are exceeded in a year: a. short-term (1-hour average) frequency of exceedance b. long-term (8-hour average) frequency of exceedance	0	2003	11
1.3.2	Average number of times national water quality standards are exceeded in a year a. In three major rivers b. In major drinking water supplies	0	2003	11
1.3.2	Industries generating wastewater (number)	112	2002	19/26
1.3.3	Solid waste generated (kg/per capita/day) Vientiane	0.75	2001	9
1.3.3	Solid waste generated (tons per year) [Vientiane 250 tons/day]	91,250	2001	9
1.3.3	Proportion of recyclable solid waste (%)	50	2001	9
1.3.4	Toxic and hazardous wastes generated (tons/year)	...		
1.3.4	Industries generating toxic and hazardous wastes (number)	...		
1.3.4	Health-care waste generation (tons per year) [Vientiane 0.5ton/day]	183	1996	9
1.3.4	Nuclear waste generation (tons per year)	NR		
1.4.2	Cases of pesticide poisoning (number)	...		
1.4.2	Proportion of undernourished population (%)	22	2001	12
1.4.2	Prevalence of underweight children under five years of age (%)	40	2002	12
1.4.4	Motor and other vehicle injuries (number)	6,699	2003	18
1.4.4	Road traffic crashes:			
	Number of accidents (within a year)	5,177	2003	18
	Rate (Accident per 100,000 population)	97.68	2003	18
	Rate (Accident per 10,000 vehicle registration)	203.46	2003	18

	INDICATORS	DATA		Year	Source
	Rate (Injuries per 10,000 vehicle registration)	263.28		2003	18
	Rate (deaths per 100,000 population)	8.03		2003	18
1.4.1- 1.4.7	Ten leading causes of morbidity	Number	Rate per 100 000 population		
	1. Malaria	104 434	4083.17	2000	5
	2. Pneumonia	18 096	728.44	2000	5
	3. Gastritis	17 132	689.63	2000	5
	4. Influenza	12 987	522.78	2000	5
	5. Diarrhoea	12 334	496.49	2000	5
1.4.1- 1.4.7	Ten leading causes of mortality	Number	Rate per 100 000 population		
	1. Malaria	996	40.09	2000	5
	2. Pneumonia	83	3.34	2000	5
	3. Diarrhoea	34	1.36	2000	5
	4. Heart failure	34	1.36	2000	5
	5. Injury	33	1.32	2000	5
		Number of cases	Number of deaths		
1.4.5	Tuberculosis (All types)	2621	...	2002	13
1.4.5	Rheumatic fever and rheumatic heart diseases	...	...
1.4.6	Acute respiratory infections	...	...
1.4.6	Hepatitis viral	632	0	2002	13
1.4.6	Cholera	1272	1	2002	13
1.4.6	Typhoid fever (and paratyphoid fever)	...	...
1.4.6	Encephalitis	6	0	2002	13
1.4.6	Diarrhoeal diseases	...	...
1.4.7	Plague	...	...
1.4.7	Malaria	21 384	195	2002	13
1.4.7	Dengue/DHF	9192	22	2002	13
2	Legal, Policy, and Institutional Structure				
2.1.1	National environmental health policy (Y/N list, year)	N			

	INDICATORS	DATA	Year	Source
2.1.1	National environmental policy (Y/N list, year) The constitution of the Lao PDR says: "All organizations and citizens must protect the environment and natural resources: land, underground resources, forests, fauna, water resources and atmosphere." - Environmental Health Action Plan 1993	Y		3, 25
2.1.1	Policies/legislation to reduce exposure to environmental tobacco smoke (Y/N list, year)	Y	2001	16
2.1.1	National policies for healthy settings (such as healthy cities) (Y/N list, year)	Y	1996	15
2.1.2	Environmental / Health Acts promulgated: <ul style="list-style-type: none"> PM's Decree on Vientiane Urban Development and Administration Authority President's Decree Urban Planning Law Mining Law PM's Decree on Urban Development and Administration Authority PM's Decree on Management and Use of Forest and Forest Land Land Law Decree on Logging Ban Decree on Adoption of Tropical Forestry Programme Decree of Wild Animals, Fisheries, Hunting, and Fishing Provisions on Discharge of Wastewater form Factories Decree on Implementation of the Environment Protection Law Decree on Implementation of the Water and Water Resources Law Regulation of Environmental Assessment in Lao PDR Decree on Implementation of the Land Law 			25
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2.1.2	Environmental impact assessment as an official requirement (Y/N list, year) - Regulation on Environmental Assessment in Lao PDR 2003	Y	2003	21
2.1.2	Health impact assessment as part of EIA (Y/N list, year)	N		
2.1.3	Policies for decentralization such as for environmental health and monitoring (Y/N list, year)	Y	2003	15
2.1.3	Policies for privatization such as for environmental health and monitoring (Y/N list, year)	N		
2.2.1	Organizational structure for environmental health (separate sheet)	Y		

	INDICATORS	DATA	Year	Source
2.2.2	<p>List of agencies and partners for environmental health other than government (separate sheet)</p> <ul style="list-style-type: none"> • Environnement Et Developement Lao • Worldview International Foundation • UNICEF • JICA • World Bank • ADRA • CIDSE • SCFCK • EU • Lao America • MCC • EED • Lao Red Cross • ADB • Menonite • Care • EDI • UNDP • NAWACOP • SCA • SIDA • GTZ • Action Contre la Faim (ACF) • WC • Action Nord-Sud • CAA • AUSAID • Quaker • IFAD • HCR • World Vision • IUCN • FHI • Denmark Red Cross • Enfants d'Ailleurs • Thailand Associations • Concern Worldwide 	Y		3, 17
2.2.3	<p>List of relevant government agencies and their functions</p> <ul style="list-style-type: none"> • Science Technology and Environment Organization (Department of Environment, Environment Research Institute) • Ministry of Agriculture and Forests, Department of Forestry • Ministry of Industry and Handicrafts • Division of Environmental Management • Division of Mineral Resource Management • Electricite du Laos • Ministry of Communication, Transport, Post and Construction • Ministry of Public Health • Provincial and District Governments 	Y		3 27/28 27/28 27/28 27/28 27/28 27/28 27/28
2.3	<p>Relevant international conventions/agreements (List, year signed/ratified)</p> <ul style="list-style-type: none"> • Convention on Biological Diversity 	Y		3,12

	INDICATORS	DATA	Year	Source
	<ul style="list-style-type: none"> • UN Framework Convention on Climate Change (Kyoto Protocol) • Convention to Combat Desertification • Environmental Modification • Law of the Sea, Nuclear Test Ban • Vienna Convention for the Protection of the Ozone Layer • Cartagena Protocol on Biosafety 			
	Participation in International Environmental Treaties: <ul style="list-style-type: none"> • Framework Convention on Tobacco Control • Montreal Protocol on CFC Control • Framework Convention on Climate Change • Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin • Plant Protection Agreement for Asia and the Pacific Region • Convention on Road Traffic • International Plant Protection Convention 		2004 1998 1995 1995 1960 1959 1955	25
3	Human Resources Development Programs			
3.1	Environmental Health workforce			
	- environmental health officers			
	- health/sanitary inspectors			
	- assistant sanitarians			
	- environmental engineers			
	- sanitary engineers			
	- pollution control officers			
	- rural water supply and sanitation officers	510	2003	17
	- environmental staff	150	2004 est	11
3.2	Tertiary degrees related to environmental health (Y/N list)	N		
3.2	Short courses and duration related to environmental health (Y/N list) <ul style="list-style-type: none"> - Water Quality Monitoring (1 week each) - Community management for water supply and sanitation - Environmental health management - Latrine construction - Hygiene Promotion - Household chlorination 	Y	2003	15
3.3	Government certification for environmental workforce (Y/N list)	Y		

	INDICATORS	DATA	Year	Source
3.4	Professional associations related to environmental health (Y/N list, memberships)	N		
3.4	International associations' local affiliates (Y/N list, memberships)	N		
4	Priority Environmental Health Issues			
4.1	Soil erosion (mm/year) m/year	5-10	2003	14
4.1	Fertilizer consumption (metric tons/year)	7019	2002	7
4.1	Pesticide consumption (metric tons/year)			
4.1	Banned pesticides used (number)	26	2001	11
4.1	Water resources withdrawal for irrigation (annual withdrawal as percentage of total water resources)	82	1999	3, 11
4.1	Irrigated agricultural area (1000 ha)	175	2001	7
4.2 -4.6	Inputs from Chapter 1			
4.6	Carbon dioxide emissions (per capita metric tons)	0.1	2000	12
4.6	Consumption of ozone-depleting CFCs (ODP metric tons)	41	2001	2

Notes:

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

Sources:

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