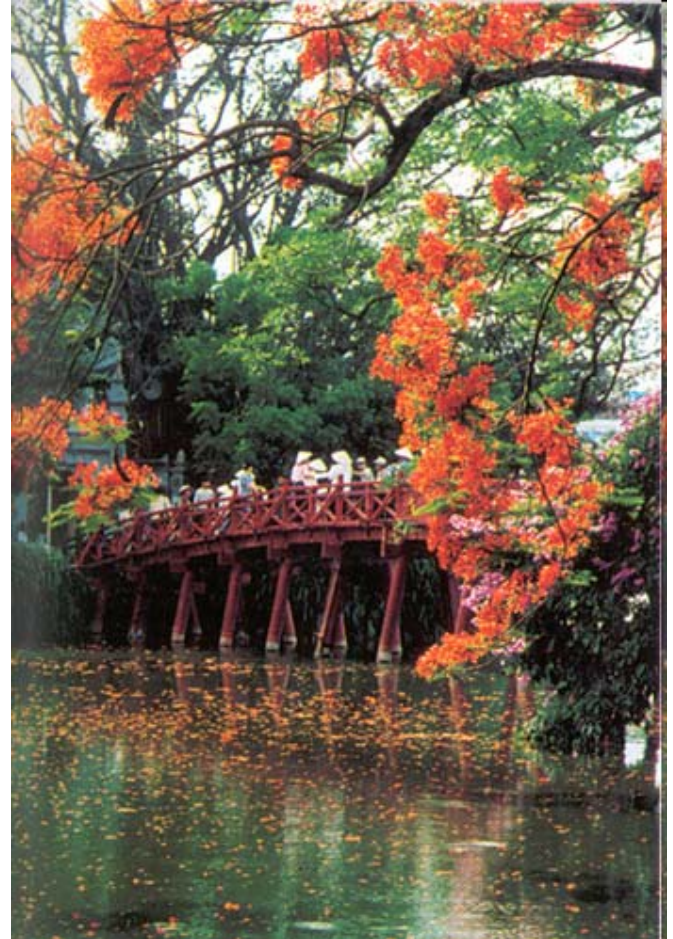


Wastewater management and treatment in urban areas in Vietnam

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MAIN CONTENTS

- Wastewater release status
- Treatment status
- Management status
- Recommendations and orientations



WASTEWATER RELEASE

DOMESTIC SOURCES

- Water consumption per capita: 150 l/day *(source: JICA project for sewage planning in Hanoi)*
- Total discharge in Hanoi: 793,207 m³/day
- Total discharge in Hai Phong: 255,988 m³/day
- Total discharge in Ho Chi Minh city: 876,170 m³/day

(source: 2009, PCD project for building the wastewater pollution control action plan in Hanoi, Hai Phong and Ho Chi Minh city)





WASTEWATER RELEASE

INDUSTRIAL SOURCES

- Main sources:
 - Plating
 - Food processing
 - Chemical
 - Textile and dyeing
 - Leather
 - Paper and pulp production
 - Automobile repair and mechanics



WASTEWATER RELEASE

INDUSTRIAL SOURCES (cont.)

- Discharge:
 - Total discharge from industrial zones/parks: 500,000 – 700,000 m³/day (estimated)
 - Discharge from outside of industrial zones/parks (300,000 establishments): insufficient data

Images: Industrial wastewater



WASTEWATER RELEASE

HOSPITAL SOURCES

- Hanoi:
 - 32 hospitals, >200 medical centres, >2,000 private clinics
 - Discharge: 6,083.6 m³/day
- Hai Phong:
 - 9 hospitals, 20 medical centres, >50 clinics
 - Discharge: 1,800 – 2,000 m³/day
- Ho Chi Minh city:
 - 83 hospitals, 26 medical centres
 - Discharge: 17,000 – 20,000 m³/day



WASTEWATER RELEASE

ESTIMATED TOTAL POLLUTION LOAD

<i>(Unit: BOD₅ tons/day)</i>	Hanoi	Hai Phong	Ho Chi Minh city
Domestic wastewater	161.22	55.119	213.7
Hospital wastewater	0.912	0.3	3.0
Industrial wastewater	60.782	<i>Insufficient data</i>	<i>Insufficient data</i>

Source: 2009, PCD, Project for building the wastewater pollution control action plan in Hanoi, Hai Phong and Ho Chi Minh city

WASTEWATER RELEASE

ESTIMATED POLLUTION CONTRIBUTION IN HANOI

Type	Percentage
Domestic wastewater	78,7%
Hospital wastewater	20,7%
Industrial wastewater	0,5%

Source: 2009, PCD, Project for building the wastewater pollution control action plan in Hanoi, Hai Phong and Ho Chi Minh city



WASTEWATER TREATMENT

DOMESTIC SOURCES

- Over 700 municipalities in Vietnam
- Only 10 centralized municipal wastewater treatment systems
- Percentage of municipal domestic wastewater treated: less than 10%



WASTEWATER TREATMENT

INDUSTRIAL SOURCES

- Only 30% of the industrial zones/parks have centralized wastewater treatment systems
- Large portion of industrial wastewater is not treated adequately to meet the environmental standards. Water quality of many rivers are seriously being threatened
- 300,000 small and medium-sized establishments outside industrial zones with little to no wastewater treatment system (due to high cost)

Industrial wastewater treatment



WASTEWATER TREATMENT

INDUSTRIAL SOURCES (cont.)

- Inspection results (2006-2008):
 - 2006: 134 out of 247 establishments (54.3%) had treatment systems, only 34 met environmental standard (13.8%)
 - 2007: 263 out of 513 establishments (51.3%) had treatment systems, only 67 met environmental standard (13.1%)
 - 2008: 601 out of 804 establishments (74.7%) have treatment systems, only 287 met environmental standard (35.7%)

WASTEWATER TREATMENT



HOSPITAL SOURCES

- Less than 50% of the hospitals have wastewater treatment systems
- Treatment capacity of these systems is low, and many do not meet the environmental standards



WASTEWATER TREATMENT

TECHNOLOGY STATUS

- Type: various types, capable of treating a wide range of wastewater
- Technology level: only a few systems can treat wastewater to meet environmental standards. No specific criterion to assess wastewater treatment technology in Vietnam
- Operation and maintenance: self operation and maintenance, even with foreign technology
- Equipments, devices: produced in few numbers, no mass production facility. Environmental technology market has not been well developed

Various wastewater treatment technologies





WASTEWATER TREATMENT

TREATMENT STATUS

- Many treatment systems are of low technology, low cost, just to deal with the authority
- Many systems are incompatible and improper due to lack of professional staff and budget (low quality equipments)
- Low awareness of the establishment owners and their personnel in operation and maintenance

WASTEWATER TREATMENT

TREATMENT STATUS

- The centralized treatment systems of industrial parks can only treat certain pollutants at certain concentration limits. Eg: pH, BOD, COD, SS, colority, nutrients (N, P)... can be treated to satisfy column A and B of TCVN 5945:2005. Other pollutants such as oil, grease, heavy metals, however, can not be treated, thus the effluent of these systems do not meet the environmental standards



WASTEWATER MANAGEMENT

- Management agencies:
 - Vietnam Environmental Administration (MONRE): water pollution control, inspection, development of legislative documents, approval of EIA,...
 - Department of Water Resources Management (MONRE): emission permit
 - Provincial DONREs: local management, cooperating with central agencies

WASTEWATER MANAGEMENT

- Management tools:

- Environmental impact assessment (EIA)
- Environmental protection commitment/scheme (for industrial establishments/zones operating prior to 01/07/2006)
- Discharge permit
- Wastewater fees (67 Decree; 88 Decree)

- Supporting tools:

- Environmental standards
- Discharge database
- Hotspot criteria (07 Circular of MONRE)

WASTEWATER MANAGEMENT

ON-GOING PROJECTS/TARGETS IN HANOI

- Projects on runoff and wastewater drainage: building collection and drainage systems, improving urban lake, wastewater treatment plants...
- Percentage of treated domestic wastewater would reach 10 – 15% by the end of 2010
- Percentage of treated industrial wastewater would reach 40% by 2010
- For hospital wastewater: 100% of hospitals and medical centres directly under the management of the city would be equipped with proper wastewater treatment system

WASTEWATER MANAGEMENT

- For rivers:
 - Wastewater collection system would be built in one part of To Lich river, along with a small-sized wastewater treatment station with advanced technology
 - A centralized wastewater treatment plant would be built on a flushing gate of Nhue river, to treat wastewater before discharging to the river





WASTEWATER MANAGEMENT

PROJECTS/TARGETS IN HAI PHONG

- Program for runoff and wastewater drainage management
- Program for control and treatment of industrial discharge sources
- Program for prevention of pollution, degradation and environmental incidents for surface and underground water sources
- Program for developing the database for management of discharge sources and control of EIA implementation

WASTEWATER MANAGEMENT

PROJECTS/TARGETS IN HO CHI MINH CITY

- Planning a system of 9 wastewater treatment plants (one has already been in operation, 3 are being prepared for construction)
- Building wastewater treatment systems in large hospitals
- Improving centralized wastewater treatment systems of industrial parks (equipping automatic monitoring system)

RECOMMENDATIONS and ORIENTATIONS

- Continue to complete the legislative system:
 - Guideline documents for the implementation of Law on Environmental Protection 2005
 - Economic/technical norm
 - Policy and mechanism for the socialization of environmental protection
 - Development of environmental services
 - Strengthening administrative sanction

RECOMMENDATIONS and ORIENTATIONS

- **Ministries, sectors and localities:**
 - Enhancing environmental protection planning
 - Improving financial mechanism to increase the efficiency of the use of environmental budget.
 - Raising budget for environmental protection.
The target is 2% of total state budget allocated for environmental activities by 2010
 - Promoting the socialization of investment in environmental protection

RECOMMENDATIONS and ORIENTATIONS

- Regarding technology:
 - Studying, applying and transferring clean and environmentally friendly technology
 - Developing wastewater treatment technology suitable for Vietnam's condition
 - Promoting the application of information technology and the replication of advanced environmental protection models
 - An orientation for wastewater treatment technology development is essential

RECOMMENDATIONS and ORIENTATIONS

- Rivers and basins: Continuing the implementation of 3 projects for environmental protection in river basins (*approved by the Prime Minister*)
 - Cau river
 - Nhue – Day river
 - Dong Nai river

RECOMMENDATIONS and ORIENTATIONS

- Pollution control:

- Strengthening the inspection of compliance of establishments and individuals in production and business
- Enhancing pollution control at sources, especially legislating the automatic monitoring of wastewater sources in industrial parks
- Promoting the application of worldwide technological advances in pollution control

THANK YOU VERY MUCH FOR YOUR
ATTENTION!

