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Water & Wastewater Technologies and Equipment - Water & Wastewater Sector in Malaysia

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Water & Wastewater Technologies and Equipment

Water & Wastewater Sector in Malaysia

By

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Your Partner in Environmental Monitoring Solutions

Structure of Presentation

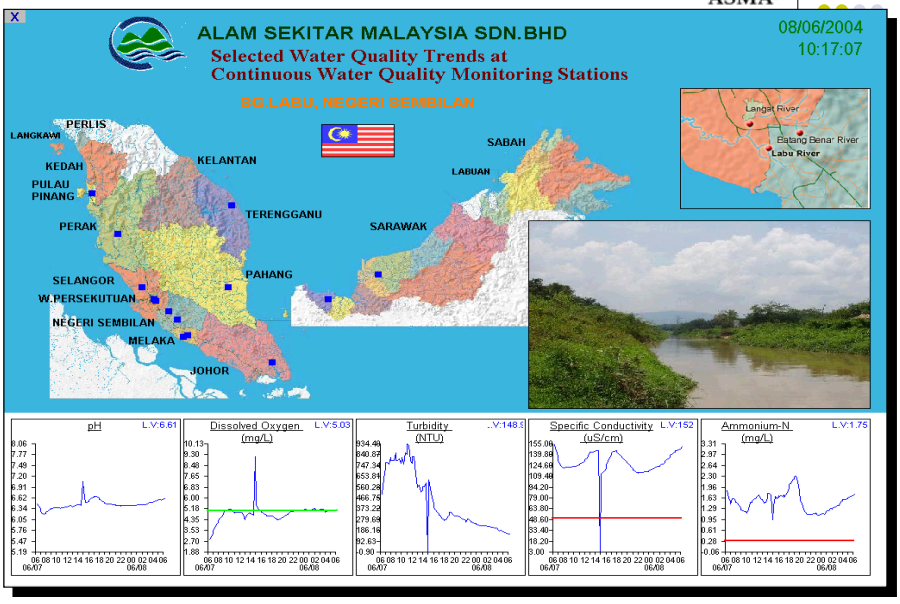
- Part 1 : ASMA Role
- Part 2 : Water Pollution Status
- Part 3 : Water Pollution Control
- Part 4 : Challenges and Issues
- Part 5 : Overcoming the challenges
- Part 6 : Arising Market
- Part 7 : Trade Barriers

ASMA's Role in Malaysia's Cleaner Water Initiatives

- Incorporated 1993,initially JV with Bovar (a Canadian EGS provider)
- In 1995, 20-year concession from Department of Environment (DOE) to install, operate & maintain the air and water quality monitoring network for Malaysia
- Imported monitoring/analysis equipment (e.g multi-parameter YSI sonde), as none available locally
- Established 15 Continuous station, real time monitoring + over 1000 manual stations on rivers
- World class uptime (not less than 95%)
- > 71 Islands Marine Water Quality Monitoring

Continuous Water Quality Network

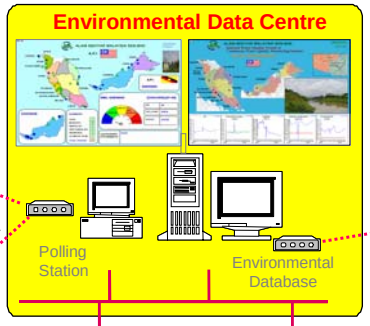
Real-time display / On-line access 24-hrs



Malaysia Environmental Data Centre

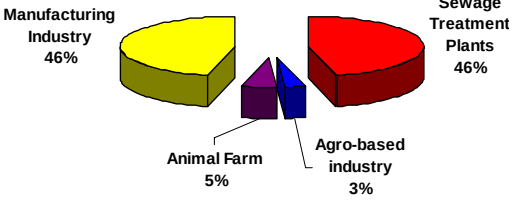
51 Continuous Air Quality Monitoring Stations

15 Continuous River Water Quality Monitoring Stations



Water Pollution Status

- 55% of rivers slightly or significantly polluted
- Point Sources – sewage, toxic chemicals and solid wastes from squatters, poultry/animal husbandries, dumpsites, industrial, construction sites, septic tanks not desludged regularly
- Non-point sources –agricultural, surface-runoffs
- Only 3.375 million cubic metres of sewage is treated/partially treated
- Industrial volume, not available
- Major pollutants
  - Ammoniacal-N, SS, BOD mainly from sewage, earthworks/land clearing, untreated/partially treated sewage/agro-based activities respectively



Water Pollution Status

Industrial Compliance

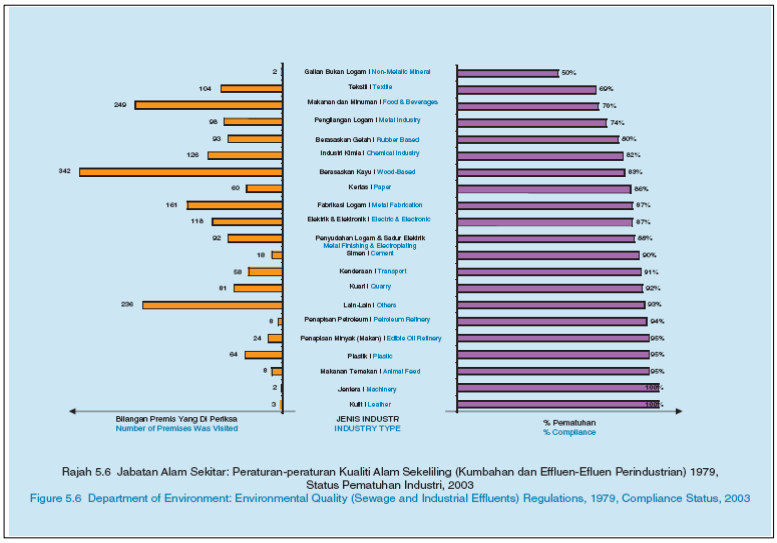
- In 2003, DOE conducted 2656 inspections of 1957 industrial premises for effluent regulation compliance
  - 83% in compliance; 17% non-compliance (exceed limit; no approval, not discharging at approved points, not informing of spillages/accidental discharges
  - Industry types (premises) include food processing, oil & gas, petrochemical, electronic/semiconductor, electroplating, palm oil, rubber processing, wood based, pulp & paper and textile

Water Pollution Status

Industrial Compliance

- 59 cases prosecuted-fine RM1.42 million
- 945 issued with Written Field Directive; 304 Written Notices
- Exceed effluent standard because some of these industries operated w/o proper plants or poorly designed treatment plants and others had poor O&M (lack experienced operators);
  - SMEs reluctance to invest building their own treatment plants due to lacking financial resources and space to construct.

Water Pollution Status
Industrial Compliance



Rajah 5.6 Jabatan Alam Sekitar: Peraturan-peraturan Kualiti Alam Sekeliling (Kumbahan dan Effluen-Effluen Perindustrian) 1979, Status Pematuhan Industri, 2003

Figure 5.6 Department of Environment: Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979, Compliance Status, 2003

Source: DOE, 2004

Water Pollution Control

- The need is mainly driven by the regulatory factors
- Adequate environmental regulations
- Enforcement level is a key factor
- As society becomes more knowledgeable (much due to media reports) & affluent, more concerns on environmental issues
- Government responding by increasing resources and building capacity for more effective control in the recent years

Water Pollution Control

- Domestic wastewater (a significant water pollution source) is indirectly managed by the government with a continuous focus on improvement measures
- Large number of domestic wastewater plants are of various capacities, systems and efficiencies throughout the country
  - Many areas are still not connected (i.e. on individual septic tanks)
- Water industry reform taking place now with very significant positive impacts expected in the long term. However industrial sources pollution control is not part of this reform.
- Industrial sources are required to have their own wastewater treatment and is regulated by the DOE

Domestic Treatment system: Communal Septic Tanks

Domestic Treatment System: Oxidation Ponds

Domestic Treatment System: Mechanised Systems

RBC

Oxidation Ditch

Extended Aeration

Challenges/issues faced in Water Pollution Control

- No single agency with overall responsibility
- Ineffective regulatory structures and poor enforcement at state level
- The majority of the older domestic wastewater systems were built before proper design guidelines became available in 1994
- Industrial and other non-domestic wastewater discharges continue to contribute significantly
  Largest industrial sources:
  - F&B, chemical based, pulp & paper, palm oil, rubber processing, textiles where many have process design and engineering inadequacies; operators lacking good process knowledge
  - SMEs are also the major contributors due to financial constraints and lack of space to construct
- As a result many treatment plants (including industrial) are underperforming and unable to meet effluent standards

Challenges/issues faced in Water Pollution Control

- The high capital cost of installing new advanced treatment plant/network or upgrading/refurbishment existing plants especially if to include tertiary treatment like biological nutrient removal e.g. ammoniacal N or if to include disinfection (not in the current effluent standard)
  - The high cost of the hi-technology equipment (proven performance compact biological treatment systems, aeration equipment, submersible pumps) due to the need to import them.
  - Equipment components that have multiple uses can attract high import duties (up to 40%)
- Insufficient resources/technical tools and skills to effectively monitor polluters
- Low cost recovery due to low charges in water/sewerage tariffs

Overcoming the challenges

- Reforming the water services (including sewerage) industry
  - Setting up of a Water Commission and National Water Asset Management Company (WamCo)
  - WamCo will develop future water supply & sewerage infrastructure
  - Water Commision acts as central regulatory body setting KPIs including on compliance
  - WamCo would source for funds from private capital markets
- Continued efforts in improving the sewerage services with an allocation of RM3.5 billion under the Ninth Malaysian Plan (2006-2010)

Overcoming the challenges

- Overseas funding- JBIC funded (Japanese G to Malaysian G soft-loan) nationwide sewerage projects (13) – fully mechanised centralised plants which allow decommissioning smaller inefficient plants
- Increased resource allocation for capacity building, stricter enforcement and river studies to protect the environment
- Incentives on waste minimisation/resource recovery/cleaner production initiatives by industries

Arising Market Opportunities

- Water /Wastewater treatment equipment -34% of world's Environmental Goods traded (EGS is US600 billion in 2005)
- Environmental Monitoring Equipment and Analysis accounted 15% of the market share
- In Malaysia, just water (excluding sewerage) supply sector alone needs a total investment of US13.7 billion spread over 50 years
- In 2006, total import of US 970 millions of water and wastewater equipment was estimated *(based on data from World Trade Atlas projected growth of 10%)*
- Japan holds the largest market share (31%) followed by the US (20%) and China (19%)

Arising Market Opportunities

- Other countries exporting water/wastewater equipment include Taiwan and Germany
- Industrial water/wastewater markets demand exists in wastewater recycling, pollution prevention technologies, advance process design and engineering
- Demand for advanced water monitoring and analytical equipment will also increase
- Specialty/advanced wastewater treatment chemicals will continue to be imported (UK, Taiwan, US, Germany) due to lack of local supply
- Hi-technology equipment (e.g. proven performance compact biological treatment systems, aeration equipment, submersible pumps) will continue to be imported

Trade Barriers

- Average applied tariff on EG was about 20% (in 2002)
- At present low trade barriers for pollution control equipment (can apply for exemption)
- Environmental Monitoring/Analysis goods attract import duty & sales tax (e.g. 10% +5% for an air analyser from the US) but can apply for tariff exemption or reduction
- Multiple uses of an 'pollution control equipment' component attracts tariff

Trade Barriers

- Government has special tax incentives for environmental industries (like resource recovery, energy conservation, renewable energy generation, forest plantation etc)
- WamCo being government owned, may get full exemption of all equipment related to all the water & sewerage projects undertaken by WamCo for the country
- Non-trade barriers:
  - Regulatory System
  - Tied Aid