



LAPORAN TAHUNAN 2007 ANNUAL REPORT





JABATAN ALAM SEKITAR
Kementerian Sumber Asli Dan Alam Sekitar

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KANDUNGAN / CONTENTS

Prakata / Foreword	8
Visi, Misi & Strategi / Vision, Mission & Strategic	10
Bab 1 / Chapter 1	
- Aktiviti Majlis Kualiti Alam Sekeliling (EQC) Environmental Quality Council (EQC) Activities	12
Bab 2 / Chapter 2	
- Pengurusan Sumber Manusia Dan Kewangan Human Resources and Financial Management	18
Bab 3 / Chapter 3	
- Penilaian Kesan Kepada Alam Sekeliling dan Input Kepada Perancangan Pembangunan Environmental Impact Assessment and Input for Development	26
Bab 4 / Chapter 4	
- Pengawasan Kualiti Udara / Air Quality Monitoring	38
- Pengawasan Bunyi Bising Ambien / Ambient Noise Monitoring	41
- Protokol Montreal dan Perlindungan Lapisan Ozon Montreal Protocol and Protection of The Ozone Layer	45
- Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai River Pollution Prevention and Water Quality Improvement Programme	52
- Kawalan Terhadap Premis Yang Ditetapkan / Control of Prescribed Premises	57
- Kawalan Terhadap Premis Yang Bukan Ditetapkan / Control of Non-Prescribed Premises	60
- Pengawasan Kualiti Air Marin Kebangsaan / Marine Water Quality Monitoring	66
- Pengawasan Kualiti Air Marin Pulau-Pulau / Island Marine Water Quality Monitoring	72
- Program Pengawasan Kualiti Air Daratan (Sungai) Surface Water (River) Quality Monitoring Program	76
- Pemantauan Kualiti Air Tanah / Groundwater Monitoring	88
- Rancangan Kontingensi Kebangsaan Kawalan Tumpahan Minyak (RKKKTM) National Oil Spill Contingency Plan (NOSCP)	89
- Jawatankuasa Tabung Pusingan Bagi Selat Melaka dan Selat Singapura (RFC) Straits of Malacca and Singapore Revolving Fund Committee (RFC)	91





- Pencemaran Marin / Marine Pollution	93
- Pengurusan Buangan Terjadual / Scheduled Wastes Management	95
- Penguatkuasaan Terhadap Aktiviti Pembakaran Terbuka Enforcement Against Open Burning Activities	99
- Punca-Punca Bergerak (Kenderaan Bermotor) / Mobile Sources (Motor Vehicles)	103
- Tindakan Undang-Undang / Legal Action	111
- Maklumbalas Terhadap Pengaduan Awam / Response to Public Complaints	114

Bab 5/ [Chapter 5](#)

- Promosi Kesedaran dan Pendidikan Alam Sekitar Promotion of Environmental Education and Awareness	118
- Sebaran Maklumat Alam Sekitar / Environmental Information Dissemination	127

Bab 6 / [Chapter 6](#)

- Hal-Ehwal Alam Sekitar Antarabangsa – Kerjasama Dua Hala International Environmental Affairs – Bilateral Cooperation	134
- Hal-Ehwal Alam Sekitar Antarabangsa – Kerjasama Serantau International Environmental Affairs – Regional Cooperation	137

Bab 7 / [Chapter 7](#)

- Bahagian Teknologi Maklumat / Information Technology Division	140
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Bab 8 / [Chapter 8](#)

- Institut Alam Sekitar Malaysia (EiMAS) / Malaysian Institute of Environment (EiMAS)	144
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Bab 9 / [Chapter 9](#)

- Pengeluaran Bersih dan Teknologi Mesra Alam Cleaner Production and Environmentally Sound Technology	156
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SINGKATAN / Abbreviations

Bank Pembangunan Asia	ADB	Asian Development Bank
Tahun Alam Sekitar ASEAN	AEY	ASEAN Environment Year
Akta Kualiti Alam Sekeliling	AKAS	Environmental Quality Act
Mesyuarat Menteri-Menteri ASEAN Mengenai Alam Sekitar	AMME	ASEAN Ministerial Meeting on the Environment
Pertubuhan Negara-Negara Asia Tenggara	ASEAN	Association of South East Asian Nations
Pegawai Kanan Alam Sekitar ASEAN	ASOEN	ASEAN Senior Officials on the Environment
Area Watch and Sanction Inspection	AWASI	Area Watch and Sanction Inspection
Buangan Terjadual	BT	Scheduled Wastes
Brunei–Indonesia–Malaysia–Filipina	BIMP	Brunei–Indonesia–Malaysia–Philippines
Keperluan Oksigen Biokimia	BOD	Biochemical Oxygen Demand
Bahan Pemusnah Ozon	BPO	Ozone Depleting Substances
Udara Bersih	CA	Clean Air
Pusat bagi Alam Sekitar, Teknologi dan Pembangunan Malaysia	CETDEM	Centre For Environmental, Technology and Development Malaysia
Kloroflourokarbon	CFC	Chlorofluorocarbon
Majlis Industri Kimia Malaysia	CICM	Chemical Industries Council of Malaysia
Pusat Pengurusan Pantai	CMC	Coastal Management Centre
Badan Penyelaras Mengenai Laut Asia Timur	COBSEA	Co-ordinating Body for the Seas of East Asia
Keperluan Oksigen Kimia	COD	Chemical Oxygen Demand
Kelapa Sawit Mentah	CPO	Crude Palm Oil
Desibel	dB	Decibel [s]
Jabatan Alam Sekitar	DOE	Department of Environment
Sistem Pengurusan Dokumen	DOKUMAS	Document Management System
Kawasan Pertumbuhan ASEAN Timur	EAGA	East ASEAN Growth Area
<i>Escherichia coli</i>	E.coli	Escherichia coli
Zon Ekonomi Eksklusif	EEZ	Exclusive Economic Zone
Penilaian Kesan Kepada Alam Sekeliling	EIA	Environmental Impact Assessment
Persatuan Perlindungan Alam Sekitar Malaysia	EPSM	Environment Protection Society of Malaysia
Unit Perancang Ekonomi	EPU	Economic Planning Unit
Majlis Kualiti Alam Sekeliling	EQC	Environmental Quality Council
Laporan Kualiti Alam Sekeliling	EQR	Environmental Quality Report
Pesuruhjaya Ekonomi & Sosial Asia Pasifik	ESCAP	Economic & Social Commission for Asia and the Pacific
Institut Alam Sekitar Malaysia	EiMAS	Environment Institute of Malaysia
Ahli Mesyuarat Kerajaan Negeri	EXCO	Executive Councillors
Persatuan Pekilang-Pekilang Malaysia	FMM	Federation of Malaysian Manufacturers
Persatuan Pertubuhan Pengguna-Pengguna Malaysia	FOMCA	Federation of Malaysian Consumer's Association
Institut Penyelidikan Hutan Malaysia	FRIM	Forest Research Institute of Malaysia
Gabungan Persatuan-Persatuan Perdagangan Getah Malaysia	FRTM	Federation of Rubber Trade Association of Malaysia



SINGKATAN/Abbreviations

Kemudahan Alam Sekitar Global	GEF	Global Environment Facility
Sistem Maklumat Geografik	GIS	Geographical Information System
Hidro Klorofluorokarbon	HCFC	Hydro Chlorofluorocarbon
Pengurusan Zon Pantai Bersepadu	ICZM	Integrated Coastal Zone Management
Unit Asap Hartridge	HSU	Hartridge Smoke Unit
Institut Diplomasi & Hal Ehwal Luar	IDHL	Institute of Diplomacy & Foreign Relations
Indeks Kualiti Air Negara	IKAN	National Water Quality Index
Organisasi Maritim Antarabangsa	IMO	International Maritime Organisation
Sistem Rujukan Antarabangsa Untuk Sumber-Sumber Maklumat Mengenai Alam Sekitar	INFOTERRA	International Referral System for Sources of Environmental Information
Institut Tadbiran Awam Negara	INTAN	National Institute of Public Administration
Program Antarabangsa mengenai Keselamatan Bahan Kimia	IPCS	International Programme on Chemical Safety
Pendaftaran Antarabangsa bagi Bahan Kimia yang Berpotensi Berbahaya	IRPTC	International Register of Potentially Toxic Chemicals
Institut Kajian Strategik dan Antarabangsa	ISIS	Institute of Strategic and International Studies
Agensi Kerjasama Antarabangsa Jepun	JICA	Japan International Co-operation Agency
Jabatan Perkhidmatan Awam	JPA	Public Service Department
Jabatan Pengairan dan Saliran Malaysia	JPS	Department of Irrigation and Drainage Malaysia
Kementerian Sains, Teknologi & Inovasi	MOSTI	Ministry of Science, Technology and Innovation
Kumbahan & Effluen-Effluen Perindustrian	KEEP	Sewage & Industrial Effluents
Kilang Kelapa Sawit Mentah	KKSM	Crude Palm Oil Mill
Penyaman Udara Kenderaan	MAC	Mobile Air Conditioning
Pusat Remote Sensing Malaysia	MACRES	Malaysian Remote Sensing Agency
Minggu Alam Sekitar Malaysia	MASM	Malaysia Environment Week
Menteri dan Ahli Majlis Mesyuarat Kerajaan Negeri yang Bertanggungjawab ke atas Alam Sekitar	MEXCOE	Ministers and State Executive Councillors Responsible for Environmental Matters
Dewan Perdagangan dan Industri Antarabangsa Malaysia	MICCI	Malaysian International Chamber of Commerce and Industry
Institut Penyelidikan Ekonomi Malaysia	MICCI	Malaysian Institute of Economic Research
Institut Teknologi Nuklear Malaysia	MINT	Malaysia Institute of Nuclear Technology
Persatuan Pemasang Kenderaan Bermotor Malaysia	MMVAA	Malaysian Motor Vehicle Assemblers' Association
Persatuan Pencinta Alam Malaysia	MNS	Malaysian Nature Society
Kementerian Perdagangan Antarabangsa Dan Industri	MITI	Ministry of International Trade and Industry
Pertubuhan Kelapa Sawit Malaysia	MPOA	Malaysian Palm Oil Association
Kementerian Pertanian	MOA	Ministry of Agriculture
Kementerian Kesihatan	MOH	Ministry of Health
Kementerian Pembangunan Sumber Manusia	MOHR	Ministry of Human Resources



SINGKATAN/Abbreviations

Kementerian Pengangkutan	MOT	Ministry of Transport
Memorandum Persefahaman	MOU	Memorandum of Understanding
Majlis Pengeluar-Pengeluar Getah Malaysia	MRPC	Malaysia Rubber Products Manufacturers' Council
Jawatankuasa Bersama Malaysia-Singapura Mengenai Alam Sekitar	MSJOE	Malaysia – Singapore Joint Committee on the Environment
Pertubuhan Bukan Kerajaan	NGO	Non-Governmental Organisation
Kementerian Sumber Asli Dan Alam Sekitar	NRE	Ministry of Natural Resources and Environment
Amoniakal Nitrogen	NH ₃ N	Ammoniacal Nitrogen
Pertubuhan Kerjasama Ekonomi dan Pembangunan	OECD	Organisation for Economic Co-operation and Development
Pertubuhan Kerjasama Alam Sekitar bagi Laut Asia Timur	PEMSEA	Partnership in Environmental Management for the Seas of East Asia
Kebenaran Maklumat Awal	PIC	Prior Informed Consent
Persatuan Pekilang-Pekilang Minyak Kelapa Sawit Malaysia	POMA	Palm Oil Millers' Association
Institut Penyelidikan Minyak Kelapa Sawit	PORIM	Palm Oil Research Institute of Malaysia
Ringgit Malaysia	RM	Ringgit Malaysia
Institut Penyelidikan Getah Malaysia	RRIM	Rubber Research Institute of Malaysia
Urusetia Konvensyen BASEL	SBC	Secretariat for BASEL Convention
Agensi Pembangunan Antarabangsa Sweden	SIDA	Swedish International Development Agency
Institut Standard dan Penyelidikan Industri Malaysia	SIRIM	Standards Industrial Research Institute of Malaysia
Udara Bersih	UB	Clean Air
Universiti Islam Antarabangsa	UIA	International Islamic University
Universiti Kebangsaan Malaysia	UKM	National University of Malaysia
Universiti Malaya	UM	University of Malaya
Persidangan Bangsa-Bangsa Bersatu Mengenai Alam Sekitar dan Pembangunan	UNCED	United Nations Conference on Environment and Development
Program Pembangunan Bangsa-Bangsa Bersatu	UNPD	United Nations Development Programme
Program Alam Sekitar Bangsa-Bangsa Bersatu	UNEP	United Nations Environment Programme
Universiti Tenaga Malaysia	UNITEN	University of Tenaga Malaysia
Unit Perancang Ekonomi	UPE	Economic Planning Unit
Universiti Putra Malaysia	UPM	University of Putra Malaysia
Universiti Sains Malaysia	USM	University of Science Malaysia
Yang Berhormat	Y.B.	The Honourable
Polis Diraja Malaysia	PDRM	Royal Malaysian Police
Kandungan Organik Meruap	VOCs	Volatile Organic Compounds
Wilayah Kualiti Air	WQR	Water Quality Region



Prakata Foreword

Dato' Hajah Rosnani Ibarahim

Ketua Pengarah Alam Sekitar

Director General Environmental Quality Malaysia



Laporan Tahunan Jabatan Alam Sekitar 2007 memberi gambaran keseluruhan aktiviti-aktiviti dan pencapaiannya dalam melaksanakan mandat di bawah Akta Kualiti Alam Sekeliling, 1974 dan dalam mempromosikan kesedaran alam sekitar di kalangan orang awam disamping dapat mengurus alam sekitar dengan baik untuk mencapai matlamat pembangunan negara.

Penguatkuasaan yang merupakan tugas utama JAS terus diberikan penekanan. Pemeriksaan kerap ke atas premis-premis industri telah dilakukan bagi memastikan Akta Kualiti Alam Sekeliling, 1974 dan Peraturan-Peraturan di bawahnya dipatuhi. Hasil daripada pemeriksaan ini, sebanyak 428 kesalahan telah berjaya didakwa dengan denda sebanyak RM 5,119,850.00.

Dalam menangani isu pengurusan buangan terjadual yang tidak sempurna, kerajaan telah meminda Akta Kualiti Alam Sekeliling, 1974 yang memberikan hukuman penjara mandatori tidak melebihi 5 tahun dan denda tidak melebihi RM 500,000 bagi kesalahan pelupusan haram, import dan eksport dan kesalahan mentransit secara haram buangan terjadual. Pindaan ini mula berkuatkuasa pada 30 Ogos 2007.

Nota e-kosainan mula dilaksanakan pada awal bulan Januari 2007 untuk memudahkan proses menjejak pergerakan buangan terjadual dari pengeluar buangan ke salah satu kemudahan pemerolehan kembali buangan atau pelupusan akhir.

The 2007 Annual Report of the Department of Environment (DOE) provides an overview of its activities and accomplishments in executing its mandate under the Environmental Quality Act, 1974 and in promoting environmental awareness amongst the general public and managing the environment to achieve the national development goals.

Enforcement being the core business of the DOE continues to be given due emphasis. Regular inspections were conducted on industrial premises to ensure compliance to the Environmental Quality Act 1974 and its subsidiary Regulations. Arising from these inspections, a total of 428 offences were successfully prosecuted and fined a total of RM 5,119,850.00.

To deal with the issue of improper management of scheduled wastes, the Government amended the Environmental Quality Act 1974 to provide for mandatory jail sentences for a term not exceeding 5 years and also liable to a fine not exceeding RM 500,000 for illegal disposal, illegal import and export and illegal transit of scheduled wastes. The amendment came into force on the 30 August 2007.

The e-consignment note was implemented in early January 2007 to facilitate the tracking of the movement of scheduled wastes from the waste generators to either waste recovery facilities or final disposal.



Bagi memastikan Ketua Pegawai Eksekutif (CEO) sesebuah syarikat juga mengambil tanggungjawab dalam memelihara dan menyemai budaya alam sekitar dalam organisasi pentadbirannya, Seksyen 43 Akta Kualiti Alam Sekeliling, 1974 telah dipinda di mana Ketua Pegawai Eksekutif hendaklah bertanggungjawab ke atas sebarang kesalahan yang dilakukan oleh syarikat. Pindaan ini mula berkuatkuasa pada 30 Ogos 2007.

Skim Pendaftaran Jururunding Kesan Penilaian Alam Sekeliling (EIA) mula diperkenalkan untuk memastikan jururunding EIA adalah cekap dalam bidang masing-masing dengan memerlukan mereka memperoleh sijil kelayakan serta pengalaman. Melalui skim yang diperkenalkan ini diharapkan agar kualiti, integriti dan kredibiliti laporan EIA dapat ditingkatkan.

JAS juga turut melaksanakan program-program dan aktiviti-aktiviti kesedaran dan pendidikan alam sekitar serta penyebaran maklumat melalui media masa untuk pelbagai peringkat masyarakat sebagai usaha berterusan dan bersama dalam membangunkan masyarakat yang penyayang dan mesra alam di negara ini.

Perlindungan alam sekitar melalui amalan-amalan mesra alam sepatutnya menjadi sebahagian aktiviti-aktiviti seharian kita. Cabaran yang mendatang dalam mengurus alam sekitar mungkin sukar. Walaubagaimanapun, dengan sokongan dan komitmen dari semua pihak dan tahap kesedaran alam sekitar yang tinggi, kita sepatutnya mampu menahuti cabaran ini.

Pemuliharaan Alam Sekitar, Tanggungjawab Kita Bersama

To ensure that the chief executive officer (CEO) of a company also take responsibility for the environmental protection and to instill environmental governance throughout the organization, section 43 of the Environmental Quality Act 1974 was also amended to include also the chief executive officer to be liable for any offences committed by the company. This amendment also came into force on the 30 August 2007.

The Environmental Impact Assessment (EIA) Consultant Registration Scheme was introduced to ensure that EIA consultants are competent in their respective fields by requiring them to have the necessary qualification and experience. It is hoped that with the introduction of this Scheme the quality, integrity and credibility of EIA reports would be enhanced.

DOE has also implemented awareness and environmental education programmes and activities and also disseminate information via the mass media to various level of society as continuous effort and long term measures towards building a caring and environmentally friendly society in the country.

Protecting the environment by adopting environmental friendly practices should be part and parcel of our daily activities. The challenges ahead in managing the environment may be daunting. However with the support and commitment from all parties and higher environmental awareness, we should be able to overcome these challenges.

Environmental Conservation, Our Shared Responsibility

Dato' Hajah Rosnani Ibrahim



Visi / Vision

Memastikan keunikan, kepelbagaian dan kualiti alam sekitar dikekalkan bagi menjamin kesihatan, kesejahteraan, keselamatan dan kesejahteraan hidup rakyat masa kini dan masa akan datang.

That the uniqueness, diversity and quality of the environment are conserved towards maintaining health, prosperity, security and well-being for the present and the future.

Misi / Mission

Menggalakkan, meningkatkan dan mengekalkan pengurusan alam sekitar yang baik dalam proses pembangunan negara.

To promote, ensure and sustain sound environmental management in the process of nation building.

Strategi / Strategies

Pembangunan Lestari melalui Pemuliharaan Sumber Semulajadi
Sustainable Development through Conservation of Resources

Integrasi Faktor Alam Sekitar dalam Perancangan Pembangunan
Integration of Environmental Factors in Development Planning

Pencegahan dan Kawalan Pencemaran
Pollution Prevention and Control

Promosi Pendidikan dan Kesedaran Alam Sekitar
Promotion of Environmental Education and Awareness

Kerjasama antara Agensi dan Persekutuan Negeri
Inter-Agency and Federal-State Cooperation

Penyertaan Awam dalam Pengurusan Alam Sekitar
Public Participation in Environment Management

Kerjasama dan Hubungan Dua Hala, Serantau dan Antarabangsa
Bilateral, Regional and International Cooperation

BAB I

Chapter I





AKTIVITI MAJLIS KUALITI ALAM SEKELILING (EQC) **ENVIRONMENTAL QUALITY COUNCIL (EQC) ACTIVITIES**

Majlis Kualiti Alam Sekeliling (EQC) telah bermesyuarat sebanyak tiga (3) kali dalam tahun 2007 iaitu:

- i) Mesyuarat Bilangan ke-97 telah diadakan pada 27 Mac 2007,
- ii) Mesyuarat Bilangan ke-98 telah diadakan pada 25 Jun 2007 dan
- iii) Mesyuarat Bilangan ke-99 telah diadakan pada 21 Ogos 2007.

Mesyuarat Bilangan ke-97 dan ke-99 telah diadakan di Ibu Pejabat, Jabatan Alam Sekitar (JAS) Putrajaya manakala Mesyuarat Bilangan ke-98 telah diadakan di Kuala Terengganu, Terengganu. Kesemua mesyuarat tersebut telah dipengerusikan oleh Y.Bhg. Dato' Kok Wee Kiat.

Ahli baru telah dilantik mewakili Kementerian Pertanian dan Industri Asas Tani, Kementerian Perdagangan Antarabangsa dan Industri dan Kerajaan Negeri Sarawak manakala yang lainnya adalah ahli yang sedia ada yang dilantik sejak penggal ke-12 dari 1 April 2006 sehingga 31 Mac 2009.

Di antara perkara-perkara yang telah dibentangkan pada tahun 2007 adalah:

Mesyuarat EQC ke-97 (27 Mac 2007)

1. Kertas EQC Bil. 1/97/2007
Kertas oleh Jabatan Alam Sekitar
 - Draf Akhir Peraturan Audit Alam Sekeliling
2. Kertas EQC Bil. 2/97/2007
Kertas oleh Jabatan Alam Sekitar
 - Status Terkini Skim Pendaftaran Juruperunding EIA

The Environmental Quality Council (EQC) had three (3) meetings in 2007:

- i) the 97th meeting was held on 27 Mac 2007,
- ii) the 98th meeting was held on 25 Jun 2007, and
- iii) the 99th meeting was held on 21 August 2007.

The 97th and 99th meetings were held at the Head Office of The Department of Environment (DOE) Putrajaya while the the 98th meeting was held in Kuala Terengganu, Terengganu. All the meetings were chaired by Dato' Kok Wee Kiat.

New members representing the Ministry of Agriculture and Agro-Base Industries, the Ministry of Trade and Industries and the Sarawak Government were appointed while the other existing members were reappointed for the 12th term from 1 April 2006 till 31 March 2009.

Among the matters brought for their attention in 2007 were:

97th EQC Meeting (27 March 2007)

1. EQC Paper No. 1/97/2007
Paper by Department of Environment
 - Environmental Audit Regulations Final Draft
2. EQC Paper No. 2/97/2007
Paper by Department of Environment
 - Status on EIA Registration Scheme



3. Kertas EQC Bil. 3/97/2007

Kertas oleh Jabatan Alam Sekitar

- Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Kualiti Minyak Petrol dan Diesel Untuk Kenderaan Motor) 2007

3. EQC Paper No. 3/97/2007

Paper by Department of Environment

- Environmental Quality Regulations (Control of Petrol and Diesel Quality for Motor Vehicles) 2007

Mesuarat EQC ke-98 (25 Jun 2007)

1. Kertas EQC Bil. 1/98/2007

Kertas oleh Jabatan Alam Sekitar

- Pelan Strategik Jabatan Alam Sekitar 2004-2010

2. Kertas EQC Bil. 2/98/2007

Kertas oleh Jabatan Alam Sekitar

- Pindaan Akta Kualiti Alam Sekeliling 1974

3. Kertas EQC Bil. 3/98/2007

Kertas oleh Jabatan Alam Sekitar

- Perintah Kualiti Alam Sekeliling (Pembawa Yang Ditetapkan) dan Peraturan-Peraturan Kualiti Alam Sekeliling (Pembawa Yang Ditetapkan)

98th EQC Meeting (25 Jun 2007)

1. EQC Paper No. 1/98/2007

Paper by Department of Environment

- Department of Environment Strategic Plan 2004-2010

2. EQC Paper No. 2/98/2007

Paper by Department of Environment

- Environmental Quality Act 1974 Amendments

3. EQC Paper No. 3/98/2007

Paper by Department of Environment

- (Prescribed Conveyance) and Environmental Quality Regulations (Prescribed Conveyance)

Mesuarat EQC ke-99 (21 Ogos 2007)

1. Kertas EQC Bil. 1/99/2007

Kertas oleh Jabatan Alam Sekitar

- Cadangan Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pencemaran Dari Stesyen Pemindahan Dan Tapak Pelupusan Sampah), 2007

2. Kertas EQC Bil. 2/99/2007

Kertas oleh Jabatan Alam Sekitar

- Konsep Peraturan Baru Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 20__

3. Kertas EQC Bil. 3/99/2007

Kertas oleh Jabatan Alam Sekitar

- Pelan Strategik Jabatan Alam Sekitar 2004-2010 (Deraf Kedua)

99th EQC Meeting (21 August 2007)

1. EQC Paper No. 1/99/2007

Paper by Department of Environment

- Proposal for Environmental Quality Regulations (Control of Pollution from Transfer Stations and Landfill Sites), 2007

2. EQC Paper No. 2/99/2007

Paper by Department of Environment

- Concept on the Proposed Environmental Quality (Clean Air) Regulations 20__

3. EQC Paper No. 3/99/2007

Paper by Department of Environment

- Department of Environment Strategic Plan 2004-2010 (Second Draft)



Mesuarat Majlis Kualiti Alam Sekeliling ke-98
 98th Environmental Quality Council Meeting



Penanaman Semula Pokok Paya Bakau, *Rhizophora Mucronata*
 Mangrove Replanting, *Rhizophora Mucronata*



LAMPIRAN/ APPENDIX

Majlis Kualiti Alam Sekeliling 2007 / Environmental Quality Council 2007	
Pengerusi EQC EQC Chairman	Y.Bhg. Dato' Kok Wee Kiat
Ketua Setiausaha, Kementerian Sumber Asli Dan Alam Sekitar Secretary-General, Ministry of Natural Resources and the Environment	Y.Bhg. Datuk Suboh Bin Mohd. Yasin
Wakil Ketua Setiausaha, Kementerian Perdagangan Antarabangsa dan Industri Representative of Secretary-General, Ministry of Domestic Trade & Industry	Tuan Haji Amran Sameon
Wakil Ketua Setiausaha, Kementerian Perdagangan Dalam Negeri dan Hal Ehwal Pengguna Representative of Secretary-General, Ministry of Domestic Trade & Consumers Affairs	Encik Masri Bin Misran
Wakil Ketua Setiausaha, Kementerian Pertanian dan Asas Tani Representative of Secretary-General, Ministry of Agriculture and Agro-Based Industries	Dr. Zakaria Abd. Hadi
Wakil Ketua Setiausaha, Kementerian Sumber Manusia Representative of Secretary-General, Ministry of Human Resources	Tuan Haji Mohamad Bin Jamil
Wakil Ketua Setiausaha, Kementerian Pengangkutan Representative of Secretary-General, Ministry of Transport	Tuan Haji Zakaria Bin Bahari
Wakil Ketua Pengarah, Kementerian Kesihatan Malaysia Representative of Director General, Ministry of Health	Y.Bhg. Datuk Ir. Dr. Mukundan Sugunan Pillay
Wakil Kerajaan Negeri Sabah Representative of the Sabah State Government Ahli Giliran Alternate Member	Y.Bhg. Datuk Monica Chia Mui Foong Y.Bhg. Datuk Eric Juin
Wakil Kerajaan Negeri Sarawak Representative of the Sarawak State Government Ahli Giliran Alternate Member	Y.Bhg. Datuk Wan Alwi Bin Dato' Seri Wan Hashim Dr. Penguang Manggil
Wakil Industri Petroleum Representative from the Petroleum Industry Ahli Giliran Alternate Member	Encik Iqbal B. Abdullah Dr. Foo Say Moo



LAMPIRAN/APPENDIX

Majlis Kualiti Alam Sekeliling 2007 / Environmental Quality Council 2007	
Wakil Industri Kelapa Sawit Representative from the Oil Palm Industry Ahli Giliran Alternate Member	Encik Teo Leng Encik Chew Jit Seng
Wakil Persekutuan Pekilang-Pekilang Malaysia Representative from the Federation of Malaysian Manufacturers Ahli Giliran Alternate Member	Y.Bhg. Tan Sri Datuk Clifford Francis Herbert Cik Grace Choo Sor Mooi
Wakil Industri Getah Representative from the Rubber Industry Ahli Giliran Alternate Member	Encik Lim Sum Teck Encik Chin Hon Meng
Wakil Kakitangan Akademik Representative from the Academic Staff of Universities/Colleges in Malaysia Ahli Giliran Alternate Member	Prof. Dr. Muhamad Bin Awang Prof. Madya Dr. Mohd. Nasir Bin Hassan
Wakil Pertubuhan Berdaftar Yang Mempunyai Kepentingan dalam Perkara Berhubung Alam Sekitar Representative from Registered interests in matters pertaining to the environment Ahli Giliran Alternate Member	Y.Bhg. Dato' Seri Dr. Salleh Bin Mohd. Nor Y.Bhg. Dato' Dr. Mikaa'il Kavanagh Abdullah
Wakil Pertubuhan Berdaftar Yang Mempunyai Pengetahuan dan Mempunyai Kepentingan Dalam Perkara Berhubung Alam Sekitar Representative from the registered Societies knowledgeable and having interests in matters pertaining to the environment Ahli Giliran Alternate Member	Ir. Gurmit Singh K.S -



BAB 2

Chapter 2





PENGURUSAN SUMBER MANUSIA DAN KEWANGAN HUMAN RESOURCES AND FINANCIAL MANAGEMENT

Bahagian Pentadbiran dan Kewangan telah diberi tanggungjawab untuk merancang, melaksana dan memantau aktiviti pentadbiran am, pengurusan sumber manusia dan pengurusan kewangan. Bahagian ini juga memberi khidmat sokongan kepada bahagian-bahagian lain di Ibu Pejabat termasuk juga pejabat JAS Negeri. Bahagian ini dibahagikan kepada tiga (3) Unit yang utama iaitu Unit Pentadbiran, Unit Sumber Manusia dan Unit Kewangan.

Pentadbiran Am

Pada tahun 2007, Unit Pentadbiran telah menjalankan aktiviti-aktiviti seperti berikut:

- Perhimpunan Bulanan, Ketua Pengarah dan kakitangan JAS.
- Majlis Anugerah Perkhidmatan Cemerlang 2006 pada 9 Julai 2007.
- Majlis Jasamu Dikenang bagi menghargai jasa kakitangan yang berkhidmat paling lama di JAS dan Majlis Sambutan Hari Raya Aidilfitri pada 5 November 2007.

Kewangan

Pada tahun 2007, jumlah peruntukan yang diterima oleh JAS adalah sebanyak RM149,527,200.00. Daripada jumlah tersebut, sebanyak RM117,597,200.00 (78.6%) telah diperuntukan untuk perbelanjaan mengurus sementara baki sebanyak RM31,930,000.00 (21.4%) merupakan peruntukan perbelanjaan pembangunan. Prestasi perbelanjaan mengurus dan pembangunan bagi tahun 2007 berada pada tahap 98.7% dan 99.7% (**Rajah 2.1 dan Rajah 2.2**).

Pengurusan Sumber Manusia

Pada tahun 2007, Jabatan masih meneruskan pengambilan kakitangan baru untuk mengisi

The Administration and Finance Division is responsible for planning, executing and monitoring general administrative activities, human resource management and finance management. This division also provides support services to the different divisions of the Headquarters as well as all the State DOE offices nationwide. This division is divided into three (3) Units, namely the Administration Unit, Human Resource Management Unit and the Finance Unit.

Administration

In 2007, the Administration Unit conducted the following activities:

- Monthly Assembly, Director General and the staff of DOE.
- The 2006 Excellent Service Awards Ceremony on 9 July 2007.
- The Jasamu Dikenang Ceremony in appreciation of long serving staff of DOE held in conjunction with the Hari Raya Aidilfitri Celebration on 5 November 2007.

Finance

In 2007, DOE received a total budget allocation of RM 149,527,200.00. Of this amount, a sum of RM 117,597,200.00 (78.6%) was allocated for operational expenditure while the remaining RM 31,930,000.00 (21.4%) was allocated for development projects. Expenditure performances for the operational and development budgets were 98.7% and 9.7% respectively (**Figure 2.1 and Figure 2.2**).

Human Resource Management

In 2007, the Department continued to recruit new staff to fulfill its present and future needs.



jawatan sedia ada dan bagi keperluan masa depan. Sehingga 31 Disember, jumlah keseluruhan perjawatan JAS adalah seramai 1,436 orang. Daripada jumlah ini, 342 (22.0%) adalah dari Kumpulan Pengurusan Dan Profesional manakala 1,225 (78.0%) adalah anggota Kumpulan Sokongan (**Rajah 2.3, 2.4 dan 2.5**). Sepanjang tahun 2007, urusan kenaikan pangkat telah dilaksanakan untuk Gred C38, C32 dan J22.

Perkhidmatan

Pada tahun 2007, JAS telah melaksanakan urusan kenaikan pangkat bagi Kumpulan Sokongan:-

- Penolong Pegawai Kawalan Alam Sekitar Gred C38-4 orang
- Penolong Pegawai Kawalan Alam Sekitar Gred C32-15 orang
- Juruteknik Alam Sekitar Gred J22-10 orang

Pegawai dan kakitangan baru yang dilantik telah diberikan latihan asas yang berkaitan dengan bidang tugas bagi memastikan sistem penyampaian Jabatan dapat dikekalkan dan dipertingkatkan.

Memperlihatkan betapa pentingnya pengurusan sumber manusia dalam membangunkan individu yang berpengetahuan, berkemahiran dan inovatif, para pegawai juga dikehendaki melepasi Peperiksaan Penilaian Tahap Kecekapan.

As of 31 December, the total strength of DOE was 1,436 posts. Of this total, 342 (22.0%) were from the Professional and Management Group and 1,225 (78.0%) from the Supporting Group (**Figure 2.3, 2.4 and 2.5**). Throughout 2007, promotion exercises were conducted for Grade C38, C32 and J22.

Service

In 2007, DOE had promoted personnel from the following Support Group personnel:-

- Assistant Environmental Control Officers Grade C38-4 personnel
- Assistant Environmental Control Officers Grade C32-15 personnel
- Environmental Technicians Grade J22-10 personnel

New officers and staff recruited were provided with relevant basic training to ensure that the delivery system of the Department would be maintained and further enhanced.

In view of the importance of human resource management in developing highly knowledgeable, skillful and innovative individuals, officers were required to undergo the Competency Level Assessment Examinations.



Majlis Anugerah Khidmat Cemerlang 2007
Excellent Service Award 2007



Perhimpunan Bulanan Jabatan Alam Sekitar
Monthly Assembly of Department of Environment

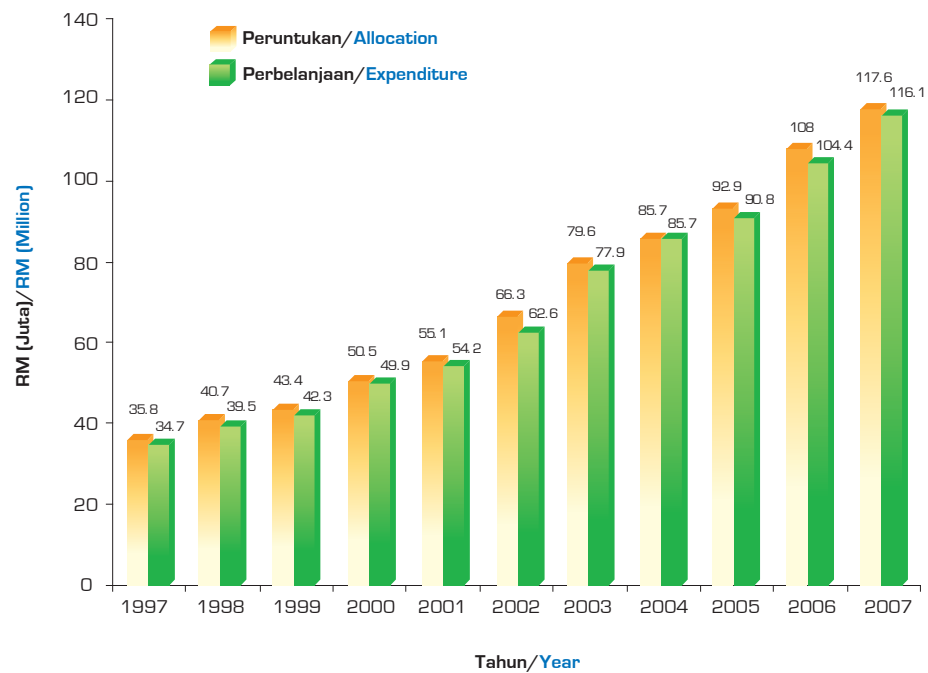


Majlis Jasamu Dikenang dan Sambutan Hari Raya Aidilfitri 2007
Jasamu Dikenang event and the Hari Raya Aidilfitri Celebration 2007

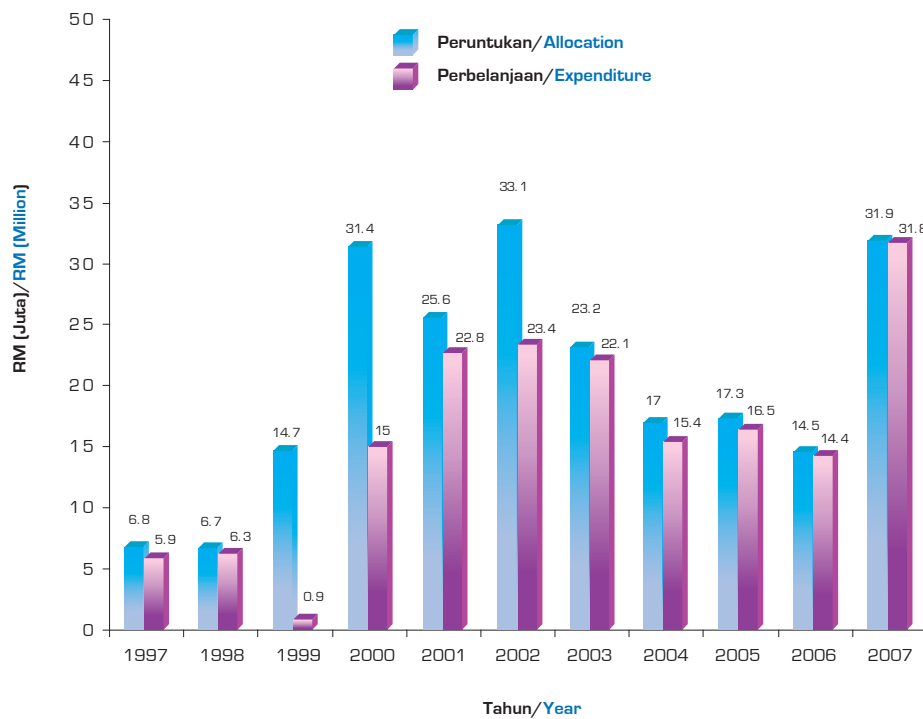


Kursus Pengurusan Aset Kerajaan
Government Assets Management Course

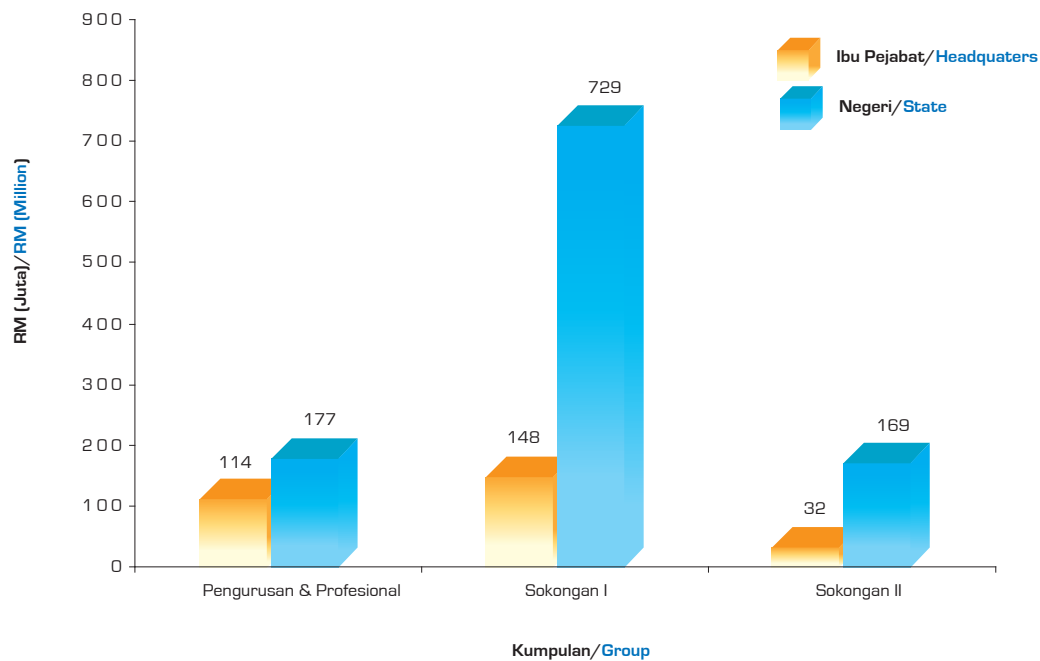
Kursus Teambuilding di Excel Training,
Broga Negeri Sembilan
Tebuilding Course at Excel Training,
Broga Negeri Sembilan



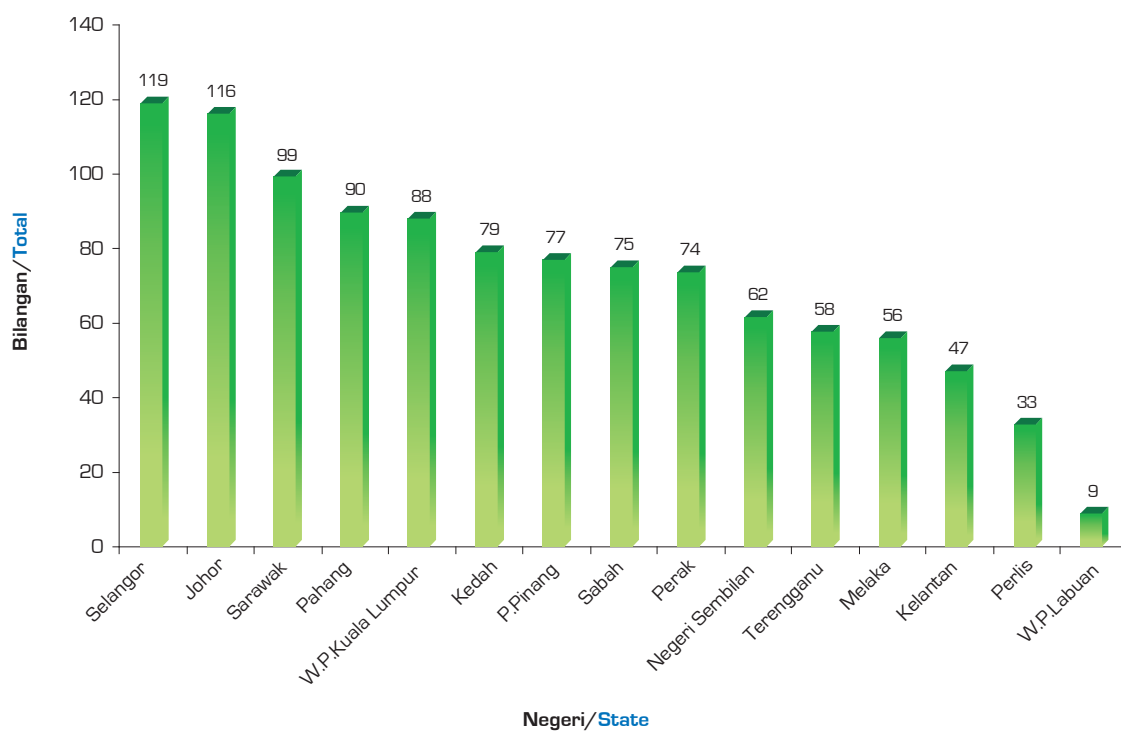
Rajah 2.1 JAS: Peruntukan dan Perbelanjaan (Mengurus), 1997-2007
Figure 2.1 DOE: Allocation and Expenditure (Operational), 1997-2007



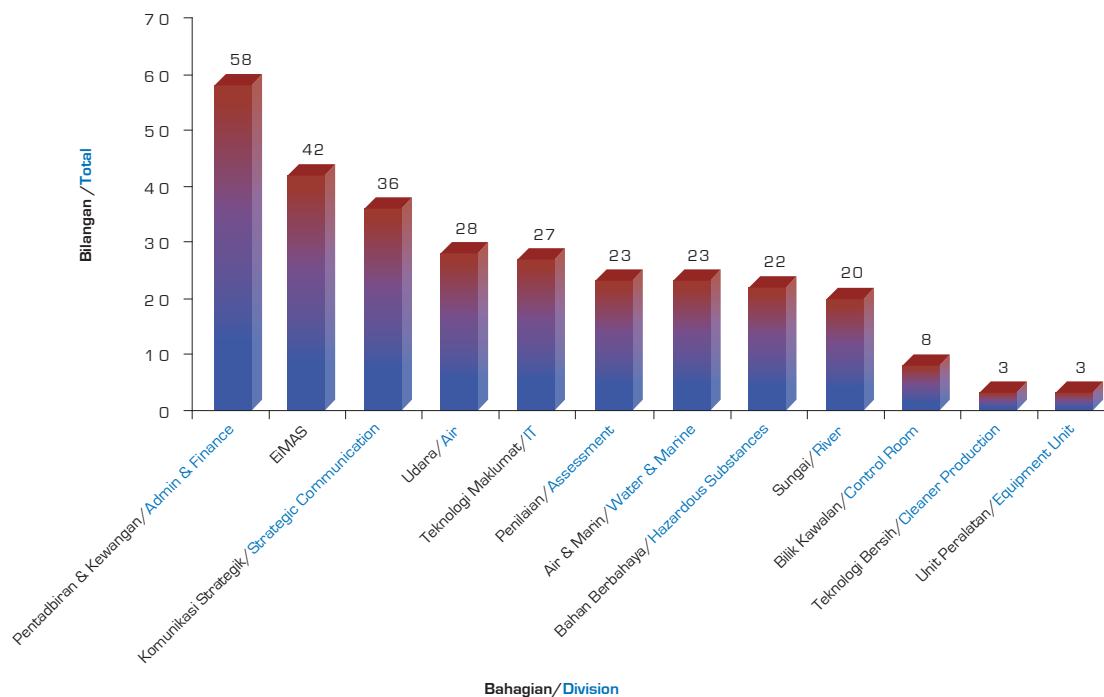
Rajah 2.2 JAS: Peruntukan dan Perbelanjaan (Pembangunan), 1997-2007
Figure 2.2 DOE: Allocation and Expenditure (Development), 1997-2007



Rajah 2.3 JAS: Pecahan Tenaga Kerja Mengikut Kumpulan
Figure 2.3 DOE: Distribution of Workforce According to Groups



Rajah 2.4 JAS: Pecahan Tenaga Kerja Mengikut Negeri
Figure 2.4 DOE: Distribution of Workforce According to States



Rajah 2.5 JAS: Pecahan Tenaga Kerja Mengikut Bahagian
Figure 2.5 DOE: Distribution of Workforce According to Divisions

BAB 3

Chapter 3





PENILAIAN KESAN KEPADA ALAM SEKELILING DAN INPUT KEPADA PERANCANGAN PEMBANGUNAN ENVIRONMENTAL IMPACT ASSESSMENT AND INPUT FOR DEVELOPMENT

Penilaian Kesan Kepada Alam Sekeliling (EIA) merupakan satu alat perancangan untuk mengelakkan dan mengurangkan masalah-masalah akibat aktiviti pembangunan. Ianya juga dapat mengelakkan berlakunya kesilapan semasa projek dilaksanakan serta dapat meminimumkan kos projek.

Di Malaysia, EIA adalah sebagai alat untuk menggabungkan pertimbangan alam sekitar di dalam perancangan projek, yang mana apabila disepadukan dalam perancangan sedia ada dan proses membuat keputusan akan memberikan maklumat tambahan untuk membuat keputusan yang lebih baik.

Laporan EIA 2007

Sebanyak 313 laporan telah diterima pada tahun 2007 (**Rajah 3.1**). Daripada bilangan ini, 285 adalah melalui prosedur penilaian awal EIA manakala 28 lagi melalui prosedur terperinci (**Rajah 3.2**). Negeri Selangor menerima bilangan laporan EIA tertinggi pada tahun 2007, diikuti dengan Johor (**Rajah 3.3 dan 3.4**).

Prosedur EIA: Piagam Pelanggan

Selaras dengan usaha kerajaan di dalam memperbaiki sistem penyampaian awam, Jabatan Alam Sekitar telah mengambil langkah bagi mempertingkatkan serta memperkukuhkan sistem penyampaian Jabatan, khususnya di dalam prosedur dan pemprosesan EIA. Sehubungan dengan itu, masa bagi memproses Laporan EIA Awal telah disingkatkan dari 12 minggu kepada 5 minggu, dan dari 20 minggu kepada 12 minggu bagi Laporan EIA Terperinci. Usaha ini telah dikenalpasti menjadi salah satu pemangkin bagi memastikan projek pembangunan khususnya projek-projek kerajaan

Environmental Impact Assessment (EIA) is essentially a planning tool for preventing environmental problems due to development activity. It also seeks to avoid costly mistakes in project implementation as well as minimizing project cost.

In Malaysia, EIA is used as a tool to incorporate environmental considerations into project planning which when integrated into existing planning and decision-making processes provides additional information for better decision-making.

EIA Reports 2007

A total of 313 reports were received in 2007 (**Figure 3.1**). Of these, 285 were preliminary EIA procedures and 28 detailed EIA procedures (**Figure 3.2**). Selangor received the highest number of EIA reports in 2007, followed by Johor (**Figure 3.3 and 3.4**).

EIA Procedures: Client's Charter

Consistent with the Government's effort in improving the public delivery system, the Department of Environment has taken steps to enhance and strengthen the Department's delivery system, in particular the EIA procedures and processes. Hence, the time taken to process a preliminary EIA report has been reduced from 12 weeks to 5 weeks; and a time reduction of 20 weeks to 12 weeks for a detailed EIA report to be processed. This effort has been recognized as one of the catalysts in ensuring that government-related development projects as well as other development projects



dan juga projek-projek yang telah digariskan di dalam pelan-pelan pembangunan dapat berjalan dengan lancar.

Langkah berterusan telah diambil di dalam memastikan prosedur EIA dapat diperbaiki agar proses membuat keputusan dapat berjalan dengan cekap, antara lainnya:-

- (i) Memperkenalkan Skim Pendaftaran Jururunding EIA baru bagi tujuan memperbaiki standard profesionalisme di kalangan EIA practitioners dengan memastikan mereka mempunyai kelayakan dan kemahiran dalam melaksanakan kajian EIA. Semua jururunding EIA hendaklah berdaftar dengan Jabatan Alam Sekitar di bawah skim baru ini supaya Laporan EIA yang berkualiti disediakan.
- (ii) Menyediakan beberapa dokumen panduan [guidance documents] dalam bentuk senarai semak dan "scope of work" bagi membantu penggerak projek dan jururunding EIA dalam menyediakan laporan EIA yang lengkap dan berkualiti yang menjurus kepada isu-isu kritikal dan signifikan bagi sesuatu projek. Dokumen panduan ini boleh dirujuk melalui laman web Jabatan Alam Sekitar. Laporan EIA yang tidak memenuhi skop ini [tidak lengkap] akan terus ditolak oleh Jabatan Alam Sekitar.
- (iii) Melengkapkan dan memperluaskan pengetahuan teknikal pegawai-pegawai yang memproses laporan EIA dari masa ke semasa melalui kursus-kursus teknikal dan melalui pengalaman semasa kerja di lapangan dan semasa membuat penilaian ke atas Laporan EIA yang berkualiti.

Siasatan Penguatkuasaan Projek EIA

Sejumlah 1,156 siasatan penguatkuasaan

as outlined in the development plans, progress smoothly.

Continuous measures have been taken to assure that the improved EIA procedures and decision-making processes proceed efficiently, among others:-

- (i) Introducing a new EIA Consultant Registration Scheme to improve the standard of professionalism among EIA practitioners by ensuring that they have qualifications and skills required to conduct an EIA study. All EIA Consultants must be registered with the Department of Environment under this new scheme to guarantee good quality EIA reports being submitted.
- (ii) Developing several guidance documents in the form of checklists and scope of work, essentially to assist project proponents and EIA consultants in submitting a complete and good quality EIA report which focuses on critical and significant issues of the proposed project. These guidance documents are made available in the Department of Environment's website. Incomplete EIA reports will be rejected instantaneously by the Department of Environment.
- (iii) Enriching and expanding the technical knowledge of EIA processing officers, from time to time through various technical courses and on-the-job experiences via site investigations and quality assessment of the EIA reports.

EIA Enforcement Investigations

A total of 1,156 enforcement investigations were



telah dijalankan pada tahun 2007 untuk mengenalpasti status pembangunan dan pematuan projek-projek EIA (**Rajah 3.5**). Oleh itu, sebanyak 388 notis atau surat arahan beserta dengan 49 kompoun telah dikeluarkan dengan 35 kes telah didakwa di mahkamah kerana gagal mematuhi syarat-syarat kelulusan.

Input Alam Sekitar Kepada Perancangan Pembangunan

Pada tahun 2007, sejumlah 88 input alam sekitar telah diberikan kepada beberapa agensi lain berhubung dengan Penyelarasan Perancangan Pembangunan, Polisi Zon Persisiran Pantai Kebangsaan, Pelan Tempatan dan kajian-kajian lain seperti langkah-langkah kawalan banjir dan aktiviti-aktiviti pembangunan tanah tinggi.

Skim Pendaftaran Jururunding EIA

Skim Pendaftaran Jururunding EIA mula diperkenalkan secara rasmi pada 1 Jun 2007. Satu kajian menyeluruh terhadap skim pendaftaran jururunding EIA di lain-lain negara serta skim pendaftaran oleh badan-badan profesional telah dijalankan terlebih dahulu. Beberapa siri mesyuarat dan seminar konsultasi telah diadakan bagi mendapatkan pandangan dan maklumbalas daripada pihak berkepentingan. Mulai 1 Oktober 2007, hanya laporan yang dijalankan dan dikemukakan oleh jururunding berdaftar sahaja diterima untuk diproses.

Skim baru ini terdiri daripada tiga (3) kategori iaitu Jururunding EIA, Jururunding Subjek dan Penolong Jururunding. Bagi meningkatkan keberkesanan skim ini, beberapa elemen baru telah diperkenalkan seperti aspek Pembangunan Profesional Berterusan (CPD) dan sistem penilaian berterusan. Sehingga 31 Disember 2007, seramai 614 individu telah didaftarkan. Daripada jumlah ini, 204

conducted in 2007 to check on the progress of projects and compliance of EIA approval conditions (**Figure 3.5**). Consequently, 388 notices or written directives, and 49 compounds were served and 35 cases were charged in court for non-compliance.

Environmental Input for Development Planning

In 2007, a total of 88 environmental inputs were provided to other agencies in connection with Development Planning Coordination, National Coastal Zone Policy, Local Plans and other studies regarding flood-mitigating measures and highland development activities.

Registration Scheme of EIA Consultants

The EIA Consultant Registration Scheme was officially introduced on 1 June 2007. Prior to its introduction, a thorough study was conducted on EIA consultant registration schemes in other countries as well as other professional schemes. A number of consultation meetings and seminars were conducted to gather input and feedback from stakeholders. Starting from 1 October 2007, only reports prepared and submitted by registered EIA consultants are accepted for processing.

The new scheme has three (3) categories namely the EIA Consultant, Subject Consultant and Assistant Consultant. To further enhance the effectiveness of the scheme, several new elements have been introduced such as the Continuous Professional Development (CPD) and continuous performance evaluation. Until 31 December 2007, a total of 614 individuals have been registered. Out of 614, 204 are



daripadanya telah berdaftar sebagai Jururunding EIA, 198 Jururunding Subjek dan 212 Penolong Jururunding.

Penilaian Awal Tapak Projek

Bagi projek-projek pembangunan yang tidak termaktub di bawah Perintah-Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan)[Penilaian Kesan Kepada Alam Sekeliling], 1987, Penilaian Awal Tapak (PAT) dan kesesuaian tapak projek perlu dikemukakan. Ini dapat membantu mengenalpasti isu-isu yang akan timbul pada masa hadapan disamping pemantauan dapat dilaksanakan ke atas sesuatu projek.

Pada tahun 2007, sejumlah 10,940 permohonan telah diterima di mana Negeri Johor mencatat jumlah permohonan paling tinggi (2,401), diikuti oleh Selangor (2,068) dan lain-lain negeri (**Rajah 3.6**). Permohonan-permohonan ini dirujukkan kepada JAS oleh Pihak Berkuasa Tempatan dan Pejabat Tanah. Input Teknikal Alam Sekitar telah diberikan untuk pertimbangan yang sewajarnya di dalam membuat keputusan.

Kebenaran Dan Kelulusan Bertulis

Peraturan-Peraturan Kualiti Alam Sekeliling (Kumbahan dan Effluen-Effluen Perindustrian), 1979 dan Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih), 1978 menghendaki supaya kebenaran dan kelulusan bertulis diperolehi daripada Ketua Pengarah Alam Sekitar sebelum pembinaan loji rawatan sisa kumbahan dan pemasangan sistem kawalan pencemaran udara dibina. Pada tahun 2007, sebanyak 898 permohonan bagi pembinaan loji rawatan sisa kumbahan (**Rajah 3.7**) dan 1,424 permohonan bagi pemasangan alat kawalan pencemaran udara (**Rajah 3.8**). Disamping itu,

registered as EIA Consultants, 198 as Subject Consultants and 212 as Assistant Consultants.

Project Pre-Siting Evaluation

Where development projects were not subjected to the Environmental Quality (Prescribed Activities)[Environmental Impact Assessment] Order 1987, pre-siting evaluation and suitability of proposed sites were carried out. This would help to identify issues that could potentially arise in future besides complementing project monitoring.

In 2007, a total of 10,940 such applications were received, where Johor recorded the highest number (2,401), followed by Selangor (2,068) and other states as shown in (**Figure 3.6**). These applications were mainly referred to the DOE from Local Authorities and Land Offices. Technical environmental inputs were given for consideration to facilitate decision making.

Written Permission And Approval

The Environmental Quality (Sewage and Industrial Effluents) Regulations 1979 and the Environmental Quality (Clean Air) Regulations 1978 require written permission and approvals to be obtained from the Director-General of Environment before construction of wastewater treatment plants and installation of air pollution control systems. In 2007, 898 such applications were received for construction of effluent treatment plants (**Figure 3.7**) and 1,424 applications for installation of air pollution control equipment (**Figure 3.8**). In addition, 2,138 applications for written approvals for installation



sebanyak 2,138 permohonan bagi kelulusan bertulis untuk pemasangan alat pembakaran bahan api seperti dandang dan alat janakuasa telah diproses (**Rajah 3.9**).

Sistem Maklumat Geografi (GIS)

Pelbagai program GIS telah dibangunkan dan dilaksanakan pada tahun 2007 bagi membolehkan teknologi GIS dapat dimanfaatkan sepenuhnya oleh JAS dalam menguruskan alam sekitar di Malaysia.

Bagi melengkapkan pengkalan data spatial, data spatial seperti lokasi projek, punca-punca pencemaran dan stesen-stesen pengawasan kualiti alam sekitar sentiasa dikemaskini.

Pada tahun 2007, Institut Latihan Alam Sekitar Malaysia (EiMAS) telah dilengkapi dengan 20 unit perkakasan kerja dan perisian GIS bagi meningkatkan dan memperbaiki program latihan.

Program latihan yang berterusan telah diberikan kepada kakitangan JAS. GIS juga boleh digunakan untuk memberi maklumat sepanjang hari berkaitan dengan lokasi titik panas bagi pengawasan pembakaran terbuka.

Disamping itu, penggunaan GIS juga dapat memberikan input yang berkaitan dengan maklumat spatial yang diperlukan oleh Bahagian-Bahagian di Ibu Pejabat, JAS Negeri/Cawangan atau agensi luar.

Pusat Khidmat Nasihat JAS di MIDA

Pusat Khidmat Nasihat JAS di Ibu Pejabat, Lembaga Kemajuan Perindustrian Malaysia (MIDA) memberi maklumat alam sekitar dan nasihat kepada bakal pelabur-pelabur dari dalam dan luar negara.

Pada tahun 2007, sebanyak 150 ulasan bertulis telah dihantar ke MIDA, 30 pertanyaan melalui telefon dan 30 bilangan temujanji dengan pelabur telah diadakan. Kebanyakan pertanyaan adalah berhubung-kait dengan kesesuaian lokasi kedudukan tapak premis, zon penampungan, kepakaran jururunding alam sekitar dan polisi kerajaan mengenai pengurusan sisa buangan.

of fuel burning equipment such as boilers and generator sets were processed (**Figure 3.9**).

Geographical Information System (GIS)

Various GIS programs were developed and undertaken in 2007 to enable the GIS technology fully utilized by the DOE in environmental management in Malaysia.

In order to develop a complete spatial data center, spatial data such as projects locations, pollution sources and environmental monitoring stations have been continuously updated.

In 2007, the Environmental Institute of Malaysia (EiMAS) was equipped with 20 units of workstations and GIS software in order to enhance and improve the training program.

Training courses are continuously provided to DOE personnel. GIS had also been used to supply daily information on hotspot locations in the monitoring of open burning.

Besides that, GIS also provided input relating to spatial information required by the various Divisions in the Headquarters Office, State/Branch Offices and other agencies.

DOE Advisory Services Desk at MIDA

The DOE Advisory Services Desk at the Head Office of the Malaysian Industrial Development Authority (MIDA) serves to provide environmental information and advice to prospective local and foreign investors.

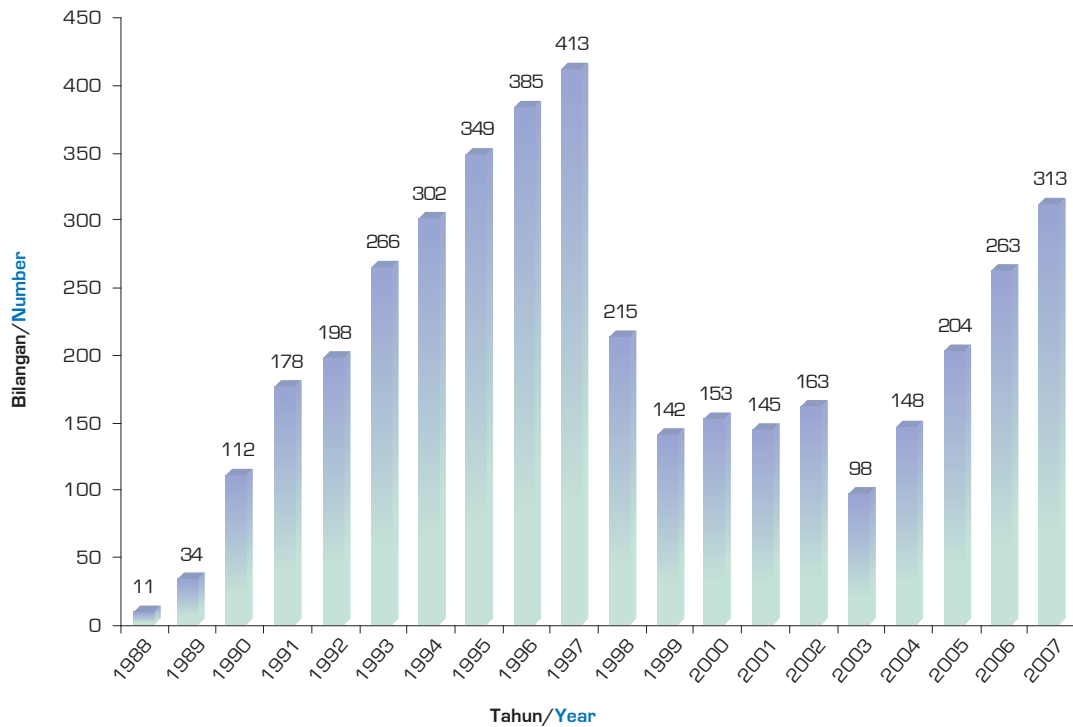
In 2007, 150 written comments were submitted to MIDA, 30 telephone enquiries were attended to and 30 meetings with investors were held. Most of the enquiries received pertained to project site suitability, buffer zones, expertise of environmental consultants and government policy in waste management.



Lawatan Penguatkuasaan ke Tapak Pembinaan
Enforcement Visit to Project Site

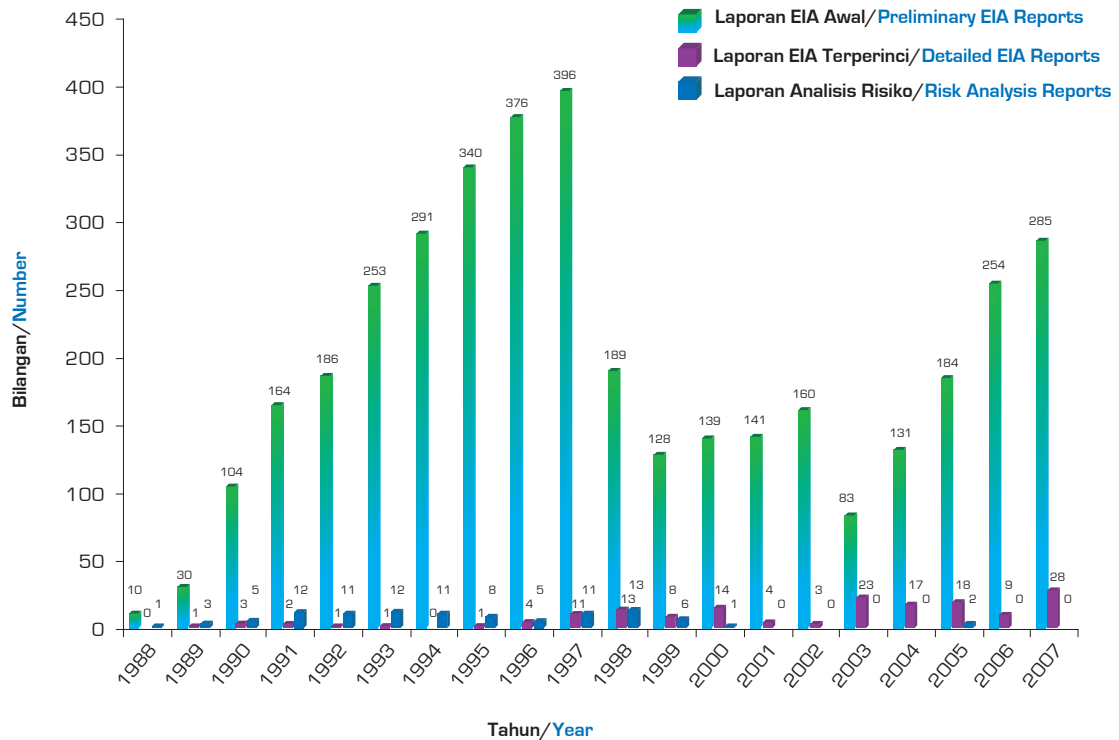


Pemantauan Udara Ke Atas Tapak Pertanian



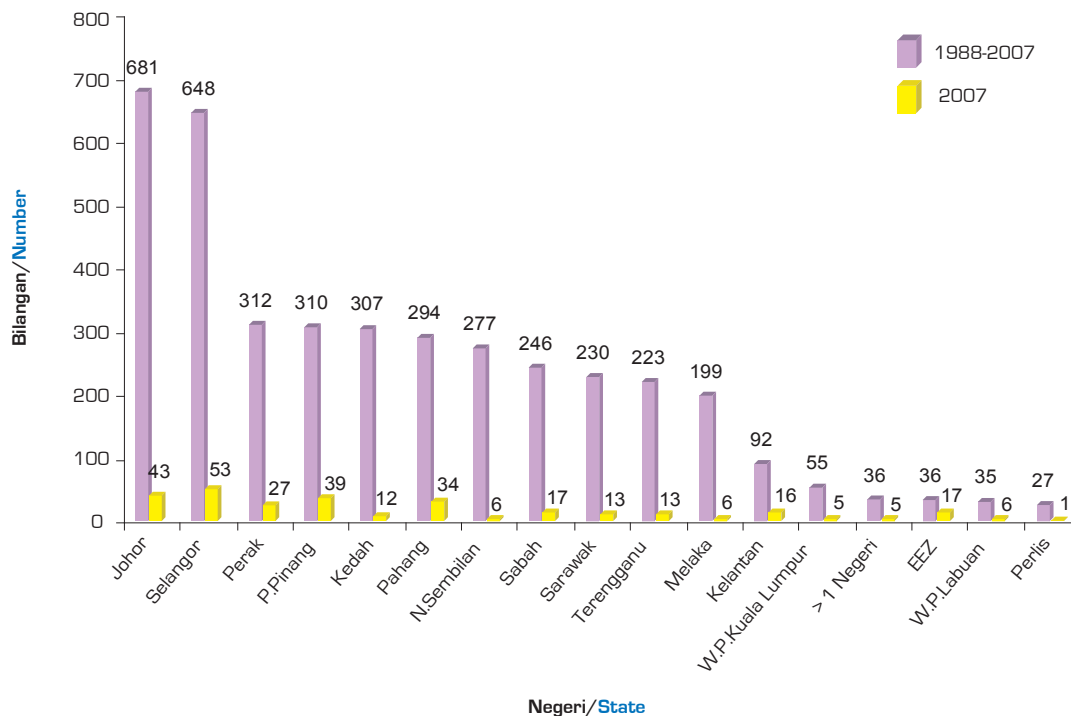
Rajah 3.1 JAS: Bilangan Laporan EIA Yang Diterima Mengikut Tahun, 1988-2007

Figure 3.1 DOE: Number of EIA Reports Received by Year, 1988-2007



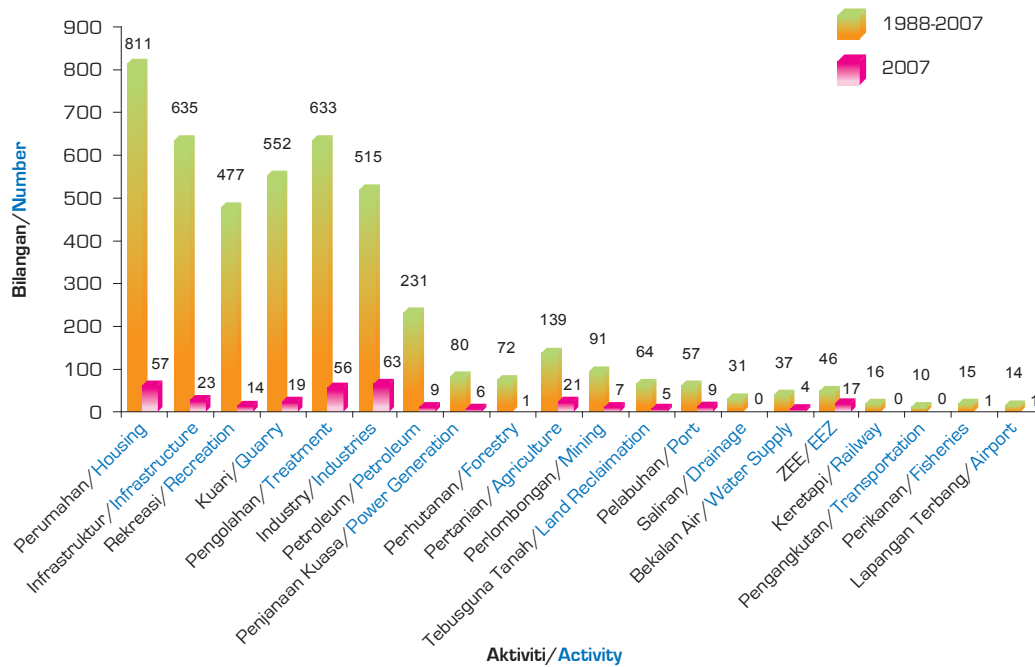
Rajah 3.2 JAS: Bilangan Laporan EIA dan Jenis Laporan Diterima, 1988-2007

Figure 3.2 DOE: Number and Type of EIA Reports Received, 1988-2007



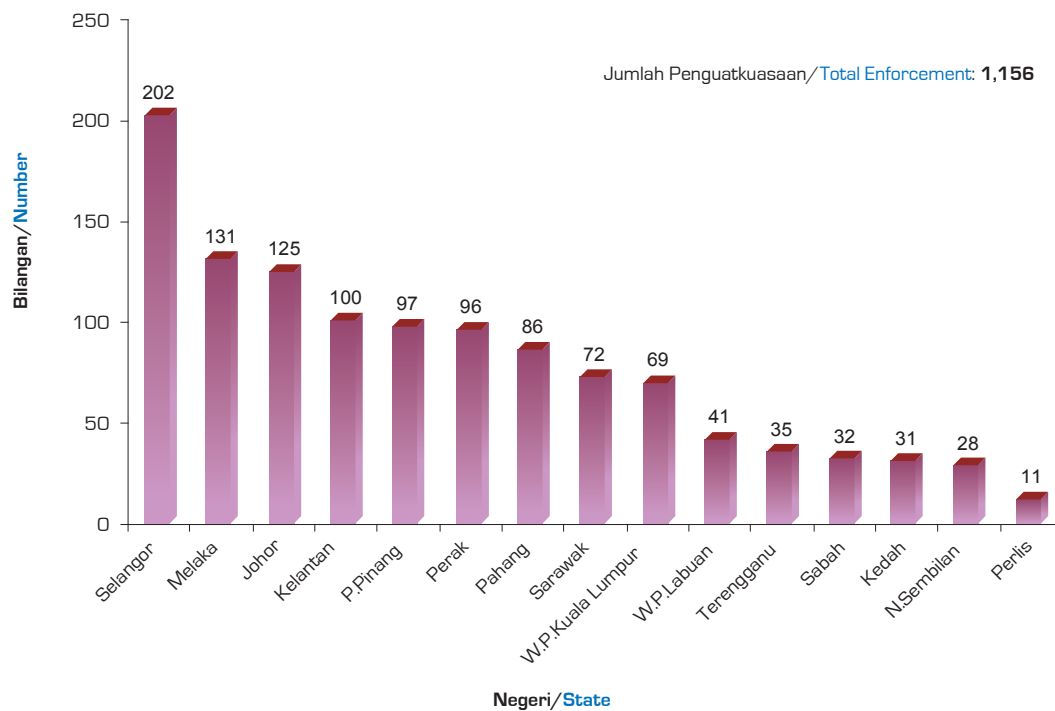
Rajah 3.3 JAS: Bilangan Laporan EIA Yang Diterima Mengikut Negeri, 1988-2007

Figure 3.3 DOE: Number of EIA Reports Received by State, 1988-2007

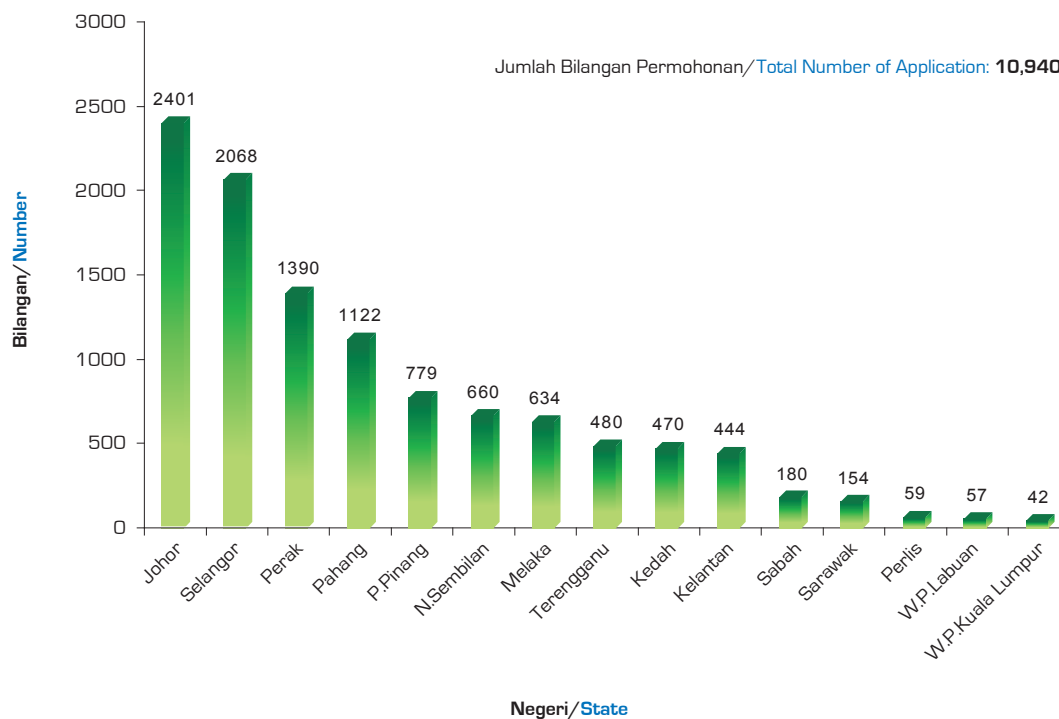


Rajah 3.4 JAS: Bilangan Laporan EIA Yang Diterima Mengikut Aktiviti, 1988-2007

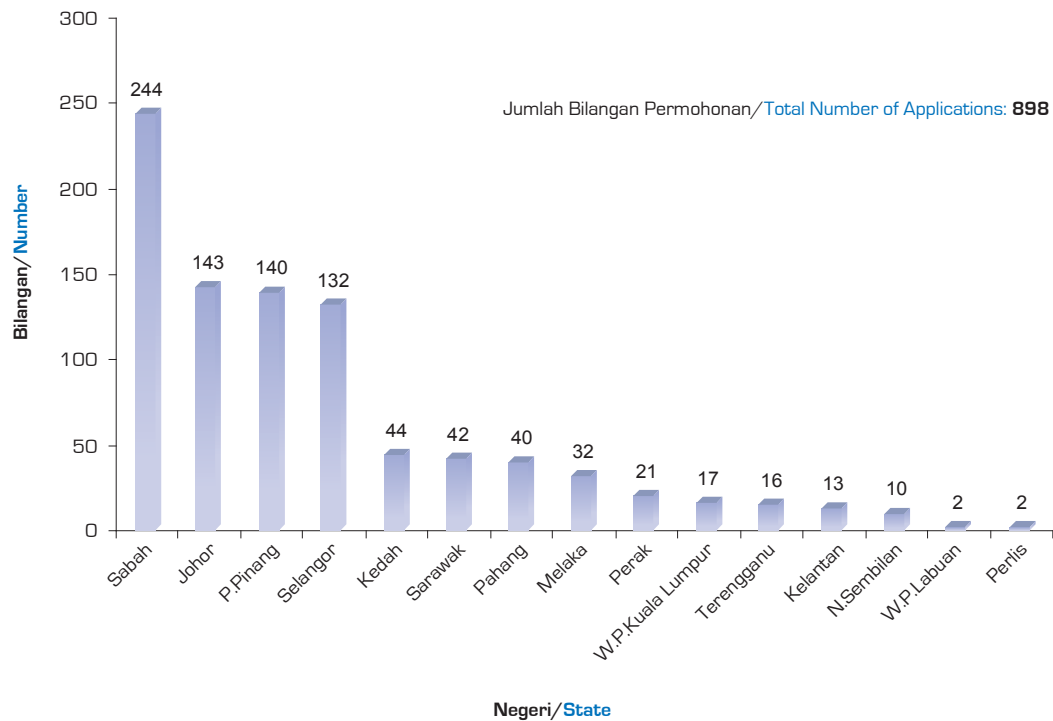
Figure 3.4 DOE: Number of EIA Reports Received by Activity, 1988-2007



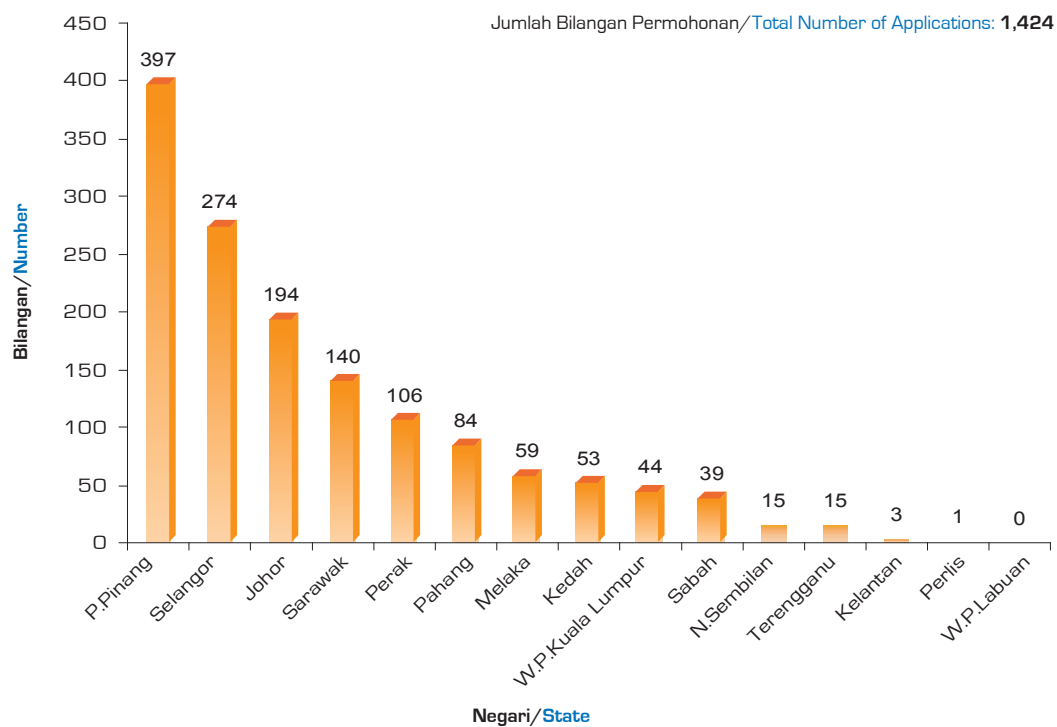
Rajah 3.5 JAS: Siasatan Penguatkuasaan Projek EIA, 2007
Figure 3.5 DOE: Post EIA Enforcement Investigations, 2007



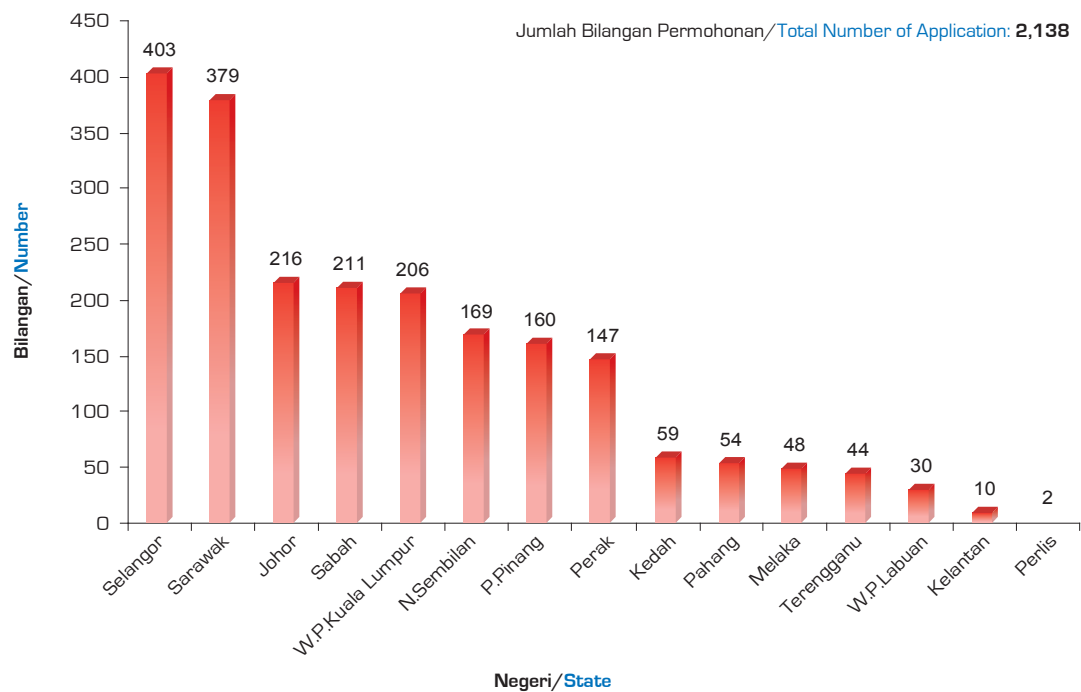
Rajah 3.6 JAS: Penilaian Awal Tapak Untuk Projek Pembangunan Mengikut Negeri, 2007
Figure 3.6 DOE: Pre-Siting Evaluation of Development Projects by State, 2007



Rajah 3.7 JAS: Kebenaran Bertulis Untuk Pembinaan Loji Pengolahan Effluen Mengikut Negeri, 2007
Figure 3.7 DOE: Application for Construction of Wastewater Treatment Plants by State, 2007



Rajah 3.8 JAS: Permohonan Bagi Pemasangan Alat Kawalan Pencemaran Udara Mengikut Negeri, 2007
Figure 3.8 DOE: Applications for Installation of Air Pollution Control Equipment by State, 2007



Rajah 3.9 JAS: Permohonan Bagi Pemasangan Alat Pembakaran Bahan Api Mengikut Negeri, 2007
Figure 3.9 DOE: Applications for Installation of Fuel Burning Equipment by State, 2007

BAB 4

Chapter 4





PENGAWASAN KUALITI UDARA AIR QUALITY MONITORING

Jabatan Alam Sekitar (JAS) secara berterusan mengawal kualiti udara menerusi 51 buah stesen di seluruh Malaysia untuk mengesan sebarang perubahan ketara kepada kualiti udara yang akan memberi kesan kepada kesihatan awam dan alam sekitar. Stesen-stesen pengawasan ini ditempatkan di lokasi strategik (**Peta 4.1 dan 4.2**) untuk memenuhi objektif program pengawasan yang spesifik.

Kebanyakan stesen-stesen ini ditempatkan di kawasan perumahan untuk memastikan tahap pendedahan pencemar udara kepada orang awam sentiasa diawasi, manakala yang lainnya ditempatkan di dalam kawasan industri dan kawasan yang padat dengan trafik.

Rangkaian Stesen Pengawasan Kualiti Udara Kebangsaan ini turut dilengkapi dengan stesen-stesen pengawasan kualiti udara manual yang ditempatkan di 20 buah lokasi yang berbeza. Di lokasi-lokasi ini, parameter seperti pepejal terampai, habuk halus bersaiz kurang dari 10 mikron (PM_{10}) dan beberapa jenis logam berat termasuk plumbum diukur sekali bagi tempoh enam hari menggunakan alat "High Volume Samplers".

Status Kualiti Udara Bagi 2007

Secara keseluruhannya, status kualiti udara di seluruh negara sepanjang tahun bertambah baik berbanding tahun 2006 dan tiada episod jerebu berlaku pada tahun 2007. Keadaan cuaca lembap dengan peningkatan jumlah hujan yang dialami di seluruh Semenanjung, Sabah dan Sarawak menyebabkan pengurangan dalam bilangan titik panas atau kejadian pembakaran terbuka yang berlaku di dalam negara. Keadaan cuaca yang sama juga dialami oleh negara jiran seperti di Kalimantan dan Sumatera yang mana tren bilangan titik panas atau pembakaran terbuka yang dilaporkan oleh ASEAN Specialised Meteorological Centre (ASMC) adalah menurun berbanding dengan tahun sebelumnya.

The Department of Environment (DOE) continuously monitors ambient air quality throughout Malaysia at 51 locations to detect any significant change in air quality which may cause negative impact to human health and the environment. These monitoring stations are strategically located (**Maps 4.1 and 4.2**) to meet specific monitoring objectives.

Most stations are located in residential areas to ensure that the level of air pollution exposed to the general public are continuously monitored. The rest of the stations are located within industrial areas and areas with high traffic volume.

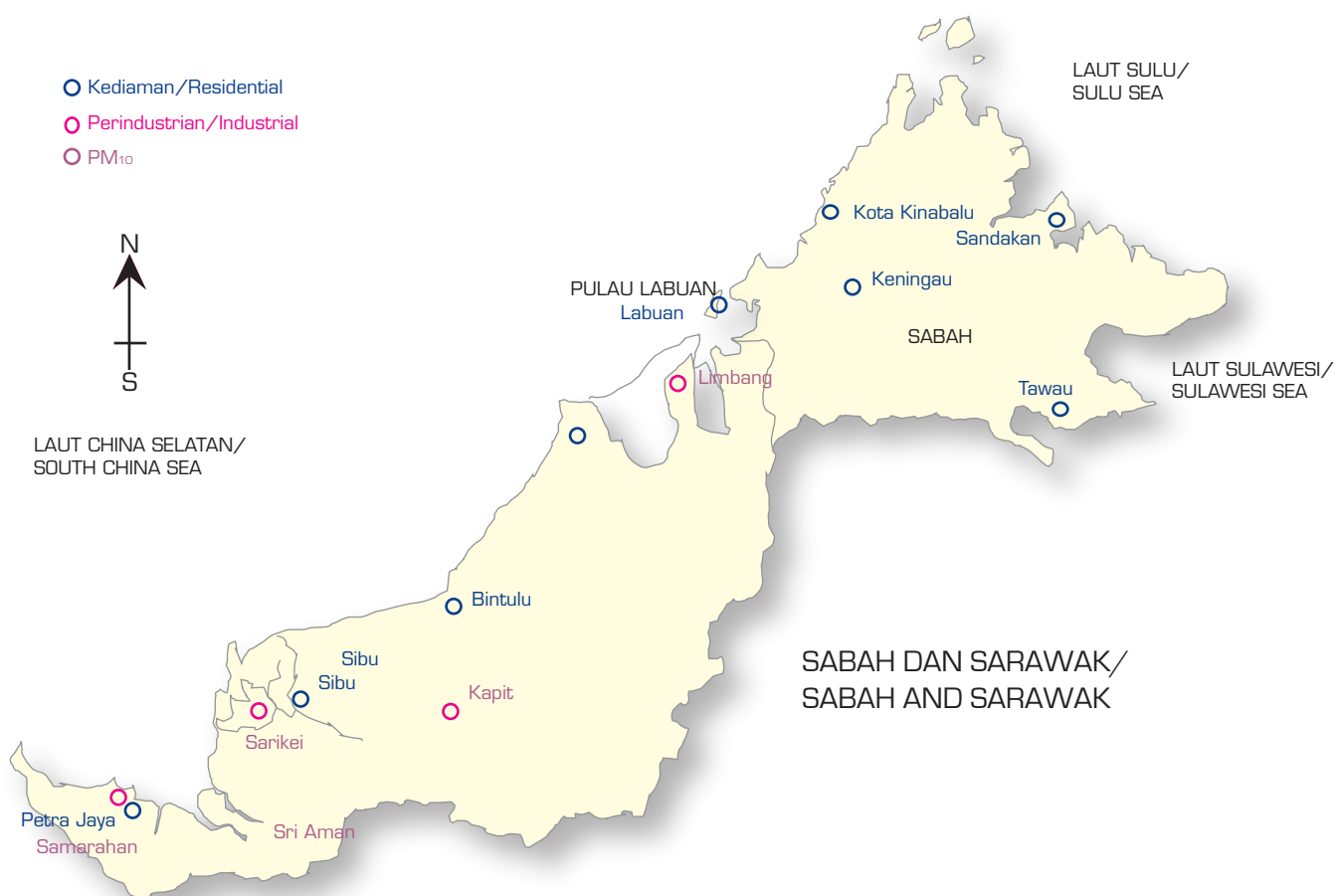
The National Air Quality Monitoring Network is also complemented by manual air quality monitoring stations located at 20 different sites. At these sites, total suspended particulate, particulate matter (PM_{10}) and several heavy metals including lead are measured at intervals of six days using High Volume Samplers.

Air Quality Status in 2007

The overall air quality status for Malaysia throughout the year had improved significantly compared to 2006 and no haze pollution episodes recorded in 2007. The wet weather condition with increased amount of rainfall experienced in Peninsular, Sabah and Sarawak had resulted in decreased number of open burning activities or hotspots detected in the country. A similar weather condition in the neighbouring country i.e. both in Kalimantan and Sumatera also led to a decreasing trend in the total number of open burning or hotspots reported by the ASEAN Specialised Meteorological Centre (ASMC) compared to the trend in the previous year.



Peta 4.1 Semenanjung Malaysia: Lokasi Stesen Pengawasan Udara Automatik, Semenanjung Malaysia, 2007
 Map 4.1 Peninsular Malaysia: Location of Continuous Air Quality Monitoring Stations, Peninsular Malaysia, 2007



Peta 4.2 Sabah & Sarawak: Lokasi Stesen Pengawasan Udara Automatik, Malaysia Timur, 2007
 Map 4.2 Sabah & Sarawak: Location of Continuous Air Quality Monitoring Stations, East Malaysia, 2007



PENGAWASAN BUNYI BISING AMBIEN AMBIENT NOISE MONITORING

Punca dan Kesan Pencemaran Bunyi Bising

Aktiviti perindustrian, projek-projek pembangunan dan trafik boleh menghasilkan kesan bunyi secara melampau. Pencemaran bunyi boleh menjejaskan kesihatan dan mengurangkan produktiviti. Selain daripada menjadi kacauganggu terhadap masyarakat, bunyi yang disertai dengan amplitud getaran yang tinggi semasa aktiviti seperti letupan batu dari kuari boleh mengakibatkan kemusnahan pada infrastruktur jalan dan bangunan.

Program Pengawasan Bunyi Bising Kebangsaan

Mulai Jun 2006, Jabatan Alam Sekitar telah memulakan Program Pengawasan Bunyi Bising Kebangsaan. Program ini telah diteruskan sepanjang tahun 2007 dengan tujuan utama untuk mewujudkan data garis dasar bagi input pembangunan pada masa akan datang. Pengukuran paras bunyi bising ambien tertumpu kepada tiga (3) kategori utama iaitu trafik jalanraya (21 stesen), perindustrian (17 stesen) dan kawasan sensitif seperti hospital, sekolah dan tempat ibadat (9 stesen) **[Jadual 4.1]**.

Pematuhan bunyi bising ambien adalah berdasarkan had-had yang disyorkan dalam "The Planning Guidelines for Environmental Noise Limits and Control". Hasil pengukuran menunjukkan kebanyakan kawasan daripada ketiga-tiga kategori mencatatkan bacaan bunyi bising melebihi daripada garis panduan yang ditetapkan.

Satu buku panduan bertajuk "Panduan Pengukuran Bunyi Bising Ambien" juga telah disediakan untuk kegunaan di semua pejabat JAS Negeri.

Sources and Effect of Noise Pollution

Activities such as industrial, development projects and traffic generate excessive noise. Noise pollution has an impact on health and reduces productivity. Besides being a nuisance to public, noise together with vibrations of very high amplitudes from activities such as blasting of rocks during quarrying can cause damage to infrastructure such as roads and buildings.

National Ambient Noise Monitoring Program

Beginning from June 2006, the Department of Environment started the National Ambient Noise Monitoring Programme. The programme continued throughout 2007 with the aim of collecting baseline data as inputs to future development projects. The ambient noise monitoring program focused at three (3) major sources of noise: road traffic (21 stations), industrial areas (17 stations) and noise sensitive areas such as hospitals, schools and places of worship (9 stations). **[Table 4.1]**.

Noise level compliance was based on the limits recommended in "The Planning Guidelines for Environmental Noise Limits and Control". The results showed that most areas at the above 3 categories recorded noise level exceeding the guideline limits.

A guide book entitled "Guide on Ambient Noise Measurement" had been prepared for use by DOE States Offices.



Bengkel dan Kolokium

Satu Bengkel Pemakaian Garispanduan Kawalan Bunyi Bising Ambien dan Getaran telah diadakan untuk kakitangan Jabatan Alam Sekitar (JAS) dan Pihak Berkuasa Tempatan (PBT) peringkat Zon Tengah, Zon Timur, Zon Selatan, Sabah dan Sarawak pada 28 Jun 2007. Kolokium berkaitan penggunaan peralatan untuk mengukur bunyi bising dan getaran persekitaran (Blastmate III) juga telah diadakan pada 8-10 Mei 2007 di Ibu Pejabat JAS, Putrajaya.

Workshops and Colloquiums

A workshop to facilitate the implementation and application of "The Planning Guidelines for Environmental Noise Limits and Control" was conducted for the staff of DOE and the Local Authorities of the Central, Eastern, and Southern Region, Sabah and Sarawak on 28 June 2007. A colloquium on handling and operation of noise and vibration meter (Blastmate III) was held on 8-10 May 2007 at DOE Head Office, Putrajaya.



Stesen Pengawasan Bunyi Bising di Kawasan Perindustrian Mentakab, Pahang
Noise Pollution Monitoring Station at Mentakab Industrial Area, Pahang



Jadual 4.1 JAS: Pengawasan Bunyi Bising Ambien, 2007
Table 4.1 DOE: Ambient Noise Monitoring, 2007

Kategori/ Category	Lokasi/Location	Bilangan Pengukuran/ No. of Measurement	Pematuhan/ Compliance [%]
Trafik/Traffic	Sabah 1. Jalan Tunku Abdul Rahman 2. Jalan UMS-Sulaman	7 7	14.3 28.6
	Selangor 1. Federal Highway, Petaling Jaya 2. Persiaran Kayangan, Seksyen 9, Shah Alam	2 4	50 50
	Kelantan 1. Jalan Kota Bharu-Kuala Krai 2. Jaan Sultan Yahya Petra	1 1	0 0
	Terengganu 1. Jalan Bukit Besar 2. Jalan Kijing, Marang	10 1	0 0
	Pulau Pinang 1. Jalan Sultan Azlan Shah 2. Lebuhraya Lingkaran Luar Butterworth 3. Jalan Teluk Kumbar	5 5 2	0 20 50
	Pahang 1. Jalan Endau Rompin-Tg. Gemok 2. KM4, Jalan Gambang-Kuantan	9 9	0 0
	Negeri Sembilan 1. Jalan Sri Pagi, Taman Rasa Sayang 2. Jalan Kuala Pilah-Seremban	2 2	0 0
	Sarawak 1. Bulatan Batu 3, Jalan Kuching 2. Bulatan Matang, Siburan	5 5	20 0
	Perlis 1. KM 13.2 Jalan Kangar-Kodiang	1	0
	Kedah 1. R&R Gurun, Kawasan Lebuhraya Utara-Selatan	10	20
	Melaka 1. Batu Berendam Airport	7	0
	Johor 1. Persimpangan Tun Fatimah, Johor Bahru	1	0
Industri/ Industries	Sabah 1. Kawasan Perindustrian Inanam	7	85.7
	Selangor 1. Seksyen 15, Shah Alam	5	80
	Kelantan 1. Kawasan Perindustrian Gua Musang	1	0



Jadual 4.1 JAS: Pengawasan Bunyi Bising Ambien, 2007
Table 4.1 DOE: Ambient Noise Monitoring, 2007

Kategori/ Category	Lokasi/Location	Bilangan Pengukuran/ No. of Measurement	Pematuhan/ Compliance [%]
Industri/ Industries	Pulau Pinang 1. Kawasan Perindustrian Bertam 2. Institut Latihan Perindustrian Kepala Batas	1 4	100 50
	Pahang 1. Kawasan Perindustrian Mentakab	9	88.9
	Negeri Sembilan 1. Taman Desa Ria Nilai, Kawasan Perindustrian Arab Malaysian 2. Taman NLFCS, PD power Berhad	2 9	0 66.7
	Sarawak 1. Kawasan Perindustrian Demak Laut	5	100
	Perlis 1. Taman 20, Chuping	3	0
	Kedah 1. Kawasan Perindustrian Mergong 2. Kawasan Pembinaan Anak Bukit	10 10	40 0
	Melaka 1. Sempadan Taman Peruna & Kilang Penapisan Petronas, Sg. Udang 2. Sempadan Kilang Pahlawan Power & Perkampungan Tg. Kling	11 4	11 4
	Johor 1. Kawasan Perindustrian Sri Sulong, Batu Pahat	1	0
	Selangor 1. Hospital Klang	2	0
	Pulau Pinang 1. Sek. Keb. Bukit Gambir 2. Sek. Keb. Taman Senangan	2 2	0 0
Kawasan Sensitif/ Sensitive Area	Perak 1. Hospital Pantai Puteri, Ipoh 2. Hospital Besar Ipoh	1 1	0 0
	Johor 1. Sek. Ren. Taman Universiti 2, Skudai	1	0
	Perlis 1. Sek. Keb. Jalan Raja Syed Alwi 2. Masjid Barakah, Jelempong	3 1	0 0
	Putrajaya 1. Presint 14 (kawasan perumahan dengan kepadatan rendah)	1	0



PROTOKOL MONTREAL DAN PERLINDUNGAN LAPISAN OZON MONTREAL PROTOCOL AND PROTECTION OF THE OZONE LAYER

Latarbelakang

Setelah ratifikasi Konvensyen Vienna bagi Perlindungan Lapisan Ozon dan Protokol Montreal pada 29 Ogos 1989, Malaysia dikategorikan sebagai Negara Artikel 5 di bawah Protokol Montreal untuk bahan-bahan yang menghapuskan lapisan ozon.

Pematuhan Terhadap Protokol Montreal

Bagi tahun 2007, kadar penggunaan Klorofluorokarbon (CFC) perkapita ialah sebanyak 0.019 kg setahun dan kuota import bahan-bahan pemusnah ozon (ODS) ialah sebanyak 287.40 metrik tan. Tren Penggunaan CFC bagi Malaysia (sebenarnya dan diunjurkan) adalah seperti ditunjukkan dalam **Rajah 4.1**.

Pelan Kebangsaan Penghapusan CFC (NCFCP) 2002–2010

Di bawah Pelan NCFCP 2002–2010, baki sebanyak 2,125 ton “ozone depleting potential (ODP)” (termasuk Halon dan Metil Bromid) akan dihapuskan dalam tempoh sembilan tahun. Peruntukan tambahan sejumlah USD 11.5 juta (RM 43.7 juta) telah diluluskan oleh “Multilateral Ozone Trust Fund” melalui Bank Dunia. Sehingga kini, terdapat beberapa projek bantuan teknikal dan program-program industri yang dijalankan oleh JAS, selaku agensi pelaksana, termasuklah:

- Program CFCs-Metered Dosed Inhaler (MDIs);
- Program Mobile Air Conditioning (MAC) Inspection oleh PUSPAKOM;
- Program Custom-ODS Training (COTP);
- Program MAC Servicing Sector;
- Program ODS Solvent Sector;
- Program Refrigeration Service Sector;
- Program Foam Sector; dan
- Program Kesedaran Awam.

Background

Upon ratification of the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on 29 August 1989, Malaysia became an Article 5 country under the Montreal Protocol for Substances That Deplete the Ozone Layer.

Compliance to Montreal Protocol

In 2007, the national Chlorofluorocarbon (CFC) consumption per capita was 0.019 kg per annum and the import quota for ozone depleting substances (ODS) for 2007 was 277.40 metric tonnes. Malaysia CFC consumption trend (actual and projected) is shown in **Figure 4.1**.

National Chlorofluorocarbons Phaseout Plan (NCFCP) 2002 - 2010

Under the NCFCP 2002–2010 the remaining 2,125 tonnes of ozone depleting potential (including Halon and Methyl Bromide) would be phased out over a period of nine years. An additional allocation of USD 11.5 million (RM 43.7 million) had been approved for Malaysia under the Multilateral Ozone Trust Fund through the World Bank. To date various on-going technical assistance projects and industrial programmes undertaken by the implementing agency include the following:

- CFCs-Metered Dosed Inhaler (MDIs) Programme;
- Mobile Air Conditioning (MAC) Inspection Programme by PUSPAKOM;
- Custom-ODS Training Programme (COTP);
- MAC Servicing Sector Programme;
- ODS Solvent Sector Programme;
- Refrigeration Service Sector Programme;
- Foam Sector Programme; and
- Public Awareness Programme.



Sepanjang tahun 2007, sejumlah USD 1,190,717.02 (RM7,116,623.82) dana telah dibelanjakan bagi pelaksanaan projek-projek di bawah program ini seperti tersenarai dalam **Jadual 4.2**.

Pengurusan Halon

Halon tidak lagi digunakan bagi pemasangan baru sistem mengawal kebakaran dan alat-alat pemadam api di Malaysia. Sebaliknya, karbon dioksida atau serbuk kimia kini digunakan sebagai alternatif. Walaubagaimanapun, kegunaan halon masih dibenarkan untuk tujuan terhad sistem keselamatan kawalan kebakaran tentera dan penerbangan awam sepertimana dipersetujui di bawah Program Protokol Montreal. Halon yang diperolehi kembali dan diktirsemula disimpan di Pusat Bank Halon Kebangsaan di Kuala Kubu Bahru, Selangor.

Penghapusan Metil Bromida

Dana projek sebanyak USD 200,000 bagi bantuan teknikal penggunaan alternatif bagi menghapuskan penggunaan Metil Bromida di Malaysia di dalam aktiviti bukan kuarantin dan sebelum penghantaran kapal disediakan oleh UNDP New York.

Penggunaan ODS dan Permit Kawalan Import

Kaedah utama untuk mengawal penggunaan ODS di negara ini ialah melalui Sistem Permit Import (AP). Jumlah kuantiti ODS yang dibenarkan diimport setahun ditetapkan oleh Kementerian Perindustrian dan Perdagangan Antarabangsa setelah perundingan dengan JAS dan Jabatan Kastam.

Program dan Kempen Kesedaran

Sempena sambutan Hari Ozon Sedunia iaitu 16 September, pengumuman tentang Hari Ozon Sedunia telah dijalankan di stesen televisyen utama dari bulan Mac sehingga Disember 2007.

In 2007, a total of USD 1,190,717.02 (RM7,116,623.82) fund was utilized for the implementation of projects as tabulated in **Table 4.2**.

Halon Management

Halon is no longer used in Malaysia for new installation of fire protection system and fire extinguishers. Instead, carbon dioxide or chemical powders are now being used as alternatives. However, halon is still allowed and restricted for use in military and civil aviation fire safety protection systems, as agreed under the Montreal Protocol. Recycled and recovered halon is stored at the National Halon Bank Centre at Kuala Kubu Bahru, Selangor.

Methyl Bromide Phase Out

A project grant of USD 200,000 for technical assistance to install alternatives to phase out all remaining non-quarantine and pre-shipment (non-QPS) uses of Methyl Bromide in Malaysia was provided by UNDP New York.

Consumption of ODS and Import Control Permit

The main instrument of control for ODS consumption in Malaysia is the Approved Permit (AP) System. The total quantity of ODS that can be imported in any year is set by the Ministry of International Trade and Industry (MITI) after consultations with DOE and the Customs Department.

Awareness Programme and Campaign

In conjunction with World Ozone Day on 16 September 2007, announcements were made via television from March to December 2007. Overall awareness programme carried out in

Perincian program kesedaran yang dijalankan dalam tahun 2007 ditunjukkan di **Jadual 4.3**. Mesyuarat-mesyuarat yang berkaitan di peringkat serantau dan antarabangsa yang dihadiri oleh JAS seperti dalam **Jadual 4.4**.

2007 is shown in **Table 4.3**. Various meetings at regional and international level attended by DOE officers is shown in **Table 4.4**.



Delagasi Malaysia di 19th Meeting of the Parties
(MOPs) to the Montreal Protocol, Canada
Malaysian Delegates at the 19th Meeting of the
Parties (MOPs) to the Montreal Protocol, Canada



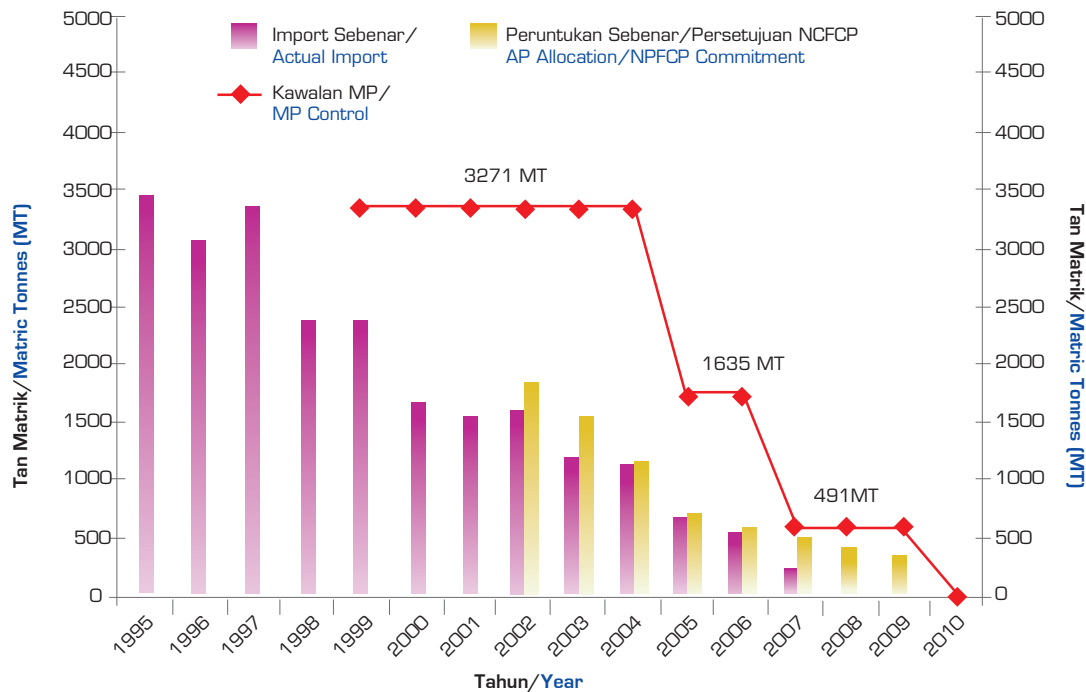
JAS: Program "Road Show RSS"
RSS Road Show Programme



Program Kesedaran Perlindungan Ozon
Peringkat Negeri Pulau Pinang
Ozone Protection Awareness Programme-Penang



Program Kesedaran Perlindungan Ozon
Peringkat Negeri Sabah
Ozone Protection Awareness Programme-Sabah



Rajah 4.1 JAS: Tren Penggunaan CFC di Malaysia, 1995-2010
Figure 4.1 DOE: Malaysia CFC Consumption Trend, 1995-2010



Program Pemeriksaan Penghawa Dingin Kenderaan (MAC) oleh PUSPAKOM
Mobile Air Conditioning (MAC) Inspection Programme by PUSPAKOM



Jadual 4.2 JAS: Aktiviti-Aktiviti Kesedaran NCFCP, 2007
Table 4.2 DOE: Public Awareness Activities NCFCP, 2007

Tarikh/ Date	Aktiviti & Program/ Activities & Programme	Tempat/ Venue
Jan-Ogos / Jan-August	Iklan Perlindungan ozon di dalam keretapi In-Train Panel Advertisement on Ozone Protection	LRT STAR (Lembah Klang) STAR LRT (Klang Valley)
18,24 April / April 18,24	Program Kesedaran perlindungan lapisan ozon Peringkat Negeri Pulau Pinang Ozone Protection Awareness Programme-Penang	Pulau Burung, SMK Sg. Ara, Bayan Lepas, JAS Negeri Pulau Pinang
3, 8,15 Mei / May 3,8,15	Program Kesedaran perlindungan lapisan ozon Peringkat Negeri Pulau Pinang Ozone Protection Awareness Programme-Penang	Pulau Burung, SMK Sg Ara, Bayan Lepas
10 Mei / May 10	Program Kesedaran perlindungan lapisan ozon Peringkat Negeri Kelantan Ozone Protection Awareness Programme-Kelantan	SMK Sungai Asap, Gua Musang
11 Jun/ June 11	Program Kesedaran perlindungan lapisan ozon Peringkat Negeri Kelantan Ozone Protection Awareness Programme-Kelantan	SMK Sultan Ibrahim [2], Pasir Mas
2-5 Jun/ June 2-5	Program Kesedaran perlindungan lapisan ozon Peringkat Negeri Sabah Ozone Protection Awareness Programme-Sabah	Sepilok, Sabah
15 Jun / June 15	Seminar HCFC Seminar on HCFC	Hotel Shangri-La, Kuala Lumpur
13-15 Julai / July 13 -15	Pameran dan Kempen Perlindungan Ozon Ozone Protection Awareness Exhibition	MAPEX 07, Pulau Pinang
21-23 Julai / July 21 - 23	Pameran dan Kempen Perlindungan Ozon Ozone Protection Awareness Exhibition	Hari Koperasi Negara, PWTC
22 Julai/ July 22	Program Kesedaran Perlindungan Lapisan Ozon Peringkat Negeri Kelantan Ozone Protection Awareness Programme-Kelantan	SMK Sains Pasir Puteh
21-22 Julai/ July 22	Program Kesedaran Perlindungan Lapisan Ozon Peringkat Negeri Sabah Ozone Protection Awareness Programme-Sabah	Beringgis Beach Resort, Papar
3-5 Ogos / August 3 -5	Pameran dan Kempen Perlindungan Ozon Ozone Protection Awareness Exhibition	MAPEX 07 Midvalley Exhibition Center, KL
11 Ogos / August 11	Pengumuman Senarai Authorized Training Center (ATC) Announcement for the List of ATC	Utusan Malaysia, New Straits Times, Sin Chew Jit Poh
14 Ogos / August 14	Program Kesedaran perlindungan lapisan ozon Peringkat Negeri Melaka Ozone Protection Awareness Programme-Melaka	Hotel the Legacy, Melaka
16 Ogos / August 16	Roadshow RSS - Pulau Pinang RSS Roadshow-Penang	Hotel Gurney, Pulau Pinang
17 Ogos / August 17	Roadshow RSS-Perak RSS Roadshow-Perak	Hotel Casuarina, Ipoh
16-18 Ogos/ August 16-18	Program Kesedaran Perlindungan Lapisan Ozon Peringkat Negeri Terengganu Ozone Protection Awareness Programme-Terengganu	Tasik Kenyir, Terengganu
18-19 Ogos/ August 18-19	Program Kesedaran Perlindungan Lapisan Ozon Peringkat Negeri Sabah Ozone Protection Awareness Programme-Sabah	Proboscis Monkey River Lodge, Kota Klias Wetland
24 Ogos/ August 24	Program Kesedaran Perlindungan Lapisan Ozon Peringkat WP Kuala Lumpur Ozone Protection Awareness Programme-Kuala Lumpur	Fakulti Sains, Universiti Malaya
3 Sept / Sept 3	Roadshow RSS Peringkat Negeri Kelantan RSS Roadshow-Kelantan	Hotel Renaissance, Kota Bharu



Jadual 4.2 JAS: Aktiviti-Aktiviti Kesedaran NCFCP, 2007
Table 4.2 DOE: Public Awareness Activities NCFCP, 2007

Tarikh/ Date	Aktiviti & Program/ Activities & Programme	Tempat/ Venue
10 Sept/ Sept 10	Roadshow RSS Peringkat Kuala Lumpur RSS Roadshow-Kuala Lumpur	Hotel Concorde, Kuala Lumpur
10 Sept/ Sept 10	Program Kesedaran Perlindungan Lapisan Ozon Peringkat Negeri Sarawak Ozone Protection Awareness Programme-Sarawak	Santubong Resort, Kuching
11 Sept/ Sept 11	Program Kesedaran Perlindungan Lapisan Ozon Peringkat Negeri Sembilan Ozone Protection Awareness Programme-N.Sembilan	Dewan Theathrette, Wisma Negeri, Seremban
8 - 9 Sept/ Sept 8 - 9	Program Kesedaran Perlindungan Lapisan Ozon Peringkat WP Kuala Lumpur Ozone Protection Awareness Programme - Kuala Lumpur	Taman Alam Kuala Selangor
27 Sept-15 Nov/ Sept 27-Nov 15	Pertandingan Melukis Poster-Lindungi Lapisan Ozon Peringkat Negeri Johor	Sekolah rendah dan menengah seluruh negeri Johor
22-23 Okt/ Oct 22-23	Roadshow RSS Peringkat Negeri Sarawak RSS Roadshow - Sarawak	Kuching, Sarawak
24-26 Okt/ Oct 24 -26	Roadshow RSS Peringkat Negeri Sabah RSS Roadshow - Sabah	Kota Kinabalu, Sabah
30 Okt/ Oct 30	Roadshow RSS Peringkat Negeri Johor RSS Roadshow-Johor	Puteri Pacific, Johor Bahru
31 Okt/ Oct 31	Program Kesedaran Perlindungan Lapisan Ozon Peringkat Negeri Selangor Ozone Protection Awareness Programme-Selangor	Sekolah-Sekolah Sekitar Negeri Selangor
1,5,6,9 Nov/ Nov 1,5,6,9	Program Kesedaran Perlindungan Lapisan Ozon Peringkat Negeri Selangor Ozone Protection Awareness Programme-Selangor	Sekolah-Sekolah Sekitar Negeri Selangor
26-28 Nov/ Nov 26 -28	Program Kesedaran Perlindungan Lapisan Ozon Peringkat Negeri Johor Ozone Protection Awareness Programme-Johor	Sekolah-Sekolah Sekitar Negeri Johor
7-9 Dis/ Dec 7-9	Pameran dan Kempen Perlindungan Ozon Ozone Protection Awareness Exhibition	Education Fair, PWTC

Jadual 4.3 JAS: Projek-Projek dan Aktiviti-Aktiviti yang Dilaksanakan di bawah NCFCP, 2007
Table 4.3 DOE: Projects and Activities Implemented under NCFCP, 2007

Sektor/ Sector	Bil. Aktiviti/ Lawatan Yang Selesai/ No. of Completed Activities	Bil. Lawatan Pemeriksaan/Penguatkuasaan No. of Inspection/Enforcement Visits
Metered Dosed Inhaler (MDI)	2	-
Program Pemeriksaan Penghawa Dingin Kenderaan (MAC) oleh PUSPAKOM Mobile Air Conditioning (MAC) Inspection Programme by PUSPAKOM	Projek selesai [2004] Project Completed [2004]	-
Program Kursus Kastam-ODS (COTP) Customs ODS Training Programme (COTP)	-	-
Sektor MAC Servis MAC Servicing Sector	3609	-
*Latihan Operator Service MAC (CSTP) Certification Service Technicians (CSTP)	-	-



Jadual 4.3 JAS: Projek-Projek dan Aktiviti-Aktiviti yang Dilaksanakan di bawah NCFCP, 2007

Table 4.3 DOE: Projects and Activities Implemented under NCFCP, 2007

Sektor/ Sector	Bil. Aktiviti/ Lawatan Yang Selesai/ No. of Completed Activities	Bil. Lawatan Pemeriksaan/Penguatkuasaan No. of Inspection/Enforcement Visits
*Baucer Alat-alat MAC MAC Tools Voucher	2830	-
*Lawatan Penguatkuasaan untuk bengkel MAC Enforcement visits for MAC Workshop	Bil. Premis -236 No. of Premise -236	Jumlah lawatan - 266 No. of Visit -266
*Baucer Mesin Kitar-semula (R&R) Recycle & Recovery (R&R) Machine Voucher	689	-
Pelarut / Solvent	1	3
Sektor Servis Penghawa Dingin Refrigeration Service Sector	-	-
Busar / Foam	-	-
*Projek Kumpulan Group Sub-Project	1 (14 Group)	28
*Projek Individu / Individual Sub-Project	26	48
Aktiviti Kesedaran / Awareness Activity	Sila rujuk Jadual 4.1 Please refer to Table 4.1	-

Jadual 4.4 JAS: Mesyuarat-Mesyuarat Peringkat Serantau dan Antarabangsa

Table 4.4 DOE: Regional and International Meeting

Tarikh/ Date	Aktiviti & Program/ Activities & Programme	Tempat/Venue
Mac 19-23/ March 19-23	The 51 st Meeting of Executive Committee for Implementation of the Montreal Protocol	Montreal, Canada
Mac 26-27/ March 26-27	The 11 th Annual Workshop for Financial Agents	Washington D.C, USA
April 10-13/ April 10-13	Joint Meeting of the SEAP and South Asia Networks of ODS Officers	Thimphu, Bhutan
Jun 2-7/ June 2-7	Open Ended - Dialogue and the 27 th Meeting of Open-Ended Working Group on Montreal Protocol	Washington D.C
Julai 23-31/ July 23 - 31	The 52 nd Meeting of Executive Committee for Implementation of the Montreal Protocol; and Informal Consultation on HCFC Phase Out	Montreal, Canada
Ogos 19-22/ August 19-22	UNEP Regional Ozone Quiz in Cooperation with Ruamruadee International School	Bangkok, Thailand
September 6-7/ September 6-7	The 4 th EAP/ENV Regional Workshop-Phase Out of ODS in East Asian Countries	Bali, Indonesia
September 16-21/ September 16-21	Seminar on the Montreal Protocol; and The 19 th Meeting of Parties (MOPs) to the Montreal Protocol	Montreal, Canada
November 8-14/ November 8-14	Joint Meeting of the SEAP and South Asia Networks of ODS Officers and 1 st Regional Enforcement Network Workshop	Bali, Indonesia
November 26-30/ November 26-30	The 53 rd Meeting of Executive Committee for Implementation of the Montreal Protocol	Montreal, Canada



PROGRAM PENCEGAHAN PENCEMARAN DAN PENINGKATAN KUALITI AIR SUNGAI RIVER POLLUTION PREVENTION AND WATER QUALITY IMPROVEMENT PROGRAMME

Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai yang mula dilaksanakan sejak tahun 2001 di bawah Rancangan Malaysia Kelapan (RMK-8) dan telah diteruskan di bawah Rancangan Malaysia Kesembilan (RMK-9). Pada tahun 2007, sebanyak 33 lembangan sungai telah dipilih menyertai program ini **(Peta 4.3)**. Program ini mempunyai dua aktiviti utama yang bertujuan meningkatkan kualiti air lembangan-lembangan sungai yang telah dikategorikan sebagai tercemar atau sederhana tercemar berdasarkan hasil pemantauan. Aktiviti pertama ialah pelaksanaan kajian pencemaran lembangan sungai diikuti dengan tindakan penguatkuasaan serta kesedaran awam bagi lembangan sungai yang telah dijadualkan.

Kriteria pemilihan sungai tersebut adalah berdasarkan kepada kegunaan berfaedah sumber-sumber airnya seperti bekalan air minuman, perikanan, rekreasi dan potensi untuk pelancongan dan juga sungai yang menghadapi pencemaran yang serius atau yang berada di tahap Kelas III dan ke bawah yang perlu dipulihkan ke tahap Kelas II iaitu sesuai sebagai bekalan air minuman dengan rawatan konvensional.

Kajian Pencegahan Pencemaran dan Peningkatan Kualiti Lembangan Air Sungai

Pada tahun 2007, kajian pencemaran sungai telah dijalankan bagi dua (2) lembangan sungai iaitu Lembangan Sungai Linggi di Negeri Sembilan dan Lembangan Sungai Sepetang di Negeri Perak. Kajian ini bertujuan mengenalpasti punca pencemaran yang menyebabkan kemerosotan kualiti air sungai dan merumuskan pelan-pelan tindakan pencegahan pencemaran serta meningkatkan kualiti air sungai berkenaan. Kajian ke atas Sungai Linggi, telah bermula pada penghujung tahun 2006 dan selesai pertengahan tahun 2007, manakala kajian ke atas Sungai Sepetang bermula awal tahun 2007 dan dijangka selesai awal tahun 2008. Pelan-pelan tindakan yang dirumuskan itu

River Pollution Prevention and Water Quality Improvement Programme had been implemented since 2001 under the 8th Malaysia Plan and will be continued under the 9th Malaysia Plan. In 2007, 33 river basins have been selected for this programme **(Map 4.3)**. The programme has two main activities for the purpose of improving the water quality of rivers categorised as polluted or slightly polluted based on monitoring results. The first activity is the implementation of a study on a polluted river basin, followed by the enforcement action and public awareness for the selected river basin.

The selection criteria for the river were based on their beneficial uses such as water supply, fisheries, recreational and tourism potential as well as those rivers which are seriously affected by pollutions or categorised as Class III and below and had to be improved to Class II which is suitable for drinking water supply with only conventional treatment.

Study on Pollution of the River Basin

In 2007, a study on river pollution was implemented for two (2) river basins namely Linggi River Basin in Negeri Sembilan and Sepetang River Basin in Perak. The purpose of the study was to identify the pollution a source responsible for the deterioration of the river water quality and formulate action plans to prevent pollution and improve its water quality. The Linggi River Basin study started at the end of 2006 and was completed by the middle of 2007 while the Sepetang River Basin study started in 2007 and will be completed by early 2008. The formulated action plans will be presented to all



akan dikemukakan kepada agensi-agensi yang berkaitan untuk pertimbangan peruntukan dan pelaksanaan.

Penguatkuasaan

Penguatkuasaan berkesan merupakan salah satu aktiviti penting hasil daripada rumusan pelan-pelan tindakan yang dicadangkan oleh kajian bagi mengurangkan beban pencemaran dan meningkatkan kualiti air sungai. Pada tahun 2006, sebanyak 11,468 premis di dalam 33 lembangan sungai telah dikenalpasti tertakluk di bawah Akta Kualiti Alam Sekeliling 1974.

Pada tahun 2007, enam (6) lembangan sungai telah berjaya mencapai sasaran 100% pematuhan bagi punca-punca yang tertakluk di bawah Akta Kualiti Alam Sekeliling (AKAS), 1974. 12 lembangan sungai telah melebihi 90% pematuhan terhadap AKAS, 1974. Peratus pematuhan yang rendah diperhatikan berlaku di lembangan Sungai Buloh iaitu 54%, yang menunjukkan keperluan bagi memperkemas lagi strategi penguatkuasaan oleh pihak JAS di negeri yang berkenaan (**Rajah 4.2**).

Selain daripada aktiviti penguatkuasaan, inventori punca-punca tetap ke atas 33 lembangan sungai yang tertakluk di bawah Akta Kualiti Alam Sekeliling, 1974 juga dikemaskini dari masa ke semasa bagi meningkatkan dan memantapkan lagi pelaksanaan program penguatkuasaan yang dijalankan.

Kesedaran Awam

Promosi kesedaran merupakan satu lagi langkah yang berkesan dalam mencegah pencemaran dan memperbaiki kualiti air sungai. Pada tahun 2007, Jabatan Alam Sekitar telah menganjurkan beberapa program kesedaran kepada pihak industri, pemaju projek, pelajar sekolah dan persatuan perumahan. Aktiviti-aktiviti kesedaran awam yang telah dilaksanakan seperti pada **Rajah 4.3**.

relevant agencies for financial considerations and implementation.

Enforcement

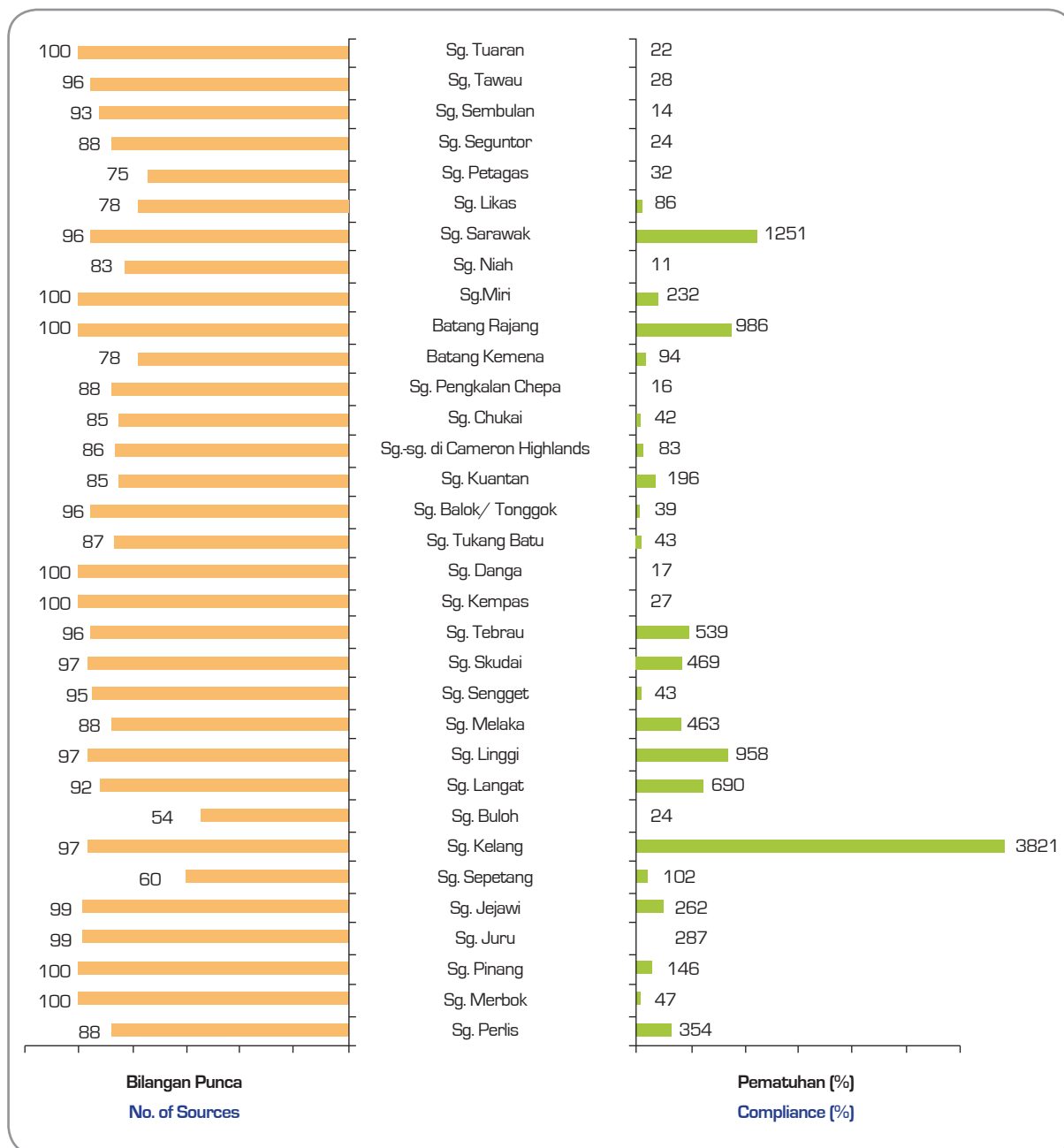
Effective enforcement is one of the important activities formulated action plans proposed under the study to reduce pollution loads and improve river water quality. In 2006, a total of 11,468 premises within the 33 river basins were subjected to the Environmental Quality Act 1974.

In 2007, six (6) river basins had achieved 100% compliance for the pollution sources subjected to the Environmental Quality Act (EQA), 1974. 12 river basins had achieved more than 90% compliance to the EQA, 1974. A low percentage compliance was observed in Buloh River Basin with 54% compliance, indicating the need for DOE to strengthen up the enforcement strategy for the state (**Figure 4.2**).

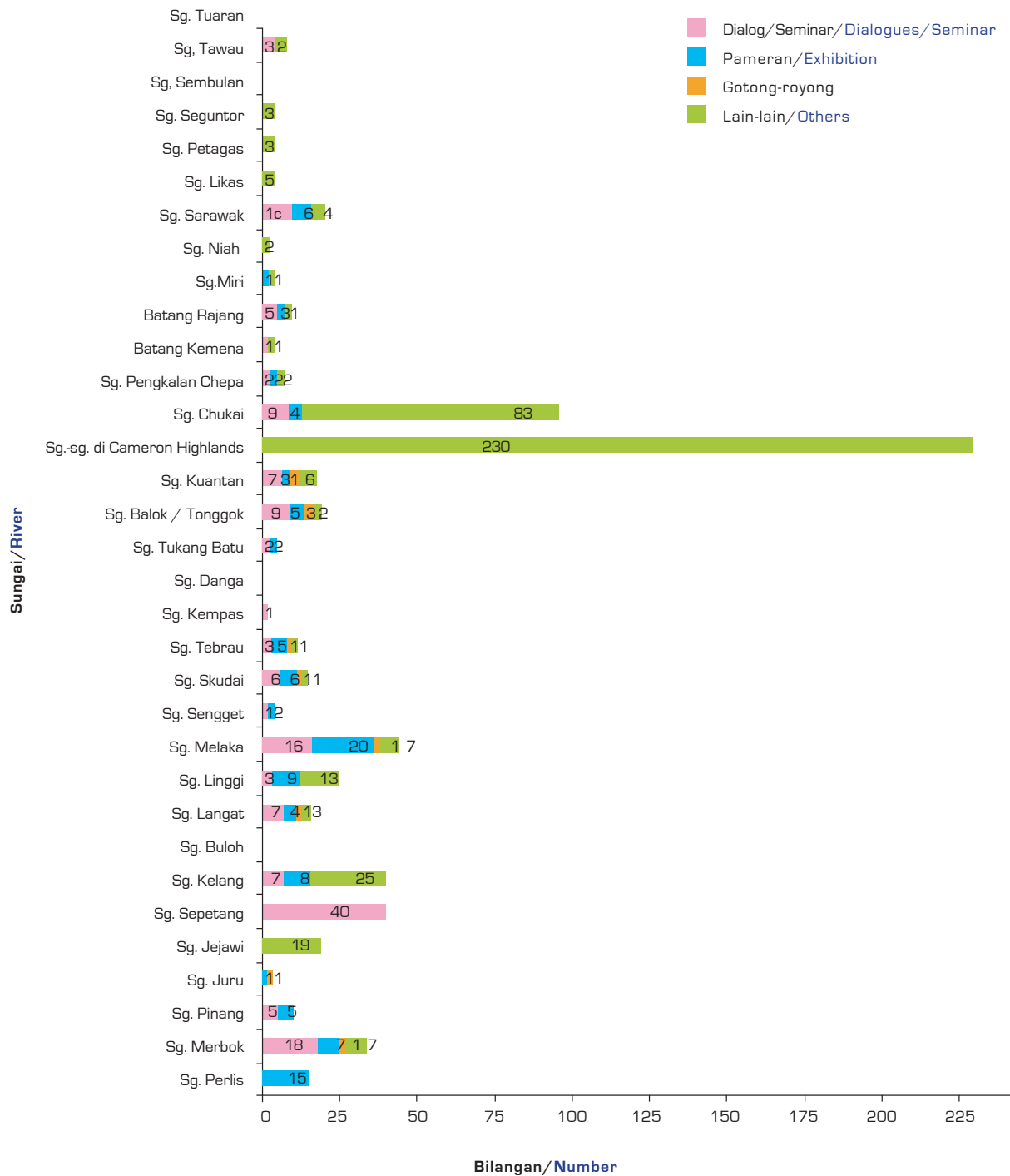
Besides enforcement activities, the inventory of point sources of pollution within the 33 river basins subjected to the Environmental Quality Act 1974 was regularly updated to enhance and strengthen the implementation of the enforcement programme.

Public Awareness

Promoting awareness is another effective measure to prevent pollution and improve river water quality. In 2007, Department of Environment has organised awareness programmes to the industries, project developers, school children and residence associations. Public awareness activities implemented were listed as in **Figure 4.3**.

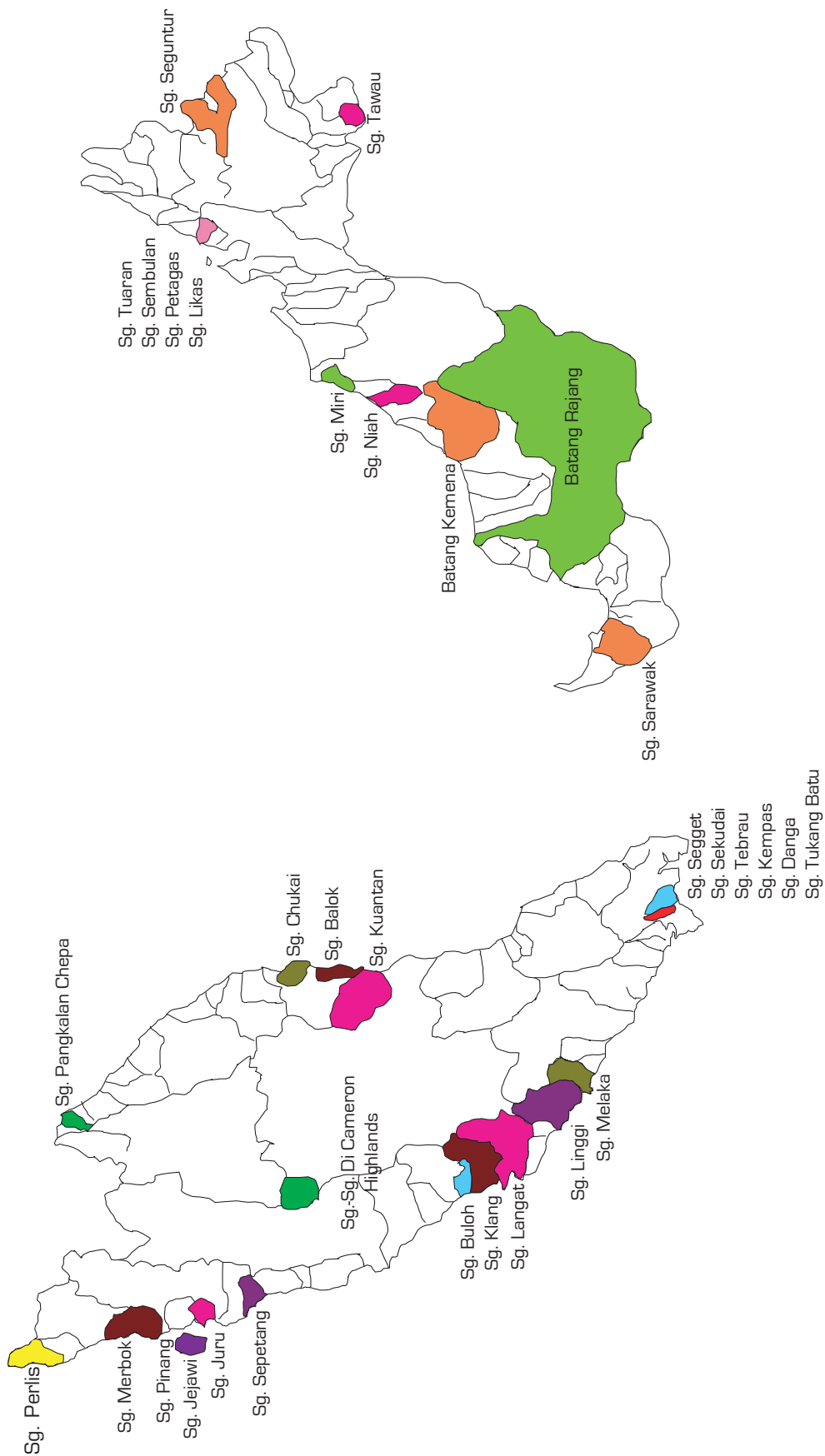


Rajah 4.2 JAS: Bilangan Punca dan Status Pemuatan Pencemaran di Bawah Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai, 2007
 Figure 4.2 DOE: Number of Sources and Status of Compliance for Pollution under River Pollution Prevention and Water Quality Improvement Programme, 2007



Rajah 4.3 JAS: Aktiviti-Aktiviti Kesedaran di bawah Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai, 2007

Figure 4.3 DOE: Awareness Activities under River Pollution Prevention and Water Quality Improvement Programme, 2007



Peta 4.3 Malaysia: Lembangan Sungai yang dipilih di bawah Program Pencegahan Pencemaran dan Peningkatan Kualiti Sungai

Map 4.3 Malaysia: Selected River Basins under River Pollution Prevention and Water Improvement Programme



KAWALAN TERHADAP PREMIS YANG DITETAPKAN CONTROL OF PRESCRIBED PREMISES

Kilang Getah Asli Mentah dan Kilang Kelapa Sawit Mentah telah dikategorikan sebagai premis yang ditetapkan di bawah Perintah Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Getah Asli Mentah) 1978 dan Perintah Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Kelapa Sawit Mentah) 1977. Operasi premis-premis ini adalah tertakluk kepada keperluan Seksyen 18, Akta Kualiti Alam Sekeliling, 1974 di mana tuan punya premis-premis ini perlu mempunyai lesen daripada Jabatan Alam Sekitar bagi menduduki dan atau menggunakan premis.

Kilang Getah Asli Mentah

Pada tahun 2007, sejumlah 85 buah kilang getah asli mentah telah dilesenkan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Getah Asli Mentah), 1978. Daripada jumlah ini, 73 buah kilang telah dilesenkan untuk melepaskan effluen yang telah diolah ke alur air, sebuah kilang telah dilesenkan untuk melepaskan effluen ke atas tanah manakala 11 buah kilang dibenarkan untuk mengitar semula effluen. Tempoh lesen yang diberikan bagi setiap premis adalah berbeza dari satu hingga tiga tahun bergantung kepada paras pematuhan kilang-kilang tersebut terhadap syarat-syarat lesen. **Rajah 4.4** menunjukkan taburan kilang getah asli mentah di Malaysia.

Sepanjang tahun 2007, pegawai-pegawai penguatkuasa JAS Negeri telah menjalankan sebanyak 218 pemeriksaan ke atas 85 buah kilang getah asli mentah yang telah dilesenkan. Kilang-kilang yang mempunyai rekod pematuhan yang rendah telah diberi keutamaan. Sebanyak 62 surat arahan dan 22 notis arahan telah dikeluarkan kepada premis-premis tersebut

Raw natural rubber factories and crude palm oil processing mills are classified as prescribed premises under the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Order, 1978 and the Environmental Quality (Prescribed Premises) (Crude Palm Oil) Order, 1977. The operation of these premises is subjected to the requirement of Section 18 of the Environmental Quality Act, 1974 whereby the owners of the premises are required to obtain a licence from the Department of Environment for occupation and/or use of the said premises.

Raw Natural Rubber Factories

In 2007, there were 85 raw natural rubber factories licensed under the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations, 1978. Out of these, 73 factories were licensed to discharge treated effluent into inland watercourse, 1 was permitted to practise land disposal while the remaining 11 were allowed to recycle their effluent. The licensing periods of each premise varied from one to three years depending on the level of compliance to the conditions in the licenses. **Figure 4.4** shows the distribution of raw natural rubber factories in Malaysia.

Throughout 2007, State DOE enforcement officers conducted 218 inspections on 85 licensed raw natural rubber factories. Factories with low compliance record were given priority. A total of 62 directives and 22 notices were issued to the concerned premises to take corrective actions. 12 compounds were issued for offences committed and 12 court actions



untuk tindakan pembaikan. Sebanyak 12 kompaun telah dikeluarkan bagi kesalahan-kesalahan yang telah dilakukan dan 12 tindakan mahkamah telah diambil bagi kesalahan melanggar syarat-syarat lesen dengan denda sebanyak RM65,000 telah dikenakan **(Rajah 4.4)**.

Pencapaian pematuhan keseluruhan oleh kilang getah asli mentah pada 2007 adalah 76% berbanding 81% pada tahun 2006.

Kilang Kelapa Sawit Mentah

Sejumlah 404 buah kilang kelapa sawit mentah telah dilesenkan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) [Kelapa Sawit Mentah], 1977 dalam tahun 2007 berbanding dengan 398 buah pada tahun 2006. Daripada 404 buah kilang yang dilesenkan, sebanyak 246 buah kilang telah dilesenkan untuk melepaskan effluen yang diolah ke dalam alur air, 112 buah kilang untuk melupuskan effluen ke atas tanah, 39 buah kilang melupuskan effluen dengan menggunakan kedua-dua kaedah dan tujuh (7) buah kilang secara kitar semula. **Rajah 4.5** menunjukkan taburan bilangan kilang kelapa sawit mentah di Malaysia.

Sepanjang tahun 2007, 1,160 pemeriksaan ke atas kesemua 404 kilang kelapa sawit yang telah dilesenkan telah dilaksanakan oleh pegawai-pegawai penguatkuasa JAS Negeri. Sebanyak 524 surat arahan dan 245 notis telah dikeluarkan kepada premis-premistersebut untuk mengambil tindakan bagi mematuhi keperluan perundangan. Sebanyak 121 kompaun telah dikeluarkan bagi kesalahan yang dilakukan dan 96 tindakan mahkamah telah diambil dengan denda sebanyak RM633,000 dikenakan bagi kegagalan mematuhi syarat-syarat lesen **(Rajah 4.5)**.

Pencapaian pematuhan keseluruhan syarat-syarat lesen oleh kilang kelapa sawit pada 2007 adalah 72% berbanding 75% pada tahun 2006.

were taken and a total fine of RM65,000 for failure to comply with conditions of the licence **(Figure 4.4)**.

Overall compliance by the raw natural rubber factories decreased to 76% compared to 81% in 2006.

Crude Palm Oil Mills

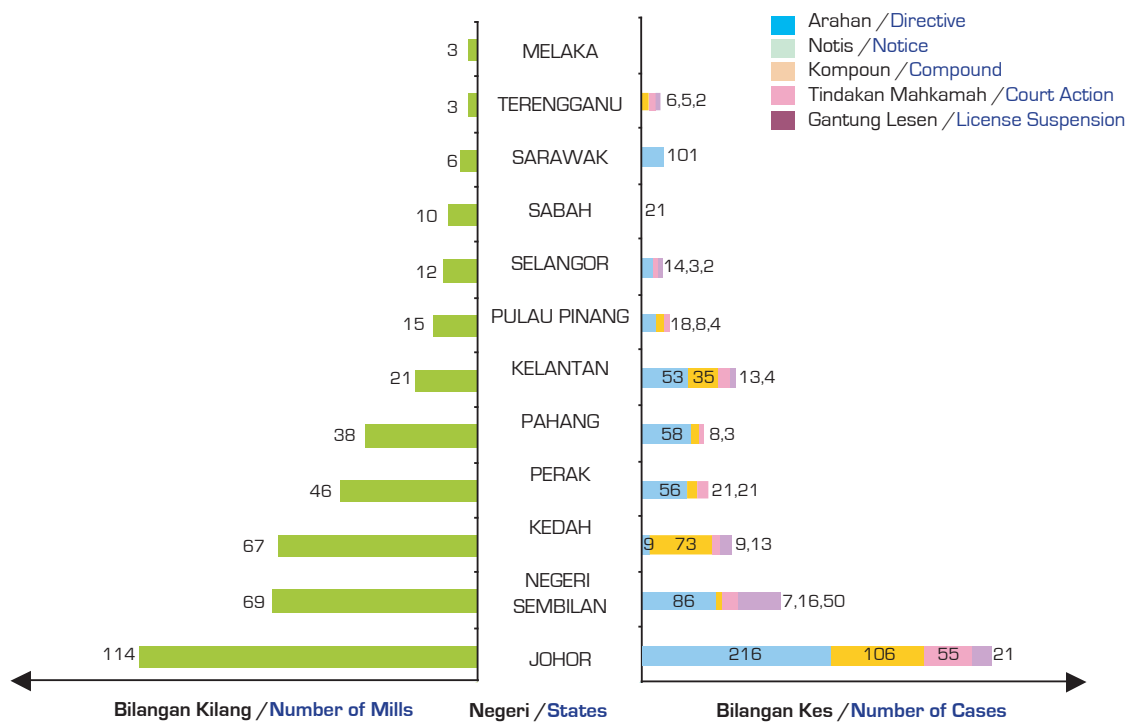
There were 404 palm oil processing mills licensed under the Environmental Quality (Prescribed Premises)(Crude Palm Oil Mill) Regulations, 1977 in 2007 compared to 398 in 2006. Of these 404 licensed prescribed premises, 246 were granted permission to discharge treated effluent into inland watercourses, 112 land disposal, 39 to implement both methods of effluent disposal and seven (7) effluent recycling. **Figure 4.5** shows the distribution of palm oil processing mills in Malaysia.

Throughout the year, 1,160 inspections on 404 licensed palm oil mills were conducted by DOE state enforcement officers. A total of 524 directives and 245 notices were issued to affected mills to take action comply with the legal requirements. 121 compounds were issued for offences committed and 96 court actions were taken and a total fine of RM633,000 for failure to comply with conditions of the licence **(Figure 4.5)**.

Overall licensing compliance by the palm oil mills in 2007 was 72% compared to 75% in 2006.



Rajah 4.4 JAS: Bilangan Kes Tindakan Undang-Undang Terhadap Kilang Getah Asli Mentah, 2007
Figure 4.4 DOE: Legal Action Against Raw Natural Rubber Factories, 2007



Rajah 4.5 JAS: Bilangan Kes Tindakan Undang-Undang Terhadap Kilang Kelapa Sawit Mentah, 2007
Figure 4.5 DOE: Legal Action Against Crude Palm Oil Mills, 2007



KAWALAN TERHADAP PREMIS YANG BUKAN DITETAPKAN CONTROL OF NON-PRESCRIBED PREMISES

Status Pematuhan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Kumbahan Dan Effluen-Effluen Perindustrian) 1979

Premis-premis yang bukan ditetapkan yang melepaskan effluen adalah tertakluk kepada kawalan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Kumbahan Dan Effluen-Effluen Perindustrian) 1979. Pada tahun 2007, Jabatan Alam Sekitar telah menjalankan 6,856 pemeriksaan penguatkuasaan terhadap sejumlah 6,272 premis industri dan premis-premis yang bukan ditetapkan yang tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Kumbahan Dan Effluen-Effluen Perindustrian) 1979. Pencapaian pematuhan keseluruhan oleh premis yang bukan ditetapkan adalah 71%. Sebanyak 29% premis lain yang diperiksa didapati menghadapi berbagai kesukaran pematuhan seperti tidak mematuhi standard pelepasan effluen (Peraturan 8) dan tidak mempunyai Kebenaran Bertulis bagi pembinaan loji pengolahan effluen (Peraturan 4).

Sebanyak 85 kes premis yang tidak patuh ini adalah tertakluk kepada tindakan undang-undang dan telah dituduh di mahkamah. Sejumlah RM 571,400.00 denda telah dikenakan. Tindakan-tindakan lain yang diambil adalah pengeluaran 1,038 surat arahan dan 317 notis arahan kepada industri supaya mereka mengambil tindakan yang sepatutnya bagi mematuhi Akta Kualiti Alam Sekeliling, 1974 dan Peraturan-Peraturan Kualiti Alam Sekeliling (Kumbahan Dan Effluen-Effluen Perindustrian) 1979.

Pada tahun 2007, status pematuhan industri dan premis-premis yang bukan ditetapkan mengikut jenis industri menunjukkan kilang Padi mencapai pematuhan sebanyak 100%, manakala industri-industri Galian Bukan Logam, Berasaskan Kayu, Jentera, perhotelan, Indah Water Konsortium dan Loji Pengolahan Persendirian, Kuari, Kulit, Penapisan Minyak

Status Of Compliance With The Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979

Non-prescribed premises that discharged effluents are subjected to the Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979. In 2007, the Department of Environment conducted 6,856 inspections on 6,272 industrial premises and other non-prescribed premises that were also subjected to the Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979. The overall compliance performance by the non-prescribed premises was 71%. The remaining 29% of the inspected premises committed offences relating to non-compliance of effluent discharge standards [Regulation 8] and did not have written approval for installation of effluent treatment plants [Regulation 4].

Of these non-complying premises, 85 cases were subjected to legal action and were charged in courts. A total fine of RM 571,400.00 were collected. Other actions taken were issuance of 1,038 written directives and 317 written notices to the industries to take appropriate actions to comply with the Environmental Quality Act, 1974 and the Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979.

In 2007, compliance status of industries and other non-prescribed premises by types indicated that rice mills achieved 100% compliance, while non-metal mineral, wood-based, machinery, hotels, Indah Water Konsortium's and private sewerage treatment plants, quarries, leather, edible oil refineries and petroleum refineries achieved between 81% to



(Makan) dan Penapisan Petroleum mencapai di antara 81% hingga 93% pematuhan. Walaubagaimanapun, industri seperti Makanan dan Minuman, Penyudahan Logam dan sadur elektrik, kertas, berasaskan getah, simen, ubatan, tekstil, industri logam, bengkel, kimia, percetakan, loji rawatan air, makanan ternakan, plastik, elektrik dan elektronik, fabrikasi logam, kenderaan dan lain-lain industri masih menghadapi masalah mematuhi kehendak-kehendak Peraturan dengan peratus pematuhan 79% dan kurang (**Rajah 4.6**). Beberapa industri ini didapati beroperasi tanpa mempunyai loji pengolahan effluen ataupun loji pengolahan effluen yang ada tidak efisien untuk mengolah effluen bagi mematuhi standard pelepasan yang ditetapkan.

Parameter-parameter yang sukar dipatuhi ialah keperluan oksigen biokimia (BOD), keperluan oksigen kimia (COD), pepejal terampai (SS), dan minyak dan gris (O&G). Secara spesifiknya, industri elektrik dan elektronik gagal mematuhi standard bagi parameter COD, BOD, SS dan O&G dan industri makanan dan minuman sukar mematuhi parameter COD, BOD, SS dan O&G.

Bagi meningkatkan pematuhan, Jabatan Alam Sekitar telah mengeluarkan arahan-arahan kepada pihak industri untuk memasang alat kawalan pencemaran yang efisien, meningkatkan keupayaan kemudahan kawalan pencemaran yang sedia ada dan juga supaya menyediakan jadual perancangan dan pelaksanaan sistem pengurusan alam sekitar yang baik. Di samping itu, pelbagai aktiviti kesedaran turut dilaksanakan sepanjang tahun untuk kumpulan sasaran yang spesifik seperti dialog, seminar dan bengkel untuk industri dengan tujuan untuk meningkatkan paras pematuhan. Jabatan Alam Sekitar turut mempromosikan penggunaan teknologi kawalan yang efisien, amalan pengeluaran bersih serta 'self-regulation'. Pihak industri juga dinasihatkan untuk mewujudkan sistem pengurusan alam sekitar yang baik dan mendapatkan pensijilan ISO 14000.

93% compliance. However industries like food and beverages, metal finishing and electroplating, paper, rubber-based, cement, pharmaceutical, textiles, metal industries, workshops, chemical, printing, feedmills, plastics, electric and electronics, metal fabrication, transport, water treatment plants and other industries could only achieve not more than 79% compliance (**Figure 4.6**). Some of these industries were found to be operating without effluent treatment plants and some had effluent treatment plants that are not capable of treating the effluent to the stipulated standards.

The problematic parameters were biochemical oxygen demand (BOD), chemical oxygen demand (COD), suspended solids (SS) and oil and grease (O&G). Specifically, the electric and electronic industries had difficulty with parameters such as COD, BOD, SS and O&G and food and beverages industries with COD, BOD, SS and O&G.

In order to improve compliance, the Department of Environment issued many directives to the relevant industries to install more appropriate and efficient control equipment, upgrade existing pollution control facilities and have good planning and implementation schedule of environmental management systems. In addition, various awareness activities were implemented throughout the year for specific target groups. Such activities included dialogues, seminars and workshops for industries with the aim of improving the level of compliance. The Department of Environment also promoted the adoption of more efficient control technologies, cleaner production practices as well as self-regulatory measures. Industries were also advised to set up good environmental management systems and ISO 14000 certified.



Lesen Pelanggaran

Di bawah Akta Kualiti Alam Sekeliling, 1974 Lesen Pelanggaran boleh dikeluarkan untuk tempoh masa yang spesifik bagi membenarkan industri yang menghadapi kesukaran untuk mematuhi standard pelepasan melanggar syarat-syarat yang dibenarkan untuk pelepasan effluen ke dalam pengairan daratan atau pelepasan bendasing udara ke atmosfera sebagaimana yang diperuntukkan di bawah Seksyen 25(1) dan Seksyen 22(1), Akta. Lesen Pelanggaran ini merupakan satu langkah atau mekanisma untuk membantu, memudah dan membolehkan industri yang bermasalah memasang atau meningkatkan peralatan kawalan pencemaran dalam tempoh masa yang mencukupi. Justifikasi lesen pelanggaran adalah bergantung kepada penilaian mengenai situasi sosio-ekonomi, pemuliharaan kualiti alam sekitar dan juga komitmen pihak industri yang bermasalah untuk mematuhi Akta dan Peraturan-Peraturan di bawahnya.

Pada tahun 2007, jumlah permohonan lesen pelanggaran di bawah Seksyen 25, Akta adalah bertambah kepada 119 berbanding 78 permohonan dalam tahun 2006 (**Rajah 4.7**). Dari 119 permohonan, 84 telah diluluskan dan 35 ditolak. Dari 84 lesen pelanggaran yang diluluskan, 35 (42%) lesen adalah untuk industri makanan dan minuman, 10 (12%) untuk lain-lain industri dan industri kertas masing-masing, 6 (7%) untuk industri berasas getah, 5 (6%) untuk industri penapisan petroleum, 4 (5%) untuk industri elektrik dan elektronik, 3 (3.5%) untuk industri kimia dan ubatan masing-masing, 2 (2%) untuk industri simen dan tekstil masing-masing dan 1 (1%) untuk industri galian bukan logam, penapisan minyak (makan), penyudahan logam dan sadur elektrik, makanan ternakan dan loji rawatan air masing-masing (**Rajah 4.8**). Antara parameter yang sukar dipatuhi oleh industri yang diluluskan lesen pelanggaran

Contravention Licenses

Under the Environmental Quality Act, 1974 contravention licenses may be granted for a specific time frame to allow industries with genuine difficulties complying with stipulated discharge or emission standards to contravene the acceptable conditions of effluent discharge into watercourses or air emissions into the atmosphere as stipulated under Section 25(1) and Section 22(1) of the Act respectively. These contravention licences serve to assist, facilitate and enable the problematic industries to have adequate time to install or upgrade their pollution control equipment. Approvals for such contravention licences would depend on the assessment of the socio-economic situation, the existing environmental quality and also the commitment of the problematic industries to comply with the Act and Regulations made thereunder.

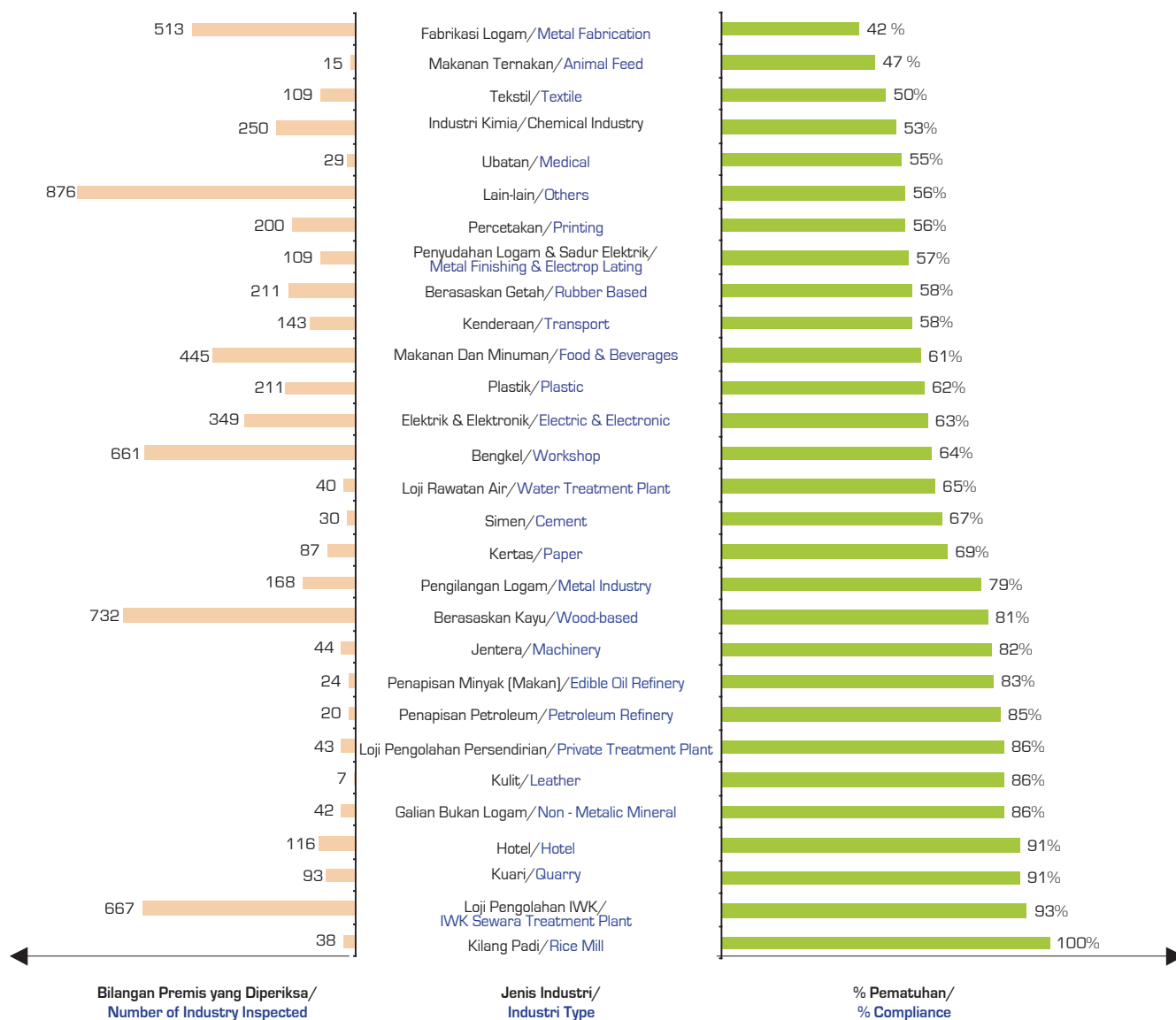
In 2007, the total number of application for contravention licences under Section 25 of the Act increased to 119 as compared to 78 applications in 2006 (**Figure 4.7**). Out of the 119 applications, 84 were approved and 35 were rejected. Of the 84 approved contravention licences, 35 (42%) licenses were for food and beverages industries, 10 (12%) each for others and paper industries, 6 (7%) for rubber based industries, 5 (6%) for petroleum industries, 4 (5%) for electric and electronic industries, 3 (3.5%) for chemical and medication industries, 2 (2%) for cement and textile industries and 1 (1%) for non-metal mineral, metal finishing and electroplating, cooking oil, animal food and water treatment system industries (**Figure 4.8**). Among parameters under contravention were biochemical oxygen demand, chemical oxygen demand, suspended solids, oil and grease, ammonical nitrogen, total

adalah keperluan oksigen biokimia, keperluan oksigen kimia, pepejal terampai, amoniakal nitrogen, jumlah nitrogen, minyak dan gris, pH, Boron, plumbum, sulfid, fenol, kadmium, zink, perak dan besi. Penguatkuasaan telah dijalankan terhadap premis-premis yang dilesenkan bagi menentukan paras pematuhan. Pematuhan keseluruhan terhadap syarat-syarat lesen pelanggaran yang dikenakan pada tahun 2007 adalah 76%.

nitrogen, pH, lead, iron, zinc, boron, cadmium, silver and phenol. Enforcement inspections were conducted on the licensed premises to determine the level of compliance. The overall compliance with the conditions of contravention licences in 2007 was 76%.

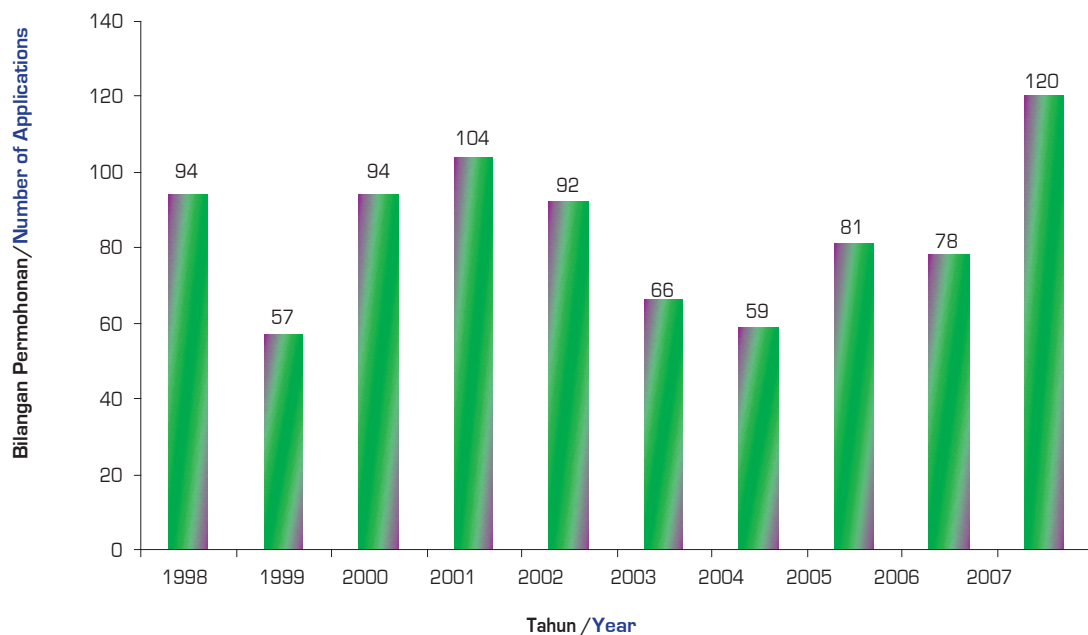


Persampelan Effluen Perindustrian
Sampling of Industry Effluent

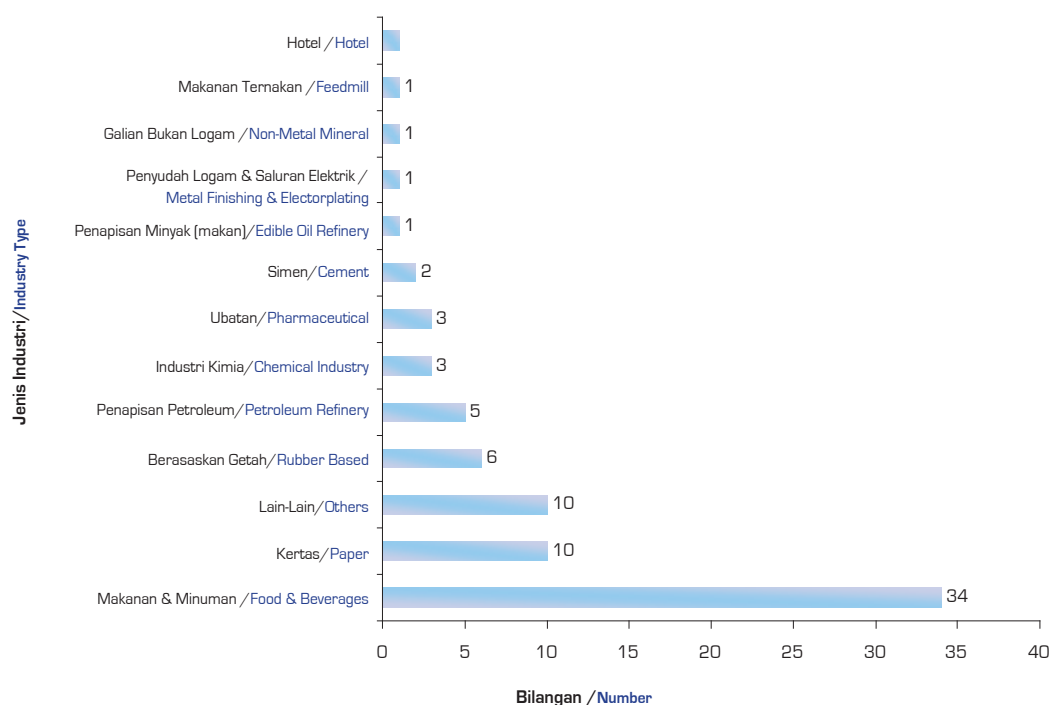


Rajah 4.6 JAS: Peraturan-Peraturan Kualiti Alam Sekeliling [Kumbahan dan Effluen-Effluen Perindustrian], 1979; Status Pematuhan Industri, 2007

Figure 4.6 DOE: Environmental Quality [Sewage and Industrial Effluent] Regulations, 1979; Compliance Status, 2007



Rajah 4.7 JAS: Bilangan Permohonan Lesen Pelanggaran
Di Bawah Seksyen 25(1) AKAS 1974, [1998 - 2007]
Figure 4.7 DOE: Number of Contravention Licenses Under Section 25(1) EQA1974, [1998 -2007]



Rajah 4.8 JAS: Lesen Pelanggaran Di Bawah Seksyen 25(1) AKAS 1974 Mengikut Jenis Industri, 2007
Figure 4.8 DOE: Contravention Licenses Under Section 25(1) AKAS 1974 By Industry Type, 2007



PENGAWASAN KUALITI AIR MARIN KEBANGSAAN MARINE WATER QUALITY MONITORING

Program Pengawasan Kualiti Air Marin Kebangsaan telah dimulakan pada tahun 1978 di Semenanjung Malaysia dan diperkembangkan ke Sabah dan Sarawak pada tahun 1985. Stesen-stesen pemantauan air marin diwujudkan di kuala sungai dan pantai-pantai bagi memantau perubahan dalam kualiti air marin berdasarkan kepada kegunaannya seperti kawasan rekreasi, perikanan dan taman-taman laut.

Pada tahun 2007, terdapat 233 stesen pengawasan di seluruh Malaysia; Perlis (2 stesen), Kedah (3 stesen), Pulau Langkawi (7 stesen), Pulau Pinang (25 stesen), Perak (13 stesen), Selangor (14 stesen), Negeri Sembilan (13 stesen), Melaka (9 stesen), Johor (51 stesen), Pahang (11 stesen), Terengganu (19 stesen), Kelantan (10 stesen), Sabah (26 stesen), W.P Labuan (5 stesen) dan Sarawak (25 stesen) **(Jadual 4.5)**. 4 stesen baru telah dibuka pada tahun 2007 **(Jadual 4.6)**.

Di bawah Program Pengawasan Selat Johor di bawah 'Malaysia-Singapore Joint Committee on the Environment' (MSJCE), 20 stesen telah dipantau pada tahun 2007 **(Jadual 4.7)**.

Marine water quality monitoring started in 1978 for Peninsular Malaysia and was extended in 1985 to cover Sabah and Sarawak. Monitoring stations had been established at estuarine and coastal areas to monitor marine water quality in relation to their beneficial uses such as recreation, fishing and marine parks.

In 2007, a total of 233 monitoring stations were set up throughout Malaysia; Perlis (2 stations), Kedah (3 stations), Pulau Langkawi (7 stations), Pulau Pinang (25 stations), Perak (13 stations), Selangor (14 stations), Negeri Sembilan (13 stations), Melaka (9 stations), Johor (51 stations), Pahang (11 stations), Terengganu (19 stations), Kelantan (10 stations), Sabah (26 stations), W.P Labuan (5 stations) dan Sarawak (25 stations) **(Table 4.5)**. Four (4) new monitoring stations were established in 2007 **(Table 4.6)**.

Under the Malaysia-Singapore Joint Committee on the Environment (MSJCE) Monitoring Programme, 20 stations were also monitored in 2007 **(Table 4.7)**.



Persampelan Kualiti Air Marin Menggunakan Van Dorn Sampler
Marine Water Quality Sampling By Using Van Dorn Sampler



Jadual 4.5 JAS: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2007
Table 4.5 DOE: Marine Water Quality Monitoring Stations, 2007

Bil/ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No. Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
1 2	PERLIS	KUALA/ESTUARINE	KUALA SG. BARU KUALA SG. PERLIS	6302903 6401901	N 06° 19' 54.5" N 06° 23' 59.0"	E 100° 09' 20.0" E 100° 07' 34.8"
1 2 3	KEDAH	KUALA/ESTUARINE PANTAI/COASTAL	KUALA SG. KEDAH KUALA JERLUN PANTAI MERDEKA	6102908 6302925 5603905	N 06° 06' 13.0" N 06° 12' 36.0" N 05° 40' 10.0"	E 100° 16' 32.0" E 100° 14' 20.9" E 100° 22' 40.0"
1 2 3 4 5 6 7	P.LANGKAWI	PANTAI/COASTAL	LANGKAWI ISLAND RESORT PANTAI KOK PANTAI KUAH PANTAI PASIR TENGGORAK PANTAI TELUK BURAU PANTAI TELUK NIBUNG PANTAI TENGAH	6399914 6397922 6398913 6497901 6396923 6497915 6297903	N 06° 17' 51.1" N 06° 22' 12.0" N 06° 19' 04.1" N 06° 25' 46.3" N 06° 21' 52.4" N 06° 21' 38.9" N 06° 18' 52.4"	E 099° 51' 38.3" E 099° 40' 43.7" E 099° 51' 04.5" E 099° 43' 37.1" E 099° 40' 13.7" E 099° 42' 08.1" E 099° 43' 46.8"
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	PULAU PINANG	KUALA/ESTUARINE PANTAI/COASTAL	KUALA SG. JAWI KUALA SG. JURU KUALA SG. KERIAN KUALA SG. PINANG KUALA SG. PERAI KUALA SUNGAI TENGAH KUALA SUNGAI PINANG BATU FERINGGI (CASUARINA) BATU MAUNG GERTAK SANGGUL KAW.PER.BAYAN LEPAS I KAW.PER.BAYAN LEPAS II KAW.PER.BAYAN LEPAS III LUAR PANTAI TELUK BAHANG PANTAI BERSIH PANTAI MIAMI PANTAI PASIR PANJANG PERSIARAN GURNEY PULAU AMAN RUMAH PAM BARU PERAI RUMAH PAM LAMA PERAI SELAT PP SELATAN (JELUTONG) TANJUNG BUNGAH TELUK BAHANG (P. MUTIARA) TELUK TEMPOYAK	5204901 5304904 5104901 5403934 5303908 5104901 4039340 5402904 5202901 5201919 5303932 5303933 5302939 5402930 5403906 5502901 5201938 5403902 5203910 5304927 5303926 5303911 5402937 5402912 5202923	N 05° 16' 50.0" N 05° 20' 20.0" N 05° 10' 00.0" N 05° 24' 00.0" N 05° 23' 00.0" N 05° 12' 41.0" N 05° 24' 13.0" N 05° 28' 10.0" N 05° 17' 10.0" N 05° 16' 50.0" N 05° 20' 00.0" N 05° 19' 00.0" N 05° 18' 20.0" N 05° 27' 45.0" N 05° 26' 30.0" N 05° 28' 30.0" N 05° 17' 50.0" N 05° 25' 30.0" N 05° 15' 50.0" N 05° 21' 15.0" N 05° 20' 00.0" N 05° 23' 30.0" N 05° 28' 00.0" N 05° 28' 46.0" N 05° 28' 30.0"	E 100° 25' 00.0" E 100° 24' 20.0" E 100° 25' 00.0" E 100° 20' 05.0" E 100° 22' 00.0" E 100° 25' 29.0" E 100° 19' 54.0" E 100° 14' 30.0" E 100° 17' 25.0" E 100° 12' 40.0" E 100° 18' 45.0" E 100° 18' 30.0" E 100° 17' 45.0" E 100° 12' 45.0" E 100° 22' 40.0" E 100° 16' 00.0" E 100° 11' 00.0" E 100° 19' 30.0" E 100° 23' 35.0" E 100° 23' 15.0" E 100° 18' 45.0" E 100° 19' 50.0" E 100° 16' 50.0" E 100° 15' 41.0" E 100° 17' 30.0"
1 2 3 4 5 6 7 8 9 10 11 12 13	PERAK	KUALA/ESTUARINE PANTAI/COASTAL	KUALA SG. MANJUNG KUALA SG. TG. PIANDANG KUALA SG. GULA KUALA SG. KURAU KUALA SG. PERAK KUALA SG. SEPETANG PANTAI PASIR BOGAK PANTAI PASIR PANJANG PANTAI PUTERI DEWI PANTAI TANJUNG BATU PANTAI TELUK BATIK PANTAI TELUK DALAM PANTAI TELUK GEDUNG	4205930 5003921 4906926 4994919 4007901 4806925 4205908 4305924 4205907 4406927 4205923 4205928 4205929	N 04° 14' 09.0" N 05° 04' 27.0" N 04° 55' 07.0" N 04° 59' 13.0" N 03° 59' 03.0" N 04° 50' 07.0" N 04° 12' 58.0" N 04° 25' 07.0" N 04° 15' 17.0" N 04° 25' 07.0" N 04° 11' 14.0" N 04° 14' 53.0" N 04° 15' 39.0"	E 100° 39' 57.0" E 100° 22' 34.0" E 100° 28' 57.0" E 100° 25' 46.0" E 100° 48' 58.0" E 100° 37' 57.0" E 100° 37' 55.0" E 100° 35' 35.0" E 100° 32' 47.0" E 100° 35' 35.0" E 100° 36' 33.0" E 100° 33' 25.0" E 100° 34' 49.0"
1 2 3 4 5 6 7 8 9 10	SELANGOR	PANTAI/COASTAL KUALA/ESTUARINE	PANTAI BAGAN LALANG PANTAI MORIB SELAT PULAU BABI SELAT KLANG UTARA KUALA SG. SEPANG KUALA SG. SEPANG (KECIL) KUALA SG. SEPANG (KAWALAN) KUALA SUNGAI KLANG KUALA SUNGAI LANGAT (JUGRA) KUALA SUNGAI LANGAT (LUMUT)	2616927 2712902 3012929 3013908 2517922 2612928 2616926 3013909 2814925 2913903	N 02° 36' 20.0" N 02° 45' 00.0" N 03° 01' 10.0" N 03° 04' 00.0" N 02° 35' 35.0" N 02° 36' 40.0" N 02° 36' 20.0" N 03° 00' 06.0" N 02° 48' 25.0" N 02° 55' 50.0"	E 101° 41' 30.0" E 101° 26' 20.0" E 101° 15' 55.0" E 101° 21' 00.0" E 101° 42' 56.0" E 101° 42' 15.0" E 101° 41' 30.0" E 101° 23' 24.0" E 101° 24' 15.0" E 101° 21' 15.0"



Jadual 4.5 JAS: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2007
Table 4.5 DOE: Marine Water Quality Monitoring Stations, 2007

Bil/ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No. Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
11			KUALA SUNGAI BULOH	3212930	N 03° 15' 10.0"	E 101° 15' 50.0"
12			KUALA SUNGAI SELANGOR	3312915	N 03° 20' 00.0"	E 101° 13' 30.0"
13			KUALA SUNGAI TENGI	3311931	N 03° 23' 00.0"	E 101° 10' 20.0"
14			KUALA SUNGAI BERNAM	3808924	N 03° 51' 00.0"	E 100° 49' 00.0"
1	N.SEMBILAN	PANTAI/COASTAL	KUALA SUNGAI LINGGI	2319901	N 02° 23' 20.0"	E 101° 58' 19.0"
2			KUALA SUNGAI LUKUT	2517910	N 02° 34' 45.0"	E 101° 47' 16.0"
3			PANTAI BAGAN PINANG	2418915	N 02° 30' 31.0"	E 101° 49' 44.0"
4			PANTAI TELUK SINTING PASIR	2419908	N 02° 24' 57.0"	E 101° 56' 31.0"
5			PORT DICKSON BANDAR	2517907	N 02° 31' 16.0"	E 101° 47' 51.0"
6			PANTAI PORT DICKSON BATU 10	2418914	N 02° 24' 58.0"	E 101° 51' 23.0"
7			PANTAI PORT DICKSON BATU 5	2418906	N 02° 29' 46.0"	E 101° 50' 15.0"
8			PANTAI PORT DICKSON BATU 6	2418916	N 02° 29' 05.0"	E 101° 50' 46.0"
9			PANTAI PORT DICKSON BATU 7	2418905	N 02° 27' 43.0"	E 101° 51' 04.0"
10			PANTAI PORT DICKSON BATU 8	2418912	N 02° 27' 16.0"	E 101° 51' 20.0"
11			PANTAI PORT DICKSON BATU 8	2418913	N 02° 27' 16.0"	E 101° 51' 10.0"
12			(STESEN)			
13		KUALA/ESTUARINE	PORT DICKSON TNB	2517909	N 02° 32' 09.0"	E 101° 47' 42.0"
14			PANTAI TG. PELANDOK	2419917	N 02° 25' 03.0"	E 101° 53' 34.0"
1	MELAKA	KUALA/ESTUARINE	KUALA SG. KESANG	2186905	N 02° 05' 43.0"	E 102° 29' 12.0"
2			KUALA SG. MELAKA	2122903	N 02° 11' 06.0"	E 102° 14' 52.0"
3			KUALA SG. MERLIMAU	2124912	N 02° 09' 25.0"	E 102° 25' 28.0"
4		PANTAI/COASTAL	KUALA SG. SEBATU	2186904	N 02° 06' 06.0"	E 102° 27' 35.0"
5			PANTAI KUNDOR TG. KELING	2221908	N 02° 14' 37.0"	E 102° 08' 29.0"
6			PANTAI ROMBANG TG.KELING	2221906	N 02° 13' 35.0"	E 102° 08' 57.0"
7			PANTAI TG. BIDARA	2320909	N 02° 17' 30.0"	E 102° 05' 18.0"
8			PULAU BESAR	2123911	N 02° 06' 55.1"	E 102° 20' 09.0"
9			PANTAI TELUK GONG	2320902	N 02° 20' 23.0"	E 102° 03' 30.0"
1	JOHOR	KUALA/ESTUARINE	KUALA SG. TEBRAU	SJ4A	N 01° 28' 56.0"	E 103° 47' 48.0"
2			KUALA SG. SKUDAI	SJ7A	N 01° 27' 46.0"	E 103° 43' 22.0"
3			KUALA SG. MELAYU	SJ8A	N 01° 26' 53.0"	E 103° 41' 53.0"
4			KUALA SG. SKUDAI	1437922	N 01° 28' 28.0"	E 103° 43' 12.0"
5			KUALA SG. TEBRAU	1438943	N 01° 28' 56.0"	E 103° 47' 48.0"
6			SG. KIM-KIM	1439965	N 01° 25' 24.0"	E 103° 54' 03.0"
7			KUALA SUNGAI BATU PAHAT	1729930	N 01° 47' 44.0"	E 102° 53' 22.0"
8			KUALA SUNGAI JOHOR	1440916	N 01° 29' 04.0"	E 104° 01' 22.0"
9			KUALA SUNGAI MELAYU	1437946	N 01° 27' 15.0"	E 103° 41' 56.0"
10			KUALA SUNGAI MERSING	2438905	N 01° 26' 10.0"	E 103° 50' 35.0"
11			KUALA SUNGAI MUAR	2024932	N 02° 02' 54.0"	E 102° 33' 11.0"
12			KUALA SUNGAI SEGGET	1437919	N 01° 27' 21.0"	E 103° 45' 58.0"
13		PANTAI/COASTAL	KG. TANJONG KOPOK	SJ1	N 01° 25' 31.0"	E 103° 47' 48.0"
14			KG. PASIR PUTIH	SJ2	N 01° 25' 48.0"	E 103° 43' 22.0"
15			J/K SULTAN ISKANDAR	SJ3	N 01° 26' 49.0"	E 103° 46' 09.0"
16			KG. SENIBUNG	SJ4	N 01° 29' 01.0"	E 103° 48' 47.0"
17			TANJUNG PUTRI	SJ5	N 01° 27' 20.0"	E 103° 46' 09.0"
18			HADAPAN MPJB	SJ6	N 01° 27' 08.0"	E 103° 45' 43.0"
19			TANJUNG DANGA	SJ7	N 01° 27' 24.0"	E 103° 42' 52.0"
20			HADAPAN PUSAT ISLAM	SJ7B	N 01° 27' 19.0"	E 103° 44' 51.0"
21			TEBING RUNTUH	SJ8	N 01° 25' 10.0"	E 103° 40' 06.0"
22			TANJUNG BUNGA	SJ9	N 01° 23' 07.0"	E 103° 39' 02.0"
23			TANJUNG KUPANG	SJ10	N 02° 23' 36.0"	E 103° 39' 11.0"
24			PULAU BELUNGKOR	EM4	N 01° 26' 25.8"	E 104° 03' 11.04"
25			PULAU TEKONG	EM5	N 01° 25' 42.3"	E 104° 04' 36.72"
26			PULAU TEKONG	EM6	N 01° 23' 19.2"	E 104° 05' 20.40"
27			JETI PULAREK	EM7	N 01° 21' 26.8"	E 104° 04' 40.65"
28			TANJUNG PENGLIH	WQ10	N 01° 19' 52.62"	E 104° 05' 39.57"
29			PULAU MERAMBONG	WM1	N 01° 20' 17.02"	E 103° 37' 36.29"
30			HADAPAN HSAJB	1437920	N 01° 27' 19.0"	E 103° 44' 44.0"
31			JETI TANJONG BELUNGKOR	1440963	N 01° 27' 14.0"	E 104° 04' 03.0"
32			KG. TELUK JAWA	1438918	N 01° 28' 17.0"	E 103° 50' 30.0"
33			PANTAI AIR PAPAN	2538959	N 02° 31' 05.0"	E 103° 50' 00.0"
34			PANTAI DESARU	1542914	N 01° 32' 48.0"	E 104° 15' 41.0"
35			LUAR KUKUP	1334925	N 01° 19' 30.0"	E 103° 26' 29.0"
36			PANTAI LIDO	1437921	N 01° 27' 56.0"	E 103° 43' 29.0"



Jadual 4.5 JAS: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2007
Table 4.5 DOE: Marine Water Quality Monitoring Stations, 2007

Bil/ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No. Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
37			PANTAI SRI PANTAI	2339960	N 02° 22' 45.0"	E 103° 53' 19.0"
38			PANTAI STULANG LAUT	1437951	N 01° 28' 02.0"	E 103° 46' 46.0"
39			PANTAI SUNGAI LURUS	1730962	N 01° 43' 42.0"	E 103° 01' 43.0"
40			PANTAI TANJONG SETAPA	1341961	N 01° 20' 33.0"	E 104° 08' 09.0"
41			PANTAI TELUK GOREK	2538958	N 02° 34' 57.0"	E 103° 48' 18.0"
42			PANTAI TELUK MAHKOTA	1841911	N 01° 53' 52.0"	E 104° 06' 15.0"
43			PANTAI TG. LEMAN	2140694	N 02° 08' 43.0"	E 104° 00' 24.0"
44			PASIR GOGOK	1441966	N 01° 25' 02.8"	E 104° 05' 59.7"
45			PEL. PASIR GUDANG	1428939	N 01° 25' 44.0"	E 103° 54' 03.0"
46			TANJUNG BUAJ	1340973	N 01° 9' 48.1"	E 104° 02' 43.4"
47			TANJUNG MERAK	1441968	N 01° 21' 45.9"	E 104° 06' 35.5"
48			TANJUNG PENGELIH	1441967	N 01° 22' 14.7"	E 104° 05' 19.5"
49			TANJUNG PENYUSUP	1444920	N 01° 22' 12.9"	E 104° 16' 48.3"
50			TANJUNG SEPANG	1443969	N 01° 23' 01.2"	E 104° 06' 44.8"
51			PANTAI PUNGGUR	1531974	N 01° 41' 05.0"	E 103° 05' 54.0"
1	PAHANG	PANTAI/COASTAL	PANTAI SEPAT	3633940A	N 03° 42' 02.0"	E 103° 20' 16.0"
				3633940B	N 03° 41' 54.0"	E 103° 20' 19.0"
2			PANTAI BATU HITAM	3833915A	N 03° 53' 06.0"	E 103° 21' 58.0"
				3833915B	N 03° 53' 09.0"	E 103° 21' 59.0"
3			PANTAI CHERATING (Club Med)	4133903A	N 04° 08' 41.0"	E 103° 24' 31.0"
				4133903B	N 04° 07' 51.0"	E 103° 24' 23.0"
4			PANTAI CHERATING (Legend)	4133942A	N 04° 06' 16.0"	E 103° 23' 06.0"
				4133942B	N 04° 06' 12.1"	E 103° 23' 07.0"
5			PANTAI KUALA API-API	3235917	N 03° 31' 20.0"	E 103° 23' 45.0"
6			PANTAI MUHIBBAH BALOK	3933901A	N 03° 55' 28.0"	E 103° 22' 21.0"
				3933901B	N 03° 55' 30.0"	E 103° 22' 23.0"
7			PANTAI BESERAH	3933941A	N 03° 54' 41.0"	E 103° 22' 02.0"
				3933941B	N 03° 54' 39.0"	E 103° 22' 01.0"
8			PANTAI TANJUNG BATU	3334915	N 03° 31' 10.0"	E 103° 23' 45.0"
9			PANTAI TELUK CEMPEDAK	3833910A	N 03° 48' 51.0"	E 103° 22' 19.0"
				3833910B	N 03° 48' 49.0"	E 103° 22' 21.0"
10			PANTAI TELUK GELORA	3833909A	N 03° 48' 16.0"	E 103° 20' 43.0"
				3833909B	N 03° 48' 20.0"	E 103° 20' 43.0"
11			PANTAI LEGENDA	3534943A	N 03° 12' 16.7"	E 103° 26' 53.7"
				3534943B	N 03° 12' 16.7"	E 103° 26' 53.7"
1	TERENGGANU	KUALA/ESTUARINE	KUALA SG. BESUT	5825902	N 05° 50' 02.8"	E 102° 33' 28.8"
2			KUALA SG. DUNGUN	4734918	N 04° 46' 48.9"	E 103° 25' 21.6"
3			KUALA SG. IBAI	5231949	N 05° 17' 06.1"	E 103° 10' 06.5"
4			KUALA SG. KERTEH	4534922	N 04° 30' 59.1"	E 103° 26' 52.6"
5			UTARA TIOXIDE	4234950	N 04° 17' 06.3"	E 103° 28' 20.9"
6			TENGAH TIOXIDE (DISCHARGE)	4234951	N 04° 16' 22.8"	E 103° 28' 12.7"
7			SELATAN DIOXIDE	4234952	N 04° 15' 04.1"	E 103° 27' 59.2"
8			KUALA SG. MARANG	5232911	N 05° 12' 24.7"	E 103° 12' 28.9"
9			KUALA SG. PAKA	4634920	N 04° 39' 29.7"	E 103° 25' 57.7"
10			KUALA SG. SETIU	5627953	N 05° 40' 05.9"	E 102° 42' 26.9"
11			KUALA SG. TERENGGANU	5331907	N 05° 20' 22.1"	E 103° 08' 12.6"
12		PANTAI/COASTAL	KUALA SG. KEMAMAN	4234929	N 04° 14' 25.2"	E 102° 26' 48.8"
13			PANTAI BATU BURUK	5331935	N 05° 19' 29.1"	E 103° 09' 01.4"
14			PANTAI BUKIT KELLUANG	5825903	N 05° 50' 02.8"	E 102° 36' 01.4"
15			PANTAI CHENDERING	5231934	N 05° 16' 11.8"	E 103° 10' 51.9"
16			PANTAI RANTAU ABANG	4833917	N 04° 52' 11.4"	E 103° 23' 17.4"
17			KIPC UTARA	4634953	N 04° 36' 37.9"	E 103° 26' 39.2"
18			KIPC TENGAH	4534954	N 04° 34' 54.9"	E 103° 27' 19.5"
19			KIPC SELATAN	4534955	N 04° 30' 09.5"	E 103° 26' 52.6"
1	KELANTAN	KUALA/ESTUARINE	KUALA SUNGAI KEMASIN	5824914	N 5° 53' 50.0"	E 102° 29' 05.0"
2			KUALA SG. GOLOK	6220911	N 6° 14' 05.0"	E 102° 05' 35.0"
3			KUALA SG. KELANTAN	6222901	N 6° 13' 12.0"	E 102° 13' 50.0"
4			KUALA SG. PENG. DATU	6213913	N 6° 10' 20.0"	E 102° 20' 40.0"
5		PANTAI/COASTAL	KUALA SG. PENG. CHEPA	6223912	N 6° 12' 20.0"	E 102° 18' 10.0"
6			PANTAI BISIKAN BAYU	5825905	N 5° 52' 00.0"	E 102° 31' 00.0"
7			PANTAI CAHAYA BULAN	6122903	N 6° 10' 45.0"	E 102° 16' 50.0"
8			PANTAI IRAMA BACHOK	6024908	N 6° 03' 00.0"	E 102° 25' 15.0"
9			PANTAI SABAK	6123909	N 6° 10' 25.0"	E 102° 20' 10.0"
10			PANTAI SERI TUJUH	6221910	N 6° 13' 00.0"	E 102° 08' 00.0"



Jadual 4.5 JAS: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2007
Table 4.5 DOE: Marine Water Quality Monitoring Stations, 2007

Bil/ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No. Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude	
1	W.P. LABUAN	PANTAI/COASTAL	LAYANG-LAYANGAN	5251902	N 05° 20' 01.0"	E 115° 11' 37.0"	
2			TANJUNG RHU	5251903	N 05° 21' 02.0"	E 115° 14' 39.0"	
3			PULAU PAPAN	5151905	N 05° 15' 22.0"	E 115° 16' 03.0"	
4			KIAMSAM	5151906	N 05° 15' 22.0"	E 115° 10' 28.0"	
5			SUNGAI PAGAR	5151907	N 05° 16' 20.0"	E 115° 10' 19.0"	
1	SABAH	KUALA/ESTUARINE	KUALA SG. MENGGATAL/ INANAM	5050905	N 05° 01' 05.0"	E 115° 07' 07.0"	
2		PANTAI/COASTAL	KUALA SG. PENYU	5453901	N 05° 34' 13.0"	E 115° 35' 55.0"	
3			PANTAI BORNEO GOLF SEAWATER	5355901	N 05° 33' 00.0"	E 115° 47' 01.0"	
4			PANTAI BAK-BAK KUDAT	6665901	N 06° 56' 44.0"	E 116° 50' 23.0"	
5			PANTAI ULU TUNGKU, LAHAD	5085901	N 05° 01' 09.0"	E 118° 53' 09.0"	
6			PANTAI BATU SAPI	5580903	N 05° 47' 42.0"	E 118° 02' 22.0"	
7			PANTAI DALIT, TUARAN	6161901	N 06° 11' 25.0"	E 116° 09' 45.0"	
8			PANTAI LOK KAWI	5560904	N 05° 55' 00.0"	E 116° 02' 00.0"	
9			PANTAI MANGROVE PARADISE	6161902	N 06° 15' 02.0"	E 116° 13' 50.0"	
10			PANTAI MANIS, PAPAR	5555901	N 05° 45' 15.0"	E 115° 52' 04.0"	
11			PANTAI MALINSUNG, PAPAR	5565902	N 05° 50' 18.0"	E 115° 50' 45.0"	
12			PANTAI PASIR PUTIH, SANDAKAN	5580901	N 05° 49' 26.0"	E 118° 04' 58.0"	
13			PANTAI SABANDAR, TUARAN	6161903	N 06° 15' 02.2"	E 115° 50' 45.0"	
14			PANTAI SARINA, KUNAK	4481901	N 04° 39' 41.0"	E 118° 04' 58.0"	
15			PANTAI SILAM LAHAD DATU	4681902	N 04° 58' 08.0"	E 116° 13' 50.0"	
16			PANTAI TELUK BRUNEI 1	5053901	N 05° 09' 55.0"	E 118° 17' 01.0"	
17			PANTAI TELUK BRUNEI 2	5053902	N 05° 09' 55.0"	E 118° 14' 46.0"	
18			PANTAI TELUK BRUNEI 3	5053903	N 05° 09' 55.0"	E 115° 32' 53.0"	
19			PANTAI TELUK BRUNEI 4	5053904	N 05° 09' 55.0"	E 115° 32' 53.0"	
20			PANTAI TELUK BRUNEI 5	5053905	N 05° 09' 55.0"	E 115° 32' 53.0"	
21			PANTAI TELUK BRUNEI 6	5053906	N 05° 09' 55.0"	E 115° 32' 53.0"	
22			PANTAI TG. ARU (REST LIDO)	5656901	N 05° 55' 01.1"	E 115° 59' 03.0"	
23			PANTAI TG. ARU (ROLLER)	5656902	N 05° 55' 01.0"	E 115° 59' 03.0"	
24			PANTAI TG. ARU (No.3)	5656903	N 05° 55' 01.0"	E 115° 59' 03.0"	
25			PANTAI TINAGAT, TAWAU	4473901	N 04° 13' 22.0"	E 117° 59' 04.0"	
26			KASTAM LAMA SANDAKAN	5580902	N 05° 50' 00.0"	E 118° 08' 01.0"	
1	SARAWAK	KUALA/ESTUARINE	KUALA BAKO	1704905	N 01° 40' 00.0"	E 110° 52' 08.0"	
2			KUALA BATANG KEMENA	3130911	N 03° 10' 53.0"	E 113° 01' 40.0"	
3			KUALA BATANG RAJANG	2111909	N 02° 07' 22.0"	E 111° 11' 21.0"	
4			KUALA SG. MIRI	4349915	N 04° 23' 59.0"	E 113° 58' 25.0"	
5			KUALA SG. SANTUBONG	1702903	N 01° 46' 38.0"	E 110° 16' 46.0"	
6			KUALA SG. SEMATAN	1898901	N 01° 48' 49.0"	E 109° 46' 29.0"	
7			KUALA SG. SARAWAK	1604907	N 01° 36' 44.0"	E 110° 29' 44.0"	
8			KUALA MUKAH	2920920	N 02° 54' 41.0"	E 112° 05' 25.0"	
9			KUALA KRIAN	1710924	N 01° 47' 20.0"	E 111° 05' 58.0"	
10			PANTAI/COASTAL	PANTAI BAKO	1704906	N 01° 42' 49.0"	E 110° 25' 40.0"
11				PANTAI BELAWAI	2212913	N 02° 14' 27.0"	E 111° 12' 51.0"
12				PANTAI BRIGHTON	4449917	N 04° 22' 25.0"	E 113° 57' 51.0"
13				PANTAI DAMAI	1702904	N 01° 47' 55.0"	E 110° 17' 58.0"
14				PANTAI LIKAU	3230915	N 03° 20' 49.0"	E 113° 08' 57.0"
15				PANTAI PANDAN	1824918	N 01° 50' 16.0"	E 109° 40' 11.0"
16				PANTAI PASIR PUTIH	1604910	N 01° 30' 14.0"	E 110° 30' 00.0"
17				PANTAI PIASAU	4539918	N 04° 27' 27.0"	E 113° 59' 38.0"
18				PANTAI SEMATAN	1898902	N 01° 49' 38.0"	E 109° 46' 29.0"
19				PANTAI TANJUNG BATU	3230913	N 03° 12' 38.0"	E 113° 02' 26.0"
20				PANTAI HARMONI	2920921	N 02° 54' 35.0"	E 112° 03' 22.0"
21				PANTAI TANJUNG KEMBANG	1810923	N 01° 49' 28.0"	E 111° 05' 44.0"
22				KUALA BARAM	4539919	N 04° 34' 50.9"	E 113° 58' 48.0"
23				PANTAI ESPLANED	4339920	N 04° 19' 04.6"	E 113° 57' 31.0"
24				PANTAI BERAYA	4238921	N 04° 12' 45.1"	E 113° 53' 30.6"
25			PANTAI BUNGAI	4137922	N 04° 03' 42.2"	E 113° 46' 50.3"	
KUALA/ESTUARINE		: 75					
PANTAI/COASTAL		: 158					
JUMLAH/TOTAL		: 233					



Jadual 4.6 JAS : Senarai Stesen Yang Telah Dibuka, 2007
Table 4.6 DOE: List of Newly-Opened Stations, 2007

Bil/ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No. Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
1	SARAWAK	KUALA/ESTUARINE	KUALA BARAM	4539919	N 04° 34' 50.9"	E 113° 58' 48.0"
2		PANTAI/COASTAL	PANTAI ESPLANED	4339920	N 04° 19' 04.6"	E 113° 57' 31.0"
3			PANTAI BERAYA	4238921	N 04° 12' 45.1"	E 113° 53' 30.6"
4			PANTAI BUNGA	4137922	N 04° 03' 42.2"	E 113° 46' 50.3"

Jadual 4.7 JAS: Stesen Pengawasan 'Malaysia-Singapore Joint Committee on the Environment'- (MSJCE), 2007
Table 4.7 DOE: Monitoring Stations under the Malaysia-Singapore Joint Committee on the Environment'- (MSJCE), 2007

Bil/ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No. Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
1	JOHOR	KUALA/ESTUARINE	KUALA SG. TEBRAU	SJ4A	N 01° 25' 31.0"	E 104° 00' 03.0"
2			KUALA SG. SKUDAI	SJ7A	N 01° 25' 48.0"	E 103° 55' 40.0"
3			KUALA SG. MELAYU	SJ8A	N 01° 26' 49.0"	E 103° 46' 09.0"
4		PANTAI/COASTAL	KG. TANJUNG KOPOK	SJ1	N 01° 25' 31.0"	E 104° 00' 03.0"
5			KG. PASIR PUTIH	SJ2	N 01° 25' 48.0"	E 103° 55' 40.0"
6			J/K SULTAN ISKANDAR	SJ3	N 01° 26' 49.0"	E 103° 46' 09.0"
7			KG. SENIBUNG	SJ4	N 01° 29' 01.0"	E 103° 48' 47.0"
8			TANJUNG PUTRI	SJ5	N 01° 27' 20.0"	E 103° 46' 09.0"
9			HADAPAN MPJB	SJ6	N 01° 27' 08.0"	E 103° 45' 43.0"
10			TANJUNG DANGA	SJ7	N 01° 27' 24.0"	E 103° 42' 52.0"
11			HADAPAN PUSAT ISLAM	SJ7B	N 01° 27' 19.0"	E 103° 44' 51.0"
12			TEBING RUNTUH	SJ8	N 01° 25' 10.0"	E 103° 40' 06.0"
13			TANJUNG BUNGA	SJ9	N 01° 23' 07.0"	E 103° 39' 02.0"
14			TANJUNG KUPANG	SJ10	N 02° 23' 36.0"	E 103° 39' 11.0"
15			PULAU BELUNGKOR	EM4	N 01° 26' 25.8"	E 104° 03' 11.04"
16			PULAU TEKONG	EM5	N 01° 25' 42.3"	E 104° 04' 36.72"
17			PULAU TEKONG	EM6	N 01° 23' 19.2"	E 104° 05' 20.40"
18			JETI PULAREK	EM7	N 01° 21' 26.8"	E 104° 04' 40.65"
19			TANJUNG PENGELIH	WG10	N 01° 19' 52.62"	E 104° 05' 39.57"
20			PULAU MERAMBONG	WM1	N 01° 20' 17.02"	E 103° 37' 36.29"



PENGAWASAN KUALITI AIR MARIN PULAU-PULAU ISLAND MARINE WATER QUALITY MONITORING

Program Pengawasan Kualiti Air Marin Pulau-Pulau telah dimulakan pada Julai 1998 melibatkan 71 buah pulau dengan 85 buah stesen pengawasan. Pulau-Pulau ini dikelaskan mengikut empat kategori iaitu pulau-pulau pembangunan (3); pulau-pulau peranginan (25); pulau-pulau Taman Laut (38); dan pulau-pulau yang dilindungi (5) (**Jadual 4.8**). Frekuensi persampelan bagi Pulau Pembangunan adalah sebanyak enam (6) kali setahun manakala sebanyak empat (4) kali setahun bagi pulau yang lainnya.

Parameter-parameter in-situ yang diukur adalah seperti suhu, pH, konduktiviti, kemasinan, oksigen terlarut dan kekeruhan diukur. Parameter lain seperti jumlah pepejal terampai, Escherichia. Coli, nitrat, jumlah karbon organik, minyak dan gris termasuk logam berat seperti Merkuri (Hg), Kadmium (Cd), Kromium (Cr), Kuprum (Cu), Plumbum (Pb) dan Arsenik (As) (**Jadual 4.9**) dihantar untuk analisis makmal. Percontohan bebola tar di pantai juga dilaksanakan.

The Island Marine Water Quality Monitoring Programme was started in July 1998 to cover 71 selected islands with 85 monitoring stations. These islands are classified into four (4) categories; development islands (3); resort islands (25); marine park Islands (38); and protected islands (5) (**Table 4.8**). The sampling frequency for development islands was six (6) times per year and four (4) times per year for the other islands.

In-situ parameters such as temperature, pH, conductivity, salinity, dissolved oxygen, turbidity were measured. The other parameters such as total suspended solids, Escherichia coli, nitrate, total organic carbon, oil and grease, and heavy metals like Mercury (Hg), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Arsenic (As) (**Table 4.9**) were sent for laboratory analysis. Tarball samplings on beaches were also conducted.



Stesen persampelan di Pulau Redang, Terengganu
Monitoring Station in Pulau Redang, Terengganu



Jadual 4.8 JAS : Pengawasan Kualiti Air Marin Pulau, 2007

Table 4.8 DOE: Island Water Quality Monitoring, 2007

Bil/ No.	Negeri/ State	Pulau/ Island	Kategori/ Category	Bil. Stesen/ No. of Station	Latitud/ Latitude	Longitud/ Longitude
1	KEDAH	SINGA BESAR	R	1	N 06° 13' 36.3"	E 099° 44' 42.9"
		DAYANG BUNTING	R	1	N 06° 12' 26.2"	E 099° 46' 48.9"
		PAYAR	M	1	N 06° 03' 52.0"	E 100° 02' 33.5"
		KACA	M	1	N 06° 04' 18.2"	E 100° 03' 06.5"
		LEMBU	M	1	N 06° 04' 28.2"	E 100° 03' 29.6"
		SEGANTANG	M	1	N 06° 02' 36.7"	E 099° 55' 34.0"
		LANGKAWI	D	1	N 06° 18' 34.8"	E 099° 51' 00.3"
		LANGKAWI	D	1	N 06° 25' 51.1"	E 099° 45' 49.0"
		LANGKAWI	D	1	N 06° 18' 51.9"	E 099° 42' 30.1"
2	PERAK	LANGKAWI	D	1	N 06° 27' 24.6"	E 099° 49' 27.6"
		PANGKOR	R	1	N 04° 11' 33.8"	E 100° 34' 51.8"
		PANGKOR	R	1	N 04° 15' 10.7"	E 100° 32' 39.3"
		PANGKOR LAUT	R	1	N 04° 12' 14.1"	E 100° 32' 53.0"
3	P.PINANG	SEMBILAN	R	1	N 04° 00' 30.7"	E 100° 32' 38.4"
		AMAN	R	1	N 05° 17' 09.7"	E 100° 17' 28.5"
		JEREJAK	R	1	N 05° 16' 51.2"	E 100° 11' 24.6"
		KENDI	R	1	N 05° 27' 41.4"	E 100° 12' 51.9"
		RIMAU	R	1	N 05° 25' 12.7"	E 100° 20' 47.9"
		GEDONG	R	1	N 05° 16' 02.6"	E 100° 23' 35.9"
		PULAU PINANG	D	1	N 05° 20' 02.3"	E 100° 19' 03.6"
		PULAU PINANG	D	1	N 05° 13' 56.6"	E 100° 11' 04.8"
		PULAU PINANG	D	1	N 05° 15' 01.9"	E 100° 16' 19.3"
4	SELANGOR	PULAU PINANG	D	1	N 05° 16' 26.4"	E 100° 23' 30.6"
		KETAM	R	1	N 03° 01' 17.5"	E 101° 15' 46.4"
		ANGSA	R	1	N 03° 11' 08.0"	E 101° 13' 07.1"
5	MELAKA	LUMUT	R	1	N 02° 59' 54.6"	E 101° 21' 42.6"
		BESAR	R	1	N 02° 06' 55.8"	E 102° 20' 10.6"
6	PAHANG	UPEH	R	1	N 02° 11' 39.5"	E 102° 12' 17.2"
		TIOMAN	M	1	N 02° 44' 22.0"	E 104° 07' 53.4"
		TIOMAN	M	1	N 02° 44' 22.0"	E 104° 07' 53.4"
		SERI BUAT	M	1	N 02° 41' 07.4"	E 103° 55' 24.6"
		CEBEH	M	1	N 02° 55' 53.6"	E 104° 05' 51.4"
		TULAI	M	1	N 02° 54' 42.1"	E 104° 06' 51.9"
		SEPUJ	M	1	N 02° 53' 53.8"	E 104° 03' 09.7"
		LABAS	M	1	N 02° 53' 23.7"	E 104° 03' 56.6"
		SEMBILANG	M	1	N 02° 40' 53.8"	E 103° 53' 28.4"
7	JOHOR	TOKONG BAHARA	M	1	N 02° 39' 48.2"	E 104° 03' 43.9"
		BUT	M	1	N 02° 39' 59.5"	E 104° 03' 36.4"
		SETINDAN	R	1	N 02° 28' 35.9"	E 103° 51' 28.7"
		BABI TENGAH	M	1	N 02° 28' 20.4"	E 103° 51' 41.9"
		DAYANG	R	1	N 02° 28' 12.8"	E 104° 30' 12.9"
		HARIMAU	M	1	N 02° 33' 26.5"	E 103° 56' 46.3"
		MENSIRIP	M	1	N 02° 33' 04.8"	E 103° 57' 28.0"
		GUAL	M	1	N 02° 32' 03.0"	E 103° 58' 03.0"
		BABI HUJUNG	M	1	N 02° 29' 24.8"	E 103° 56' 21.9"



Jadual 4.8 JAS : Pengawasan Kualiti Air Marin Pulau, 2007

Table 4.8 DOE: Island Water Quality Monitoring, 2007

Bil/ No.	Negeri/ State	Pulau/ Island	Kategori/ Category	Bil. Stesen/ No. of Station	Latitud/ Latitude	Longitud/ Longitude
		NANGA BESAR	M	1	N 02° 16' 18.0"	E 104° 37' 37.5"
		SIBU BESAR	M	1	N 02° 12' 21.0"	E 104° 04' 22.0"
		SIBU HUJUNG	M	1	N 02° 10' 20.0"	E 104° 06' 39.7"
		SIBU TENGAH	R	1	N 02° 10' 54.9"	E 104° 05' 45.4"
		RAWA	M	1	N 02° 31' 03.0"	E 103° 58' 09.6"
		TINGGI	M	1	N 02° 17' 33.7"	E 104° 06' 03.7"
		BESAR	M	1	N 02° 25' 51.8"	E 103° 58' 37.1"
		PEMANGGIL	M	1	N 02° 04' 52.1"	E 104° 18' 54.8"
		AUR	M	1	N 02° 27' 24.3"	E 104° 30' 08.5"
8	TERENGGANU	GUMIA	R	1	N 05° 13' 51.8"	E 103° 15' 39.3"
		BIDONG LAUT	R	1	N 05° 36' 43.6"	E 103° 03' 23.7"
		DUYONG	R	1	N 05° 20' 05.6"	E 103° 07' 44.7"
		PERHENTIAN BESAR	M	1	N 05° 53' 21.5"	E 102° 45' 01.8"
		PERHENTIAN BESAR	M	1	N 05° 53' 21.5"	E 102° 45' 01.8"
		PERHENTIAN KECIL	M	1	N 05° 55' 04.5"	E 102° 43' 30.4"
		REDANG	M	1	N 05° 46' 32.2"	E 103° 02' 13.4"
		REDANG	M	1	N 05° 46' 32.2"	E 103° 02' 13.4"
		KAPAS	M	1	N 05° 13' 01.1"	E 103° 15' 35.4"
		SUSU DARA	M	1	N 05° 57' 34.8"	E 102° 40' 30.8"
		LANG TENGAH	M	1	N 05° 47' 32.9"	E 102° 53' 27.1"
		PINANG	M	1	N 05° 44' 52.7"	E 103° 00' 09.4"
		EKOR TEBU	M	1	N 05° 44' 25.6"	E 103° 01' 45.4"
		LIMA	M	1	N 05° 46' 11.5"	E 103° 03' 32.6"
		TENGGOLO	M	1	N 05° 48' 33.8"	E 103° 40' 32.1"
		NYIREH	M	1	N 05° 50' 39.9"	E 103° 39' 47.5"
9	SABAH	GAYA	R	1	N 06° 00' 58.7"	E 116° 03' 12.1"
		LAYANG-LAYANG	R	1	N 07° 22' 12.6"	E 113° 50' 16.4"
		MABUL	R	1	N 04° 15' 04.0"	E 118° 38' 02.4"
		SIPADAN	R	1	N 04° 07' 05.2"	E 118° 37' 37.3"
		SIPADAN	R	1	N 04° 06' 51.0"	E 118° 37' 32.9"
10	SARAWAK	SATANG BESAR	P	1	N 01° 46' 39.0"	E 110° 09' 53.7"
		TALANG-TALANG KECIL	P	1	N 01° 53' 42.9"	E 109° 45' 58.2"
		TALANG-TALANG BESAR	P	1	N 01° 54' 39.7"	E 109° 46' 36.0"
11	W.P. LABUAN	LABUAN	D	1	N 05° 22' 49.9"	E 115° 13' 43.8"
		LABUAN	D	1	N 05° 16' 21.9"	E 115° 14' 55.0"
		LABUAN	D	1	N 05° 22' 18.6"	E 115° 14' 48.0"
		LABUAN	D	1	N 05° 14' 30.9"	E 115° 14' 23.3"
		KURAMAN	M	1	N 05° 13' 07.5"	E 115° 08' 25.5"
		RUSUKAN KECIL	M	1	N 05° 12' 06.4"	E 115° 08' 53.9"
		RUSUKAN BESAR	M	1	N 05° 11' 24.0"	E 115° 08' 31.2"
Pulau Peranginan/ <i>Resort Island (R)</i>				25		27
Pulau Taman Laut/ <i>Marine Park Island (M)</i>				38		41
Pulau Dilindungi/ <i>Protected Island (P)</i>				5		5
Pulau Pembangunan/ <i>Development Island (D)</i>				3		12
JUMLAH/TOTAL				71		85



Jadual 4.9 JAS: Parameter Kualiti Air Marin, 2007
 Table 4.9 DOE: Marine Water Quality Parameters, 2007

Bil./No.	Parameter/ Parameters	Kod/Code	Unit/Unit
PENGUKURAN IN-SITU/ IN-SITU MEASUREMENTS			
1	Oksigen Terlarut/ <i>Dissolved Oxygen</i>	DO	mg/l
2	Kemasinan/ <i>Salinity</i>	Sal	%
3	Suhu/ <i>Temperature</i>	Temp	°C
4	Konduktiviti/ <i>Conductivity</i>	Cond	mS/cm
5	Kekeruhan/ <i>Turbidity</i>	Turb	NTU/FTU
6	pH	pH	-
PENGUKURAN MAKMAL/ LABORATORY MEASUREMENT			
1	Jumlah Pepejal Terampai/ <i>Total Suspended Solid</i>	TSS	mg/l
2	Escherichia Coli	<i>E.coli</i>	cfu/100 ml
3	Minyak dan Gris/ <i>Oil and Grease</i>	O&G	mg/l
4	Kuprum/ <i>Copper</i>	Cu	mg/l
5	Kadmium/ <i>Cadmium</i>	Cd	mg/l
6	Plumbum/ <i>Lead</i>	Pb	mg/l
7	Arsenik/ <i>Arsenic</i>	As	mg/l
8	Merkuri/ <i>Mercury</i>	Hg	mg/l
9	Kromium/ <i>Chromium</i>	Cr	mg/l
10	Bebola Tar/ <i>Tarball</i>	Tar	g/100 m
11	Jumlah Karbon Organik/ <i>Total Organic Carbon</i>	TOC	mg/l
12	Nitrat/ <i>Nitrate</i>	NO ³⁻	mg/l



Stesen persampelan di Pulau Mabul, Sabah
 Monitoring Station in Pulau Mabul, Sabah



PROGRAM PENGAWASAN KUALITI AIR DARATAN (SUNGAI) SURFACE WATER (RIVER) QUALITY MONITORING PROGRAM

Jabatan Alam Sekitar (JAS) telah melaksanakan Program Pengawasan Kualiti Air Kebangsaan sejak tahun 1978. Walaubagaimanapun, sejak tahun 1995 kerja-kerja ini telahpun diswastakan kepada pihak Alam Sekitar Malaysia Sdn. Bhd. (ASMA). Pada tahun 2007, sebanyak 1,063 stesen dari 143 buah lembangan sungai di Malaysia telah dipantau (**Jadual 4.10**). Sampel air yang diambil dari 1,063 stesen dianalisa untuk mengira Indeks Kualiti Air (WQI) berasaskan parameter berikut:-

- Keperluan Oksigen Biokimia (BOD)
- Keperluan Oksigen Kimia (COD)
- Ammoniakal Nitrogen (NH_3N)
- pH
- Oksigen Terlarut (DO)
- Pepejal Terampai (SS)

Parameter lain seperti logam berat dan bakteria diukur bergantung kepada keperluan tempat. Tambahan pula, 10 buah stesen pemantauan kualiti air sungai secara automatik telah dipasang untuk mengesan perubahan secara terus kepada kualiti air sungai di Sg. Perai (Seberang Perai-Pulau Pinang), Sg. Perak (Perak), Sg. Selangor (Selangor), Sg. Kelang (Kuala Lumpur), Sg. Linggi (Negeri Sembilan), Sg. Melaka (Melaka), Sg. Skudai (Johor), Sg. Keratong (Pahang), Sg. Terengganu (Terengganu) dan Sg. Sarawak (Sarawak) [**Jadual 4.11**]. Di bawah Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai, lima (5) stesen automatik telah ditubuhkan di Sg. Langat (Selangor), Sg. Labu (N. Sembilan), Sg. Batang Benar (N. Sembilan), Sg. Putat (Melaka) dan Sg. Rajang (Sarawak).

The Department of Environment (DOE) implemented the National River Water Monitoring program in 1978. However since 1995 this work was privatized to Alam Sekitar Malaysia Sdn. Bhd. (ASMA). In 2007, a total of 1,063 stations located within 143 river basins in Malaysia were monitored (**Table 4.10**). Water samples taken from the 1,063 stations were analyzed to compute the Water Quality Index (WQI) based on the following parameters:-

- Biochemical Oxygen Demand (BOD)
- Chemical Oxygen Demand (COD)
- Ammoniacal Nitrogen (NH_3N)
- pH
- Dissolved Oxygen (DO)
- Suspended Solids (SS)

Other parameters such as heavy metals and bacteria would be measured depending on site requirements. In addition, 10 automatic water quality monitoring stations had been installed to monitor river quality changes on a continuous basis at Sg. Perai (Seberang Perai-Pulau Pinang), Sg. Perak (Perak), Sg. Selangor (Selangor), Sg. Kelang (Kuala Lumpur), Sg. Linggi (Negeri Sembilan), Sg. Melaka (Melaka), Sg. Skudai (Johor), Sg. Keratong (Pahang), Sg. Terengganu (Terengganu) and Sg. Sarawak (Sarawak) [**Table 4.11**]. Under the Pollution Prevention and Water Quality Improvement Program, five (5) automatic stations had been installed at Sg. Langat (Selangor), Sg. Labu (N. Sembilan), Sg. Batang Benar (Negeri Sembilan), Sg. Putat (Melaka) and Sg. Rajang (Sarawak).



Jadual 4.10 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2007
Table 4.10 DOE: List of the River Catchment and River Monitored, 2007

Negeri/ State	Kod WKA/ WKA Code	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Station	Sungai Diawasi/ River Monitored	Bil.Stesen/ No. of Station
PERLIS	01	PERLIS	9	JARUM JERNIH KOK MAK NGULANG PELARIT PERLIS SERAI WANG KELIAN	1 2 1 1 1 1 1 1
KEDAH	01PLA 01PLB 01PLC 03	KISAP KUAH MELAKA KEDAH	1 1 2 9	KISAP KUAH PETANG ULU MELAKA JANING KEDAH PADANG TERAP PEDU PENDANG TEKAI	1 1 1 1 1 1 4 1 1 1
	04	MERBOK	10	BAKAR ARANG BATU BONGKOK BUKIT MERAH KOROK MERBOK PETANI TOK PAWANG TUPAH	1 1 1 1 1 1 1 1 1
KEDAH/ PULAU PINANG	05	MUDA	13	CHEPIR JERUNG KARANGAN KETIL MUDA PEGANG SEDIM TAWAR	1 2 1 2 4 1 1 1
PULAU PINANG	06J	JURU	12	ARA PERMATANG RAWA JURU KILANG UBI PASIR RAMBAI	1 1 2 5 1 2
KEDAH/ PULAU PINANG	06P	PERAI	20	AIR MELINTAS JARAK KARANGAN KELADI KEREH KUBANG SEMANG KULIM PERAI PERTAMA SELUANG SELUANG BAWAH	1 5 1 1 2 3 2 1 1 1 2



Jadual 4.10 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2007
Table 4.10 DOE: List of the River Catchment and River Monitored, 2007

Negeri/ State	Kod WKA/ WKA Code	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Station	Sungai Diawasi/ River Monitored	Bil.Stesen/ No. of Station
PULAU PINANG	06K	KLUANG	4	ARA	2
				KLUANG	1
				RELAU	1
	06PP	PINANG	11	AIR ITAM	5
				AIR TERJUN	1
				DONDANG	3
				JELUTONG	1
				PINANG	1
	06PBL	BAYAN LEPAS	3	BAYAN LEPAS	1
				TIRAM	2
	07	JEJAWI	7	CHEMPEDAK	1
				JAWI	1
				JUNJUNG	3
				MACHANG BUBUK	1
				TENGAH	1
PULAU PINANG/ PERAK	08	KERIAN	9	KECHIL	2
				KERIAN	4
				SELAMA	2
				SERDANG	1
PERAK	09	KURAU	6	ARA	1
				KURAU	5
	10	SEPETANG	15	BATU TEGOH	4
				JANA	1
				LARUT	1
				LIDIN	1
				LIMAU	1
				MALAI	1
				SEPETANG	2
				TEMERLOH	2
				TRONG	1
				TUPAI	1
	11	BRUAS	6	BRUAS	3
				DANDANG	1
				ROTAN	2
	8	RAJA HITAM	12	DERHAKA	2
				MANJONG	2
				NYIOR	1
				RAJA HITAM	3
	12W	WANGI	4	DERALIK	2
				WANGI	2
	13	PERAK	58	BATANG PADANG	3
				BIDOR	3
				CHENDERANG	2
				CHEPOR	1
				CUAR	1
				KAMPAR	2
				KANGSAR	2
				KEPAYANG	2
				KERDAH	2
				KINJANG	1
				KINTA	8
				KLAH	2
				KLIAN BARU	2
				KUANG	1
				NYAMOK	1



Jadual 4.10 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2007
 Table 4.10 DOE: List of the River Catchment and River Monitored, 2007

Negeri/ State	Kod WKA/ WKA Code	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Station	Sungai Diawasi/ River Monitored	Bil.Stesen/ No. of Station
				PARI PELUS PERAK PINJI RAIA SELUANG SEROKAI SINTANG SUNGKAI SUNGKAI MATI TUMBOH	2 2 8 2 2 1 2 1 2 2 1
PERAK/ SELANGOR	14	BERNAM	13	BERNAM INKI SLIM TROLA	7 1 2 3
SELANGOR	15 16	TENGI SELANGOR	3 13	TENGI AIR HITAM BATANG KALI KANCHING KERLING KUNDANG RAWANG SELANGOR SEMBAH SERENDAH BULOH	3 1 1 1 1 1 1 5 1 1 5
SELANGOR/ WPKL	18	KLANG	30	AMPANG BATU BUNOS DAMANSARA GOMBAK JINJANG KERAYONG KEROH KLANG KUYOH PENCHALA	1 3 1 3 3 2 2 2 11 1 1
SELANGOR	19	LANGAT	28	ANAK CHUAU BALAK BATANG BENAR BATANG LABU BATANG NILAI BERANANG BUAN CHUAU JIJAN LANGAT LIMAU MANIS LUI PAJAM RINCHING SEMENYIH	1 1 2 2 2 1 1 2 1 8 1 1 1 1 3
N.SEMBILAN	20	SEPANG	4	RAMBAI SEPANG	1 3



Jadual 4.10 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2007
Table 4.10 DOE: List of the River Catchment and River Monitored, 2007

Negeri/ State	Kod WKA/ WKA Code	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Station	Sungai Diawasi/ River Monitored	Bil.Stesen/ No. of Station
	20L 21	LUKUT LINGGI	1 24	LUKUT BATANG PENAR CHEMBONG KAYU ARA KEPAYONG KUNDUR BESAR LINGG PAROI PEDAS REMBAU SENAWANG SIMIN SIMPANG EMPAT SIPUT TEMIANG	1 3 1 1 1 1 6 1 1 2 1 1 1 2 2
MELAKA	22	MELAKA	21	BATANG MELAKA DURIAN TUNGGAL KEMUNTING KERU MELAKA PUTAT REMBIA TAMPIN DUYONG GAPAM CHIN-CHIN CHOHONG KESANG TANGKAK MERLIMAU BARU TUANG AIR SALAK SRI MELAKA	2 1 1 1 9 2 2 3 3 1 1 2 3 1 4 1 1 1 1
	23	DUYONG	4	GAPAM CHIN-CHIN CHOHONG	1 1 2
	24	KESANG	7	KESANG TANGKAK MERLIMAU BARU TUANG	3 1 4 1 1
	24A	MERLIMAU BARU	4	MERLIMAU BARU TUANG	4 1 1
	24SM	SRI MELAKA	2	AIR SALAK SRI MELAKA	1 1
JOHOR/ NEGERI SEMBILAN	25	MUAR	39	AIR PANAS GEMAS GEMENCHEH JUASEH KELAMAH LABIS MEDA MERBUDU MERLIMAU MUAR P. MENKUANG PALONG SARANG BUAYA SEGAMAT SENARUT SEROM SIMPANG PULAI TENANG	1 1 2 1 1 3 1 1 1 16 1 4 1 1 1 1 1 1
JOHOR	26	BATU PAHAT	20	AMRAN BANTANG BATU PAHAT BEKOK	1 1 1 5



Jadual 4.10 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2007
 Table 4.10 DOE: List of the River Catchment and River Monitored, 2007

Negeri/ State	Kod WKA/ WKA Code	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Station	Sungai Diawasi/ River Monitored	Bil.Stesen/ No. of Station
				BERLIAN	1
				CHAAH	1
				LENIK	1
				MEREK	1
				MERPO	1
				SEMBERONG	2
				SIMPANG KANAN	2
				SIMPANG KIRI	3
	27A	AIR BALOI	3	AIR BALOI	4
	27A	BENUT	7	BENUT	1
				PARIT HJ. YASSIN	1
				PINGGAN	1
				ULU BENUT	1
	28	SEGGET	5	SEGGET	5
	28A	PONTIAN BESAR	7	AIR HITAM	1
				AYER MERAH	1
				KELAPA SAWIT	1
				PONTIAN BESAR	4
	28B	PONTIAN KECIL	2	PONTIAN KECIL	2
	28C	SKUDAI	11	MELANA	2
				SKUDAI	9
	28D	TEBRAU	11	ANAK TEBRAU	3
				BALA	1
				CAW TEBRAU	1
				PANDAN	1
				PLENTONG	1
				SEBULUNG	1
				SENGKUANG	1
				TAMPOI	1
				TEBRAU	1
	28E	KEMPAS	2	KEMPAS	2
	28F	DANGA	2	DANGA	2
	28G	REMBAH	2	RAMBAH	2
	29	JOHOR	39	ANAK SG. SAYONG	2
				BELITONG	1
				BERANGAN	1
				BKT. BESAR	2
				CHEMANGAR	1
				JOHOR	5
				LAYANG	1
				LAYAU KIRI	1
				LEBAM	1
				LINGGIU	1
				PANTI	1
				PAPAN	1
				PELEPAH	1
				PENGGEI	1
				REMIS	1
				SANTI	1
				SAYONG	5
				SEBOL	1
				SELUYUT	1
				SEMANGAR	1
				SEMENCHU	1
				SENING	1
				SERAI	1
				TELOR	1
				TEMOH	1



Jadual 4.10 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2007
Table 4.10 DOE: List of the River Catchment and River Monitored, 2007

Negeri/ State	Kod WKA/ WKA Code	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Station	Sungai Diawasi/ River Monitored	Bil.Stesen/ No. of Station
	29B	KAW.PASIR GUDANG	5	TIRAM	4
				BULUH	1
				LATOH	1
				MASAI	1
				PEREMBI	1
				TUKANG BATU	1
	29C	SANGLANG	1	SANGLANG	1
	30	PULAI	3	CHOH	1
				PULAI	2
	30A	SEDILI BESAR	10	AMBAT	1
				DOHOL	1
				MUPUR	1
				PASIR PANJANG	1
				SEDILI BESAR	5
				TEMUBOR KANAN	1
	30B	SEDILI KECIL	6	ANAK SEDILI KECIL	1
				BAHAN	2
				SEDILI KECIL	3
	30C	PALOI	1	PALOI	1
	31A	MERSING	2	MERSING	2
	31B	JEMALUANG	2	JEMALUANG	2
	31C	KIM-KIM	2	KIM-KIM	2
	32	ENDAU	25	ANAK SG.	1
				DENGAR	1
				ENDAU	2
				JASIN	1
				JEBONG	1
				KAHANG	1
				LENGA	1
				LENGGOR	1
				MAMAI	1
				MELATAI	1
				MENGKIBOL	3
				PALOH	1
				PAMOL	1
				SELAJ	1
				SEMBERONG	6
				SINGOL	1
				TAMOK	1
PAHANG	32AE	ANAK ENDAU	2	ANAK ENDAU	2
	33	ROMPIN	18	AUR	1
				BAKAR	1
				JEKATIH	2
				JERAM	1
				KEPASING	1
				KERATONG	3
				PONTIAN	1
				PUKIN	3
				ROMPIN	4
				SEPAYANG	1
	34B	BEBAR	5	BEBAR	1
				MERBA	1
				SERAI	2
	34M	MERCHONG	2	TEMIANG	1
				KELAYAT	1
				MERCHONG	1



Jadual 4.10 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2007
Table 4.10 DOE: List of the River Catchment and River Monitored, 2007

Negeri/ State	Kod WKA/ WKA Code	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Station	Sungai Diawasi/ River Monitored	Bil.Stesen/ No. of Station
	35P	PAHANG	91	ANAK SG. LEPAR BATU BELAYAR BENTONG BENUS BERA BERKAPOR BERTAM BILUT BURUNG CHINI HABU JELAI JEMPOL JENGKA KELAU KERTAM KOYAN KUNDANG LENGGOK LEPAR LIPIS LUIT MARAN MENTIGA PAHANG PENJURING PERTANG PERTING RINGLET SEMANTAN SERTING T.PAYA BUNGOR TAHAN TANGLIR TASIK BERA TASIK CHINI TEKAL TEKAM TELANG TELEMONG TELOM TEMBELING TERANUM TERAS TERLA TRIANG TRINGKAP	1 1 1 4 2 3 1 3 1 1 1 1 2 2 2 1 1 1 1 3 3 1 1 2 8 1 2 1 1 3 5 1 1 1 1 10 1 2 1 1 2 1 1 1 1 2 1
	36	KUANTAN	15	BELAT CHARU GALING BESAR GALING KECIL KENAU KUANTAN PANDAN PINANG REMAN RIAU	1 1 1 1 1 5 1 1 1 1 1



Jadual 4.10 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2007
Table 4.10 DOE: List of the River Catchment and River Monitored, 2007

Negeri/ State	Kod WKA/ WKA Code	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Station	Sungai Diawasi/ River Monitored	Bil.Stesen/ No. of Station
	37	BALOK	4	BALOK YIOR	2 2
	37A	CHERATING	1	PANJANG	1
	37B	TONGGOK	2	CHERATING TONGGOK	1 2
TERENGGANU	38	KEMAMAN	9	CHERUL KEMAMAN	2 3
				NERAM	1
				PERASING	1
				RANSAN	2
	39C	CHUKAI	6	BUNGKUS	1
				CHUKAI	1
				IBOK	2
				RUANG	2
	39K	KERTIH	2	KERTIH	2
	40	PAKA	6	BESUL	1
				PAKA	2
				RASAU	1
				RENGAT	1
	41	DUNGUN	5	DUNGUN	4
				TELEMBOH	1
	42I	IBAI	3	IBAI	3
	42L	MERCHANG	2	LANDAS	1
				MERCHANG	1
	42M	MARANG	3	KERAK	1
				MARANG	1
				TEMALA	1
KELANTAN	43	TERENGGANU	12	BERANG	2
				NERUS	4
				PUEH	2
				TELEMONG	1
				TERENGGANU	3
	44	SETIU	5	SETIU	4
				TAROM	1
	45	MERANG	1	MERANG	1
	46	BESUT	4	BESUT	3
				JERTIH	1
	47	KLUANG	1	KLUANG	1
	47K	KEMASIN	5	KEMASIN	2
				SEMERAK	3
	48	KELANTAN	42	ARING	1
				BELATOP	2
				BER	1
				BEROK	3
				BETIS	1
				CHIKU	1
				GALAS	5
				KELANTAN	3
				KELESA	1
				KERILLA	2
				KETIL	1
				LEBIR	4
				NAL	3
				NENGGIRI	3
				PEHI	1
				PERGAU	6
				RELAI	2



Jadual 4.10 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2007
Table 4.10 DOE: List of the River Catchment and River Monitored, 2007

Negeri/ State	Kod WKA/ WKA Code	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Station	Sungai Diawasi/ River Monitored	Bil.Stesen/ No. of Station
	48C	PENGKALAN CHEPA	6	SOKOR TUANG ALOR B ALOR LINTAH KELADI PENGKALAN CHEPA	1 1 1 1 1 3
	48D	PENGKALAN DATU	3	PENGKALAN DATU	3
	49	GOLOK	7	GOLOK LANAS TASIK GARU	5 1 1
SARAWAK	50	KAYAN	3	KAYAN	3
	50S	KAYAN	3	KAYAN	3
	51	SARAWAK	17	KELANTAN KUAP MAONG KIRI SARAWAK SARAWAK KANAN SARAWAK KIRI SEMADANG SEMENGGOH TABUAN SAMARAHAN KARANGAN SADONG TARAT AI LUPAR SEKERANG SETERAP UNDUP LAYAR SARIBAS KERIAN SEBLAK BALOI BINATANG JULAU KANOWIT MERADONG RAJANG SALIM SARIKEI	1 2 1 5 2 1 1 1 1 2 2 4 1 2 3 1 1 1 2 1 1 1 1 1 1 1 1 1 12 1 1
	52	SADONG	7		
	53	LUPAR	8		
	54	SARIBAS	3		
	55	KERIAN	3		
	56	RAJANG	19		
	57	OYA	3	OYA	3
	58	MUKAH	4	MUKAH	4
	59	BALINGIAN	2	BALINGIAN	2
	60	TATAU	1	TATAU	1
	61	KEMENA	5	KEMENA SIBIU SIMILAJAU SUAI NIAH SEKALOH KABULOH KEJAPIL SATAP SIBUTI ADONG DALAM	4 1 2 1 2 2 1 1 2 1 1 1 1
	62	SIMILAJAU	2		
	63	SUAI	1		
	64	NIAH	4		
	65	SIBUTI	6		
	66	MIRI	7		



Jadual 4.10 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2007
Table 4.10 DOE: List of the River Catchment and River Monitored, 2007

Negeri/ State	Kod WKA/ WKA Code	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Station	Sungai Diawasi/ River Monitored	Bil.Stesen/ No. of Station
				LUTONG	2
				MIRI	2
				PADANG LIKU	1
	67	BARAM	5	BARAM	4
	68	LIMBANG	5	TUTOH	1
	69	TRUSAN	1	LIMBANG	5
	70	LAWAS	3	TRUSAN	1
				LAWAS	3
SABAH	71	MENGGALONG	2	MENGGALONG	2
	71A	LAKUTAN	1	LAKUTAN	1
	71B	LINGKUNGAN	2	LINGKUNGAN	2
	72	PADAS	10	ANSIP	1
				BUNSIT	1
				LIAWAN	1
				PADAS	3
				PANGATAN	1
				PEGALAN	2
				TANDULU	1
	73	MEMBAKUT	1	MEMBAKUT	1
	74A	BONGAWAN	1	BONGAWAN	1
	74	KIMANIS	1	KIMANIS	1
	75	PAPAR	3	PAPAR	3
	76	MOYOG	4	MOYOG	4
	76A	SEMBULAN	2	SEMBULAN	2
	76B	LIKAS	8	DARAU	1
				INANAM	3
				LIKAS	2
				MENGGATAL	2
	76C	TELIPOK	2	TELIPOK	2
	77	TUARAN	5	DAMIT	2
				SONG SAI	1
				TUARAN	2
	78	KEDAMAIAN	4	KEDAMAIAN	1
				TEMPASUK	2
				WARIU	1
	78T	TENGHILAN	1	TENGHILAN	1
				BANDAU	1
	79	BINGKONGAN	6	BINGKONGAN	2
				MENGGARIS	2
				TANDEK	1
	80	BENGKOKA	2	BENGKOKA	2
	82	PAITAN	1	PAITAN	1
	83	SUGUT	6	BONGKUD	1
				LOHAN	1
				MERALI	1
				SUGUT	3
	84	LAPOK	7	KINIPIR	2
				LABOK	1
				LIWAGU	2
				MALIAU	1
				TUNGUD	1
	84A	SAPI	4	SAPI	3
				SUALONG	1
	85	MOUNAD	2	MOUNAD	2
	85A	SEGALIUD	2	SEGALIUD	2
	86	KINABATANGAN	10	KARAMUAK	1
				KINABATANGAN	2
				KOYAH	1



Jadual 4.10 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2007
Table 4.10 DOE: List of the River Catchment and River Monitored, 2007

Negeri/ State	Kod WKA/ WKA Code	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Station	Sungai Diawasi/ River Monitored	Bil.Stesen/ No. of Station
				LEEPANG	1
				MENANGGUL	1
				PIN	1
				TAKALA	1
				TENEGANG BESAR	2
	87	SEGAMA	3	SEGAMA	3
	88	TUNGKU	2	TUNGKU	2
	88A	SILABUKAN	2	SILABUKAN	2
	89	TINGKAYU	2	TINGKAYU	2
	90	KALUMPANG	5	KALUMPANG	3
				PANG BURONG 1	1
				PANG BURONG 2	1
	91A	BALUNG	1	BALUNG	1
	91B	APAS	1	APAS	1
	91	TAWAU	4	TAWAU	4
	92	MEROTAI	3	MEROTAI	3
	93	UMAS-UMAS	1	UMAS-UMAS	1
	94	BRANTIAN	1	BRANTIAN	1
	95	KALABAKAN	3	KALABAKAN	3
				JUMLAH :	1,063

Jadual 4.11 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2007
Table 4.11 DOE: List of the River Catchment and River Monitored, 2007

Jenis Pemantauan/ Types of Monitoring	Tahun / Years												
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Pemantauan Manual/ Manual Monitoring													
Lembangan Sungai/River Basin	115	116	117	120	120	120	120	120	120	120	146	146	146
Bilangan Stesen Pemantauan/ Number of Monitoring Stations	821	909	909	900	902	901	931	827	926	926	1069	1064	1063
Pemantauan Berterusan Automatik/ Automatic Continuous Monitoring													
Lembangan Sungai/River Basin	2	4	6	8	10	10	10	10	12	12	12	12	12
Bilangan Stesen Pemantauan/ Number of Monitoring Stations	2	4	6	8	10	10	10	10	15	15	15	15	15



PEMANTAUAN KUALITI AIR TANAH GROUNDWATER MONITORING

Pada tahun 2007, sebanyak 303 sampel daripada 122 buah telaga pemantauan kualiti air tanah di Malaysia telah dianalisis. Telaga dibina di kawasan-kawasan mengikut kategori guna tanah: pertanian, perindustrian, padang golf, tapak pelupusan sampah, tapak penstoran radioaktif, pelupusan tapak J.E, kawasan bekalan air, bekas tapak perlombongan, perbandaran dan luar bandar (**Jadual 4.12**).

Pengukuran sampel secara in-situ dan sampel untuk dianalisis di makmal dikumpul di setiap stesen. Parameter in-situ yang diukur adalah suhu, pH, konduktiviti, saliniti (kemasinan), oksigen terlarut dan turbiditi. Parameter yang dianalisis di makmal pula ialah kandungan organik meruap (VOC), racun perosak, logam berat, anion, bakteria, sebatian berfenol, radioaktif, jumlah keliatan dan jumlah pepejal terlarut.

In 2007, 303 groundwater samples were drawn on a quarterly basis from 122 monitoring wells in Malaysia for analysis. The wells had been constructed in areas categorized according to landuse: agriculture, industrial, golf course, solid waste landfill, radioactive storage, animal burial, municipal water supply, ex-mining (gold mine) and urban/suburban areas (**Table 4.12**).

Samples for in-situ measurement and samples for laboratory analysis were collected at each station. In-situ parameters were temperature, pH, conductivity, salinity, dissolved oxygen and turbidity. For laboratory analysis, the parameters were total volatile organic compounds (VOC), pesticides, heavy metals, anions, bacteria, phenolic compounds, radioactivity, total hardness and total dissolved solids.

Jadual 4.12 JAS: Taburan Telaga-telaga Pemantauan Air Bawah Tanah, 2007
Table 4.12 DOE: Distribution of Groundwater Monitoring Wells, 2007

Kategori/ Category	Bilangan Telaga/ Number of Wells
Kawasan Pertanian/ Agricultural Areas	12
Bandar / Urban Suburban Areas	12
Tapak Perindustrian/ Industrial Sites	18
Tapak Pelupusan Sampah/ Landfills	27
Padang Golf/ Golf Courses	7
Tapak Radioaktif/ Radioactive Sites	1
Luarbandar / Rural Areas	5
Bekas Lombong/ Ex-Mining	3
Bekalan Air Tempatan/ Municipal Water Supply	11
Tapak Pelupusan Bangkai Haiwan/ Animal Burial	16
Kolam Akuakultur/ Aquaculture Farms	6
Peranginan/ Resorts	1
Kolam Air Masin/ Saltwater	3
Jumlah/ Total	122



RANCANGAN KONTINGENSI KEBANGSAAN KAWALAN TUMPAHAN MINYAK (RKKKTM) **NATIONAL OIL SPILL CONTINGENCY PLAN (NOSCP)**

RKKKTM ditadbir oleh Jawatankuasa Kebangsaan Kawalan Tumpahan Minyak (JKKTM) yang dianggotai oleh 18 Jabatan dan agensi, dipengerusikan oleh Jabatan Alam Sekitar Malaysia (JAS) dan dibantu Jabatan Laut Malaysia (JLM). Disamping itu penubuhan beberapa rangkaian stokpile peralatan kawalan tumpahan minyak (KTM) di lokasi-lokasi strategik sepanjang Pantai Barat dan Pantai Timur Malaysia membolehkan aktiviti latihan untuk kawalan tumpahan minyak (OSR) dilaksanakan secara berjadual dan berkala. Latihan ini bagi memastikan semua pegawai JAS yang terlibat dalam KTM dibekalkan dengan pengetahuan dan kemahiran dalam pengendalian peralatan dan pengurusan krisis. Resolusi 7 International Convention on Oil Spill Preparedness and Response (OPRC) 1990, telah menggariskan komitmen di peringkat Antarabangsa dalam hal-ehwal berhubung dengan latihan. Keperluan latihan ini telah dimasukkan ke dalam mekanisma tindakbalas RKKKTM.

Pada tahun 2007, pelbagai peringkat latihan dan drill KTM telah dilaksanakan secara berasingan atau bersama oleh badan kerajaan dan bukan kerajaan seperti JLM, syarikat-syarikat minyak serta kemudahan-kemudahan dibawahnya, PIMMAG (Petroleum Industry of Malaysia Mutual Aid Group) dan Pihak Berkuasa Pelabuhan. Tiga (3) latihan dan kursus KTM iaitu di Bintulu, Sarawak (13 & 14 Jun 2007), Kota Kinabalu, Sabah (18 & 19 April 2007) dan Langkawi (3 & 4 September 2007). Program-program latihan ini telah disertai oleh pegawai JAS dan JLM Sarawak, Sabah serta Langkawi, Agensi Penguatkuasaan Maritim, dan Pihak Berkuasa Tempatan.

The NOSCP is administered by the National Oil Spill Control Committee consisting of 18 member departments and agencies, chaired by the Department of Environment Malaysia (DOE) and assisted by the Marine Department of Malaysia (MARDEP). Apart from the establishment of adequate Oil Spill Response Equipment (OSRE) bases that are strategically positioned throughout the Eastern and Western Coast of the nation, scheduled and periodical training activities for oil spill response (OSR) personnel was also conducted. Such training was to ensure DOE officers involved in OSR were equipped with the necessary knowledge and skills in equipment handling and crisis management. Resolution 7 of the International Convention on Oil Spill Preparedness and Response (OPRC) 1990 provides for an international commitment for training and preparedness. This preparedness and training requirement has been incorporated into the Malaysian NOSCP response system.

In 2007, many levels of OSR trainings and drills were conducted or through joint efforts with other governmental and non governmental organizations such as MARDEP, Oil Companies and Facilities, the Petroleum Industry of Malaysia Mutual Aid Group (PIMMAG) and Port Authorities. Three (3) OSR exercises and courses were coordinated by DOE Bintulu, Sarawak (13 & 14 Jun 2007), Kota Kinabalu, Sabah (18 & 19 April 2007) and Langkawi (3 & 4 September 2007). These training programs were attended by officers from DOE and Marine Department Sarawak, Sabah and Langkawi as well as Maritime Enforcement Agencies and Local Authorities.



JAWATANKUASA TABUNG PUSINGAN BAGI SELAT MELAKA DAN SELAT SINGAPURA (RFC) **STRAITS OF MALACCA AND SINGAPORE REVOLVING FUND COMMITTEE (RFC)**

Pada 11 Februari 1981, satu Memorandum Persefahaman (MoU) telah ditandatangani di antara kerajaan Malaysia, Indonesia, Singapura dan Malacca Straits Council bagi pihak Jepun untuk mewujudkan Tabung Pusingan untuk mengawal kejadian tumpahan minyak yang berpunca dari kapal-kapal yang melayari perairan Selat Melaka dan Singapura.

Pada masa kini, Tabung Pusingan berkenaan ditadbir oleh Maritime and Port Authority (MPA) bagi pihak Singapura untuk tempoh lima (5) tahun mulai 1 April 2006 hingga 31 Mac 2011.

Di antara aktiviti-aktiviti yang dilaksanakan oleh RFC pada tahun 2007 adalah:

- Mesyuarat Pengurusan Jawatankuasa Tabung Pusingan ke-28 telah diadakan dari 21-22 April 2007 di Singapura. Mesyuarat tersebut dihadiri oleh delegasi dari Malaysia [Jabatan Alam Sekitar dan Jabatan Laut Semenanjung Malaysia], Indonesia and Singapura.
- Tiga (3) orang peserta masing-masing dari Malaysia dan Indonesia telah dibiayai ke International Chemical and Oil Pollution Conference and Exhibition (ICOPCE) 2007, di Hotel Shangri-La, Singapura, dari 24-26 September 2007.
- Susulan kepada keputusan mesyuarat Jawatankuasa Tabung Pusingan ke-28, Mesyuarat Teknikal Jawatankuasa Tabung Pusingan telah berlangsung di Singapura pada 6 November 2007 dengan dihadiri oleh delegasi dari Malaysia, Indonesia dan Singapura. Mesyuarat telah mengemaskini Prosedur Operasi Tetap bagi Kawalan Bersama Tumpahan Minyak di Selat Melaka dan Selat Singapura.

On 11 February 1981, a Memorandum of Understanding (MoU) was signed between the Government of Malaysia, Indonesia, Singapore and the Japanese Malacca Straits Council, for the establishment of a Revolving Fund to combat oil spills from vessels plying the Straits of Malacca and Singapore.

The Fund is currently administered by the Maritime and Port Authority of Singapore on behalf of the Republic of Singapore for duration of five (5) years from 1 April 2006 to 31 March 2011.

Among the activities carried out by the RFC in 2007 were:

- 28th Revolving Fund Committee (RFC) Management Meeting was held from 21 to 22 April 2007 in Singapore. Meeting was attended by delegations from Malaysia (Department of Environment and Marine Department), Indonesia and Singapore.
- Three (3) participants from Malaysia and Indonesia were sponsored to the International Chemical and Oil Pollution Conference and Exhibition (ICOPCE) 2007, at Shangri-La Hotel Singapore, from 24-26 September 2007.
- Pursuant to the decision of the 28th Management Meeting, the RFC Technical Meeting was convened in Singapore on 6 November 2007 which was attended by Malaysia, Indonesia and Singapore. The meeting reviewed the Standard Operating Procedure (SOP) for Joint Oil Spill Combat in the Straits of Malacca and Straits of Singapore.



Mesyuarat Teknikal Jawatankuasa Tabung Pusingan, 6 November 2007, Singapura
Revolving Fund Committee Technical Meeting, 6th November 2007, Singapore.



PENCEMARAN MARIN
MARINE POLLUTION

Pada tahun 2007, terdapat 30 aduan kes pencemaran marin berpunca daripada tumpahan minyak dilaporkan; 10 kes dikesan di Laut China Selatan, 11 di Selat Melaka dan sembilan (9) di Selat Johor **(Jadual 4.13)**. Kebanyakan kejadian tumpahan minyak adalah kecil dan tidak melibatkan kerja-kerja pembersihan.

Tindakan rondan yang berterusan oleh Agensi Penguatkuasaan Perundangan Maritim (APPM) dan operasi bersepadu telah dipertingkatkan dalam menangani kejadian pelepasan dan pembangunan haram sisa minyak ke dalam perairan Malaysia.

Operasi bersepadu penguatkuasaan marin yang dijalankan di perairan Malaysia di antara Agensi Penguatkuasaan Perundangan Maritim Kebangsaan dan negara jiran bagi menangani pelbagai isu termasuk pencemaran marin.

In 2007, 30 cases of marine pollution from oil spills were reported; 10 cases in the South China Sea, 11 in the Straits of Malacca and nine (9) in the Johor Straits **(Table 4.13)**. Most of the oil spill incidents were minor and did not require clean up.

Continuous surveillance by Maritime Law Enforcement Agencies (MLEA) and Joint Marine Enforcements were increased to overcome illegal discharges and dumping of oily waste into Malaysian Waters.

Continuous joint marine enforcements were conducted in Malaysian Waters with National Maritime Law Enforcement Agencies and neighboring countries to tackle various maritime issues including marine pollution.



Pencemaran Marin Berpunca Daripada Tumpahan Minyak
Marine Pollution from Oil Spills



Jadual 4.13 JAS: Kejadian Pencemaran Minyak, 2007
Table 4.13 DOE: Oil Pollution Incidents, 2007

LOKASI/ LOCATION	KAWASAN/ AREA		BIL. KES/ NO. OF CASES
Laut China Selatan/ South China Sea	Perairan Malaysia Malaysia Territory	Semenanjung/ Peninsular	7
		Malaysia Timur/ East Malaysia	3
Laut Sulu/ Sulu Sea	Zon Ekonomi Eksklusif (EEZ)/ Exclusive Economic Zone (EEZ)		0
Selat Melaka/ Straits of Malacca	Perairan Malaysia/ Malaysia Territory	Sabah	0
Selat Johor/ Straits of Johor	Perairan Malaysia/ Malaysia Territory		11
	Zon Ekonomi Eksklusif (EEZ)/ Exclusive Economic Zone (EEZ)		0
	Perairan Malaysia Malaysia Territory	Bahagian Barat/ West Part	2
		Bahagian Timur/ East Part	7
Jumlah/ Total			30



Tinjauan ke Kawasan Pantai Tercemar
Survey to Polluted Beach Area



PENGURUSAN BUANGAN TERJADUAL SCHEDULED WASTES MANAGEMENT

Import dan Eksport Buangan Terjadual

Pada tahun 2007, sebanyak lapan (8) Kebenaran Bertulis telah dikeluarkan untuk mengimport 133,074 tan metrik buangan untuk tujuan penggunaan sebagai bahan mentah industri **(Jadual 4.14)**. Buangan yang diimport ialah buangan gipsum dari loji janakuasa, sanga kuprum, asid terpakai, buangan kaca daripada tiub sinar katod dan enapcemar kalsium hidroksida. Sejumlah 7,108 tan metrik buangan terjadual telah dieksport untuk tujuan pemerolehan kembali **(Jadual 4.15)**. Buangan yang dieksport kebanyakannya terdiri daripada enapcemar hidroksida logam, buangan elektrik dan elektronik, sanga zink dan mangkin terpakai daripada 57 pengeluar buangan untuk pemerolehan kembali logam di luar negara **(Jadual 4.16)**.

Kebenaran Bertulis dan Lesen Premis Yang Ditetapkan

Pada tahun 2007, sebanyak 68 Kebenaran Bertulis telah diluluskan oleh Ketua Pengarah untuk pembinaan kemudahan pengolahan dan pelupusan buangan terjadual. Kebenaran Bertulis berkenaan telah diberi kepada 35 kemudahan pemerolehan kembali separa (e-waste), 18 kemudahan pemerolehan kembali (bukan e-waste), 11 kemudahan pemerolehan kembali penuh (e-waste) dan 4 kemudahan penstoran luar tapak.

Sejumlah 609 lesen diluluskan kepada kemudahan baru dan kemudahan sediaada untuk pemerolehan kembali luar tapak, penstoran luar tapak-pengangkutan, penunu, buangan terjadual, pengolahan atas tanah, pengolahan luar tapak dan tapak pelupusan selamat **(Jadual 4.17)**.

Import and Export of Scheduled Wastes

In 2007, eight (8) Written Approvals were issued for the import of 133,074 tonnes of wastes for use as raw materials in industrial processes **(Table 4.14)**. The imported wastes comprised of copper slag, waste gypsum arising from power plant, copper slag, spent acid, waste glass from cathode ray tube and calcium hydroxide sludges. A total of 7,108 tonnes of scheduled wastes were exported for recovery operations **(Table 4.15)**. The exported wastes were derived from 57 waste generators and comprised mainly of metal hydroxide sludges, electrical and electronic wastes, zinc dross and spent catalyst destined for metal recovery in foreign countries **(Table 4.16)**.

Written Permission and Licenses for Prescribed Premises

In 2007, 68 Written Permissions were granted by the Director General for the construction of treatment and disposal facility for scheduled wastes; 35 off-site partial recovery plants (e-waste), 18 off-site recovery plants (non e-waste), 11 off-site full recovery plants (e-waste) and 4 off-site storage facilities.

A total of 609 licences were issued for both existing and new facilities for off-site recovery, off-site storage-transportation, scheduled wastes incinerators, land treatment, off-site treatment and secured landfills **(Table 4.17)**.



Jadual 4.14 JAS: Kuantiti, Jenis dan Sumber Buangan Terjadual Yang Diimport (Tan), 2003-2007
Table 4.14 DOE: Quantity, Types and Sources of Scheduled Wastes Imported (Tonnes), 2003-2007

Jenis Buangan/ Type of waste	Tahun/Year	2003	2004	2005	2006	2007
	Negara/Country					
Sanga Kuprum/ Copper Slag	Singapura/Singapore	52,283	58,723	58,774	33,674	28,400
Sanga Peleburan/ Granulated Blast Furnace Slag	Singapura/Singapore	-	70	-	0	0
	Jepun/Japan	234,644	293,614	241,872	0	0
	China/China	17,363	-	-	0	0
Buangan Gypsum Dari Janakuasa/ Waste Gypsum from Power Plant	Singapura/Singapore	0	0	0	132,833	84,890
Buangan Kaca CRT/ Waste Glass from CRT	Amerika Syarikat/ United States	0	0	0	4,628	14,966
Asid Terpakai/ Spent Ultra High Acid	Singapura/Singapore	0	0	0	1,016	3,276
Mangkin Terpakai/ Spent Catalyst	Singapura/Singapore	1,108	1,108	6,000	0	0
Sanga Kalsium Hidroksida/ Sludge Calcium Hydroxide	Singapura/Singapore	0	0	0	0	1,542
Jumlah (Tan)/ Total (Tonnes)		305,398	353,515	306,646	172,151	133,074



Penstoran buangan terjadual yang teratur
Regular Storage of Scheduled Wastes



Penstoran buangan terjadual yang tidak teratur
Irregular Storage of Scheduled Wastes



Jadual 4.15 JAS: Kuantiti dan Jenis Buangan Terjadual Yang Dieksport [Tan], 2003-2007
Table 4.15 DOE: Quantity and Types of Scheduled Wastes Exported [Tonnes], 2003-2007

Jenis Buangan/Type of Waste	Tahun/Year	2003	2004	2005	2006	2007
Enapocemar Hidroksida Logam/ Metal Hydroxide Sludge		1,451	2,494	2,288	1,769	2,592
Mangkin Terpakai/ Spent Catalyst		693	722	215	645	794
Bahan Letupan Terpakai/ Used Blasting Material		-	25	-	105	120
Dross Zink/ Zinc Dross		-	-	2,347	1,082	1,050
Buangan Bateri Nikel-Kadmium/ Waste of Nickel Cadmium Battery		217	103	272	117	-
Toner Terpakai/ Used Toner		-	-	-	139	47
Buangan Mengandungi Formaldehid/ Waste Containing Formaldehyde		-	-	-	24	132
Buangan Elektrikal & Elektronik/ Electrical & Electronic Wastes		-	-	90	1,925	2,350
Buangan Mengandungi Merkuri/ Solid Waste Containing Mercury Compound		-	-	-	-	23
Bekas-bekas Terpakai Mengandungi Bahan Kimia/ Used Drums Containing Chemicals		-	10	12	-	-
Jumlah [Tan]/ Total [Tonnes]		2,361	3,354	5,224	5,806	7,108



Mesin Pemisah Buangan Elektronik (E-Waste)
E-Waste Separator Machine



Jadual 4.16 JAS: Kuantiti dan Destinasi Buangan Terjadual yang Dieksport (Tan), 2003-2007
Table 4.16 DOE: Quantity and Destination of Scheduled Wastes Exported [Tonnes], 2003-2007

Negara Pengimport/Importing Country	2003	2004	2005	2006	2007
Amerika / America	60	25	-	1,847	1,721
Australia / Australia	209	-	-	-	-
Filipina / Philippines	-	1,000	1,000	1,280	-
Finland / Finland	23	190	-	381	360
Belgium / Belgium	140	51	-	119	807
Kanada / Canada	-	80	-	-	-
Holland / Holland	232	295	-	-	-
Itali / Italy	28	-	-	98	92
Jepun / Japan	1,006	1,019	1,793	660	2,092
Jerman / Germany	349	476	492	537	1,681
Korea Selatan / South Korea	118	-	-	117	-
Perancis / France	98	189	272	-	-
Singapura / Singapore	-	23	14	10	11
Sweden / Sweden	7	6	8	21	35
China / China	-	-	-	79	-
Afrika Selatan / South Africa	-	-	1,555	424	140
Thailand / Thailand	-	-	90	233	136
Estonia / Estonia	-	-	-	-	33
Jumlah (Tan) / Total (Tonnes)	2,361	3,354	5,224	5,806	7,108

Jadual 4.17 JAS: Lesen-Lesen Yang Dikeluarkan Bagi Kemudahan Pengolahan dan Pelupusan Buangan Terjadual, 2007
Table 4.17 DOE: Licensed Scheduled Waste Treatment and Disposal Facilities, 2007

Negeri / State	Kemudahan / Facility							Bil. Lesen / No. of License	Bil. Premis / No. of Premises
	A	B	C	D	E	F	G		
JOHOR	39	-	42	6	-	-	-	87	45
KEDAH	61	-	23	1	-	1	-	86	25
MELAKA	21	-	22	1	-	-	-	44	21
N.SEMBILAN	15	1	15	3	1	2	2	39	22
PAHANG	4	-	6	1	-	-	-	11	6
PERAK	20	-	17	2	-	-	-	39	20
PULAU PINANG	46	-	44	3	-	-	-	93	48
SABAH	9	-	-	5	-	-	-	14	12
SARAWAK	17	7	8	10	1	1	2	46	25
SELANGOR	60	1	50	4	-	-	-	115	63
TERENGGANU	2	-	3	4	-	1	-	10	6
WP KL	11	-	6	-	-	-	-	17	12
WP LABUAN	5	1	-	1	1	-	-	8	8
Jumlah / Total	310	10	236	41	3	5	4	609	313

NOTA:

- A Penstoran Luar Tapak-Pengangkutan / Off Site Storage-Transport
- B Penstoran Luar Tapak / Off Site Storage
- C Pemerolehan Kembali Luar Tapak / Off Site Recovery
- D Insinerator Buangan Terjadual / Scheduled Waste Incinerator
- E Pengolahan Di Atas Tanah / Landfarm
- F Tapak Pelupusan Selamat / Secured Landfill
- G Pengolahan Luar Tapak / Off Site Treatment



PENGUATKUASAAN TERHADAP AKTIVITI PEMBAKARAN TERBUKA ENFORCEMENT AGAINST OPEN BURNING ACTIVITIES

Sepanjang tahun 2007, semua pejabat JAS Negeri telah meneruskan operasi rondaan di kawasan yang cenderung berlaku kebakaran. Sejumlah 4,365 kes pembakaran terbuka yang dikesan dan disiasat termasuk hotspot yang dikesan melalui satelit **(Jadual 4.18 & 4.19)**.

Kejadian pembakaran terbuka sering berlaku di kawasan pertanian (1,412), ladang (540), industri (245) dan belukar (204) terutamanya semasa cuaca panas dan kering iaitu pada bulan Februari (431), Mac (523), Julai (482) dan Ogos (777). Daripada 4,365 kes pembakaran terbuka tersebut, 350 kes telah dikompaun sebanyak RM 634,400.00 dan 11 kes telah dikenakan tindakan mahkamah.

Pengawasan Melalui Udara

Program Pengawasan Udara masih lagi diteruskan pada tahun 2007 untuk mengawasi dan mengesan kejadian pencemaran alam sekitar seperti aktiviti pembakaran terbuka, pelepasan dari industri, pencemaran pantai dan laut, aktiviti pembukaan tanah tinggi dan pembangunan di pulau-pulau. Maklumat mengenai aktiviti pencemaran alam sekitar yang dikesan melalui pengawasan dari udara ini disalurkan terus ke bilik operasi JAS untuk diambil tindakan penguatkuasaan oleh pegawai penguatkuasa di lapangan.

Sejumlah RM 2 juta diperuntukkan di bawah Projek Pembangunan pada tahun 2007 untuk pelaksanaan program ini. Di bawah program ini, sebanyak 268 bilangan penerbangan yang melibatkan 734.67 jumlah jam penerbangan telah dilaksanakan.

Throughout 2007 DOE State Offices continued to conduct daily ground surveillance of fire prone areas. A total of 4,365 open burning cases were investigated, including hotspots detected via satellites **(Table 4.18 & 4.19)**.

Frequent open burning incidents were found to occur in agricultural areas (1,412), plantations (540), industries (245) and bushes (204) especially during the hot and dry period in the month of February (431), March (523), July (482) and August (777). Out of 4,365 open burning cases detected, 350 cases were issued compounds amounting to RM 634,400.00 and 11 cases were prosecuted in court.

Airborne Surveillance

The National Airborne Surveillance Programme continued in 2007 to monitor and detect environmental pollution due to open burning activities, emission from industries, coastal and marine pollution, land clearing activities on highland and island development. Information on environmental pollution activities detected from the air would be transmitted directly to the DOE operation room for follow up on enforcement actions by ground surveillance staff.

A development budget of RM 2 million was allocated in 2007 for aerial surveillance. In this programme, 268 flights with a total of 734.67 flight hours were undertaken.



Status Serta Pematuhan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978

Sepanjang tahun 2007, sebanyak 4,852 lawatan penguatkuasaan ke atas premis-premis industri (industri pembuatan dan premis yang ditetapkan) telah dijalankan. Jumlah keseluruhan tahap pematuhan kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978 adalah sebanyak 90.64%. Industri penapisan minyak dan penapisan petroleum mencapai peratus pematuhan (100%) dan industri padi merekodkan tahap pematuhan yang paling rendah (79%) **(Rajah 4.9)**. Sebab utama tahap pematuhan yang rendah berkait dengan penyelenggaraan alat kawalan pencemaran yang kurang cekap.

Status of Compliance with the Environmental Quality (Clean Air) Regulations 1978

Throughout 2007, 4,852 enforcement visits to premises (both manufacturing industries and prescribed premises) were conducted. Overall compliance to the Environmental Quality (Clean Air) Regulations 1978 was 90.64%. The edible oil refineries and petroleum refineries achieved full compliance (100%) and the lowest compliance was recorded by the rice (paddy) processing industries (79%) **(Figure 4.9)**. The main reason for low compliance was due to inefficient maintenance of pollution control equipment.

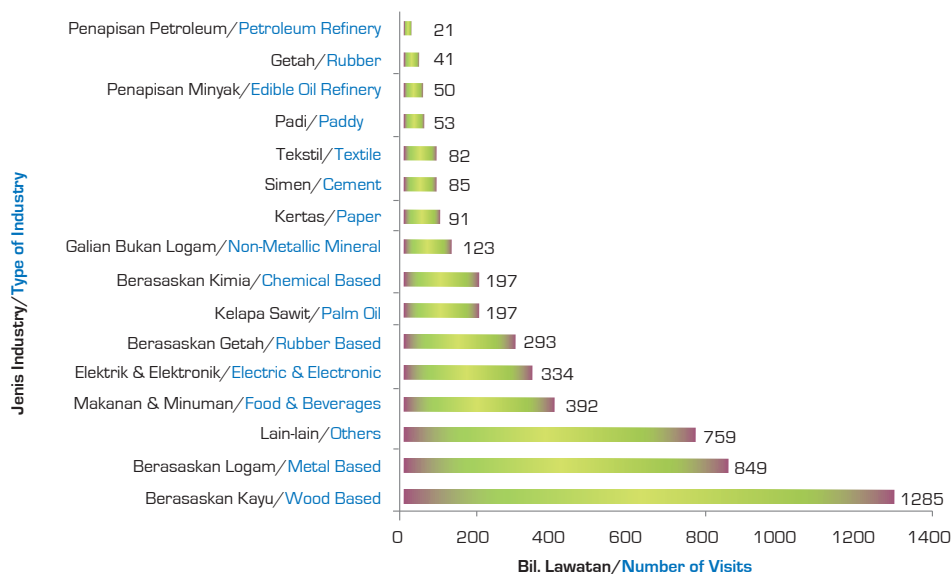


Pencemaran Udara Dari Kilang
Air Pollution from Factory

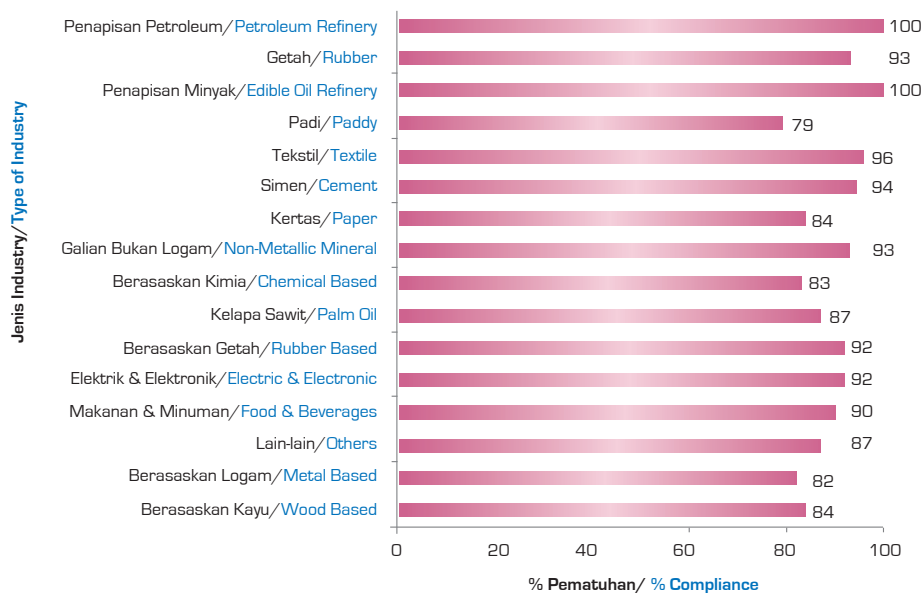


JABATAN ALAM SEKITAR

Kementerian Sumber Asli Dan Alam Sekitar



* Berdasarkan bilangan lawatan penguatkuasaan / Based on total number of enforcement visits



Rajah 4.9 JAS: Status Pematuhan* Premis Perindustrian Terhadap Peraturan-Peraturan (Udara Bersih), 1978, 2007
Figure 4.9 DOE: Compliance* to Environmental Quality (Clean Air) Regulation, 1978, 2007



Jadual 4.18 JAS: Bilangan Kes Pembakaran Terbuka Mengikut Negeri, 2007
Table 4.18 DOE: Number of Open Burning Cases by State, 2007

Negeri/State	Ladang/ Plantation	Pertanian/ Agriculture	Belukar/ Bushes	Hutan/ Forest	Tapak Pembinaan/ Construction Sites	Tapak Pelupusan/ Disposal Sites	Industri/ Industry	Lain-lain/ Others
PERLIS	12	54	6	2	4	4	-	2
KEDAH	10	175	17	-	16	10	20	59
P.PINANG	1	4	-	1			9	31
PERAK	15	11			6	17	1	61
SELANGOR	11	34	9	3	36		36	266
WP KL	-	-		-	53	26	31	72
N.SEMBILAN	5	8	10	1	18	6	12	69
MELAKA	11	19	2	1	13	4	17	43
JOHOR	32	7	15	9	6	9	23	54
PAHANG	10	18	11	29	4	5	10	52
TERENGGANU	18	-	5	23	17	1	21	22
KELANTAN	31	-	9	23	14	9	26	78
SARAWAK	374	1,047	58	30	2	-	16	5
SABAH	10	35	16	33	8	4	21	590
WP LABUAN	-	-	7	-	3	-	2	9
Jumlah/Total	540	1,412	204	313	224	139	245	1,413
Jumlah keseluruhan/Total Amount: 4,365								

Jadual 4.19 JAS: Bilangan Kes Pembakaran Terbuka Bulanan, 2007
Table 4.19 DOE: Number of Open Burning Cases by Month, 2007

Jenis Kebakaran/ Burning Cases	Ladang/ Plantation	Pertanian/ Agriculture	Belukar/ Bushes	Hutan/ Forest	Tapak Pembinaan/ Construction Sites	Tapak Pelupusan/ Disposal Sites	Industri/ Industry	Lain-lain/ Others
Bulan/Month								
Januari/January	8	86	13	18	24	13	23	104
Februari/February	48	130	34	31	25	13	23	127
Mac/March	80	103	41	30	35	26	40	168
April/April	41	50	25	20	17	9	21	176
Mei/May	89	65	30	14	17	14	28	117
Jun/June	31	41	11	8	28	8	15	103
Julai/July	70	170	11	17	21	21	23	149
Ogos/August	102	408	21	29	15	6	23	173
September/September	27	115	5	13	17	8	15	96
Oktober/October	35	227	11	4	6	6	15	92
November/November	9	12	1	2	14	7	11	57
Disember/December	-	5	1	2	5	8	8	51
Jumlah/Total	540	1,412	204	188	224	139	245	1,413
Jumlah keseluruhan/Total Amount: 4,365								



PUNCA-PUNCA BERGERAK (KENDERAAN BERMOTOR) MOBILE SOURCES (MOTOR VEHICLES)

Sehingga akhir tahun 2007, sebanyak 16,813,943 buah kenderaan bermotor telah berdaftar di Malaysia, iaitu pertambahan sebanyak 1,023,211 buah kenderaan (6.48%) berbanding tahun 2006. Pecahan keseluruhan kenderaan bermotor yang berdaftar mengikut jenis kenderaan adalah seperti di **Rajah 4.10**.

Daripada 1,023,211 buah kenderaan baru yang didaftarkan dalam tahun 2007, kategori motosikal dan motokar adalah yang paling tinggi bilangannya iaitu 485,236 unit (47.42%) dan 477,647 unit (46.68%), manakala sebanyak 60,328 unit (5.90%) adalah dari lain-lain jenis kenderaan termasuk lori, bas, van dan sebagainya.

Taburan bilangan kenderaan bermotor yang berdaftar mengikut negeri adalah seperti di **Rajah 4.11**. Wilayah Persekutuan Kuala Lumpur mempunyai bilangan kenderaan yang tertinggi iaitu 3.75 juta (22.29%) diikuti dengan Johor, Selangor, Pulau Pinang dan Perak.

By the end of 2007, there were about 16,813,943 registered motor vehicles in Malaysia, an increase of 1,023,211 (6.48%) compared to 2006. The breakdown of the total registered vehicles according to vehicle types is given in **Figure 4.10**.

Out of 1,023,211 new vehicles registered in 2007, motorcycles and motorcars made up the highest number of 485,236 (47.42%) and 477,647 (46.68%) respectively, while the remaining 60,328 (5.90%) were from the other vehicle types such as lorries, buses, vans and others.

The distribution of registered vehicles throughout the States is given in **Figure 4.11**. The Federal Territory of Kuala Lumpur recorded the highest number of vehicle registered i.e. 3.75 million (22.29 %) followed by Johor, Selangor, Pulau Pinang and Perak.

Kawalan Pelepasan Asap dan Gas dari Kenderaan Bermotor

Pelepasan asap serta gas-gas pencemar seperti karbon monoksida (CO), hidrokarbon (HC), oksida-oksida nitrogen (NOx) serta partikulat (PM) yang dilepaskan melalui ekzos kenderaan bermotor adalah dikawal di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Daripada Enjin Diesel), 1996 dan Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Daripada Enjin Petrol), 1996.

Kawalan Pelepasan Asap Hitam Dari Kenderaan Diesel

Kawalan pelepasan asap hitam berlebihan dari ekzos kenderaan diesel dikawal melalui Program AWASI (Area Watch And Sanction Inspection). Melalui program ini, skuad peronda

Control of Smoke and Gaseous Emissions from Motor Vehicles

Emission of smoke and gaseous pollutants such as carbon monoxide (CO), hydrocarbons (HC), oxides of nitrogen (NOx) and particulate matter (PM) emitted from motor vehicle exhausts are controlled under the Environmental Quality (Control of Emission from Diesel Engines) Regulations, 1996 and the Environmental Quality (Control of Emission from Petrol Engines) Regulations, 1996.

Control of Black Smoke Emission from Diesel Vehicles

Excessive black smoke emission from diesel vehicle exhausts is controlled through the AWASI (Area Watch and Sanction Inspection) Programme. Through this programme, the



JAS akan menjalankan rondaan, pemerhatian dan menjalankan ujian asap hitam ke atas kenderaan-kenderaan diesel. Kompaun diberikan serta merta kepada pemandu dan pemilik kenderaan sekiranya kenderaan tersebut gagal mematuhi had pelepasan asap 50 Unit Asap Hartridge (HSU) dan Perintah larangan menggunakan kenderaan di jalanraya dikeluarkan sekiranya didapati melepaskan asap hitam melebihi 70 HSU. Perintah Larangan tersebut hanya akan dibatalkan setelah kenderaan dibaiki dengan sempurna dan lulus ujian semula asap.

Pada tahun 2007, sebanyak 1,380 kempen penguatkuasaan telah dilaksanakan di bandar-bandar di seluruh negara. Sebanyak 132,649 buah kenderaan diesel telah diperiksa, dan dari jumlah tersebut 4,928 buah kenderaan telah dikompaun kerana gagal mematuhi had pelepasan asap hitam iaitu 50 HSU, termasuk 677 daripadanya telah dikenakan perintah larangan. Kenderaan yang dikenakan Perintah Larangan boleh beroperasi semula setelah dibaikpulihan dan lulus ujian asap oleh JAS. Pada keseluruhannya, peratus pematuhan oleh kenderaan diesel adalah 96.28%.

Bilangan kenderaan diesel yang dikompaun dan peratus pematuhan mengikut jenis kenderaan adalah seperti di **Rajah 4.12**. **Rajah 4.13** pula menunjukkan bilangan kenderaan dikompaun dan peratus pematuhan mengikut negeri. Tindakan mahkamah telah juga diambil ke atas 296 pemandu serta pemilik kenderaan kerana gagal menjelaskan kompaun yang telah dikenakan.

Selain pelaksanaan program AWASI di kawasan bandar, program penguatkuasaan di sepanjang lebuh raya dan jalan utama di seluruh negara juga telah dilaksanakan. Kempen "Kawalan

DOE's mobile squad would go on patrol, observing and testing diesel vehicles emitting excessive smoke. Compounds were issued on-the-spot to the drivers and owners if the vehicle fails to comply with the stipulated smoke limit of 50 HSU and a Prohibition Order (prohibiting road use) will only be issued if the smoke limit exceeds 70 HSU. The prohibition order is in force until the vehicle is repaired accordingly and comply with the stipulated smoke limit.

In 2007, a total of 1,380 enforcement campaigns were conducted in urban areas throughout the country. A total of 132,649 diesel vehicles were visually inspected, out of which 4,928 vehicles were compounded for failing to comply the 50 HSU smoke limit including 677 vehicles were issued with the prohibition order. Vehicles issued with prohibition order were required to undergo smoke retest by the DOE before allowed on the road. Overall compliance of diesel vehicles was 96.28%.

The number of diesel vehicles summoned and their percentage of compliance according to vehicle types is given in **Figure 4.12**. **Figure 4.13** shows the number of vehicles compounded, number of prohibition orders issued and the percentage of compliance according to States. Court prosecutions were also taken against 296 drivers and vehicle owners for failing to settle the compounds issued.

Apart from conducting the AWASI Programme within urban areas, enforcement programme were also conducted along highways and the main roads. A campaign on The "Control of



Pelepasan Kenderaan Berenjin Diesel dan Petrol disepanjang Lebuhraya dan Jalan Utama” telah dirasmikan oleh Y.Bhg. Datuk Suboh Bin Mohd. Yasin, Ketua Setiausaha, Kementerian Sumber Asli dan Alam Sekitar di Plaza Tol Batu 3, Shah Alam pada 4 September 2007.

Kempen ini turut dilaksanakan secara serentak oleh semua pejabat JAS Negeri. Dalam kempen ini, sebanyak 1,902 kenderaan diesel telah diperiksa dan sebanyak 793 kenderaan telah dikompoun manakala 133 pula dikenakan Perintah Larangan menggunakan kenderaan **(Rajah 4.14)**.

Kawalan Pelepasan Gas CO dan HC Dari Kenderaan Petrol

Sepanjang tahun 2007, sejumlah 1,350 buah kenderaan petrol telah diuji pelepasan CO dan HC dengan menggunakan meter gas CO-HC Analyzer melalui kaedah ‘Ujian Idling’. Sebanyak 106 buah kenderaan telah dikompaun kerana gagal mematuhi had pelepasan CO dan HC yang dibenarkan. Secara keseluruhannya, peratus pematuhan adalah 93.15%. Surat amaran dikeluarkan kepada pemandu untuk diambil bacaan ke atas kenderaan bagi memastikan ianya mematuhi ujian tersebut.

Sebanyak 2 kempen kawalan pelepasan gas CO dan HC telah dijalankan sepanjang tahun 2007.

Ujian Kelulusan Jenis (Kenderaan Petrol)

Pada atau selepas 1 Januari 2000, mana-mana model baru kenderaan motor dikehendaki mematuhi standard pelepasan pencemar yang ditetapkan dalam Jadual Ketiga, Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Daripada Enjin Petrol), 1996. Jisim karbon monoksida yang dibenarkan hendaklah tidak melebihi 2.2 g/km, manakala

Emission from Diesel and Petrol Vehicles along Highways and Main Roads” was launched by Datuk Suboh Bin Mohd. Yasin, Secretary General, Ministry of Natural Resources and Environment at the Batu 3 Toll Plaza, Shah Alam on 4 September 2007.

The campaign was also conducted simultaneously by all DOE state offices. From these campaigns, a total of 1,902 diesel vehicles were inspected, 793 vehicles were compounded and 133 issued with Prohibition Orders prohibiting road use **(Figure 4.14)**.

Control of CO and HC Gas Emissions from Petrol Vehicles

Throughout 2007, a total of 1,350 petrol powered vehicles were tested for CO and HC emission using CO-HC gas analyzer by the “Idling Test” method. 106 vehicles were compounded for failing to comply with the stipulated CO and HC limits. The overall percentage of compliance is 93.15%. Warning letters were issued to drivers to take immediate repairs on the vehicles to ensure compliance.

There were two campaigns conducted for the control of CO and HC emissions in 2007.

Type Approval Test (Petrol Vehicles)

As of 1 of January 2000, new models of petrol driven motor vehicles are required to comply with emission standards prescribed in the Third Schedule of the Environmental Quality (Control of Emission from Petrol Engines) Regulations, 1996. The mass of Carbon Monoxide shall not exceed 2.2 g/km while the Hydrocarbon and Nitrogen Oxides combined



kombinasi hidrokarbon dan nitrogen oksida hendaklah tidak melebihi 0.5 g/km. Pada tahun 2007, JAS telah mengeluarkan sebanyak 51 Sijil Ujian Kelulusan Jenis bagi model baru kenderaan yang akan dipasarkan di Malaysia.

Pewujudan Kemudahan Yang DiLuluskan

Bagi kemudahan orang awam untuk menjalankan ujian pelepasan asap dan gas di bengkel-bengkel kereta, JAS telah memberi pengiktirafan kepada bengkel-bengkel yang memenuhi kriteria-kriteria yang ditetapkan iaitu "Kemudahan Yang Diluluskan". Pusat-pusat ini juga berupaya untuk membaiki dengan serta merta kenderaan yang tidak mematuhi standard pelepasan.

Sehingga akhir tahun 2007, sebanyak 53 bengkel serta pusat-pusat pemeriksaan kenderaan di seluruh negara telah diberikan sijil pengiktirafan sebagai "Kemudahan Yang Diluluskan" oleh JAS untuk menguji pelepasan asap hitam kenderaan diesel.

Kawalan Pelepasan Asap Daripada Motosikal

Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Daripada Motosikal), 2003 telah diwartakan dan dikuatkuasa mulai 1 Januari 2004. Peraturan ini telah menggariskan piawai pelepasan seperti berikut :-

- Standard Kelulusan Jenis bagi motosikal baru : 97/24/EC
- Standard Pelepasan [idling] bagi motosikal terpakai : 4.5 % CO (Karbon Monoksida)

Pengimport motosikal adalah dikehendaki mematuhi standard baru pelepasan berkuatkuasa 1 Januari 2005 bagi model baru dan 1 Julai 2005 bagi model sedia ada. Pembuat tempatan

shall not exceed 0.5 g/km. In 2007, DOE had issued 51 Type Approval Test Certificates for new models to be marketed in Malaysia.

Establishment of Approved Testing Facilities

To facilitate public access to workshops for smoke and gaseous emission testing, DOE accredited a number of workshops that had fulfilled the prescribed criteria as "Approved Testing Facilities". Such centers could also serve as immediate repair centers for the non-complying vehicles.

By the end of 2007, a total of 53 workshops and vehicle testing centers throughout the country were registered by DOE as "Approved Testing Facilities" to test black smoke emission from diesel vehicles.

Control of Emission from Motorcycles

The Environmental Quality (Control of Emission from Motorcycles) Regulations, 2003 was gazetted and came into force on 1 January 2004. The emission standards adopted are as follows:-

- Type Approval Emission Standard for new motorcycles : 97/24/EC
- Idling Emission Standard for in-use motorcycles: 4.5% CO (Carbon Monoxide)

Motorcycle importers were required to comply with the new emission standards effective from 1 January 2005 for new models and 1 July 2005 for current models. Local



hendaklah mematuhi standard pelepasan baru berkuatkuasa 1 Julai 2005 bagi model baru dan 1 Julai 2006 bagi model sedia ada. Sepanjang tahun 2007 sebanyak 15 Sijil Kelulusan Jenis telah dikeluarkan kepada pembuat, pemasang dan pengimport motosikal untuk pasaran dalam negara.

Bunyi Bising Kenderaan Bermotor

Pelepasan bunyi bising daripada kenderaan bermotor dikawal di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Bunyi Bising Kenderaan Bermotor), 1987.

Kempen penguatkuasaan bagi mengawal pelepasan bunyi bising dari motosikal telah dilaksanakan secara bersama oleh JAS dan Polis DiRaja Malaysia (Cawangan Trafik). Pada tahun 2007, sejumlah 1,635 buah motosikal telah ditahan untuk menjalani ujian pelepasan bunyi bising. Dari jumlah ini, 185 penunggang motosikal telah dikompaun kerana melanggar had bunyi bising yang dibenarkan. Secara keseluruhannya, peratus pematuhan adalah 88.68% (**Rajah 4.15**).

manufactures would have to comply with the new emission standards effective from 1 July 2005 for new models and 1 July 2006 for current models. Throughout 2007, a total of 15 Type Approval Test Certificates were issued to manufacturers, assemblers and importers of motorcycles for the domestic market.

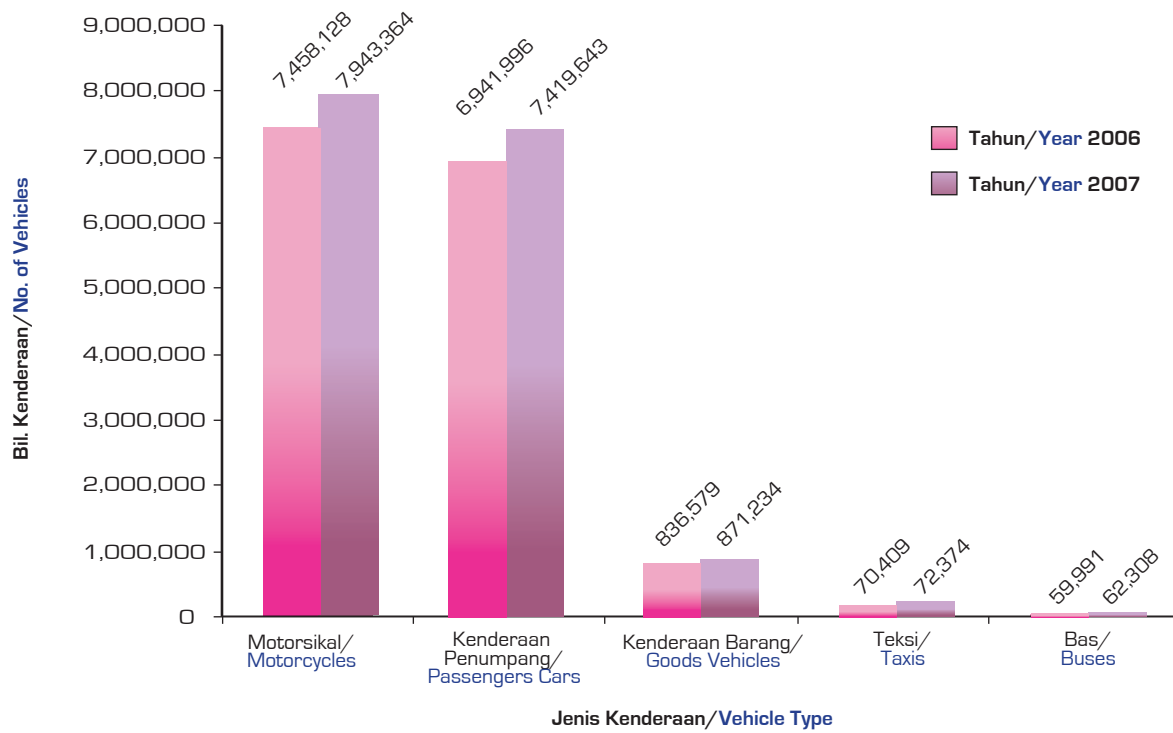
Noise from Motor Vehicles

Noise from motor vehicles is controlled by the Environmental Quality (Motor Vehicle Noise), Regulations 1987.

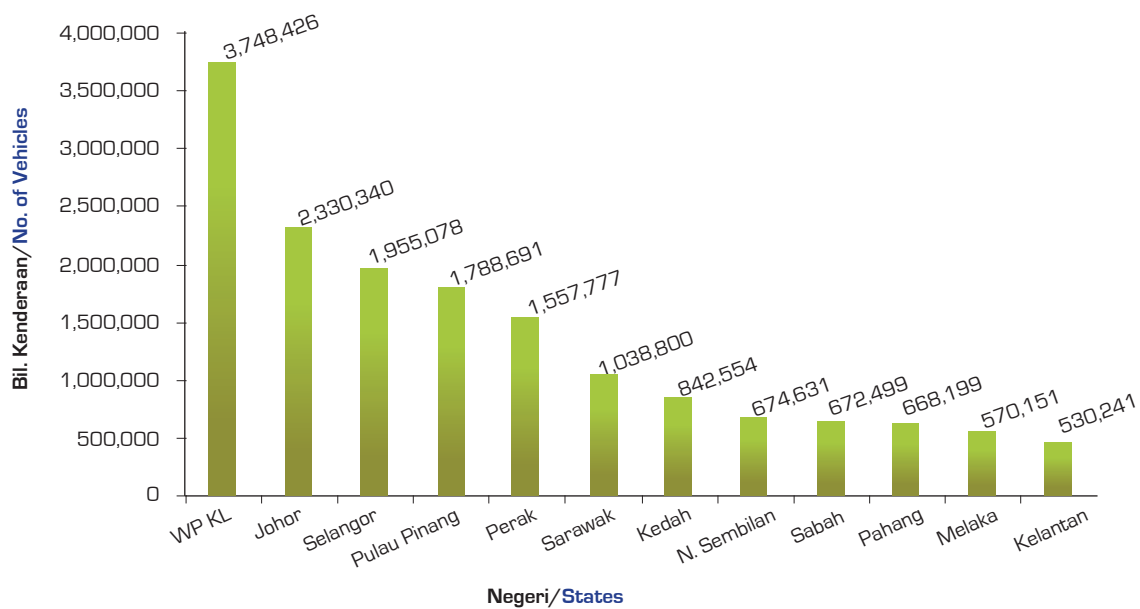
Enforcement campaigns to control excessive noise from motorcycles were jointly conducted by the DOE and the Traffic Police. In 2007, a total of 1,635 motorcycles were stopped for noise inspection. From the above total, 185 motorcyclists were summoned for violating the stipulated noise limits. The overall percentage of compliance was 88.68% (**Figure 4.15**).



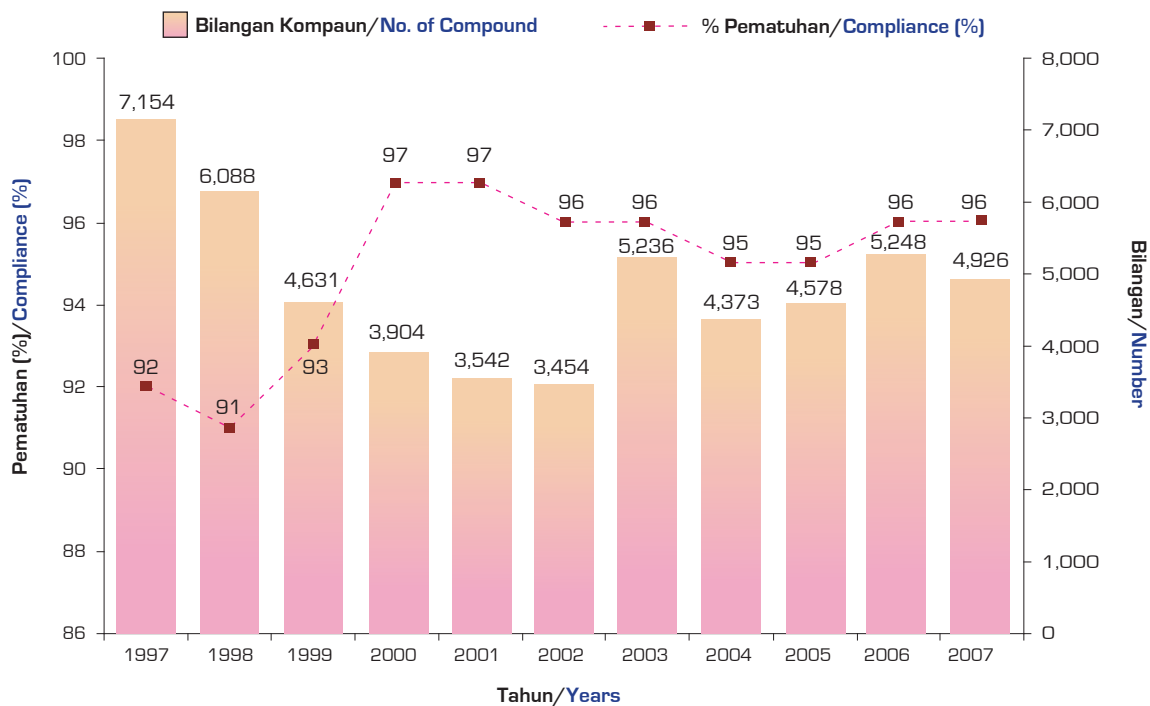
Kenderaan Diesel Diperhatikan Mengeluarkan Asap Hitam
Diesel Vehicles Emitting Excessive Smoke



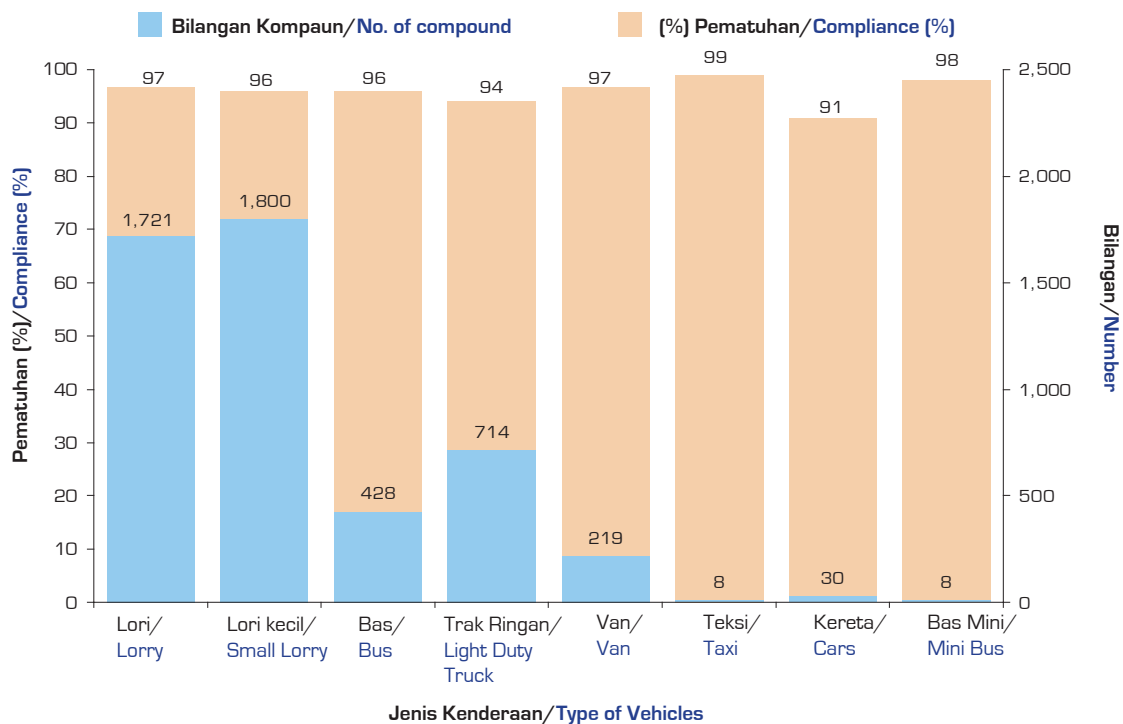
Rajah 4.10 JAS: Bilangan Kenderaan Bermotor Mengikut Jenis, 2007
Figure 4.10 DOE: Number of Motor Vehicles by Type, 2007



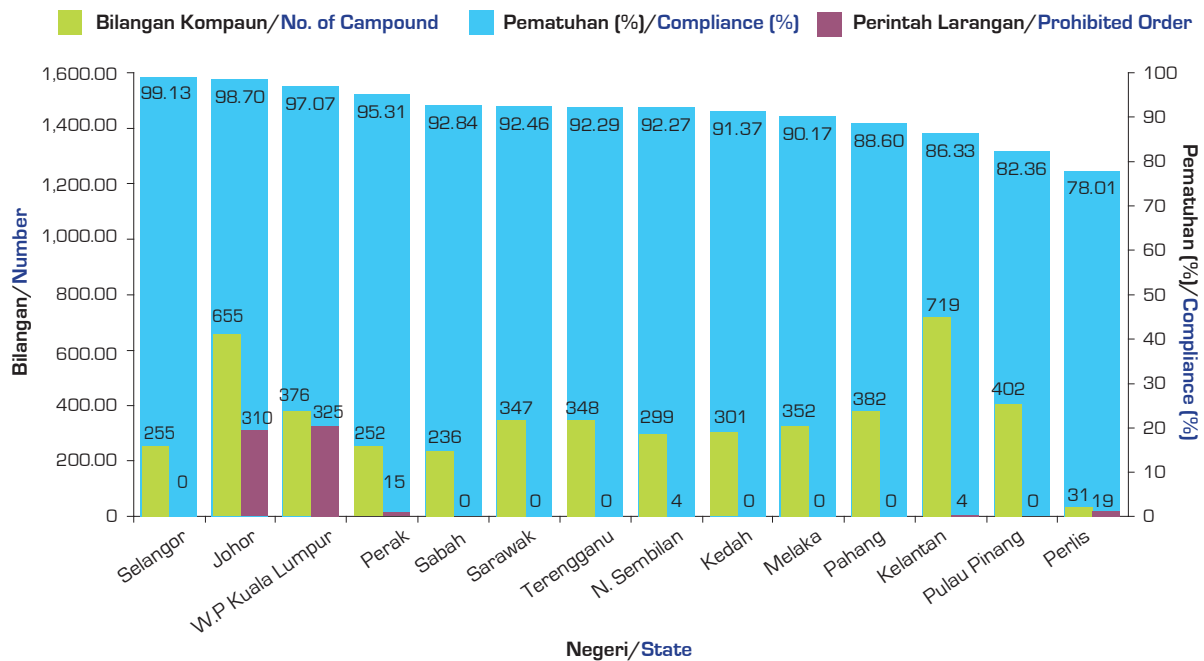
Rajah 4.11 JAS: Bilangan Kenderaan Bermotor Mengikut Negeri, 2007
Figure 4.11 DOE: Number of Motor Vehicles by State, 2007



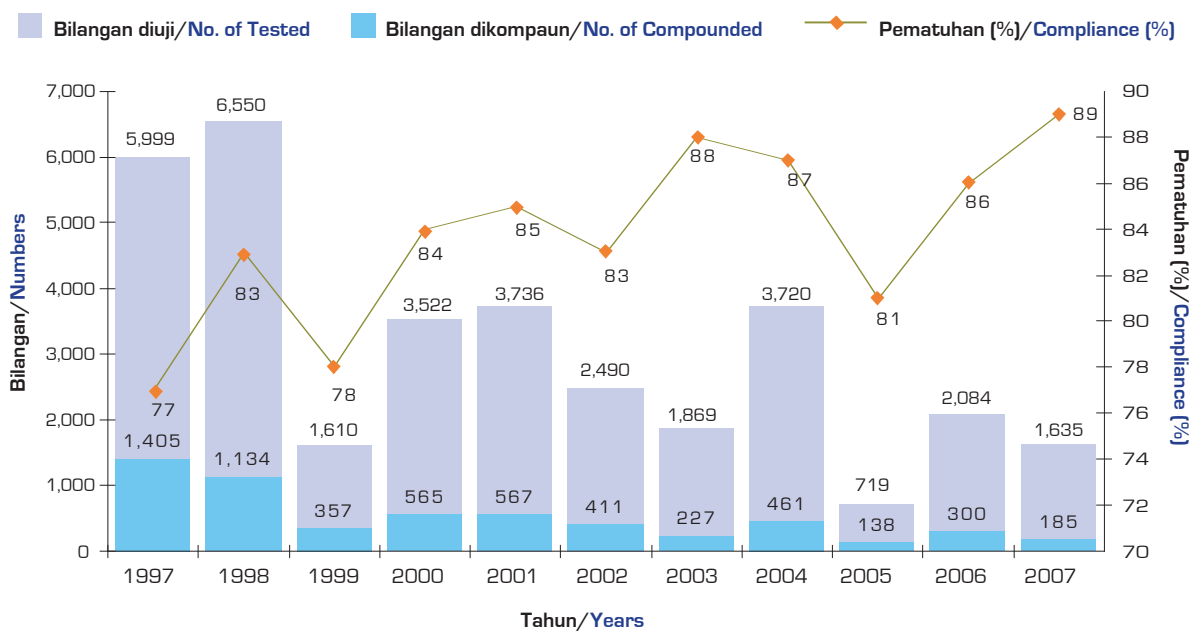
Rajah 4.12 JAS: Penguatkuasaan Pelepasan Asap Hitam Kenderaan Diesel Mengikut Tahun, 1997-2007
Figure 4.12 DOE: Enforcement of Vehicular Black Smoke Emission by Year, 1997-2007



Rajah 4.13 JAS: Penguatkuasaan Pelepasan Asap Hitam Kenderaan Diesel Mengikut Jenis, 1997-2007
Figure 4.13 DOE: Enforcement of Vehicular Black Smoke Emission by Type, 1997-2007



Rajah 4.14 JAS: Penguatkuasaan Pelepasan Asap Hitam Kenderaan Mengikut Negeri, 2007
 Figure 4.14 DOE: Enforcement of Vehicular Black Smoke Emission by State, 2007



Rajah 4.15 JAS: Penguatkuasaan Pelepasan Bunyi Bising Motosikal, 1997-2007
 Figure 4.15 DOE: Enforcement of Motorcycle Noise Emission, 1997-2007



TINDAKAN UNDANG-UNDANG LEGAL ACTION

Pendakwaan

Pada tahun 2007, sejumlah 428 kesalahan telah disabitkan oleh mahkamah dan melibatkan denda berjumlah RM 5,119,850.00 (**Rajah 4.16** dan **Jadual 4.20**). Daripada jumlah ini, sebanyak 170 kes (39.71%) adalah melibatkan kesalahan pelepasan asap oleh kenderaan bermotor melebihi had yang ditetapkan di bawah Seksyen 22(1), AKAS 1974 dengan denda sebanyak RM 269,850.00. Bagi kesalahan mencemar perairan daratan melalui pelepasan effluen melebihi had yang ditetapkan di bawah Seksyen 25(1) AKAS 1974 dengan jumlah denda sebanyak RM 3,050,000.00

Prosecution

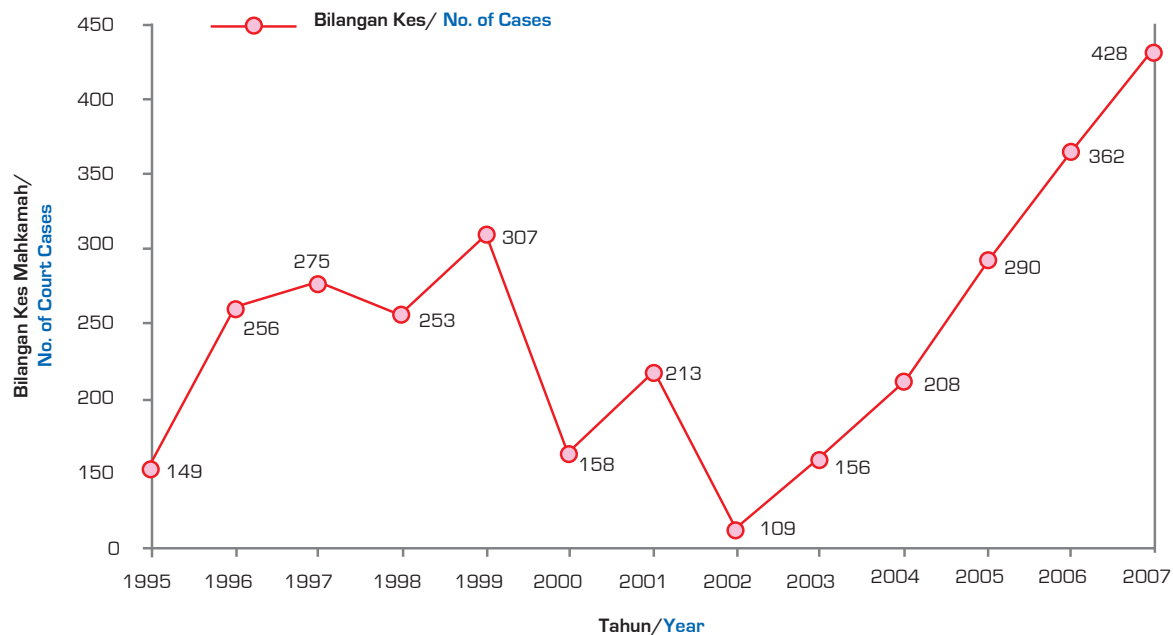
In 2007, a total of 428 offences were prosecuted and fined a total of RM 5,119,850.00 (**Figure 4.16** and **Table 4.20**). Out of this total, 170 (39.71%) cases involved offences from motor vehicles emissions above the stipulated standards under Section 22(1) of the EQA 1974 and fined a total of RM 269,850.00. For polluting inland waters by effluent discharges above the stipulated standards under Section 25(1) of the EQA 1974, 127 (29.67%) cases were prosecuted and fined a total of RM 3,050,000.00

Kompaun

Sejumlah 5,059 kompaun telah dikeluarkan pada tahun 2007 kepada premis dan syarikat untuk pelbagai kesalahan di bawah AKAS, 1974. Daripada jumlah ini, sebanyak 2,985 (59%) adalah kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Dari Enjin Diesel), 1996, sebanyak 1,113 (22%) adalah kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005, sebanyak 529 (10.45%) adalah kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih), 1978, sebanyak 409 (8.08%) adalah kesalahan di bawah Seksyen 29A, AKAS 1974 dan sebanyak 23 (0.45%) adalah kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan dari Enjin Petrol) 1996 (**Rajah 4.17**).

Compounds

A total of 5,059 compounds were issued in 2007 against premises and companies for various offences under EQA, 1974. Out of this total, 2,985 (59%) were offences under the Environmental Quality (Control of Emission from Diesel Engines) Regulations, 1996, 1,113 (22%) were offences under the Environmental Quality (Scheduled Wastes) Regulations, 2005, 529 (10.45%) were offences under the Environmental Quality (Clean Air) Regulations, 1978, 409 (8.08%) were offences under Section 29A of EQA, 1974 and 23 (0.45%) were offences under the Environmental Quality (Control of Emission from Petrol Engines) Regulations, 1996 (**Figure 4.17**).



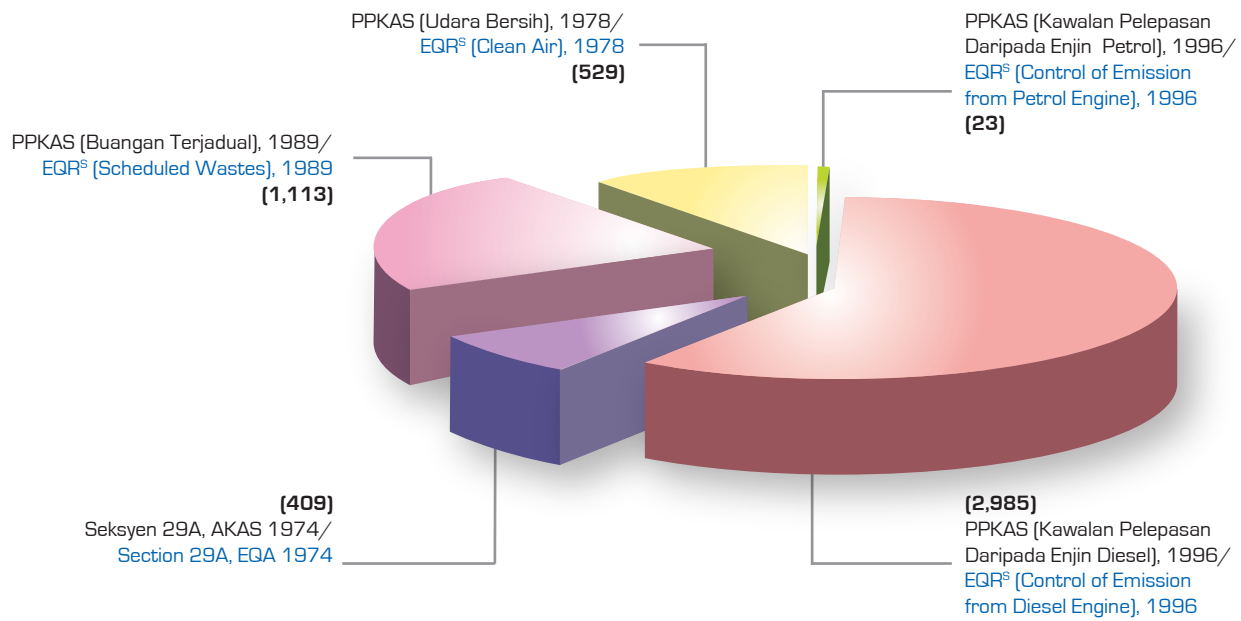
Rajah 4.16 JAS: Bilangan Kes Mahkamah, 2007
Figure 4.16 DOE: Number of Court Cases, 2007

Jadual 4.20 JAS: Kesalahan Disabitkan oleh Mahkamah, 2007
Table 4.20 DOE: Offences Were Prosecuted by Court, 2007

Bil./ No.	Akta Kualiti Alam Sekeliling, 1974/ Environmental Quality Act, 1974	Bilangan Kes Mahkamah/ Number of Court Cases	Denda (RM)/ Fines (RM)
1.	Seksyen 16/Section 16	74	830,000.00
2.	Seksyen 18/Section 18	8	86,000.00
3.	Seksyen 19/Section 19	1	1,000.00
4.	Seksyen 22/Section 22	170	269,850.00
5.	Seksyen 25/Section 25	127	3,050,000.00
6.	Peraturan 18 (KEEP)/Regulation 18 (KEEP)	1	8,000.00
7.	Seksyen 29A/Section 29A	13	155,000.00
8.	Seksyen 34A/Section 34A	8	142,000.00
9.	Seksyen 34B/Section 34B	15	550,000.00
10.	Peraturan 9 (BT)/Regulation 9 (BT)	2	9,000.00
11.	Seksyen 24/Section 24	1	8,000.00
12.	Seksyen 31/Section 31	2	15,000.00
13.	Seksyen 37/Section 37	2	1,500.00
14.	Peraturan 38 (Udara Bersih)/Regulation 38 (Clean Air)	1	3,000.00
15.	Seksyen 16/Section 16	3	18,500.00
Jumlah/Total:		428	5,119,850.00



JABATAN ALAM SEKITAR
Kementerian Sumber Asli Dan Alam Sekiter



Rajah 4.17 JAS: Bilangan Kompaun Yang Diterima oleh JAS, 2007
Figure 4.17 DOE: Number of Compounds Received by DOE, 2007



Kesalahan Di Bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual), 2005
Offences Under Environmental Quality (Scheduled Wastes) Regulations, 2005



MAKLUMBALAS TERHADAP PENGADUAN AWAM RESPONSE TO PUBLIC COMPLAINTS

Jabatan Alam Sekitar telah menerima sebanyak 4,728 aduan pencemaran alam sekitar sepanjang tahun 2007. Daripada jumlah ini, 4,639 kes telah diambil tindakan oleh pejabat JAS Negeri. Sementara, 89 kes aduan adalah di luar bidangkuasa JAS dan telah dirujuk kepada agensi yang berkaitan.

The Department of Environment received 4,728 environmental pollution complaints in 2007. Out of this total number, 4,639 cases were handled by the State DOE Offices. Another 89 cases outside the jurisdiction of DOE were referred to other relevant agencies.

Pada tahun 2007, Selangor direkodkan menerima paling banyak aduan iaitu 962 (20.14%), diikuti dengan Pulau Pinang 535 (11.32%) dan Negeri Sembilan 444 (9.38%). Wilayah Persekutuan Labuan pula direkodkan menerima paling sedikit aduan iaitu 22 (0.48%) dan diikuti dengan Perlis 38 (0.80%) aduan.

In 2007, Selangor recorded the highest number of complaints received 962 (20.14%), followed by Pulau Pinang 535 (11.32%) and Negeri Sembilan 444 (9.38%). Federal Territory of Labuan recorded the least number of complaints received 22 (0.48%) followed by Perlis 38 (0.80%).

Seperti pada tahun-tahun sebelumnya, kebanyakan aduan yang diterima adalah berkaitan dengan pencemaran udara iaitu 3,466 (74.71%), diikuti dengan pencemaran air sebanyak 550 (11.85%), pencemaran bunyi sebanyak 189 (4.07%), kes pelupusan haram buangan terjadual sebanyak 177 (3.82%), kes berkaitan pencemaran tanah sebanyak 18 (0.39%), kes tumpahan minyak sebanyak 56 (1.21%), dan lain-lain aduan sebanyak 272 (5.86%) (**Rajah 4.18**).

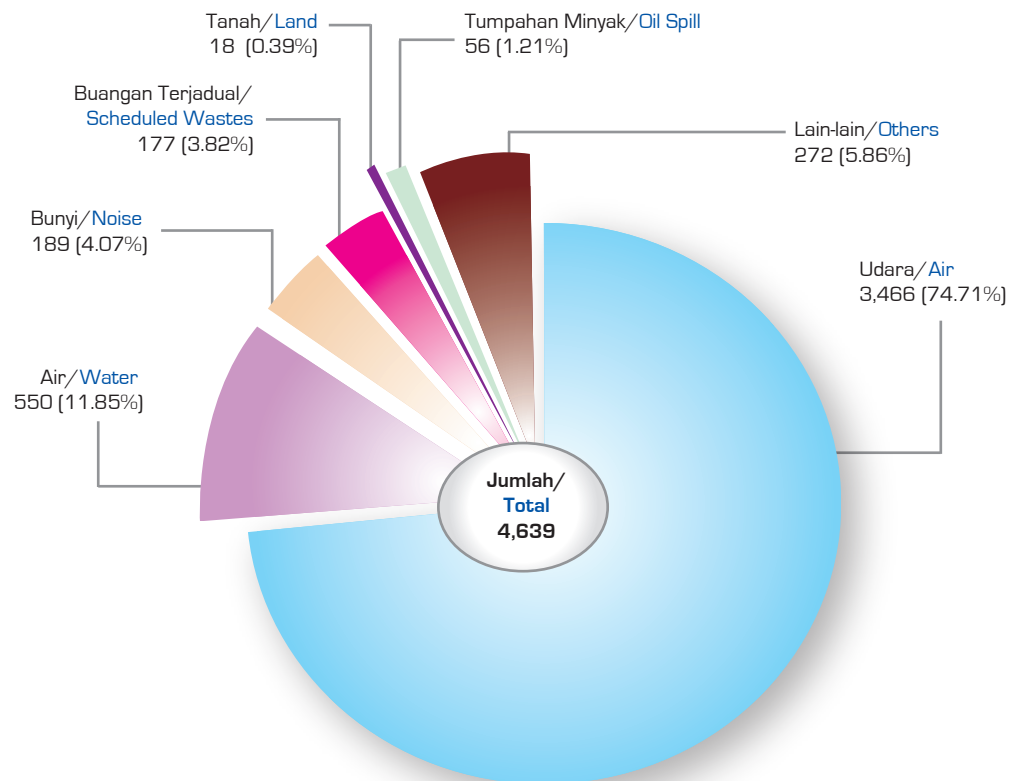
As in the previous years, most of the complaints received are related to air pollution 3,466 (74.71%), followed by 550 (11.85%) water pollution, 189 (4.07%) noise pollution, 177 (3.82%) illegal dumping of scheduled or toxic wastes, 18 (0.39%) land pollution, 56 (1.21%) oil spillage and 272 (5.86%) others (**Figure 4.18**).



Pencemaran Air
Water Pollution



JABATAN ALAM SEKITAR
Kementerian Sumber Asli Dan Alam Sekiter



Rajah 4.18 JAS: Jenis Aduan Pencemaran, 2007
Figure 4.18 DOE: Type of Complaints, 2007



Pencemaran Sungai River Pollution



Hakisan Tanah di Kawasan Tanah Tinggi
Soil Erosion in Highland Areas



BAB 5

Chapter 5





PROMOSI KESEDARAN DAN PENDIDIKAN ALAM SEKITAR PROMOTION OF ENVIRONMENTAL EDUCATION AND AWARENESS

Bandar Lestari-Anugerah Alam Sekitar 2006/2007

Jabatan Alam Sekitar, Kementerian Sumber Asli dan Alam Sekitar dengan kerjasama Jabatan Kerajaan Tempatan, Kementerian Perumahan dan Kerajaan Tempatan dan Institut Alam Sekitar dan Pembangunan (LESTARI), UKM yang menyediakan sokongan teknikal telah memulakan anugerah ini untuk memberi pengiktirafan kepada pihak berkuasa tempatan yang telah berusaha menggabungkan dimensi alam sekitar di dalam perancangan, pentadbiran dan pelaksanaan dasar, program-program dan aktiviti-aktivitinya.

Penilaian ini berasaskan kepada lima [5] kriteria: i) Persekitaran Fizikal, ii) Inisiatif Ekologi, iii) Perkhidmatan Alam Sekitar, iv) Pentadbiran Alam Sekitar dan v) Aktiviti Pendidikan dan Kesedaran. Untuk tahun 2006/2007, sebanyak 47 buah Pihak Berkuasa Tempatan telah menyertainya di bawah kategori-kategori berikut:

1. Kategori 1-PBT Ibu Negeri [15]
2. Kategori 2-PBT Majlis Perbandaran/Bandaraya [17]
3. Kategori 3-Majlis Daerah [15]

Program Kitar Semula Telefon Bimbit Terpakai

Pada tahun 2007, Jabatan Alam Sekitar telah meneruskan lagi kempen "Kitar Semula Bateri dan Telefon Bimbit Terpakai". Sebanyak 370 tong bateri telah ditempatkan di pejabat-pejabat kerajaan dan swasta, syarikat-syarikat telekomunikasi, institusi pengajian tinggi dan pusat membeli belah di sekitar Lembah Klang dan Putrajaya.

Pelbagai bahan promosi seperti risalah-risalah, brosur, poster dan rantai kunci telah

Bandar Lestari-Environment Award 2006/2007

The Department of Environment, Ministry of Natural Resources And Environment in collaboration with the Local Government Department, Ministry of Housing and Local Government and Institute for Environment and Development (LESTARI), UKM providing technical support initiated this award to give recognition to Local Authorities for incorporating environment dimension in planning, administration and implementation of policies, programs and activities.

Assessment was based on five [5] criteria: i) Physical Environment, ii) Ecological Initiatives, iii) Environmental Services, iv) Environmental Governance and v) Education and Awareness activities. For 2006/2007, 47 local authorities participated under the following categories:

1. Category 1-Capital Cities [15]
2. Category 2-Town Councils/Municipalities [17]
3. Category 3-District Councils [15]

A Recycle Used Hand Phone Programme

In 2007, the Department of Environment continued the "Recycling of Used Hand Phone and Battery" campaign. 370 bins were distributed to government and private offices, telecommunications companies, higher learning institutions and shopping malls in the Klang Valley and Putrajaya.

Promotion materials such as pamphlets, brochures, posters and keychains were



diedarkan kepada orang awam dalam usaha meningkatkan pengetahuan dan kesedaran mereka dalam mengurus dan melupuskan buangan terjadual.

Seminar Wake up Call: Global Warming on Bottom Line

Selaras dengan tema Hari Alam Sekitar Sedunia 2007, *Melting Ice-A Hot Topic?*, satu seminar 'Wake up Call: Global Warming on Bottom Line' telah diadakan pada 28 Ogos 2007 di Petaling Jaya, Selangor. Objektif utama seminar adalah untuk meningkatkan kesedaran pihak industri terhadap isu pemanasan global.

Seramai 130 orang peserta yang terdiri daripada wakil swasta/industri (104), pertubuhan bukan kerajaan/ahli akademik (10), dan wakil dari Jabatan Alam Sekitar (16) telah menghadiri seminar tersebut. Tiga (3) kertas kerja telah dibentangkan semasa seminar tersebut: Pemanasan Global di Kutub oleh Datin Paduka Sharifah Mazlina Syed Abdul Kadir, *Addressing Global Warming-An Opportunity to Improve Your Bottom Line* oleh En. Azman Zainal Abidin, Pusat Tenaga Malaysia dan *Ecological Footprints-An Overview* oleh Environment Protection Society for Malaysia (EPSM). Video 'An Inconvenient Truth' telah ditayangkan untuk memberikan kesedaran kepada peserta mengenai seriusnya isu pemanasan global yang telah menyebabkan peningkatan suhu bumi.

Anugerah Langkawi

Anugerah Langkawi Tahun 2007 telah diberikan kepada Dato' Dr. Mohammed Anwar a/I Fazal Mohammed yang merupakan seorang aktivis ekologi dan pemuliharaan alam sekitar. Beliau juga telah mengasaskan beberapa pertubuhan berkaitan alam sekitar seperti Sustainable Penang Initiative (SPI), Consumers' Association of Penang (CAP) dan pengasas bersama Pesticide Network International (PAN). Pecalonan beliau adalah berdasarkan usaha

distributed to the public to increase their knowledge and awareness on the management and disposal of scheduled waste.

Wake up Call: Global Warming on Bottom Line Seminar

Based on the theme for World Environment Day 2007, *Melting Ice-A Hot Topic?* a seminar 'Wake up Call: Global Warming on Bottom Line' was held on 28 August 2007 in Petaling Jaya, Selangor. The aim objective of this seminar is to increase awareness among the industries on global warming.

130 participants from the private/industrial sector (104), non-government organizations/ academicians (10) and representatives from the Department of Environment (16) attended the seminar. Three (3) papers were presented in the seminar: *Pemanasan Global di Kutub* by Datin Paduka Sharifah Mazlina Syed Abdul Kadir, *Addressing Global Warming-An Opportunity to Improve Your Bottom Line* by En. Azman Zainal Abidin, Pusat Tenaga Malaysia, and *Ecological Footprints-An Overview* by Environment Protection Society for Malaysia (EPSM). A video presentation entitled 'An Inconvenient Truth' was also screened to create awareness to the participants on the impacts of global warming towards the increase of Earth's temperature.

Langkawi Award 2007

The 2007 Langkawi Award was presented to Dato' Dr. Mohammed Anwar a/I Fazal Mohammed, a dedicated activist in ecology and environmental conservation. He also initiated some environmental organisations such as the Sustainable Penang Initiative (SPI), Consumers' Association of Penang (CAP) and also the co-founder of Pesticide Network International (PAN). He was nominated based on his efforts and initiative in environmental conservation,



beliau dalam mempelopori banyak inisiatif alam sekitar bukan sahaja di dalam negara malahan di rantau Asia Pasifik.

Dato' Dr. Mohammed Anwar merupakan penerima Anugerah Langkawi yang ke-16 dan menerima sejumlah wang RM10,000 sebuah plak penghargaan dan sijil pengiktirafan yang ditandatangani oleh Ke Bawah D.Y.M.M. Seri Paduka Baginda Yang di-Pertuan Agong Al-Wathiqu Billah Tuanku Mizan Zainal Abidin Ibni Al-Marhum Sultan Mahmud Al-Muktafi Billah Shah.

Projek Wira Alam

Projek Wira Alam yang telah dimulakan pada tahun 1998 adalah program kesedaran yang dijalankan bersama di antara JAS, Persatuan Pencinta Alam Malaysia (MNS) dan Kementerian Pelajaran Malaysia. Projek ini dibahagikan kepada tiga tahap: Tahap 1 (Wira Diri), Tahap 2 (Wira Komuniti) dan Tahap 3 (Wira Alam). Setiap pelajar perlu menyelesaikan tugas yang ditetapkan di dalam buku aktiviti Projek Wira Alam setiap tahap sebelum ke peringkat seterusnya.

Sejak dilancarkan sehingga tahun 2007, seramai 10,945 pelajar telah menyertai tahap 1 (Wira Diri); sejumlah 1,242 pelajar menyertai tahap 2 (Wira Komuniti); dan 280 pelajar di tahap 3 (Wira Alam).

Pada tahun 2007, JAS dengan kerjasama MNS telah mengadakan satu Perkhemahan Wira Alam Sekolah Rendah Peringkat Kebangsaan di Kuala Kurau, Perak pada 2-4 Oktober 2007 yang bertujuan untuk menyampaikan maklumat kepada pelajar serta meningkatkan pengetahuan serta kemampuan dalam mengendalikan aktiviti alam sekitar di bawah Projek Wira Alam.

Kem Kesedaran Alam Sekitar (KeKAS)

Pada tahun 2007, seramai 3,558 peserta

not only in the country but also in the Asia Pacific region.

Dato' Dr. Mohammed Anwar is the 16th Malaysian to receive the prestigious Langkawi Award which included a cash award of RM10,000 a plaque and a Certificate signed by D.Y.M.M. Seri Paduka Baginda Yang di-Pertuan Agong Al-Wathiqu Billah Tuanku Mizan Zainal Abidin Ibni Al-Marhum Sultan Mahmud Al-Muktafi Billah Shah.

Wira Alam Project

The Wira Alam Project which started in 1998 is a collaborative awareness project between DOE, the Malaysian Nature Society (MNS) and the Ministry of Education. The project is divided into three stages; Level 1 (Wira Diri), Level 2 (Wira Komuniti) and Level 3 (Wira Alam). Each participating student has to complete the tasks provided in the Activity Book at each level before advancing to the next level.

Up till the end of 2007, a total of 10,945 students had participated at Level 1 (Wira Diri); 1,242 students at Level 2 (Wira Komuniti); and 280 students had reached Level 3 (Wira Alam).

In 2007, DOE in collaboration with MNS conducted a "Perkhemahan Wira Alam Sekolah Rendah Peringkat Kebangsaan" in Kuala Kurau, Perak on 2-4 October 2007 to provide information to students and increase their knowledge and capacity to conduct environmental activities under the Wira Alam Project.

Environmental Awareness Camp (KeKAS)

In 2007, a total of 3,558 participants were



involved in 58 environmental awareness camps conducted throughout Malaysia by the Department of Environment including, one camp for trainee teachers. These camps were organized in collaboration with the Ministry Of Education and the State Education Departments. Of the 58 camps conducted, 13 camps were organized for teachers to become facilitators in their schools. The other 45 camps were attended by students from schools and Institute of Higher Learning throughout the country. The modules on Marine, Forest, Highland, Organic Farming, Urbanisation and Oil Palm Plantation Ecosystems were used for this purpose.



Perkemahan Wira Alam Sekolah Rendah Peringkat Kebangsaan di Chalet Peranginan Kuala Gula, Kuala Kurau Perak, 2-4 Oktober 2007.

Camping for School Children National Level in Chalet Peranginan Kuala Gula, Kuala Kurau Perak, 2-4th October 2007.



Kursus Fasilitator Kem Kesedaran Alam Sekitar [KeKAS], Taman Negara Kuala Niah, Sarawak, 23-26 Jun 2007

Course for Facilitator Environmental Awareness Camp (KeKAS) in Taman Negara Kuala Niah, Sarawak, 23-26th June 2007

Pertandingan Debat Alam Sekitar Antara Institusi Pengajian Tinggi (IPT)

Inter-Varsity Environmental Debate

Sejak tahun 1991, Debat Alam Sekitar Antara Institusi Pengajian Tinggi merupakan program tahunan yang dianjurkan oleh JAS dengan kerjasama Majlis Debat Universiti-Universiti Malaysia (MADUM), Dewan Bahasa Dan Pustaka dan Kementerian Pelajaran Malaysia/ Kementerian Pengajian Tinggi Malaysia. Debat Alam Sekitar Antara IPT kali ke-17 ini telah diadakan pada 27-31 Julai 2007 menyaksikan penyertaan sebanyak 22 pasukan debat dari 22 Institusi Pengajian Tinggi di Malaysia. Tuan rumah pada kali ini ialah Universiti Sains Islam Malaysia, Negeri Sembilan.

Since 1991, the Inter-Varsity Environmental Debate had been organised annually by DOE in collaboration with the Malaysian Universities Debate Council (MADUM), Dewan Bahasa dan Pustaka and the Ministry of Education/ Ministry of Higher Education. The 17th Inter-Varsity Environmental Debate from 27-31 July 2007 saw participation from 22 teams from 22 Institutions of Higher Learning in Malaysia. The host institution was Universiti Sains Islam Malaysia, Negeri Sembilan.

Sistem 'power match berkumpulan' (bracket power match) untuk pusingan awal bagi

The bracket power match system was adopted in the preliminary rounds to determine whether



menentukan pasukan yang akan berlawan dan juga peranan mereka (kerajaan/pembangkang). Setiap pasukan akan ditentukan kedudukan (ranking) mereka berdasarkan menang/kalah, juri, margin (julat kemenangan) dan markah keseluruhan.

Pertandingan Peringkat Awal melibatkan enam (6) pusingan. Lapan (8) pasukan terbaik berdasarkan kedudukan akan dipilih untuk ke peringkat suku akhir dan pasukan yang menang akan ke separuh akhir secara kalah mati. Dua (2) pasukan akan ke peringkat akhir.

a team is in the preposition or opposition side. The ranking of each team was based on several criteria such as “winner/loser”, jury, margin and overall score.

All teams took part in the preliminary six (6) rounds. The eight (8) highest ranking teams were then selected to compete in the Quarter-Finals, out of which four (4) qualified for the Semi-finals and eventually two (2) teams entered the Finals.

Jadual 5.1 JAS : Institusi Pengajian Yang Mengambil Bahagian
Table 5.1 DOE : Participating Institutions of Higher Learning

Institusi Pengajian Yang Mengambil Bahagian Participating Institutions of Higher Learning	
• Universiti Malaya (UM) • Universiti Kebangsaan Malaysia (UKM) • Universiti Putra Malaysia (UPM) • Universiti Teknologi Malaysia (UTM) • Universiti Sains Malaysia (USM) • Universiti Utara Malaysia (UUM) • Universiti Islam Antarabangsa Malaysia (UIAM) • Universiti Malaysia Sarawak (UNIMAS) • Universiti Malaysia Sabah (UMS) • Universiti Pendidikan Sultan Idris (UPSI) • Universiti Teknologi Mara (UiTM) • Universiti Kuala Lumpur (UniKL)	• Universiti Sains Islam Malaysia (USIM) • Universiti Malaysia Terengganu (UMT) • Universiti Malaysia Pahang (UMP) • Universiti Teknikal Malaysia Melaka (UTeM) • Universiti Malaysia Perlis (UniMAP) • Universiti Darul Iman Malaysia (UDM) • Universiti Multimedia (MMU) • Universiti Tenaga Nasional (UNITEN) • Universiti Teknologi Petronas (UTP) • Universiti Tun Abdul Razak (UNITAR)

Pertandingan Akhir Debat Alam Sekitar Antara Institusi Pengajian Tinggi 2007 telah diadakan di Dewan Kuliah Pusat, Universiti Sains Islam Malaysia menyaksikan perlawanan di antara Universiti Kebangsaan Malaysia (UKM) dan Universiti Islam Antarabangsa Malaysia (UIAM). UKM diwakili oleh Hasrul Hashim, Khairul Anuar Salim, Muhammad Firdaus Abd. Rahim dan pendebat simpanan, Anis Akrimah A. Rahim. UIAM pula diwakili Nurul Husna Ahmad, Mohd Daud Mat Din, Farah Nor Diayana Samsudin dan pendebat simpanan, Siti Nurfarhana Omar Aziz.

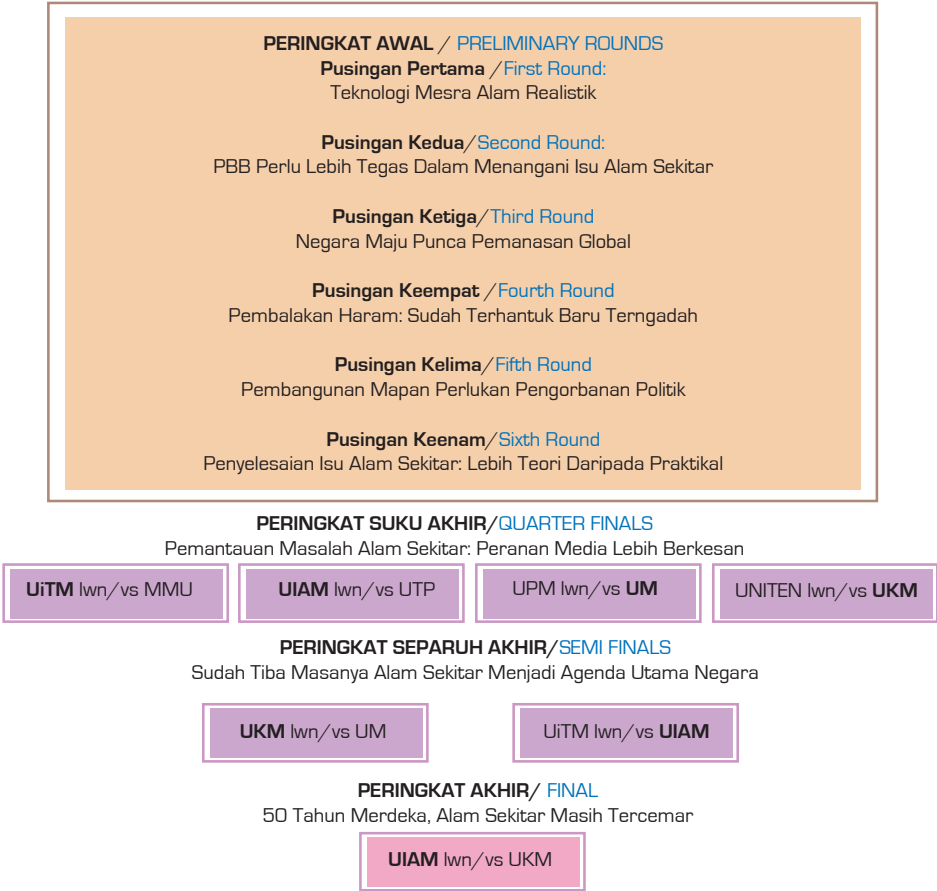
The Finals of the 2007 Inter-Varsity Environmental Debate held at the Dewan Kuliah Pusat of Universiti Sains Islam Malaysia was between Universiti Kebangsaan Malaysia (UKM) and Universiti Islam Antarabangsa (UIAM). UKM was represented by Hasrul Hashim, Khairul Anuar Salim, Muhammad Firdaus Abd. Rahim and Anis Akrimah A. Rahim. UIAM was represented by Nurul Husna Ahmad, Mohd Daud Mat Din, Farah Nor Diayana Samsudin and Siti Nurfarhana Omar Aziz as reserve.



UIAM muncul sebagai johan pertandingan Debat Alam Sekitar 2007, menerima Piala Pusingan Menteri Sumber Asli dan Alam Sekitar serta wang tunai RM 8,000 dan sijil penyertaan. Manakala UKM, sebagai naib johan menerima wang tunai RM 5,000 dan sijil penyertaan. Dua pasukan yang layak ke separuh akhir iaitu Universiti Teknologi MARA (UiTM) dan Universiti Malaya (UM), masing-masing menerima wang tunai RM 1,000 dan juga sijil penyertaan. Pendebat UIAM, Mohd Daud Mat Din muncul Pendebat Terbaik dan menerima Piala Ketua Pengarah Alam Sekitar, beserta wang tunai RM 1,500. Hadiah telah disampaikan oleh Y.B. Dato' S. Sothinathan, Timbalan Menteri Sumber Asli dan Alam Sekitar.

The UIAM team emerged the overall winner of the 2007 Inter-Varsity Environmental Debate, receiving the Minister of Natural Resources and Environment Challenge Trophy, a cash prize of RM 8,000 and certificates of participation. UKM, as runners-up received a cash prize of RM 5,000 and certificates of participation. The two teams which qualified for the semi-finals, namely UiTM and UM each received a cash prize of RM 1,000 and certificates of participation. Mohd Daud Mat Din from UIAM was named the Best Debater and received the Director-General of Environment Trophy, together with a cash prize of RM 1,500. The prizes were given out by Y.B. Dato' S. Sothinathan, the Deputy Minister of the Ministry of Natural Resources and Environment.

Jadual 5.2 JAS: Pusingan Pertandingan Debat Alam Sekitar Antara Institusi Pengajian Tinggi (IPT)
 Table 5.2 DOE: The Rounds of the Inter-Varsity Environmental Debate among Institutions of Highest Learning





**Sustainable School-Environment Award
2007/2008**

The Sekolah Lestari-Anugerah Alam Sekitar Programme, a collaborative environmental awareness programme between the Department of Environment and the Ministry of Education Malaysia with technical support from the Institute of Environment and Development (LESTARI) of Universiti Kebangsaan Malaysia is designed to facilitate and strengthen existing environmental education programmes in schools. Through this initiative the fundamental elements of environmental education can be incorporated directly by teachers and students, and indirectly by local communities through the integration of knowledge, skills and environmental values under the four key components of Management, Curriculum, Co-Curriculum, and Greening.

This programme was launched by the then Honourable Minister of Natural Resources and Environment, Dato' Sri Adenan Hj. Satem and the Honourable Minister of Education, Dato' Sri Hishammuddin Tun Hussein at Sekolah Menengah Jalan Tiga, Bandar Baru Bangi, Selangor on 27 January 2005.



Bagi tujuan mempromosikan program ini, dua dokumen utama telah diterbitkan iaitu buku Asas Pembentukan Sekolah Lestari-Anugerah Alam Sekitar dan Garispanduan Pelaksanaan dan Penilaian Sekolah Lestari-Anugerah Alam Sekitar. Risalah dan poster juga turut diterbitkan dan diedarkan ke semua Jabatan Alam Sekitar Negeri dan Jabatan Pelajaran Negeri. Maklumat mengenai program ini boleh diakses melalui laman web Jabatan: www.doe.gov.my.

Bengkel Penambahbaikan Penilaian dan Penganugerahan Program Sekolah Lestari-Anugerah Alam Sekitar

Dalam persediaan bagi menjalankan proses penilaian, satu bengkel iaitu Bengkel Penambahbaikan Proses Penilaian telah diadakan pada 14-16 Ogos 2007 di Seremban, Negeri Sembilan. Seramai 50 peserta dari Jabatan Alam Sekitar, Jabatan Pelajaran Negeri, Kementerian Pelajaran Malaysia, sektor swasta dan persatuan bukan kerajaan (NGO) telah menyertai bengkel tersebut. Objektif asal bengkel ini diadakan adalah untuk meningkatkan kefahaman berkenaan prosedur-prosedur penilaian dan pelaksanaan program bagi sesi 2007/2008.

For the promotion and facilitation of participation, two guiding documents had been published: 'Basis for Sekolah Lestari-Environment Award' and 'Implementation and Evaluation Guidelines for Sekolah Lestari-Environment Award'. Brochures and posters were also produced and distributed to all State Departments of Environment and State Education Departments. Information can also be accessed through the DOE website: www.doe.gov.my.

Sekolah Lestari-Anugerah Alam Sekitar Evaluation and Improvement Workshop

In preparation for the assessment process, a Workshop To Improve The Assessment Process was conducted on 14-16 August 2007 in Seremban, Negeri Sembilan. Fifty participants (50) from the Department of Environment, State Education Department, the Ministry of Education, the private sector and non-governmental organisations (NGO) participated in the workshop. The objective of this workshop was to enhance understanding of the procedures of evaluation and implementation of this program for the 2007/2008 session.



SEBARAN MAKLUMAT ALAM SEKITAR **ENVIRONMENTAL INFORMATION DISSEMINATION**

Sebaran Maklumat / Perhubungan Awam

Beberapa aktiviti yang bertujuan untuk mempromosi dan meningkatkan kesedaran alam sekitar telah dilaksanakan dalam tahun 2007 seperti pameran alam sekitar, program usaha sama dengan RTM, Kuiz Alam Sekitar dan kad kreatif alam sekitar di radio.

Kad Kreatif Alam Sekitar

Jabatan Alam Sekitar dengan kerjasama Stesen Muzik FM telah mengadakan Pertandingan Kad Kreatif Alam Sekitar bermula dari 1 Mac sehingga 30 April 2007. Lebih daripada 1,000 penyertaan dari seluruh Malaysia telah diterima. Penyertaan yang berjaya dan mengandungi mesej alam sekitar yang berkaitan akan dibaca melalui Radio Muzik FM.

Kuiz Alam Sekitar

Kuiz Alam Sekitar anjuran JAS dengan kerjasama Stesen Radio Muzik FM telah diadakan bagi tujuan mempromosikan kesedaran alam sekitar kepada orang awam menerusi radio. Tajuk kuiz alam sekitar yang ke udara sepanjang tahun adalah berbeza iaitu:

- Pemanasan Global, Januari 2007
- Air Nadi Kehidupan Kita, Februari 2007
- Pengurusan Sumber Semulajadi, Mac 2007
- Pemuliharaan Alam Sekitar, Tanggungjawab Bersama, April 2007
- Udara Bersih, Hidup Sihat, Mei 2007
- Pencairan Ais, Jun 2007
- Pengurusan Marin dan Alam Sekeliling, Julai 2007
- Kawalan Pencemaran Bunyi Bising, Ogos 2007
- Nilai-Nilai Murni Alam Sekitar, September 2007
- Kesedaran Pendidikan Alam Sekitar, Oktober 2007

Information Dissemination / Public Relations

Several activities aimed at promoting and enhancing environmental awareness conducted in 2007 were environmental exhibitions, collaborative programmes with RTM, Radio Environmental Quizzes and environmental creative cards.

Environmental Creative Cards

The Department of Environment in collaboration with Muzik FM Station organized the Environmental Creative Card Competition from 1 March till 30 April 2007. More than 1,000 entries all over Malaysia were received. Winning entries containing relevant environmental messages were read out over Muzik FM.

Environmental Quizzes

The Environmental Quizzes were conducted by DOE in collaboration with Muzik FM Station to promote environmental awareness to the public through the radio. Different environmental topics as listed below were aired throughout the year:

- Global Warming, January 2007
- Water Is Our Life, February 2007
- Environmental Management, March 2007
- Environmental Conservation, Our Shared Responsibility, April 2007
- Clean Air, Healthy Life, May 2007
- Ice Melting, June 2007
- Environment and Marine Management, July 2007
- Control of Noise Pollution, August 2007
- Environmental Ethics, September 2007
- Environmental Education and Awareness, October 2007





- Kitar Semula, Mulakannya, November 2007
- Pembuangan Sisa Toksik dan Sisa Pepejal, Disember 2007

Pameran Awam

Pada tahun 2007, JAS telah menyertai sebanyak 14 pameran bertemakan alam sekitar yang telah dianjurkan oleh sekolah-sekolah, institusi-institusi pengajian tinggi, sektor perindustrian, agensi kerajaan dan awam.

- Pameran RAPTOR-Persatuan Pencinta Alam Malaysia di Tanjung Tuan, Negeri Sembilan, 10-11 Mac 2007
- Pameran Smart Tunnel di Sungai Besi, Kuala Lumpur, 11 Mac 2007
- Pameran di Perpustakaan Negara, Kuala Lumpur, 24 Mac 2007
- Kempen Keselamatan dan Kesihatan di CCM Fertilizer, 28 Mac 2007
- Pameran Universiti Kebangsaan Malaysia di UKM, Bangi Selangor, 12 April 2007
- Pameran Universiti Teknologi Mara Malaysia (UiTM) di UiTM Shah Alam Selangor, 16-18 April 2007
- Pameran Carrefour di Wangsa Maju Kuala Lumpur, 9-10 Jun 2007
- Pameran Carrefour di Alamanda Putrajaya, 13-14 Jun 2007
- Karnival Jom Heboh di Pulau Pinang, 7-8 Julai 2007
- Karnival Jom Heboh di Bukit Jalil, Selangor, 4-5 Ogos 2007
- Pameran Sempena 50 Tahun Merdeka di Dewan Baiduri NRE Putrajaya, 27 Ogos 2007
- Bengkel Penambahbaikan Program Kesedaran Alam Sekitar di Palace Beach & Spa Mines Resort City, 25 Oktober 2007
- Pameran Sempena Forum Kontraktor Dan Hari Keselamatan, Kesihatan Persekitaran di Cyberview Lodge Resort & Spa Cyberjaya, 6-7 November 2007

- Start! Recycle, November 2007
- Dumping of Domestic Waste and Toxic Waste, December 2007

Environmental Exhibitions

In 2007, DOE took part in 14 environmental exhibitions organized by schools, institutions of higher learning, the industrial sector, government agencies and the public.

- Pameran RAPTOR-Malaysian Nature Society at Tanjung Tuan, Negeri Sembilan, 10-11 March 2007
- Exhibition in the vicinity of the Smart Tunnel at Sungai Besi, Kuala Lumpur, 11 March 2007
- Exhibition at the National Library, Kuala Lumpur, 24 March 2007
- Campaign on Safety and Healthy at CCM Fertilizer Plant, 28 March 2007
- Exhibition at Universiti Kebangsaan Malaysia Bangi, Selangor, 12 April 2007
- Exhibition at Universiti Teknologi Mara Malaysia (UiTM) Shah Alam, Selangor, 16-18 April 2007
- Exhibition at Carrefour Wangsa Maju, Kuala Lumpur, 9-10 June 2007
- Exhibition at Carrefour Alamanda Putrajaya, 13-14 June 2007
- Karnival Jom Heboh in Pulau Pinang, 7-8 July 2007
- Karnival Jom Heboh in Bukit Jalil, Selangor, 4-5 August 2007
- Exhibition on "Sempena 50 Tahun Merdeka" in Dewan Baiduri, NRE Putrajaya, 27 August 2007
- Exhibition at "Bengkel Penambahbaikan Program Kesedaran Alam Sekitar" at Palace Beach & Spa Mines Resort City, 25 October 2007
- Exhibition at "Forum Kontraktor Dan Hari Keselamatan, Kesihatan Persekitaran" at Cyberview Lodge Resort & Spa Cyberjaya, 6-7 November 2007





Pameran Alam Sekitar
Environmental Exhibition

Maklumat Alam Sekitar

Pada tahun 2007, JAS telah menerbitkan sejumlah 524,000 naskhah bahan-bahan bacaan alam sekitar yang terdiri daripada Laporan Kualiti Alam Sekeliling 2006, Laporan Tahunan Jabatan Alam Sekitar 2006, majalah IMPAK dan ERA HIJAU, cetakan semula buku Alam Sekitar Anugerah Tuhan Edisi ke-3, risalah-risalah, buku-buku dan kalendar bermesejkan alam sekitar.

Bahan-bahan bercetak tersebut diedarkan kepada pelbagai agensi kerajaan, perpustakaan-perpustakaan, pusat rujukan, institusi pendidikan, persatuan bukan kerajaan dan orang individu.

Environmental Information

In 2007, DOE published more than 524,000 copies of environmental reading materials consisting of the Environmental Quality Report 2006, the 2006 DOE Annual Report, IMPAK and ERA HIJAU bulletin, a reprint of "The Environment: The Gift of God", brochures, books and calendars with environmental messages.

These printed materials were distributed to various government agencies, libraries, reference centres, educational institutions, non-governmental organizations and individuals.



Jabatan Alam Sekitar telah mewujudkan koleksi gambar fotonya sendiri melalui penubuhan bank imej. Sehingga hujung tahun 2007, sebanyak 4,562 gambar dari pelbagai kategori dan tema telah diambil dan disimpan di dalam bank imej.

DOE also established its own photography collections through the setting up of its photo image bank. To date, a total of 4,562 images of various categories and themes had been captured and stored in the image bank.



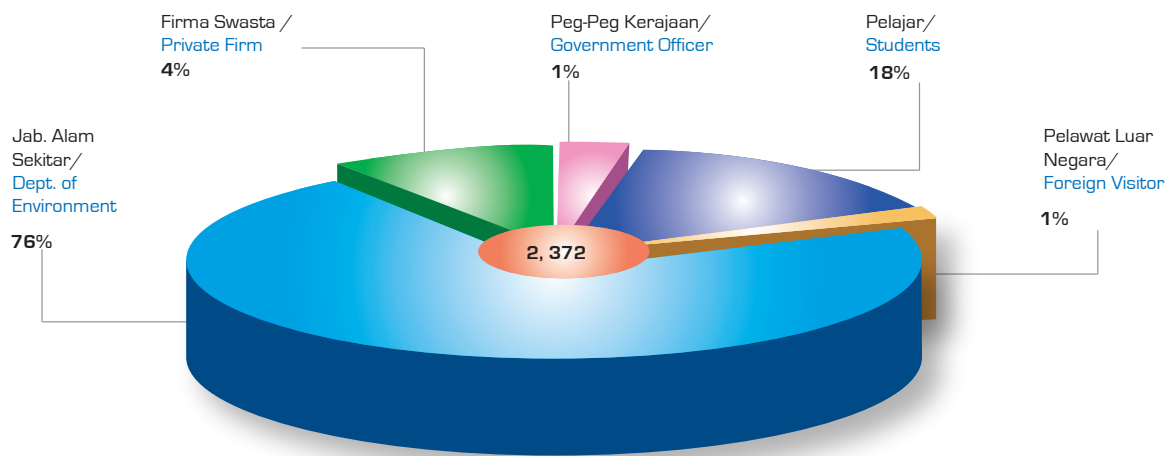
Koleksi Bahan Terbitan JAS.
Collection of DOE Publications.

Perkhidmatan Perpustakaan-Enviro

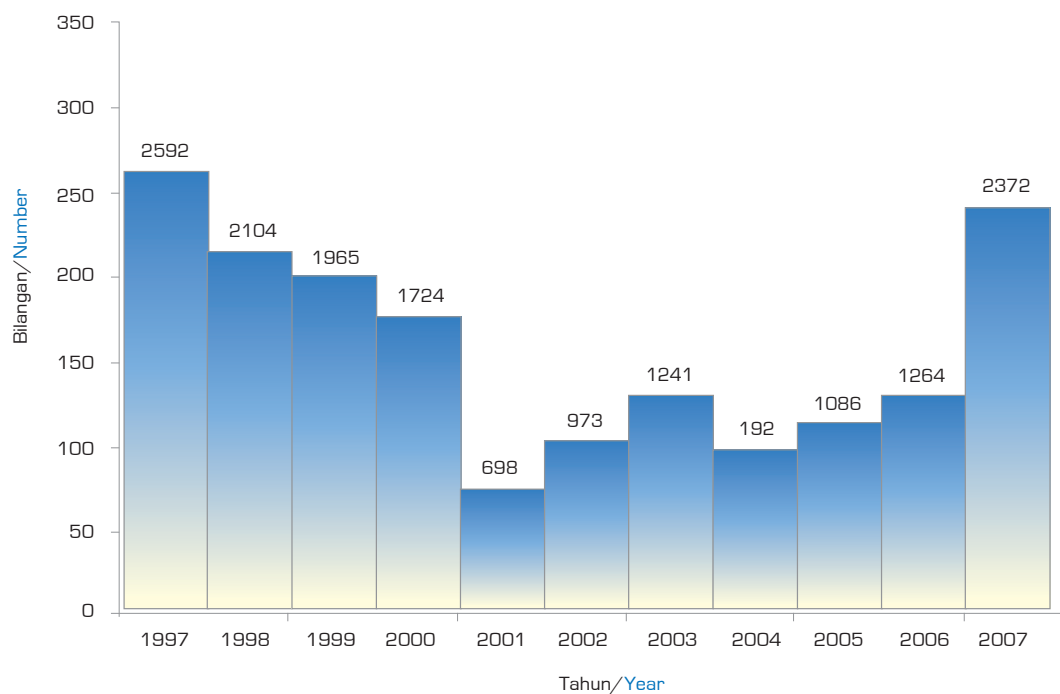
Perpustakaan-Enviro yang terletak di Ibu Pejabat JAS berfungsi sebagai pusat rujukan kepada kakitangan JAS dan orang awam yang berdaftar. Sehingga 31 Disember 2007, koleksi bahan rujukan adalah sebanyak 35,072 buah. Bilangan pengunjung ke perpustakaan juga telah meningkat kepada 2,372 orang berbanding dengan 1,254 orang pada tahun 2006 (Rajah 5.1, 5.2 dan 5.3).

Enviro-Library Services

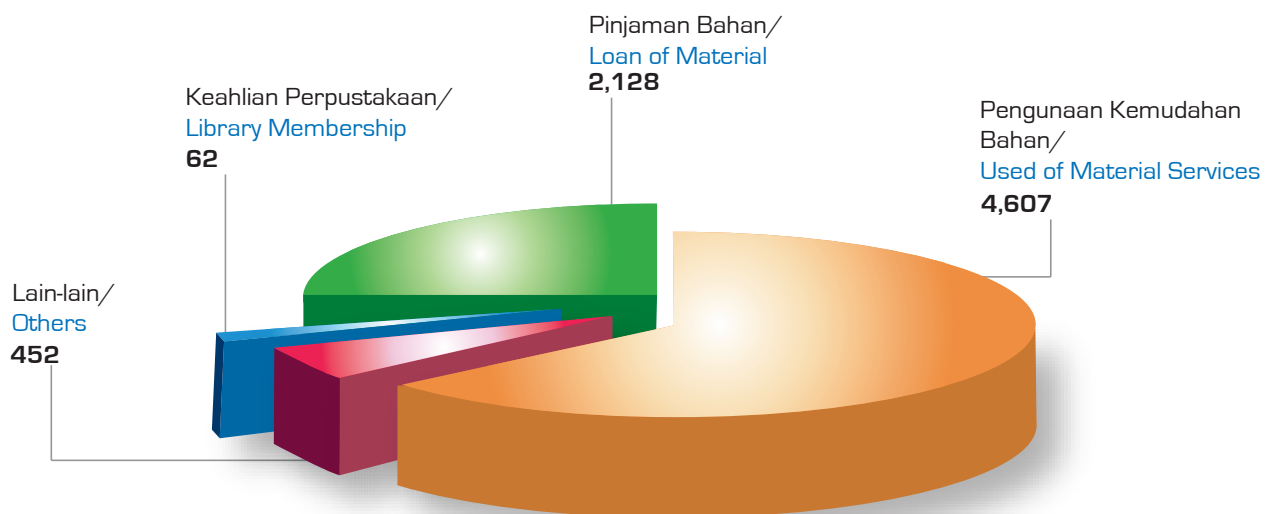
The Enviro-Library located at the DOE Head Office served as an important reference centre for both DOE staff and registered public users. As of 31 December 2007, the entire collection of reference materials totaled 35,072. The number of library users increased to 2,372 compared to 1,254 in 2006 (Figure 5.1, 5.2 & 5.3).



Rajah 5.1 JAS: Kategori Pengguna-Pengguna Perpustakaan Jabatan Alam Sekitar, 2007.
Figure 5.1 DOE: Category of Library Users, 2007



Rajah 5.2 JAS: Bilangan Pengunjung Perpustakaan, 2007
Figure 5.2 DOE: Number of Library Users, 2007



Rajah 5.3 JAS: Perkhidmatan Perpustakaan,
Figure 5.3 DOE: Library Services, 2007



Pusat Rujukan Kepada Kakitangan JAS dan Orang Awam
Reference Centre for Both DOE and Registered Public Users

BAB 6

Chapter 6





HAL- EHWAL ALAM SEKITAR ANTARABANGSA – KERJASAMA DUA HALA INTERNATIONAL ENVIRONMENTAL AFFAIRS – BILATERAL COOPERATION

Malaysia - Indonesia

Seramai 62 orang dari Kementerian Lingkungan Hidup Republik Indonesia telah mengadakan lawatan sambil belajar ke Ibu Pejabat Jabatan Alam Sekitar, Malaysia pada 6-8 Februari 2007. Tujuan lawatan ini adalah untuk mempelajari dan berkongsi pengalaman dalam pengurusan alam sekitar di Malaysia. Delegasi juga telah berpeluang melawat ke pejabat Indah Water Konsortium Sdn Bhd dan kawasan perumahan Bukit Jelutong, Shah Alam, Selangor milik Guthrie Property Development Holding Bhd. Selain itu delegasi juga telah mengadakan lawatan ke pejabat Dewan Bandaraya Kuala Lumpur untuk mendapatkan maklumat berkenaan pengurusan alam sekitar di bandaraya.

Delegasi seramai 15 pegawai dari Kementerian Alam Sekitar, Indonesia telah melawat Jabatan Alam Sekitar, Malaysia pada 12 November 2007. Fokus lawatan ini adalah untuk mengetahui berkenaan prosedur kesan penilaian alam sekeliling di Malaysia.

Malaysia - Jepun

Delegasi seramai 12 orang pelajar dari Dokkyo University in Soka City, Jepun yang diketuai oleh Prof. Tadashi Inui telah melawat Jabatan Alam Sekitar, Malaysia pada 5 Mac 2007. Lawatan ini bertujuan untuk mengetahui berkenaan isu-isu alam sekitar dan program-program kesedaran di Malaysia.

Malaysia - Singapura

Mesyuarat Ke-6 Kumpulan Kerja Jawatankuasa Bersama Malaysia-Singapura mengenai Alam Sekitar (MSJCE) telah diadakan pada 16-17 April 2007 di Kuantan, Pahang.

Malaysia - Indonesia

A delegation consisting of 62 officers from the Ministry of Natural Resources and the Environment, Indonesia visited the Department of Environment, Malaysia on 6-8 February 2007. The purpose of the visit is to learn and share experiences in environmental management between Indonesia and Malaysia. The delegation also had the opportunity to visit the Indah Water Konsortium Sdn Bhd and a housing development area in Bukit Jelutong, Shah Alam, Selangor. Besides this, the delegation also visited the Kuala Lumpur City Hall to gather information on town planning and environmental management in the city.

Another delegation consisting of 15 officers from the Ministry of Environment, Indonesia visited the Department of Environment, Malaysia on 12 November 2007. The visit focused on the environmental impact assessment procedures in Malaysia.

Malaysia - Japan

A delegation consisting of 12 students from the Dokkyo University in Soka City, Japan and headed by Prof. Tadashi Inui visited the Department of Environment, Malaysia on 5 March 2007. The visit was to learn about environmental issues and awareness programs in Malaysia.

Malaysia - Singapore

The Sixth Meeting of the Malaysia -Singapore Joint Committee on the Environment (MSJCE) Working Group Meeting was held on 16 - 17 April 2007 in Kuantan, Pahang.



Mesyuarat telah dipengerusikan bersama oleh Y. Bhg. Dato' Hajah Rosnani Ibarahim, Ketua Pengarah Alam Sekitar, Malaysia dan Encik Lee Yuen Hee, Ketua Pegawai Eksekutif, Agensi Alam Sekitar Kebangsaan (NEA), Singapura.

The meeting was co-chaired by Dato' Hajah Rosnani Ibarahim, Director General of Environment, Malaysia and Mr. Lee Yuen Hee, Chief Executive Officer of the National Environment Agency (NEA), Singapore.

Isu-isu alam sekitar yang telah dibincangkan ialah:

Among the issues discussed were:

- Kawalan Pencemaran Kenderaan
- Pemantauan Kualiti Air di Selat Johor
- Progress of Review of Scope of Work on the Monitoring of Water Quality, Ecology and Morphology in and Around the Straits of Johor.
- Pencemaran di kawasan tadahan air Skudai
- Pelan Tindakan Kecemasan Tumpahan Bahan Kimia di Lintasan Kedua Malaysia-Singapura
- Kerjasama di antara Institut Latihan Alam Sekitar Malaysia (EiMAS) dan Institut Latihan Alam Sekitar, Singapura

- Vehicular Emission Control
- Water Quality in the Straits of Johor
- Progress of Review of Scope of Work on the Monitoring of Water Quality, Ecology and Morphology in and around the Straits of Johor
- Pollution in Skudai Water Catchment
- Emergency Response Plan for Chemical Spill at the Malaysia - Singapore Second Crossing
- Collaboration between Environmental Institute of Malaysia (EiMAS) and Singapore Environment Institute (SEI)

Delegasi juga dibawa untuk menikmati "Night Cruise" di Sungai Kuantan bagi melihat kelip-kelip dan juga melawat Muzium Sejarah Sungai Lembing di Pahang. Tujuan mesyuarat ini adalah penting untuk meningkatkan kerjasama dua hala di antara dua negara.

The delegates were taken on a night cruise up the Kuantan River to watch fireflies in their natural habitat and also to the Lembing River Historical Museum in Kuantan, Pahang. The meeting was beneficial in enhancing bilateral cooperation between the two countries.

Malaysia - Vietnam

Malaysia - Vietnam

Delegasi seramai lapan orang pegawai dari Petro Vietnam telah mengadakan lawatan ke Jabatan Alam Sekitar, Malaysia pada 18 Julai 2007. Delegasi ini telah diberi taklimat ringkas berhubung dengan pengurusan bahan berbahaya, kesan penilaian alam sekeliling (EIA) dan pengurusan kualiti air marin di Malaysia.

A delegation consisting of eight officers from the Petro Vietnam visited the Department of Environment, Malaysia on 18 July 2007. The delegates were briefed on the hazardous waste management, environmental impact assessment (EIA) and marine water quality management in Malaysia.

Jabatan Alam Sekitar, Malaysia juga telah menerima lawatan delegasi dari Asian Institute of Technology Center, Vietnam pada 29-30 November 2007. Tujuan lawatan ini diadakan adalah untuk mempelajari dengan lebih lanjut

The Department of Environment, Malaysia also received a delegation from the Asian Institute of Technology Center, Vietnam on 29-30 November 2007. The purpose of the visit was to learn about the implementation of Cleaner



berhubung pelaksanaan Teknologi Bersih di Malaysia. Delegasi seramai 17 orang pegawai ini juga turut berpeluang melawat SIRIM Berhad dan Kilang Pemprosesan Makanan di Sungai Buloh, Selangor.

Delegasi seramai 12 orang pegawai dari Kementerian Pembinaan, Vietnam telah mengadakan lawatan ke Jabatan Alam Sekitar, Malaysia pada 24 Ogos 2007. Lawatan tersebut yang diketuai oleh Encik Nquyen The Hung, Timbalan Pengarah dari Jabatan Sains dan Teknologi, Vietnam bertujuan untuk mempelajari berkenaan prosedur penilaian kesan terhadap alam sekeliling di Malaysia.

Malaysia - Republik Demokratik Rakyat Korea

Seramai tiga delegasi dari World Health Organization (WHO) Fellowship dari Republik Demokratik Rakyat Korea telah mengadakan lawatan ke Jabatan Alam Sekitar, Malaysia pada 14 Ogos 2007. Tujuan lawatan adalah untuk bertukar-tukar maklumat berhubung dengan kesan penilaian alam sekeliling (EIA), pengurusan bahan berbahaya dan pengurusan kualiti udara di antara Malaysia Republik Demokratik Rakyat Korea. Delegasi juga turut berpeluang melawat stesen kawalan kualiti udara di Putrajaya.

Production in Malaysia. The delegation of 17 officers had the opportunity to visit SIRIM Berhad and a food processing factory in Sungai Buloh, Selangor.

Another delegation consisting of 12 officers from the Ministry of Construction, Vietnam visited the Department of Environment, Malaysia on 24 August 2007. The delegates headed by Mr. Nquyen The Hung, Vice Director of Department of Science and Technology, Vietnam aimed to learn about the environmental impact assessment procedures in Malaysia.

Malaysia - Democratic People's Republic of Korea

A delegation consisting of three (3) officers from the World Health Organization (WHO) Fellowship, Democratic People's Republic of Korea visited the Department of Environment, Malaysia on 14 August 2007. The visit was to exchange information on environmental impact assessment (EIA), hazardous waste management and air quality management between Malaysia and the Democratic People's Republic of Korea. The delegation also had the opportunity to visit the air quality monitoring station in Putrajaya.



HAL-EHWAL ALAM SEKITAR ANTARABANGSA – KERJASAMA SERANTAU **INTERNATIONAL ENVIRONMENTAL AFFAIRS – REGIONAL COOPERATION**

Mesyuarat Ketiga Conference of Parties (COP3-Haze) to the ASEAN Agreement on Transboundary Haze Pollution

Mesyuarat Ketiga Conference of the Parties (COP3-Haze) to the ASEAN Agreement on Transboundary Haze Pollution telah diadakan di Bangkok, Thailand pada 3–7 September 2007. Mesyuarat ini telah dihoskan oleh Kementerian Sumber Asli dan Alam Sekitar, Thailand. Mesyuarat ini telah dihadiri oleh delegasi dari Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Filipina, Singapura, Thailand, Vietnam dan Sekretariat ASEAN.

Di antara isu yang telah disampaikan dan dibincang ialah laporan kejadian kebakaran dan jerebu serta ramalan keadaan meteorologi oleh ASEAN Specialised Meteorological Centre (ASMC), perbincangan berkenaan ASEAN Transboundary Haze Pollution Control Fund dan status ratifikasi oleh Indonesia dan Filipina. Mesyuarat ini juga telah mengambil maklum dan mempersetujui cadangan lima (5) aktiviti penting yang dikenalpasti untuk terus dilaksanakan di bawah Perjanjian Jerebu, iaitu :

Pelaksanaan ASEAN Peatland Management Strategy (APMS);

- Pelaksanaan aktiviti untuk terus mempromosikan amalan pembakaran sifar dan pembakaran terkawal;
- Mengadakan latihan “table-top” dan simulasi untuk meningkatkan tindakan kecemasan bersama;
- Capacity building untuk tujuan penguatkuasaan undang-undang dan pendakwaan; dan
- Forum/dialog dengan komuniti penyumbang antarabangsa dan lain-lain agensi untuk mempromosikan pelaksanaan Perjanjian Jerebu.

Third Meeting of the Conference of Parties (COP3-Haze) to the ASEAN Agreement on Transboundary Haze Pollution

The Third Meeting of the Conference of Parties (COP3-Haze) to the ASEAN Agreement on Transboundary Haze Pollution was held in Bangkok, Thailand on 3–7 September 2007. Hosted by the Ministry of Natural Resources and Environment, Thailand. The meeting was attended by delegates from Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam and The ASEAN Secretariat.

Among the issues presented and discussed were the review of fire and haze occurrences and forecast of meteorological conditions by ASEAN Specialised Meteorological Centre (ASMC), discussion on ASEAN Transboundary Haze Pollution Control Fund and the status of ratification by Indonesia and Philippines. The meeting also noted the outcome of the stocktaking and review of relevant regional activities that support the implementation of the Haze Agreement where the following five (5) priority areas had been identified by the Committee:

Implementation of the ASEAN Peatland Management Strategy (APMS);

- Implementation of activities to further promote zero burning and controlled burning practices;
- Conduct of table-top and simulation exercises to enhance joint emergency response;
- Capacity building for law enforcement, investigation and prosecution; and
- Regular forums/dialogues with international donor community and other stakeholders to promote the implementation of the Haze Agreement.



Mesyuarat Ke-6 Kumpulan Kerja Jawatankuasa
Bersama Malaysia-Singapura mengenai Alam Sekitar (MSJCE)
The Sixth Meeting of the Malaysia -Singapore
Joint Committee on the Environment (MSJCE) Working Group Meeting

BAB 7

Chapter 7





BAHAGIAN TEKNOLOGI MAKLUMAT INFORMATION TECHNOLOGY DIVISION

Penggabungan JAS*NET NRE*NET	Masuk Ke Dalam	Rangkaian Rangkaian	Luas Luas	Integration of Wide Area Network JAS*NET into NRE*NET
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Penggabungan masuk rangkaian Jabatan Alam Sekitar, JAS*Net, ke dalam rangkaian Kementerian Sumber Asli Dan Alam Sekitar, NRE*Net telah dijalankan pada tahun 2007, melibatkan sembilan (9) jabatan dan agensi di bawah NRE. Rangkaian ini mula beroperasi penuh secara rasminya pada 1 September 2007. Penggabungan ini akan dapat meningkatkan pelaksanaan MyEG di dalam JAS.

The integration of the Wide Area Network JAS*NET of Department of Environment (DOE) into the Ministry of Natural Resources and Environment's Wide Area Network NRE*NET was carried out in 2007, involving nine (9) other departments and agencies under NRE. The network was completed and officially launched on 1 September 2007. With this integration it will enhance the implementation of MyEG in DOE.

Pelaksanaan Sistem Penguatkuasaan Dan Pemantauan Jarak Jauh (CEMS)

Sistem Penguatkuasaan Dan Pemantauan Jarak Jauh (CEMS) membolehkan maklumat pencemar udara yang dilepaskan oleh premis-premis industri diperolehi secara terus. Sebagai permulaan kajian, jenis industri telah dipilih iaitu stesen janakuasa elektrik, kilang simen, kilang kelapa sawit dan insinerator bahan buangan. Sistem ini dijangka siap sepenuhnya hujung tahun 2008.

Implementation of Continuous Emission Monitoring System (CEMS)

The Continuous Emission Monitoring System (CEMS) captures online information pertaining to air pollution which was emitted by premises of the industry. As a pilot study, four (4) types of industries were selected: power generation plant, cement factory, palm oil mill and waste incineration plant. This system is expected to be completed by the end of 2008.

Laman Web JAS

Laman web JAS yang beralamat di <http://www.doe.gov.my> dapat memberikan maklumat berkaitan dengan pelaksanaan aktiviti-aktiviti di dalam JAS, bacaan indeks pencemar udara (IPU) dan senarai jururunding yang berdaftar dengan JAS. Komunikasi dengan orang awam juga dapat dilakukan melalui laman web ini, di mana aduan berkaitan dengan pencemaran alam sekitar, pertanyaan dan cadangan boleh diajukan melaluinya.

Website of DOE

DOE's website at <http://www.doe.gov.my> provides information such as activities implemented in DOE, air pollutant index (API) and consultants registered with DOE. Public communication with the department can also be done at the website, whereby environmental pollution complaints, enquiries and suggestions can be forwarded through the website.



Jadual 7.1 JAS: Peralatan ICT

Table 7.1 DOE: ICT Equipment

Bil/ No.	Perkakasan / Equipment	Kuantiti / Quantity
1	Komputer Type A / Computer Type A	2
2	Komputer Type B / Computer Type B	2
3	Komputer Type C / Computer Type C	250
4	Komputer Type D / Computer Type C	52
5	Pencetak Hitam-Putih / Printer Black-White	80
6	Pencetak Dot Matrik / Printer Dot Matrik	16
7	Pengimbas / Scanner	5
8	Kamera Digital / Digital Camera	1

Jadual 7.2 Jas: Kursus-kursus ICT- 2007

Table 7.2 Doe: ICT Courses, 2007

Bil/No.	Nama Kursus/Course	Tarikh/Date	Bilangan Peserta/ Number of Participants
1	Kursus Oracle Fundamental I	12-15 Feb 2007	8
2	Kursus Microsoft Word (Asas)	23 April 2007	20
3	Kursus Microsoft Excel (Asas)	24 April 2007	29
4	Kursus Microsoft Point (Asas)	25 April 2007	28
5	Kursus Microsoft Word (Pertengahan) HQ Sahaja	30-31 Mei 2007	24
6	Kursus PHP	3-6 Julai 2007	8
7	Kursus E-KAS OMPD Bil. 1/2007	3-4 Julai 2007	37
8	Latihan Penggunaan Sistem Aplikasi VEMIS	10 Julai 2007	30
9	Latihan Kemasukan Data Harta Modal & Inventori Jabatan	17 Ogos 2007	11
10	Kursus PPSM Baru	28 Ogos 2007	8
11	Kursus MS Word (Pertengahan) JAS Negeri Sahaja	29 Okt 2007	14
12	Kursus MS Excel (Pertengahan)	30-31 Okt 2007	26
13	Kursus MS Power Point (Pertengahan)	1-2 Nov 2007	22
14	Training on Content Development Using Flash	13-15 Nov 2007	20
15	Latihan Penggunaan (END USER TRAINING)	19 Nov 2007	29
16	Latihan Sistem Administrator bagi Sistem Pemantauan & Penguatkuasaan Jarak Jauh Menerusi CEMS	21-22 Nov 2007	22
17	Seminar CEMS	10 Dis 2007	50
18	Kursus ORACLE 9i: Administration 1	10-12 Dis 2007	6
		JUMLAH/TOTAL	392



JABATAN ALAM SEKITAR
Kementerian Sumber Asli Dan Alam Sekiter



Menjawab Pertanyaan Alam Sekitar

BAB 8

Chapter 8





INSTITUT ALAM SEKITAR MALAYSIA (EiMAS) MALAYSIAN INSTITUTE OF ENVIRONMENT (EiMAS)

Program Latihan EiMAS

Pada tahun 2007, EiMAS telah berjaya menyediakan 78 kursus latihan kepada sejumlah 3,201 peserta **(Jadual 8.1)**.

Daripada jumlah peserta tersebut, 1,997 adalah kakitangan Jabatan Alam Sekitar, manakala selebihnya terdiri dari peserta luar jabatan. Program latihan ini bertujuan untuk meningkatkan kecekapan dan kompetensi di kalangan para peserta.

Program Latihan untuk Industri

Bermula tahun 2006, EiMAS telah melaksanakan program ke arah meningkatkan kefahaman, pengetahuan dan kemahiran dalam pematuhan keperluan alam sekitar di kalangan pihak industri. Program latihan yang telah dibentuk khas ini meliputi kursus persijilan dan seminar dalam pengurusan buangan terjadual dan pengendalian alat kawalan pencemaran.

Kursus Persijilan

Pada tahun 2007, tiga (3) Kursus Persijilan iaitu Kursus Persijilan Untuk Pengurusan Buangan Terjadual dan dua (2) ujian daripada kursus persijilan tersebut juga turut dilaksanakan untuk industri.

Selain itu, enam (6) seminar telah dianjurkan untuk memberi pemahaman dan pengetahuan mengenai keperluan dan kehendak Jabatan Alam Sekitar. Topik-topik yang diliputi ialah Pengurusan Buangan Terjadual, Pemahaman Mengenai Keperluan Alam Sekitar, Sistem Pengolahan Effluen Industri dan Sistem kawalan Pencemaran Udara, dan Teknologi Bersih di Industri Tekstil.

EiMAS Training Programme

In 2007 EiMAS successfully executed 78 training courses for a total of 3,201 participants **(Table 8.1)**.

Out of the total number of participants, 1,997 were DOE while the rest were external participants. These training programmes were aimed to enhance the efficiency and competency of the participants.

Training Programmes for Industries

Beginning 2006, EiMAS carried out training programmes for industries in order to enhance understanding, knowledge and skills towards compliance to environmental requirements. These included specially designed programmes, such as certification courses and training seminars, management of scheduled wastes and handling of pollution control equipment.

Certification Courses

In 2007, three (3) Certification Courses namely, Certification Course for Scheduled Waste Managers and two (2) Certification Course Tests were conducted for the industries.

Meanwhile, six (6) seminars were conducted to provide understanding and knowledge on environmental requirements to the industries. The topics covered were Scheduled Waste Management, Understanding of Environmental Requirements, Industrial Effluent Treatment Systems, Air Pollution Control Systems and Cleaner Production in Textile Industries.



Program Latihan Untuk Kakitangan JAS

Disamping menjalankan program latihan, EiMAS juga telah menganjurkan ceramah, seminar, bengkel, pameran dan persidangan, yang bertujuan untuk meningkatkan pengetahuan di kalangan kakitangan jabatan dalam pengurusan alam sekitar, kesihatan dan keselamatan pekerjaan di kalangan kakitangan JAS.

Mini Persidangan

Mini Persidangan ke-3 telah diadakan pada 15 November 2007 berjaya membentuk satu landasan kepada pegawai JAS yang menghadiri latihan di luar negara untuk berkongsi pengetahuan, pengalaman dan idea baru sepanjang latihan mereka di sana. Persidangan ini juga mampu mewujudkan jaringan maklumat alam sekitar di kalangan kakitangan JAS. Sejumlah sepuluh (10) pembentangan telah dibuat.

Program Sangkutan

Program sangkutan untuk pegawai DOE telah dibuat di beberapa organisasi swasta. Program ini bertujuan untuk menyediakan latihan 'hands-on' kepada kakitangan JAS bagi membolehkan mereka menjadi jurulatih yang kompeten dalam bidang masing-masing (**Jadual 8.2**).

Program Kerjasama

Sebagai usaha menyediakan latihan yang terbaik untuk kakitangan JAS, dan memantapkan keupayaan tenaga pengajarnya, EiMAS juga telah menjalinkan kerjasama dengan agensi kerajaan, badan-badan berkanun dan sektor swasta. Program ini telah menerima kerjasama baik dari pihak industri dan pemaju projek dalam menyediakan premis untuk lawatan tapak pada peserta kursus EiMAS termasuk dari luar negara di bawah kursus MTCP (**Jadual 8.3**).

Training Programmes for DOE

Besides routine training courses, EiMAS also conducted talks, seminars, workshops, exhibitions and conferences, aimed at enhancing the knowledge of environmental management and occupational safety and health among DOE staff.

Mini Conference

The 3rd DOE Mini Conference held on 15 November 2007 provided platform for DOE officers who had attended overseas training, to share their knowledge, experiences and new ideas gained during their training courses. The conference also facilitates the establishment of a network for environmental information among DOE personnel. A total of ten (10) presentations were made.

Attachment Programmes

Attachment programmes for DOE officers were held at various private institutions. The objectives of this programme is to provide 'hands-on' training for DOE staff to enable them to become competent trainers in their respective fields (**Table 8.2**).

Collaboration Programmes

In fulfilling the need to provide the best training for DOE personnel as well as to strengthen the capacity of EiMAS trainers, EiMAS had established collaborative programmes with a number of government agencies, statutory bodies and the private sector. The programmes also received good cooperation from various industries and project developers who had offered their premises for EiMAS participants for study visits, including foreign participants under the MTCP (**Table 8.3**).





Latihan Luar Negara

Selain daripada mengendalikan latihan dalam negara, EiMAS juga bertanggungjawab menguruskan penghantaran pegawai dan kakitangan JAS untuk mengikuti kursus di luar negara bagi tempoh kurang dari tiga (3) bulan.

Sepanjang tahun 2007, EiMAS telah mengatitkan 16 pencalonan yang melibatkan 16 program latihan di luar negara (**Jadual 8.4**).

Program Kerjasama Teknikal Malaysia (PKTM): Kursus mengenai Pengurusan Alam Sekitar dan Kawalan Pencemaran (EPMC)

Unit Perancang Ekonomi selaku penyelarar kepada program PKTM, telah meluluskan EiMAS sebagai agensi ke-35 untuk mengendalikan latihan kepada peserta antarabangsa di bawah Program Kerjasama Teknikal Malaysia (PKTM). Kursus Pengurusan Alam Sekitar dan Kawalan Pencemaran (EPMC) ini dibuka kepada negara-negara Organisation of the Islamic Conference (OIC) dan Asia-Pasifik. Kriteria untuk pemilihan akhir peserta adalah hubungkait tugas, kelayakan akademik dan peruntukan kewangan.

Kursus EMPC yang berlangsung pada 2 hingga 20 Julai 2007 telah dihadiri oleh 21 orang peserta dari Iraq, Jordan, Indonesia, Saudi Arabia, Egypt, Sudan, DPR Korea, Timor-Leste, Philippines, Vietnam, Uzbekistan, Lao PDR dan Cambodia serta dua (2) orang peserta dari Malaysia.

Kursus PKTM ini diadakan untuk menyediakan latihan dalam pelbagai aspek dan kaedah pengurusan kualiti udara; berkongsi amalan-amalan yang baik dalam pelaksanaan program-program kebangsaan dan antara agensi yang melibatkan pengurusan pencemaran pantai dan

Overseas Training Courses

Apart from conducting internal training programmes, EiMAS was also responsible in making arrangements for DOE officers and staff for overseas training of less than three (3) months.

Throughout 2007, 16 nominations to participate in 16 overseas programmes were made (**Table 8.4**).

Malaysian Technical Cooperation Programme (MTCP) Course on Environmental Management and Pollution Control (EPMC)

The Economic Planning Unit, as the coordinator for MTCP, gave its approval to EiMAS as the 35th agency to provide training for international participants under the auspices of the Malaysian Technical Co-operation Programme. The course on Environmental Management and Pollution Control (EPMC) is open to Organisation of the Islamic Conference (OIC) and Asia-Pacific Countries. Final selection was made based on job relevancy, academic qualifications and budget availability.

The EMPC course, held on 2-20 July, 2007 was attended by 21 participants from Iraq, Jordan, Indonesia, Saudi Arabia, Egypt, Sudan, DPR Korea, Timor-Leste, Philippines, Vietnam, Uzbekistan, Lao PDR and Cambodia as well as two (2) participants from Malaysia.

The objectives of MTCP Course were to provide training in the various aspects and methods for air quality management; to share good practices on the implementation of national and inter-agencies programmes involving coastal and marine pollution management;



marin; berkongsi pengalaman dalam keperluan perundangan dan prosedur mengenai penilaian kesan kepada alam sekeliling (EIA) di Malaysia; dan memberi pendedahan serta pengetahuan yang bersesuaian dan kemahiran mengenai punca-punca pencemaran buangan berbahaya dan pengurusan kawalannya.

Kursus ini telah berjaya menonjolkan aspek pengurusan alam sekitar yang berbeza-beza di Malaysia, dan hubungan rapat di antara agensi kerajaan dan sektor swasta membuktikan kejayaan konsep Persyarikatan Malaysia.

Program Latihan Negara Ketiga/ Program Kerjasama Teknikal Malaysia (PKTM): Kursus Mengenai Rawatan Sisa Air Buangan Dalam Industri Makanan Untuk Negara CLMV

Pada tahun 2007, EiMAS juga telah diberi kepercayaan untuk menjadi agensi pelaksana bagi kursus Third Country Training Programme (TCTP)/MTCP tajaan Unit Perancang Ekonomi dan Japan International Cooperation Agency (JICA). Kursus ini dibuka kepada negara seperti Cambodia, Lao PDR, Myanmar dan Vietnam (CLMV). Pemilihan akhir peserta adalah berdasarkan kepada kesesuaian, kelayakan akademik dan peruntukan kewangan.

Kursus yang berlangsung pada 20 hingga 30 Ogos 2007 telah dihadiri oleh 13 orang peserta dari negara CLMV dan tiga (3) orang peserta dari Malaysia.

Objektif kursus ini diadakan adalah bagi memberi kefahaman tentang prinsip kawalan pencemaran dalam proses industri makanan; memperkenalkan pengawasan sistem rawatan air sisa; menyediakan panduan dalam kawalan proses; dan memberikan pengetahuan dan kemahiran dalam teknik pemeriksaan yang berkaitan dengan sistem operasi rawatan air sisa.

to share experiences on the legal and procedural requirements on environmental impact assessment (EIA) in Malaysia; and to give exposure and provide appropriate knowledge and skill on hazardous waste pollution sources and control management.

This course succeeded in demonstrating the different aspects of environmental management in Malaysia, as well as the close partnership between Government agencies and the private sector, underlining the success of Malaysian Incorporated concept.

Third Country Training Programme (TCTP)/ Malaysian Technical Cooperation Programme (MTCP): Course on Waste Water Treatment in Food Industry for CLMV Countries

In 2007, EiMAS was also entrusted to be the implementing Agency for the Third Country Training Programme (TCTP)/MTCP Course sponsored by the Economic Planning Unit and Japan International Cooperation Agency (JICA). The course was offered to countries like Cambodia, Lao PDR, Myanmar and Vietnam (CLMV). Final selection was made based on job relevancy, academic qualifications and budget availability.

The course, held on 20-30 August, 2007 was attended by 13 participants from CLMV Countries and three (3) participants from Malaysia.

The objectives of the course were to understand the principal of pollution control in food processing industries; to familiarise with performance monitoring of waste water treatment system; to provide guidance in process control; and to impart knowledge and skills on inspection techniques related to waste water treatment system operation.



Kerjasama dengan Institut Latihan Kehakiman dan Perundangan (ILKAP)

EiMAS meneruskan program kerjasama dengan ILKAP melalui penganjuran kursus bertajuk Kursus Asas Pendakwaan dan Tatacara Mahkamah pada 3–7 September 2007 yang dihadiri oleh Pegawai Pendakwa JAS.

Collaboration with the Judicial and Legal Training Institute (ILKAP)

EiMAS continued its collaboration programme with ILKAP by organising a course entitled Basic Course on Prosecution and Court Procedure on 3–7 September 2007, intended for DOE's Prosecuting Officers.

Kerjasama dengan Maktab Polis DiRaja Malaysia

Pada tahun 2007, EiMAS telah mengadakan dua (2) siri kursus Penyediaan dan Metodologi bagi Kertas Siasatan dengan kerja sama Maktab Polis Di Raja Malaysia, Cheras kepada 57 orang Pegawai Penyiasat JAS.

Collaboration with the Malaysian Royal Police College

In 2007, EiMAS organised two (2) series of courses on "Preparation and Methodology of Investigation Papers" in collaboration with the Malaysian Royal Police College, Cheras for 57 DOE's Investigating Officers.

Jadual 8.1 JAS: Program Latihan EiMAS, 2007
Table 8.1 DOE: EiMAS Training Programmes, 2007

Bil/ No.	Kategori Kursus / Course Category	Bil. Kursus Yang Disediakan/ No. of Courses Conducted	Peserta JAS/ DOE Participants	Peserta Luar/ External Participants	Tempoh (Hari)/ Duration (Days)
1	Basic Competency	5	232	-	271
2	Occupational Safety and Healthy	15	539	-	31
3	Office Management	11	266	-	42
4	Water Quality Management	10	252	15	47
5	Air Quality Management	8	161	-	40
6	Environmental Legislation	4	79	21	20
7	Environmental Management and Impact Assessment	7	143	10	33
8	Malaysian Technical Cooperation Programme (MTCP)	1	-	21	19
9	Malaysian Technical Cooperation Programme (MTCP)/ Third Country Training Programme (TCTP)	1	3	13	10
10	Certification Programme for Plant Operators	3	-	74	15
11	Information Communication Technology	4	72	-	15
12	Seminars and Conferences	7	250	1000	7
13	Examination for Certification	2	-	50	-
Jumlah/Total		78	1997	1204	550



Jadual 8.2 JAS: Program Sangkutan, 2007
Table 8.2 DOE: Attachment Programmes, 2007

Bil/ No.	Peserta/ Participants	Tarikh/ Date	Tempat/ Place	Bidang/ Scope
1	i. Rohimi Harun, DOE Kelantan ii. Fahmi Vel Abdullah, DOE Pahang	12 – 23 Nov	International Centre of Excellence of Water Resources Management (ICE WaRM) Adelaide, Australia	Control of Non Point Sources
2	i. Wan Abdul Latif Wan Jaafar, DOE Johor ii. Salahuddin Sidik. DOE HQ	12 – 23 Nov	International Centre of Excellence of Water Resources Management (ICE WaRM) Adelaide, Australia	Water Pollution Quality / Loading

Jadual 8.3 JAS: Premis Industri/Tapak Projek Yang Dilawati oleh Peserta Kursus, 2007
Table 8.3 DOE: Industrial Premises/Project Sites Visited By Course Participants, 2007

Bil/ No.	Tajuk/ Title
1	Golden Jomalina Food Industries Sdn. Bhd. (Telok Panglima Garang Industrial Estate, Selangor)
2	Pacipic Food Product Sdn. Bhd. (Ayer Keroh Industrial Estate, Melaka)
3	F & NCC Beverages Sdn. Bhd. (Shah Alam, Selangor)
4	Carlsberg (M) Sdn. Bhd. (Shah Alam, Selangor)
5	Prima Agri-Products Sdn. Bhd (Bandar Baru Bangi, Selangor)
6	Nestle Manufacturing (Malaysia) Sdn. Bhd. (Chembong Industrial Estate, Negeri Sembilan)



Jadual 8.4 JAS: Senarai Latihan Luar Negara EiMAS, 2007
Table 8.4 DOE: EiMAS Overseas Training List, 2007

Bil/ No.	Tajuk/ Title	Penganjur/ Organizer	Tempat/ Place	Tarikh/ Date	Peserta)/ Participant
1	Air Pollution Management	The Colombo Plan & Royal Thai Government	Bangkok, Thailand	16 Jan – 15 Feb	Ahmad Samsuddin b. Che Abas , EiMAS
2	Fukuoka Prefecture International Environmental Personal Development Training	Fukuoka Prefecture, Japan	Japan	07 Jan – 03 Feb	Wan Aminordin b. Wan Kamaruddin, DOE Melaka
3	International Training Programme on Health, Environment & Development	The Colombo Plan & Royal Thai Government	Bangkok, Thailand	12 Feb – 05 Mac	Ainon Zakiah bt. Zakaria, DOE Selangor
4	Minamata Disease Workshop 2007	Japan Gov	Japan	13 – 20 Mac	i. Thahirah Kamarulzaman, DOE HQ ii. Zaidi Mohamed @ Awang, DOE Selangor
5	Regional Workshop on Prevention of Illegal Transboundary Movement for Hazardous Waste	Asia-Pacific Regional Centre for Hazardous Waste Management Training & Technology Transfer (the Basel Convention Regional Centre China, BCRC)	Beijing, China	28 – 29 Mac	Wan Azuan Wan Omar, DOE HQ
6	Course on Hazardous Waste Management	The Colombo Plan & Royal Thai Government	Bangkok, Thailand	23 April – 18 May	Mohd Shahir b. Mohd Mujahid, DOE Pahang (Rompin)
7	3rd International Environmental Policy Training Course	National Ins. of Env Human Resources Dept. Ministry of Env Korea	Korea	28 May – 22 Jun	.Habsah Ismail – DOE HQ
8	Seminar on Implementation of Multilateral Environmental Agreements through Cleaner Production	UNEP	Bangkok, Thailand	13 – 14 Jun	i. Charanpal Singh, DOE HQ ii. Siti Zaleha Ibrahim, DOE HQ
9	Solid Waste Management Training Programme	Ministry of Environment Korea	Republic Korea	23 Ogos – 5 Sept	Mohd Faizal Bin Mokhtar, DOE Pahang
10	Solid Waste Management Training Programme	Ministry of Environment Korea	Republic Korea	23 Ogos – 5 Sept	Muzamil B. Mostaipor Jarip, DOE Melaka
11	Seminar on Enhancing Effectiveness of Training Programmes under South-South Cooperation	JICA	Japan	26 Ogos – 4 Sept	Roshadah Bt. Hashim, EiMAS
12	ASEAN-China Workshop on EIA/SEA	State Environment Protection Administration (SEPA)	Beijing, China	15 – 20 Okt	Pn. Azuri Azizah Hj. Saedon, DOE Pahang
13	Seminar on Coastal Management and Marine Environmental Observations for Developing Countries	People's Republic of China Gov	Xiamen, China	28 Okt – 25 Nov	Al-Razi B. Kamarudin, DOE Selangor
14	Hazardous Waste Management and Appropriate Disposal for Asia	JICA	Japan	20 Nov – 22 Dec	Azmi Bin Khamis, DOE Sarawak

GALERI GAMBAR EIMAS
EIMAS PHOTO GALLERY

PROGRAM KERJASAMA TEKNIKAL MALAYSIA (MTCP) 2-20 JULAI 2007
MALAYSIAN TECHNICAL COOPERATION PROGRAMME (MTCP) 2nd-20th JULY 2007



Lawatan Sambil Belajar ke Kilang NS Cement,
Negeri Sembilan.
Study Visit to NS Cement Plant, Negeri Sembilan.



Taklimat Alat Kawalan Tumpahan Minyak oleh
PIMMAG Sdn. Bhd.
Oil Spills Control Equipment Briefing by
PIMMAG Sdn Bhd.



Demontrasi Ujian Ke Atas Peralatan di
Master Jaya Sdn. Bhd.
Demonstration on Pollution Control Equipment by
Master Jaya Sdn. Bhd.



Lawatan ke Prima Agri Sdn. Bhd.
Visit to Prima Agri Sdn.Bhd.



LATIHAN UNTUK PESERTA DALAM NEGERI DAN PESERTA JABATAN ALAM SEKITAR COURSE FOR LOCAL AND DOE PARTICIPANTS



Sesi Latihan Makmal EiMAS, Kursus Hakisan Tanah.
Laboratory Session EiMAS, Soil Erosion Course



Taklimat Mengenai "Personal Protective Equipment"
Briefing on 'Personal Protective Equipment'



Sesi Ceramah, Kursus "Train the Trainer"
Lecture Session, Train the Trainer Course



Taklimat Ketika Mesyuarat Protokol dan
Persampelan
Briefing at Sampling and Protocol Meeting.



Sesi Membina Pasukan, Kursus Kecemerlangan Diri
Team Building Session, Course of Self Excellent





KURSUS ASAS PEGAWAI KAWALAN ALAM SEKITAR, 15 JANUARI-6 APRIL 2007
BASIC COURSES ENVIRONMENTAL CONTROL OFFICERS, 15th JANUARY-6th APRIL 2007



Lawatan ke kilang Kelapa Sawit.
Study Visit to Palm Oil Factory.



Lawatan ke Tapak Projek Berkaitan EIA
Site Visit to EIA Related Project.



Lawatan Prima Agri Sdn. Bhd.
Visit to Prima Agri Sdn.Bhd



Lawatan ke Pacific Food Sdn. Bhd.
Visit to Pacific Food Sdn.Bhd



Taklimat Berkaitan Persampelan Air Daripada
Kakitangan ASMA.
Briefing on Water Sampling by ASMA.



Lawatan Peserta ke Akademi Laut Malaysia (ALAM)
Participant Visit to Akademi Laut Malaysia (ALAM)



PROGRAM LATIHAN NEGARA KETIGA, 20-30 OGOS 2007
THIRD COUNTRY TRAINING PROGRAMME (TCTP), 20-30th AUGUST 2007



Sesi Bergambar Bersama Delegasi JICA.
Photo Session With Delegation From JICA.



Lawatan ke Kilang Carlsberg Shah Alam
Visit to Carlsberg Factory at Shah Alam.

BAB 9

Chapter 9





PENGELUARAN BERSIH DAN TEKNOLOGI MESRA ALAM CLEANER PRODUCTION AND ENVIRONMENTALLY SOUND TECHNOLOGY

Jabatan Alam Sekitar telah menggariskan beberapa strategi untuk mempromosi dan meningkatkan kesedaran mengenai Pengeluaran Bersih (CP) dan Teknologi Mesra Alam (EST) khususnya kepada industri kecil dan sederhana sepertimana dalam Rancangan Malaysia Ke-9 (2006-2010).

Pada tahun 2007, Unit Teknologi Bersih telah mengendalikan beberapa program dan aktiviti untuk pegawai-pegawai JAS dan pihak-pihak yang berkaitan.

Projek Pembangunan “Sistem Aplikasi Untuk Penilaian Dan Pelaksanaan Cleaner Production”

Projek ini melibatkan dua skop kerja iaitu pembangunan perisian ‘Penilaian dan Pelaksanaan untuk Cleaner Production’ dan pembangunan laman web Cleaner Production Virtual Centre (CPVC).

Aplikasi yang akan dibangunkan ini merupakan self-help tool kepada industri terutamanya kepada industri kecil dan sederhana (IKS) di Malaysia.

Pendekatan seperti ini perlu memandangkan industri pembuatan dan pengeluaran semakin bertambah dari masa ke semasa. Secara tidak langsung akan menggalakkan pihak industri mengamalkan budaya self-regulation terhadap pematuhan Akta Kualiti Alam Sekeliling (AKAS), 1974.

Melalui kaedah ini juga adalah diharapkan peranan Jabatan Alam Sekitar dapat diperluaskan bukan sahaja dari segi aspek penguatkuasaan malah boleh berperanan sebagai pemudahcara kepada pengurusan alam sekitar yang baik dan efisien.

The Department of Environment has further outlined its strategies to promote and enhance the awareness of Cleaner Production (CP) and Environmentally Sound Technologies (EST) especially in the small and medium industries as reflected in the Ninth Malaysian Plan (2006-2010).

In 2007, the Cleaner Production Unit carried out several programmes and activities for DOE’s officers and relevant stakeholders.

Development Project On “Application System For Evaluation And Implementation of Cleaner Production”

The scope of this project involves software development for ‘Cleaner Production Implementation and Assessment’ software and the development of Cleaner Production Virtual Centre (CPVC) (web-based).

The application that will be developed is a self-help tool for the industries particularly to small and medium industrial (SMI) in Malaysia.

This approach is important because of the increasing number of manufacturing industries and indirectly will also encourage the industries to adopt the culture of self-regulation towards achieving compliance with the Environmental Quality Act (EQA), 1974.

Through this method, it is hoped that the role of DOE can be expanded not only in the enforcement aspects but also as a facilitator to further manage the environment in a more efficient manner.



Seminar Mengenai Aspek Alam Sekitar dan Teknologi Bersih untuk Industri Tekstil; Hotel Palm Garden, IOI Resort, Putrajaya; 14 Mei 2007

Objektif seminar ini diadakan adalah untuk menarik perhatian pihak industri, jururunding dan pihak swasta mengenai parameter warna yang akan dikuatkuasa dalam satu peraturan yang sedang digubal oleh Jabatan Alam Sekitar dan teknologi penyahwarna dalam sistem rawatan effluen tekstil.

Disamping itu, seminar ini juga mewar-warkan kepentingan dan manfaat pendekatan konsep Pengeluaran Bersih di dalam sektor tekstil dan pengurusan alam sekitar.

Sebanyak enam kertas kerja telah dibentangkan dan seramai 108 peserta yang terdiri dari sektor industri, swasta, jururunding dan pegawai dari Jabatan Alam Sekitar telah menghadiri seminar ini.

Seminar ASEAN Plus Three Mengenai Promosi Teknologi Mesra Alam dan Pengeluaran Bersih; Hotel Istana, Kuala Lumpur; 27-28 November 2007

Objektif seminar ini diadakan adalah:

- i) Untuk mempromosi dan meningkatkan kesedaran mengenai Teknologi Mesra Alam dan Pengeluaran Bersih industri khususnya di peringkat kebangsaan dan ASEAN amnya, dalam memberi maklumat mengenai teknologi terkini mengenai pencegahan, mengawal dan mengurangkan beban pencemaran;
- ii) Untuk membincangkan peranan dan tanggungjawab multistakeholders dalam mempromosikan Teknologi Mesra Alam dan konsep Pengeluaran Bersih;

Seminar on Environmental Aspects and Cleaner Production on Textile Industries; Palm Garden Hotel, IOI Resort, Putrajaya; 14 May 2007

The primary objective of the seminar was to inform the industries, consultants and private sectors on the introduction of the parameter colour in the new Environmental Quality (Industrial Effluents) Regulations and Colour Removal Technology in textile industrial effluent treatment systems.

This seminar also highlighted the importance and benefits of Cleaner Production concept and strategy in textile industries and environmental management.

There were six papers presented during the seminar which was attended by 108 participants mainly from industrial sector, private sector, consultants and DOE officers.

ASEAN Plus Three Seminar on Promotion of Environmentally Sound Technologies and Cleaner Production; Istana Hotel, Kuala Lumpur; 27-28 November 2007

The objectives of the seminar were as follows:

- i) To promote and enhance the awareness of Environmentally Sound Technology and Cleaner Production to the industries particularly at the national level and generally at the ASEAN region and also to update the latest technologies on preventing, controlling and reducing the pollution load;
- ii) To discuss the role and the responsibilities of the multistakeholders in promoting Environmentally Sound Technology and Cleaner Production concepts;



iii) Berkongsi maklumat dan pengalaman dalam kerja-kerja implementasi dan mempromosi program Teknologi Mesra Alam dan Pengeluaran Bersih di negara-negara ASEAN Plus Three; dan

iv) Membincang mekanisme kewangan dan opsyen teknikal yang ada dan diperlukan dalam membantu industri mengimplementasi Teknologi Mesra Alam dan konsep Pengeluaran Bersih.

Seminar selama dua hari ini telah dihadiri oleh 100 peserta dari pihak industri kecil dan sederhana (IKS), industri tekstil, makanan dan minuman, pensaduran dan percetakan, peserta dari negara ASEAN Plus Three (Korea, China dan Jepun) serta pegawai-pegawai JAS.

Seminar ini juga turut melibatkan lawatan ke Samsung Corning (M) Sdn. Bhd., Negeri Sembilan dan Kilang Malaysia Milk Sdn. Bhd. Petaling Jaya, Selangor.

Taklimat/ Pembentangan Teknikal/Lawatan

Beberapa aktiviti taklimat/pembentangan teknikal yang berkaitan dengan Teknologi Mesra Alam telah dibentangkan oleh syarikat-syarikat seperti berikut kepada kakitangan JAS:

- i) 'Okura Carbonizer' oleh Nasmech Technology Sdn. Bhd.;
- ii) 'Taklimat Mengenai Teknologi Rawatan Bau Busuk Air Kumbahan, Sungai dan Tapak Pelupusan Sampah' oleh Finetop Essence Sdn. Bhd.;
- iii) 'Taklimat Mengenai Teknologi Rawatan Effluen Kilang Kelapa Sawit' oleh PDS Global Sdn. Bhd.

iii) To share information and experience on the implementation and the promotion of Environmentally Sound Technology and Cleaner Production programmes in the ASEAN Plus Three countries; and

iv) To discuss and evaluate the various technical options and the financial mechanism required to assist in the industries in implementing Environmentally Sound Technology and Cleaner Production.

The two-day seminar was attended by 100 participants from small and medium Industries (SMI), textiles, food and beverage, electroplating, printing industries, ASEAN +3 countries (Korea, China and Japan) and DOE officers.

The seminar also included visits to Samsung Corning (M) Sdn. Bhd., Negeri Sembilan and Malaysia Milk Sdn. Bhd. Factory, Petaling Jaya, Selangor.

Briefing/Technical Presentation/Visits

Several briefing/technical presentation activities related to Environmentally Sound Technologies were given by companies to DOE staff:

- i) 'Okura Carbonizer' by Nasmech Technology Sdn. Bhd.;
- ii) 'Briefing on Odour Control Treatment Technology of Wastewater, River and Landfills' by Finetop Essence Sdn. Bhd.;
- iii) 'Briefing on Effluent Treatment Technology of Palm Oil Factories' by PDS Global Sdn. Bhd.



Delagasi seramai 15 pegawai dari Asian Institute of Technology Centre, Vietnam telah melawat Unit Teknologi Bersih pada 30 November 2007 untuk bertukar dan berkongsi maklumat mengenai Pengeluaran Bersih di antara kedua-dua negara.

Pada tahun 2007, sebanyak 21 lawatan ke kilang-kilang tekstil dan kilang makanan & minuman yang terpilih di sekitar Perak, Selangor, Melaka, Negeri Sembilan, Johor dan Kelantan telah dibuat oleh Unit Teknologi Bersih. Tujuan lawatan adalah untuk meninjau pelaksanaan opsyen Pengeluaran Bersih dan menyebarkan serta menasihatkan kilang tentang konsep Pengeluaran Bersih dan faedahnya perlaksanaannya.

Penerbitan

Dalam usaha mempromosikan Pengeluaran Bersih kepada sektor industri, Unit Pengeluaran Bersih telah menerbitkan dua bahan rujukan: 'Cleaner Production Audit Guidelines' dan 'Cleaner Production Blueprint for Malaysia' dan bahan-bahan pameran seperti poster, brosur, roll-up bunting dan pop-up display.

A delegation of 15 officers from the Asian Institute of Technology Centre, Vietnam visited the Cleaner Production Unit on 30 November 2007 to exchange and share information on Cleaner Production in both counties.

In 2007, 21 visits were made to selected textile and food & beverage factories around Perak, Selangor, Malacca, Negeri Sembilan, Johor and Kelantan by the Cleaner Production Unit. The objectives of these visits were to observe the implementation of Cleaner Production, to disseminate information on the concept of Cleaner Production and to advise the industries on the benefits of Cleaner Production implementation.

Publication

To further promote Cleaner Production to the industrial sector, the Cleaner Production Unit published two publications: 'Cleaner Production Audit Guidelines' and 'Cleaner Production Blueprint for Malaysia' and prepared exhibition materials such as posters, brochures, roll-up bunting and pop-up display.



Seminar ASEAN Plus Three Mengenai Promosi Teknologi Mesra Alam dan Pengeluaran Bersih
ASEAN Plus Three Seminar on Promotion of Environmentally Sound Technologies and Cleaner Production



Jadual 9.1 JAS: Senarai Aktiviti Promosi dan Kesedaran Tahun 2007
Table 9.1 DOE: List of Promotion and Awareness Activities in 2007

Bil/ No.	Tarikh/Date	Aktiviti & Program Activities & Programmes	Tempat/Venue
1	14 Mei 2007 2007, 14 th May	Seminar Mengenai Aspek Alam Sekitar dan Teknologi Bersih Kepada Industri Tekstil Seminar on Environment Aspects and Cleaner Production on Textile Industries	IOI Resort, Putrajaya IOI Resort, Putrajaya
2	27-28 November 2007 2007, 27 th -28 th November	Seminar ASEAN Plus Three Mengenai Promosi Teknologi Mesra Alam dan Pengeluaran Bersih ASEAN Plus Three Seminar on Promotion of Environmentally Sound Technologies and Cleaner Production	Hotel Istana, Kuala Lumpur Istana Hotel, Kuala Lumpur

Jadual 9.2 JAS: Senarai Projek-projek yang Dilaksanakan Tahun 2007
Table 9.2 DOE: List of Project Implementation in 2007

Bil/ No.	Projek Mula Project Started	Projek Project	Projek Selesai Project Completed
1	Jun 2007 2007, June	Projek Pembangunan "Sistem Aplikasi untuk Penilaian Pelaksanaan Cleaner Production" Development Project on "Application System for Evaluation and Implementation of Cleaner Production"	Mei 2008 2008, May

Jadual 9.3 JAS: Penerbitan oleh Unit Teknologi Bersih Tahun 2007
Table 9.3 DOE: Publication by Cleaner Production Unit in 2007

Tarikh/Date	Tajuk Penerbitan/ Publication Title
Disember 2007 2007, December	Cleaner Production Blueprint for Malaysia (Edisi Ke-2) Cleaner Production Blueprint for Malaysia (2nd Edition)
Mac 2007 2007, March	Cleaner Production Audit Guidelines Cleaner Production Audit Guidelines



Jadual 9.4 JAS: Senarai Aktiviti Taklimat /Ceramah Tahun 2007
Table 9.4 DOE: List of Briefing /Technical Presentation Activities in 2007

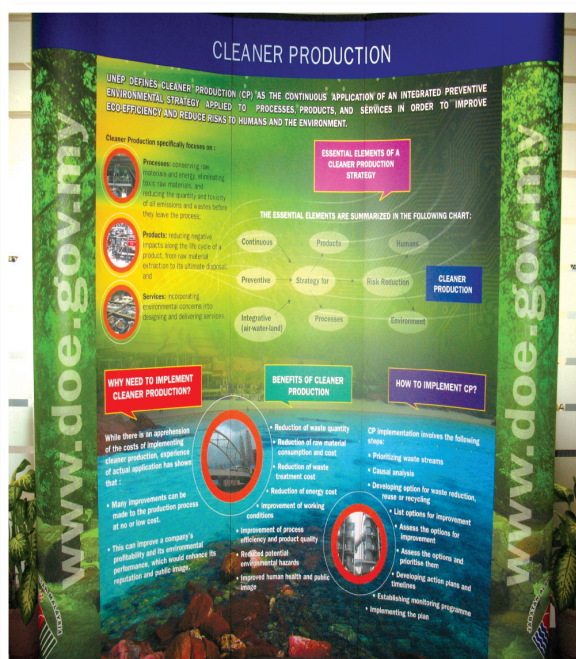
Bil/ No.	Tarikh/Date	Aktiviti Taklimat/Ceramah/ Briefing/Technical Presentation Activities	Tempat/Venue
1	30 November 2007 2007, 30 th November	Lawatan Kerja oleh Delegasi dari Vietnam Mengenai Promosi CP di Malaysia Study Visit by Vietnamese Delegations on CP Promotion in Malaysia	Ibu Pejabat Jabatan Alam Sekitar, Putrajaya DOE Headquarters Office, Putrajaya
2	12 Julai 2007 2007, 12 th July	Taklimat Mengenai Teknologi Rawatan Effluen Kilang Kelapa Sawit oleh PDS Global Sdn Bhd Briefing on Effluent Treatment Technology of Palm Oil Factories by PDS Global Sdn. Bhd.	Ibu Pejabat Jabatan Alam Sekitar, Putrajaya DOE Headquarters Office, Putrajaya
3	17 Mei 2007 2007, 17 th May	Taklimat Mengenai Teknologi Rawatan Bau Busuk Air Kumbahan, Sungai dan Tapak Pelupusan Sampah oleh Finetop Essence Sdn. Bhd. Briefing on Odour Control Treatment Technology of Wastewater, River and Landfills by Finetop Essence Sdn. Bhd.	Ibu Pejabat Jabatan Alam Sekitar, Putrajaya DOE Headquarters Office, Putrajaya
4	3 Mei 2007 2007, 3 rd May	Taklimat Mengenai 'Okura Carbonizer' - Teknologi Pemprosesan Bahan Buangan Mesra Alam oleh Nasmeh Technology Sdn. Bhd. Briefing on 'Okura Carbonizer' - Environmental Friendly Waste Processing Technology by Nasmeh Technology Sdn. Bhd.	Ibu Pejabat Jabatan Alam Sekitar, Putrajaya DOE Headquarters Office, Putrajaya



Lawatan Kerja oleh Delegasi dari Vietnam Mengenai Promosi CP di Malaysia
Study Visit by Vietnamese Delegations on CP Promotion in Malaysia



Penerbitan Cleaner Production
Cleaner Production Publication



Bahan Pameran Cleaner Production
Cleaner Production Exhibition Material



