Laporan Tahunan
2010 Annual Report

JABATAN ALAM SEKITAR
Kementerian Sumber Asli Dan Alam Sekitar

DEPARTMENT OF ENVIRONMENT
Ministry Of Natural Resources And Environment

Laporan Tahunan / Annual Report
2010

Jabatan Alam Sekitar
Kementerian Sumber Asli dan Alam Sekitar
Department of Environment
Ministry of Natural Resources and Environment

Kementerian Sumber Asli Dan Alam Sekitar Malaysia
Ministry of Natural Resources and Environment, Malaysia

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Kandungan/Contents

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 Plam 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
Escherichia coli	*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 Penguna-Pengguna Malaysia	FOMCA	Federation of Malaysian Consumer's Association

Singkatan/Abbreviations

Institut Penyelidikan Hutan Malaysia	FRIM	Forest Research Institute of Malaysia
Gabungan Persatuan-Persatuan Perdagangan Getah Malaysia	FRTM	Federation of Rubber Trade Association of Malaysia
Kemudahan Alam Sekitar Global	GEF	Global Environment Facility
Sistem Maklumat Geografik	GIS	Geograpical Information System
Hidroklorofluorokarbon	HCFC	Hydrochlorofluorocarbon
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 & Efluen-Efluen Perindustrian	KEEP	Sewage & Industrial Effluents
Kilang Kelapa Sawit Mentah	KKSM	Crude Palm Oil Mill
Penyaman Udara Kenderaan	MAC	Mobile Air Conditioning
Agensi Remote Sensing Malaysia	ARSM	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

Singkatan/Abbreviations

Kementerian Kesihatan	MOH	Ministry of Health
Kementerian Pembangunan Sumber Manusia	MOHR	Ministry of Human Resources
Kementerian Pengangkutan	MOT	Ministry of Transport
Memorandum Persefahaman	MOU	Memorandum of Understanding
Majlis Pengeluar-Pengeluar Getah Malaysia	MRPC	Malaysia Rubber Products Manufacturers' Council
JawatankuasaBersamaMalaysia-SingapuraMengenai Alam Sekitar	MSJCE	Malaysia – Singapore Joint Committee on the Environment
Pertubuhan Bukan Kerajaan	NGO	Non-Governmentnal Organisation
Kementerian Sumber Asli Dan Alam Sekitar	NRE	Ministry of Natural Resources and Environment
Amoniakal Nitrogen	NH_3N	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

Saya dengan ikhlas hati membentangkan Laporan Tahunan Jabatan Alam Sekitar (JAS) bagi tahun 2010.

Jabatan Alam Sekitar terus memberi penekanan kepada usaha-usaha mencegah dan mengawal pencemaran air, pencemaran udara dan pengurusan buangan terjadual. Pada tahun 2010, status kualiti udara di Malaysia menunjukkan peningkatan bilangan hari udara bersih dari 62.8 peratus berbanding 55.6 peratus pada tahun 2009.

Selaras dengan Indikator Prestasi Utama (KPI) yang disasarkan di bawah Program Kajian Pencegahan Pencemaran Dan Peningkatan Kualiti Air Sungai, bagi tahun 2010, sebanyak 14 sungai (atau 42% dari jumlah sungai yang diawasi) telah berjaya mencapai sasaran 100% pematuhan bagi punca-punca yang tertakluk di bawah Akta Kualiti Alam Sekeliling (AKAS), 1974 berbanding hanya lapan (8) sungai pada tahun lepas. Sebanyak 14 sungai lagi telah mencapai lebih 90% pematuhan.

JAS telah memperolehi sijil MS ISO 9001:2008 bagi skop pemprosesan Laporan EIA dan penguatkuasaan syarat-syarat kelulusan berdasarkan keperluan standard MS ISO 9001:2008 pada 19 Mac 2010. JAS telah bekerjasama dengan Unit Penyelarasan Pelaksanaan (ICU), Jabatan Perdana Menteri untuk membangunkan sistem Business Licensing Electronic Support (BLESS) iaitu permohonan melalui talian bagi kebenaran/kelulusan bertulis dan penilaian awal tapak oleh syarikat.

I am pleased to present the 2010 Annual Report of the Department of Environment (DOE).

Department of Environment continued the emphasis to the prevention and controlling of water pollution, air pollution and scheduled waste management. In 2010, the overall air quality status for Malaysia showed improvement with the number of good quality days increased to 62.8 percent compared to 55.6 percent in 2009.

In line with the Key Performance Indicator (KPI) set for the River Pollution Prevention and Water Quality Improvement programme in 2010, 14 rivers (or 42% of the total number of rivers monitored) achieved 100% compliance for pollution sources subjected to the Environmental Quality Act (EQA), 1974 compared to eight (8) rivers in 2009. Fourteen (14) other rivers achieved more than 90% compliance.

DOE received the MS ISO 9001:2008 certification, a Quality Management System certification for the processing of EIA Reports and enforcement of EIA approval conditions on 19 March 2010. DOE in collaboration with the Implementation and Coordination Unit (ICU), Prime Minister's Department implemented the on-line application system, Business Licensing Electronic Support (BLESS) for written permission and pre-siting evaluation approvals from companies.

JAS telah dianugerahkan penarafan 4 bintang dari Unit Pemodenan Tadbiran & Perancangan Pengurusan Malaysia, MAMPU pada 29 Mac 2010 berdasarkan prestasi pengurusan awam, perkhidmatan teras dan pengurusan pelanggan yang baik. JAS juga turut berjaya menerima Persijilan 5S dari Perbadanan Produktiviti Malaysia pada 4 Ogos 2010 di atas pematuhan kepada sistem pengurusan baik kualiti alam sekeliling.

JAS juga turut melaksanakan program-program dan aktiviti-aktiviti kesedaran dan pendidikan alam sekitar serta penyebaran maklumat untuk pelbagai peringkat masyarakat sebagai usaha berterusan dan bersama dalam membangunkan masyarakat yang penyayang dan mesra alam. Setiap individu memainkan peranan penting untuk melindungi alam sekitar kita melalui penerapan amalan mesra alam di dalam tindakan setiap masa.

Saya ingin mengambil kesempatan ini untuk merakamkan penghargaan kepada semua pihak yang telah memberikan sokongan dan komitmen mereka kepada Jabatan Alam Sekitar dalam melaksanakan tugas murni untuk alam sekitar yang lestari, sihat dan kualiti hidup yang lebih baik.

Salam Mesra Alam

DOE was awarded the 4-star rating from the Malaysian Administrative Modernisation and Management Planning Unit, MAMPU on 29 March 2010 for good performance in public management, core services and clients management. DOE also succeeded in the 5S Certification from Malaysia Productivity Corporation on 4 August 2010 for the good environmental quality management system practices.

DOE continued to implement its awareness and environmental education programmes and activities as well as disseminate information to various levels of the society as an effort and long term measure towards building a caring and environmentally friendly society. Members of the public play an important role in the protection of our environment by observing environmentally friendly practices in their daily activities.

I would like to take this opportunity to record my appreciations to everyone who has given invaluable support and commitment to the Department of Environment in carrying out its duties for a sustainable, healthy and an enhanced quality of life.

Good Wishes For the Environment

Dato' Hajah Rosnani Ibarahim
Ketua Pengarah Alam Sekitar Malaysia
Director-General of Environmental Quality Malaysia

VISI / VISSION

Pemuliharaan Alam Sekitar Untuk
Kesejahteraan Rakyat

Environmental Conservation for the Well-being
of the People

MISI / MISSION

Memastikan Pembangunan Lestari di dalam
Proses Memajukan Negara

To Ensure Sustainable Development 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 Environmental Management

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

BAB 1 / CHAPTER 1

Aktiviti Majlis Kualiti Alam Sekitar
Environmental Quality Council (EQC) Activities

Majlis Kualiti Alam Sekeliling telah bermesyuarat sebanyak tiga (3) kali dalam tahun 2010 iaitu:

i) Mesyuarat Bilangan Ke-105 telah diadakan pada 19 Januari 2010,
ii) Mesyuarat Bilangan Ke-106 telah diadakan pada 1 April 2010 dan
iii) Mesyuarat Bilangan ke-107 telah diadakan pada 26 Oktober 2010.

Mesyuarat Bilangan ke-105 dan ke-107 telah diadakan di Ibu Pejabat Jabatan Alam Sekitar, Putrajaya, manakala mesyuarat ke-106 telah diadakan di Bilik Mesyuarat Mutiara, Aras 13, Wisma Sumber Asli, Kementerian Sumber Asli dan Alam Sekitar, Putrajaya. Kesemua mesyuarat tersebut telah dipengerusikan oleh Y.Bhg. Prof. Dato' Ir. Dr. Zaini Bin Ujang, Naib Canselor, Universiti Teknologi Malaysia.

Bermula dari Mesyuarat ke-106, Encik Azhar Noordin yang mewakili Industri Petroleum telah digantikan dengan Encik Mohd Tarmizi Munir, manakala Encik Piarapakaran Subramaniam @ Piara tidak lagi mewakili Gabungan Persatuan Pengguna Malaysia (FOMCA). Tempat beliau masih belum diisi.

Mesyuarat merakamkan penghargaan kepada Encik Azhar Noordin dan Encik Piarapakaran Subramaniam@Piara di atas sumbangan mereka kepada EQC.

Mesyuarat telah membincangkan dan memperakukan beberapa cadangan yang dikemukakan untuk pertimbangan. Antara kertas kerja yang dibentangkan dalam tahun 2010 adalah:

Mesyuarat EQC ke-105 (19 Januari 2010)

1. Kertas EQC Bil.1/105/2010
   - Kertas oleh Jabatan Alam Sekitar
   - Kertas Makluman Mengenai Cadangan Penggunaan Hasil Kajian Bagi Kriteria dan Standard Kualiti Air Marin

2. Kertas EQC Bil.2/105/2010
   - Kertas oleh Jabatan Alam Sekitar
   - Kertas Makluman Mengenai Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Daripada Enjin Petrol) 20__ dan Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Daripada Enjin Diesel) 20__.

The Environmental Quality Council (EQC) had three (3) meetings in 2010:

i) the 105th meeting was held on 19 January 2010,
ii) the 106th meeting was held on 1 April 2010, and
iii) the 107th meeting was held on 26 October 2010.

The 105th and 107th meetings were held at the Head Office of the Department of Environment (DOE) Putrajaya while the 106th meeting was held in the Mutiara Meeting Room, Level 13, Wisma Sumber Asli, Ministry of Natural Resources and Environment, Putrajaya. All the meetings were chaired by Y.Bhg. Prof. Dato' Ir. Dr. Zaini Bin Ujang, Vice Chancellor, University Technology of Malaysia.

Begining from the 106th meeting, Mr. Azhar Noordin was replaced by Mr. Mohd Tarmizi Munir representing the Petroleum Industry while the post representating the Federation of Malaysian Consumers Associations (FOMCA) left vacant by Mr.Piarapakaran Subramaniam @ Piara has yet to be replaced.

The council placed on record its appreciations to Mr. Azhar Noordin and Mr. Piarapakaran Subramaniam@Piara for their contributions to EQC.

The council had deliberated and endorsed matters presented at the meetings. Among the papers brought for their attention in 2010 were:

105th EQC Meeting (19 January 2010)

1. EQC Paper No. 1/105/2010
   - Paper by Department of Environment
   - Information Paper Regarding The Proposal of Usage of the findings from the Marine Water Quality Criteria and Standards Study

2. EQC Paper No. 2/105/2010
   - Paper by Department of Environment
   - Information Paper on the Environmental Quality Regulations (Control of Emission From Petrol Engine) 20__ and Environmental Quality Regulations (Control of Emission From Diesel Engine) 20__.

3. Taklimat Pengerusi Jawatankuasa Kecil EQC
   – Program Pembersihan Sungai Klang Disampaikan oleh Jabatan Alam Sekitar

4. Taklimat Pengerusi Jawatankuasa Kecil EQC
   – Penentuan Halatuju Majlis Kualiti Alam Sekeliling oleh Wakil Pertubuhan Berdaftar Yang Mempunyai Pengetahuan dan Mempunyai Kepentingan Dalam Perkara Berhubung Alam Sekitar.

5. Taklimat Pengerusi Jawatankuasa Kecil EQC
   – Semakan Perlaksanaan Dasar Alam Sekitar Negara oleh Wakil Kakitangan Akademik dari Universiti atau Kolej di Malaysia

Mesyuarat EQC ke-106 (1 April 2010)

1. Kertas EQC Bil.1/106/2010
   - Kertas oleh Jabatan Alam Sekitar
   • Taklimat Pengerusi Jawatankuasa Kecil EQC Program Pembersihan Sungai Klang

2. Kertas EQC Bil.2/106/2010
   • Taklimat Pengerusi Jawatankuasa Kecil EQC Penentuan Halatuju Majlis Kualiti Alam Sekeliling oleh Wakil Pertubuhan Berdaftar Yang Mempunyai Pengetahuan dan Mempunyai Kepentingan Dalam Perkara Berhubung Alam Sekitar.

3. Kertas EQC Bil.3/106/2010
   • Taklimat Pengerusi Jawatankuasa Kecil EQC Semakan Perlaksanaan Dasar Alam Sekitar Negara oleh Wakil Kakitangan Akademik dari Universiti atau Kolej di Malaysia

4. Kertas EQC Bil.4/106/2010
   - Kertas oleh Jabatan Alam Sekitar
   • Kertas Pemakluman Indikator Utama Prestasi (KPI) Ketua Pengarah Alam Sekitar

Mesyuarat EQC ke-107 (26 Oktober 2010)

1. Kertas EQC Bil.1/107/2010
   - Kertas oleh Jabatan Alam Sekitar
   • Pelan Tindakan Udara Bersih

2. Kertas EQC Bil.2/107/2010
   - Kertas oleh Kementerian Sumber Asli Dan Alam Sekitar
   • Road Map of Carbon Intensity

3. Briefing by the EQC Sub-committee Chairman
   - on the Klang River Cleaning Program Given by Department of Environment

4. Briefing by the EQC Sub-committee Chairman
   – on the Determination of EQC's Vision by the Representative from the Registered Societies Knowledgeable and Having Interests in Matters Pertaining to the Environment

5. Briefing by the EQC Sub-committee Chairman
   - on the Review on the Implementation of the National Environmental Policy by the Representative from the Academic Staff of the Universities or Colleges in Malaysia

106th EQC Meeting (1 April 2010)

1. EQC Paper No. 1/106/2010
   - Paper by Department of Environment
   • Briefing by the EQC Sub Committee Chairman on the Klang River Cleaning Program

2. EQC Paper No. 2/106/2010
   • Briefing by the EQC Sub-committee Chairman on the Determination of EQC's Vision by Representative from Societies Knowledgeable And Having Interests In Matters Pertaining To The Environment

3. EQC Paper No. 3/106/2010
   • Briefing by the EQC Sub-committee Chairman on the Review on the Implementation of the National Environmental Policy by Representative from the Academic Staff of the Universities or Colleges in Malaysia

4. EQC Paper No. 4/106/2010
   - Paper by Department of Environment
   • Information Paper on the main Key Performance Indicator (KPI) of the Director General of Environment.

107th EQC Meeting (26 Oktober 2010)

1. EQC Paper No. 1/107/2010
   - Paper by Department of Environment
   • Clean Air Action Plan

2. EQC Paper No. 2/107/2010
   - Paper by Ministry of Natural Resources And Environment
   • Road Map of Carbon Intensity

Jadual 1.1 JAS: Majlis Kualiti Alam Sekeliling, 2010
Table 1.1 DOE: Environmental Quality Council, 2010

Bil./ No.	Perwakilan/Representative	Nama/Name
1.	Pengerusi EQC/ EQC Chairman	YBhg. Prof. Dato' Ir. Dr. Zaini Bin Ujang
2.	Ketua Setiausaha Kementerian Sumber Asli dan Alam Sekitar/ Secretary-General, Ministry of Natural Resources and the Environment	Y.Bhg. Dato' Zoal Azha Yusof
3.	Wakil Ketua Setiausaha Kementerian Perdagangan Antarabangsa dan Industri/ Secretary-General, Ministry of Trade & Industry or his authorized representative	Tuan Haji Amran Sameon
4.	Wakil Ketua Setiausaha Kementerian Perdagangan Dalam Negeri dan Hal Ehwal Pengguna/ Secretary-General, Ministry of Domestic Trade & Consumers Affairs or his authorized representative	Encik Nor Azhar Manap
5.	Wakil Ketua Setiausaha Kementerian Pertanian dan Industri Asas Tani/ Secretary-General, Ministry of Agriculture dan Agro-Base Industries or his authorized representative	Encik Muhammad Salimi Bin Sajari
6.	Wakil Ketua Setiausaha Kementerian Sumber Manusia/ Secretary-General, Ministry of Human Resources or his authorized representative	Tuan Haji Mohamad Bin Jamil
7.	Wakil Ketua Setiausaha Kementerian Pengangkutan/ Secretary-General, Ministry of Transport or his authorized representative	Puan Saripah Abd. Mutalib
8.	Wakil Pengarah Kementerian Kesihatan Malaysia/ Director General, Ministry of Health or his authorized representative	Y.M. Engku Azman B. Tuan Mat
9.	Wakil Kerajaan Negeri Sabah/ Representative from the Sabah Government Ahli Giliran/Alternate Member	Datuk Suzannah Liaw Encik Yabi Yangkat
10.	Wakil Kerajaan Negeri Sarawak/ Representative from the Sarawak Government Ahli Giliran/Alternate Member	Datu Wan Alwi Bin Dato' Seri Wan Hashim Encik Peter Sawal
11.	Wakil Industri Petroleum/ Representative from the Petroleum Industry Ahli Giliran/Alternate Member	Encik Mohd Tarmizi Munir Cik Maureen Song Chai Kee
12.	Wakil Industri Kelapa Sawit/ Representative from the Oil Palm Industry Ahli Giliran/Alternate Member	Encik Teo Leng Dr.K. Ramadasan
13.	Wakil Persekutuan Pekilang-Pekilang Malaysia/ Representative from the Federation of Malaysian Manufacturers Ahli Giliran/Alternate Member	Y. Bhg. Tan Sri Datuk Clifford Francis Herbert Encik Mohamad Dit
14.	Wakil Industri Getah/ Representative from the Rubber Industry Ahli Giliran/Alternate Member	Encik Lim Sum Teck Encik Chin Hon Meng
15.	Wakil Kakitangan Akademik dari Universiti atau Kolej/ Representative from the Academic Staff of the Universities or Colleges in Malaysia Ahli Giliran/Alternate Member	Prof. Dr. Nik Meriam Bte Nik Sulaiman Ir. Dr. Abdul Aziz Abd. Rahman
16.	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	Encik Peter Ho Ms Geetha P.Kumaran
17.	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	Encik Piarapakaran Subramanium @ Piara Ms Christine Lim Shok Hong

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 semua kakitangan di Ibu Pejabat dan JAS Negeri. Bahagian ini dibahagikan kepada lima (5) seksyen yang utama iaitu Seksyen Pentadbiran, Seksyen Sumber Manusia, Seksyen Kewangan, Seksyen Pembangunan dan Latihan dan Seksyen Pengurusan Aset.

Pentadbiran Am

Pada 2010, Seksyen Pentadbiran telah menjalankan aktiviti-aktiviti seperti berikut:

- Perhimpunan Bulanan bersama Ketua Pengarah dan kakitangan JAS;
- Ceramah Pengurusan Integriti oleh SPRM pada 15 Mac 2010;
- Pengurusan persediaan untuk Audit Penarafan Bintang MAMPU bagi Jabatan pada 29 Mac 2010;
- Hari Bersama Pelanggan Bilangan 2/2010 pada 23 April 2010;
- Kempen Derma Darah serta Ceramah Kesedaran Menderma Darah oleh Pusat Darah Negara pada 23 Julai 2010 dan 20 Disember 2010;
- Aktiviti-aktiviti ke arah pensijilan 5S di Ibu Pejabat JAS. JAS telah mendapat Sijil 5S daripada MPC pada 4 Ogos 2010;
- Majlis Jamuan Sambutan Hari Raya Aidilfitri 2010 pada 30 September 2010;
- Pertandingan Penjimatan Tenaga dan Sumber Pejabat Peringkat Kementerian Sumber Asli dan Alam Sekitar pada 15 Oktober 2010 sehingga 27 Oktober 2010;
- Hari Inovasi JAS pada 11 November 2010; dan
- Ceramah Pencegahan Kebakaran pada 16 Disember 2010

The Administration and Finance Division is responsible for planning, executing and monitoring general administrative activities, human resource 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 five (5) sections, namely the Administrative Section, Human Resource Section; Finance Section, Development and Training Section and the Assets Management Section.

General Administration

In 2010, the Administrative Section conducted the following activities:

- Monthly Assembly with the Director General and staff of DOE;
- Talk on Integrity Management by MACC on 15 March 2010;
- Coordinating all preparation efforts for the MAMPU Star Rating Audit on 29 March 2010;
- The 2nd Meet The Client's Day 2010 on 23 April 2010;
- Blood Donation Campaign including a talk on Blood Donation Awareness by National Blood Bank on 23 July 2010 and 20 December 2010;
- Various activities leading to the 5S certification by MPC on 4 August 2010;
- Hari Raya Aidilfitri celebration luncheon on 30 September 2010;
- Competition on Energy and Cost Saving at Ministrial level involving all Divisions and Agencies under the Ministry of Natural Resources and Environment from 15- 27 October 2010;
- Innovation Day on 11 November 2010; and
- Talk on Fire Prevention on 16 December 2010.

Perhimpunan Bulanan Ibu Pejabat Jabatan Alam Sekitar di Putrajaya
Monthly Assembly at Department of Environment Headquarters, Putrajaya

Majlis Pelancaran Program Pementoran JAS Siri 1 pada 6 Ogos 2010
Officiation Ceremony of the DOE Mentoring Programme Part 1

Kewangan

Pada tahun 2010, jumlah peruntukan yang diterima oleh JAS adalah sebanyak RM 133,840,620.00. Daripada jumlah tersebut, sebanyak RM 104,708,800.00 (78.23%) telah diperuntukkan bagi perbelanjaan mengurus sementara baki sebanyak RM 29,131,820.00 (21.77%) merupakan peruntukan perbelanjaan pembangunan. Prestasi perbelanjaan mengurus dan pembangunan bagi tahun 2010 masing-masing pada tahap 99.72% dan 99.7 % (**Rajah 2.1** dan **Rajah 2.2**)

Pengurusan Sumber Manusia

Pada tahun 2010, Jabatan Alam Sekitar telah meneruskan pengambilan kakitangan baru untuk mengisi jawatan sedia ada dan bagi keperluan masa depan. Sehingga 31 Disember 2010, keseluruhan perjawatan JAS adalah sebanyak 1,645 jawatan. Daripada jumlah perjawatan tersebut 22.31% adalah anggota Kumpulan Pengurusan dan Profesional dan 77.69% adalah anggota Kumpulan Sokongan (**Rajah 2.3, 2.4** dan **2.5**).

Selain itu, urusan kenaikan pangkat telah dilaksanakan pada tahun 2010 untuk jawatan berikut:-

i. 16 jawatan Gred C48.
ii. 18 jawatan Gred C44.
iii. 5 jawatan Gred C32.
iv. 6 jawatan Gred J22.
v. 1 jawatan Gred N4
vi. 2 jawatan Gred R6
vii. 1 jawatan Gred R4

Latihan dan Kompetensi

Pegawai dan kakitangan baru yang dilantik telah diberikan latihan asas yang berkaitan untuk memastikan sistem penyampaian Jabatan dapat dipertingkatkan. Selaras dengan konsep pembelajaran berterusan, semua warga kerja jabatan digalakkan untuk menjalani pelbagai kursus yang dianjurkan oleh JAS dan agensi-agensi berkaitan. Bagi tahun 2010, 83.8% daripada keseluruhan bilangan anggota JAS telah menjalani kursus melebihi 7 hari dengan jayanya.

Memperlihatkan kepentingan pengurusan sumber manusia dalam membangunkan individu yang berpengetahuan, berkemahiran dan inovatif, pegawai-pegawai dikehendaki melepasi Peperiksaan Penilaian Tahap Kecekapan (PTK).

Finance

In 2010, DOE received a total budget allocation of RM 133,840,620.00. Of this amount, a sum of RM 104,708,800.00 (78.23%) was allocated for operational expenditure while the remaining RM 29,131,820.00 (21.77%) was allocated for development projects. Expenditure performances for the operational and development budgets were 99.72% and 99.7% respectively (**Figure 2.1** and **Figure 2.2**).

Human Resource Management

In 2010, the Department of Environment continued to recruit new staff to fulfill its present and future needs. As of 31 December 2010, the total strength of DOE was 1,645 of which 22.31% were from the Professional and Management Group and 77.69% from the Support Group (**Figures 2.3, 2.4** and **2.5**).

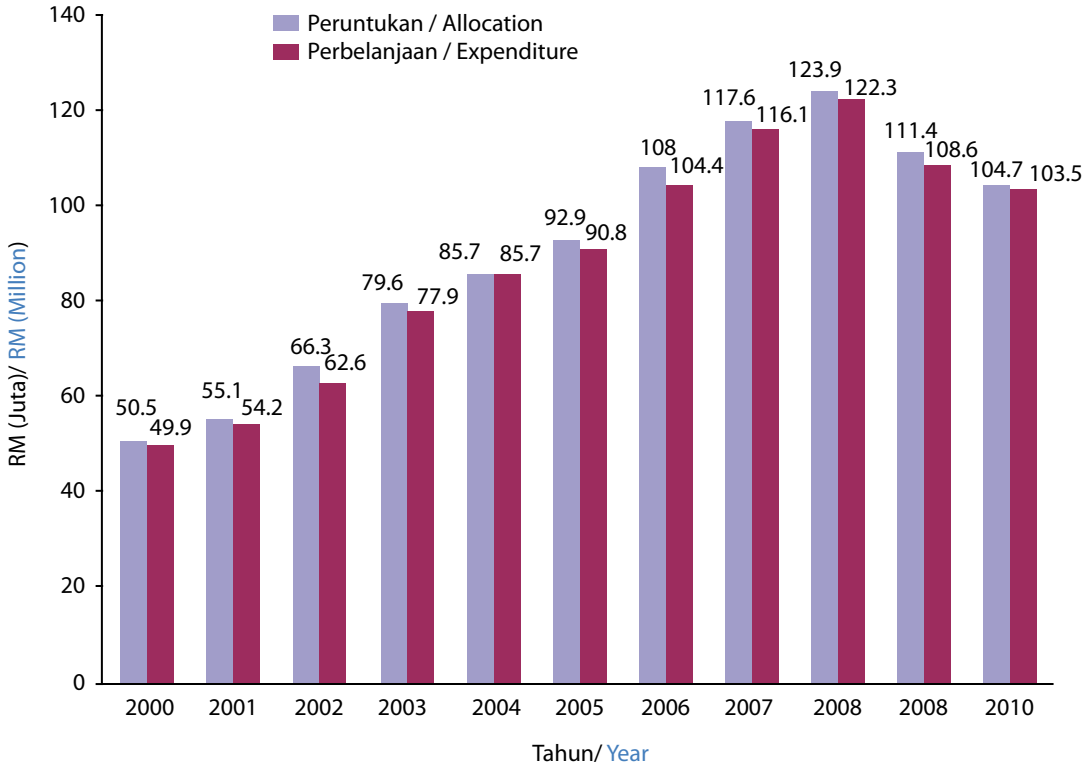
In addition to that, the promotion exercise was done in 2010 for the following positions:-

i. 16 positions of Grade C48
ii. 18 positions of Grade C44
iii. 5 positions of Grade C32
iv. 6 positions of Grade J22
v. 1 position of Grade N4
vi. 2 positions of Grade R6
vii. 1 position of Grade R4

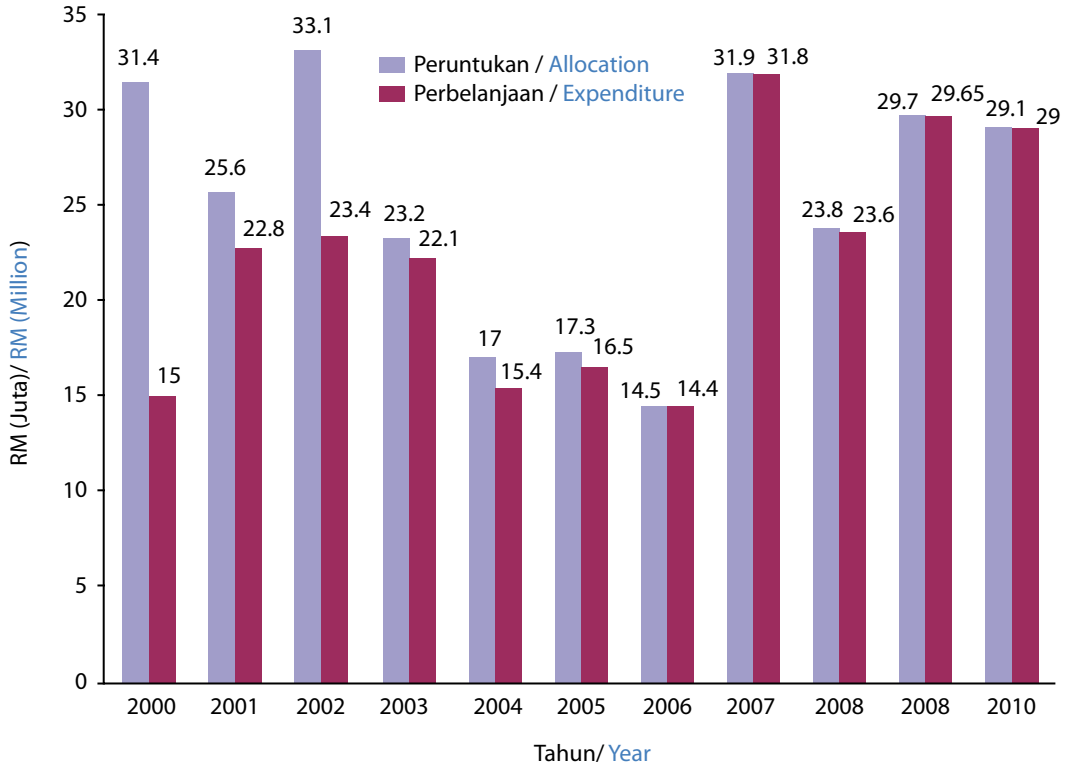
Training and Competency

New officers and staff recruited were provided with relevant basic training to ensure that the delivery system of the Department would be further enhanced. In line with the concept of continuous learning, all staff was encouraged to participate in various courses organized by DOE and relevant agencies. In 2010, 83.8% of the Department's total workforce had successfully undergone more than 7 days of training.

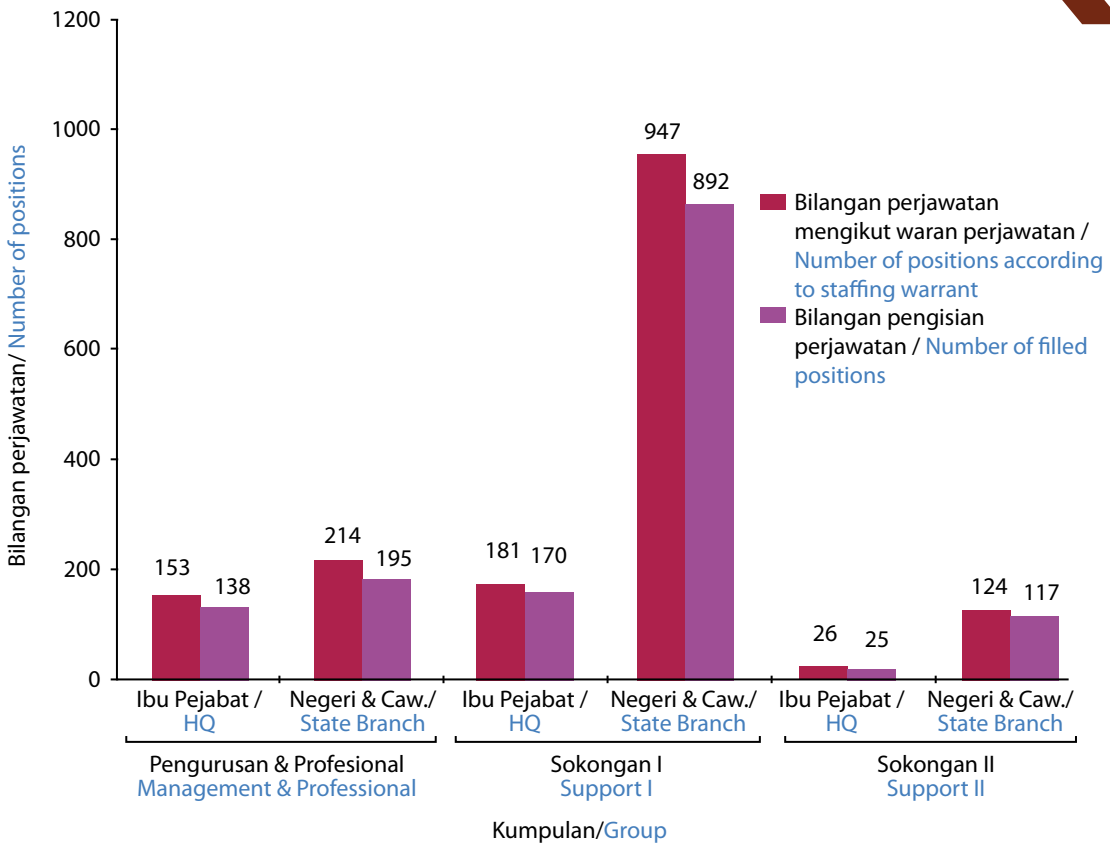
In view of the importance of human resource management in developing highly knowledgeable, skillful and innovative individuals, officers were required to undergo the Competency Level Assessment Examinations.



Rajah 2.1 JAS: Peruntukan dan Perbelanjaan (Mengurus), 2000 -2010
Figure 2.1 DOE: Allocation and Expenditure (Operational), 2000 -2010

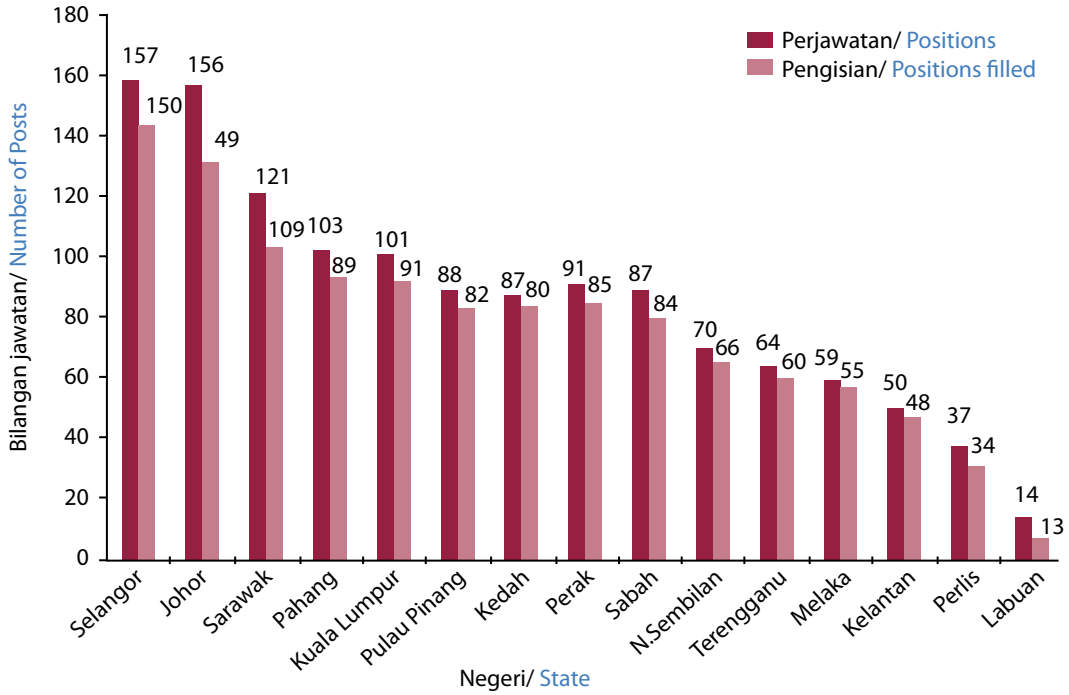


Rajah 2.2 JAS: Peruntukan dan Perbelanjaan (Pembangunan), 2000-2010
Figure 2.2 DOE: Allocation and Expenditure (Development), 2000-2010



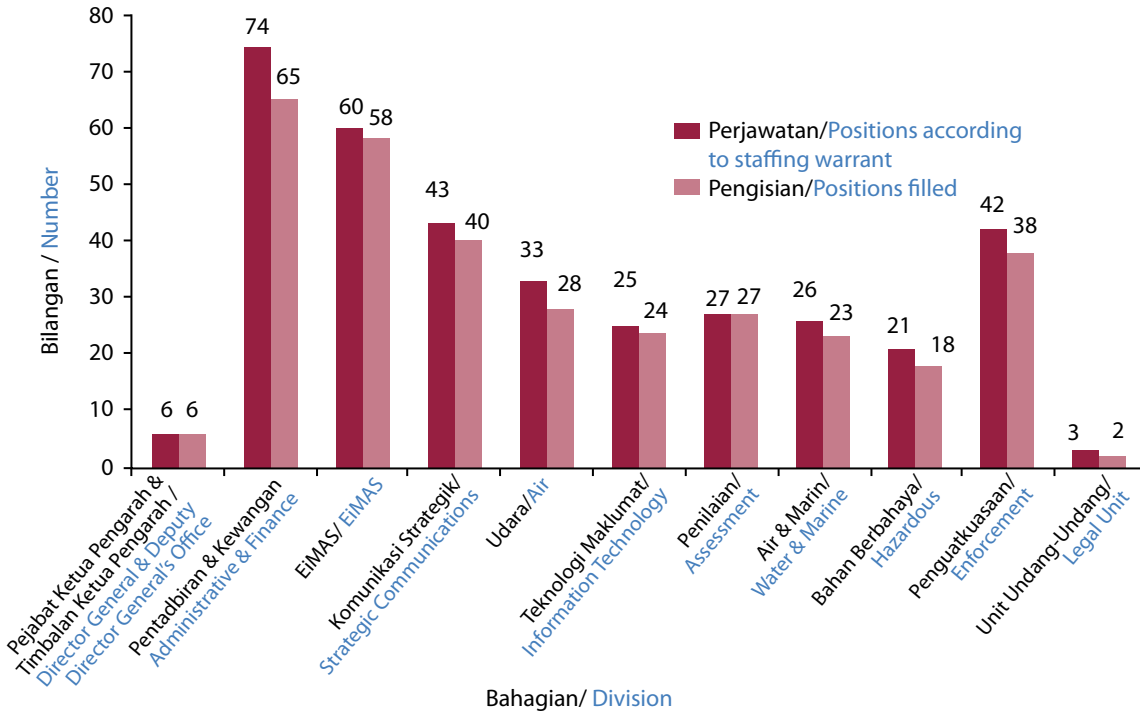
Rajah 2.3 JAS: Perbandingan Antara Bilangan Perjawatan Dalam Waran Perjawatan dan Bilangan Pengisian Mengikut Kumpulan (JAS Ibu Pejabat dan Negeri), 2010

Figure 2.3 DOE: Comparison between the Number of Positions Stipulated in Staffing Warrant and the Number of Positions Filled (Headquarters and State Offices) According to Group, 2010



Rajah 2.4 JAS: Perbandingan Perjawatan (Mengikut Waran Perjawatan) dan Pengisian Jawatan Mengikut Negeri, 2010

Figure 2.4 DOE: Comparison between the Number of Positions (Stipulated in Staffing Warrant) and the Number of Filled Positions by State, 2010



Rajah 2.5 JAS: Perbandingan Perjawatan (Mengikut Waran Perjawatan) dan Pengisian Jawatan Mengikut Bahagian di Ibu Pejabat JAS, 2010

Figure 2.5 DOE: Comparison between the Number of Positions (Stipulated in Staffing Warrant) and the Number of Filled Positions by Division in DOE Headquarters, 2010

Peserta-peserta Bengkel Pengurusan Tatatertib anjuran Seksyen Sumber Manusia pada 26 – 27 Januari 2010

Participants of the Disciplinary Procedure Management Workshop organized by the Human Resource Section on 26 - 27 January 2010

Bagi tahun 2010, Peperiksaan PTK telah diadakan sebanyak dua (2) kali bagi jawatan teknikal dan Kumpulan Sokongan II yang dilantik di bawah kuasa Ketua Setiausaha Kementerian.

Di samping itu, Peperiksaan Pengesahan Dalam Jawatan kepada pegawai-pegawai Gred C41, C27 dan J17 telah diadakan sebanyak 2 kali (Jun dan Disember). Peperiksaan Kenaikan Pangkat Secara Lantikan (KPSL) bagi pegawai Gred C41 telah diadakan pada bulan Ogos 2010 yang bertujuan untuk meningkatkan kerjaya pegawai-pegawai teknikal di JAS.

Penghargaan Terhadap Warga Kerja Cemerlang

Majlis Anugerah Perkhidmatan Cemerlang Tahun 2009 telah diadakan pada 27 April 2010. Seramai 118 orang pegawai telah dipilih untuk menerima anugerah ini sebagai tanda penghargaan jabatan terhadap prestasi kerja yang cemerlang pegawai-pegawai ini sepanjang tahun 2009.

Pengurusan Aset dan Stor

Seksyen Pengurusan Aset, Stor dan Peralatan telah ditubuhkan di Ibu Pejabat Jabatan Alam Sekitar pada Januari 2010. Fungsi utama Seksyen ini adalah bagi menyelaras pengurusan aset dan stor bagi seluruh Jabatan Alam Sekitar Malaysia berdasarkan Pekeliling Perbendaharaan Bilangan 5 Tahun 2007 (Tatacara Pengurusan Aset) dan Pekeliling Perbendaharaan Bil. 5 Tahun 2009 (Tatacara Pengurusan Stor).

In 2010, the Competency Level Assessment Examinations (PTK) were held two (2) times for all technical officers as well as those in the Supporting Group II, appointed by the Ministry's Secretary General.

Besides that, two (2) Service Confirmation Examinations for officers of Grades C41, C27 and J17 were held (June and December). The Promotion Examinations (KPSL) for officers to Grades C41 were held in August 2010 to allow technical officers in DOE to further enhance their career development.

Appreciation of Excellent Employees

The 2009 Excellent Service Awards Presentation Ceremony was held on 27 April 2010. A total of 118 officers received this award in recognition of their excellent job performance by the Department acknowledgement towards the excellent job performance of the recipients throughout year 2009.

Assets and Store Management

The Assets, Store and Instruments Section was set up in the Department of Environment Headquarters on January 2010. Its main function is to coordinate the management of assets and store for the department nationwide, in accordance to the Treasury Circular No.5 2007 (Assets Management) and the Treasury Circular No.5 2009 (Store Management).

Peserta-peserta Kursus Perolehan & Pengurusan Kewangan Bagi Projek Pembangunan JAS pada 19 - 22 September 2010

Participants of the Purchasing and Finance Management Course for DOE Development Projects on 19 - 22 September 2010

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 impak alam sekitar akibat aktiviti pembangunan. Ianya juga dapat menghindarkan perbelanjaan yang tinggi dalam pelaksanaan projek.

EIA adalah kajian untuk mengenalpasti, meramal, menilai dan memberi maklumat mengenai kesan-kesan kepada alam sekitar bagi sesuatu cadangan projek dan mengemukakan langkah-langkah tebatan sebelum projek berkenaan diluluskan dan dilaksanakan.

Laporan EIA 2010

Sebanyak 277 laporan telah diterima pada tahun 2010 (**Rajah 3.1**). Daripada bilangan ini, 266 laporan EIA telah diproses mengikut prosedur penilaian awal EIA dan 11 laporan EIA lagi melalui prosedur EIA terperinci (**Rajah 3.2**). Negeri Johor menerima bilangan laporan EIA tertinggi pada tahun 2010 diikuti dengan Negeri Selangor (**Rajah 3.3** dan **Rajah 3.4**).

Prosedur EIA: Piagam Pelanggan

Selaras dengan usaha kerajaan di dalam mempertingkatkan perkhidmatan sektor awam, Jabatan Alam Sekitar (JAS) telah mengambil langkah bagi mempertingkatkan serta memperkukuhkan sistem penyampaian Jabatan, khususnya di dalam prosedur dan pemprosesan EIA. Sehubungan dengan itu, piagam pelanggan bagi memproses Laporan EIA Awal telah disingkatkan dari 12 minggu kepada 5 minggu, dan piagam pelanggan bagi Laporan EIA Terperinci telah ditambahbaik dari 20 minggu kepada 12 minggu. Usaha ini dilihat dapat membantu di dalam melancarkan pelaksanaan projek-projek pembangunan khususnya projek-projek kerajaan dan juga projek-projek yang telah digariskan di dalam pelan-pelan pembangunan.

Beberapa langkah berterusan diambil di dalam memastikan prosedur dan pemprosesan EIA yang ditambahbaik berjalan dengan lancar, seperti berikut:

(i) Memperkenalkan Skim Pendaftaran Jururunding baru bagi mempertingkatkan tahap profesionalisma EIA *practitioners* dengan memastikan mereka mempunyai

Environmental Impact Assessment (EIA) is essentially a planning tool for preventing and reducing environmental impact due to development activity. It also seeks to avoid costly mistakes in project implementation.

EIA is a study to identify, predict, evaluate and communicate information about the impacts on the environment of a proposed project and to detail out the mitigating measures prior to project approval and implementation.

EIA Reports 2010

A total of 277 reports were received in 2010 (**Figure 3.1**). Of these, 266 were preliminary EIA Reports and 11 detailed EIA Reports (**Figure 3.2**). Johor received the highest number of EIA reports in 2010, followed by Selangor (**Figure 3.3** and **Figure 3.4**).

EIA Procedures: Client Charter

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

kelayakan dan kemahiran bagi melaksanakan kajian EIA. Semua jururunding EIA hendaklah berdaftar dengan JAS di bawah skim baru ini supaya laporan EIA yang berkualiti disediakan.

(ii) Menyediakan beberapa dokumen panduan (*guidance document*) dalam bentuk "*scope of work*" dan "*checklist*" bagi membantu jururunding menyediakan laporan EIA yang lengkap, berkualiti serta menjurus kepada isu-isu utama dan signifikan bagi sesuatu projek, yang boleh dirujuk melalui laman web JAS. Laporan EIA yang tidak memenuhi skop ini (tidak lengkap) akan terus ditolak.

(iii) Melengkapkan pengetahuan pegawai-pegawai yang memproses laporan EIA dari semasa ke semasa dengan kursus-kursus teknikal yang ditawarkan dan pengalaman semasa di lapangan dan semasa pemprosesan laporan EIA.

Pada tahun 2010, JAS telah mengemaskini *Environmental Requirements - A Guide For Investors* dengan memasukkan peraturan baru effluen perindustrian, kumbahan dan kawalan pencemaran dari Stesen Pemindahan Sisa Pepejal dan Kambus Tanah.

JAS juga telah mengemaskini Panduan Penilaian Permohonan Kelulusan Laporan EIA Awal Bagi Aktiviti Pulihguna Luar Tapak Buangan Terjadual sebagai rujukan kepada pegawai JAS di dalam memahami dasar, prosedur serta kehendak di dalam merancang dan menilai cadangan projek di bawah aktiviti 18a(ii), Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 1987. Di samping itu juga, Prosedur Tetap Operasi Penguatkuasaan EIA telah dikemaskini bagi memantapkan prosedur penguatkuasaan EIA.

Siasatan Penguatkuasaan Projek EIA

Sejumlah 1,148 siasatan penguatkuasaan telah dijalankan pada tahun 2010 untuk mengenalpasti status pembangunan dan pematuhan projek-projek EIA (**Rajah 3.5**). Daripada siasatan-siasatan tersebut sebanyak 534 notis atau surat arahan dan sebanyak 66 kompaun telah dikeluarkan manakala 13 kes telah didakwa di mahkamah kerana tidak mematuhi syarat-syarat kelulusan.

Input Alam Sekitar Kepada Perancangan Pembangunan

Pada tahun 2010, sejumlah 120 input alam sekitar telah dikemukakan kepada agensi-agensi yang berkaitan

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 focus on critical and significant issues of the proposed project. These guidance documents are made available in the DOE's website. Incomplete EIA reports will be rejected instantaneously by the DOE.

(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.

In 2010. DOE has updated the Environmental Requirements - A Guide For Investors by incorporating the new regulations on industrial effluent, sewage and control of pollution from solid waste transfer station and landfill.

DOE has updated the Guideline in Assessing Application of Preliminary EIA Approval for Construction of Toxic and Hazardous Waste (off site recovery plant) activity for DOE officers in understanding the policy, procedures and requirements in planning dan assessing project proposal under activity 18a(ii) Environmental Quality (Prescribed Activity)(Environmental Impact Assessment) Order 1987. In addition, the EIA Enforcement Standard Operating Procedure (SOP) has also been updated to strengthen the EIA Enforcement Procedure.

EIA Enforcement Investigations

A total of 1,148 enforcement investigations were conducted in 2010 to check on the progress of projects and compliance of EIA approval conditions (**Figure 3.5**). Consequently, 534 notices or written directives and 66 compounds were served and 13 cases were charged in court for non-compliance.

Environmental Input For Development Planning

In 2010, a total of 120 environmental inputs were provided to other agencies in relation to development planning coordination, local plans, national physical plan studies, environmentally sensitive areas and highland development activities.

dengan penyelarasan perancangan pembangunan, pelan tempatan, kajian rancangan fizikal negara, kajian kawasan sensitif alam sekitar dan aktiviti-aktiviti pembangunan di tanah tinggi.

Skim Pendaftaran Jururunding 2010

Skim Pendaftaran Jururunding EIA yang baru telah mula diperkenalkan pada 1 Jun 2007. Mulai 1 Oktober 2007, Jabatan Alam Sekitar telah mula mewajibkan semua jururunding EIA untuk berdaftar dengan JAS sebelum dibenarkan untuk menjalankan kajian. Tujuan utama skim pendaftaran ini adalah untuk memastikan hanya individu yang benar-benar kompeten sahaja dibenarkan menjalankan kajian EIA. Ini bagi memastikan kualiti laporan EIA adalah baik dan membantu pembuat keputusan membuat keputusan yang terbaik terhadap sesuatu cadangan projek.

Pada tahun 2010, empat (4) Mesyuarat Panel Penilaian Permohonan Jururunding telah diadakan. Sebanyak 61 permohonan telah diterima dengan satu (1) permohonan diluluskan dan didaftarkan sebagai Jururunding EIA, tiga (3) sebagai Jururunding Subjek dan sembilan (9) Penolong Jururunding (**Jadual 3.1**). Sehingga 31 Disember 2010, sejumlah 943 individu telah didaftarkan dengan JAS untuk menjalankan kajian EIA, dimana 241 orang adalah Jururunding EIA, manakala selebihnya merupakan Jururunding Subjek seramai 331 orang dan Penolong Jururunding seramai 371 orang (**Jadual 3.2**).

Selain itu, proses pembaharuan pendaftaran bagi Jururunding EIA juga telah dijalankan sebanyak empat (4) kali. Sehingga 31 Disember 2010, seramai 202 individu yang berdaftar dengan JAS sebagai Jururunding EIA perlu memperbaharui pendaftaran mereka. Walaubagaimanapun, hanya 125 individu sahaja yang telah memperbaharui pendaftaran mereka. Bagi mereka yang tidak memohon untuk pembaharuan, nama mereka telah digugurkan dari senarai Jururunding EIA. Menerusi poses penilaian berterusan, JAS juga telah mengambil tindakan ke atas individu yang menghasilkan laporan yang kurang berkualiti atau tiada integriti.

Kursus Induksi Untuk Jururunding EIA

Bermula Januari 2010, setiap pemohon yang ingin berdaftar sebagai Jururunding EIA dan memperbaharui pendaftaran, telah diwajibkan menghadiri kursus EIA *Induction Course for EIA Consultant* dan lulus penilaian sebelum didaftarkan atau diperbaharui pendaftaran mengikut kategori masing-masing. Sejumlah lapan (8)

EIA Consultants Registration 2010

The new EIA Consultant Registration Scheme was introduced on 1 June 2007. Starting from the 1 October 2007, the Department of Environment has made it a requirement for consultants to be registered before they are allowed to conduct the study. The main objective of the scheme is to ensure only competent individuals are allowed to conduct EIA study. This is to ensure the quality of the EIA reports; which will later assist the decision makers making the best decision on the proposed project.

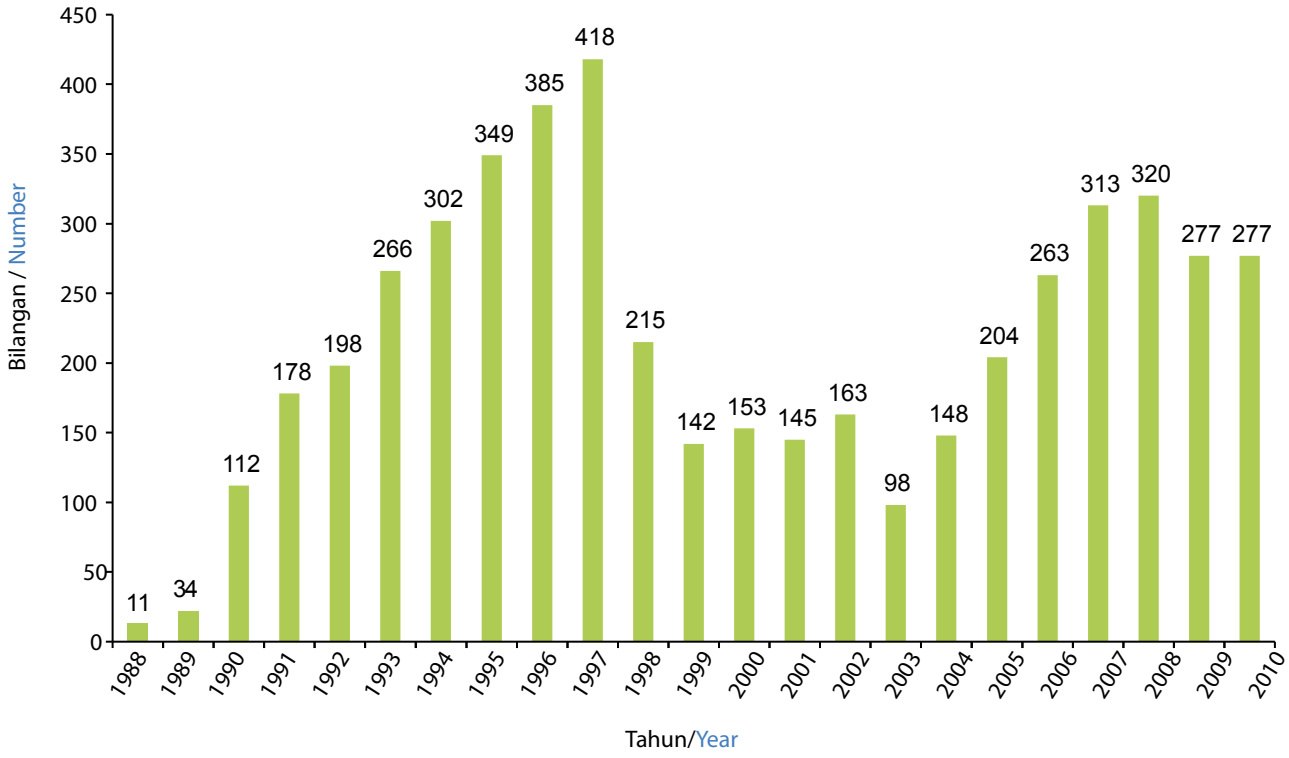
In 2010, four (4) Application Review Panel Meetings had been carried out. A total of 61 applications were reviewed and only one (1) had been registered as EIA Consultant, three (3) as Subject Consultants, and nine (9) as Assistant Consultants (**Table 3.1**). Until 31 December 2010, a total of 943 individuals had been registered with DOE to carry out EIA studies. A total of 241 are EIA Consultants, 331 are Subject Consultants and 371 are Assistant Consultants (**Table 3.2**).

In addition, the renewal of registered EIA Consultants was carried out four (4) times in 2010. Until 31 December 2010, 202 registered EIA Consultants were required to renew their registration. However, only 125 individuals applied for renewal. Those who did not apply for the renewal were dropped from the registered lists. Through continuous assessment exercise, DOE is able to monitor and take action based on the performance of the consultants especially on their quality of report prepared and their integrity in performing their tasks.

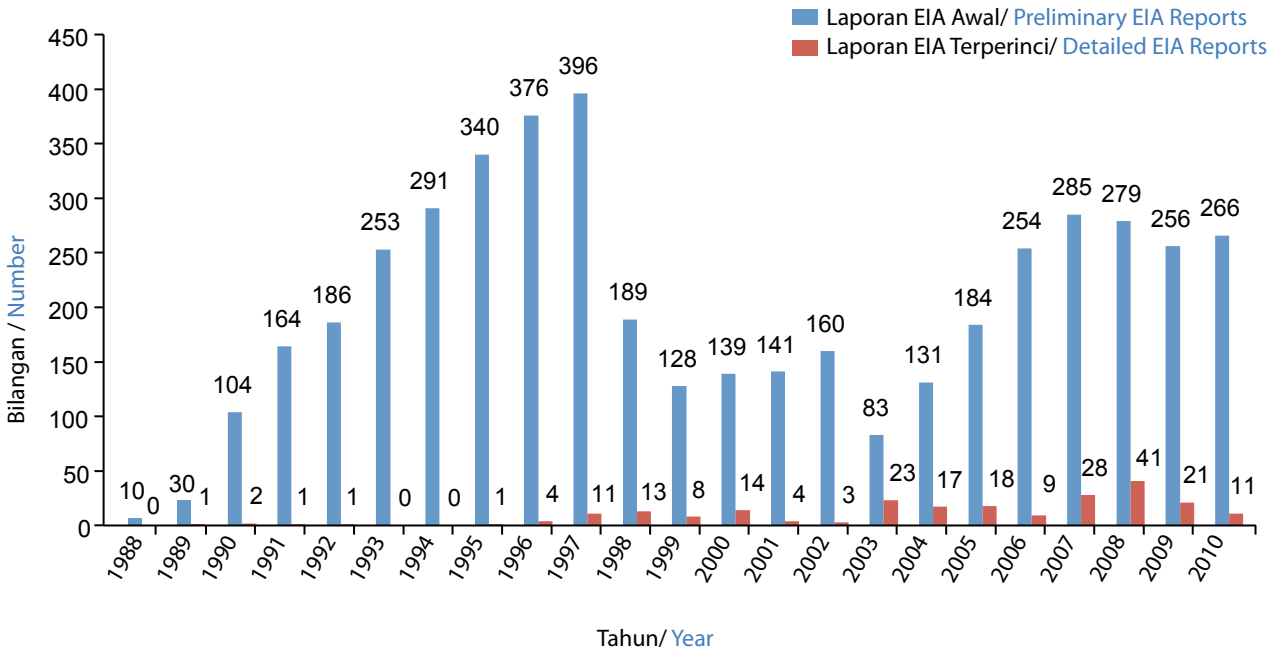
Induction Course For EIA Consultants

Starting from January 2010, all registered consultants were required to attend the compulsory EIA Induction Course as a prerequisite for the renewal of their registration. New applicants were also required to attend the induction course prior to submission of their application to DOE. A total of eight (8) courses and assessments had been conducted with a total of 239 participants (**Table 3.3**).

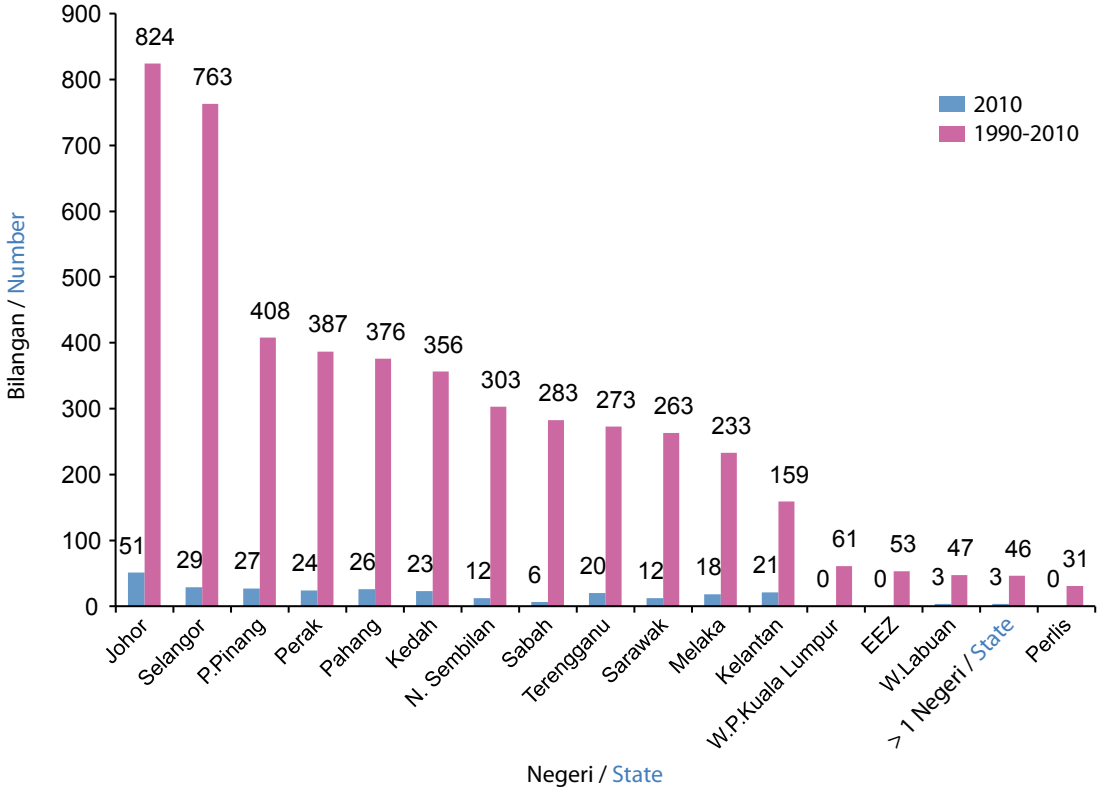
The objective of the course is to provide detailed explanation to all consultants involved in EIA study on the relevant administrative and technical requirements; as well as other critical issues to be considered in EIA study. It also provides information for preparing the EIA reports that help in project planning. The modules were developed by DOE to strengthen the preparation of EIA studies particularly in the scoping and reporting method.



Rajah 3.1 JAS: Bilangan Laporan EIA Yang Diterima Mengikut Tahun, 1988-2010
Figure 3.1 DOE: Number Of EIA Received by Year, 1988-2010



Rajah 3.2 JAS: Bilangan Laporan EIA dan Jenis Laporan Diterima, 1988 - 2010
Figure 3.2 DOE: Number and Type of Reports EIA Received, 1988 - 2010



Rajah 3.3 JAS: Bilangan Laporan EIA Yang Diterima Mengikut Negeri ,1990-2010
Figure 3.3 DOE: Number of EIA Reports Received by State 1990-2010

kursus dan lapan (8) penilaian telah dilaksanakan ke atas 239 orang peserta (**Jadual 3.3**).

Tujuan utama kursus ini dilaksanakan adalah untuk memberikan bimbingan dalam penyediaan Laporan EIA bagi memenuhi kehendak dan keperluan JAS serta pihak-pihak yang berkepentingan. Ia juga untuk memberikan penerangan dalam penyediaan EIA bagi membantu perancangan projek. Modul kursus ini dibangunkan kerana Jabatan Alam Sekitar mendapati masih terdapat beberapa kelemahan dalam kajian EIA khususnya skop kajian serta kaedah pelaporan.

Skim Pendaftaran Juruaudit Alam Sekitar

Skim Pendaftaran Juruaudit Alam Sekitar yang baru telah mula diperkenalkan pada Jun 2009. Mulai 1 Disember 2009, JAS hanya menerima laporan-laporan audit pematuhan yang disediakan oleh Juruaudit Alam Sekitar berdaftar dengan JAS sahaja.

Tujuan utama skim pendaftaran ini adalah untuk memastikan hanya individu yang benar-benar kompeten sahaja dibenarkan menjalankan audit alam sekitar. Ini bagi memastikan pelaksanaan audit dan pelaporan audit alam sekitar adalah mengikut prosedur dan garispanduan yang ditetapkan.

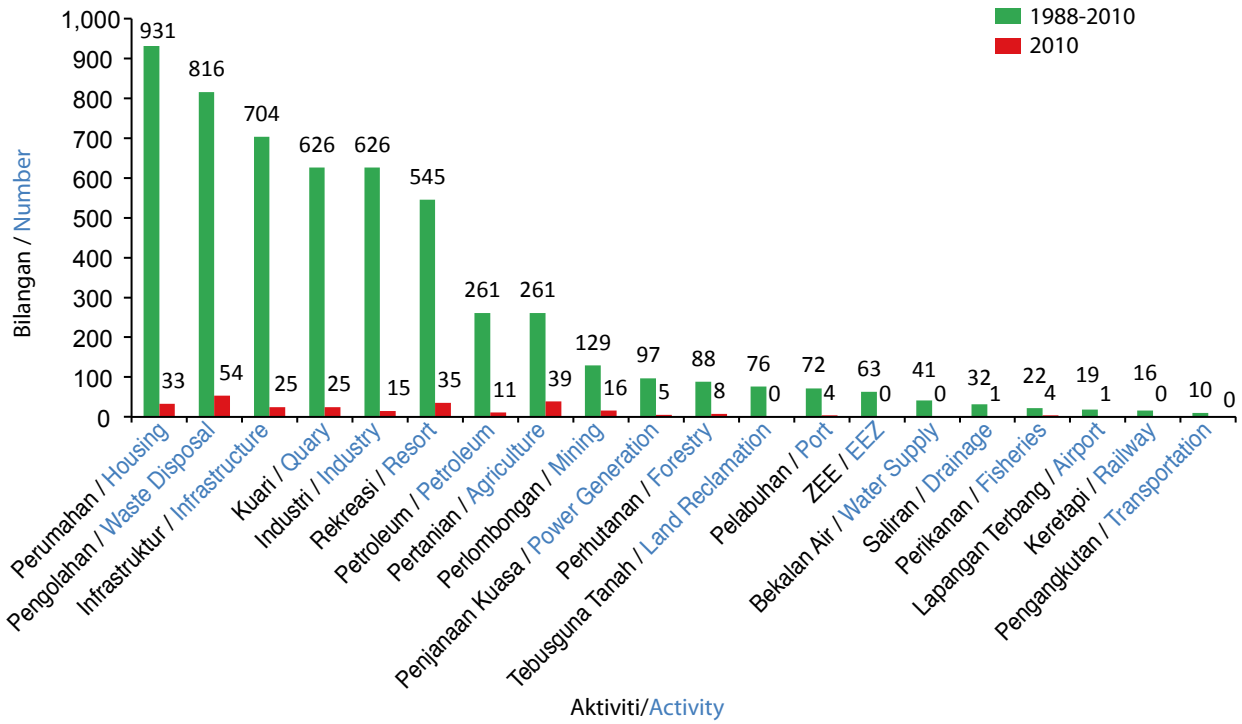
Environmental Audit Registration

The new Environmental Audit Registration Scheme was introduced on 1 June 2009. Starting from 1 December 2009, the DOE will only accept environmental audit reports prepared and submitted by Registered Environmental Auditors.

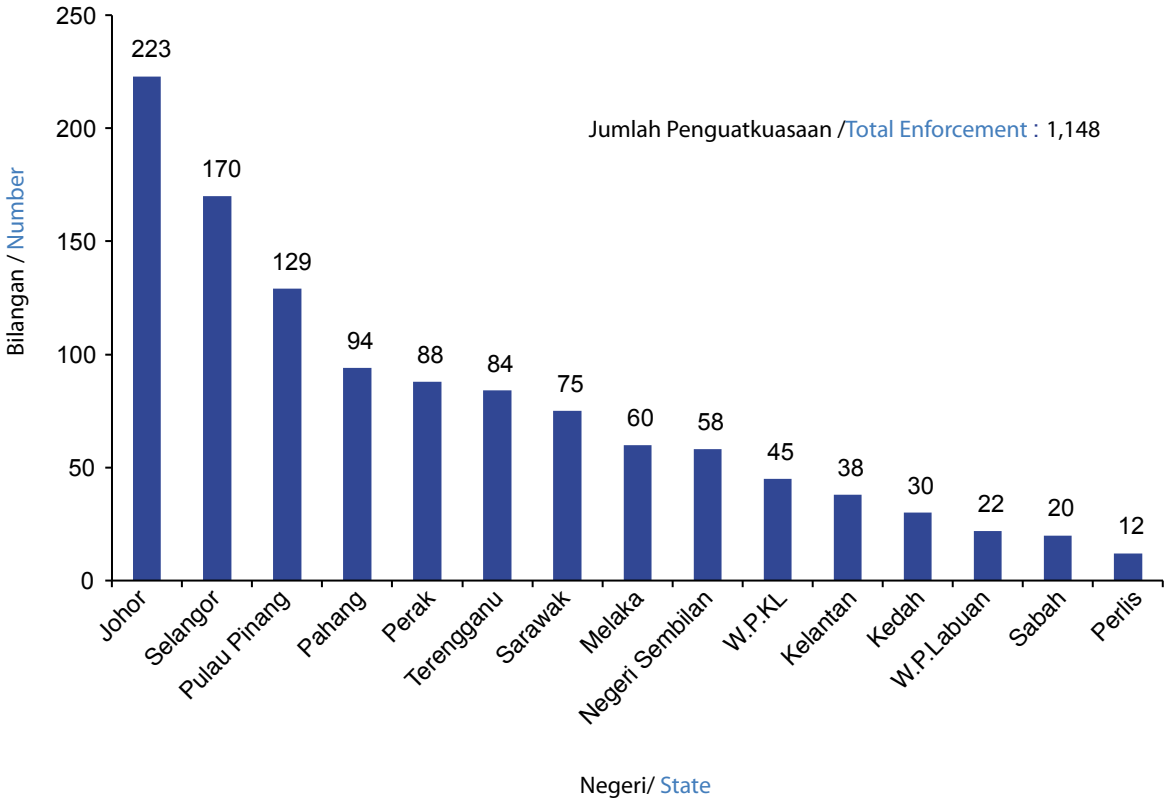
The main objective of the scheme is to ensure that only competent individuals are allowed to conduct this third party environmental audit. This scheme will ensure the implementation of the environmental audit and reporting follow the procedures and guidelines.

The implementation of the environmental audit will help to reduce enforcement activity and encourage the industry and project proponent to increase their environmental compliance directly and indirectly.

In 2010, a total of 26 applications were received; and 12 auditors were successfully registered as Environmental Auditors (**Table 3.4**). Until 31 December 2010, a total of 53 auditors had been registered under the Scheme (**Table 3.5**).



Rajah 3.4 JAS: Bilangan Laporan EIA yang Diterima Mengikut Aktiviti, 1988-2010
Figure 3.4 DOE: Number of EIA Reports Received by Activity, 1988-2010



Rajah 3.5 JAS: Siasatan Penguatkuasaan Projek EIA, 2010
Figure 3.5 DOE: Post EIA Enforcement Investigations, 2010

Pelaksanaan audit ini dapat mengurangkan kebergantungan terhadap aktiviti penguatkuasaan oleh JAS dan menggalakkan industri dan pemaju projek untuk meningkatkan tahap pematuhan alam sekitar secara langsung serta tidak langsung.

Pada tahun 2010, sebanyak 26 permohonan telah diterima dan hanya 12 daripadanya telah didaftarkan sebagai Juruaudit Alam Sekitar (**Jadual 3.4**). Sehingga 31 Disember 2010, sebanyak 53 orang individu telah didaftarkan sebagai Juruaudit Alam Sekitar (**Jadual 3.5**).

Kursus Induksi Untuk Juruaudit Alam Sekitar

Pada tahun 2010, pelaksanaan kursus induksi untuk Juruaudit Alam Sekitar yang berdaftar pada tahun 2009 dan 2010 telah mula dijalankan. Kehadiran ke kursus ini juga diwajibkan bagi semua juruaudit berdaftar. Sebanyak dua (2) Kursus Induksi telah diadakan di Putrajaya untuk Juruaudit Alam Sekitar (**Jadual 3.6**).

Tujuan kursus ini adalah untuk memberikan penerangan terperinci kepada semua Juruaudit Alam Sekitar tentang keperluan-keperluan pentadbiran dan teknikal semasa menjalankan audit alam sekitar, meningkatkan

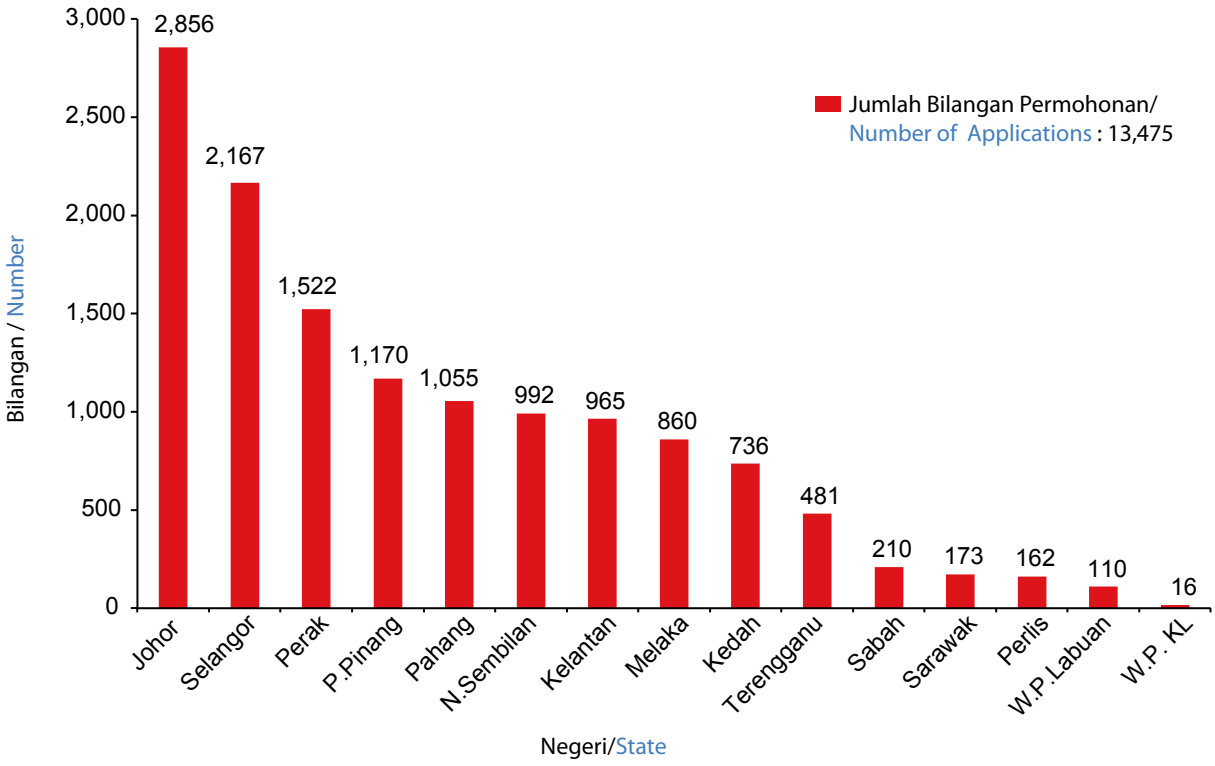
Induction Course for Environmental Auditors

Starting from 2010, all registered environmental auditors were required to attend the compulsory Induction Course and passed the assessment as a prerequisite for renewal of their registration. Two (2) Induction Courses were held in Putrajaya for Registered Environmental Auditors (**Table 3.6**).

The objectives of the course are to guide the Registered Environmental Auditor to undertake environmental audit in a manner that meets DOE requirements and audit procedures; to give better understanding on DOE legal requirements (Environmental Quality Act, 1974) as well as other related conventions and also to guide the environmental auditor to prepare Environmental Audit reports in a format specified by the DOE.

Notification on Environmental Audit Requirement

DOE had released a written notification in the main newspapers on November 2010 to notify all relevant stakeholders on the requirements of the Third Party Audit (as stated in EIA Conditions of Approval). The preparation of the audit report has to be done by a Registered Environmental Auditor.



Rajah 3.6 JAS: Penilaian Awal Tapak Untuk Pembangunan Projek-Projek Mengikut Negeri, 2010
Figure 3.6 DOE: Pre-Sitting Evaluation of Development Projects By State, 2010

pemahaman terhadap undang-undang dan peraturan-peraturan di bawah Akta Kualiti Alam Sekeliling, 1974 dan konvensyen yang berkaitan, serta memberi panduan untuk pelaporan audit alam sekitar mengikut format yang ditetapkan oleh JAS.

Pengumuman Notifikasi Keperluan Menjalankan Audit Alam Sekitar

JAS telah mengeluarkan notifikasi di akhbar-akhbar utama pada November 2010 mengenai keperluan menjalankan Audit Pihak Ketiga (*Third Party Audit*) bagi projek-projek yang telah mendapat kelulusan EIA seperti yang dinyatakan di dalam syarat kelulusan EIA. Bagi projek-projek yang tidak tertakluk EIA, Audit Pihak Ketiga, perlu dijalankan sekiranya menerima Notifikasi Bertulis daripada JAS.

Pembangunan Profesional Berterusan (*Continuous Professional Development*)

Keperluan bagi CPD telah diwajibkan di bawah Skim Pendaftaran Juruaudit Alam Sekitar, di mana juruaudit berdaftar perlu mengumpul jumlah jam latihan yang tertentu bagi membolehkan mereka memperbaharui pendaftaran. Mana-mana penyedia latihan boleh memohon bagi mendapatkan jam kredit. Maklumat berkenaan program-program ini kemudiannya disebarkan kepada semua juruaudit berdaftar.

Penilaian Awal Tapak Projek

Bagi projek-projek pembangunan yang tidak tertakluk di bawah Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling), 1987, penilaian awal tapak (PAT) perlu dikemukakan untuk menentukan kesesuaian tapak projek yang dicadangkan.

Pada tahun 2010, sejumlah 13,475 permohonan telah diterima di mana Negeri Johor mencatat permohonan PAT (2,856) paling tinggi, diikuti oleh Selangor (2,167) dan lain-lain negeri seperti yang ditunjukkan di dalam **Rajah 3.6**. Kesemua permohonan ini dirujukkan kepada JAS oleh pihak berkuasa seperti Pihak Berkuasa Tempatan dan Pejabat Tanah.

Input teknikal telah diberikan kepada pihak berkuasa bagi memastikan aspek alam sekitar diberi pertimbangan yang sewajarnya di dalam membuat keputusan.

Continuous Professional Development (CPD)

The requirement for CPD has been included under the Environmental Auditor Registration Scheme. Therefore, registered auditors are required to obtain a certain number of training (CPD) hours every year to enable them to renew their registration. Course organiser or course provider may apply to obtain CPD hours for their programmes. The information about the programmes were disseminated to all registered auditors.

Project Pre-Siting Evaluation

Where development project were not subjected to the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 1987, pre-siting evaluation of proposed site suitability were carried out.

In 2010, a total of 13,475 such applications were received, whereby Johor recorded the highest number (2,856), followed by Selangor (2,167), and other states as shown in **Figure 3.6**. These applications were mainly referred to the DOE by Local Authorities and Land Offices.

Technical environmental aspects were given due consideration in the decision making process.

Written Notification and Approval

The Environmental Quality (Sewage) Regulations, 2009 and the Environmental Quality (Industrial Effluents) Regulations, 2009 require written notifications to be submitted to the Director-General of Environment before construction of sewage/industrial effluent treatment systems are installed.

In 2010, 54 written notifications were received for new sources of sewage discharge or release (**Figure 3.7A**) and 325 written notifications were received for new or altered sources of discharges of industrial effluents or mixed effluents (**Figure 3.7B**).

The Environmental Quality (Clean Air) Regulations, 1978 require Written Approval to be submitted to the Director-General of Environment before air pollution control systems are installed.

Pemberitahuan Dan Kelulusan Bertulis

Peraturan-Peraturan Kualiti Alam Sekeliling (Kumbahan) 2009 dan Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian), 2009 menghendaki supaya pemberitahuan bertulis diperolehi terlebih dahulu daripada Ketua Pengarah Alam Sekitar (KPAS) sebelum apa-apa sistem pengolahan kumbahan/efluen perindustrian dipasang.

Pada tahun 2010, 54 pemberitahuan bertulis diterima bagi punca baru pembuangan atau pelepasan kumbahan (**Rajah 3.7A**) dan 325 pemberitahuan bertulis diterima bagi punca baru atau yang diubah efluen perindustrian atau efluen bercampur (**Rajah 3.7B**).

Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih), 1978 menghendaki supaya Kebenaran Bertulis diperoleh terlebih dahulu daripada Ketua Pengarah Alam Sekitar (KPAS) sebelum alat kawalan pencemaran udara dipasang.

Pada tahun 2010, JAS telah menerima sebanyak 1,809 permohonan bagi pemasangan alat kawalan pencemaran udara (**Rajah 3.8**) dan 2,360 permohonan bagi kelulusan bertulis untuk pemasangan alat pembakaran bahan api seperti dandang dan alat janakuasa (**Rajah 3.9**).

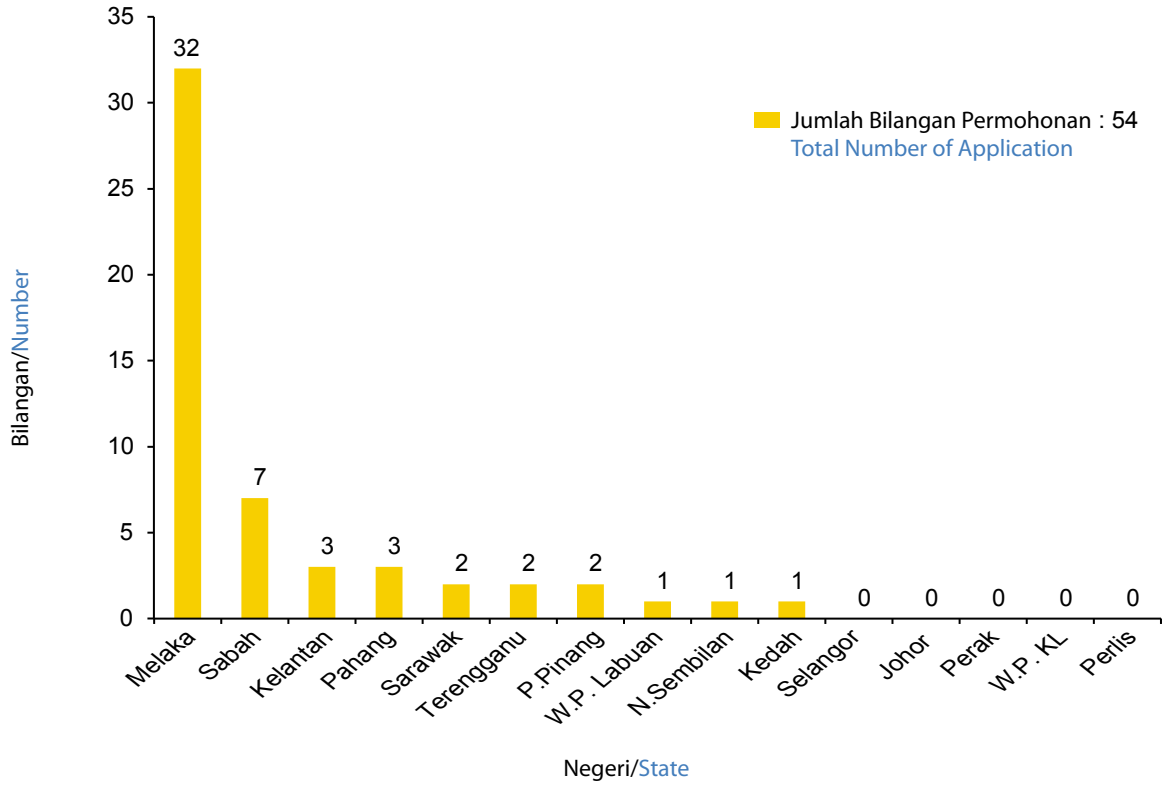
In 2010, DOE received 1,809 applications for installation of air pollution control equipment (**Figure 3.8**) and 2,360 applications for Written Approvals for installation of fuel burning equipment such as boilers and generator sets (**Figure 3.9**).

Geographical Information System (GIS)

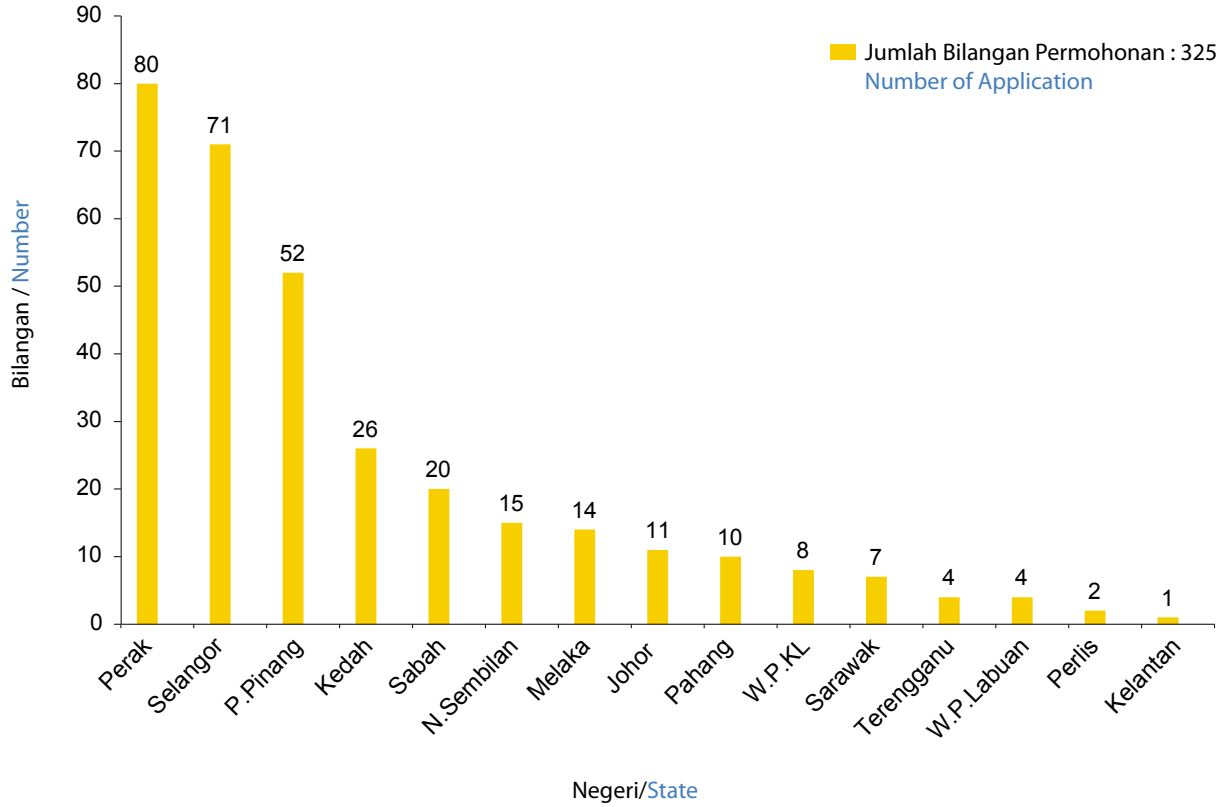
Various GIS development programs in DOE were extensively implemented in 2010 for the benefit of all DOE officers. The GIS portal application was developed and officially used on 1 November 2010 for development, analysis and environmental management purposes.

For data development programs, remote sensing data acquisitions had been implemented to update the spatial data center. Besides that, programs to complete and update the location of pollution sources, environmental monitoring stations, development projects and prescribed premises enacted under the Environmental Quality Act (EQA), 1974 had been continuously conducted.

In 2010, two (2) workshops were held to provide training to DOE State officers; GIS Portal Enhancement Workshop and Basic GIS 1 Workshop. The GIS Annual Meeting for

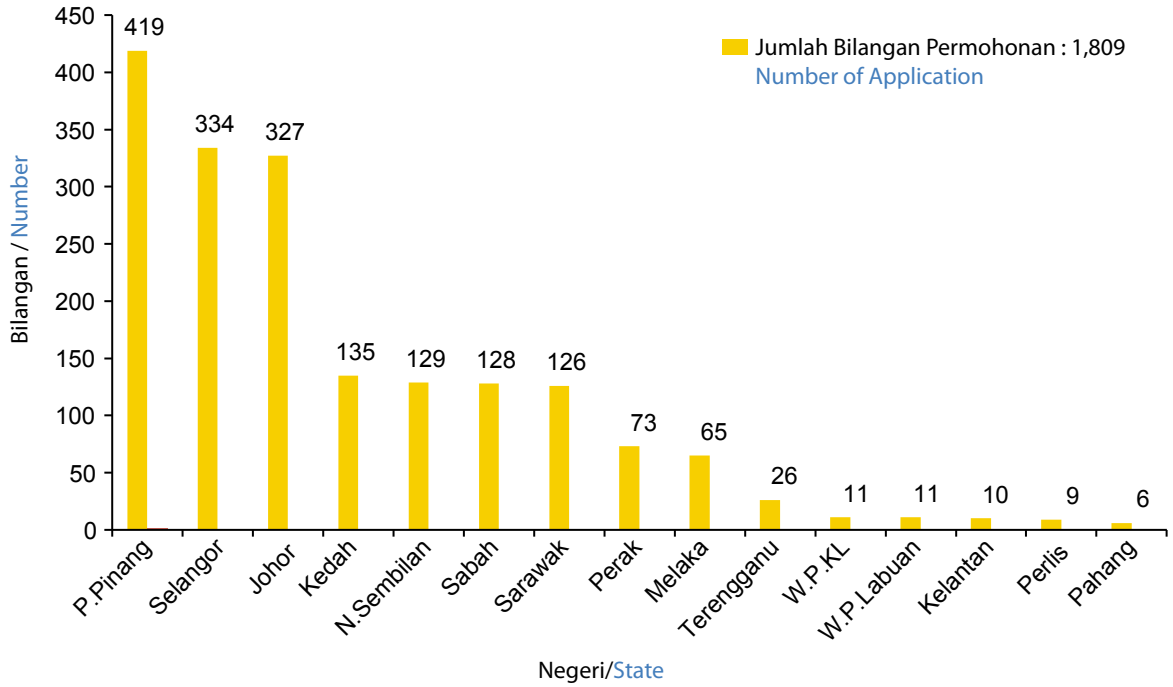


Rajah 3.7A JAS: Pemberitahuan Bertulis Bagi Punca baru Pembuangan Atau Pelepasan Kumbahan, 2010
Figure 3.7A DOE: Notification For New Sources of Sewage Discharge or Release, 2010



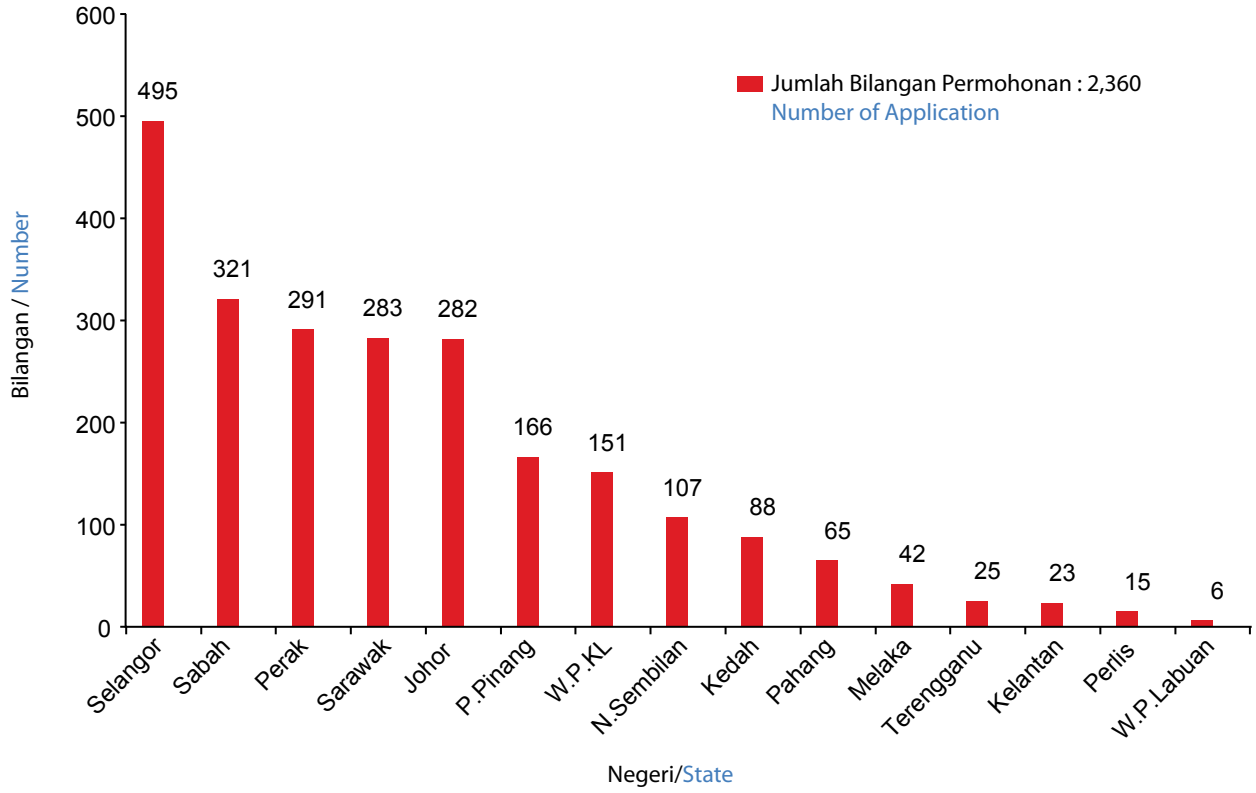
Rajah 3.7B JAS : Pemberitahuan Bertulis Bagi Punca baru Atau Yang diubah Efluen Perindustrian atau Efluen Bercampur, 2010

Figure 3.7B DOE :Notification For New Or Altered Sources Of Discharge Of Industrial Effluent



Rajah 3.8 JAS: Permohonan Bagi Pemasangan Alat Kawalan Pencemaran Udara Mengikut Negeri, 2010

Figure 3.8 DOE: Applications for Installation of Air Pollution Control Equipment By State, 2010



Rajah 3. 9 JAS: Permohonan Bagi Pemasangan Alat Pembakaran Bahan Api Mengikut Negeri, 2010
Figure 3.9 DOE: Applications for Installation of Fuel Burning Equipment By State, 2010

Sistem Maklumat Geografi (GIS)

Program pembangunan teknologi GIS di JAS telah giat berkembang dalam tahun 2010 bagi memberi manfaat kepada semua pegawai JAS. Aplikasi Portal GIS telah siap dibangunkan dan digunakan secara rasminya pada 1 November 2010 bagi kegunaan pembangunan, analisis dan pengurusan alam sekitar.

Bagi program pembangunan data, perolehan data imej *remote sensing* telah dilaksanakan untuk melengkapkan pangkalan data spatial. Selain daripada itu, program bagi melengkapkan dan mengemaskini punca-punca pencemaran, stesen-stesen pengawasan kualiti alam sekitar, projek-projek pembangunan dan premis-premis yang tertakluk di bawah Akta Kualiti Alam Sekeliling (AKAS),1974 terus dilaksanakan.

Pada tahun 2010, dua (2) bengkel telah diadakan kepada pegawai- pegawai JAS Negeri iaitu Bengkel Penambahbaikan Portal GIS dan Kursus Asas GIS 1. Mesyuarat Penyelarasan GIS bagi JAS telah diadakan pada 8 hingga 10 November 2010 di Hotel Concorde, Shah Alam bagi membincangkan perkembangan GIS di JAS Negeri dan juga keperluan bagi RMK 10.

DOE officers was held on 8-10 November 2010 in Concorde Hotel, Shah Alam to share information and discuss on the progress of GIS implementation in DOE State Offices and also requirements in the 10th Malaysian Plan.

In addition, GIS had been used to provide daily information on hotspot locations in the monitoring of open burning. GIS applications also had been applied to provide input relating to spatial information and maps required by various Divisions in the Headquarters, State/Branch Offices and other agencies.

MS ISO 9001:2008 Certification

DOE had obtained MS ISO 9001:2008, a Quality Management System certification on 19 March 2010 for the processing of EIA Reports and enforcement of EIA approval conditions. The system is implemented at the head office and all 15 state offices. Surveillance audit had been carried out from 22 to 24 December 2010 at the head office and selected DOE state offices as determined by SIRIM.

Di samping itu, penggunaan aplikasi GIS dalam menyediakan maklumat harian berkaitan lokasi titik panas bagi tujuan pemantauan kawasan pembakaran terbuka. Aplikasi GIS juga giat digunapakai dalam membekalkan input yang berkaitan dengan maklumat spatial dan peta yang diperlukan oleh Bahagian-Bahagian di Ibu Pejabat, pejabat JAS Negeri/Cawangan dan lain-lain agensi kerajaan.

Persijilan MS ISO 9001:2008

JAS telah memperolehi sijil MS ISO 9001:2008 pada 19 Mac 2010 bagi skop pemprosesan Laporan EIA dan penguatkuasaan syarat-syarat kelulusan berdasarkan keperluan standard MS ISO 9001:2008. Sistem ini dilaksanakan di Ibu Pejabat JAS dan semua 15 pejabat negeri. Audit pemantauan telah dijalankan pada 22 hingga 24 Disember 2010 di Ibu Pejabat JAS dan pejabat-pejabat JAS Negeri yang ditetapkan oleh SIRIM.

Business Licensing Electronic Support (BLESS)

JAS telah bekerjasama dengan Unit Penyelarasan Pelaksanaan (ICU), Jabatan Perdana Menteri untuk membangunkan sistem permohonan atas talian. Setakat 2010, sebanyak 16 jenis permohonan boleh dikemukakan secara atas talian oleh pemohon melalui BLESS. Fasa satu pelaksanaan hanya terhad kepada pemohon dalam sektor pengilangan, perhotelan dan pembinaan di negeri Selangor dan Wilayah Persekutuan Kuala Lumpur sahaja.

Sistem Pangkalan Data EIA

JAS telah membangunkan Sistem Pangkalan Data EIA dan kini terdiri daripada dua (2) modul iaitu modul Laporan EIA dan Jururunding EIA. Pelaksanaan sistem ini membolehkan maklumat terkini mengenai Laporan EIA dan Jururunding EIA dipaparkan terus di laman web JAS. Laman web tersebut memaparkan senarai laporan EIA yang sedang diproses, telah diluluskan dan yang tidak diluluskan.

Pusat Khidmat Nasihat JAS di MIDA

Pusat Khidmat Nasihat JAS di Ibu Pejabat Lembaga Kemajuan Perindustrian Malaysia (MIDA) berperanan untuk memberi maklumat dan nasihat mengenai alam sekitar kepada pelabur-pelabur tempatan dan dari luar negara.

Dalam tahun 2010, sejumlah 215 ulasan bertulis telah dikemukakan kepada MIDA bagi permohonan Lesen

Business Licensing Electronic Support (BLESS)

DOE in collaboration with the Implementation and Coordination Unit (ICU), Prime Minister's Department developed an on-line application system. Until 2010, there were 16 applications received on-line through BLESS. The first phase of implementation is available to applicants in the manufacturing, hoteling dan construction sector from Selangor and Federal Territory of Kuala Lumpur.

EIA Database System

DOE had developed an EIA Database System which consisted of two (2) modules; module for EIA Reports and EIA Consultants. The implemention of this system enabled the latest information relating to EIA Reports and EIA Consultants to be published in DOE's website. The website displayed a list of EIA reports being processed, approved and not approved.

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 2010, a total of 215 written comments were submitted to MIDA for application by industries on Manufacturing Licence, Pioneer Status Incentive, Investment Tax Incentive and other approval, 71 meetings with investors and industries were attended and 54 advices were given via tele-conversation and e-mail to industries and MIDA officials from local and overseas. The advices were pertained to environmental requirements that need to be complied with, by a new or existing industry, such as Site Suitability Evaluation (PAT), Environmental Impact Assessment (EIA), written approvals / permissions for the installation of pollution control equipment, and licences for the importation / exportation of scheduled wastes. Other specific requirements frequently asked include: environmental standards to be complied with, buffer zone, as well as environmental requirements for the setting up of partial and full recovery facilities for electrical and electronic wastes (e-wastes).

The DOE Advisor at MIDA also acted as the Department's resource person in Familiarisation Programme with industrial promotional agencies from developing countries, seminars on industrial promotion, dialogues between MIDA and Chamber of Commerce or industrial associations.

Pengilang, Galakan Taraf Perintis, Galakan Insentif Cukai dan lain-lain kelulusan, 71 mesyuarat dengan pelabur dan industri telah dihadiri dan 54 khidmat nasihat telah diberi melalui telefon dan e-mel kepada para pelabur dan pegawai MIDA dari dalam dan luar negara. Ulasan-ulasan bertulis yang diberi kepada MIDA dan nasihat-nasihat yang dberi kepada pelabur meliputi kehendak-kehendak alam sekitar yang perlu dipatuhi oleh industi baru atau sedia ada seperti Penilaian Awal Tapak, Penilaian Kesan kepada Alam Sekeliling (EIA), kelulusan/kebenaran bertulis dan lesen bagi premis yang ditetapkan dan pengimportan/pengeksportan buangan terjadual. Lain-lain keperluan alam sekitar spesifik yang sering ditanya termasuklah: piawai-piawai alam sekitar yang perlu dipatuhi, zon penampan dan keperluan alam sekitar bagi penubuhan kemudahan pemerolehan kembali buangan elektrikal dan elektronik.

Penasihat JAS di MIDA juga bertindak sebagai pegawai sumber maklumat JAS dalam Panel Perbincangan Program Familiarisasi dengan badan promosi industri negara-negara membangun, seminar-seminar promosi industri, dialog-dialog antara MIDA dan *Chamber of Commerce* atau pertubuhan industri.

Pembangunan Lestari
Sustainable Development

Jadual 3.1 JAS : Jumlah Permohonan Yang Diluluskan, 2010
Table 3.1 DOE: Number of Applications Approved, 2010

Kategori / Category	Jumlah Permohonan / No. of Application	Jumlah Lulus / No. of Application Approved	Peratusan Lulus (%) / Percentage Approved (%)
Jururunding EIA/EIA Consultant	2	1	50%
Jururunding Subjek/ Subject Consultant	23	3	13%
Penolong Jururunding/ Assistant Consultant	23	9	39%
Jumlah/Total	**48**	**13**	**27%**

Jadual 3.2 JAS: Jumlah Keseluruhan Jururunding Berdaftar Sehingga 31 Disember 2010
Table 3.2 DOE: Number of Registered Consultants Until 31 December 2010

Kategori / Category	Jumlah Lulus / No. of Application Approved	Peratusan (%) / Percentage (%)
Jururunding EIA/ EIA Consultant	241	25.6%
Jururunding Subjek/ Subject Consultant	331	35.1%
Penolong Jururunding/ Assistant Consultant	371	39.3%
Jumlah/Total	**943**	**100%**

Jadual 3.3 JAS: Kursus Induksi EIA Untuk Jururunding EIA
Table 3.3 DOE: Induction Course For EIA Consultants

Bil./ No	Kursus / Course	Tarikh / Date	Tempat Venue
1.	Kursus Induksi EIA untuk Jururunding EIA Bil. 1/10 EIA Induction Course 1/10	24 – 25 Feb 2010	Residence@UNITEN
2.	Kursus Induksi EIA untuk Jururunding EIA Bil 2/10 EIA Induction Course 2/10	24 – 25 Mac/ March 2010	Cititel, Pulau Pinang
3.	Kursus Induksi EIA untuk Jururunding EIA Bil 3/10 EIA Induction Course 3/10	19 – 20 Mei/ May 2010	Crystal Crown, Johor Bahru
4.	Kursus Induksi EIA untuk Jururunding EIA Bil 4/10 EIA Induction Course 4/10	26 – 27 Mei/ May 2010	Shangri-La, Putrajaya
5.	Kursus Induksi EIA untuk Jururunding EIA Bil 5/10 EIA Induction Course 5/10	7 – 8 Julai/ July 2010	Shangri-La Putrajaya
6.	Kursus Induksi EIA untuk Jururunding EIA Bil 6/10 EIA Induction Course 6/10	28 – 29 Julai/ July 2010	Le Meridien, Kota Kinabalu
7.	Kursus Induksi EIA untuk Jururunding EIA Bil 7/10 EIA Induction Course 7/10	4 – 5 Ogos/August 2010	Pullman Putrajaya Lakeside
8.	Kursus Induksi EIA untuk Jururunding EIA Bil 8/10 EIA Induction Course 8/10	13 – 14 Okt./ Oct. 2010	Shangri-La Putrajaya

Jadual 3.4 JAS: Jumlah Permohonan Yang Diluluskan, 2010
Table 3.4 DOE: Number of Applications Approved, 2010

Jumlah Permohonan / No. of Applicants	Jumlah Lulus / No. of Applications Approved	Peratusan Lulus / Percentage Approved
26	12	46.2%

Jadual 3.5 JAS: Jumlah Keseluruhan Juruaudit Berdaftar Sehingga 31 Disember 2010
Table 3.5 DOE: Number of Registered Environmental Auditor Until 31 December 2010

Perkara / Category	Jumlah Diluluskan / No. of Application Approved
Juruaudit yang didaftarkan bagi tahun 2009 No. of Applicants Registered in 2009	41
Juruaudit yang didaftarkan bagi tahun 2010 No. of Applicants Registered In 2010	12
Jumlah / Total	**53**

Jadual 3.6 JAS: Kursus Induksi EIA untuk Juruaudit Alam Sekitar
Table 3.6 DOE: Induction Course for Environmental Auditor

Bil. / No.	Kursus / Course	Tarikh / Date	Tempat / Venue
1.	Kursus Induksi Juruaudit Alam Sekitar Bil.1/10 Induction Course for Environmental Auditor 1/2010	10–12 November 2010	Marriott Putrajaya
2	Kursus Induksi EIA untuk Jururunding EIA Bil.2/10 Induction Course for Environmental Auditor 2/2010	24–26 November 2010	Shangri-La, Putrajaya

Integrasi Faktor Alam Sekitar Dalam Perancangan Pembangunan
Integration of Environmental Factors In Development Planning

BAB 4 / CHAPTER 4

Pengawasan Kualiti Udara
Air Quality Monitoring

Malaysia mempunyai rangkaian 52 buah stesen pengawasan kualiti udara automatik yang ditempatkan di seluruh negara bagi memantau sebarang perubahan ketara kepada status kualiti udara sesuatu tempat atau kawasan yang mungkin memberi kesan kepada kesihatan awam dan alam sekitar.

Lokasi-lokasi yang strategik (**Peta 4.1 dan 4.2**) dipilih bagi penempatan stesen-stesen pengawasan kualiti udara ini sejajar dengan objektif program pengawasan yang spesifik. Bagi memastikan tahap pendedahan pencemar udara kepada orang awam sentiasa diawasi, kebanyakan penempatan stesen diutamakan dalam kawasan perumahan dan selebihnya ditempatkan dalam kawasan industri dan kawasan bandar yang sibuk dengan trafik.

Rangkaian stesen pengawasan kualiti udara di negara ini juga turut dilengkapi dengan stesen-stesen pengawasan kualiti udara secara manual yang ditempatkan di 14 buah lokasi yang berbeza. Pengawasan di stesen-stesen manual melibatkan parameter-parameter seperti pepejal terampai, habuk halus bersaiz kurang dari 10 mikron (PM_{10}) dan beberapa jenis logam berat termasuk plumbum yang diukur setiap enam (6) hari menggunakan alat "High Volume Samplers".

Status Kualiti Udara

Pada keseluruhannya, status kualiti udara di Malaysia pada tahun 2010 menunjukkan peningkatan kepada kualiti udara dengan bilangan hari udara bersih meningkat dari 62.8 peratus berbanding 55.6 peratus pada tahun 2009. Walaubagaimanapun, pada bulan Oktober 2010, berlaku episod jerebu jangka pendek di selatan Semenanjung Malaysia, khususnya di kawasan Muar, Johor. Ini adalah disebabkan oleh pencemaran jerebu merentasi sempadan berpunca dari pembakaran tanah dan hutan di Sumatera Tengah, Indonesia.

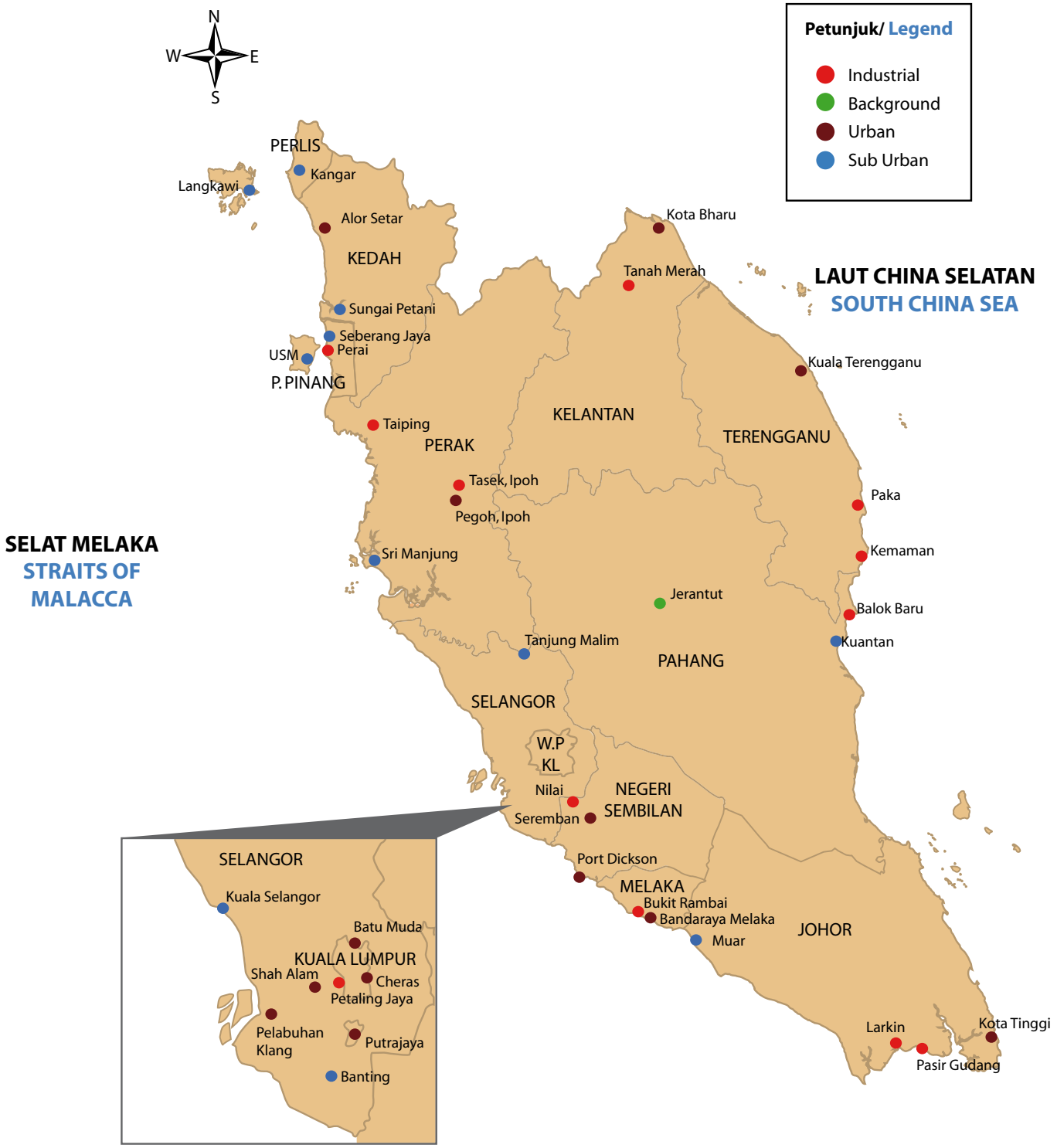
Malaysia's air quality monitoring network consists of 52 stations that are located throughout the country to monitor and to detect any significant change in the air quality that can contribute negative impact to human health and the environment.

These monitoring stations are strategically located (**Map 4.1 and 4.2**) to meet specific monitoring objectives. Most stations are located in residential areas to ensure the air quality exposed to the public is continuously monitored. The rest of the stations are located within industrial areas and areas with high traffic volume.

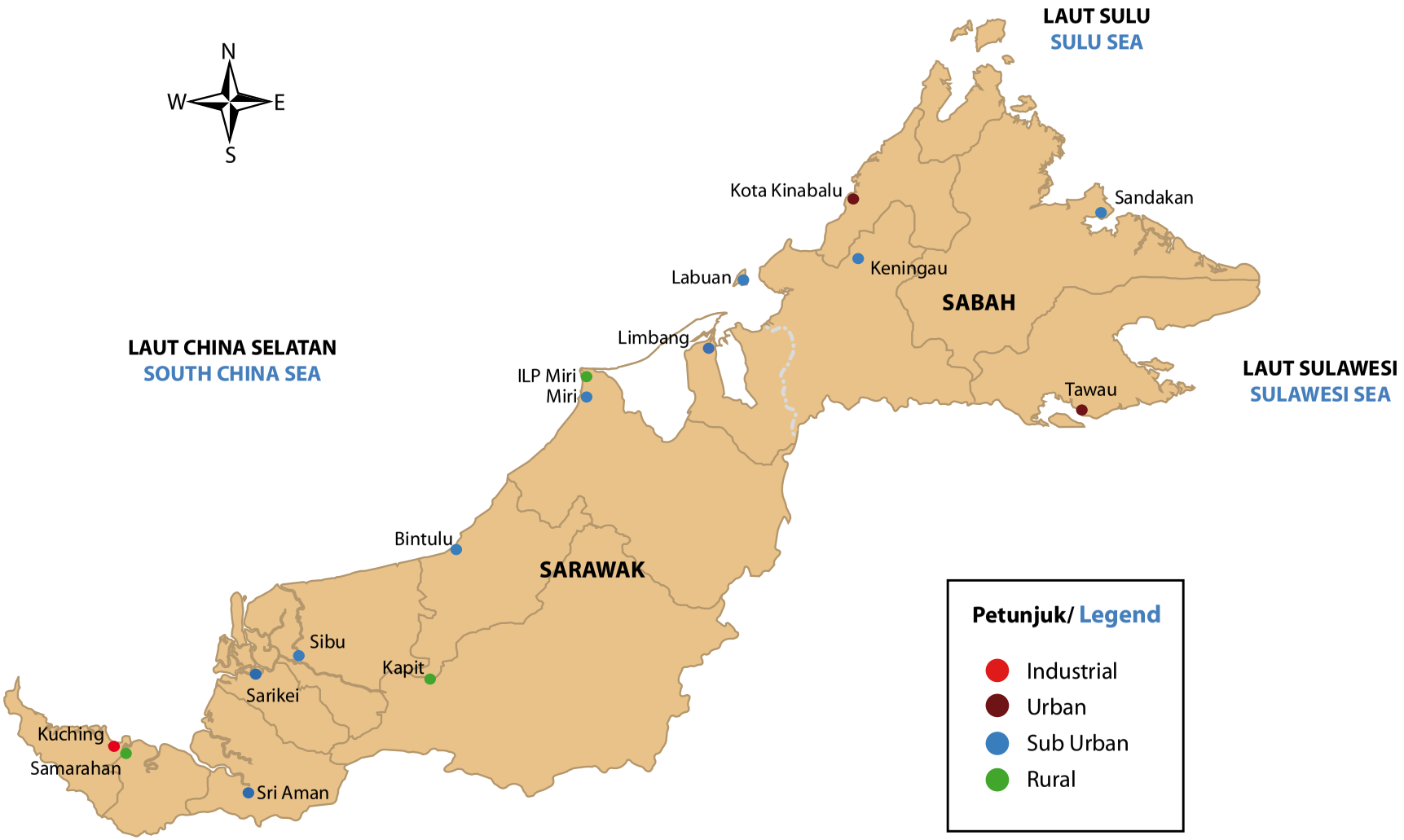
The National Air Quality Monitoring Network is also complemented by manual air quality monitoring stations located at 14 different sites. At these sites, total suspended particulate, particulate matter (PM_{10}) and several heavy metals including lead are measured at intervals of six (6) days using High Volume Samplers.

Air Quality Status

The overall air quality status for Malaysia in 2010 showed improvement in the air quality with the number of good quality days increased to 62.8 percent compared to 55.6 percent in 2009. However, in October 2010, there was a short spell of haze episode in the southern part of Peninsular Malaysia particularly in Muar, Johor. It was due to transboundary haze pollution caused by land and forest fires in Central Sumatera.



Peta 4.1 Semenanjung Malaysia: Lokasi Stesen Pengawasan Kualiti Udara Automatik, 2010
Map 4.1 Peninsular Malaysia: Location of Continuous Air Quality Monitoring Station, 2010



Peta 4.2 Sabah & Sarawak: Lokasi Stesen Pengawasan Kualiti Udara Automatik, 2010
Map 4.2 Sabah & Sarawak: Location of Continuous Air Quality Monitoring Station, 2010

Program Pencegahan Kebakaran Dan Pengurusan Tanah Gambut
Fire Prevention And Peatland Programmes

Pencegahan kebakaran dan pengurusan tanah gambut yang lestari adalah sangat penting bagi mengelak berlakunya pembakaran terbuka tanah gambut yang boleh menyebabkan jerebu setempat. Teknik sekatan saliran (check dam) telah dikenalpasti satu daripada kaedah pengurusan air di tanah gambut yang berkesan untuk mencegah dan mengawal pembakaran terbuka. Selain daripada itu sumber air semasa musim kemarau berupa telaga air tanah adalah satu alternatif yang praktikal bagi tujuan meningkatkan paras air di dalam saliran dan memudahkan kerja-kerja pemadaman jika berlaku kebakaran di tanah gambut. Selain dari kaedah pemantauan yang telah dilaksanakan oleh Jabatan Alam Sekitar (JAS) melalui udara dan rondaan darat, pemantauan melalui menara tinjau yang dibina di lokasi-lokasi strategik dalam kawasan tanah gambut juga telah dikenalpasti sebagai satu kaedah sokongan bagi memantapkan kaedah pemantauan ini.

Satu projek perintis mengenai program mencegah kebakaran dan pengurusan tanah gambut mudah terbakar telah diselaras dan dilaksanakan oleh Jabatan Alam Sekitar pada tahun 2010. Projek telah melibatkan beberapa agensi pelaksana iaitu Jabatan Pengaliran dan Saliran, Jabatan Mineral dan Geosains, Jabatan Perhutanan Sarawak, Jabatan Perhutanan Sabah, Majlis Bandaraya Miri, Ikatan Relawan Rakyat Malaysia (RELA) dan Jabatan Alam Sekitar Negeri berkaitan. Projek ini telah dilaksanakan di enam (6) buah negeri di mana terdapat kawasan tanah gambut yang luas dan mudah terbakar iaitu di Johor, Pahang, Selangor, Kelantan, Sarawak dan Sabah. Projek ini merangkumi aktiviti-aktiviti seperti pembinaan sekatan saliran (*check dam*) berjumlah 87 buah iaitu; Negeri Johor (49), Pahang (18), Sarawak (14), Selangor (3) dan Sabah (3). Di samping itu juga, sebanyak 19 buah buah telaga air tanah telah dibina iaitu; Sarawak (6), Pahang (5), Johor (2), Selangor (2), Kelantan (2) dan Sabah (2). Sepanjang tahun 2010, sebanyak 3 buah menara tinjau telah dibina iaitu setiap sebuah (1) di Selangor, Pahang dan Sarawak. Satu Prosedur Tetap Operasi (Standard Operating Procedure) untuk Melaksanakan Program Pencegahan Kebakaran di Tanah Gambut telah disediakan dan digunapakai oleh semua agensi pelaksana bermula pada Mac 2010. Pembinaan infrastruktur mencegah kebakaran tersebut di atas didapati banyak membantu dalam mencegah pembakaran terbuka yang boleh menyebabkan kemerosotan kualiti udara.

Fire prevention and sustainable peatland management is vital to avoid occurrence of peatlands fire and associated haze. Canal blocking technique or check dam is identified as one of the method for effective water management in peatlands for fire prevention. Check dam is used to increase the water levels in peatlands, thus avoiding the peatland from drying up especially during drought period. Construction of tube well is another method that generates underground water that is used to put out fire in peatlands. Watch towers are constructed to monitor fires in peatlands and this mechanism supports the Department of Environment's enforcement work, apart from routine land and aerial surveillance.

A pioneer programme on fire prevention and peatland management was implemented and coordinated by the Department of Environment in 2010. The project involved several implementing agencies such as the Drainage and Irrigation Department, Mineral and Geoscience Department, Sarawak Forestry Department, Sabah Forestry Department, Miri City Council, RELA and the relevant States Department of Environment. The project was implemented in 6 (six) states that have extensive fire prone peatland areas namely in Selangor, Johor, Pahang, Kelantan, Sarawak and Sabah. The project involved the construction of check dams for a total of 87 which were; Johor (49), Pahang (18), Sarawak (14), Selangor (3) and Sabah (3). A total of 19 tube wells were constructed; Sarawak (6), Pahang (5), Johor (2), Selangor (2), Kelantan (2) and Sabah (2). A total of 3 watch towers were constructed each in Selangor, Pahang and Sarawak. A Standard Operating Procedure (SOP) for Fire Prevention and Peatland Management was prepared and implemented by the agencies starting from March 2010. The construction of check dams, tube wells and watch towers were proven effective in preventing peatland fires that lead to deterioration of air quality.

Jadual 4.1 JAS: Ringkasan Projek Infrastruktur Mencegah Kebakaran Dan Pengurusan Tanah Gambut, 2010
Rajah 4.1 DOE: Summary of Infrastructural Projects on Fire Prevention And Peatland Management, 2010

Negeri/ State	Infrastruktur/Infrastructure		
	Sekatan Saliran/ Check Dam	Telaga Air Tanah/ Tube Wall	Menara Tinjau/ Watch Tower
Pahang	18	5	1
Sarawak	14	6	1
Selangor	3	2	1
Johor	49	2	-
Kelantan	-	2	-
Sabah	3	2	-
Jumlah/Total	**87**	**19**	**3**

Pembinaan Sekatan Saliran di Johan Setia, Klang, Selangor
Construction of Check Dam in Johan Setia, Klang, Selangor

Protokol Montreal dan Perlindungan Lapisan Ozon
Montreal Protocol and Protection of the Ozone Layer

Latarbelakang

Malaysia telah meratifikasi Konvensyen Vienna bagi Perlindungan Lapisan Ozon dan Protokol Montreal mengenai Bahan-bahan Pemusnah Lapisan Ozon pada 29 Ogos 1989. Sebagai negara Parti kepada Protokol Montreal, Malaysia mempunyai obligasi untuk menghentikan pengimportan klorofluorokarbon (CFC), halon dan karbon tetraklorida (CTC) mulai 1 Januari 2010 dan hidroklorofluorokarbon (HCFC) pada 2030.

Pematuhan Terhadap Protokol Montreal

Mulai 1 Januari 2010 tiada lagi pengimportan CFC, CTC dan halon dibenarkan (**Rajah 4.1**). Bagi fasa seterusnya yang bermula pada tahun 2010, Malaysia perlu menghapuskan penggunaan HCFC secara berperingkat sehingga 2030 seperti yang telah ditetapkan di bawah Protokol Montreal. Bagi mencapai sasaran ini, JAS telah melantik *Centre for Environmental Technologies* (CETEC) bagi menyediakan Pelan Pengurusan Penghapusan HCFC (HPMP), yang menggariskan polisi dan strategi jangka masa panjang untuk menghapuskan penggunaan HCFC mengikut jadual penghapusan di bawah obligasi Protokol Montreal. **Rajah 4.2** menunjukkan pengimportan HCFC pada tahun 2010 yang berjumlah 8,170 tan metrik.

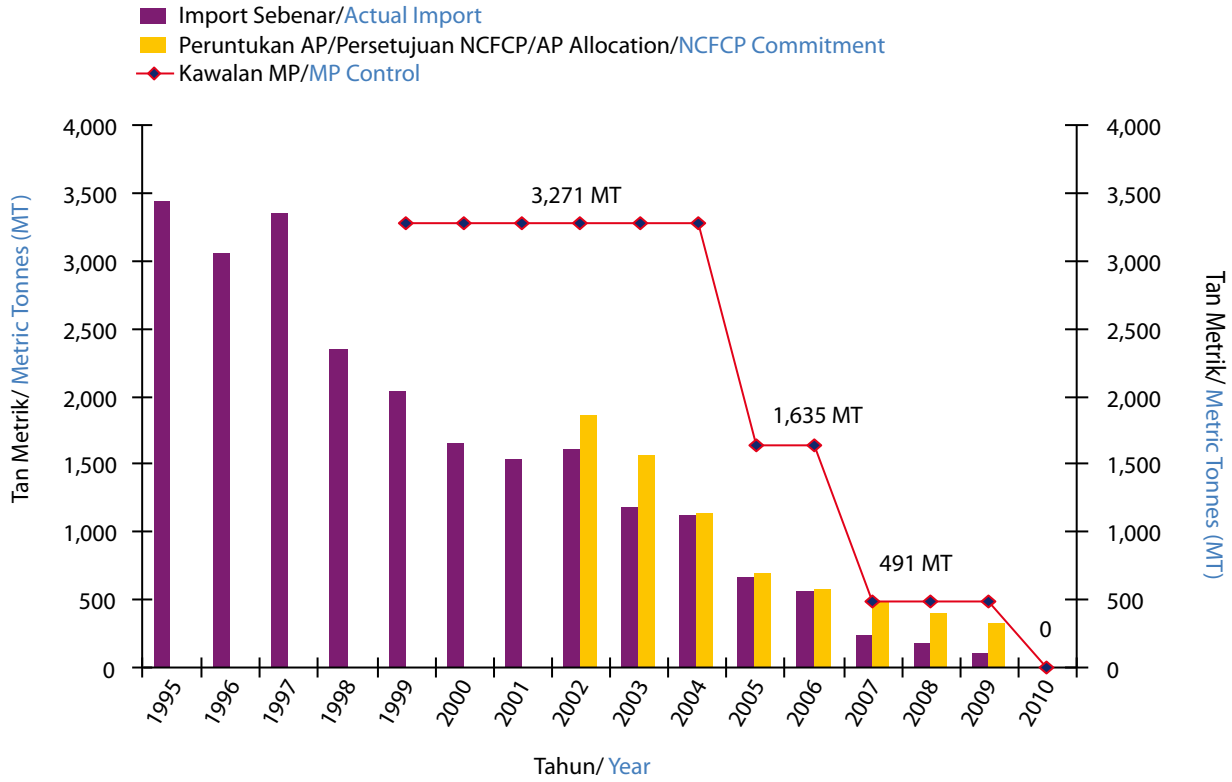
Background

Malaysia ratified the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol for Substances that Deplete the Ozone Layer on 29 August 1989. As a Party to the Montreal Protocol, Malaysia has the obligation to stop importing chlorofluorocarbon (CFC), halon and carbon tetrachloride (CTC) by 1 January 2010 and hydrochlorofluorocarbon (HCFC) by 2030.

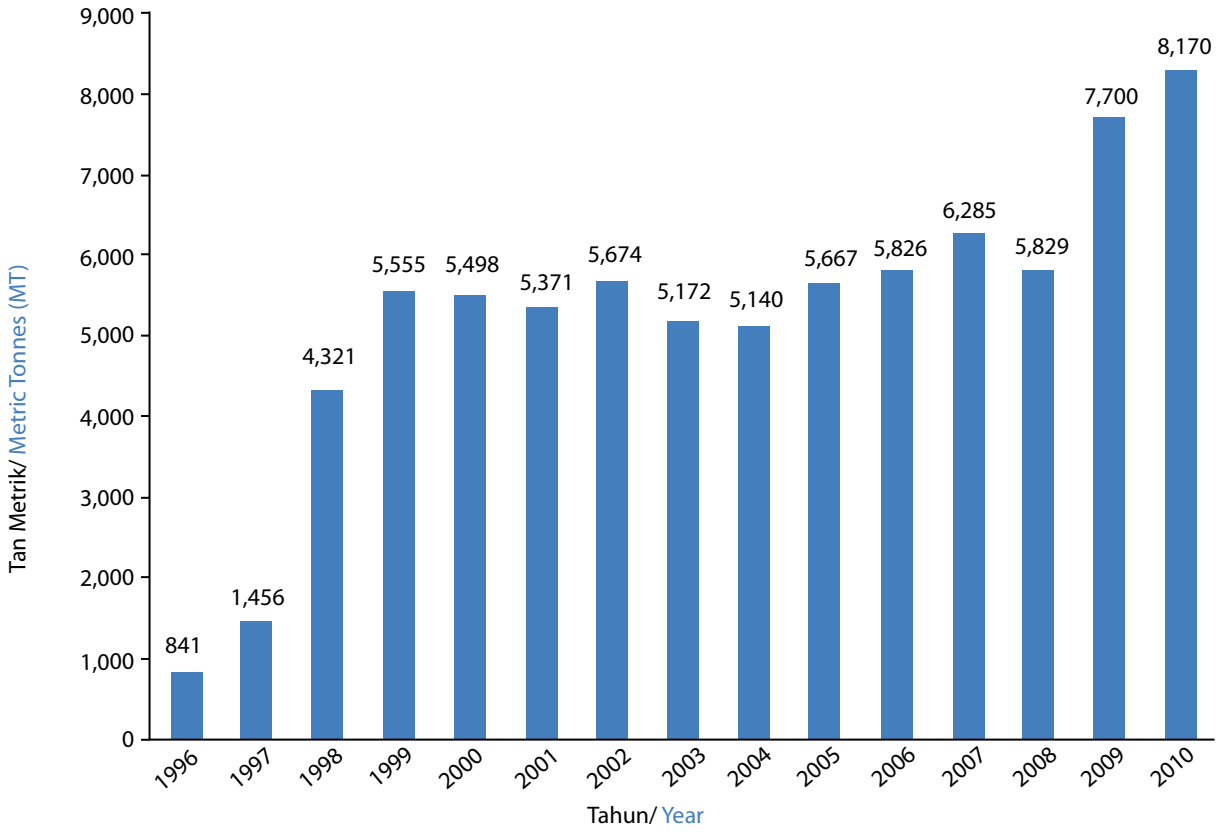
Compliance to Montreal Protocol

As of 1 January 2010, the importation of CFC, CTC and halon are no longer allowed (**Figure 4.1**). For the next phase beginning in 2010, Malaysia needs to phase out the use of HCFC in stages by 2030, as stipulated under the Montreal Protocol. To meet this target, the DOE has appointed Centre for Environmental Technologies (CETEC) in the preparation of the HCFC Phase-out Management Plan (HPMP), outlining the policies and long term strategies for the phase-out of HCFC according to the Montreal Protocol obligated phase-out schedule. **Figure 4.2** shows the importation of HCFC in 2010 which amounted to 8,170 metric tonnes.

Keindahan Alam
Nature's Beauty



Rajah 4.1 JAS: Status Pematuhan Pengimportan CFC (tiada pengimportan dibenarkan pada tahun 2010)
Figure 4.1 DOE: Compliance Status on CFC Importation (no importation allowed in 2010)



Rajah 4.2 JAS: Tren Penggunaan HCFC Di Malaysia, 1996 - 2010
Figure 4.2 DOE: Malaysia HCFC Consumption Trend, 1996 - 2010

Pelan Kebangsaan Penghapusan CFC (NCFCP) 2002 – 2010

Pada penghujung tahun 2010, semua projek dan aktiviti bagi penghapusan CFC, CTC dan halon di bawah Pelan NCFCP 2002–2010 telah selesai dilaksanakan dengan jayanya. Hampir 95% daripada peruntukan USD 11.5 juta (RM 43.7 juta) yang telah diluluskan oleh *Multilateral Ozone Trust Fund* (MLF) melalui agensi pelaksana Bank Dunia telah dibelanjakan untuk melaksanakan projek-projek dan aktiviti kesedaran seperti berikut:

i. Program *CFCs-Metered Dose Inhaler (MDIs)*;
ii. Program Pemeriksaan *Mobile Air Conditioning (MAC)* oleh PUSPAKOM;
iii. Program Latihan Bahan Pemusnah Lapisan Ozon bagi Kastam (COTP);
iv. Program Sektor Servis MAC;
v. Program Sektor Bahan Pelarut;
vi. Program Sektor Servis Pendingin;
vii. Program Sektor Busa; dan
viii. Program Kesedaran Alam Sekitar.

Perincian projek-projek ini seperti disenaraikan dalam **Jadual 4.1**.

National Chlorofluorocarbons Phase-out Plan (NCFCP) 2002 - 2010

By end of 2010 all projects and activities to phase out CFC, CTC and Halon under the NCFCP 2002–2010 had been successfully completed. Almost 95% of the USD 11.5 million (RM43.7 million) which had been approved for Malaysia under the Multilateral Ozone Trust Fund (MLF) through the World Bank as the implementing agency was spent for the implementation of the following projects:

i. CFCs-Metered Dose Inhaler (MDIs) Programme;
ii. Mobile Air Conditioning (MAC) Inspection Programme by PUSPAKOM;
iii. Customs-ODS Training Programme (COTP)
iv. MAC Servicing Sector Programme;
v. ODS Solvent Sector Programme;
vi. Refrigeration Service Sector Programme;
vii. Foam Sector Programme; and
viii. Public Awareness Programme.

Details of these projects are as listed in **Table 4.1**.

Bengkel Konsultatif Bersama Industri Bagi Penyediaan Pelan Pengurusan Penghapusan HCFC
Industrial Consultative Workshop for Preparation of HCFC Phase-out Management Plan (HPMP)

Jadual 4.1 JAS: Projek-projek dan Aktiviti-aktiviti yang dilaksanakan di bawah NCFCP 2010
Table 4.1 DOE: Projects and Activities Implemented under NCFCP 2010

Sektor Sector	Bil. Aktiviti/Lawatan Yang Selesai No. of Completed Activities / Visits	Bil. Lawatan Pemeriksaan / Penguatkuasaan 2010 No. of Inspection / Enforcement Visits 2010
1. Metered Dose Inhaler (MDI)	1	-
2. Program Pemeriksaaan Penghawa Dingin Kenderaan (MAC) oleh PUSPAKOM Mobile Air Conditioning (MAC) Inspection Programme by PUSPAKOM	Projek selesai (2004) Project Completed (2004)	-
3. Program Kursus Kastam-ODS (COTP) Customs ODS Training Programme (COTP)	4	-
4. Sektor Servis Penghawa Dingin Kenderaan Mobile Air conditioning Servicing Sector (MAC)		22
Program Pentauliahan Juruteknik Servis MAC (CSTP) Certification of MAC Service Technicians Programme (CSTP)	6	
Jumlah peserta Number of participants	155	
Lawatan Verifikasi untuk bengkel MAC Verification visits for MAC workshops	22	
Baucer Mesin R&R MAC Vouchers for MAC R&R machines	16	
5. Pelarut / Solvent	Projek selesai (2006) Project completed (2006)	88
6. Sektor Servis Penyejukan Refrigeration Service Sector (RSS)		
Program Pentauliahan Juruteknik Servis RSS (CSTP) Certification of RSS Service Technicians Programme (CSTP)	38	
Jumlah peserta Number of participants	765	
Lawatan Verifikasi untuk bengkel RSS Verification visits for RSS workshops	88	
Baucer “Basic Tools” Vouchers for Basic Tools	44	
Baucers Mesin R&R RSS Vouchers for RSS R&R machines	104	
7. Busa / Foam Sub-Projek Kumpulan / Individu Group Sub-Project / Individual Sub-Project	Projek selesai (2005) Project completed (2005)	
8. Aktiviti Kesedaran / Awareness Activity	Sila rujuk Jadual 4.2 Please refer to Table 4.2	

Program Latihan Kawalan Pengimportan dan Penggunaan Bahan Pemusnah Ozon bagi Pegawai-Pegawai Kastam
Training Programme on Control and Use of Ozone Depleting Substances for Customs Officers

Pelancaran Seminar Pelan Pengurusan Penghapusan HCFC oleh Y.B. Menteri Sumber Asli dan Alam Sekitar
Launching of the HCFC Phase-out Management Plan Seminar by the Honourable Minister of Natural Resources and Environment

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 kepada sistem keselamatan kawalan kebakaran tentera dan penerbangan awam sepertimana dipersetujui di bawah Program Protokol Montreal. Sehingga tahun 2010 sebanyak 7,144 kg Halon 1211 dan sebanyak 254,177 kg Halon 1301 dikumpulkan dan disimpan di Pusat Bank Halon Kebangsaan di Kuala Kubu Baru, Selangor. Penggunaan sebarang sistem pencegahan kebakaran yang menggunakan alternatif kepada halon perlu mendapatkan kelulusan bertulis daripada Jabatan Bomba dan Penyelamat Malaysia terlebih dahulu sebelum sistem tersebut digunakan.

Penghapusan Metil Bromida

Tabung MLF telah menyediakan dana projek sebanyak USD 200,000 bagi bantuan teknikal untuk penggunaan alternatif bagi menghapuskan penggunaan metil bromida di Malaysia di dalam aktiviti bukan kuarantin dan pra-perkapalan.

Di bawah program bantuan teknikal ini, satu Projek Demonstrasi Mengenai Alternatif-Alternatif Metil Bromida Dalam Fumigasi Tanah telah dijalankan di Cameron Highlands, Pahang mulai bulan Mei 2009 hingga Mac 2010. Satu seminar bagi menyebarkan hasil projek ini dijadualkan pada suku tahun pertama tahun 2011.

Program dan Kempen Kesedaran

Sempena sambutan Hari Ozon Antarabangsa iaitu pada 16 September 2010, pengumumannya telah dibuat di stesen televisyen utama dari bulan Ogos sehingga November 2010. Perutusan Menteri Sumber Asli dan Alam Sekitar diterbitkan di akhbar-akhbar utama pada 16 September. Tema Hari Ozon 2010 ialah ***Ozone Layer Protection: Governance and Compliance At Their Best***. Sempena sambutan Hari Ozon Antarabangsa satu seminar mengenai Pelan Pengurusan Penghapusan Hidroklorofluorokarbon (HPMP) telah dianjurkan pada 3 November 2010 di Hotel Grand Dorsette, Subang Jaya, Selangor. Seminar ini telah dirasmikan oleh Y. B. Dato Sri Douglas Uggah Embas, Menteri Sumber Asli dan Alam Sekitar. Risalah-risalah mengenai perlindungan lapisan ozon dan penghapusan bahan pemusnah lapisan ozon HCFC serta Buletin Ozon diterbitkan untuk sebaran. Perincian program kesedaran yang telah dijalankan sepanjang tahun 2010 termasuk di peringkat JAS Negeri disenaraikan di **Jadual 4.2**, manakala **Jadual 4.3** menyenaraikan mesyuarat-mesyuarat di peringkat serantau dan antarabangsa yang dihadiri oleh pegawai JAS.

Halon Management

Halon is no longer used in Malaysia for new installation of fire protection systems 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. Until 2010, 7,144 kg Halon 1211 and 254,177 kg Halon 1301 were collected and stored at the National Halon Bank Centre in Kuala Kubu Baru, Selangor. Prior written approval from the Fire and Rescue Department of Malaysia is required for the use of alternatives to halon in any new fire fighting system.

Methyl Bromide Phase-Out

The MLF provided a project grant of USD 200,000 for technical assistance in the usage of alternatives to phase out all remaining non-quarantine and pre-shipment (non-QPS) uses of methyl bromide in Malaysia.

Under this technical assistance programme, a Demonstration Project on Methyl Bromide Alternatives in Soil Fumigation was carried out in Cameron Highlands, Pahang from May 2009 till March 2010. A seminar to disseminate results of this project is scheduled during the first quarter of 2011.

Awareness Programmes and Campaigns

In conjunction with the International Ozone Day Celebration on 16 September 2010, announcements were made on television from August to November 2010. A message from the Minister of Natural Resources and Environment was published in mainstream newspapers on 16 September. The theme for the 2010 International Ozone Day was: **Ozone Layer Protection: Governance and Compliance At Their Best**. In conjunction with the International Ozone Day, DOE organised a seminar on HCFC Phase-out Management Plan (HPMP) on 3rd November at Grand Dorsette Hotel, Subang Jaya, Selangor. Pamphlets on ozone layer protection and HCFC phase-out as well as the Ozone Bulletin were published and distributed. Details of awareness programmes carried out in 2010 including those organized by DOE State Offices are listed in **Table 4.2**. Meetings at regional and international levels attended by DOE officers are listed in **Table 4.3.**

Jadual 4.2 JAS: Aktiviti-Aktiviti Kesedaran 2010

Table 4.2 DOE: Public Awareness Activities, 2010

Tarikh Date	Aktiviti & Program Activities & Programmes	Tempat Venue
8 Februari, 23 Mac, 26 Mei, 23 Ogos, 5 Oktober, 9 November / February 8, March 23, May 26, August 23, October 5, November 9	Program Latihan *Refrigerant Identifier* (RI) untuk PUSPAKOM Refrigerant Identifier (RI)Training Programme for PUSPAKOM	PUSPAKOM Training Academy (PUTRA), Kuantan, Pahang
19-21 Mac, 30 Julai – 1 Ogos, 22-24 Oktober, 19-21 November/ March 19-21, July 30 – August 1, October 22-24, November 19-21	Pameran dan Kempen Kesedaran Perlindungan Ozon Ozone Protection Awareness Campaigns and Exhibitions	MAPEX Kuala Lumpur MAPEX Melaka MAPEX Kuantan MAPEX Seremban
26 Mac, 21 April, 23 Mei & 7 Oktober / March 26, April 21, May 23 & October 7	Jerayawara Program Ceramah Perlindungan Ozon, Pameran dan Pemeriksaan Gas Penyaman Udara Kenderaan Roadshows on Ozone Protection Awareness Talks, Exhibitions and Vehicle Air-cond Gas Inspections	Universiti Darul Iman Malaysia, Politeknik Kuala Terengganu, Institut Latihan Perindustrian Gong Badak, Universiti Teknologi Mara, Dungun
29 Mac, 8 April, 22 April, 24 April & 1 Jun / March 29, April 8, April 22, April 24 & June 1	Program Ceramah dan Pameran Kesedaran Perlindungan Lapisan Ozon di Sekolah – sekolah Rendah Ozone Protection Awareness Talks and Exhibitions for Primary Schools	SK Paya Resak, Kuala Terengganu, SK Pusat Jerteh, Besut, SK Sri Rasau, Dungun, SK Kuala Berang, Hulu Terengganu, SK Wakaf Tapai, Marang
5-18 April / April 5-18	Kempen Selamatkan Bumi Save Our Earth Campaign	Dataran Pahlawan Megamall, Melaka
6-8 April , 12-16 April, 19-20 April, 27-29 April, 4-6 Mei,18-20 Mei, 20-22 Julai, 27-29 Julai, 3-5 Ogos / April 6-8, April 12-16, April 19-20, April 27-29, May 4-6, May 18-20, July 20-22, July 27-29, August 3-5	Jerayawara Kesedaran Alam Sekitar – Penipisan Lapisan Ozon Roadshows on Environmental Awareness – Ozone Layer Depletion	PPD Sri Aman dan Lubok Antu, PPD Betong & Saratok, PPD Sarikei, PPD Sibu, PPD Bintulu, PPD Miri, PPD Serian, PPD Kuching, Sarawak
15-17 April / April 15 -17	Kem Kesedaran Perlindungan Lapisan Ozon Ozone Layer Protection Awareness Camp	Peladang Agro Resort, Setiu, Terengganu
17-20 April & 2-4 Ogos / April 17-20, August 2-4	Latihan Kawalan Pengimportan dan Penggunaan Bahan Pemusnah Ozon / Training Programme on Control of Importation and Consumption of Ozone Depleting Substances	De Rhu Resort, Kuantan, Pahang, & Hotel Star City, Alor Setar, Kedah
3 Mei / May 3	Seminar Selamatkan Lapisan Ozon Seminar on Save the Ozone Layer	Perpustakaan Awam Negeri Terengganu, Kuala Terengganu Public Library of Terengganu, Kuala Terengganu

Jadual 4.2 JAS: Aktiviti-Aktiviti Kesedaran 2010 (sambung)
Table 4.2 DOE: Public Awareness Activities, 2010 (continue)

Tarikh Date	Aktiviti & Program Activities & Programmes	Tempat Venue
10 Mei / May 10	Program Kesedaran Perlindungan Lapisan Ozon - Ozonrace Ozone Layer Protection Awareness Programme - Ozonrace	S.M.K Tengku Mohd Faris Petra, Pengkalan Chepa, Kelantan
20 Mei / May 20	Kempen dan Seminar Kesedaran Perlindungan Lapisan Ozon Awareness Campaign and Seminar on Ozone Layer Protection	Hotel Rosa Pasadena, Cameron Highlands, Pahang
5-6 Julai & 7-8 Julai /July 5-6 & July 7-8	2 Siri Kem Kesedaran Kepentingan & Perlindungan Lapisan Ozon 2 Series of Awareness Camps on Importance and Protection of Ozone Layer	Tasoh Lake Resort & Retreat, Kaki Bukit, Perlis
23-25 Julai / July 23-25	Kem Kesedaran Perlindungan Lapisan Ozon Awareness Camp on Ozone Layer Protection	Teratak Hijjaz Country Resort, Bangi
25 Julai / July 25	Kempen Berbasikal Selamatkan Lapisan Ozon Cycling Campaign on Save the Ozone Layer	Balik Pulau, Pulau Pinang
27-29 Julai / July 27-29	Kem Kesedaran Perlindungan Lapisan Ozon Awareness Camp on Ozone Protection	Taman Negara Lagenda Ledang, Tangkak, Johor Lagenda Ledang National Park, Tangkak, Johor
16 September / September 16	Iklan Hari Ozon Antarabangsa di Surat Khabar Newspaper Advertisement on International Ozone Day Celebration	Sin Chew Daily, See Hua Daily, Utusan Malaysia dan/and NST
25 – 26 September / September 25-26	Kem Pendidikan Perlindungan Lapisan Ozon Educational Camp on Ozone Layer Protection	Taman Rimba Cherok To'Kun, Pulau Pinang
25 & 26 September / September 25-26	Seminar Kesedaran Perlindungan Lapisan Ozon Awareness Seminar on Ozone Layer Protection	Politeknik Tuanku Syed Sirajudin, Arau, Perlis
28 September / September 28	Seminar 'Care for Our Earth – Save Our Ozone' Seminar 'Care for Our Earth – Save Our Ozone'	Politeknik Sultanah Bahiyah, Kulim, Kedah
1 Oktober / October 1	Khutbah Jumaat & Kempen Lindungi Ozon Kita Friday Sermon & Campaign on Save Our Ozone Layer	Pusat Islam, Politeknik Sultanah Bahiyah, Kulim Islamic Centre, Politeknik Sultanah Bahiyah, Kulim
4 Oktober /October 4	Kempen Kesedaran Perlindungan Lapisan Ozon Ozone Layer Protection Awareness Campaign	R&R Gambang, Lebuhraya Pantai Timur, Pahang Gambang R&R, East Coast Highway, Pahang
4 Oktober & 2 November / October 4 & November 2	Bengkel Konsultatif HPMP dengan Industri Industrial Consultative Workshop on HPMP	Holiday Villa, Petaling Jaya, Grand Blue Wave Hotel, Shah Alam, Selangor

Jadual 4.2 JAS: Aktiviti-Aktiviti Kesedaran 2010 (sambung)
Table 4.2 DOE: Public Awareness Activities, 2010 (continue)

Tarikh Date	Aktiviti & Program Activities & Programmes	Tempat Venue
6 Oktober / October 6	Kempen Kesedaran Kawalan Perlindungan Lapisan Ozon Awareness Campaign on Ozone Layer Protection	Kompleks Masyarakat Penyayang, Pulau Pinang
12 Oktober /October 12	Kempen Kesedaran Kawalan Pelepasan Gas Pemusnah Ozon Awareness Campaign on Emission Control of Ozone Depleting Gases	Plaza Tol Sg Nyior, Butterworth, Pulau Pinang / Sg. Nyior Toll Plaza, Butterworth, Pulau Pinang
19 Oktober / October 19	Kempen Udara Bersih sempena Hari Ozon Antarabangsa Clean Air Campaign in conjunction with International Ozone Day	Kompleks Sukan Likas, Kota Kinabalu, Sabah Likas Sports Complex, Kota Kinabalu, Sabah
23 Oktober / October 23	Kempen dan Pameran Kesedaran Perlindungan Lapisan Ozon sempena Pelancaran Minggu Alam Sekitar Malaysia (MASM) 'Awareness Campaign and Exhibition on Ozone Layer Protection in conjunction with Launching of Malaysia Environment Week (MASM)	Choice Super Mall, Semariang, Kuching, Sarawak
23 – 24 Oktober / October 23-24	Karnival Lindungi Ozon Carnival on Ozone Protection	Sutera Mall, Skudai, Johor
25 & 26 Oktober / October 25 & 26	Kem Kesedaran Perlindungan Lapisan Ozon Ozone Layer Protection Awareness Camp	Mimpian Jadi Beach Resort, Tuaran & SK Kauluan, Tuaran, Sabah
27 Oktober / October 27	Latihan Kawalan Pengimportan dan Penggunaan Bahan Pemusnah Ozon bagi Projek 'Sky Hole Patching II' Training Programme on Control of Importation and Consumption of Ozone Depleting Substances for the Project 'Sky Hole Patching II'	Grand Blue Wave Hotel, Shah Alam, Selangor
3 November / November 3	Seminar Pelan Pengurusan Penghapusan HCFC Seminar on HCFC Phase-out Management Plan (HPMP)	Grand Dorsett Hotel, Subang Jaya, Selangor
10 November / November 10	Kursus Kesedaran Perlindungan Lapisan Ozon Awareness Course on Ozone Layer Protection	Pejabat Jabatan Alam Sekitar Terengganu/ DOE State Office, Terengganu
23 November / November 23	Seminar Perlindungan Lapisan Ozon Seminar on Ozone Layer Protection	Klana Resort, Seremban, Negeri Sembilan
28 November / November 28	Larian Mesra Ozon Ozone Friendly Run	Marina Wing, Lumut Waterfront, Perak
14 Disember / December 14	Bengkel Peranan Wanita Dalam Memelihara Lapisan Ozon Workshop on Women's Role in Protecting the Ozone Layer	Hotel De Palma, Shah Alam, Selangor

Jadual 4.3 JAS: Mesyuarat-Mesyuarat dan Latihan Peringkat Serantau dan Antarabangsa
Table 4.3 DOE: Regional and International Meetings and Trainings

Tarikh Date	Aktiviti & Program Activities & Programmes	Tempat Venue
8-12 Mac / March 8-12	Training on Alternative Technologies to Phase Out HCFCs	Tokyo, Japan
8-9 April / April 8-9	The 14th Financial Agents Workshop, World Bank	Washington DC
12-16 April / April 12-16	The 60th Meeting of Executive Committee For Implementation of the Montreal Protocol	Montreal, Canada
26-29 April / April 26-29	Southeast Asia and the Pacific (SEAP) and South Asia (SA) Network Meeting of Ozone Officers	Manila, Philippines
6-7 Mei / May 6-7	Workshop on Low-GWP HCFC Replacement in Foam Sector	Seoul, Korea
14 Jun /June 14	Seminar on the Environmentally Sound Management of Banks of ODS	Geneva, Switzerland
15-18 Jun / June 15-18	The 30th Meeting of Open-Ended Working Group on Montreal Protocol	Geneva, Switzerland
5-9 Julai / July 5-9	The 61st Meeting of Executive Committee For Implementation of the Montreal Protocol	Montreal, Canada
18-20 September/ September 18-20	Joint SEAP/SA Ozone Officers Network Meeting	Beijing, China
21-22 September/ September 21-22	4th MEA Regional Enforcement Network Meeting	Beijing, China
27-28 September / September 27-28	ATMOsphere 2010: The International Workshop on Natural Refrigerants	Brussels, Belgium
11-13 Oktober/ October 11-13	Professional Event: Linking Chemical, Climate Change and Energy	Vienna, Austria
8-12 November/ November 8-12	The 22nd Meeting of Parties (MOP 22) to the Montreal Protocol	Bangkok, Thailand
29 Nov – 3 Disember/ November 29 – December 3	The 62nd Meeting of Executive Committee For Implementation of the Montreal Protocol	Montreal, Canada

Delegasi Malaysia di Mesyuarat Parti kepada Protokol Montreal ke-22 di Bangkok, Thailand
Malaysian Delegates at the 22nd Meeting of Parties to the Montreal Protocol, Bangkok, Thailand

Karnival Lindungi Ozon, Sutera Mall Skudai, Johor
Carnival on Ozone Protection, Sutera Mall, Skudai , Johor

Program Pencegahan Pencemaran Dan PeningkatanKualiti Air Sungai

River Pollution Prevention And Water Quality Improvement Programme

Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai mula dilaksanakan sejak tahun 2001 di bawah Rancangan Malaysia Kelapan (RMK-8) dan diteruskan di bawah Rancangan Malaysia Kesembilan (RMK-9). Program ini bertujuan meningkatkan kualiti air di lembangan-lembangan sungai yang telah dikategorikan sebagai tercemar atau sederhana tercemar berdasarkan hasil pemantauan kualiti air sungai yang telah dijalankan oleh Jabatan Alam Sekitar.

Dua (2) aktiviti utama di bawah program ini adalah pelaksanaan kajian pencemaran lembangan sungai yang tercemar dan pelaporan semasa tindakan-tindakan penguatkuasaan serta aktiviti kesedaran awam dalam lembangan-lembangan sungai yang terpilih. Bagi tahun 2010, sebanyak 33 lembangan sungai telah dipilih untuk program ini dengan perlaksanaan Kajian Lembangan Sungai Kuantan di Pahang (**Peta 4.3**) serta dua (2) kajian khas bagi inventori punca-punca pencemaran di Lembangan Sungai Sarawak (Sarawak) dan Lembangan Sungai Buloh (Selangor).

Kriteria pemilihan sungai-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 Air Sungai

Projek Kajian Pencegahan Pencemaran dan Peningkatan Kualiti Air Lembangan Sungai Kuantan telah disambung pelaksanaannya dari tahun 2009 dan diselesaikan pada tahun 2010. Tujuan kajian adalah untuk mengenalpasti punca-punca pencemaran yang menyebabkan kemerosotan kualiti air sungai dan merumuskan pelan-pelan tindakan bagi pencegahan pencemaran dan peningkatan kualiti air sungai berkenaan. Pelan-pelan tindakan yang dirumuskan itu dikemukakan kepada agensi-agensi yang berkaitan untuk pertimbangan peruntukan dan perlaksanaan.

Selain itu, kajian inventori punca-punca pencemaran bagi Lembangan Sungai Sarawak (Sarawak) yang dimulakan pada tahun 2009 telah diselesaikan pada tahun 2010. Kajian ini telah diperluaskan ke Lembangan Sungai Buloh (Selangor) pada tahun 2010. Kajian inventori ini bertujuan untuk mengenalpasti semua jenis punca pencemaran di lembangan sungai dan membolehkan agensi-agensi terlibat memperkemaskan strategi penguatkuasaan seterusnya pencegahan dan kawalan pencemaran dapat dibuat dengan lebih berkesan.

River Pollution Prevention and Water Quality Improvement Programme had been implemented since the year 2001 under the 8th Malaysia Plan (8th MP) and continued under the 9th Malaysia Plan (9th MP). The purpose of this programme is to improve the water quality of the river which has been categorised as polluted or slightly polluted based on the Department of Environment's monitoring programme.

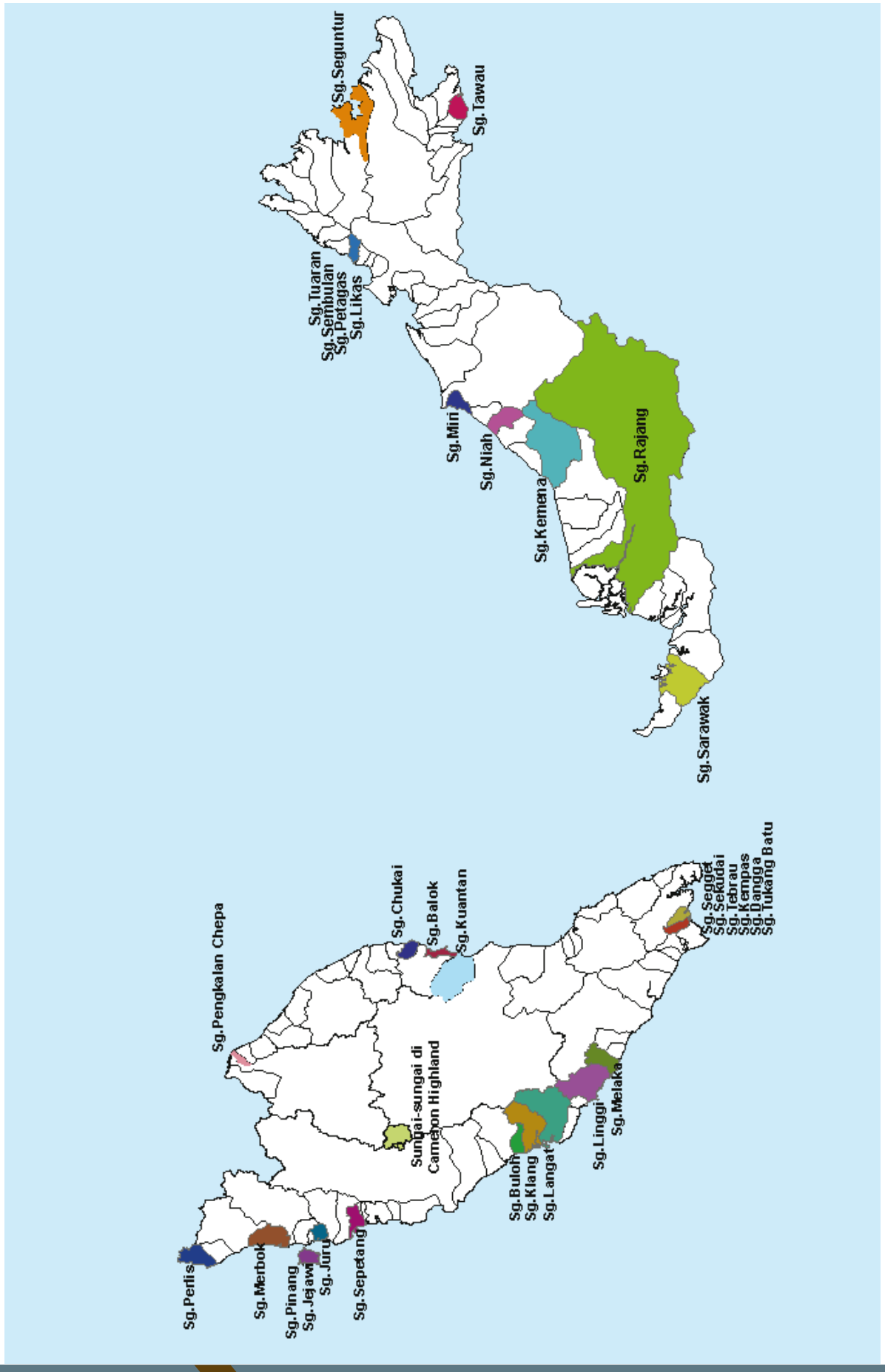
The two (2) main activities under this program are the implementation of a study on a polluted river basin and the regular reporting on the enforcement action and public awareness activities held for the selected river basin. In 2010, 33 river basins have been selected for this programme together with the implementation of the detailed study of the Kuantan River Basin in Pahang and two (2) special studies for pollution sources inventory in Sarawak River Basin (Sarawak) and Buloh River Basin (Selangor) (**Map 4.3**).

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 which need to be improved to Class II which is suitable for drinking water supply with only conventional treatment.

Study on River Pollution Prevention and Water Quality Improvement

The study on River Pollution Prevention and Water Quality Improvement Programme for the Kuantan River Basin was started in 2009 and completed in 2010. The purpose of the study was to identify the pollution sources responsible for the deterioration of the river water quality and to formulate action plans to prevent pollution and improve its water quality. The formulated action plans will be presented to all relevant agencies for financial consideration and implementation.

Besides that, a study to inventorise all pollution sources for Sarawak River Basin (Sarawak) started in 2009 has been completed in 2010 and the same study were extended to Buloh River Basin (Selangor) in 2010. The purpose of these studies was to identify all pollution sources in the river basin and enable the relevant agencies to strategise their enforcement action, thus effectively preventing and controlling water pollution.



Peta 4.2 JAS: 33 Lembangan Sungai Yang Dipilih Di Bawah Program Pencegahan Pencemaran Dan Peningkatan Kualiti Air Sungai Di Malaysia
Map 4.2 DOE: 33 River Basins Have Been Selected For River Pollution Prevention And Water Quality Improvement Programme In Malaysia

Penguatkuasaan

Penguatkuasaan berkesan adalah merupakan salah satu hasil rumusan pelan-pelan tindakan yang dicadangkan oleh kajian bagi mengurangkan beban pencemaran dan seterusnya meningkatkan kualiti air sungai. Pada tahun 2010, sebanyak 6,838 punca-punca pencemaran di 33 lembangan sungai di bawah program ini telah dikenalpasti tertakluk di bawah Akta Kualiti Alam Sekeliling, 1974. Dari jumlah ini, sebanyak 329 premis telah diberi notis arahan supaya mempertingkatkan keupayaan sistem rawatan dan 47 premis telah dihadapkan ke mahkamah (**Rajah 4.3**).

Selaras dengan Indikator Prestasi Utama (KPI) yang disasarkan, bagi tahun 2010, 14 lembangan sungai (atau 42% dari jumlah lembangan sungai yang diawasi di bawah program ini) telah berjaya mencapai sasaran 100% pematuhan bagi punca-punca yang tertakluk di bawah Akta Kualiti Alam Sekeliling (AKAS), 1974 berbanding hanya lapan (8) lembangan pada tahun lepas. Sementara sebanyak 14 lembangan lagi telah mencapai lebih 90% pematuhan terhadap AKAS, 1974.

Pematuhan punca pencemaran terhadap AKAS, 1974 yang rendah dicatatkan di lima lembangan sungai yang lain iaitu Sungai Miri (83%), Sungai Merbok (89%), Sungai Juru (75%), Sungai Perlis (70%) dan Sungai Jejawi (13%) yang menunjukkan keperluan bagi memperkemaskan strategi penguatkuasaan oleh pihak JAS di negeri-negeri yang berkenaan (**Rajah 4.4**).

Selain daripada itu, bagi memantapkan lagi tindakan penguatkuasaan di 33 lembangan sungai ini, aktiviti kajian inventori punca-punca tetap yang tertakluk di bawah AKAS, 1974 bagi 33 lembangan sungai ini juga dikemaskini dari masa ke semasa bagi memperkemas dan memantapkan program penguatkuasaan yang dijalankan.

Kesedaran Awam

Kesedaran awam merupakan satu lagi langkah yang berkesan dalam mencegah pencemaran dan meningkatkan kualiti air sungai. Pada tahun 2010, JAS telah menjalankan aktiviti-aktiviti kesedaran awam kepada berbagai kumpulan sasaran seperti pihak industri, pemaju projek pembangunan, murid-murid sekolah dan juga penduduk setempat. Aktiviti-aktiviti kesedaran awam yang dijalankan adalah seperti di **Rajah 4.5**. Sebanyak 297 aktiviti kesedaran awam seperti sesi dialog/seminar/pameran telah dilaksanakan termasuk 23 aktiviti gotong-royong yang dijalankan oleh penduduk-penduduk setempat di sepanjang sungai berkenaan.

Sejak tahun 2006 sehingga tahun 2010, sejumlah 845 sesi dialog/seminar/pameran dan 64 aktiviti gotong-royong telah dilaksanakan, melebihi jumlah sasaran awal yang perlu dilaksanakan dalam RMK-9 iaitu 660 sesi dialog/seminar/pameran dan 33 aktiviti gotong-royong.

Enforcement

Effective enforcement is one of the essential measures formulated in the action plans under the study to reduce pollution loads and improve river water quality. In 2010, a total of 6,838 premises within the 33 river basins were identified to be subjected to the Environmental Quality Act, 1974. Of these premises, 329 premises were given notices to upgrade their treatment systems and 47 premises were taken to court (**Figure 4.3**).

In line with the Key Performance Indicator (KPI) set for the programme in 2010, 14 river basins (or 42% of the total number of river basins monitored under this programme) had achieved 100% compliance for the pollution sources subjected to the Environmental Quality Act (EQA), 1974 compared to only eight (8) river basins in 2009. Another 14 river basins had achieved more than 90% compliance towards the EQA, 1974.

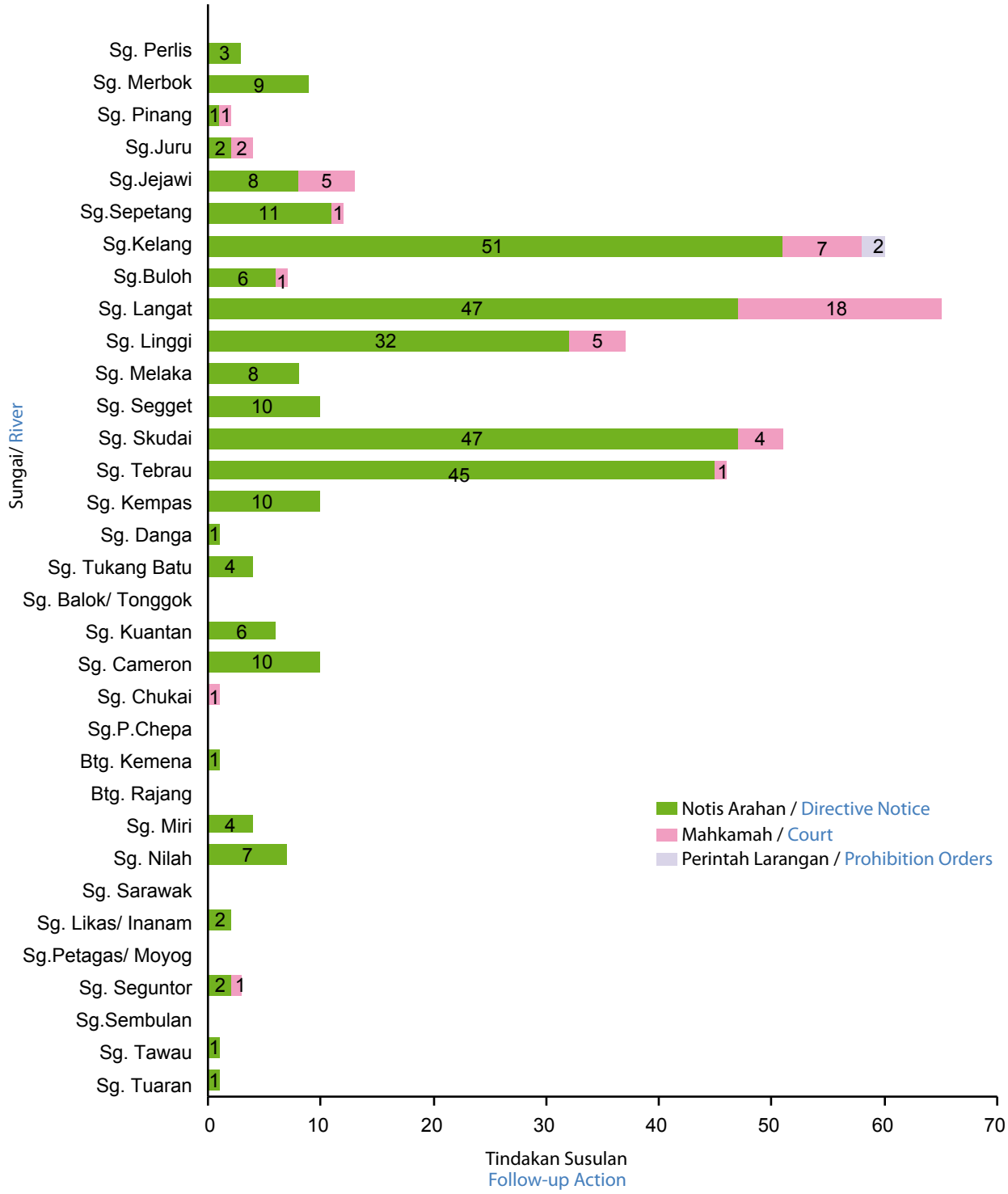
A lower percentage of compliance observed in the remaining five (5) river basins i.e. Sungai Miri (83%), Sungai Merbok (89%), Sungai Juru (75%), Sungai Perlis (70%) and Sungai Jejawi (13%) indicated the need for DOE to strengthen its enforcement strategy for these river basins (**Figure 4.4**).

Besides enforcement activities, the inventory of polluting point sources within these 33 river basins subjected to the EQA, 1974 was regularly updated to enhance and strengthen the implementation of the enforcement programme.

Public Awareness

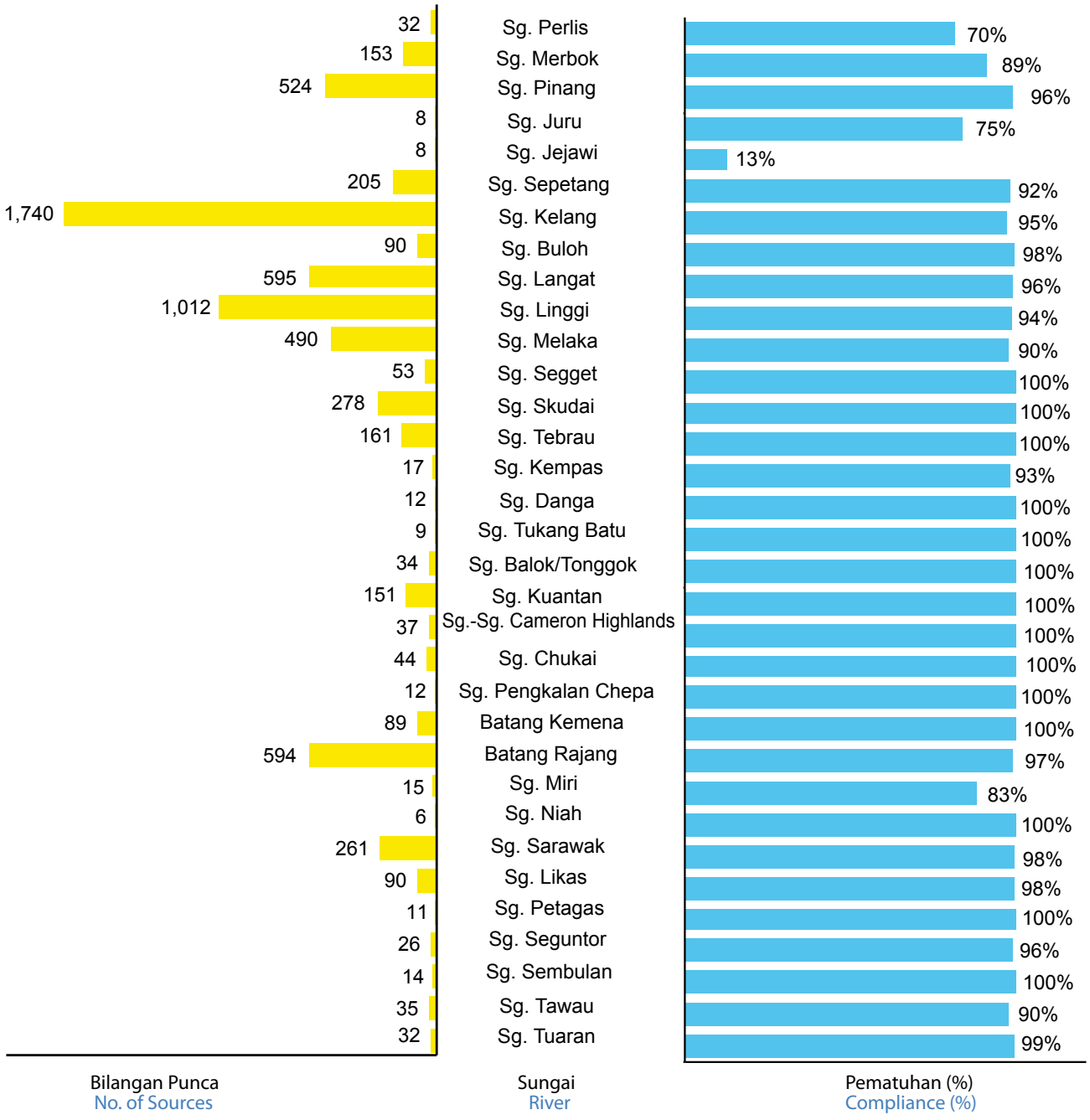
Promoting awareness is another effective measure to prevent pollution and improves the river water quality. In 2010, the DOE had organised awareness programmes to various target groups namely the industries, developers, school children and also to local communities. Public awareness activities implemented are listed in **Figure 4.5**. A total of 297 awareness activities such as dialogue sessions/seminars/exhibitions had been organised in these 33 river basins including 23 clean-up activities organised by the local communities along the river system.

Since 2006 until 2010, 845 dialogue sessions/seminars/exhibitions and 64 clean-up activities had been organised under this programme exceeding the targetted member of 660 dialogue sessions/seminars/exhibitions and 33 clean-up activities to be implemented by the end of the 9th MP (2010).



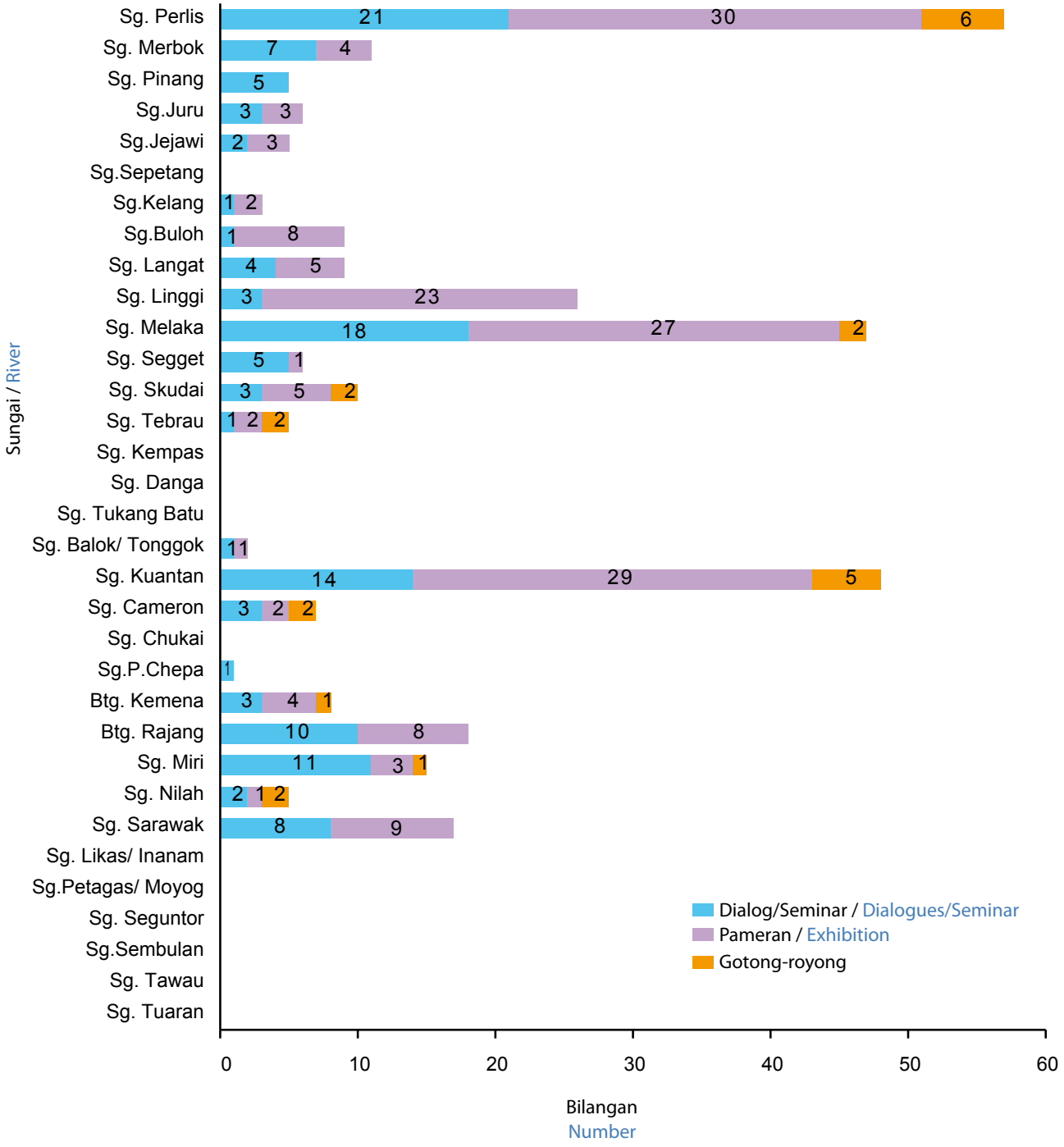
Rajah 4.3 JAS: Tindakan Susulan Ke Atas Punca-Punca Pencemaran di Bawah Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai, 2010

Figure 4.3 DOE: Follow-up Actions on Pollution Sources under River Pollution Prevention and Water Quality Improvement Programme, 2010



Rajah 4.4 JAS: Bilangan Punca Pencemaran/Status Pematuhan Punca-Punca Terhadap AKAS 1974 di bawah Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai, 2010

Figure 4.4 DOE: Number of Pollution Sources/Status of Compliance toward EQA 1974 under River Pollution Prevention and Water Quality Improvement Programme, 2010



Rajah 4.5 JAS: Aktiviti-Aktiviti Kesedaran di Bawah Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai, 2010

Figure 4.5 DOE: Awareness Activities under the River Pollution Prevention and Water Quality Improvement Programme, 2010

Kawalan Terhadap Premis Yang Ditetapkan
Control Of Prescribed Premises

Kilang Getah Asli Mentah dan Kilang Kelapa Sawit Mentah 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 2010, sejumlah 80 buah kilang getah asli mentah telah dilesenkan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan)(Getah Asli Mentah), 1978. Dari jumlah ini, 68 buah kilang telah dilesenkan untuk melepaskan efluen yang telah diolah ke alur air, sebuah kilang telah dilesenkan untuk melepaskan efluen ke atas tanah, manakala 11 buah kilang dibenarkan untuk mengitar semula efluen. 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 4.6** menunjukkan bilangan kilang getah asli mentah mengikut negeri seluruh Malaysia.

Dalam tahun 2010, pegawai-pegawai penguatkuasa Jabatan Alam Sekitar negeri telah menjalankan sebanyak 260 pemeriksaan ke atas kesemua 80 buah kilang getah asli mentah yang telah dilesenkan. Kilang-kilang yang mempunyai rekod pematuhan yang rendah telah diberi keutamaan pemeriksaan. Tindakan susulan pemeriksaan penguatkuasaan yang diambil adalah seperti yang ditunjukkan dalam **Rajah 4.6**.

Sebanyak 39 surat arahan dan 10 notis arahan telah dikeluarkan kepada premis-premis tersebut untuk mengambil tindakan pembaikan bagi mematuhi keperluan perundangan. Sebanyak tiga (3) kompaun telah dikeluarkan bagi kesalahan-kesalahan yang telah dilakukan. Tujuh (7) tindakan mahkamah telah diambil bagi kesalahan melanggar syarat-syarat lesen dengan denda sebanyak RM65,000 telah dikenakan.

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 are subjected to the requirement of Section 18 of the Environmental Quality Act, 1974 whereby the owners of the premises are required to obtain a license from the Department of Environment for the occupation and/or use of the said premises.

Raw Natural Rubber

In 2010, there were 80 raw natural rubber factories licensed under the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations, 1978. Out of these, 68 factories were licensed to discharge treated effluent into inland watercourse, one (1) was permitted to practise land disposal while the remaining 11 were allowed to recycle their effluent. The licensing periods of these premises varied from one to three years depending on the level of compliance to the conditions of the licences. **Figure 4.6** shows the distribution of raw natural rubber factories according to states in Malaysia.

Throughout 2010, state DOE enforcement officers conducted 260 inspections on 80 licensed raw natural rubber factories. Factories with low compliance record were given priority for inspections. Actions taken as a result of these inspections are as shown in **Figure 4.6**.

A total of 39 directive letters and 10 notices were issued to the concerned premises to take corrective actions. Three (3) compounds were issued for the offences committed and seven (7) court actions were taken with a total fine of RM 65,000 for failure to comply with conditions of the licence.

Status Pematuhan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Getah Asli Mentah), 1978

Pada tahun 2010, pencapaian pematuhan keseluruhan kilang getah asli mentah yang tertakluk di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan)(Getah Asli Mentah) 1978 adalah 99 %.

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

Kilang getah asli mentah juga tertakluk kepada kawalan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih), 1978. Pada tahun 2010, pencapaian pematuhan keseluruhan oleh kilang getah asli mentah adalah 100%.

Status Pematuhan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual), 2005

Kilang getah asli mentah adalah juga tertakluk kepada kawalan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual), 2005. Pada tahun 2010 pencapaian pematuhan keseluruhan oleh premis yang ditetapkan adalah 99%.

Kilang Kelapa Sawit Mentah

Sejumlah 419 buah kilang kelapa sawit mentah telah dilesenkan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan)(Kelapa Sawit Mentah), 1977 pada tahun 2010. Dari 419 buah kilang yang dilesenkan, sebanyak 278 buah kilang telah dilesenkan untuk melepaskan efluen yang diolah ke dalam alur air, 94 buah kilang untuk melupuskan efluen ke atas tanah, 32 buah kilang melupuskan efluen dengan menggunakan gabungan kaedah alur air dan atas tanah, 12 buah kilang menggunakan kaedah kompos manakala tiga (3) buah kilang menggunakan gabungan kaedah alur air dan kompos. **Rajah 4.7** menunjukkan taburan bilangan kilang kelapa sawit mentah di Malaysia mengikut negeri.

Sepanjang tahun 2010, sebanyak 1,112 pemeriksaan ke atas kesemua 419 kilang kelapa sawit yang telah dilesenkan di seluruh negara telah dilaksanakan oleh pegawai penguatkuasa JAS Negeri (**Rajah 4.7**).

Status Of Compliance With The Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations,1978

In 2010, the overall compliance performance by the raw natural rubber factories that were subjected to the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations, 1978 was 99%.

Status Of Compliance With The Environmental Quality (Clean Air) Regulations, 1978

Raw natural rubber factories are also subjected to the Environmental Quality (Clean Air) Regulations, 1978. In 2010, overall compliance performance by the raw natural rubber factories to the regulations was 100%.

Status Of Compliance With The Environmental Quality (Scheduled Wastes) Regulations, 2005

Raw natural rubber factories are also subjected to the control of the Environmental Quality (Scheduled Wastes) Regulations, 2005. In 2010, overall compliance performance by the raw natural rubber factories to the regulations was 99%.

Crude Palm Oil

There were 419 palm oil processing mills licensed under the Environmental Quality (Prescribed Premises) (Crude Palm Oil Mill) Regulations, 1977 in the year 2010. Of these 419 licensed prescribed premises, 278 were granted permission to discharge treated effluent into inland watercourse, 94 to practice land disposal, 32 to discharge into inland watercourse and land disposal, 12 to practise composting and three (3) to discharge treated effluent into inland watercourse and composting. **Figure 4.7** shows the distribution of palm oil processing mills in Malaysia according to states.

Throughout the year, 1,112 inspections on 419 licensed palm oil mills were conducted by state DOE enforcement officers (**Figure 4.7**).

Sebanyak 196 surat arahan dan 376 notis telah dikeluarkan kepada premis-premis tersebut untuk mengambil tindakan bagi mematuhi keperluan perundangan. Sebanyak 77 kompaun dikeluarkan bagi kesalahan yang dilakukan dan 95 tindakan mahkamah telah diambil bagi kegagalan mematuhi syarat-syarat lesen dan denda sebanyak RM 948,000 telah dikenakan (**Rajah 4.7**).

Status Pematuhan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Minyak Sawit Mentah), 1977

Pada tahun 2010, pencapaian pematuhan keseluruhan kilang kelapa sawit mentah yang tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan)(Minyak Sawit Mentah), 1977 adalah 87%.

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

Kilang kelapa sawit mentah juga tertakluk kepada kawalan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih), 1978. Pada tahun 2010, pencapaian pematuhan keseluruhan oleh premis yang ditetapkan adalah 96%.

Status Pematuhan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual), 2005

Kilang Kelapa Sawit Mentah adalah juga tertakluk kepada kawalan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual), 2005. Pada tahun 2010 pencapaian pematuhan keseluruhan oleh premis yang ditetapkan adalah 94%.

A total 196 directive letters and 376 notices were issued to the mills to comply with the legal requirement. Seventy seven compounds were issued for offences committed and 95 court actions were taken with a total fine of RM 948,000 for failure to comply with conditions of the licences (**Figure 4.7**).

Status Of Compliance With The Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulations, 1977

In 2010, the overall compliance of the palm oil processing mills that were subjected to the Environmental Quality Prescribed Premises) (Crude Palm Oil) Regulations, 1977 was 87%.

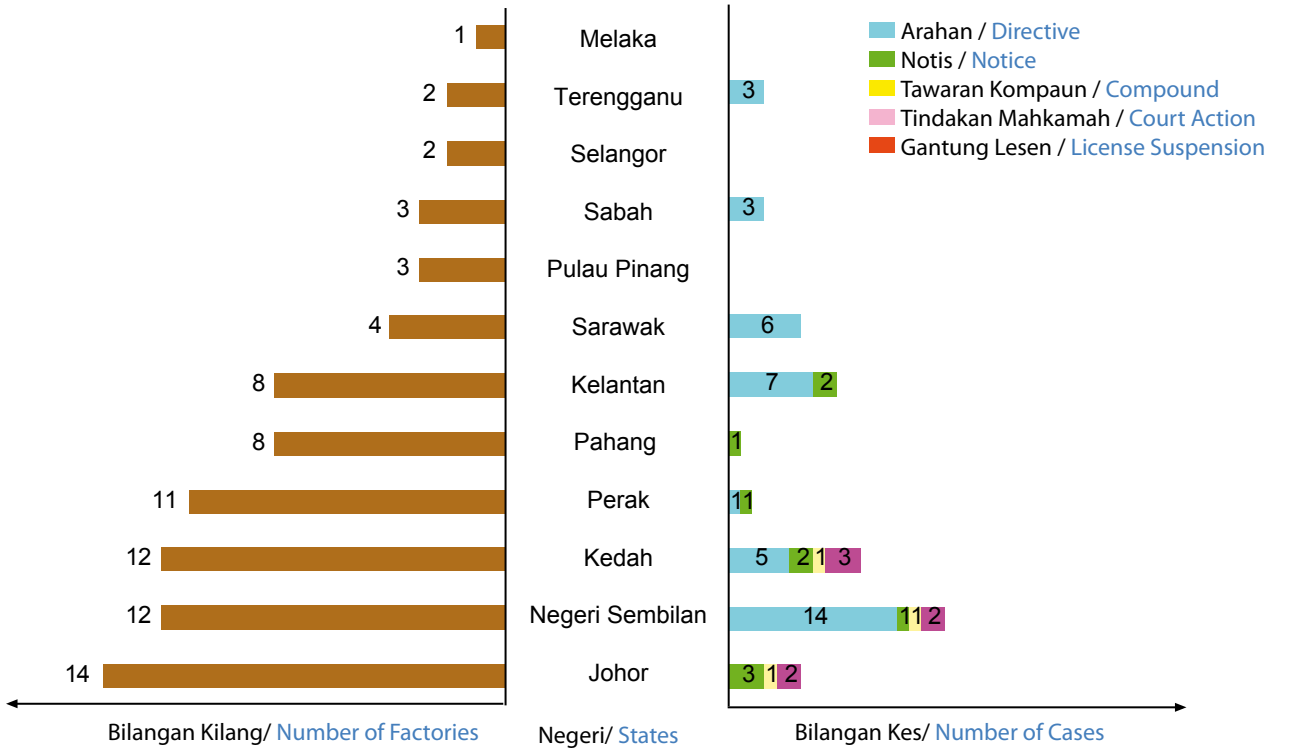
Status Of Compliance With The Environmental Quality (Clean Air) Regulations, 1978

Palm oil processing mills are also subjected to the control of the Environmental Quality (Clean Air) Regulations, 1978. In 2010, the overall compliance performance by palm oil processing mills to the regulations was 96%.

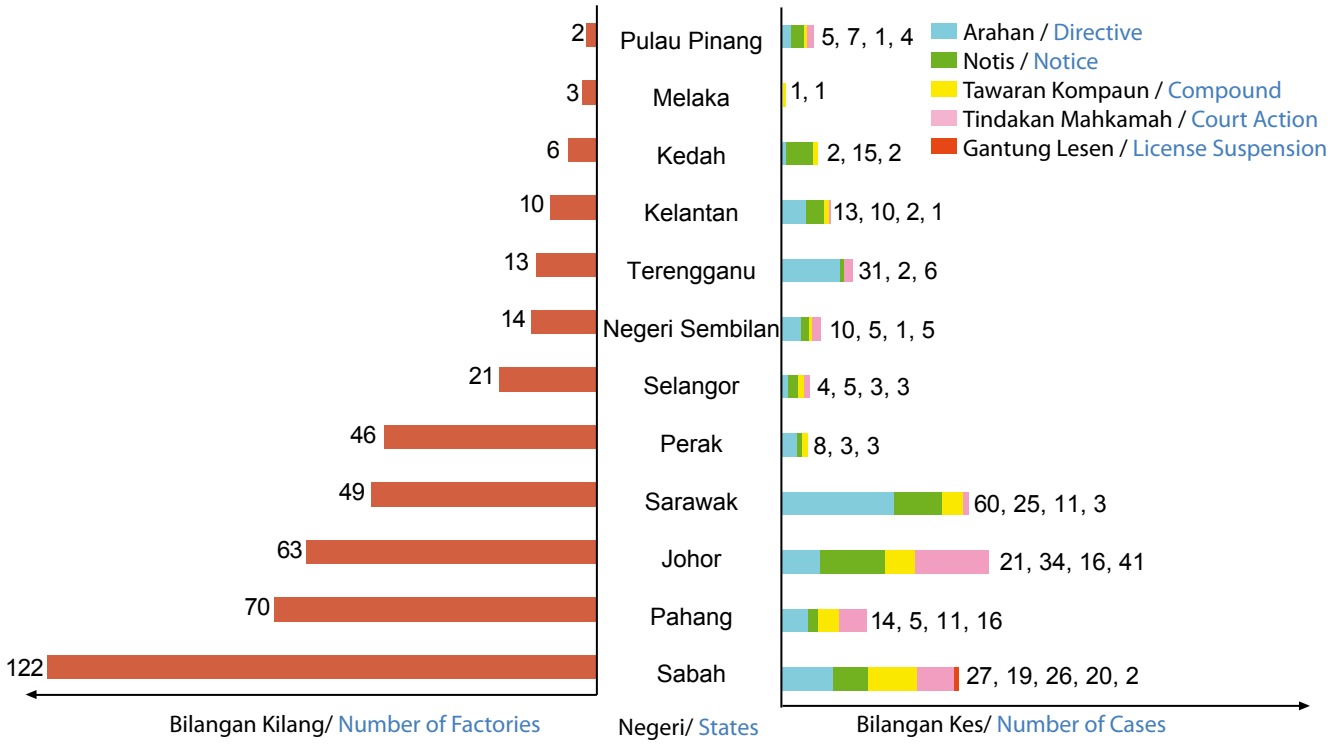
Status Of Compliance With The Environmental Quality (Scheduled Wastes) Regulations, 2005

Palm oil processing mills are also subjected to the control of the Environmental Quality (Scheduled Wastes) Regulations, 2005. In 2010, the overall compliance performance by the palm oil processing mills to the regulations was 94%.

Kawasan Kilang Kelapa Sawit Mentah
Palm Oil Processing Mills Area



Rajah 4.6 JAS : Tindakan Undang-Undang Terhadap Kilang Getah Asli Mentah, 2010
Figure 4.6 DOE : Legal Action Against Raw Natural Rubber Factories, 2010



Rajah 4.7 JAS : Tindakan Undang-Undang Terhadap Kilang Kelapa Sawit Mentah, 2010
Figure 4.7 DOE : Legal Action Against Crude Palm Oil Mills, 2010

Kawalan Terhadap Premis Yang Bukan Ditetapkan
Control Of Non-Prescribed Premises

Status Pematuhan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009

Premis-premis yang bukan ditetapkan yang melepaskan efluen adalah tertakluk kepada kawalan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009. Pada tahun 2010, JAS telah menjalankan 9,247 pemeriksaan penguatkuasaan terhadap sejumlah 27 kategori industri pembuatan dan premis-premis yang bukan ditetapkan lain yang tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009. Pencapaian pematuhan keseluruhan oleh premis yang bukan ditetapkan adalah 97% dan sejumlah 3% premis lagi yang diperiksa didapati tidak mematuhi standard pelepasan efluen (Peraturan 18).

Pada tahun 2010, status pematuhan industri dan premis-premis yang bukan ditetapkan yang tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian), 2009 menunjukkan kilang padi dan industri jentera mencapai pematuhan 100% (**Rajah 4.8**).

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

Premis-premis yang bukan ditetapkan adalah juga tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978. Pada tahun 2010, Jabatan Alam Sekitar (JAS) telah menjalankan 10,276 pemeriksaan penguatkuasaan terhadap sejumlah 29 kategori industri pembuatan dan premis-premis yang bukan ditetapkan lain yang tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih), 1978. Pencapaian pematuhan keseluruhan oleh premis yang bukan ditetapkan adalah 96% dan sebanyak 4% premis lagi yang diperiksa didapati membina alat pembakaran bahanapi serta cerobong tanpa Kelulusan Bertulis daripada Ketua Pengarah Kualiti Alam Sekeliling (Peraturan 36 dan 38).

Pada tahun 2010, status pematuhan industri dan premis-premis yang bukan ditetapkan yang tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih), 1978 menunjukkan loji rawatan air, jentera dan loji pengolahan kumbahan IWK mencapai pematuhan 100%, sementara lain-lain industri menunjukkan pematuhan melebihi 80% (**Rajah 4.9**).

Status of Compliance with the Environmental Quality (Industrial Effluents) Regulations, 2009

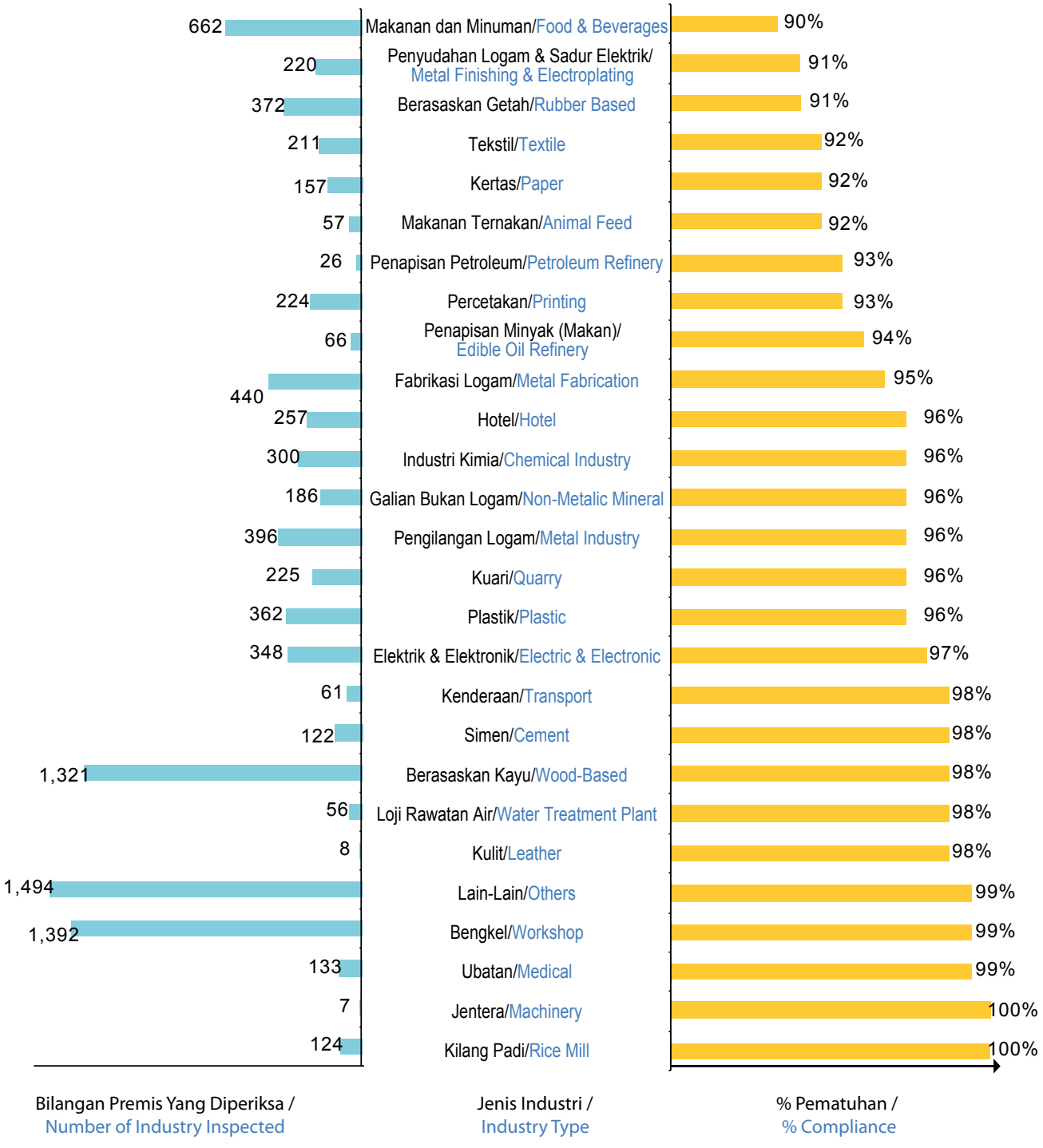
Non-prescribed premises that discharged effluents are subjected to the Environmental Quality (Industrial Effluent) Regulations, 2009. In 2010, DOE conducted 9,247 inspections on 27 categories of industrial premises and other non-prescribed premises that were subjected to the Environmental Quality (Industrial Effluent) Regulations, 2009. The overall compliance achievement by the non-prescribed premises was 97% and the other 3% of the premises inspected were found not complying the effluent discharge standards (Regulation 18).

In 2010, the compliance status of industries and other non-prescribed premises subjected to the Environmental Quality (Industrial Effluent) Regulations, 2009 indicated that rice mills and machinery industries achieved 100% compliance (**Figure 4.8**).

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

Non-prescribed premises are also subjected to the Environmental Quality (Clean Air) Regulations, 1978. In 2010, DOE conducted 10,276 inspections on 29 categories of industrial premises and other non-prescribed premises that were subjected to the Environmental Quality (Clean Air) Regulations, 1978. The overall compliance by the non-prescribed premises was 96% and the other 4% of the premises were found to install fuel burning equipment and chimney without Written Approval from Director General of Environmental Quality (Regulations 36 and 38).

In 2010, the compliance status of industries and other non-prescribed premises that were subjected to the Environmental Quality (Clean Air) Regulations, 1978 indicated that water treatment plants and IWK sewage treatment plants achieved 100% compliance, while other industries showed more than 80% compliance (**Figure 4.9**).



Rajah 4.8 JAS : Status Pematuhan Industri Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009, 2010

Figure 4.8 DOE : Compliance Status to the Environmental Quality (Industrial Effluent) Regulations, 2009, 2010

Status Pematuhan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005

Premis-premis yang bukan ditetapkan adalah tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005. Pada tahun 2010, JAS telah menjalankan 10,276 pemeriksaan penguatkuasaan terhadap sejumlah 29 kategori industri pembuatan dan premis-premis yang bukan ditetapkan lain. Pencapaian pematuhan keseluruhan adalah 96%. Sebanyak 4% premis lagi yang diperiksa didapati menghadapi berbagai kesukaran pematuhan seperti tidak mengemukakan pemberitahuan mengenai pengeluaran buangan terjadual kepada JAS, buangan terjadual tidak distor dengan baik, buangan terjadual tidak dilabel dengan sempurna dan tidak menyimpan inventori buangan terjadual (Peraturan -Peraturan 3, 8, 9, 10 dan 11).

Pada tahun 2010, status pematuhan industri dan premis-premis yang bukan ditetapkan yang tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 menunjukkan industri hotel, kilang padi, industri jentera dan loji pengolahan kumbahan IWK mencapai pematuhan 100%, sementara lain-lain industri menunjukkan pematuhan melebihi 80% (**Rajah 4.10**).

Tindakan Penguatkuasaan

Sebanyak 329 kes premis yang tidak patuh terhadap AKAS 1974 telah dituduh di mahkamah. Sejumlah RM 3,441,050 denda telah dikenakan. Tindakan-tindakan penguatkuasaan lain yang diambil adalah pengeluaran 1,839 surat arahan dan 717 notis arahan kepada industri supaya mengambil tindakan yang wajar bagi mematuhi Akta Kualiti Alam Sekeliling, 1974 dan Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009, Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978 dan Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005.

Bagi meningkatkan pematuhan, JAS telah mengeluarkan arahan-arahan kepada pihak industri supaya memasang alat kawalan pencemaran yang sesuai dan 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, berbagai aktiviti kesedaran dilaksanakan sepanjang tahun untuk kumpulan sasaran yang spesifik. Aktiviti-aktiviti tersebut termasuklah dialog, seminar dan bengkel untuk industri dengan tujuan untuk meningkatkan tahap pematuhan undang-undang. Jabatan Alam Sekitar juga dalam usaha memastikan pematuhan sepenuhnya, mempromosi

Status of Compliance with the Environmental Quality (Scheduled Wastes) Regulations, 2005

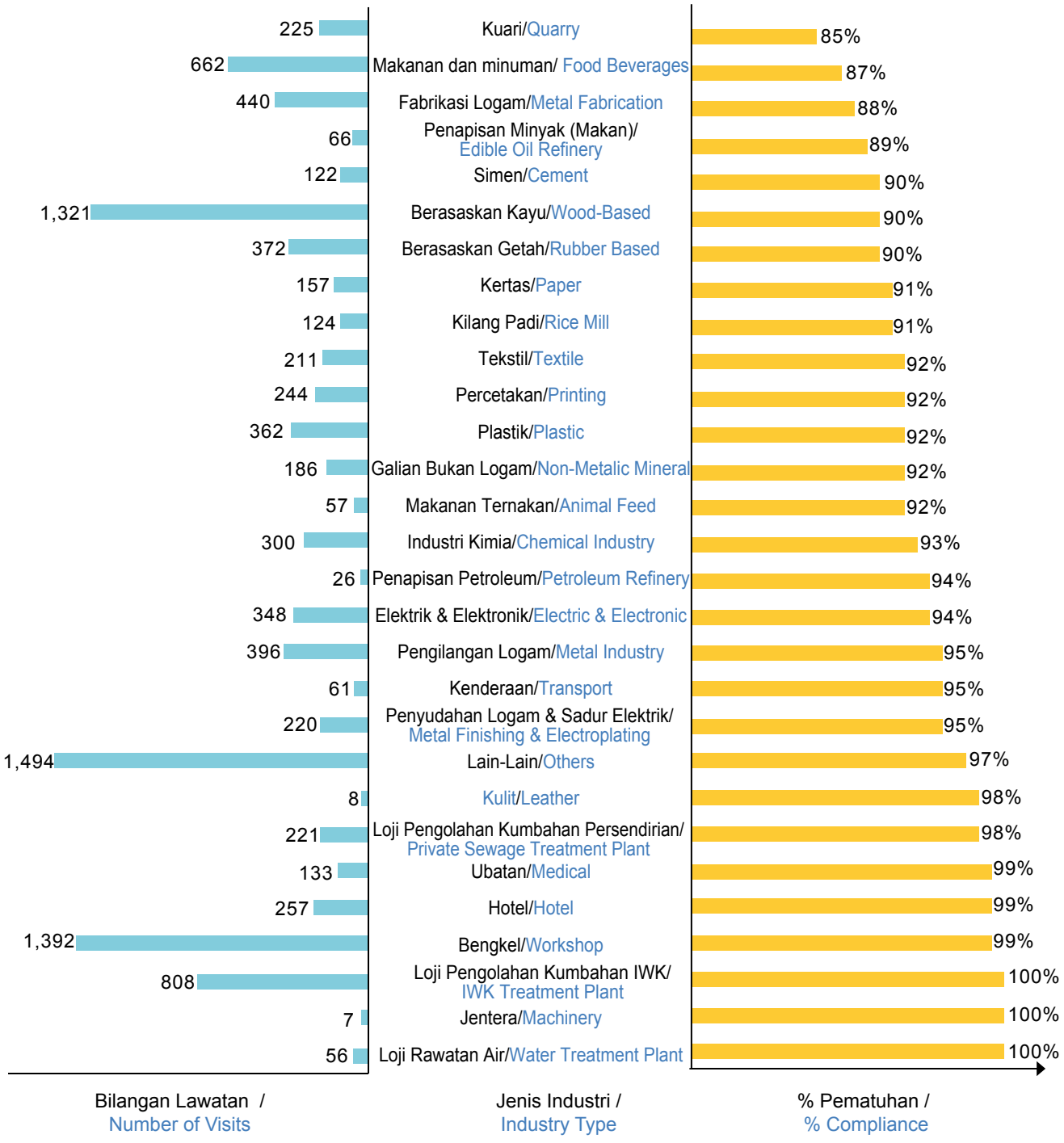
Non-prescribed premises are also subjected to the Environmental Quality (Scheduled Wastes) Regulations, 2005. In 2010, DOE conducted 10,276 inspections on 29 categories of industrial premises and other non-prescribed premises. The overall compliance was 96%. The remaining 4% of the premises inspected were found to have committed offences relating to failure in submitting notifications of scheduled waste generation to DOE, improper storage and improper labelling of scheduled waste, and failure to keep accurate and up-to-date inventory of scheduled waste (Regulations 3, 8, 9, 10 and 11).

In 2010, the compliance status of industries and other non-prescribed premises that were subjected to the Environmental Quality (Scheduled Wastes) Regulations, 2005 showed that hotels, rice mills, machinery industries and IWK sewage treatment plants achieved 100% compliance, while other industries showed more than 80% compliance (**Figure 4.10**).

Enforcement Actions

Of these non-complying premises, 329 cases were charged in courts. A total fine of RM 3,441,050 were collected. Other enforcement actions taken were issuance of 1,839 written directives and 717 notices to the industries, for them to take appropriate actions in order to comply with the Environmental Quality Act, 1974 and the Environmental Quality (Industrial Effluent) Regulations, 2009, Environmental Quality (Clean Air) Regulations, 1978 and Environmental Quality (Scheduled Wastes) Regulations, 2005.

In order to improve compliance, the DOE issued directives to the industries to install more appropriate and efficient control equipment, upgrade the existing pollution control facilities and to have a 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 regulatory compliance. The Department of Environment, in its effort to ensure full compliance, also promoted the adoption of more efficient control technologies, cleaner production practices as well as self-regulations. The industries were also advised to set up a good environmental management system and be ISO 14000 certified.



Rajah 4.9 JAS : Status Pematuhan Industri Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978, 2010

Figure 4.9 DOE : Compliance Status to the Environmental Quality (Clean Air) Regulations 1978, 2010

penggunaan teknologi kawalan yang efisien, amalan pengeluaran bersih serta pematuhan kendiri. Pihak industri juga dinasihatkan untuk mewujudkan sistem pengurusan alam sekitar yang baik dan digalakkan untuk mendapatkan pensijilan ISO 14000.

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 2010, jumlah permohonan lesen pelanggaran di bawah Seksyen 25, Akta adalah sebanyak 547 (**Rajah 4.11**). Dari 547 permohonan, 326 telah diluluskan dan 221 ditolak. Daripada 326 lesen pelanggaran yang diluluskan, 263 (80.67%) lesen adalah untuk loji pengolahan kumbahan IWK, 25 (7.67%) untuk loji pengolahan kumbahan persendirian, 17 (5.21%) untuk industri makanan dan minuman, 5 (1.53%) untuk industri tekstil, 3 (0.92%) untuk industri penapisan minyak (makan), 2 (0.61%) untuk industri galian bukan logam, kenderaan, berasaskan getah dan kertas setiap satu, serta 1 (0.31%) untuk elektrik dan elektronik, industri kimia, makanan ternakan, ubatan dan lain-lain setiap satu (**Rajah 4.12**).

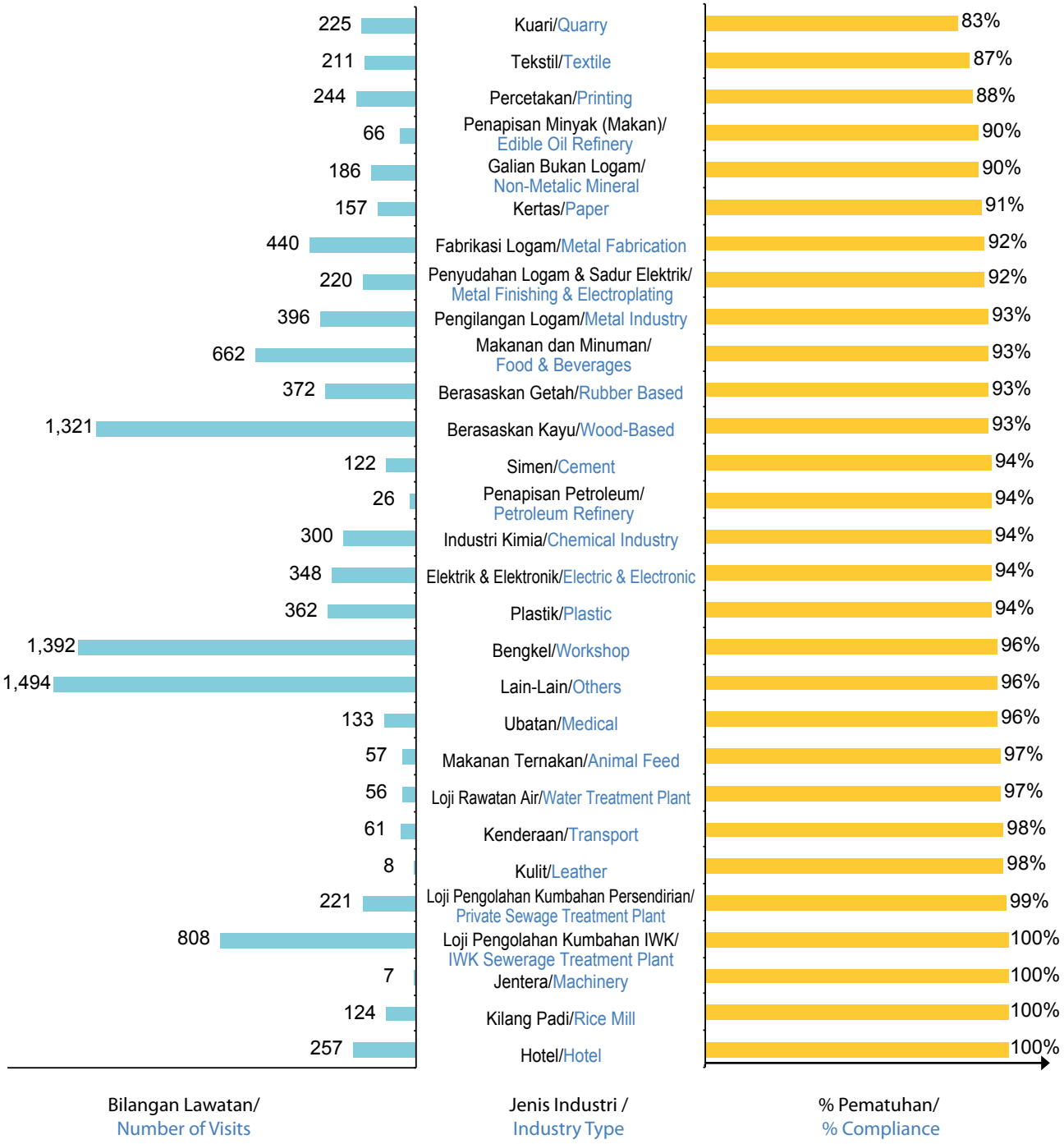
Antara parameter yang sering diluluskan lesen pelanggaran adalah keperluan oksigen biokimia, keperluan oksigen kimia, pepejal terampai, amoniakal nitrogen, jumlah nitrogen, minyak dan gris, pH, boron, plumbum, sulfid, fenol, kadmium, zink, perak dan besi. Pemeriksaan penguatkuasaan telah dijalankan terhadap premis-premis yang dilesenkan bagi menentukan tahap pematuhan terhadap syarat lesen. Pematuhan keseluruhan terhadap syarat-syarat lesen oleh premis-premis yang dilesenkan pada tahun 2010 adalah 79%.

CONTRAVENTION LICENCES

Under the Environmental Quality Act, 1974 contravention licences may be granted for a specific time frame to allow industries with genuine difficulties in complying with stipulated discharge or emission standards to contravene the acceptable conditions of effluent discharges 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 as a measure or mechanism to assist, facilitate and enable the problematic industries with adequate time to install or upgrade their pollution control equipment. Approval for such contravention licences would depend on the assessment of the socio-economic situation, the conservation of environmental quality and also the commitment of the problematic industries to comply with the Act and Regulations made thereunder.

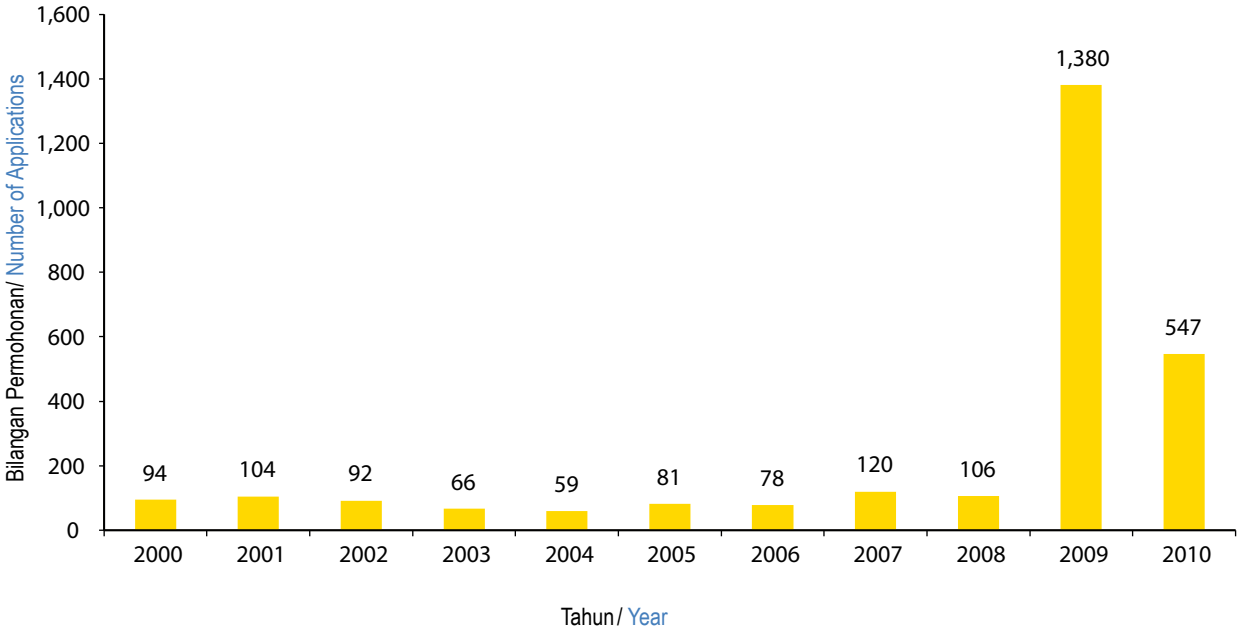
In 2010, there are 547 for contravention licences under Section 25 of the Act (**Figure 4.11**). Out of the 547 applications, 326 were approved and 221 were rejected. Out of the 326 approved contravention licences, 263 (80.67%) were for IWK sewage treatment plants, 25 (7.67%) for private sewage treatment plant, 17 (5.21%) for food and beverages industries, 5 (1.53%) for textile industries, 3 (0.92%) for edible oil refinery, 2 (0.61%) each for non-metalic mineral, transport, rubber based and paper industries, and 1 (0.31%) each for electric and electronics, chemical industry, animal feed, medical and others (**Figure 4.12**).

Among the parameters that most industries granted with contravention licenses were biochemical oxygen demand, chemical oxygen demand, suspended solids, ammoniacal nitrogen, total nitrogen, oil and grease, pH, boron, lead, sulphide, phenol, cadmium, zinc, silver and iron. Enforcement inspections were conducted on the licensed premises to determine the level of compliance to the licence conditions. The overall compliance with the conditions of contravention licence in 2010 was 79%.

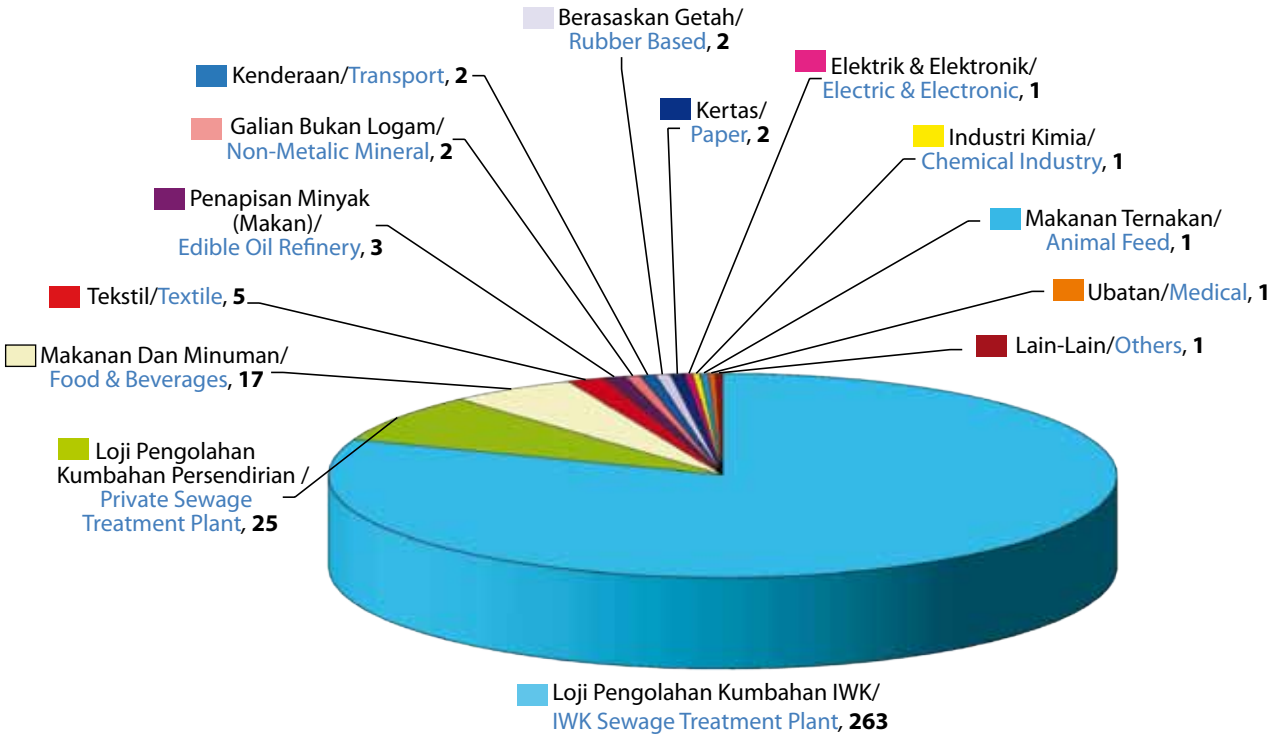


Rajah 4.10 JAS : Status Pematuhan Industri Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005, 2010

Figure 4.10 DOE : Compliance Status to the Environmental Quality (Scheduled Wastes) Regulations 2005, 2010



Rajah 4.11 JAS: Bilangan Permohonan Lesen Pelanggaran Di Bawah Seksyen 25 (1) AKAS 1974, 2010
Figure 4.11 DOE: Number of Contravention Licenses Under Section 25 (1) EQA 1974, 2010



Rajah 4.12 JAS: Lesen Pelanggaran di Bawah Seksyen 25(1) AKAS 1974, Mengikut Jenis Industri,2010
Figure 4.12 DOE: Contravention Licenses Under Section 25(1) by Industry Type, 2010

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.

Dalam tahun 2010, terdapat 240 stesen pengawasan di seluruh Malaysia; Perlis (2 stesen), Kedah (3 stesen), Pulau Langkawi (7 stesen), Pulau Pinang (22 stesen), Perak (13 stesen), Selangor (14 stesen), Negeri Sembilan (13 stesen), Melaka (12 stesen), Johor (54 stesen), Pahang (11 stesen), Terengganu (19 stesen), Kelantan (10 stesen), Sabah (26 stesen), W.P Labuan (5 stesen) dan Sarawak (29 stesen) (**Jadual 4.4**). Tujuh (7) stesen baru telah dibuka pada tahun 2010 (**Jadual 4.5**) bagi mengembangkan rangkaian pengawasan stesen marin di Malaysia.

Di samping itu, di bawah Program Pengawasan Selat Johor di bawah 'Malaysia-Singapore Joint Committee on the Environment' (MSJCE), 20 stesen telah dipantau pada tahun 2010 (**Jadual 4.6**).

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 estuaries and coastal areas to monitor marine water quality with respect to their beneficial uses such as recreation, fishing and marine parks.

In 2010, a total of 240 monitoring stations were set up through out Malaysia; Perlis (2 stations), Kedah (3 stations), Pulau Langkawi (7 sations), Pulau Pinang (22 stations), Perak (13 stations), Selangor (14 stations), Negeri Sembilan (13 stations), Melaka (12 stations), Johor (54 stations), Pahang (11 stations), Terengganu (19 stations), Kelantan (10 stations), Sabah (26 stations), W.P Labuan (5 stations) and Sarawak (29 stations) (**Table 4.4**). Seven (7) monitoring stations were opened in 2010 (**Table 4.5**) to extend the monitoring network marine stations in Malaysia.

Under the Malaysia-Singapore Joint Committee on the Environment (MSJCE) Monitoring Programme, 20 stations were monitored in 2010 (**Table 4.6**).

Kawasan Perikanan
Fishing Area

Jadual 4.4 JAS : Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2010

Table 4.4 DOE: Marine Water Quality Monitoring Stations, 2010

Bil./ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No.Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
1	PERLIS	KUALA/ESTUARINE	KUALA SG. BARU	6302903	N 06° 19' 54.5"	E 100° 09' 20.0"
2		KUALA/ESTUARINE	KUALA SG. PERLIS	6401901	N 06° 23' 59.0"	E 100° 07' 34.8"
1	KEDAH	KUALA/ESTUARINE	KUALA SG. KEDAH	6102908	N 06° 06' 13.0"	E 100° 16' 32.0"
2		KUALA/ESTUARINE	KUALA JERLUN	6302925	N 06° 12' 36.0"	E 100° 14' 20.9"
3		PANTAI/COASTAL	PANTAI MERDEKA	5603905	N 05° 40' 10.0"	E 100° 22' 40.0"
1	P.LANGKAWI	PANTAI/COASTAL	LANGKAWI ISLAND RESORT	6399914	N 06° 17' 51.1"	E 099° 51' 38.3"
2		PANTAI/COASTAL	PANTAI KOK	6397922	N 06° 22' 12.0"	E 099° 40' 43.7"
3		PANTAI/COASTAL	PANTAI KUAH	6398913	N 06° 19' 04.1"	E 099° 51' 04.5"
4		PANTAI/COASTAL	PANTAI PASIR TENGKORAK	6497901	N 06° 25' 46.3"	E 099° 43' 37.1"
5		PANTAI/COASTAL	PANTAI TELUK BURAU	6396923	N 06° 21' 52.4"	E 099° 40' 13.7"
6		PANTAI/COASTAL	PANTAI TELUK NIBUNG	6497915	N 06° 21' 38.9"	E 099° 42' 08.1"
7		PANTAI/COASTAL	PANTAI TENGAH	6297903	N 06° 18' 52.4"	E 099° 43' 46.8"
1	PULAU PINANG	KUALA/ESTUARINE	KUALA SG. JAWI	5204901	N 05° 16' 50.0"	E 100° 25' 00.0"
2		KUALA/ESTUARINE	KUALA SG. JURU	5304904	N 05° 20' 20.0"	E 100° 24' 20.0"
3		KUALA/ESTUARINE	KUALA SG. KERIAN	5104901	N 05° 10' 00.0"	E 100° 25' 00.0"
4		KUALA/ESTUARINE	KUALA SG. PINANG	5403934	N 05° 24' 00.0"	E 100° 20' 05.0"
5		KUALA/ESTUARINE	KUALA SG.PERAI	5303908	N 05° 23' 00.0"	E 100° 22' 00.0"
6		PANTAI/COASTAL	BATU FERINGGI (CASUARINA)	5402904	N 05° 28' 10.0"	E 100° 14' 30.0"
7		PANTAI/COASTAL	KAW.PER.BAYAN LEPAS I	5303932	N 05° 20' 00.0"	E 100° 18' 45.0"
8		PANTAI/COASTAL	KAW.PER.BAYAN LEPAS II	5303933	N 05° 19' 00.0"	E 100° 18' 30.0"
9		PANTAI/COASTAL	KAW.PER.BAYAN LEPAS III	5302939	N 05° 18' 20.0"	E 100° 17' 45.0"
10		PANTAI/COASTAL	LUAR PANTAI TELUK BAHANG	5402930	N 05° 27' 45.0"	E 100° 12' 45.0"
11		PANTAI/COASTAL	PANTAI BERSIH	5403906	N 05° 26' 30.0"	E 100° 22' 40.0"
12		PANTAI/COASTAL	PANTAI MIAMI	5502901	N 05° 28' 30.0"	E 100° 16' 00.0"
13		PANTAI/COASTAL	PANTAI PASIR PANJANG	5201938	N 05° 17' 50.0"	E 100° 11' 00.0"
14		PANTAI/COASTAL	PERSIARAN GURNEY	5403902	N 05° 25' 30.0"	E 100° 19' 30.0"
15		PANTAI/COASTAL	RUMAH PAM BARU PERAI	5304927	N 05° 21' 15.0"	E 100° 23' 15.0"

Jadual 4.4 JAS : Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2010 (sambungan)
Table 4.4 DOE: Marine Water Quality Monitoring Stations, 2010 (continue)

Bil./ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No.Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
16	PULAU PINANG	PANTAI/COASTAL	RUMAH PAM LAMA PERAI	5303926	N 05° 20' 00.0"	E 100° 18' 45.0"
17		PANTAI/COASTAL	SELAT PP SELATAN (JELUTONG)	5303911	N 05° 23' 30.0"	E 100° 19' 50.0"
18		PANTAI/COASTAL	TANJUNG BUNGAH	5402937	N 05° 28' 00.0"	E 100° 16' 50.0"
19		PANTAI/COASTAL	GERTAK SANGGUL	5201919	N 05° 16' 50.0"	E 100° 12' 40.0"
20		PANTAI/COASTAL	TELUK TEMPOYAK	5202923	N 05° 28' 30.0"	E 100° 17' 30.0"
21		KUALA/ESTUARINE	KUALA SUNGAI TENGAH	5104901	N 05° 12' 41.0"	E 100° 25' 29.0"
22		KUALA/ESTUARINE	KUALA SUNGAI PINANG	403934	N 05° 24' 13.0"	E 100° 19' 54.0"
1	PERAK	KUALA/ESTUARINE	KUALA SG. MANJUNG	4205930	N 04° 14' 09.0"	E 100° 39' 57.0"
2		KUALA/ESTUARINE	KUALA SG. TG. PIANDANG	5003921	N 05° 04' 27.0"	E 100° 22' 34.0"
3		KUALA/ESTUARINE	KUALA SG.GULA	4906926	N 04° 55' 07.0"	E 100° 28' 57.0"
4		KUALA/ESTUARINE	KUALA SG.KURAU	4994919	N 04° 59' 13.0"	E 100° 25' 46.0"
5		KUALA/ESTUARINE	KUALA SG.PERAK	4007901	N 03° 59' 03.0"	E 100° 48' 58.0"
6		KUALA/ESTUARINE	KUALA SG.SEPETANG	4806925	N 04° 50' 07.0"	E 100° 37' 57.0"
7		PANTAI/COASTAL	PANTAI PASIR BOGAK	4205908	N 04° 12' 58.0"	E 100° 37' 55.0"
8		PANTAI/COASTAL	PANTAI PASIR PANJANG	4305924	N 04° 25' 07.0"	E 100° 35' 35.0"
9		PANTAI/COASTAL	PANTAI PUTERI DEWI	4205907	N 04° 15' 17.0"	E 100° 32' 47.0"
10		PANTAI/COASTAL	PANTAI TANJUNG BATU	4406927	N 04° 25' 07"	E 100° 35' 35.0"
11		PANTAI/COASTAL	PANTAI TELUK BATIK	4205923	N 04° 11' 14.0"	E 100° 36' 33.0"
12		PANTAI/COASTAL	PANTAI TELUK DALAM	4205928	N 04° 14' 53.0"	E 100° 33' 25.0"
13		PANTAI/COASTAL	PANTAI TELUK GEDUNG	4205929	N 04° 15' 39.0"	E 100° 34' 49.0"
1	SELANGOR	PANTAI/COASTAL	PANTAI BAGAN LALANG	2616927	N 02° 36' 20.0"	E 101° 41' 30.0"
2		PANTAI/COASTAL	PANTAI MORIB	2712902	N 02° 45' 00.0"	E 101° 26' 20.0"
3		PANTAI/COASTAL	SELAT PULAU BABI	3012929	N 03° 01' 10.0"	E 101° 15' 55.0"
4		KUALA/ESTUARINE	SELAT KLANG UTARA	3013908	N 03° 04' 00.0"	E 101° 21' 00.0"
5		KUALA/ESTUARINE	KUALA SG. SEPANG	2517922	N 02° 35' 35.0"	E 101° 42' 56.0"
6		KUALA/ESTUARINE	KUALA SG. SEPANG (KECIL)	2612928	N 02° 36' 40.0"	E 101° 42' 15.0"
7		KUALA/ESTUARINE	KUALA SG. SEPANG (KAWALAN)	2616926	N 02° 36' 20.0"	E 101° 41' 30.0"

Jadual 4.4 JAS : Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2010 (sambungan)
Table 4.4 DOE: Marine Water Quality Monitoring Stations, 2010 (continue)

Bil./ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No.Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
8	SELANGOR	KUALA/ESTUARINE	KUALA SUNGAI KLANG	3013909	N 03° 00' 06.0"	E 101° 23' 24.0"
9		KUALA/ESTUARINE	KUALA SUNGAI LANGAT (JUGRA)	2814925	N 02° 48' 25.0"	E 101° 24' 15.0"
10		KUALA/ESTUARINE	KUALA SUNGAI LANGAT (LUMUT)	2913903	N 02° 55' 50.0"	E 101° 21' 15.0"
11		KUALA/ESTUARINE	KUALA SUNGAI BULOH	3212930	N 03° 15' 10.0"	E 101° 15' 50.0"
12		KUALA/ESTUARINE	KUALA SUNGAI SELANGOR	3312915	N 03° 20' 00.0"	E 101° 13' 30.0"
13		KUALA/ESTUARINE	KUALA SUNGAI TENGI	3311931	N 03° 23' 00.0"	E 101° 10' 20.0"
14		KUALA/ESTUARINE	KUALA SUNGAI BERNAM	3808924	N 03° 51' 00.0"	E 100° 49' 00.0"
1	N. SEMBILAN	KUALA/ESTUARINE	KUALA SUNGAI LINGGI	2319901	N 02° 23' 20.0"	E 101° 58' 19.0"
2		KUALA/ESTUARINE	KUALA SUNGAI LUKUT	2517910	N 02° 34' 45.0"	E 101° 47' 16.0"
3		PANTAI/COASTAL	PANTAI BAGAN PINANG	2418915	N 02° 30' 31.0"	E 101° 49' 44.0"
4		PANTAI/COASTAL	PANTAI TELUK SINTING PASIR PANJANG	2419908	N 02° 24' 57.0"	E 101° 56' 31.0"
5		PANTAI/COASTAL	PORT DICKSON BANDAR	2517907	N 02° 31' 16.0"	E 101° 47' 51.0"
6		PANTAI/COASTAL	PANTAI PORT DICKSON BATU 10	2418914	N 02° 24' 58.0"	E 101° 51' 23.0"
7		PANTAI/COASTAL	PANTAI PORT DICKSON BATU 5	2418906	N 02° 29' 46.0"	E 101° 50' 15.0"
8		PANTAI/COASTAL	PANTAI PORT DICKSON BATU 6	2418916	N 02° 29' 05.0"	E 101° 50' 46.0"
9		PANTAI/COASTAL	PANTAI PORT DICKSON BATU 7	2418905	N 02° 27' 43.0"	E 101° 51' 04.0"
10		PANTAI/COASTAL	PANTAI PORT DICKSON BATU 8	2418912	N 02° 27' 16.0"	E 101° 51' 20.0"
11		PANTAI/COASTAL	PANTAI PD. BATU 8 (STESEN KAWALAN)	2418913	N 02° 27' 16.0"	E 101° 51' 10.0"
12		PANTAI/COASTAL	PORT DICKSON TNB	2517909	N 02° 32' 09.0"	E 101° 47' 42.0"
13		PANTAI/COASTAL	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/ESTUARINE	KUALA SG. MELAKA	2122903	N 02° 11' 06.0"	E 102° 14' 52.0"
3		KUALA/ESTUARINE	KUALA SG. SRI MELAKA	2121914	N 02° 11' 16.4"	E 102° 14' 39.2"
4		KUALA/ESTUARINE	KUALA SG. MERLIMAU	2124912	N 02° 09' 25.0"	E 102° 25' 28.0"
5		KUALA/ESTUARINE	KUALA SG. SEBATU	2186904	N 02° 06' 06.0"	E 102° 27' 35.0"
6		PANTAI/COASTAL	PANTAI KUNDOR TG. KELING	2221908	N 02° 14' 37.0"	E 102° 08' 29.0"
7		PANTAI/COASTAL	PANTAI ROMBANG TG. KELING	2221906	N 02° 13' 35.0"	E 102° 08' 57.0"

Jadual 4.4 JAS : Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2010 (sambungan)
Table 4.4 DOE: Marine Water Quality Monitoring Stations, 2010 (continue)

Bil./ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No.Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
8	MELAKA	PANTAI/COASTAL	PANTAI TG. BIDARA	2320909	N 02° 17' 30.0"	E 102° 05' 18"
9		PANTAI/COASTAL	PANTAI TELUK GONG, PENGKALAN BALAK	2320902	N 02° 20' 23.0"	E 102° 03' 30.0"
10		PANTAI/COASTAL	PULAU UPEH	2121913	N 02° 11' 40.1"	E 102° 14' 18.1"
11		PANTAI/COASTAL	PULAU MELAKA POINT A	2121915	N 02° 10' 44.5"	E 102° 14' 59.3"
12		PANTAI/COASTAL	PULAU MELAKA POINT B	2121916	N 02° 10' 39.5"	E 102° 15' 22.4"
1	JOHOR	PANTAI/COASTAL	KG.TANJUNG KOPOK	SJ1	N 01° 25' 31.0"	E 104° 00' 03"
2		PANTAI/COASTAL	KG. PASIR PUTIH	SJ2	N 01° 25' 48.0"	E 103° 55' 40.0"
3		PANTAI/COASTAL	J/K SULTAN ISKANDAR	SJ3	N 01° 26' 49.0"	E 103° 46' 09.0"
4		PANTAI/COASTAL	KG.SENIBUNG	SJ4	N 01° 29' 01.0"	E 103° 48' 47.0"
5		KUALA/ESTUARINE	KUALA SG.TEBRAU	SJ4A	N 01° 28' 56.0"	E 103° 47' 48.0"
6		PANTAI/COASTAL	TANJUNG PUTRI	SJ5	N 01° 27' 20.0"	E 103° 46' 09.0"
7		PANTAI/COASTAL	HADAPAN MPJB	SJ6	N 01° 27' 08.0"	E 103° 45' 43.0"
8		PANTAI/COASTAL	TANJUNG DANGA	SJ7	N 01° 27' 24.0"	E 103° 42' 52.0"
9		KUALA/ESTUARINE	KUALA SG.SKUDAI	SJ7A	N 01° 27' 46.0"	E 103° 43' 22.0"
10		PANTAI/COASTAL	HADAPAN PUSAT ISLAM	SJ7B	N 01° 27' 19.0"	E 103° 44' 51.0"
11		PANTAI/COASTAL	TEBING RUNTUH	SJ8	N 01° 25' 10.0"	E 103° 40' 06.0"
12		KUALA/ESTUARINE	KUALA SG.MELAYU	SJ8A	N 01° 26' 53.0"	E 103° 41' 53.0"
13		PANTAI/COASTAL	TANJUNG BUNGA	SJ9	N 01° 23' 07.0"	E 103° 39' 02.0"
14		PANTAI/COASTAL	TANJUNG KUPANG	SJ10	N 01° 23' 36.0"	E 103° 39' 11.0"
15		KUALA/ESTUARINE	KUALA SUNGAI BATU PAHAT	1729930	N 01° 47' 44.0"	E 102° 53' 22.0"
16		KUALA/ESTUARINE	KUALA SUNGAI JOHOR	1440916	N 01° 29' 04.0"	E 104° 01' 22.0"
17		KUALA/ESTUARINE	KUALA SUNGAI MELAYU	1437946	N 01° 27' 15.0"	E 103° 41' 56.0"
18		KUALA/ESTUARINE	KUALA SUNGAI MERSING	2438905	N 02° 26' 10.0"	E 103° 50' 35.0"
19		KUALA/ESTUARINE	KUALA SUNGAI MUAR	2024932	N 02° 02' 54.0"	E 102° 33' 11.0"
20		KUALA/ESTUARINE	KUALA SUNGAI SEGGET	1437919	N 01° 27' 21.0"	E 103° 45' 58.0"

Jadual 4.4 JAS : Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2010 (sambungan)
Table 4.4 DOE: Marine Water Quality Monitoring Stations, 2010 (continue)

Bil./ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No.Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
21	JOHOR	KUALA/ESTUARINE	KUALA SUNGAI SKUDAI	1437922	N 01° 28' 28.0"	E 103° 43' 12.0"
22		KUALA/ESTUARINE	KUALA SUNGAI TEBRAU	1438943	N 01° 28' 56.0"	E 103° 47' 48.0"
23		PANTAI/COASTAL	HADAPAN HSAJB	1437920	N 01° 27' 19.0"	E 103° 44' 44.0"
24		PANTAI/COASTAL	JETI TANJONG BELUNGKOR	1440963	N 01° 27' 14.0"	E 104° 04' 03.0"
25		PANTAI/COASTAL	KG. TELUK JAWA	1438918	N 01° 28' 17.0"	E 103° 50' 30.0"
26		PANTAI/COASTAL	PANTAI AIR PAPAN	2538959	N 02° 31' 05.0"	E 103° 50' 00.0"
27		PANTAI/COASTAL	PANTAI DESARU	1542914	N 01° 32' 48.0"	E 104° 15' 41.0"
28		PANTAI/COASTAL	LUAR KUKUP	1334925	N 01° 19' 30.0"	E 103° 26' 29.0"
29		PANTAI/COASTAL	PANTAI LIDO	1437921	N 01° 27' 56.0"	E 103° 43' 29.0"
30		PANTAI/COASTAL	PANTAI SRI PANTAI	2339960	N 02° 22' 45.0"	E 103° 53' 19.0"
31		PANTAI/COASTAL	PANTAI STULANG LAUT	1437951	N 01° 28' 02.0"	E 103° 46' 46.0"
32		PANTAI/COASTAL	PANTAI SUNGAI LURUS	1730962	N 01° 43' 42.0"	E 103° 01' 43.0"
33		PANTAI/COASTAL	PANTAI TANJONG SETAPA	1341961	N 01° 20' 33.0"	E 104° 08' 09.0"
34		PANTAI/COASTAL	PANTAI TELUK GOREK	2538958	N 02° 34' 57.0"	E 103° 48' 18.0"
35		PANTAI/COASTAL	PANTAI TELUK MAHKOTA	1841911	N 01° 53' 52.0"	E 104° 06' 15.0"
36		PANTAI/COASTAL	PANTAI TG.LEMAN	2140694	N 02° 08' 43.0"	E 104° 00' 24.0"
37		PANTAI/COASTAL	PASIR GOGOK	1441966	N 01° 25' 02.8'	E 104° 05' 59.7'
38		PANTAI/COASTAL	PEL. PASIR GUDANG	1428939	N 01° 25' 44.0"	E 103° 54' 03.0"
39		PANTAI/COASTAL	TANJUNG BUAI	1340973	N 01° 29' 48.1"	E 104° 02' 43.4"
40		PANTAI/COASTAL	TANJUNG MERAK	1441968	N 01° 21' 45.9'	E 104° 06' 35.5"
41		PANTAI/COASTAL	TANJUNG PENGELIH	1441967	N 01° 22 14.7'	E 104° 05' 19.5"
42		PANTAI/COASTAL	TANJUNG PENYUSUP	1444920	N 01° 22' 12.9"	E 104° 16' 48.3"
43		PANTAI/COASTAL	TANJUNG SEPANG	1443969	N 01° 23' 01.2"	E 104° 06' 44.8"
44		PANTAI/COASTAL	PANTAI PUNGGUR	1531974	N 01° 41' 05.0"	E 103° 05' 54.0"

Jadual 4.4 JAS : Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2010 (sambungan)
Table 4.4 DOE: Marine Water Quality Monitoring Stations, 2010 (continue)

Bil./ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No.Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
45	JOHOR	KUALA/ESTUARINE	SUNGAI KIM-KIM	1439965	N 01° 25' 24.0"	E 103° 54' 03.0"
46		PANTAI/COASTAL	TANJUNG BIN	1336975	N 01° 19' 28.4"	E 103° 33' 25.8"
47		PANTAI/COASTAL	HADAPAN JABATAN LAUT	1438943	N 01° 22' 57.9"	E 103° 32' 07.6"
48		PANTAI/COASTAL	PELABUHAN TJ. PELEPAS	1438918	N 01° 21' 13.0"	E 103° 32' 35.0"
49		KUALA/ESTUARINE	PULAU BELUNGKOR	EM4	N 01° 26' 25.8"	E 104° 03' 11.04"
50		PANTAI/COASTAL	PULAU TEKONG	EM5	N 01° 25' 42.3"	E 104° 04' 36.72"
51		PANTAI/COASTAL	PULAU TEKONG	EM6	N 01° 23' 19.2"	E 104° 05' 20.40"
52		PANTAI/COASTAL	JETI PULAREK	EM7	N 01° 21' 26.8"	E 104° 04' 40.65"
53		PANTAI/COASTAL	TANJUNG PENGELIH	WQ10	N 01° 19' 52.62"	E 104° 05' 39.57"
54		PANTAI/COASTAL	PULAU MERAMBONG	WM1	N 01° 20' 17.02"	E 103° 37' 36.29"
1	PAHANG	PANTAI/COASTAL	PANTAI SEPAT	3633940A	N 03° 42' 02.0"	E 103° 20' 16.0"
		PANTAI/COASTAL		3633940B	N 03° 41' 54.0"	E 103° 20' 19.0"
2		PANTAI/COASTAL	PANTAI BATU HITAM	3833915A	N 03° 53' 06"	E 103° 21' 58"
		PANTAI/COASTAL		3833915B	N 03° 53' 09"	E 103° 21' 59"
3		PANTAI/COASTAL	PANTAI CHERATING (Club Med)	4133903A	N 04° 08' 41.0"	E 103° 24' 31.0"
		PANTAI/COASTAL		4133903B	N 04° 07' 51.0"	E 103° 24' 23"
4		PANTAI/COASTAL	PANTAI CHERATING (Legend)	4133942A	N 04° 06' 16.0"	E 103° 23' 06"
		PANTAI/COASTAL		4133942B	N 04° 06' 12.0"	E 103° 23' 07"
5		PANTAI/COASTAL	PANTAI KUALA API-API	3235917	N 03° 31' 20.0"	E 103° 23' 45.0"
6		PANTAI/COASTAL	PANTAI MUHIBBAH BALOK	3933901A	N 03° 55' 28.0"	E 103° 22' 21.1"
		PANTAI/COASTAL		3933901B	N 03° 55' 30.0"	E 103° 22' 23.0"
7		PANTAI/COASTAL	PANTAI BESERAH	3933941A	N 03° 54' 41.0"	E 103° 22' 02.0"
		PANTAI/COASTAL		3933941B	N 03° 54' 39.0"	E 103° 22' 01.0"
8		PANTAI/COASTAL	PANTAI TANJUNG BATU	3334915	N 03° 31' 10.0"	E 103° 23' 45.0"

Jadual 4.4 JAS : Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2010 (sambungan)
Table 4.4 DOE: Marine Water Quality Monitoring Stations, 2010 (continue)

Bil./ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No.Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
9	PAHANG	PANTAI/COASTAL	PANTAI TELUK CEMPEDAK	3833910A	N 03^0 48' 51"	E 103° 22' 19.0"
		PANTAI/COASTAL		3833910B	N 03^0 48' 49.0"	E 103° 22' 21.0"
10		PANTAI/COASTAL	PANTAI TELUK GELORA	3833909A	N 03^0 48' 16.0"	E 103° 20' 43.0"
		PANTAI/COASTAL		3833909B	N 03^0 48' 20.0"	E 103° 20' 43.0"
11		PANTAI/COASTAL	PANTAI LEGENDA	3534943A	N 03^0 12' 16.7"	E 103^0 26' 53.7"
		PANTAI/COASTAL		3534943B	N 03^0 12' 16.7"	E 103^0 26' 53.7"
1	TERENGGANU	KUALA/ESTUARINE	KUALA SG. BESUT	5825902	N 05° 50' 02.8"	E 102° 33' 28.8"
2		KUALA/ESTUARINE	KUALA SG. DUNGUN	4734918	N 04° 46' 48.9"	E 103° 25' 21.6"
3		KUALA/ESTUARINE	KUALA SG. IBAI	5231949	N 05° 17' 06.1"	E 103° 10' 06.5"
4		KUALA/ESTUARINE	KUALA SG. KERTEH	4534922	N 04° 30' 59.1"	E 103° 26' 52.6"
5		KUALA/ESTUARINE	UTARA TIOXIDE	4234950	N 04° 17' 06.3"	E 103° 28' 20.9"
6		KUALA/ESTUARINE	TENGAH TIOXIDE (DISCHARGE)	4234951	N 04° 16' 22.8"	E 103° 28' 12.7"
7		KUALA/ESTUARINE	SELATAN TIOXIDE	4234952	N 04° 15' 04.1"	E 103° 27' 59.2"
8		KUALA/ESTUARINE	KUALA SG. MARANG	5232911	N 05° 12' 24.7"	E 103° 12' 28.9"
9		KUALA/ESTUARINE	KUALA SG. PAKA	4634920	N 04° 39' 29.7"	E 103° 25' 57.7"
10		KUALA/ESTUARINE	KUALA SG. SETIU	5627953	N 05° 40' 05.9"	E 102° 42' 26.9"
11		KUALA/ESTUARINE	KUALA SG. TERENGGANU	5331907	N 05° 20' 22.1"	E 103° 08' 12.6"
12		KUALA/ESTUARINE	KUALA SUNGAI KEMAMAN	4234929	N 04° 14' 25.2"	E 102° 26' 48.8"
13		PANTAI/COASTAL	PANTAI BATU BURUK	5331935	N 05° 19' 29.1"	E 103° 09' 01.4"
14		PANTAI/COASTAL	PANTAI BUKIT KELUANG	5825903	N 05° 50' 02.8"	E 102° 36' 01.4"
15		PANTAI/COASTAL	PANTAI CHENDERING	5231934	N 05° 16' 11.8"	E 103° 10' 51.9"
16		PANTAI/COASTAL	PANTAI RANTAU ABANG	4833917	N 04° 52' 11.4"	E 103° 23' 17.4"
17		PANTAI/COASTAL	KIPC UTARA	4634953	N 04° 36' 37.9"	E 103° 26' 39.2"
18		PANTAI/COASTAL	KIPC TENGAH	4534954	N 04° 34' 54.9"	E 103° 27' 19.5"

Jadual 4.4 JAS : Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2010 (sambungan)
Table 4.4 DOE: Marine Water Quality Monitoring Stations, 2010 (continue)

Bil./ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No.Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
19	TERENGGANU	PANTAI/COASTAL	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/ESTUARINE	KUALA SG. GOLOK	6220911	N 6° 14' 05.0"	E 102° 05' 35.0"
3		KUALA/ESTUARINE	KUALA SG. KELANTAN	6222901	N 6° 13' 12.0"	E 102° 13' 50.0"
4		KUALA/ESTUARINE	KUALA SG. PENG. DATU	6123913	N 6° 10' 20.0"	E 102° 20' 40.0"
5		KUALA/ESTUARINE	KUALA SG.PENG.CHEPA	6223912	N 6° 12' 20.0"	E 102° 18' 10.0"
6		PANTAI/COASTAL	PANTAI BISIKAN BAYU	5825905	N 5° 52' 00.0"	E 102° 31' 00.0"
7		PANTAI/COASTAL	PANTAI CAHAYA BULAN	6122903	N 6° 10' 45.0"	E 102° 16' 50.0"
8		PANTAI/COASTAL	PANTAI IRAMA BACHOK	6024908	N 6° 03' 00.0"	E 102° 25' 15.0"
9		PANTAI/COASTAL	PANTAI SABAK	6123909	N 6° 10' 25.0"	E 102° 20' 10.0"
10		PANTAI/COASTAL	PANTAI SERI TUJUH	6221910	N 6° 13' 00.0"	E 102° 08' 00.0"
1	W.P. LABUAN	PANTAI/COASTAL	LAYANG-LAYANGAN	5251902	N 05° 20' 01.0"	E 115° 11' 37.0"
2		PANTAI/COASTAL	TANJUNG ARU	5251903	N 05° 21' 02.0"	E 115° 14' 39.0"
3		PANTAI/COASTAL	PULAU PAPAN	5151905	N 05° 15' 22.0"	E 115° 16' 03.0"
4		PANTAI/COASTAL	KIAMSAM	5151906	N 05° 15' 22.0"	E 115° 10' 28.0"
5		PANTAI/COASTAL	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		KUALA/ESTUARINE	KUALA SG.PENYU	5453901	N 05° 34' 13.0"	E 115° 35' 55.0"
3		PANTAI/COASTAL	BORNEO GOLF SEAWATER	5355901	N 05° 33' 00.0"	E 115° 47' 01.0"
4		PANTAI/COASTAL	PANTAI BAK-BAK KUDAT	6665901	N 06° 56' 44.0"	E 116° 50' 23.0"
5		PANTAI/COASTAL	PANTAI ULU TUNGKU, LAHAD DATU	5085901	N 05° 01' 09.0"	E 118° 53' 09.0"
6		PANTAI/COASTAL	PANTAI BATU SAPI	5580903	N 05° 47' 42.0"	E 118° 02' 22.0"
7		PANTAI/COASTAL	PANTAI DALIT, TUARAN	6161901	N 06° 11' 25.0"	E 116° 09' 45.0"
8		PANTAI/COASTAL	PANTAI LOK KAWI	5560904	N 05° 55' 00.0"	E 116° 02' 00.0"

Jadual 4.4 JAS : Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2010 (sambungan)
Table 4.4 DOE: Marine Water Quality Monitoring Stations, 2010 (continue)

Bil./ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No.Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
9	SABAH	PANTAI/COASTAL	PANTAI MANGROVE PARADISE, TUARAN	6161902	N 06° 15' 02.0"	E 116° 13' 50.0"
10		PANTAI/COASTAL	PANTAI MANIS, PAPAR	5555901	N 05° 45' 15.0"	E 115° 52' 04.0"
11		PANTAI/COASTAL	PANTAI MELINSUNG, PAPAR	5565902	N 05° 50' 18.0"	E 115° 50' 45.0"
12		PANTAI/COASTAL	PANTAI PASIR PUTIH, SANDAKAN	5580901	N 05° 49' 26.0"	E 118° 04' 58.0"
13		PANTAI/COASTAL	PANTAI SABANDAR, TUARAN	6161903	N 06° 15' 02.2"	E 116° 13' 50.0"
14		PANTAI/COASTAL	PANTAI SARINA, KUNAK	4481901	N 04° 39' 41.0"	E 118° 17' 01.0"
15		PANTAI/COASTAL	PANTAI SILAM LAHAD DATU	4681902	N 04° 58' 08.0"	E 118° 14' 46.0"
16		PANTAI/COASTAL	PANTAI TELUK BRUNEI 1	5053901	N 05° 09' 55.0"	E 115° 32' 53.0"
17		PANTAI/COASTAL	PANTAI TELUK BRUNEI 2	5053902	N 05° 09' 55.0"	E 115° 32' 53.0"
18		PANTAI/COASTAL	PANTAI TELUK BRUNEI 3	5053903	N 05° 09' 55.0"	E 115° 32' 53.0"
19		PANTAI/COASTAL	PANTAI TELUK BRUNEI 4	5053904	N 05° 09' 55.0"	E 115° 32' 53.0"
20		PANTAI/COASTAL	PANTAI TELUK BRUNEI 5	5053905	N 05° 09' 55.0"	E 115° 32' 53.0"
21		PANTAI/COASTAL	PANTAI TELUK BRUNEI 6	5053906	N 05° 09' 55.0"	E 115° 32' 53.0"
22		PANTAI/COASTAL	PANTAI TG. ARU (REST LIDO)	5656901	N 05° 55' 01.0"	E 115° 59' 03.0"
23		PANTAI/COASTAL	PANTAI TG. ARU (ROLLER SKATING)	5656902	N 05° 55' 01.0"	E 115° 59' 03.0"
24		PANTAI/COASTAL	PANTAI TG.ARU (No. 3)	5656903	N 05° 55' 01.0"	E 115° 59' 03.0"
25		PANTAI/COASTAL	PANTAI TINAGAT, TAWAU	4473901	N 04° 13' 22.0"	E 117° 59' 04.0"
26		PANTAI/COASTAL	KASTAM LAMA SANDAKAN (PANTAI TLDM)	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/ESTUARINE	KUALA BATANG KEMENA	3130911	N 03° 10' 53.0"	E 113° 01' 40.0"
3		KUALA/ESTUARINE	KUALA BATANG RAJANG	2111909	N 02° 07' 22.0"	E 111° 11' 21"
4		KUALA/ESTUARINE	KUALA SG. MIRI	4349915	N 04° 23' 59.0"	E 113° 58' 25.0"
5		KUALA/ESTUARINE	KUALA SG. SANTUBONG	1702903	N 01° 46' 38.0"	E 110° 16' 46.0"
6		KUALA/ESTUARINE	KUALA SG. SEMATAN	1898901	N 01° 48' 49.0"	E 109° 46' 29.0"

Jadual 4.4 JAS : Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2010 (sambungan)
Table 4.4 DOE: Marine Water Quality Monitoring Stations, 2010 (continue)

Bil./ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No.Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
7	SARAWAK	KUALA/ESTUARINE	KUALA SG.SARAWAK	1604907	N 01° 36' 44.0"	E 110° 29' 44.0"
8		KUALA/ESTUARINE	KUALA MUKAH	2920920	N 02° 54' 41.0"	E 112° 05' 25.0"
9		KUALA/ESTUARINE	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/COASTAL	PANTAI BELAWAI	2212913	N 02° 14' 27.0"	E 111° 12' 51.0"
12		PANTAI/COASTAL	PANTAI BRIGHTON	4449917	N 04° 22' 25.0"	E 113° 57' 51.0"
13		PANTAI/COASTAL	PANTAI DAMAI	1702904	N 01° 47' 55.0"	E 110° 17' 58.0"
14		PANTAI/COASTAL	PANTAI LIKAU	3230915	N 03° 20' 49.0"	E 113° 08' 57.0"
15		PANTAI/COASTAL	PANTAI PANDAN	1824918	N 01° 50' 16.0"	E 109° 40' 11.0"
16		PANTAI/COASTAL	PANTAI PASIR PUTIH	1604910	N 01° 30' 14.0"	E 110° 30' 00.0"
17		PANTAI/COASTAL	PANTAI PIASAU	4539918	N 04° 27' 27.0"	E 113° 59' 38.0"
18		PANTAI/COASTAL	PANTAI SEMATAN	1898902	N 01° 49' 38.0"	E 109° 46' 29.0"
19		PANTAI/COASTAL	PANTAI TANJUNG BATU	3230913	N 03° 12' 38.0"	E 113° 02' 26.0"
20		PANTAI/COASTAL	PANTAI HARMONI	2920921	N 02° 54' 35.0"	E 112° 03' 22.0"
21		PANTAI/COASTAL	PANTAI TANJUNG KEMBANG	1810923	N 01° 49' 28.0"	E 111° 05' 44.0"
22		KUALA/ESTUARINE	KUALA SG BARAM	4539919	N 04° 34' 50.9"	E 113° 58' 48.0"
23		PANTAI/COASTAL	PANTAI ESPLANED	4339920	N 04° 19' 04.6"	E 113° 57' 31.0"
24		PANTAI/COASTAL	PANTAI BERAYA	4238921	N 04° 12' 45.1"	E 113° 53' 30.6"
25		PANTAI/COASTAL	PANTAI BUNGAI	4137922	N 04° 03' 42.2"	E 113° 46' 50.3"
26		PANTAI/COASTAL	PANTAI EMAS	3331926	N 03° 26' 27.8"	E 113° 13' 27.7"
27		KUALA/ESTUARINE	MUARA KUALA PANIPAP	3332927	N 03° 29' 48.5"	E 113° 17' 07.6"
28		PANTAI/COASTAL	PANTAI TANJUNG SIMALAJU	3431928	N 03° 33' 05.9"	E 113° 10' 03.7"
29		PANTAI/COASTAL	PANTAI KUALA NYALAU	3432929	N 03° 38' 06.7"	E 113° 22' 30.2"

Kuala/ Estuarine : 78
Pantai/ Coastal : 162
Jumlah/ Total : 240

Jadual 4.5 JAS : Senarai Stesen Yang Telah Dibuka, 2010

Table 4.5 DOE: List of Newly-Opened Stations, 2010

Bil./ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No. Stesen/ Station No .	Latitud/ Latitude	Longitud/ Longitude
1.	JOHOR	PANTAI/COASTAL	TANJUNG BIN	1336975	N 01° 19' 28.4"	E 103° 33' 25.8"
2.		PANTAI/COASTAL	HADAPAN JABATAN LAUT	1438943	N 01° 22' 57.9"	E 103° 32' 07.6"
3.		PANTAI/COASTAL	PELABUHAN TG. PELEPAS	1438918	N 01° 21' 13.0"	E 103° 32' 35.0"
4.	SARAWAK	PANTAI/COASTAL	PANTAI EMAS	3331926	N 03° 26' 27.8"	E 113° 13' 27.7"
5.		KUALA/ESTUARINE	MUARA KUALA PANIPAP	3332927	N 03° 29' 48.5"	E 113° 17' 07.6"
6.		PANTAI/COASTAL	PANTAI TANJUNG SIMALAJU	3431928	N 03° 33' 05.9"	E 113° 10' 03.7"
7.		PANTAI/COASTAL	PANTAI KUALA NYALAU	3432929	N 03° 38' 06.7"	E 113° 22' 30.2"

Keindahan Laut Warisan Kebanggaan Kami

Marine Environment is Our National Heritage

Jadual 4.6 JAS : Stesen Pengawasan 'Malaysia-Singapore Joint Committee on the Environment' – (MSJCE), 2010

Table 4.6 DOE: Monitoring Stations under the Malaysia-Singapore Joint Committee on the Environment (MSJCE), 2010

Bil./ No.	Negeri/ State	Kawasan/ Area	Nama Stesen/ Station Name	No. Stesen/ Station No.	Latitud/ Latitude	Longitud/ Longitude
1.	JOHOR	PANTAI/ COASTAL	KG.TANJUNG KOPOK	SJ1	N 01° 25' 31.0"	E 104° 00' 03"
2.		PANTAI/ COASTAL	KG. PASIR PUTIH	SJ2	N 01° 25' 48.0"	E 103° 55' 40.0"
3.		PANTAI/ COASTAL	J/K SULTAN ISKANDAR	SJ3	N 01° 26' 49.0"	E 103° 46' 09.0"
4.		PANTAI/ COASTAL	KG.SENIBUNG	SJ4	N 01° 29' 01.0"	E 103° 48' 47.0"
5.		KUALA/ ESTUARINE	KUALA SG.TEBRAU	SJ4A	N 01° 28' 56.0"	E 103° 47' 48.0"
6.		PANTAI/ COASTAL	TANJUNG PUTRI	SJ5	N 01° 27' 20.0"	E 103° 46' 09.0"
7.		PANTAI/ COASTAL	HADAPAN MPJB	SJ6	N 01° 27' 08.0"	E 103° 45' 43.0"
8.		PANTAI/ COASTAL	TANJUNG DANGA	SJ7	N 01° 27' 24.0"	E 103° 42' 52.0"
9.		KUALA/ ESTUARINE	KUALA SG.SKUDAI	SJ7A	N 01° 27' 46.0"	E 103° 43' 22.0"
10.		PANTAI/ COASTAL	HADAPAN PUSAT ISLAM	SJ7B	N 01° 27' 19.0"	E 103° 44' 51.0"
11.		PANTAI/ COASTAL	TEBING RUNTUH	SJ8	N 01° 25' 10.0"	E 103° 40' 06.0"
12.		KUALA/ ESTUARINE	KUALA SG.MELAYU	SJ8A	N 01° 26' 53.0"	E 103° 41' 53.0"
13.		PANTAI/ COASTAL	TANJUNG BUNGA	SJ9	N 01° 23' 07.0"	E 103° 39' 02.0"
14.		PANTAI/ COASTAL	TANJUNG KUPANG	SJ10	N 01° 23' 36.0"	E 103° 39' 11.0"
15.		PANTAI/ COASTAL	PULAU BELUNGKOR	EM4	N 01° 26' 25.8"	E 104° 03' 11.04"
16.		PANTAI/ COASTAL	PULAU TEKONG	EM5	N 01° 25' 42.3"	E 104° 04' 36.72"
17.		PANTAI/ COASTAL	PULAU TEKONG	EM6	N 01° 23' 19.2"	E 104° 05' 20.40"
18.		PANTAI/ COASTAL	JETI PULAREK	EM7	N 01° 21' 26.8"	E 104° 04' 40.65"
19.		PANTAI/ COASTAL	TANJUNG PENGELIH	WQ10	N 01° 19' 52.62"	E 104° 05' 39.57"
20.		PANTAI/ COASTAL	PULAU MERAMBONG	WM1	N 01° 20' 17.02"	E 103° 37' 36.29"

Pengawasan Kualiti Air Marin Pulau-Pulau
Island Marine Water Quality Monitoring

Malaysia dikurniakan dengan banyak pulau yang kaya dengan sumber akuatik. Kualiti air marin memainkan peranan yang penting dalam pemuliharaan sumber semulajadi ini. Sehubungan dengan itu, Program Pengawasan Kualiti Air Marin Pulau-Pulau telah dimulakan pada Julai 1998.

Bagi tahun 2010, program ini melibatkan 73 buah pulau terpilih dengan 86 buah stesen pengawasan. Pulau ini dikelaskan mengikut empat kategori iaitu pulau pembangunan (3) ; pulau peranginan (31) ; pulau Laut (21); dan pulau yang dilindungi (18) (**Jadual 4.7**). Frekuensi persampelan bagi Pulau Pembangunan adalah sebanyak enam (6) kali setahun manakala bagi pulau yang lainnya adalah sebanyak empat (4) kali setahun. Sebanyak tiga (3) stesen yang terletak berdekatan dengan tanah besar digugurkan (**Jadual 4.8**) dan tiga (3) stesen diwujudkan di kawasan baru bagi memperluaskan rangkaian program pengawasan kualiti air marin pulau-pulau (**Jadual 4.9**).

Pengukuran parameter-parameter fizikal kualiti air marin dibuat secara in-situ seperti suhu, pH, konduktiviti, kemasinan, oksigen terlarut dan kekeruhan manakala 14 parameter yang dianalisis di makmal pula adalah seperti jumlah pepejal terampai, *Escherichia coli*, nitrat, fosfat, jumlah karbon organik, minyak dan gris termasuk logam berat seperti Merkuri (Hg), Kadmium (Cd), Kromium (Cr), Kuprum (Cu), Plumbum (Pb), Arsenik (As), TBT dan TPT (**Jadual 4.10**). Percontohan bebola tar di pantai juga dilaksanakan.

Malaysia is endowed with many islands with rich marine aquatic resources. The quality of marine water plays an important role in the conservation of these resources. As a step towards this, The Island Marine Water Quality Monitoring Programme was started in July 1998.

In 2010, the monitoring programme cover 73 selected islands with 86 monitoring stations. These islands are classified into four categories; development islands (3); resort islands (31); Marine Park Islands (21); and protected islands (18) (**Table 4.7**). The sampling frequency for Development Islands was six (6) times per year, while the frequency for the other islands was four (4) times per year. Three (3) stations located near the mainland were dropped (**Table 4.8**) and three (3) new stations were established at three (3) new locations that widen the monitoring network coverage (**Table 4.9**).

Marine water quality monitoring includes measurement of in-situ parameters such as temperature, pH, conductivity, salinity, dissolved oxygen, turbidity; while laboratory analysis involves 14 other parameters such as total suspended solids, *Escherichia coli*, nitrate, phosphate, total organic carbon, oil and grease, and heavy metals like Mercury (Hg), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Arsenic (As), TBT and TPT (**Table 4.10**). Tarball samplings on beaches were also conducted.

Aktiviti Ternakan Ikan
Fish Farming

Jadual 4.7 JAS : Pengawasan Kualiti Air Marin Pulau, 2010

Table 4.7 DOE: Island Water Quality Monitoring, 2010

Bil./ No.	Negeri/ State	Pulau/ Island	Kategori/ Categori	Bilangan Stesen/ No. of Station	Latitud/ Latitude	Longitud/ Longitude
1.	PERLIS	Perak	P	1	N 05° 41' 8.00"	E 098° 56' 49.0"
2.	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"
		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"
		Langkawi	D	1	N 06° 27' 24.6"	E 099° 49' 27.6"
3.	PERAK	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"
		Sembilan	R	1	N 04° 00' 30.7"	E 100° 32' 38.4"
		Tukun Perak	P	1	N 04° 07' 32.4"	E 100° 33' 40.3"
4.	P. PINANG	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"
		Pulau Pinang	D	1	N 05° 16' 26.4"	E 100° 23' 30.6"
5.	SELANGOR	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"
		Lumut	R	1	N 02° 59' 54.6"	E 101° 21' 42.6"
6.	NEGERI SEMBILAN	Arang	P	1	N 02° 31' 03.5"	E 101° 47' 37.8"
7.	MELAKA	Besar	R	1	N 02° 06' 55.8"	E 102° 20' 10.6"
		Upeh	R	1	N 02° 11' 39.5"	E 102° 12' 17.2"
		Undan	R	1	N 02° 02' 50.5"	E 102° 20' 07.2"
8.	PAHANG	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"
		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"
9.	JOHOR	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"
		Nanga Besar	M	1	N 02° 16' 18.0"	E 104° 37' 37.5"

Jadual 4.7 JAS : Pengawasan Kualiti Air Marin Pulau, 2010 (sambungan)
Table 4.7 DOE: Island Water Quality Monitoring, 2010 (continue)

Bil./ No.	Negeri/ State	Pulau/ Island	Kategori/ Categori	Bilangan Stesen/ No. of Station	Latitud/ Latitude	Longitud/ Longitude
	JOHOR	Sibu Tengah	R	1	N 02° 10' 54.9"	E 104° 05' 45.4"
		Pemanggil	M	1	N 02° 04' 52.1"	E 104° 18' 54.8"
		Kukup	P	1	N 01° 19' 41.9"	E 103° 26' 12.0"
		Pisang	P	1	N 01° 28' 05.8"	E 103° 15' 45.5"
10.	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"
		Lang Tengah	M	1	N 05° 47' 32.9"	E 102° 53' 27.1"
		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"
		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"
		Tenggol	P	1	N 04° 48' 33.8"	E 103° 40' 32.1"
		Nyireh	P	1	N 04° 50' 39.9"	E 103° 39' 47.5"
11.	KELANTAN	Panjang	P	1	N 06° 11' 15.8"	E 102° 18' 32.7"
		Kundur	P	1	N 06° 13' 00.6"	E 102° 14' 87.1"
12.	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"
		Sapi	M	1	N 06° 00' 59.9"	E 116° 00' 53.6"
		Manukan	R	1	N 05° 58' 39.8"	E 116° 00' 44.7"
		Tiga	R	1	N 05° 43' 17.4"	E 115° 39' 02.4"
		Kalampunian Besar	M	1	N 05° 45' 51.0"	E 115° 40' 71.0"
		Kapalai	R	1	N 04° 13' 52.0"	E 118° 41' 08.2"
		Ligitan	R	1	N 04° 09' 52.0"	E 118° 50' 35.9"
		Molleangan Besar	R	1	N 07° 04' 90.6"	E 117° 02' 51.5"
		Banggi	R	1	N 07° 06' 53.0"	E 117° 05' 13.4"
		Balambangan	R	1	N 07° 11' 76.9"	E 116° 52' 19.5"
		Silingan	P	1	N 06° 10' 43.3"	E 118° 03' 50.0"
		Gulisan	P	1	N 06° 08' 93.3"	E 118° 03' 33.3"
		Bakungan Kecil	P	1	N 06° 09' 92.6"	E 118° 06' 49.8"
		Banggi	P	1	N 07° 08' 21.2"	E 117° 05' 87.6"
		Mantanani Besar	P	1	N 06° 42' 29.0"	E 116° 21' 40.2"

Jadual 4.7 JAS : Pengawasan Kualiti Air Marin Pulau, 2010 (sambungan)
Table 4.7 DOE: Island Water Quality Monitoring, 2010 (continue)

Bil./ No.	Negeri/ State	Pulau/ Island	Kategori/ Categori	Bilangan Stesen/ No. of Station	Latitud/ Latitude	Longitud/ Longitude
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' 55.5"
		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/Island	Bilangan Pulau/ No. of Island	Bilangan Stesen/ No. of Station
Pulau Peranginan - Resort Island (R)	34	35
Pulau/Taman Laut - Marine Park Island (M)	21	24
Pulau Dilindungi - Protected Island (P)	15	15
Pulau Pembangunan - Development Island (D)	3	12
Jumlah/ Total	**73**	**86**

Jadual 4.8 JAS : Senarai Stesen Yang Telah Ditutup, 2010
Table 4.8 DOE: List of Closed Stations, 2010

Bil./ No.	Negeri/ State	Pulau/ Island	Kategori/ Category	Bilangan Stesen/ No. of Station	Latitud/ Latitude	Longitud/ Longitude
1.	SARAWAK	Patuk	P	1	N 02° 43' 86.0"	E 111° 24' 03.6"
2.		Bruit	P	1	N 02° 44' 43.4"	E 111° 23' 11.0"
1.	TERENGGANU	Duyong	R	1	N 05° 20' 05.6"	E 103° 07' 44.7"

Jadual 4.9 JAS : Senarai Stesen Yang Baru Dibuka, 2010
Table 4.9 DOE: List of Newly-Opened Stations, 2010

Bil./ No.	Negeri/ State	Pulau/ Island	Kategori/ Category	Bilangan Stesen/ No. of Station	Latitud/ Latitude	Longitud/ Longitude
1.	TERENGGANU	Lang Tengah	M	1	N 05° 47' 32.9"	E 102° 53' 27.1"
1.	SABAH	Banggi	P	1	N 07° 08' 21.2"	E 117° 05' 87.6"
2.		Mantanani Besar	P	1	N 06° 42' 29.0"	E 116° 21' 40.2"

Jadual 4.10 JAS : Parameter Kualiti Air Marin, 2010
Table 4.10 DOE: Marine Water Quality Parameters, 2010

Bil./ No.	Parameter/Parameters	Kod/Code	Unit/Unit
	PENGUKURAN IN-SITU/ IN-SITU MEASUREMENTS		
1.	Oksigen Terlarut/ Dissolved Oxygen	DO	mg/l
2.	Kemasinan/ Salinity	*Sal*	%
3.	Suhu/ Temperature	Temp	°C
4.	Konduktiviti/ Conductivity	Cond	mS/cm
5.	Kekeruhan/ Turbidity	Turb	NTU/FTU
6.	pH	pH	-
	PENGUKURAN MAKMAL/ LABORATORY MEASUREMENT		
1.	Jumlah pepejal terampai/ Total Suspended Solid	TSS	mg/l
2.	*Escherichia coli*	*E.coli*	cfu/100 ml
3.	Minyak dan Gris/ Oil and Grease	O&G	mg/l
4.	Kuprum/ Copper	Cu	µg/l
5.	Kadmium/ Cadmium	Cd	µg/l
6.	Plumbum/ Lead	Pb	µg/l
7.	Arsenik/ Arsenic	As	µg/l
8.	Merkuri/ Mercury	Hg	µg/l
9.	Kromium/ Chromium	Cr	µg/l
10.	Bebola tar/ Tarball	Tar	g/100m
11.	Jumlah karbon organic/ Total Organic Carbon	TOC	mg/l
12.	Nitrat/ Nitrate	NO_3^-	mg/l
13.	Fosfat/Phosphate	PO_4	mg/l
14.	Tributiltin/Tributyltin	TBT	µg/l
15.	Trifeniltin/Tripheniltin	TPT	µg/l

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. Bermula pada tahun 1995, kerja-kerja ini telah diswastakan kepada Alam Sekitar Malaysia Sdn. Bhd. (ASMA).

Pada tahun 2010, sebanyak 1,055 buah stesen daripada 570 buah lembangan sungai di Malaysia telah dipantau (**Jadual 4.11**). Sampel air yang diambil dari 1,055 buah stesen dianalisa untuk mengira Indeks Kualiti Air (IKA) berasaskan kepada parameter yang berikut:

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

Selain itu parameter lain juga dianalisa seperti logam berat dan bakteria mengikut keperluan sesuatu tempat (stesen). Mulai April 2010, JAS hanya mengawasi 10 buah stesen pemantauan kualiti air sungai yang dipasang secara automatik untuk mengesan perubahan secara terus menerus kepada kualiti air sungai Sg. Perak (Perak), Sg. Selangor (Selangor), Sg. Kelang (WPKL), Sg. Linggi (Negeri Sembilan), Sg. Melaka (Melaka), Sg. Skudai (Johor), Sg. Sarawak (Sarawak), Sg. Labu (Negeri 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 2010, a total of 1,055 stations located within 570 rivers in Malaysia were monitored (**Table 4.11**). Water samples taken from the 1,055 stations were analyzed to compute 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 requirement. In addition, in April 2010, only 10 automatic water quality monitoring stations had been installed to monitor river quality changes on a continuous basis at Sg. Perak (Perak), Sg. Selangor (Selangor), Sg. Kelang (WPKL), Sg. Linggi (Negeri Sembilan), Sg. Melaka (Melaka), Sg. Skudai (Johor), Sg. Sarawak (Sarawak), Sg. Labu (Negeri Sembilan), Sg. Putat (Melaka) and Sg. Rajang (Sarawak).

Sumber Air
Water Resource

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
PERLIS	01	PERLIS	9	JARUM	1
				JERNIH	2
				KOK MAK	1
				NGULANG	1
				PELARIT	1
				PERLIS	1
				SERAI	1
				WANG KELIAN	1
KEDAH	01PLA	KISAP	1	KISAP	1
	01PLB	KUAH	1	KUAH	1
	01PLC	ULU MELAKA	2	PETANG	1
				ULU MELAKA	1
	03	KEDAH	9	JANING	1
				KEDAH	1
				PDG TERAP	4
				PEDU	1
				PENDANG	1
				TEKAI	1
	04	MERBOK	10	BAKAR ARANG	1
				BONGKOK	1
				BUKIT MERAH	1
				KOROK	1
				MERBOK	1
				PETANI	1
				TOK PAWANG	2
				TUPAH	2
KEDAH/ P.PINANG	05	MUDA	13	CHEPIR	1
				JERUNG	2
				KARANGAN	1

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
KEDAH/ P.PINANG	05	MUDA	13	KETIL	2
				MUDA	4
				PEGANG	1
				SEDIM	1
				TAWAR	1
P.PINANG	06PP	PINANG	11	AIR ITAM	5
				AIR TERJUN	1
				DONDANG	3
				JELUTONG	1
				PINANG	1
	06J	JURU	12	ARA	1
				JURU	2
				KILANG UBI	5
				PASIR	1
				PMTG RAWA	1
				RAMBAI	2
	06K	KLUANG	4	ARA	2
				KLUANG	1
				RELAU	1
	06P	PERAI	20	AIR MELINTAS	1
				JARAK	5
				KELADI	1
				KEREH	2
				KUBANG SEMANG	1
				KULIM	4
				PERAI	2
				PERTAMA	1
				SELUANG	1
				SELUANG BAWAH	2

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
P.PINANG	06T	BAYAN LEPAS	3	BAYAN LEPAS	1
				TIRAM	2
	07	JAWI	7	CHEMPEDAK	1
				JAWI	1
				JUNJONG	3
				MACHANG BUBOK	1
				TENGAH	1
P.PINANG/ PERAK	08	KERIAN	9	KECHIL	2
				KERIAN	4
				SELAMA	2
				SERDANG	1
PERAK	12	RAJA HITAM	8	DERHAKA	2
				MANJONG	2
				NYIOR	1
				RAJA HITAM	3
	12W	WANGI	4	DERALIK	2
				WANGI	2
	09	KURAU	6	ARA	2
				KURAU	4
	10	SEPETANG	15	BATU TEGOH	3
				JANA	2
				LARUT	1
				LIDIN	1
				LIMAU	1
				MALAI	1
				SEPETANG	2
				TEMERLOH	2
				TRONG	1
				TUPAI	1

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
PERAK	11	BRUAS	6	BRUAS	3
				DANDANG	1
				ROTAN	2
	13	PERAK	56	BATANG PADANG	3
				BIDOR	3
				CHENDERIANG	2
				CHEPOR	1
				CUAR	1
				KAMPAR	2
				KANGSAR	2
				KEPAYANG	2
				KERDAH	2
				KINJANG	1
				KINTA	8
				KLAH	2
				KUANG	1
				NYAMOK	1
				PARI	2
				PELUS	2
				PERAK	8
				PINJI	2
				RAIA	2
				SELUANG	1
				SEROKAI	2
				SINTANG	1
				SUNGKAI	2
				SUNGKAI MATI	2
				TUMBOH	1
PERAK/ SELANGOR	14	BERNAM	13	BERNAM	7

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
PERAK/ SELANGOR	14	BERNAM	13	INKI	1
				SLIM	3
				TROLAK	2
SELANGOR	17	BULOH	5	BULOH	5
SELANGOR/WPKL	18	KLANG	30	AMPANG	1
				BATU	3
				BUNOS	1
				DAMANSARA	3
				GOMBAK	3
				JINJANG	2
				KERAYONG	2
				KEROH	2
				KLANG	10
				KUYOH	1
				PENCHALA	1
				SEMELAH	1
SELANGOR	19	LANGAT	28	ANAK CHUAU	1
				BALAK	1
				BATANG BENAR	2
				BATANG LABU	2
				BATANG NILAI	2
				BERANANG	1
				BUAN	1
				CHUAU	2
				JIJAN	1
				LANGAT	8
				LIMAU MANIS	1
				LUI	1
				PAJAM	1

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
SELANGOR	19	LANGAT	28	RINCHING	1
				SEMENYIH	3
	20	SEPANG	4	RAMBAI	1
				SEPANG	3
	15	TENGI	3	TENGI	3
	16	SELANGOR	13	AIR HITAM	1
				BATANG KALI	1
				KANCHING	1
				KERLING	1
				KUNDANG	1
				RAWANG	1
				SELANGOR	5
				SEMBAH	1
				SERENDAH	1
N.SEMBILAN	20L	LUKUT	1	LUKUT	1
	21	LINGGI	24	BATANG PENAR	3
				CHEMBONG	1
				KAYU ARA	1
				KEPAYONG	1
				KUNDUR BESAR	1
				LINGGI	6
				PAROI	1
				PEDAS	1
				REMBAU	2
				SENAWANG	1
				SIMIN	1
				SIMPANG EMPAT	1
				SIPUT	2
				TEMIANG	2

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
MELAKA	21BT	TUANG	1	BARU	1
	21SM	SERI MELAKA	2	AIR SALAK	1
				SERI MELAKA	1
	22	MELAKA	21	BTG.MELAKA	2
				DURIAN TUNGGAL	1
				KEMUNTING	1
				KERU	1
				MELAKA	9
				PUTAT	2
				REMBIA	2
				TAMPIN	3
	24	KESANG	7	CHIN-CHIN	1
				CHOHONG	2
				KESANG	3
				TANGKAK	1
	24A	MERLIMAU	4	MERLIMAU	4
	23	DUYONG	4	DUYONG	3
				GAPAM	1
JOHOR/ N.SEMBILAN	25	MUAR	39	AIR PANAS	1
				GEMAS	1
				GEMENCHEH	2
				JUASSEH	2
				KELAMAH	1
				LABIS	3
				MEDA	1
				MERBUDU	1
				MERLIMAU	1
				MUAR	17
				P. MENKUANG	1

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
JOHOR/ N.SEMBILAN	25	MUAR	39	PALONG	2
				SARANG BUAYA	1
				SEGAMAT	1
				SENARUT	1
				SEROM	1
				SPG. LOI	1
				TENANG	1
JOHOR	26	BATU PAHAT	20	AMRAN	1
				BANTANG	1
				BATU PAHAT	1
				BEKOK	5
				BERLIAN	1
				CHAAH	1
				LENIK	1
				MEREK	1
				MERPO	1
				SEMBERONG	2
				SIMPANG KANAN	2
				SIMPANG KIRI	3
	27A	AIR BALOI	3	AIR BALOI	3
	28	SEGGET	5	SEGGET	5
	28D	TEBRAU	11	BALA	1
				PANDAN	1
				PLENTONG	1
				SEBULUNG	1
				SENGKUANG	1
				TAMPOI	1
				TEBRAU	5
	28F	DANGA	2	DANGA	2

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
JOHOR	28G	RAMBAH	2	RAMBAH	2
	29B	KAW. PASIR GUDANG	5	BULUH	1
				LATOH	1
				MASAI	1
				PEREMBI	1
				TUKANG BATU	1
	27B	BENUT	7	BENUT	4
				PARIT HJ. YASSIN	1
				PINGGAN	1
				ULU BENUT	1
	28A	PONTIAN BESAR	7	AIR HITAM	1
				AYER MERAH	1
				PONTIAN BESAR	5
	28B	PONTIAN KECIL	2	PONTIAN KECIL	2
	28C	SKUDAI	11	MELANA	2
				SKUDAI	9
	28E	KEMPAS	2	KEMPAS	2
	29C	SANGLANG	1	SANGLANG	1
	29D	PULAI	3	PULAI	2
				ULU CHOH	1
	31C	KIM-KIM	2	KIM-KIM	2
	29	JOHOR	39	JOHOR	4
				ANAK SG. SAYONG	2
				BELITONG	1
				BERANGAN	1
				BUKIT BESAR	2
				CHEMANGAR	1
				LAYANG	1
				LAYAU KIRI	1

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
JOHOR	29	JOHOR	39	LEBAM	1
				LINGGIU	1
				PANTI	1
				PAPAN	1
				PELEPAH	2
				PENGGELI	2
				REMIS	1
				SANTI	1
				SAYONG	4
				SEBOL	1
				SELUYUT	1
				SEMANGAR	1
				SEMENCHU	1
				SENING	1
				SERAI	1
				TELOR	1
				TEMOH	1
				TIRAM	4
	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

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
JOHOR	31B	JEMALUANG	2	JEMALUANG	2
	32	ENDAU	25	ANK SG. SEMBERONG	1
				DENGAR	1
				ENDAU	3
				JASIN	1
				JEBONG	1
				KAHANG	1
				LENGA	1
				LENGGOR	1
				MAMAI	1
				MELATAI	1
				MENGKIBOL	3
				PALOH	1
				PAMOL	1
				SELAI	1
				SEMBERONG	5
				SINGOL	1
				TAMOK	1
PAHANG	32AE	ANAK ENDAU	2	ANAK ENDAU	2
	33	ROMPIN	17	AUR	1
				BAKAR	1
				JEKATIH	2
				JERAM	1
				KEPASING	1
				KERATONG	3
				PONTIAN	1
				PUKIN	3
				ROMPIN	4
	34M	MERCHONG	2	MERCHONG	2

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
PAHANG	35P	PAHANG	91	ANAK SG. LEPAR	1
				BATU	1
				BELAYAR	1
				BENTONG	4
				BENUS	2
				BERA	3
				BERKAPOR	1
				BERTAM	3
				BILUT	1
				BURUNG	1
				CHINI	1
				HABU	1
				JELAI	2
				JEMPOL	2
				JENGKA	2
				KELAU	2
				KERTAM	1
				KOYAN	1
				KUNDANG	1
				LENGGOK	1
				LEPAR	3
				LIPIS	3
				LUIT	1
				MARAN	1
				MENTIGA	2
				PAHANG	8
				PENJURING	1
				PERTANG	2
				PERTING	1

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
PAHANG	35P	PAHANG	91	RINGLET	1
				SEMANTAN	3
				SERTING	5
				T. PAYA BUNGOR	1
				TAHAN	1
				TANGLIR	1
				TASIK BERA	1
				TASIK CHINI	10
				TEKAL	1
				TEKAM	2
				TELANG	1
				TELEMONG	1
				TELOM	2
				TEMBELING	1
				TERANUM	1
				TERAS	1
				TERLA	1
				TRIANG	2
				TRINGKAP	1
	34B	BEBAR	5	BEBAR	2
				MERBA	1
				SERAI	2
	36	KUANTAN	15	BELAT	1
				CHARU	1
				GALING BESAR	1
				GALING KECIL	1
				KENAU	1
				KUANTAN	5
				PANDAN	1

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
PAHANG	36	KUANTAN	15	PINANG	1
				REMAN	1
				RIAU	1
				TALAM	1
	37	BALOK	4	BALOK	2
				PANJANG	1
				YIOR	1
	37A	CHERATING	1	CHERATING	1
	37B	TONGGOK	2	TONGGOK	2
TERENGGANU	38	KEMAMAN	9	CHERUL	2
				KEMAMAN	3
				NERAM	1
				PERASING	1
				RANSAN	2
	39K	KERTIH	2	KERTIH	2
	40	PAKA	6	BESUL	1
				PAKA	2
				RASAU	2
				RENGAT	1
	41	DUNGUN	5	DUNGUN	4
				TELEMBOH	1
	42M	MARANG	3	KERAK	1
				MARANG	1
				TEMALA	1
	43	TERENGGANU	12	BERANG	2
				NERUS	4
				PUEH	2
				TELEMONG	1
				TERENGGANU	3

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
TERENGGANU	44	SETIU	5	CHALOK	2
				SETIU	2
				TAROM	1
	46	BESUT	4	BESUT	3
				JERTIH	1
	47	KLUANG	1	KLUANG	1
	39C	CHUKAI	6	BUNGKUS	1
				CHUKAI	1
				IBOK	2
				RUANG	2
	42I	IBAI	3	IBAI	3
	42L	MERCHANG	2	LANDAS	1
				MERCHANG	1
	45	MERANG	1	MERANG	1
KELANTAN	47K	KEMASIN	5	KEMASIN	2
				SEMERAK	3
	48	KELANTAN	40	ARING	1
				BELATOP	2
				BER	1
				BEROK	3
				BETIS	1
				CHIKU	1
				GALAS	5
				KELANTAN	3
				KERILLA	2
				LEBIR	4
				NAL	3
				NENGGIRI	3
				PEHI	1

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
KELANTAN	48	KELANTAN	40	PERGAU	6
				RELAI	2
				SOKOR	1
				TUANG	1
	49	GOLOK	7	GOLOK	5
				LANAS	1
				TASIK GARU	1
	48C	PENGKALAN CHEPA	6	ALOR B	1
				ALOR LINTAH	1
				KELADI	1
				PENGKALAN CHEPA	2
				RAJA GALI	1
	48D	PENGKALAN DATU	3	PENGKALAN DATU	3
SARAWAK	50	KAYAN	3	KAYAN	3
	50S	SEMUNSAM	1	SEMUNSAM	1
	51	SARAWAK	16	KUAP	2
				MAONG KIRI	1
				SAMARAHAN	2
				SARAWAK	6
				SARAWAK KANAN	1
				SARAWAK KIRI	1
				SEMADANG	1
				SEMENGGOH	1
				TABUAN	1
	59	BALINGIAN	2	BALINGIAN	2
	62	SIMILAJAU	2	SIMILAJAU	2
	64	NIAH	4	NIAH	2
				SEKALOH	2
	68	LIMBANG	5	LIMBANG	5

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
SARAWAK	69	TRUSAN	1	TRUSAN	1
	70	LAWAS	3	LAWAS	3
	52	SADONG	6	KARANGAN	2
				SADONG	4
	53	LUPAR	8	AI	2
				LUPAR	3
				SEKERANG	1
				SETERAP	1
				UNDUP	1
	54	SARIBAS	3	LAYAR	2
				SARIBAS	1
	55	KERIAN	3	KERIAN	2
				SEBLAK	1
	56	RAJANG	19	BALOI	1
				BINATANG	1
				JULAU	1
				KANOWIT	1
				MERADONG	1
				RAJANG	11
				SALIM	1
				SARIKEI	2
	57	OYA	3	OYA	3
	58	MUKAH	4	MUKAH	4
	60	TATAU	1	TATAU	1
	61	KEMENA	5	KEMENA	4
				SIBIU	1
	63	SUAI	1	SUAI	1
	65	SIBUTI	6	KABULOH	2
				KEJAPIL	1

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
SARAWAK	65	SIBUTI	6	SATAP	1
				SIBUTI	2
	66	MIRI	7	ADONG	1
				DALAM	1
				LUTONG	2
				MIRI	2
				PADANG LIKU	1
	67	BARAM	5	BARAM	4
				TUTUH	1
SABAH	71	MENGGALONG	2	MENGGALONG	2
	71A	LAKUTAN	1	LAKUTAN	1
	71B	LINGKUNGAN	2	BUKAU	1
				LINGKUNGAN	1
	72	PADAS	10	BUNSIT	1
				LIAWAN	1
				PADAS	3
				PANGATAN	1
				PEGALAN	3
				TANDULU	1
	73	MEMBAKUT	1	MEMBAKUT	1
	74	KIMANIS	1	KIMANIS	1
	74A	BONGAWAN	1	BONGAWAN	1
	74	PAPAR	3	PAPAR	3
	76	MOYOG	4	MOYOG	4
	77	TUARAN	5	DAMIT	2
				SONG SAI	1
				TUARAN	2
	78	KEDAMAIAN	4	KEDAMAIAN	1
				TEMPASUK	2

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
SABAH	78	KEDAMAIAN	4	WARIU	1
	78T	TENGHILAN	1	TENGHILAN	1
	79	BINGKONGAN	6	BANDAU	1
				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	LABOK	7	KINIPIR	2
				LABOK	1
				LIWAGU	2
				MALIAU	1
				TUNGUD	1
	84A	SAPI	4	SAPI	3
				SUALONG	1
	85	MOUNAD	2	MOUNAD	2
	87	SEGAMA	3	SEGAMA	3
	88	TUNGKU	2	TUNGKU	2
	88A	SILABUKAN	2	SILABUKAN	2
	89	TINGKAYU	2	TINGKAYU	2
	91	TAWAU	4	TAWAU	4
	91A	APAS	1	APAS	1
	91B	BALUNG	1	BALUNG	1
	92	MEROTAI	3	MEROTAI	3
	93	UMAS-UMAS	1	UMAS-UMAS	1

Jadual 4.11 JAS : Senarai Lembangan Sungai Dan Sungai-Sungai Yang Dipantau, 2010 (sambungan)
Table 4.11 DOE: List of the River Catchment And River Monitored, 2010 (continue)

Negeri/ State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bil. Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bil. Stesen/ No. of Stations
SABAH	94	BRANTIAN	1	BRANTIAN	1
	95	KALABAKAN	3	KALABAKAN	3
	76A	SEMBULAN	2	SEMBULAN	2
	76B	LIKAS	8	DARAU	1
				INANAM	3
				LIKAS	2
				MENGGATAL	2
	76C	TELIPOK	2	TELIPOK	2
	85A	SEGALIUD	2	SEGALIUD	2
	86	KINABATANGAN	10	KARAMUAK	1
				KINABATANGAN	4
				KOYAH	1
				LEEPANG	1
				MENANGGUL	1
				PIN	1
				TAKALA	1
	90	KALUMPANG	5	KALUMPANG	3
				PANG BURONG 1	1
				PANG BURONG 2	1
JUMLAH:		**143**	**1,055**	**570**	**1,055**

Pemantauan Kualiti Air Tanah
Groundwater Monitoring

Pada tahun 2010, sebanyak 201 sampel daripada 112 buah telaga pemantauan kualiti air tanah di seluruh Malaysia telah dianalisa. Telaga dibina di kawasan-kawasan mengikut kategori guna tanah pertanian, perindustrian, padang golf, tapak pelupusan sampah, tapak pelupusan bangkai haiwan, kawasan bekalan air, bekas tapak perlombongan, perbandaran dan luar bandar di seluruh Malaysia (**Jadual 4.12**).

Pengukuran parameter-parameter fizikal kualiti air tanah dibuat secara in-situ manakala parameter kimia dan biologi dianalisis di makmal. Parameter in-situ yang diukur adalah suhu, pH, konduktiviti, turbiditi, saliniti (kemasinan) dan oksigen terlarut. Parameter yang dianalisis di makmal pula ialah bahan kimia organik meruap (VOC), hidrokarbon, racun perosak, logam berat, anion, bakteria, sebatian berfenol, radioaktif, jumlah keliatan dan jumlah pepejal terlarut.

In 2010, 201 groundwater samples were drawn on a quarterly basis from 112 monitoring wells in Malaysia for analysis. The wells had been constructed in areas categorized according to landuse agriculture, industrial, golf course, solid waste landfill, 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, turbidity, salinity, and dissolved oxygen. For laboratory analysis, the parameters were total volatile organic compounds (VOC), hydrocarbons, 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, 2010
Table 4.12 DOE: Distribution of Groundwater Monitoring Wells, 2010

Kategori/Category	Bilangan Telaga/Number of Wells
Kawasan Pertanian/ Agricultural Areas	12
Bandar / Urban Suburban Areas	11
Tapak Perindustrian/ Industrial Sites	18
Tapak Pelupusan Sampah/ Landfills	25
Padang Golf/ Golf Courses	7
Luarbandar / Rural Areas	5
Bekas Lombong/ Ex-Mining	3
Bekalan Air Tempatan/ Municipal Water Supply	9
Tapak Pelupusan Bangkai Haiwan/ Animal Burial	14
Kolam Akuakultur/ Aquaculture Farms	6
Tapak Pelupusan Radioaktif/ Radioactive Landfill	1
Peranginan/ Resorts	1
Jumlah/ Total	**112**

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 stokpil peralatan kawalan tumpahan minyak (KTM) di lokasi-lokasi strategik sepanjang Pantai Barat dan Pantai Timur Malaysia dapat membantu dan menyegerakan tindakan kawalan tumpahan minyak sekiranya berlaku kejadian tersebut. JAS juga memberi penekanan terhadap latihan-latihan berstruktur dan berkala bagi semua kakitangan yang terlibat dengan OSR dalam tindakbalas KTM.

Latihan-latihan berkenaan adalah bagi memastikan semua kakitangan JAS dan agensi-agensi yang akan terlibat dalam KTM dibekalkan dengan pengetahuan dan kemahiran yang mencukupi dalam pengendalian peralatan dan pengurusan krisis. Resolusi 7 *International Convention on Oil Spill Preparedness and Response*, telah menggariskan komitmen di peringkat Antarabangsa dalam hal-ehwal berhubung dengan latihan. Keperluan latihan ini telah dimasukkan ke dalam mekanisma tindakbalas RKKKTM.

Pada tahun 2010, JAS telah menganjurkan Latihan Melawan Tumpahan Minyak Peringkat Kebangsaan di Pulau Pinang dari 3 hingga 5 Ogos 2010. Program ini bertujuan memberi pendedahan kepada agensi yang relevan mengawal tumpahan minyak bermula dari peringkat pertama iaitu tindakbalas di pelabuhan/ terminal, peringkat kedua tindakbalas pada peringkat negeri dan pembersihan pantai serta peringkat ketiga iaitu tindakbalas peringkat kebangsaan. Latihan bertujuan menguji:

- Kesediaan dan tindakbalas peringkat pertama;
- Kesediaan dan keperluan penyediaan rancangan kontigensi peringkat negeri pada peringkat kedua;
- Kesediaan tindakbalas pembersihan pantai peringkat negeri;
- Penyelarasan peringkat kebangsaan;
- Sistem perhubungan dan tindakbalas.

The NOSCP is administered by the National Oil Spill Control Committee (NOSCC) 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, DOE places equal emphasis on scheduled and periodical training activities for personnel involved in Oil Spill Response (OSR).

Such training is aimed to ensure DOE officers involved in OSR are well equipped with 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 to training and preparedness. This preparedness and training requirement has been incorporated into our NOSCP response system.

In 2010, DOE organized the National Oil Spill Preparedness and Response Exercise in Penang from 3 to 5 August 2010. This programme aims to provide exposure to relevant agencies in controlling oil spill from Tier 1 response in port/terminal, Tier 2 response in state level with beach clean up and Tier 3 at national level response. The exercise aimed at testing:

- Tier 1 response and preparedness;
- Preparedness and the need for a state Tier 2 contingency plan;
- Preparedness and response of state beach clean up;
- Coordination at National level;
- Communication system and response.

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 Selat Melaka dan Selat Singapura sebagai salah satu usaha bersama ketiga-tiga negara untuk mengawal kejadian tumpahan minyak yang berpunca dari kapal-kapal yang melayari perairan Selat Melaka dan Selat Singapura.

Pengurusan 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 Jawatankuasa Tabung Pusingan pada tahun 2010 adalah seperti berikut:

- Mesyuarat Pengurusan Jawatankuasa Tabung Pusingan ke-31 telah diadakan di Singapura dari 26-27 Mei 2010;
- Lima (5) orang peserta masing-masing dari Malaysia, Singapura dan Indonesia telah dibiayai ke *Oil Spill Incident Management Exercise* 2010 di Singapura pada 13-14 Julai 2010;
- Mesyuarat Teknikal Jawatankuasa Tabung Pusingan telah berlangsung di Singapura pada 30 September hingga 1 Oktober 2010; dan
- Tiga (3) orang peserta masing-masing dari Malaysia, Singapura dan Indonesia telah dibiayai untuk menghadiri ke *16th Singapore International Bunkering Conference and Exhibition* di Singapura dari 26-29 Oktober 2010.

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 Straits of Singapore.

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

Among the activities carried out by the RFC in the year 2010 are:

- 31st Revolving Fund Committee (RFC) Management Meeting was held from 26-27 May 2010 in Singapore;
- Five (5) participants from Malaysia, Singapore and Indonesia were sponsored to the Oil Spill Incident Management Exercise 2010 in Singapore on 13 to 14 July 2010;
- RFC Technical Meeting convened in Singapore on 30 September to 1 October 2010; and
- Three (3) participants from Malaysia, Singapore and Indonesia were sponsored to attend the International Chemical and Oil Pollution Conference and Exhibition (ICOPCE) in Singapore from 26–29 October 2010.

Pencemaran Marin
Marine Pollution

Sepanjang tahun 2010, terdapat 16 kes pencemaran marin berpunca daripada tumpahan minyak dilaporkan; enam (6) kes dikesan di Laut China Selatan, enam (6) di Selat Melaka dan empat (4) di Selat Johor (**Jadual 4.13**). Daripada enam belas (16) jumlah kes tumpahan minyak yang berlaku pada tahun 2010 dua (2) kes adalah berpunca dari pelantar minyak, sembilan (9) kes dari kapal dan lima (5) kes tidak diketahui punca.

Tindakan rondaan bersepadu dengan Agensi Penguatkuasaan Maritim Malaysia (APMM) sentiasa diteruskan bagi memantau dan mengesan kejadian pencemaran di laut. Di samping itu, penglibatan JAS dengan operasi bersepadu bersama APMM turut membantu menangani isu pencemaran marin.

In 2010, 16 cases of marine pollution from oil spills were reported; six (6) cases in the South China Sea, six (6) in the Straits of Malacca and four (4) in the Johor Straits (**Table 4.13**). Out of the 16 cases of oil spill in 2010 the sources were from oil rigs (2 cases), ships (9 cases) and other unknown sources (5 cases).

Sea patrol measures were taken continuously with Malaysian Maritime Enforcement Agency (MMEA) to monitor and detect marine pollution. In addition, DOE involvement in joint operation with MMEA would help to tackle this marine pollution issue.

Jadual 4.13 JAS: Kejadian Pencemaran Minyak, 2010
Table 4.13 DOE: Oil Pollution Incidents, 2010

Lokasi/ Location	Kawasan/ Area		Bil. Kes/ No. of Cases
Laut China Selatan South China Sea	Perairan Malaysia Malaysia Territory	Semenanjung/ Peninsular	1
		Malaysia Timur/ East Malaysia	5
	Zon Ekonomi Eksklusif (ZEE) Exclusive Economic Zone (EEZ)		0
Laut Sulu Sulu Sea	Perairan Malaysia Malaysia Territory	Sabah	0
Selat Melaka Straits of Malacca	Perairan Malaysia/ Malaysia Territory		6
	Zon Ekonomi Eksklusif (ZEE) Exclusive Economic Zone (EEZ)		0
Selat Johor Straits of Johor	Perairan Malaysia Malaysia Territory	Bahagian Barat/ West Part	0
		Bahagian Timur/ East Part	4
Jumlah/ Total			**16**

Latihan Melawan Tumpahan Minyak pada 5 Ogos 2010 di Pulau Pinang
Oil Spill Combat Exercise on 5 August 2010 in Penang

Pengurusan Buangan Terjadual
Scheduled Wastes Management

Kebenaran Bertulis dan Lesen Premis Yang Ditetapkan

Sebanyak 70 Kebenaran Bertulis telah dikeluarkan oleh Ketua Pengarah untuk pembinaan kemudahan pengolahan dan pelupusan buangan terjadual pada tahun 2010. Kebenaran Bertulis berkenaan telah dikeluarkan kepada 30 kemudahan pemerolehan kembali separa (e-waste), 18 kemudahan pemerolehan kembali (bukan e-waste), tujuh (7) kemudahan pemerolehan kembali penuh (e-waste), 11 kemudahan penstoran luar tapak, satu (1) kemudahan pengolahan luar tapak, dua (2) insinerator buangan terjadual dan satu (1) kemudahan pengolahan atas tanah (**Jadual 4.14**).

Di samping itu, sejumlah 665 lesen dikeluarkan kepada kemudahan baru dan kemudahan sedia ada untuk pemerolehan kembali luar tapak, penstoran luar tapak-pengangkutan, insinerator, buangan terjadual, pengolahan atas tanah, pengolahan luar tapak dan tapak pelupusan selamat (**Jadual 4.15**).

Written Permission and Licences for Prescribed Premises

Seventy (70) Written Permissions were issued by the Director General in 2010 for the construction of treatment and disposal facility for scheduled wastes, 30 off-site partial recovery plants (e-waste), 18 off-site recovery plants (non e-waste), seven (7) off-site full recovery plants (e-waste), 11 off-site storage facilities, one (1) off-site treatment facility, two (2) scheduled waste incinerators and one (1) land treatment facility (**Table 4.14**).

In addition, a total of 665 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 4.15**).

Bahan Disyaki Buangan Terjadual
Suspected Scheduled Wastes

Jadual 4.14 JAS: Status Permohonan Kebenaran Bertulis (KB) Kemudahan Pengolahan & Pelupusan Buangan Terjadual, 2010
Table 4.14 DOE: Written Permission (KB) for Scheduled Waste Treatment and Disposal Facilities, 2010

BIL./ NO.	KEMUDAHAN/ FACILITIES	NEGERI / STATE															JUMLAH/ TOTAL
		JHR	KDH	KLN	MLK	N.S	PHG	PRK	PRS	PP	SBH	SRK	SLG	TRG	WP (KL)	WP (LAB)	
1	**Insinerator Buangan Terjadual** Scheduled Waste Incinerator	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	**2**
2	**Kemudahan Pemerolehan Kembali** Off Site Recovery Facilities																
	a. Pemerolehan Kembali Penuh bukan e-Waste / Full Off Site Recovery none e-waste	-	-	-	2	-	2	-	-	3	1	3	7	-	-	-	**18**
	b. Pemerolehan Kembali Penuh e-Waste Full Off Site Recovery e-Waste	-	-	-	4	-	-	-	-	2	-	-	1	-	-	-	**7**
	c. Pemerolehan Kembali Separa e-Waste Partial Recovery e-Waste	3	-	-	15	-	-	-	-	9	-	-	3	-	-	-	**30**
3	**Kemudahan Penstoran Luar Tapak** Off Site Storage Facilities	4	-	-	-	-	1	-	-	-	-	2	1	1	-	2	**11**
4	**Kemudahan Pengolahan Luar Tapak** Off site Treatment Facilities																
	a. Loji rawatan Fizikal &Kimia Chemical & Physical Treatment	-	-	-	-	-	-	-	-	-	-	-		1	-	-	**1**
	b. Loji Solidifikasi / Solidification Plant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0**
	c. Loji Rawatan Air Resapan Diffusion Water Treatment Plant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0**
5	**Kemudahan Pengolahan Di Tanah** Land Treatment Facility	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	**1**
6	**Tapak Pelupusan Selamat** Secured Landfill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0**
	Bil. KB Yang Dikeluarkan No. of Written Permission	**7**	**0**	**0**	**22**	**0**	**3**	**0**	**0**	**14**	**1**	**5**	**12**	**2**	**0**	**4**	**70**

NOTA/ NOTE :

JHR - JOHOR
KDH - KEDAH
KLN - KELANTAN
MLK - MELAKA
N.S - NEGERI SEMBILAN
PHG - PAHANG
PRK - PERAK
PRS - PERLIS
PP - PULAU PINANG
SBH - SABAH
SRK - SARAWAK
SLG - SELANGOR
TRG - TERENGGANU
WP (KL) - WILAYAH PERSEKUTUAN KUALA LUMPUR
WP (LAB) - WILAYAH PERSEKUTUAN LABUAN

Jadual 4.15 JAS: Lesen-Lesen Yang Dikeluarkan Bagi Kemudahan Pengolahan & Pelupusan Buangan Terjadual , 2010

Table 4.15 DOE: Licensed Scheduled Waste Treatment and Disposal Facilities, 2010

BIL./ NO.	KEMUDAHAN/FACILITIES	NEGERI/STATE															JUMLAH/ TOTAL
		JHR	KDH	KLN	MLK	N.S	PHG	PRK	PRS	PP	SBH	SRK	SLG	TRG	WP (KL)	WP (LAB)	
1	**Penstoran Luar Tapak - Pengangkutan** Off Site Storage-Transport	42	21	-	19	12	6	26	1	58	6	27	64	5	8	4	**299**
	Penstoran Luar Tapak / Off Site Storage	-	1	-	-	2	-	-	-	-	-	14	1	-	-	2	**20**
2	**Pemerolehan Kembali / Off Site Recovery**																
	a. **Pemerolehan Kembali Penuh bukan e-Waste** Full Off Site Recovery none e-waste	29	5	-	4	8	7	23	1	18	-	6	33	5	-	-	**139**
	b. **Pemerolehan Kembali Penuh e-Waste** Full Off Site Recovery e-Waste	4	1	-	3	2	-	-	-	7	-	-	3	-	-	-	**20**
	c. **Pemerolehan Kembali Separa e-Waste** Partial Recovery e-Waste	15	15	-	14	5	-	5	-	39	-	7	27	-	8	-	**135**
3	**Penunu Buangan Terjadual** Schedule Waste Incinerator	6	1	-	1	3	1	3	-	3	5	10	5	2	-	1	**41**
4	**Pengolahan Di Tanah / Land Treatment Facility**	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	**2**
	Pengolahan Luar Tapak Off Site Treatment Facilities	-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	**4**
5	**Tapak Pelupusan Selamat / Secured Landfill**	-	1	-	-	2	-	-	-	-	-	1	-	1	-	-	**5**
	Bil. Lesen / No. of License	**96**	**45**	**0**	**41**	**36**	**14**	**57**	**2**	**125**	**11**	**68**	**133**	**13**	**16**	**8**	**665**
	Bil. Premis / No. of Premises	**46**	**23**	**0**	**19**	**17**	**9**	**31**	**1**	**64**	**10**	**42**	**69**	**8**	**8**	**7**	**354**

NOTA/ NOTE :

JHR - JOHOR
KDH - KEDAH
KLN - KELANTAN
MLK - MELAKA
N.S - NEGERI SEMBILAN
PRK - PERAK
PRS - PERLIS
PHG - PAHANG
SBH - SABAH
SLG - SELANGOR
SRK - SARAWAK
TRG - TERENGGANU
WP (KL) - WILAYAH PERSEKUTUAN KUALA LUMPUR
WP (LAB) - WILAYAH PERSEKUTUAN LABUAN

Skim Notifikasi Dan Pendaftaran Bahan-Bahan Berbahaya Alam Sekeliling (EHSNR)

Environmentally Hazardous Substances Notification And Registration Scheme (EHSNR)

Jangkamasa bagi Skim Notifikasi dan Pendaftaran Bahan-Bahan Berbahaya Alam Sekeliling (EHSNR) yang telah dijalankan secara sukarela akan dilanjutkan sehingga ke satu tarikh selepas peraturan mengenai skim ini digubal. Langkah-langkah awalan bagi menyediakan deraf peraturan tersebut telah diambil dalam tahun 2010 dan elemen-elemen di dalam deraf tersebut dijangka akan dapat disediakan bagi ulasan pada pertengahan tahun 2011.

Sehingga 31 Disember 2010, 1,101 syarikat berasaskan kimia telah dikenalpasti berpotensi sebagai pengilang dan pengimport EHS. Sejumlah 237 syarikat berasaskan kimia telah mendaftar dan 547 EHS telah didaftarkan ke dalam skim. Jumlah EHS yang telah dinotifikasi secara rasmi ialah 317 dan daripada jumlah tersebut 115 EHS memerlukan notifikasi secara terperinci. Sebanyak 81 EHS telah dinotifikasi secara terperinci kepada JAS.

Disebabkan oleh isu-isu yang berkaitan dengan *"Confidential Business Information"*, sistem ini telah membenarkan syarikat-syarikat yang berdaftar di luar negara untuk membuat notifikasi terperinci secara terus kepada JAS dan dua (2) syarikat telah mendaftar sebagai pembekal luar negara pada tahun 2010. JAS telah menganjurkan lima (5) siri *"EHSNR hands on training"* pada tahun 2010. Seramai 123 orang yang mewakili pelbagai syarikat telah menghadiri kursus tersebut. Sebanyak tiga (3) siri seminar kesedaran EHSNR turut dianjurkan dengan jumlah peserta yang telah hadir seramai 134 orang.

The voluntary period for the Environmentally Hazardous Substances Notification and Registration Scheme (EHSNR) has been extended until the regulation for this scheme is enacted. The initial stage of drafting the regulation took place in 2010 and the elements of this regulation are expected to be available for comments by mid-2011.

Until 31 December 2010, 1,101 chemical companies had been identified as potential manufacturers and importers for Environmentally Hazardous Substances (EHS). Two hundred and thirty seven (237) chemical companies had registered and 547 EHS had been entered under the scheme. The number of EHS that had been officially notified were 317 and out of this, 115 EHS were required to do detailed notification. The number of EHS which had already notified in detail to DOE was 81.

Due to the confidential business information issues, the system now allows overseas companies to notify the detailed notification directly to DOE. Two (2) companies had registered as overseas suppliers in 2010. The department had organized five (5) series of EHSNR hands on training in 2010. A total of 123 participants from various companies attended the training. Additionally, three (3) series of awareness seminars on EHSNR were also organized and the number of participants attended was 134.

Penguatkuasaan Terhadap Aktiviti Pembakaran Terbuka
Enforcement Against Open Burning Activities

Sepanjang tahun 2010, semua pejabat JAS Negeri telah meneruskan operasi rondaan mencegah pembakaran terbuka di kawasan-kawasan yang dikenalpasti sebagai kawasan yang cenderung berlaku kebakaran. Sejumlah 3,027 kes pembakaran terbuka telah dikesan dan disiasat termasuk hotspot yang dikesan melalui satelit (**Jadual 4.16 & Jadual 4.17**).

Kebanyakan kes-kes pembakaran terbuka adalah melibatkan kawasan hutan (712), ladang (586), belukar (578) dan pertanian (359) terutamanya semasa cuaca panas dan kering iaitu pada bulan Februari (506), Mac (569), Ogos (334), September (234) dan Oktober (253). Daripada 3,027 kes pembakaran terbuka tersebut, 333 kes telah dikompaun dengan jumlah kompaun yang dikutip adalah sebanyak RM 437,397.00 dan tujuh (7) kes telah dikenakan tindakan mahkamah.

Pengawasan Melalui Udara

Program Pengawasan Melalui Udara diteruskan pelaksanaannya pada tahun 2010 untuk mengawasi dan mengesan dari udara kejadian pencemaran alam sekitar terutamanya aktiviti pembakaran terbuka, pelepasan dari industri, pencemaran pantai dan laut. Di samping itu, aktiviti pembukaan tanah serta pembangunan di kawasan tanah tinggi dan pembangunan di pulau-pulau juga dipantau melalui operasi ini. Maklumat mengenai kejadian 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 1,784,970.00 diperuntukkan di bawah Projek Pembangunan pada tahun 2010 untuk pelaksanaan program ini. Sepanjang program ini, sebanyak 224 bilangan penerbangan yang melibatkan 876.5 jumlah jam penerbangan telah dilaksanakan.

Throughout 2010, DOE State Offices continued to conduct daily ground surveillance of fire prone areas. A total of 3,027 open burning cases were investigated, including hotspots detected via satellites (**Table 4.16 & Table 4.17**).

Frequent incidents of open burning mainly were found to occur in forest areas (712), plantations (586), bushes (578) and agriculture areas (359) especially during the hot and dry period in the months of February (506), March (569), August (334), September (234) and October (253). Out of 3,027 open burning cases detected, 333 cases were issued compounds amounting to RM 437,397.00 and seven (7) cases were prosecuted in court.

Airborne Surveillance

The National Airborne Surveillance Programme continued in 2010 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 were also monitored. Information on the environmental pollution activities detected from the air surveillance would be transmitted directly to the DOE operation room for follow up on enforcement actions by ground surveillance staff.

A development budget of RM 1,784,970.00 was allocated in 2010 for aerial surveillance. In this programme, 224 flights with a total of 876.5 flight hours were undertaken.

Pembakaran Terbuka
Open Burning

Jadual 4.16 JAS: Bilangan Kes Pembakaran Terbuka Mengikut Negeri, 2010
Table 4.16 DOE: Number of Open Burning Cases by State, 2010

Negeri State	Ladang Plantation	Pertanian Agriculture	Belukar Bushes	Hutan Forest	Tapak Pembinaan Construction Sites	Tapak Pelupusan Disposal Sites	Industri Industry	Lain-lain Others
PERLIS	8	6	1	0	0	0	0	0
KEDAH	10	48	20	0	13	15	6	61
P.PINANG	0	2	2	0	4	2	2	4
PERAK	31	20	28	31	5	5	2	10
SELANGOR	28	36	30	23	19	37	37	248
WP KL	0	0	0	0	0	0	0	0
N.SEMBILAN	9	0	1	11	1	0	0	2
MELAKA	7	0	2	0	1	0	0	0
JOHOR	56	30	29	10	10	6	7	17
PAHANG	129	22	44	208	0	0	2	14
TERENGGANU	26	0	28	24	11	2	8	32
KELANTAN	93	9	6	98	5	5	13	43
SARAWAK	164	128	353	217	1	31	7	58
SABAH	25	58	24	90	5	5	1	23
WP LABUAN	0	0	10	0	1	0	1	10
Jumlah/Total	586	359	578	712	76	108	86	522
Jumlah Keseluruhan/Total Amount : 3,027								

Jadual 4.17 JAS: Bilangan Kes Pembakaran Terbuka Bulanan, 2010
Table 4.17 DOE: Number of Open Burning Cases by Month, 2010

Bulan / Month	Ladang Plantation	Pertanian Agriculture	Belukar Bushes	Hutan Forest	Tapak Pembinaan Construction Sites	Tapak Pelupusan Disposal Sites	Industri / Industry	Lain-lain Others
Januari/January	54	24	44	18	14	11	9	66
Februari/February	146	82	97	77	10	24	17	53
Mac/ March	116	44	85	240	14	13	10	47
April/April	68	29	30	61	6	8	7	40
Mei/May	36	4	36	37	5	3	2	31
Jun/June	52	27	14	30	1	1	3	37
Julai/July	13	16	8	24	3	8	6	45
Ogos/August	29	48	115	64	9	3	11	55
September/September	15	39	49	89	3	11	2	26
Oktober/October	24	33	63	54	7	9	7	56
November/November	18	8	29	7	2	15	7	38
Disember/December	15	5	8	11	2	2	5	28
Jumlah/Total	586	359	578	712	76	108	86	522
Jumlah Keseluruhan/Total Amount : 3,027								

Punca-Punca Bergerak (Kenderaan Bermotor)
Mobile Sources (Motor Vehicles)

Sehingga akhir tahun 2010, sebanyak 20,188,565 buah kenderaan bermotor telah berdaftar di Malaysia, iaitu pertambahan sebanyak 1,171,783 buah kenderaan (6.16%) berbanding tahun 2009. Pecahan keseluruhan kenderaan bermotor yang berdaftar mengikut jenis kenderaan adalah seperti di **Rajah 4.13**.

Dari sejumlah 1,158,072 buah kenderaan baru yang didaftarkan dalam tahun 2010, kategori motokar merupakan yang tertinggi iaitu 585,304 unit (50.54 %) diikuti motosikal sebanyak 498,041 unit (43.0 %), manakala sebanyak 74,727 unit (6.5%) adalah dari lain-lain jenis kenderaan termasuk lori, bas, van dan sebagainya.

Taburan bilangan kenderaan bermotor di Malaysia mengikut negeri adalah seperti di **Rajah 4.14**. Wilayah Persekutuan masih mendahului negeri-negeri lain dengan mempunyai bilangan kenderaan yang tertinggi iaitu sebanyak 4,635,212 unit (23.0%), diikuti oleh negeri Johor, Selangor, Pulau Pinang dan 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 dilaksanakan melalui Program AWASI (*Area Watch And Sanction Inspection*). Melalui Program AWASI ini, skuad peronda JAS akan menjalankan rondaan, pemerhatian pelepasan asap hitam dari ekzos kenderaan, memberhentikan kenderaan untuk menjalankan ujian asap ke atas kenderaan-kenderaan diesel yang diperhatikan mengeluarkan asap hitam berlebihan.

By the end of 2010, there were about 20,188,565 registered motor vehicles in Malaysia, an increase of 1,171,783 units (6.16%) compared to 2009. The breakdown of the total registered vehicles according to vehicle types is given in **Figure 4.13**.

Out of 1,158,072 new vehicles registered in 2010, motorcars made up the highest number with 585,304 units (50.54 %) followed by motorcycles 498,041 units (43.0%), while the remaining 74,727 units (6.5%) 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 4.14**. The Federal Territory of Kuala Lumpur recorded the highest number of vehicles registered of 4,635,212 units (23.0%) followed by Johor, Selangor, Pulau Pinang and Perak.

Control of Smoke and Gaseous Emissions From Motor Vehicles

Emission of smoke and gaseous pollutants such as carbon monoxide, hydrocarbons, oxides of nitrogen and particulate matters 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

The control of excessive black smoke emission emitted from diesel vehicle exhausts is by the AWASI (Area Watch And Sanction Inspection) Programme. Through this programme the DOE's mobile squad would go round patrolling the streets, observing and testing diesel vehicles belching excessive smoke.

Compounds were issued on-the-spot to the drivers and owners if their vehicle fails to comply to the stipulated smoke limit of 50 HSU, and a prohibition order (prohibiting vehicle use) will be issued if the smoke limit exceeds 70 HSU.

Tindakan kompaun akan diambil serta merta kepada pemandu dan tuanpunya kenderaan yang didapati gagal mematuhi had pelepasan asap 50 Unit Asap Hartridge (HSU). Kompaun serta perintah larangan menggunakan kenderaan di jalanraya akan dikeluarkan sekiranya kenderaan didapati melepaskan asap hitam melebihi 70 HSU.

Pada tahun 2010, sebanyak 1,797 operasi penguatkuasaan telah dilaksanakan di bandar-bandar di seluruh negara. Sebanyak 230,672 buah kenderaan diesel telah diperiksa, dan dari jumlah tersebut, sebanyak 2,983 buah kenderaan telah dikompaun kerana gagal mematuhi had pelepasan asap hitam sebanyak 50 HSU, manakala 414 daripadanya telah dikenakan perintah larangan beroperasi sehingga dibaikpulih dan lulus ujian asap semula oleh JAS. Pada keseluruhannya, peratus pematuhan oleh kenderaan diesel adalah 98.7%.

Bilangan kenderaan diesel yang dikompaun dan peratus pematuhan mengikut jenis kenderaan adalah seperti di **Rajah 4.15**. **Rajah 4.16** pula menunjukkan bilangan kenderaan dikompaun, pengeluaran perintah larangan serta peratus pematuhan mengikut negeri. Tindakan mahkamah telah juga diambil ke atas 575 pemandu serta tuan-tuan punya kenderaan kerana gagal menjelaskan kompaun yang telah dikenakan.

Kawalan Pelepasan Gas CO dan HC Dari Kenderaan Petrol

Sepanjang tahun 2010, sejumlah 5,436 buah kenderaan petrol telah diuji pelepasan CO dan HC dengan menggunakan meter gas CO-HC Analyzer melalui kaedah 'ujian idling'. Sebanyak 407 buah kenderaan telah dikompaun kerana gagal mematuhi had pelepasan yang dibenarkan. Peratus pematuhan secara keseluruhannya adalah 93.1%. Surat amaran juga telah dikeluarkan kepada pemandu kenderaan yang gagal mematuhi had pelepasan CO dan HC supaya segera membaiki kenderaan bagi memastikan kenderaan sentiasa mematuhi had pelepasan yang ditetapkan.

In 2010, a total of 1,797 enforcement programmes were conducted in the cities throughout the country. A total of 230,672 diesel vehicles were visually inspected, out of which 2,983 vehicles were compounded for failing to comply the 50 HSU smoke limit including 414 vehicles 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 98.7%.

The number of vehicles summoned and their percentage of compliance according to vehicle types is given in **Figure 4.15** and **Figure 4.16** shows the number of vehicles compounded, number of prohibition order issued and the percentage of compliance according to the states. Court actions were also taken against 575 drivers and vehicle owners for failing to settle the compounds issued.

Control of CO and HC Gas Emissions from Petrol Vehicles

Throughout 2010, a total of 5,436 petrol powered vehicles were tested using the CO-HC gas analyzer by the idling test method. A total of 407 vehicles were compounded for failing to comply with the stipulated CO and HC limits. The overall percentage of compliance was 93.1 %. Warning letters were issued to drivers to take immediate action to repair their vehicles to ensure compliance.

Type Approval Test (Petrol Vehicles)

Malaysia had established exhaust emission standard for new vehicles in order to improve exhaust emission by utilizing new engine design and emission control technology.

Ujian Kelulusan Jenis (Kenderaan Petrol)

Malaysia telah memperkenalkan standard pelepasan pencemar untuk model baru kenderaan motor dengan tujuan memperbaiki pelepasan pencemar dengan menggunakan rekabentuk enjin baru dan teknologi kawalan pelepasan.

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 di mana jisim karbon monoksida yang dibenarkan hendaklah tidak melebihi 2.2 g/km, manakala kombinasi hidrokarbon dan nitrogen oksida hendaklah tidak melebihi 0.5 g/km. Pada tahun 2010, Jabatan Alam Sekitar telah mengeluarkan sebanyak 44 Sijil Ujian Kelulusan Jenis bagi model baru kenderaan yang akan dipasarkan di Malaysia.

Pengwujudan Kemudahan Yang Diluluskan

Bagi membolehkan orang ramai menghantar kenderaan mereka untuk menjalani ujian pelepasan asap dan gas, Jabatan Alam Sekitar melalui program "Kemudahan Yang Diluluskan (KYDL)" telah memberi pengiktirafan kepada bengkel-bengkel kenderaan yang memenuhi kriteria-kriteria yang telah ditetapkan.

Sehingga akhir tahun 2010, sebanyak 57 bengkel serta pusat-pusat pemeriksaan kenderaan di seluruh negara telah diberikan sijil pengiktirafan sebagai "Kemudahan Yang Diluluskan" oleh JAS. Kesemua pusat atau bengkel tersebut adalah 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 mula 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)

Any new model of motor vehicle that is commissioned on and after 1 January, 2000 is required to comply with emission standards prescribed in the Third Schedule of Environmental Quality (Control of Emission from Petrol Engines) Regulations, 1996. The mass of carbon monoxide shall not exceed 2.2 g/km while the combination of hydrocarbon and nitrogen oxides shall not exceed 0.5 g/km. In 2010, the Department of Environment has issued 44 Type Approval Test Certificate for new model to be marketed in Malaysia.

Establishment of Approved Testing Facilities

To facilitate convenient 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 centres could also serve as immediate repair centres for the non-complying vehicles.

By the end 2010, a total of 57 workshops and vehicle testing centers throughout the country were registered as "Approved Testing Facilities".

Control of Emission from Motorcycles

Regulation to control air pollution from motorcycle exhausts namely the Environmental Quality (Control of Emission from Motorcycles) Regulations, 2003 has been gazetted and these regulations entered into force on 1 January 2004. The emissions 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)

Pengimport motosikal adalah dikehendaki mematuhi standard baru pelepasan berkuatkuasa 1 Januari 2005 bagi model baru dan 1 Julai 2005 bagi model sedia ada, manakala pembuat tempatan hendaklah mematuhi standard pelepasan baru berkuatkuasa 1 Julai 2005 bagi model baru dan 1 Julai 2006 bagi model sedia ada. Sepanjang tahun 2010, sebanyak tujuh (7) 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.

Operasi penguatkuasaan bagi mengawal pelepasan bunyi bising dari motorsikal telah dilaksanakan oleh pejabat-pejabat JAS Negeri dengan kerjasama Polis DiRaja Malaysia (Cawangan Trafik). Pada tahun 2010, sejumlah 2,780 buah motosikal telah ditahan untuk menjalani ujian pelepasan bunyi bising. Dari jumlah ini, 107 penunggang motosikal telah dikompaun kerana melanggar had bunyi bising yang dibenarkan. Peratus pematuhan secara keseluruhanya ialah 96.2 % (**Rajah 4.17**).

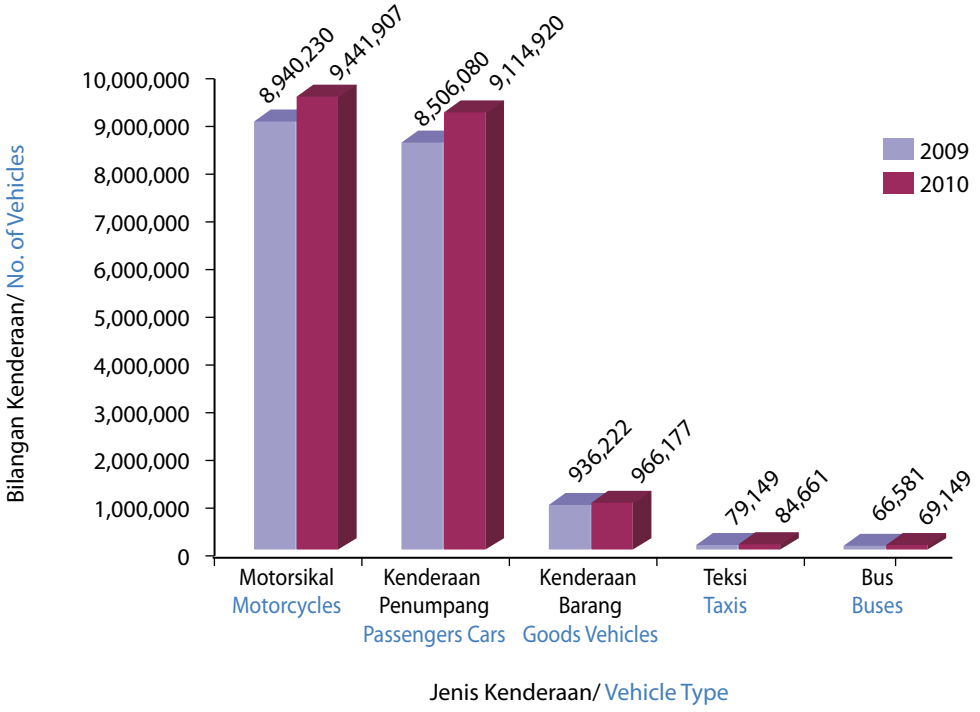
Motorcycles importers are required to comply with the new emission standards effective from 1 January 2005 for new models and 1 July 2005 for current models, while the local manufactures would have to comply with the new emission standards effective from 1 July 2005 for new models and 1 July 2006 for current models. Throughout 2010, a total of seven (7) Type Approval Test Certificate were issued to the manufacturers, assemblers and importers of motorcycles for the domestic market.

Noise from Motor Vehicles

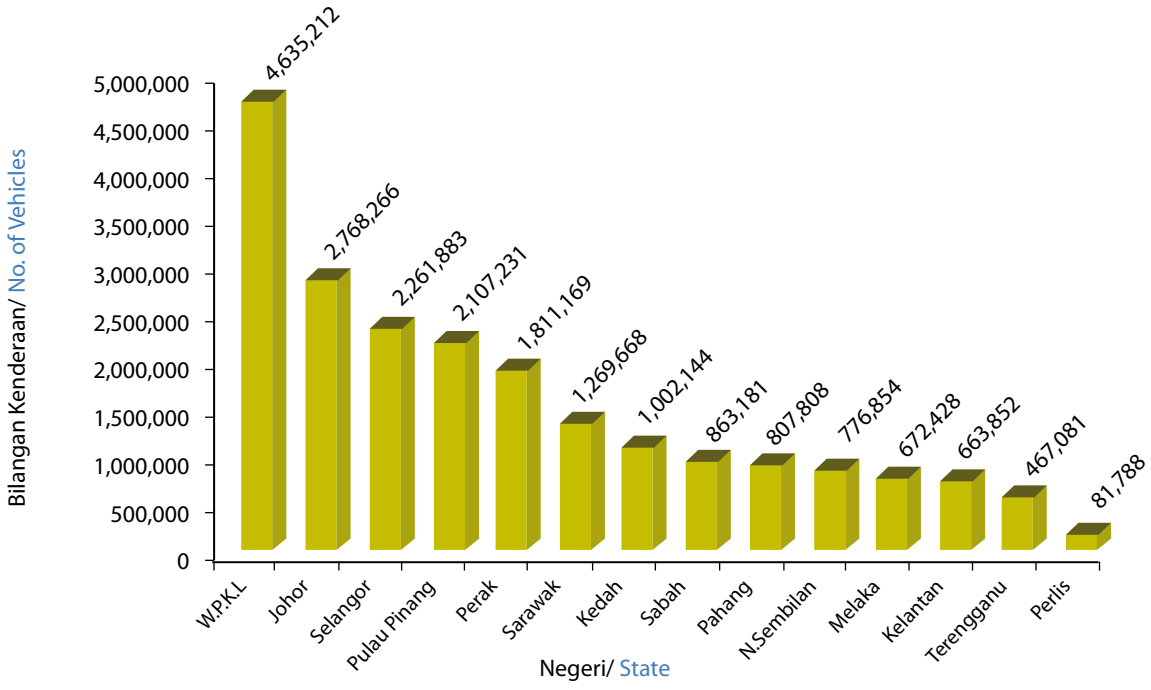
The control of noise from motor vehicles is enforced under the Environmental Quality (Motor Vehicle Noise) Regulations, 1987.

Enforcement campaigns to control excessive noise from motorcycles were jointly conducted by the DOE and the Traffic Police. In 2010, a total of 2,780 motorcycles were stopped for the noise inspection. From the above total, 107 motorcyclists were summoned for violating the stipulated noise limits. The overall percentage of compliance was 96.2% (**Figure 4.17**).

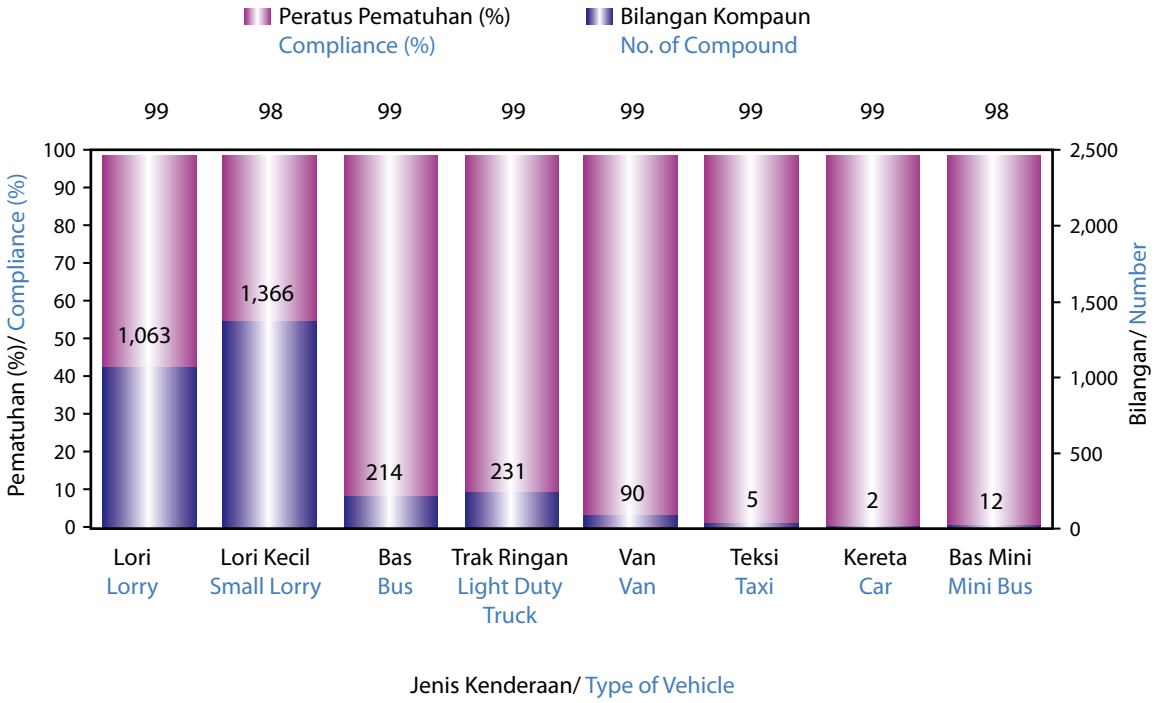
Ujian Pelepasan Asap Hitam
Black Smoke Emission Test



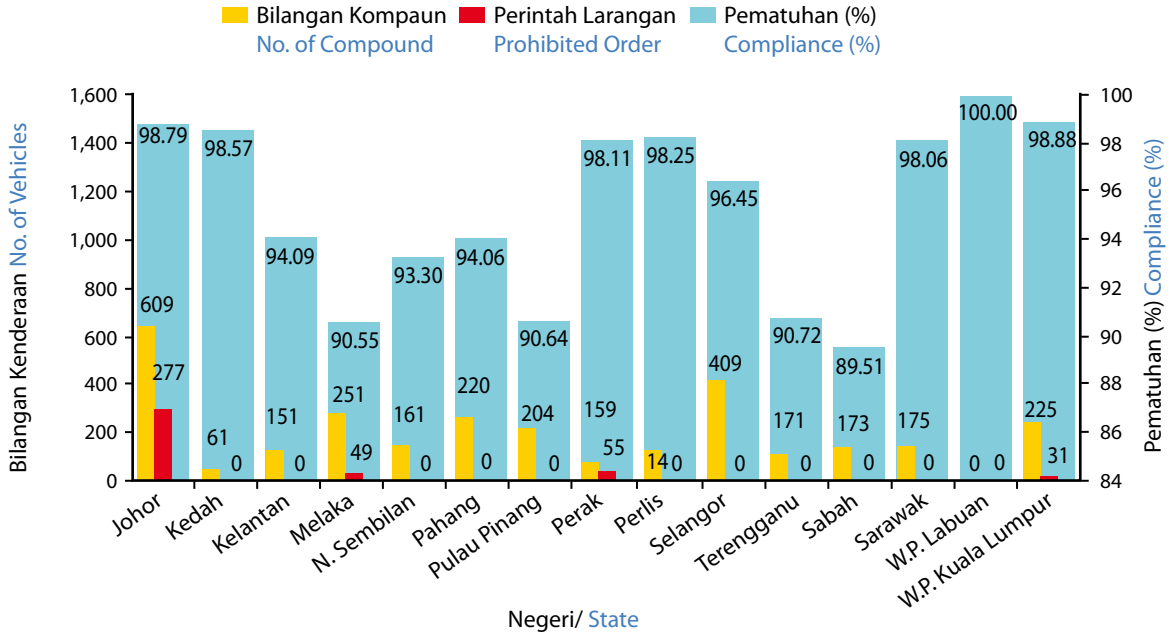
Rajah 4.13 JAS: Bilangan Kenderaan Bermotor Mengikut Jenis, 2010
Figure 4.13 DOE: Number of Motor Vehicles by Type, 2010



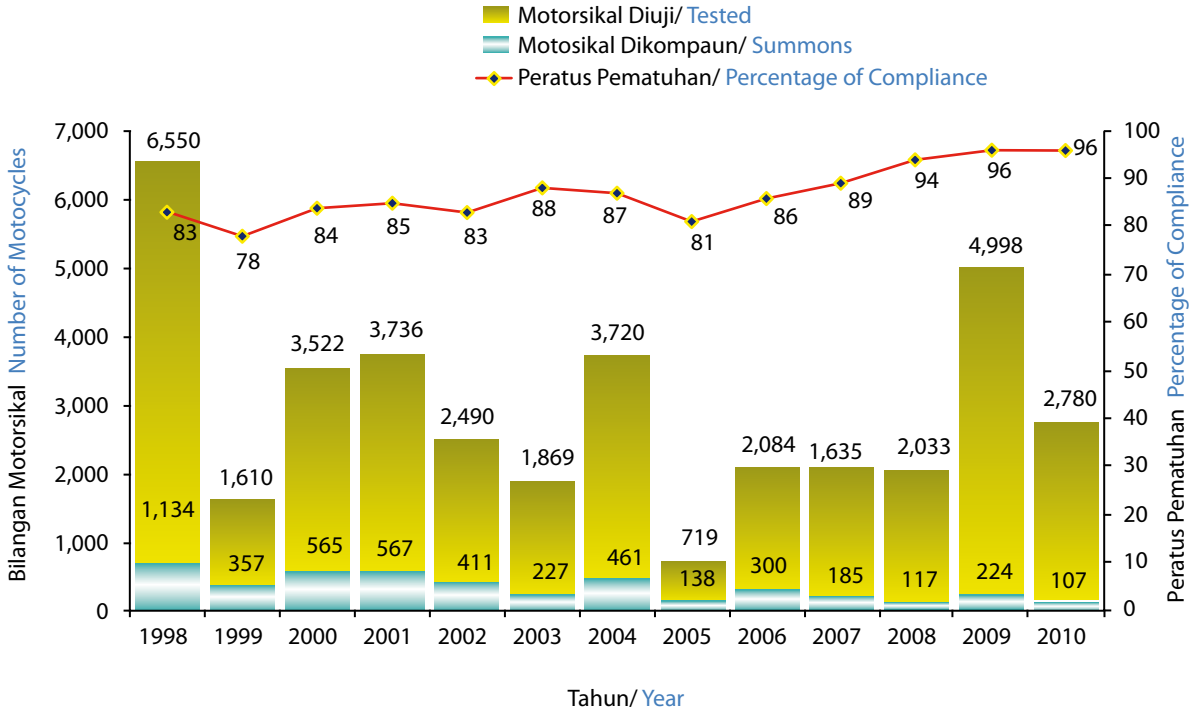
Rajah 4.14 JAS : Bilangan Kenderaan Bermotor Mengikut Negeri, 2010
Figure 4.14 DOE: Number of Motor Vehicles by State, 2010



Rajah 4.15 JAS: Penguatkuasaan Pelepasan Asap Hitam Kenderaan Mengikut Jenis Kenderaan, 2010
Figure 4.15 DOE: Enforcement of Vehicular Black Smoke Emission by Types, 2010



Rajah 4.16 JAS : Penguatkuasaan Pelepasan Asap Hitam Kenderaan Mengikut Negeri, 2010
Figure 4.16 DOE: Enforcement of Vehicular Black Smoke by State, 2010



Rajah 4.17 JAS : Penguatkuasaan Pelepasan Bunyi Bising Motorsikal, 1998-2010
Figure 4.17 DOE: Enforcement of Motocycle Noise Emission, 1998-2010

Pusat Atau Bengkel Untuk Ujian Asap Hitam
Workshops and Vehicle Testing Centers for Smoke And Gaseous Emission Testing

Tindakan Undang-Undang
Legal Action

Pendakwaan

Pada tahun 2010, sejumlah 1,066 kes kesalahan di bawah Akta Kualiti Alam Sekeliling, 1974 telah didakwa di mahkamah yang melibatkan denda berjumlah RM5,201,100.00 (**Rajah 4.18**).

Daripada jumlah keseluruhan kes tersebut, sebanyak 668 (62.7%) kes mahkamah adalah melibatkan kesalahan pencemaran udara daripada kenderaan bermotor melalui pelepasan ke udara melebihi had yang ditetapkan di bawah Seksyen 22(1) dengan jumlah denda sebanyak RM 766,050.00. Terdapat 206 (19.3%) kes mahkamah yang melibatkan pelepasan efluen melebihi had yang ditetapkan di bawah Seksyen 25(1) Akta dengan jumlah denda sebanyak RM 2,839,000.00.

Selain itu, sebanyak 102 (9.6%) kes adalah melibatkan kesalahan pelanggaran syarat lesen di bawah Seksyen 16 dengan jumlah denda sebanyak RM917,000.00 sementara 90 (8.4%) kes yang selebihnya adalah kesalahan-kesalahan lain di bawah Akta.

Kompaun

Sejumlah 5,854 kompaun telah dikeluarkan sepanjang tahun 2010 kepada premis dan syarikat untuk pelbagai kesalahan di bawah Akta. Daripada jumlah keseluruhan tersebut, sebanyak 3,020 (51.6%) kompaun adalah kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Dari Enjin Diesel), 1996, sebanyak 1,569 (26.8%) kompaun adalah kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual), 2005, sebanyak 401 (6.9%) kompaun adalah kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan dari Enjin Petrol), 1996, sebanyak 419 (7.2%) kompaun adalah kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih), 1978 dan sebanyak 333 (5.7%) kompaun adalah kesalahan di bawah Seksyen 29A, AKAS, 1974 (**Rajah 4.19**).

Prosecution

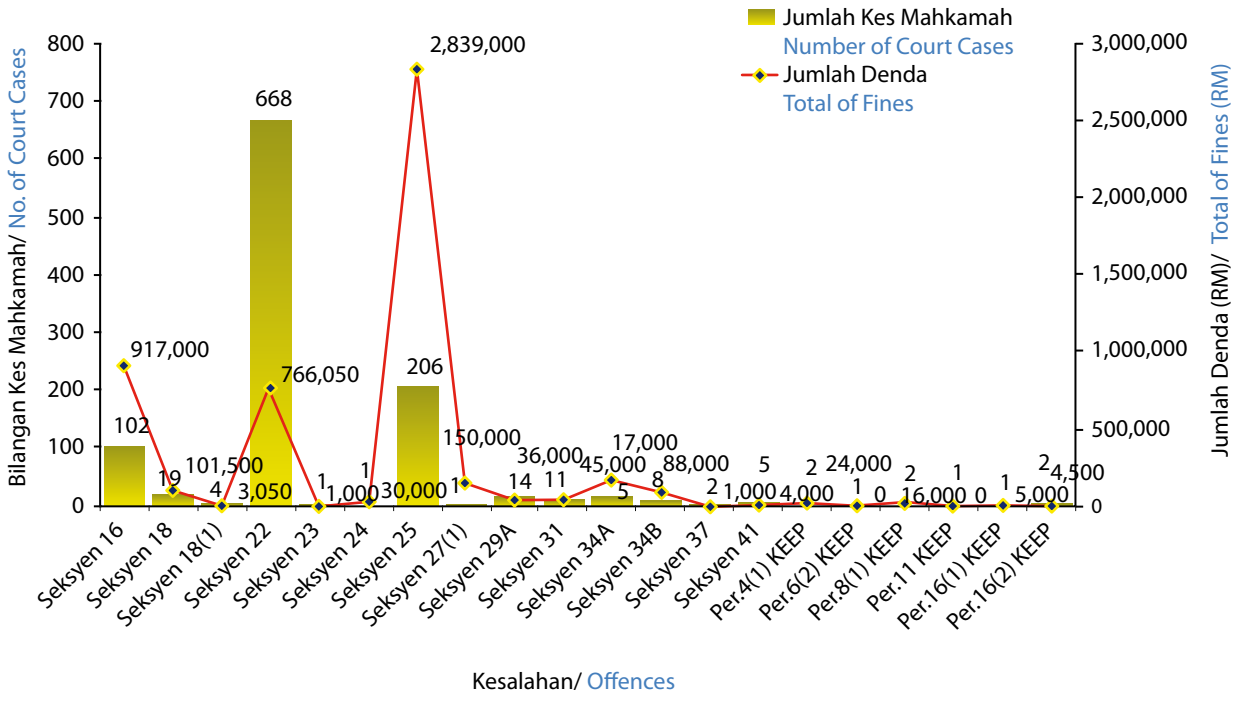
In 2010, a total of 1,066 offences were prosecuted under the Environmental Quality Act, 1974 and fined a total of RM 5,201,100.00 (**Figure 4.18**).

Out of this total, 668 (62.7%) cases involved offences from motor vehicles emissions exceeding the stipulated standard under Section 22(1) of the Act and fined a total of RM 766,050.00. There were 206 (19.3%) cases involved in effluent discharges exceeding the stipulated standard under Section 25(1) of the EQA, 1974, and fined RM 2,839,000.00.

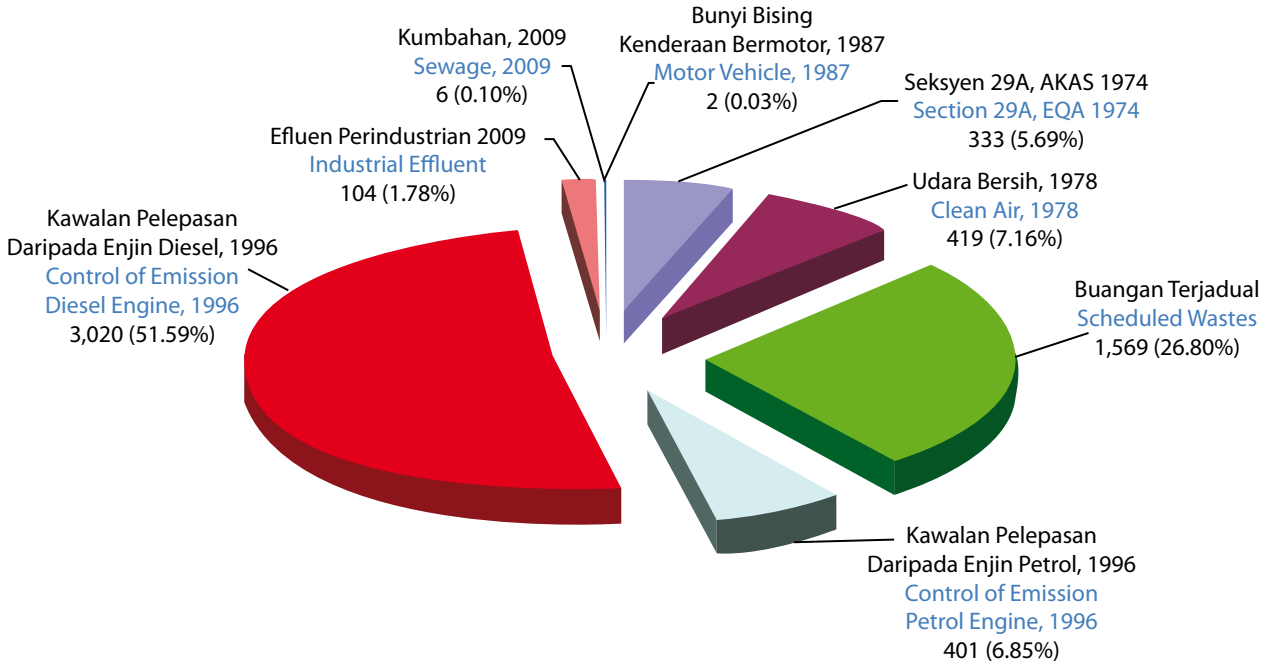
Apart from that, 102 (9.6%) cases were involved in violating conditions of licences under Section 16 and fined RM917,000.00 while the remaining 90 (8.4%) cases were prosecuted for other offences under the Act.

Compounds

A total of 5,854 compounds were issued in 2010 against premises and companies for various offences under the Act. Out of this total, 3,020 (51.6%) were offences under Environmental Quality (Control of Emission from Diesel Engine) Regulations, 1996, 1,569 (26.8%) were offences under Environmental Quality (Scheduled Wastes) Regulations, 2005, 401 (6.9%) were offences under Environmental Quality (Control of Emission from Petrol Engine) Regulations, 1996, 419 (7.2%) were offences under Environmental Quality (Clean Air) Regulations, 1978 and 333 (5.7%) were offences under Section 29A of the Act (**Figure 4.19**).



Rajah 4.18 JAS: Bilangan Kes Mahkamah dan Denda, 2010
Figure 4.18 DOE: Number of Court Cases and Fines, 2010



Rajah 4.19 JAS: Bilangan Kes Kompaun Mengikut Pecahan Peraturan-Peraturan Kualiti Alam Sekeliling, 2010
Figure 4.19 DOE: Number of Compounds Cases were Offences Under Environmental Quality Regulations, 2010

Maklumbalas Terhadap Pengaduan Awam
Response To Public Complaints

Pada tahun 2010, sejumlah 6,925 aduan pencemaran alam sekitar telah diterima oleh Jabatan Alam Sekitar. 5,557 kes aduan telah diambil tindakan di bawah peruntukan Akta Kualiti Alam Sekeliling, 1974 dan peraturan-peraturan di bawahnya oleh pejabat JAS Negeri, manakala 1,368 kes aduan adalah diluar bidangkuasa JAS dan telah dirujuk kepada agensi lain yang berkaitan untuk diambil tindakan.

Pada tahun 2010, Selangor menerima aduan yang tertinggi iaitu sebanyak 1,601 kes (23.12%), diikuti oleh Pulau Pinang sebanyak 1,015 kes (14.66%) dan Johor sebanyak 859 kes (12.40%). Wilayah Persekutuan Labuan menerima aduan yang paling sedikit iaitu sebanyak 36 kes (0.52%) dan diikuti dengan Perlis iaitu sebanyak 46 kes (0.66%).

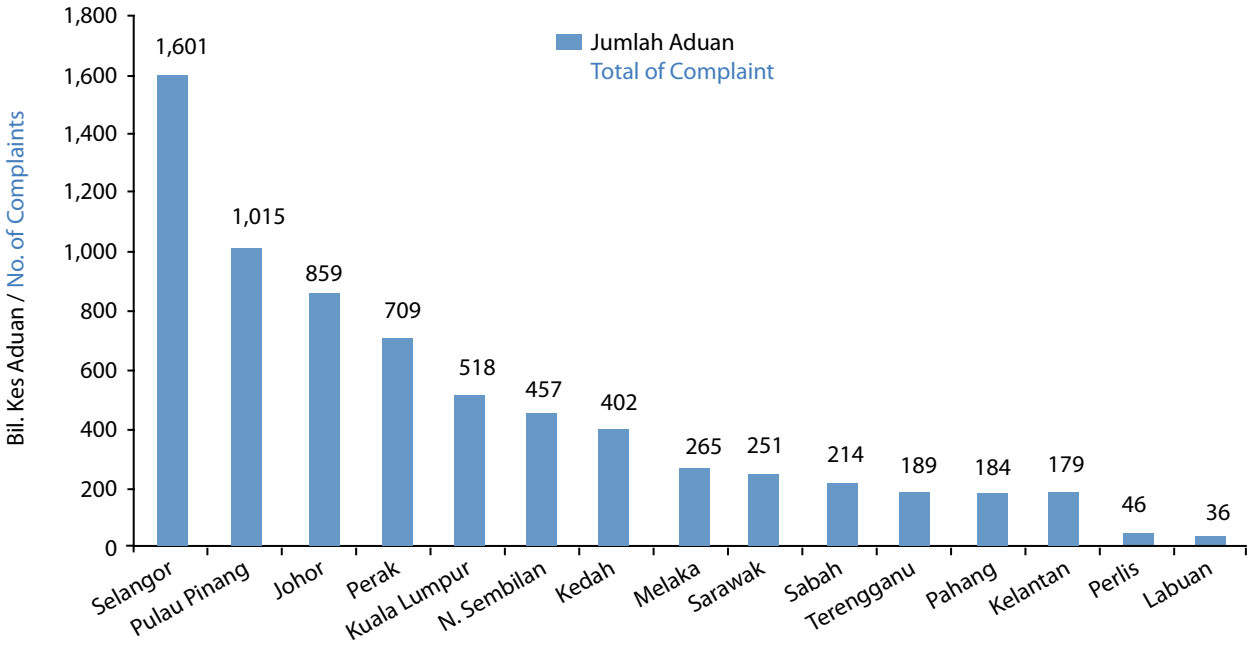
Seperti pada tahun yang sebelumnya, bilangan aduan pencemaran yang tertinggi adalah berkaitan dengan pencemaran udara iaitu sebanyak 5,221 kes (75.39%), 735 kes (10.61%) berkaitan pencemaran air, 271 kes (3.92%) berkaitan pencemaran bunyi, 168 kes (2.43%) berkaitan pelupusan haram buangan terjadual, 53 kes (0.77%) berkaitan pencemaran tanah, 65 kes (0.94%) berkaitan tumpahan minyak dan 412 kes (5.95%) lain-lain aduan (**Rajah 4.21**).

The Department of Environment received 6,925 environmental pollution complaints in 2010. Out of these, 5,557 cases were under the Environmental Quality Act, 1974 and investigated by the State DOE Offices, while the remaining 1,368 cases were outside the jurisdiction of DOE and were referred to other relevant agencies.

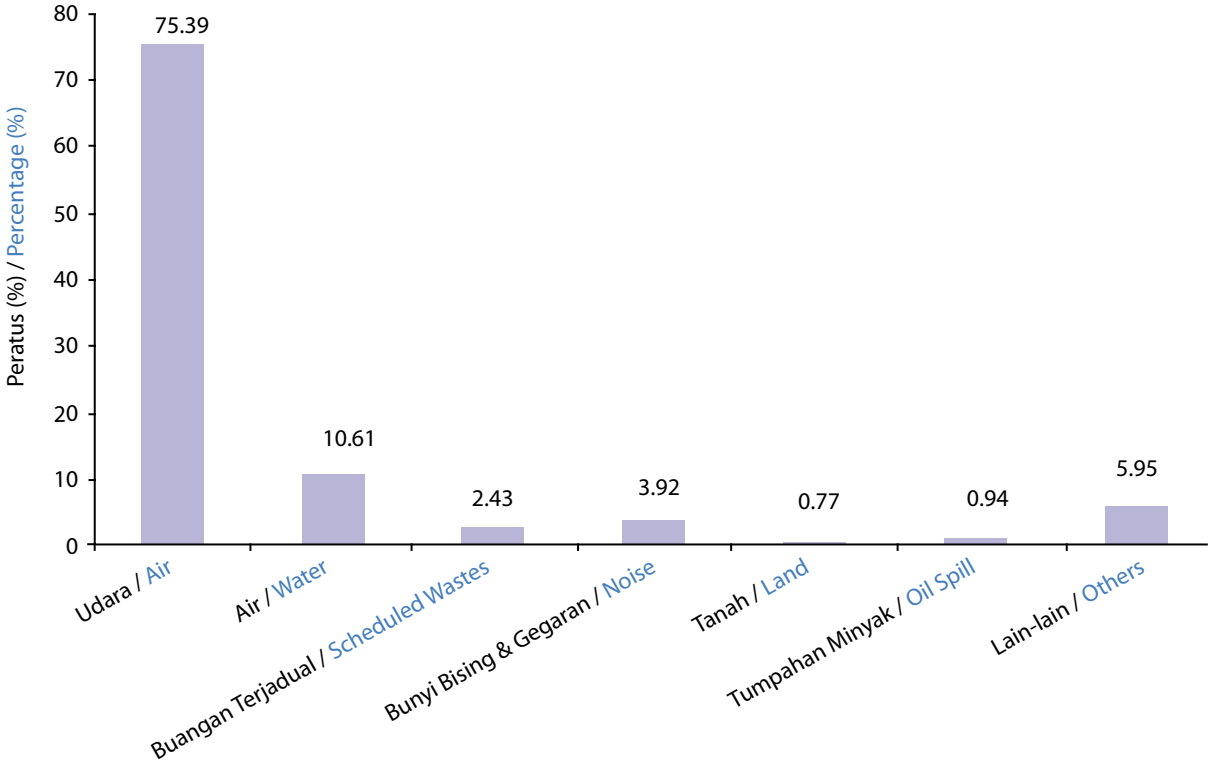
In 2010, Selangor recorded 1,601 (23.12%) complaints, the highest number received, followed by Penang 1,015 (14.66%) and Johor 859 (12.40%). Federal Territory of Labuan recorded the least number of complaints received with 36 (0.52%) complaints and followed by Perlis 46 (0.66%).

As in the previous years, most of the complaints received were related to air pollution 5,221 (75.39%), followed by 735 (10.61%) water pollution, 271 (3.92%) noise pollution, 168 (2.43%) on illegal dumping of scheduled or toxic wastes, 53 (0.77%) land pollution, 65 (0.94%) oil spillage and 412 (5.95%) of other complaints (**Figure 4.21**).

Aktiviti Guna Tanah
Land Use Activities



Rajah 4.20 JAS : Bilangan Aduan Mengikut Negeri, 2010
Figure 4.20 DOE : Number of Complaint by State, 2010



Rajah 4.21 JAS : Bilangan Kes Aduan Mengikut Jenis, 2010
Figure 4.21 DOE : Number of Complaint Cases by Types, 2010

Pengawasan Melalui Udara
Airborne Surveillance

BAB 5 / CHAPTER 5

Promosi Kesedaran Dan Pendidikan Alam Sekitar
Promotion Of Environmental Education And Awareness

Program Rakan Alam Sekitar (RAS)

Rakan Alam Sekitar merupakan program *out-reach* yang telah dilancarkan pada 4 Jun 2009 untuk meningkatkan kesedaran dan menggerakkan anggota masyarakat di setiap kawasan Parlimen dalam aktiviti pemeliharaan dan pemuliharaan alam sekitar serta membantu membanteras kegiatan-kegiatan pencemaran alam sekitar. Program RAS adalah berbentuk '*community based*' dan '*hands-on*'; melibatkan pemimpin masyarakat, penduduk setempat termasuklah generasi muda dan dewasa, NGOs serta pihak-pihak industri atau swasta tempatan.

Selain daripada pelaporan kes-kes pencemaran alam sekitar kepada agensi-agensi kerajaan bertanggungjawab, aktiviti-aktiviti juga meliputi pencegahan dan pengawalan pencemaran, peningkatan kualiti alam sekitar serta kempen pendidikan dan kesedaran alam sekitar.

Antara aktiviti yang dilaksanakan di bawah Program RAS pada tahun 2010 yang bertemakan "Pemanasan Global, Bertindak Sekarang!" ialah pembersihan pantai, kitar semula buangan (termasuk *e-waste*), menanam pokok, membuat baja kompos, menghasilkan produk kraftangan dari bahan buangan, *River Rangers*, penggunaan EM (*effective microorganism*), kitar buangan minyak masak kepada sabun, Kem Kesedaran Alam Sekitar untuk ahli RAS dan lain-lain program kesedaran dan pendidikan alam sekitar yang dijalankan oleh agensi-agensi di bawah Kementerian Sumber Asli dan Alam Sekitar.

Sehingga akhir tahun 2010, seramai 21,500 orang telah berdaftar sebagai ahli Rakan Alam Sekitar. Penyertaan sebagai ahli adalah percuma dan terbuka kepada seluruh warganegara Malaysia. Pendaftaran secara *online* boleh dilakukan di www.doe.gov.my/ras.

Bandar Lestari-Anugerah Alam Sekitar

Jabatan Alam Sekitar dengan kerjasama Jabatan Kerajaan Tempatan, Kementerian Perumahan dan Kerajaan Tempatan dan Institut Alam Sekitar dan Pembangunan (LESTARI), UKM telah memulakan anugerah ini untuk memberi pengiktirafan kepada Pihak Berkuasa Tempatan (PBT) yang telah berusaha menggabungkan dimensi alam sekitar di dalam perancangan, pentadbiran dan pelaksanaan dasar, program-program dan aktiviti-aktivitinya.

Rakan Alam Sekitar (RAS) Programme

The "Rakan Alam Sekitar", an out-reach programme was launched on 4 June 2009 to increase awareness and participation of local communities in every Parliamentary area in environmental conservation and preservation as well as combating environmental pollution. RAS programmes are 'community based' and 'hands-on' in nature, involving community leaders, local residents including youths and adults, NGOs and local industries.

Apart from reporting cases of environmental pollution to relevant government agencies, the environmental activities include prevention and control of pollution, enhancing the quality of the environment and environmental education and awareness campaigns.

Among the activities that were carried out under the "Rakan Alam Sekitar" Programme in 2010 with the theme "Global Warming, Act Now!" were beach cleaning, recycling of waste (including e-waste), tree planting, composting, handicraft-making from used materials , River Rangers, the use of EM (Effective Microorganisms), recycling of used cooking oil to make soap, Environmental Awareness Camp for members of Rakan Alam Sekitar and other awareness and environmental education programmes conducted by other agencies under the Ministry of Natural Resources and Environment.

Till end 2010, about 21,500 peoples were registered as members of Rakan Alam Sekitar. Application to be a member is free and open to all Malaysians. Online registration can be made at www.doe.gov.my/ras.

Bandar Lestari – Environment Award

The Department of Environment in collaboration with the Department of Local Government, Ministry of Housing and Local Government and Institute for Environment and Development (LESTARI), UKM initiated this award to give recognition to Local Authorities for incorporating environmental dimensions in planning, administration and implementation of policies, program and activities.

Penilaian ini berasaskan kepada lima (5) kriteria:

1. Persekitaran Fizikal
2. Inisiatif Ekologi
3. Perkhidmatan Alam Sekitar
4. Pentadbiran Alam Sekitar
5. Aktiviti Pendidikan Dan Kesedaran

Untuk sesi penilaian Program Bandar Lestari 2009/2010 sebanyak 36 Pihak Berkuasa Tempatan (PBT) telah menyertai seperti berikut:-

1. Kategori 1 – Ibu Negeri (15)
2. Kategori 2 – Bandaraya dan Perbandaran (9)
3. Kategori 3 – Majlis Daerah (10)

Penerima Anugerah Bandar Lestari – Anugerah Alam Sekitar 2009/2010

Majlis Penganugerahan Bandar Lestari – Anugerah Alam Sekitar telah diadakan sempena Minggu Alam Sekitar Malaysia (MASM) Peringkat Kebangsaan pada 21 Oktober 2010 di Putrajaya. Majlis ini telah disempurnakan oleh Y.B. Dato Sri Douglas Uggah Embas, Menteri Sumber Asli dan Alam Sekitar.

Penerima Anugerah ini telah menerima sebuah trofi dan plak yang ditandatangani oleh Y.A.B Perdana Menteri Malaysia.

Penerima Anugerah Bandar Lestari – Anugerah Alam Sekitar 2009/2010:

Dewan Bandaraya Kuching Utara, Kategori Ibu Negeri

Majlis Perbandaran Subang Jaya, Kategori Perbandaran

Penerima Anugerah Khas Anugerah Bandar Lestari – Anugerah Alam Sekitar 2009/2010:

Majlis Bandaraya Melaka Bersejarah: Pengurusan Sungai

Majlis Bandaraya Petaling Jaya: Kemudahan Orang Kurang Upaya

Majlis Bandaraya Miri: Program Kitar Semula

Assessment was based on five (5) criteria:

1. Physical Environment
2. Ecological Initiatives
3. Environmental Services
4. Environmental Governance
5. Education and Awareness Activities

For Bandar Lestari – Environment Award 2009/2010, 36 local authorities participated under the following categories:-

1. Category 1 – State Capitals (15)
2. Category 2 – Cities and Municipalities (9)
3. Category 3 – District Councils (10)

Winners of Bandar Lestari – Environment Award 2009/2010

The Bandar Lestari – Environment Award Ceremony was held in conjunction with the annual Malaysian Environment Week (MASM) on 21 October 2010 in Putrajaya. The award was presented by Y.B. Dato Sri Douglas Uggah Embas, Minister of Natural Resources and Environment.

The winners received a trophy and a plaque signed by the Prime Minister of Malaysia.

Winners of Bandar Lestari-Environment Award 2009/2010:

Kuching North City Hall, State Capitals Category

Subang Jaya Municipal Council, Municipalities Category

Winners of Special Mention Bandar Lestari-Environment Award 2009/2010:

Melaka Historical City Council: River Management

Petaling Jaya City Council: Services For People With Special Needs

Miri City Council: Recycling Program

Pertandingan Debat Alam Sekitar Antara Institusi Pengajian Tinggi (IPT)

Sejak tahun 1991, Debat Alam Sekitar Antara Institusi Pengajian Tinggi merupakan program tahunan yang dianjurkan oleh Jabatan Alam Sekitar dengan kerjasama Kementerian Pengajian Tinggi, Majlis Debat Universiti-Universiti Malaysia (MADUM) dan Dewan Bahasa dan Pustaka .

Pertandingan debat ini merupakan debat ala parlimen dan menggunakan kaedah sistem *bracket power match* untuk pusingan awal bagi 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.

Pertandingan Debat Alam Sekitar Antara Institusi Pengajian Tinggi Kali Ke-20 yang disertai oleh 23 Institusi Pengajian Tinggi (IPT) telah diadakan di Universiti Malaysia Terengganu (UMT) pada 15-19 Julai 2010. Pertandingan Akhir Debat Alam Sekitar Antara Institusi Pengajian Tinggi ke-20 ini telah disaksikan oleh lebih kurang 1,500 penonton di Dewan Sultan Mizan, UMT di antara pasukan Universiti Teknologi PETRONAS (UTP) dan pasukan Universiti Sains Islam Malaysia (USIM).

Pasukan UTP muncul sebagai johan dan menerima Piala Pusingan Menteri Sumber Asli dan Alam Sekitar, wang tunai RM8,000.00 serta sijil penyertaan. Mohd Ikhwan bin Rosseli, pendebat daripada USIM telah muncul sebagai Pendebat Terbaik dan menerima Piala Ketua Pengarah Alam Sekitar beserta wang tunai RM1,500.00 dan sijil penyertaan. Hadiah-hadiah telah disampaikan oleh Y.B. Dato' Saifudin Abdullah, Timbalan Menteri Pengajian Tinggi (**Rajah 5.1**).

Inter-Varsity Environmental Debate

Since 1991, the Environmental Debate for Institution of Higher Learning had been organized annually by the Department of Environment in collaboration with the Ministry of Higher Education, Malaysian Universities Debate Council (MADUM) and Dewan Bahasa dan Pustaka.

The Inter-Varsity Environmental Debate was conducted in a parliamentary manner and the bracket power match system was adopted in the preliminary rounds to determine whether 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.

The 20th Inter Varsity Environmental Debate which was participated by 23 institutions of higher learning was held in University of Malaysia Terengganu (UMT) from 15-19 July 2010. About 1,500 guests attended the Finals of the 2010 Debate held at Dewan Sultan Mizan of University Malaysia Terengganu between University Technology PETRONAS team (UTP) and Islamic Science University of Malaysia team (USIM).

The UTP team emerged the overall winner and received the Minister of Natural Resources and Environment Challenge Trophy, a cash prize of RM 8,000.00 and a certificate of participation. Mohd Ikhwan Bin Rosseli of USIM emerged as the Best Debater and received the Director General of Environment Trophy, together with a cash prize of RM 1,500.00. The prizes were given out by Y.B. Dato' Saifuddin Abdullah, the Deputy Minister of Higher Education (**Figure 5.1**).

Rajah 5.1 JAS : Pusingan Pertandingan Debat Alam Sekitar Antara Institusi Pengajian Tinggi (IPT)
Figure 5.1 DOE : The Rounds of the Inter-Varsity Environmental Debate among Institutions of Higher Learning

PERINGKAT AWAL / PRELIMINARY ROUNDS

Pusingan Pertama / First Round:
TEKNOLOGI HIJAU MELESTARIKAN ALAM SEKITAR

Pusingan Kedua / Second Round:
ISU ALAM SEKITAR: NGO MENANGGUK DI AIR YANG KERUH

Pusingan Ketiga / Third Round:
PRASARANA TERBINA, ALAM SEKITAR MERANA

Pusingan Keempat / Fourth Round:
PROGRAM MEKANISME PEMBANGUNAN BERSIH (CDM) LEBIH MENGUNTUNGKAN SYARIKAT DARIPADA ALAM SEKITAR

Pusingan Kelima / Fifth Round:
PENGGUNAAN AIR TANAH MEMBAWA BENCANA KEPADA ALAM SEKITAR

Pusingan Keenam / Sixth Round:
PENGURUSAN BUANGAN ELEKTRIK DAN ELEKTRONIK (E-WASTE) BERJAYA DILAKSANAKAN

PERINGKAT SUKU AKHIR/QUARTER FINALS
GAYA HIDUP MESRA ALAM, IBARAT HIDUP SEGAN MATI TAK MAHU

USIM lwn/vs UTHM

UM lwn/vs UTM

UTP lwn/vs MMU

UiTM lwn/vs **UPM**

PERINGKAT SEPARUH AKHIR/SEMI FINALS
KITA PERLU TEKNOLOGI TERKINI UNTUK MENYELESAIKAN PENCEMARAN AIR

USIM lwn/vs UM

UTP lwn/vs UPM

PERINGKAT AKHIR/ FINALS
PENGUATKUASAAN UNDANG-UNDANG LEBIH BERKESAN DARIPADA PEMANTAPAN KESEDARAN DALAM MENYELAMATKAN ALAM SEKITAR

USIM lwn/vs **UTP**

*Nota: Pasukan yang digelapkan menang dalam perdebatan
* Note : Bold Team win in debating

Minggu Alam Sekitar Malaysia (MASM)

Sambutan Minggu Alam Sekitar Malaysia (MASM) merupakan acara sambutan yang diadakan secara tahunan oleh Jabatan Alam Sekitar (JAS). Sambutan ini telah diperkenalkan pada tahun 1991 bersempena memperingati Deklarasi Langkawi yang telah ditandatangani oleh Ketua-Ketua Negara Komanwel semasa Persidangan Ketua-Ketua Kerajaan Komanwel (CHOGM) pada tahun 1989. Ia kemudiannya disambut setiap tahun samaada di peringkat kebangsaan mahupun negeri dari 21 sehingga 27 Oktober dengan tujuan untuk menyemai kesedaran alam sekitar di kalangan rakyat Malaysia.

Sambutan MASM yang ke-19 telah diadakan dari 21 sehingga 23 Oktober bertempat di Presint 4, Putrajaya bertemakan "Pemuliharaan Alam Sekitar, Tanggungjawab Bersama". Y.B. Dato Sri Douglas Uggah Embas, Menteri Sumber Asli dan Alam Sekitar bersama-sama dengan para tetamu kehormat secara rasminya melancarkan sambutan MASM 2010. Beberapa aktiviti telah dianjurkan untuk memberi pendedahan kepada orang awam berkaitan dengan alam sekitar.

Malaysia Environment Week (MASM)

Malaysia Environment Week (MASM) is a premier event in the diary of DOE. The event was first mooted in 1991, as a follow up to the Langkawi Declaration on The Environment that was signed by the heads of government during the Commenwealth Heads of Government Meeting (CHOGM) in 1989. It is commemorated every year at the national and state level for a period of one week, usually from 21 to 27 October with the aim of instiling environmental awareness among Malaysians.

The 19th MASM was held from 21 to 23 October 2010 at Precinct 4, Putrajaya with the theme "Environmental Conservation, Our Shared Responsibility". Y.B. Dato Sri Douglas Uggah Embas, the Minister of Natural Resources and Environment as the guest of honour, officiated the launch of MASM 2010. Several activities were organised to further expose the public to knowledge on environmental-related matters.

Sambutan Minggu Alam Sekitar Malaysia Ke-19
The 19th Malaysia Environment Week

Program Berbasikal *Eco Hunt* dan Al-kuliyyah

Jabatan Alam Sekitar dengan kerjasama Perbadanan Putrajaya telah menganjurkan *Eco Hunt* Berbasikal pada 23 Oktober 2010 bertempat di Presint 3, Putrajaya. Acara ini diadakan bersempena dengan Sambutan Minggu Alam Sekitar Malaysia 2010 yang mana para peserta berbasikal telah dilepaskan oleh Y.Bhg. Dato' Hajah Rosnani Ibarahim, Ketua Pengarah Alam Sekitar Malaysia.

Seramai 160 peserta berbasikal dari pelbagai persatuan berbasikal telah mengambil bahagian di dalam kategori *Fun Ride* manakala 12 peserta berbasikal berkeluarga telah mengambil bahagian di dalam kategori *Eco Hunt*. Program ini memberi peluang kepada para peserta melihat keindahan Putrajaya sambil berbasikal.

Selain daripada *Eco Hunt*, rancangan bual agama bertajuk 'Kasihanilah Bumi Kita' telah bersiaran secara langsung di dalam rancangan Al-Kuliyyah di TV3 pada 28 Oktober 2010. Rancangan bual agama ini berkisar kepada isu pemeliharaan dan pemuliharaan alam sekitar di kalangan orang awam.

Kem Kesedaran Alam Sekitar (KeKAS)

Pada tahun 2010, Jabatan Alam Sekitar telah menganjurkan dua (2) kem untuk pelatih guru Institut Pendidikan Guru Malaysia (IPGM) dengan kerjasama Kementerian Pelajaran Malaysia (KPM) manakala satu (1) kem untuk ahli-ahli Rakan Alam Sekitar (RAS). Aktiviti kem yang dijalankan adalah bertemakan penerapan amalan-amalan mesra alam seperti membuat sabun daripada minyak masak terpakai, membuat enzim daripada sisa makanan yang tidak dimasak dan membuat kotak suria.

KeKAS Siri 1 telah dijalankan di Amansari Beach Resort, Kuantan, Pahang pada 12 hingga 14 Mac 2010 dengan jumlah peserta seramai 64 orang. Diikuti dengan kem seterusnya di Siar Beach Resort, Lundu Sarawak pada 6 hingga 8 Ogos 2010 dengan jumlah peserta seramai 51 orang.

KeKAS bagi ahli RAS telah dijalankan di Teluk Batik Resort, Lumut Perak pada 2 hingga 4 Julai 2010. Seramai 49 orang ahli RAS telah menyertai perkhemahan ini.

Eco Hunt on Bicycle and Al-Kuliyyah Programme

DOE in collaboration with Putrajaya Corporation organized the 'Eco Hunt on Bicycle' on 23 October 2010 at Precinct 3, Putrajaya. Held in conjunction with the Malaysia Environment Week 2010, the Eco Hunt was flagged off by Y.Bhg. Dato' Hajah Rosnani Ibarahim, Director General of Environment Quality Malaysia.

About 160 cyclists from various cycling associations took part in the Fun Ride category and 12 families participated in the Eco Hunt category. The event allowed the participants to enjoy the scenic sights of Putrajaya while cycling.

Besides the Eco Hunt, an environmental talk with the theme, 'Kasihanilah Bumi Kita' was aired on the Al-Kuliyyah programme in TV3 on 28 October 2010. The talk was aimed at protecting and conserving the environment among the public.

Environmental Awareness Camp (KeKAS)

In 2010, the Department of Environment organized two (2) camps for teacher's trainees from the Institut Pendidikan Guru Malaysia (IPGM) in collaboration with the Ministry of Education (MOE) and one (1) camp for members of Rakan Alam Sekitar (RAS). The camp activities focused on environmentally friendly practices such as making soap from used cooking oil, making enzyme from uncooked food waste and making solar box.

The 1st camp was conducted in Amansari Beach Resort, Kuantan, Pahang on 12 to 14 March 2010 with a total of 64 participants. This was followed by another camp which was conducted at Siar Beach Resort, Lundu, Sarawak from 6 to 8 August 2010 with 51 participants.

A camp for RAS members was conducted in Teluk Batik Resort, Lumut, Perak on 2 to 4 July 2010. A total of 49 members participated in this camp.

Program Sekolah Lestari-Anugerah Alam Sekitar 2009/2010

Program Sekolah Lestari-Anugerah Alam Sekitar (SLAAS) telah dilancarkan pada 27 Januari 2005, merupakan program anjuran bersama Jabatan Alam Sekitar dan Kementerian Pelajaran Malaysia dengan sokongan teknikal daripada Institut Alam Sekitar dan Pembangunan (LESTARI), Universiti Kebangsaan Malaysia (UKM). Program ini berkonsepkan pendekatan menyeluruh yang melibatkan semua lapisan warga sekolah bersama keluarga, komuniti setempat, kerajaan, pihak swasta dan badan bukan kerajaan dalam empat (4) komponen utama iaitu pengurusan, kurikulum, kokurikulum, dan penghijauan. Sekolah yang menyertai Program Sekolah Lestari-Anugerah Alam Sekitar merupakan pusat pembelajaran dan pengajaran yang dapat mempengaruhi warga sekolah dan masyarakat setempat ke arah kehidupan yang lestari.

Bagi sesi 2009/2010, sebanyak 116 penyertaan telah diterima yang terdiri daripada 47 buah sekolah rendah dan 69 buah sekolah menengah.

Proses penilaian peringkat negeri telah dilaksanakan bagi kedua-dua kategori sekolah rendah dan sekolah menengah bermula bulan April 2010 sehingga bulan Jun 2010. Berdasarkan penilaian yang telah dijalankan di peringkat negeri, sebanyak 10 buah sekolah rendah dan 13 buah sekolah menengah telah dipilih memasuki peringkat kebangsaan (**Jadual 5.1**). Penilaian Peringkat Kebangsaan telah dilaksanakan bermula bulan September 2010 sehingga November 2010.

Majlis Penganugerahan Sekolah Lestari-Anugerah Alam Sekitar 2009/2010 akan diadakan pada tahun 2011.

Sekolah Lestari-Environment Award 2009/2010

The Sekolah Lestari-Environment Award programme which was launched on 27 January 2005 is a programe organized by the Department of Environment and the Ministry of Education with technical support from the Institute of Environment and Development (LESTARI), National University of Malaysia. The concept of this program was hinged on an integrated approach, which involves the school community as a whole, their families, local communities, government, private sector and non-governmental organisations in four (4) main components which are management, curriculum, co-curriculum and greening activities. The schools that participated in this program shall also serve as a centre of learning and education that can guide the school community and local society towards a sustainable future.

For the 2009/2010 session, 116 entries were received, comprising of 47 primary schools and 69 secondary schools.

The state level assessment was conducted for both categories of primary schools and secondary schools from April 2010 to June 2010. Based on the state level assessment, 10 primary schools and 13 secondary schools were selected to the national level (**Table 5.1**). The national assessment was conducted from September 2010 to November 2010.

The Sekolah Lestari-Environment Award 2009/2010 Ceremony would be held in 2011.

Jadual 5.1 JAS : Senarai sekolah yang terpilih ke Penilaian Peringkat Kebangsaan, 2010
Table 5.1 DOE : List of schools that were selected to the National Level Assessment, 2010

Negeri/State	Sekolah Menengah/Secondary School	Sekolah Rendah/Primary School
W.P Kuala Lumpur	SMK Zon R1 Wangsa Maju, Kuala Lumpur	SJK (C) Tsun Jin, Kuala Lumpur
Selangor	SMK Bandar Baru Sungai Long, Kajang	SK Sri Kelana, Petaling Jaya
Melaka	SMK Sungai Rambai, Jasin	SK Convent Infant Jesus (1), Melaka
Negeri Sembilan	SMK Datuk Undang Abdul Manap, Johol	-
Johor	SMK Sultanah Engku Tun Aminah, Johor Bahru	SK Ledang, Tangkak
Perak	SMK Pengkalan, Lahat	SK Sg. Setar, Parit Buntar
Pulau Pinang	SMK Kampong Kastam, Butterworth	-
Kedah	SMK Tunku Putra, Langkawi	-
Perlis	-	SK Putra, Kangar
Pahang	SMK Tengku Afzan, Kuantan	-
Terengganu	SMK Kerteh, Kerteh	SK Kuala Besut, Besut
Kelantan	SMK Kota, Kota Bharu	SK Hamzah (2), Machang
Sabah	SM St. Micheal, Penampang	SJK (C) Yuk Chin, Tawau
Sarawak	SMK Lopeng Tengah, Miri	SJK (C) Tung Hua, Sibu

Projek Wira Alam

Projek Wira Alam (PWA) telah dilancarkan pada 5 Jun 1998 bertujuan untuk memotivasikan para pelajar untuk memberikan sumbangan aktif dalam aktiviti pemuliharaan alam sekitar ke arah memelihara dan meningkatkan kualiti alam.

Projek ini merupakan anjuran Jabatan Alam Sekitar dengan kerjasama Kementerian Pelajaran Malaysia dan Persatuan Pencinta Alam Malaysia. Projek ini terbahagi kepada tiga tahap iaitu Wira Diri (Tahap 1), Wira Komuniti (Tahap 2) dan Wira Alam (Tahap 3). Setiap pelajar perlu menyelesaikan tugasan yang ditetapkan di dalam buku aktiviti pada setiap tahap sebelum ke peringkat seterusnya.

Pada tahun 2010, sebanyak 2,467 permohonan baru dari pelajar-pelajar telah diterima untuk menyertai projek ini. Seramai 451 orang pelajar telah lulus Wira Diri (Tahap 1) dan menerima sijil beserta *organizer* Wira Diri. Seramai 193 orang pelajar lulus Wira Komuniti (Tahap 2) dan menerima sijil, beg, t-shirt beserta topi Wira Komuniti. Manakala, seramai 51 orang pelajar lulus Wira Alam (Tahap 3) dan menerima sijil penghargaan. Seramai 30 orang pelajar daripada empat (4) buah sekolah telah lulus dengan cemerlang dan dipilih untuk menerima Anugerah Wira Alam 2010. Pelajar-pelajar ini menerima wang tunai sebanyak RM300, *vest* dan plak Wira Alam.

Wira Alam Project

The Wira Alam Project (PWA) was launched on 5 June 1998 to motivate students to actively participate in environmental conservation activities to protect and improve the quality of the environment.

This project was organized by the Department of Environment in collaboration with the Ministry of Education and Malaysian Nature Society. This project is divided into three stages: Wira Diri (Level 1), Wira Komuniti (Level 2) and Wira Alam (Level 3). Each participating student has to complete the tasks provided in the activity book in each level before advancing into the next level.

In 2010, 2,467 new applications were received to participate in this project. A total of 451 students successfully completed Wira Diri (Level 1) and each received a certificate and a Wira Diri's Organizer. A total of 193 students completed Wira Komuniti (Level 2) and each received a certificate, a Wira Komuniti's bag, t-shirt and cap. A total of 51 students completed Wira Alam (Level 3) and received certificates. Thirty students from four (4) schools completed this level successfully and received the Wira Alam Award 2010. Each student received a cash prize of RM300, Wira Alam's vest and a plaque.

Penerima Anugerah Wira Alam 2010 dari Semenanjung Malaysia
Recipents Wira Alam Award 2010 from Peninsular Malaysia

Sebaran Maklumat Alam Sekitar
Environmental Information Dissemination

Maklumat Alam Sekitar

Jabatan Alam Sekitar terus meningkatkan usaha dalam menerbitkan dan menyebarkan maklumat alam sekitar bagi mempromosikan kesedaran dan pendidikan alam sekitar. Sepanjang tahun 2010, sejumlah 306,000 naskhah bahan bercetak telah diterbitkan untuk edaran. Bahan-bahan terbitan tersebut terdiri daripada Laporan Kualiti Alam Sekeliling 2009, Laporan Tahunan 2009, buku Kompendium 2010, majalah IMPAK, majalah ERA HIJAU dan cetakan semula buku Amalan Mesra Alam.

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

Pameran Alam Sekitar

Pada tahun 2010, Ibu Pejabat Jabatan Alam Sekitar (JAS) telah menyertai 26 pameran bertemakan alam sekitar yang dianjurkan oleh Jabatan/Agensi Kerajaan, Badan Berkanun, Pertubuhan Bukan Kerajaan, Sektor Swasta, Institut Pengajian Tinggi dan Sekolah. Ini adalah usaha berterusan JAS dalam mempromosikan pendidikan dan kesedaran alam sekitar secara dekat kepada masyarakat. Antara perkhidmatan yang diberikan semasa sesi pameran adalah khidmat nasihat, pendaftaran ahli Rakan Alam Sekitar, edaran bahan-bahan promosi (brosur, beg mesra alam dan sebagainya), persembahan video, permainan alam sekitar dan demonstrasi produk mesra alam (*effective microbe*).

- Pameran semasa Hari Bersama Pelanggan JAS Bil.1/2010
  Putrajaya, 11 Februari 2010
- Pameran semasa Kempen Lestari Universiti Kebangsaan Malaysia
  Bangi, 6 Mac 2010
- Pameran semasa Hari Bersama Pelanggan JAS Bil.2/2010
  Putrajaya, 11 Mac 2010
- Pameran semasa Sambutan Air Sedunia 2010
  Dataran Tanjung Mas, Muar, Johor
  26-27 Mac 2010

Environmental Information

The Department of Environment continued its efforts in 2010 to publish and distribute environmental information as part of a comprehensive programme to promote environmental awareness and education. In 2010, 306,000 copies of information materials were published and distributed including the Environmental Quality Report 2009, the 2009 Annual Report, Compendium 2010 booklet, IMPAK bulletin, ERA HIJAU bulletin and reprinting of the Environmental Friendly Practices Booklet.

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

Environmental Exhibitions

In 2010, Department of Environment (DOE) participated in 26 environmental exhibitions organized by Government agencies, statutory bodies, non-governmental organizations, private sector, institutions of higher learning and schools. This is DOE's initiative to promote education and environmental awareness among the public. During the exhibitions, activities such as consultation, registration of Rakan Alam Sekitar members, distribution of promotional materials (brochures, environmental friendly bags and others), video presentation, environmental games and demonstration of environmental friendly products (effective microbe) were conducted.

- Exhibiton at "Hari Bersama Pelanggan JAS Bil. 1/2010"
  Putrajaya, 11 February 2010
- Exhibition at "Kempen Lestari, Universiti Kebangsaan Malaysia"
  Bangi, 6 March 2010
- Exhibition at "Hari Bersama Pelanggan JAS Bil. 2/2010"
  Putrajaya, 11 March 2010
- Exhibition at "Sambutan Air Sedunia 2010"
  Dataran Tanjung Mas, Muar, Johor
  26-27 March 2010
- Exhibition at "Majlis Pelancaran Menanam 26 Juta Pokok"
  Precinct 5, Putrajaya,
  22 April 2010

- Pameran semasa Majlis Pelancaran Menanam 26 Juta Pokok
  Presint 5, Putrajaya,
  22 April 2010

- Pameran semasa Hari Bersama Pelanggan JAS Bil.3/2010
  Putrajaya, 23 April 2010

- Pameran semasa Kempen Kesedaran Kitar Semula
  Sekolah Kebangsaan Ampang Pecah, Hulu Selangor, Selangor, 24 April 2010

- Pameran semasa Minggu Teknik dan Vokasional 2010
  Sekolah Menengah Kebangsaan Undang,
  Rembau, Negeri Sembilan, 28 April 2010

- Pameran semasa Hari Keselamatan dan Kesihatan Keretapi Tanah Melayu Berhad
  Kuala Lumpur, 12 Mei 2010

- Pameran semasa 'Waste Management Conference and Exhibition'
  Sime Darby Convention Centre
  19-20 Mei 2010

- Pameran semasa 'National Conference on Sustainability Malaysia 2010'
  Universiti Malaya,
  25 Mei 2010

- Pameran semasa Hari Potensi Tabika KEMAS,
  Putrajaya International Convention Centre,
  Putrajaya, 9 Jun 2010

- Pameran semasa Kempen *Blue Ocean, Green Action*,
  Aquaria KLCC
  10-13 Jun 2010

- Pameran semasa Hari Bersama Pelanggan JAS Bil.4/2010
  Putrajaya, 24 Jun 2010

- Pameran semasa Perasmian Sistem Penuaian Air Hujan
  Zoo Negara, 26 Jun 2010

- Pameran semasa Hari Bersama Pelanggan JAS Bil.5/2010
  Putrajaya, 9 Julai 2010

- Pameran semasa Program Alam Sekitar,
  Sekolah Menengah Kebangsaan Presint 9(2)
  Putrajaya, 28 Julai 2010

- Exhibition at "Hari Bersama Pelanggan JAS Bil. 3/2010"
  Putrajaya, 23 April 2010

- Exhibition at "Kempen Kesedaran Kitar Semula"
  Sekolah Kebangsaan Ampang Pecah, Hulu Selangor, Selangor, 24 April 2010

- Exhibition at "Minggu Teknik dan Vokasional 2010"
  Sekolah Menengah Kebangsaan Undang,
  Rembau, Negeri Sembilan, 28 April 2010

- Exhibition at "Hari Keselamatan dan Kesihatan Keretapi Tanah Melayu Berhad
  Kuala Lumpur, 12 May 2010

- Exhibition at Waste Management Conference and Exhibition
  Sime Darby Convention Centre
  19-20 May 2010

- Exhibition at National Conference on Sustainability Malaysia 2010
  Universiti Malaya,
  25 May 2010

- Exhibition at "Hari Potensi Tabika KEMAS"
  Putrajaya International Convention Centre,
  Putrajaya, 9 June 2010

- Exhibition at "Kempen Blue Ocean, Green Action"
  Aquaria KLCC
  10-13 June 2010

- Exhibition at "Hari Bersama Pelanggan JAS Bil. 4/2010"
  Putrajaya, 24 June 2010

- Exhibition at "Perasmian Sistem Penuaian Air Hujan"
  Zoo Negara, 26 June 2010

- Exhibition at "Hari Bersama Pelanggan JAS Bil. 5/2010"
  Putrajaya, 9 July 2010

- Exhibition at "Program Alam Sekitar"
  Sekolah Menengah Kebangsaan Presint 9(2)
  Putrajaya, 28 July 2010

- Exhibition at "Program SIHATON 2010"
  Sekolah Menengah Kebangsaan Precinct 9(1)
  Putrajaya, 7 August 2010

- Pameran semasa Program SIHATON 2010,
  Sekolah Menengah Kebangsaan Presint 9(1)
  Putrajaya, 7 Ogos 2010

- Pameran semasa Hari Bersama Pelanggan JAS Bil. 6/2010
  Putrajaya, 9 Ogos 2010

- Pameran semasa Sambutan MASM Peringkat Kebangsaan 2010,
  Putrajaya, 21-23 Oktober 2010

- Pameran semasa 'International Conference and Exhibition on the Rehabilitation, Restoration and Transformation of Mining Land'
  Sunway Pyramid Convention Centre
  1-2 November 2010

- Pameran semasa Hari Inovasi NRE 2010
  Putrajaya, 9-10 November 2010

- Pameran semasa Hari Keselamatan dan Kesihatan FABER
  Faber Tower, Kuala Lumpur
  10 November 2010

- Pameran semasa Hari Bersama Pelanggan JAS Bil.7/2010
  Putrajaya, 11 November 2010

- Pameran semasa Sambutan Hari Tandas Kebangsaan 2010,
  The Mall, Kuala Lumpur
  22-23 November 2010

- Pameran semasa Pelancaran Kumpulan Alam Sekitar
  Auditorium Utama, Hospital Kuala Lumpur, 14 Disember 2010

- Exhibition at "Hari Bersama Pelanggan JAS Bil. 6/2010"
  Putrajaya, 9 August 2010

- Exhibition at "Sambutan MASM Peringkat Kebangsaan 2010"
  Putrajaya, 21-23 October 2010

- Exhibition at International Conference and Exhibition on the Rehabilitation, Restoration and Transformation of Mining Land
  Sunway Pyramid Convention Centre
  1-2 November 2010

- Exhibition at "Hari Inovasi NRE 2010"
  Putrajaya, 9-10 November 2010

- Exhibition at "Hari Keselamatan dan Kesihatan FABER"
  Faber Tower, Kuala Lumpur
  10 November 2010

- Exhibition at "Hari Bersama Pelanggan JAS Bil. 7/2010"
  Putrajaya, 11 November 2010

- Exhibition at "Sambutan Hari Tandas Kebangsaan 2010, The Mall, Kuala Lumpur"
  22-23 November 2010

- Exhibition at "Pelancaran Kumpulan Alam Sekitar"
  Auditorium Utama, Hospital Kuala Lumpur, 14 December 2010

Bengkel Pengendalian Mesyuarat Berkesan dan Bengkel Penulisan Minit Mesyuarat Berwibawa
Workshop in " Pengendalian Mesyuarat Berkesan dan Bengkel Penulisan Minit Mesyuarat Berwibawa"

Perkhidmatan Perpustakaan-Enviro

Perpustakaan-Enviro yang terletak di Ibu Pejabat Jabatan Alam Sekitar berfungsi sebagai pusat rujukan kepada kakitangan JAS dan orang awam yang berdaftar. Sehingga 31 Disember 2010, koleksi bahan rujukan adalah sebanyak 21,423 buah. Bilangan pengunjung ke perpustakaan adalah seramai 2,561 orang dimana 80% daripadanya adalah kakitangan dan pegawai-pegawai kerajaan (**Rajah 5.2, 5.3 & 5.4**).

Aktiviti Perpustakaan-Enviro

Pada tahun 2010, Perpustakaan-Enviro JAS Ibu Pejabat telah mengadakan dua (2) bengkel iaitu Bengkel Pengendalian Mesyuarat Berkesan pada 23 November 2010 dan Bengkel Penulisan Minit Mesyuarat Berwibawa pada 24 November 2010. Seramai 40 peserta yang terdiri daripada kakitangan JAS telah menyertai Bengkel tersebut. Lawatan sambil belajar ke Karangkraf telah diadakan pada 6 Disember 2010 yang terdiri daripada pegawai-pegawai dari JAS Ibu Pejabat.

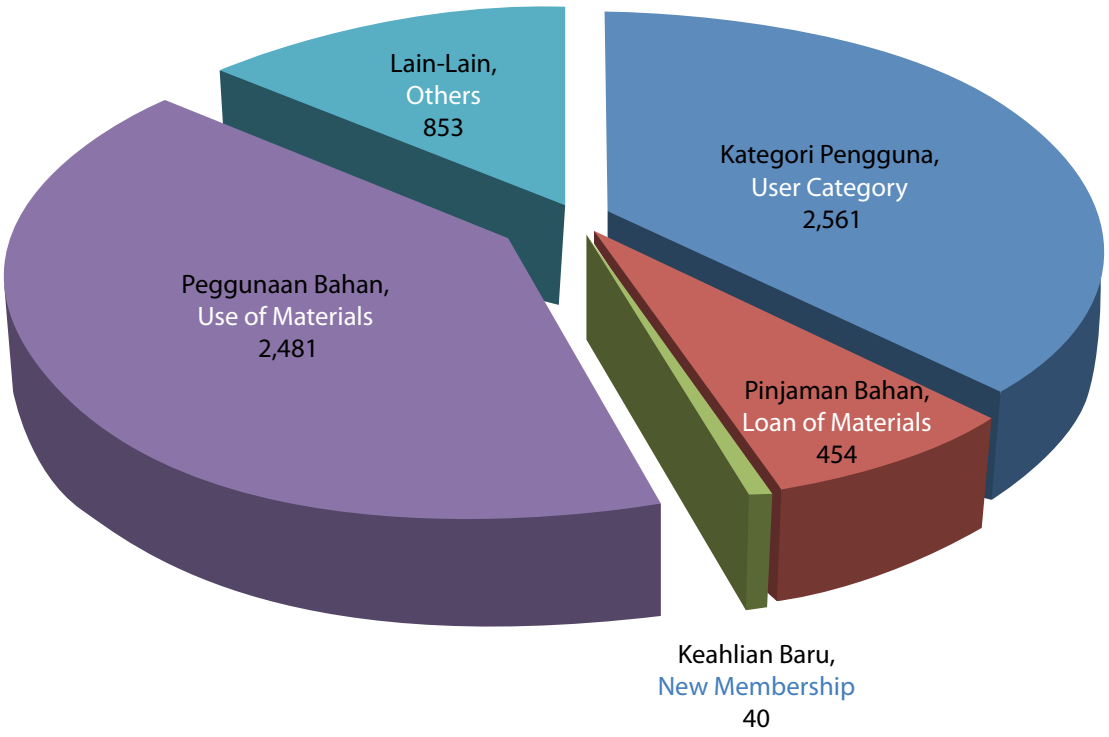
Enviro-Library Services

The Enviro-Library located at the DOE Head Office served as an important reference centre both for DOE staff and registered public users. As of 31 December 2010, the entire collection of reference materials totaled 21,423 items. The number of library users were 2,561 of which 80% were employees and government officers (**Figure 5.2, 5.3 & 5.4**).

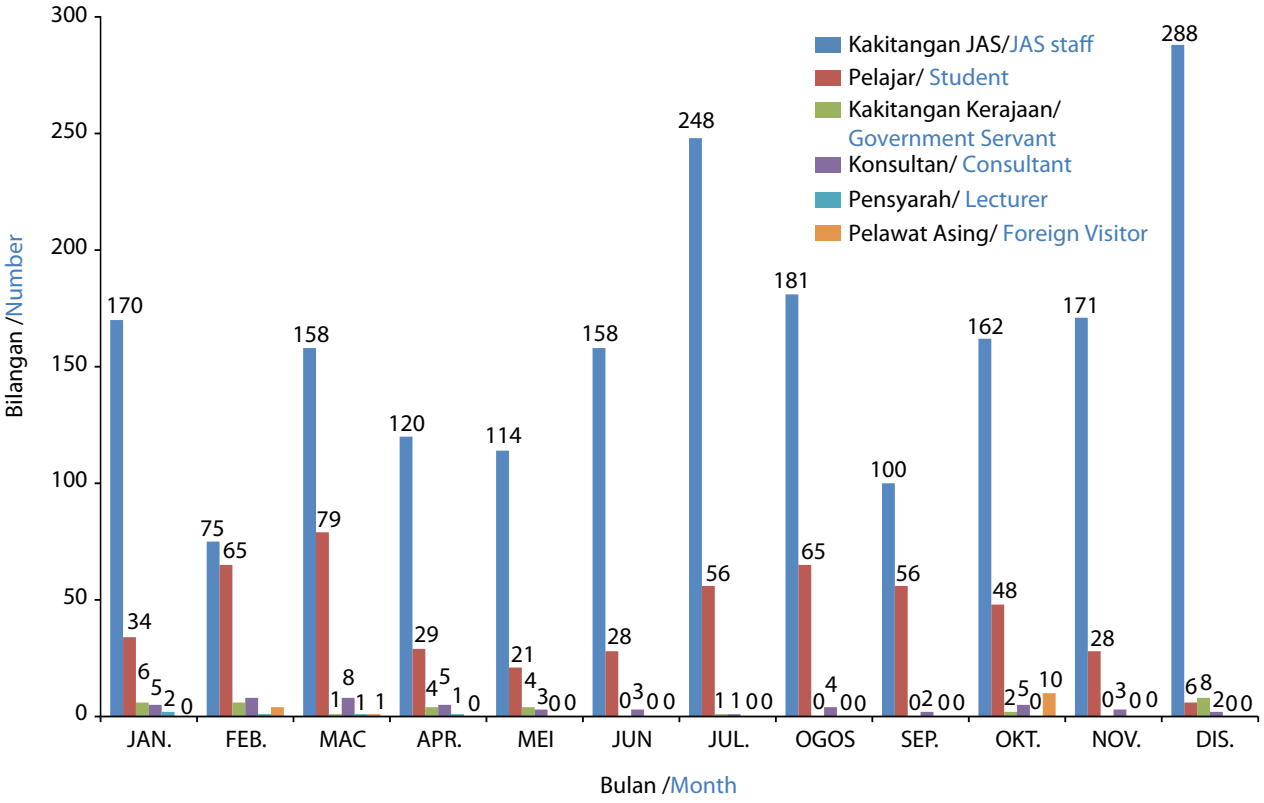
Enviro-Library Activities

In 2010, the Enviro-Library DOE Head Office organised two (2) workshops for its staff namely "Pengendalian Mesyuarat Berkesan" on 23 November 2010 and "Penulisan Minit Mesyuarat Berwibawa" on 24 November 2010. Forty participants participated in both workshops. A study visit to Karangkraf on 6 December 2010 was conducted consisting of officers from DOE head office.

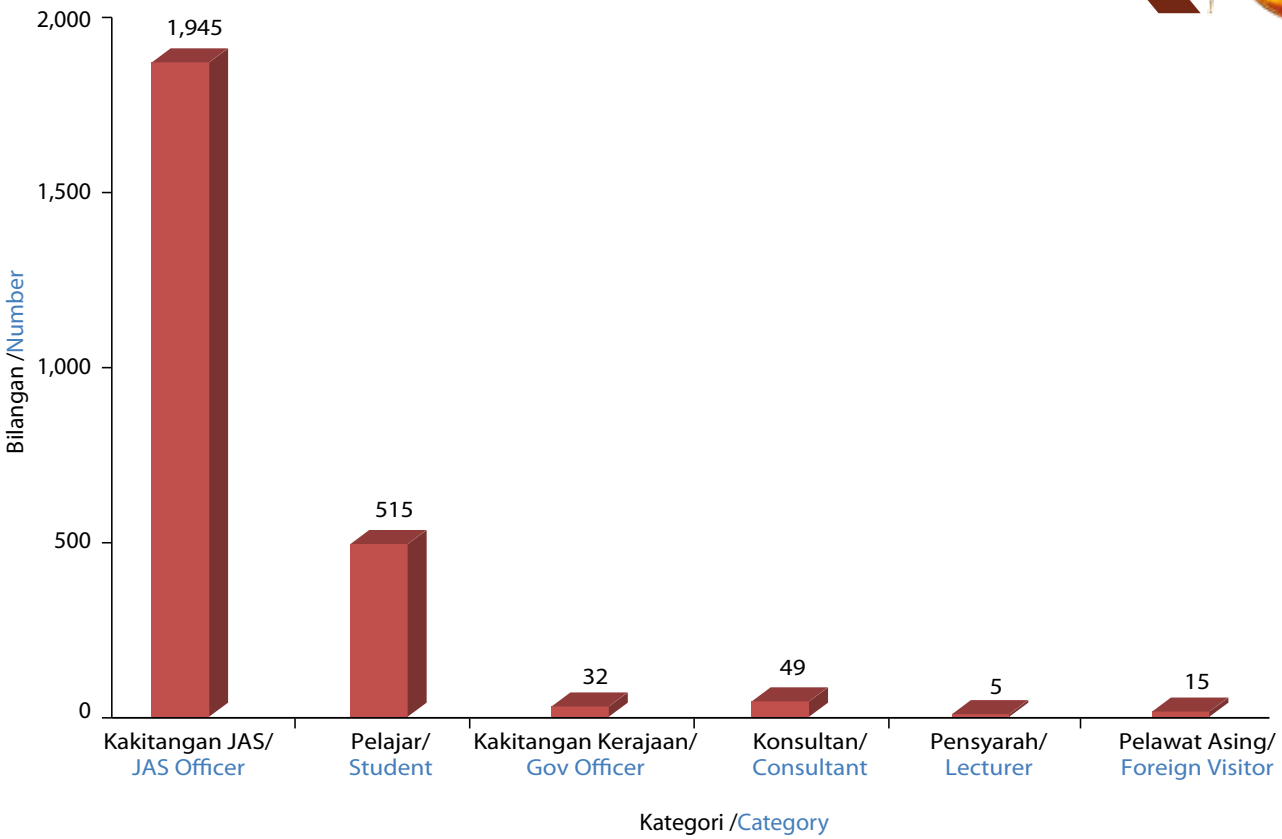
Lawatan Ke Karangkraf
Visit to Karangkraf



Rajah 5.2 JAS : Perkhidmatan Perpustakaan 2010
Figure 5.2 DOE : Library Services, 2010



Rajah 5.3 JAS : Bilangan Pengunjung Perpustakaan (Bulanan), 2010
Figure 5.3 DOE : Number of Library Users,(Monthly) 2010



Rajah 5.4 JAS : Kategori Pengguna Perpustakaan Jabatan Alam Sekitar, 2010
Figure 5.4 DOE : Category of Library Users, 2010

Perkhidmatan Perpustakaan Enviro
Enviro-Library Services

Jadual 5.1 JAS: Indeks Petunjuk Prestasi (KPI) JAS NEGERI, 2010
Table 5.1 DOE: Key Performance Index (KPI) State Offices, 2010

Bil./ No.	Aktiviti/ Activities	PLS	KDH	PP	PRK	SLG	KL	NS	MLK	JHR	KLN	TRG	PHG	SBH	SRW	LAB
1.	Ceramah Sekolah-Sekolah/IPT/ Lecture in schools/IPT	21	35	16	9	5	11	7	6	14	16	13	20	17	41	3
2.	Ceramah Umum/Industri/ Public/Industries lecture	3	21	16	7	18	5	3	6	14	10	14		16	15	6
3.	Pameran/Exhibition	30	29	49	13	56	17	41	27	24	6	23	45	41	18	3
4.	Seminar/Taklimat/Bengkel/Dialog/ Seminar/Briefing/Workshop/ Dialogue	-	6	5	9	12	0	7	32	5	5	2	-	17	3	1
5.	Kem Kesedaran Alam Sekitar (KeKAS)/Environmental Awareness Camp (KeKAS)	2	8	5	1	2	2	1	1	5	1	5	4	4	1	2
6.	Minggu Alam Sekitar Maaysia (MASM)/Malaysia Environment Week (MASM)	-	-	5	-	-	3	-	-	1	-	12	4	18	3	-
7.	Lain-Lain/Others															
	7.1 Kolokium/Colloquium	10	13	15	-	-	26	15	20	-	4	6	-	13	-	-
	7.2 Program RAS Bersama MP/ RAS Programme with MP	-	-	1	-	2	-	-	5	18	2	2	-	9	8	-
	7.3 Program Sekolah Lestari/ Sekolah Lestari Programme	2	9	5	1	7	4	4	-	26	6	-	5	1	25	-
	7.4 Program Media Masa/Media Cetak/ Siaran Radio (Keringat Bakti)/Mass Media/Newspaper	-	2	2	-	-	-	-	-	-	1	-	4	5	-	-
	7.5 Program Rakan Alam Sekitar Rakan Alam Sekitar (RAS) Programme	4	-	-	1	2	-	1	5	-	-	2	-	26	8	-
	7.6 Hari Alam Sekitar Sedunia (WED)/ World Environment Day (WED)	-	-	-	-	1	-	-	-	1	-	-	2	8	-	-
	7.7 Penerbitan (Laporan Tahunan)/ Annual Report Publication	1	1	1	1	1	1	1	1	3	1	1	1	1		
	7.8 Hari Bersama Pelanggan/ Client's Day	-	3	-	3	2	-	-	12	12	4	0	7	4	-	
	7.9 Latihan Industri/ Industrial Training	-	-	-	-	4	-	7	-	-	17	16	-	-	-	1
	7.10 Lawatan Sambil Belajar/Kerja/ Pelajar/	-	-	-	8	-	-	-	-	-	-	-	-	-	-	6
	7.11 Program Komuniti/ Community Programme	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-

Sumber/ Source: Laporan KPI Negeri Mesyuarat Pengarah-Pengarah_Q4/2010/KPI Report in Directorate Meeting _Q4/2010

NOTA/ NOTE:

PLS - PERLIS
KDH - KEDAH
PP - PULAU PINANG
PRK - PERAK
SLG - SELANGOR
KL - WILAYAH PERSEKUTUAN KUALA LUMPUR
N.S - NEGERI SEMBILAN
MLK - MELAKA
JHR - JOHOR
KLN - KELANTAN
TRG - TERENGGANU
PHG - PAHANG
SBH - SABAH
SRK - SARAWAK
LAB - WILAYAH PERSEKUTUAN LABUAN

Galeri Gambar Program Rakan Alam Sekitar
"Rakan Alam Sekitar Programme" Photo Gallery

Program Berbasikal *Eco Hunt*
Eco Hunt on Bicycle

Galeri Gambar Program Rakan Alam Sekitar
"Rakan Alam Sekitar Programme" Photo Gallery

Kem Kesedaran Alam Sekitar (KeKAS)
Environmental Awareness Camp (KeKAS)

BAB 6 / CHAPTER 6

Hal-Ehwal Alam Sekitar Antarabangsa-Kerjasama Dua Hala
International Environmental Affairs-Bilateral Cooperation

Mesyuarat Ke-9 Kumpulan Kerja Jawatankuasa Bersama Malaysia - Singapura mengenai Alam Sekitar (WG of MSJCE)

Mesyuarat Ke-9 Kumpulan Kerja Jawatankuasa Bersama Malaysia - Singapura mengenai Alam Sekitar *(WG of MSJCE)* telah diadakan di Singapura pada 22-23 November 2010. Mesyuarat tersebut dipengerusikan bersama oleh Y.Bhg. Dato' Hajah Rosnani Ibarahim, Ketua Pengarah Alam Sekitar, Malaysia dan Encik Andrew Tan Ketua Pegawai Eksekutif, *National Environment Agency*, Singapura.

Delegasi Malaysia ke mesyuarat tersebut terdiri daripada pegawai-pegawai kanan dari Jabatan Alam Sekitar serta wakil dari Pusat Hidrografi Nasional, Jabatan Perikanan dan Universiti Kebangsaan Malaysia.

Beberapa isu-isu alam sekitar yang melibatkan kedua-dua buah negara seperti kawalan pencemaran kenderaan, pemantauan kualiti air di Selat Johor, tumpahan minyak dan kimia di Selat Johor dan program latihan alam sekitar dibincangkan di mesyuarat tersebut.

The 9th Malaysia - Singapore Joint Committee on the Environment Working Group Meeting (WG of MSJCE)

The 9th Malaysia - Singapore Joint Committee on the Environment (MSJCE) Working Group Meeting (WG of MSJCE) was held in Singapore on 22-23 November 2010. The Meeting was co-chaired by Y.Bhg. Dato' Hajah Rosnani Ibarahim, Director General of Environment, Malaysia and Mr. Andrew Tan, Chief Executive Officer, National Environment Agency, Singapore.

The Malaysian delegates to this meeting were senior officers of the Department of Environment and representatives from the National Hydrographic Centre, Fisheries Department and National University of Malaysia.

Several environmental issues between both countries such as the vehicular emissions control, water quality in the Straits of Johor, chemical and oil spill along the Straits of Johor, and inter-country environmental-related training program were discussed at the meeting.

Mesyuarat Ke-9 Kumpulan Kerja Jawatankuasa Bersama Malaysia - Singapura mengenai Alam Sekitar (Working Group of MSJCE)
The 9th Malaysia - Singapore Joint Committee on the Environment (MSJCE) Working Group Meeting

Hal-Ehwal Alam Sekitar Antarabangsa-Kerjasama Serantau
International Environmental Affairs-Regional Cooperation

Mesyuarat Ke-8 ASEAN *Working Group On Environmentally Sustainable Cities* (AWGESC)

Mesyuarat Kali Ke-8 ASEAN *Working Group on Environmentally Sustainable Cities* (AWGESC) telah diadakan pada 21-22 Julai 2010 di Hotel Equatorial, Kuala Lumpur. Mesyuarat tersebut dianjurkan oleh Jabatan Alam Sekitar, Kementerian Sumber Asli dan Alam Sekitar, Malaysia dan dipengerusikan oleh Ms. Liana Bratasida, Staf Ahli Menteri Lingkungan Hidup Bidang Lingkungan Global dan Kerja Sama Internasional, Kementerian Alam Sekitar, Indonesia.

Mesyuarat tersebut bertujuan untuk meningkatkan koordinasi dan kerjasama di antara pelbagai badan ASEAN dan *dialogue partners* dalam menangani cabaran pelestarian alam sekitar dalam bidang udara bersih, air bersih dan tanah bersih serta isu "blue" dan "green" ke arah mencapai bandar yang selesa didiami.

The 8th Meeting of the ASEAN Working Group on Environmentally Sustainable Cities (AWGESC)

The 8th Meeting of the ASEAN Working Group on Environmentally Sustainable Cities was held at Equatorial Hotel, Kuala Lumpur from 21-22 July 2010. The event was hosted by the Department of Environment, Ministry of Natural Resources and Environment, Malaysia and it was chaired by Ms. Liana Bratasida, Special Assistant to the Minister on Global Environmental Affairs and International Cooperation, Ministry of Environment, Indonesia.

The meeting functioned as a consultative forum to enhance coordination and collaboration among various ASEAN sectoral bodies and dialogue partners in addressing environmentally sustainable challenges in the areas of clean air, clean water and clean land as well as the green and blue issues, towards achieving liveable cities/ urban areas.

Mesyuarat Ke-8 ASEAN Working Group On Environmentally Sustainable Cities (AWGESC)
The 8th Meeting of the ASEAN Working Group on Environmentally Sustainable Cities (AWGESC)

Mesyuarat ini telah dihadiri oleh 37 delegasi dari Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Filipina, Singapura, Thailand, Vietnam, Sekretariat ASEAN dan wakil dari pertubuhan antarabangsa.

Malaysia–Brunei Darussalam–Singapura

Satu delegasi yang terdiri daripada 31 orang pegawai-pegawai kanan kerajaan Brunei Darussalam, Singapura termasuk Malaysia telah mengadakan lawatan sambil belajar ke Jabatan Alam Sekitar Malaysia pada 28 Oktober 2010. Delegasi ini adalah peserta bagi kursus *Leadership Development Programme* (LDP) anjuran Institut Tadbiran Awam Negara (INTAN), Malaysia dengan kerjasama Institut Perkhidmatan Awam (IPA), Brunei Darussalam dan Civil Service College (CSC), Singapura. Taklimat berkaitan dengan program Promosi Kesedaran dan Pendidikan Alam Sekitar di Malaysia seperti Bandar Lestari-Anugerah Alam Sekitar dan Sekolah Lestari-Anugerah Alam Sekitar telah diberikan kepada para peserta.

The meeting was attended by 37 delegates from Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Philippines, Singapore, Thailand, Vietnam, the ASEAN Secretariat and representatives from international organizations.

Malaysia–Brunei Darussalam-Singapore

A delegation consisting of 31 senior officers from Brunei Darussalam, Singapore as well as Malaysia visited the Department of Environment, Malaysia on 28 October 2010. This visit was part of the Leadership Development Programme (LDP) organized by National Institute of Public Administration (INTAN), Malaysia with cooperation from Civil Service Institute (IPA), Brunei Darussalam and Civil Service College (CSC), Singapore. A briefing on the Promotion of Environmental Education and Awareness Programmes in Malaysia such as Sustainable City-Environment Award and Sustainable School-Environment Award was given to the participants.

Lawatan Delegasi dari Malaysia, Brunei Darussalam dan Singapura ke Ibu Pejabat JAS pada 28 Oktober 2010
Visit by Malaysia, Brunei Darussalam and Singapore to DOE Headquarters on 28 October 2010.

BAB 7 / CHAPTER 7

Bahagian Teknologi Maklumat
Information Technology Division

Bahagian Teknologi Maklumat telah diberi tanggungjawab untuk menyediakan infrastruktur dan perkhidmatan teknologi dan komunikasi maklumat (ICT) di Jabatan Alam Sekitar (JAS) antaranya:

i) Melaksanakan perolehan perkakasan, perisian dan perkhidmatan ICT,

ii) Merancang, membangun, melaksana dan menyelenggara sistem-sistem aplikasi Jabatan serta menyokong pelaksanaan aplikasi-aplikasi Elektronik Kerajaan (MyEG) di Jabatan,

iii) Menyedia, memantau dan menyelenggara perkhidmatan rangkaian komunikasi Jabatan,

iv) Memantau dan mengawal selia keselamatan ICT di seluruh Jabatan selaras dengan dasar keselamatan ICT JAS,

v) Menyediakan latihan-latihan ICT; dan

vi) Menyediakan khidmat nasihat dan sokongan teknikal ICT kepada para pengguna di Jabatan.

Portal Jabatan Alam Sekitar

Sejajar dengan halatuju kerajaan untuk mempertingkatkan usaha mendekati rakyat, pada penghujung tahun 2010, Portal Jabatan Alam Sekitar telah diberi wajah baru dengan harapan ianya lebih mudah dan mesra pengguna.

Rekabentuk Portal JAS yang terbaru ini mempunyai muka depan yang lebih ringkas namun padat dengan maklumat, pautan dan perkhidmatan yang disediakan oleh Jabatan Alam Sekitar seperti himpunan sistem atas talian, perkhidmatan pembayaran atas talian, aduan dan maklumbalas, himpunan video serta keratan akhbar.

Portal JAS turut menyediakan pautan ke laman-laman media sosial Jabatan Alam Sekitar seperti YouTube, Facebook dan Blog yang memudahkan pengunjung untuk mendekati Jabatan Alam Sekitar.

The Information Technology Division is responsible to provide information and communication technology (ICT) infrastructure and services for the Department of Environment (DOE) which includes the following:

i) Procurement of hardware, software and ICT services,

ii) Planning, developing, implementing and maintaining applications system within the department as well as supporting the implementation of the Electronic Government (MyEG) application systems at the department,

iii) Providing, monitoring and maintaining the department's network and communication services,

iv) Monitoring and regulating the ICT security within the entire department in accordance to the department's ICT Security Policy,

v) Providing ICT training; and

vi) Providing ICT technical advices and support to the users at the Department.

Department of Environment's Portal

In line with the Government's effort to reach out to its people, the Department of Environment's Portal was given a fresh facelift in 2010 with the hope that it will be more convenient and user friendly.

The new design of the DOE's Portal comes with a front page that has a simpler design but full of information, links and services provided by the Department of Environment such as the collection of online systems, online payment service, complaints and feedbacks, and collections of videos and newspaper cuttings.

The DOE's Portal also provides links to social media sites of the Department of Environment, such as YouTube, Facebook and Blog which facilitates visitors in contacting the Department of Environment.

Portal Jabatan Alam Sekitar
Department of Environment's Portal

Laman Web Institut Alam Sekitar Malaysia (EiMAS)

Laman web baru Institut Alam Sekitar Malaysia (EiMAS) dibangunkan bertujuan untuk menghebahkan maklumat mengenai program-program yang dianjurkan oleh institut tersebut kepada anggota Jabatan Alam Sekitar serta pihak industri dan orang awam.

Pengunjung-pengunjung laman web EiMAS boleh mendapatkan maklumat mengenai program-program yang diadakan sepanjang tahun, seperti kursus-kursus dalaman, kursus-kursus pensijilan serta seminar-seminar.

Untuk maklumat lanjut, sila layari laman web EiMAS di http://www.doe.gov.my/eimas.

Environment Institute of Malaysia's (EiMAS) Website

The Environment Institute of Malaysia's (EiMAS) new website was developed to provide information on training programmes organized by the institute to the staff of Department of Environment as well as to the industries and the public.

Visitors to EiMAS's website will be able to get information on training programmes that were conducted throughout the year, such as courses for the staff, certification courses and seminars.

For further information, please visit EiMAS's website at http://www.doe.gov.my/eimas.

Laman web Institut Alam Sekitar Malaysia (EiMAS)
Environment Institute of Malaysia's (EiMAS) Website

Sistem Semakan Tawaran Kompaun Bagi Punca Bergerak

Sistem Semakan Tawaran Kompaun Bagi Punca Bergerak merupakan satu sistem aplikasi yang dibangunkan oleh Jabatan Alam Sekitar bagi memudahkan orang awam untuk menyemak maklumat tawaran kompaun bagi kesalahan-kesalahan 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.

Sistem ini boleh diakses secara terus melalui Portal Jabatan Alam Sekitar di http://www.doe.gov.my.

Mobile Sources Compound Checking System

The Mobile Sources Compound Checking System is an online services application system developed by the Department of Environment to allow the public to check details on compounds that were issued under the Environmental Quality (Control of Emission from Diesel Engines) Regulations, 1996 and Environmental Quality (Control of Emission from Petrol Engines) Regulations, 1996.

This system is easily accessible via the Department of Environment's Portal at http://www.doe.gov.my.

Sistem Semakan Tawaran Kompaun Bagi Punca Bergerak
Mobile Sources Compound Checking System

SISTEM PENGURUSAN FAIL (SPF)

Sistem Pengurusan Fail (SPF) adalah satu sistem aplikasi berpangkalan data yang dibangunkan pada tahun 2010 untuk membantu pengguna untuk mengesan fail-fail yang didaftarkan dalam sistem tersebut dengan lebih mudah dan cepat. Pengguna hanya perlu menaip nombor rujukan, kod, perkara atau tajuk fail untuk membuat carian fail dalam masa yang singkat.

FILE MANAGEMENT SYSTEM

The File Management System is a database application system developed by the Information Technology Division in 2010 to facilitate users to easily and quickly track and locate files registered in the system. In order to search for a particular file, users only need to key in the file's reference number, code, item or file name.

Sistem Pengurusan Fail (SPF)
File Management System

Program Bahagian Teknologi Maklumat, 2010
Information Technology Division, 2010

Program Bahagian Teknologi Maklumat, 2010
Information Technology Division, 2010

BAB 8 / CHAPTER 8

Institut Alam Sekitar Malaysia (EiMAS)
Environment Institute Of Malaysia (EiMAS)

Program Latihan EiMAS

Pada tahun 2010, EiMAS telah berjaya menyediakan latihan kepada sejumlah 1,768 peserta melalui 90 kursus (**Jadual 8.1**). Daripada 1,768 peserta yang menyertai program latihan yang dilaksanakan 1,004 orang (56.8%) adalah kakitangan JAS, manakala selebihnya adalah peserta dari luar jabatan seperti agensi kerajaan dan pihak swasta. Program latihan ini bertujuan untuk meningkatkan kecekapan dan kompetensi di kalangan semua peserta.

Program Latihan untuk Industri

Pada tahun 2010, EiMAS meneruskan usaha menganjurkan program-program dan latihan untuk industri, bagi meningkatkan kefahaman dan pengetahuan mereka dalam mencapai pematuhan terhadap kehendak alam sekitar.

Kursus Persijilan

Pada tahun 2010, 31 Kursus Persijilan untuk pihak industri telah berjaya dilaksanakan iaitu Kursus Persijilan Untuk Pengurusan Buangan Terjadual, Kursus Pensijilan Bagi Operator Alat Kawalan Pencemaran Udara dan Kursus Pensijilan bagi Operator Sistem Pengolahan Efluen Industri. 31 peperiksaan kursus persijilan tersebut juga telah dilaksanakan pada tahun 2010.

Program Sangkutan

EiMAS telah menguruskan beberapa program sangkutan bagi kakitangan JAS di beberapa organisasi swasta di dalam negara dan luar negara.

Program ini bertujuan untuk menyediakan latihan 'hands-on' kepada kakitangan JAS bagi membolehkan mereka menjadi jurulatih yang kompeten dalam bidang masing-masing. Seramai 40 orang pegawai telah mengikuti program sangkutan di tiga (3) premis kilang di dalam negara (**Jadual 8.2**) dan empat (4) orang pegawai mengikuti program sangkutan di luar negara pada tahun 2010 (**Jadual 8.3**).

EiMAS Training Programme

In 2010 EiMAS had successfully executed 90 training courses for a total of 1,768 participants (**Table 8.1**). Out of the 1,768 participants, 1,004 participants (56.8%) were from DOE while the rest were external participants from the government agencies and private sectors. These training programmes were aimed to enhance the efficiency and competency of the participants.

Training Programmes for Industries

In 2010, EiMAS continued to carry out training programmes for industries in order to upgrade their understanding and knowledge towards compliance to environmental requirements.

Certification Courses

In 2010, 31 Certification Courses were conducted for the industries namely, Certification Course for Scheduled Waste Managers, Certification Course for Operators of Air Pollution Control Equipment (Bag Filter Dust Collector) and Certification Course for Operators of Industrial Effluent Treatment Systems (IETS). Examination for these certification courses were conducted 31 times during year 2010.

Attachment Programmes

Attachment programmes for DOE officers were held at various local private organizations as well as with a government agency abroad.

The objectives of this programme were to provide 'hands-on' training for DOE staff to enable them to become competent trainers in their respective fields. A total of 40 officers attended this attachment programme at three (3) factory premises in Malaysia (**Table 8.2**) and four (4) officers attended attachment programmes outside Malaysia (**Table 8.3**) in 2010.

Latihan Di Dalam dan Luar Negara

Selain daripada mengendalikan program latihan dalam jabatan, EiMAS juga bertanggungjawab menguruskan kehadiran pegawai dan kakitangan JAS untuk mengikuti kursus di dalam dan luar negara yang tempohnya kurang daripada tiga (3) bulan.

Sepanjang tahun 2010, seramai 29 pegawai JAS telah menghadiri 20 kursus/seminar di dalam negara (**Jadual 8.4**) dan 25 pencalonan bagi menghadiri 15 program latihan di luar negara (**Jadual 8.5**).

Program Kerjasama

Dalam memenuhi keperluan menyediakan latihan yang terbaik untuk kakitangan JAS, dan juga memantapkan keupayaan tenaga pengajar EiMAS, EiMAS juga telah menjalinkan kerjasama dengan agensi kerajaan, badan-badan berkanun dan sektor swasta. Ini termasuklah beberapa premis industri/pemaju projek yang menerima peserta kursus dalam program lawatan kerja peserta daripada EiMAS termasuk peserta luar negara di bawah kursus Program Kerjasama Teknikal Malaysia (PKTM).

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

Sebagai penyelaras kepada program PKTM, Unit Perancang Ekonomi telah meluluskan EiMAS sebagai agensi ke-35 bagi mengendalikan latihan untuk peserta antarabangsa di bawah Program Kerjasama Teknikal Malaysia (PKTM). Kursus Pengurusan Alam Sekitar dan Kawalan Pencemaran (EMPC) ini dibuka kepada negara–negara *Organization of the Islamic Conference* (OIC) dan Asia-Pasifik. Pemilihan akhir peserta adalah berdasarkan kepada relevansi tugas, kelayakan akademik dan peruntukan kewangan.

Kursus EMPC yang berlangsung pada 12 Julai sehingga 30 Julai 2010 telah dihadiri oleh 17 orang peserta daripada Vietnam, Myanmar, Singapura, Cambodia, Lao PDR, Pakistan, Sri Lanka, Yemen, Sudan, Nigeria dan satu (1) orang peserta daripada Malaysia.

Local and Overseas Training Courses

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

Throughout 2010, 29 officers attended 20 courses/seminar that were held locally (**Table 8.4**) and 25 nominations for 15 programmes outside Malaysia (**Table 8.5**).

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. These included a number of industries/project developers who had accepted participants from EiMAS and foreign participants under the Malaysian Technical Cooperation Programme (MTCP) for their study visit.

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

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

The EMPC course held on 12 July to 30 July 2010 was attended by 17 participants from Vietnam, Myanmar, Singapore, Cambodia, Lao PDR, Pakistan, Sri Lanka, Yemen, Sudan and Nigeria as well as one (1) participant from Malaysia.

Objektif kursus PKTM ini diadakan adalah bagi menyediakan latihan dalam pelbagai aspek dan kaedah bagi pengurusan kualiti udara; berkongsi amalan-amalan yang baik dalam pelaksanaan program-program kebangsaan dan antara agensi yang melibatkan pengurusan pencemaran pantai dan 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 perbezaan pengurusan alam sekitar di Malaysia, dan hubungan rapat di antara agensi kerajaan dan swasta membuktikan kejayaan konsep `Persyarikatan Malaysia'.

Kerjasama dengan Institut Latihan Kehakiman dan Perundangan

EiMAS meneruskan program kerjasama dengan ILKAP melalui tiga (3) kursus bertajuk Kursus Asas Pendakwaan dan Tatacara Mahkamah, Kursus Lanjutan Pendakwaan dan Kursus Teknik Pemeriksaan Saksi dan Penghujahan. Seramai 60 orang pegawai JAS telah menghadiri kursus-kursus tersebut. Para peserta turut didedahkan kepada sesi latihan perbicaraan kes alam sekitar sebenar menggunakan kemudahan mahkamah moot di ILKAP.

EiMAS telah mengemaskini dan memurnikan modul kursus berkaitan penguatkuasaan praktikal yang sebelum ini disediakan oleh *Danish Cooperation for Environment and Development* (DANCED) pada tahun 1998.

Kursus yang bertajuk Penguatkuasaan Praktikal untuk Pegawai-Pegawai Penyiasat JAS telah diberi pendekatan baru dengan mengambilkira perkembangan perundangan dan prosedur penyiasatan alam sekitar di Malaysia.

The objectives of this 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; 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 our Malaysian Incorporated concept.

Collaboration with the Judicial and Legal Training Institute (ILKAP)

EiMAS continued its collaboration programmes with ILKAP by organising three (3) courses; Basic Course on Prosecution and Court Procedure, Advanced Course on Prosecution and Course on Techniques on Submission and Examination of Witness. A total of 60 DOE's Officers attended these courses. The participants were also required to participate in mock trials based on actual environmental court cases at ILKAP moot court.

EiMAS had also reviewed and updated the course on practical enforcement which was developed by the Danish Cooperation for Environment and Development (DANCED) in 1998.

The course module aptly titled Practical Enforcement for DOE's Investigation Officers were rewritten to suit the current development and requirement of environmental laws and investigation procedures in Malaysia.

Jadual 8.1 JAS: Program Latihan EiMAS, 2010
Table 8.1 DOE: EiMAS Training Programmes, 2010

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.	Kursus Asas Teknikal/ Basic Technical Course	1	36		84
2.	Kursus Induksi Khusus/ Specific Induction Course	1	49		5
3.	Pengurusan Berkualiti/ Quality Management	6	134	-	24
4.	Pengurusan Kualiti Air/ Water Quality Management	5	89	-	21
5.	Pengurusan Kualiti Udara/ Air Quality Management	7	127	3	33
6.	Undang-Undang Alam Sekitar/ Environmental Legislation	4	77	-	20
7.	Pengurusan dan Kesan Kepada Alam Sekeliling/ Environmental Management and Impact Assessment	18	156	263	62
8.	Pengurusan Buangan Terjadual/ Scheduled Waste Management	5	130	9	28
9.	Bengkel OHS *Planning for DOE Staff and Health Committee*/ Workshop on OSH Planning for DOE Staff and Health Committee	2	49	-	4
10.	Program Kerjasama Teknikal Malaysia/ Malaysian Technical Cooperation Programme (MTCP)	1	-	18	19
11.	Program Persijilan Untuk Industri/ Certification Programme for Industry	31	-	758	162
12.	Teknologi Komunikasi Maklumat/ Information Communication Technology	4	81	-	19
13.	Seminar dan Persidangan/ Seminars and Conference	4	76	-	2
14.	Program Kerjasama Malaysia-Nepal/ Malaysia-Nepal Twinning Programme	1	-	8	12

Jadual 8.2 JAS: Program Sangkutan Dalam Negara, 2010
Table 8.2 DOE: Attachment Programmes in Malaysia, 2010

Bil./ No.	Tempat/Place	Tarikh/Date	Peserta/Participants
1.	Arachem (M) Sdn. Bhd. Bandar Sri Damansara Kuala Lumpur	22-26 Mac/March 2010	1) KPP John Rampai (EiMAS) 2) PK Mohammad Adli Rashid Abdullah (DOE Pahang) 3) PK Mohd Asri Ramli (DOE Melaka) 4) PK Shamsuri Abdul Manan (HQ, DOE) 5) PK Che Rohaida Ngah (EiMAS) 6) PPKK Roslina Abdul Rahim (EiMAS) 7) PPKK Kamaruddin Abdul Rahman (EiMAS) 8) PPK Ismail Ja'afar (EiMAS) 9) PPK Lee Say Chuan (DOE Penang) 10) PPK Mohamad Aliff Zabidi (DOE WPKL) 11) PPK Muhammad Hizam Mohd Ibrahim (EiMAS) 12) JT Siti Asiah Omar (EiMAS)
2.	CUF Petronas Gas Berhad Kertih, Terengganu	20 – 24 Jun/June 2010	1) PKK Abu Bakar Tajuddin (DOE Cameron Highland) 2) PK Shazana Mohd Ibrahim (EiMAS) 3) PPKK Sae'irah Abdul Rahman (DOE Kelantan) 4) PPK Mohd Nizam Abd Latif @ Abd Razak (DOE Terengganu) 5) PPK Mohd Firdaus Ismail (DOE Terengganu) 6) JT Zatil Aqmar Mohd Isa (EiMAS)
3.	Sabah Forest Industries Sipitang Sabah	25 – 30 Julai/July 2010	1) PK Goh See Ben (EiMAS) 2) PK Hapsah Mohamed (EiMAS) 3) PK Rafidah Mohamad Annuar (DOE Sarawak) 4) PPKK Kalsom Ismail (EiMAS) 5) PPK Muhammad Hizam Mohd Ibrahim (EiMAS) 6) PPK Maria Sunding (DOE Labuan)

Jadual 8.2 JAS: Program Sangkutan Dalam Negara, 2010 (sambungan)
Table 8.2 DOE: Attachment Programmes in Malaysia, 2010 (continue)

Bil./ No.	Tempat/Place	Tarikh/Date	Peserta/Participants
4.	Sabah Forest Industries Sipitang Sabah	1 – 6 Ogos/August 2010	1) PKK Mohd Helmi Ahmad (DOE Temerloh) 2) PK Farah Diyana Rusli (EiMAS) 3) PK Amy Charlene Wong (EiMAS) 4) PPKK Hashimah Hussain (EiMAS) 5) PPK Wan Khairuldin Wan Ismail (EiMAS)
5.	Arachem (M) Sdn. Bhd. Bandar Sri Damansara Kuala Lumpur	22 – 26 Nov 2010	1) KPP Aminuddin Shah Hj. Ahmad (HQ, DOE) 2) PKK Mai Zainatun Nufus Mohd Jaffar (DOE Selangor) 3) PK Amaluzzaman Muhammad (HQ, DOE) 4) PK Farah Diyana Rusli (EiMAS) 5) PK Shazana Mohd Ibrahim (EiMAS) 6) PPKK Kalsom Ismail (EiMAS) 7) PPKK Rosnani Ahmad (EiMAS) 8) PPKK Hashimah Hussain (EiMAS) 9) PPKK Zaleha M. Rashid (EiMAS) 10) PPKK Md Zulhaidi Abd Manaf (EiMAS) 11) JT Zatil Aqmar Mohd Isa (EiMAS)

Jadual 8.3: Program Sangkutan Luar Negara, 2010
Table 8.3: Attachment Programmes Outside Malaysia, 2010

Bil./ No.	Program/ Programme	Tarikh/ Date	Peserta/Participants
1.	Program Sangkutan Mengenai Operasi Kuari dan Alam Sekitar di United Kingdom/ Attachment Programme in the Field of Quarry Operation and Environment at United Kingdom	21 Jun/June – 2 Julai/July 2010	1. KPP Mohd Hidzir Bakar (EiMAS) 2. KPP Hamzah Mohamad (EiMAS)
2.	Program Sangkutan Mengenai Kawalan Hakisan & Kelodakan di California, USA / Attachment Programme on Erosion Control and Soil Sedimentation, California, USA	11-22 Oktober/October 2010	1. PK Dasuki Loo Abdullah (DOE, Headquarters-EIA) 2. PPKK Nor Razzaman Hamzah (DOE Pahang- Cameron Highlands)

Jadual 8.4 JAS: Latihan Di Dalam Negara, 2010
Table 8.4 DOE: Local Training Courses, 2010

Bil./ No	Tajuk/Tempat Title/Place	Penganjur/ Organizer	Tempat/ Place	Tarikh/ Date	Peserta/ Participants
1.	Intan Executive Talk	INTAN	Intan Bukit Kiara	19 Januari/ January 2010	1) Tuan Haji Hashim Daud (DOE, Headquarters – Director of Water and Marine Division) 2) Encik Lee Choong Min (DOE, Headquarters – Director of Enforcement Division) 3) KPP Norlin Jaafar (DOE, Headquarters – EIA) 4) PK Nor Dalilah Abdul Rashid (DOE, Headquarters – EIA)
2.	Intan Executive Talk	INTAN	Intan Bukit Kiara	25 Februari/ February 2010	Puan Rahani Hussin (Pengarah/ Director EiMAS)
3.	Seminar on Bahasa Brunei Darussalam-Indonesia-Malaysia (Mabbim) dengan tema "Meningkatkan Daya Komunikasi Bahasa Melayu/ Indonesia dalam Pemeliharaan Alam Sekitar/ Lingkungan Hidup	Dewan Bahasa dan Pustaka	Dewan seminar, Menara DBP, Dewan Bahasa & Pustaka, Kuala Lumpur	9 – 10 Mac/ March 2010	PK Azlina Omar (DOE, Headquarters-Strategic Communication)
4.	Course on Pengemaskinian Akta/ PU dan Pengenalan Maklumat Perundangan	Jabatan Peguam Negara	Dewan Tan Sri Abdul Kadir Yusof, Jabatan Peguam Negara, Putrajaya	22 – 23 Mac/ March 2010	1) PPP Fazlina Fauzi (EiMAS) 2) PP Rosfaruzzah Rosali (DOE, Headquarters - Library)
5.	Forum on Climate Change and the Impact on your Health	Council for Sustainable Development Malaysia (BCSDM)	The Securities Commission, Bukit Kiara, Kuala Lumpur	6 April 2010	KPP Hajah Halimah Taib (EiMAS)
6.	Siri Ceramah Hak-Hak Wanita Islam Menurut Undang-Undang Keluarga Islam di Malaysia	Jabatan Peguam Negara	Dewan Tan Sri Abdul Kadir Yusof, Jabatan Peguam Negara, Putrajaya	23 April 2010	1) Puan Nur' Ain Binti Jamaluddin (EiMAS) 2) Puan Rosmanyah Binti Abdul Rahman (DOE, Headquarters-Strategic Communication)
7.	Waste Management Conference	Ensearch	Kuala Lumpur	19 – 20 Mei/ May 2010	KPP Mohd Hidzir Bakar (EiMAS)

Jadual 8.4 JAS: Latihan Di Dalam Negara, 2010 (sambungan)
Table 8.4 DOE: Local Training Courses, 2010 (continue)

Bil./ No	Tajuk/Tempat Title/Place	Penganjur/ Organizer	Tempat/ Place	Tarikh/ Date	Peserta/ Participants
8.	OSH in the Office	NIOSH	NIOSH Bandar Baru Bangi	18 – 19 Mei/ May 2010	PK Zuraini Kerya (DOE Selangor)
9.	Intan Executive Talk	INTAN	Intan Bukit Kiara	27 Mei/May 2010	Director Lee Choong Min (DOE, Headquarters-Enforcement)
10.	Sub-Regional Workshop and Regional Dialogue on Wastewater Management in Asia	Akademi Sains Malaysia	Kuala Lumpur	15 – 16 Jun/ June 2010	KPP Aminuddin Shah (DOE, Headquarters-Water and Marine)
11.	Forum on Coaching and Mentoring for Competitiveness and Innovation	Perbadanan Produktiviti Malaysia (MPC)	Matrade Exhibition & Convention Centre, Kuala Lumpur	22 September 2010	1) TKP(P) Dr. Ir. Shamsudin Hj. Ab. Latif (DOE, Headquarters) 2) Puan Rahani Hussin (Pengarah/ Director EiMAS)
12.	Seminar on Criminalisation of Bribery	SPRM/ADB/ OECD Anti Corruption Initiative for Asia and the Pacific	Palace of the Golden Horses, Selangor	23 – 24 September 2010	1) KPP Wan Abdul Latif Wan Jaffar (DOE, Headquarters-Enforcement) 2) KPP Aminuddin Shah (DOE, Headquarters-Water and Marine)
13.	Bengkel Teknologi dan Aplikasi Sistem Satelit Navigasi Global (GNSS)	Agensi Angkasa Negara	PICC, Putrajaya	27 – 28 September 2010	1) KPP Mohamad Suffian Abd Rahim (DOE, Headquarters –GIS) 2) PPK Mohamad Zaidi Ismail (DOE, Headquarters –GIS)
14.	Legislative Requirements for Hazardous Chemicals (Module 1)	NIOSH	NIOSH Bandar Baru Bangi	11 – 13 Oktober/ October 2010	PK Zuraini Kerya (DOE Selangor)
15.	Control of Chemicals Hazardous to Health (Module 2)	NIOSH	NIOSH Bandar Baru Bangi	14 – 16 Oktober/ October 2010	PK Zuraini Kerya (DOE Selangor)
16.	Chemical Health Risk Assessment (Module 3)	NIOSH	NIOSH Bandar Baru Bangi	18 – 22 Oktober/ October 2010	PK Zuraini Kerya (DOE Selangor)
17.	Chemical Pollution in Water Resources	Nuclear Malaysia	Bangi	27 – 29 October 2010	KPP Jamaludin Mahmud Abu Bakar (EiMAS)

Jadual 8.4 JAS: Latihan Di Dalam Negara, 2010 (sambungan)
Table 8.4 DOE: Local Training Courses, 2010 (continue)

Bil./ No	Tajuk/Tempat Title/Place	Penganjur/ Organizer	Tempat/ Place	Tarikh/ Date	Peserta/ Participants
18.	Seminar Sustainable Construction	Universiti Teknologi Malaysia	Hotel Hilton, K. Lumpur	29 November 2010	TKP(P) Dr. Ir. Shamsudin Hj. Ab. Latif (DOE, Headquarters)
19.	Bengkel Pengurusan Tekanan Mental	Institut Kefahaman Islam Malaysia (IKIM)	Kuala Lumpur	15 Disember/ December 2010	Puan Rahani Hussin (Pengarah/ Director EiMAS)
20.	Seminar on LCA for Eco-Friendly Products and Services	SIRIM	SIRIM	15 Disember/ December 2010	1) PKK Mai Zainatun Nufus Mohd Jaffar (DOE Selangor) 2) PPKK Norriahan Mohd Nasir (DOE Selangor)

Jadual 8.5 JAS: Latihan Luar Negara, 2010
Table 8.5 DOE: Overseas Courses, 2010

Bil./ No	Tajuk/Tempat Title/Place	Penganjur/ Organizer	Tempat/ Place	Tarikh/ Date	Peserta/ Participants
1.	EPP Training Course on Contaminated Soil and Hazardous Waste Site Management	Public Service Department (JPA) and Japan International Cooporation Agency (JICA)	Japan	8 – 27 Feb. 2010	1) PKK Mohd Amin Ghazali (DOE Terengganu - Kemaman) 2) PKK Mohd Helmi Ahmad (DOE Pahang - Temerloh) 3) PK Ijan Khusaida Mohd Jan (DOE, Headquarters - Hazardous Waste) 4) PK Nor Hayati Mohd Idris (DOE Selangor) 5) PPKK Kamarudin Abdul Rahman (EiMAS) 6) PPKK Zainoorliza Zainal Abidin (DOE Melaka) 7) PPKK Kamalulhakim Abdullah (DOE Johor - Batu Pahat) 8) PPK Rozita Abdul Jalil (DOE WP Kuala Lumpur)

Jadual 8.5 JAS: Latihan Luar Negara, 2010 (sambungan)
Table 8.5 DOE: Overseas Courses, 2010 (continue)

Bil./ No	Tajuk/Tempat Title/Place	Penganjur/ Organizer	Tempat/ Place	Tarikh/ Date	Peserta/ Participants
2.	Asian Odor Measurement Workshop	Japan Association on Odor Environment (JAOE)	Tokyo, Japan	22 Feb. – 5 Mac/ March 2010	KPP Nor Rashidah Mohd Ghazali (DOE, Headquarters - Air Division)
3.	The International Workshop on Current Status and Future Prospects of the Air Pollution in East Asia	Ministry of Environment Japan	Niigata, Japan	25 Feb. 2010	KPP Roshadah Hashim (DOE, Headquarters - Air Division)
4.	Course on Sustainable Development and Environmental Management	Ministry of Foreign Affair Singapore	Singapore	1 – 12 Mac/March 2010	KPP Rusnani Abdullah (EiMAS)
5.	Training on Alternative Technologies to Phase Out HCFCs	United Nations Industrial Development Organization (UNIDO) & Ministry of Economy, Trade and Industry of Japan (METI)	Tokyo, Japan	8 - 12 Mac/March 2010	PK Azlina Othman (DOE, Headquarters - Air Division)
6.	Training Course on Energy Efficiency and Emission Reduction	The Colombo Plan Secretariat & the Technical Cooperation Directorate, Ministry of Foreign Affairs Singapore	Singapore	15 – 19 Mac/March 2010	PKK Mai Zainatun Nufus Mohd Jaffar (DOE, Headquarters - Air Division)
7.	Environmental Toxicology	Thailand International Development Cooperation Agency (TICA)	Bangkok, Thailand	1 – 9 April 2010	PK Nor Azam Abdul Aziz (DOE, Headquarters-Hazardous Waste)
8.	Urban Solid Waste Management	Thailand-Singapore Third Country Training programme	Singapore	5 – 16 April 2010	PK Mohd Shahrin Bin Mudzarap @ Mansor (DOE, Headquarters - EIA)
9.	Regional Workshop on Environmental Impact Assessment (EIA) in Asia: Sharing Good Practices and Capacity Strengthening Needs	Asian Development Bank (ADB)	Manila	9 – 10 Jun/June 2010	1) KPP Norlin Jaafar (DOE, Headquarters - EIA) 2) KPP Muhibbah Selamat (DOE Johor)
10.	Seminar on Economic Development and Climate Change	Government of China	Beijing, China	25 Mei/May– 7 Jun/ June 2010	PK Anuar Ishak (DOE Melaka)

Jadual 8.5 JAS: Latihan Luar Negara, 2010 (sambungan)
Table 8.5 DOE: Overseas Courses, 2010 (continue)

Bil./ No	Tajuk/Tempat Title/Place	Penganjur/ Organizer	Tempat/ Place	Tarikh/ Date	Peserta/ Participants
11.	Course on Creation of Recycling Society Based on Hazardous Waste Management and Appropriate Disposal in Asia	Public Service Department (JPA) and Japan International Cooperation Agency (JICA)	Japan	13 Julai/July– 14 Ogos/ August 2010	1) PK Nor Azah Masrom (DOE, Headquarters- Communication Strategic) 2) PK Nor Hazwan Norizan (DOE Negeri Sembilan)
12.	Senior Executive Programme	Public Service Department (JPA)	Melbourne, Australia	16 – 26 November 2010	KPP Azlan Ahmad (DOE W.P Kuala Lumpur)
13.	Training Workshop on ISWM	UNEP	Bangkok	15-16 Disember/ December 2010	PKK Yahya Othman (DOE Selangor - Kajang)
14.	Course on Bio-medical Waste Management	The Colombo Plan Secretariat	India	6 – 18 Disember/ December 2010	KPP Fenny Wong Nyuk Yin (DOE, Headquarters - Hazardous Waste)
15.	Course on TCTP: Green Economy and Investment	Japan International Cooperation Agency (JICA) & Ministry of Environmental Protection of China	Beijing, China	20 - 27 Disember/ December 2010	1) KPP Normadiah Husien (DOE, Headquarters- Communication Strategic) 2) PK Che Rohaida Ngah (EiMAS)

BAB 9 / CHAPTER 9

Pengeluaran Bersih Dan Teknologi Mesra Alam
Cleaner Production And Environmentally Sound Technology

Program Pembangunan Pusat Teknologi Mesra Alam Dan Pengeluaran Bersih, Jabatan Alam Sekitar

Di bawah Rancangan Malaysia Ke-Sembilan (2006-2010), Jabatan Alam Sekitar menerusi Unit Teknologi Bersih telah dipertanggungjawabkan untuk melaksanakan projek pembangunan iaitu 'Pembangunan Pusat Teknologi Mesra Alam dan Pengeluaran Bersih'.

Unit Teknologi Bersih, Jabatan Alam Sekitar ditubuhkan dengan peranannya sebagai sebuah pusat yang mengkoordinasi pengeluaran bersih di Malaysia. Ini dilaksanakan menerusi strategi-strategi seperti yang digariskan di bawah `Blueprint Pengeluaran Bersih untuk Malaysia':

1. Pengubalan Dasar Nasional
2. Pendidikan dan Kempen Kesedaran Pengeluaran Bersih
3. Pembentukan Rangkaian Kerja dan Penghebahan Maklumat
4. Latihan Audit Pengeluaran Bersih
5. Insentif-Insentif
6. Mengukuhkan Perundangan Rangka Kerja Dasar
7. Pembangunan Kapasiti
8. Pusat Koordinasi Pengeluaran Bersih

Peranan dan tanggungjawab Unit Pengeluaran Bersih dalam mengkoordinasi pengeluaran bersih di Malaysia adalah seperti berikut:

(i) Menyediakan kelengkapan dan fasiliti bagi membangunkan Pusat Teknologi Mesra Alam dan Pengeluaran Bersih Malaysia
(ii) Membangunkan sumber manusia di Jabatan Alam Sekitar dan industri yang berpengetahuan dan berkemahiran mengenai pengeluaran bersih menerusi program latihan
(iii) Merancang dan melaksanakan program-program promosi dan meningkatkan kesedaran pengeluaran bersih kepada industri menerusi seminar, bengkel, taklimat dan demonstrasi pengeluaran bersih;
(iv) Merancang dan melaksanakan program bantuan Audit pengeluaran bersih ke atas Industri Kecil dan Sederhana di Malaysia;
(v) Meningkatkan kefahaman kepada industri dan menyediakan panduan pelaksanaan pengeluaran bersih kepada industri menerusi penyediaan dan penyebaran maklumat; dan

Development Of Environmentally Sound Technology And Cleaner Production Programme, Department Of Environment

Under the Ninth Malaysia Plan (2006-2010), Department of Environment through the Cleaner Production Unit has been responsible for implementing development projects, namely 'Development of Environmentally Sound Technology and Cleaner Production Centre'.

The Cleaner Production Unit, Department of Environment was established with its role to be a centre to coordinate the development of Cleaner Production in Malaysia. This is done through the following strategies outlined in the `Cleaner Production Blueprint for Malaysia':

1. National Policy Formulation
2. Cleaner Production Education and Awareness Campaign
3. Network Formation and Information Dissemination
4. Training and Cleaner Production Audit
5. Incentives
6. Strengthening the Legal Framework Policy
7. Capacity Development
8. Cleaner Production Coordination Centre

The roles and responsibilities of the Cleaner Production Unit in coordinating Cleaner Production in Malaysia are as follows:-

(i) To provide equipment and facilities in order to establish `Environmentally Sound Technologies and Cleaner Production Centre' in Malaysia
(ii) To develop human resources in the Department of Environment and industries on their knowledge and skills through a Cleaner Production training programme
(iii) Planning and implement a promotion programme and raise the Cleaner Production awareness to industries through seminars, workshops and Cleaner Production demonstration;
(iv) Planning and implement a Cleaner Production Audit assistance programme for Small and Medium Industries in Malaysia;
(v) To enhance the understanding among industries and provides guidance on the implementation of Cleaner Production to industries through the provision and dissemination of information; and

(vi) Menyediakan fasiliti pengeluaran bersih menerusi pelaksanaan kajian dan pembangunan pengeluaran bersih.

Matlamat utama pelaksanaan program-program pengeluaran bersih adalah seperti berikut:

(i) Memperbanyakkan industri di Malaysia yang melaksanakan amalan pengeluaran bersih sebagai pencegahan kepada pencemaran
(ii) Membantu industri di Malaysia yang bermasalah terhadap pematuhan AKAS 1974 melaksanakan pengeluaran bersih sebagai pengawalan kepada pencemaran
(iii) Membantu industri di Malaysia untuk melaksanakan amalan pengeluaran bersih dengan penyediaan bahan-bahan maklumat mengenai pelaksanaan pengeluaran bersih

Pelaksanaan program pengeluaran bersih pada tahun 2010 adalah berdasarkan aktiviti seperti berikut:-

(1) Pembangunan Sumber Manusia di Jabatan Alam Sekitar mengenai pengeluaran bersih
(2) Penyediaan kelengkapan dan bahan pengeluaran bersih
(3) Program promosi dan kesedaran industri mengenai pengeluaran bersih
(4) Program bantuan audit pengeluaran bersih kepada Industri Kecil dan Sederhana
(5) Projek demonstrasi pengeluaran bersih

Pembangunan Sumber Manusia Di Jabatan Alam Sekitar Mengenai Pengeluaran Bersih

Tujuan Program Pembangunan Sumber Manusia Mengenai Pengeluaran Bersih adalah:

(i) Membangunkan sumber manusia di Jabatan Alam Sekitar yang berpengetahuan dan berkemahiran mengenai pengeluaran bersih menerusi pembangunan dan pelaksanaan program latihan; dan
(ii) Mewujudkan kepakaran dalam pengeluaran bersih melalui program latihan sangkutan

Dengan adanya `*resource person*' berkenaan, ia dapat membantu memastikan keberkesanan pelaksanaan dan kejayaan program pengeluaran bersih oleh Jabatan ini, seterusnya memastikan kesinambungan sumber manusia mengenai pengeluaran bersih dan pelaksanaan program di Jabatan ini.

Aktiviti-aktiviti yang dilaksanakan di bawah program ini adalah seperti di **Jadual 9.1**.

(vi) To provide the Cleaner Production facilities through the implementation of research and development on Cleaner Production.

The main goals of Cleaner Production programme are as follows:

(i) To encourage the industry in Malaysia to practice and implement Cleaner Production as a prevention of pollution
(ii) To assist the industry in Malaysia that has a problem of non-compliance to EQA 1974 implementing Cleaner Production as a control of pollution
(iii) To assist the industry in Malaysia to implement Cleaner Production practices in the provision of information materials on Cleaner Production implementation

The implementation of Cleaner Production programme in 2010 are based on the following activities:-

(1) Human Resource Development on Cleaner Production in the Department of Environment
(2) Preparation of Cleaner Production Equipment and Material
(3) Promotion and Awareness Programme on Cleaner Production
(4) Cleaner Production Audit Assistance Programme for Small and Medium Industries
(5) Cleaner Production Demonstration Project

Human Resource Development In The Department Of Environment On Cleaner Production

The purpose of the Human Resource Development Programme on Cleaner Production is:

(i) To develop human resources in the Department of Environment who are knowledgeable and skilled on cleaner production through the development and implementation of the training programme by the Department; and
(ii) To create expertise on Cleaner Production through the attachment training programme

The availability of 'resource person' will ensure the effectiveness and success implementation of Cleaner Production programme by the Department. It can also ensure the continuity of human resources development and implementation of the Cleaner Production programme in the Department.

The activities conducted under this programme are shown in **Table 9.1**.

Bengkel Latihan Pengeluaran Bersih Kepada Pegawai JAS
Training Workshop on Cleaner Production to DOE Officers

Jadual 9.1 JAS: Bengkel Latihan Pengeluaran Bersih kepada Pegawai JAS
Table 9.1 DOE: Training Workshop on Cleaner Production to DOE Officers

Bil./ No.	Tarikh/ Date	Program/ Programme	Tempat/ Venue
1	28 Januari/ January 2010	Bengkel Taklimat dan Latihan mengenai `Projek Demonstrasi Pengeluaran Bersih' Briefing and Training Workhsop on `Cleaner Production Demonstration Project'	Hotel Hyatt Saujana Kuala Lumpur, Subang, Selangor
2	31 Mei/May 2010 - 4 Jun/June 2010	Bengkel Latihan `Pengenalan kepada Pengeluaran Bersih' Training Workshop on `Introduction to Cleaner Production"	Hotel Prescott Metro Inn, Kajang, Selangor
3	26-30 Julai/July 2010	Bengkel Latihan `Audit Pengeluaran Bersih' Training Workshop on `Cleaner Production Audit'	Hotel Allson Klana, Seremban, Negeri Sembilan
4	2 Ogos/August 2010	Bengkel Taklimat dan Latihan mengenai `Projek Demonstrasi Pengeluaran Bersih' Briefing and Training Workhsop on `Cleaner Production Demonstration Project'	Universiti Malaya, Kuala Lumpur
5	19 Oktober/ October 2010	Bengkel `Projek Demonstrasi Pengeluaran Bersih' Workshop on `Cleaner Production Demonstration Project'	Hotel Grand Blue Wave, Shah Alam, Selangor & MM Vitaoils Sdn. Bhd., Shah Alam, Selangor

Penyediaan Kelengkapan Dan Bahan Pengeluaran Bersih

Penyediaan kelengkapan dan bahan pengeluaran bersih adalah penting sebagai alatan sokongan kepada program-program pengeluaran bersih yang dilaksanakan oleh Jabatan. Pada tahun 2010, penyediaan kelengkapan dan bahan pengeluaran bersih yang dilaksanakan adalah seperti berikut:-

(i) Bahan terbitan berkaitan pengeluaran bersih
(ii) Bahan promosi berkaitan pengeluaran bersih

Objektif program ini adalah seperti berikut:-

(i) Untuk menyediakan bahan rujukan, garispanduan dan dokumentasi pengeluaran bersih bagi meningkatkan kefahaman dan kesedaran mengenainya kepada sektor industri, pegawai-pegawai JAS, institusi kewangan, badan bukan kerajaan dan orang awam;
(ii) Untuk menghebahkan maklumat mengenai pengeluaran bersih menerusi bahan-bahan terbitan;
(iii) Untuk menyampaikan maklumat-maklumat terkini di laman sesawang khusus pengeluaran bersih yang dikenali *Cleaner Production Virtual Centre* (CPVC); dan
(iv) Untuk menggalakkan pelaksanaan pengeluaran bersih di kalangan pihak industri bagi mengatasi masalah pencemaran alam sekitar.

Preparation Of Cleaner Production Equipment And Materials

Cleaner production equipment and material provision is an important tool to support cleaner production programme executed by the Department. In 2010, the provision of cleaner production equipment and material facilitation were carried out as follows:-

(i) Cleaner Production Publication Materials
(ii) Cleaner Production Promotion Materials

The objectives of the programme are as follows:-

(i) To provide reference material, guidelines and documentation on cleaner production in order to enhance the understanding and awareness on it's to industry, DOE's officers, financial institution, non governmental bodies and public;
(ii) To disseminate the information on cleaner production through publication materials;
(iii) To deliver the latest information on Department's Cleaner Production website namely Cleaner Production Virtual Centre (CPVC);
(iv) To encourage implementation of cleaner production within the industry to overcome environmental pollution problem.

Sistem Aplikasi Cleaner Production Virtual Centre (CPVC)
Application System of Cleaner Production Virtual Centre (CPVC)

Antara aktiviti-aktiviti yang dilaksanakan adalah seperti berikut:

(i) Penerbitan buku `*Cleaner Production Tips for Industries*';
(ii) Penerbitan buku `*Cleaner Production: A Do-It Yourself Manual*';
(iii) Terbitan bahan-bahan promosi dan poster pengeluaran bersih;
(iv) Hebahan maklumat di laman sesawang `*Cleaner Production Virtual Centre* (CPVC)'; dan
(v) Edaran bahan terbitan pengeluaran bersih menerusi program/aktiviti seperti jerayawara seminar, lawatan audit pengeluaran bersih, latihan, bengkel dan pameran.

Program Promosi Dan Kesedaran Industri Mengenai Pengeluaran Bersih

Pada tahun 2010, Unit Teknologi Bersih telah bergiat aktif dalam aktiviti mempromosi dan menggalakkan industri untuk melaksanakan amalan pengeluaran bersih dengan mengadakan seminar dan bengkel.

Seminar Pengeluaran Bersih: Ke Arah Industri Malaysia Yang Mesra Alam

Sebanyak empat (4) seminar telah diadakan dengan kerjasama di antara Pejabat JAS Negeri dan Unit Perundingan Universiti Malaya (UPUM) selaku perunding projek. Seramai 150–200 orang peserta telah menghadiri setiap seminar yang diadakan yang terdiri daripada wakil industri elektronik, makanan, automotif, sawit, petrokimia dan lain-lain (**Jadual 9.3**).

Topik-topik dalam seminar ini adalah seperti berikut:

(i) *Cleaner Production: The 5 W's and 1 H*;
(ii) *Cleaner Production Demonstration Project*;
(iii) *Cleaner Production Case Studies & Hazard Identification, Evaluation and Risk Control (HIRARC)*;
(iv) *Introduction to Cleaner Production Implementation Tools: An Application Software System for Cleaner Production Implementation Evaluation and Assessment*
(v) Faedah Kewangan Pelaksanaan Pengeluaran Bersih

Seminar Pengeluaran Bersih Peringkat Kebangsaan: `*Cleaner Production for Sustainable SME's in ASEAN Region–Sharing of Experiences*'

Seminar ini telah diadakan pada 13 Oktober 2010 bertempat di Auditorium, Institut Pendidikan dan Pengajian Siswazah, Universiti Malaya, Kuala Lumpur anjuran bersama Unit

The activities carried out under this programme are as follows:

(i) Book publication of `Cleaner Production Tips for Industries';
(ii) Book publication of `Cleaner Production: A Do-It Yourself Manual';
(iii) Publication of Cleaner Production promotion materials and poster;
(iv) Information dissemination on `Cleaner Production Virtual Centre' website; and
(v) Distribution of Cleaner Production publication materials through programme / activities such as roadshow seminars, Cleaner Production Audit visit, training, workshops and exhibition.

Promotion And Awareness Programme On Cleaner Production To Industries

In 2010, the Clean Technology Unit had been actively involved in promoting and encouraging the industry to implement cleaner production practices through the seminars and workshops.

Seminar on Cleaner Production: Towards Malaysia Environment Friendly Industry

Four (4) seminars were organised with the cooperation of State DOE Offices and the University of Malaya Consultancy Unit (UPUM) as the project consultant. A total of 150 to 200 participants attended each seminar, comprising representatives from electronic industry, food, automotive, oil, petrochemicals and others (**Table 9.3**).

Topics in the seminar included:

(i) Cleaner Production: The 5 W's and 1 H;
(ii) Cleaner Production Demonstration Project;
(iii) Cleaner Production Case Studies & Hazard Identification, Risk Evaluation and Control (HIRARC);
(iv) (iv) Introduction to Cleaner Production Implementation Tools: An Application Software System for Cleaner Production Implementation Evaluation and Assessment
(v) Implementation of Cleaner Production Financial Benefits

National Level Seminar on Cleaner Production: Cleaner Production for Sustainable `SME's in the ASEAN Region-Sharing of Experiences'

The seminar was held on October 13, 2010 at the Auditorium, Institute of Education and Graduate Studies,

Teknologi Bersih, Jabatan Alam Sekitar dan Universiti Malaya, Kuala Lumpur. Objektif seminar ini adalah:

(i) Meningkatkan kerjasama dan mengeratkan hubungan kerja di antara Jabatan Alam Sekitar dengan pusat-pusat Pengeluaran Bersih di negara-negara Asia Tenggara;
(ii) Sebagai perkongsian maklumat mengenai status kemajuan pengeluaran bersih di sesebuah negara Asia Tenggara;
(iii) Meningkatkan kefahaman pihak industri dan *stakeholder* mengenai pengeluaran bersih.

Seminar ini telah dihadiri oleh peserta daripada pelbagai industri, agensi-agensi kerajaan, perunding alam sekitar, badan-badan bukan kerajaan, ahli akademik dari institusi pengajian tinggi serta wakil persatuan-persatuan industri.

Bengkel Pengeluaran Bersih: Ke Arah Industri yang Lebih Berdaya Saing dan Mesra Alam Sekitar

Pada tahun 2010, sebanyak tiga (3) bengkel telah diadakan seperti dalam **Jadual 9.4**.

Aktiviti-aktiviti yang dilaksanakan dalam bengkel ini adalah:

(i) Taklimat dan Diskusi Mengenai Pengenalan kepada Audit Pengeluaran Bersih
(ii) Taklimat dan Diskusi Mengenai Contoh Kajian Kes Audit Pengeluaran Bersih di Industri
(iii) Taklimat dan Diskusi Mengenai Merancang Pelaksanaan Pengeluaran Bersih di Industri
(iv) Sesi Lawatan Demonstrasi Pengeluaran Bersih di Premis Industri iaitu Syarikat MM Vitaoils Sdn. Bhd., Shah Alam.

Bengkel Pengeluaran Bersih: Ke Arah Perusahaan Batik yang Mesra Alam

Bengkel ini dilaksanakan dengan kerjasama JAS Negeri Kelantan dan Unit Perundingan Universiti Malaya sebagai perunding projek. Ia dilaksanakan bertujuan sebagai langkah Jabatan ini dalam memberi kesedaran mengenai tanggungjawab bersama menjaga alam sekitar kepada pengusaha-pengusaha batik di Malaysia. Bengkel ini telah diadakan pada 6 dan 7 Julai 2010 di Hotel Grand Riverview, Kota Bharu, Kelantan dan dijayakan dengan penyertaan seramai 20 orang peserta dari kalangan pihak pengusaha batik. Majlis ini telah dirasmikan oleh Y.B. Mej.(B) Dato' Hj Md Anizam Abd Rahman, Pengerusi Jawatankuasa Perumahan, Kerjaraya, Utiliti dan Alam Sekitar Kelantan.

University Malaya, Kuala Lumpur and was organized by the Clean Technology Unit and the University of Malaya, Kuala Lumpur. The objectives of this seminar were:

(i) Enhance the cooperation and strengthen the working relationship between the Department of Environment Cleaner Production Centres in the countries of Southeast Asia;
(ii) The sharing of information regarding the status of the development of a cleaner production in Southeast Asia;
(iii) To increase the understanding of the industry and stakeholders on cleaner production.

The seminar was attended by participants from various industries, government agencies, environmental consultants, non-governmental organizations, academics from tertiary institutions and representatives of industry associations.

Workshop on Cleaner Production: Towards a More Competitive and Environment Friendly Industry

In 2010, a total of three (3) workshops were held as shown in **Table 9.4**.

The activities undertaken in this workshop were:

(i) Presentation and Discussion on the Introduction of Cleaner Production Audit
(ii) Briefing and Discussion on Case Study Examples of Cleaner Production Audit in Industry
(iii) Presentation and Discussion on the Implementation Plan Cleaner Production in Industry
(iv) Cleaner Production Demonstration Sessions Tour at the Premises Industrial Companies Vitaoils MM, Shah Alam.

Workshop on Cleaner Production: Towards Environmentally Friendly Batik Industry

The workshop was conducted in collaboration with the DOE State Office (Kelantan) and the University of Malaya Consultancy Unit as a project consultant. It is aimed to create awareness about shared responsibility in taking care of the environment to the operators of batik industry in Malaysia. The workshop was held on 6 and 7 July 2010 at the Grand Riverview Hotel, Kota Bharu, Kelantan, with 20 participants from the batik industry. The ceremony was officiated by Y.B. Mej.(B) Dato' Hj Md Anizam Abd Rahman, Commitee Chairman of Housing, Public Works, Utility dan Environment, Kelantan.

Aktiviti-aktiviti yang dilaksanakan dalam bengkel ini adalah seperti berikut:

(i) Dua (2) Sesi Dialog: `Di Persimpangan: Cabaran Industri Batik di Malaysia' dan `Klinik Pengeluaran Bersih bagi Pengusaha Batik'
(ii) Kertas Kerja mengenai `Impak Kegiatan Industri Terhadap Alam Sekitar Konsep Pengeluaran Bersih dan Aplikasi di Premis Batik'
(iii) Sesi Interaktif Pengeluaran Bersih
(iv) Sesi Lawatan dan Pengumpulan Maklumat Kilang Batik (Kilang Batik Razali dan Kilang Batik Samasa)

The activities undertaken in this workshop are as follows:

(i) Two (2) Dialogue Session: `The Crossroads: Challenges in Malaysia Batik Industries' and `Cleaner Production Clinic for Batik Entrepreneurs'
(ii) Working Paper on `Impact of Industries Activities on the Environment Cleaner Production Concepts and It's Application in Batik Premise'
(iii) Cleaner Production Interactive Session
(iv) Visit Session and Information Collection on Batik Factories (Razali Batik Factory and Samasa Batik Factory)

Jadual 9.2 JAS: Penganjuran Program Jerayawara `Seminar Mempromosi Pengeluaran Bersih untuk Industri'
Table 9.2 DOE: Roadshow Programme on `Seminar on Promoting of Cleaner Production and Environmentally Sound Technologies' by Zone Year 2010

Bil./ No.	Tarikh/ Date	Tempat/ Venue	Zon/ Zone	Penganjuran Bersama Unit Teknologi Bersih, JAS Ibu Pejabat bersama JAS Negeri/ Jointly Organized of Cleaner Production Unit, DOE Headquarters with DOE State
1	2 Mac/March 2010	Hotel Vistana, Kuantan, Pahang	Zon Pantai Timur/ East Coast Zone	Terengganu, Kelantan dan Pahang
2	18 Mei/May 2010	Hotel Sunway, Seberang Prai, Pulau Pinang	Zon Utara/ Northern Zone	Perlis, Kedah, Pulau Pinang, Perak Utara
3	15 Jun/June 2010	Hotel Everly Resort, Melaka	Zon Selatan/ Southern Zone	Johor, Melaka, N. Sembilan
4	13 Julai/July 2010	Hotel Quality, Shah Alam, Selangor	Zon Tengah/ Central Zone	Selangor, Kuala Lumpur, Perak Selatan

Jadual 9.3 JAS: Seminar Kebangsaan `Cleaner Production for Sustainable SME's in ASEAN', 2010
Table 9.3 DOE: National Seminar on `Cleaner Production for Sustainable SME's in ASEAN', 2010

Bil./ No.	Tajuk Kertas Kerja Nasional/ Title of Country Paper	Pensyarah/ Lecturer	Negara/ Country
1.	Peranan Jabatan Alam Sekitar dalam Mempromosi Pengeluaran Bersih di Malaysia/ Department of Environment's Role in Promoting Cleaner Production in Malaysia	Prof. Dr. Nik Meriam Sulaiman, Profesor, Jabatan Kejuruteraan Kimia, Universiti Malaya, Kuala Lumpur Prof. Dr. Nik Meriam Sulaiman, Professor, Chemical Engineering Department, University of Malaya, Kuala Lumpur	Malaysia
2.	Dari Mempromosi Pengeluaran Bersih kepada Pelaksanaan Projek Teknologi Bersih bagi Industri Kecil dan Sederhana di Vietnam/ From Cleaner Production Promotion to Implementation of Cleaner Technology Projects in Industrial SME's in Vietnam	Prof. Dr. Tran Van Nhan, Profesor, Institut Sains Persekitaran dan Teknologi, Universiti Teknologi Hanoi,Vietnam Prof. Dr. Tran Van Nhan, Professor, Institute for Environmental Science and Technology, Hanoi University of Technology, Vietnam	Vietnam
3.	Perkongsian Maklumat Melalui Aktiviti Mempromosi CP di Vietnam/ Information Sharing Through Cleaner Production Promotion Activities in Vietnam	Prof. Dr. Tran Van Nhan, Profesor, Institut Sains Persekitaran dan Teknologi, Universiti Teknologi Hanoi,Vietnam Prof. Dr. Tran Van Nhan, Professor, Institute for Environmental Science and Technology, Hanoi University of Technology, Vietnam	Vietnam
4.	Gambaran Keseluruhan Mengenai Pendidikan dan Kajian Pengeluaran Bersih di Thailand/ Overview on Cleaner Production Education and Research in Thailand	Dr. Thumrongrut Mungcharoen, Profesor, Jabatan Kejuruteraan Kimia, Universiti Kasetsart, Thailand Dr. Thumrongrut Mungcharoen, Professor, Department of Chemical Engineering Kasetsart University, Thailand	Thailand
5.	Pelaksanaan Pengeluaran Bersih oleh Sektor Industri Kecil dan Sederhana di Indonesia/ Cleaner Production Implementation by Small and Medium Industries Sector in Indonesia	Dra. Rismawarni Marshal, Pengarah Eksekutif, Pusat Pengeluaran Bersih Nasional Indonesia, Kementerian Alam Sekitar, Indonesia Dra. Rismawarni Marshal, Executive Director, Indonesia National Cleaner Production Centre, Ministry of Environment, Indonesia	Indonesia

Jadual 9.4 JAS: Bengkel Pengeluaran Bersih: Ke Arah Industri yang Lebih Berdaya Saing dan Mesra Alam Sekitar
Table 9.4 DOE: Workshop on Cleaner Production: Towards a Competitive and Environmental Friendly Industries

Bil./ No.	Tarikh/ Date	Tempat/ Venue
1.	20- 21 Julai/July 2010	Hotel Palm Garden IOI Resort, Putrajaya/ Palm Garden IOI Resort Hotel, Putrajaya
2.	5 - 6 Oktober/October 2010	Hotel Grand Blue Wave, Shah Alam/ Grand Blue Wave Hotel, Shah Alam

Projek Demonstrasi Pengeluaran Bersih

Projek ini dilaksanakan bermula dari Julai 2009 dan selesai dilaksanakan pada November 2010. Kilang MM Vitaoils Sdn.Bhd. di Shah Alam, Selangor telah dipilih sebagai sebuah premis demonstrasi pengeluaran bersih.

Objektif bagi projek demonstrasi ini adalah untuk mewujudkan sebuah premis yang melaksanakan amalan pengeluaran bersih untuk dijadikan contoh pelaksanaannya kepada industri yang lain.

Audit Pengeluaran Bersih dijalankan pada peringkat permulaan projek. Opsyen Pengeluaran Bersih dikenalpasti menerusi audit tersebut dan dilaksanakan. Pelaksanaan Pengeluaran Bersih di kilang tersebut dijadikan sebagai demonstrasi kepada industri yang lain menerusi penyampaian maklumat dalam program-program promosi pengeluaran bersih seperti jerayawara seminar, bengkel, dokumentasi video, bahan terbitan dan hebahan maklumat di laman web Pengeluaran Bersih Jabatan iaitu `*Cleaner Production Virtual Centre*'.

Di bawah projek ini juga, latihan Audit Pengeluaran Bersih di lapangan secara `*hands-on*' kepada pegawai Jabatan ini dan juga kepada staf teknikal di premis demonstrasi telah dijalankan. Di akhir projek, staf teknikal yang terlibat telah berupaya untuk melaksanakan pengeluaran bersih dengan sendiri secara berterusan.

Projek ini ini secara tidak langsung telah mendorong dan menggalakkan pihak industri lain untuk mengamalkan Pengeluaran Bersih. Ia juga merupakan usaha ke arah pencegahan pencemaran di peringkat awal proses di industri.

Dengan adanya industri yang melaksanakan pengeluaran bersih yang dijadikan demonstrasi, ia dapat memberi gambaran sebenar mengenai keberkesanan pelaksanaannya serta menjadikan industri lain lebih terbuka dan bersedia mengamalkan konsep ini.

Bantuan Khidmat Audit Pengeluaran Bersih Ke Atas Industri Kecil Dan Sederhana

Program ini dijalankan dengan melaksanakan bantuan audit pengeluaran bersih ke atas Industri Kecil dan Sederhana untuk mengenalpasti opsyen-opsyen pengeluaran bersih di premis industri yang diaudit. Pada tahun 2010, sebanyak tiga (3) buah kilang telah dijalankan audit pengeluaran bersih seperti di **Jadual 9.5**.

Cleaner Production Demonstration Project

The project has been carried out from July 2009 and completed in November 2010. In this project, MM Vitaoils Sdn.Bhd. factory in Shah Alam, Selangor was selected as a cleaner production demonstration premise.

The objective of this demonstration project is to establish a premise practicing cleaner production concept to be an example to other industries.

Cleaner Production Audit was conducted at the beginning of the project. Cleaner Production Options were identified through the audit and implemented. Implementation of Cleaner Production at the premise are used as a demonstration to other industries through the dissemination of information on programmes such as the cleaner production promotion roadshow seminars, workshops, video documentation, publications and dissemination of information on the Department's Cleaner Production website of `Cleaner Production Virtual Centre'.

This project also involved field training on Cleaner Production Audit to the DOE officers and also to the technical staff of the demonstration premise. At the end of the project, the technical staffs involved were capable to implement Cleaner Production by themselves continuously.

This project will indirectly be able to motivate and encourage other industries to adopt Cleaner Production. It is also a step towards prevention of pollution at an early stage in the industry process.

The availability of industries which implement Cleaner Production as a demonstration project can give a true picture of the effectiveness of its implementation and will be able to make other industries willing to adopt these concepts.

Cleaner Production Audit Assistance To Small And Medium Industries

The programme is carried out by implementing cleaner production audit assistance to Small and Medium Industries to identify cleaner production options in the industrial premises which have been audited. In 2010, the cleaner production audit was carried out on three (3) factories as in **Table 9.5**.

Proses Audit Pengeluaran Bersih yang dilaksanakan ke atas industri adalah seperti berikut:-

1. Pra-Audit Pengeluaran Bersih ke atas IKS
2. Taklimat Audit Pemgeluaran Bersih/Promosi Pengeluaran Bersih di Premis
3. Analisa, Kajian Proses dan Penilaian
4. Mengenalpasti Opsyen Pengeluaran Bersih
5. Penyediaan Laporan Audit kepada Industri
6. Penyebaran Maklumat Audit Pengeluaran Bersih Menerusi Laman Web CPVC
7. Kajian Kes Menerusi Laporan Audit Pengeluaran Bersih untuk Menggalakkan Industri yang diaudit Melaksanakan CP
8. Kajian Kes berkenaan juga menjadi Contoh / Panduan kepada Industri Lain

The Cleaner Production Audit process carried out on the industry is as follows:-

1. Cleaner Production Pre-Audit in SMIs
2. Briefing on Cleaner Production / Cleaner Production Promotion at Premise
3. Analysis, Research and Evaluation Process
4. Cleaner Production Option Identification
5. Cleaner Production Audit Report Preparation
6. Information Dissemination through Cleaner Production Virtual Centre (CPVC)
7. Case Study through the Cleaner Production Audit Report for Encouraging the Audited Industries to Implement CP
8. The Case Studies Would Also be Examples / Guide to Other Industries

Dengan adanya pelaksanaan program ini, ia telah dapat memberi kefahaman kepada industri mengenai audit pengeluaran bersih, mengenalpasti opsyen pengeluaran bersih dan seterusnya menggalakkan industri untuk melaksanakan amalan pengeluaran bersih.

The implementation of this programme can provide an understanding to the industry on the cleaner production audit, identifying cleaner production options and therefore, encourage the industry to adopt cleaner production practices.

Jadual 9.5 JAS: Program Bantuan Audit Pengeluaran Bersih ke atas Industri Kecil dan Sederhana di Malaysia, 2010
Table 9.5 DOE: Cleaner Production Audit Assistance Programme to Malaysia Small and Medium Industries, 2010

Bil./ No	Tarikh/ Date	Lawatan Audit Pengeluaran Bersih/ Cleaner Production Audit Visit	Jenis Industri/ Type of Industry	Wakil Pegawai JAS/ Representative of DOE Officer
1.	6 Januari/ January 2010	Laksamana Usaha Noodle Products Sdn. Bhd., Kuala Lumpur	Pemprosesan mee kuning, kuey tiow dan laksa/ Yellow noodles, kuey teow and laksa making	Unit Teknologi Bersih dan JAS Kuala Lumpur/ Cleaner Production Unit and DOE State of Kuala Lumpur
2.	26 Januari/ January 2010	SCF Food Industries Sdn. Bhd., Kuantan, Pahang	Pemprosesan kicap/ Soya sauce processing	Unit Teknologi Bersih dan JAS Pahang/ Cleaner Production Unit and DOE State of Pahang
3.	26 Januari/ January 2010	Kitapanel Wood Product Sdn. Bhd., Kuantan, Pahang	Pembuatan kayu panel perabot/ Wood furniture panel manufacturing	Unit Teknologi Bersih dan JAS Pahang/ Cleaner Production Unit and DOE State of Pahang

Pembangunan Sistem Aplikasi Pangkalan Data Maklumat Pengeluaran Bersih

Sistem Aplikasi Pangkalan Data Maklumat Pengeluaran Bersih Malaysia (*Malaysia Cleaner Production Information Database System*, MCPID) merupakan satu sistem pangkalan data berasaskan web yang mengandungi maklumat-maklumat mengenai pelaksanaan Pengeluaran Bersih oleh industri-industri di negara ini.

Pembangunan sistem ini dilaksanakan melibatkan kerja kajian dan pengumpulan maklumat mengenai Pengeluaran Bersih di negara ini.

Sistem MCPID diharap dapat berfungsi sebagai mekanisma untuk menyampaikan dan menyebarkan maklumat, menjadi panduan dan tempat rujukan mengenai Pengeluaran Bersih kepada Industri Kecil dan Sederhana (IKS) tempatan dan orang awam.

Pembangunan Sistem MCPID ini adalah program kesinambungan dan pengukuhan kepada projek pembangunan `Cleaner Production Virtual Centre, CPVC' dan `Cleaner Production Implementation Tool, CPIT' yang telahpun beroperasi di Jabatan Alam Sekitar.

Sistem ini diharap dapat memantapkan program promosi pengeluaran bersih yang dilaksanakan Jabatan Alam Sekitar kepada industri khasnya IKS di Malaysia dan seterusnya dapat menyokong kerja-kerja penguatkuasaan ke atas industri ke arah pematuhan AKAS, 1974. Melalui pendekatan ini juga Jabatan Alam Sekitar berharap ia dapat membantu pihak IKS di seluruh Malaysia untuk mengurangkan dan meminimakan pencemaran alam sekitar dari peringkat awal aktiviti/proses dengan mengamalkan pengeluaran bersih di industri masing-masing.

Development Of Cleaner Production Information Database Apllication System

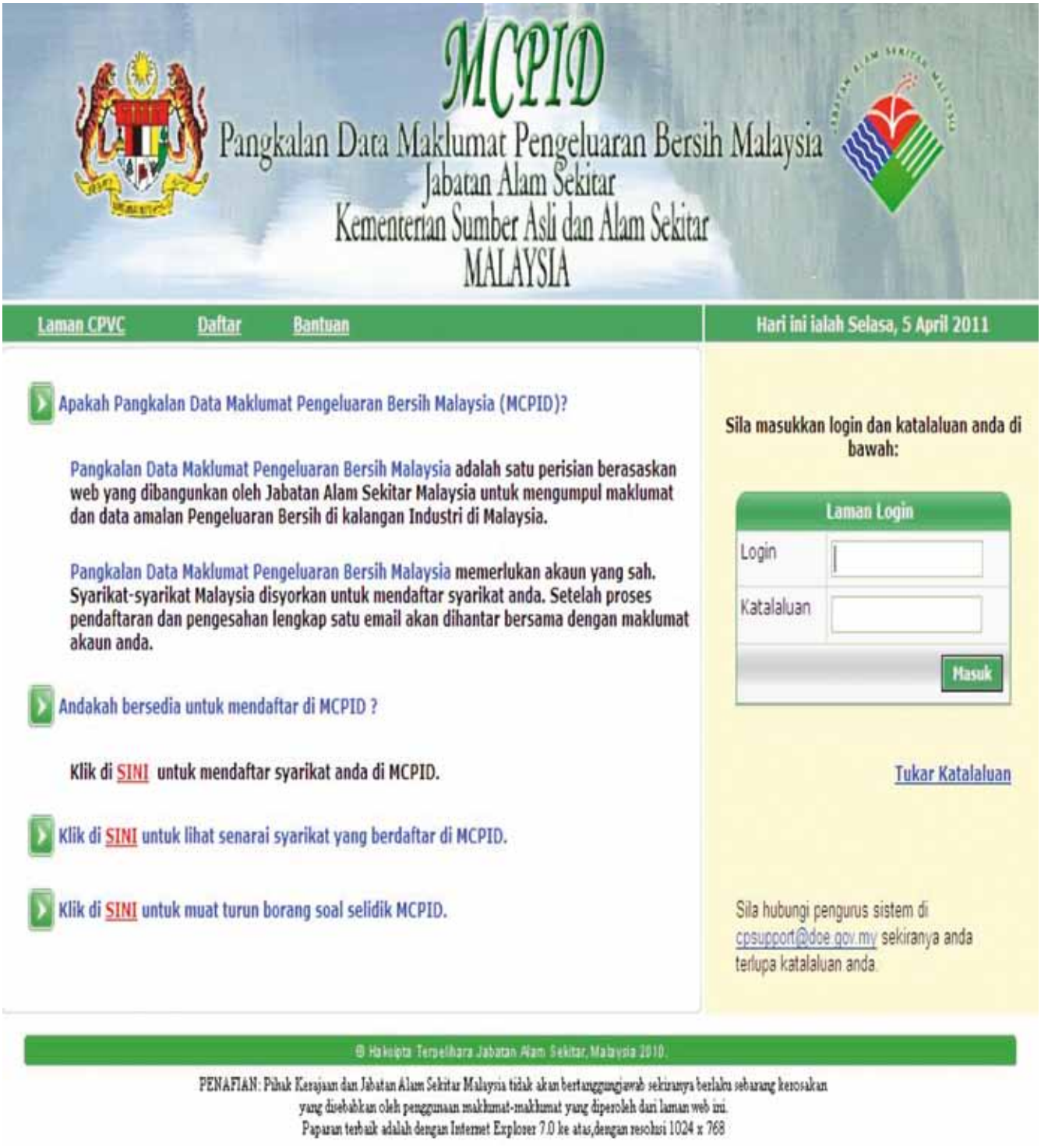
Malaysia Cleaner Production Information Database System (MCPID) is a web-based database system that contains information about the implementation of Cleaner Production by industries in the country.

The development of this system involves the study and gathering of information on Cleaner Production in this country.

MCPID system is expected to act as a mechanism to communicate and disseminate information, guidance and reference points on Cleaner Production to local Small and Medium Industries (SMIs) and the public.

The development of MCPID system is a continuation programme and strengthens the development project of `Cleaner Production Virtual Centre, CPVC' and `Cleaner Production Implementation Tool, CPIT' which has been operating in the Department of Environment.

The system is expected to strengthen the promotion of Cleaner Production programme implemented by DOE to industry, especially Small and Medium Industries (SMIs) in Malaysia and further support the role of enforcement work towards compliance on EQA, 1974. Through this approach, it will help the SMIs in Malaysia to reduce and minimize environmental pollution from the early stages of activities/ processes by implementing cleaner production in their respective premises.



Sistem Aplikasi Pangkalan Data Maklumat Pengeluaran Bersih Malaysia (MCPID)
Malaysia Cleaner Production Information Database System (MCPID)

Jadual 9.5 JAS: Kajian Soal Selidik Pelaksanaan Pengeluaran Bersih di Industri Kecil dan Sederhana (IKS) di Malaysia, 2010
Table 9.5 DOE: Questionnaire Study on Cleaner Production Implementation in Small and Medium Industries (SMIs) in Malaysia, 2010

Status Perlaksanaan/ Implementation Status	Bilangan Responden/ Number of Respondent	Peratusan (%)/ Percentage (%)
Adaptasi/Adaptation	119	19.22
Mencuba/Try-out	250	40.39
Masih Tiada/No response	152	24.56
Tiada Pengalaman/No experience	98	15.83
Jumlah/Total	**619**	**100**

Jadual 9.6 JAS: Kajian Soal Selidik Faktor Penghalang Pelaksanaan Pengeluaran Bersih di Industri Kecil dan Sederhana (IKS) di Malaysia, 2010
Table 9.5 DOE: Questionnaire Study on Barriers Factor in the Implementation of Cleaner Production for Small and Medium Industries (SMIs) in Malaysia, 2010

Faktor Penghalang Pelaksanaan Pengeluaran Bersih di Industri/Barriers Factor in the Implementation of Cleaner Production	Bilangan Responden/ Number of Respondent	Peratusan (%)/ Percentage (%)
Pengetahuan/knowledgeable	50	42.02
Kewangan/Finance	45	37.82
Sumber Manusia/Human Resources	24	20.16
Jumlah/Total	**119**	**100**

Galeri Gambar Pengeluaran Bersih
Cleaner Production Photo Gallery

Galeri Gambar Pengeluaran Bersih
Cleaner Production Photo Gallery

Galeri Gambar Pengeluaran Bersih
Cleaner Production Photo Gallery

Jabatan Alam Sekitar
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