

JABATAN ALAM SEKITAR
Kementerian Sumber Asli dan Alam Sekitar



DEPARTMENT OF ENVIRONMENT
Ministry of Natural Resources and Environment



LAPORAN TAHUNAN

2012

ANNUAL REPORT

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SINGKATAN ABBREVIATIONS

Bank Pembangunan Asia	ADB	Asian Development Bank
Tahun Alam Sekitar ASEAN	AEY	ASEAN Environment Year
Akta Kualiti Alam Sekeliling	AKAS	Environmental Quality Act
Mesyuarat Menteri-Menteri ASEAN Mengenai Alam Sekitar	AMME	ASEAN Ministerial Meeting on the Environment
Pertubuhan Negara-Negara Asia Tenggara	ASEAN	Association of South East Asian Nations
Pegawai Kanan Alam Sekitar ASEAN	ASOEN	ASEAN Senior Officials on the Environment
Area Watch and Sanction Inspection	AWASI	Area Watch and Sanction Inspection
Buangan Terjadual	BT	Scheduled Wastes
Brunei-Indonesia-Malaysia-Filipina	BIMP	Brunei-Indonesia-Malaysia-Philippines
Keperluan Oksigen Biokimia	BOD	Biochemical Oxygen Demand
Bahan Pemusnah Ozon	BPO	Ozone Depleting Substances
Udara Bersih	CA	Clean Air
Pusat bagi Alam Sekitar, Teknologi dan Pembangunan Malaysia	CETDEM	Centre For Environmental, Technology and Development Malaysia
Kloroflourokarbon	CFC	Chlorofluorocarbon
Majlis Industri Kimia Malaysia	CICM	Chemical Industries Council of Malaysia
Pusat Pengurusan Pantai	CMC	Coastal Management Centre
Badan Penyelaras Mengenai Laut Asia Timur	COBSEA	Co-ordinating Body for the Seas of East Asia
Keperluan Oksigen Kimia	COD	Chemical Oxygen Demand
Kelapa Sawit Mentah	CPO	Crude Palm Oil
Desibel	dB	Decibel (s)
Jabatan Alam Sekitar	DOE	Department of Environment
Sistem Pengurusan Dokumen	DOKUMAS	Document Management System
Kawasan Pertumbuhan ASEAN Timur	EAGA	East ASEAN Growth Area
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 Pengguna-Pengguna Malaysia	FOMCA	Federation of Malaysian Consumer's Association
Institut Penyelidikan Hutan Malaysia	FRIM	Forest Research Institute of Malaysia
Gabungan Persatuan-Persatuan Perdagangan Getah Malaysia	FRTM	Federation of Rubber Trade Association of Malaysia

SINGKATAN ABBREVIATIONS

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

SINGKATAN ABBREVIATIONS

Memorandum Persefahaman	MOU	Memorandum of Understanding
Majlis Pengeluar-Pengeluar Getah Malaysia	MRPC	Malaysia Rubber Products Manufacturers' Council
Jawatankuasa Bersama Malaysia-Singapura Mengenai Alam Sekitar	MSJCE	Malaysia – Singapore Joint Committee on the Environment
Pertubuhan Bukan Kerajaan	NGO	Non-Governmental Organisation
Kementerian Sumber Asli Dan Alam Sekitar	NRE	Ministry of Natural Resources and Environment
Amoniakal Nitrogen	NH ₃ N	Ammoniacal Nitrogen
Pertubuhan Kerjasama Ekonomi dan Pembangunan	OECD	Organisation for Economic Co-operation and Development
Pertubuhan Kerjasama Alam Sekitar bagi Laut Asia Timur	PEMSEA	Partnership in Environmental Management for the Seas of East Asia
Kebenaran Maklumat Awal	PIC	Prior Informed Consent
Persatuan Pekilang-Pekilang Minyak Kelapa Sawit Malaysia	POMA	Palm Oil Millers' Association
Institut Penyelidikan Minyak Kelapa Sawit	PORIM	Palm Oil Research Institute of Malaysia
Ringgit Malaysia	RM	Ringgit Malaysia
Institut Penyelidikan Getah Malaysia	RRIM	Rubber Research Institute of Malaysia
Urusetia Konvensyen BASEL	SBC	Secretariat for BASEL Convention
Agensi Pembangunan Antarabangsa Sweden	SIDA	Swedish International Development Agency
Institut Standard dan Penyelidikan Industri Malaysia	SIRIM	Standards Industrial Research Institute of Malaysia
Udara Bersih	UB	Clean Air
Universiti Islam Antarabangsa Malaysia	UIA	International Islamic University of Malaysia
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 Nasional	UNITEN	University of Tenaga Malaysia Nasional
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

Jabatan Alam Sekitar dengan sukacitanya membentangkan Laporan Tahunan yang merangkumi ruang lingkup kerja dan pencapaian pada tahun 2012.

Jabatan Alam Sekitar meneruskan mandat yang diberi untuk mentadbir Akta Kualiti Alam Sekeliling, 1974 di mana Penguatkuasaan yang merupakan fungsi utama terus diberikan penekanan. Pada tahun ini juga pindaan telah dibuat pada Seksyen 37 dengan pengenalan peruntukan baru Seksyen 37C di bawah AKAS 1974 di mana seksyen ini memberi kuasa-kuasa tambahan kepada pegawai-pegawai penguatkuasaan dalam melaksanakan penguatkuasaan di bawah Akta ini. Komponen utama Seksyen 37C adalah :

- (i) Ketua Pengarah atau mana-mana pegawai yang diberi kuasa secara bertulis oleh Ketua Pengarah boleh menangkap tanpa waran mana-mana orang yang dipercayainya dengan munasabah telah melakukan atau cuba untuk melakukan suatu kesalahan di bawah Akta ini.
- (ii) Ketua Pengarah atau mana-mana pegawai yang diberi kuasa secara bertulis oleh Ketua Pengarah yang membuat penangkapan di bawah subseksyen (1) hendaklah, tanpa kelengahan yang tidak perlu, membawa orang yang ditangkap itu ke balai polis yang paling hampir, dan sesudah itu orang itu hendaklah diperlakukan mengikut undang-undang yang berhubungan dengan tatacara jenayah yang sedang berkuat kuasa.

FOREWORD

The Department of Environment wishes to present its Annual Report which provides an account of its work and achievements in the year 2012.

DOE continues its mandate to administer the Environmental Quality Act (EQA), 1974 whereby continual emphasis is given to enforcement which is the core business of the Department. In 2012, amendment was made on Section 37 with the introduction of a new provision under Section 37C of the EQA 1974 which authorized additional powers to the enforcement officers in doing enforcement under this Act. The main components of Section 37C are :

- (i) The Director General or any officer duly authorized in writing by him may arrest without warrant any person whom he reasonably believes has committed or is attempting to commit an offence under this Act.
- (ii) The Director General or any officer duly authorized in writing by him making an arrest under subsection (1) shall, without unnecessary delay, bring the person arrested to the nearest police station, and thereafter the person shall be dealt with according to the law relating to criminal procedure for the time being in force.

Pada tahun 2012, Jabatan Alam Sekitar telah melaksanakan beberapa program berbentuk "pakej penambahbaikan" bagi pemprosesan laporan EIA dan prosedur EIA, memendekkan tempoh pemprosesan laporan EIA dari 5 minggu kepada 3 minggu, pindaan kepada undang-undang berkaitan, penambahbaikan kepada Skim Pendaftaran Jururunding EIA dan Juruaudit Alam Sekitar, pameran laporan EIA penuh di laman sesawang Jabatan Alam Sekitar semasa tempoh pemprosesan dan pembentukan garis panduan EIA spesifik.

(i) **Pindaan Seksyen 34A dan Pertambahan Seksyen 34AA, di bawah Akta Kualiti Alam Sekeliling, 1974**

Seksyen 34A telah dipinda buat pertama kalinya sejak tahun 1986 dengan tujuan untuk memperkukuhkan dan menambahbaik sistem dan mekanisma EIA di Malaysia. Pindaan tersebut telah diwartakan pada Ogos 2012 dan dikuatkuasakan pada 2 Januari 2013. Komponen utama pindaan kepada Seksyen 34A adalah:-

- a. mana-mana orang yang berhasrat untuk menjalankan apa-apa aktiviti yang ditetapkan hendaklah **melantik orang yang layak** untuk **menjalankan penilaian kesan kepada alam sekeliling** dan untuk **mengemukakan laporan** mengenainya **kepada Ketua Pengarah Alam sekeliling** mengikut cara sebagaimana yang ditetapkan oleh Ketua Pengarah Alam Sekeliling;
- b. Ketua Pengarah Alam Sekeliling **tidak boleh meluluskan laporan EIA sekiranya laporan itu tidak mengikut rancangan pemajuan atau rancangan fizikal yang diluluskan oleh pihak berkuasa yang meluluskan yang berkaitan**, dengan memberikan alasan untuk tidak meluluskan, dan hendaklah memaklumkan orang itu dan pihak berkuasa yang meluluskan yang berkaitan dengan sewajarnya; dan
- c. Penalti terhadap pelanggaran seksyen 34A ini dinaikkan **kepada tidak lebih daripada lima ratus ribu ringgit** atau penjara selama tempoh tidak lebih daripada lima tahun atau kedua-duanya.

In the year 2012, the Department had implemented various programmes in the form of "improvement package" namely for the EIA report review process and EIA procedures, essentially shortening the EIA review duration from 5 weeks to 3 weeks, amendment to related legislation, enhancement of EIA Consultant and Environmental Auditors Registration Schemes, display of full EIA report in the Department of Environment's official website for the duration of EIA processing and establishment of specific EIA guidelines.

(i) **Amendment to Section 34A and Introduction of Section 34AA under the Environmental Quality Act, 1974**

Section 34A was amended for the first time since 1986, with the purpose to strengthen and enhance the EIA system and mechanism in Malaysia. It was gazetted on August 2012 and came into force on 2 January 2013. The main components of the amended Section 34A are:-

- a. any person intending to carry out any prescribed activity shall **appoint a qualified person to conduct an environmental impact assessment** and to **submit a report** thereof to the **Director General** in the manner as **the Director General** may prescribe;
- b. the Director General **shall not approve EIA report which is not in accordance with the development plan or physical plan approved by the relevant approving authority, giving reasons for not approving**, and shall inform the person and the relevant approving authority accordingly; and
- c. The penalty for contravening Section 34A was increased from one hundred thousand ringgit to **five hundred thousand ringgit or to imprisonment for a period not exceeding five years or to both**.

Bagi memperkukuhkan elemen penguatkuasaan dan sebagai langkah pencegahan, satu **Seksyen baru, 34AA** telah diperkenalkan yang memberi kuasa kepada Ketua Pengarah Alam Sekeliling untuk memberhentikan kerja orang yang menjalankan aktiviti yang ditetapkan **tanpa kelulusan di bawah subseksyen 34A(3); yang mencabuli apa-apa syarat yang dilampirkan pada kelulusan laporan itu; atau yang pada pendapat Ketua Pengarah Alam Sekeliling adalah dijalankan mengikut cara yang mungkin menyebabkan kerosakan alam sekeliling.** Perintah Larangan atau perintah berhenti kerja itu boleh dikeluarkan bagi maksud menghalang aktiviti yang ditetapkan daripada berterusan **sama ada secara mutlak atau bersyarat; bagi apa-apa tempoh sebagaimana yang ditentukan oleh Ketua Pengarah Alam Sekeliling; atau sehingga kehendak untuk meremedi sebagaimana yang diarahkan oleh Ketua Pengarah Alam Sekeliling telah dipatuhi.**

(ii) **Penambahbaikan Prosedur EIA – Memendekkan Tempoh Pemprosesan Laporan EIA dari 5 Minggu kepada 3 Minggu (Hari Bekerja) Bagi Beberapa Aktiviti Yang Ditetapkan.**

Selaras dengan usaha Kerajaan dalam mempertingkatkan perkhidmatan sektor awam, Jabatan Alam Sekitar telah mengambil langkah mempertingkatkan serta memperkukuhkan sistem penyampaian Jabatan, khususnya di dalam prosedur dan pemprosesan EIA. Sehubungan itu, piagam pelanggan bagi memproses Laporan EIA Awal telah dipercepatkan dari 5 minggu kepada 3 minggu (hari bekerja) bagi aktiviti-aktiviti tertentu iaitu perumahan dan bandar-bandar baru, industri di kawasan industri yang diwartakan, pemerolehan kembali luar tapak dan penstoran luar tapak bagi buangan terjadual (kecuali pemerolehan kembali bateri asid plumbum terpakai) dan loji pengolahan air buangan bagi kumbahan.

Menyedari kepentingan pencegahan pencemaran alam sekitar dan kesihatan awam berpunca dari tanah yang tercemar ini, Seksyen Tanah Tercemar dan EHS, Bahagian Bahan Berbahaya, Jabatan Alam Sekitar (JAS) Ibu Pejabat sedang menggubal peraturan bagi membolehkan penguatkuasaan peruntukan Seksyen 24, Akta Kualiti Alam Sekeliling 1974, sekatan mengenai pencemaran tanah tanih.

To further strengthen the enforcement element and as preventative measures, a new **Section 34AA** was introduced, which confers power to the Director General of Environmental Quality to issue **a prohibition order or stop work order** to the person carrying out the prescribed activities **without approval under subsection 34A(3); that violates any conditions attached to the approval of the report; or which in the opinion of the Director General are being carried out in a manner that is likely to cause environmental damage.** The prohibition order or stop work order may be issued for the purpose of preventing the prescribed activities from continuing either **absolutely or conditionally; for such period as the Director General may determine; or until requirements to remedy as the Director General may direct have been complied with.**

(ii) **Enhancement of the EIA Procedures - Reducing the Preliminary EIA Processing Time from 5 Weeks to 3 Weeks (Working Days) for Selected Prescribed Activities.**

In line with the Government's effort to improve public service delivery system, the Department of Environment has taken steps to enhance and strengthen its delivery system, particularly in the EIA procedures and processing. The Department has embarked in reducing the Preliminary EIA processing time from 5 weeks to 3 weeks (working days) for selected prescribed activities, i.e. housing and new townships development, industries in gazetted industrial area, off-site recovery and off-site storage of scheduled wastes (except for recovery of lead acid battery) and wastewater treatment plant for municipal sewage.

Recognizing the importance to prevent environmental pollution and public health from contaminated soil, the Contaminated Land and EHS Section, Hazardous Wastes Division, Department of Environment (DOE) Headquarters is in the midst of drafting legislations on contaminated land management in Malaysia to enable the enforcement of Section 24, Environmental Quality Act 1974, and

Selari dengan penggubalan peraturan tersebut, satu piawaian dan rangkakerja penilaian dan pengurusan tanah tercemar di Malaysia telah diterbitkan oleh Jabatan Alam Sekitar dalam bentuk tiga (3) siri garispanduan bagi mengenalpasti, menilai dan membaikpulih tanah yang tercemar seperti berikut:-

- i. *Contaminated Land Management and Control Guidelines No. 1: Malaysian Recommended Site Screening Levels for Contaminated Land;*
- ii. *Contaminated Land Management and Control Guidelines No. 2: Assessing and Reporting Contaminated Sites;* dan
- iii. *Contaminated Land Management and Control Guidelines No. 3: Remediation of Contaminated Sites.*

Tiga (3) siri garispanduan tersebut juga telah di muat naik dalam laman sesawang Jabatan Alam Sekitar. Sehingga 31 Disember 2012, sebanyak 23 kes berkaitan pengurusan tanah tercemar di Malaysia telah dirujuk ke Jabatan ini di atas kesedaran awam pihak yang terbabit.

Dalam usaha memberi kesedaran kepada orang awam secara berterusan, Jabatan Alam Sekitar 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 di Negara ini. Perlindungan alam sekitar melalui amalan-amalan mesra alam seharusnya menjadi sebahagian aktiviti seharian kita.

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.

Pemuliharaan Alam Sekitar, Tanggungjawab Bersama



Halimah Hassan

Ketua Pengarah Alam Sekitar Malaysia
Director-General of Environmental Quality Malaysia

restrictions on soil contamination. In parallel with that, a framework for site assessment and management of contaminated land in Malaysia were published by DOE in the form of three (3) series of guidelines for the purpose of identification, investigation and remediation of contaminated land in the country as follows:-

- i. *Contaminated Land Management and Control Guidelines No. 1: Malaysian Recommended Site Screening Levels for Contaminated Land;*
- ii. *Contaminated Land Management and Control Guidelines No. 2: Assessing and Reporting Contaminated Sites;* and
- iii. *Contaminated Land Management and Control Guidelines No. 3: Remediation of Contaminated Sites.*

These three (3) guidelines has also been uploaded in the website of the Department of Environment. Until 31 December 2012, a total of 23 cases related to contaminated land management in Malaysia have been referred to the Department due to increased awareness and among the people concern.

In an effort to create awareness among the general public, DOE continued to implement its awareness and environmental education programmes and activities as well as disseminate information to various levels of the society towards building a caring and environmentally friendly society in the country. Protecting environment by adopting environmental friendly practices should be part and parcel of our daily activities.

I would like to take this opportunity to record my appreciation 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.

Environmental Conservation, Our Shared Responsibility

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 SEKELILING (EQC) ENVIRONMENTAL QUALITY COUNCIL (EQC) ACTIVITIES

Dalam tahun 2012, Majlis Kualiti Alam Sekeliling telah bermesyuarat dua (2) kali iaitu bilangan ke 109 pada 6 Mac 2012 dan bilangan ke 110 pada 5 Oktober 2012. Mesyuarat telah diadakan di Bilik Cempaka, Tingkat 3, Pejabat Jabatan Alam Sekitar, Putrajaya dan telah dipengerusikan oleh Y.Bhg. Prof. Dato' Ir. Dr. Zaini Bin Ujang, Naib Canselor, Universiti Teknologi Malaysia.

Penggal ketigabelas Majlis Kualiti Alam Sekeliling berakhir pada 31 Mac 2012. Ahli-ahli baru Majlis dilantik oleh YB Menteri untuk Penggal keempatbelas bermula pada 1 Ogos 2012. Lantikan ini akan tamat pada 31 Mac 2015. Senarai ahli-ahli yang dilantik adalah seperti di **Jadual 1.1**

Majlis merakamkan penghargaan di atas sumbangan ahli yang telah tamat tempoh dan mengalu-alukan kehadiran ahli baru.

Mesyuarat telah membincangkan dan memperakukan beberapa cadangan yang dikemukakan untuk pertimbangan. Antara kertas kerja yang dibentangkan adalah seperti berikut:-

Perbincangan EQC ke 109
(Tarikh: 6 Mac 2012)

1. Kertas EQC Bil.1/109/2012
Kertas oleh Jabatan Alam Sekitar
 - Kertas Perbincangan Cadangan Pindaan Peraturan-Peraturan Kualiti Alam Sekeliling (Effluen Perindustrian) 2009
2. Kertas EQC Bil.2/109/2012
Kertas oleh Jabatan Alam Sekitar
 - Kertas Perbincangan : Cadangan Peraturan Baru : Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pencemaran dari Aktiviti Penternakan)

The Environmental Quality Council (EQC) had two (2) meetings in the year 2012. The 109th meeting was held on 6 March 2012 and the 110th meeting was held on 5 October 2012. Both of the meetings were held in the Cempaka Meeting Room, 3rd Floor, Department of Environment's office, Putrajaya and were chaired by Y.Bhg. Prof. Dato' Ir. Dr. Zaini Bin Ujang, Vice Chancellor, University Teknologi Malaysia.

The Environmental Council thirteenth term ended on 31 March 2012. New EQC members were elected by the Minister for the fourteenth term beginning on the 1 August 2012. The term will end by 31 March 2015. List of the members elected is as in the **Table 1.1**.

The council placed on record its appreciation to the previous members for their contributions to EQC and welcomed the new members to the council.

The council had deliberated and endorsed matters presented at the meeting. Among the papers were as followed:-

EQC discussions at the 109th Meeting
(Date: 6 March 2012)

1. EQC Paper No. 1/109/2012
Paper by Department of Environment
 - Discussion Paper Proposed Amendments to the Environmental Quality (Industrial Effluent) Regulations 2009
2. EQC Paper No. 2/109/2012
Paper by Department of Environment
 - Discussion Paper : Proposed New Regulation: Environmental Quality (Control of Pollution From Animal Farming Activities) Regulations

Perbincangan EQC ke 110
(Tarikh: 5 Oktober 2012)

1. Kertas EQC Bil.1/110/2012
Kertas oleh Jabatan Alam Sekitar
 - Kertas Makluman :
Makluman Perkembangan
Cadangan Peraturan Baru :
Peraturan-Peraturan Kualiti Alam
Sekeliling (Kawalan Pencemaran dari
Aktiviti Penternakan)
2. Kertas EQC Bil.2/110/2012
Kertas oleh Jabatan Alam Sekitar
 - Kertas Perbincangan :
Cadangan Peraturan Baru :
Draf Peraturan-Peraturan Kualiti Alam
Sekeliling (Kawalan Hakisan Dan
Kelodakan)
3. Kertas EQC Bil.3/110/2012
Kertas oleh Jabatan Alam Sekitar
 - Kertas Perbincangan :
Cadangan Perwakilan Kuasa Kepada
Pegawai-Pegawai Jabatan
Pengairan Dan Saliran (JPS) Bagi
Kawalan Hakisan Dan Kelodakan
4. Kertas EQC Bil.4/110/2012
Kertas oleh Jabatan Alam Sekitar
 - Kertas Perbincangan :
Cadangan Konsep Draf Peraturan
(Orang Yang Berwibawa Dan Orang
Yang Layak) 2013

EQC discussions at the 110th Meeting
(Date: 5 October 2012)

1. EQC Paper No. 1/110/2012
Paper by Department of Environment
 - Information Paper :
Information Paper on the Status of the
Proposed New Regulation:
Environmental Quality (Control of
Pollution From Animal Farming
Activities) Regulations
2. EQC Paper No. 2/110/2012
Paper by Department of Environment
 - Discussion Paper :
Proposed New Regulation:
Draft Environmental Quality
(Control of Erosion and Siltation)
Regulations
3. EQC Paper No. 3/110/2012
Paper by Department of Environment
 - Discussion Paper :
Proposal on the Delegation of Powers
to the Department of Drainage And
Irrigation (JPS) Officers For The Control
Of Erosion And Siltation
4. EQC Paper No. 4/110/2012
Paper by Department of Environment
 - Discussion Paper :
Concept Paper on the Competent
And Qualified Persons Regulation 2013

Jadual 1.1 JAS : Majlis Kualiti Alam Sekeliling 2012
Table 1.1 DOE : Environmental Quality Council 2012

Bil. No.	Perwakilan / Representative	Nama / Name
1	Pengerusi EQC EQC Chairman	Y.Bhg. Prof. Dato' Ir. Dr. Zaini Bin Ujang
2	Ketua Setiausaha Kementerian Sumber Asli dan Alam Sekitar Secretary-General, Ministry of Natural Resources and Environment	Y.Bhg. Dato' Zool 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

Jadual 1.1 JAS: Majlis Kualiti Alam Sekeliling, 2011 (sambungan)
Table 1.1 DOE: Environmental Quality Council, 2011 (continued)

Bil. No.	Perwakilan / Representative	Nama / Name
4	Wakil Ketua Setiausaha Kementerian Perdagangan Dalam Negeri, Koperasi Dan Kepenggunaan Secretary-General, Ministry of Domestic Trade, Co-Operatives and Consumerism or his authorized representative	Puan Siti Hajar Ibrahim
5	Wakil Ketua Setiausaha Kementerian Pertanian dan Industri Asas Tani Secretary-General, Ministry of Agriculture and 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	Ir Haji Saiful Azhar Mohd Said
7	Wakil Ketua Setiausaha Kementerian Pengangkutan Secretary-General, Ministry of Transport or his authorized representative	Puan Vanitha Mohan
8	Wakil Ketua Pengarah Kementerian Kesihatan Malaysia Director General, Ministry of Health or his authorized representative	Y.Bhg. Datuk Dr. Lokman Hakim Bin Sulaiman
9	Wakil Kerajaan Negeri Sabah Representative from the Sabah Government Ahli Giliran / Alternate Member	Y.Bhg Datuk Michael Emban Encik Yabi Yangkat
10	Wakil Kerajaan Negeri Sarawak Representative from the Sarawak Government Ahli Giliran / Alternate Member	Y.Bhg. Datu Sudarsono Osman Encik Peter Sawal
11	Wakil Industri Petroleum Representative from the Petroleum Industry Ahli Giliran / Alternate Member	Dr. Thangaratnam Ponnudurai @ Bea Cik Lee Tzee Wan
12	Wakil Industri Kelapa Sawit Representative from the Oil Palm Industry Ahli Giliran / Alternate Member	Dr.K. Ramadasan -tiada-
13	Wakil Persekutuan Pekilang-Pekilang Malaysia Representative from the Federation of Malaysian Manufacturers Ahli Giliran / Alternate Member	Y.Bhg. Dato' Hj. Mizanur Rahman Ghani Encik K.N Gobinathan
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 Representative from the Academic Staff of the Universities or Colleges in Malaysia Ahli Giliran / Alternate Member	Prof. Dr. Nik Meriam Bt Nik Sulaiman Ir. Dr. Abdul Aziz Abd. Raman
16	Wakil Pertubuhan Yang Berpengalaman Mengenai Alam Sekitar (Environmental Management And Research - ENSEARCH) Representative from the registered Societies knowledgeable and having interests in matters pertaining to the environment (ENSEARCH) Ahli Giliran / Alternate Member	Encik Abdul Aziz Bin Long Ms Geetha P.Kumaran
17	Wakil Pertubuhan Yang Berpengalaman Berhubung Alam Sekitar (Malaysian Nature Society-MNS) Representative from the registered Societies knowledgeable and having interests in matters pertaining to the environment (MNS) Ahli Giliran / Alternate Member	Y.Bhg. Prof. Dr. Maketab Mohamed Encik Yeap Chin Aik



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 dan Inovasi, Seksyen Sumber Manusia, Seksyen Kewangan, Seksyen Pembangunan dan Latihan dan Seksyen Pengurusan Aset.

Pentadbiran Am

Pada 2012, Seksyen Pentadbiran dan Inovasi telah menjalankan aktiviti-aktiviti seperti berikut:

- Perhimpunan Bulanan bersama Ketua Pengarah dan kakitangan JAS;
- Aktiviti-aktiviti ke arah Pensijilan Semula 5S Ibu Pejabat pada 10 April 2012;
- Lawatan Naziran ke JAS Sabah, JAS Terengganu, JAS Kelantan dan JAS Pahang;
- Minggu Kecergasan dan Kesihatan;
- Kursus Pengurusan Rekod dan Khidmat Nasihat ARKIB pada 28-30 Mei 2012;
- Kursus Pemanduan Berhemah pada 6-8 Jun 2012;
- Mini Lab Keselamatan dan Kesihatan Pekerja untuk Kakitangan JAS pada 6 September 2012;
- Majlis Jamuan Sambutan Hari Raya Aidilfitri 2012 dan Majlis Persaraan pada 6 September 2012;
- Latihan Pengosongan Bangunan bersama pihak Kementerian pada 21 September 2012;
- Kursus Pemantapan pasukan kesenian koir JAS; dan
- Memenangi Pertandingan Video Inisiatif NRE Goes Green pada bulan Oktober 2012.

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) main sections, namely the Administrative and Innovation Section, Human Resource Section, Finance Section, Development and Training Section and the Assets Management Section.

General Administration

In 2012, the Administrative and Innovation Section conducted the following activities:

- Monthly Assembly with the Director General and staff of DOE;
- Various activities leading to the 5S recertification for Headquarters on 10 April 2012;
- Audit visit to DOE Sabah, Terengganu, Kelantan and Pahang;
- Fitness and Health Week;
- Course on Record Management and Advisory Service from ARKIB on 28-30 May 2012;
- Safety Driving Course on 6-8 June 2012;
- Mini Lab on Occupational Safety and Health for DOE staff on 6 September 2012;
- Hari Raya Aidilfitri celebration luncheon and Retirement Ceremony on 6 September 2012;
- Building evacuation training in collaboration with the Ministry on 21 September 2012;
- Course for DOE's coir team; and
- Won the NRE Goes Green Initiative Video Competition in October 2012.

Kewangan

Pada tahun 2012, jumlah peruntukan yang diterima oleh JAS adalah sebanyak RM144,818,932.20. Daripada jumlah tersebut, sebanyak RM118,025,932.28 (81.50%) telah diperuntukkan bagi perbelanjaan mengurus sementara baki sebanyak RM26,793,000.00 (18.50%) merupakan peruntukan bagi perbelanjaan pembangunan. Prestasi perbelanjaan mengurus dan pembangunan bagi tahun 2012 masing-masing pada tahap 100% dan 98.63%.

Pengurusan Sumber Manusia

Jawatan yang terlibat dalam urusan kenaikan pangkat pada tahun 2012 adalah seperti berikut:

- i. 4 jawatan Gred C54
- ii. 10 jawatan Gred C48
- iii. 11 jawatan Gred C44
- iv. 1 jawatan Gred M44
- v. 2 jawatan Gred N36
- vi. 6 jawatan Gred C32
- vii. 2 jawatan Gred C32 (KUP)
- viii. 1 jawatan Gred N32
- ix. 1 jawatan Gred J22 (KUP)

Latihan

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 JAS digalakkan untuk mengikuti pelbagai kursus yang dianjurkan oleh JAS dan agensi-agensi berkaitan. Bagi tahun 2012, 98.20% daripada keseluruhan bilangan anggota JAS telah menjalani kursus melebihi 7 hari dengan jayanya.

Finance

In 2012, DOE received a total budget allocation of RM144,818,932.20. Of this amount, a sum of RM118,025,932.28 (81.50%) was allocated for operational expenditure while the remaining RM26,793,000.00 (18.50%) was allocated for development projects. Expenditure performances for the operational and development budgets were 100% and 98.63% respectively.

Human Resource Management

The promotion exercise was done in 2012 for the following positions:-

- i. 4 position of Grade C54
- ii. 10 positions of Grade C48
- iii. 11 positions of Grade C44
- iv. 1 positions of Grade M44
- v. 2 positions of Grade N36
- vi. 6 positions of Grade C32
- vii. 2 positions of Grade C32 (KUP)
- viii. 1 positions of Grade N32
- ix. 1 positions of Grade J22 (KUP)

Training

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 were encouraged to participate in various courses organized by DOE and relevant agencies. In 2012, 98.20% of the Department's total workforce had successfully undergone more than 7 days of training.

Kompetensi

Peperiksaan Perkhidmatan untuk tujuan Pengesahan Dalam Perkhidmatan bagi pegawai-pegawai Gred C41, C27 dan J17 telah diadakan sebanyak 2 kali (Jun dan Disember). Peperiksaan Kenaikan Pangkat Secara Lantikan (KPSL) telah diadakan pada bulan Disember 2012 yang bertujuan untuk meningkatkan kerjaya pegawai-pegawai teknikal di JAS.

Penghargaan Terhadap Warga Kerja Cemerlang

Majlis Anugerah Perkhidmatan Cemerlang Tahun 2012 telah diadakan pada 25 April 2013. Seramai 121 orang pegawai telah dipilih untuk menerima anugerah ini sebagai tanda penghargaan jabatan terhadap prestasi kerja yang cemerlang pegawai-pegawai ini sepanjang tahun 2012.

Pengurusan Aset dan Stor

Sepanjang tahun 2012, Seksyen Pengurusan Aset telah menjalankan aktiviti-aktiviti seperti berikut:

- Kursus Pengurusan Aset (TPA);
- Kursus Pengurusan Stor (TPS);
- Kursus Pengurusan Aset dan Stor Untuk Ketua-Ketua Jabatan JAS; dan
- Bengkel Hands-On Sistem Pengurusan Aset.

Pada tahun 2012, Jabatan Alam Sekitar telah dipilih menjadi Jabatan perintis oleh Kementerian Kewangan Malaysia (MOF) bagi Sistem Pengurusan Aset (SPA) dan Sistem Pengurusan Stor (SPS) untuk Projek Perakaunan Akruan 2015. Pemilihan JAS sebagai Jabatan Perintis adalah berdasarkan penggunaan SPA serta SPS yang telah dilaksanakan dan diguna pakai sehingga ke peringkat cawangan.

Competency

Service Confirmation Examinations for officers of Grades C41, C27 and J17 were held twice (June and December). The Promotion Examinations (KPSL) was held in December 2012 to allow technical officers in DOE to further enhance their career development.

Appreciation of Excellent Employees

The 2012 Excellent Service Awards Presentation Ceremony was held on 25th April 2013. A total of 121 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 2012.

Assets and Store Management

During 2012, the Asset Management Section has conducted the following activities:

- Course on Asset Management (TPA);
- Course on Store Management (TPS);
- Course on Store Asset Management for Heads of DOE, and
- Hands-on Workshop on Asset Management System.

In 2012, Department of Environment was chosen to be the pilot project of Ministry of Finance (MOF) for Asset Management System (SPA) and Store Management System (SPS) for Accrual Accounting Project 2015. DOE's selection as the Pioneer Department is based on the implementation of the SPA and SPS throughout to the generic branch.



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 kesan-kesan kepada alam sekitar akibat aktiviti pembangunan. Ianya juga dapat menghindarkan perbelanjaan yang tinggi dalam pelaksanaan projek yang disebabkan oleh kerosakan alam sekitar semasa pelaksanaan projek.

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

LAPORAN EIA 2012

Sejumlah 335 laporan telah diterima dan diproses oleh Jabatan Alam Sekitar pada tahun 2012 (**Rajah 3.1**). Daripada bilangan ini, sebanyak 322 laporan EIA telah diproses mengikut Prosedur EIA Awal dan 13 laporan EIA lagi dianalisa melalui Prosedur EIA Terperinci (**Rajah 3.2**). Negeri Selangor menerima bilangan laporan EIA tertinggi pada tahun 2012 diikuti dengan Negeri Johor (**Rajah 3.3**). Aktiviti pengolahan dan pelupusan buangan (sisa pepejal, kumbahan dan buangan terjadual) merupakan aktiviti yang paling banyak diterima EIAny pada tahun 2012 (**Rajah 3.4**).

PAKEJ PENAMBAHBAIKAN EIA

Bagi memastikan proses EIA di Malaysia berterusan, relevan dan berkeupayaan tinggi, kesemua pihak hendaklah menunjukkan komitmen dan penglibatan dalam proses ini. Jabatan Alam Sekitar secara berterusan telah mengambil inisiatif dalam menambahbaik sistem penyampaian Jabatan, terutamanya di

Environmental Impact Assessment (EIA) is essentially a planning tool for preventing, avoiding and reducing the environmental impacts due to development activities. It can also avoid paying high cost in the project implementation due to damages to the environment.

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 2012

In 2012 a total of 335 reports were received and processed by the Department of Environment. (**Figure 3.1**). Of these, 322 were Preliminary EIA reports and 13 were Detailed EIA reports (**Figure 3.2**). In 2012 Selangor received the highest number of EIA reports and followed by Johor (**Figure 3.3**). According to activity, the highest number of EIA reports received in 2012 was from the wastes treatment and disposal activities (solid wastes, sewage and scheduled wastes) (**Figure 3.4**).

EIA IMPROVEMENT PACKAGE

In ensuring continuity, relevancy and credibility of the EIA process in Malaysia, all stakeholders must show their commitments and involvements in EIA process. The Department of Environment from time to time has taken the initiatives in improving the Department's delivery system, especially in EIA mechanisms, which is in line

dalam mekanisma EIA yang sejajar dengan hala tuju dan aspirasi Kerajaan di dalam mengubah Malaysia kepada penduduk berpendapatan tinggi menjelang tahun 2020.

Pada tahun 2012, Jabatan Alam Sekitar telah melaksanakan beberapa program berbentuk "pakej penambahbaikan" bagi pemprosesan laporan EIA dan prosedur EIA, memendekkan tempoh pemprosesan laporan EIA dari 5 minggu kepada 3 minggu, pindaan kepada undang-undang berkaitan, penambahbaikan kepada Skim Pendaftaran Jururunding EIA dan Juruaudit Alam Sekitar, pameran laporan EIA penuh di laman sesawang Jabatan Alam Sekitar semasa tempoh pemprosesan dan pembentukan garis panduan EIA spesifik.

(i) Pindaan Seksyen 34A dan Pertambahan Seksyen 34AA, Akta Kualiti Alam Sekeliling, 1974

Seksyen 34A telah dipinda buat pertama kalinya sejak tahun 1986 dengan tujuan untuk memperkukuhkan dan menambahbaik sistem dan mekanisma EIA di Malaysia. Pindaan tersebut telah diwartakan pada Ogos 2012 dan dikuatkuasakan pada 2 Januari 2013. Komponen utama pindaan kepada Seksyen 34A adalah:-

- a. mana-mana orang yang berhasrat untuk menjalankan apa-apa aktiviti yang ditetapkan hendaklah **melantik 'orang yang layak' untuk menjalankan penilaian kesan kepada alam sekeliling dan untuk mengemukakan laporan mengenainya kepada Ketua Pengarah** mengikut cara sebagaimana yang ditetapkan oleh Ketua Pengarah;
- b. Ketua Pengarah **tidak boleh meluluskan laporan EIA sekiranya laporan itu tidak mengikut rancangan pemajuan atau rancangan fizikal yang diluluskan oleh pihak berkuasa yang meluluskan yang berkaitan**, dengan memberikan alasan untuk tidak meluluskan, dan hendaklah

with the Government's direction and aspiration in transforming Malaysia to a high income nation by year 2020.

As such, in 2012, various programs in the form of "improvement package" were introduced within the EIA processes and procedures, among others, shortening the EIA reviewing time from 5 weeks to 3 weeks, amendment of related laws, enhancement of EIA Consultant and Environmental Auditor Registration Schemes, display of full EIA report in the Department of Environment's Official Website during processing and also establish specific guidelines on EIA.

(i) Amendment to Section 34A and Introduction of New Section 34AA Under the Environmental Quality Act, 1974

Section 34A was amended for the first time since 1986, with the purpose to strengthen and enhance the EIA system and mechanism in Malaysia. It was gazetted on August 2012 and came into force on 2 January 2013. The main components of the amended Section 34A are:-

- a. any person intending to carry out any prescribed activity shall **appoint a 'qualified person to conduct an environmental impact assessment** and to **submit a report** thereof to the **Director General** in the manner as the **Director General** may prescribe;
- b. the **Director General shall not approve EIA report which is not in accordance with the development plan or physical plan approved by the relevant approving authority, giving reasons for not approving**, and shall inform the person and the relevant approving authority accordingly; and

- memaklumkan orang itu dan pihak berkuasa yang meluluskan yang berkaitan dengan sewajarnya; dan
- c. Penalti terhadap pelanggaran seksyen 34A ini dinaikkan **kepada tidak lebih daripada lima ratus ribu ringgit** atau penjara selama tempoh tidak lebih daripada lima tahun atau kedua-duanya.

Bagi memperkukuhkan elemen penguatkuasaan dan sebagai langkah pencegahan, satu **Seksyen baru, 34AA** telah diperkenalkan yang memberi kuasa kepada Ketua Pengarah Alam Sekitar untuk memberhentikan kerja orang yang menjalankan aktiviti yang ditetapkan **tanpa kelulusan di bawah subseksyen 34A(3); yang mencabuli apa-apa syarat yang dilampirkan pada kelulusan laporan itu; atau yang pada pendapat Ketua Pengarah adalah dijalankan mengikut cara yang mungkin menyebabkan kerosakan alam sekeliling.** Perintah Larangan atau perintah berhenti kerja itu boleh dikeluarkan bagi maksud menghalang aktiviti yang ditetapkan daripada berterusan **sama ada secara mutlak atau bersyarat; bagi apa-apa tempoh sebagaimana yang ditentukan oleh Ketua Pengarah; atau sehingga kehendak untuk meremedi sebagaimana yang diarahkan oleh Ketua Pengarah telah dipatuhi.**

(Nota: ¹ - "orang yang layak" : Seseorang yang memenuhi kehendak sebagaimana yang ditentukan oleh Ketua Pengarah untuk **menjalankan audit alam sekeliling dan penilaian kesan kepada alam sekeliling** dan untuk mengemukakan laporan mengenainya).

- (ii) **Penambahbaikan Prosedur EIA – Memendekkan Tempoh Pemprosesan Laporan EIA dari 5 Minggu kepada 3 Minggu (Hari Bekerja) Bagi Beberapa Aktiviti Yang Ditetapkan.**

Selaras dengan usaha Kerajaan dalam mempertingkatkan perkhidmatan sektor

- c. The penalty for contravening section 34A was increased from one hundred thousand ringgit to **five hundred thousand ringgit or to imprisonment for a period not exceeding five years or to both.**

To further strengthen the enforcement element and as preventive measures, a new **Section 34AA** was introduced, which provides the Director General to issue **a prohibition order or stop work order** to the person carrying out the prescribed activities **without the approval under subsection 34A(3), who violates any conditions attached to the approval of the report; or which in the opinion of the Director General are being carried out in a manner that is likely to cause environmental damage.** The prohibition order or stop work order may be issued for the purpose of preventing the prescribed activities from continuing either **absolutely or conditionally; for such period as the Director General may determine; or until requirements to remedy as the Director General may direct have been complied with.**

(Note :¹ - "**qualified person**" : a person who fulfils the requirement as the Director General may determine to conduct an **environmental audit and environmental impact assessment, and to submit a report thereon).**

- (ii) **Enhancement of the EIA Procedures – Reducing the Preliminary EIA Processing Time from 5 Weeks to 3 Weeks (Working Days) for Selected Prescribed Activities.**

In line with the Government's effort to improve public service delivery system, the Department of Environment has

awam, Jabatan Alam Sekitar telah mengambil langkah mempertingkatkan serta memperkukuhkan sistem penyampaian Jabatan, khususnya di dalam prosedur dan pemprosesan EIA. Sehubungan itu, piagam pelanggan bagi memproses Laporan EIA Awal telah dipercepatkan dari 5 minggu kepada 3 minggu (hari bekerja) bagi aktiviti-aktiviti tertentu iaitu perumahan dan bandar-bandar baru, industri di kawasan industri yang diwartakan, pemerolehan kembali luar tapak dan penstoran luar tapak bagi buangan terjadual (*kecuali pemerolehan kembali bateri asid plumbum terpakai*) dan loji pengolakan air buangan bagi kumbahan.

SIASATAN PENGUATKUASAAN PROJEK EIA

Sejumlah 1,142 siasatan penguatkuasaan telah dijalankan pada tahun 2012 untuk mengenalpasti status pembangunan dan pematuan projek-projek EIA (**Rajah 3.5**). Daripada jumlah siasatan tersebut, sejumlah 590 notis atau surat arahan, 157 kompaun telah dikeluarkan manakala 19 kes telah didakwa di mahkamah kerana tidak mematuhi syarat-syarat kelulusan.

PERWAKILAN KUASA - PENYIASATAN KE ATAS KAWALAN HAKISAN DAN KELODAKAN BAGI PROJEK EIA

Penguatkuasaan ke atas kawalan hakisan dan kelodakan bagi aktiviti-aktiviti yang tertakluk di bawah Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 1987 adalah di bawah tanggungjawab Jabatan Alam Sekitar. Di bawah program *INRE Enforcement* yang telah dibangunkan sejak tahun 2011, telah menetapkan supaya penguatkuasaan berkaitan kawalan hakisan dan kelodakan diwakil kuasakan kepada pegawai-pegawai Jabatan Pengairan dan Saliran (JPS).

Bagi meningkatkan kefahaman dan kesedaran mengenai perwakilan kuasa

taken steps to enhance and strengthen its delivery system, particularly in the EIA procedures and processing. The Department has embarked in reducing the Preliminary EIA processing time from 5 weeks to 3 weeks (working days) for selected prescribed activities, ie housing and new townships development, industries in gazetted industrial area, off-site recovery and off-site storage of scheduled wastes (except for recovery of lead acid battery) and wastewater treatment plant for municipal sewage.

EIA ENFORCEMENT INVESTIGATIONS

A total of 1,142 enforcement inspections on EIA projects were conducted in 2012 to check the project development status and the compliance of EIA approval conditions. (**Figure 3.5**). From this inspections, a total of 590 notices or written directives were issued, 157 compounds were served and 19 cases were charged in court for non-compliance.

DELEGATION OF POWERS – INVESTIGATION ON THE EROSION AND SEDIMENT CONTROL FOR EIA PROJECTS

The Department of Environment is responsible for the enforcement on erosion and sediment control for activities prescribed under the Environmental Quality (Prescribed Activity) (Environmental Impact Assessment) 1987. Under the *INRE Enforcement* Program which was developed since 2011, the enforcement on erosion and sediment control has been delegated to officers from the Department of Irrigation and Drainage (DID).

To increase knowledge and awareness on the delegation of powers to the DID's management

ini kepada pihak pengurusan dan pelaksana JPS, satu seminar khusus kepada warga JPS Ibu Pejabat, Negeri dan Daerah telah diadakan di EiMAS, Bangi pada 2 Mei 2012. Taklimat berkenaan perwakilan kuasa ini juga telah diberikan kepada pihak Pengurusan Tertinggi JPS semasa Mesyuarat Jawatankuasa Tindakan Jabatan Pengairan Dan Saliran Malaysia Bil. 2/2012 pada 25 Jun 2012 di Wilayah Persekutuan Labuan.

EiMAS telah membangunkan modul latihan berkaitan bagi melatih pegawai-pegawai JPS tentang keperluan undang-undang dan pentadbiran yang berkaitan serta aspek penguatkuasaan termasuk pemeriksaan langkah-langkah kawalan hakisan dan kelodakan, persampelan, penyediaan laporan siasatan dan penyediaan kertas siasatan.

Antara September hingga Disember 2012 sebanyak empat (4) sesi latihan "*train the trainers*" kepada 140 orang pegawai-pegawai JPS telah dikendalikan di Pusat Latihan JPS, Institut Pembangunan Modal Insan (IPMI), Jalan Ampang seperti berikut:-

- (i) 24 – 28 September 2012;
- (ii) 15-19 Oktober 2012;
- (iii) 5-9 November 2012; dan
- (iv) 19-23 November 2012.

Bagi membolehkan penguatkuasaan ini dilaksanakan, satu **Perintah Kualiti Alam Sekeliling (Pewakilan Kuasa) (Penyiasatan Ke Atas Kawalan Hakisan dan Kelodakan) 2012** telah diwartakan pada 6 Disember 2012. Menerusi Perintah ini, **Ketua Pengarah Kualiti Alam Sekeliling** telah mewakilkan kuasa berikut kepada pegawai-pegawai JPS dari kategori Jurutera, Penolong Jurutera dan Juruteknik:

- (i) Seksyen 31 Kuasa menghendaki pemunya atau penduduk memasang, mengendali, membaiki, dsb;
- (ii) Seksyen 37 Pemunya atau penduduk hendaklah memberi maklumat;

and officers from the headquarters, state and district offices, a seminar was conducted by the Department of Environment on 2 May 2012 at EiMAS, Bangi. On 25 June 2012, DID's top management were also briefed during the DID's Action Committee Meeting at Federal Territory of Labuan.

EiMAS has developed training modules to guide DID's officers on the legal, administration and enforcement aspects including the inspections of erosion and sedimentation control measures, sampling, preparation of enforcement report and investigation paper.

Between September to December 2012, a total of four (4) training sessions "*train the trainers*" were carried out to 140 DID's officers at DID's training institute in Jalan Ampang, Human Capital Development Institute (IPMI) as follows:-

- (i) 24 – 28 September 2012;
- (ii) 15-19 October 2012;
- (iii) 5-9 November 2012; and
- (iv) 19-23 November 2012.

The Environmental Quality (Delegation of Powers) (Investigations on the Erosion and Sedimentation Control) 2012 was gazetted on 6 December 2012. Under this order, the **Director General of Environmental Quality** delegates the following powers to DID's officers from the category of Engineer, Assistant Engineer and Technician:-

- (i) Section 31 Power to require owner or occupier to install, operate, repair, etc.;
- (ii) Section 37 Owner or occupier to furnish information;

- (iii) Seksyen 38 Kuasa untuk menahan, menaiki, menggelidah, dsb (kecuali kuasa untuk menahan, menaiki dan menggeledah kapal atau pesawat udara); dan
- (iv) Seksyen 38A Kuasa untuk memeriksa orang yang mengetahui kes.

INPUT ALAM SEKITAR KEPADA PERANCANGAN PEMBANGUNAN

Pada tahun 2012, sejumlah 100 input alam sekitar telah dikemukakan kepada agensi-agensi yang berkaitan, mengenai penyelarasan perancangan pembangunan, pelan tempatan, kajian rancangan fizikal negara, kajian kawasan sensitif alam sekitar dan aktiviti-aktiviti pembangunan di tanah tinggi.

SKIM PENDAFTARAN JURURUNDING EIA

Skim Pendaftaran Jururunding EIA yang baru telah diperkenalkan pada 1 Jun 2007. Mulai 1 Oktober 2007 pula, Jabatan Alam Sekitar telah mewajibkan semua jururunding EIA untuk berdaftar dengan JAS sebelum dibenarkan menjalankan kajian. Pendaftaran ini telah menjadi satu keperluan undang-undang di bawah pindaan terkini Akta Kualiti Alam Sekeliling, 1974 pada tahun 2012.

Pada tahun 2012, Mesyuarat Panel Penilaian Permohonan Jururunding telah diadakan sebanyak empat (4) kali. Sebanyak 128 permohonan telah diterima dan hanya 108 berjaya didaftarkan. 20 daripadanya telah didaftarkan sebagai Jururunding EIA, 23 sebagai Jururunding Subjek dan 65 Penolong Jururunding. (**Jadual 3.1**). Semenjak program ini dimulakan pada 2007 sehingga 31 Disember 2012, 1,063 individu telah didaftarkan dengan JAS untuk menjalankan kajian EIA, di mana 267 orang adalah Jururunding EIA, manakala selebihnya merupakan Jururunding Subjek iaitu seramai 365 orang dan Penolong Jururunding seramai 431 orang (**Jadual 3.2**).

- (iii) Section 38 Power to stop, board, search, etc. (except power to stop, board and search ship or aircraft); and
- (iv) Section 38A Power to examine person acquainted with case.

ENVIRONMENTAL INPUT FOR DEVELOPMENT PLANNING

In 2012, a total of 100 environmental inputs were provided to other agencies in relation to development planning coordination, local plans, review of national physical plans, environmentally sensitive areas and highland development activities.

EIA CONSULTANTS REGISTRATION SCHEME

The new EIA Consultants Registration Scheme was introduced on 1 June 2007. Beginning 1 October 2007, the Department of Environment has made it compulsory for all EIA consultants to register with the DOE before being allowed to carry out the study. This requirement was further strengthen through the legal framework with the latest ammendment of the Environmental Quality Act, 1974, in 2012.

To assess the consultants, in 2012, the Consultant Application Assessment Panel Meeting was carried out four (4) times. A total of 128 applications were received and only 108 were successfull to be registered, whereby 20 of them have been registered as EIA Consultants, 23 as subjects Consultant and 65 as Assistant Consultant (**Table 3.1**). Since the programme was implemented in 2007 until 31 December 2012, a total of 1,063 individuals had been registered with the DOE to conduct EIA study, where 267 are EIA Consultants, 365 are the Subject Consultants and 431 are Assistant Consultants. (**Table 3.2**).

Proses pembaharuan pendaftaran bagi Jururunding EIA dan Jururunding Subjek yang telah tamat tempoh pendaftaran telah dijalankan sebanyak empat (4) kali. (Tempoh 3 tahun bagi Jururunding EIA dan 5 tahun bagi Jururunding Subjek). Sehingga 31 Disember 2012, seramai 255 individu yang telah berdaftar dengan JAS sebagai Jururunding EIA dan seramai 144 berdaftar sebagai Jururunding Subjek perlu memperbaharui pendaftaran mereka. Walau bagaimanapun, hanya 193 Jururunding EIA dan 43 Jururunding Subjek yang telah memperbaharui pendaftaran mereka.

Tujuan utama skim pendaftaran ini adalah untuk memastikan hanya mereka yang kompeten dan layak sahaja dibenarkan menjalankan kajian EIA di dalam menghasilkan laporan EIA yang berkualiti. Ini akan memudahkan *decision-makers* memberi pertimbangan yang terbaik terhadap sesuatu cadangan projek.

AKTIVITI-AKTIVITI DAN LAIN-LAIN OUTPUT

Kursus Induksi Untuk Jururunding EIA

Mulai Januari 2010, setiap pemohon yang ingin berdaftar sebagai Jururunding EIA dan memperbaharui pendaftaran, perlu menghadiri kursus *EIA Induction Course for EIA Consultant* dan lulus penilaian sebelum didaftarkan mengikut kategori masing-masing. Pada tahun 2012 sejumlah lima (5) kursus telah diadakan dengan jumlah peserta seramai 169. Walau bagaimanapun, hanya 155 peserta sahaja yang telah lulus penilaian dengan jayanya (**Jadual 3.3**).

Tujuan utama kursus ini dilaksanakan adalah untuk memberikan bimbingan dalam penyediaan Laporan EIA bagi memenuhi kehendak dan keperluan Jabatan Alam Sekitar 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

Registration renewal process for EIA Consultants and Subject Consultants was carried out four (4) times, following the expiration of registration period of 3 years for EIA Consultants and 5 years for Subjects Consultants. Until 31 December 2012, a total of 255 individuals who have registered with the DOE as EIA Consultants and 144 who have registered as Subject Consultants need to renew their registration. However, only 193 EIA Consultants and 43 Subjects Consultants renewed their registration.

The main aim of the registration scheme is to ensure that only competent and qualified persons are allowed to carry out EIA Study and produce good quality EIA reports. This will facilitate decision-makers in making the best decisions on the proposed projects.

ACTIVITIES AND OTHER OUTPUT

Induction Course For EIA Consultants

Starting from January 2010, all applicants who wish to register as EIA Consultants and renew registration, are required to attend Induction Course for EIA Consultant and passed the assessment before being registered in accordance to their respective categories. In 2012 a total of five (5) courses were conducted to 169 participants. However, only 155 participants have successfully passed the assessment (**Table 3.3**).

The main purpose of this course is to provide guidance in the preparation of EIA reports to meet the requirements and needs of the Department of Environment and interested parties. This course was developed by the Department of Environment since there are still

mengenalpasti skop kajian EIA khususnya menentukan kaedah penulisan laporan EIA dan sebagainya.

SKIM PENDAFTARAN JURUAUDIT ALAM SEKITAR

Skim Pendaftaran Juruaudit Alam Sekitar telah mula diperkenalkan pada Jun 2009. Mulai 1 Disember 2009, Jabatan Alam Sekitar hanya menerima laporan-laporan audit pematuhan yang disediakan oleh Juruaudit Alam Sekitar yang berdaftar dengan JAS sahaja. Pendaftaran ini adalah satu keperluan undang-undang di bawah Seksyen 33A Akta Kualiti Alam Sekeliling, 1974.

Bagi tahun 2012, sebanyak 13 permohonan telah diterima di mana 12 daripadanya telah didaftarkan sebagai Juruaudit Alam Sekitar (**Jadual 3.4**). Sehingga 31 Disember 2012, sebanyak 64 orang individu telah didaftarkan sebagai Juruaudit Alam Sekitar. (**Jadual 3.5**)

Tujuan utama skim pendaftaran ini adalah untuk memastikan hanya mereka yang kompeten dan layak sahaja dibenarkan menjalankan audit alam sekitar. Audit Alam Sekitar yang dilaksanakan merupakan Audit Pihak Ketiga (Audit Bebas) bagi pematuhan terhadap keperluan alam sekitar di bawah Seksyen 33A, Akta Kualiti Alam Sekeliling 1974 (Pindaan 2012).

Skim ini adalah untuk memastikan pelaksanaan audit dan pelaporan audit alam sekitar adalah mengikut prosedur dan garis panduan yang ditetapkan. Pelaksanaan audit ini dapat mengurangkan kebergantungan terhadap aktiviti penguatkuasaan oleh Jabatan Alam Sekitar dan menggalakkan industri dan pemaju projek untuk meningkatkan tahap pematuhan alam sekitar secara langsung serta tidak langsung. Pada tahun 2012, sejumlah 125 laporan audit berkaitan pematuhan syarat kelulusan EIA telah diterima oleh Jabatan Alam Sekitar.

weaknesses in the determining the scope of the EIA study, EIA report writing, etc.

ENVIRONMENTAL AUDITOR REGISTRATION SCHEME

Environmental Auditor Registration Scheme was first introduced in June 2009. Starting from 1 December 2009, the Department of Environment will only accepts compliance audit reports prepared by auditors registered with the DOE. This is in line with Section 33A of the Environmental Quality Act, 1974.

In 2012, 13 applications were received and 12 have been registered as Environmental Auditor (**Table 3.4**). Until 31 December 2012, a total of 64 individuals are registered as Environmental Auditor. (**Table 3.5**)

The main objective of the registration scheme is to ensure that only competent and qualified individuals are allowed to carry out environmental audits. The type of environmental audit conducted is a Third Party Audit (Independent Audit) for compliance requirements under Section 33A of the Environmental Quality Act 1974 (Amendment 2012).

This scheme ensures the audit and environmental audit reporting is in accordance with the procedures and guidelines. The implementation of this audit can reduce dependence on enforcement activities by the Department of Environment and encourage industry and project developers to raise the level of environmental compliance directly and indirectly. In 2012, a total of 125 audit reports on compliance to the EIA approval conditions were received by the Department of Environment.

Kursus Induksi Untuk Juruaudit Alam Sekitar

Semua juruaudit yang telah berdaftar diwajibkan untuk hadir ke Kursus Induksi Untuk Juruaudit Alam Sekitar sebagai salah satu syarat untuk pembaharuan pendaftaran. 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 pemahaman terhadap undang-undang dan peraturan Akta Kualiti Alam Sekeliling, 1974 dan konvensyen yang berkaitan, serta memberi panduan untuk pelaporan audit alam sekitar mengikut format yang ditetapkan.

Pada tahun 2012 satu siri kursus telah dijalankan dengan jumlah peserta seramai 25 orang (**Jadual 3.6**).

Pembangunan Profesional Berterusan (CPD)

Keperluan bagi Pembangunan Profesional Berterusan 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.

PEMBENTUKAN GARIS PANDUAN EIA

Pada tahun 2012, Jabatan Alam Sekitar telah menerbitkan garis panduan-garis panduan EIA spesifik yang baru sebagai tambahan kepada 25 garis panduan berkaitan EIA, termasuklah garis panduan EIA sedia ada yang dikemaskini, seperti berikut:-

- Garis panduan bagi Penempatan dan Pengezonan Industri dan Kawasan Perumahan (dikemaskini);
- Garis panduan EIA bagi Tapak Pelupusan Sanitari Sisa Pepejal (baru);

Induction Course for Environmental Auditors

It is compulsory for all registered environmental auditors to attend the Induction Course for Environmental Auditor as a prerequisite for the renewal of their registration. The objectives of the course is to provide a detailed description to all Environmental Auditor regarding administrative and technical requirements while conducting environmental audits, to increase the understanding of the laws and regulations of the Environmental Quality Act, 1974 and related conventions, as well as providing guidance for reporting environmental audits in accordance with the prescribed format.

In 2012 a series of courses were conducted with a total of 25 participants (**Table 3.6**).

Continuous Professional Development (CPD)

Requirements for Continuous Professional Development has been mandated under the Environmental Auditors Registration Scheme, where the registered auditor must collect a certain number of training hours to renew their registration. Any training providers can apply for credit hours. Information regarding these programs is then distributed to all registered auditors

DEVELOPMENT OF EIA-RELATED GUIDELINES

In 2012, the Department of Environment has developed a new specific guidelines for EIA activities in addition to the existing 25 EIA-related guidelines, as well as revision of existing EIA guidelines, as follows:-

- EIA Guidelines for Siting and Zoning of Industries and Residential Areas (revised);
- EIA Guidelines for Sanitary Landfill (new);
- EIA Guidelines for Solid Waste Incinerator (new); and

- Garis panduan EIA Bagi Loji Penunuan (Insinerator) Sisa Pepejal (baru); dan
- Dokumen Panduan Penilaian Impak Kesihatan di dalam EIA (baru).

Senarai lengkap garis panduan EIA boleh dirujuk di laman sesawang Jabatan Alam Sekitar.

Objektif garis panduan ini adalah untuk membantu jururunding EIA bagi menjalankan kajian penilaian kesan alam sekeliling bagi aktiviti pembangunan khususnya tapak pelupusan sanitari sisa pepejal dan insinerator. Manakala bagi Garis panduan Penempatan dan Pengezonan Industri dan Kawasan Perumahan, ianya adalah untuk membantu *decision makers* dalam menentukan tapak dan pembangunan kawasan perindustrian dan kediaman yang baru untuk meminimumkan impak terhadap alam sekitar.

PENERBITAN BUKU “EIA IN MALAYSIA -AN EVOLUTION”

Pada tahun 2012, Bahagian Penilaian telah menerbitkan buku bertajuk *EIA IN MALAYSIA - AN EVOLUTION*. Penerbitan ini adalah satu usaha oleh Bahagian Penilaian bagi menyediakan saluran untuk merekod pencapaian, kejayaan serta kelemahan ke arah penambahbaikan, peningkatan dan penyelenggaraan keadaan alam sekitar dalam usaha kita mengejar pembangunan negara. Tujuan utama penerbitan ini adalah untuk merekodkan pembangunan prosedur EIA serta mendokumentasikan usaha pelaksanaan EIA dan usaha-usaha penambahbaikan sejak ia diperkenalkan di negara ini.

PENILAIAN AWAL TAPAK BAGI PROJEK PEMBANGUNAN

Penggerak projek dikehendaki untuk mengemukakan permohonan Penilaian Awal Tapak (PAT) kepada Jabatan Alam Sekitar untuk menentukan kesesuaian tapak projek yang dicadangkan (projek EIA dan bukan EIA).

- Guidance Document on Health Impact Assessment (HIA) in Environmental Impact Assessment (EIA) (new).

The complete list of EIA guidelines can be referred from the website.

The objective of these guidelines is to assist EIA consultants to conduct environmental impact assessments or development activities, particularly sanitary landfills and solid waste incinerator. The Guidelines for Siting and Zoning of Industries and Residential Area is to assist decision makers in making decision on the siting and development of new industrial and residential areas to minimize the potential environmental impacts.

PUBLICATION OF “EIA IN MALAYSIA-AN EVOLUTION”

In 2012, the Assessment Division has published a book with the title *EIA IN MALAYSIA - AN EVOLUTION*. This publication is an effort by the Assessment Division to provide an avenue to highlight the achievements, successes as well as the shortcomings towards improvement, enhancement and maintenance of sound environmental conditions in our pursuit of national development. The main purpose of this publication is to record the development of the EIA procedure as well as to document the immense effort of the EIA implementation and improvement since it was introduced in the country.

SITE PRELIMINARY ASSESSMENT FOR DEVELOPMENT PROJECTS

Project developers are required to submit Site Preliminary Assessment (PAT) application to the Department of Environment to determine the suitability of their proposed project sites for any proposed development projects (EIA and non-EIA projects).

Pada tahun 2012, sejumlah 13,376 permohonan telah diterima di mana Negeri Johor mencatat permohonan PAT (2,672) paling tinggi, diikuti oleh Selangor (1,865) dan lain-lain negeri seperti yang ditunjukkan di **Rajah 3.6**. Selain dari penggerak projek, permohonan ini juga dirujuk kepada Jabatan Alam Sekitar oleh Kerajaan Negeri, Pihak Berkuasa Tempatan dan Pejabat Tanah serta agensi-agensi lain yang berkaitan.

Input Teknikal telah diberikan kepada pihak berkuasa ini bagi memastikan aspek alam sekitar diberikan pertimbangan yang sewajarnya semasa proses membuat keputusan.

PEMBERITAHUAN DAN KELULUSAN BERTULIS

Peraturan-Peraturan Kualiti Alam Sekeliling (Kumbahan), 2009 dan Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian), 2009 menghendaki supaya pihak premis mengemukakan pemberitahuan bertulis kepada Ketua Pengarah Alam Sekitar sebelum pembinaan sistem pengolahan kumbahan/efluen perindustrian. Manakala Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978 menghendaki supaya Kelulusan Bertulis diperolehi terlebih dahulu daripada Ketua Pengarah Alam Sekitar sebelum pemasangan alat pembakaran bahan api dan cerobong.

Pada tahun 2012, JAS telah menerima 61 pemberitahuan bertulis bagi pembinaan loji rawatan sisa kumbahan (**Rajah 3.7A**), 291 pemberitahuan bertulis bagi punca baru atau yang diubah efluen perindustrian atau efluen bercampur (**Rajah 3.7B**) dan 2,408 permohonan bagi pemasangan alat kawalan pencemaran udara (**Rajah 3.8**). Di samping itu, Jabatan Alam Sekitar juga telah memproses sebanyak 2303 permohonan bagi kelulusan bertulis untuk pemasangan alat pembakaran bahan api seperti dandang dan alat janakuasa (**Rajah 3.9**).

In 2012, a total of 13,376 PAT applications were received and processed by the Department of Environment, whereby Johor recorded the highest number of applications (2,672), followed by Selangor (1,865) and other states as shown in **Figure 3.6**. Besides the project developers, these applications were also referred to the Department of Environment by the State Governments, Local Authorities and Land Offices, as well as other relevant agencies.

Technical environmental inputs were provided to the above agencies to ensure 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 Environmental Quality before the constructions of sewage/industrial effluent treatment system. The Environmental Quality (Clean Air) Regulations, 1978 require Written Approval to be submitted to the Director General of Environmental Quality before any fuel burning equipment and chimney/stack are installed.

In 2012, a total of 61 written notifications were received for the construction of effluent treatment plants (**Figure 3.7A**), 291 written notifications for new or altered sources of discharges of industrial effluent or mixed effluents (**Figure 3.7B**) and 2,408 applications for installation of air pollution control equipment (**Figure 3.8**). In addition, 2303 applications for written approvals for the installation of fuel burning equipment such as boilers and generator sets were processed by the Department of Environment (**Figure 3.9**).

PERSIJILAN MS ISO 9001:2008

JAS telah memperolehi sijil MS ISO 9001:2008 sejak 19 Mac 2010 bagi skop pemprosesan Laporan EIA dan penguatkuasaan syarat-syarat kelulusan EIA. Sistem ini dilaksanakan di Ibu Pejabat JAS dan kesemua 15 pejabat Jabatan Alam Sekitar Negeri. Memandangkan pensijilan ini akan tamat pada 18 Mac 2013, maka Audit Pensijilan Semula oleh badan pensijilan SIRIM QAS Sdn Bhd dijadualkan akan diadakan dari 6-8 Februari 2013.

Bagi memastikan pelaksanaan prosedur kerja sentiasa mematuhi kehendak MS ISO 9001:2008, Jabatan Alam Sekitar telah menjalankan Audit Kualiti Dalamannya sebanyak 2 kali iaitu pada bulan Jun 2012 dan Oktober 2012 di Ibu Pejabat dan di semua Jabatan Alam Sekitar Negeri.

Jabatan Alam Sekitar juga akan memperluaskan skop pensijilan dengan menambah aktiviti pemprosesan lesen dan penguatkuasaan syarat lesen Premis Yang Ditetapkan iaitu Kilang Kelapa Sawit Mentah, Kilang Getah Asli Mentah dan Kemudahan Pengolahan dan Pelupusan Buangan Terjadual.

BUSINESS LICENSING ELECTRONIC SUPPORT SYSTEM (BLESS)

Jabatan Alam Sekitar telah bekerjasama dengan Unit Penyelarasan Pelaksanaan (ICU), Jabatan Perdana Menteri untuk penggunaan yang lebih berkesan bagi sistem permohonan kelulusan berkaitan Jabatan Alam Sekitar secara atas talian melalui laman sesawang BLESS. Sehingga tahun 2012, sebanyak 14 jenis permohonan dan kelulusan di bawah Jabatan Alam Sekitar yang boleh dikemukakan secara atas talian melalui sistem BLESS.

Sehingga 2012, di bawah fasa satu pelaksanaan adalah di negeri Selangor dan Wilayah Persekutuan Kuala Lumpur sahaja yang merangkumi 3 sektor iaitu pengilangan, perhotelan dan pembinaan.

MS ISO 9001:2008 CERTIFICATION

The Department of Environment is MS ISO 9001:2008 Quality Management System certified since 19 March 2010 for the processing of EIA reports and the enforcement of EIA approval conditions. The ISO system is implemented by Department of Environment Headquarters as well as in all 15 Department of Environment State Offices. The certification expires on 18 March 2013. A re-certification audit by SIRIM QAS Sdn Bhd is scheduled to be held from 6 to 8 of February 2013.

To ensure all requirements of the MS ISO 9001:2008 are adhered to at all times, the Department of Environment has conducted their own internal audits in June and October 2012 in headquarters and all State Offices.

The Department of Environment will expand the scope of certification to include the procedure on processing of Prescribed Premises licence and enforcement of the licencing conditions. Prescribed Premises refers to Crude Palm Oil Mill, Raw Natural Rubber Mill and Scheduled Waste Recovery and Disposal Facilities.

BUSINESS LICENSING ELECTRONIC SUPPORT SYSTEM (BLESS)

The Department of Environment, has been working together with the Implementation and Coordination Unit (ICU), Prime Minister's Department towards effective application of on-line submission system for approvals related to the Department of Environment, which can be accessed through the BLESS website. As of 2012, there were 14 types of applications and approvals under the Department of Environment available on-line through the BLESS system.

As of 2012, under the first phase of the BLESS system 3 sectors namely manufacturing, hotels and constructions were covered in the area of Selangor and Federal Territory of Kuala Lumpur only.

SISTEM PANGKALAN DATA EIA

Pada tahun 2012, Jabatan Alam Sekitar telah membangunkan Modul Pemprosesan dan Penguatkuasaan EIA di dalam Sistem Elektronik Kawalan Alam Sekitar (EKAS) iaitu sistem pangkalan data bersepadu Jabatan Alam Sekitar yang digunapakai di Ibu Pejabat dan Jabatan Alam Sekitar Negeri.

Sistem ini dibangunkan dengan tujuan untuk memantau piagam pelanggan pemprosesan Laporan EIA dan status tindakan penguatkuasaan oleh Jabatan Alam Sekitar Negeri ke atas projek-projek pembangunan yang telah diluluskan dan jenis tindakan yang diambil terhadap sebarang ketidakpatuhan.

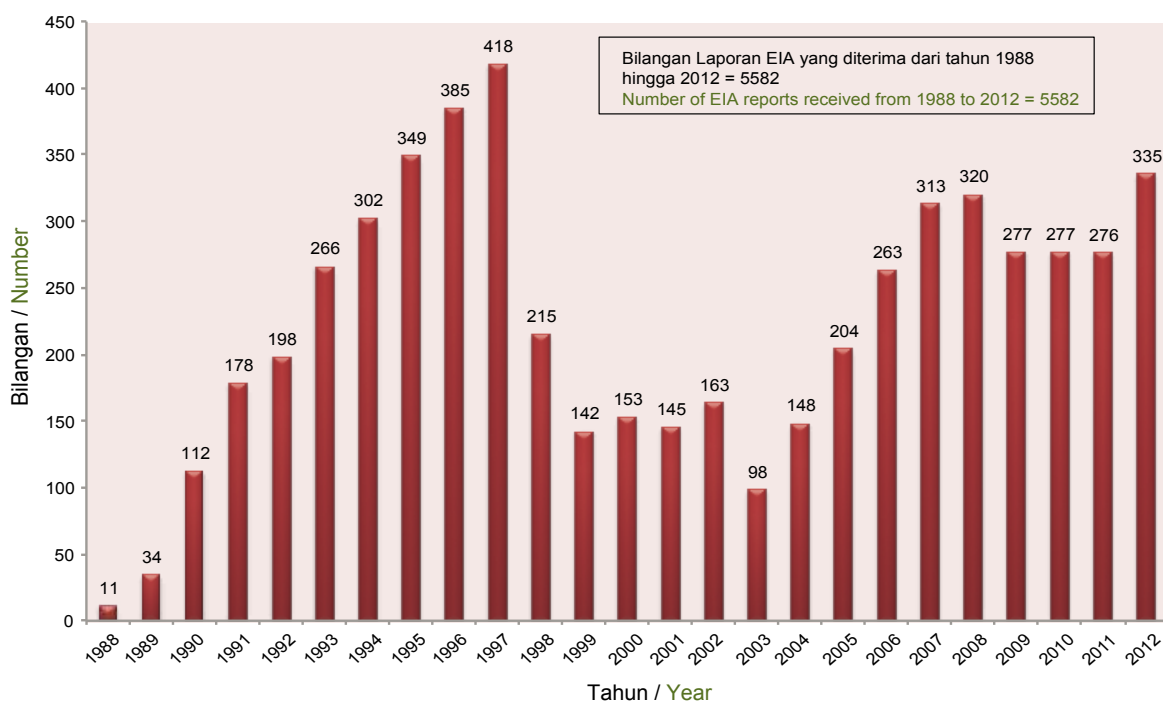
Pelaksanaan sistem ini juga membolehkan Laporan EIA penuh yang sedang diproses di Jabatan Alam Sekitar Ibu Pejabat dan juga semua Jabatan Alam Sekitar Negeri beserta ringkasan eksekutif dipaparkan terus di laman sesawang Jabatan Alam Sekitar. Laman sesawang Jabatan Alam Sekitar juga memaparkan senarai status permohonan laporan EIA yang diproses oleh Jabatan Alam Sekitar (sedang diproses, lulus, tidak diluluskan).

EIA DATA MANAGEMENT SYSTEM

In 2012, DOE has developed its EIA Processing and Enforcement Data Management System in the Integrated Pollution Sources Control Data Management System (EKAS) which is being used at DOE's headquarters and state level.

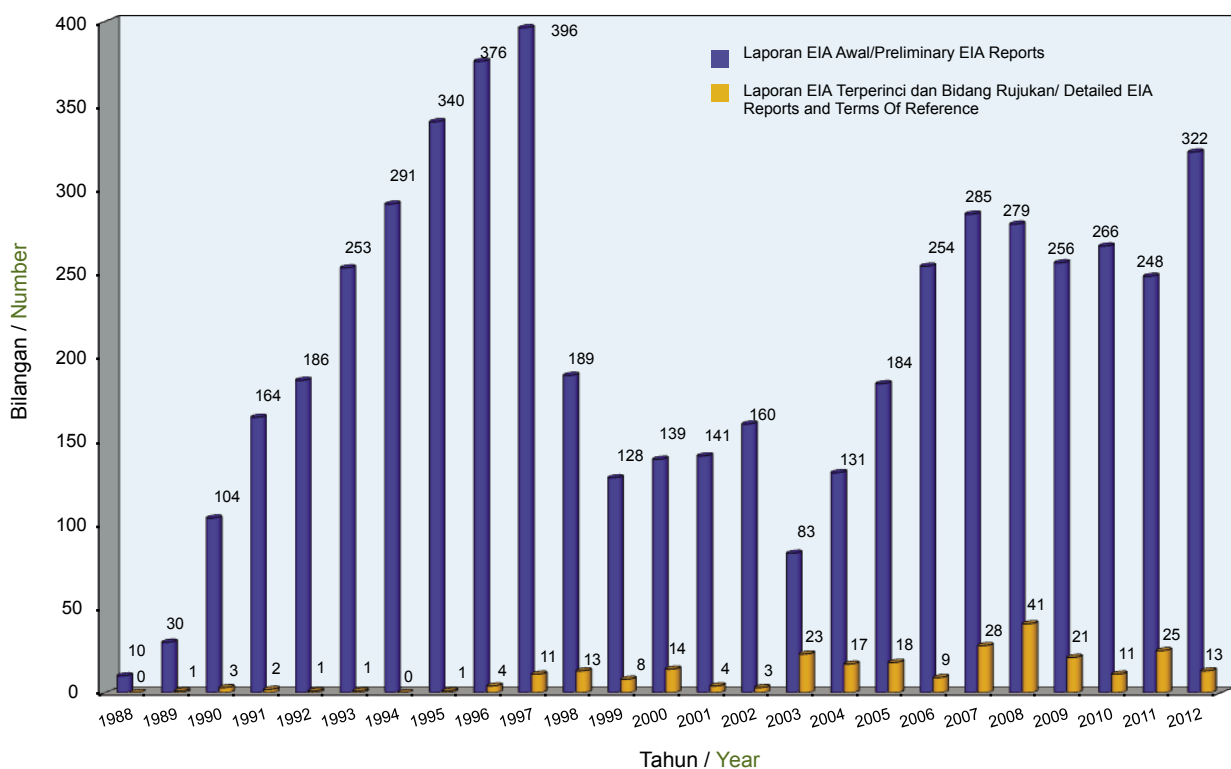
The system is developed to enable the processing officers and the management to monitor DOE's client charter performance on EIA processing. The system also provide information on DOE enforcement activities, status of compliance of all approved EIA projects and type of actions taken against any non-compliances.

The implementation of this system also provides for full EIA Reports and executive summaries to be displayed in the Department's website during the EIA processing time. The list of the EIA application status processed by the Department of Environment (review, approved, not approved) can also be viewed from the same website.

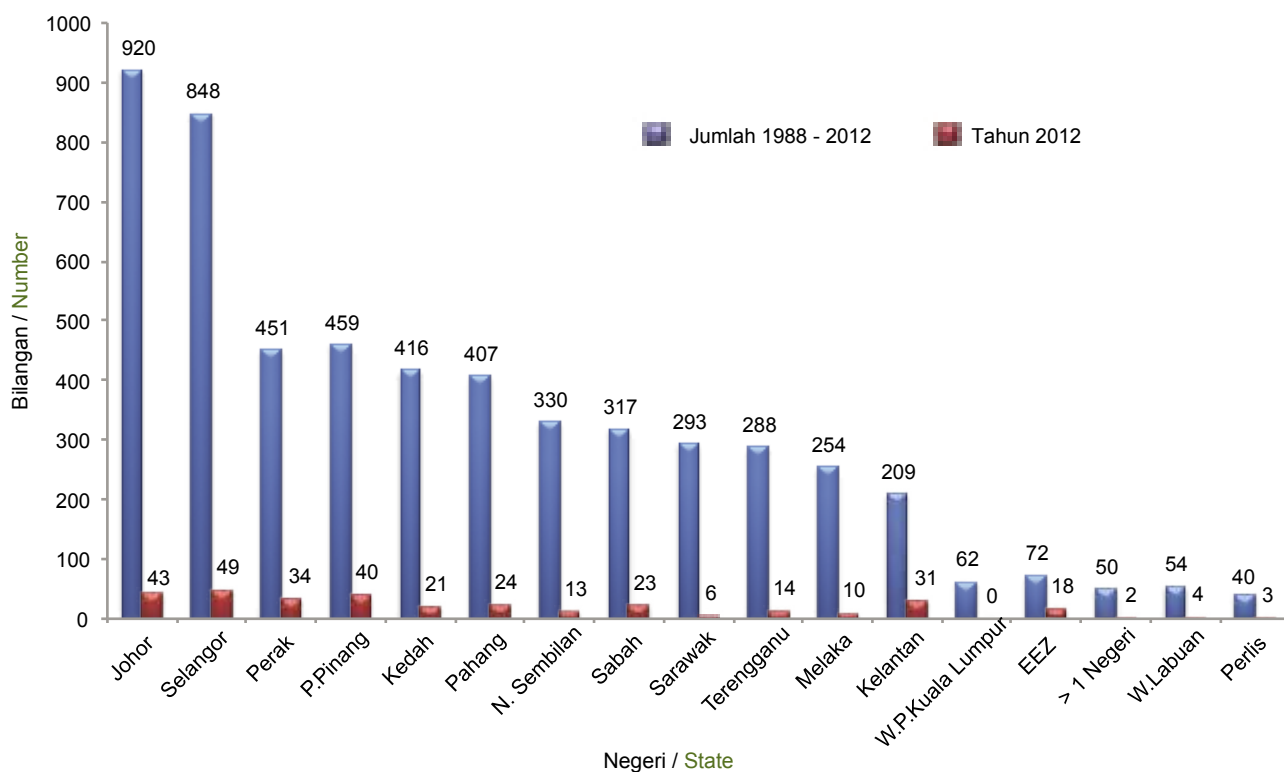


Rajah 3.1 JAS : Bilangan Laporan EIA Yang Diterima Mengikut Tahun, 1988-2012

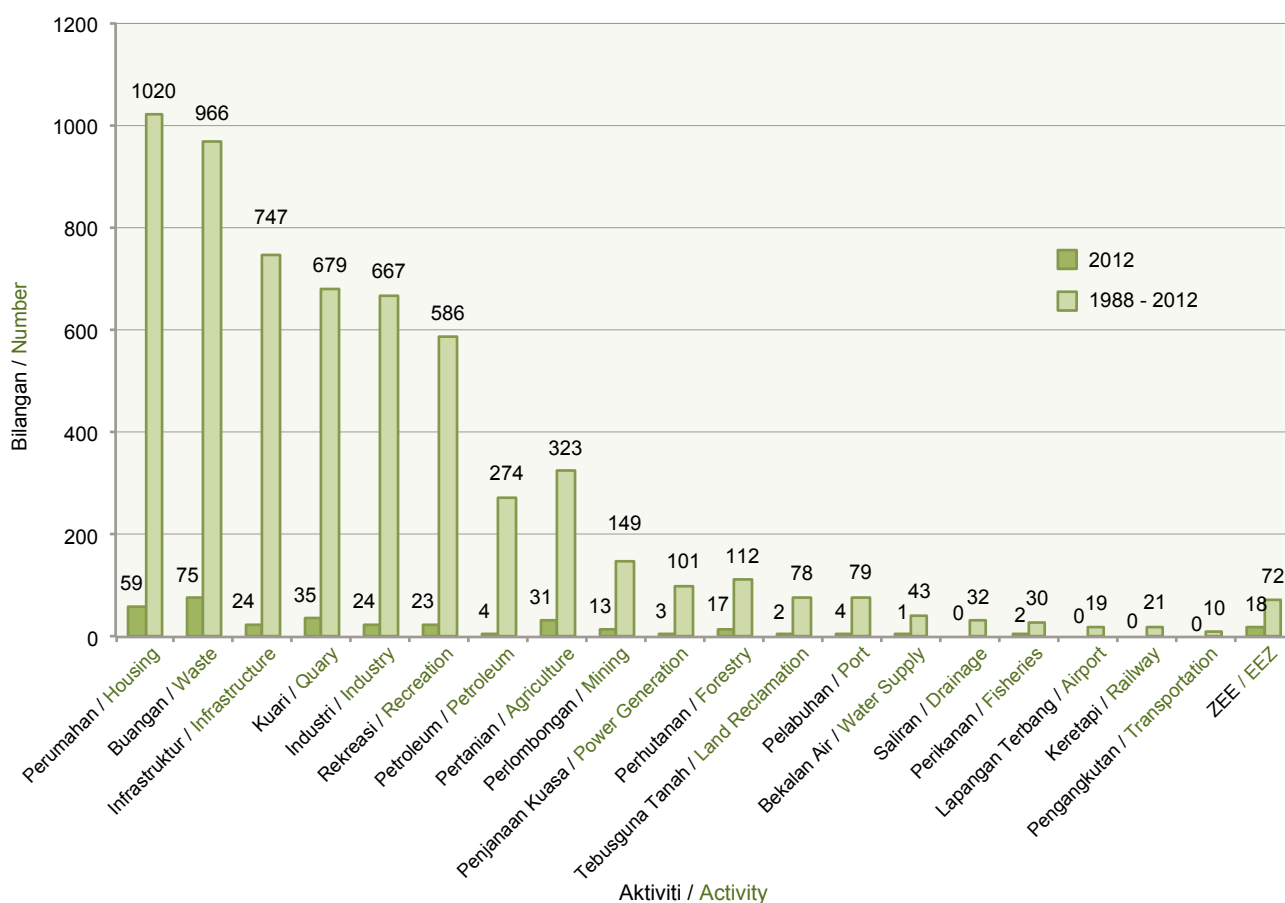
Figure 3.1 DOE: Number of EIA Reports Received By Year, 1988 - 2012



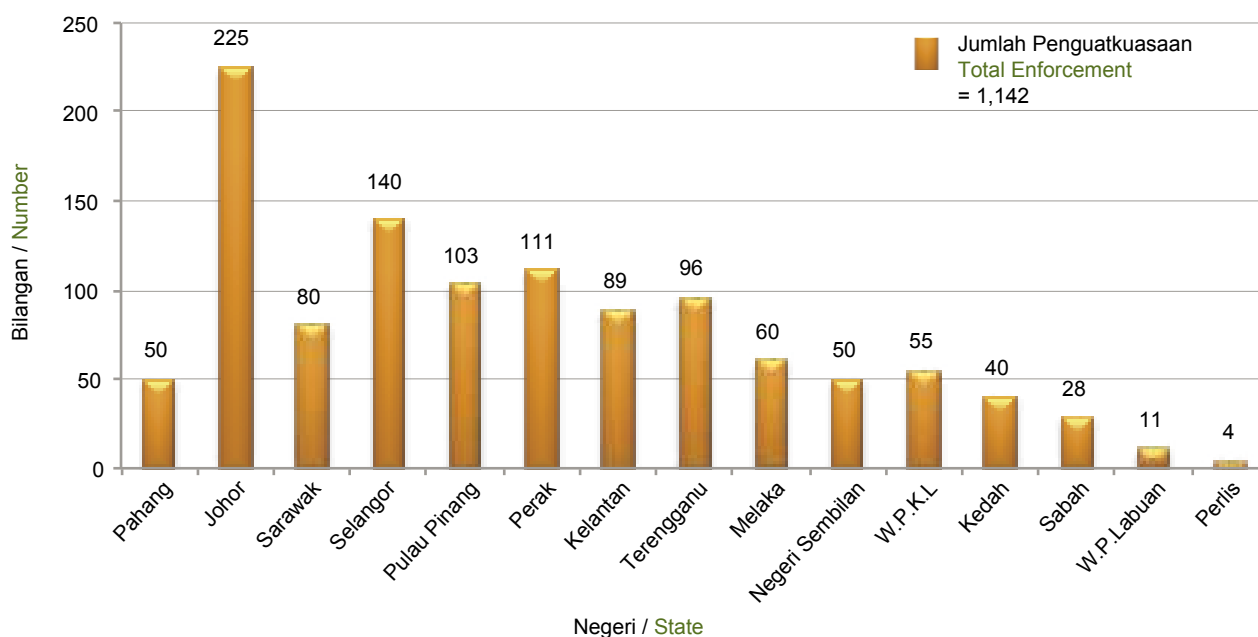
Rajah 3.2 JAS: Bilangan Laporan EIA dan Jenis Laporan Diterima, 1988 - 2012
Figure 3.2 DOE: Number and Type of EIA Reports Received, 1988 - 2012



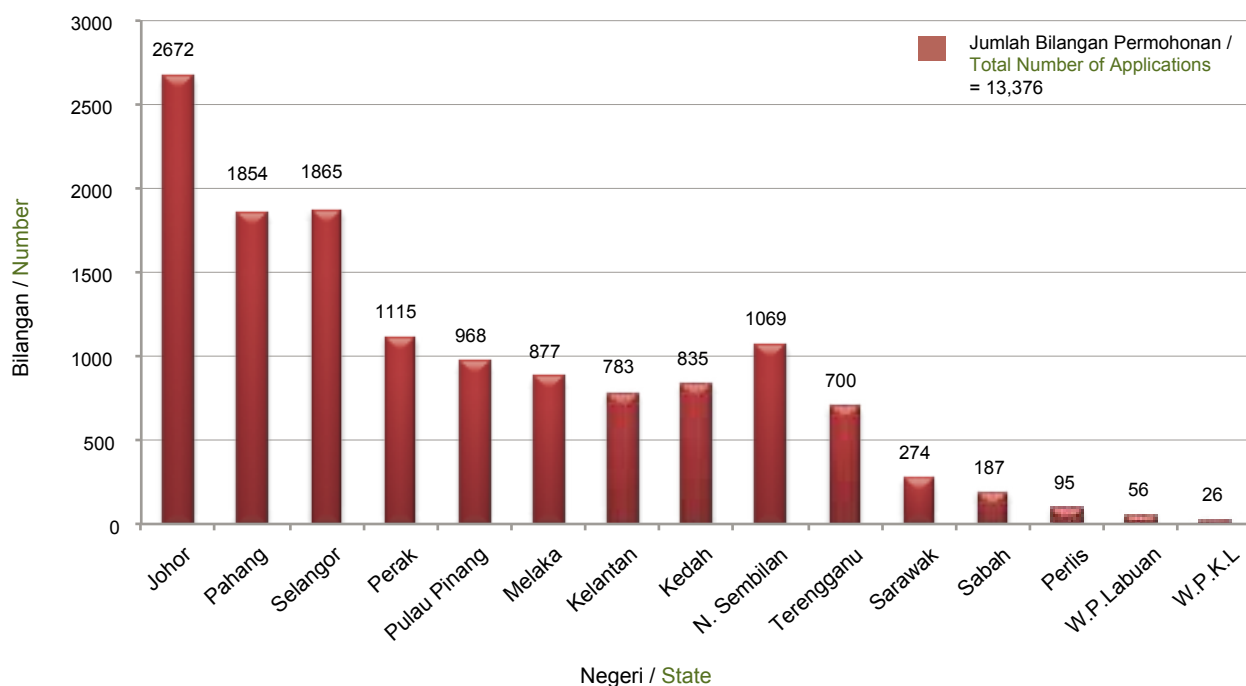
Rajah 3.3 JAS: Bilangan Laporan EIA Yang Diterima Mengikut Negeri, 1988-2012
Figure 3.3 DOE: Number of EIA Reports Received By State 1988-2012



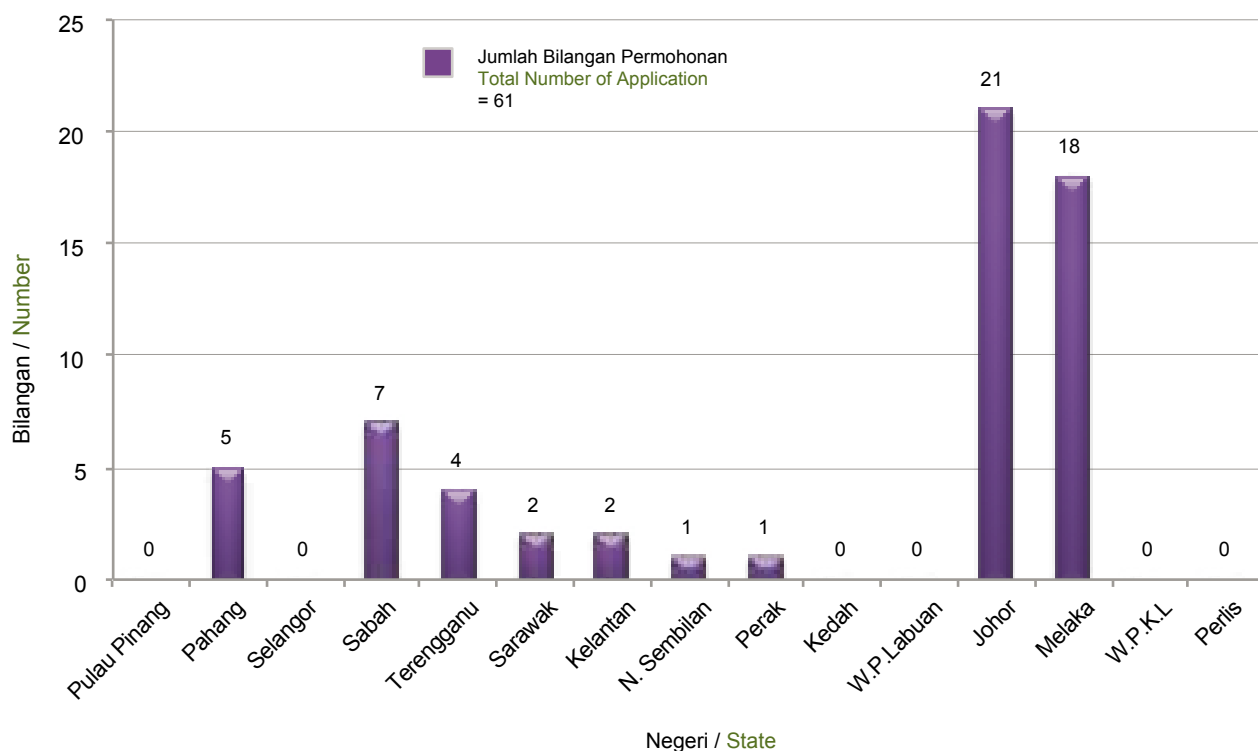
Rajah 3.4 JAS: Bilangan Laporan EIA Yang Diterima Mengikut Aktiviti, 1988-2012
 Figure 3.4 DOE: Number of EIA Reports Received by Activity, 1988-2012



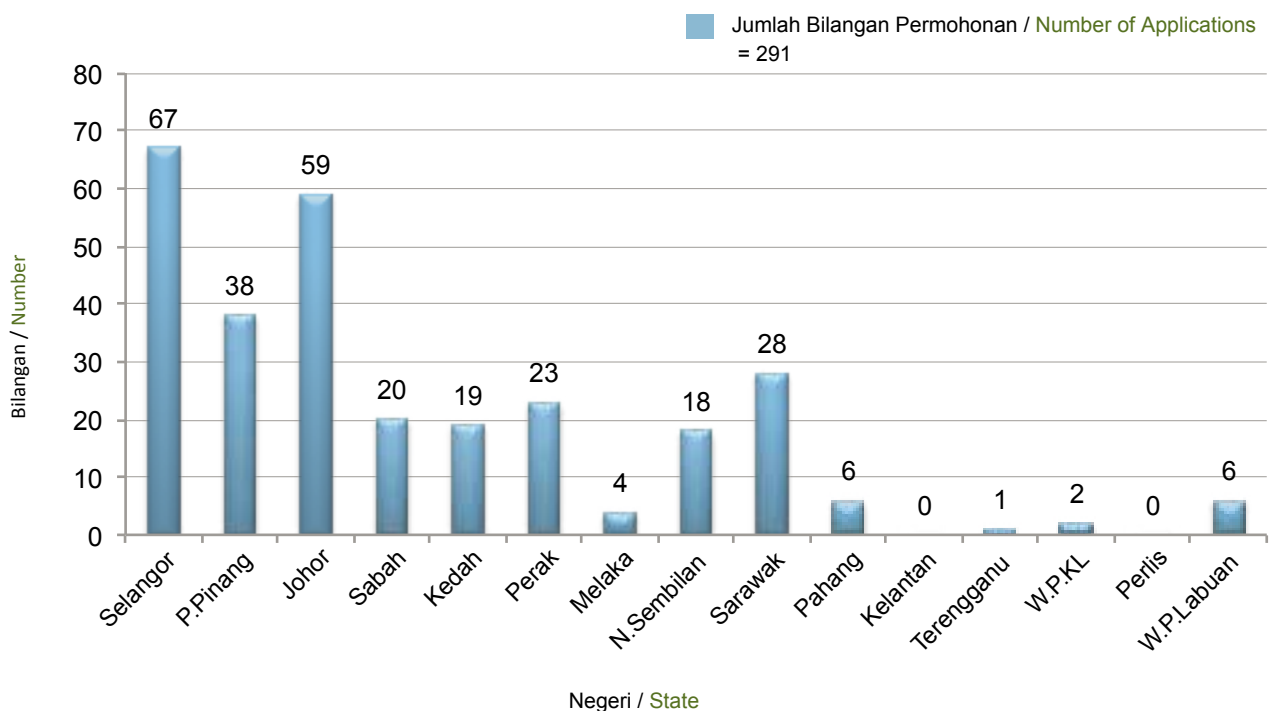
Rajah 3.5 JAS: Siasatan Penguatkuasaan Projek EIA, 2012
 Figure 3.5 DOE: Post EIA Enforcement Investigation, 2012



Rajah 3.6 JAS: Penilaian Awal Tapak Untuk Pembangunan Projek-Projek Pembangunan Negeri, 2012
Figure 3.6 DOE: Pre-Sitting Evaluation of Development Projects By State, 2012

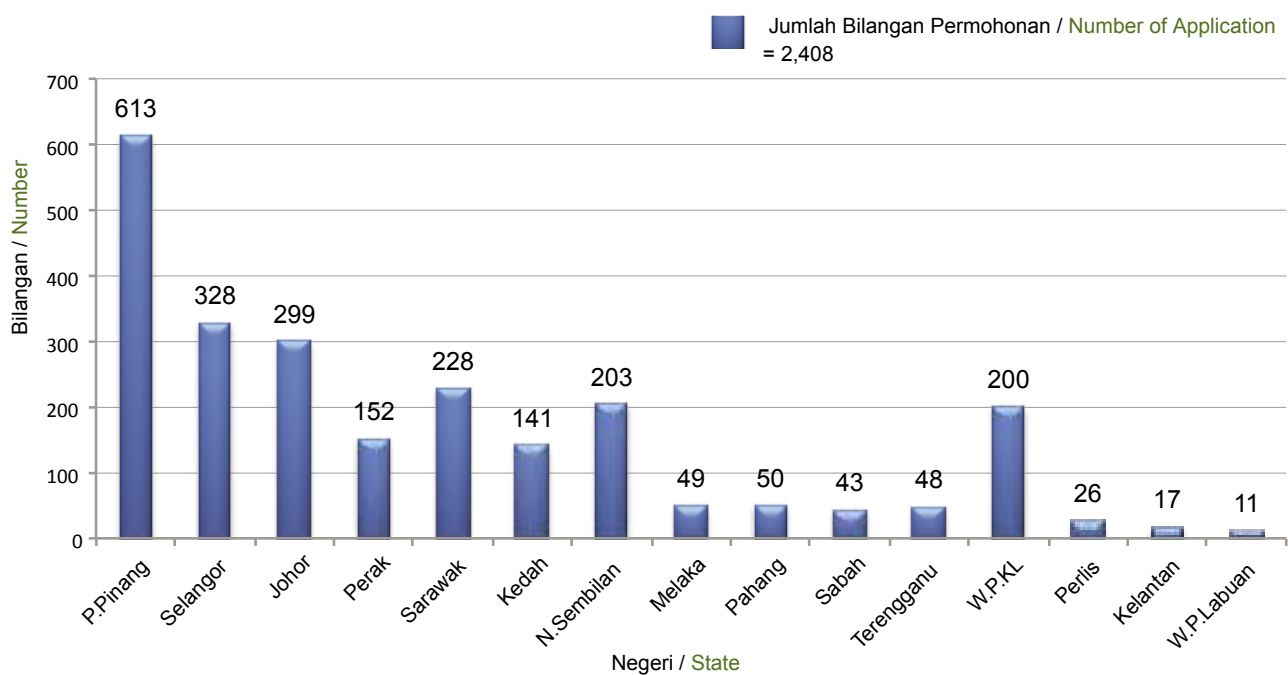


Rajah 3.7A JAS: Pemberitahuan Bertulis Bagi Punca Baru Pembuangan atau Pelepasan Kumbahan, 2012
Figure 3.7A DOE: Notification For New Sources of Sewage Discharge or Release, 2012



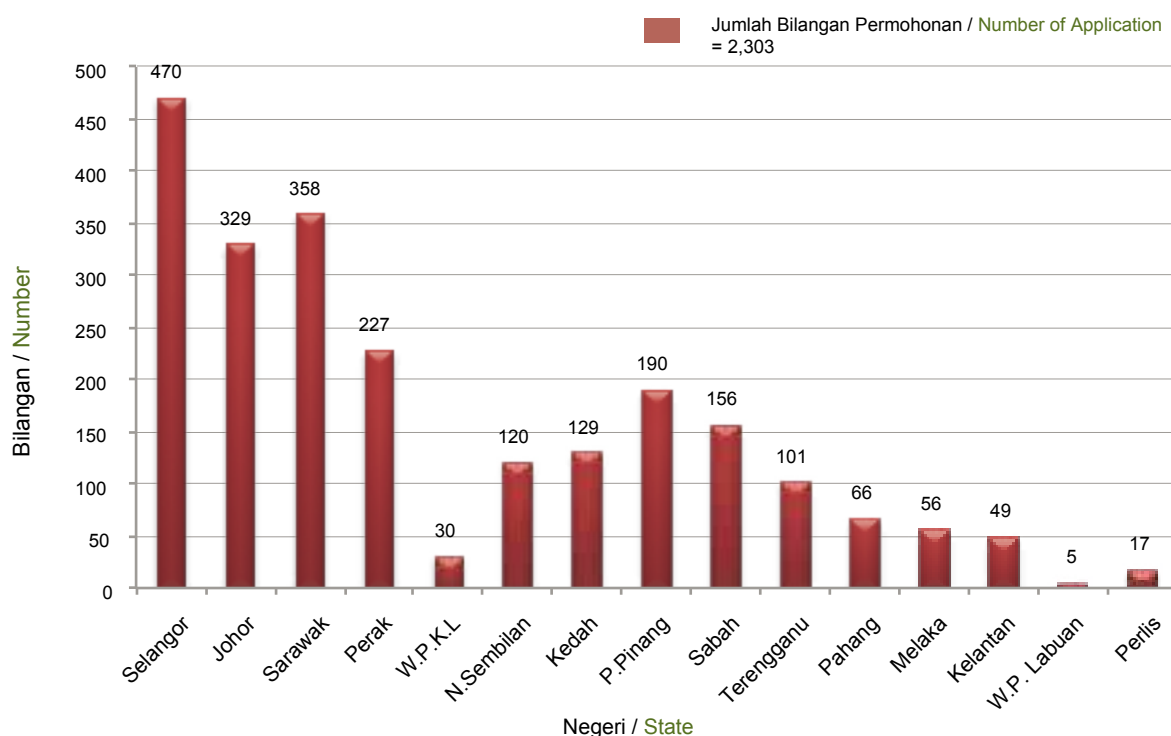
Rajah 3.7B JAS: Pemberitahuan Bertulis Bagi Punca Baru Atau Yang Diubah Efluen Perindustrian atau Efluen Bercampur,2012

Figure 3.7B DOE: Notification For New Or Altered Sources of Discharge of Industrial Effluent Or Mixed Effluent,2012



Rajah 3.8 JAS: Permohonan Bagi Pemasangan Alat Kawalan Pencemaran Udara Mengikut Negeri, 2012

Figure 3.8 DOE: Application for Installation of Air Pollution Control Equipment By State, 2012



Rajah 3.9 JAS: Permohonan Bagi Pemasangan Alat Pembakaran Bahan Api Mengikut Negeri, 2012
Figure 3.9 DOE: Application for Installation of Fuel Burning Equipment By State, 2012

Jadual 3.1 JAS: Jumlah Permohonan Jururunding Yang Diluluskan bagi Tahun 2012
Table 3.1 DOE : Number of Consultant Applications Approved 2012

Kategori / Category	Jumlah Permohonan / No. of Applications	Jumlah Lulus / No. of Applications Approved	Peratusan Lulus (%) / Percentage Approved (%)
Jururunding EIA / EIA Consultant	26	20	77%
Jururunding Subjek / Subject Consultant	33	23	70%
Penolong Jururunding / Assistant Consultant	69	65	94%
Jumlah / Total	128	108	84%

Jadual 3.2 JAS: Jumlah Keseluruhan Jururunding Berdaftar Sehingga 31 Disember 2012
Table 3.2 DOE : Number Of Registered Consultants until 31 December 2012

Perkara / Category	Jumlah Diluluskan / No. of Applications Approved	Peratusan (%) / Percentage (%)
Jururunding EIA / EIA Consultant	267	25%
Jururunding Subjek / Subject Consultant	365	34%
Penolong Jururunding / Assistant Consultant	431	41%
Jumlah / Total	1063	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. 1/12 EIA Induction Course 1/12	21 – 22 Feb 2012 21 – 22 Feb 2012	Puri Pujangga, UKM
2	Kursus Induksi EIA untuk Jururunding EIA Bil. 2/12 EIA Induction Course 2/12	17 – 18 April 2012 17 – 18 April 2012	Puri Pujangga, UKM
3	Kursus Induksi EIA untuk Jururunding EIA Bil. 3/12 EIA Induction Course 3/12	19 – 20 Jun 2012 19 – 20 June 2012	Puri Pujangga, UKM
4	Kursus Induksi EIA untuk Jururunding EIA Bil. 4/12 EIA Induction Course 4/12	18 – 19 Sept. 2012 18 – 19 Sept. 2012	Puri Pujangga, UKM
5	Kursus Induksi EIA untuk Jururunding EIA Bil. 5/12 EIA Induction Course 5/12	20 – 21 Sept. 2012 20 – 21 Sept. 2012	Puri Pujangga, UKM

Jadual 3.4 JAS: Jumlah Permohonan Yang Diluluskan bagi Juruaudit Alam Sekitar Untuk Tahun 2012
Table 3.4 DOE: Number Of Auditor Applications Approved In 2012

Jumlah Permohonan / No of Applicants	Jumlah Lulus / No. of Applications Approved	Peratusan Lulus / Percentage Approved
13	12	92.3%

Jadual 3.5 JAS : Jumlah Keseluruhan Juruaudit Berdaftar Sehingga 31 Disember 2012
Table.3.5 DOE : Number Of Registered Environmental Auditor Until 31 December 2012

Perkara / Category	Jumlah Diluluskan / No. of Applications Approved
Juruaudit yang didaftarkan bagi tahun 2009 / Environmental Auditors registered in 2009	38
Juruaudit yang didaftarkan bagi tahun 2010 / Environmental Auditors registered in 2010	8
Juruaudit yang didaftarkan bagi tahun 2011 / Environmental Auditors registered in 2011	6
Juruaudit yang didaftarkan bagi tahun 2012 / Environmental Auditors registered in 2012	12
Jumlah / Total	64

Nota : Tahun 2009, Jumlah asal juruaudit adalah 41, namun tiga (3) auditor tidak memperbaharui pendaftaran mereka.

Note : Number of auditors registered in 2009 is 41, out of that three (3) auditors did not renew their registration and has been delisted.

Jadual 3.6 JAS: Kursus Induksi EIA Untuk Juruaudit Alam Sekitar
Table 3.6 DOE: Induction Course For Environmental Auditors

Bil. / No.	Kursus / Course	Tarikh / Date	Tempat / Venue
1.	Kursus Induksi Juruaudit Alam Sekitar Bil 1/12 Induction Courses for Environmental Auditors 1/12	9 – 12 Julai / July 2012	Institut Latihan Keselamatan Dan Social KWSP (ESSET) Bangi



BAB 4
CHAPTER 4

PENGAWASAN KUALITI UDARA AIR QUALITY MONITORING

Sebanyak 52 buah stesen pengawasan kualiti udara automatik ditempatkan di seluruh Malaysia bagi memantau secara berterusan status kualiti udara sesuatu tempat atau kawasan. Sebarang perubahan ketara ke atas kualiti udara dikesan melalui stesen-stesen ini yang mana mungkin memberi kesan kepada kesihatan awam dan alam sekitar.

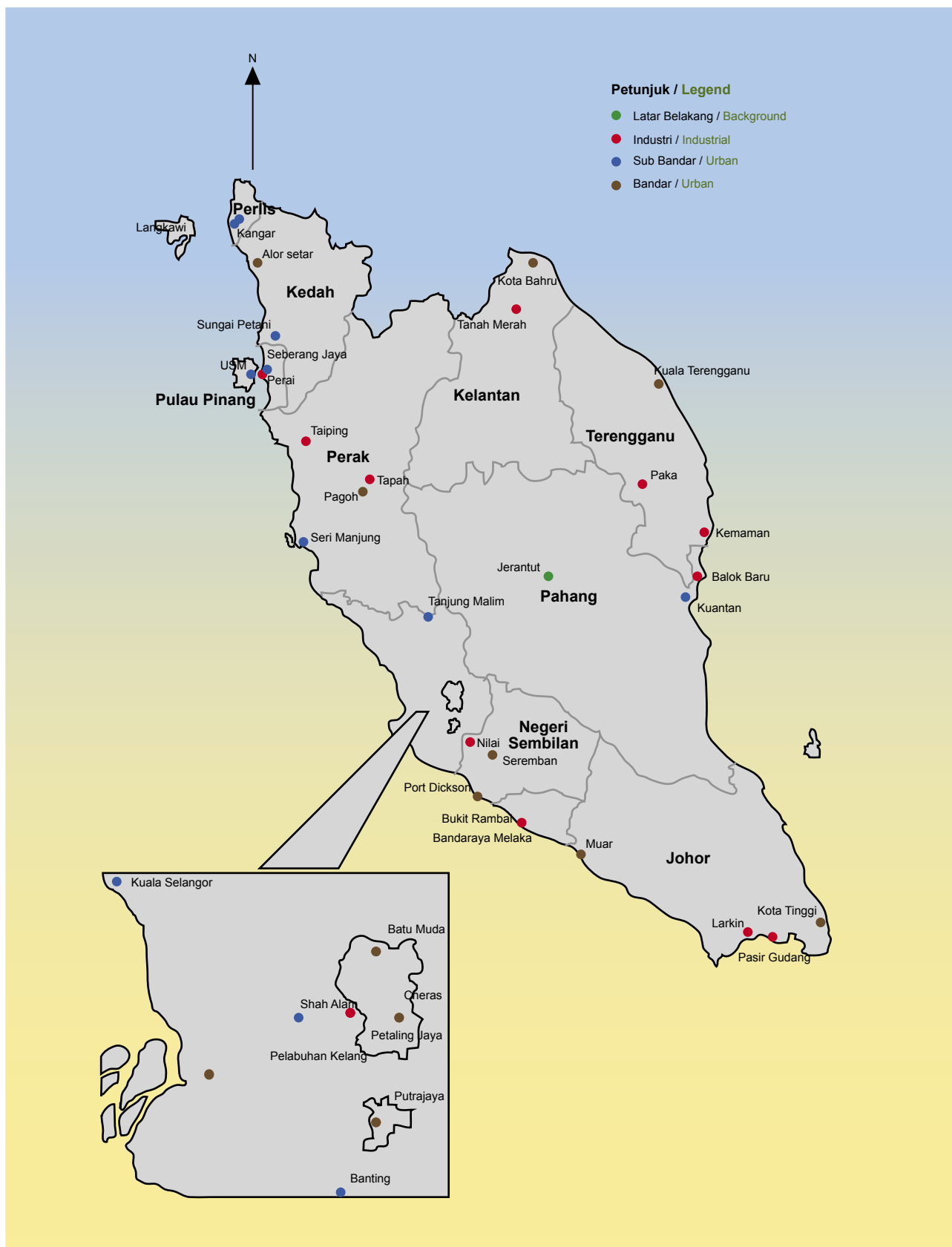
Lokasi-lokasi yang strategik (**Peta 4.1** dan **4.2**) dipilih bagi penempatan stesen-stesen pengawasan kualiti udara ini sejajar dengan objektif program pengawasan yang spesifik. Bagi memastikan tahap pendedahan pencemar udara kepada orang awam sentiasa diawasi, kebanyakan penempatan stesen diutamakan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

Tambahan kepada rangkaian stesen pengawasan kualiti udara automatik, stesen-stesen pengawasan kualiti udara secara manual juga ditempatkan di 14 buah lokasi yang berbeza. Pengawasan di stesen-stesen manual melibatkan pengukuran parameter-parameter seperti pepejal terampai, habuk halus bersaiz kurang dari 10 mikron (PM_{10}) dan beberapa parameter logam berat termasuk plumbum. Bagi stesen manual ini, pengukuran dibuat setiap enam (6) hari dalam satu bulan dengan menggunakan alat "High Volume Samplers". Semasa episod jerebu di Miri, Sarawak pada Jun 2012, pengawasan kualiti udara melalui alat pengukuran habuk mudah alih juga dilaksanakan bagi memantau status kualiti udara di kawasan berkenaan.

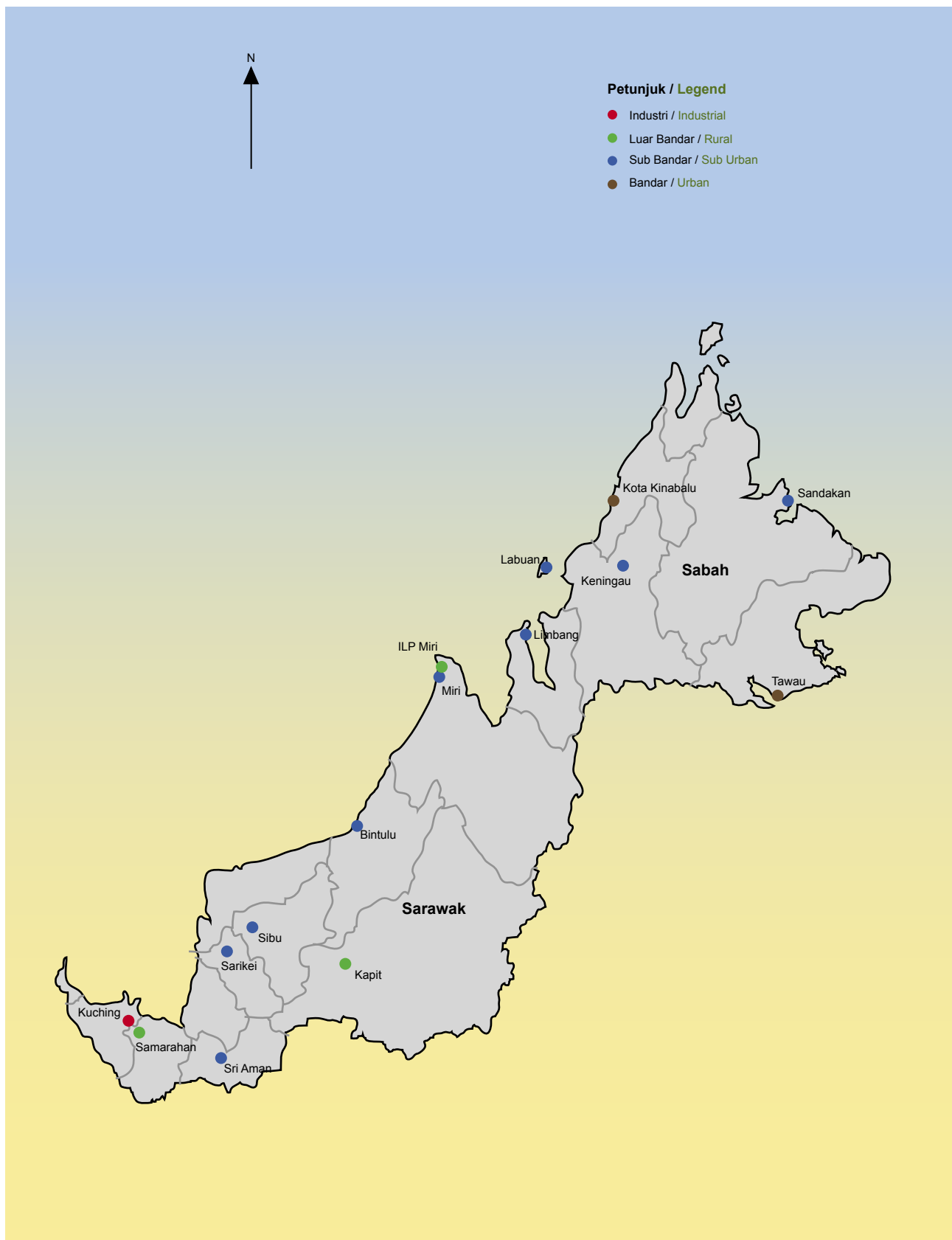
Malaysia's air quality monitoring network consists of 52 stations that are located throughout the country to continuously monitor and to detect any significant change, in the air quality that can contribute negative impact on human health and the environment.

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 in city 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 a month using High Volume Samplers. During the haze episode in Miri, Sarawak in June 2012, air quality monitoring using portable particulate sampler was also carried out to monitor air quality status in the area.



Peta 4.1 Semenanjung Malaysia: Lokasi Stesen Pengawasan Kualiti Udara Automatik, 2012
 Map 4.1 Peninsular Malaysia: Location of Continuous Air Quality Monitoring Station, 2012



Peta 4.2 Sabah & Sarawak: Lokasi Stesen Pengawasan Kualiti Udara Automatik, 2012
 Map 4.2 Sabah & Sarawak: Location of Continuous Air Quality Monitoring Station, 2012

PENGAWASAN KUALITI AIR MARIN KEBANGSAAN MARINE WATER QUALITY MONITORING

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

Pada tahun 2012, terdapat 224 stesen pengawasan di seluruh Malaysia; Perlis (2 stesen), Kedah (9 stesen), Pulau Pinang (22 stesen), Perak (11 stesen), Selangor (14 stesen), Negeri Sembilan (13 stesen), Melaka (13 stesen), Johor (34 stesen), Pahang (20 stesen), Terengganu (20 stesen), Kelantan (10 stesen), Sabah (26 stesen), W.P Labuan (5 stesen) dan Sarawak (25 stesen) (**Jadual 4.1, Peta 4.3 dan 4.4**).

Sebagai tambahan, di bawah Program Pengawasan Selat Johor di bawah 'Malaysia-Singapore Joint Committee on the Environment' (MSJCE), 20 stesen telah dipantau pada tahun 2012 (**Jadual 4.2**).

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

In 2012, a total of 224 monitoring stations were set up throughout Malaysia; Perlis (2 stations), Kedah (9 stations), Pulau Pinang (22 stations), Perak (11 stations), Selangor (14 stations), Negeri Sembilan (13 stations), Melaka (13 stations), Johor (34 stations), Pahang (20 stations), Terengganu (20 stations), Kelantan (10 stations), Sabah (26 stations), W.P Labuan (5 stations) and Sarawak (25 stations) (**Table 4.1, Map 4.3 and 4.4**).

In addition under the Malaysia-Singapore Joint Committee on the Environment (MSJCE) Monitoring Programme, 20 stations were monitored in 2012 (**Table 4.2**).



Jadual 4.1 JAS: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2012

Table 4.1 DOE: Marine Water Quality Monitoring Stations, 2012

Bil/ No.	Negeri State	Kawasan / Area	Nama Stesen/ Station Name	No. Stesen/ Station No.	Longitude/ Longitude	Latitude/ Latitude
1	PERLIS	KUALA/ESTUARINE	KUALA SG. BARU	6302903	N 06° 19' 54.5"	E 100° 09' 20.0"
2	PERLIS	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	KEDAH	KUALA/ESTUARINE	KUALA JERLUN	6302925	N 06° 12' 36.0"	E 100° 14' 20.9"
3	KEDAH	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	P.LANGKAWI	PANTAI/COASTAL	PANTAI KOK	6397922	N 06° 22' 12.0"	E 099° 40' 43.7"
3	P.LANGKAWI	PANTAI/COASTAL	PANTAI KUAH	6398913	N 06° 19' 04.1"	E 099° 51' 04.5"
4	P.LANGKAWI	PANTAI/COASTAL	PANTAI PASIR TENGGORAK	6497901	N 06° 25' 46.3"	E 099° 43' 37.1"
5	P.LANGKAWI	PANTAI/COASTAL	PANTAI TELUK BURAU	6396923	N 06° 21' 52.4"	E 099° 40' 13.7"
6	P.LANGKAWI	PANTAI/COASTAL	PANTAI TELUK NIBUNG	6497915	N 06° 21' 38.9"	E 099° 42' 08.1"
1	PULAU PINANG	KUALA/ESTUARINE	KUALA SG. JAWI	5204901	N 05° 16' 50.0"	E 100° 25' 00.0"
2	PULAU PINANG	KUALA/ESTUARINE	KUALA SG. JURU	5304904	N 05° 20' 20.0"	E 100° 24' 20.0"
3	PULAU PINANG	KUALA/ESTUARINE	KUALA SG. KERIAN	5104901	N 05° 10' 00.0"	E 100° 25' 00.0"
4	PULAU PINANG	KUALA/ESTUARINE	KUALA SG. PINANG	5403934	N 05° 24' 00.0"	E 100° 20' 05.0"
5	PULAU PINANG	KUALA/ESTUARINE	KUALA SG.PERAI	5303908	N 05° 23' 00.0"	E 100° 22' 00.0"
6	PULAU PINANG	PANTAI/COASTAL	BATU FERINGGI (CASUARINA)	5402904	N 05° 28' 10.0"	E 100° 14' 30.0"
7	PULAU PINANG	PANTAI/COASTAL	KAW.PER.BAYAN LEPAS I	5303932	N 05° 20' 00.0"	E 100° 18' 45.0"
8	PULAU PINANG	PANTAI/COASTAL	KAW.PER.BAYAN LEPAS II	5303933	N 05° 19' 00.0"	E 100° 18' 30.0"
9	PULAU PINANG	PANTAI/COASTAL	KAW.PER.BAYAN LEPAS III	5302939	N 05° 18' 20.0"	E 100° 17' 45.0"
10	PULAU PINANG	PANTAI/COASTAL	LUAR PANTAI TELUK BAHANG	5402930	N 05° 27' 45.0"	E 100° 12' 45.0"
11	PULAU PINANG	PANTAI/COASTAL	PANTAI BERSIH	5403906	N 05° 26' 30.0"	E 100° 22' 40.0"
12	PULAU PINANG	PANTAI/COASTAL	PANTAI MIAMI	5502901	N 05° 28' 30.0"	E 100° 16' 00.0"
13	PULAU PINANG	PANTAI/COASTAL	PANTAI PASIR PANJANG	5201938	N 05° 17' 50.0"	E 100° 11' 00.0"
14	PULAU PINANG	PANTAI/COASTAL	PERSIARAN GURNEY	5403902	N 05° 25' 30.0"	E 100° 19' 30.0"
15	PULAU PINANG	PANTAI/COASTAL	RUMAH PAM BARU PERAI	5304927	N 05° 21' 15.0"	E 100° 23' 15.0"
16	PULAU PINANG	PANTAI/COASTAL	RUMAH PAM LAMA PERAI	5303926	N 05° 20' 00.0"	E 100° 18' 45.0"
17	PULAU PINANG	PANTAI/COASTAL	SELAT PP SELATAN (JELUTONG)	5303911	N 05° 23' 30.0"	E 100° 19' 50.0"
18	PULAU PINANG	PANTAI/COASTAL	TANJUNG BUNGAH	5402937	N 05° 28' 00.0"	E 100° 16' 50.0"
19	PULAU PINANG	PANTAI/COASTAL	GERTAK SANGGUL	5201919	N 05° 16' 50.0"	E 100° 12' 40.0"
20	PULAU PINANG	PANTAI/COASTAL	TELUK TEMPOYAK	5202923	N 05° 28' 30.0"	E 100° 17' 30.0"
21	PULAU PINANG	KUALA/ESTUARINE	KUALA SUNGAI TENGAH	5104901	N 05° 12' 41.0"	E 100° 25' 29.0"
22	PULAU PINANG	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	PERAK	KUALA/ESTUARINE	KUALA SG. TG. PIANDANG	5003921	N 05° 04' 27.0"	E 100° 22' 34.0"
3	PERAK	KUALA/ESTUARINE	KUALA SG.GULA	4906926	N 04° 55' 07.0"	E 100° 28' 57.0"
4	PERAK	KUALA/ESTUARINE	KUALA SG.KURAU	4994919	N 04° 59' 13.0"	E 100° 25' 46.0"
5	PERAK	KUALA/ESTUARINE	KUALA SG.PERAK	4007901	N 03° 59' 03.0"	E 100° 48' 58.0"
6	PERAK	KUALA/ESTUARINE	KUALA SG.SEPETANG	4806925	N 04° 50' 07.0"	E 100° 37' 57.0"
7	PERAK	PANTAI/COASTAL	PANTAI PASIR BOGAK	4205908	N 04° 12' 58.0"	E 100° 37' 55.0"
8	PERAK	PANTAI/COASTAL	PANTAI PASIR PANJANG	4305924	N 04° 25' 07.0"	E 100° 35' 35.0"
9	PERAK	PANTAI/COASTAL	PANTAI TANJUNG BATU	4406927	N 04° 25' 07"	E 100° 35' 35"
10	PERAK	PANTAI/COASTAL	PANTAI TELUK BATIK	4205923	N 04° 11' 14.0"	E 100° 36' 33.0"
11	PERAK	PANTAI/COASTAL	PANTAI TELUK DALAM	4205928	N 04° 14' 53.0"	E 100° 33' 25.0"
1	SELANGOR	PANTAI/COASTAL	PANTAI BAGAN LALANG	2616927	N 02° 36' 20.0"	E 101° 41' 30.0"
2	SELANGOR	PANTAI/COASTAL	PANTAI MORIB	2712902	N 02° 45' 00.0"	E 101° 26' 20.0"
3	SELANGOR	PANTAI/COASTAL	SELAT PULAU BABI	3012929	N 03° 01' 10.0"	E 101° 15' 55.0"

Jadual 4.1 JAS: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2012 (sambungan)
Table 4.1 DOE: Marine Water Quality Monitoring Stations, 2012 (continued)

Bil/ No.	Negeri State	Kawasan / Area	Nama Stesen/ Station Name	No. Stesen/ Station No.	Longitude/ Longitude	Latitude/ Latitude
4	SELANGOR	PANTAI/COASTAL	SELAT KLANG UTARA	3013908	N 03° 04' 00.0"	E 101° 21' 00.0"
5	SELANGOR	KUALA/ESTUARINE	KUALA SG. SEPANG	2517922	N 02° 35' 35.0"	E 101° 42' 56.0"
6	SELANGOR	KUALA/ESTUARINE	KUALA SG. SEPANG (KECIL)	2612928	N 02° 36' 40.0"	E 101° 42' 15.0"
7	SELANGOR	KUALA/ESTUARINE	KUALA SG. SEPANG (KAWALAN)	2616926	N 02° 36' 20.0"	E 101° 41' 30.0"
8	SELANGOR	KUALA/ESTUARINE	KUALA SUNGAI KLANG	3013909	N 03° 00' 06.0"	E 101° 23' 24.0"
9	SELANGOR	KUALA/ESTUARINE	KUALA SUNGAI LANGAT (JUGRA)	2814925	N 02° 48' 25.0"	E 101° 24' 15.0"
10	SELANGOR	KUALA/ESTUARINE	KUALA SUNGAI LANGAT (LUMUT)	2913903	N 02° 55' 50.0"	E 101° 21' 15.0"
11	SELANGOR	KUALA/ESTUARINE	KUALA SUNGAI BULOH	3212930	N 03° 15' 10.0"	E 101° 15' 50.0"
12	SELANGOR	KUALA/ESTUARINE	KUALA SUNGAI SELANGOR	3312915	N 03° 20' 00.0"	E 101° 13' 30.0"
13	SELANGOR	KUALA/ESTUARINE	KUALA SUNGAI TENGI	3311931	N 03° 23' 00.0"	E 101° 10' 20.0"
14	SELANGOR	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	N. SEMBILAN	KUALA/ESTUARINE	KUALA SUNGAI LUKUT	2517910	N 02° 34' 45.0"	E 101° 47' 16.0"
3	N. SEMBILAN	PANTAI/COASTAL	PANTAI BAGAN PINANG	2418915	N 02° 30' 31.0"	E 101° 49' 44.0"
4	N. SEMBILAN	PANTAI/COASTAL	PANTAI TELUK SINTING PASIR PANJANG	2419908	N 02° 24' 57.0"	E 101° 56' 31.0"
5	N. SEMBILAN	PANTAI/COASTAL	PORT DICKSON BANDAR	2517907	N 02° 31' 16.0"	E 101° 47' 51.0"
6	N. SEMBILAN	PANTAI/COASTAL	PANTAI PORT DICKSON BATU 10	2418914	N 02° 24' 58.0"	E 101° 51' 23.0"
7	N. SEMBILAN	PANTAI/COASTAL	PANTAI PORT DICKSON BATU 5	2418906	N 02° 29' 46.0"	E 101° 50' 15.0"
8	N. SEMBILAN	PANTAI/COASTAL	PANTAI PORT DICKSON BATU 6	2418916	N 02° 29' 05.0"	E 101° 50' 46.0"
9	N. SEMBILAN	PANTAI/COASTAL	PANTAI PORT DICKSON BATU 7	2418905	N 02° 27' 43.0"	E 101° 51' 04.0"
10	N. SEMBILAN	PANTAI/COASTAL	PANTAI PORT DICKSON BATU 8	2418912	N 02° 27' 16.0"	E 101° 51' 20.0"
11	N. SEMBILAN	PANTAI/COASTAL	PANTAI PD. BATU 8 (STESEN KAWALAN)	2418913	N 02° 27' 16.0"	E 101° 51' 10.0"
12	N. SEMBILAN	PANTAI/COASTAL	PORT DICKSON TNB	2517909	N 02° 32' 09.0"	E 101° 47' 42.0"
13	N. SEMBILAN	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	MELAKA	KUALA/ESTUARINE	KUALA SG. MELAKA	2122903	N 02° 11' 06.0"	E 102° 14' 52.0"
3	MELAKA	KUALA/ESTUARINE	KUALA SG. SRI MELAKA	2121914	N 02° 11' 16.4"	E 102° 14' 39.2"
4	MELAKA	KUALA/ESTUARINE	KUALA SG. MERLIMAU	2124912	N 02° 09' 25.0"	E 102° 25' 28.0"
5	MELAKA	KUALA/ESTUARINE	KUALA SG. SEBATU	2186904	N 02° 06' 06.0"	E 102° 27' 35"
6	MELAKA	PANTAI/COASTAL	PANTAI KUNDOR TG. KELING	2221908	N 02° 14' 37.0"	E 102° 08' 29.0"
7	MELAKA	PANTAI/COASTAL	PANTAI ROMBANG TG. KELING	2221906	N 02° 13' 35.0"	E 102° 08' 57.0"
8	MELAKA	PANTAI/COASTAL	PANTAI TG. BIDARA	2320909	N 02° 17' 30.0"	E 102° 05' 18"
9	MELAKA	PANTAI/COASTAL	PANTAI TELUK GONG	2320902	N 02° 20' 23.0"	E 102° 03' 30.0"
10	MELAKA	PANTAI/COASTAL	PULAU MELAKA POINT A (i)	2121915	N 02°11.40.1'	E 102o 14.18.1'
11	MELAKA	PANTAI/COASTAL	PULAU MELAKA POINT A (ii)	2121915	N 02°10.44.5'	E 102o 14.59.3'
12	MELAKA	PANTAI/COASTAL	PULAU MELAKA POINT B (i)	2121916	N 02°10.39.5'	E 102o 15.22.4'
13	MELAKA	PANTAI/COASTAL	PULAU MELAKA POINT B (ii)	212916	N 02°11.20.5'	E 102o 15.10.8'
1	JOHOR	KUALA/ESTUARINE	KUALA SUNGAI BATU PAHAT	1729930	N 01° 47' 44.0"	E 102° 53' 22.0"
2	JOHOR	KUALA/ESTUARINE	KUALA SUNGAI JOHOR	1440916	N 01° 29' 04.0"	E 104° 01' 22.0"
3	JOHOR	KUALA/ESTUARINE	KUALA SUNGAI MELAYU	1437946	N 01° 27' 15.0"	E 103° 41' 56.0"
4	JOHOR	KUALA/ESTUARINE	KUALA SUNGAI MERSING	2438905	N 02° 26' 10.0"	E 103° 50' 35.0"
5	JOHOR	KUALA/ESTUARINE	KUALA SUNGAI MUAR	2024932	N 02°02' 54.0"	E 102° 33' 11.0"
6	JOHOR	KUALA/ESTUARINE	KUALA SUNGAI SEGGET	1437919	N 01° 27' 21.0"	E 103° 45' 58.0"

Jadual 4.1 JAS: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2012 (sambungan)
Table 4.1 DOE: Marine Water Quality Monitoring Stations, 2012 (continued)

Bil/ No.	Negeri State	Kawasan / Area	Nama Stesen/ Station Name	No. Stesen/ Station No.	Longitude/ Longitude	Latitude/ Latitude
7	JOHOR	KUALA/ESTUARINE	KUALA SUNGAI SKUDAI	1437922	N 01° 28' 28.0"	E 103° 43' 12.0"
8	JOHOR	KUALA/ESTUARINE	KUALA SUNGAI TEBRAU	1438943	N 01° 28' 56.0"	E 103° 47' 48.0"
9	JOHOR	PANTAI/COASTAL	HADAPAN HSAJB	1437920	N 01° 27' 19.0"	E 103° 44' 44.0"
10	JOHOR	PANTAI/COASTAL	JETI TANJONG BELUNGKOR	1440963	N 01° 27' 14.0"	E 104° 04' 03.0"
11	JOHOR	PANTAI/COASTAL	KG. TELUK JAWA	1438918	N 01° 28' 17.0"	E 103° 50' 30.0"
12	JOHOR	PANTAI/COASTAL	PANTAI AIR PAPAN	2538959	N 02° 31' 05.0"	E 103° 50' 00.0"
13	JOHOR	PANTAI/COASTAL	PANTAI DESARU	1542914	N 01° 32' 48.0"	E 104° 15' 41.0"
14	JOHOR	PANTAI/COASTAL	LUAR KUKUP	1334925	N 01° 19' 30.0"	E 103° 26' 29.0"
15	JOHOR	PANTAI/COASTAL	PANTAI LIDO	1437921	N 01° 27' 56.0"	E 103° 43' 29.0"
16	JOHOR	PANTAI/COASTAL	PANTAI SRI PANTAI	2339960	N 02° 22' 45.0"	E 103° 53' 19.0"
17	JOHOR	PANTAI/COASTAL	PANTAI STULANG LAUT	1437951	N 01° 28' 02.0"	E 103° 46' 46.0"
18	JOHOR	PANTAI/COASTAL	PANTAI SUNGAI LURUS	1730962	N 01° 43' 42.0"	E 103° 01' 43.0"
19	JOHOR	PANTAI/COASTAL	PANTAI TANJONG SETAPA	1341961	N 01° 20' 33.0"	E 104° 08' 09.0"
20	JOHOR	PANTAI/COASTAL	PANTAI TELUK GOREK	2538958	N 02° 34' 57.0"	E 103° 48' 18.0"
21	JOHOR	PANTAI/COASTAL	PANTAI TELUK MAHKOTA	1841911	N 01° 53' 52.0"	E 104° 06' 15.0"
22	JOHOR	PANTAI/COASTAL	PANTAI TG.LEMAN	2140694	N 02° 08' 43.0"	E 104° 00' 24.0"
23	JOHOR	PANTAI/COASTAL	PASIR GOGOK	1441966	N 01° 25' 02.8'	E 104° 05' 59.7'
24	JOHOR	PANTAI/COASTAL	PEL. PASIR GUDANG	1428939	N 01° 25' 44.0"	E 103° 54' 03.0"
25	JOHOR	PANTAI/COASTAL	TANJUNG BUAI	1340973	N 01° 29' 48.1"	E 104° 02' 43.4"
26	JOHOR	PANTAI/COASTAL	TANJUNG MERAK	1441968	N 01° 21' 45.9'	E 104° 06' 35.5"
27	JOHOR	PANTAI/COASTAL	TANJUNG PENGELIH	1441967	N 01° 22' 14.7'	E 104° 05' 19.5"
28	JOHOR	PANTAI/COASTAL	TANJUNG PENYUSUP	1444920	N 01° 22' 12.9"	E 104° 16' 48.3"
29	JOHOR	PANTAI/COASTAL	TANJUNG SEPANG	1443969	N 01° 23' 01.2"	E 104° 06' 44.8"
30	JOHOR	PANTAI/COASTAL	PANTAI PUNGGUR	1531974	N 01° 41' 05.0"	E 103° 05' 54.0"
31	JOHOR	KUALA/ESTUARINE	SUNGAI KIM-KIM	1439965	N 01° 25' 24.0"	E 103° 54' 03.0"
32	JOHOR	PANTAI/COASTAL	TANJUNG BIN	1336975	N 01° 19' 28.4"	E 103° 33' 25.8"
33	JOHOR	PANTAI/COASTAL	HADAPAN JABATAN LAUT	1438943	N 01° 22' 57.9"	E 103° 32' 07.6"
34	JOHOR	PANTAI/COASTAL	PELABUHAN TJ. PELEPAS	1438918	N 01° 21' 13.0"	E 103° 32' 35.0"
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	PAHANG	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	PAHANG	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	PAHANG	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	PAHANG	PANTAI/COASTAL	PANTAI KUALA API-API	3235917	N 03° 31' 20.0"	E 103° 23' 45.0"
6	PAHANG	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	PAHANG	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	PAHANG	PANTAI/COASTAL	PANTAI TANJUNG BATU	3334915	N 03° 31' 10.0"	E 103° 23' 45.0"
9	PAHANG	PANTAI/COASTAL	PANTAI TELUK CEMPEDAK	3833910A	N 03° 48' 51"	E 103° 22' 19.0"
		PANTAI/COASTAL		3833910B	N 03° 48' 49.0"	E 103° 22' 21.0"
10	PAHANG	PANTAI/COASTAL	PANTAI TELUK GELORA	3833909A	N 03° 48' 16.0"	E 103° 20' 43.0"
		PANTAI/COASTAL		3833909B	N 03° 48' 20.0"	E 103° 20' 43.0"
11	PAHANG	PANTAI/COASTAL	PANTAI LEGENDA	3534943A	N 03° 12' 16.7"	E 103° 26' 53.7"
		PANTAI/COASTAL		3534943B	N 03° 12' 16.7"	E 103° 26' 53.7"

Jadual 4.1 JAS: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2012 (sambungan)
Table 4.1 DOE: Marine Water Quality Monitoring Stations, 2012 (continued)

Bil/ No.	Negeri State	Kawasan / Area	Nama Stesen/ Station Name	No. Stesen/ Station No.	Longitude/ Longitude	Latitude/ Latitude
1	TERENGGANU	KUALA/ESTUARINE	KUALA SG. BESUT	5825902	N 05° 50' 02.8"	E 102° 33' 28.8"
2	TERENGGANU	KUALA/ESTUARINE	KUALA SG. DUNGUN	4734918	N 04° 46' 48.9"	E 103° 25' 21.6"
3	TERENGGANU	KUALA/ESTUARINE	KUALA SG. IBAI	5231949	N 05° 17' 06.1"	E 103° 10' 06.5"
4	TERENGGANU	KUALA/ESTUARINE	KUALA SG. KERTEH	4534922	N 04° 30' 59.1"	E 103° 26' 52.6"
5	TERENGGANU	PANTAI/COASTAL	UTARA TIOXIDE	4234950	N 04° 17' 06.3"	E 103° 28' 20.9"
6	TERENGGANU	PANTAI/COASTAL	TENGAH TIOXIDE (DISCHARGE)	4234951	N 04° 16' 22.8"	E 103° 28' 12.7"
7	TERENGGANU	PANTAI/COASTAL	SELATAN TIOXIDE	4234952	N 04° 15' 04.1"	E 103° 27' 59.2"
8	TERENGGANU	KUALA/ESTUARINE	KUALA SG. MARANG	5232911	N 05° 12' 24.7"	E 103° 12' 28.9"
9	TERENGGANU	KUALA/ESTUARINE	KUALA SG. PAKA	4634920	N 04° 39' 29.7"	E 103° 25' 57.7"
10	TERENGGANU	KUALA/ESTUARINE	KUALA SG. SETIU	5627953	N 05° 40' 05.9"	E 102° 42' 26.9"
11	TERENGGANU	KUALA/ESTUARINE	KUALA SG. TERENGGANU	5331907	N 05° 20' 22.1"	E 103° 08' 12.6"
12	TERENGGANU	KUALA/ESTUARINE	KUALA SUNGAI KEMAMAN	4234929	N 04° 14' 25.2"	E 102° 26' 48.8"
13	TERENGGANU	PANTAI/COASTAL	PANTAI BATU BURUK	5331935	N 05° 19' 29.1"	E 103° 09' 01.4"
14	TERENGGANU	PANTAI/COASTAL	PANTAI BUKIT KELUANG	5825903	N 05° 50' 02.8"	E 102° 36' 01.4"
15	TERENGGANU	PANTAI/COASTAL	PANTAI CHENDERING	5231934	N 05° 16' 11.8"	E 103° 10' 51.9"
16	TERENGGANU	PANTAI/COASTAL	PANTAI RANTAU ABANG	4833917	N 04° 52' 11.4"	E 103° 23' 17.4"
17	TERENGGANU	PANTAI/COASTAL	KIPC UTARA	4634953	N 04° 36' 37.9"	E 103° 26' 39.2"
18	TERENGGANU	PANTAI/COASTAL	KIPC TENGAH	4534954	N 04° 34' 54.9"	E 103° 27' 19.5"
19	TERENGGANU	PANTAI/COASTAL	KIPC SELATAN	4534955	N 04° 30' 09.5"	E 103° 26' 52.6"
20	TERENGGANU	PANTAI/COASTAL	PANTAI PULAU DUYUNG	5231908	N 05° 20' 5.6"	E 103° 7' 44.7"
1	KELANTAN	KUALA/ESTUARINE	KUALA SUNGAI KEMASIN	5824914	N 5° 53' 50.0"	E 102° 29' 05.0"
2	KELANTAN	KUALA/ESTUARINE	KUALA SG. GOLOK	6220911	N 6° 14' 05.0"	E 102° 05' 35.0"
3	KELANTAN	KUALA/ESTUARINE	KUALA SG. KELANTAN	6222901	N 6° 13' 12.0"	E 102° 13' 50.0"
4	KELANTAN	KUALA/ESTUARINE	KUALA SG. PENG. DATU	6123913	N 6° 10' 20.0"	E 102° 20' 40.0"
5	KELANTAN	KUALA/ESTUARINE	KUALA SG. PENG. CHEPA	6223912	N 6° 12' 20.0"	E 102° 18' 10.0"
6	KELANTAN	PANTAI/COASTAL	PANTAI BISIKAN BAYU	5825905	N 5° 52' 00.0"	E 102° 31' 00.0"
7	KELANTAN	PANTAI/COASTAL	PANTAI CAHAYA BULAN	6122903	N 6° 10' 45.0"	E 102° 16' 50.0"
8	KELANTAN	PANTAI/COASTAL	PANTAI IRAMA BACHOK	6024908	N 6° 03' 00.0"	E 102° 25' 15.0"
9	KELANTAN	PANTAI/COASTAL	PANTAI SABAK	6123909	N 6° 10' 25.0"	E 102° 20' 10.0"
10	KELANTAN	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	W.P. LABUAN	PANTAI/COASTAL	TANJUNG ARU	5251903	N 05° 21' 02.0"	E 115° 14' 39.0"
3	W.P. LABUAN	PANTAI/COASTAL	PULAU PAPAN	5151905	N 05° 15' 22.0"	E 115° 16' 03.0"
4	W.P. LABUAN	PANTAI/COASTAL	KIAMSAM	5151906	N 05° 15' 22.0"	E 115° 10' 28.0"
5	W.P. LABUAN	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	SABAH	KUALA/ESTUARINE	KUALA SG. PENYU	5453901	N 05° 34' 13.0"	E 115° 35' 55.0"
3	SABAH	PANTAI/COASTAL	BORNEO GOLF SEAWATER	5355901	N 05° 33' 00.0"	E 115° 47' 01.0"
4	SABAH	PANTAI/COASTAL	PANTAI BAK-BAK KUDAT	6665901	N 06° 56' 44.0"	E 116° 50' 23.0"
5	SABAH	PANTAI/COASTAL	PANTAI ULU TUNGKU, LAHAD DATU	5085901	N 05° 01' 09.0"	E 118° 53' 09.0"
6	SABAH	PANTAI/COASTAL	PANTAI BATU SAPI	5580903	N 05° 47' 42.0"	E 118° 02' 22.0"
7	SABAH	PANTAI/COASTAL	PANTAI DALIT, TUARAN	6161901	N 06° 11' 25.0"	E 116° 09' 45.0"
8	SABAH	PANTAI/COASTAL	PANTAI LOK KAWI	5560904	N 05° 55' 00.0"	E 116° 02' 00.0"
9	SABAH	PANTAI/COASTAL	PANTAI MANGROVE PARADISE, TUARAN	6161902	N 06° 15' 02.0"	E 116° 13' 50.0"
10	SABAH	PANTAI/COASTAL	PANTAI MANIS, PAPAR	5555901	N 05° 45' 15.0"	E 115° 52' 04.0"

Jadual 4.1 JAS: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2012 (sambungan)
Table 4.1 DOE: Marine Water Quality Monitoring Stations, 2012 (continued)

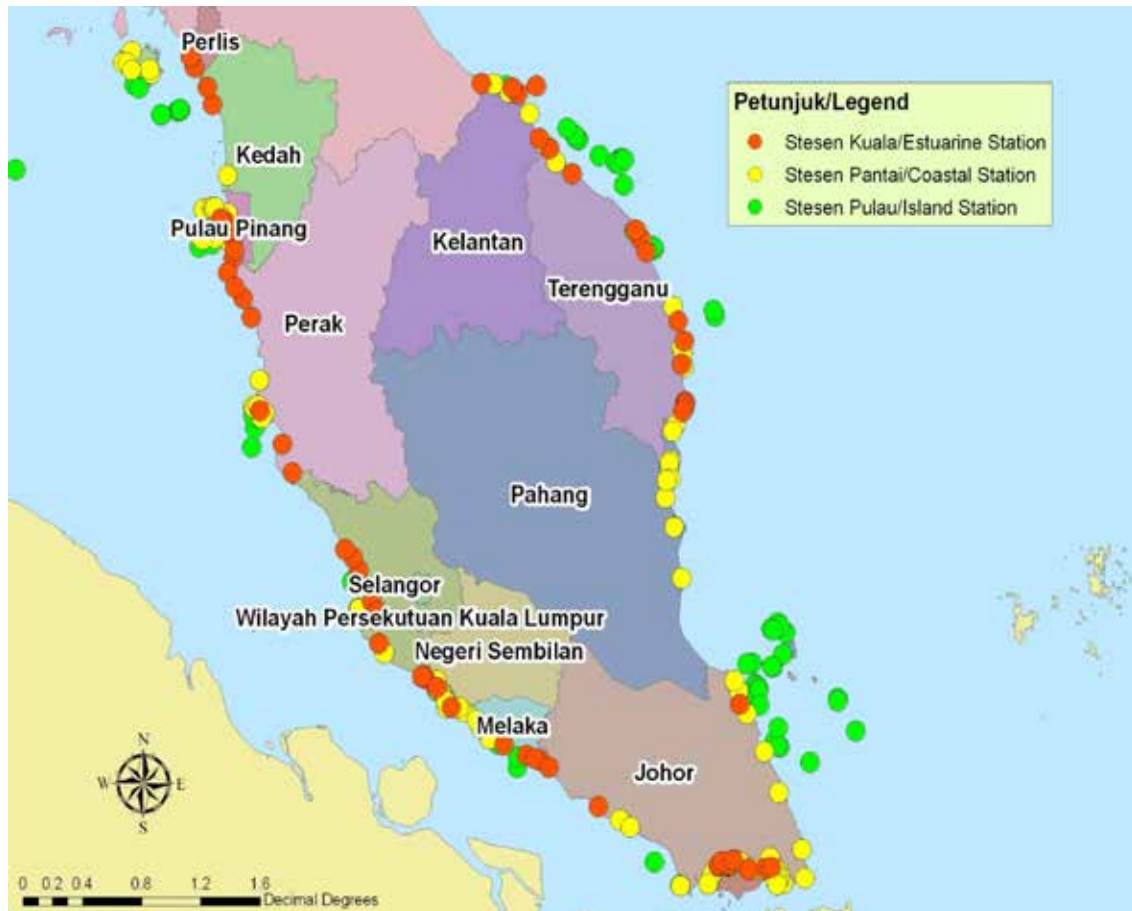
Bil/ No.	Negeri State	Kawasan / Area	Nama Stesen/ Station Name	No. Stesen/ Station No.	Longitude/ Longitude	Latitude/ Latitude
11	SABAH	PANTAI/COASTAL	PANTAI MELINSUNG, PAPAR	5565902	N 05° 50' 18.0"	E 115° 50' 45.0"
12	SABAH	PANTAI/COASTAL	PANTAI PASIR PUTIH, SANDAKAN	5580901	N 05° 49' 26.0"	E 118° 04' 58.0"
13	SABAH	PANTAI/COASTAL	PANTAI SABANDAR, TUARAN	6161903	N 06° 15' 02.2"	E 116° 13' 50.0"
14	SABAH	PANTAI/COASTAL	PANTAI SARINA, KUNAK	4481901	N 04° 39' 41.0"	E 118° 17' 01.0"
15	SABAH	PANTAI/COASTAL	PANTAI SILAM LAHAD DATU	4681902	N 04° 58' 08.0"	E 118° 14' 46.0"
16	SABAH	PANTAI/COASTAL	PANTAI TELUK BRUNEI 1	5053901	N 05° 09' 55.0"	E 115° 32' 53.0"
17	SABAH	PANTAI/COASTAL	PANTAI TELUK BRUNEI 2	5053902	N 05° 09' 55.0"	E 115° 32' 53.0"
18	SABAH	PANTAI/COASTAL	PANTAI TELUK BRUNEI 3	5053903	N 05° 09' 55.0"	E 115° 32' 53.0"
19	SABAH	PANTAI/COASTAL	PANTAI TELUK BRUNEI 4	5053904	N 05° 09' 55.0"	E 115° 32' 53.0"
20	SABAH	PANTAI/COASTAL	PANTAI TELUK BRUNEI 5	5053905	N 05° 09' 55.0"	E 115° 32' 53.0"
21	SABAH	PANTAI/COASTAL	PANTAI TELUK BRUNEI 6	5053906	N 05° 09' 55.0"	E 115° 32' 53.0"
22	SABAH	PANTAI/COASTAL	PANTAI TG. ARU (REST LIDO)	5656901	N 05° 55' 01.0"	E 115° 59' 03.0"
23	SABAH	PANTAI/COASTAL	PANTAI TG. ARU (ROLLER SKATING)	5656902	N 05° 55' 01.0"	E 115° 59' 03.0"
24	SABAH	PANTAI/COASTAL	PANTAI TG.ARU (No. 3)	5656903	N 05° 55' 01.0"	E 115° 59' 03.0"
25	SABAH	PANTAI/COASTAL	PANTAI TINAGAT, TAWAU	4473901	N 04° 13' 22.0"	E 117° 59' 04.0"
26	SABAH	PANTAI/COASTAL	KASTAM LAMA SANDAKAN (PANTAI TLDM)	5580902	N 05° 50' 00.0"	E 118° 08' 01.0"
1	SARAWAK	KUALA/ESTUARINE	KUALA SUNGAI BAKO	1704905	N 01° 40' 00.0"	E 110° 52' 08.0"
2	SARAWAK	KUALA/ESTUARINE	KUALA BATANG KEMENA	3130911	N 03° 10' 53.0"	E 113° 01' 40.0"
3	SARAWAK	KUALA/ESTUARINE	KUALA BATANG RAJANG	2111909	N 02° 07' 22.0"	E 111° 11' 21"
4	SARAWAK	KUALA/ESTUARINE	KUALA SG SIMALAJU	3431903	N 03° 33' 05.9"	E 113° 10' 03.7"
5	SARAWAK	KUALA/ESTUARINE	KUALA SG. SANTUBONG	1702903	N 01° 46' 38.0"	E 110° 16' 46.0"
6	SARAWAK	KUALA/ESTUARINE	KUALA SG. SEMATAN	1898901	N 01° 48' 49.0"	E 109° 46' 29.0"
7	SARAWAK	KUALA/ESTUARINE	KUALA SG.SARAWAK	1604907	N 01° 36' 44.0"	E 110° 29' 44.0"
8	SARAWAK	KUALA/ESTUARINE	KUALA MUKAH	2920920	N 02° 54' 41.0"	E 112° 05' 25.0"
9	SARAWAK	KUALA/ESTUARINE	KUALA BATANG KRIAN	1710924	N 01° 47' 20.0"	E 111° 05' 58.0"
10	SARAWAK	KUALA/ESTUARINE	KUALA PANTAI BELAWAI	2212913	N 02° 14' 27.0"	E 111° 12' 51.0"
11	SARAWAK	PANTAI/COASTAL	PANTAI BAKO	1704906	N 01° 42' 49.0"	E 110° 25' 40.0"
12	SARAWAK	PANTAI/COASTAL	PANTAI BRIGHTON	4449917	N 04° 22' 25.0"	E 113° 57' 51.0"
13	SARAWAK	PANTAI/COASTAL	PANTAI DAMAI	1702904	N 01° 47' 55.0"	E 110° 17' 58.0"
14	SARAWAK	PANTAI/COASTAL	PANTAI LIKAU	3230915	N 03° 20' 49.0"	E 113° 08' 57.0"
15	SARAWAK	PANTAI/COASTAL	PANTAI PANDAN	1824918	N 01° 50' 16.0"	E 109° 40' 11.0"
16	SARAWAK	PANTAI/COASTAL	PANTAI PASIR PUTIH	1604910	N 01° 30' 14.0"	E 110° 30' 00.0"
17	SARAWAK	PANTAI/COASTAL	PANTAI PIASAU	4539918	N 04° 27' 27.0"	E 113° 59' 38.0"
18	SARAWAK	PANTAI/COASTAL	PANTAI SEMATAN	1898902	N 01° 49' 38.0"	E 109° 46' 29.0"
19	SARAWAK	PANTAI/COASTAL	PANTAI TANJUNG BATU	3230913	N 03° 12' 38.0"	E 113° 02' 26.0"
20	SARAWAK	PANTAI/COASTAL	PANTAI HARMONI	2920921	N 02° 54' 35.0"	E 112° 03' 22.0"
21	SARAWAK	PANTAI/COASTAL	PANTAI TANJUNG KEMBANG	1810923	N 01° 49' 28.0"	E 111° 05' 44.0"
22	SARAWAK	PANTAI/COASTAL	PANTAI ESPLANED	4339920	N 04° 19' 04.6"	E 113° 57' 31.0"
23	SARAWAK	PANTAI/COASTAL	PANTAI BERAYA	4238921	N 04° 12' 45.1"	E 113° 53' 30.6"
24	SARAWAK	PANTAI/COASTAL	PANTAI BUNGA	4137922	N 04° 03' 42.2"	E 113° 46' 50.3"
25	SARAWAK	PANTAI/COASTAL	PANTAI EMAS	3331926	N 03° 26' 27.8"	E 113° 13' 27.7"

Kuala / Estuarine : 69
Pantai / Coastal : 155
Jumlah / Total : 224

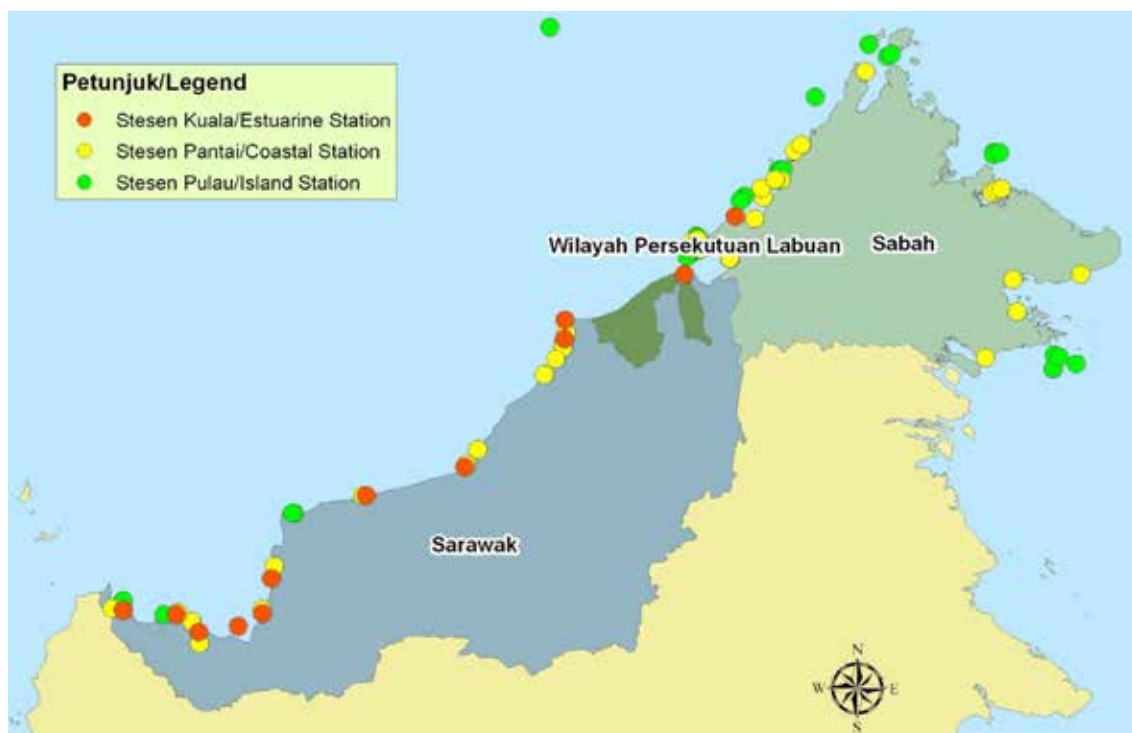
Jadual 4.2 JAS: Stesen Pengawasan 'Malaysia-Singapore Joint Committee on the Environment' (MSJCE), 2012

Table 4.2 DOE: Monitoring Stations under the Malaysia-Singapore Joint Committee on the Environment (MSJCE), 2012

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



Peta 4.3 JAS: Lokasi Stesen Pengawasan Kualiti Air Marin di Semenanjung Malaysia
Map 4.3 DOE: Location of Marine Water Quality Stations in Peninsular Malaysia



Peta 4.4 JAS: Peta Lokasi Stesen Pengawasan Kualiti Air Marin di Sabah dan Sarawak
Map 4.4 DOE: Location of Marine Water Quality Stations in Sabah and Sarawak

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

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

Pada tahun 2012, program ini telah dilaksanakan di sekitar 76 buah pulau terpilih dan melibatkan 93 stesen pengawasan. Pulau-pulau ini dikelaskan mengikut empat kategori iaitu Pulau Pembangunan (3); Pulau Peranginan (32); Pulau Taman Laut (29); dan Pulau Yang Dilindungi (12) (**Jadual 4.3**). Kekerapan persampelan bagi Pulau Pembangunan adalah sebanyak enam (6) kali setahun manakala bagi pulau yang lain-lain adalah sebanyak empat (4) kali setahun.

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* (*E.coli*), nitrat, fosfat, jumlah karbon organik, minyak dan gris, logam berat termasuklah Merkuri (Hg), Kadmium (Cd), Kromium (Cr), Kuprum (Cu), Plumbum (Pb), Arsenik (As) dan Tributyltin (TBT) serta Triphenyltin (TPT) (**Jadual 4.4**). Percontohan bebola tar di pantai juga dilaksanakan.

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

In 2012, the programme was conducted at 76 selected islands covering 93 monitoring stations. The islands are classified into four categories; Development Islands (3); Resort Islands (32); Marine Park Islands (29); and protected islands (12) (**Table 4.3**). The sampling frequency for Development Island was six (6) times per year, while the frequency for the other islands categories was four (4) times per year.

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* (*E. coli*), nitrate, phosphate, total organic carbon, oil and grease, heavy metals including Mercury (Hg), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Arsenic (As) and Tributyltin (TBT) as well as Triphenyltin (TPT) (**Table 4.4**). Tarball sampling on beaches were also conducted.

Jadual 4.3 JAS: Pengawasan Kualiti Air Marin Pulau, 2012
Table 4.3 DOE: Island Water Quality Monitoring, 2012

Bil. / No.	Negeri / State	Pulau / Island	Kategori / Category	Bilangan Stesen / No. of Station	Latitud / Latitude	Longitud / Longitude
1.	KEDAH	Singa Besar	R	1	N 06° 13' 36.3"	E 099° 44' 42.9"
		Dayang Bunting	R	1	N 06° 12' 26.2"	E 099° 46' 48.9"
		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"
		Payar	M	1	N 06° 03' 78.7"	E 100° 02' 53.0"
		Kaca	M	1	N 06° 04' 29.7"	E 100° 02' 96.9"
		Lembu	M	1	N 06° 04' 44.0"	E 100° 03' 48.3"
		Segantang	M	1	N 06° 02' 60.9"	E 099° 55' 56.0"
2.	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"
3.	P. PINANG	Aman	R	1	N 05° 16' 01.0"	E 100° 23' 63.5"
		Jerejak	R	1	N 05° 16' 51.2"	E 100° 11' 24.6"
		Kendi	R	1	N 05° 13' 849"	E 100° 10' 804"
		Rimau	R	1	N 05° 14' 722"	E 100° 16' 376"
		Gedong	R	1	N 05° 16' 888"	E 100° 23' 357"
		Pulau Pinang (Batu Maung)	D	1	N 05° 20' 2.3"	E 100° 19' 3.6"
		Pulau Pinang (Gertak Sanggul)	D	1	N 05° 13' 56.6"	E 100° 11' 4.8"
		Pulau Pinang (Teluk Bahang)	D	1	N 05° 15' 1.9"	E 100° 16' 19.3"
		Pulau Pinang (Padang Kota)	D	1	N 05° 16' 26.4"	E 100° 23' 30.6"
4.	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"
5.	NEGERI SEMBILAN	Arang	P	1	N 02° 31' 03.5"	E 101° 47' 37.8"
6.	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"
		Besar (Point B)	R	1	N 02° 06' 24.2"	E 102° 19' 20.8"
		Upeh (Point B)	R	1	N 02° 11' 23.1"	E 102° 12' 11.6"
		Undan (Point B)	R	1	N 02° 02' 50.2"	E 102° 20' 06.5"
7.	PAHANG	Tioman	M	1	N 02° 44' 22.0"	E 104° 07' 53.4"

Jadual 4.3 JAS: Pengawasan Kualiti Air Marin Pulau, 2012 (sambungan)
Table 4.3 DOE: Island Water Quality Monitoring, 2012 (continued)

Bil. / No.	Negeri / State	Pulau / Island	Kategori / Category	Bilangan Stesen / No. of Station	Latitud / Latitude	Longitud / Longitude
		Seri Buat	M	1	N 02° 41' 07.4"	E 103° 55' 24.6"
		Cebah	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"
		Tioman (Teluk Salang)	M	1	N 02° 52' 35.5"	E 104° 09' 13.9"
		Sepui	M	1	N 02° 53' 09.6"	E 104° 44' 05.1"
		Tokong Bahara	M	1	N 02° 39' 48.2"	E 104° 03' 43.9"
8.	JOHOR	Setindan	R	1	N 02° 28' 35.9"	E 103° 51' 28.7"
		Babi Tengah	R	1	N 02° 28' 20.4"	E 103° 51' 41.9"
		Dayang	M	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"
		Sibu Tengah	M	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"
9.	TERENGGANU	Gumia	R	1	N 05° 13' 51.8"	E 103° 15' 39.3"
		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 (North)	M	1	N 05° 46' 59.2"	E 103° 02' 17.0"
		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"
		Redang (South)	M	1	N 05° 46' 34.0"	E 103° 02' 03.7"
		Kapas	M	1	N 03° 13' 01.1"	E 103° 15' 64.1"
		Bidong Laut	R	1	N 05° 36' 43.6"	E 103° 3' 23.7"
10.	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"
11.	SABAH	Gaya	R	1	N 06° 00' 58.7"	E 116° 03' 12.1"
		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"

Jadual 4.3 JAS: Pengawasan Kualiti Air Marin Pulau, 2012 (sambungan)
Table 4.3 DOE: Island Water Quality Monitoring, 2012 (continued)

Bil. / No.	Negeri / State	Pulau / Island	Kategori / Category	Bilangan Stesen / No. of Station	Latitud / Latitude	Longitud / Longitude
		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"
		Banggi	R	1	N 07° 08' 21.2"	E 117° 05' 87.6"
		Mantanani Besar	R	1	N 06° 42' 29.0"	E 116° 21' 40.2"
		Bakungan Kecil	P	1	N 06° 9' 92.6"	E 118° 6' 49.8"
12.	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"
13.	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)			32		37	
Pulau Taman Laut / Marine Park Island (M)			29		32	
Pulau Dilindungi / Protected Island (P)			12		12	
Pulau Pembangunan / Development Island (D)			3		12	
Jumlah/ Total			76		93	

Jadual 4.4 JAS : Parameter Kualiti Air Marin, 2012
Table 4.4 DOE: Marine Water Quality Parameters, 2012

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 organik / 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 / Triphenyltin	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 Sungai sejak tahun 1978 untuk menentukan status terkini kualiti air sungai-sungai dan mengesan perubahan dari semasa ke semasa.

Rangkaian stesen pengawasan kualiti air sungai pada tahun 2012 terdiri daripada 832 stesen manual yang ditempatkan di 473 batang sungai seluruh negara seperti dalam **Jadual 4.5**. Parameter-parameter kualiti air yang diukur terdiri daripada parameter fizikal, kimia dan biologi seperti di **Jadual 4.6**.

Indeks Kualiti Air (IKA) dibentuk berdasarkan enam parameter utama seperti berikut :-

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

Kualiti air sungai juga dipantau secara atas talian (on-line) melalui stesen-stesen automatik yang ditempatkan di Sg. Perak (Perak), Sg. Selangor (Selangor), Sg. Kelang (WPKL), Sg. Linggi (Negeri Sembilan), Sg. Melaka (Melaka), Sg. Skudai (Johor), Sg. Sarawak (Sarawak), Sg. Labu (N. Sembilan), Sg. Putat (Melaka) dan Sg. Rajang (Sarawak). Parameter-parameter yang diukur dari stesen automatik ini terhadap kepada parameter pH, oksigen terlarut, suhu, kekeruhan dan ammonium.

Jabatan Alam Sekitar turut terlibat dalam Program River of Life (ROL) iaitu salah satu Program NKEA bagi Greater Kuala Lumpur / Klang Valley. Antara objektif utama ROL adalah untuk membersihkan dan memperbaiki kualiti air sepanjang 110km Sungai Klang dan Sungai Gombak pada tahun 2020. Jabatan Alam Sekitar berperanan dalam melaporkan kualiti

The Department of Environment (DOE) has implemented the National River Water Monitoring Program since 1978 to determine the latest water quality and detect water quality changes in rivers from time to time.

In 2012, DOE's river water quality monitoring network comprises a total of 832 manual water quality monitoring stations (MWQM) which were located at 473 rivers in Malaysia as shown in **Table 4.5**. Water samples from these stations were analyzed and tested for physical, chemical and biological parameters as shown in **Table 4.6**.

River water quality is determined from Water Quality Index (WQI) which is derived based on six principal parameters namely;

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

River water quality is also being monitored on-line through a number of automatic monitoring stations which are located at Sg. Perak (Perak), Sg. Selangor (Selangor), Sg. Kelang (WP Kuala Lumpur), Sg. Linggi (Negeri Sembilan), Sg. Melaka (Melaka), Sg. Skudai (Johor), Sg. Sarawak (Sarawak), Sg. Labu (N. Sembilan), Sg. Putat (Melaka) and Sg. Rajang (Sarawak). The measured parameters from this automatic stations are limited to pH, dissolved oxygen, temperature, turbidity and ammonium.

The Department of Environment is also involved in the River of Life (ROL) programme, one of the NKEAs Programme for Greater Kuala Lumpur / Klang Valley. Among the main objectives of the ROL is to clean and improve the water quality along 110km of the Klang and Gombak rivers by 2020. The role of DOE is to report the status of water quality in the Klang River Water

air sungai-sungai yang dipantau di dalam Wilayah Kualiti Air Sungai Klang, iaitu Sungai Klang, Sungai Gombak, Sungai Batu dan Sungai Jinjang. Senarai stesen pemantauan adalah seperti di **Jadual 4.7**.

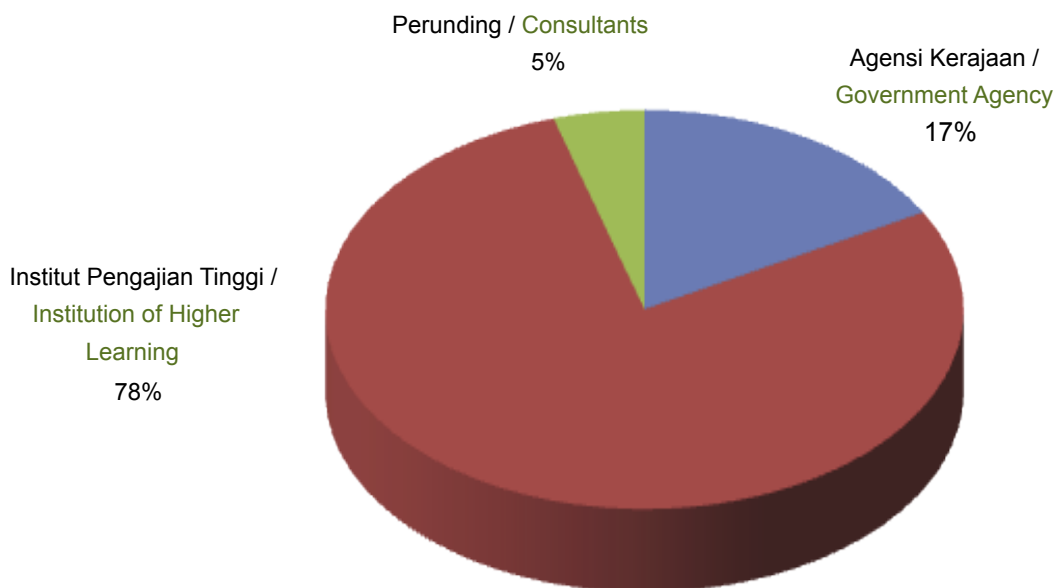
Permohonan Data Kualiti Air Sungai

Data-data kualiti air sungai ini telah digunakan oleh tiga kategori pengguna iaitu agensi-agensi/ jabatan kerajaan, penuntut institusi pengajian tinggi dan perunding yang menjalankan projek-projek kerajaan. Pada tahun 2012, permohonan terbanyak yang diterima adalah daripada penuntut institusi pengajian tinggi (78%), diikuti oleh agensi kerajaan (17%) dan perunding (5%) (**Rajah 4.1**).

Quality Regional, namely Sungai Klang, Sungai Gombak, Sungai Batu and Sungai Jinjang. The list of monitoring stations are as shown in **Table 4.7**.

Request For River Water Quality Data

This river water quality data were mainly utilized by three (3) categories of users which are government agencies, researchers from higher learning institutions and consultants who have contracts from the government projects. In 2012, the most frequent water quality data users were from higher learning institution students (78%), followed by government agencies (17%) and appointed consultants (5%) (**Figure 4.1**).



Rajah 4.1 JAS: Pecahan Permohonan Data Air Sungai, 2012
Figure 4.1 DOE: River Water Quality Data Application, 2012

Jadual 4.5 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2012
Table 4.5 DOE: List of the River Catchment And River Monitored, 2012

Negeri / State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bilangan Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bilangan Stesen/ No. of Stations
PERLIS	01	PERLIS	1	JARUM	1
				JERNIH	1
				NGULANG	1
				PELARIT	1
				PERLIS	1
				WANG KELIAN	1
KEDAH	01PLA	KISAP	1	KISAP	1
	01PLC	ULU MELAKA	2	PETANG	1
				ULU MELAKA	1
	03	KEDAH	1	JANING	1
				KEDAH	1
				PDG TERAP	3
				PEDU	1
				PENDANG	1
				TEKAI	1
				BONGKOK	1
	04	MERBOK	1	MERBOK	1
				PETANI	1
				TOK PAWANG	1
				TUPAH	1
KEDAH/ P.PINANG	05	MUDA	1	CHEPIR	1
				JERUNG	1
				KARANGAN	1
				KETIL	2
				MUDA	4
				PEGANG	1
				SEDIM	1
P.PINANG	06PP	PINANG	1	AIR ITAM	5
				AIR TERJUN	1
				DONDANG	1
				JELUTONG	1
				PINANG	1
	06J	JURU	1	JURU	2
				KILANG UBI	4
				PASIR	1
				RAMBAI	1
	06K	KLUANG	1	ARA	2
				RELAU	1
	06P	PERAI	1	JARAK	3
				KELADI	1
				KEREH	2
				KULIM	2
				PERAI	2
				PERTAMA	1
	06T	BAYAN LEPAS	1	BAYAN LEPAS	1
				TIRAM	2
	07	JAWI	1	JAWI	1
				JUNJONG	1
				MACHANG BUBOK	1

Jadual 4.5 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2012 (sambungan)
Table 4.5 DOE: List of the River Catchment And River Monitored, 2012 (continued)

Negeri / State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bilangan Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bilangan Stesen/ No. of Stations
P.PINANG/ PERAK	08	KERIAN	1	KECHIL	1
				KERIAN	4
				SELAMA	2
PERAK	12	RAJA HITAM	1	MANJONG	2
				NYIOR	1
				RAJA HITAM	2
	12W	WANGI	1	DERALIK	1
				WANGI	1
	09	KURAU	1	ARA	2
				KURAU	4
	10	SEPETANG	2	BATU TEGOH	3
				JANA	1
				LIMAU	1
				SEPETANG	2
				TEMERLOH	2
				TRONG	1
				TRONG	1
	11	BRUAS	1	BRUAS	3
				DANDANG	1
				ROTAN	1
	13	PERAK	2	BATANG PADANG	3
				BIDOR	3
				CHENDERIAN	1
				CHEPOR	1
				KAMPAR	2
				KANGSAR	1
				KEPAYANG	2
				KERDAH	1
				KINJANG	1
				KINTA	6
				KLAH	1
				KUANG	1
				NYAMOK	1
				PARI	1
				PELUS	2
				PERAK	8
				PINJI	2
				RAIA	2
				SELUANG	1
				SEROKAI	1
				SUNGKAI	2
				TUMBOH	1
PERAK/ SELANGOR	14	BERNAM	1	BERNAM	4
				INKI	1
				SLIM	2
				TROLAK	1

Jadual 4.5 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2012 (sambungan)
Table 4.5 DOE: List of the River Catchment And River Monitored, 2012 (continued)

Negeri / State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bilangan Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bilangan Stesen/ No. of Stations
SELANGOR	17	BULOH	1	BULOH	4
	19	LANGAT	1	ANAK CHUAU	1
				BATANG NILAI	1
				CHUAU	2
				JIJAN	1
				LANGAT	7
				LUI	1
				PAJAM	1
				SEMENYIH	1
				SEPANG	2
	20	SEPANG	1	SEPANG	2
	15	TENGI	1	TENGI	3
	16	SELANGOR	1	BATANG KALI	1
				KANCHING	1
				KERLING	1
				SELANGOR	4
				SEMPAH	1
				SERENDAH	1
SELANGOR/ WPKL	18	KLANG	34	BATU	3
				GOMBAK	3
				JINJANG	3
				KLANG	7
				SEMELAH	1
				AIR BUSUK	1
				AMPANG	2
				BELONGKONG	1
				BUNOS	2
				KERAYONG	2
				KEROH	2
				TOBA	1
				UNTUT	1
				ANAK AIR BATU	1
				DAMANSARA	1
				KUYOH	1
				RASAU	1
				PENCHALA	1
N.SEMBILAN	21	LINGGI	2	BATANG PENAR	1
				CHEMBONG	1
				KEPAYONG	1
				KUNDUR BESAR	1
				LINGGI	5
				PEDAS	1
				REMBAU	2
				SIMIN	1
MELAKA	21SM	SERI MELAKA	1	SERI MELAKA	1
	22	MELAKA	1	BTG.MELAKA	2
				DURIAN TUNGGAL	1
				KEMUNTING	1
				DUSUN/KERU	1

Jadual 4.5 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2012 (sambungan)
Table 4.5 DOE: List of the River Catchment And River Monitored, 2012 (continued)

Negeri / State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bilangan Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bilangan Stesen/ No. of Stations
	24	KESANG	1	MELAKA	5
				REMBIA	1
				TAMPIN	1
				CHOHONG	2
	24A	MERLIMAU	1	KESANG	3
	23	DUYONG	1	MERLIMAU	2
				DUYONG	3
				GAPAM	1
JOHOR/ N.SEMBILAN	25	MUAR	1	AIR PANAS	1
				GEMENCHEH	1
				JUASSEH	1
				LABIS	1
				MEDA	1
				MUAR	8
				SARANG BUAYA	1
				SEGAMAT	1
JOHOR	26	BATU PAHAT	2	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	1	AIR BALOI	3
	28	SEGGET	1	SEGGET	5
	28D	TEBRAU	1	BALA	1
				PANDAN	1
				PLENTONG	1
				SEBULUNG	1
				SENGKUANG	1
				TAMPOI	1
				TEBRAU	4
				DANGA	2
				RAMBAH	2
				BULUH	1
	29B	KAW. PASIR GUDANG	1	LATOH	1
				MASAI	1
				PEREMBI	1
				TUKANG BATU	1
				BENUT	4
				PARIT HJ. YASSIN	1
				PINGGAN	1
				ULU BENUT	1
	27B	BENUT	1		

Jadual 4.5 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2012 (sambungan)
Table 4.5 DOE: List of the River Catchment And River Monitored, 2012 (continued)

Negeri / State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bilangan Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bilangan Stesen/ No. of Stations
	28A	PONTIAN BE-SAR	1	AIR HITAM	1
				AYER MERAH	1
				PONTIAN BESAR	5
	28B	PONTIAN KECIL	1	PONTIAN KECIL	2
	28C	SKUDAI	1	MELANA	2
				SKUDAI	9
	28E	KEMPAS	1	KEMPAS	2
	29C	SANGLANG	1	SANGLANG	1
	29D	PULAI	1	PULAI	2
				ULU CHOH	1
	31C	KIM-KIM	1	KIM-KIM	2
	29	JOHOR	2	ANAK SG. SAYONG	1
				BELITONG	1
				BUKIT BESAR	1
				CHEMANGAR	1
				JOHOR	4
				LAYANG	1
				LAYAU KIRI	1
				LEBAM	1
				LINGGIU	1
				PANTI	1
				PAPAN	1
				PELEPAH	2
				PENGGEI	2
				REMIS	1
				SANTI	1
				SAYONG	4
				SEBOL	1
				SELUYUT	1
				SEMANGAR	1
				SEMENCHU	1
				TELOR	1
				TEMOH	1
				TIRAM	4
	30A	SEDILI BESAR	1	AMBAT	1
				DOHOL	1
				PASIR PANJANG	1
				SEDILI BESAR	5
				TEMUBOR KANAN	1
	30B	SEDILI KECIL	1	ANAK SEDILI KECIL	1
				BAHAN	2
				SEDILI KECIL	2
	30C	PALOI	1	PALOI	1
	31A	MERSING	1	MERSING	2
	31B	JEMALUANG	1	JEMALUANG	2
	32	ENDAU	2	ENDAU	3
				JASIN	1
				JEBONG	1

Jadual 4.5 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2012 (sambungan)
Table 4.5 DOE: List of the River Catchment And River Monitored, 2012 (continued)

Negeri / State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bilangan Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bilangan Stesen/ No. of Stations
				KAHANG	1
				LENGGOR	1
				MAMAI	1
				MELATAI	1
				MENGKIBOL	3
				PALOH	1
				PAMOL	1
				SELAJ	1
				SEMBERONG	5
				SINGOL	1
				TAMOK	1
PAHANG	32AE	ANAK ENDAU	1	ANAK ENDAU	2
	33	ROMPIN	1	AUR	1
				KERATONG	2
				PONTIAN	1
				PUKIN	1
				ROMPIN	4
	34M	MERCHONG	1	MERCHONG	1
	35P	PAHANG	1	BENTONG	1
				BENUS	2
				BERA	2
				BERKAPOR	1
				BERTAM	1
				BURUNG	1
				CHINI	1
				HABU	1
				JELAI	2
				JEMPOL	2
				JENGKA	2
				KELAU	1
				KERTAM	1
				KOYAN	1
				KUNDANG	1
				LENGGOK	1
				LEPAR	3
				LIPIS	3
				LUIT	1
				MARAN	1
				MENTIGA	1
				PAHANG	8
				PERTING	1
				RINGLET	1
				SEMANTAN	4
				SERTING	2
				T. PAYA BUNGOR	1
				TAHAN	1
				TANGLIR	1
				TASIK BERA	1
				TASIK CHINI	1

Jadual 4.5 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2012 (sambungan)
Table 4.5 DOE: List of the River Catchment And River Monitored, 2012 (continued)

Negeri / State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bilangan Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bilangan Stesen/ No. of Stations
				TEKAL	1
				TEKAM	2
				TELANG	1
				TELOM	2
				TEMBELING	1
				TERANUM	1
				TERAS	1
				TERIS	3
				TERLA	1
				TRIANG	2
				TRINGKAP	1
	34B	BEBAR	1	BEBAR	1
				MERBA	1
				SERAI	2
	36	KUANTAN	1	BELAT	1
				CHARU	1
				KENAU	1
				KUANTAN	5
				PANDAN	1
				RIAU	1
				TALAM	1
				BALOK	2
	37	BALOK	1	PANJANG	1
				CHERATING	1
	37A	CHERATING	1	CHERATING	1
	37B	TONGGOK	1	TONGGOK	1
TERENGGANU	38	KEMAMAN	1	CHERUL	1
				KEMAMAN	2
				RANSAN	1
	39K	KERTIH	1	KERTIH	1
	40	PAKA	1	PAKA	1
				RASAU	1
	41	DUNGUN	1	DUNGUN	4
	42M	MARANG	1	MARANG	1
	43	TERENGGANU	1	BERANG	1
				NERUS	1
				PUEH	1
				TELEMONG	1
				TERENGGANU	3
	44	SETIU	1	CHALOK	2
				SETIU	2
	46	BESUT	1	BESUT	2
	47	KLUANG	1	KLUANG	1
	39C	CHUKAI	1	BUNGKUS	1
				CHUKAI	1
				IBOK	1
				RUANG	1
	42I	IBAI	1	IBAI	3
	42L	MERCHANG	1	MERCHANG	1
	45	MERANG	1	MERANG	1

Jadual 4.5 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2012 (sambungan)
Table 4.5 DOE: List of the River Catchment And River Monitored, 2012 (continued)

Negeri / State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bilangan Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bilangan Stesen/ No. of Stations
KELANTAN	47K	KEMASIN	1	KEMASIN	2
				SEMERAK	2
	48	KELANTAN	2	BELATOP	2
				BER	1
				BEROK	3
				BETIS	1
				GALAS	5
				KELANTAN	3
				KERILLA	1
				LEBIR	3
				NAL	2
				NENGGIRI	3
				PERGAU	6
				RELAJ	1
				SOKOR	1
				TUANG	1
	49	GOLOK	1	GOLOK	5
				LANAS	1
	48C	PENGKALAN CHEPA	1	ALOR B	1
				ALOR LINTAH	1
				KELADI	1
				PENGKALAN CHEPA	2
				RAJA GALI	1
	48D	PENGKALAN DATU	1	PENGKALAN DATU	3
SARAWAK	50	KAYAN	1	KAYAN	3
	50S	SEMUNSAM	1	SEMUNSAM	1
	51	SARAWAK	1	KUAP	1
				MAONG KIRI	1
				SAMARAHAN	2
				SARAWAK	6
				SARAWAK KANAN	1
				SARAWAK KIRI	1
				SEMADANG	1
				SEMENGGOH	1
				TABUAN	1
	59	BALINGIAN	1	BALINGIAN	2
	62	SIMILAJAU	1	SIMILAJAU	2
	64	NIAH	1	NIAH	2
				SEKALOH	1
	68	LIMBANG	1	LIMBANG	5
	69	TRUSAN	1	TRUSAN	1
	70	LAWAS	1	LAWAS	3
	52	SADONG	1	KARANGAN	2
				SADONG	4
	53	LUPAR	1	AI	2

Jadual 4.5 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2012 (sambungan)
Table 4.5 DOE: List of the River Catchment And River Monitored, 2012 (continued)

Negeri / State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bilangan Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bilangan Stesen/ No. of Stations
				LUPAR	3
				SEKERANG	1
				SETERAP	1
				UNDUP	1
	54	SARIBAS	1	LAYAR	2
	55	KERIAN	1	SARIBAS	1
				KERIAN	2
				SEBLAK	1
	56	RAJANG	1	BALOI	1
				BINATANG	1
				JULAU	1
				KANOWIT	1
				MERADONG	1
				RAJANG	11
				SALIM	1
				SARIKEI	2
	57	OYA	1	OYA	3
	58	MUKAH	1	MUKAH	4
	60	TATAU	1	TATAU	1
	61	KEMENA	1	KEMENA	3
				SIBIU	1
				SUAI	1
				KABULOH	2
				KEJAPIL	1
				SATAP	1
	66	MIRI	1	SIBUTI	2
				ADONG	1
				DALAM	1
				LUTONG	1
				MIRI	2
	67	BARAM	1	PADANG LIKU	1
				BARAM	4
				TUTUH	1
SABAH	71	MENGGALONG	1	MENGGALONG	2
	71A	LAKUTAN	1	LAKUTAN	1
	71B	LINGKUNGAN	1	BUKAU	1
	72	PADAS	1	LINGKUNGAN	1
				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	1	PAPAR	3
	76	MOYOG	1	MOYOG	4

Jadual 4.5 JAS: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2012 (sambungan)
Table 4.5 DOE: List of the River Catchment And River Monitored, 2012 (continued)

Negeri / State	Kod WKA/ Code WQR	Lembangan Sungai/ River Basin	Bilangan Stesen/ No. of Stations	Sungai Diawasi/ River Monitored	Bilangan Stesen/ No. of Stations
	77	TUARAN	1	DAMIT	2
				SONG SAI	1
				TUARAN	2
	78	KEDAMAIAN	1	KEDAMAIAN	1
				TEMPASUK	2
				WARIU	1
	78T	TENGHILAN	1	TENGHILAN	1
	79	BINGKONGAN	1	BANDAU	1
				BINGKONGAN	2
				MENGGARIS	2
				TANDEK	1
	80	BENGKOKA	1	BENGKOKA	2
	82	PAITAN	1	PAITAN	1
	83	SUGUT	1	BONGKUD	1
				LOHAN	1
				MERALI	1
				SUGUT	3
	84	LABOK	1	KINIPIR	2
				LABOK	1
				LIWAGU	2
				MALIAU	1
				TUNGUD	1
	84A	SAPI	1	SAPI	3
				SUALONG	1
	85	MOUNAD	1	MOUNAD	2
	87	SEGAMA	1	SEGAMA	3
	88	TUNGKU	1	TUNGKU	2
	88A	SILABUKAN	1	SILABUKAN	2
	89	TINGKAYU	1	TINGKAYU	2
	91	TAWAU	1	TAWAU	4
	91A	APAS	1	APAS	1
	91B	BALUNG	1	BALUNG	1
	92	MEROTAI	1	MEROTAI	3
	93	UMAS-UMAS	1	UMAS-UMAS	1
	94	BRANTIAN	1	BRANTIAN	1
	95	KALABAKAN	1	KALABAKAN	3
	76A	SEMBULAN	1	SEMBULAN	2
	76B	LIKAS	1	INANAM	3
				LIKAS	2
				MENGGATAL	2
	76C	TELIPOK	1	TELIPOK	2
	85A	SEGALIUD	1	SEGALIUD	2
	86	KINABATANGAN	1	KARAMUAK	1
				KINABATANGAN	3
				KOYAH	1
				MENANGGUL	1
	90	KALUMPANG	1	KALUMPANG	3
JUMLAH / TOTAL					832

Jadual 4.6 JAS: Parameter-Parameter Pengukuran Kualiti Air Sungai
Table 4.6 DOE: River Water Quality Parameters

Parameter	Unit	Parameter	Unit
DO	mg/l, % saturated	Hg	mg/l
BOD	mg/l	Cd	mg/l
COD	mg/l	Cr	mg/l
SS	mg/l	Pb	mg/l
pH	unit	Zn	mg/l
NH ₃ -N	mg/l	Ca	mg/l
Suhu / Temperature	°C	Fe	mg/l
Konduktiviti/ Conductivity	uS	K	mg/l
Kemasinan / Salinity	ppt	Mg	mg/l
Kekeruhan / Turbidity	NTU	Na	mg/l
Pepejal terlarut / Dissolved solids	mg/l	Minyak dan Gris/ Oil and Gris	mg/l
Nitrat, NO ₃	mg/l	Methylene Blue Active Substances (MBAS)	mg/l
Cl	mg/l	<i>E-coli</i>	cfu/100ml
PO ₄	mg/l	Total Coliform	cfu/100ml
As	mg/l		

Jadual 4.7 JAS : Senarai Stesen Pemantauan Projek River of Life
Table 4.7 DOE : List of the River of Life Monitoring Station

Sungai	No Stesen	Sungai	No Stesen
Air Busuk	1K35	Kerayong	1K 41
Ampang	1K23		1K 47
	1K36	Keroh	1K 21
Anak Air Batu	1K42		1K 43
	1K19	Kuyoh	1K 48
	1K20	Rasau	1K 49
Batu	1K28	Penchala	1K 50
	1K52	Payong	1K 51
Belongkong	1K34		1K 06
	1K27		1K 07
Bunos	1K33	Klang	1K 08
	1K37		1K 25
	1K17		1K 45
Gombak	1K18		1K 46
	1K24	Semelah	1K 10
	1K22	Toba	1K 31
Jinjang	1K38	Untut	1K 32
	1K39		

PENGAWASAN KUALITI AIR TANAH GROUNDWATER MONITORING

Program Pengawasan Kualiti Air Tanah Kebangsaan telah dimulakan pada tahun 1997 di Semenanjung Malaysia dan telah diperkembangkan ke Sabah dan Sarawak pada tahun 2003. Kedudukan stesen air tanah di Semenanjung Malaysia adalah seperti dalam **Peta 4.5**.

Pengukuran parameter-parameter fizikal kualiti air tanah dijalankan secara in-situ untuk menentukan tahap ukuran bagi suhu, pH, konduktiviti, kekeruhan, kemasinan dan oksigen terlarut. Parameter-parameter yang dianalisis di makmal adalah bagi menentukan tahap kandungan bahan kimia organik meruap (VOC), hidrokarbon, racun perosak, logam berat, anion, bakteria, sebatian berfenol, radioaktif, jumlah keliatan dan jumlah pepejal terlarut.

Peralatan yang digunakan semasa persampelan air tanah termasuklah pam *hydrolift*, tiub hdpe, alat ukur kedalaman air, generator, botol persampelan/ larutan pengawetan-alat ujian, kotak kedap ais dan *multiprobe*.

Pada tahun 2012, sebanyak 361 sampel daripada 107 buah telaga pengawasan kualiti air tanah di seluruh Malaysia telah di analisa. Telaga pengawasan ini telah dibina di kawasan-kawasan mengikut jenis guna tanah iaitu 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 4.8**).

Sepanjang tahun 2012 juga, sejumlah 36 stesen telah dijalankan pemeriksaan. Daripada jumlah itu, sebanyak 27 stesen perlu dilakukan penyelenggaraan secara menyeluruh, seperti melakukan pencucian telaga iaitu kerja-kerja mencuci skrin dan mengganti injap kaki.

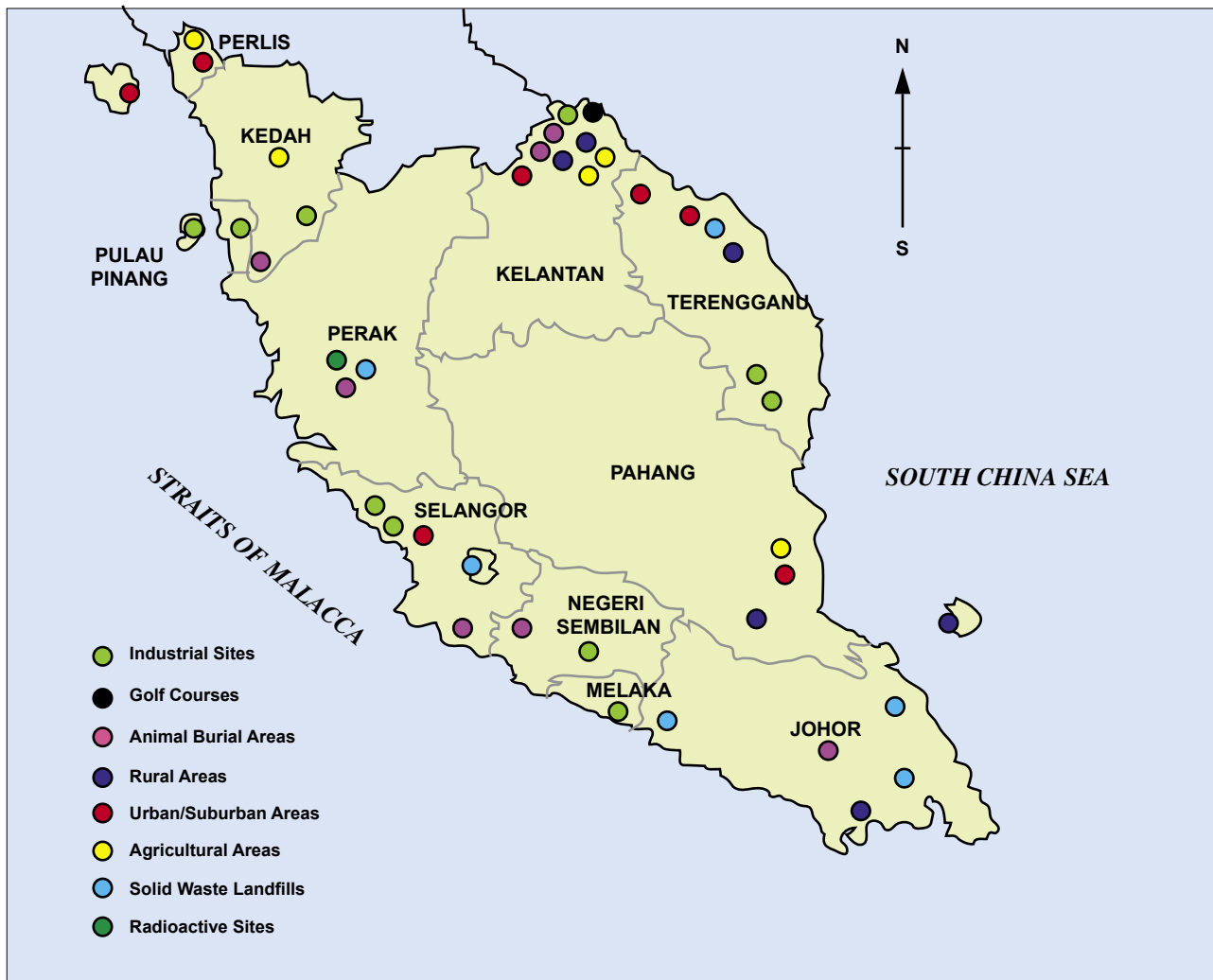
Groundwater water quality monitoring was established in 1997 for Peninsular Malaysia and was extended to cover Sabah and Sarawak in 2003. The location of groundwater stations in Peninsular Malaysia are shown in **Map 4.5**.

In-situ measurements were taken to determine the level of temperature, pH, conductivity, turbidity, salinity and dissolved oxygen. Laboratory analysis were carried out to determine the level of total volatile organic compounds (VOCs), hydrocarbons, pesticides, heavy metals, anions, bacteria, phenolic compounds, radioactivity, total hardness and total dissolved solids.

The equipments used in groundwater sampling were hydrolift pump, hdpe tubing, water depth sensor, generator, sampling bottle/ preservative kit, coolbox and multiprobe.

In 2012, a total of 361 groundwater samples were taken on a quarterly basis from 107 monitoring wells in Malaysia for analysis. The monitoring wells had been constructed in areas categorised according to land use such as agriculture, industrial, golf course, solid waste landfill, animal burial, municipal water supply, ex-mining (gold mine) and urban/suburban (**Table 4.8**).

In 2012, a total of 36 groundwater stations were inspected. Out of these, 27 stations required major maintenance, such as flushing work for cleaning the screens and replacing the footvalves.



Peta 4.5 JAS: Peta kedudukan stesen air tanah di Semenanjung Malaysia.
 Map 4.5 DOE: The distribution map of groundwater stations in Peninsular Malaysia

Kerja-kerja persampelan air tanah di lapangan sedang dijalankan.
 The water quality sampling carried out at site



Jadual 4.8 JAS: Bilangan Telaga Air Tanah Mengikut Jenis Kategori Guna Tanah, 2012
Table 4.8 DOE: Number of Groundwater Wells by Land Use Category, 2012

Kategori / Category	Bilangan Telaga / Numbers of Wells
Kawasan Pertanian / Agricultural Areas	12
Bandar & Pinggir Bandar / Urban & Suburban Areas	11
Tapak Perindustrian/ Industrial Sites	18
Tapak Pelupusan Sampah / Landfills	24
Padang Golf / Golf Courses	7
Luar Bandar/ Rural Areas	3
Bekas lombong / Ex- Mining	3
Bekalan Air Tempatan /Municipal Water Supply	7
Tapak Pelupusan Bangkai Haiwan / Animal Burial	14
Kolam Akuakultur / Aquaculture Farms	6
Tapak Pelupusan Radioaktif / Radioactive Landfill	1
Peranginan / Resorts	1
Jumlah / Total	107

SKIM NOTIFIKASI DAN PENDAFTARAN BENDA-BENDA BERBAHAYA KEPADA ALAM SEKELILING (EHSNR) ENVIRONMENTALLY HAZARDOUS SUBSTANCES NOTIFICATION AND REGISTRATION SCHEME (EHSNR)

Skim Notifikasi dan Pendaftaran Benda-Benda Berbahaya Kepada Alam Sekeliling (EHSNR) telah dibangunkan oleh Jabatan Alam Sekitar (JAS) semenjak tahun 2009. Skim notifikasi dan pendaftaran ini diwujudkan bertujuan untuk membekalkan maklumat kepada Kerajaan Malaysia bagi membolehkan JAS dan agensi-agensi lain yang terlibat dalam pengurusan kimia bagi mengenalpasti benda-benda berbahaya dalam negara dan juga untuk membuat keputusan mengenai pengurusan benda-benda berbahaya ini secara selamat.

Berdasarkan kepada maklumat yang dikemukakan oleh pihak industri, JAS akan menyediakan satu senarai Pendaftaran Bahan Kimia di Malaysia. Senarai Pendaftaran Bahan Kimia ini akan mengandungi maklumat mengenai identiti benda-benda berbahaya yang telah diberitahu kepada JAS, kegunaannya di Malaysia, pengelasan tahap berbahaya dan jumlah keseluruhan yang terdapat di pasaran Malaysia. Senarai ini akan digunakan sebagai panduan dan rujukan untuk membolehkan JAS menghasilkan satu perundangan bagi mengawal benda-benda berbahaya kepada alam sekeliling (EHS) pada masa hadapan.

Sehingga 31 Disember 2012, sebanyak 1,365 syarikat telah dikenalpasti berpotensi sebagai pengilang dan pengimport benda-benda berbahaya kepada alam sekeliling (EHS). Sebanyak 365 syarikat kimia telah mendaftar secara atas talian menerusi laman web EHSNR. Hasil daripada pendaftaran tersebut, sebanyak 1,738 EHS telah pun didaftarkan di bawah skim ini. Jumlah EHS yang telah dinotifikasi secara rasmi adalah 798, di mana 180 daripada EHS ini memerlukan notifikasi terperinci. Jumlah EHS yang telah dinotifikasi secara terperinci kepada JAS adalah 149. Di samping itu, 14 syarikat telah mendaftar sebagai pembekal luar negara.

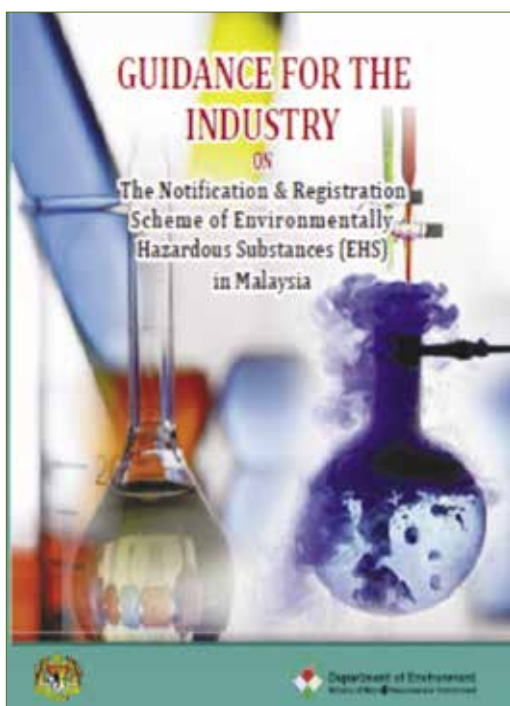
The Environmentally Hazardous Substances Notification and Registration (EHSNR) Scheme has been developed by the Department of Environment (DOE) since the year 2009. This notification and registration scheme has been developed to provide information to the Malaysian Government to enable the Department of Environment and other agencies involved in chemicals management to identify substances of concern in the country and make decisions on how to manage these substances in a safe and sound manner.

Based on the information submitted by various industries, the Department of Environment (DOE) will establish a Malaysian Chemicals Register List. The Malaysian Chemicals Register List will contain information on the identity of substances that have been notified to DOE, their uses in Malaysia, their hazard classification and the accumulated amounts placed in Malaysian market. The list will be used as a guidance and reference for the Department of Environment to come out with regulations to control Environmentally Hazardous Substances (EHS) in the future.

Until 31 December 2012, 1,365 chemical companies had been identified as potential manufacturers and importers for EHS. A total of 365 chemical companies had registered online through the EHSNR web page. Through this registration process, 1,738 EHS had been registered under the scheme. The number of EHS that had been officially notified were 798 and out of these, 180 EHS were required to do detailed notification. The number of EHS which had already been notified in detail to DOE was 149. On the other hand, 14 companies had registered as the overseas suppliers.

Jabatan telah melancarkan satu laman web baru bagi skim ini pada Disember 2012. Laman web baru ini merupakan versi yang telah dibuat penambahbaikan bagi memenuhi keperluan pihak pengguna. Di antara penambahbaikan yang telah dibuat ialah pengiraan jumlah kuantitisebenarsecara automatik, pendaftaran sehingga lima (5) pengguna untuk setiap syarikat, fungsi memuatnaik dokumen rujukan dan kemudahan pencetakan.

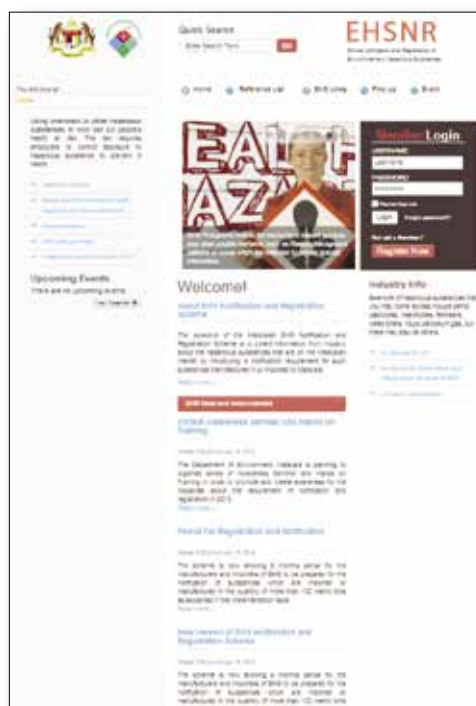
Jabatan juga telah menghasilkan edisi kedua bagi dokumen panduan bertajuk 'Guidance for the Industry on the Notification & Registration Scheme of Environmentally Hazardous Substances (EHS) in Malaysia' pada tahun 2012.



Edisi kedua bagi dokumen panduan bertajuk 'Guidance for the Industry on the Notification & Registration Scheme of Environmentally Hazardous Substances (EHS) in Malaysia'
Second edition for the guidance document entitled 'Guidance for the Industry on the Notification & Registration Scheme of Environmentally Hazardous Substances (EHS) in Malaysia'

The department had launched a new web page for EHSNR in December 2012. This new web page is an improved version designed to accommodate industries needs. The improvements include auto actual tonnage calculation, registration of up to five (5) users for each company, referenced document upload and printable page function.

The department had also published the second edition of the guidance document entitled 'Guidance for the Industry on the Notification & Registration Scheme of Environmentally Hazardous Substances (EHS) in Malaysia' in the year 2012.



Laman web baru bagi Skim Notifikasi dan Pendaftaran Benda-Benda Berbahaya Kepada Alam Sekeliling (EHSNR)
New web page for the Environmentally Hazardous Substances Notification & Registration Scheme (EHSNR)

Bagi membantu pihak industri memahami sistem EHSNR ini, Jabatan telah mengadakan 3 latihan 'hands on training' pada tahun ini. Latihan ini telah diadakan di Bilik ICT JAS, Putrajaya. Jumlah peserta yang menghadiri latihan ini adalah seramai 64 orang dan kesemua peserta tersebut mewakili pelbagai industri kimia di Malaysia.

The Department of Environment had successfully conducted 3 hands on training this year. These trainings were held in the ICT Room, DOE, Putrajaya and were attended by 64 participants from various chemical industries throughout Malaysia.



Hands on Training' pada tahun 2012 di Bilik ICT JAS, Putrajaya
Hands on Training in the year 2012 at the ICT Room, DOE, Putrajaya

PELAKSANAAN KONVENSYEN BASEL, ROTTERDAM DAN STOCKHOLM DI MALAYSIA

THE IMPLEMENTATION OF BASEL, ROTTERDAM AND STOCKHOLM CONVENTION IN MALAYSIA

Malaysia telah menyertai Konvensyen Basel dan Rotterdam dan merupakan signatori kepada Konvensyen Stockholm semenjak tahun 2002.

Pada tahun 2012, Malaysia telah menghadiri Mesyuarat kelapan (8) *Open Ended Working Group* bagi Konvensyen Basel di Geneva Switzerland dari 25 hingga 28 September 2012.

Mesyuarat tersebut telah dihadiri oleh lebih dari 200 perwakilan yang terdiri dari negara-negara pihak dan juga badan-badan pemerhati. Mesyuarat telah bersetuju mengambil keputusan untuk memperkasakan pelaksanaan konvensyen ini sebagai satu perjanjian global yang bertanggungjawab ke atas pengurusan buangan bahan berbahaya. Antara perkara yang telah dipertimbangkan adalah :

- i) Membangunkan garis panduan teknikal bagi buangan elektronik dan buangan yang mengandungi *persistent organic pollutants (POPs)*.
- ii) Pemantauan kemajuan kerja ke atas garis panduan teknikal bagi pengurusan alam sekitar yang baik untuk buangan yang mengandungi POPs, yang juga akan mengambilkira POPs baru yang telah dikenalpasti pada tahun 2010 di dalam Konvensyen Stockholm. Garispanduan-garispanduan teknikal ini akan menambahbaik usaha-usaha kerjasama erat antara kedua-dua konvensyen Stockholm dan Basel.

Disamping itu, pakar-pakar juga telah mengkaji semula garis panduan teknikal bagi pergerakan merentasi sempadan buangan elektronik dan akan dikemaskini untuk dipertimbangkan di dalam *Conference of the Parties (COPs)*, yang merupakan badan tertinggi dalam urus tadbir Konvensyen Basel, semasa mesyuarat kesebelasnya pada tahun 2013.

Malaysia is a party to the Basel and Rotterdam Convention, and signatory to the Stockholm Convention.

In 2012, Malaysia had participated in 8th Open Ended Working Group in Geneva, Switzerland from 25 to 28 September 2012 .

This meeting was attended by more than 200 international management experts from signatory countries and observers from international bodies. The meeting has adopted decision aim at strengthening implementation of the leading global treaty governing hazardous waste. Considerable progress was made in a number of areas, including:-

- i) Further development of technical guidelines on e-waste and wastes containing persistent organic pollutants (POPs).
- ii) Work progressed on technical guidelines for environmentally-sound management of wastes containing persistent organic pollutants, with agreement on covering new POPs added in 2010 to the Stockholm Convention on POPs. The guidelines will further strengthen synergies between the two global conventions.

Besides that, the experts have also reviewed technical guidelines on transboundary movements of e-waste, which will be further revised and considered for adoption by the Conference of the Parties (COPs), the highest governing body of the Convention, at its eleventh meeting (COP-11) in 2013.

Susulan dari inisiatif Indonesia-Swiss, kumpulan kerja tersebut telah pun mengambil langkah awal dalam membangunkan frasakata yang meliputi terma-terma utama yang digunakan di dalam Konvensyen Basel seperti bahan buangan/bukan bahan buangan, buangan berbahaya /bukan buangan berbahaya, guna semula, guna terus, *refurbishment*, barangan terpakai, barangan di akhir hayat dan lain lain lagi.

Keputusan dari kedua-dua mesyuarat tersebut diharapkan dapat membantu dalam persediaan mesyuarat kesebelas bagi persidangan negara negara pihak kepada Konvensyen Basel, yang akan diadakan secara berturut-turut dengan persidangan negara negara pihak bagi Konvensyen Rotterdam dan Stockholm selama dua minggu dari 28 April hingga 10 Mei 2013 di Geneva, Switzerland.

As a follow-up to the Indonesian-Swiss country-led initiative, the Working Group decided that a first step towards achieving this goal was the development of a glossary covering key terminology under the Convention such as waste/non-waste, hazardous waste/non-hazardous waste, re-use, direct re-use, refurbishment, second hand goods, used goods and end-of-life goods.

The outcomes of the two meetings will help set the stage for the 11th meeting of the COPs to the Basel Convention, which will be held back-to-back with the conferences of the parties to the Rotterdam and Stockholm conventions during a two-week period from 28 April to 10 May 2013 in Geneva.



Delegasi Malaysia, Y. Bhg. Datin Paduka Che Asmah Ibrahim, Pengarah Bahagian Bahan Berbahaya, menghadiri Open Ended Working Group di Geneva, Switzerland pada 25 hingga 28 September 2012.
Malaysia Delegate, Y.Bhg. Datin Paduka Che Asmah Ibrahim, Director of Hazardous Substances Division, attending the Open Ended Working Group, Geneva, Switzerland from 25 to 28 September 2012.

Lawatan Sambil Belajar ke Copper Smelter and Refinery for E-waste di Amerika Syarikat dan Kanada

Pada tahun 2012, Bahagian Bahan Berbahaya telah mengadakan lawatan sambil belajar ke tiga kemudahan pemerolehan kembali e-sisa seperti berikut :

- (i) East Providence Sampling Facility, Rhode Island USA
- (ii) Horne Smelter, Rouyn-Noranda, Quebec, Canada
- (iii) Canadian Copper Refinery, Montreal Canada

Lawatan ini bertujuan untuk memberi pendedahan kepada kakitangan Jabatan untuk melihat sendiri premis pemerolehan kembali logam berharga dari e-sisa dan membuat penilaian dan perbandingan dengan kemudahan yang terdapat di dalam negara.

Study Visit On Copper Smelter and Refinery for E-waste in USA and Canada

In 2012, Hazardous Substances Division had conducted a study visit to three e-waste recovery facilities, namely :

- (i) East Providence Sampling Facility, Rhode Island USA
- (ii) Horne Smelter, Rouyn-Noranda, Quebec, Canada
- (iii) Canadian Copper Refinery, Montreal Canada

The objectives of this visit are to get experience on how these facilities recovered precious metal from e-waste and to assess and compare with the existing facilities in Malaysia .



Di Kemudahan Penerimaan Material dan percontohan, Xstrata, Rhode Island
At Xstrata Providence, Rhode Island material receipt and sampling facility



Di Horne Smelter di Rouyn-Noranda Quebec
At Horne Smelter in Rouyn-Noranda Quebec



Di CCR Refinery di Montreal, Canada
At the CCR Refinery in Montreal, Canada

PROJEK MODEL BAGI PENGUMPULAN, PENGASINGAN DAN PENGANGKUTAN E-WASTE DARI ISI RUMAH

THE PROJECT FOR MODEL DEVELOPMENT FOR E-WASTE COLLECTION, SEGREGATION AND TRANSPORTATION FROM HOUSEHOLDS FOR RECYCLING

Projek pembangunan model untuk Pengumpulan, Pengasingan dan Pengangkutan e-waste dari isi rumah telah dimulakan pada September 2011 dan berakhir pada Mac 2013. Projek ini juga dikenali sebagai projek "Penang e-waste".

Matlamat dan objektif utama projek ini adalah untuk membangunkan sistem pengumpulan e-waste dari isi rumah yang bersesuaian dan berkesan. Sistem yang dibangunkan ini akan diguna pakai sebagai model bagi menaiktaraf sistem pungutan e-waste dari isi rumah serta dapat membantu dalam penggubalan dasar baru di masa hadapan.

Model bagi sistem pengumpulan, pengasingan dan pengangkutan melalui projek perintis ini telah dijalankan di negeri Pulau Pinang. Projek ini telah dianjurkan bersama oleh Jabatan Alam Sekitar negeri Pulau Pinang dan Majlis Perbandaran Pulau Pinang. Projek ini telah ditaja sepenuhnya oleh *Japan International Corporation Agency (JICA)* di mana Encik Hideki Wada telah dilantik sebagai ketua pasukan pakar dalam membangunkan projek perintis ini.

Barangan elektronik terpakai seperti televisyen, penghawa dingin, komputer, peti sejuk, mesin basuh, telefon, ketuhar gelombang mikro, radio, dan peralatan elektrik lain dikategorikan sebagai e-waste. Beberapa kedai barangan elektrik dan elektronik telah menyertai projek ini secara sukarela dan pelanggan (pemilik e-waste) boleh menghantar e-waste ke kedai yang telah mengambil bahagian dalam projek ini. Setelah menerima e-waste, baucar akan diberikan kepada pelanggan oleh pihak kedai. Setiap bulan, kedai yang terlibat akan mengeluarkan invois kepada pusat kemudahan pemerolehan kembali penuh

Project for Model Development for e-waste Collection, Segregation and Transportation from Households for Recycling was started on September 2011 and ended on March 2013. This project is also known as Penang e-waste project.

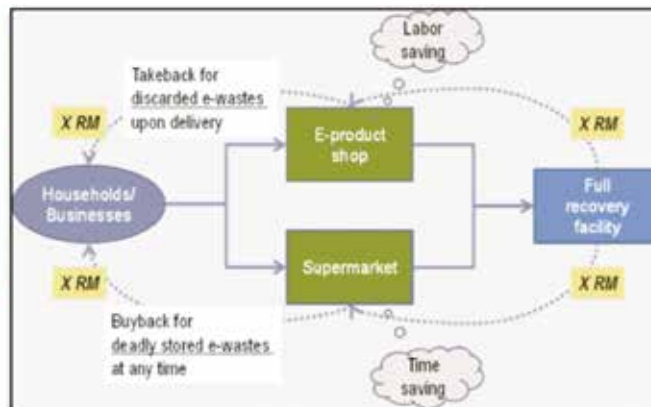
The main goal and objective of this project is to develop an appropriate, effective and efficient e-waste collection system from households. The developed system is expected to be used as a model to expand it to the nationwide collection system. At the same time, it is expected to support development of new policy for the future.

A practical model for collection, segregation and transportation for recycling e-waste generated from households will be developed through this pilot project in Penang. The project was co-organized by Department of Environment and Municipal Council of Penang. It was fully sponsored by Japan International Corporation Agency (JICA) and headed by JICA's expert team with Mr. Hideki WADA as the leader for setting up a pilot project in managing e-waste from households.

Used electronic product such as televisions, air-conditioner, computer, refrigerator, washing machine, telephone, microwave/ oven, radio and other electrical appliances is categorized as electronic waste. A few electric and electronic shops participated voluntarily in this project. Upon receiving e-waste from customers, the participating shops will issue e-waste vouchers. Then every month the participating



Logo E-waste Alam Alliance
di Pulau Pinang
Logo of E-waste Alam
Alliance –Penang



Konsep Model Projek
Concept of the Pilot
Project System

bagi menuntut kembali jumlah wang yang telah diberikan kepada pelanggan melalui pemberian baucar.

Pada 18 Februari 2012, seramai 10 wakil dari ahli Jawatankuasa Penyelarasan Bersama (JCC) telah menyertai satu lawatan ke Tokyo, Jepun. Lawatan ini bertujuan untuk mempelajari kaedah sebenar pengurusan e-waste.

Disepanjang tahun 2011 hingga 2013, sebanyak 4 (empat) kali mesyuarat Jawatankuasa Penyelarasan Bersama (JCC) telah diadakan dan telah dihadiri oleh wakil dari Jabatan Alam Sekitar, Majlis Perbandaran Pulau Pinang, Kementerian Perumahan dan Kerajaan Tempatan, Jabatan Pengurusan Sisa Pepejal Negara, JICA Malaysia, dan Unit Perancang Ekonomi. Selain mesyuarat, beberapa bengkel juga yang telah diadakan. Pada tahun 2011, seminar dan bengkel pertama telah diadakan pada 24 Oktober 2011, di Hotel Vistana, Penang. Manakala pada tahun 2012, bengkel perkongsian idea telah diadakan pada 17 Januari 2012, di Hotel Cititel, Penang dan bengkel untuk melancarkan Projek Perintis telah diadakan pada 1 Jun 2012 di Hotel E & O. Bagi tahun 2013, satu bengkel penutup telah diadakan pada 5 Februari 2013 di Hotel Equatorial, Bangi dan bengkel terakhir untuk mempelajari kaedah "Willingness To Pay" telah diadakan dari 19-20 Mac 2013 di Grand Blue Wave Hotel, Shah Alam.

shops can reclaim the total voucher amount from the full recovery facilities by sending the invoices together with the vouchers.

Training in Tokyo, Japan was carried out on February 18, 2012 with 10 representatives from the JCC. The training was conducted specially to learn the actual methods for the management of e-waste.

Between 2011 until 2013, the Joint Coordination Committee (JCC) meetings were held four (4) times and attended by representatives from Department of Environment, Municipal Council of Penang, Ministry of Housing and Local Government, National Solid Waste Management Department, JICA Malaysia, and Economic Planning Unit. Workshops were also held for the e-waste project. In 2011, the kickoff seminar was held on October, 24 2011, at Vistana Hotel, Penang. In 2012, the idea sharing workshop was held on January 17 2012, at Cititel Hotel, Penang and a workshop for launching the Pilot Project was held on 1st of June 2012 at E&O Hotel. In 2013, on February 5 2013, a workshop on the wrap up of the e-waste program has been held at Equatorial Hotel, Bangi and the last workshop for training on "Willingness to Pay" Method was held on March 19-20, 2013 at Grand Blue Wave Hotel, Shah Alam.

Secara keseluruhannya, projek ini merumuskan kaedah pengurusan e-waste dari isi rumah sebagai tanggungjawab pengguna dan pemilik. Maklumat data yang diperolehi dari projek ini juga dijangka akan diguna pakai di seluruh negara bagi membantu memperbaiki polisi dan dasar baru Jabatan Alam Sekitar.

Overall, this project formulates management of e-waste from households as the responsibility of the user and the owner. The data obtained from this project is expected to be adopted across the country and improve the policy for the Department of Environment.



Mesyuarat yang diadakan bersama MPPP
Task force meeting with MPPP



Mesyuarat JCC
JCC Meeting



Gambar e-waste yang telah dikutip
Photos of collected e-waste



Lawatan ke Tokyo, Jepun
Training in Tokyo, Japan



Bengkel Perkongsian Kemajuan Projek Perintis
Workshop for sharing the progress of the Pilot Project



Bengkel Penutup pada 5 Februari 2013 di Hotel Equatorial, Bangi
Wrap up workshop on 5th February 2013 at Hotel Equatorial, Bangi

PROGRAM PENCEGAHAN KEBAKARAN DAN PENGURUSAN TANAH GAMBUT

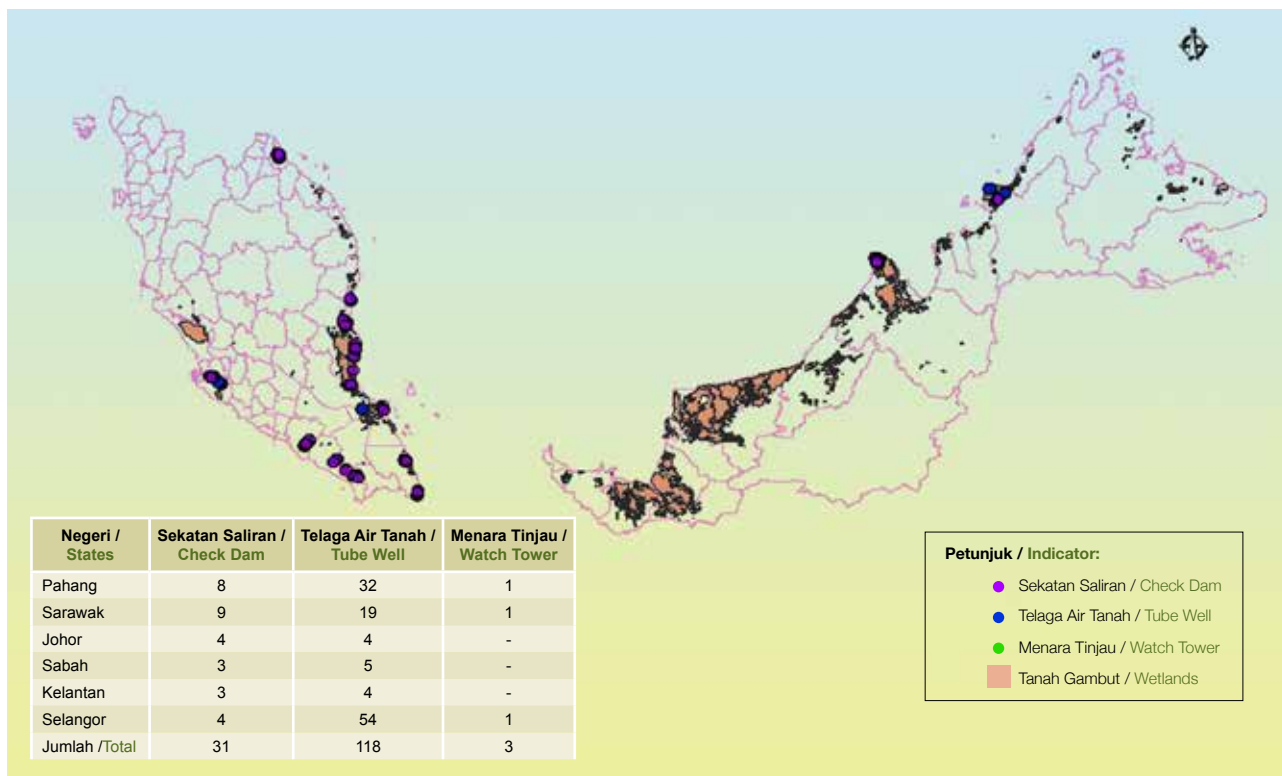
FIRE PREVENTION AND PEATLAND MANAGEMENT PROGRAMME

Program ini telah dimulakan pada tahun 2009 untuk membina infrastruktur utama iaitu sekatan saluran, telaga air tanah dan menara tinjau bagi mengawal pembakaran tanah gambut. Tujuan pembinaan sekatan air ialah untuk meninggikan paras air dan mengekalkan kelembapan tanah gambut. Sekatan saluran ini juga berupaya mengurangkan risiko kebakaran tanah gambut terutama semasa musim panas dan kering. Pembinaan telaga air tanah adalah bagi tujuan mengumpulkan air untuk aktiviti pemadaman kebakaran dan juga bagi mengekalkan kelembapan tanah gambut. Menara tinjau dibina di lokasi-lokasi strategik dalam kawasan tanah gambut bagi memudahkan pemantauan dan pengesanan awal sebarang aktiviti pembakaran di kawasan tanah gambut.

Program ini dilaksanakan atas inisiatif dan semangat 1NRE yang melibatkan kerjasama erat di kalangan agensi utama iaitu Jabatan Alam Sekitar (JAS), Jabatan Pengairan dan Saliran (JPS), Jabatan Mineral dan Geosains (JMG) dan Jabatan Perhutanan Semenanjung Malaysia (JPSM). 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. Sehingga 31 Disember 2012, sebanyak 118 sekatan saluran telah dibina iaitu; Negeri Johor (54), Pahang (32), Sarawak (19), Selangor (5), Kelantan (4) dan Sabah (4). Di samping itu juga, sebanyak 31 buah telaga air tanah telah dibina iaitu; Sarawak (9), Pahang (8), Johor (4), Selangor (4), Kelantan (3) dan Sabah (3). Sebanyak 3 buah menara tinjau telah siap dibina dan beroperasi iaitu sebuah (1) di Selangor, Pahang dan Sarawak. Prosedur Tetap Operasi (SOP) bagi program ini telah disediakan pada tahun 2010 dan dikemaskini dari semasa ke semasa mengikut keperluan. Program ini telah menunjukkan keberkesannya dari segi dapat mengurangkan tempoh pemadaman kebakaran di beberapa kawasan tanah gambut dari tempoh 7 hari kepada 2 hingga 3 hari.

The programme to control peat fires started in 2009 which involves construction of infrastructures namely check dam, tube well and watch tower. The construction of check dams has been proven as an effective method to raise the water levels and maintain the moisture in peat soils, thus minimizing the risk of peatland fires especially during the hot and dry periods. Tube wells act as the source of water supply for fire suppression as well as to sustain water level in peatland areas, whilst, watch towers are constructed at strategic locations in order to monitor peat fires and also to detect at early stage any occurrence of open burning in peat areas.

This programme was implemented under the spirit of 1NRE Enforcement that involves cooperation within key agencies under Ministry of Natural Resources and Environment among others are Department of Environment (DOE), Department of Irrigation and Drainage (DID), Department of Mineral and Geoscience (MGD) and Forestry Department of Malaysia. 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 involves the construction of 118 check dams located in; Johor (54), Pahang (32), Sarawak (19), Selangor (5), Kelantan (4) and Sabah (4). A total of 31 tube wells were constructed; Sarawak (9), Pahang (8), Johor (4), Selangor (4), Kelantan (3) and Sabah (3). A total of 3 watch towers were constructed and in operation in the state of Selangor, Pahang and Sarawak. A Standard Operating Procedure (SOP) was prepared in 2010 and has been updated in 2012. The programme was proven to be very effective in reducing time taken in putting out peatfires from 7 days to 2 or 3 days.



Peta 4.6 Malaysia: Peta Lokasi Pembinaan Infrastruktur di bawah Program Pencegahan Kebakaran dan Pengurusan Tanah Gambut Yang Sering Terbakar
 Map 4.6 Malaysia: Location map of infrastructures constructed under the Peatland Fire Prevention and Management Programme



Prosedur Tetap Operasi (SOP) Bagi Melaksanakan Program Pencegahan Kebakaran di Tanah Gambut (kiri)
 Garispanduan Bagi Reka Bentuk Sekatan Air untuk Mengawal dan Mengelakkan Kebakaran Tanah Gambut (kanan)
 Standard Operating Procedure (SOP) for the implementation of Peatland Fire Prevention Program (left)
 Guidelines For Design and Construction of Check Dams For Prevention and Control of Peatland Fire (right)



Pembinaan sekatan saluran di Miri, Sarawak
Construction of check dam in Miri, Sarawak



Pembinaan menara tinjau di Penur,
Kuantan, Pahang
Construction of watch tower in Penur,
Kuantan, Pahang



Telaga Air Tanah di Bachok, Kelantan
Tube Well Constructed in Bachok, Kelantan

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 telah memenuhi obligasi untuk menghentikan pengimportan klorofluorokarbon (CFC), halon dan karbon tetraklorida (CTC) mulai 1 Januari 2010. Manakala bahan pemusnah ozon seperti metil bromida akan dihapuskan pengimportan mulai 2015 dan hidroklorofluorokarbon (HCFC) pada 2030.

Pematuhan Terhadap Protokol Montreal

Mulai 1 Januari 2010, Malaysia tidak lagi membenarkan pengimportan CFC, CTC dan halon. Bagi fasa seterusnya Malaysia perlu menghapuskan penggunaan HCFC secara berperingkat sehingga 2030 seperti yang telah ditetapkan di bawah Protokol Montreal. **Rajah 4.2** menunjukkan tren penggunaan HCFC pada tahun 2012 yang berjumlah **10,569** metrik tan. Bagi mencapai sasaran ini, Pelan Pengurusan Penghapusan HCFC (HPMP) yang menggariskan polisi dan strategi untuk menghapuskan penggunaan HCFC sebanyak 10% menjelang 2015 telah mula dilaksanakan. Pada 28 Ogos 2012 majlis pelancaran HPMP telah disempurnakan oleh Y.B. Menteri Sumber Asli dan Alam Sekitar disusuli penyerahan memorandum perjanjian untuk dimeterai oleh 17 industri dari sektor pembuatan busa yang menerima dana Tabung Pelbagai Hala Protokol Montreal untuk projek penukaran teknologi.

Pengurusan Halon

Halon tidak lagi digunakan bagi pemasangan baru sistem mengawal kebakaran dan alat-alat pemadam api di Malaysia. Sebaliknya, air, karbon dioksida atau serbuk kimia

Background

Malaysia ratified the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer on 29 August 1989. As a Party to the Montreal Protocol, Malaysia has complied with the obligation to stop importing chlorofluorocarbon (CFC), halon and carbon tetrachloride (CTC) as of 1 January 2010. Other ozone depleting substances such as methyl bromide will be phased out by 2015 and hydrochlorofluorocarbon (HCFC) by 2030.

Compliance to Montreal Protocol

As of 1 January 2010, the importation of CFC, CTC and halon were no longer allowed in Malaysia. Malaysia needs to phase out the use of HCFC in stages by 2030, as stipulated under Montreal Protocol. **Figure 4.2** shows the trend on HCFC consumption in 2012 which amounted to **10,569** metric tonnes. To meet this target, the HCFC Phase-out Management Plan (HPMP), outline the policies and long term strategies for phasing out 10% of HCFC consumption by 2015 has been implemented. On 28 August 2012, the implementation of HPMP was launched by the Honourable Minister of Natural Resources and Environment followed by handing over memorandum of agreement to be signed by the 17 foam industries which received funding from the Multilateral Fund of Montreal Protocol for technology conversion project.

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

kini digunakan sebagai alternatif. Walau bagaimanapun, 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 2012, sebanyak 7,144 kg Halon 1211 dan sebanyak 266,800 kg Halon 1301 dikumpulkan dan disimpan di Pusat Bank Halon Kebangsaan di Kuala Kubu Bahru, Selangor. Penggunaan sebarang sistem pencegahan kebakaran yang menggunakan alternatif kepada halon perlu mendapat kelulusan bertulis daripada Jabatan Bomba dan Penyelamat Malaysia terlebih dahulu sebelum sistem tersebut digunakan.

Penghapusan Metil Bromida

Penggunaan metil bromida akan dihapuskan sepenuhnya pada tahun 2015 kecuali bagi penggunaan kuarantin pra-perkapalan (QPS). Jumlah pengimportan metil bromida yang dikawal oleh Jabatan Pertanian Malaysia pada tahun 2012 adalah sebanyak 126 metrik tan.

Jabatan Pertanian dengan kerjasama SIRIM telah menerbitkan satu garis panduan Keperluan Pengwasapan Metil Bromida. Skop merangkumi keperluan yang perlu dipatuhi untuk penggunaan pengwasapan metil bromida dalam menentukan tujuan kuarantin.

Program dan Kempen Kesedaran

Sambutan Hari Ozon Antarabangsa iaitu pada 16 September 2012 merupakan ulangtahun ke 25 Protokol Montreal dan disambut dengan meriah di seluruh dunia termasuk di Malaysia. Tema Hari Ozon 2012 ialah **Protecting Our Atmosphere For Generations to Come** atau 'Perlindungan Atmosfera Untuk Generasi Akan Datang'. Perutusan khas Y.B. Menteri Sumber Asli dan Alam Sekitar telah diiklankan di akhbar Berita Minggu dan *The Sunday Times* serta di laman sesawang Kementerian Sumber Asli dan Alam Sekitar (NRE) dan Jabatan Alam Sekitar. Aktiviti-aktiviti sambutan juga dijalankan di

alternatives. However, halon is still allowed and for restricted use in military and civil aviation fire safety protection systems, as agreed under the Montreal Protocol. As of 2012, 7,144 kg Halon 1211 and 266,800 kg Halon 1301 were collected and stored at the National Halon Bank Centre in Kuala Kubu Bahru, Selangor. Prior written approval from the Fire and Rescue Department of Malaysia is required for the usage of alternatives to halon in any new fire-fighting system.

Methyl Bromide Phase-Out

The use of methyl bromide will be totally phased out by the year 2015 except for the use of quarantine purposes for pre-shipment. In 2012, the total amount of imported methyl bromide controlled by the Department of Agriculture was 126 metric tonnes.

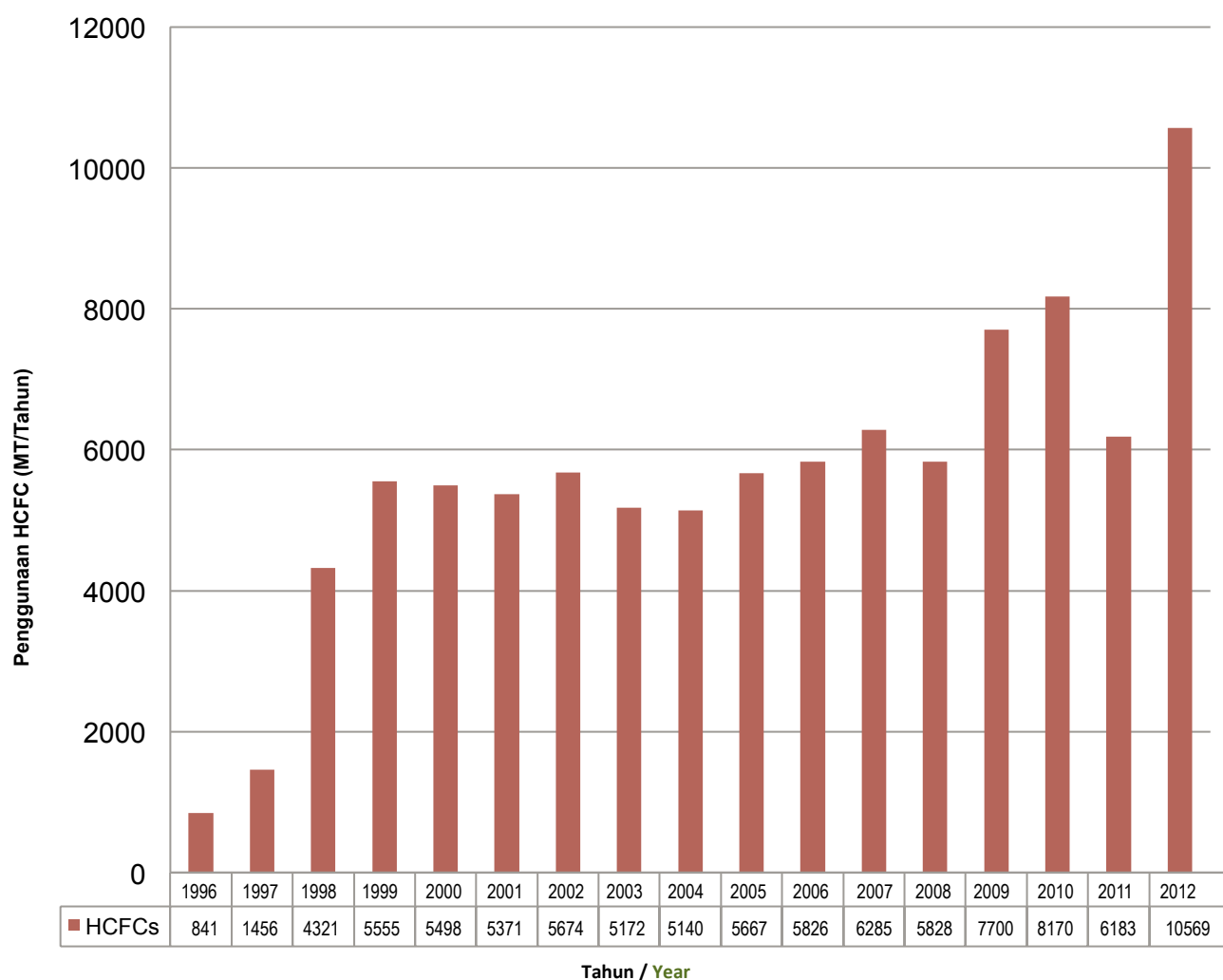
The Department of Agriculture in collaboration with SIRIM has published a guideline on the Methyl Bromide Fumigation Requirements. The scope prescribes the requirements for methyl bromide fumigation practices carried out to meet the quarantine purposes.

Awareness Programme and Campaign

The International Ozone Day Celebration on 16 September 2012 marked the 25th Anniversary of the Montreal Protocol and was celebrated all over the world including Malaysia. The theme for this year celebration is **'Protecting Our Atmosphere For Generation To Come'**. An exclusive message from the Minister of Natural Resources and Environment was published in *The Sunday Times* and *Berita Minggu* as well as in the NRE and the DOE's websites. Other activities were also organised at state level during this day (**Table 4.9**). Commemorative stamps on the 25th Anniversary of Montreal

peringkat negeri seperti dinyatakan dalam **Jadual 4.9**. Majlis Pelancaran Setem sempena sambutan Hari Ozon Antarabangsa telah disempurnakan oleh Ketua Pengarah Alam Sekitar semasa merasmikan Seminar Mengenai HPMP di Institut Perguruan Malaysia, Sg. Petani, Kedah. Risalah-risalah mengenai perlindungan lapisan ozon dan penghapusan bahan pemusnah lapisan ozon HCFC serta Buletin Ozon diterbitkan untuk sebaran. Perincian program kesedaran yang dijalankan sepanjang tahun 2012 dan mesyuarat antarabangsa yang dihadiri JAS seperti di **Jadual 4.10** dan **Jadual 4.11**.

Protocol was launched by the Director General of Environment during the opening of a HPMP Seminar at the Institut Perguruan Malaysia in Sg. Petani, Kedah. 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 2012 are listed in **Table 4.10**. Meetings at regional and international levels attended by the DOE officers are listed in **Table 4.11**.



Rajah 4.2 JAS: Tren Penggunaan HCFC, 1996 - 2012
Figure 4.2 DOE: HCFC Consumption Trend, 1996 - 2012

Jadual 4.9 JAS: Sambutan Hari Ozon Peringkat Negeri, 2012
Table 4.9 DOE: Ozone Day Celebration at the State Level, 2012

Tarikh Date	Aktiviti & Program Activities & Programme	Tempat Venue
7 Julai / July 7	Pertandingan Mewarna Kanak-kanak (Kempen Go Green Sempena Hari Alam Sekitar Sedunia 2012) Peringkat Negeri Sembilan Children Colouring Competition (GO Green Campaign In Conjunction with World Environment Day 2012 at Negeri Sembilan state level)	Tesco, Nilai Negeri Sembilan
12 September / September 12	Kempen Kesedaran Perlindungan Lapisan Ozon Untuk Pelajar Sekolah Peringkat Negeri Sembilan Ozone Layer Protection Campaign for School Students at Negeri Sembilan state level	SMK Tunku Ampuan Najihah, Seremban
15 September / September 15	Kempen Berbasikal Sempena Hari Ozon Peringkat Antarabangsa dan Ekspo Beli Barangan Malaysia Zon Utara Peringkat Negeri Pulau Pinang Cycling Campaign In Conjunction with International Ozone day Celebration and Buy Malaysia's Product Expo, North Zone, Pulau Pinang state level.	Pasaraya Quensbay Mall, Bayan Baru Pulau Pinang
18 September / September 18	Sambutan Hari Ozon Antarabangsa 2012 – Majlis Pelancaran setem kenangan 25 Tahun Montreal Protokol oleh Ketua Pengarah Alam Sekitar; dan Seminar Kesedaran Perlindungan Ozon Peringkat Negeri Kedah International Ozone Day Celebration 2012 and Launching of Commemorative Stamps on the 25 th Anniversary of Montreal Protocol by the Director General of Environment; and Seminar on Ozone Layer Protection, Kedah state level	IPG Kampus Sultan Abdul Halim, Sg. Petani Kedah
22 September / September 22	Kempen Kesedaran Perlindungan Ozon Peringkat Wilayah Persekutuan, Kuala Lumpur Ozone Layer Protection Campaign in Federal Territory, Kuala Lumpur	SeK. Men Keb Zon RI Wangsa Maju Kuala Lumpur
29 September / September 29	Sambutan Hari Ozon Peringkat Labuan Ozone Day Celebration at Labuan state level	Taman Botani, Labuan
2 Oktober / October 12	Ceramah Kesedaran Ozon (Hari Bersama Pelanggan) Peringkat Selangor Awareness Lecture on Ozone (Customer Day), Selangor State Level	SIRIM, Shah Alam
8 Oktober / October 8	Seminar Kesedaran Ozon Peringkat Terengganu Awareness Seminar on Ozone, Terengganu state level	IKM Besut, Besut Terengganu
24 Oktober / October 24	Seminar Kesedaran Ozon Peringkat Negeri Melaka Awareness Seminar on Ozone, Melaka state level	MITC Ayer Keroh, Melaka
30 -31 Oktober / October 30-31	Kem Kesedaran Perlindungan Lapisan Ozon Peringkat Negeri Sabah Awareness Camp on Ozone Layer Protection Sabah State Level	Mahua Waterfall, Kg. Mahua Tambunan



Pelancaran Setem Kenangan Ulangtahun Protokol Montreal ke 25 oleh Ketua Pengarah Alam Sekitar
 Launching of the Commemorative stamp of the 25th Anniversary of Montreal Protocol by the
 Director General of Environment Malaysia

Jadual 4.10 JAS: Aktiviti-Aktiviti Kesedaran 2011
Table 4.10 DOE: Public Awareness Activities 2011

Tarikh Date	Aktiviti & Program Activities & Programmes	Tempat Venue
26 Mac / March 26	Bengkel Konsultatif HPMP dengan Industri Industrial Stakeholder Consultative Meeting On HPMP	Hotel Holiday Villa, Subang Jaya, Selangor
27-29 Februari / February 27-29	Media Workshop – Understanding the Links Between Ozone Depletion and Climate Change	Institute of AIBD, Kuala Lumpur
28 Ogos / August 28	Majlis Pelancaran Pelaksanaan Pelan Penghapusan HCFC (HPMP) Peringkat 1 Launching Ceremony of The Implementation of HCFC Phase-out Management Plan (HPMP) Stage-1	Cyberview Resort, Cyberjaya
12 September / September 12	Majlis Menandatangani Dokumen Perjanjian (Memorandum Of Agreement – MOA) untuk sektor Pembuatan Busa Signing Ceremony of Memorandum Of Agreement – MOA) for Foam Sector	Bilik Mesyuarat Cempaka, Aras 3, DOE
11-14 Disember / December 11-14	Bengkel Latihan Kastam Mengenai Kawalan Bahan Pemusnah Ozon Hidroklorofluorokarbon (HCFC) Anjuran Bersama Jabatan Alam Sekitar dan Akademi Kastam Di Raja Malaysia (AKMAL) Customs Training Workshop on Control of Ozone Depleting Substances (HCFC) co-organised by the Department of Environment and Malaysian Royal Customs Academy (AKMAL)	Aseania Resort & Spa, Langkawi

Jadual 4.11 JAS: Mesyuarat-Mesyuarat dan Latihan Peringkat Serantau dan Antarabangsa 2012
Table 4.11 DOE: Regional and International Meetings and Training 2012

Tarikh Date	Aktiviti & Program Activities & Programmes	Tempat Venue
8-10 Februari / February 8-10	Business Matching Survey by PREC Institute, Japan	Klang Valley, Malaysia
4-15 Mac / March 4-15	Seminar On Ozone Layer Protection And Global Warming Countermeasures – Measure To Reduce The Controlled Substance Of The Montreal Protocol and Kyoto Protocol	Tokyo, Japan
12-15 Mac / March 12-15	Harmonization of Training Material, Training Methodologies for the Good Practice Training in the Refrigeration Servicing Sector	Bangkok, Thailand
16-20 April / April 16-20	The 66 th Executive Committee of Multilateral Fund Meeting (ExCom)	Montreal, Canada
15-18 Mei / May 15-18	2012 Joint Network Meeting of the SEAP-SA ODS Officers & Regional Workshop Implementation Of Climate and Energy Benefit From HCFC Phaseout	Paro, Kingdom Of Bhutan
16-20 Julai/July 16-20	The 67 th Executive Committee of Multilateral Fund Meeting (ExCom)	Bangkok, Thailand
21 Julai/July 21	Technology Conference 'Advancing Ozone & Climate Protection Technologies	Bangkok, Thailand
23-24 Julai/July 23-24	The 32 nd Open Ended Working Group Meeting (OEWG 32)	Bangkok, Thailand
15-19 Oktober/ October 15-19	Joint Network Meeting of the SEAP-SA ODS Officers and New Ozone Officers Meeting.	Pattaya, Thailand
11 November/ November 11	Seminar on Protecting the Atmosphere for Generation to Come	Geneva, Switzerland
12-16 November/ November 12-16	The 24 th Meeting of Parties to The Montreal Protocol	Geneva, Switzerland
3-7 Disember / December 3-7	The 68 th Executive Committee of Multilateral Fund Meeting (ExCom)	Montreal, Canada
8 Disember/ December 8	Forum on Climate Friendly Alternatives in Commercial Refrigeration	Montreal, Canada



Delegasi Malaysia di Mesyuarat Parti kepada Protokol Montreal ke -24 di Geneva, Switzerland
 Malaysian Delegates at the 24th Meeting of Parties to the Montreal Protocol, Geneva, Switzerland

PENGUATKUASAAN TERHADAP AKTIVITI PEMBAKARAN TERBUKA ENFORCEMENT AGAINST OPEN BURNING ACTIVITIES

Kes pembakaran terbuka dikesan melalui operasi rondaan mencegah pembakaran terbuka yang dilaksanakan oleh JAS Negeri di kawasan-kawasan yang dikenalpasti sebagai kawasan yang berisiko berlaku kebakaran dan sering menerima aduan daripada orang awam. Disamping itu maklumat *hotspots* juga diperolehi melalui satelit yang dipantau dan dilaporkan oleh *ASEAN Specialised Meteorological Centre (ASMC)*. Pada tahun 2012 sebanyak 3,446 kes *hotspots* di seluruh negara telah dilaporkan melalui satelit (**Jadual 4.12**).

Open burning cases were detected during daily ground surveillance conducted by DOE State Offices at fire-prone areas, which have frequent public complaints and also through hotspots detected via satellites reported by the ASEAN Specialised Meteorological Centre (ASMC). Throughout the year 2012, a total of 3,446 hotspots were detected via satellites (**Table 4.12**).

Jadual 4.12 JAS: Bilangan Kes Hotspots Mengikut Negeri, 2012
Table 4.12 DOE: Number of Hotspots by States, 2012

Bulan/ Month Negeri/ State	Jan / Jan	Feb / Feb	Mac/ March	Apr/ Apr	Mei/ May	Jun / June	Jul / July	Ogos / Aug	Sept / Sept	Okt / Oct	Nov / Nov	Dis / Dec	Jumlah/ Total
Johor	9	19	9	9	5	14	16	11	35	13	3	2	145
Kedah	9	14	9	8	2	10	4	17	6	8	0	5	92
Kelantan	2	12	20	5	15	19	18	7	6	4	8	4	120
Melaka	0	1	1	5	0	2	4	8	7	4	0	0	32
Negeri Sembilan	3	3	2	5	3	3	5	5	3	3	1	0	36
Pahang	12	26	38	29	28	83	55	58	63	31	12	3	438
Perak	15	9	20	4	8	18	24	14	6	5	1	2	126
Perlis	2	2	3	0	0	1	0	4	0	4	0	0	16
Pulau Pinang	5	4	6	0	0	6	1	3	3	1	2	0	31
Sabah	3	3	25	14	8	84	40	68	25	32	10	9	321
Sarawak	21	64	81	182	129	469	144	295	292	148	46	19	1890
Selangor	16	7	6	24	15	22	12	17	9	1	1	0	130
Terengganu	0	9	13	9	3	6	3	7	13	4	0	1	68
W.P. K. L / Putrajaya	0	0	1	0	0	0	0	0	0	0	0	0	1
W.P. Labuan	0	0	0	0	0	0	0	0	0	0	0	0	0
Jumlah / Total	97	173	234	294	216	737	326	514	468	258	84	45	3,446
Jumlah Keseluruhan / Total : 3,446													

Sebanyak 3,554 kes pembakaran terbuka telah dikesan pada tahun 2012 (**Jadual 4.13 & Jadual 4.14**) dan dilaporkan oleh setiap JAS Negeri melalui Sistem e-KAS (Modul Pembakaran Terbuka dan Modul Aduan). Kejadian pembakaran terbuka yang utama sering berlaku adalah di kawasan belukar (896), pertanian (791), ladang (551) dan hutan (539) terutamanya semasa cuaca panas dan kering iaitu pada bulan Jun (868), Julai (393), Ogos (387) dan September (366). Daripada 3,554 kes pembakaran terbuka tersebut, 428 kes telah dikompaun dengan jumlah kompaun yang dikutip ialah sebanyak RM 541,050.00.

In 2012 total of 3,544 open burning cases detected and these cases were reported through e-KAS reporting system (Open Burning Module and Complaint Module) by the DOE state offices (**Table 4.13 & Table 4.14**). Cases of open burning recorded are mainly from bush fires (896), agriculture area (791), plantations area (551) and forests (539) which normally occurred during the hot and dry period in the months of June (868), July (393), August (387) and September (366). Out of 3,554 open burning cases detected, 428 cases were issued compounds amounting to RM 541,050.00.

Jadual 4.13 JAS: Bilangan Kes Pembakaran Terbuka Bulanan, 2012
Table 4.13 DOE: Number Of Open Burning Cases By Month, 2012

Kategori / 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	34	32	21	14	14	15	10	39
Februari / February	35	42	24	59	18	18	2	18
Mac / March	51	60	39	50	18	11	16	24
April / April	47	48	96	43	12	11	11	20
Mei / May	41	76	57	41	21	19	15	15
Jun / June	136	269	203	103	45	25	28	59
Julai / July	65	85	98	62	22	23	14	24
Ogos / August	54	62	155	52	20	9	17	18
September / September	51	53	145	51	22	6	23	15
Oktober / October	24	40	38	39	11	8	23	4
November / November	8	15	17	16	8	2	9	4
Disember / December	5	9	3	9	0	4	2	5
Jumlah/ Total	551	791	896	539	211	151	170	245
Jumlah Keseluruhan / Total: 3,554								

Jadual 4.14 JAS: Bilangan Kes Pembakaran Terbuka Mengikut Negeri, 2012
Table 4.14 DOE: Number of Open Burning Cases by States, 2012

Kategori / Negeri/ State	Ladang/ Plantation	Pertanian / Agriculture	Belukar / Bushes	Hutan / forest	Tapak Pembinaan / Construction Sites	Tapak Pelupusan / Disposal Sites	Industri / Industry	Lain-lain / Others
Johor	52	39	34	5	31	9	52	28
Kedah	23	24	20	24	6	1	1	19
Kelantan	15	23	11	68	7	16	16	29
Melaka	20	4	7	0	16	4	7	6
Negeri Sembilan	16	1	16	17	12	6	4	4
Pahang	114	55	82	208	17	5	11	5
Perak	21	32	16	54	16	2	13	14
Perlis	6	24	3	0	1	0	5	1
Pulau Pinang	4	7	17	18	22	16	16	27
Sabah	28	64	12	3	8	3	4	43
Sarawak	208	452	500	76	8	6	22	19
Selangor	29	56	142	39	61	63	9	26
Terengganu	15	2	26	25	1	1	10	23
WP K. Lumpur	0	8	10	2	4	18	0	1
WP Labuan	0	0	0	0	1	1	0	0
Jumlah/Total	551	791	896	539	211	151	170	245
Jumlah Keseluruhan/ Total : 3,554								

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, yang dipengerusikan oleh Ketua Pengarah Jabatan Alam Sekitar Malaysia (JAS). Peralatan mengawal tumpahan minyak ditempatkan di lokasi-lokasi strategik seperti pada **Rajah 4.3**. JAS juga memberi penekanan terhadap latihan-latihan berstruktur dan berkala bagi semua kakitangan yang terlibat dalam tindakbalas Kontingensi Tumpahan Minyak (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. Berdasarkan Resolusi 7 *International Convention on Oil Spill Preparedness and Response (OPRC) 1990* yang mana telah menggariskan komitmen di peringkat Antarabangsa dalam hal-ehwal berhubung dengan latihan. Keperluan latihan ini telah dimasukkan ke dalam mekanisme tindakbalas RKKKTM.

Sepanjang tahun 2012, sebanyak 14 aktiviti berkaitan dengan tumpahan minyak telah dianjurkan dan dihadiri oleh pegawai-pegawai JAS bagi tujuan peningkatan kemahiran dan perkongsian kepakaran dalam usaha melawan tumpahan minyak di perairan Malaysia.

Antara aktiviti tersebut ialah:

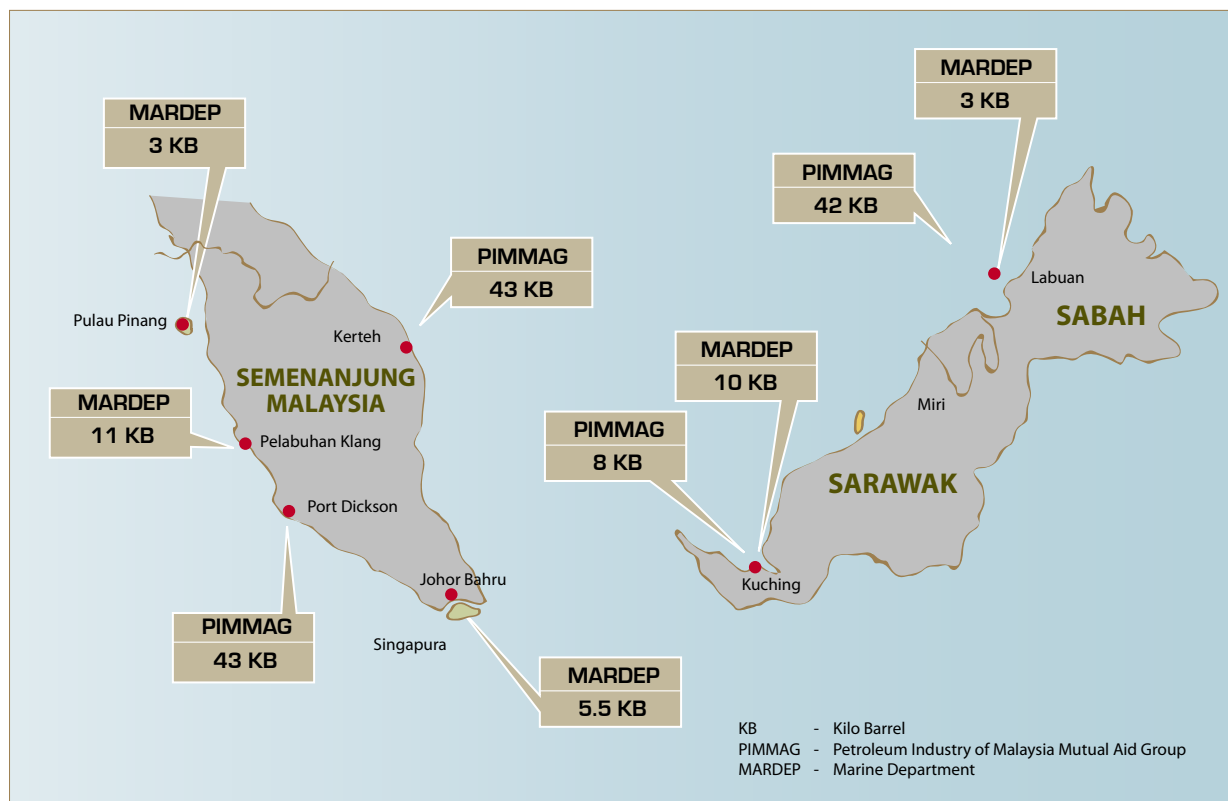
- i. Latihan Pembersihan Pantai di 12 buah negeri.
- ii. Latihan Melawan Tumpahan Minyak Peringkat Kebangsaan di Kota Kinabalu, Sabah pada 18-22 Jun 2012.
- iii. Mesyuarat Dua Hala Malaysia-Brunei Berhubung “*Standard Operating Procedure For Joint Oil Spill Combat in the South China Sea Including Brunei Bay for Brunei and Malaysia*” di Labuan pada 10-11 Julai 2012.

The NOSCP is administered by the National Oil Spill Control Committee (NOSCC) consisting of 18 member departments and agencies, chaired by the Director General of Department of Environment Malaysia (DOE). Oil Spill Response Equipment (OSRE) bases are positioned at strategic locations as shown in **Figure 4.3**. 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. The 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.

Throughout 2012, a total of 14 activities related to oil spill were organized and attended by DOE officers to enhance their knowledge and for capacity building and sharing of expertise to combat oil spills in Malaysian waters.

The activities are:

- i. Beach Clean-Up Exercise in 12 states.
- ii. National Oil Spill Combat in Kota Kinabalu, Sabah on 18-22 June 2012.
- iii. Bilateral Meeting Malaysia-Brunei On Standard Operating Procedure For Joint Oil Spill Combat in the South China Sea Including Brunei Bay for Brunei and Malaysia” in Labuan on 10-11 July 2012.



Rajah 4.3 JAS: Lokasi Peralatan Melawan Tumpahan Minyak Dan Keupayaan Di Malaysia
 Figure 4.3 DOE: Location Of Oil Spill Equipment Stockpile And Capability In Malaysia



Latihan Melawan Tumpahan Minyak Peringkat Kebangsaan di Kota Kinabalu, Sabah
 pada 18 hingga 22 Jun 2012
 National Oil Spill Combat Exercise in Kota Kinabalu, Sabah on 18 to 22 June 2012

JAWATANKUASA TABUNG PUSINGAN BAGI SELAT MELAKA DAN SELAT SINGAPURA (RFC)

STRAITS OF MALACCA AND SINGAPORE REVOLVING FUND COMMITTEE (RFC)

Tabung RFC ini telah ditubuhkan pada 11 Februari 1981 dengan tujuan mengawal kejadian tumpahan minyak dari kapal-kapal yang melalui Selat Melaka dan Selat Singapura.

Pengurusan Tabung ini adalah diurus secara bergilir-gilir di kalangan tiga (3) buah negara iaitu Malaysia, Singapura dan Indonesia. Setiap giliran adalah untuk tempoh lima (5) tahun. Pada tahun 2011, pengurusan tabung ini ditadbir oleh *Directorate General of Sea Transportation* di bawah Kementerian Pengangkutan negara Indonesia untuk tempoh lima (5) tahun.

Di antara aktiviti yang dilaksanakan oleh Jawatankuasa ini pada tahun 2012 adalah seperti berikut:

- i. Mesyuarat Pengurusan Jawatankuasa Tabung Pusingan ke-32 telah diadakan di Jakarta, Indonesia pada 8-9 Oktober 2012.
- ii. Seramai tiga (3) orang peserta masing-masing dari setiap negara iaitu Malaysia, Singapura dan Indonesia telah dibiayai ke *The 2nd International Conference On Liability And Compensation Regime Coverage Transboundary Oil Prevention Damage Covered By Offshore Exploration And Exploitation Activities* di Bali, Indonesia pada 21-23 November 2012.

RFC Fund was established on 11 February, 1981 for the purpose of combating oil spills from vessels passing through the Straits of Malacca and Singapore.

The Fund is administered on a rotation basis among the three (3) countries, namely Malaysia, Singapore and Indonesia for a period of five (5) years each. In 2011, the fund is administered by the Directorate General of Sea Transportation under Ministry of Transportation, Indonesia for duration of five (5) years.

Among the activities carried out by the RFC in the year 2012 are:

- i. 32 Revolving Fund Committee Management Meeting was held in Jakarta, Indonesia from 8-9 October 2012.
- ii. Three (3) participants from each country namely Malaysia, Singapore and Indonesia respectively were sponsored to attend The 2nd International Conference On Liability And Compensation Regime Coverage Transboundary Oil Prevention Damage Covered By Offshore Exploration And Exploitation Activities in Bali, Indonesia on 21-23 November 2012.

Mesyuarat Pengurusan Jawatankuasa Tabung Pusingan ke-32 telah diadakan di Jakarta, Indonesia pada 8-9 Oktober 2012. 32nd Revolving Fund Committee Management Meeting was held in Jakarta, Indonesia from 8th-9th October 2012.



PENCEMARAN MARIN MARINE POLLUTION

Sepanjang tahun 2012, sejumlah 21 kes aduan pencemaran tumpahan minyak telah diterima iaitu lapan (8) kes berlaku di Laut China Selatan, satu (1) kes dikesan di Selat Melaka, dua (2) kes di Laut Sulu dan sepuluh (10) kes di Selat Johor (**Jadual 4.15**).

Daripada dua puluh satu (21) jumlah kes tumpahan minyak yang berlaku pada tahun 2012 empat (4) kes adalah berpunca dari kapal, satu (1) kes dari pelantar minyak, 16 kes tidak diketahui punca.

Throughout 2012, there were 21 cases of marine pollution from oil spills reported; eight (8) cases in the South China Sea, one (1) in the Straits of Malacca, two (2) in the Sulu Sea and ten (10) in the Johor Straits (**Table 4.15**).

Out of 21 cases of oil spill in 2012 the spills are from oil rig (1 case), ships (4 cases) and other unknown source 16 cases.

Jadual 4.15 JAS: Kejadian Pencemaran Minyak, 2012
Table 4.15 DOE: Oil Spill Incidents, 2012

Lokasi / Location	Kawasan / Area		Bil. Kes / No. of Cases	Negeri / State
Laut China Selatan / South China Sea	Perairan Malaysia Malaysia Territory	Semenanjung / Peninsular	5	Johor (5)
		Malaysia Timur / East Malaysia	2	Sabah
	Zon Ekonomi Eksklusif (ZEE)/ Exclusive Economic Zone (EEZ)		1	Terengganu
Laut Sulu / Sulu Sea	Perairan Malaysia Malaysia Territory	Sabah	2	Sabah
Selat Melaka / Straits of Malacca	Perairan Malaysia Malaysia Territory		1	Kedah
	Zon Ekonomi Eksklusif (ZEE)/ Exclusive Economic Zone (EEZ)		0	-
Selat Johor Straits of Johor	Perairan Malaysia Malaysia Territory	Bahagian Barat/ West Part	5	Johor
		Bahagian Timur / East Part	5	Johor
Jumlah / Total			21	

PENGURUSAN BUANGAN TERJADUAL SCHEDULED WASTE MANAGEMENT

Kebenaran Bertulis dan Lesen Premis Yang Ditetapkan

Pada tahun 2012 sebanyak 34 Kebenaran Bertulis telah dikeluarkan oleh Ketua Pengarah Alam Sekeliling untuk pembinaan kemudahan pemerolehan kembali, pengolahan dan pelupusan buangan terjadual. Kebenaran Bertulis berkenaan telah dikeluarkan kepada 20 kemudahan pemerolehan kembali (bukan e-waste), satu (1) kemudahan pemerolehan kembali penuh (e-waste), sembilan (9) kemudahan pemerolehan kembali separa (e-waste), tiga (3) kemudahan penstoran luar tapak dan 1 kemudahan tapak pelupusan selamat (**Jadual 4.16**).

Di samping itu, sejumlah 409 lesen dikeluarkan kepada kemudahan baru dan sedia ada pada tahun 2012 yang terdiri daripada 164 kemudahan pemerolehan kembali luar tapak (bukan e-waste), 24 kemudahan pemerolehan kembali luar tapak (penuh e-waste), 135 kemudahan pemerolehan kembali luar tapak (separa e-waste), 40 kemudahan penunu buangan terjadual, dua (2) kemudahan pengolahan di tanah, empat (4) kemudahan pengolahan luar tapak, lima (5) kemudahan tapak pelupusan selamat dan 35 kemudahan penstoran luar tapak. Sejumlah 369 lesen dikeluarkan kepada pembawa yang ditetapkan. (**Jadual 4.17**).

Written Permission and Licences for Prescribed Premises

In 2012, 34 Written Permissions were issued by the Director General of Environment for the construction of recovery, treatment and disposal facility for scheduled wastes, 20 off-site recovery plants (non e-waste), one (1) off-site full recovery plants (e-waste), nine (9) off-site partial recovery plants (e-waste), three (3) off-site storage facilities and one (1) secure landfill facility (**Table 4.16**).

In addition, a total number of 409 licenses were issued for both existing and new facilities in 2012 which consists of 164 licenses for off-site recovery (non e-waste), 24 licenses for off-site full recovery plants (e-waste), 135 licenses for off-site partial recovery plants (e-waste), 40 licenses for scheduled wastes incinerators, two (2) licenses for land treatment facilities, four (4) licenses for off-site treatment, five (5) licenses for secured landfills and 35 licenses for off-site storage facilities. A total of 369 licenses were issued for prescribed conveyance (**Table 4.17**).

Jadual 4.16 JAS: Status Kebenaran Bertulis (KB) Yang Dikeluarkan oleh JAS Negeri Bagi Kemudahan Pemerolehan Kembali, Pengolahan & Pelupusan Buangan Terjadual, 2012
Table 4.16 DOE: Written Permission Status (KB) Produced by DOE for Recovery Facilities, Treatment & Disposal of Wastes, 2012

BIL/ No.	KEMUDAHAN / FACILITIES	JUMLAH KEBENARAN BERTULIS MENGIKUT NEGERI TOTAL NO OF WRITTEN PERMISSION BY STATE															JUMLAH TOTAL
		JHR	KDH	KLN	MLK	N.S	PHG	PRK	PRS	PP	SBH	SRK	SLG	TRG	WP (KL)	WP (LAB)	
1	Penunu Buangan Terjadual / Scheduled Waste Incinerator																0
2	Kemudahan Pemerolehan Kembali Luar Tapak / Off Site Recovery Facilities																
	a. Pemerolehan Kembali Luar Tapak (bukan e-Waste) / Off Site Recovery (none e-waste)	3	4		1	3	1	1				2	5				20
	b. Pemerolehan Kembali Luar Tapak (penuh e-Waste) / Off Site Recovery (full e-Waste)	1															1
	c. Pemerolehan Kembali Luar Tapak (Separa e-Waste) / Off Site Recovery (Partial e-Waste)	1			2				1			5					9
3	Kemudahan Penstoran Luar Tapak / Off Site Storage Facilities											2			1		3
4	Kemudahan Pengolahan Luar Tapak / Off site Treatment Facilities																
	a. Loji rawatan Fizikal & Kimia / Chemical & Physical Treatment																0
	b. Loji Solidifikasi / Solidification Plant																0
	c. Loji Rawatan Air Resapan / Diffusion Water Treatment Plant																0
5	Kemudahan Pengolahan Di Tanah / Land Treatment Facility																0
6	Tapak Pelupusan Selamat / Secured Landfill	1															1
	Bil. KB Yang Dikeluarkan / No. of Written Permission	6	4	0	3	3	1	1	0	1	0	4	10	0	1	0	34

Jadual 4.17 JAS: Lesen-Lesen Yang Dikeluarkan Bagi Kemudahan Pemerolehan Kembali, Pengolahan & Pelupusan Buangan Terjadual Yang Diluluskan Oleh Jabatan Alam Sekitar, 2012
Table 4:17 DOE: Licences Issued for Recovery Facilities, Processing Wastes Disposal Approved by the Department of the Environment, 2012

BIL NO.	KEMUDAHAN / FACILITIES	JUMLAH LESEN DIKELUARKAN MENGIKUT NEGERI TOTAL NO OF LICENCES ISSUED BY STATE															JUMLAH TOTAL
		JHR	KDH	KLN	MLK	N.S	PHG	PRK	PRS	PP	SBH	SRK	SLG	TRG	WP (KL)	WP (LAB)	
1	Pembawa Yang Ditetapkan / Prescribed Conveyance	66	22		22	14	11	29	1	64	6	37	80	7	7	3	369
	Penstoran Luar Tapak / Off Site Storage	2	1			1	3	1				22	3	0		2	35
2	Pemerolehan Kembali Luar Tapak / Off Site Recovery																0
	a. Pemerolehan Kembali Luar Tapak (bukan e-Waste) / Off Site Recovery (none e-waste)	38	6		2	10	9	25	1	18	1	8	40	6			164
	b. Pemerolehan Kembali Luar Tapak (penuh e-Waste) / Off Site Recovery (full e-Waste)	4	1		5	2			7			5					24
	c. Pemerolehan Kembali Luar Tapak (separa e-Waste) /Off Site Recovery (partial e-Waste)	18	12		14	4	1	4		39		8	28		7		135
3	Penunu Buangan Terjadual / Schedule Waste Incinerator	4	1		2	4	2	2		3	4	10	5	2		1	40
4	Pengolahan Di Tanah / Land Treatment Facilities											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	132	44	0	45	39	26	61	2	131	11	89	161	16	14	7	778
	Bil. Premis / No. of Premises	58	26	0	23	18	17	32	1	67	7	51	76	9	7	4	396

NOTA / NOTES:

JHR - JOHOR
KDH - KEDAH
KLN - KELANTAN
LK - MELAKA
N.S - NEGERI SEMBILAN
PRK - PERAK
PRS - PERLIS
PP - PULAU PINANG

PHG - PAHANG
SBH - SABAH
SLG - SELANGOR
SRK - SARAWAK
TRG - TERENGGANU
WP (KL) - WILAYAH PERSEKUTUAN KUALA LUMPUR
WP (LAB) - WILAYAH PERSEKUTUAN LABUAN

PENGURUSAN TANAH TERCEMAR DI MALAYSIA CONTAMINATED LAND MANAGEMENT IN MALAYSIA

Revolusi perindustrian Malaysia yang dilihat bermula dalam Rancangan Malaysia Kedua (1971–1975) berkembang ke arah Negara membangun menghasilkan tapak yang berpotensi sebagai tanah yang tercemar. Sekiranya langkah-langkah awal tidak diambil, bahan cemar ini boleh mencemarkan tanah, air tanah dan seterusnya mencemari bekalan air awam menjadi penyebab kepada pencemaran alam sekitar dan mengganggu kesihatan orang ramai.

Menyedari kepentingan pencegahan pencemaran alam sekitar dan kesihatan awam berpunca dari tanah yang tercemar ini, Seksyen Tanah Tercemar dan EHS, Bahagian Bahan Berbahaya, Jabatan Alam Sekitar (JAS) Ibu Pejabat sedang menggubal peraturan bagi membolehkan penguatkuasaan terhadap peruntukan Seksyen 24, Akta Kualiti Alam Sekeliling 1974, sekatan mengenai pencemaran tanah. Selari dengan penggubalan peraturan tersebut, satu piawaian dan rangkakerja penilaian dan pengurusan tanah tercemar di Malaysia telah diterbitkan oleh JAS dalam bentuk tiga (3) siri garis panduan bagi mengenalpasti, menilai dan membaikpulih tanah yang tercemar seperti berikut:-

- i. *Contaminated Land Management and Control Guidelines No. 1: Malaysian Recommended Site Screening Levels for Contaminated Land;*
- ii. *Contaminated Land Management and Control Guidelines No. 2: Assessing and Reporting Contaminated Sites;* dan
- iii. *Contaminated Land Management and Control Guidelines No. 3: Remediation of Contaminated Sites.*

Tiga (3) siri garis panduan tersebut juga telah di muat naik dalam laman sesawang JAS. Sehingga 31 Disember 2012, sebanyak 23 kes berkaitan pengurusan tanah tercemar di Malaysia telah dirujuk ke Jabatan ini di atas kesedaran awam pihak yang terbabit.

Malaysia's industrial revolution which started during the Second Malaysia Plan (1971-1975) evolved towards becoming a developing country producing industrial sites that could be potentially contaminated. If the early steps are not taken, these pollutants may contaminate the soil and the groundwater, consequently contaminate the public water supply to cause environmental pollution and may deteriorate the public health.

Recognising the importance to prevent environmental pollution and public health from contaminated soil, the Contaminated Land and EHS Section, Hazardous Wastes Division, Department of Environment (DOE) Headquarters is in the midst of drafting the legislation on contaminated land management in Malaysia to enable the enforcement of Section 24, Environmental Quality Act 1974, restrictions on soil contamination. In parallel with that, a framework for site assessment and management of contaminated land in Malaysia were published by DOE in the form of three (3) series of guidelines for the purpose of identification, investigation and remediation of contaminated land in the country as follows:-

- i. Contaminated Land Management and Control Guidelines No. 1: Malaysian Recommended Site Screening Levels for Contaminated Land;
- ii. Contaminated Land Management and Control Guidelines No. 2: Assessing and Reporting Contaminated Sites, and
- III Contaminated Land Management and Control Guidelines No. 3: Remediation of Contaminated Sites.

These three (3) series of guidelines has also been uploaded in the website of the Department of Environment. Until 31 December 2012, a total of 23 cases related to contaminated land management in Malaysia have been referred to the Department upon awareness and voluntary basis.

Disamping itu, Bahagian Bahan Berbahaya, JAS dengan kerjasama Institut Alam Sekitar Malaysia (EiMAS) telah menganjurkan kursus berkaitan pembangunan penilaian dan pengurusan tanah tercemar di Malaysia pada 1 - 5 Oktober 2012 di EiMAS kepada pegawai-pegawai JAS dari Ibu Pejabat, JAS Negeri dan pejabat-pejabat cawangan.

In addition, the Hazardous Substances Division, DOE in collaboration with the Environment Institute of Malaysia (EiMAS) had organised a course on the development of assessment and management of contaminated land in Malaysia from 1 to 5 October 2012 at EiMAS to DOE officers from DOE Headquarters, DOE State Offices and Branch offices.



Tanah Tercemar / Contaminated Land



Tapak Industri Berpotensi Tercemar
Industrial Sites that has Potential to be Contaminated



Tapak Berpotensi Tercemar
Sites that has Potential to be Contaminated



Tiga Siri Garispanduan Pengurusan dan Kawalan Tanah Tercemar di Malaysia terbitan Jabatan Alam Sekitar
Three series of Contaminated Land Management and Control Guidelines published by Department of Environment



Kursus Penilaian dan Pengurusan Tanah Tercemar di Malaysia
pada 1 - 5 Oktober 2012 bertempat di EIMAS
Course on Assessment and Management of Contaminated Land in Malaysia,
1 - 5 October 2012 at EIMAS

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 pemilik premis ini perlu mempunyai lesen daripada Jabatan Alam Sekitar bagi menduduki dan menggunakan premis.

Kilang Getah Asli Mentah

Sepanjang tahun 2012, sejumlah 76 buah kilang getah asli mentah telah dilesenkan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Getah Asli Mentah), 1978. Daripada jumlah ini, 61 buah kilang telah dilesenkan untuk melepaskan efluen yang telah diolah ke alur air, sebuah kilang telah dilesenkan untuk melepaskan efluen ke atas tanah, manakala 14 buah kilang dibenarkan untuk mengitar semula efluen. Tempoh lesen yang diberikan adalah berbeza bagi setiap premis, iaitu dari satu hingga tiga tahun dan bergantung kepada prestasi pematuhan kilang-kilang tersebut terhadap syarat-syarat lesen. **Rajah 4.4** menunjukkan bilangan kilang getah asli mentah mengikut negeri.

Dalam tahun 2012, pegawai-pegawai penguatkuasa JAS Negeri telah menjalankan 242 pemeriksaan ke atas 76 buah kilang getah asli mentah yang telah dilesenkan. Kilang-kilang yang mempunyai rekod pematuhan yang rendah sebelum ini telah diberi keutamaan pemeriksaan. Tindakan susulan pemeriksaan penguatkuasaan yang diambil adalah seperti yang ditunjukkan dalam **Rajah 4.4**.

Sejumlah 12 surat arahan dan 21 notis arahan telah dikeluarkan kepada premis-premis tersebut supaya mengambil tindakan

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 respectively. 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 licence from the Department of Environment to occupy and/or use of the said premises.

Raw Natural Rubber

In 2012, there were 76 raw natural rubber factories licensed under the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations, 1978. Out of these, 61 factories were licensed to discharge treated effluent into inland watercourse, one (1) was permitted to practise land disposal, while the remaining 14 were allowed to recycle their effluent. The licensing periods of these premises vary from one to three years depending on the level of compliance to the conditions of the licences. **Figure 4.4** shows the distribution of raw natural rubber factories according to states.

Throughout 2012, state DOE enforcement officers conducted 242 inspections on 76 licensed raw natural rubber factories. Factories with low compliance record were given priority for inspections. Follow-up actions taken as a result of these inspections are as shown in **Figure 4.4**.

A total of 12 directive letters and 21 notices were issued to the concerned premises to take corrective actions in order to comply with the

pembaikan bagi mematuhi keperluan perundangan. Sebanyak empat (4) kompaun telah dikeluarkan bagi kesalahan-kesalahan yang telah dilakukan. Manakala lima (5) tindakan mahkamah telah diambil bagi kegagalan mematuhi syarat-syarat lesen dengan denda sebanyak RM33,000 telah dikutip (**Rajah 4.4**).

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

Pada tahun 2012, 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 2012, pencapaian pematuhan keseluruhan oleh kilang getah asli mentah adalah 99%.

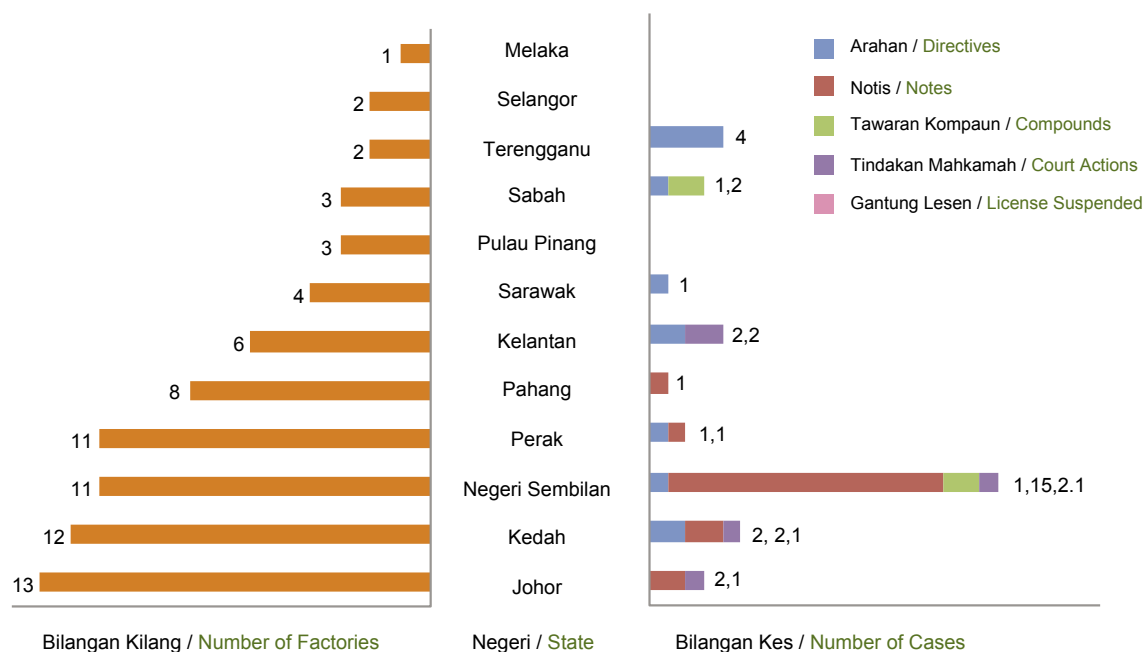
legal requirements. Four (4) compounds were issued for the offences committed, while five (5) court actions were taken with a total fines of RM33,000 for failure to comply with conditions of the licence (**Figure 4.4**).

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

In 2012, 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 2012, overall compliance performance by the raw natural rubber factories was 99%.



Rajah 4.4 JAS: Tindakan Undang-Undang Terhadap Kilang Getah Asli Mentah, 2012
Figure 4.4 DOE: Legal Actions Against Raw Natural Rubber Factories, 2012

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

Pada tahun 2012, pencapaian pematuhan keseluruhan oleh kilang getah asli mentah bagi Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 adalah 96%.

Kilang Kelapa Sawit Mentah

Sejumlah 434 buah kilang kelapa sawit mentah telah dilesenkan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan)(Kelapa Sawit Mentah), 1977 pada tahun 2012. Daripada 434 buah kilang yang dilesenkan, 290 buah kilang telah dilesenkan bagi melepaskan efluen yang diolah ke dalam alur air, 93 buah kilang melupuskan efluen ke atas tanah, 33 buah kilang melupuskan efluen dengan menggunakan gabungan kaedah alur air dan atas tanah. Manakala, 13 buah kilang menggunakan kaedah kompos dan lima (5) buah kilang menggunakan gabungan kaedah alur air dan kompos. **Rajah 4.5** menunjukkan taburan bilangan kilang kelapa sawit mentah di Malaysia mengikut negeri.

Sepanjang tahun 2012, sejumlah 1,157 pemeriksaan ke atas 434 kilang kelapa sawit yang dilesenkan telah dilaksanakan oleh pegawai-pegawai penguatkuasa JAS Negeri. Tindakan susulan hasil pemeriksaan tersebut adalah seperti yang ditunjukkan dalam **Rajah 4.5**.

Sejumlah 133 surat arahan dan 198 notis arahan telah dikeluarkan kepada premis-premis tersebut supaya mematuhi keperluan perundangan. Sebanyak 95 kompaun dikeluarkan bagi kesalahan yang dilakukan, manakala 72 tindakan mahkamah telah diambil bagi kegagalan mematuhi syarat-syarat lesen dan denda sebanyak RM984,900 telah dikutip.

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

Pada tahun 2012, pencapaian pematuhan keseluruhan kilang kelapa sawit mentah yang

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

In 2012, overall compliance with performance by the raw natural rubber factories for the Environmental Quality (Scheduled Wastes) Regulations, 2005 was 96%.

Crude Palm Oil

There were 434 palm oil mills licensed under the Environmental Quality (Prescribed Premises) (Crude Palm Oil Mill) Regulations, 1977 in the year 2012. Of these 434 licensed prescribed premises, 290 were granted permission to discharge treated effluent into inland watercourse, 93 to practice land disposal, 33 to discharge effluent by combination into inland watercourse and land disposal, while, 13 to practice composting and five (5) to discharge treated effluent using a combination of inland watercourse and composting. **Figure 4.5** shows the distribution of palm oil mills in Malaysia according to states.

Throughout 2012, a total of 1,157 inspections on 434 licensed palm oil mills were conducted by State DOE enforcement officers. Follow up actions taken as a result from these inspections are shown in **Figure 4.5**.

A total of 133 directive letters and 198 notices were issued to the mills to comply with the legal requirements. A total of 95 compounds were issued for offences committed, while 72 court actions were taken with a total fine of RM984,900 for failure to comply with conditions of the licences.

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

In 2012, the overall compliance performance by the crude palm oil mills that were subjected

tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Minyak Kelapa Sawit Mentah) 1977 adalah 96%.

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

Kilang minyak kelapa sawit mentah juga tertakluk kepada kawalan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978. Pada tahun 2012, pencapaian pematuhan keseluruhan oleh kilang minyak kelapa sawit mentah adalah 97%.

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

Pada tahun 2012 pencapaian pematuhan keseluruhan kilang minyak kelapa sawit di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 adalah 98%.

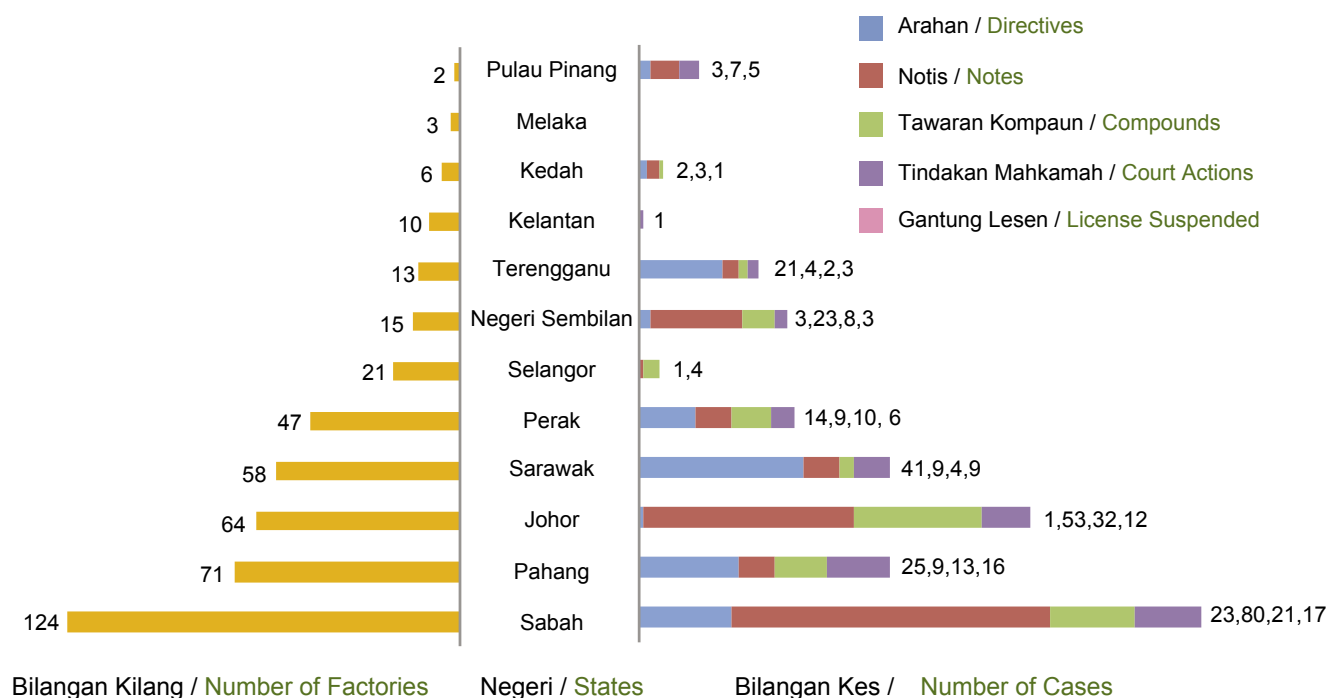
to the Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulations, 1977 was 96%.

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 2012, the overall compliance performance by palm oil mills was 97%.

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

In 2012, the overall compliance performance by the palm oil mills under the Environmental Quality (Scheduled Wastes) Regulations, 2005 was 98%.



Rajah 4.5 JAS: Tindakan Undang-Undang Terhadap Kilang Minyak Kelapa Sawit Mentah, 2012
Figure 4.5 DOE: Legal Actions Against Crude Palm Oil Mills, 2012

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 2012, JAS telah menjalankan 6,597 pemeriksaan ke atas 38 kategori industri pembuatan dan lain-lain premis yang bukan ditetapkan yang tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009. Pencapaian pematuhan keseluruhan oleh premis yang bukan ditetapkan adalah 98.1%. Hanya lima (5) kategori industri mencapai pematuhan 100%, pada tahun 2012 (**Rajah 4.6**).

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 2012, JAS telah menjalankan 6,947 pemeriksaan kepada 40 kategori industri pembuatan dan lain-lain premis yang bukan ditetapkan yang tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978. Pencapaian pematuhan keseluruhan oleh premis yang bukan ditetapkan adalah 96.5%. Hanya lapan (8) kategori industri mencapai pematuhan 100% peraturan tersebut pada tahun 2012. (**Rajah 4.7**).

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

Premis-premis yang bukan ditetapkan adalah juga tertakluk kepada kawalan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005. Pada tahun 2012, JAS telah menjalankan 6,947 pemeriksaan ke atas 40 kategori industri pembuatan dan lain-lain premis yang bukan ditetapkan. Pencapaian pematuhan keseluruhan oleh premis yang bukan ditetapkan adalah 97.3%. Antara

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

The non-prescribed premises that discharge effluents are subjected to the Environmental Quality (Industrial Effluents) Regulations, 2009. In 2012, DOE conducted 6,597 inspections on 38 categories of industrial premises and other non-prescribed premises that were subjected to the Environmental Quality (Industrial Effluents) Regulations, 2009. The overall compliance achievement by the non-prescribed premises was 98.1%. Only five (5) categories of industries achieved 100% compliance in 2012 (**Figure 4.6**).

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

The non-prescribed premises are also subjected to the Environmental Quality (Clean Air) Regulations, 1978. In 2012, DOE conducted 6,947 inspections on 40 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 96.5%. Only eight (8) categories of industries achieved 100% compliance to the regulation in 2012. (**Figure 4.7**).

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

The non-prescribed premises are also subjected to the Environmental Quality (Scheduled Wastes) Regulations, 2005. In 2012, the DOE conducted 6,947 inspections on 40 categories of industrial premises and other non-prescribed premises. The overall compliance achieved by the non-prescribed premises was 97.3%. Among the non-compliances recorded include failure to submit notifications of

kegagalan pematuan yang direkodkan adalah termasuk gagal mengemukakan pemberitahuan mengenai pengeluaran buangan terjadual kepada JAS, buangan terjadual tidak distor dan tidak dilabel dengan sempurna dan gagal menyimpan rekod inventori buangan terjadual dengan tepat dan terkini (Peraturan-Peraturan 3, 8, 9, 10 dan 11).

Pada tahun 2012, hanya 9 kategori industri mencapai pematuan 100% terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 (**Rajah 4.8**).

TINDAKAN PENGUATKUASAAN

Sejumlah 278 kes premis yang tidak patuh telah dituduh di mahkamah dengan RM 3,275,950 denda telah dikenakan. Tindakan-tindakan penguatkuasaan lain yang diambil adalah pengeluaran 1,103 surat arahan dan 1,185 notis arahan kepada industri supaya mengambil tindakan yang sewajarnya 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 pematuan kepada peraturan, JAS telah mengeluarkan arahan-arahan kepada industri supaya memasang alat kawalan pencemaran yang sesuai dan efisien, meningkatkan keupayaan kemudahan kawalan pencemaran yang sedia ada dan juga menyediakan jadual perancangan dan pelaksanaan sistem pengurusan alam sekitar yang baik. Sebagai tambahan, pelbagai 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 pematuan undang-undang. Jabatan Alam Sekitar juga dalam usaha memastikan pematuan sepenuhnya, mempromosi penggunaan teknologi kawalan yang efisien, amalan pengeluaran bersih serta pematuan sendiri. Pihak industri juga dinasihatkan untuk mewujudkan sistem pengurusan alam sekitar yang baik dan digalakkan untuk mendapatkan pensijilan ISO 14000.

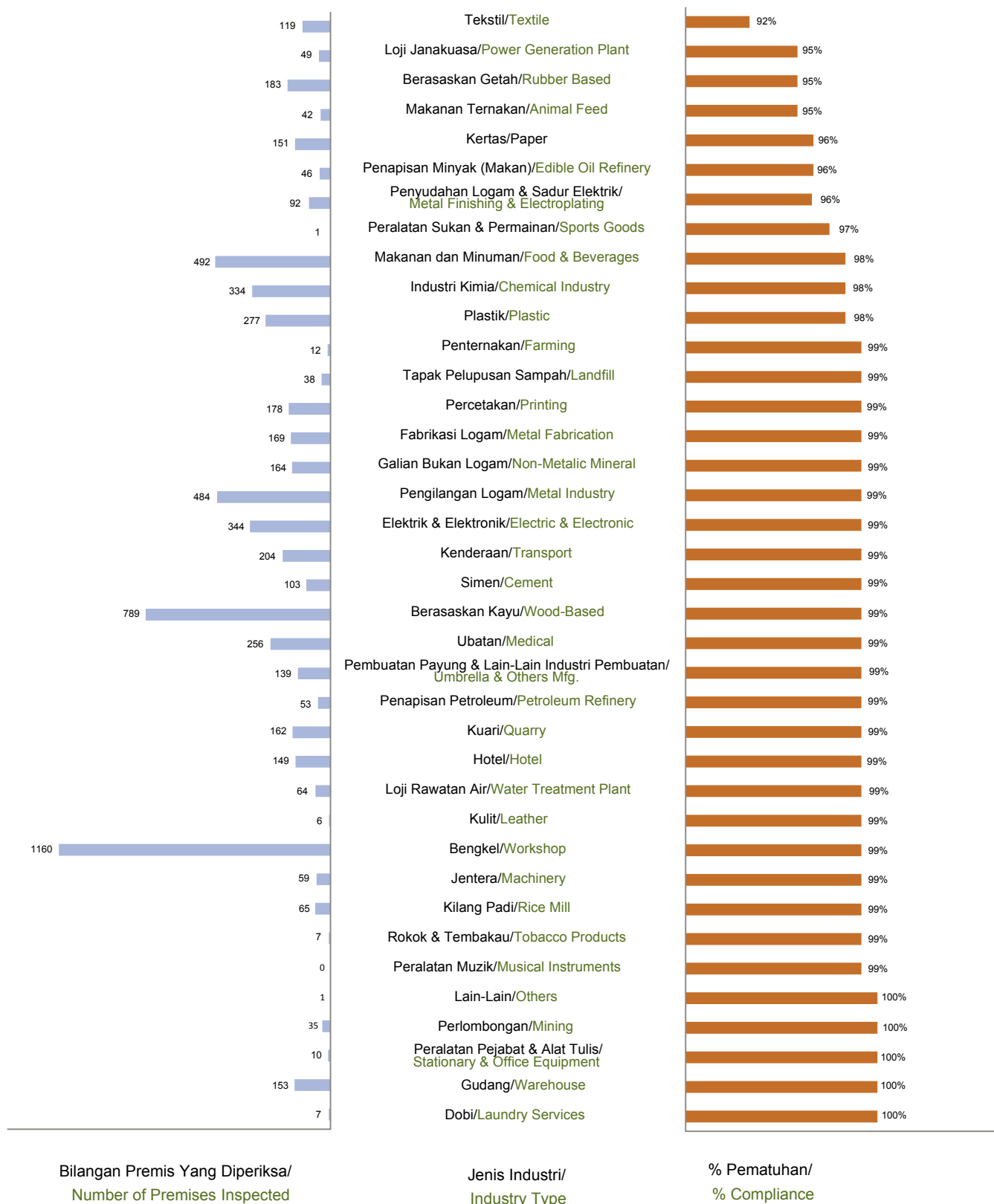
scheduled wastes generation to DOE, improper storage and improper labelling of scheduled wastes and failure to keep accurate and up-to-date inventory records of scheduled wastes (Regulations 3, 8, 9, 10 and 11).

In 2012, only 9 categories of industries that were subjected to the Environmental Quality (Scheduled Wastes) Regulations, 2005 achieved 100% compliance (**Figure 4.8**).

ENFORCEMENT ACTIONS

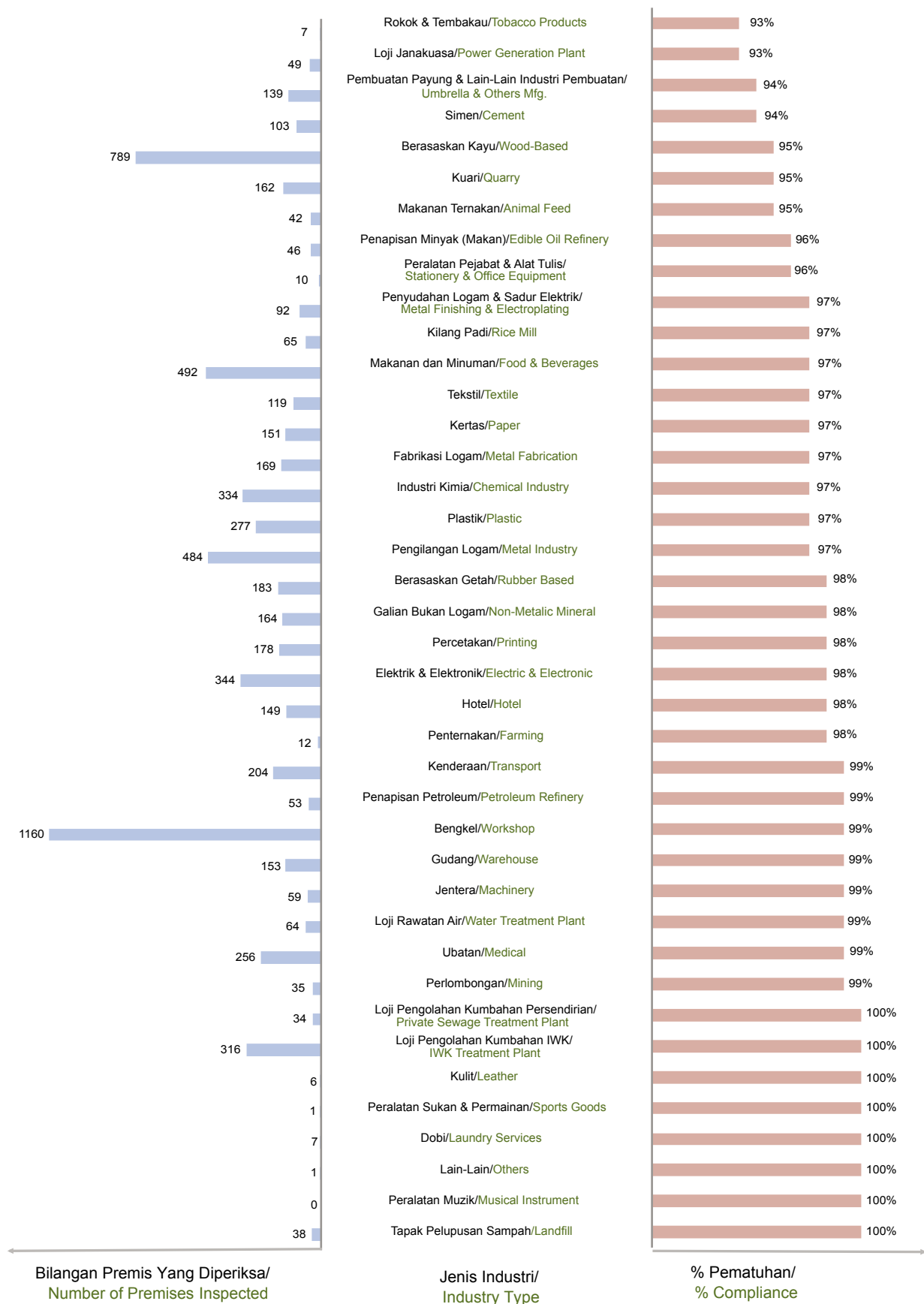
A total of 278 cases of non-compliances were charged in courts with a fine of RM 3,275,950 were collected. Other enforcement actions taken against the non-complying industries were issuance of 1,103 written directives and 1,185 notices for them to take appropriate actions in order to comply with the Environmental Quality Act, 1974 and the Environmental Quality (Industrial Effluents) Regulations, 2009, Environmental Quality (Clean Air) Regulations, 1978 and Environmental Quality (Scheduled Wastes) Regulations, 2005.

In order to improve compliance to regulations, DOE issued directives to the industries to install appropriate and efficient control equipment, upgrade 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.

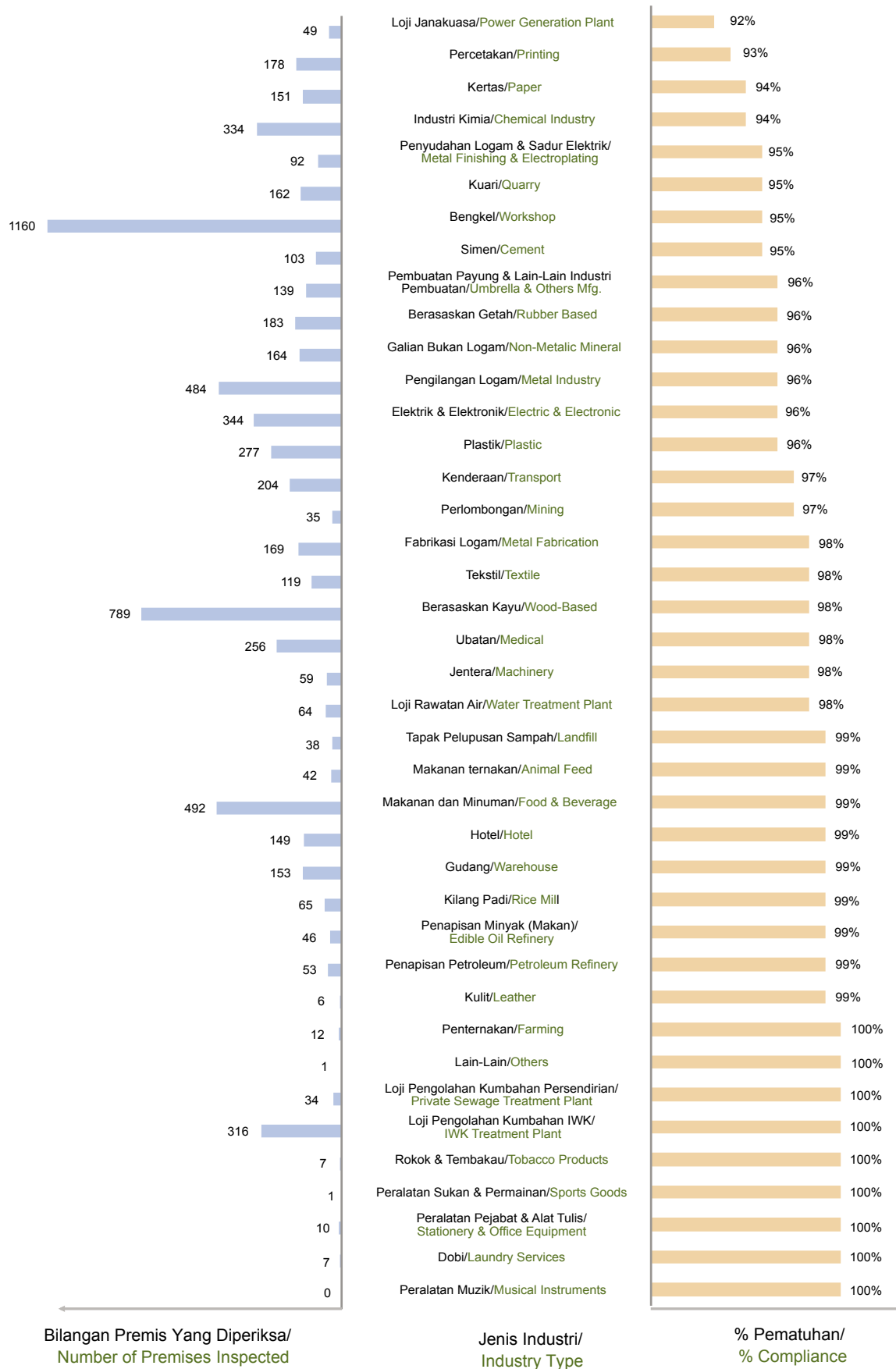


Rajah 4.6 JAS : Status Pemuatan Industri Terhadap Peraturan- Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009, 2012

Figure 4.6 DOE : Compliance Status to the Environmental Quality (Industrial Effluent) Regulations 2009, 2012



Rajah 4.7 JAS : Status Pematuhan Industri Terhadap Peraturan- Peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978, 2012
 Figure 4.7 DOE : Compliance Status to the Environmental Quality (Clean Air) Regulations 1978, 2012



Rajah 4.8 JAS : Status Pematuhan Industri Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005, 2012

Figure 4.8 DOE : Compliance Status to the Environmental Quality (Scheduled Wastes) Regulations 2005, 2012

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

Sehingga akhir tahun 2012, sebanyak 22,702,221 buah kenderaan bermotor telah berdaftar di Malaysia, iaitu pertambahan sebanyak 1,300,952 buah kenderaan (6%) berbanding tahun 2011. Pecahan keseluruhan kenderaan bermotor yang berdaftar mengikut jenis kenderaan adalah seperti di **Rajah 4.9**.

Dari sejumlah 1,311,749 buah kenderaan baru yang didaftarkan dalam tahun 2012, kategori kereta merupakan yang tertinggi iaitu sebanyak 628,239 unit (47.89%) diikuti motosikal sebanyak 609,596 unit (46.47%), manakala sebanyak 73,914 unit (5.64%) adalah dari lain-lain jenis kenderaan termasuk lori, bas, van dan sebagainya.

Taburan bilangan kenderaan bermotor di Malaysia mengikut negeri adalah seperti di **Rajah 4.10**. Wilayah Persekutuan Kuala Lumpur mendahului negeri-negeri lain dengan mempunyai bilangan kenderaan yang tertinggi iaitu sebanyak 5,320,562 unit (23.43%) daripada keseluruhan bilangan kenderaan yang berdaftar di negara ini, 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 (NO_x) 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 dipantau melalui

By the end of 2012, a total of 22,702,221 motor vehicles were registered in Malaysia, an increase of 1,300,952 units (6%) compared to 2011. The breakdown of the total registered vehicles according to vehicle types is given in **Figure 4.9**.

Out of 1,311,749 newly registered vehicles in 2012, motorcars made up the highest number with 628,239 units (47.89%) followed by motorcycles 609,596 units (46.47%), while the remaining 73,914 (5.64%) were from other types of vehicles such as lorries, buses, vans and others.

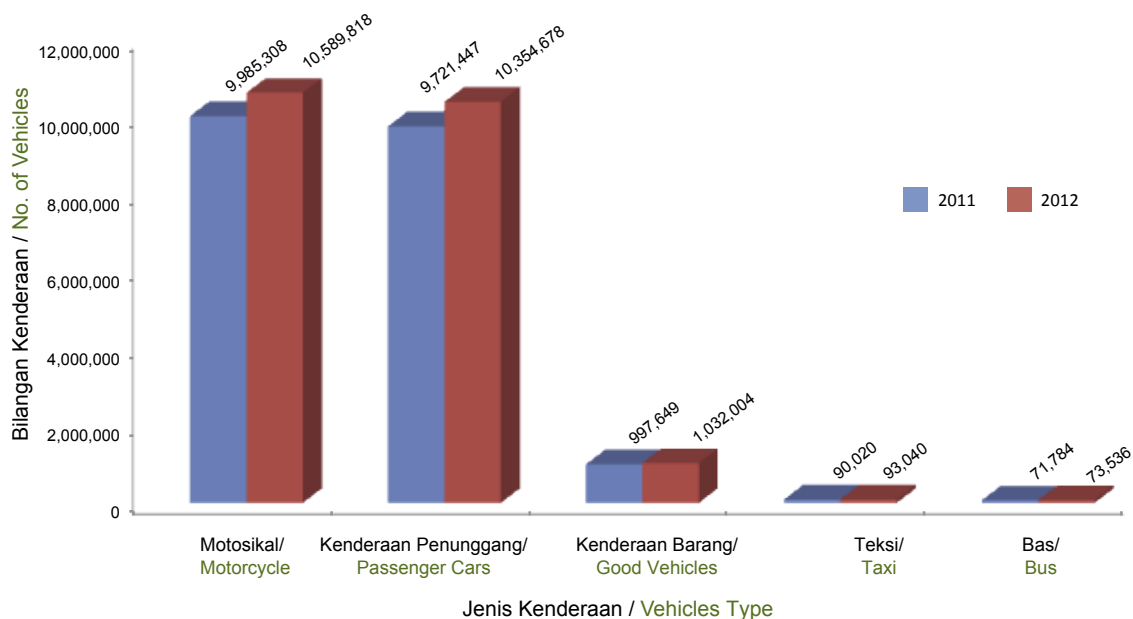
The distribution of registered vehicles throughout the states is given in **Figure 4.10**. The Federal Territory of Kuala Lumpur recorded the highest number of registered vehicles, with 5,320,562 (23.43 %) followed by Johor, Selangor, Pulau Pinang and Perak.

Control of Smoke and Gaseous Emissions From Motor Vehicles

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

Control of Black Smoke Emission From Diesel Vehicles

The control of excessive black smoke emission emitted from diesel vehicle exhausts is



Rajah 4.9 JAS: Bilangan Kenderaan Bermotor Mengikut Jenis, 2012

(Sumber: Jabatan Pengangkutan Jalan, 2012)

Figure 4.9 DOE: Number of Type of Vehicles, 2012

(Sources: Road Transport Department, 2012)

Program AWASI (*Area Watch And Sanction Inspection*). Melalui program ini, skuad peronda JAS akan menjalankan rondaan, pemerhatian pelepasan asap hitam dari ekzos kenderaan dan menahan kenderaan untuk menjalankan ujian asap ke atas kenderaan-kenderaan diesel yang disyaki mengeluarkan asap hitam berlebihan.

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

Pada tahun 2012, sebanyak 2,262 program penguatkuasaan telah dilaksanakan di bandar-bandar di seluruh negara. Sejumlah 290,979 buah kenderaan diesel telah diperiksa. Dari jumlah tersebut, sebanyak 2,909 buah

monitored through the AWASI (*Area Watch And Sanction Inspection*) Programme. Through this programme the DOE's mobile squad would be going around patrolling the streets, observing and testing diesel vehicles releasing excessive black smoke.

Compounds will be issued on-the-spot to the drivers and owners if their vehicles fail to comply with the stipulated smoke limit of 50 HSU. A prohibition order (prohibiting vehicle use) will be issued if the smoke limit exceeds 70 HSU.

In 2012, a total of 2,262 enforcement rounds were conducted in the cities throughout the country. A total of 290,979 diesel vehicles were visually inspected. Out of these, 2,909 vehicles were compounded for failing to comply with

kenderaan telah dikompaun kerana gagal mematuhi had pelepasan asap hitam sebanyak 50 HSU, manakala 229 kenderaan telah dikenakan perintah larangan beroperasi sehingga lulus ujian asap semula oleh JAS. Pada keseluruhannya, peratus pematuhan oleh kenderaan diesel adalah 99%. Ini adalah peningkatan sebanyak 0.02% berbanding dengan tahun 2011.

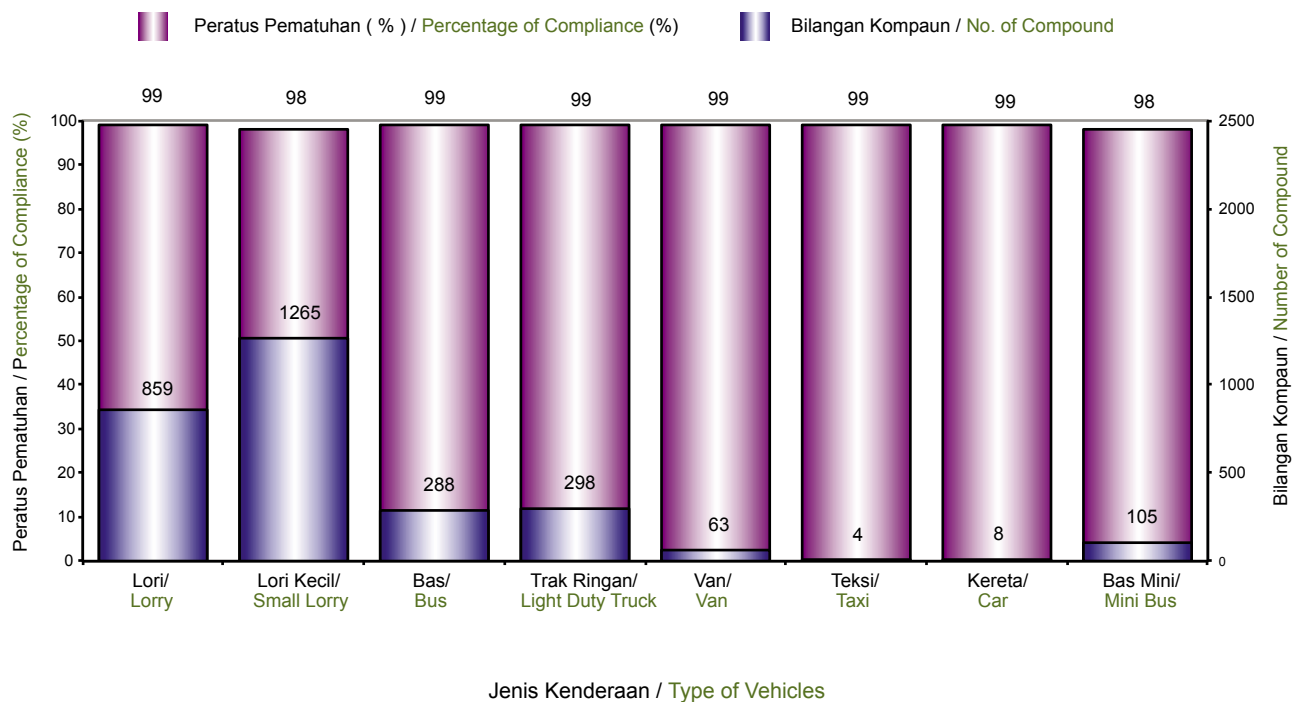
Bilangan kenderaan diesel yang dikompaun dan peratus pematuhannya mengikut jenis kenderaan adalah seperti di **Rajah 4.11**. **Rajah 4.12** pula menunjukkan bilangan kenderaan dikompaun, pengeluaran perintah larangan serta peratus pematuhan mengikut negeri. Tindakan mahkamah telah juga diambil ke atas 83 pemandu atau pemilik kenderaan kerana gagal menjelaskan kompaun yang telah dikenakan.

the 50 HSU smoke limit while 229 vehicles were issued with the prohibition order and required to undergo smoke retest by the DOE. Overall compliance of diesel vehicles was 99%. This is an increase of 0.02% compared to 2011.

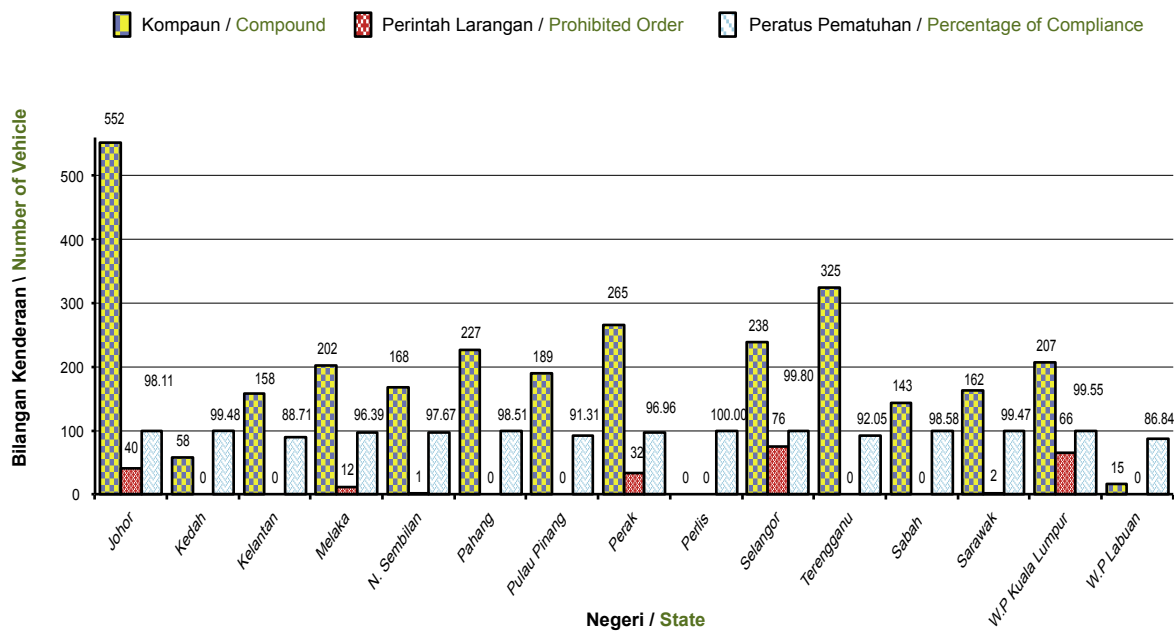
The number of diesel vehicles summoned and their percentage of compliance according to types of vehicle is given in **Figure 4.11**. **Figure 4.12** shows the number of vehicles compounded, number of prohibition orders issued and the percentage of compliance according to the states. Court actions were also taken against 83 drivers or vehicle owners for failing to settle the compounds issued.



Rajah 4.10 JAS : Bilangan Kenderaan Bermotor Mengikut Negeri, 2012
Figure 4.10 DOE : Number of Motor Vehicles by State, 2012



Rajah 4.11 JAS : Peratus Pematuhan Mengikut Jenis Kenderaan dan Bilangan Saman, 2012
 Figure 4.11 DOE : Percentage of Compliance According to Type of Vehicle and Number of Compound, 2012



Rajah 4.12 JAS : Peratus Pematuhan Mengikut Negeri, Bilangan Kenderaan Dikompaun dan Tindakan Perintah Larangan, 2012
 Figure 4.12 DOE : Percentage of Compliance According to State, Number of Compounded and Prohibited Order, 2012

Kawalan Pelepasan Gas CO dan HC Dari Kenderaan Petrol

Sepanjang tahun 2012, sejumlah 3,367 buah kenderaan berenjin petrol telah diuji untuk pelepasan CO dan HC dengan menggunakan meter gas CO-HC Analyzer melalui kaedah "ujian idling" di jalan raya. Dari jumlah tersebut, sebanyak 402 buah kenderaan telah dikompaun kerana gagal mematuhi had pelepasan yang ditetapkan. Peratus pematuhan keseluruhannya adalah 88.06% iaitu penurunan sebanyak 0.77% berbanding dengan tahun 2011. Surat amaran juga telah dikeluarkan kepada pemandu-pemandu kenderaan yang gagal mematuhi had-had pelepasan CO dan HC supaya segera menyelenggara kenderaan bagi memastikan kenderaan sentiasa mematuhi had pelepasan yang ditetapkan oleh undang - undang.

Ujian Kelulusan Jenis (Kenderaan Petrol)

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

Mana-mana model baru kenderaan bermotor pada atau selepas 1 Januari 2000 adalah dikehendaki mematuhi standard pelepasan pencemar yang ditetapkan dalam Jadual Ketiga, Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Daripada Enjin Petrol), 1996. Jisim karbon monoksida yang dibenarkan hendaklah tidak melebihi 2.2 g/km, manakala kombinasi hidrokarbon dan nitrogen oksida hendaklah tidak melebihi 0.5 g/km. Pada tahun 2012, Jabatan Alam Sekitar telah mengeluarkan 65 Sijil Ujian Kelulusan Jenis bagi model baru kenderaan yang akan dipasarkan di Malaysia.

Control of CO and HC Gas Emissions from Petrol Vehicles

In 2012, a total of 3,367 petrol powered vehicles were inspected using the CO-HC gas analyzer via the idling test method conducted by the road side. From the above a total of 402 vehicles were compounded for failing to comply with the stipulated CO and HC limits. The overall percentage of compliance is 88.06%, a decrease of 0.77% compared to 2011. Warning letters were also issued to drivers for immediate servicing their vehicles to ensure compliance with the emission limits stipulated in the law.

Type Approval Test (Petrol Vehicles)

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

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 the Environmental Quality (Control of Emission from Petrol Engines) Regulations, 1996. The mass of carbon monoxide shall not exceed 2.2 g/km while the combination of hydrocarbon and nitrogen oxides shall not exceed 0.5 g/km. In 2012, the Department of Environment has issued 65 Type Approval Test Certificates for new models to be marketed in Malaysia.

Pengwujudan Kemudahan Yang Diluluskan

Bagi memudahkan orang awam menghantar kenderaan mereka untuk menjalani ujian pelepasan asap dan gas, JAS melalui program "Kemudahan Yang Diluluskan (KYDL)" telah memberi pengiktirafan kepada bengkel-bengkel kenderaan yang memenuhi kriteria-kriteria yang telah ditetapkan. Kemudahan ini membolehkan pengujian segera dijalankan dan kenderaan yang tidak mematuhi boleh juga diperbaiki di pusat-pusat ini untuk memastikan kenderaan ini mematuhi had pelepasan asap.

Sehingga akhir tahun 2012, sejumlah 61 bengkel serta pusat-pusat pemeriksaan kenderaan di seluruh negara telah diberikan sijil pengiktirafan sebagai "Kemudahan Yang Diluluskan" oleh JAS.

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)

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. Pada tahun 2012, sebanyak 36 Sijil Kelulusan Jenis telah dikeluarkan kepada pembuat, pemasang dan pengimport motorsikal untuk pasaran tempatan.

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 fulfilled the prescribed criteria as "Approved Testing Facilities". These testing facilities could also serve as immediate testing and repair centres for the non-complying vehicles, to ensure they are always in compliance with the emission limits stipulated.

By the end of 2012, a total of 61 workshops and vehicle testing centres throughout the country were accredited as "Approved Testing Facilities" by DOE.

Control of Emission from Motorcycles

The Environmental Quality (Control of Emission from Motorcycles) Regulations, 2003 has been gazetted and there regulations entered into force on 1 January 2004. Under this regulation, the emission standards adopted are as follows:-

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

Motorcycle importers 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 manufacturers had to comply with the new emission standards effective from 1 July 2005 for new models and 1 July 2006 for current models. In 2012, a total of 36 Type Approval Test Certificates were issued to the manufacturers, assemblers and importers of motorcycles for the domestic market.

Bunyi Bising Kenderaan Bermotor

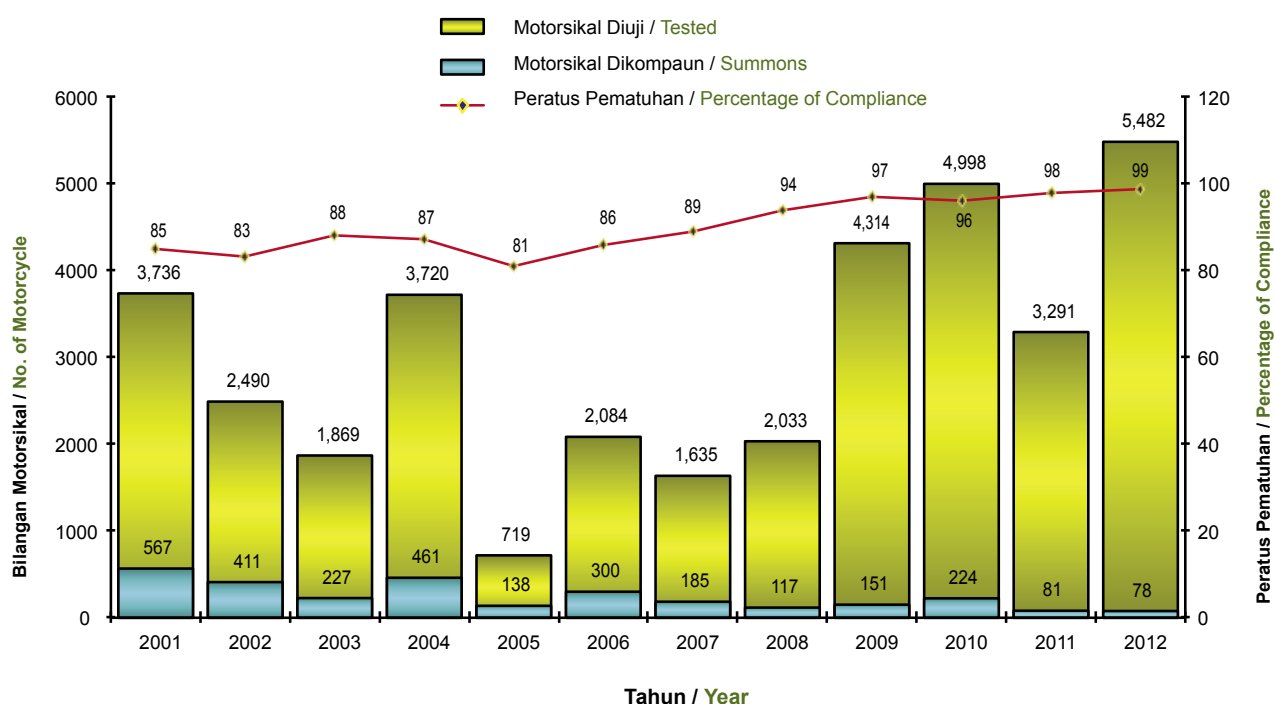
Pelepasan bunyi bising daripada kenderaan bermotor dikawal di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Bunyi Bising Kenderaan Bermotor) 1987.

Operasi penguatkuasaan bagi mengawal pelepasan bunyi bising dari motosikal telah dilaksanakan oleh Pejabat-pejabat JAS negeri dengan kerjasama Polis DiRaja Malaysia (Cawangan Trafik). Pada tahun 2012, sejumlah 5,482 buah motosikal telah ditahan bagi menjalani ujian pelepasan bunyi bising. Dari jumlah ini, 78 penunggang motosikal telah dikompaun oleh pihak polis kerana melanggar had bunyi bising yang dibenarkan. Peratus pematuhan secara keseluruhannya ialah 98.6 % (**Rajah 4.13**) yang mana meningkat 1.1% berbanding pada 2011.

Noise from Motor Vehicles

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

Enforcement operations to control excessive noise from motorcycles were jointly conducted by the DOE and the Traffic Police. In 2012, a total of 5,482 motorcycles were stopped for the noise inspection. Out of these, 78 motorcyclists were summoned for violating the stipulated noise limits. The overall percentage of compliance is 98.6 % (**Figure 4.13**) which is an increase of 1.1% compared to 2011.



Rajah 4.13 JAS: Peratus Pematuhan Bilangan Motorsikal Diuji dan Bilangan Kompaun dari 2001-2012

Figure 4.13 DOE : Percentage of Compliance Number of Motorcycle Tested and Number of Summons from 2001-2012

TINDAKAN UNDANG-UNDANG LEGAL ACTION

Pendakwaan

Pada tahun 2012, sejumlah 359 kes kesalahan di bawah Akta Kualiti Alam Sekeliling (AKAS) 1974 telah didakwa di mahkamah dengan denda yang dikenakan berjumlah RM4,794,800. (Rajah 4.14).

Daripada jumlah keseluruhan kes tersebut, sebanyak 79 (22.0%) kes mahkamah adalah melibatkan kesalahan pencemaran udara daripada kenderaan bermotor iaitu pelepasan bendasing ke udara melebihi had yang ditetapkan di bawah Seksyen 22(1), AKAS 1974 dengan jumlah denda sebanyak RM 140,150. Sebanyak 74 (20.61%) kes mahkamah yang melibatkan pelepasan efluen melebihi had yang ditetapkan di bawah Seksyen 25(1), AKAS 1974 dengan jumlah denda sebanyak RM 1,247,000.

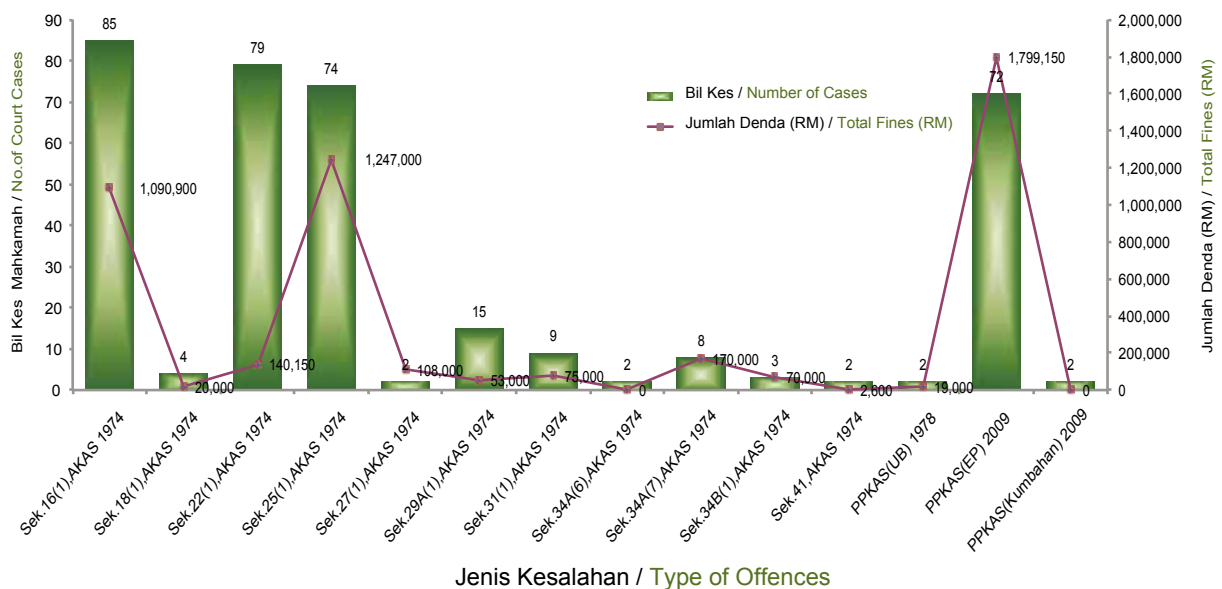
Selain itu, sebanyak 85 (23.67%) kes adalah melibatkan kesalahan pelanggaran syarat lesen di bawah Seksyen 16, AKAS 1974 dengan jumlah denda sebanyak RM1,090,900, sementara 121 (33.70%) kes yang selebihnya melibatkan kesalahan-kesalahan lain di bawah AKAS 1974.

Prosecution

In 2012, a total of 359 offences were prosecuted under the Environmental Quality Act (EQA) 1974 and fined a total of RM4,794,800. (Figure 4.14).

Out of this total, 79 (22.0%) court cases involved offences related to air pollution from motor vehicle emissions exceeding the stipulated standards under Section 22(1) of the EQA 1974 and fined a total of RM 140,150. There were 74 (20.61%) cases involved in effluent discharges exceeding the stipulated standards under Section 25(1) of the EQA 1974, and fined RM 1,247,000.

Apart from this, 85 (23.67%) cases were involved in violating conditions of licence under Section 16 of the Act and fined RM1,090,900, while the remaining 121 (33.70%) cases were prosecuted for various other offences under the EQA 1974.



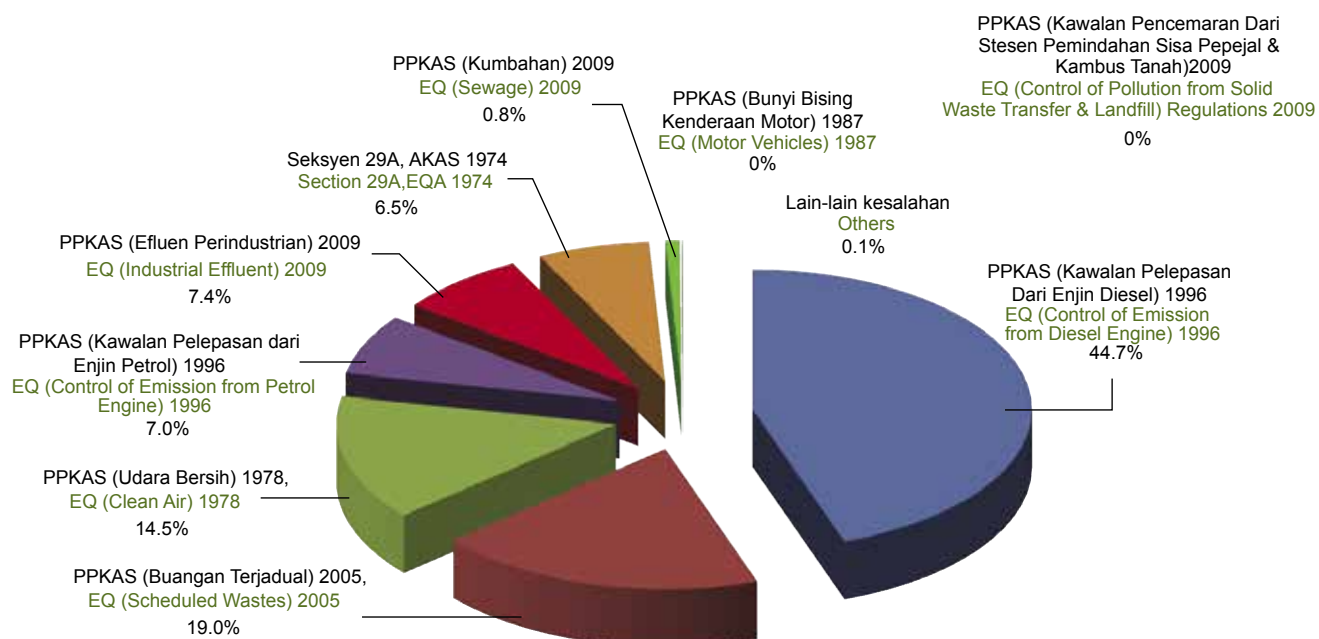
Rajah 4.14 JAS : Bilangan Kes Mahkamah dan Denda, 2012
Figure 4.14 DOE : Number of Court Cases and Fines, 2012

Kompaun

Sejumlah 6,621 kompaun telah dikeluarkan sepanjang tahun 2012 kepada premis dan syarikat untuk pelbagai kesalahan di bawah AKAS 1974. Daripada jumlah keseluruhan tersebut, sebanyak 2,958 (44.7%) kompaun dikeluarkan bagi kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Dari Enjin Diesel) 1996, sebanyak 1,258 (19.0%) kompaun bagi kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005, sebanyak 961 (14.5%) kompaun bagi kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978, sebanyak 462 (7.0%) kompaun bagi kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan dari Enjin Petrol) 1996, sebanyak 491 (7.4%) kompaun bagi kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009, sebanyak 430 (6.5%) kompaun bagi kesalahan di bawah Seksyen 29A, AKAS 1974, sebanyak 56 (0.8%) kompaun bagi kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Kumbahan) 2009 dan sebanyak 5 (0.1%) kompaun bagi lain-lain kesalahan (**Rajah 4.15**).

Compounds

A total of 6,621 compounds were issued in 2012 to premises and companies for various offences under the EQA 1974. Out of this total a total of 2,958 (44.7%) were offences under the Environmental Quality (Control of Emission from Diesel Engine) Regulations 1996, 1,258 (19.0%) were offences under the Environmental Quality (Scheduled Wastes) Regulations 2005, 961 (14.5%) were offences under the Environmental Quality (Clean Air) Regulations 1978, 462 (7.0%) were offences under the Environmental Quality (Control of Emission from Petrol Engine) Regulations 1996, 491 (7.4%) were offences under the Environmental Quality (Industrial Effluents) Regulations 2009, 430 (6.5%) were offences under Section 29A of the EQA 1974, 56 (0.8%) were offences under the Environmental Quality (Sewage) Regulations 2009 and 5 (0.1%) for other offences (**Figure 4.15**).



Rajah 4.15 JAS: Bilangan Kes Kompaun Mengikut Pecahan Peraturan Peraturan Kualiti Alam Sekeliling 2012
Figure 4.15 DOE: Number of Compound Cases According to Environmental Quality Regulations, 2012

MAKLUMAT TERHADAP PENGADUAN AWAM RESPONSE TO PUBLIC COMPLAINTS

Jabatan Alam Sekitar (JAS) telah menerima sejumlah 6,062 aduan pencemaran alam sekitar pada tahun 2012. Daripada jumlah ini, 4,575 kes aduan telah diambil tindakan di bawah peruntukan Akta Kualiti Alam Sekeliling (AKAS) 1974 dan Peraturan-Peraturan di bawahnya oleh Pejabat JAS Negeri mengikut tempoh piagam yang ditetapkan, manakala 1,487 kes aduan yang di luar bidangkuasa JAS telah dirujuk kepada agensi-agensi yang berkaitan untuk diambil tindakan. **(Rajah 4.16).**

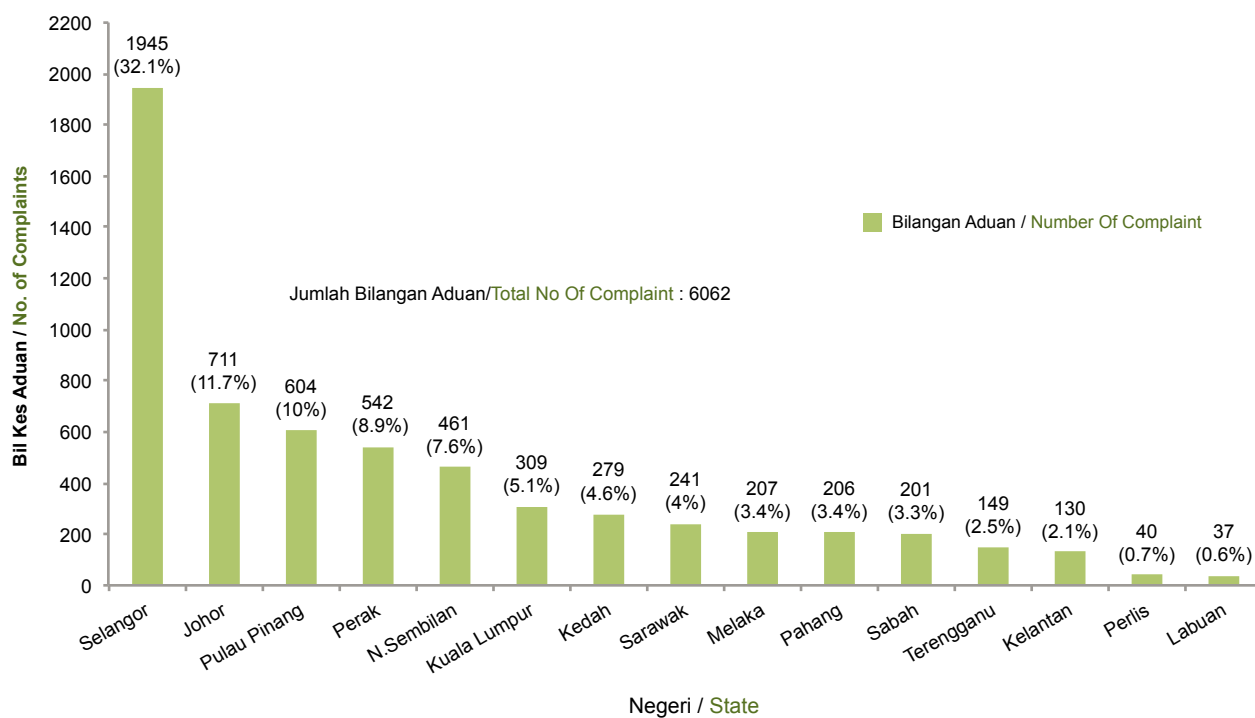
Pada tahun 2012, JAS Selangor menerima bilangan aduan yang paling tinggi iaitu sebanyak 1,945 kes (32.1%), diikuti oleh Johor sebanyak 711 kes (11.7%) dan Pulau Pinang sebanyak 604 kes (10.0%). Wilayah Persekutuan Labuan menerima aduan yang paling sedikit iaitu sebanyak 37 kes (0.6%), diikuti dengan Perlis iaitu sebanyak 40 kes (0.7%).

Seperti tahun-tahun yang sebelumnya, bilangan aduan pencemaran yang tertinggi adalah berkaitan dengan pencemaran udara iaitu sejumlah 4,467 kes (73.7%), sejumlah 705 kes (11.6%) berkaitan pencemaran air, 230 kes (3.8%) berkaitan pencemaran bunyi bising, 125 kes (2.1%) berkaitan pelupusan buangan terjadual secara haram, 102 kes (1.7%) berkaitan tumpahan minyak, 45 kes (0.7%) berkaitan pencemaran tanah dan sejumlah 388 kes (6.4%) melibatkan aduan-aduan yang lain **(Rajah 4.17).**

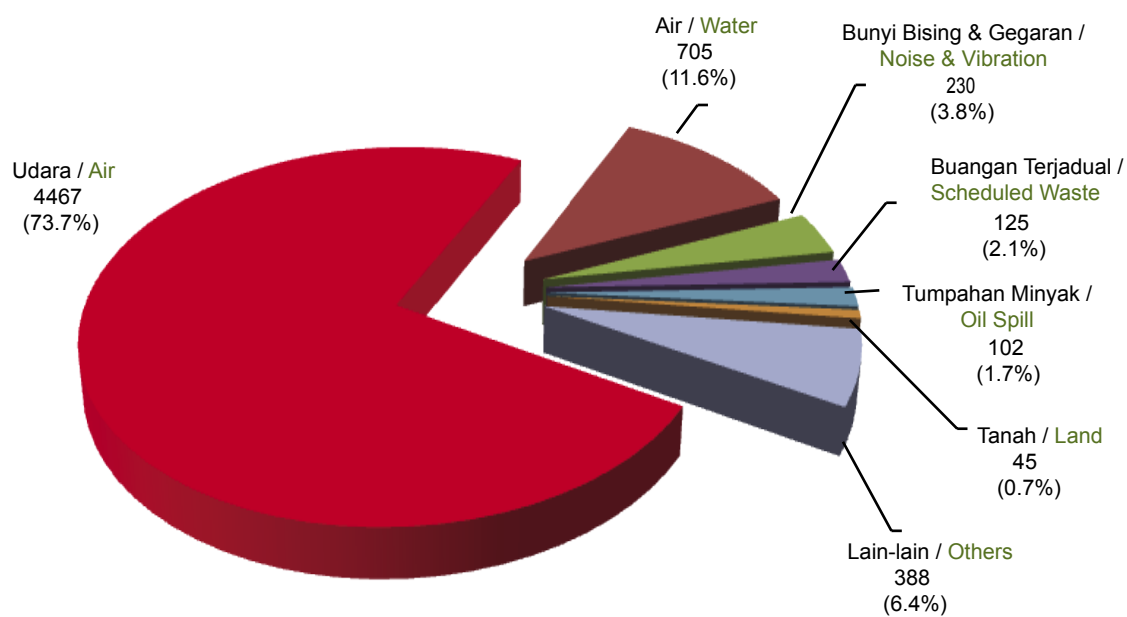
The Department of Environment received a total of 6,062 environmental pollution complaints in 2012. Out of these, 4,575 cases were under the Environmental Quality Act, 1974 and was investigated by the State DOE Offices within client charter period, while the remaining 1,487 cases were not under the jurisdiction of DOE and were referred to other relevant agencies for their further action. **(Figure 4.16).**

In 2012, DOE Selangor received 1,945 (32.1%) complaints, the highest number received, followed by Johor 711 (11.7%) and Penang 604 (10.0%). Federal Territory of Labuan recorded the least number of complaints received with only 37 (0.6%) complaints, followed by Perlis 40 (0.7%) complaints.

As in the previous years, most of the complaints received were related to air pollution, 4,467 (73.7%), followed by 705 (11.6%) on water pollution, 230 (3.8%) on noise pollution, 125 (2.1%) on illegal dumping of scheduled or toxic wastes, 102 (1.7%) on oil spills, 45 (0.7%) on soil pollution and 388 (6.4%) on other complaints **(Figure 4.17).**



Rajah 4.16 JAS: Bilangan Aduan Mengikut Negeri, 2012
Figure 4.16 DOE: Number of Complaints by State, 2012



Rajah 4.17 JAS : Bilangan Kes Aduan Mengikut Jenis, 2012
Figure 4.17 DOE : Number of Complaint Cases by Types, 2012



BAB 5
CHAPTER 5

PROMOSI KESEDARAN DAN PENDIDIKAN ALAM SEKITAR

PROMOTION OF ENVIRONMENTAL EDUCATION AND AWARENESS

Program Rakan Alam Sekitar (RAS)

Program Rakan Alam Sekitar (RAS) yang dilancarkan pada 4 Jun 2009 telah mempunyai seramai 100,420 ahli berdaftar di seluruh Malaysia sehingga Disember 2012. Program ini bertujuan meningkatkan kesedaran serta menggerakkan anggota masyarakat secara *hands-on* dalam aktiviti pemuliharaan alam sekitar dan juga menjadi mata dan telinga untuk membantu agensi-agensi kerajaan yang bertanggungjawab dalam membanteras kegiatan-kegiatan yang merosakkan atau mencemarkan alam sekitar.

Penglibatan pelbagai pihak seperti pejabat ahli Parlimen, agensi kerajaan, swasta, pertubuhan bukan kerajaan (NGO) dan pemimpin masyarakat setempat merupakan satu kerjasama strategik dalam pelaksanaan Program RAS.

Peranan media sosial dalam menyebarkan inisiatif ini telah memberikan kesan positif di mana Facebook RAS mendapat sambutan yang menggalakkan daripada ahli RAS dan orang awam dalam perkongsian maklumat berkaitan usaha pemeliharaan dan pemuliharaan alam sekitar.

Penyertaan orang ramai sebagai ahli RAS adalah amat dihargai. Pendaftaran ini boleh dilakukan secara *online* di <http://ras.doe.gov.my/portal/> dan pendaftaran adalah percuma. Pendaftaran adalah terbuka kepada semua warganegara Malaysia.

Minggu Alam Sekitar Malaysia (MASM)

Minggu Alam Sekitar Malaysia (MASM) merupakan acara tahunan anjuran Jabatan Alam Sekitar yang disambut untuk menyemai dan meningkatkan kesedaran alam sekitar di kalangan masyarakat Malaysia. Sambutan MASM ke-21 telah diadakan pada 21 Oktober

Rakan Alam Sekitar (RAS) Programme

The "Rakan Alam Sekitar" was launched on 4 June 2009 and until December 2012, 100,420 were registered as members. This programme intend to increase environmental awareness and also mobilizing community members in "hands-on" environmental activities as well as being the 'eyes' and 'ears' of government agencies responsible for combating environmental pollution.

One of the strategic cooperation in the implementation of RAS programme is the involvement of various stakeholders such as the office of Member of Parliament, government agencies, private sector, non-governmental organizations (NGOs) and community leaders.

The role of social media in wide spreading this initiative has shown positive effects in which RAS Facebook has received good response from RAS members and the public in sharing information related to the preservation and conservation of the environment.

Public registration as a RAS member is highly appreciated. Online registration as RAS member can be made through the RAS portal at <http://ras.doe.gov.my/portal/>. RAS membership is open to all Malaysian.

Malaysia Environment Week (MASM)

Malaysia Environment Week (MASM) is an annual event organized by the Department of Environment, aims to nurture and raise environmental awareness among the entire community of Malaysia. The 21st MASM Celebration was held on 21 October 2012 at

2012 di Taman Tasik Titiwangsa, Kuala Lumpur dengan bertemakan "Terima Kasih Di Atas Sumbangan Anda". Tema ini adalah bertujuan sebagai tanda penghargaan kepada rakyat Malaysia yang memberi sumbangan secara langsung mahupun tidak langsung dalam usaha memulihara alam sekitar.

MASM 2012 telah dirasmikan oleh YB Dato Sri Douglas Uggah Embas, Menteri Sumber Asli dan Alam Sekitar. Pada tahun ini, beberapa program telah diadakan seperti *Enviro-Run* dan Pertandingan Mari Memancing. Kedua-dua program ini telah berjaya menarik lebih daripada 5,500 orang peserta. Pelbagai hadiah menarik telah ditawarkan bagi menggalakkan penyertaan orang awam dalam pertandingan ini.

Bagi menyemai amalan mesra alam dan gaya hidup sihat di kalangan belia, acara senamrobik turut diadakan. Seramai 4,000 peserta, terdiri daripada peserta Program Latihan Khidmat Negara (PLKN) dan Institusi Pengajian Tinggi Awam & Swasta dan orang awam telah menyertai acara ini.

Selain daripada program-program tersebut, terdapat pelbagai program lagi yang telah diadakan bagi memeriahkan sambutan MASM 2012 seperti Peraduan Mewarna Bagi Kanak-Kanak, Pameran/Jualan Produk Mesra Alam, Kuiz Jutawan Alam Sekitar, Program Pengumpulan Barangan Kitar Semula, Pemeriksaan Kenderaan (Perlepasan Gas Enjin Petrol dan *Refrigerent Inspection*) dan Persembahan "Pertandingan Raja Band' Kuala Lumpur 2012"

Pada keseluruhannya, MASM 2012 telah mencapai matlamatnya dalam memupuk semangat mencintai alam di kalangan masyarakat di Malaysia.

Taman Tasik Titiwangsa, Kuala Lumpur with the theme of "Thank You For Your Contribution", to show appreciation to the people of Malaysia who have contributed directly or indirectly towards environmental conservation.

MASM 2012 was officiated by YB Dato Sri Douglas Uggah Embas, Minister of Natural Resources and Environment. Several programmes were organized during MASM celebration such as the *Enviro-Run* and Fishing Competition. These programmes have attracted more than 5,500 participants. Various prizes were offered to encourage public participation in this contest.

To instill environmentally friendly practices among youth, the aerobics event was also held. A total of 4,000 public participants from the National Service Training Program (NSTP) and public & private institutions of higher education participated in the event.

Apart from these programmes, many other programmes were held for MASM 2012 celebration such as Colouring Contest For Children, Exhibition and Sale of Environmentally Friendly Products, Environmental Millionaire Quiz, Recycling Goods Collection Programme, Free Vehicle Inspection (Discharge of Petrol Engines Gas and Refrigerent Inspection) and "Band King Competition Performance, Kuala Lumpur 2012".

On overall, MASM 2012 has achieved its objective to instill the spirit of love to the environment to the various communities in Malaysia.



Pelancaran Minggu Alam Sekitar Malaysia 2012
Launching of Malaysia Environment Week 2012



Enviro 2012
Enviro 2012



Pelepasan Memancing Ikan
Flag off for Fishing Participants
(Image source: image.bernama.com)



Pertandingan mewarna
Colouring contest
(sumber gambar: image.bernama.com)



Pemeriksaan kenderaan
Vehicle inspection
(Image source: image.bernama.com)



Senamrobik
Aerobics
(Image source: image.bernama.com)

Pertandingan Debat Alam Sekitar Antara Institusi Pengajian Tinggi

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

Pertandingan debat ini dikendalikan secara debat ala parlimen. Penentuan pasukan yang akan berlawan dan juga peranan mereka sebagai kerajaan atau pembangkang dibuat menggunakan kaedah *system bracket power match* untuk pusingan awal. Kedudukan setiap pasukan dibuat berdasarkan menang/kalah, juri, julat kemenangan dan markah keseluruhan.

Pertandingan Peringkat Awal melibatkan enam (6) pusingan. Lapan (8) pasukan terbaik akan dipilih untuk ke peringkat suku akhir dan empat (4) pasukan yang menang akan ke peringkat separuh akhir dan seterusnya dua (2) pasukan akan ke peringkat akhir.

Pertandingan Debat Alam Sekitar Antara Institusi Pengajian Tinggi (IPT) Kali Ke-22 yang disertai oleh 28 pasukan telah diadakan di Universiti Malaya pada 29 Jun hingga 3 Julai 2012. Pertandingan Akhir antara pasukan Universiti Malaya (UM) dan pasukan Universiti Tun Hussein Onn Malaysia (UTHM) telah disaksikan oleh lebih kurang 900 orang penonton.

Pasukan UTHM telah muncul sebagai johan dan telah menerima Piala Pusingan Menteri Sumber Asli dan Alam Sekitar, wang tunai RM8,000.00 serta sijil penyertaan. Pada tahun ini, terdapat hadiah tambahan sumbangan Sistem Penerbangan Malaysia Berhad (MAS) berupa simulator pesawat B777-200.

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 proposition or opposition side. The ranking of each team was based on several criteria such as "winner/loser", jury, margin and overall score.

The preliminary contest consists of six (6) rounds. The eight (8) highest ranking teams were then selected to compete in the Quarter-Finals, out of which four (4) will qualify for the Semi-Finals and eventually two (2) teams will reach the Finals.

The 22nd Inter Varsity Environmental Debate which was participated by 28 institutions of higher learning Institutions was held in Universiti Malaya from 29 June - 3 July 2012. About 900 guests attended the Finals of the 2012 Debate between University of Malaya team (UM) and Universiti Tun Hussein Onn Malaysia (UTHM).

The UTHM 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. Additional prize for this year was sponsored by Malaysia Airlines System (MAS), in kind of simulator flight B777-200.

Mohd Firdaus Bin Ahmad, pendebat daripada UM telah muncul sebagai Pendebat Terbaik Akhir dan menerima Piala Ketua Pengarah Alam Sekitar beserta wang tunai RM1,500.00, Piala Irian dan Sijil Penyertaan.

Pemenang Pendebat Terbaik Liga dimenangi oleh pendebat UM iaitu Muhammad Azzairi Bin Rosle yang membawa pulang sebanyak RM 300, Piala Irian dan hadiah tambahan sumbangan Sistem Penerbangan Malaysia Berhad (MAS) berupa tiket penerbangan pergi dan balik ke Jakarta, Indonesia.

Majlis penyampaian hadiah disempurnakan oleh YBhg. Dr. Abdul Rahim bin Nik., Timbalan Ketua Setiausaha (Alam Sekitar), Kementerian Sumber Asli dan Alam Sekitar.

Mohd Firdaus Bin Ahmad of UM emerged as the Best Debater and received the Director General of Environment Trophy, together with a cash prize of RM 1,500.00.

League Best Debater was awarded to Muhammad Azzairi Bin Rosle and he received a trophy together with a cash prize of RM 300 and a sponsorship ticket from Malaysia Airlines System (MAS) to Jakarta Indonesia.

The prizes were given out by YBhg. Dr. Abdul Rahim bin Haji Nik, the Deputy Secretary General (Environment), Ministry of Natural Resources and Environment .



Pertandingan Akhir Debat Alam Sekitar antara Universiti Tun Hussein Onn Malaysia (UTHM) dan Universiti Malaya (UM).

Environmental Debate Finals between Universiti Tun Hussein Onn Malaysia (UTHM) and University of Malaya (UM)



Majlis penyampaian hadiah disempurnakan oleh YBhg. Dr. Abdul Rahim bin Nik., Timbalan Ketua Setiausaha (Alam Sekitar), Kementerian Sumber Asli dan Alam Sekitar
The prizes were given out by YBhg. Dr. Abdul Rahim bin Haji Nik, the Deputy Secretary General (Environment), Ministry of Natural Resources and Environment

Projek Wira Alam

Projek Wira Alam (PWA) telah dilancarkan pada 5 Jun 1998 bertujuan untuk meningkatkan motivasi para pelajar supaya memberi sumbangan aktif dalam aktiviti pemeliharaan dan pemuliharaan alam sekitar ke arah meningkatkan kualiti alam sekitar Negara.

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 yang menyertai program ini perlu menyelesaikan tugas yang ditetapkan di dalam buku aktiviti pada setiap tahap sebelum ke peringkat seterusnya.

Pada tahun 2012, sebanyak 786 permohonan baharu dari pelajar-pelajar telah diterima untuk menyertai projek ini. Seramai 319 orang pelajar telah lulus Wira Diri (Tahap 1) dan menerima sijil, organizer Wira Diri. Seramai 201 orang pelajar lulus Wira Komuniti (Tahap 2) dan menerima sijil, beg, t-shirt dan topi Wira Komuniti. Seramai 30 orang pelajar daripada Sekolah Menengah Kebangsaan Bukit Jelutong, Selangor telah lulus Wira Alam (Tahap 3) dan 8 daripadanya lulus dengan cemerlang dan telah dipilih untuk menerima Anugerah Wira Alam 2011. Pelajar-pelajar ini menerima wang tunai RM300, vest dan plak Wira Alam.

Majlis Penganugerahan Projek Wira Alam 2011 telah diadakan pada 24 Mei 2012 di Sekolah Menengah Kebangsaan Presint 8 (1), Putrajaya dan dirasmikan oleh YBhg. Datuk Dr. Abdul Rahim bin Haji Nik, Timbalan Ketua Setiausaha II, Kementerian Sumber Asli dan Alam Sekitar.

Pada tahun 2012 juga, satu siri Perkhemahan Wira Diri (Tahap 1) telah diadakan di Dusun Eco Resort, Bentong, Pahang pada 7-8 September 2012 di mana seramai 70 orang pelajar dari sekolah menengah sekitar Daerah Bentong

Projek Wira Alam Project

The Wira Alam Project was launched on 5 June, 1998 to motivate the students to actively participate 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 the Malaysian Nature Society. This project is divided into three stages, namely Wira Diri (Level 1), Wira Komuniti (Level 2) and Wira Alam (Level 3). Each participating student who participated in this programme need to complete the tasks in the activity book in each level provided before advancing into the next level

In 2012, a total of 786 new applications were received to participate in this project. A total of 319 students had successfully completed Wira Diri (Level 1) and each received a certificate and a Wira Diri organizer. A total of 201 students Wira Komuniti (Level 2) and each received completed a certificate, bag, t-shirt and cap. A total of 30 secondary school students from Bukit Jelutong, Selangor has passed the Wira Alam (Level 3) and 8 students passed with distinction and were selected to receive Wira Alam Awards for 2011. These students received RM300, vest and Wira Alam plaque.

Wira Alam Award Ceremony 2011 was held on 24 May 2012 at Sekolah Menengah Kebangsaan Presint 8 (1) Putrajaya and was inaugurated by YBhg. Datuk Dr. Abdul Rahim bin Haji Nik, Deputy Secretary II, Ministry of Natural Resources and Environment.

In 2012, a Wira Diri Camp (Level 1) was held at Dusun Eco Resort, Bentong, Pahang, on 7-8 September 2012 whereby a total of 70 secondary school students from Bentong District participated in the camp. Various

telah menyertai perkhemahan ini. Pelbagai aktiviti telah dijalankan berdasarkan Buku Aktiviti Tahap 1 seperti kebersihan alam, penggunaan tenaga, siratan dan rantaian makanan dan sebagainya.

Mulai tahun 2013, permohonan baharu untuk menyertai Projek Wira Alam untuk Tahap 1 dan Tahap 2 akan diproses oleh JAS Negeri masing-masing. Oleh itu, bagi memberikan pendedahan kepada Pegawai JAS Negeri dan guru-guru satu Bengkel Promosi Projek Wira Alam juga telah diadakan kepada sejumlah 40 orang guru-guru sekolah sekitar Negeri Pahang dan juga pegawai-pegawai Jabatan Alam Sekitar Negeri pada 9-11 September 2012. Para peserta telah dilatih bagaimana Projek Wira Alam dari Tahap 1 hingga Tahap 3 dilaksanakan.

activities were carried out based on Level 1 of the Activity Book such as environmental sanitation, energy consumption, food chain and others.

Beginning 2013, new application of Wira Alam Project for Level 1 and Level 2 will be processed by the respective state office. Therefore, in order to give exposure to the State DOE officers as well as the teachers, the Promotional Workshop on Wira Alam Project was held to a total of 40 school teachers from Pahang and officers of DOE States on 9-11 September 2012. The participants were trained on how to manage Wira Alam Project is from Level 1 to Level 3.

Penerima Anugerah Wira Alam 2011:
Recipients of Wira Alam Award 2011:

Sekolah / School	:	SMK Bukit Jelutong No. 2, Jalan Serambi U8/21 Bukit Jelutong 40150 Shah Alam
Guru pembimbing / Teacher adviser	:	En. Azka Zihni Mohd Azhar
Penerima / Recipients	:	1. Muhammad Iqbal B. Hanafi 2. Nur Irsalina Sulzaily 3. Nik Nor Izzati Binti Nik Adnan 4. Sarah Aida Binti Mohamed Mustak 5. Muhd Afrizal Alham Bin Mohd Azhar 6. Raid Azrul Bin Roslan 7. Lee Jia Zhe 8. Annisa Shafiqah Bt Shahrin



Perkhemahan Wira Diri (Tahap 1) dan Bengkel Promosi Projek Wira Alam di Dusun Eco Resort, Bentong, Pahang pada 7-11 September 2012
Wira Diri Camp(Level 1) Camp and Promotional Workshop at Dusun Eco Resort, Bentong, Pahang from 7 to 11 September 2012



Majlis Penganugerahan Projek Wira 2011 yang telah disempurnakan oleh YBhg. Datuk Dr. Abdul Rahim Bin Haji Nik, Timbalan Ketua Setiausaha II, Kementerian Sumber Asli dan Alam Sekitar pada 24 Mei 2012 di SMK Presint 8(1), Putrajaya.

Wira Alam Award Ceremony 2011 which was graced by Hon. Datuk Dr. Abdul Rahim bin Haji Nik, Deputy Secretary II, Ministry of Natural Resources and Environment on May 24, 2012

Bandar Lestari-Anugerah Alam Sekitar

Program Bandar Lestari–Anugerah Alam Sekitar (BLAAS) adalah program anjuran Jabatan Alam Sekitar (JAS) Malaysia dengan kerjasama Jabatan Kerajaan Tempatan, Kementerian Perumahan & Kerajaan Tempatan dan Institut Alam Sekitar dan Pembangunan (LESTARI), Universiti Kebangsaan Malaysia. Program ini telah dilancarkan pada 5 Jun 2013 dan telah memasuki kitaran yang ke-4.

Secara umumnya, program ini bertujuan untuk mengiktiraf usaha Pihak Berkuasa Tempatan (PBT), yang telah mengintegrasikan unsur-unsur kelestarian di dalam perancangan, pentadbiran dan pelaksanaan dasar, program-program dan aktiviti-aktivitinya. Program ini terbuka kepada PBT Ibu Negeri, Majlis Perbandaran/Bandaraya dan Majlis Daerah di seluruh negara.

Bagi kitaran keempat iaitu sesi 2011/2012, sebanyak enam (6) Bengkel Promosi BLAAS telah diadakan. Selain daripada mempromosikan program BLAAS ini kepada PBT, objektif bengkel ini juga adalah untuk memberi pendedahan dan panduan kepada PBT dalam tatacara pengisian Borang Perolehan Maklumat dengan lengkap dan tepat sebelum dikemukakan kepada JAS selaku urusetia program.

Berikut adalah senarai Bengkel Promosi BLAAS mengikut zon :-

(i) Zon Tengah
(Kuala Lumpur, Selangor dan Perak)
Tarikh : 2 - 3 Oktober 2011
Tempat : Hotel Impiana Ipoh, PERAK

(ii) Negeri Sarawak
Tarikh : 1-2 November 2011
Tempat : Hotel Harbour View, Kuching,
SARAWAK

(iii) Zon Timur
(Pahang, Kelantan, dan Terengganu)
Tarikh : 21 – 22 Februari 2012
Tempat : Swiss Garden Resort & Spa,
Kuantan, PAHANG

Sustainable City - Environment Award

Sustainable City - Environment Award is a programme organized by Department of Environment (DOE) Malaysia in collaboration with the Local Government Department, Ministry of Housing and Local Government and Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia. This programme was launched on 5 June 2013 and has entered the fourth cycle.

Generally, the programme is intended to recognize the efforts of Local Authorities, which has integrated the elements of sustainability in planning, administration and implementation of policies, programmes and their activities. This programme is open to all Local Authorities of State Capital, Municipal/Cities and District Councils across the country.

In total, six (6) Promotional Workshops were held in 2012. The purpose of these workshops is to promote the programme to the various Local Authorities, and to give exposure and guidance to the Local Authorities in completing the Information Procurement Form before submitting to the DOE as the programme secretariat.

The list of Promotional Workshops by zone is as follows: -

(i) Central Zone
(Kuala Lumpur, Selangor and Perak)
Date : 2 - 3 October 2011
Place : Impiana Hotel, Ipoh, PERAK

(ii) Sarawak
Date : 1-2 November 2011
Place : Harbour View Hotel, Kuching,
SARAWAK

(iii) Eastern Zone
(Pahang, Kelantan and Terengganu)
Date : 21 – 22 February 2012
Place : Swiss Garden Resort & Spa,
Kuantan, PAHANG

(iv) Zon Selatan
(Melaka, Johor dan Negeri Sembilan)
Tarikh : 28 - 29 Februari 2012
Tempat : Avillion Legacy Melaka, MELAKA

(v) Sabah
Tarikh : 13 – 15 Mac 2012
Tempat : Hotel Promenade, Kota Kinabalu,
SABAH

(vi) Zon Utara
(Kedah, Perlis dan P.Pinang)
Tarikh : 27 - 28 Mac 2012
Tempat: Swiss-Inn, Sungai Petani, KEDAH

Program Kerjasama dengan Agensi Luar:

i) Cabaran Interaktif Pengguna Kelab Pengguna Sekolah (CIP KPS) 2012 Peringkat Kebangsaan Anjuran Kementerian Perdagangan Dalam Negeri, Koperasi dan Kepenggunaan (KPDNKK)

CIP KPS merupakan acara tahunan KPDNKK berbentuk pertandingan interaktif atau *explorace* yang melibatkan penyertaan ahli-ahli Kelab Pengguna Sekolah di seluruh Malaysia.

Objektif utama penganjurannya ialah untuk mendidik, menyebarkan luas dan meningkatkan kesedaran kepenggunaan dengan memfokuskan kepada aspek-aspek seperti perundangan pengguna, pengurusan kewangan berhemat, pemakanan sihat serta pemeliharaan alam sekitar.

Program ini dahulunya dikenali sebagai Kuiz Pengguna yang ditayangkan di televisyen bermula pada tahun 1992. Mulai tahun 2010, kuiz ini ditambahbaik kepada *explorace* di mana ia didapati bersesuaian dengan perkembangan masa kini untuk menarik ramai penyertaan.

Jabatan Alam Sekitar (JAS) juga telah terlibat dalam cabaran peringkat kebangsaan yang berlangsung pada 26 April 2012 (Khamis) di Taman Semarak, Taman Wetland Putrajaya.

(iv) Southern Zone
(Melaka, Johor and Negeri Sembilan)
Date : 28 - 29 February 2012
Place : Avillion Legacy Melaka, MELAKA

(v) Sabah
Date : 13 – 15 March 2012
Place : Promenade Hotel, Kota Kinabalu,
SABAH

(vi) Northern Zone
(Kedah, Perlis and P.Pinang)
Date : 27 - 28 March 2012
Place : Swiss-Inn, Sungai Petani, KEDAH

Cooperation Program with External Agencies

i) Consumers Interactive Challenge of School Consumer Club (CIP KPS) 2012 National Level Organized by the Ministry of Domestic Trade, Co-operatives and Consumerism

CIP KPS is an annual *Explorace* event organized by Ministry of Domestic Trade, Co-operatives and Consumerism. The participants of this event are members of School Consumer Club throughout Malaysia.

The main objective of this event is to educate, disseminate and increase consumerism awareness regarding consumer law, financial management, healthy eating and the environment preservation.

This program was formerly known as the Consumer Quiz aired on television from 1992. Starting from 2010, it has been improvised to *Explorace* event to attract more participants.

Department of Environment (DOE) was also involved in the national challenge on 26 April 2012 (Thursday) at Taman Semarak, Putrajaya Wetland Park.

Tajuk cabaran yang dikendalikan oleh JAS adalah cabaran "Alam Sekitar" di mana peserta dikehendaki menyediakan *Eco-Enzim* mengikut arahan-arahan yang telah disediakan.

ii) Pertandingan Mewarna dengan kerjasama Bayer Co. (Malaysia) Sdn. Bhd.

JAS telah menjadi salah seorang panel juri di peringkat awal bagi program 'Bayer Young Environmental Envoy Program in Malaysia' yang telah diadakan pada 2-3 April 2012. Penghakiman peringkat akhir telah diadakan pada 17 Julai 2012.

The participants of this challenge are required to prepare *Eco-Enzyme* according to the given instruction.

ii) Colouring Contest in collaboration with Bayer Co. (Malaysia) Sdn. Bhd.

DOE was one of the elected jury in the early stages of "Bayer Young Environmental Envoy Program in Malaysia", which was held on 2-3 April 2012. The final event was held on 17 July 2012.



Bengkel Program BLAAS bagi PBT Zon Tengah, 2 - 3 Oktober 2011, Impiana Hotel Ipoh, PERAK
Workshop program for Local Authorities BLAAS Middle Zone, 2 - 3 October 2011,
Impiana Hotel Ipoh, SILVER



Bengkel Program BLAAS Negeri Sarawak, 1-2 November 2011, Harbour View Hotel, Kuching, Sarawak
 BLAAS Workshop 1-2 November 2011, the Harbour View Hotel, Kuching, Sarawak



Bengkel Program BLAAS Zon Timur 21-22 Februari 2012, Swiss Garden Resort & Spa, Kuantan, Pahang
 BLAAS East Zone Workshop, 21-22 February 2012, the Swiss Garden Resort & Spa Kuantan, Pahang



Bengkel Program BLAAS Zon Selatan 27-28 Februari 2012, Avillion Legacy Melaka
BLAAS South Zone Workshop 27-28 February 2012, the Avillion Legacy Melaka



Bengkel Program BLAAS bagi PBT Negeri Sabah 13-14 Mac 2012, Promenade Hotel, Kota Kinabalu, SABAH
BLAAS Workshop for State Local Authorities, 13-14 March 2012, Promenade Hotel, Kota Kinabalu, SABAH

SEBARAN MAKLUMAT ALAM SEKITAR ENVIRONMENTAL INFORMATION DISSEMINATION

Program Promosi dan Kesedaran Alam Sekitar Menerusi Media Massa

Pada tahun 2012, Jabatan Alam Sekitar telah melaksanakan Program Promosi dan Kesedaran Alam Sekitar menerusi media seperti berikut:-

Penerbitan Artikel Mempromosi Kesedaran Alam Sekitar dan Rakan Alam Sekitar di Majalah Anjung Seri dan Jelita

Jabatan Alam Sekitar telah melaksanakan Kempen Mempromosi Kesedaran Alam Sekitar dan Rakan Alam Sekitar menerusi penerbitan artikel dan pengiklanan di Majalah Anjung Seri dan Jelita. Tujuan penerbitan ini adalah untuk menyebarkan dan menyampaikan maklumat mengenai kesedaran alam sekitar kepada orang awam menerusi media.

Pada tahun 2012, artikel dan pengiklanan yang telah diterbitkan di Majalah Anjung Seri adalah seperti berikut:-

- (i) Amalan Mesra Alam di Rumah, Kepentingan Enzim Sisa Buangan
- (ii) Pengiklanan tentang program Rakan Alam Sekitar
- (iii) Amalan Mesra Alam
- (iv) Kekalkan Kesejahteraan Alam Sekitar Sewaktu 'Spring Cleaning'
- (v) Anda dan Hijau

Manakala, artikel dan pengiklanan yang telah diterbitkan di Majalah Jelita adalah seperti berikut:-

- (i) Bersama Memulihara Alam Sekitar
- (ii) Sayangi Alam Sekitar Kita

Kempen Promosi dan Kesedaran Alam Sekitar Menerusi Penerbitan Setem Korporat Jabatan

Kempen Promosi dan Kesedaran Alam Sekitar Melalui Setem Persendirian Korporat Jabatan ini adalah selaras dengan program

Promotion and Environmental Awareness Programme Through Mass Media

In 2012, the Department of Environment has conducted Promotional and Environmental Awareness Programmes Through Media such as:-

Publication on Environmental Awareness and 'Rakan Alam Sekitar' Articles in 'Anjung Seri' and 'Jelita' Magazines

The Department of Environment has implemented a Campaign on Environmental Awareness and Rakan Alam Sekitar Programme through the publication of articles and advertisement in Anjung Seri and Jelita magazines. The purpose of this publication is to disseminate the information on environmental awareness to the public through media.

In 2012, articles and advertorials which have been published in Anjung Seri magazine are as follows:-

- (i) Environmentally Friendly Practices at Home, The Importance of Garbage Enzyme
- (ii) Advertorial on 'Rakan Alam Sekitar'
- (iii) Environmentally Friendly Practices
- (iv) Sustaining The Environmental Wellness During 'Spring Cleaning'
- (v) You and Green

In addition, the articles and advertisement which were published in Jelita magazine are as follows:-

- (i) Together Conserving The Environment
- (ii) Love Our Environment

Campaign on Environmental Awareness Through Department's Corporate Stamp

The Campaign on Environmental Awareness Through Department's Corporate Stamp is in line with the Department's transformation

transformasi Jabatan yang menggalakkan pelaksanaan aktiviti yang meningkatkan imej korporat Jabatan serta memberi pendedahan maklumat kepada pihak awam dengan lebih luas mengenai program Jabatan.

Pada tahun 2012, sebanyak lima (5) jenis Setem Korporat Jabatan Alam Sekitar telah diterbitkan seperti berikut:-

- (i) Setem 'Rakan Alam Sekitar'
- (ii) Setem 'Minggu Alam Sekitar Malaysia'
- (iii) Setem 'Program Wira Alam'
- (iv) Setem 'Program Pra-Sekolah Lestari: Modul Kesedaran Alam Sekitar (Air & Kitar Semula)'
- (v) Setem 'Program Pra-Sekolah Lestari: Modul Kesedaran Alam Sekitar (Haiwan & Tumbuhan)'

Kempen Promosi dan Kesedaran Alam Sekitar Menerusi Penyiaran Pesanan Pendek Amalan Mesra Alam di Stesen Radio

Pada tahun 2012, bersempena Sambutan Hari Alam Sekitar Sedunia yang diraikan pada 5 Jun setiap tahun, Jabatan Alam Sekitar telah melaksanakan kempen mengenai Amalan Mesra Alam menerusi pesanan pendek di stesen radio Hot FM bagi meningkatkan kesedaran orang awam.

Program pesanan pendek Amalan Mesra Alam ini telah disiarkan di stesen radio Hot FM dari 18 Jun – 1 Julai 2012.

Kempen Promosi dan Kesedaran Alam Sekitar Menerusi Penyiaran Pengiklanan Rakan Alam Sekitar di Stesen Radio

Jabatan Alam Sekitar telah melaksanakan program di atas sebagai tujuan untuk mempromosi dan menggalakkan penyertaan orang awam dalam program Rakan Alam Sekitar.

programme which promotes the implementation of activities that enhance the corporate image of the Department. The campaign also provides information to the public about the Department's programme.

In 2012, a total of five (5) types of Department of Environment Corporate Stamp were published as follows:-

- (i) Stamp of 'Rakan Alam Sekitar'
- (ii) Stamp of 'Malaysia Environment Week'
- (iii) Stamp of 'Wira Alam Programme'
- (iv) Stamp of 'Pra-Sekolah Lestari: Environmental Awareness Module (Water & Recycle)'
- (v) Stamp of 'Pra-Sekolah Lestari: Environmental Awareness Module (Animals & Plants)'

Environmental Promotion and Awareness Campaign Through Public Service Message of Environment-Friendly Practice on Radio Station

In 2012, in conjunction with the World Environment Day celebrated on 5 June every year, the Department of Environment has implemented a campaign through public service message on 'Hot FM' radio station to raise public awareness on Environmental-Friendly Practices

The public service message programme on Environment-Friendly Practices was broadcast over the 'Hot FM' radio station from 18 June to 1 July 2012.

Environmental and Awareness Campaign Through Rakan Alam Sekitar Advertisement Programme on Radio Station

The Department of Environment has implemented the above programme to promote and encourage public participation in 'Rakan Alam Sekitar' programmes.

Kempen tersebut telah dilaksanakan menerusi penyiaran pengiklanan Rakan Alam Sekitar di Stesen Radio Hot FM dan Fly FM dari 13-22 Disember 2012.

The campaign was broadcasted over the 'Hot FM' and 'Fly FM' radio station from 13-22 Disember 2012.



Program Inovasi Khidmat Awam (PIKA) di Stesen Radio KLFM Mengenai Minggu Alam Sekitar Malaysia 2012
Public Service Innovation Programme (PIKA) KLFM Radio Station On Malaysia Environment Week 2012

Pameran Awam

Pada tahun 2012, Jabatan Alam Sekitar Ibu Pejabat telah menyertai 14 pameran bertemakan alam sekitar yang dianjurkan oleh institusi-institusi pengajian tinggi, sektor perindustrian, agensi kerajaan dan awam seperti berikut:

1. Pameran sempena Program *Green Day*, Kolej Poly-Tech Mara Kuala Lumpur, 1 March 2012
2. Pameran sempena Minggu Pejabat Hijau, Ibu Pejabat Sime Darby Property Berhad, Ara Damansara, 16 – 20 April 2012
3. Pameran sempena Program Minggu Keselamatan, Kesihatan dan Persekitaran, Dutch Lady Milk Industries, Petaling Jaya, 23 & 24 April 2012

Environmental Exhibitions

In 2012, Department of Environment Headquarters participated in 14 exhibitions organized by the higher education institutions, industrial sectors, government agencies and the public sectors as follows:

1. Exhibition at Green Day Program, College of Poly-Tech Mara Kuala Lumpur, 1 March 2012
2. Exhibition at Green Office Week, Sime Darby Property Berhad (Headquarters), Ara Damansara, 16 – 20 April 2012
3. Exhibition at Safety, Health and Environment Week Program, Dutch Lady Milk Industries, Petaling Jaya, 23 & 24 April 2012

- | | |
|---|---|
| <p>4. Pameran sempena <i>Project -Revive Green Festival</i> Melaka 2012, Pantai Klebang Melaka, 25 & 26 Mei 2012</p> <p>5. Pameran sempena Kempen Alam Sekitar, Keselamatan dan Kesihatan Pekerjaan, Sunway Construction Sdn Bhd, Presint 4, Putrajaya, 18 Jun 2012</p> <p>6. Pameran sempena SMIDEX 2012, KLCC, 20 - 22 Jun 2012</p> <p>7. Pameran sempena Kempen Persekitaran, Keselamatan dan Kesihatan, Sunway Construction Sdn Bhd, Presint 1, Putrajaya, 5 Julai 2012</p> <p>8. Pameran sempena Program Hari Terbuka INSTUN 2012, Tanjung Malim, Perak, 7 Julai 2012</p> <p>9. Pameran sempena Program <i>Earth Day</i>, Kementerian Penerangan Komunikasi & Kebudayaan Malaysia, Dataran Presint 8, Putrajaya, 8 Julai 2012</p> <p>10. Pameran sempena Program Jelajah Janji Ditepati (PJJD) Negeri Selangor, Bandar Baru Bangi, 8 Julai 2012</p> <p>11. Pameran sempena Karnival Kelestarian Alam Sekitar UPM 2012, Dewan Besar UPM, Serdang, 29-30 September 2012</p> <p>12. Pameran sempena Seminar Perundingan Terbuka Bagi Penggubalan Peraturan Baru Untuk Kawalan Pencemaran Dari Aktiviti Penternakan, Eimas, 10 Oktober 2012</p> <p>13. Pameran sempena Karnival Paya Indah Wetlands Dan <i>World Wildlife Week</i> 2012, Paya Indah Wetlands, Dengkil, 3-4 November 2012</p> <p>14. Pameran sempena Program <i>Environmental Awareness Week</i>, Pavilion Fakulti Undang-Undang, UiTM Shah Alam, 20-22 November 2012</p> | <p>4. Exhibition at Project - Revive Green Festival Melaka 2012, Pantai Klebang Melaka, 25 & 26 May 2012</p> <p>5. Exhibition at Environment, Safety and Health Campaign, Sunway Construction Sdn Bhd, Presint 4, Putrajaya, 18 June 2012</p> <p>6. Exhibition at SMIDEX 2012, KLCC, 20 - 22 June 2012</p> <p>7. Exhibition at Environment, Safety and Health Campaign, Sunway Construction Sdn Bhd, Presint 1, Putrajaya, 5 July 2012</p> <p>8. Exhibition at INSTUN Open Day Program 2012, Tanjung Malim, Perak, 7 July 2012</p> <p>9. Exhibition at Earth Day Program, Ministry of Information Communications and Culture, Dataran Presint 8, Putrajaya, 8 July 2012</p> <p>10. Exhibition at 'Program Jelajah Janji Ditepati' (PJJD) Negeri Selangor, Bandar Baru Bangi, 8 July 2012</p> <p>11. Exhibition at Environmental Sustainability Carnival, Dewan Besar UPM, Serdang, 29-30 September 2012</p> <p>12. Exhibition at Seminar of Open Consultation for Drafting New Rules To Control Pollution From Livestock Activities, EiMAS, 10 October 2012</p> <p>13. Exhibition at Karnival Paya Indah Wetlands dan World Wildlife Week 2012, Paya Indah Wetlands, Dengkil, 3-4 November 2012</p> <p>14. Exhibition at Environmental Awareness Week Program, Pavilion of Law Faculty, UiTM Shah Alam, 20-22 November 2012</p> |
|---|---|



Pameran di KPTM Kuala Lumpur sempena Green Day Program
Exhibition at MoHE Green Day Program Kuala Lumpur



Pameran di Paya Indah Wetlands, Dengkil sempena Carnival World Wild Life Week
Exhibition at Paya Indah Wetlands, Dengkil in conjunction with the Carnival World Wild Life Week



Pameran di UiTM Shah Alam sempena Program *Environmental Awareness Week*
Exhibition at UiTM Shah Alam in conjunction with the Environmental Awareness Week

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 2012, koleksi bahan rujukan adalah sebanyak 32,986 buah. Bilangan pengunjung ke perpustakaan adalah seramai 1148 orang dimana 82% daripadanya adalah kakitangan dan pegawai-pegawai kerajaan (**Rajah 5.2, 5.3 & 5.4**).

Aktiviti Perpustakaan

Lawatan Sambil Belajar

Pada Tahun 2012, Perpustakaan Enviro JAS Ibu Pejabat telah mengadakan Lawatan sambil Belajar ke Perpustakaan Kementerian Pengajian Tinggi dan Pesta Buku Antarabangsa pada 2 Mei dan 5 Mei 2012. Lawatan ini telah disertai oleh pegawai dan JAS Ibu Pejabat.

Mini Pesta Buku JAS

Program ini telah diadakan pada 30 dan 31 Mei 2012. Pelbagai aktiviti disediakan termasuklah pertandingan mewarna, pameran dan jualan buku baru.

Bengkel Penulisan Kreatif

Bengkel ini disertai oleh seramai 40 orang peserta dari JAS dan dilatih oleh Tuan Zamri Mohamad dari Fine Academy. Program ini dilaksanakan pada 3-4 Julai 2012 di JAS Ibu Pejabat.

Pertandingan Mewarna

Pertandingan Mewarna diadakan di Taman Tasik Titiwangsa Kuala Lumpur pada 21 Oktober 2012 bersempena dengan Minggu Alam Sekitar Malaysia 2012.

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 2012, the entire collection of reference materials totaled 32,986 items. The number of visitors to the library were 1148 of which 82% were employees and government officers (**Figure 5.2, 5.3 & 5.4**).

Library Activities

Study Visit

In 2012, the DOE Enviro Library Head Office organized two (2) study visits for its staff namely to the Ministry of Higher Education on 2 May 2012 and The Kuala Lumpur International Book Fair on 3 May 2012.

Mini Book Fair JAS

The programme was held on 30-31 May 2012. Various activities were conducted including colouring contests, exhibitions and sales of new books.

Creative Writing Workshop

This workshop was participated by 40 of DOE staff and facilitated by Mr. Zamri Mohamad from Fine Academy. The program was held on 3-4 July 2012 at DOE Headquarters.

Colouring Contest

The Colouring Contest were held at Taman Tasik Titiwangsa Kuala Lumpur on 21 October 2012 in conjunction with Malaysia Environment Week.



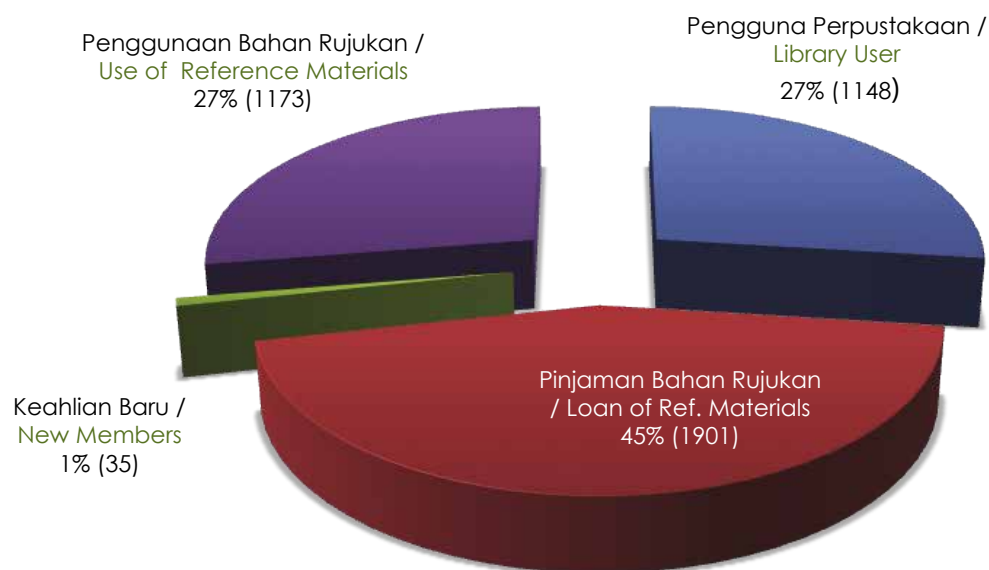
Bengkel penulisan kreatif anjuran Perpustakaan Jabatan Alam Sekitar
Creative writing workshop organized by the Department of Environment, Enviro Library



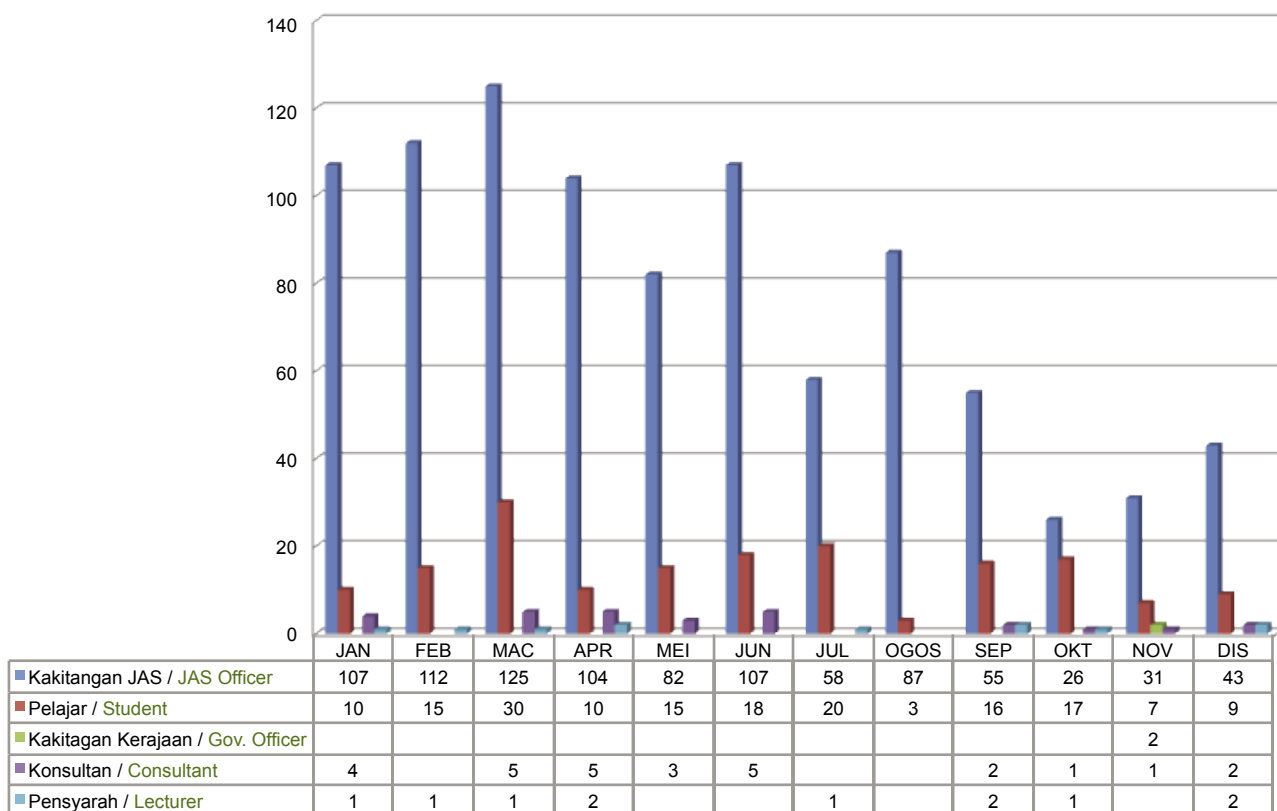
Pertandingan Mewarna sempena Mini Pesta Buku JAS
Colouring Contest in conjunction with the DOE's Mini Book Fair 2012



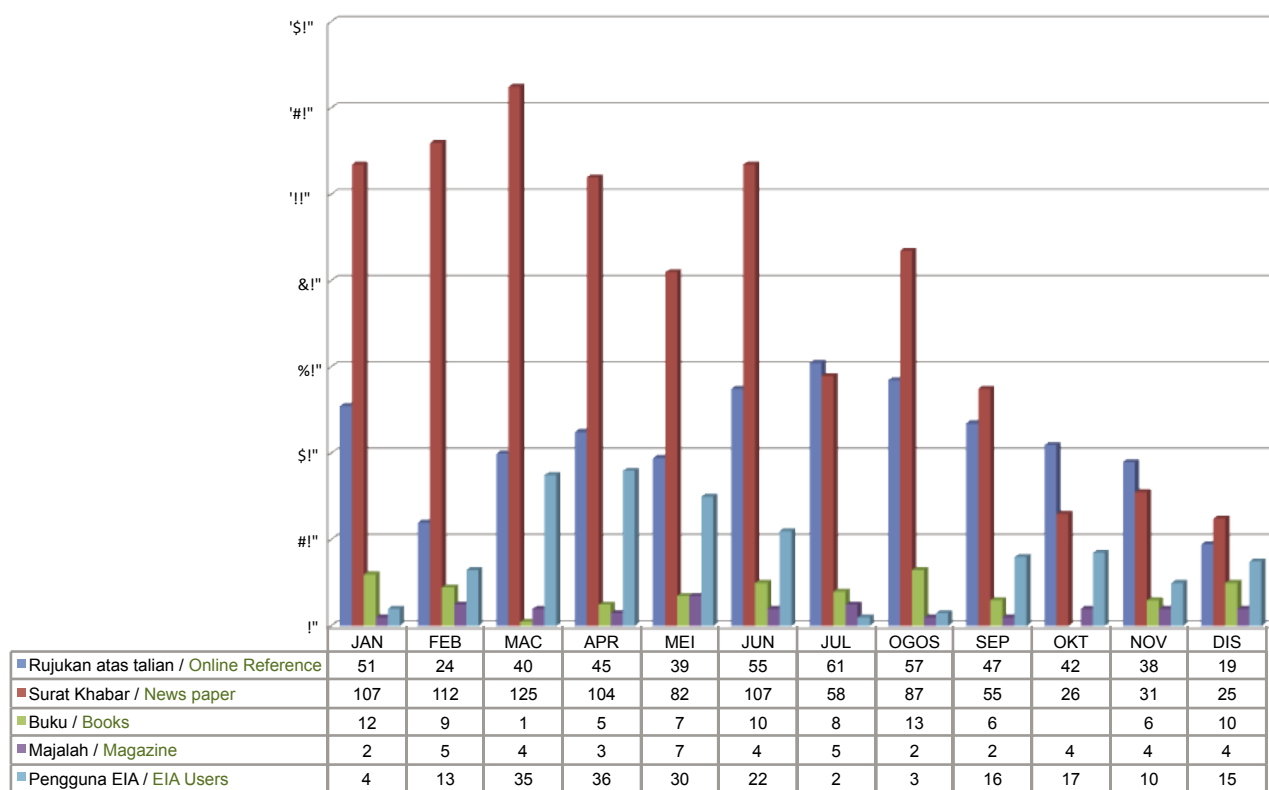
Pertandingan Mewarna sempena MASM 2012
Colouring Contest in conjunction with MASM 2012



Rajah 5.2 JAS : Perkhidmatan Perpustakaan 2012
Figure 5.2 DOE : Library Services, 2012



Rajah 5.3 JAS: Bilangan Pengunjung Perpustakaan (Bulanan), 2012
Figure 5.3 DOE: Number of Library Users,(Monthly) 2012



Rajah 5.4 Jas : Bilangan Penggunaan Bahan Rujukan Di Perpustakaan
 Figure 5.4 Doe : Number of Reference Materials Use in Library



BAB 6
CHAPTER 6

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

Malaysia - Singapura

Mesyuarat Kesepuluh Kumpulan Kerja Jawatankuasa Bersama Malaysia - Singapura mengenai Alam Sekitar (MSJCE WG)

Mesyuarat Kesepuluh Kumpulan Kerja Jawatankuasa Bersama Malaysia - Singapura mengenai Alam Sekitar (*WG of MSJCE*) telah diadakan pada 22 Mei 2012 di Kuala Lumpur dan telah dipengerusikan bersama oleh Puan Halimah Hassan, Ketua Pengarah Alam Sekitar, Malaysia dan Encik Andrew Tan, Ketua Pegawai Eksekutif, *National Environment Agency*, Singapura.

Mesyuarat ini dihadiri oleh 22 delegasi Malaysia dari pelbagai agensi seperti Pusat Hidrografi Nasional, Universiti Kebangsaan Malaysia, Unit Perancang Ekonomi (Johor), Jabatan Laut, *Johor Port Authority* dan wakil dari Kementerian Sumber Asli dan Alam Sekitar. Selain itu, Singapura diwakili oleh 17 delegasi dari pelbagai agensi seperti Lembaga Pembekalan Awam, Kementerian Pembangunan Negara, Kementerian Hal Ehwal Luar Negeri, Lembaga Perumahan dan Pembangunan, *Maritime and Port Authority*, Kementerian Alam Sekitar dan Sumber Air dan Suruhanjaya Tinggi Republik Singapura.

Mesyuarat ini memainkan peranan penting untuk kedua-dua negara bertukar-tukar maklumat dan pengalaman dalam menangani isu-isu alam sekitar yang mempunyai kepentingan bersama.

Malaysia - India

Satu delegasi yang terdiri daripada 18 orang pegawai kanan dari Kementerian Pembangunan Bandar, India telah

Malaysia-Singapore

The 10th Malaysia - Singapore Joint Committee on the Environment Working Group Meeting (MSJCE WG)

The 10th Malaysia - Singapore Joint Committee on the Environment (MSJCE) Working Group Meeting (*WG of MSJCE*) was held in Kuala Lumpur on 22 May 2012. The Meeting was co-chaired by Madam Halimah Hassan, Director-General of Environment, Malaysia and Mr. Andrew Tan, Chief Executive Officer, *National Environment Agency*, Singapore.

This meeting was attended by 22 Malaysian delegates from various agencies namely Centre of National Hydrography, Universiti Kebangsaan Malaysia, Economic Planning Unit (Johor), Marine Department, *Johor Port Authority* and a representative from Ministry of Natural Resources and Environment. Meanwhile, Singapore was represented by 17 delegates from different agencies namely Public Utilities Board, Ministry of National Development, Ministry of Foreign Affairs, Housing and Development Board, *Maritime and Port Authority*, Ministry of the Environment and Water Resources as well as the High Commission of the Republic of Singapore.

This meeting marked as an important role for both countries to exchange information and experiences in tackling environmental issues of mutual interest.

Malaysia - India

A delegation consisting of 18 senior officers from Ministry of Urban Development, India, visited the DOE, Malaysia on 30 May 2012.

mengadakan lawatan sambil belajar ke JAS, Malaysia pada 30 Mei 2012. Tujuan lawatan tersebut adalah untuk memahami polisi dan arah tuju pengurusan pembentungan serta pembangunan luar bandar di Malaysia.

Malaysia – Afrika

Seramai 4 orang dari *Water Sanitation for Afrika* (WSA) telah mengadakan lawatan sambil belajar ke JAS pada 3 Oktober 2012. Tajuk lawatan adalah "*Economic And Financial Modest For Pricing And Setting Sanitation Tariffs For the Benefit of The Urban Poor*". Tujuan lawatan tersebut adalah untuk mempelajari dan berkongsi pengalaman mengenai pengurusan sistem pembentungan seperti penyediaan polisi, rangka kerja, perancangan, komunikasi, teknikal dan tarif supaya dapat diaplikasikan di negara-negara yang memerlukan sistem pembentungan yang sempurna demi alam sekitar dan kesihatan awam.

The visit aimed to understand the policy and direction for sewerage management and rural development in Malaysia.

Malaysia – Afrika

A total of 4 people from *Water Sanitation for Afrika* (WSA) visited the DOE on 3 October 2012. The topics for the visit is "*Economic And Financial Modest For Pricing And Setting Sanitation Tariffs For the Benefit of The Urban Poor*". The purpose of the visit was to learn and share experience on sewage management system such as provision of policy, framework, planning, communication, technical and tariff to be applied in countries which require sewage system that is good for environment and public health.



Mesyuarat Kesepuluh Kumpulan Kerja Jawatankuasa Bersama Malaysia - Singapura mengenai Alam Sekitar (MSJCE WG) pada 22 Mei 2012 di Kuala Lumpur

The 10th Malaysia - Singapore Joint Committee on the Environment Working Group Meeting (MSJCE WG) on 22 May 2012 in Kuala Lumpur





Lawatan Delegasi dari Kementerian Pembangunan Bandar, India ke JAS pada 30 Mei 2012
Visit by Ministry of Urban Development to DOE on 30 May 2012



Lawatan Delegasi dari Water Sanitation for Afrika (WSA) ke JAS pada 3 Oktober 2012
Visit by Water Sanitation for Afrika (WSA) to DOE on 3 October 2012

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

SAMBUTAN TAHUN ALAM SEKITAR ASEAN 2012

Sambutan ini telah diadakan pada 17-18 Julai 2012 di Kuala Lumpur dan telah dihadiri oleh Menteri-Menteri Alam Sekitar atau wakil dari Negara Anggota ASEAN serta dari negara China, Jepun dan Korea Selatan. Majlis ini telah dirasmikan oleh YB Dato Sri Douglas Uggah Embas, Menteri Sumber Asli dan Alam Sekitar.

Tema bagi sambutan tahun alam sekitar ini adalah "Kesedaran Alam Sekitar Melalui Sekolah Lestari" dan memfokuskan kepada peranan pihak sekolah dalam meningkatkan kesedaran pelajar tentang kepentingan pemeliharaan dan pemuliharaan alam sekitar.

Dalam sambutan ini juga, Majlis Penganugerahan Sekolah Lestari Peringkat ASEAN turut diadakan buat julung kalinya. Anugerah ini telah disampaikan oleh YB Tan Sri Datuk Seri Panglima Joseph Kurup, Timbalan Menteri Sumber Asli dan Alam Sekitar kepada 20 buah sekolah lestari (Kategori Sekolah Rendah dan Menengah) dari seluruh rantau ASEAN bagi mengiktiraf usaha-usaha mereka dalam memupuk kesedaran alam sekitar di kalangan pelajar dan masyarakat.

Pemilihan sekolah-sekolah ini adalah berdasarkan kriteria kebangsaan dan Garis Panduan Untuk Program Sekolah Lestari ASEAN yang telah disahkan oleh Menteri-Menteri Alam Sekitar ASEAN pada tahun 2011. Pemenang menerima Kristal Labu Sayung dan sijil pengiktirafan yang ditandatangani oleh YB Menteri Sumber Asli dan Alam Sekitar.

Semasa sambutan ini juga, delegasi-delegasi ASEAN telah dibawa untuk melawat terowong SMART, Taman Eko Rimba Bukit Nanas dan SJK (C) Tsun Jin, yang merupakan salah satu daripada penerima Sekolah Lestari - Anugerah Alam Sekitar (SLAAS).

ASEAN ENVIRONMENT YEAR 2012

The ASEAN Environment Year 2012 was held from 17 to 18 July 2012 in Kuala Lumpur and was attended by Environment Ministers and representatives from ASEAN countries as well as China, Japan and South Korea. The launching ceremony was officiated by YB Dato Sri Douglas Uggah Embas, Minister of Natural Resources and Environment.

The theme for AEY 2012 is 'Environmental Awareness through Eco-Schools' and it focused on the role played by schools in improving the awareness of their students on the importance of environmental conservation.

The inaugural ASEAN Eco-Schools Award 2012 was the highlight of the occasion. The award was presented by YB Tan Sri Datuk Seri Panglima Joseph Kurup, Deputy Minister of Natural Resources and Environment to 20 eco-school (primary and secondary categories) from ASEAN Member States in recognition to their exemplary efforts in inculcating environmental awareness and education to their students and the communities.

The selection of the eco-schools was based on national criteria and the ASEAN Guidelines on Eco-schools adopted by the ASEAN Environment Ministers in 2011. The winner received a Labu Sayung Crystal and a certificate of recognition signed by the YB Minister of Natural Resources and Environment.

Delegates from ASEAN countries were also taken to visit SMART tunnel, Taman Eco Rimba and SJK(C) Tsun Jin which was one of the recipients of Sustainable School – Environment Award.



ASEAN ENVIRONMENT YEAR 2012 di Kuala Lumpur pada 17 Julai 2012
ASEAN ENVIRONMENT YEAR 2012 in Kuala Lumpur on 17 July 2012



Lawatan ke SRJK (C) Tsun Jin, Kg Pandan pada 18 Julai 2012
Visit to SRJK (C) Tsun Jin, Kg Pandan on 18 July 2012



BAB 7
CHAPTER 7

PENGURUSAN TEKNOLOGI MAKLUMAT DAN KOMUNIKASI INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) MANAGEMENT

Bahagian Teknologi Maklumat telah diberi tanggungjawab untuk menyediakan infrastruktur dan perkhidmatan teknologi dan komunikasi maklumat (ICT) kepada Jabatan Alam Sekitar (JAS). Ini termasuklah melaksanakan perolehan perkakasan, perisian dan perkhidmatan ICT; merancang, membangun, melaksana dan menyelenggara sistem-sistem aplikasi Jabatan serta menyokong pelaksanaan aplikasi-aplikasi Kerajaan Elektronik (MyEG) di Jabatan; menyedia, memantau dan menyelenggara perkhidmatan rangkaian komunikasi Jabatan; memantau dan mengawal selia keselamatan ICT di seluruh Jabatan selaras dengan dasar keselamatan ICT JAS; menyediakan latihan-latihan ICT serta menyediakan khidmat nasihat dan sokongan teknikal ICT kepada para pengguna di Jabatan.

Penarafan 5 Bintang dan Pencapaian *Strategic Achievers* Laman Web Jabatan Alam Sekitar

Laman Web Rasmi Jabatan Alam Sekitar telah berjaya mengekalkan pencapaian penarafan lima (5) bintang untuk dua (2) tahun berturut-turut dalam Penilaian Portal dan laman Web Sektor Awam Kerajaan Malaysia (MGPWA) 2012 yang dianjurkan oleh Multimedia Corporation Sdn. Bhd.(MDeC).

Selain daripada pencapaian lima (5) bintang, Laman Web Rasmi Jabatan Alam Sekitar turut meraih Anugerah *Strategic Achievers*. Anugerah *Strategic Achievers* merupakan kriteria baru yang diperkenalkan bagi menghargai kesungguhan agensi Kerajaan dalam menyediakan laman web yang telus dan tidak tergugat dengan isu keselamatan.

Majlis penganugerahan tersebut telah berlangsung pada 12 Disember 2012 bertempat di Putrajaya Marriot Hotel untuk meraikan pencapaian 281 portal dan laman

The Information Technology Division is responsible to provide information and communication technology (ICT) infrastructure and services for the Department of Environment (DOE). This includes the procurement of hardware, software and ICT services; 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, providing, monitoring and maintaining the department's network and communication services, monitoring and regulating the ICT security within the entire department in accordance to the DOE ICT Security Policy, providing ICT training, as well as providing ICT technical advices and support to the users of the Department.

Department of Environment's Website 5 Star rating and Strategic Achievement Achievers

The Department of Environment's Official Website was awarded a five-star rating for two (2) consecutive years in the Malaysia Government Portal and Website Assessment (MGPWA) 2012 organized by the Multimedia Corporation Sdn.Bhd. (MDeC).

Apart from the achievement of five (5) stars, the Official Website of the Department of Environment also was awarded with Strategic Achievers Award. Strategic Achievers Award is a new criteria to appreciate and recognised the agencies in providing a website that is transparent and is not adversely affected by security issues.

The award ceremony was held on 12 December 2012 at Putrajaya Marriot Hotel to celebrate the achievements of 281 portals and websites that are rated five (5) stars and bagged 28

web yang mendapat penarafan lima (5) bintang 2012 dan 28 yang berjaya meraih anugerah *Strategic Achievers* dalam penilaian MGPWA 2012. Anugerah tersebut telah diterima oleh Ketua Pengarah Alam Sekitar.

awards for Strategic Achievers in MGPWA 2012 assessment. The award was received by the Director General of Environment.



Penarafan 5 Bintang Laman Web
Jabatan Alam Sekitar
Department of Environment's
Website 5 Star rating

Seranta Awam Atas Talian

Seranta Awam Atas Talian merupakan inisiatif Mantan Ketua Setiausaha Negara, Tan Sri Sidek Hassan. Surat Pekeliling Am Bil.2 Tahun 2012 – “Seranta Awam Atas Talian Bagi Sebarang Cadangan Atau Pindaan Undang-Undang” menjelaskan bahawa agensi-agensi Kerajaan Persekutuan perlu mengadakan seranta awam atas talian bagi semua draf cadangan baru atau pindaan undang-undang (termasuk undang-undang kecil, dasar, peraturan, dan lain-lain), tidak kira sama ada cadangan baru atau pindaan tersebut perlu dibentangkan di Parlimen ataupun tidak. Sehubungan itu, laman web ini disediakan untuk memaparkan draf Undang-Undang, Peraturan-Peraturan atau Perintah di bawah Akta Kualiti Alam Sekeliling 1974. Draf-draf ini hanya akan dipapar di laman web JAS selama 14 hari. Orang awam digalakkan memberi pandangan dan maklum balas kepada Jabatan Alam Sekitar sepanjang tempoh paparan tersebut.

Online Public Engagement

Online Public Engagement is an initiative by Former Secretary-General, Tan Sri Sidek Hassan. In General Circular No. 2 Year 2012 – “Online Public Engagement for Any Suggestions or Amendments” stated that Federal Government agencies have to provide online public engagement for all drafts of new proposal or law amendment (including by-law, policy, rule, and other), whether it is a new proposal or amendment need to be presented in Parliament or not. Therefore, this website is prepared for public consultation and will display the drafts of amendments or newly formulated Legislations, Rules, Regulations or Order under the Environmental Quality Act 1974. These drafts will be only displayed in DOE's Website for 14 days. Public are encouraged to give opinion and feedback to the Department of Environment during this period.



Laman Web Seranta Awam Atas Talian
Jabatan Alam Sekitar
Online Public
Engagement Web
Site

Laman Web Rasmi EIA, Jabatan Alam Sekitar

Sejajar dengan hasrat Jabatan untuk mewujudkan satu pusat rujukan untuk laporan EIA, maka Laman Web EIA telah dibangunkan dengan menampilkan reka bentuk yang lebih ringkas serta padat dengan kandungan EIA yang diharapkan dapat memberi manfaat kepada orang awam yang ingin mengetahui lebih lanjut mengenai penilaian kesan kepada alam sekeliling. Layari <http://eia.doe.gov.my/portal> untuk memasuki Laman Web EIA.

Department of Environment, EIA Official Website

In line with the Department's effort to establish an information center for EIA reports, the EIA's Website was developed with a simpler yet attractive design and full of EIA informative content that is expected to benefit public who wish to know more about the environmental impact assessment. Visit <http://eia.doe.gov.my/portal> to access the EIA's Website.



Laman Web Rasmi EIA
Official Web Site of EIA

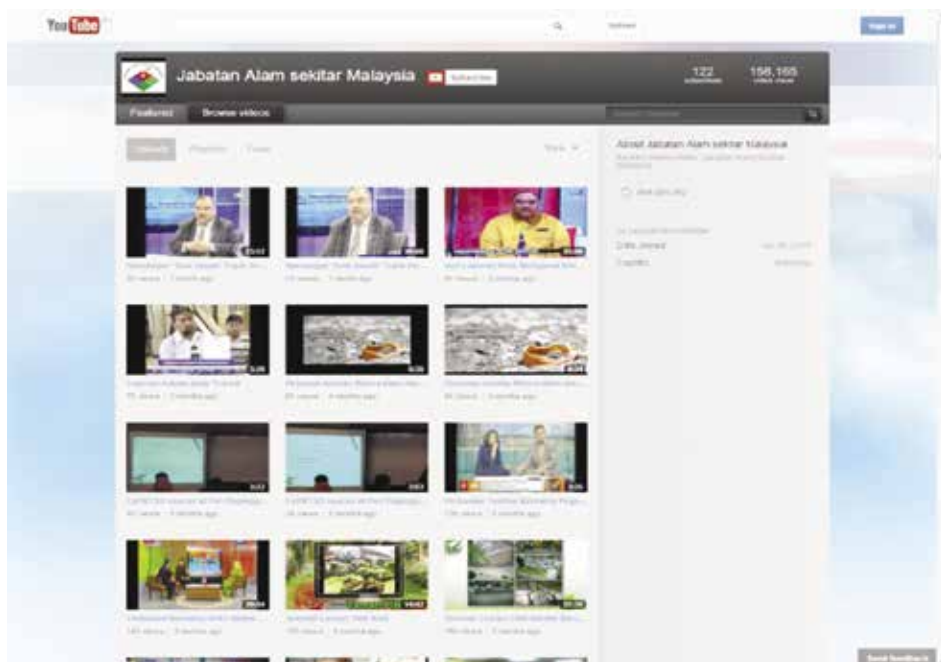
Koleksi Video Jabatan Alam Sekitar

Jabatan Alam Sekitar telah mengumpul sebanyak 60 video dan memaparkannya dalam laman web You Tube siaran JAS. Koleksi-koleksi video yang disumbangkan oleh setiap Bahagian dan Unit membantu warga JAS dan orang awam untuk mengetahui lebih lanjut mengenai isu-isu alam sekitar. Kini seramai 158,146 orang telah melayari video-video berkenaan. Layari <http://www.youtube.com/user/JabatanAlamSekitar> untuk menonton video-video tersebut

Department of Environment's Video Collection

Department of Environment has accumulated a total of 60 videos and display them on the YouTube broadcast. Video collections contributed by each Division and Unit helps DOE staff and the public to learn more about environmental issues. As of now a total of 158,146 people has browsed the videos. Visit <http://www.youtube.com/user/JabatanAlamSekitar> to watch the video.

Siaran Youtube Jabatan
Alam Sekitar
Department of
Environment's YouTube
Channel

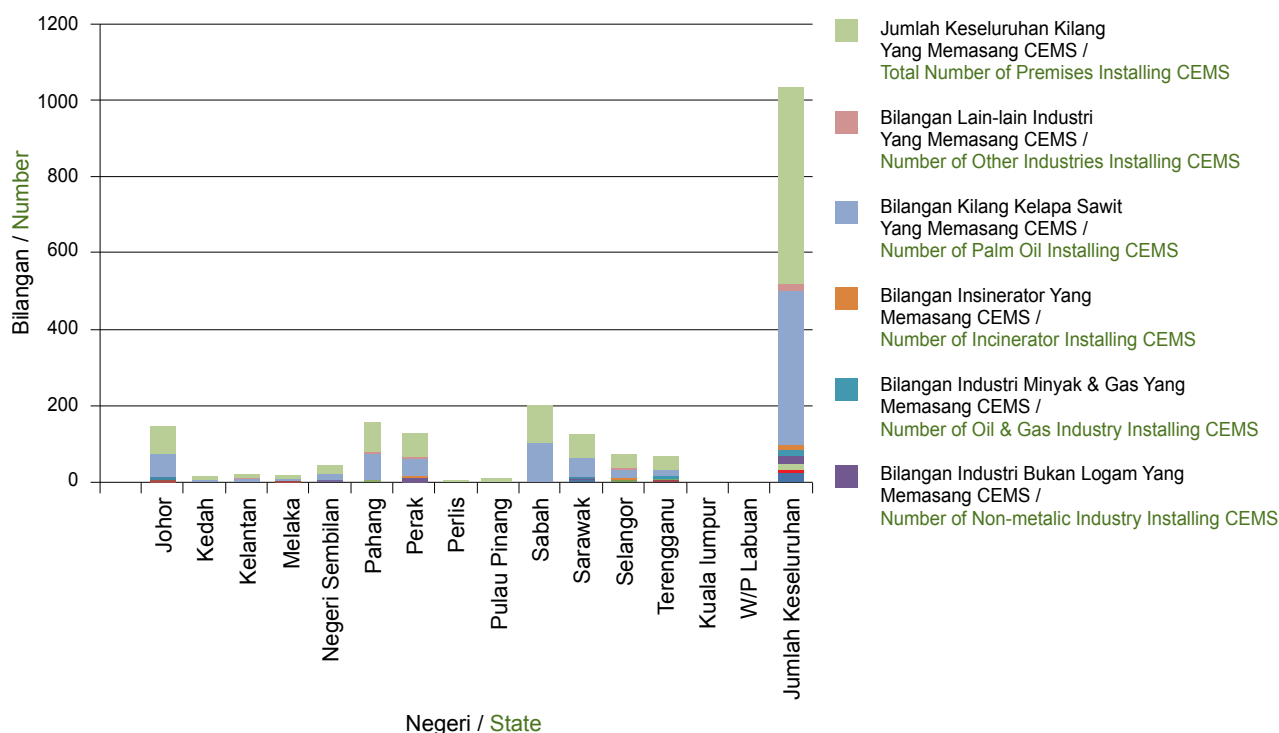


Sistem Penguatkuasaan Dan Pemantauan Jarak Jauh Melalui Continuous Emissions Monitoring System (RMESvCEMS)

Sehingga penghujung tahun 2012 sejumlah 518 premis industri telah didaftarkan dalam Sistem Penguatkuasaan Dan Pemantauan Jarak Jauh Melalui Continuous Emissions Monitoring System (CEMS). Ini menunjukkan peningkatan sebanyak 14% premis didaftarkan pada tahun tersebut berbanding 444 premis berdaftar pada tahun 2011. Sejumlah 253 premis telah berjaya menyalurkan data pelepasan bahan pencemar udara ke Sistem RMESvCEMS berbanding 217 pada tahun 2011.

Remote Monitoring and Enforcement System via Continuous Emissions Monitoring System (RMESvCEMS)

Towards the end of 2012, a total of 518 industrial premises were registered in the Remote Monitoring and Enforcement System via Continuous Emissions Monitoring System (RMESvCEMS). This shows an increase of 14% registered premises compared to 444 registered premises in 2011. A total of 253 premises have successfully sent their emissions data into the RMESvCEMS system compared to 217 premises in 2011.



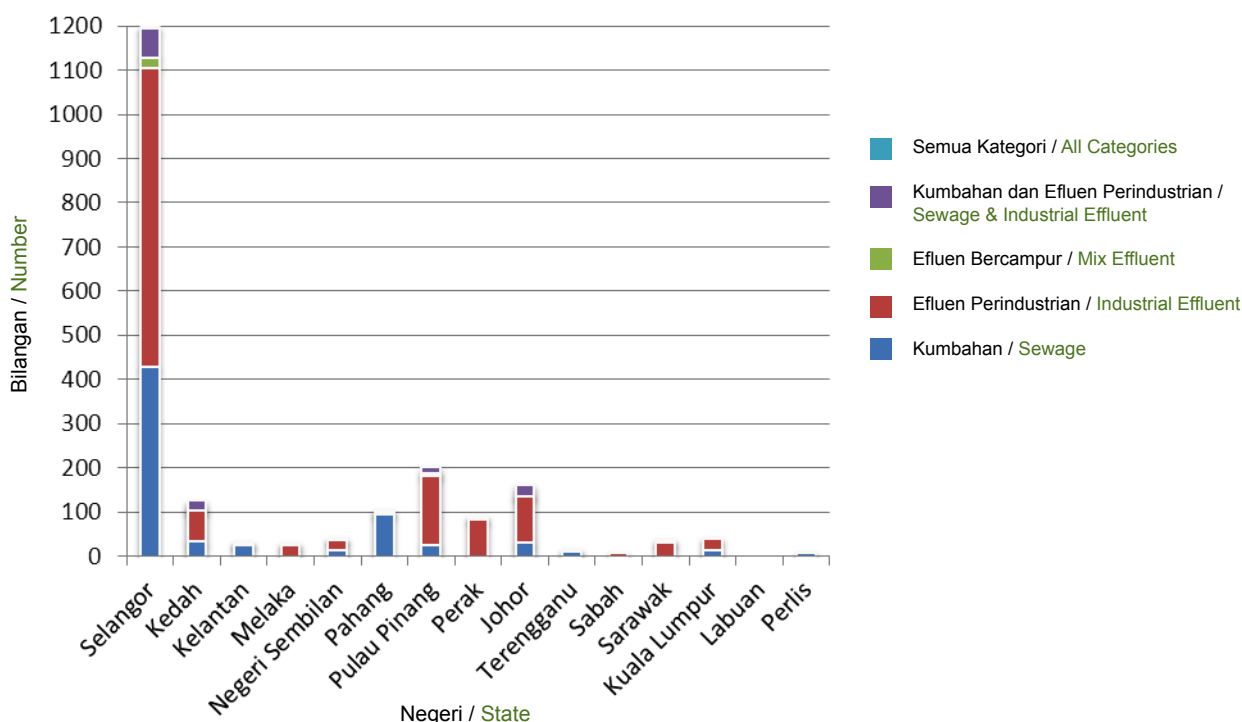
Rajah 7.1 JAS : Bilangan Premis Berdaftar Dalam RMESvCEMS Mengikut Jenis Industri dan Negeri, 2012
Figure 7.1 DOE : Number of Registered Premises in the RMESvCEMS by Industry and State, 2012

Sistem Pelaporan Bulanan Pelepasan Efluen Perindustrian dan Kumbahan (MDMR)

Pelaksanaan Sistem Pelaporan Bulanan Pelepasan Efluen Perindustrian dan Kumbahan (MDMR) telah dibuat sejak pertengahan tahun 2010. Sehingga Disember 2012, jumlah pengguna berdaftar bagi sistem ini adalah sebanyak 4,250 premis industri. Bilangan pelaporan yang telah dikemukakan melalui sistem ini adalah sebanyak 14,039 laporan pelepasan kumbahan, 12,066 laporan pelepasan efluen perindustrian dan 446 laporan pelepasan efluen campuran.

Monthly Industrial Effluent and Sewage Discharge Monitoring Report (MDMR)

The Monthly Industrial Effluent and Sewage Discharge Monitoring Report (MDMR) was implemented in mid-2010. By December 2012, the number of registered users of this system were 4,250 industrial premises. The number of reports submitted using the system are 14,039 reports for sewage discharge, 12,066 reports for industrial effluent discharge and 446 reports for mixed effluent discharge.



Rajah 7.2 JAS : Bilangan Premis Berdaftar Dalam MDMR Mengikut Jenis Industri dan Negeri, 2012
Figure 7.2 DOE : Number of Registered Premises in the MDMR by Industry and State, 2012

Sistem Perintis Penguatkuasaan Bergerak

Sistem Perintis Penguatkuasaan Bergerak merupakan satu sistem pengeluaran kompaun secara serta merta kepada premis-premis industri yang melakukan kesalahan. Sistem perintis ini mula dilaksanakan pada Disember 2012 di JAS Selangor, JAS Johor dan JAS Cawangan Sepang.

Peningkatan Sistem Aplikasi E-Kawalan Alam Sekitar (E-KAS)

Sistem E-Kawalan Alam Sekitar merupakan satu sistem aplikasi bersepadu berasaskan web yang menjadi pusat pengumpulan data-data berkaitan alam sekitar termasuk maklumat punca pencemaran, pelesenan, pematuhan dan penguatkuasaan alam sekitar. Dalam tahun 2012, sistem ini telah dinaiktaraf dengan penambahan dua modul baru iaitu Modul EIA dan Modul Pelupusan Haram.

Mobile Enforcement Pilot System (M-Force)

Mobile Enforcement Pilot System (M-Force) is a system for producing immediate compound to industrial premises. Mobile Enforcement Pilot System (M-Force) was implemented in December 2012 by JAS Selangor, JAS Johor and JAS Sepang.

E-Kawalan Alam Sekitar (E-KAS) System Upgrade

The E-Kawalan Alam Sekitar (E-KAS) System is an integrated web-based application system that serves as a repository of environment related data including pollution sources, licensing, compliance and enforcement activities. In 2012, the system has been upgraded with two additional new modules, EIA Module and Illegal Dumping Module



Latihan Sistem Perintis Penguatkuasaan Bergerak
Mobile Enforcement Pilot System Training

Sistem Maklumat Geografi Alam Sekitar (SMGAS)

Bermula pada tahun 2012, Seksyen GIS telah ditempatkan di bawah Bahagian Teknologi Maklumat. Ini bertujuan memastikan pelaksanaan program pembangunan GIS serta penggunaan GIS dapat dimanfaatkan oleh semua kakitangan di Jabatan Alam Sekitar.

Menerusi Pembangunan Sistem Maklumat Geografi (SMGAS) dibawah Rancangan Malaysia Kesepuluh (2011-2015), Seksyen GIS pada tahun 2012 telah berjaya melaksanakan program yang melibatkan:

- a) Pembangunan Sumber Manusia;
- b) Pembangunan Data dan Aplikasi; dan
- c) Pembangunan Infrastruktur.

Pembangunan Sumber Manusia GIS

Bagi memastikan teknologi GIS ini terus dimanfaatkan dalam kerja seharian, tiga (3) kursus asas GIS telah dilaksanakan dengan kerjasama EiMAS pada bulan Mei, September dan Oktober 2012. Disamping itu, tiga (3) siri bengkel telah diadakan pada April, Jun

Environmental Geographic Information System (SMGAS)

Beginning in 2012, Section GIS has been placed under the Information Technology Division. This is to ensure the implementation of GIS development and use of GIS been fully utilized by all the staff in the Department of Environment.

With the Development of Geographic Information System (SMGAS) in the Tenth Malaysia Plan (2011-2015), GIS Section has successfully implemented this program involving:

- a) Human Resource Development;
- b) Data and Application Development; and
- c) Development of Infrastructure.

GIS Human Resource Development

In ensuring GIS technology been utilized in daily task, three (3) GIS courses have been conducted in collaboration with EiMAS in May, September and October 2012. Also three (3) workshops were held in April, June and

dan Disember 2012 melibatkan pegawai JAS Negeri dan Bahagian. Selain itu wakil JAS turut menyertai dua (2) persidangan GIS pada Mei dan Oktober 2012. Mesyuarat Tahunan Penyelarasan GIS juga telah berjaya dilaksanakan bagi memastikan perkembangan GIS ini dapat diselaraskan di setiap JAS Negeri dan Bahagian.

Pembangunan Infrastruktur GIS

Pada tahun 2012, perolehan peralatan ICT baru dan pembaharuan lesen perisian GIS telah dilaksanakan dan diagihkan kepada JAS Negeri. Ini bagi memastikan penggunaan GIS dapat digunapakai oleh semua kakitangan JAS. Disamping itu Bilik Operasi Kawalan JAS Negeri turut dilengkapi dengan infrastruktur GIS bagi membolehkan maklumat GIS dapat dicapai dengan lebih cepat. Pelaksanaan Pembangunan Infrastruktur adalah seperti berikut:

- i. Perolehan 20 unit Komputer Desktop GIS;
- ii. Perolehan 20 unit Komputer Riba GIS;
- iii. Perolehan 15 unit paparan LCD untuk Bilik Kawalan Operasi;
- iv. Pembaharuan dan peningkatan lesen perisian ArcGIS (Arcinfo dan ArcGIS Server); dan
- v. Pembaharuan lesen Google Earth Pro dan API.

Pembangunan Data dan Aplikasi GIS

Pada tahun 2012, beberapa maklumat data spatial telah dibangunkan dan diperolehi daripada agensi lain. Semua maklumat data spatial ini kemudiannya dikemaskini dalam aplikasi GIS di dalam Portal GIS. Peningkatan aplikasi GIS turut dilaksanakan bagi membolehkan pengguna mendapat capaian maklumat GIS dengan lebih mudah dan interaktif. Program pemetaan spatial mengikut lembangan turut dimulakan pada tahun 2012 dengan memberi fokus kepada beberapa lembangan dan sungai iaitu Lembangan Langat, Klang, Muar, Muda dan sungai-sungai

December 2012 involving DOE Officers from states and divisions. Apart from that two (2) GIS conferences were held in May and October 2012 with the participation of DOE officers. In addition, the DOE's GIS Annual Meeting has been successfully conducted to ensure the development of GIS is well coordinated in each State Offices and Divisions.

GIS Infrastructure Development

In 2012, the procurement of new ICT equipment and GIS software license renewal has been implemented and distributed to DOE State Offices. This is to ensure that GIS application can be used and practice by all DOE employees. Furthermore, DOE Operations Control Room is also equipped with GIS infrastructure to enable the GIS information can be reached within a short time. Implementations of the infrastructure development are as follows:

- i. Procurement of 20 units GIS Computer Desktop;
- ii. Procurement of 20 units GIS Laptop;
- iii. Procurement of 15 LCD display units for Operations Control Room;
- iv. Renewal and upgrading of ArcGIS software licenses (ArcInfo and ArcGIS Server); and
- v. Renewal of Google Earth Pro and API.

GIS Data and Applications Development

In 2012, several spatial information have been developed and obtained from other agencies. All spatial information is then updated in the GIS Application inside GIS DOE Portal. Upgrading of a GIS Application was also implemented to enable users to get access on GIS information more easily and more interactive. Spatial mapping program according to the basin was also initiated in 2012 by focusing on a three (3) basins and rivers. Among them are the Langat Basin, Muar Basin, Muda Basin and rivers under the 1 State 1 River Programme namely Sungai Miri (Sarawak), Sungai Pinang (Pulau



Kursus Asas GIS Modul 3
GIS Basic Course Module 3



Penyertaan JAS dalam Simposium Maklumat Geospasial Kebangsaan (NGIS) Ke-5 (21-22 Mei 2012) DOE participation in the 5th National Symposium on Geospatial Information (NGIS) (21-22 May 2012)

di bawah Program 1 Negeri 1 Sungai iaitu Sungai Miri (Sarawak), Sungai Pinang (Pulau Pinang), Sungai Melaka (Melaka), Sungai Galing (Pahang), Sungai Hiliran (Terengganu), Sungai Papar (Sabah), Sungai Skudai (Johor), Sungai Petani (Kedah), Sungai Penchala (Selangor), Sungai Temiang (N.Sembilan), Sungai Pengkalan Chepa (Kelantan), Sungai Kinta (Perak), Sungai Bintangor (Sarawak) dan Sungai Perlis (Perlis).

Perolehan dan Pelupusan Peralatan ICT

Pada tahun 2012, Bahagian Teknologi Maklumat telah membuat perolehan sejumlah 160 unit komputer desktop, 75 unit komputer riba, 113 unit pencetak, lima (5) unit pelayan dan 67 unit tablet PC. Manakala sejumlah 58 unit komputer desktop, 15 unit komputer riba dan 29 unit pencetak telah dilupuskan pada tahun yang sama.

Pinang), Sungai Melaka (Melaka), Sungai Galing (Pahang), Sungai Hiliran (Terengganu), Sungai Papar (Sabah), Sungai Skudai (Johor), Sungai Petani (Kedah), Sungai Penchala (Selangor), Sungai Temiang (N.Sembilan), Sungai Pengkalan Chepa (Kelantan), Sungai Kinta (Perak), Sungai Bintangor (Sarawak) dan Sungai Perlis (Perlis).

Procurement and Disposal of ICT Equipments

In 2012, the Information Technology Division had acquired a total of 160 desktop computers, 75 laptops, 113 printers, five (5) servers and 67 tablet PCs. Meanwhile a total of 58 desktop computers, 15 laptops and 29 printers were disposed in the same year.



Program Latihan ICT

Pada tahun 2012, Bahagian Teknologi Maklumat dengan kerjasama EiMAS telah menganjurkan sebanyak 13 program latihan ICT, termasuklah kursus, bengkel dan taklimat ICT sebagai sebahagian daripada usaha untuk meningkatkan kefahaman, pengetahuan dan kemahiran ICT di kalangan kakitangan JAS. Program latihan tersebut ialah:

- i) Program Pemantapan ICT;
- ii) Kursus Penyelenggaraan Komputer Sesi 1;
- iii) Kursus Penyelenggaraan Komputer Sesi 2;
- iv) Kursus Microsoft Office Suite 2007 – Pertengahan (Sesi 1);
- v) Kursus Microsoft Office Suite 2007 – Pertengahan (Sesi 2);
- vi) Kursus Microsoft Office Suite 2007 – Lanjutan;
- vii) Latihan Pengguna: MDMR & ESCP;
- viii) Latihan Pengguna: eSWIS;
- ix) Penyediaan Montaj menggunakan Powerpoint & Photoshop;
- x) Pengenalan kepada PHP & MySQL;
- xi) Kursus GIS Sesi 1;
- xii) Kursus GIS Sesi 2; dan
- xiii) Kursus GIS Sesi 3.

ICT Training Programmes

In 2012, the Information Technology Division collaborated with EiMAS in organizing a total of 13 ICT training program, including courses, workshops and talks in its effort to increase the understanding, knowledge and skills in ICT among DOE staff. The training programmes are as follows:

- i) ICT Enhancement Programme;
- ii) Computer Maintenance Session 1;
- iii) Computer Maintenance Session 2;
- iv) Microsoft Office Suite 2007 – Intermediate Level (Session 1);
- v) Microsoft Office Suite 2007 – Intermediate Level (Session 2);
- vi) Microsoft Office Suite 2007 – Advanced Level;
- vii) End User System Training: MDMR & ESCP;
- viii) End User System Training: eSWIS;
- ix) Montage Making Using Powerpoint & Photoshop;
- x) Introduction to PHP & MySQL;
- xi) GIS Course Session 1;
- xii) GIS Course Session 2; and
- xiii) GIS Course Session 3.



BAB 8
CHAPTER 8

INSTITUT ALAM SEKITAR MALAYSIA (EiMAS)

ENVIRONMENT INSTITUTE OF MALAYSIA (EiMAS)

Program Latihan EiMAS

Pada tahun 2012, EiMAS telah berjaya menyediakan latihan kepada sejumlah 2,272 peserta melalui 107 kursus (**Jadual 8.1**). Daripada 2,272 peserta yang menyertai program latihan yang dilaksanakan, 1,300 orang (57.2%) adalah kakitangan Jabatan Alam Sekitar, manakala 972 orang adalah peserta dari luar jabatan. Program latihan ini bertujuan untuk meningkatkan kecekapan dan kompetensi di kalangan kakitangan Jabatan Alam Sekitar dan lain-lain organisasi yang berkaitan.

Program Latihan untuk Industri

Pada tahun 2012, EiMAS meneruskan usaha menganjurkan program-program dan latihan untuk industri, bagi meningkatkan kefahaman dan pengetahuan mereka dalam mencapai pematuhan terhadap kehendak alam sekitar.

Kursus Pensijilan untuk Industri

Pada tahun 2012, sebanyak 49 Kursus Pensijilan untuk pihak industri telah berjaya dilaksanakan mengikut topik iaitu :

- 1) Kursus Pensijilan Alam Sekitar Dalam Pengoperasian Sistem Pengolahan Effluen Industri;
- 2) Kursus Pensijilan Alam Sekitar Dalam Pengurusan Buangan Terjadual;
- 3) Kursus Pensijilan Alam Sekitar Dalam Pengendalian Pengolahan Kumbahan; dan
- 4) Kursus Pensijilan Alam Sekitar Dalam Pengoperasian Penapis Bag.

Sebanyak 49 sesi peperiksaan kursus pensijilan tersebut juga telah dilaksanakan sepanjang tahun 2012. Pihak EiMAS berjaya memberikan latihan kepada 945 kakitangan industri dan mereka telah menduduki peperiksaan yang telah ditetapkan di bawah program ini.

EiMAS Training Programme

In 2012, EiMAS had successfully executed 107 training courses for a total of 2,272 participants (**Table 8.1**). Out of the 2,272 participants, 1,300 participants (57.2%) were from DOE while the rest (972) were external participants. These training programmes were aimed to enhance the efficiency and competency of personnel from DOE and other relevant organizations.

Training Programmes for Industries

In 2012, EiMAS continued to carry out training programmes for industries in order to upgrade their understanding and knowledge towards compliance to environmental requirements.

Certification Courses for Industries

In 2012, a total of 49 Certification Courses were conducted for the industries namely;

- 1) Certification Course for Operators of Industrial Effluent Treatment Systems (IETS) ;
- 2) Certification Course for Scheduled Waste Management;
- 3) Certification Course for Sewerage Treatment Operation; and
- 4) Certification Course for Operators of Air Pollution Control Equipment (Bag Filter Dust Collector).

49 examination sessions for these certification courses were also conducted. Throughout 2012, EiMAS has successfully trained 945 Industrial Personnel and they had also passed the exam required under this programme.

Program Sangkutan

EiMAS telah menguruskan tujuh (7) 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 12 orang pegawai telah mengikuti program sangkutan di premis kilang di dalam negara (**Jadual 8.2**) dan tujuh (7) orang pegawai mengikuti program sangkutan di luar negara pada tahun 2012. (**Jadual 8.3**).

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 2012, EiMAS telah mengaturkan kehadiran 50 orang pegawai JAS bagi menghadiri kursus di dalam negara (**Jadual 8.4**) dan 34 pencalonan bagi menghadiri program latihan di luar negara (**Jadual 8.5**).

Kursus Secara Kerjasama dengan Institusi Latihan Dalam Negeri

Institut Latihan Kehakiman dan Perundangan (ILKAP)

EiMAS juga telah meneruskan program kerjasama dengan ILKAP dengan mengaturkan dua (2) kursus bertajuk Kursus Tatacara Memberi Keterangan Di Mahkamah dan Kursus Lanjutan Pendakwaan. Seramai 50 orang pegawai JAS telah menghadiri kursus-kursus tersebut. Para peserta juga turut didedahkan kepada sesi latihan perbicaraan kes secara *mock trial* dengan menggunakan kes-kes JAS yang lepas.

Attachment Programmes

Attachment programmes for DOE officers were held at various private organizations within and outside the country. 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 12 officers attended this attachment programmes at factory premises in Malaysia (**Table 8.2**) and seven (7) officers attended attachment programmes outside Malaysia in 2012. (**Table 8.3**)

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 for training programmes with duration of less than three (3) months.

Throughout 2012, EiMAS had facilitated the attendance of 50 officers to attend courses/seminar that were held locally (**Table 8.4**) and 34 nominations for programmes outside Malaysia (**Table 8.5**).

Collaboration with Local Training Institution

The Judicial and Legal Training Institute (ILKAP)

EiMAS continued its collaboration programmes with ILKAP by organizing two (2) courses; Course On Procedures of Giving Evidence in Court and Advanced Course on Prosecution. A total of 50 DOE's Officers attended these courses. The participants were also required to participate in mock trials based on actual environmental court cases from DOE.

Polis Diraja Malaysia (PDRM)

Menyedari pentingnya gambar foto yang representatif dan penyimpanan yang selamat di dalam sesuatu penyiasatan kes alam sekitar dan prosedur pendakwaan selanjutnya, EiMAS dengan kerjasama Polis Diraja Malaysia (PDRM) telah menganjurkan Kursus Kompetensi untuk Fotografi di dalam Penyiasatan Kes Alam Sekitar kepada pegawai-pegawai penyiasat JAS. Kursus lima (5) hari ini diadakan di Maktab Polis Diraja Malaysia (PDRM), Cheras dan dihadiri seramai 29 orang peserta. Kursus ini bertujuan untuk memahirkan para peserta tentang fungsi kamera dan teknik fotografi gambar dan prosedur pengendalian gambar dan imej tersebut supaya dapat digunakan sebagai bahan keterangan yang diterima di mahkamah.

Bantuan Teknikal dari Agensi Antarabangsa

United State Environment Protection Agency (USEPA)

Pada tahun 2012, EiMAS telah menganjurkan dua (2) kursus dengan mendapat kerjasama teknikal daripada *United State Environment Protection Agency* (USEPA) iaitu Washington DC dan California EPA.

Kursus *Environmental Compliance Inspection (ECI) For DOE Officers* telah dianjurkan pada 19-21 Mac 2012 dengan bantuan teknikal dari USEPA Washington DC. Dua orang tenaga pengajar yang terlibat ialah Mr Davis Jones (EPA Washington DC) dan Ms. Sarah Marshall (EPA Chicago). Seramai 44 orang peserta dari kumpulan profesional dan pengurusan JAS telah hadir. Para peserta telah mendapat pendedahan tentang pendekatan dan pelaksanaan penguatkuasaan undang-undang alam sekitar dan teknik penyiasatan yang diamalkan di peringkat antarabangsa khususnya di Negara Amerika Syarikat.

Royal Malaysian Police (RMP)

Recognising the significance of good photographs and the importance of their safekeeping in environmental investigation and the subsequent prosecution procedure, EiMAS in collaboration with the Royal Malaysian Police (RMP), conducted a Competency Course on Photography for Environmental Investigation for DOE's Investigation Officers. The five (5) days course held at Royal Malaysian Police College (RMPC), Cheras was attended by 29 DOE Investigation Officers. The course not only aimed to equip DOE Investigation Officers with the functions of the camera and the photography techniques to best captured representative photographs but also on the procedures required by law on how to use the photographs as exhibits acceptable by the court.

Technical Assistance from International Agencies

United State Environment Protection Agency (USEPA)

In 2012, EiMAS conducted two (2) courses with the technical assistance from the United State Environment Protection Agency (USEPA) namely the Washington DC and California EPA.

The Environmental Compliance Inspection (ECI) Course For DOE Officers was held from 19-21 March 2012 with the technical assistance from USEPA Washington DC. Two facilitators were involved in conducting the training course - Mr Davis Jones (EPA Washington DC) and Ms. Sarah Marshall (EPA Chicago). A total of 44 participants from DOE's professional and management group attended the course. The participants were introduced to the approaches and implementation of environmental enforcement and investigation techniques as practised internationally with focus on United States.

Kursus kedua yang dianjurkan dengan bantuan teknikal dari USEPA ialah Kursus *Environmental Management And Compliance Monitoring Of Hazardous Substances (EMCM) For DOE Officers* yang melibatkan agensi peringkat negeri *Department of Toxic Substances Control (DTSC), California EPA*. Kursus ini dijalankan dari 9-13 Julai 2012 yang melibatkan dua (2) orang tenaga pengajar pakar yang berpengalaman iaitu Mr. Alan Ito dan Mr. Keith Kihara. Kursus ini memberi fokus kepada penguatkuasaan undang-undang berkaitan kawalan bahan berbahaya di Amerika Syarikat dan pengurusan tanah tercemar serta cabaran yang dihadapi. Seramai 34 orang peserta dari kumpulan kumpulan profesional dan pengurusan JAS telah hadir.

The second course conducted with the technical assistance from USEPA was a Course On *Environmental Management And Compliance Monitoring Of Hazardous Substances (EMCM) For DOE Officers* involving United States state agency, the Department of Toxic Substances Control (DTSC), California EPA. The course was held from 9-13 July 2012 under the expert facilitation of two DTSC experienced trainers, Mr. Alan Ito dan Mr. Keith Kihara. The training course focused on the enforcement of the legal provisions pertaining to control of hazardous substance in the United States and management of contaminated lands and challenges faced. A total of 34 participants from DOE's professional dan management group attended the course.

Jadual 8.1 JAS: Program Latihan EiMAS, 2012
Table 8.1 DOE: EiMAS Training Programmes, 2012

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	60	0	90
2.	Kursus Induksi Khusus / Specific Induction Course	2	74	0	10
3.	Pengurusan Kualiti / Quality Management	6	144	5	20
4.	Pengurusan Kualiti Air / Water Quality Management	6	131	3	28
5.	Pengurusan Kualiti Udara / Air Quality Management	8	125	0	34
6.	Perundangan Alam Sekitar / Environmental Legislation	7	175	2	35
7.	Pengurusan Alam Sekitar Dan Kesan Kepada Alam Sekitar / Environmental Management and Impact Assessment	10	198	8	40
8.	Pengurusan Buangan Terjadual / Scheduled Waste Management	8	160	9	41
9.	Program Pensijilan Untuk Industri / Certification Programme for Industry	49	0	945	270
10.	Teknologi Maklumat / Information Communication Technology	10	233	0	31

Jadual 8.2 JAS: Program Sangkutan Dalam Negara, 2012
Table 8.2 DOE: Attachment Programmes in Malaysia, 2012

Bil. / No.	Lokasi/ Place	Tarikh/ Date	Peserta/ Participants
1	SK Bearing	8 – 9 Mar 2012	1. PK Goh See Ben (EiMAS) 2. PPKK Kamarudin Abdul Rahman (EiMAS)
2	Carrier International	12 – 13 Mar 2012	1. PK Goh See Ben (EiMAS) 2. PPKK Kamarudin Abdul Rahman (EiMAS)
3	Arachem (M) Sdn. Bhd., Damansara	16 – 20 Jul 2012	1. KPP Ahmad Saifful Salihin (EiMAS) 2. PPK Norsazali Ramli (DOE Selangor) 3. PK Mohamed Safuan Mohamed Sanuar (DOE N. Sembilan) 4. PK Grace Puyang Emang (Enforcement Division, DOE Headquarters) 5. PK Ahmad Madzhar Mansor (DOE Selangor) 6. PK Mohd Rosli Mohd Nor (Hazardous Waste Division, DOE Headquarters) 7. PK Noorlida Abd Malik (Water & Marine Division, DOE Headquarters) 8. PPKK Hadijah Ali (DOE Melaka) 9. PPK Rina Arnida Ahmad (EiMAS) 10. PPK Julia anak Langan (DOE Sarawak)

Jadual 8.3 JAS: Program Sangkutan Luar Negara, 2012
Table 8.3 DOE: Overseas Attachment Programmes, 2012

Bil./ No.	Program / Programme	Tempat / Place	Tarikh / Date	Peserta / Participants
1	Attachment Programme-BMPs Standard In Installation And Specification (USA)	North Carolina Dept of Environment, USA	26 Mar - 6 Apr 2012	1. KPP Rohimah Ayub (DOE Pahang) 2. PPKK Nor Razzaman Hamzah (DOE Pahang)
2	Attachment Programme - Benchmarking Visit in Management and Control of E-Waste (USA)	USA and Canada	18 - 24 June 2012	1. P(BB) Datin Paduka Che Asmah Ibrahim (Hazardous Waste Division DOE Headquarters) 2. KPP Zuraini Ahmad Tajudin (Hazardous Waste Division – DOE Headquarters)
3	Climate Change (Earth System, Future Scenarios and Threads) (United Kingdom)	School of Civil Engineering & Geosciences Newcastle University, United Kingdom	29 Oct – 2 Nov 2012	PK Amy Charlene Wong (Air Division, DOE Headquarters)
4	Certified Technical Training for Auditing Met One Instruments Equipment (USA)	USA	30 Oct - 9 Nov 2012	1) PK Halmy Sirat (Air Division, DOE Headquarters) 2) PK Mohd Amir Ismail (Air Division, DOE Headquarters)

Jadual 8.4 JAS: Latihan Di Dalam Negara, 2012
Table 8.4 DOE: Local Training Courses, 2012

Bil. / No	Perkara / Title	Penganjur / Organizer	Tempat / Place	Tarikh / Date	Peserta / Participants
1	Majlis Syarahan Umum – Global Use of Nuclear Energy: Challenges and Opportunities	UKM, Bangi	UKM, Bangi	2 Feb 2012	1. P(EiMAS) Rahani Hussin (EiMAS) 2. KPP Mohd Hidzir Bakar (EiMAS) 3. KPP Hamzah Mohamad (EiMAS)
2	Kursus Pengendalian Barang Kes (Pelbagai Jabatan)	ILKAP	ILKAP	20 - 23 Feb 2012	1. PKK Mehrani Saharudin (DOE Penang) 2. JT Norraini Lias (DOE WP Kuala Lumpur)
3	Kursus Diploma Eksekutif Penguatkuasaan Undang-Undang (ILKAP-UiTM)	ILKAP	ILKAP	13 Feb – 2 Mar 2012	KPP Mohd Sani Mat Daud (DOE Kedah)
4	Conference on Trainers Meet Trainers	INTAN	Istana Hotel, Kuala Lumpur	22 Feb 2012	1. KPP Hajah Dalilah Dali (EiMAS) 2. KPP Rusnani Abdullah (EiMAS) 3. KPP Raseli Mat Lazim (EiMAS) 4. KPP Mohd Hidzir Bakar (EiMAS) 5. KPP Ahmad Saifull Salihin (EiMAS)
5	Bengkel Memberi Keterangan Dalam Perbicaraan Kes Jenayah.	ILKAP	ILKAP	5 - 6 Mar 2012	1. PK Rojiah Abu Bakar (DOE Selangor) 2. PPKK Kamarruddin Ab. Rahman (EiMAS)
6	Certificate in Change Management, Organization Development and Appreciative Inquiry	PRIMA Asia Pasific Consulting Sdn Bhd	Grand Dorsett Hotel, Subang	7 – 9 Mar 2012	P(Pahang) Dato' Dr. Ahmad Kamarul Najuib Che Ibrahim (DOE Pahang)
7	1 Day E-Learning Mini Seminar and Exhibition	PMSB	Seri Pacific Hotel, Kuala Lumpur	26 Apr 2012	1. KPP Hajah Dalilah Dali (EiMAS) 2. KPP Hamzah Mohamad (EiMAS) 3. PK Goh See Ben (EiMAS)

Jadual 8.4 JAS: Latihan Di Dalam Negara, 2012 (sambungan)
Table 8.4 DOE: Local Training Courses, 2012 (continued)

Bil. / No	Perkara / Title	Penganjur / Organizer	Tempat / Place	Tarikh / Date	Peserta / Participants
8	Kursus Asas Fotografi dan Lanjutan	Akademi Photovideo	Akademi Photovideo, Taman Prima Sri Gombak	5 – 7 May 2012	1. PK Shamsuri Abd Manan (Water and Marine Division, DOE Headquarters) 2. PPK Mohd Sanip Saikhol Bakhri Ahmad (Water and Marine Division, DOE Headquarters)
9	EU-ASIA Biomass Best Practices & Business Partnering Conference 2012	Biomass-SP	PWTC, Kuala Lumpur	8-9 May 2012	1. KPP Mohd Famey Yusoff (Air Division, DOE Headquarters) 2. PK Amy Charlene Wong (Air Division, DOE Headquarters)
10	Forum Pengurusan Pelanggan	INTAN	INTAN Bukit Kiara	12 Jun 2012	1. PK Mazrita Masnon (Assessment Division, DOE Headquarters) 2. PK Noorazehan Baharum (Strategic Communications Division, DOE Headquarters) 3. PPKK Wan Noraini Wan Hamzah (Enforcement Division, DOE Headquarters) 4. PPKK Rozita Abdul Jalil (Air Division, DOE Headquarters)
11	Executive Diploma in Enforcement Law	ILKAP	ILKAP	11 – 29 Jun 2012	KPP Hajah Dalilah Dali (EiMAS)
12	Course on 4 th International UKM-KAIST Summer School on Nuclear Power Science and Engineering 2012	UKM Bangi	UKM Bangi	2 - 13 Jul 2012	KPP Sharifah Zakiah Syed Sahab (Assessment Division, DOE Headquarters)
13	Kursus Aplikasi Manual Saliran Mesra Alam Dalam Perancangan Projek (MSMA)	CP Training Consultant	Grand Continental Hotel, Kuala Lumpur	10 –12 Jul 2012	1. P(Selangor) Siti Zaleha Ibrahim (DOE Selangor) 2. PKK Mohammad Ezanni Mat Salleh (DOE Johor) 3. PK Mohd Hisyam Abdullah (DOE Pahang) 4. PK Rohimi Harun (DOE Kelantan)

Jadual 8.4 JAS: Latihan Di Dalam Negara, 2012 (sambungan)
Table 8.4 DOE: Local Training Courses, 2012 (continued)

Bil. / No	Perkara / Title	Penganjur / Organizer	Tempat / Place	Tarikh / Date	Peserta / Participants
14	Seminar Keselamatan dan Kesihatan Pekerjaan	Department of Occupational Safety and Health (DOSH)	Grand Dorsett Hotel, Subang	11 - 12 Jul 2012	1. PK Zuraini Kerya (DOE Selangor) 2. PPK Marlia Malnan (DOE Selangor)
15	Kursus Penggubalan Undang-Undang	Jabatan Peguam Negara, Putrajaya	Jabatan Peguam Negara, Putrajaya	18 – 20 Jul 2012	KPP Tunku Khalkausar Tunku Fathahi (Enforcement Division, DOE Headquarters)
16	ESP Training Seminar	Tai&Chyun Associates Ind., Inc.	Armada Hotel, Petaling Jaya	28 Aug 2012	1. PK Farah Diyana Rusli (EiMAS) 2. PPK Kalsom Ismail (EiMAS) 3. PPK Muhammad Hizam Mohd Ibrahim (EiMAS)
17	Course on Certified Environmental Professional in Sewage Treatment Plant Operation (CePSTPO)	Malaysian Water Academy Sdn. Bhd. (MYWA)	IWK Technical Training Centre, Kuala Lumpur	24 – 28 Sep 2012	1. KPP Ahmad Saifull Salihin (EiMAS) 2. PK Shazana Mohd Ibrahim (EiMAS)
18	Course on Certified Language and Behaviour (LAB) Profile	MTM Consultants Sdn Bhd	MTM Learning Centre, Shah Alam	8 – 10 Oct 2012	P(Perak) Dato Abu Hassan Mohd Isa (DOE Perak)
19	Persidangan Perkhidmatan Awam ke 17	INTAN Kuala Lumpur	INTAN Kuala Lumpur	1-2 Nov 2012	P(EiMAS) Rahani Hussin (EiMAS)
20	Seminar Kaedah Pelaksanaan Kajian Keperluan Latihan dan Perancangan Pembangunan Latihan dengan Berkesan	HPI Consultants Sdn Bhd	Carlton Hotel, Shah Alam	5 - 6 Nov 2012	1. KPP Rusnani Abdullah (EiMAS) 2. KPP John Rampai (EiMAS)
21	Seminar Pembangunan Kaedah Penilaian Keberkesanan Latihan Dan Meningkatkan Keberkesanan Latihan	HPI Consultants Sdn Bhd	Carlton Hotel, Shah Alam	19 - 20 Nov 2012	1. KPP Rusnani Abdullah (EiMAS) 2. KPP Raseli Mat Lazim (EiMAS)
22	Certified Erosion, Sediment and Storm Water Inspector Certification Program (CESSWI)	Perunding Azman, Ooi & Rao Sdn Bhd	Hotel De Palma, Ampang	5 – 9 Nov 2012	1. KPP Rosli Zul (DOE Perak) 2. PK Mohd Rosiskada Mohamed (DOE Terengganu) 3. PPK Rozita Yunus (Air Division, DOE Headquarters)

Jadual 8.4 JAS: Latihan Di Dalam Negara, 2012 (sambungan)
Table 8.4 DOE: Local Training Courses, 2012 (continued)

Bil. / No	Perkara / Title	Penganjur / Organizer	Tempat / Place	Tarikh / Date	Peserta / Participants
23	YKSM's Senior Management Development Programme	Yayasan Kepimpinan & Strategi Malaysia (YKSM)	Thistle, Port Dickson	19 - 22 Nov 2012	P(K) Ismail Ithnin (Enforcement Division, DOE Headquarters)
24	Seminar on Strategic Environmental Assessment (SEA) using RIAM	Envirolink Sdn Bhd	Grand Paragon Hotel, Johor Bharu	3 - 5 Dec 2012	1. PK Elbyta Rozana Mohd Hatta (DOE Johor) 2. PK Siti Hasyimah Sahari (DOE Johor)

Jadual 8.5 JAS: Latihan Luar Negara, 2012
Table 8.5 DOE: Overseas Courses, 2012

Bil. / No.	Tajuk / Title	Penganjur / Organizer	Tempat / Place	Tarikh / Date	Peserta / Participants
1	Project of Enhancement of Training Capacity of EiMAS on Environmental Management	JICA	Japan	15 - 28 Jan 2012	1. KPP Raseli Mat Lazim (EiMAS) 2. PKK Zulfadzli Zakaria (DOE Negeri Sembilan) 3. PK Shaari Amat (Enforcement Division, DOE Headquarters) 4. PK Shazana Mohd Ibrahim (EiMAS) 5. PPK Roslina Abdul Rahim (EiMAS) 6. PPK Kamarudin Abdul Rahman (EiMAS) 7. PPK Rosnani Ahmad (EiMAS) 8. PPK Hashimah Hussain (EiMAS) 9. PPK M. Yazir Mohd Rashid (EiMAS) 10. PPK Ahmad Samsuddin Che Abas (DOE Kuala Lumpur) 11. PPK Abu Bakar Md. Arshad (DOE Kuala Lumpur) 12. PPK Muhammad Hizam Mohd Ibrahim (EiMAS)
2	Training Course on Climate Change, Energy and Environment	Colombo Plan Secretariat and Singapore Government	Singapore	20 - 24 Feb 2012	KPP Mohd Rashdan Topa (Air Division, DOE Headquarters)

Jadual 8.5 JAS: Latihan Luar Negara, 2012 (sambungan)
Table 8.5 DOE: Overseas Courses, 2012 (continued)

Bil. / No.	Tajuk / Title	Penganjur / Organizer	Tempat / Place	Tarikh / Date	Peserta / Participants
3	Singapore Youth Environment Envoy (YEE) Programme	National Environment Agency (NEA), Singapore	Singapore	15 - 18 Mac 2012	1. PK Ahmad Azri Alias (Strategic Communications Division, DOE Headquarters) 2. PK Nabilah Fatin Abdul Rahim (Strategic Communications Division, DOE Headquarters)
4	Regional Environmental Security Conference (RESC)	United States Pacific Command (USPACOM)	Jakarta, Indonesia	2 - 5 Apr 2012	KPP Mashitah Darus (Air Division, DOE Headquarters)
5	Project of Enhancement of Training Capacity of EiMAS on Environmental Management	JICA	Japan	21 May - 1 Jun 2012	1) KPP Hajah Dalilah Haji Dali (EiMAS) 2) KPP Mohd Hidzir Bakar (EiMAS) 3) KPP Hamzah Mohamad (EiMAS) 4) KPP Ahmad Saifful Salihin (EiMAS) 5) PK Goh See Ben (EiMAS) 6) PK Azhar Saran (DOE Johor) 7) PK Mohd Rosiskada Mohamed (DOE Terengganu) 8) PPK Wan Khairuldin Wan Ismail (EiMAS)
6	2 nd Workshop on Green Economy Policies	China-ASEAN Environmental Cooperation Center (CAEC)	Naning, China	28 May - 4 Jun 2012	P(Sarawak) Ismail Ithnin (DOE Sarawak)
7	Course on Climate Change (Focusing on Renewable Energy and Environmental Health)	Korea Environment Corporation	Seoul, Korea	10 - 27 Jun 2012	P(Johor)) Mokhtar Abdul Majid (DOE Johor)
8	Course on Environmental Technology for Low-Carbon Society	JICA	Japan	23 Sep - 25 Oct 2012	KPP Ramli Abd Rahman (Green Industry Unit, DOE Headquarters)

Jadual 8.5 JAS: Latihan Luar Negara, 2011 (sambungan)
Table 8.5 DOE: Overseas Courses, 2011 (continued)

Bil. / No.	Tajuk / Title	Penganjur / Organizer	Tempat / Place	Tarikh / Date	Peserta / Participants
9	Course on Creation of Recycling Society Based on Hazardous Based Management and Appropriate Disposal in Asia	JICA	Japan	11 Jul - 11 Aug 2012	1. KPP Zarnadi Mohamed (DOE Johor) 2. PK Normarlina Idris (DOE Sarawak)
10	Seminar on Recycling Industrial Policy	JICA	Japan	26 Aug - 15 Sept 2012	1. KPP Amirul Aripin (DOE Selangor) 2. PK Norazlinda Ismail (DOE Perak)
11	CHINA-ASEAN Youth Seminar on Green Economy and Ecological Innovation	CHINA-ASEAN Environmental Cooperation Center (CAEC), Ministry of Environmental Protection of P. R. China (MEP)	Beijing, China	19 - 21 September 2012	1. KPP Norhazni Mat Sari (Enforcement Division, DOE Headquarters) 2. PK Anuar Ishak (DOE Melaka) 3. PK Grace Puyang (Enforcement Division, DOE Headquarters)
12	Technical Visit to China Board Group	Construction Industry Development Board Malaysia (CIDB)	Changsa, Hunan Province, China	3 Dec 2012	KPP Sharifah Zakiah Syed Sahab (Assessment Division, DOE Headquarters)



BAB 9
CHAPTER 9

PENGELUARAN BERSIH DAN TEKNOLOGI MESRA ALAM

CLEANER PRODUCTION AND ENVIRONMENTALLY SOUND TECHNOLOGY

PEMBANGUNAN KEPAKARAN DAN MODUL LATIHAN ALAM SEKITAR

Di bawah Rancangan Malaysia Ke-Sepuluh (2011-2015), Jabatan Alam Sekitar menerusi Unit Industri Hijau memberi penekanan terhadap pembangunan kapasiti Pengeluaran Bersih dengan membangunkan kepakaran sumber manusia untuk mempromosi dan meningkatkan keupayaan Perusahaan Kecil dan Sederhana (PKS) dalam pengawalan dan pencegahan pencemaran.

Objektif Program Pembangunan Kapasiti Pengeluaran Bersih adalah seperti berikut:-

- (i) Membangunkan dan melaksanakan program latihan Pengeluaran Bersih berasaskan modul untuk Pegawai Jabatan Alam Sekitar dan industri khususnya kepada Perusahaan Kecil dan Sederhana (PKS);
- (ii) Membangunkan dan melaksanakan program latihan *Cleaner Production Virtual Centre (CPVC) / Cleaner Production Implementation Tools (CPIT)* untuk Pegawai Jabatan Alam Sekitar dan industri khususnya kepada Perusahaan Kecil dan Sederhana (PKS);
- (iii) Mengadakan program latihan sangkutan mengenai Pengeluaran Bersih untuk Pegawai Jabatan Alam Sekitar sama ada di dalam atau luar negara terpilih;
- (iv) Membangunkan modul latihan Pengeluaran Bersih mengikut jenis industri; dan
- (v) Mewujudkan jaringan Pengeluaran Bersih.

DEVELOPMENT OF EXPERTISE AND ENVIRONMENTAL TRAINING MODULE

Under the Tenth Malaysia Plan (2011-2015), the Green Industry Unit emphasizes on capacity building of human resource in Cleaner Production to promote and increase the Small and Medium Enterprise (SMEs) ability in the prevention and control of pollution.

The objectives of the Cleaner Production Capacity Building Programme are as follows:-

- (i) Develop and implement Cleaner Production Training Module Programme to DOE officers and industry mainly Small and Medium Enterprise (SMEs);
- (ii) Develop and implement training programmes on *Cleaner Production Virtual Centre (CPVC) / Cleaner Production Implementation Tools (CPIT)* to DOE officers and industries mainly Small and Medium Enterprise (SMEs);
- (iii) Conduct local and overseas attachment training programmes on Cleaner Production to DOE officers;
- (iv) Develop Cleaner Production training module according to the type of industry; and
- (v) Establish Cleaner Production networking

Latihan Pengeluaran Bersih Berasaskan Modul Kepada Pegawai JAS

Latihan Pengeluaran Bersih berasaskan modul dilaksanakan menggunakan modul latihan 'Pengenal kepada Pengeluaran Bersih' dan 'Audit Pengeluaran Bersih' yang telah dibangunkan di bawah Rancangan Malaysia Kesembilan (RMKe-9). Modul ini mengandungi topik spesifik berdasarkan kepelbagaian dan jenis industri di negara ini.

Aktiviti-aktiviti yang dilaksanakan di bawah program ini pada tahun 2012 adalah seperti di **Jadual 9.1**.

Program Pembangunan Kepakaran Dan Subject Matter Expert Dalam Bidang Pengeluaran Bersih Bagi Pegawai-Pegawai Jabatan Alam Sekitar

Pembangunan kepakaran dalam Pengeluaran Bersih terutama Pakar Bidang Khusus di kalangan pegawai-pegawai JAS adalah penting bagi menyokong program-program CP yang dijalankan oleh Jabatan . Kebolehan untuk menjalankan audit CP dan menjana opsyen-opsyen secara berkesan merupakan kemahiran yang diperlukan untuk membantu IKS dalam mengenalpasti isu-isu dan peluang untuk mengurangkan impak terhadap alam sekitar. Pelaksanaan opsyen-opsyen ini akan menyumbang secara terus kepada pengurangan *carbon footprint*.

Pendekatan ini diperlukan agar pegawai-pegawai JAS dapat memberi khidmat nasihat kepada industri pembuatan dan pengeluaran tentang pelaksanaan CP secara efektif. Secara tidak langsung ia akan menggalakkan pihak industri untuk mengamalkan budaya *self regulation* terhadap pematuhan AKAS, 1974. Melalui kaedah ini juga, peranan Jabatan Alam Sekitar dapat diperluaskan bukan sahaja sebagai agensi penguatkuasa malah boleh berperanan sebagai pemudahcara, perunding dan sumber rujukan kepada pihak industri ke arah pengurusan alam sekitar yang lebih baik dan cekap.

Cleaner Production Training Module Programme for DOE Officers

The Cleaner Production training was conducted based on the training modules of 'Cleaner Production Audit' and 'Introduction to Cleaner Production' that were developed under the Ninth Malaysian Plan (RMKe-9). The modules contain a specific topic relating to diversity and types of industry in this country.

The activities implemented under this programme in 2012 are as shown in **Table 9.1**.

Program for Skills Development and Subject Matter Expert in Cleaner Production Areas For Officers of Department of Environment

The capacity building in Cleaner Production especially on Subject Matter Expert (SME) for DOE officers is very important in supporting CP programmes carried out by the department. The capabilities to conduct CP audits and generate effective options are the skills needed to assist SMEs in identifying the issues and opportunities to reduce the environmental impact. The implementation of these options will contribute directly to the reduction of carbon footprint.

This approach will enable DOE officials to help the industries by providing advice and technique on how to implement CP effectively. Indirectly, this will encourage the industries to adopt self-regulation for compliance of EQA, 1974. Through this approach, the role of DOE can be expanded not only as the law enforcement agency, but also as a facilitator, consultant and source of reference for the industries towards a better and efficient environmental management.

Program Pembangunan Kepakaran ini meliputi perkara-perkara berikut:

- i. Kursus Pengkompetenan Audit Pengeluaran Bersih;
- ii. Bengkel Pembangunan bahan rujukan dan modul latihan;
- iii. Pembangunan sistem dan peralatan untuk CP; dan
- iv. Program Latihan Khas *Subject Matter Expert (SME)*.

Sehingga tahun 2012, seramai 84 orang pegawai telah dilatih dan telah kompeten Tahap 1 audit CP manakala Seramai 22 orang pegawai telah lulus kompetensi Tahap 2.

Program Latihan Pengeluaran Bersih kepada Pegawai Unit Industri Hijau

Pada tahun 2012 sebanyak tiga (3) sesi latihan aplikasi dan penyelenggaraan laman sesawang Pusat Maya Industri Hijau (PMIH) dan Pusat Data Industri Hijau Malaysia (PDIH) telah dijalankan bagi semua pegawai-pegawai Unit Industri Hijau dengan kerjasama syarikat penyelenggaraan sistem maklumat yang telah dilantik.

Melalui latihan ini pegawai-pegawai didedahkan kepada teknik dan kemahiran untuk mengemaskini laman web PMIH dan menyelenggara sistem maklumat industri hijau (PDIH).

Latihan Sangkutan dan Hubungan Jaringan Kerja Pengeluaran Bersih

Pada 23 September – 25 Oktober 2012, pegawai Unit Industri Hijau, En. Ramli Abd Rahman telah menghadiri Kursus *Environmental Technology for a Low Carbon Society* di Kitakyushu, Jepun. Tujuan kursus diadakan ialah untuk memberi pendedahan kepada peserta dari Malaysia, Vietnam, Indonesia, Pakistan, Maldives, Filipina dan China mengenai isu pemanasan global dan keperluan untuk membina masyarakat berkarbon rendah

The Capacity Building Program covers the following areas:

- I. Cleaner Production Audit Competency courses;
- ii. Workshop on development of reference materials and training modules;
- iii. Development of systems and tools for CP; and
- iv. Special Training Program on Subject Matter Expert (SME).

Until 2012, a total of 84 officers were trained and passed the Competency Level 1 CP audit while 22 officers passed the Competency Level 2.

Cleaner Production Training Programme for Officers of Green Industry Unit

In 2012, three (3) sessions of applications and maintenance training for Green Industry Virtual Centre (GIVC) and Malaysia Green Industry Database (MGID) websites were conducted in collaboration with appointed consultant.

The training provides latest technique and expertise for officers to update and maintain the GIVC and MGID.

Cleaner Production Networking and Attachment Programmes

On 23 September – 25 October 2012, Mr. Ramli Abd Rahman from Green Industry Unit attended a course on *Environmental Technology for a Low Carbon Society* in Kitakyushu, Japan. The course aimed to expose participants from Malaysia, Vietnam, Indonesia, Pakistan, Maldives, Philippines and China on the issues of global warming and the need to build a low carbon society in order to combat the issue. This course was organized

bagi menangani masalah tersebut. Kursus ini dianjurkan oleh JICA Kyushu dan diuruskan oleh Kitakyushu International Techno-Cooperative Association (KITA).

Terdapat tiga topik utama dalam kursus ini iaitu pemuliharaan tenaga, penjanaan kuasa yang bersih dan polisi-polisi pentadbiran. Selain pembelajaran dalam kelas, para peserta juga dibawa melawat Tokyo dan lain-lain bandaraya di Pulau Kyushu untuk melawat beberapa buah kilang dan kemudahan lain bagi mempelajari usaha dan program yang dilakukan untuk menangani pemanasan global.

Kursus tersebut didapati sangat menarik dan berfaedah kepada JAS terutama Unit Industri Hijau yang terlibat dalam mempromosikan inisiatif hijau kepada industri di Malaysia. Ia juga memberi peluang untuk menjalin hubungan kerjasama dengan JICA, KITA dan lain-lain organisasi dari negara peserta. Di akhir kursus, En. Ramli telah menyampaikan taklimat mengenai Pelan Tindakan yang menggariskan usaha-usaha yang dibuat oleh JAS melalui Unit Industri Hijau bagi menangani pemanasan global di Malaysia.

by JICA Kyushu and handled by Kitakyushu International Techno-Cooperative Association (KITA).

There are three major topics covered in the course which are energy conservation, clean power generation and administration policies. Besides classroom teaching, the participants travelled to Tokyo and other cities in Kyushu Island to visit several plants and facilities to learn the efforts and programmes being taken to combat global warming.

The course was very exciting and beneficial to DOE especially Green Industry Unit which involves in promoting green initiatives to Malaysian industries. It also gives opportunity to establish working networks with JICA, KITA and other organizations from the participating countries. At the end of the course, Mr. Ramli delivered the Action Plan which outlines the efforts by DOE through Green Industry Unit to help combat global warming in Malaysia.

PROGRAM MENINGKATKAN KEUPAYAAN PERUSAHAAN KECIL DAN SEDERHANA (PKS) DALAM PENGAWALAN DAN PENCEGAHAN PENCEMARAN

Di bawah Rancangan Malaysia Kesepuluh (RMKe10) (2011-2015) sehingga penghujung tahun 2012, JAS telah berjaya melaksanakan program dan projek seperti yang telah dirancang bagi meningkatkan pelaksanaan pengeluaran bersih oleh pihak PKS. Objektif program adalah meningkatkan keupayaan PKS dalam pengawalan dan pencegahan pencemaran untuk:-

- i. Melaksanakan bantuan Audit Pengeluaran Bersih kepada PKS;
- ii. Melaksanakan bantuan khidmat nasihat kepada PKS;
- iii. Melaksanakan skim pendaftaran juruaudit Pengeluaran Bersih;
- iv. Menubuhkan badan panel verifikasi Pengeluaran Bersih oleh PKS;
- v. Melaksanakan program penyelidikan dan pembangunan (R&D) mengenai Teknologi Mesra Alam dan Pengeluaran Bersih; dan
- vi. Melaksanakan program perkongsian dan penyebaran maklumat Pengeluaran Bersih.

Di antara program dan projek yang telah dilaksanakan adalah seperti berikut:-

Bantuan Audit Pengeluaran Bersih kepada Industri kecil dan Sederhana

Projek Audit Pengeluaran Bersih atau "*Cleaner Production*" (CP) kepada Perusahaan Kecil dan Sederhana (PKS) dilaksanakan bertujuan untuk meningkatkan kesedaran dan kefahaman pengusaha Perusahaan Kecil dan Sederhana (PKS) mengenai konsep Pengeluaran Bersih

CAPABILITY ENHANCEMENT FOR SMALL AND MEDIUM ENTERPRISE (SMEs) IN THE PREVENTION AND CONTROL OF POLLUTION PROGRAMME

Under the Tenth Malaysia Plan (2011-2015) until the end of 2012, DOE has successfully carried out the projects and programmes that were planned to increase the implementation of Cleaner Production by SMEs. The objectives of the programmes are to enhance the capability of SMEs in prevention and control of pollution as follows:

- i. Implementing Cleaner Production Audit Assistance to SMEs;
- ii. Providing consultation to SMEs;
- iii. Implementing Cleaner Production auditor registration scheme;
- iv. Establishing of Cleaner Production verification panel by SMEs;
- v. Implementing research and development programme on Cleaner Production and Environmentally Sound Technology; and
- vi. Implementing programmes on the sharing and dissemination of information on Cleaner Production.

Among the projects and programme conducted were:

Cleaner Production Audit Assistance To Small and Medium Industries

In Ninth Malaysia Plan (2006-2010), the Cleaner Production Audit Assistance project for Small and Medium Enterprise (SMEs) was introduced to enhance the awareness and understanding of the Cleaner Production concept among

yang telah mula dilaksanakan di bawah Rancangan Malaysia ke Sembilan (2006-2010) dan telah dilanjutkan di bawah Rancangan Malaysia ke Sepuluh (2011-2015).

Pada tahun 2012 JAS telah mempergiatkan usaha bagi menggalakkan pihak industri untuk melaksanakan amalan pengeluaran bersih menerusi projek Bantuan Audit Pengeluaran Bersih dan Khidmat Nasihat.

Projek Bantuan Audit Pengeluaran Bersih telah dilaksanakan dengan kerjasama pihak perunding SIRIM. Sebanyak 75 buah premis PKS dari seluruh Malaysia telah terpilih untuk melalui proses pra-audit. Laporan pra-audit yang telah disediakan akan memberi maklumbalas kepada pihak PKS tentang opsyen Pengeluaran Bersih yang boleh diaplikasikan. Perbincangan dan khidmat nasihat susulan telah dijalankan bagi memastikan kejayaan pelaksanaan opsyen-opsyen CP.

Daripada 75 premis PKS tersebut sebanyak 15 premis PKS telah dipilih untuk Projek Bantuan Audit Pengeluaran Bersih Lanjutan. Melalui projek ini kajian dan analisa terperinci kepada operasi premis akan dilakukan dan cadangan penambahbaikan akan diberi dalam bentuk opsyen-opsyen CP. Pihak PKS akan melaksanakan cadangan opsyen CP berdasarkan laporan Audit Terperinci CP dan JAS akan memantau pelaksanaannya.

Program ini juga merupakan satu platform latihan untuk pegawai JAS yang terlibat bagi meningkatkan kepakaran dan seterusnya melahirkan Pakar Bidang Khusus dalam Pengeluaran Bersih.

Program Penyelidikan dan Pembangunan (R&D) Teknologi Mesra Alam dan Pengeluaran Bersih

Projek Demonstrasi Pengeluaran Bersih

Pada tahun 2012, projek demonstrasi CP diteruskan dengan Projek Integrasi CP fasa dua di premis pembuatan batik. Premis Dagang

SMEs and the project is continued under the Tenth Malaysia Plan (2011-2015).

In 2012, DOE has intensified the effort to encourage the industries to adopt Cleaner Production practices through Cleaner Production Audit Assistance project and Consultation programme.

The Cleaner Production Audit Assistance project was implemented with the cooperation of SIRIM as the project consultant. A total of 75 SMEs premises from all over Malaysia have been selected to undergo the pre - audit process. The pre-audit report that was prepared would give information to the SMEs on the Cleaner Production options that could be applied. Follow up discussions and consultations were carried out to ensure the SMEs successfully implemented the Cleaner Production Options.

15 out of 75 SMEs from the pre - audit stage were selected to participate in detail audit programme where the detail analysis of the operation was carried out and process improvement options were proposed in form of CP options. The SMEs will be guided to implement the options as provided in the Details CP report and the progress will be monitored by the DOE .

This programme also serves as the training platform for DOE officers to develop expertise and henceforth will create Subject Matter Expert in Cleaner Production.

Research and Development Programme on Cleaner Production and Environmentally Sound Technology

Cleaner Production Demonstration Project

In 2012, the second phase of the CP Integrated Project in the batik manufacturing Industry was continued. Dagang Batikraf Sdn. Bhd in Kota

Batikraf Sdn. Bhd. di Kota Bharu telah dipilih untuk dijadikan premis demonstrasi. Projek ini mendapat sokongan dari beberapa agensi seperti Lembaga Kraftangan Malaysia, UPEN Kelantan, JPS Kelantan dan juga JAS Negeri Kelantan. Projek ini bertujuan menyediakan sebuah premis batik yang bersifat mesra alam dan berdaya saing melalui penggunaan CP secara menyeluruh dan dijadikan sebagai *benchmark* bagi lain-lain premis batik. Projek tersebut berakhir pada November 2012.

Hasil daripada pelaksanaan projek integrasi tersebut, satu Garis Panduan Pelaksanaan Amalan Industri Hijau (CP) Bagi Industri Batik telah disediakan sebagai panduan dalam melaksanakan opsyen-opsyen pengeluaran bersih di premis batik. Garis Panduan ini akan dijadikan sebagai bahan rujukan rutin harian pekerja dan pegawai JAS untuk memudahkan proses pelaksanaan amalan pengeluaran bersih di premis batik.

Disamping itu, sebanyak dua (2) seminar dan satu (1) bengkel khusus kepada pengusaha batik telah berjaya dilaksanakan seperti di **Jadual 9.2**. Seminar dan bengkel ini yang bertemakan “Ke Arah Pembuatan Batik yang Mesra Alam” bertujuan untuk memberi pengetahuan dan pendedahan berkaitan kaedah mudah untuk melaksanakan amalan Pengeluaran Bersih kepada pengusaha batik.

Program Perkongsian dan Penyebaran Maklumat Pengeluaran Bersih

Pameran dan Promosi Industri Hijau

Pada tahun 2012 aktiviti pameran dan promosi di bawah Unit Industri Hijau, Jabatan Alam Sekitar telah ditingkatkan dengan lebih agresif di mana sebanyak 5 pameran telah berjaya disertai seperti di **Jadual 9.3**

Pada tahun 2012 buat julung kalinya JAS telah menyertai ekspo SMIDEX yang telah berlangsung di Kuala Lumpur Convention Center (KLCC) selama 3 hari bermula pada

Bharu was selected to be the demonstration premise. This project was supported by Lembaga Kraftangan Malaysia, UPEN Kelantan, DID Kelantan and DOE Kelantan State Office. The project aimed to promote a batik premise that is environmentally friendly and competitive through the application of CP as a whole and serves as a benchmark for other batik premises. The project ended in November 2012.

As a result of this integration project, a Guideline for Implementation of the Green Industry Initiative (CP) in Batik Industry has been prepared to serve as a guidance for implementing cleaner production options in batik premises. This Guideline will be used as a daily guidance for batik workers and DOE officers to facilitate the implementation of cleaner production practices in batik premises.

Besides that, two (2) seminars and a workshop were organized specifically for batik entrepreneurs as shown in **Table 9.2**. The seminars and workshop with the theme “Towards Environmental Friendly Batik Production” aimed to expose and help batik producers to implement Cleaner Production practices at their premises.

Information Dissemination and Sharing Programme on Cleaner Production

Green Industry Exhibition and Promotion

In 2012, DOE Green Industry Unit placed more emphasis to the exhibition and promotion program where a total of 5 exhibitions were participated as shown in **Table 9.3**

Also In 2012, for the first time DOE was invited to participate in SMIDEX expo which was held at the Kuala Lumpur Convention Center (KLCC) for 3 days starting from 20 to 22 June

20 hingga 22 Jun 2012. Ekspo SMIDEX yang dianjurkan oleh Perbadanan Perusahaan Kecil dan Sederhana (SME Corp) ini menyediakan sebanyak 350 ruang pameran. Pameran ini disertai oleh 200 syarikat tempatan dan 100 syarikat luar negara di mana ia merupakan satu platform yang terbaik untuk mempromosikan Industri Hijau kepada Perusahaan Kecil dan sederhana (PKS) di Malaysia.

Pusat Maya Industri Hijau (PMIH)

Pusat Maya Pengeluaran Bersih (PMPB) dibangunkan pada tahun 2007 untuk memaklumkan dan memberi maklumat kepada PKS mengenai opsyen-opsyen yang ada untuk aktiviti mereka. Selaras dengan perkembangan semasa di sektor kelestarian alam sekitar pada tahun 2012, nama PMPB telah ditukar kepada Pusat Maya Industri Hijau (PMIH), di mana lebih banyak maklumat terkini telah dimuatnaik termasuk Laporan Teknologi Pengeluaran Bersih kepada PKS.

Buletin Pengeluaran Bersih

Pada tahun 2012 penerbitan Buletin Pengeluaran Bersih diteruskan di mana sebanyak 2 siri buletin dengan tema yang berbeza telah berjaya diterbitkan. Tema untuk buletin siri 1 adalah berkaitan Kesan Karbon manakala untuk buletin siri 2 adalah berkaitan dengan Industri Hijau. Kedua-dua siri telah diterbitkan masing-masing pada bulan Julai dan November 2012. Buletin ini memaparkan maklumat-maklumat terkini dan juga maklumat mengenai Pengeluaran Bersih di Malaysia mahupun di luar Negara. Ia bertujuan untuk meningkatkan pemahaman berkaitan pengeluaran bersih kepada semua *stakeholder* di negara ini terutamanya Perusahaan Kecil dan Sederhana (PKS) untuk mewujudkan industri yang mesra alam. Bagi tujuan promosi juga beberapa bahan terbitan seperti brosur dan poster telah diterbitkan dan diedarkan kepada pihak industri.

2012. SMIDEX 2012 was organized by Small and Medium Enterprise Corporation (SME Corp) which offered 350 exhibition booths. This exhibition was participated by more than 200 local companies and 100 overseas companies. SMIDEX is one of the excellent platform to promote Green Industry to SMEs in Malaysia.

Green Industry Virtual Centre (GIVC)

The Cleaner Production Virtual Centre (CPVC) was developed in 2007 to inform and educate the Small and Medium Enterprise in Malaysia about Cleaner Production options available for their activities. In 2012, in order to keep up with the latest developments in environmental sustainability, the name of CPVC website was changed to Green Industry Virtual Centre (GIVC). The content of the website was also updated and new information such as CP audit assistance reports for SMEs have been uploaded.

Cleaner Production Bulletin

The publication of the Cleaner Production Bulletin continued in 2012 where two series of bulletin with two different themes were successfully published. The first series with the theme of Carbon Footprint as the theme was published in July 2012 and the second series with the theme of Green Industry was published in November 2012. The bulletin features the latest information on Cleaner Production in Malaysia as well as in other countries. It is aimed to promote and encourage industries especially the Small and Medium Enterprises (SMEs) to implement cleaner production practices. Brochures and posters were also published and distributed to the industries for promotion of CP among industries.

Seminar Inisiatif Industri Hijau kepada Industri

Sebanyak dua (2) siri Seminar Inisiatif Pengeluaran Bersih telah berjaya dianjurkan oleh Unit Industri Hijau dengan kerjasama Unit Perundingan Universiti Malaya (UPUM). Pada tahun 2012 seminar ini dirancang untuk memberi fokus kepada industri batik dengan tajuk "Ke Arah Pembuatan Batik yang Mesra Alam".

Seminar tersebut telah diadakan pada bulan September dan Oktober 2012 yang dihadiri oleh pengusaha batik, ahli akademik, badan-badan kerajaan seperti Perbadanan Kraftangan Malaysia, Unit Perancang Ekonomi Negeri dan Kerajaan Tempatan serta Jabatan Alam Sekitar. Setiap siri seminar ini telah mensasarkan kehadiran seramai 150 peserta. Tujuan seminar adalah untuk memberi pendedahan dan pengetahuan mengenai pelaksanaan konsep Amalan Pengeluaran Bersih di premis batik.

Clean Batik Initiative

Tahun 2012 adalah tahun terakhir program kerjasama *Clean Batik Initiatives (CBI)* yang telah dilaksanakan oleh Unit Teknologi Bersih dan Malaysia-German Chamber of Commerce (MGCC) di Kelantan dan Terengganu. Sebanyak 100 buah premis batik telah dipilih untuk dijalankan audit CP dan melaksanakan opsyen-opsyen CP mengikut skop yang ditetapkan. Bantuan khidmat nasihat juga diberikan oleh *Technical Consultant* yang dilantik.

Melalui program kerjasama ini sebanyak 2 sesi dialog polisi peringkat negeri telah diadakan di Kelantan dan Terengganu. Manakala dialog peringkat kebangsaan telah berlangsung di Kuala Lumpur pada 28 November 2012 dengan disertai seramai 30 orang yang terdiri daripada pihak yang berkepentingan dalam industri batik termasuk persatuan pembatik, badan-badan kerajaan, kementerian dan swasta.

Seminar on Green Industry Initiative to Industries

There were two (2) seminars organized by Green Industry Unit with the cooperation of University of Malaya Consultancy Unit (UPUM). Batik industry became the focus of the seminar in 2012 with the slogan "Towards Environmental Friendly Batik Manufacturer".

The seminar was held in September and October 2012, attended by batik manufacturers and dealers, academicians, government agencies such as Malaysian Handicraft Corporation, State Economic Planning Unit and Local Government and the Department of Environment. For each seminar 150 participants was the target. The purpose of the seminar is to give exposure and knowledge on the implementation of the Cleaner Production concept to batik industries.

Clean Batik Initiative

The year 2012 was the final year for The Clean Batik Initiative (CBI) collaboration programme which was implemented by Cleaner Production Unit with Malaysia-German Chamber of Commerce (MGCC) in Kelantan and Terengganu. A total of 100 batik premises implemented with the Cleaner Production options within the prescribed scope has been audited and technical consultation was also provided by an appointed consultant.

With this collaboration programmes two sessions of state level policy dialogue were held in Kelantan and Terengganu. Meanwhile, the National Policy Dialogue was held in Kuala Lumpur on 28 November 2012 and attended by 30 batik industry stakeholders including batik manufacturer associations, government agencies, ministries, and private sectors.



Bengkel *Cleaner Production Tips* Kepada Pegawai JAS
Training Workshop on Cleaner Production Tips to DOE Officers



Bengkel Kemahiran Penilaian Opsyen Pengeluaran Bersih Kepada Pegawai JAS
Training Workshop on Assessment Technique for Cleaner Production Options to DOE Officers



Seminar Inisiatif Industri Hijau bagi Industri Batik Malaysia
Seminar on Green Industry Initiative for Malaysia Batik Industries



Bengkel Inisiatif Industri Hijau bagi Industri Batik Malaysia
Seminar on Green Industry Initiative for Malaysia Batik Industries



Lawatan Tapak ke Projek Pembangunan Premis Demonstrasi CP untuk Industri Batik
Site visit to CP Demonstration Project for Batik Industry



Pameran dan Promosi Industri Hijau
di Expo SMIDEX 2012
Exhibition and Promotion of Green
Industry at SMIDEX Expo 2012



Terbitan mengenai Pengeluaran
Bersih, 2012
Cleaner Production Publication,
2012

Jadual 9.1 JAS: Bengkel & Kursus Pengeluaran Bersih kepada Pegawai JAS
Table 9.1 DOE: Workshop & Courses on Cleaner Production for DOE Officers

Bil. / No.	Tarikh / Date	Program / Programme	Tempat / Venue
1	26-30 Mac/March 2012	Kursus Pengenalan Kepada Asas Pengeluaran Bersih Course Introduction to Cleaner Production Base	Hotel Central Review (M) Sdn Bhd
2	21-25 Mei/May 2011	Kursus Audit Pengeluaran Bersih:- Pengkompeteran Tahap 1 Cleaner Production Audit Courses: - Competency Level 1	Hotel Quality Shah Alam
3	11-12 Julai/ July 2012	Bengkel Suplimen: Imbangan Jisim Supplement Workshop: Mass Balance and Basic Energy Balance	Hotel Oriental Crystal Kajang
4	5 - 6 September/ September 2012	Bengkel Suplimen: Tips Pengeluaran Bersih/Penjanaan Opsyen Supplement Workshop: Tips Cleaner Production / Generation Options	Hotel Allson Klana Resort Seremban
5	10-11 Oktober/ October 2012	Bengkel Suplimen: Kemahiran Penilaian Opsyen Supplement Workshop: Skills Assessment Option	Hotel Crystal Crown Petaling Jaya, Selangor
6	31 Oktober-2 November/ October- November 2012	Kursus Pemantapan Inisiatif Industri Hijau (LCA) Bagi Pegawai-Pegawai JAS Course on the Green Industry Initiative (LCA) for DOE Officers	Hotel Seaview Langkawi

Jadual 9.2 JAS: Seminar & Bengkel Pengeluaran Bersih kepada Industri
Table 9.2 DOE: Seminar & Workshop on Cleaner Production to Industries

Bil. / No.	Tarikh / Date	Program / Programme	Tempat / Venue
1	20 September/ September 2012	Seminar Pengeluaran Bersih kepada Industri Batik di Zon Tengah Seminar on Cleaner Production of Batik Industry in the Central Zone	Kompleks Perbadanan Putrajaya
2	16 Oktober/ October 2012	Seminar Pengeluaran Bersih kepada Industri Batik di Zon Timur Seminar on Cleaner Production of Batik Industry in the East Zone	Hotel Crown Garden Kota Bharu Kelantan
	5-6 November/ November 2012	Bengkel Pengeluaran Bersih Kepada Pengusaha Batik Workshop on Cleaner Production for Batik Industry	Hotel Crown Garden Kota Bharu Kelantan

Jadual 9.3 JAS: Program Pameran dan Promosi Industri Hijau
Table 9.3 DOE: Green Industry Exhibitions and Promotion Program

Bil. / No.	Tarikh / Date	Nama Syarikat / Organisation	Lokasi / Venue	Catatan / Remark
1	6 Mac/March 2012	Permintex Sanko Technologies Sdn. Bhd.	No. 5, Jalan Jasmine 3, Sek BB10, Bukit Beruntung RAWANG	Environmental Management System (EMS) Week
2	08-09 Mei/May 2012	Institut Geologi Malaysia	One World Hotel, Bandar Utama, PETALING JAYA	Program Outreach IGM
3	25-26 Mei/May 2012	REVIVAL	Pantai Klebang, MELAKA	Project REVIVE Green Festival Melaka 2012
4	20-22 Jun/June 2012	SME Corp. Malaysia	KLCC, KL	SMIDEX'12
5	29-30 September 2012	Kolej Mohamad Rashid, UPM	Dewan Besar UPM, UPM SERDANG	Karnival Kelestarian Alam Sekitar UPM 2012



Jabatan Alam Sekitar

Kementerian Sumber Asli dan Alam Sekitar

Department of Environment

Ministry of Natural Resources and Environment

Aras 1 – 4, Podium 2 & 3, Wisma Sumber Asli
No. 25, Persiaran Perdana, Presint 4,
62574 Putrajaya

Tel: 03-8871 2000/2002

Faks: 03-8889 1044