



KEMENTERIAN
ALAM SEKITAR DAN AIR
Ministry of Environment and Water



LAPORAN TAHUNAN

2020

ANNUAL REPORT

Department of Environment, Malaysia

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PRAKATA FOREWORD

Pemuliharaan Alam Sekitar, Tanggungjawab Bersama Environmental Conservation, Our Shared Responsibility.

Jabatan Alam Sekitar (JAS) dengan bangganya membentangkan Laporan Tahunan 2020 yang merangkumi pencapaian dan pelaksanaan program pada tahun tersebut.

JAS meneruskan mandat yang diberi untuk mentadbir Akta Kualiti Alam Sekeliling 1974, selari dengan visi Jabatan ini, "Pemuliharaan Alam Sekitar Untuk Kesejahteraan Rakyat" dan misi "Memastikan Pembangunan Lestari di dalam Proses Memajukan Negara".

Penekanan yang berterusan diberi di dalam mencegah dan mengawal pencemaran air, pencemaran udara dan pengurusan buangan terjadual. Pemeriksaan ke atas punca-punca pencemaran telah dipertingkatkan dan dimantapkan. Pencemar-pencemar juga telah dikenakan tindakan undang-undang yang tegas.



The Department of Environment (DOE) proudly presents the 2020 Annual Report which provides an account of its achievements and programme implementations in that year.

DOE continues to pursue its mandate to administer the Environmental Quality Act (EQA) 1974, in line with the department's vision, "Environmental Conservation for the Well-being of the People" and mission "To ensure Sustainable Development in the Process of Nation Building".

Continued emphasis is given to the prevention and control of water pollution, air pollution and scheduled waste management. Inspections on pollution sources have been intensified and improved. Strict legal actions were also taken against environmental offenders.

Wan Abdul Latiff Bin Wan Jaffar

Ketua Pengarah Jabatan Alam Sekitar
Director-General, Department of Environment

Penilaian Kesan Kepada Alam Sekeliling (EIA) masih menjadi strategi asas pencegahan yang dikuatkuasakan oleh Jabatan ini melalui Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015 bagi mengurangkan kesan kepada alam sekeliling dari projek pembangunan. Sejumlah 366 laporan EIA telah diterima dan diproses oleh Jabatan Alam Sekitar pada tahun 2020. Daripada bilangan ini, sebanyak 316 laporan EIA di bawah Jadual Pertama perintah tersebut telah diproses di pejabat JAS Negeri dan 50 laporan EIA di bawah Jadual Kedua telah diproses di Ibu Pejabat JAS yang perlu melibatkan pameran dan ulasan awam.

JAS juga turut melaksanakan program-program dan aktiviti-aktiviti kesedaran dan pendidikan alam sekitar serta penyebaran maklumat untuk pelbagai peringkat masyarakat sebagai usaha berterusan dan bersama dalam membangunkan masyarakat yang mesra alam di negara ini. Perlindungan alam sekitar melalui amalan-amalan mesra alam seharusnya menjadi sebahagian daripada 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.

Environmental Impact Assessments (EIA) continued to be the main preventive strategy enforced by the department through the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 to mitigate all environmental impacts from development projects. A total of 366 EIA reports were received and processed by the Department of Environment in 2020. Of these, 316 EIA reports processed by the DOE State Offices were subject to the First Schedule of this Order while another 50 EIA reports processed by the DOE State Offices were subject to the Second Schedule of the EIA Order which requires public display and comments.

DOE continued to implement its awareness and environmental education programmes and activities to disseminate information to various levels of the society as an effort and long-term measure towards building a caring and environmentally friendly society in the country. Protecting the environment by adopting environmentally friendly practices should be part of our daily activities.

I would like to take this opportunity to express my appreciation to everyone who has provided invaluable support and commitment to the department in carrying out its duties for a sustainable, healthy and an enhanced quality of life.





VISI / VISION

**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

- **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 dan Hubungan Dua Hala, Serantau dan Antarabangsa /
Bilateral, Regional and International Cooperation**
- **Penyertaan Awam Dalam Pengurusan Alam Sekitar /
Public Participation in Environmental Management**
- **Kerjasama Antara Agensi dan Persekutuan Negeri /
Inter-Agency and Federal State Cooperation**
- **Pembangunan Lestari Melalui Pemuliharaan Sumber Semulajadi /
Sustainable Development Through Conservation of Resources**

Bab 1

Chapter 1



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

MESYUARAT MAJLIS KUALITI ALAM SEKELILING (EQC) BAGI TAHUN 2020

ENVIRONMENTAL QUALITY COUNCIL (EQC) FOR YEAR 2020

Pada tahun 2020, Majlis Kualiti Alam Sekeliling telah mengadakan Mesyuarat EQC Bilangan Ke-128 pada 10 Julai 2020 yang dipengerusikan oleh Pengerusi Majlis Kualiti Alam Sekeliling, YBhg. Dato' Dr. Nadzri bin Yahaya.

Walaupun Jabatan Alam Sekitar (JAS) kini telah diletakkan di bawah pengurusan Kementerian Alam Sekitar dan Air, pelantikan ahli MKAS (EQC) yang telah dibuat di bawah Seksyen 4, Akta Kualiti Alam Sekeliling masih berkuatkuasa bagi tempoh sehingga 31 Mei 2022.

Pelantikan ahli Majlis adalah selama tiga (3) tahun bermula pada 1 Jun 2019 sehingga 31 Mei 2022. Senarai ahli EQC penggal ke-16 adalah seperti di **Jadual 1.1**.

Mesyuarat telah membincangkan satu kertas pertimbangan berkaitan Cadangan Gubalan Baharu atau Pindaan Peraturan Berkaitan Kawalan Bahan Pencemar Baharu iaitu kawalan pencemaran daripada aktiviti penternakan, perlombongan, akuakultur, air daripada aktiviti cucian dan basuhan di rumah (greywater).

The Environmental Quality Council (EQC) had its 128th meeting in 2020 on 10 July 2020. The Meeting was chaired by YBhg. Dato' Dr. Nadzri bin Yahaya who is also the Chairman of The Environmental Quality Council (EQC).

Although there has been a change in the management to the Ministry of Environment and Water, the members of the EQC remain the same as the appointment is valid until 31st May 2022.

The appointment of EQC members for the 16th term was made for the period 1 Jun 2019 to 31 May 2022. The list of EQC Members for the 16th term is as shown in **Table 1.1**.

The council deliberated and discussed matters presented at the meetings which were related to the proposal of drafting or amending regulations to control new pollutants from livestock, mining, aquaculture, and household activities that generate greywater.

Jadual 1.1 : Senarai Ahli Majlis Kualiti Alam Sekeliling (EQC) Penggal Ke-16 (1 Jun 2019 Hingga 31 Mei 2022)
Table 1.1 : List of Environment Quality Council Members 16th Term (1st June 2019 to 31st May 2022)

BIL. / NO.	PERWAKILAN / DELEGATION	NAMA AHLI / MEMBER NAME
1	Pengerusi EQC EQC Chairman	YBhg. Dato' Dr Nadzri Bin Yahaya
2	Kementerian Alam Sekitar dan Air Ministry of Environment and Water	Ketua Setiausaha, Kementerian Alam Sekitar dan Air Head Secretary, Ministry of Environment and Water
3	Kementerian Tenaga dan Sumber Asli Ministry of Energy and Natural Resources	Setiausaha, Bahagian Pengurusan Biodiversiti dan Perhutanan, Kementerian Tenaga dan Sumber Asli Secretary, Biodiversity and Forestry Management Division, Ministry of Energy and Natural Resources
4	Kementerian Perdagangan Antarabangsa dan Industri Ministry of International Trade and Industry	Timbalan Ketua Setiausaha (Industri), Kementerian Perdagangan Antarabangsa dan Industri Deputy Secretary General (Industry), Ministry of International Trade and Industry

Jadual 1.1 : Senarai Ahli Majlis Kualiti Alam Sekeliling (EQC) Penggal Ke-16 (1 Jun 2019 Hingga 31 Mei 2022)
Table 1.1 : List of Environment Quality Council Members 16th Term (1st June 2019 to 31st May 2022)

BIL. / NO.	PERWAKILAN / DELEGATION	NAMA AHLI / MEMBER NAME
5	Kementerian Perdagangan Dalam Negeri Koperasi dan Kepenggunaan Ministry of Domestic Trade and Consumer Affairs	Pengarah, Bahagian Penyelidikan dan Dasar Kepenggunaan, Kementerian Perdagangan Dalam Negeri dan Hal Ehwal Pengguna Director, Research and Consumer Policy Division, Ministry of Domestic Trade and Consumer Affairs
6	Kementerian Pertanian dan Industri Makanan Ministry of Agriculture and Food Industries	Setiausaha Bahagian, Bahagian Dasar dan Perancangan Strategik, Kementerian Pertanian dan Industri Makanan Division Secretary, Policy and Strategic Planning Division, Ministry of Agriculture and Food Industries
7	Kementerian Sumber Manusia Ministry of Human Resources	Pengarah, Jabatan Keselamatan dan Kesihatan Pekerjaan (JKKP) Negeri Selangor, Kementerian Sumber Manusia Director, Selangor State Department of Occupational Safety and Health (DOSH), Ministry of Human Resources
8	Kementerian Pengangkutan Ministry of Transport	Timbalan Ketua Setiausaha (Dasar), Kementerian Pengangkutan Deputy Secretary General (Policy), Ministry of Transport
9	Kementerian Perumahan dan Kerajaan Tempatan Ministry of Housing and Local Government	Ketua Pengarah, Jabatan Pengurusan Sisa Pepejal Negara, Kementerian Perumahan dan Kerajaan Tempatan Head Director, National Solid Waste Management Department, Ministry of Housing and Local Government
10	Kementerian Kesihatan Malaysia Ministry of Health Malaysia	Timbalan Pengarah, Cawangan Regulatori, Bahagian Perkhidmatan Kejuruteraan, Kementerian Kesihatan Malaysia Deputy Director of, Regulatory Branch, Engineering Services Division, Ministry of Health Malaysia
11	Kerajaan Negeri Sabah Sabah State Government	Setiausaha Tetap Kementerian Pelancongan, Kebudayaan Dan Alam Sekitar Sabah Permanent Secretary of the Sabah Ministry of Tourism, Culture and Environment Ahli Ganti: Alternate Members: Pengarah Jabatan Perlindungan Alam Sekitar Sabah Director of Sabah Department of Environmental Protection

Jadual 1.1 : Senarai Ahli Majlis Kualiti Alam Sekeliling (EQC) Penggal Ke-16 (1 Jun 2019 Hingga 31 Mei 2022)
Table 1.1 : List of Environment Quality Council Members 16th Term (1st June 2019 to 31st May 2022)

BIL. / NO.	PERWAKILAN / DELEGATION	NAMA AHLI / MEMBER NAME
12	Kerajaan Negeri Sarawak Sarawak State Government	Setiausaha Tetap, Kementerian Pembangunan Bandar dan Sumber Asli Sarawak Permanent Secretary, Ministry of Urban Development and Natural Resources Sarawak Ahli Ganti: Alternate Members: Kontroller, Lembaga Sumber Asli dan Alam Sekitar, Sarawak Controller, Natural Resources and Environment Board, Sarawak
13	Wakil Industri Petroleum Representative from The Petroleum Industry	Puan Ungku Haslina Bt. Ungku Mohamed Tahir, Ketua Jabatan Alam Sekitar & Prestasi Sosial, PETRONAS Principal of Environment PETRONAS Ahli Ganti: Alternate Members: Encik Mohd Azhar bin Ab Shatar, Ketua Jabatan Alam Sekitar & Prestasi Sosial, PETRONAS 'Principal' Alam Sekitar PETRONAS
14	Wakil Industri Kelapa Sawit The Palm Oil Industry Representative	Encik Johari Meor Ngah, Persatuan Minyak Sawit Malaysia/ Malaysian Palm Oil Association Ahli Ganti: Alternate Members: Encik Johari Salleh, Malaysian Palm Oil Association
15	Wakil Persekutuan Pekilang-Pekilang Malaysia (FMM) Representative from Federation of Malaysian Manufacturers	YBhg. Dato' Hj. Mizanur Rahman Ghani, Ahli Majlis dan Pengerusi FMM Environmental Management Committee Council Member and Chairman of FMM Environment Management Committee Ahli Ganti: Alternate Members: Encik K.N. Gobinathan, Timbalan Pengerusi FMM Environmental Management Committee. Deputy Chairman of FMM Environment Management Committee.
16	Wakil Industri Getah Representative from The Rubber Industry	Encik Lim Sum Teck, Naib Presiden, Persatuan Pengilang Produk Getah Malaysia Vice President Malaysian Rubber Products Manufacturer Association (MRPMA) Ahli Ganti: Alternate Members: Encik Chin Hon Meng Naib Presiden, Persatuan Pengilang Produk Getah Malaysia Vice President Malaysian Rubber Products Manufacturer Association (MRPMA)

Jadual 1.1 : Senarai Ahli Majlis Kualiti Alam Sekeliling (EQC) Penggal Ke-16 (1 Jun 2019 Hingga 31 Mei 2022)
Table 1.1 : List of Environment Quality Council Members 16th Term (1st June 2019 to 31st May 2022)

BIL. / NO.	PERWAKILAN / DELEGATION	NAMA AHLI / MEMBER NAME
17	Wakil Kakitangan Akademik Representative from the Academic Staff	YBhg. Prof. Emeritus Dato' Dr. Ibrahim Komoo, Rakan Sejawat, Institut Persekitaran dan Pembangunan (LESTARI), Universiti Kebangsaan Malaysia Principal Fellow, Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia Head, Cluster of Environment and Natural Resources, Majlis Professor Negara Ahli Ganti: Alternate Members: Tiada
18	Wakil Pertubuhan Yang Berpengalaman Mengenai Alam Sekitar Representative from registered Societies knowledgeable and having interest in matters pertaining to the environment	Puan Meenakshi Raman Presiden, Sahabat Alam Malaysia Ahli Ganti: Alternate Members: Theivanai Amarthalingam Penasihat Undang-Undang Sahabat Alam Malaysia Legal Adviser, Sahabat Alam Malaysia
19	Wakil Pertubuhan Yang Berpengalaman Mengenai Alam Sekitar Representative from the registered organisations knowledgeable in matters pertaining to the environment	Puan Saradambal Srinivasan Ketua Dasar, Dana Hidupan Liar Dunia Program Terrestrial Semenanjung Malaysia Policy Lead, Peninsular Malaysia Terrestrial Programme World Wildlife Fund Ahli Ganti: Alternate Members: Tiada





Bab 2

Chapter 2



PENGURUSAN SUMBER MANUSIA DAN KEWANGAN HUMAN RESOURCES AND FINANCIAL MANAGEMENT

PENGURUSAN SUMBER MANUSIA DAN KEWANGAN HUMAN RESOURCES AND FINANCIAL MANAGEMENT

92.94%

Pengisian jawatan di JAS sehingga 31.12.2020 / **Job positions filled as at 31.12.2020**

Perjawatan / **Position:** 1,543

Pengisian / **Occupancy:** 1,434

Kekosongan / **Vacancy:** 109

100%

Peratusan Pegawai Menghadiri Kursus Bagi Tahun 2020 / **Percentage of officers who attended courses for the year 2020**

1,381 pegawai hadir tujuh (7) hari dan lebih kursus bagi tahun 2019 / **1,381 DOE staff attended courses for seven (7) days or more in 2019**

**114
ORANG / EMPLOYEES**

Penerima Anugerah Perkhidmatan Cemerlang (APC) 2020 / **Recipients of Excellent Service Award (APC) 2020**

PECAHAN PEGAWAI MENGIKUT JANTINA / BREAKDOWN OF OFFICERS BY GENDER

Lelaki / Male	801
Perempuan / Female	633

PECAHAN PERJAWATAN/ BREAKDOWN OF POSITION

Pegawai Teknikal / Technical Officer	1,132
Pegawai Gunasama / Kader / Non-Technical Officer	411

PERBELANJAAN PEMBANGUNAN JAS 2020

JAS telah menerima peruntukan pembangunan sebanyak RM 67,595,000.00 pada tahun 2020. Dengan peruntukan sedemikian, sebanyak lapan (8) projek telah selesai dilaksanakan dengan prestasi perbelanjaan sebanyak 95.3%.

DEVELOPMENT EXPENDITURE OF DOE IN 2020

DOE received an allocation of RM 67,595,000.00 for development expenditure in 2020. With the allocation provided, DOE has completed eight (8) development projects, with an expenditure up to 95.3%.

**PERUNTUKAN 2020 /
BUDGET ALLOCATION IN 2020
RM 67,595,000.00**

**PERBELANJAAN 2020 /
EXPENDITURE IN 2020
RM 64,414,794.71**

ANGGARAN BELANJA MENGURUS 2020

Anggaran Belanja Mengurus yang telah diluluskan bagi tahun 2020 adalah sebanyak RM116,584,900. Manakala, Peruntukan Dipinda pada 31 Disember 2020 adalah sebanyak RM114,278,359. Anggaran Belanja Mengurus Tahun 2020 Mengikut Objek Am adalah seperti di **Jadual 2.1**

ESTIMATED OPERATING EXPENDITURE 2020

The Approved Estimated Operating Expenditure for 2020 is RM116,584,900, while Budget Amendment as at 31 December 2020 is RM114,278,359. The details of the Estimated Operating Expenditure 2020 is as shown in **Table 2.1**.

PERBELANJAAN MENGURUS 2020

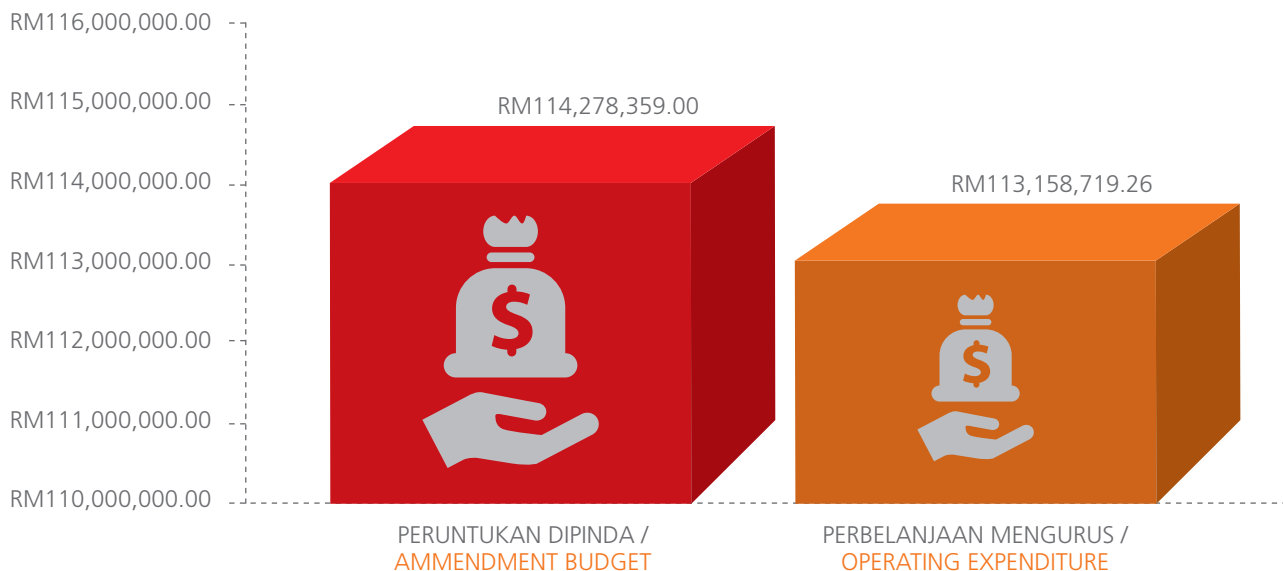
JAS telah membelanjakan sebanyak RM113,158,719.26 iaitu sebanyak 99.02% daripada Peruntukan Dipinda. Maklumat Perbelanjaan Mengurus Tahun 2020 adalah seperti di **Rajah 2.1**.

OPERATING EXPENDITURE 2020

DOE spent RM113,158,719.26 which is 99.02% of the Amended Budget. Details of Operating Expenditure 2020 is shown in **Figure 2.1**.

Jadual 2.1 : Anggaran Belanja Mengurus 2020
Table 2.1 : Estimated Operating Expenditure 2020

OBJEK AM / GENERAL OBJECT	PERIHAL OBJEK AM / DESCRIPTION OF GENERAL OBJECT	PERUNTUKAN DILULUSKAN (RM) / APPROVED BUDGET (RM)	PERUNTUKAN DIPINDA (RM) / BUDGET AMENDMENT (RM)
10000	Emolumen / Emoluments	92,357,400	89,671,059
20000	Perkhidmatan dan Bekalan / Services and Supplies	23,037,500	23,417,300
30000	Aset / Assets	0.00	0.00
40000	Pemberian dan Kenaan Bayaran Tetap / Grants and Fixed Charges	1,190,000	1,190,000
JUMLAH KESELURUHAN / TOTAL		116,584,900	114,278,359



Rajah 2.1
Figure 2.1

Perbelanjaan Mengurus 2020
Operating Expenditure 2020



Bab 3

Chapter 3



**PENILAIAN KESAN KEPADA
ALAM SEKELILING (EIA) DAN
INPUT KEPADA PERANCANGAN
PEMBANGUNAN
ENVIRONMENTAL IMPACT
ASSESSMENT (EIA) AND INPUT
FOR DEVELOPMENT**

PENILAIAN KESAN KEPADA ALAM SEKELILING (EIA) DAN INPUT KEPADA PERANCANGAN PEMBANGUNAN

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) AND INPUT FOR DEVELOPMENT

EIA merupakan satu alat perancangan untuk mencegah, mengawal dan mengurangkan kesan-kesan kepada alam sekitar akibat aktiviti pembangunan. Laporan EIA yang komprehensif memberikan pilihan daripada pelbagai perspektif bagi melaksanakan sesuatu projek pembangunan dari aspek tapak cadangan, kaedah pelaksanaan projek, penggunaan teknologi, sumber dan langkah-langkah mitigasi yang diintegrasikan pada setiap peringkat pelaksanaan projek bermula dari perancangan sehingga ke pelaksanaan serta penamatan projek.

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

LAPORAN EIA 2020

Sejumlah 366 laporan EIA telah diterima dan dinilai oleh Jabatan Alam Sekitar (JAS) pada tahun 2020 (**Rajah 3.1**). Laporan EIA tersebut adalah sebanyak 316 (86%) laporan bagi aktiviti yang tertakluk di bawah Jadual Pertama, Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015, manakala 50 (14%) laporan bagi aktiviti yang tertakluk di bawah Jadual Kedua perintah tersebut.

Selangor menerima bilangan laporan EIA tertinggi pada tahun 2020 iaitu sebanyak 94 (26.0%), Kelantan 88 (24.4%) dan Pahang 45 (12.5%). **Rajah 3.3** menunjukkan perbandingan status keputusan Laporan EIA dengan jumlah laporan yang diterima oleh JAS.

Laporan EIA bagi aktiviti yang ditetapkan berkaitan perhutanan merupakan yang paling banyak diterima pada tahun 2020 iaitu sebanyak 120 (28.8%) laporan, diikuti aktiviti berkaitan pengolahan dan pelupusan buangan sebanyak 97 (23.3%) laporan dan aktiviti berkaitan industri sebanyak 38 (9.1%) laporan (**Rajah 3.4**).

Selain itu, tiga (3) laporan EIA bagi aktiviti berkaitan pembangunan medan minyak dan gas luar pantai di dalam kawasan Zon Ekonomi Eksklusif (ZEE) telah diterima iaitu dua (2) Sarawak dan satu (1) di negeri Kelantan.

EIA is an essential planning tool for preventing, controlling and reducing the environmental impacts arising from development activities. A comprehensive EIA report provides options from various perspectives to implement a development project in terms of proposed site, project implementation methods, use of technology, resources and mitigation measures integrated at each stage from planning to implementation of project and project decommissioning.

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

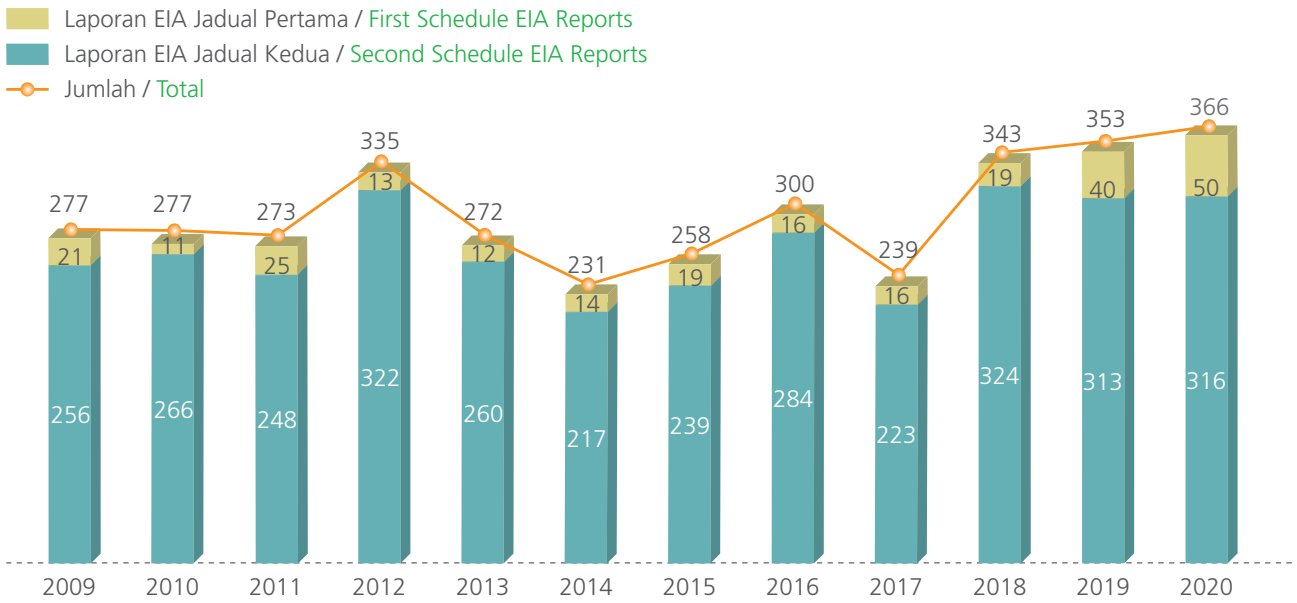
EIA REPORTS 2020

A total of 366 EIA reports were received and reviewed by the Department of Environment (DOE) in 2020 (**Figure 3.1**). Of this figure, 316 (86%) were EIA reports of activities that came under the First Schedule of Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, while 50 (14%) were reports of activities under the Second Schedule of the Order.

Selangor received the highest number of EIA reports in 2020, with 94 (26.0%) reports, Kelantan with 88 (24.4%) reports and Pahang with 45 (12.5%). **Figure 3.3** shows the details and a comparison of the status of the EIA Reports with the number of reports received by the DOE.

Figure 3.4 displays the number of EIA reports generated with regard to prescribed activities. Forestry related activities had the most reports in 2020 with 120 (28.8%) reports, followed by activities related to waste treatment and disposal with 97 (23.3%) and activities related to industries with 38 (9.1%) reports.

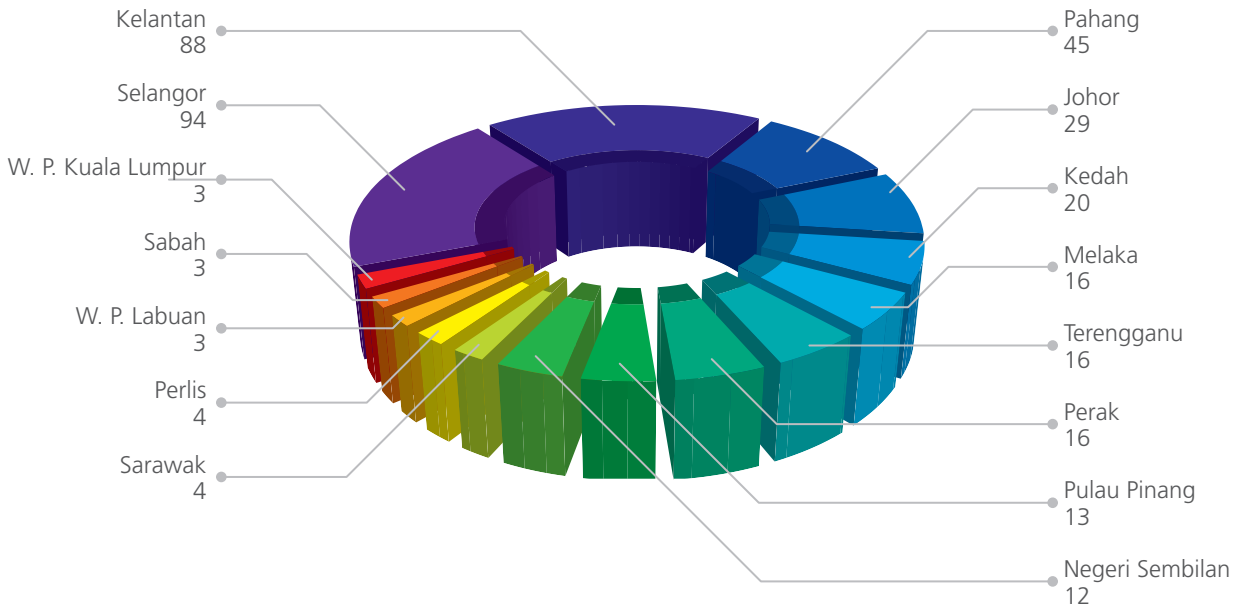
Meanwhile, three (3) EIA reports for activities related to offshore oil and gas field development within the area of the Economic Exclusive Zone (EEZ) were received - two (2) in Sarawak and one (1) in Kelantan.



* Jumlah kumulatif Laporan EIA diterima daripada tahun 2009-2020 - 3,524 Laporan EIA/
 * A total cumulative of EIA Reports received from year 2009-2020 - 3,524 EIA Reports

Rajah 3.1
Figure 3.1

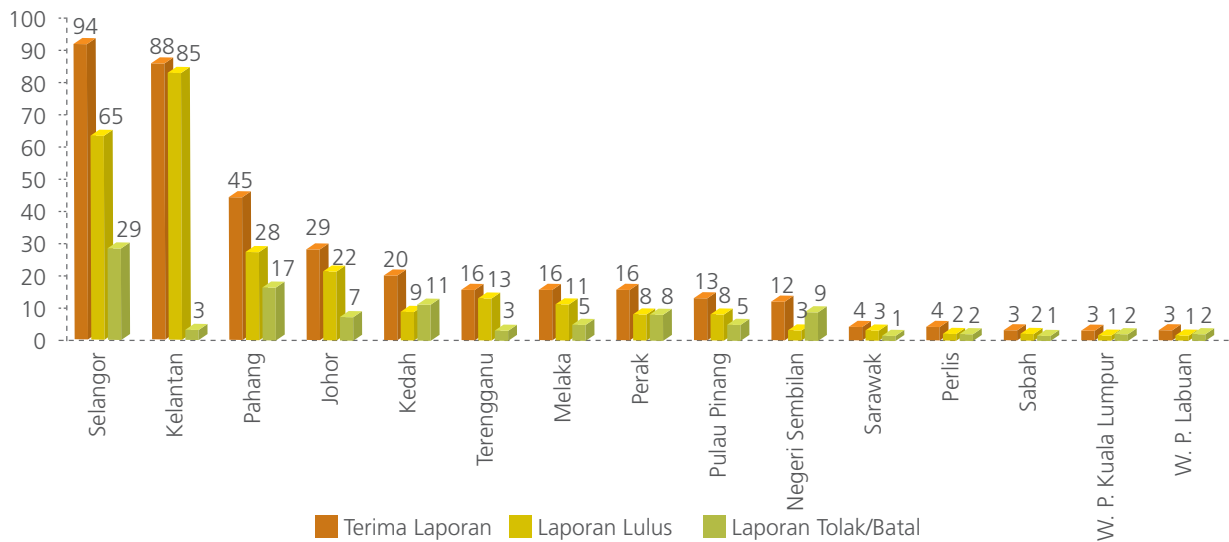
Rajah 3.1 : Bilangan Laporan EIA yang Diterima Mengikut Tahun
 Figure 3.1 : The Number of EIA Reports Received by Years



50.4% daripada jumlah laporan EIA adalah aktiviti di Selangor dan Kelantan
 50.4% of the total EIA reports received were for activities in Selangor and Kelantan

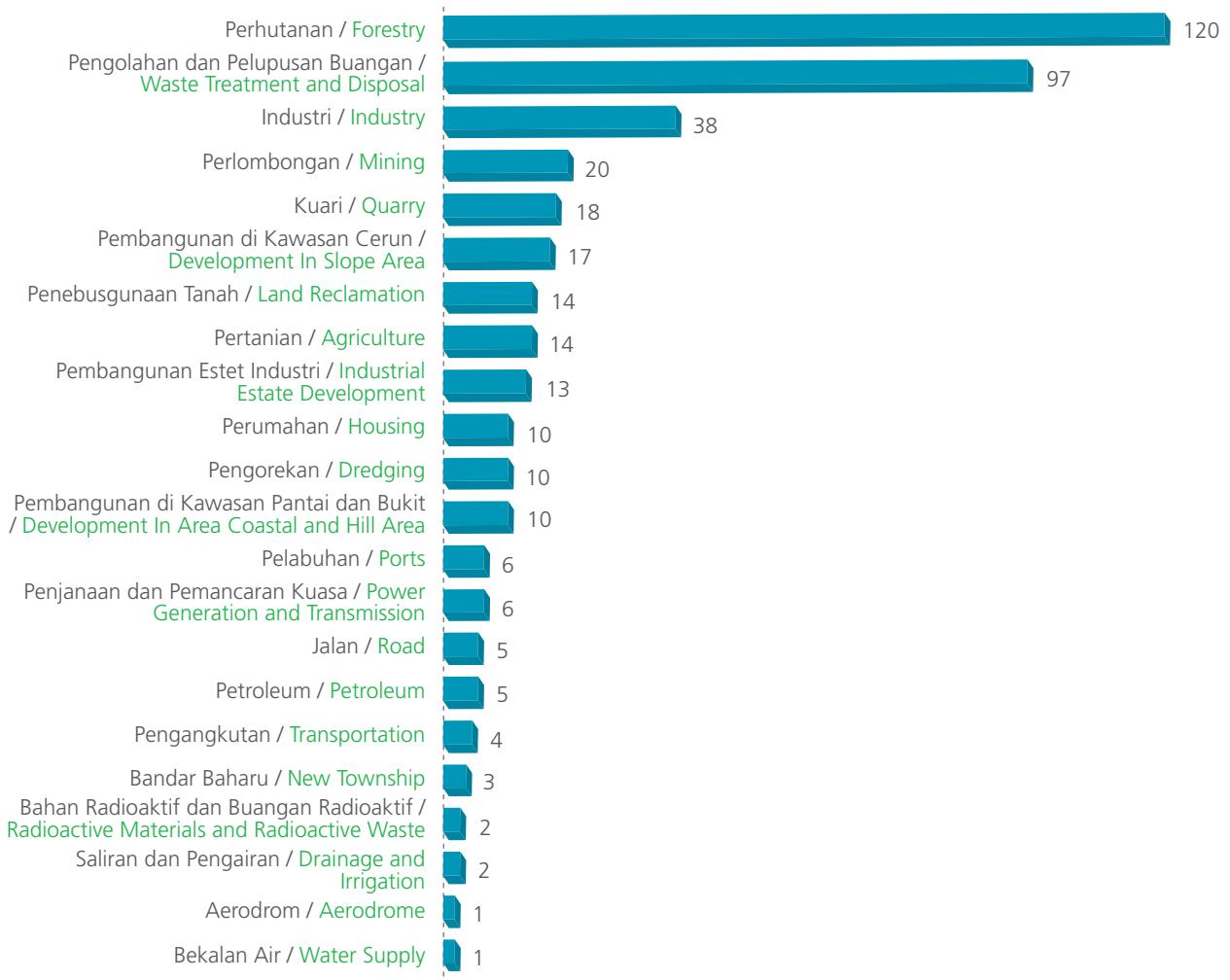
Rajah 3.2
Figure 3.2

Bilangan Laporan EIA yang Diterima Mengikut Negeri
 The Number of EIA Reports Received by State



Rajah 3.3
Figure 3.3

Penerimaan dan Keputusan Laporan EIA Mengikut Negeri
EIA Reports Received and Status by States



Rajah 3.4
Figure 3.4

Bilangan Laporan EIA yang Diterima Mengikut Aktiviti yang Ditetapkan, 2020
The Number of EIA Reports Received by Prescribed Activities, 2020

PENGUATKUASAAN PROJEK EIA

Sejumlah 1,344 siasatan penguatkuasaan telah dijalankan pada tahun 2020 untuk mengenalpasti status pembangunan dan pematuhan projek-projek EIA (**Rajah 3.5**). Sepanjang tahun 2020, sejumlah 744 bentuk tindakan penguatkuasaan telah dikeluarkan oleh JAS. Tindakan penguatkuasaan tersebut merangkumi 525 notis arahan, 205 kompaun dan 37 kes telah didakwa di mahkamah kerana tidak mematuhi syarat-syarat kelulusan EIA. Selain itu, sebanyak tujuh (7) perintah larangan bagi aktiviti yang ditetapkan di bawah Seksyen 34AA, Akta Kualiti Alam Sekeliling 1974 telah dikeluarkan bagi kesalahan serius berkaitan pematuhan EIA. (**Rajah 3.6**).



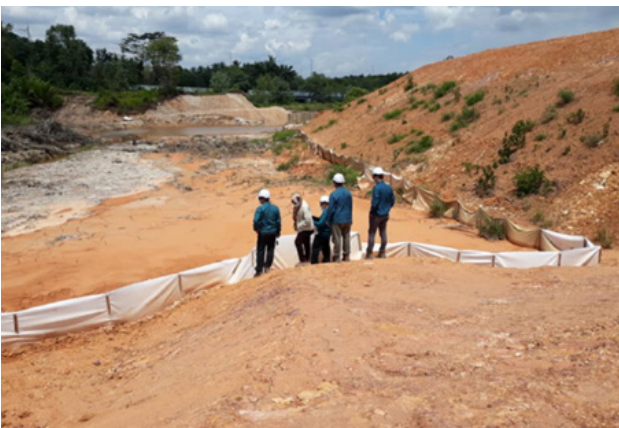
Penguatkuasaan Projek EIA bagi Aktiviti Penebusgunaan Tanah
Enforcement of EIA Projects for Land Reclamation Activities

EIA PROJECT ENFORCEMENT

A total of 1,344 enforcement inspections on EIA projects were conducted in 2020 to investigate the project development status and the compliance of EIA approval conditions. (**Figure 3.5**). In 2020, a total of 744 enforcement actions were issued by the DOE. The enforcement actions consist of 525 notices and 205 compounds, while 37 cases were charged in court for not complying with the conditions of EIA approval. This aside, seven (7) prohibition orders for prescribed activity under Section 34AA, Environmental Quality Act 1974 were also issued for serious offences related to EIA compliance. (**Figure 3.6**).



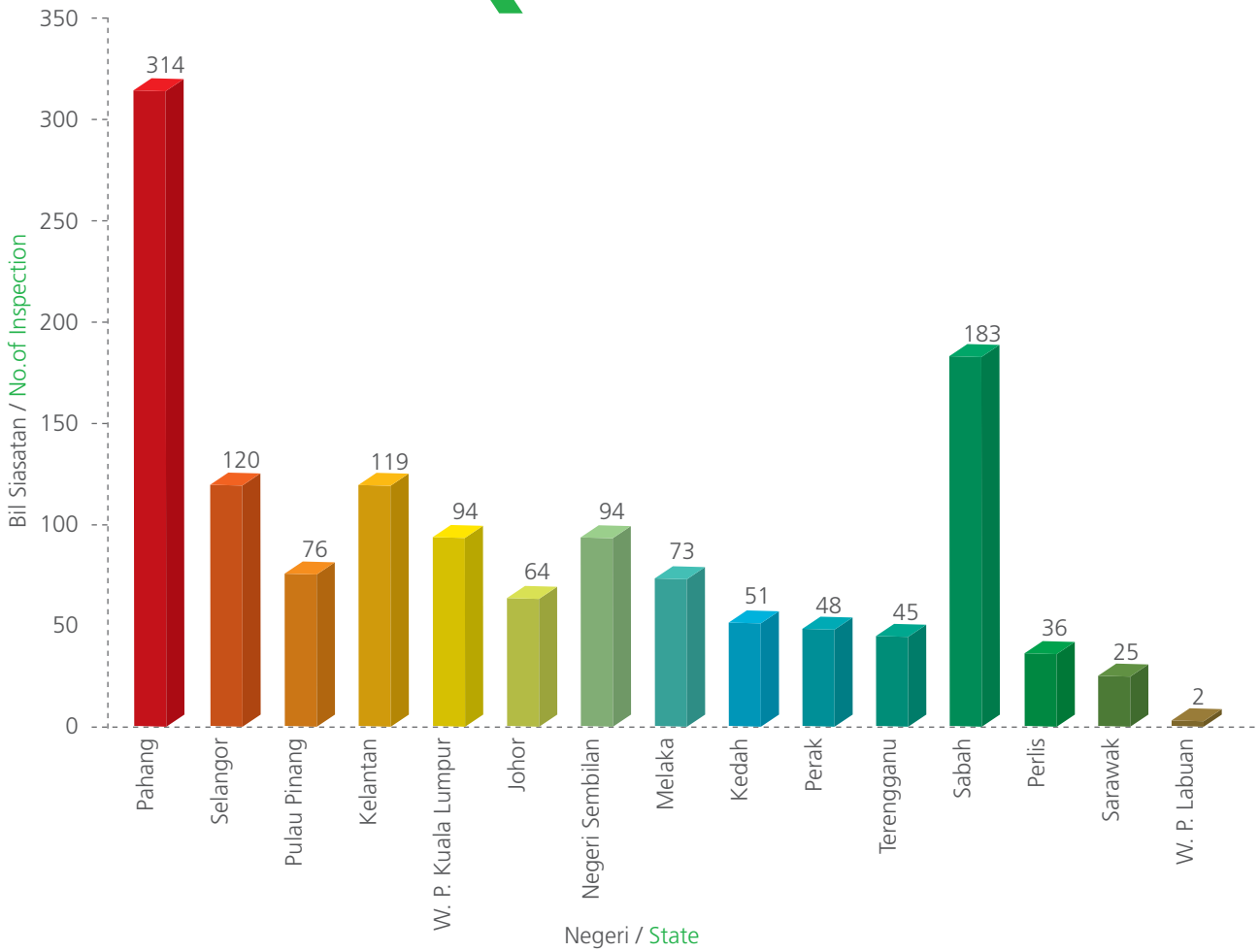
Pasca EIA untuk Aktiviti Industri
Post EIA for Industrial Activities



Aktiviti Penguatkuasaan EIA
EIA Enforcement Activity

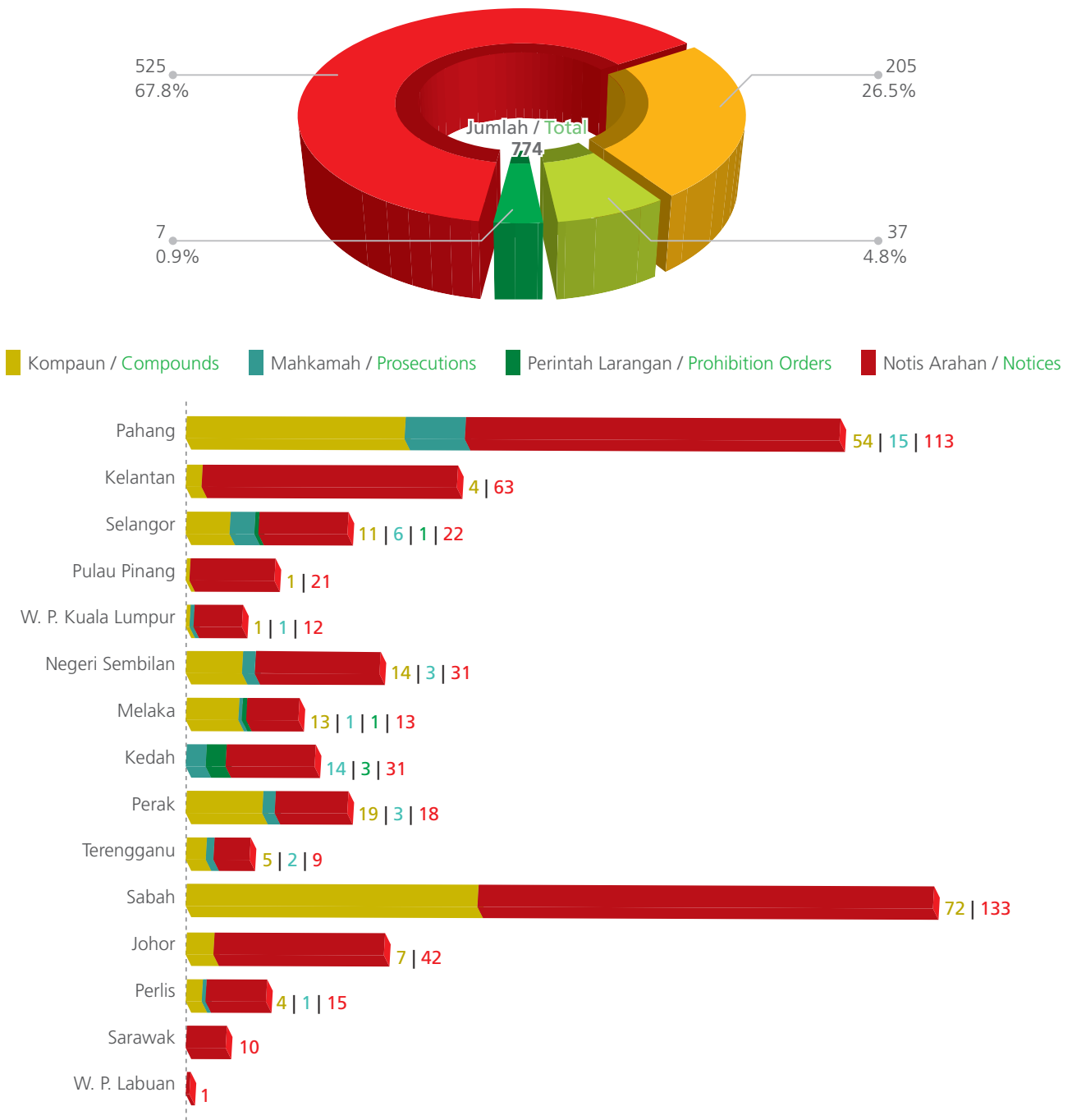


Aktiviti Penguatkuasaan EIA
EIA Enforcement Activity



Rajah 3.5
Figure 3.5

Bilangan Penguatkuasaan Projek EIA Tahun 2020
The Number of EIA Enforcement Year 2020



Rajah 3.6
Figure 3.6
Tindakan Susulan Penguatkuasaan Projek EIA Tahun 2020
Follow Up Action of EIA Enforcement Investigations Year 2020

SKIM PENDAFTARAN JURURUNDING EIA

Skim Pendaftaran Jururunding EIA yang baharu telah mula diperkenalkan pada 1 Jun 2007. Pendaftaran Jururunding EIA ini telah menjadi satu keperluan undang-undang di bawah Akta Kualiti Alam Sekeliling, 1974 (Pindaan 2012) yang mewajibkan semua jururunding EIA untuk berdaftar dengan JAS sebelum menjalankan kajian EIA.

EIA CONSULTANTS REGISTRATION SCHEME

The new EIA Consultants Registration Scheme was introduced in June 1, 2007. This registration of EIA Consultants has become a legal requirement under the Environmental Quality Act, 1974 (Amendment 2012) which requires all EIA consultants to be registered with DOE prior to carrying out any EIA studies.

Pendaftaran terbuka kepada individu dan dibahagikan kepada empat (4) kategori iaitu Jururunding EIA (C), Jururunding Subjek (CS), Pakar Subjek (SS) dan Pembantu Jururunding (AC).

Sebanyak 112 permohonan telah diterima pada tahun 2020 di mana hanya 70 layak untuk didaftarkan.

Sehingga 31 Disember 2020, sebanyak 923 individu telah berdaftar di bawah Skim Pendaftaran Jururunding EIA, di mana 158 orang adalah EIA C, 122 orang SC, 96 orang adalah SS dan 547 orang adalah AC (**Jadual 3.1**).

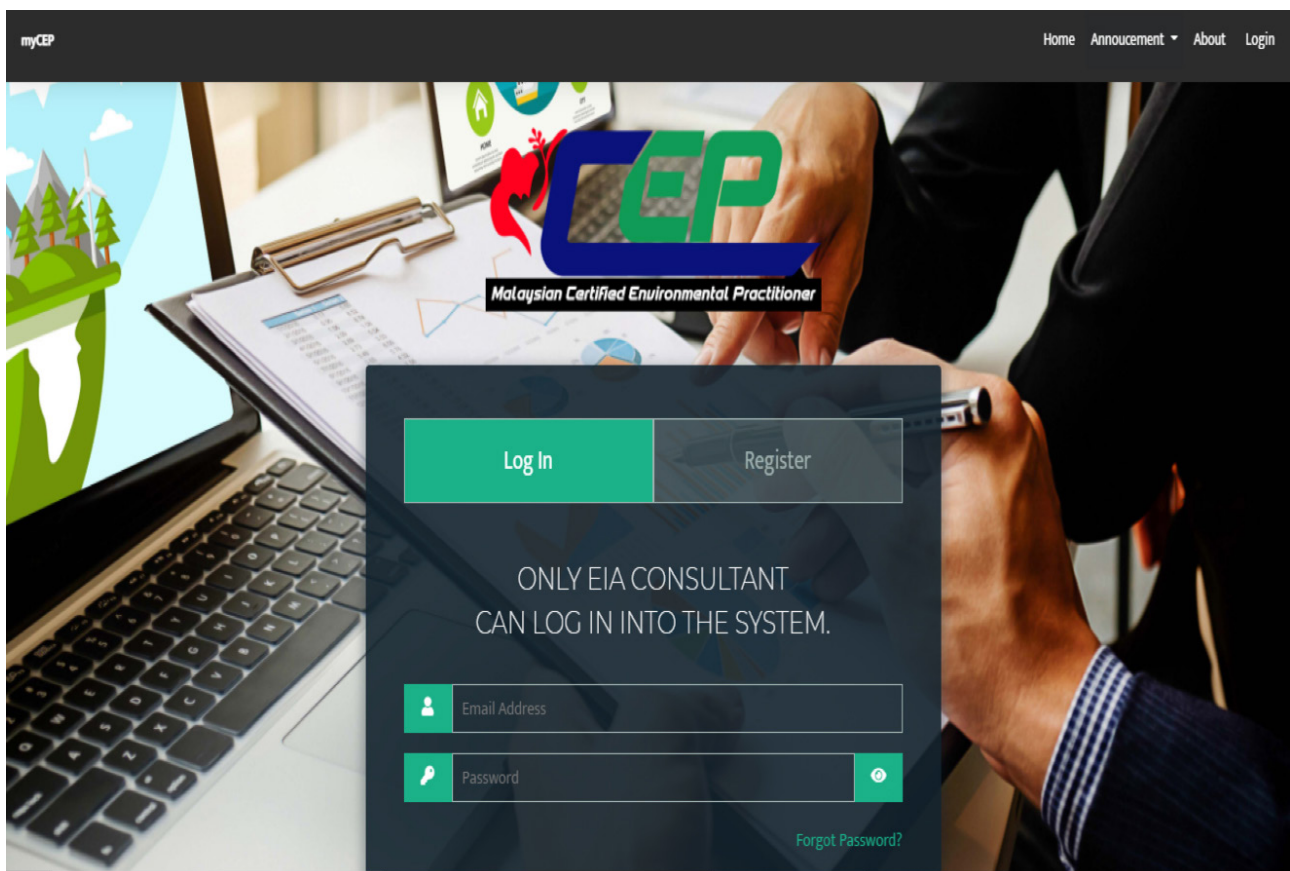
Pada Jun 2020, satu sistem pendaftaran atas talian telah diwujudkan untuk melaksanakan pendaftaran baharu jururunding dan pembaharuan pendaftaran melalui sistem dalam talian iaitu myCEP (Malaysian Certified Environmental Practitioner). Sistem ini membolehkan jururunding EIA mengemukakan permohonan untuk pendaftaran dan pembaharuan pendaftaran secara atas talian sepanjang tahun. Pemohon boleh memilih kategori khusus yang sesuai dengan kelayakan akademik, kemahiran dan pengalaman. Sistem boleh dicapai melalui URL <https://mycep.doe.gov.my/>.

Registration is open for individuals and divided into four (4) categories namely, EIA Consultant (C), Subject Consultant (CS), Subject Specialist (SS) and Assistant Consultant (AC).

A total of 112 applications were received in 2020 where only 70 were qualified to be registered.

As at 31 December 2020, DOE has registered 923 individuals under this EIA Registration Scheme where 158 are EIA C, 122 are SC, 96 are SS and 547 are AC (**Table 3.1**).

In June 2020, an online registration system was established to implement the new registration of consultants and online renewal, namely the myCEP (Malaysian Certified Environmental Practitioner). This system allows EIA consultants to register and renew through online registration throughout the year. Applicants can choose specific categories that suit their academic qualifications, skills and experience. The system can be accessed through the URL <https://mycep.doe.gov.my/>.



Pendaftaran Jururunding EIA Melalui Sistem Dalam Talian MyCEP
EIA Consultant Registration Through MyCEP Online System

Jadual 3.1 : Jumlah Keseluruhan Jururunding Berdaftar Sehingga 31 Disember 2020
Table 3.1 : Number of Registered Consultants Until 31 December 2020

KATEGORI / CATEGORY	JUMLAH / TOTAL	PERATUSAN (%) / PERCENTAGE (%)
Jururunding EIA / EIA Consultant	158	17.1
Jururunding Subjek / Subject Consultant	122	13.2
Pakar Subjek / Subject Specialist	96	10.4
Pembantu Jururunding / Assistant Consultant	547	59.3
Jumlah / Total	923	100

SKIM PENDAFTARAN JURUAUDIT ALAM SEKITAR

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

Bagi tahun 2020, sebanyak 15 permohonan baharu telah diterima dan 11 daripadanya telah didaftarkan sebagai Juruaudit Alam Sekitar manakala bagi permohonan pembaharuan, pihak JAS telah menerima 20 permohonan dan 16 permohonan telah diluluskan (**Jadual 3.2**). Sehingga 31 Disember 2020, sebanyak 115 orang individu telah didaftarkan sebagai Juruaudit Alam Sekitar.

Tujuan utama skim pendaftaran ini adalah untuk memastikan hanya orang yang layak sahaja dibenarkan menjalankan audit alam sekitar.

Audit Alam Sekeliling merupakan keperluan di bawah Seksyen 33A, Akta Kualiti Alam Sekeliling 1974. Pelaksanaan audit dan pelaporan audit alam sekeliling adalah mengikut prosedur dan garis panduan yang ditetapkan.

Pelaksanaan audit ini merupakan salah satu kaedah pematuhan sendiri yang boleh dilaksanakan bagi memastikan pematuhan yang berterusan terhadap Akta Kualiti Alam Sekeliling 1974.

ENVIRONMENTAL AUDIT REGISTRATION SCHEME

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

For 2020, a total of 15 new applications were processed and 11 auditors were successfully registered as Environmental Auditors while for the renewal application, the department received 20 applications and 16 applications were approved (**Table 3.2**). As at 31st December 2020, a total of 115 auditors have been registered under the Scheme.

The main objective of the scheme is to ensure that only a qualified person is allowed to conduct this third-party environmental audit.

Environmental Audit is a requirement under Section 33A of the Environmental Quality Act 1974. The environmental audit and audit reporting is in accordance with established procedures and guidelines.

The implementation of this audit is one of the self-regulatory methods that can be implemented to ensure continuous compliance with the Environmental Quality Act 1974.

Jadual 3.2 : Jumlah Permohonan Juruaudit Alam Sekeliling yang Diluluskan bagi Tahun 2020
Table 3.2: Number of Approved Environmental Auditor Applications in 2020

JENIS PERMOHONAN / TYPES OF APPLICANT	JUMLAH PERMOHONAN / NO. OF APPLICANTS	JUMLAH LULUS / NO. OF APPLICATIONS APPROVED	PERATUSAN LULUS / PERCENTAGE APPROVED
Baharu / New	15	11	73 %
Pembaharuan / Renewals	20	16	80 %

PERMOHONAN KELULUSAN MENJALANKAN AKTIVITI EKSPLOKASI DI DALAM KAWASAN ZON EKONOMI EKSKLUSIF (ZEE)

Eksplorasi minyak dan gas merupakan proses awal dalam pembangunan medan pengeluaran minyak dan gas bertujuan untuk mengenalpasti lokasi sumber minyak dan gas. Ia amat penting kepada pembangunan negara di mana ianya merupakan salah satu Program Transformasi Ekonomi (Economic Transformation Programme ETP), di bawah peluang perniagaan yang dikenalpasti dalam Bidang Utama Ekonomi Negara (NKEA). Aktiviti eksplorasi minyak dan gas ini tidak tertakluk kepada Perintah Kualiti Alam Sekeliling (Penilaian Kesan Kepada Alam Sekeliling) 2015.

Kebanyakan lokasi medan eksplorasi minyak dan gas luar pantai berada di dalam kawasan ZEE. Kelulusan bagi projek-projek di dalam kawasan ZEE ini adalah di bawah bidangkuasa Jawatankuasa Menimbang dan Meluluskan Permohonan Di Bawah Seksyen 21(1) dan Seksyen 22 Akta Zon Ekonomi Eksklusif 1984 (Akta 311) (JKZEE) yang diselaraskan oleh Kementerian Perdagangan Dalam Negeri dan Hal Ehwal Pengguna (KPDNHEP) sebagai Urusetia.

Keahlian Jawatankuasa ini dianggotai oleh pelbagai agensi di peringkat Persekutuan termasuk JAS. JKZEE berperanan menilai dan meluluskan sesuatu permohonan untuk kerja-kerja membina, mengendali atau menggunakan mana-mana pulau, pemasangan atau struktur buatan, pemasangan kabel serta talian paip di ZEE.

Selain daripada menilai laporan EIA bagi aktiviti pembangunan medan minyak dan gas di dalam kawasan ZEE, JAS juga turut bertanggungjawab memberikan input kepada JKZEE bagi permohonan kelulusan projek yang tidak tertakluk kepada Perintah Kualiti Alam Sekeliling (Penilaian Kesan Kepada Alam Sekeliling) 2015. Pada tahun 2020, JAS telah menerima sebanyak 16 permohonan pembangunan di dalam kawasan ZEE ini yang telah dinilai oleh JAS Negeri yang berkaitan iaitu 15 di Sarawak dan satu (1) di Sabah.

INPUT ALAM SEKITAR KEPADA PERANCANGAN PEMBANGUNAN

Pada tahun 2020, sejumlah 12,631 input alam sekitar telah diulas oleh JAS Negeri kepada penggerak projek, Kerajaan Negeri, Pihak Berkuasa Tempatan, Pejabat Tanah serta agensi-agensis lain yang berkaitan.

Input teknikal yang diulas ini adalah penting bagi memastikan keperluan perundangan alam sekitar dipatuhi dan aspek alam sekitar diberikan pertimbangan yang sewajarnya di dalam proses membuat keputusan.

APPLICATIONS TO CONDUCT EXPLORATION ACTIVITIES IN THE EXCLUSIVE ECONOMIC ZONE (EEZ)

The exploration of oil and gas is the initial process for the development of an oil and gas production field in identifying the availability of oil and gas within the resource area. It is crucial to the development of the country as it is part of the Economic Transformation Programme (ETP) under the business opportunities that have been identified in the National Key Economic Area (NKEA). The exploration of oil and gas is not subject to the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015.

Most of these offshore oil and gas exploration fields are located within the EEZ. The approval for projects within the EEZ area is under the purview of the Committee to Consider and Approve Under Section 21 (1) and Section 22 of the Exclusive Economic Zone Act 1984, which is under the Exclusive Economic Zone Act 1984 (Act 311). The committee is co-ordinated by the Ministry of Domestic Trade and Consumer Affairs (KPDNHEP), which acts as the Secretariat.

The members of the committee are from various agencies at Federal level including DOE. The committee is responsible for evaluating and approving applications for the construction, operation or use of any island, installation or structure, cable installation and pipeline in EEZ.

Apart from reviewing and approving EIA reports for the development of oil and gas fields within EEZ area, DOE also has the responsibility to provide input for the committee regarding applications for projects that are not subject to the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015. In 2020, the DOE received 16 development applications, 15 in Sarawak and one (1) in Sabah, in this EEZ area that were evaluated by the relevant State DOEs.

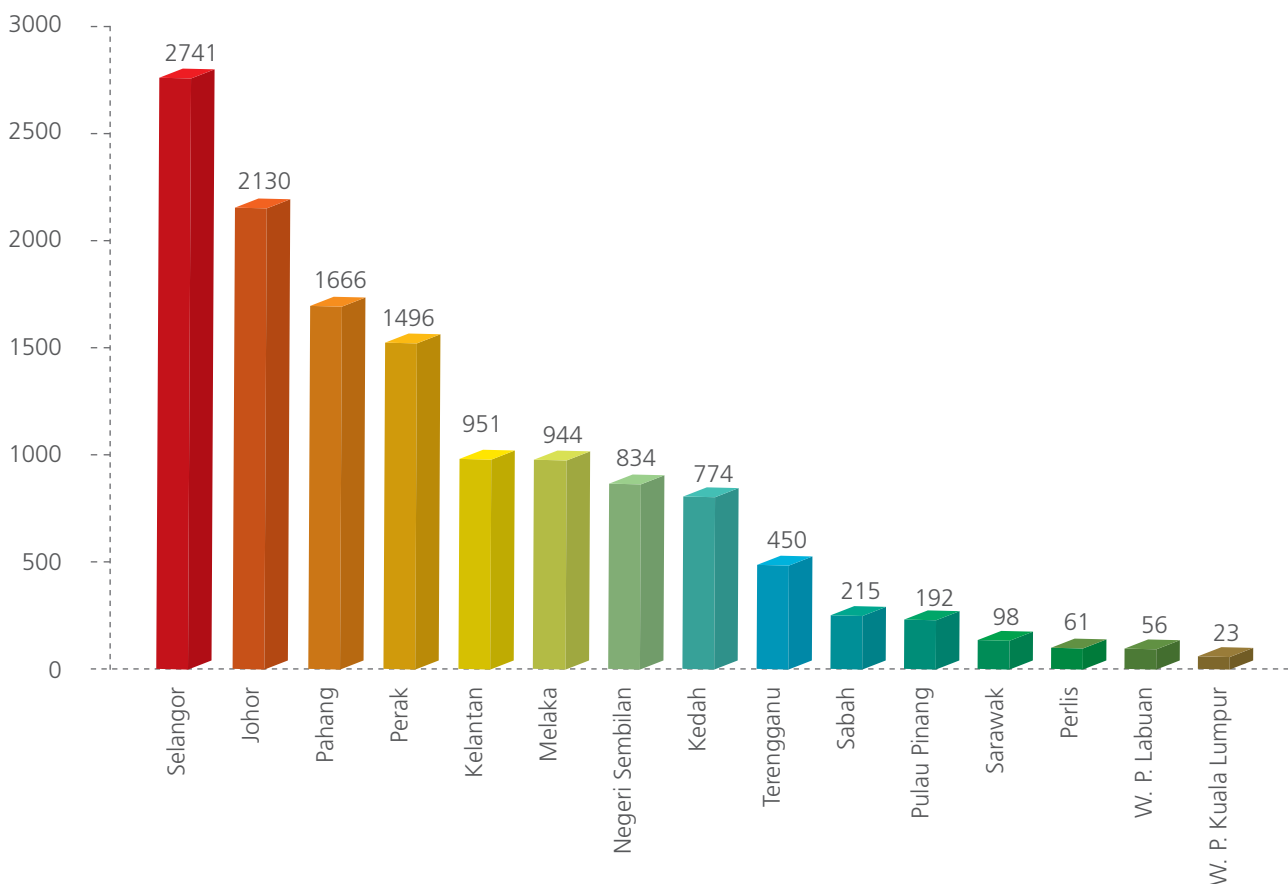
ENVIRONMENTAL INPUT FOR DEVELOPMENT PLANNING

In 2020, a total of 12,631 environmental inputs were reviewed by DOE state offices to the project developers, State Governments, Local Authorities and Land Offices, as well as other relevant agencies.

Technical environmental inputs provided were important to ensure that the environmental legal requirements are complied with, and that the environmental aspects were given due consideration in the decision-making process.

Di pihak Ibu Pejabat JAS, input alam sekitar turut diulas kepada agensi seperti Kementerian Perumahan dan Kerajaan Tempatan (KPKT), Malaysian Investment Development Authority (MIDA), Kementerian Perdagangan Dalam Negeri dan Hal-Ehwal Pengguna (KPDNHEP) dan Kementerian Air, Tanah dan Sumber Asli (KATS) mengenai penyelarasan perancangan pembangunan, pelaburan industri dari dalam dan luar negara, pelan tempatan, kajian rancangan fizikal negara, kajian kawasan sensitif alam sekitar, pembukaan medan minyak, aktiviti di kawasan tanah tinggi dan sebagainya.

On the part of the DOE headquarters level, environmental inputs were also provided to relevant agencies such as Ministry of Housing and Local Government, MIDA, Ministry of Domestic Trade and Consumer Affairs and Ministry of Water, Land and Natural Resources in relation to development planning coordination, local plans, national physical plan study, foreign and local industrial investment, environmentally sensitive areas study, oil and gas field development, and development activities in the highlands etc.



* Jumlah Input Alam Sekitar kepada Perancangan Pembangunan diterima pada tahun 2020 - 12,631 permohonan

* Total Environmental Input For Development Planning received in year 2020 - 12,631 application

Rajah 3.7
Figure 3.7

Bilangan Input Alam Sekitar kepada Perancangan Pembangunan mengikut Negeri, 2020 The Number of Environmental Input for Development Planning by States, 2020

PEMBERITAHUAN DAN KELULUSAN BERTULIS

Peraturan-Peraturan Kualiti Alam Sekeliling (Kumbahan), 2009 dan Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian), 2009

WRITTEN NOTIFICATION AND APPROVAL

The Environmental Quality (Sewage) Regulations 2009 and the Environmental Quality (Industrial Effluents) Regulations 2009 require that written notification be

menghendaki supaya pihak premis mengemukakan pemberitahuan bertulis kepada Ketua Pengarah Kualiti Alam Sekeliling sebelum pembinaan sistem pengolakan kumbahan/efluen perindustrian.

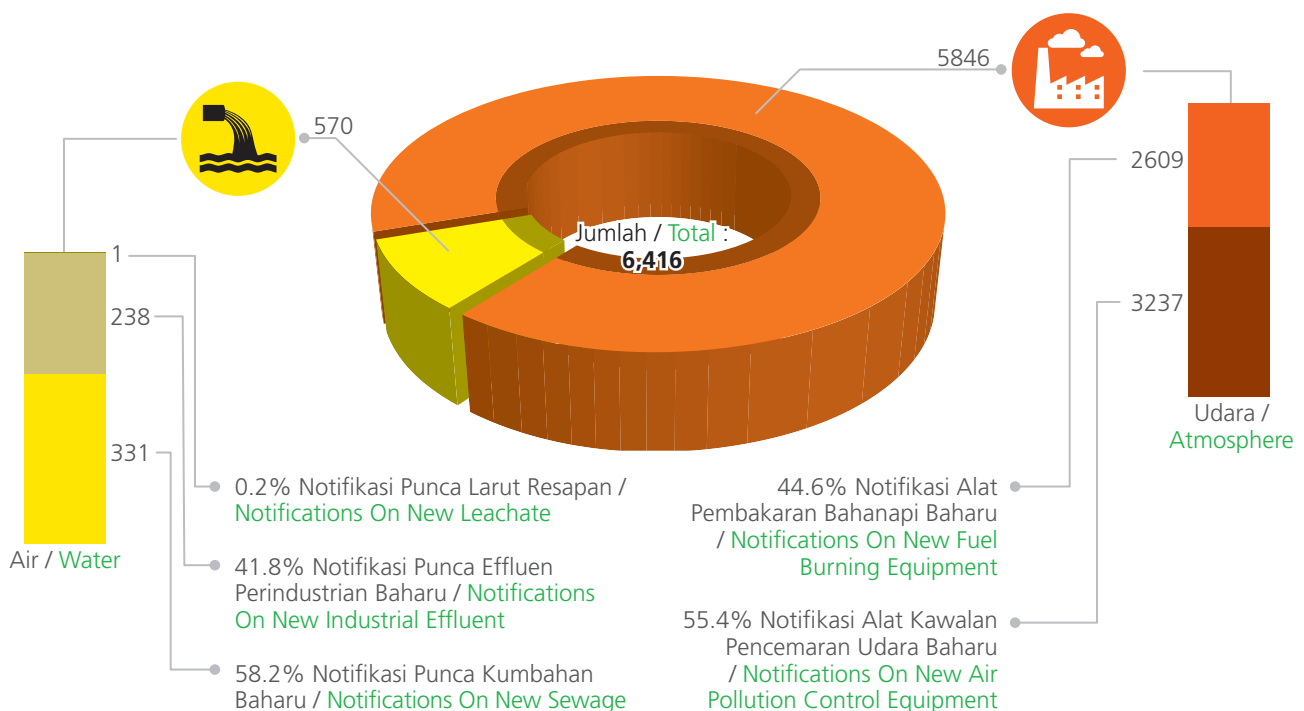
Manakala Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014 menghendaki supaya pemberitahuan bertulis kepada Ketua Pengarah Kualiti Alam Sekeliling bagi pemasangan sistem kawalan pencemaran udara.

Pada tahun 2020, JAS telah menerima sejumlah 6,416 pemberitahuan bertulis bagi punca yang melibatkan pelepasan efluen dan pelepasan ke udara. Sebanyak 331 daripada jumlah tersebut adalah bagi pembinaan loji pengolakan kumbahan, 238 pemberitahuan bertulis untuk sumber baharu atau diubah pelepasan efluen perindustrian atau efluen bercampur, 1 pemberitahuan bertulis untuk larut resapan dan 3,237 permohonan bagi pemasangan alat kawalan pencemaran udara. Tambahan itu, JAS juga telah memproses sebanyak 2,609 pemberitahuan bertulis untuk pemasangan alat pembakaran bahan api seperti dandang dan alat janakuasa (**Rajah 3.8** dan **Rajah 3.9**).

submitted to the Director General of Environmental Quality before the construction of the sewage/industrial effluent treatment system.

Whereas for air pollution control systems, The Regulations Environmental Quality (Clean Air) Regulations 2014 requires written notifications to the Director General of Environmental Quality prior to installation.

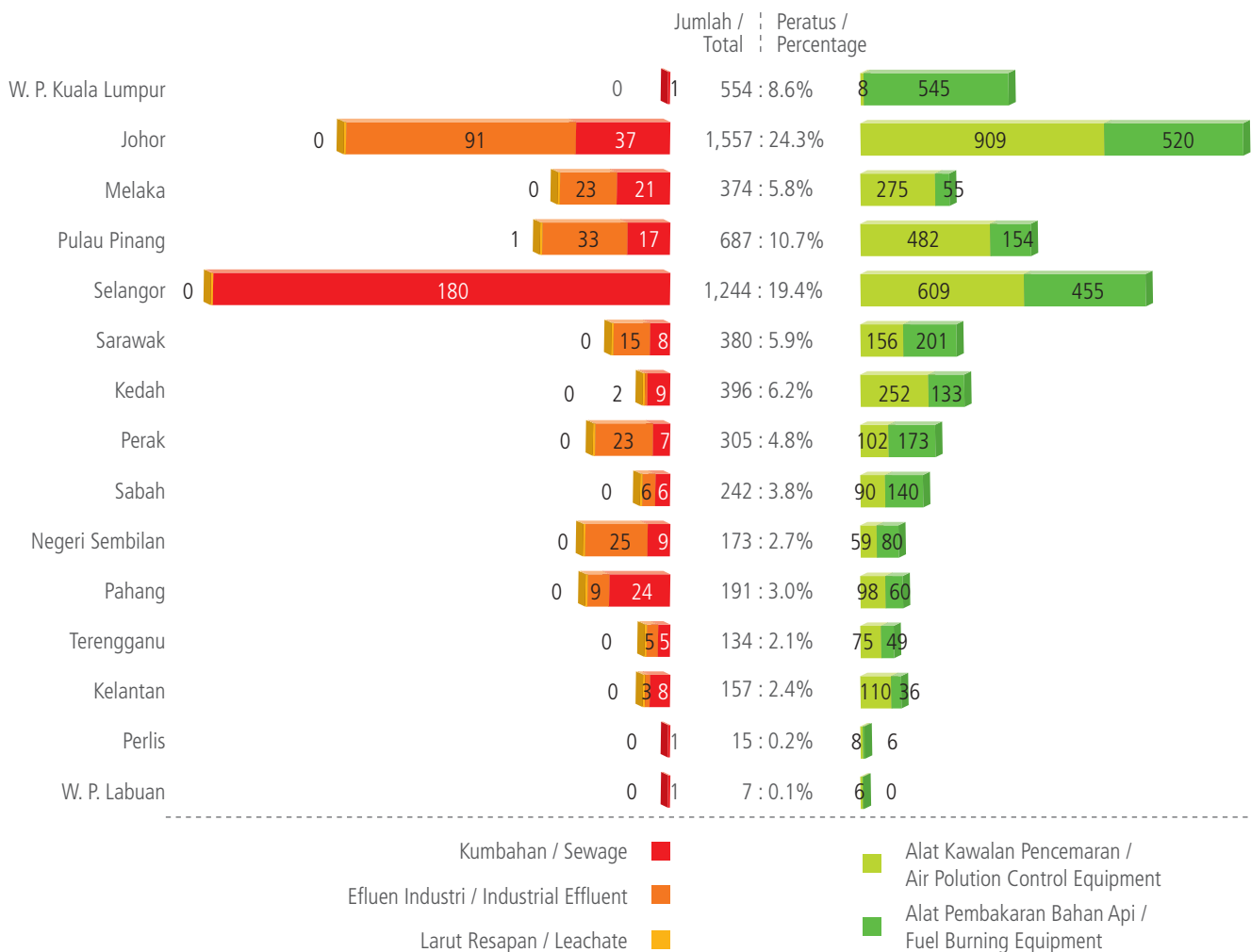
In 2020, DOE received a total of 6,416 written notifications from sources to discharge effluent and produce emission to air. Of this number, 331 written notifications were for the construction of effluent treatment plants, 238 for new or altered sources of discharges of industrial effluent or mixed effluents, 1 written notification for leachate and 3,237 applications for installation of air pollution control equipment. In addition, the DOE has also processed a total of 2,609 written notification for the installation of fuel burning equipment such as boilers and generator sets (**Figure 3.8** and **Figure 3.9**).



Bilangan Notifikasi bagi Pelepasan Kumbahan, Larut Resapan, Efluen Perindustrian, Alat Pembakaran Bahan Api dan Alat Kawalan Pencemaran Udara, 2020

The Number of Notifications for Sewage Discharge, Leachate, Industrial Effluent, Fuel Burning Equipment and Air Pollution Control Equipment, 2020

Rajah 3.8
Figure 3.8



Bilangan Notifikasi bagi Pelepasan Kumbahan, Larut Resapan, Efluen Perindustrian, Alat Pembakaran Bahan Api dan Alat Kawalan Pencemaran Udara mengikut Negeri, 2020
The Number of Notifications for Sewage Discharge, Leachate, Industrial Effluent, Fuel Burning Equipment and Air Pollution Control Equipment by State, 2020

Rajah 3.9
Figure 3.9

PROJEK PEMBANGUNAN DI BAWAH RANCANGAN MALAYSIA KE-11

Di bawah Rancangan Malaysia ke 11, JAS telah melaksanakan Projek Pemantapan Kelestarian Alam Sekitar bermula tahun 2016 dan berakhir pada 2020. Projek ini adalah untuk memantap dan memperkasakan Pelaksanaan Prosedur EIA di Malaysia di bawah Akta Kualiti Alam Sekeliling 1974 melalui Pembentukan Garis Panduan Alam Sekitar selaras dengan Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015.

DEVELOPMENT PROJECTS UNDER THE 11th MALAYSIA PLAN

Under the 11th Malaysia Plan, the DOE has implemented the Environmental Sustainability Project beginning in 2016 and ending in 2020. This project is to strengthen and empower the implementation of EIA Procedures in Malaysia under the Environmental Quality Act 1974 through the Establishment of Environmental Guidelines in accordance with the Environmental Quality (Assigned Activities) (Environmental Impact Assessment) 2015.

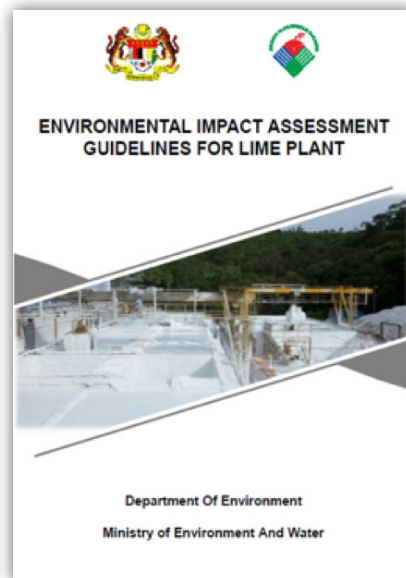
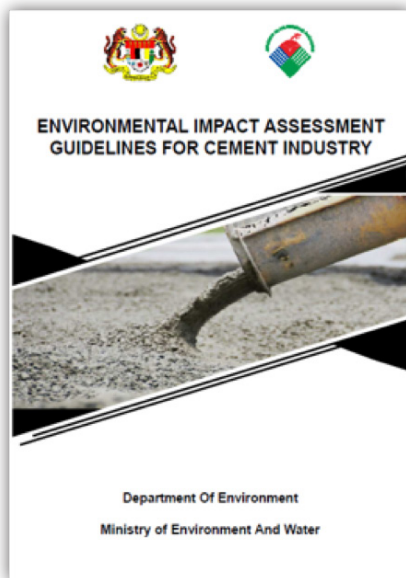
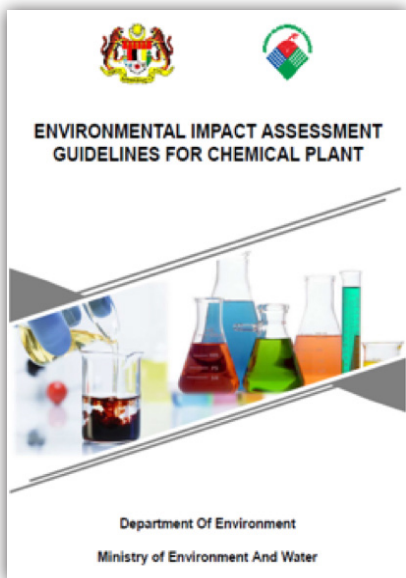
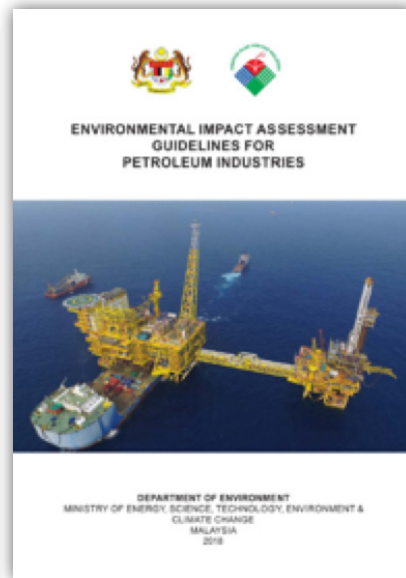
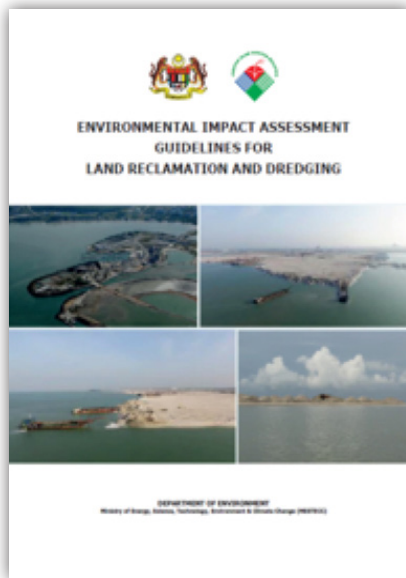
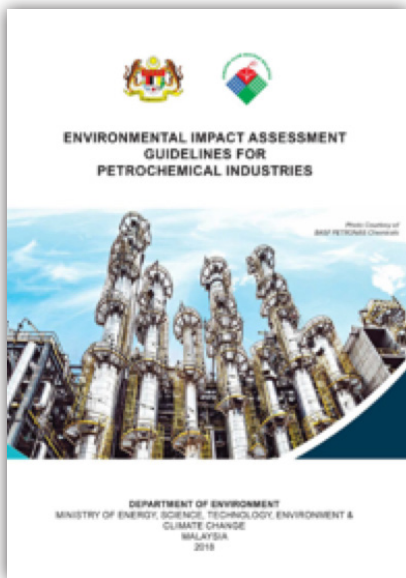
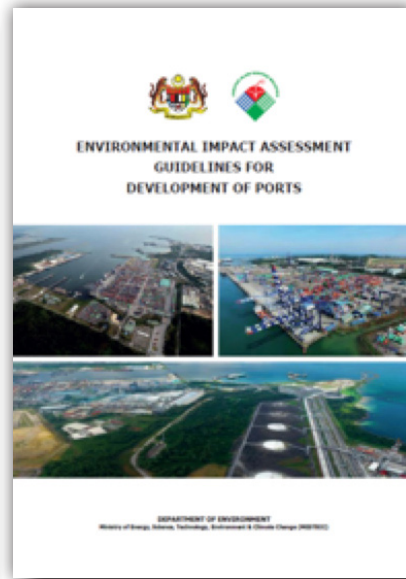
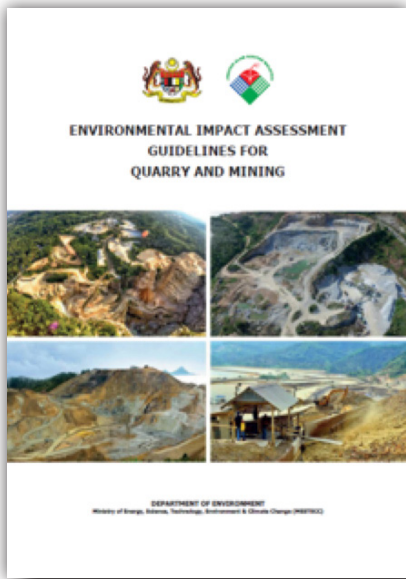
Penerbitan garis panduan ini bertujuan membantu pihak penggerak projek, perunding serta pemegang-pemegang taruh berkaitan dalam memahami keperluan-keperluan semasa dalam penyediaan laporan EIA dari segi aspek skop yang berkaitan impak alam sekitar, teknologi, rekabentuk, kawalan pencemaran dan pengurusan alam alam sekitar.

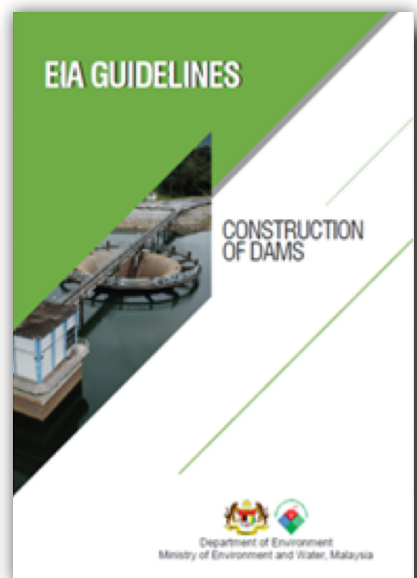
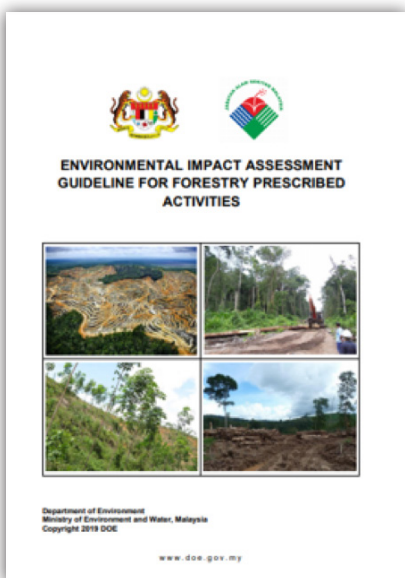
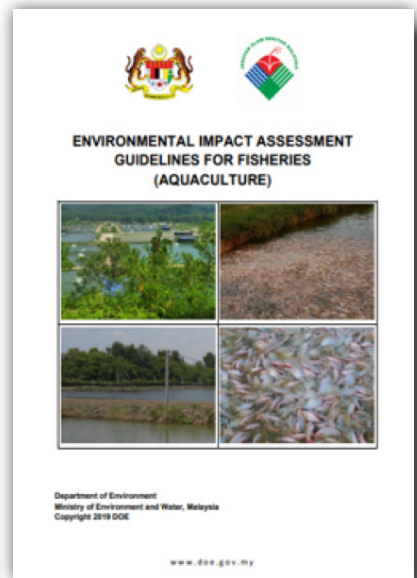
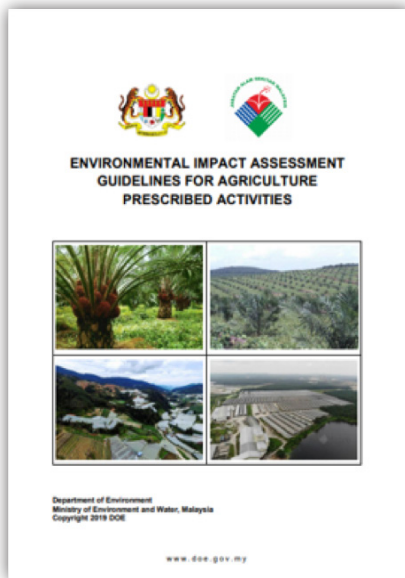
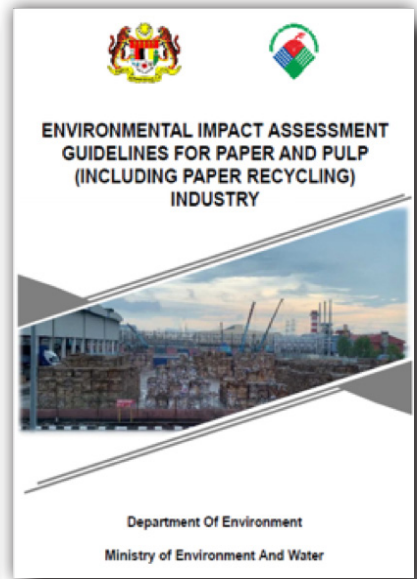
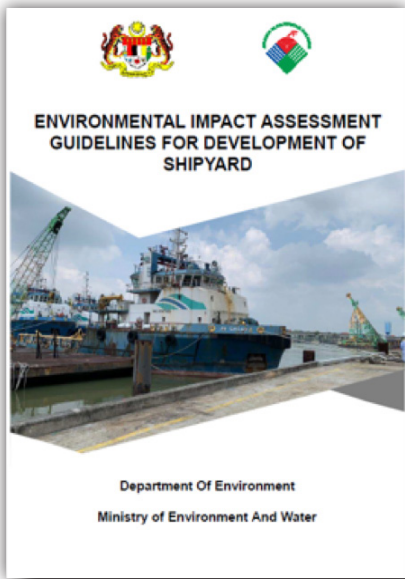
Sepanjang Rancangan Malaysia Ke 11, sejumlah 32 Garis Panduan EIA disediakan. Rajah di bawah menunjukkan Garis Panduan bagi tempoh 2016 sehingga 2020.

The publication of these guidelines are intended to assist the project proponents, consultants and relevant stakeholders in understanding the current requirements in preparing the EIA reports in terms of the scope related to environmental impact, technology, design, pollution control and environmental management.

During the 11th Malaysia Plan, a total of 32 EIA Guidelines for specific activities were prepared. The figure below shows the implementation of the project starting 2016 to 2020.









Tiga Puluh Dua (32) Garis Panduan EIA yang Diterbitkan di Bawah Rancangan Malaysia Ke-11
 Thirty Two (32) EIA Guidelines Published Under The 11th Malaysia Plan



Ogos / August 2020



Februari / February 2020

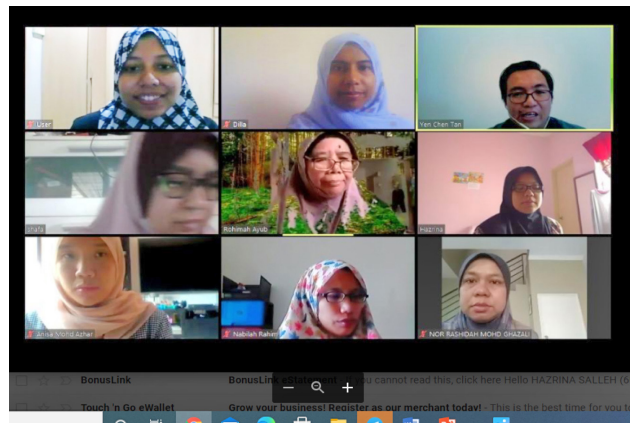


Ogos / August 2020

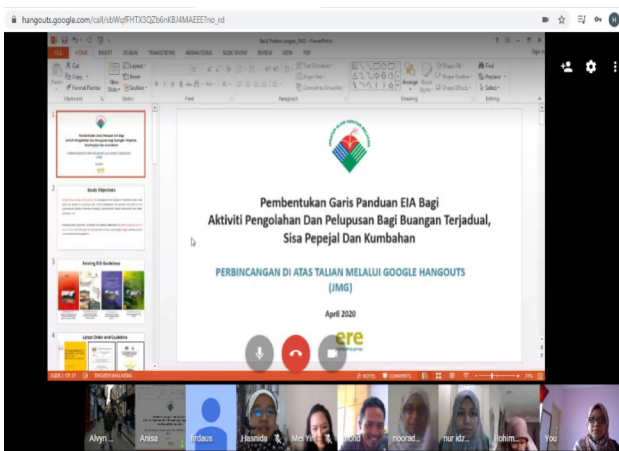


September 2020 / September 2020

Program Libat Urus Norma Baru Bersama Pemegang Taruh bagi Projek Pembangunan Rancangan Malaysia Ke-11
New Norm Stakeholder Engagement for Development Projects Under the 11th Malaysia Plan



Pelaksanaan Libat Urus Norma Baru Sepanjang 2020 bagi Projek di Bawah Rancangan Malaysia Ke-11
Implementation of New Norms Throughout 2020 for Projects Under the 11th Malaysia Plan



Pelaksanaan Libat Urus Norma Baru Sepanjang 2020 bagi Projek di Bawah Rancangan Malaysia Ke-11 Implementation of New Norms Throughout 2020 for Projects Under the 11th Malaysia Plan

PENGUKUHAN PROSEDUR PEMROSESAN LAPORAN PENILAIAN KESAN KEPADA ALAM SEKELILING (ENVIRONMENTAL IMPACT ASSESSMENT (EIA) DI BAWAH SEKSYEN 34A, AKTA KUALITI ALAM SEKELILING 1974)

Jabatan Alam Sekitar (JAS) telah menambahkan prosedur pemprosesan Laporan Penilaian Kesan Kepada Alam Sekitar (EIA) untuk membantu memacu pembangunan bagi projek-projek yang tertakluk EIA.

Usaha penambahbaikan yang dilaksanakan termasuklah pindaan kepada Perintah Kualiti Alam Sekeliling (Aktiviti yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015 bagi memantapkan kawalan terhadap kesan pencemaran daripada aktiviti-aktiviti yang berkaitan. Ini termasuklah aspek mengkaji semula aktiviti yang ditetapkan berdasarkan kuantum atau saiz, lokasi di dalam kawasan sensitif alam sekitar, serta kesesuaian aktiviti dengan merujuk kepada bidang kuasa agensi lain.

STRENGTHENING ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT PROCESSING PROCEDURES UNDER SECTION 34A, ENVIRONMENTAL QUALITY ACT 1974

The Department of Environment (DOE) has enhanced the Environmental Impact Assessment (EIA) Report processing procedures to drive the development of projects that are subject to EIA.

The enhancement of EIA procedures involved amendments to the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 by strengthening control over impacts of pollution from related activities. This includes reviewing the prescribed activities based on quantum or size, location of sensitive areas, as well as the suitability of the activities within the jurisdiction of other agencies.

Dalam hal ini, pada 1 September 2020 bagi keperluan mengemukakan laporan EIA kepada JAS sebagaimana kehendak Seksyen 34A, Akta Kualiti Alam Sekeliling 1974 bagi Aktiviti Yang Ditetapkan di bawah Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015, tiga (3) elemen baru penambahbaikan yang mudah dan cepat dicapai (quick wins) diperkenalkan seperti berikut:

- (i) Pengemukaan dan Edaran Bidang Rujukan/ Laporan EIA
- (ii) Pengukuhan Seranta Awam
- (iii) Penstrukturan Ringkasan Eksekutif

Selain itu juga, Jabatan telah melaksanakan pemansuhan bagi penilaian Bidang Rujukan (TOR) Laporan Penilaian Kesan Kepada Alam Sekeliling bagi Aktiviti Yang Ditetapkan di bawah Jadual Pertama Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015 berkuatkuasa 1 Januari 2021.

Elemen penambahbaikan yang dilaksanakan ini lebih menjurus kepada usaha meningkatkan kebolehpasaran dan menyebarkan maklumat secara digital yang mudah difahami, interaktif dan memberi impak yang tinggi kepada pemegang taruh serta pemahaman orang awam terhadap Laporan EIA selain memperkasa prosedur melalui pengurangan karenah birokrasi yang boleh melambatkan proses kelulusan sesuatu Laporan EIA.

In this regard, starting from 1 September 2020 as required by Section 34A, Environmental Quality Act 1974 for Prescribed Activities under the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, three (3) new elements of improvement which are straightforward and quick to achieve (quick wins) were introduced as follows:

- (i) Submission and Distribution of Terms of Reference/ EIA Report
- (ii) Strengthening Public Outreach
- (iii) Structuring the Executive Summary

In addition, the Department also has eliminated assessment of the Terms of Reference (TOR) Environmental Impact Assessment Report for Prescribed Activities under the First Schedule of the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 effective 1 January 2021.

This elements of improvement are more towards improving accessibility and disseminating digital information that are easily understandable, interactive and has a high impact on stakeholders and public in understanding the EIA Report as well as strengthening procedures by reducing bureaucracy that can delay the approval of an EIA Report.



QUICK WINS DAN PENAMBAHBAIKAN EIA QUICK WINS AND EIA IMPROVEMENTS

Fokus kepada usaha meningkatkan kebolehcapaian dan menyebarkan maklumat secara digital yang mudah difahami, interaktif dan memberi impak yang tinggi kepada pemegang taruh serta pemahaman orang awam.
Focus on improving accessibility and disseminating digital information that is easy to understand, interactive and has a high impact on stakeholders as well as on public understanding.

01

Pengemukakan dan Edaran Bidang Rujukan / Laporan EIA / Submission and Distribution of Terms of Reference (TOR) / EIA Report

Pengemukakan dan edaran dokumen berbentuk digital dan meminimumkan edaran hardcopy kepada pihak berkepentingan.
Submission of documents in digital form to minimize hardcopy distribution to stakeholders.

Pengukuhan Seranta Awam / Strengthening Public Engagement

02

Menyebarkan maklumat yang lebih interaktif melalui pengiklanan secara dalam talian bagi mempertingkatkan kefahaman dan penglibatan orang awam dalam mengemukakan ulasan.
Dissemination of interactive information through online platforms to enhance the understanding and involvement of the public.

03

Penstrukturan Ringkasan Eksekutif / Restructuring Executive Summary

Ringkasan Eksekutif Laporan EIA berbentuk infografik.
Executive Summary of the EIA Report in the form of infographics.

Pemansuhan bagi penilaian Bidang Rujukan Jadual Pertama / Eliminating TOR for First Schedule

04

Menambahbaik sistem perkhidmatan pemrosesan EIA.
Enhancing the delivery system of the EIA process.



Bab 4

Chapter 4



**PENGAWASAN DAN
PENGUATKUASAAN
MONITORING AND
ENFORCEMENT**

PENGAWASAN DAN PENGUATKUASAAN MONITORING AND ENFORCEMENT

PENGAWASAN KUALITI AIR MARIN MARINE WATER QUALITY MONITORING

Program Pengawasan Kualiti Air Marin telah dimulakan di Semenanjung Malaysia untuk pantai dan muara sungai pada tahun 1978 dan diperkembangkan ke Sabah dan Sarawak pada tahun 1985, manakala untuk pulau bermula pada tahun 1998.

Stesen-stesen pengawasan air marin diwujudkan di pantai, muara sungai dan pulau bagi memantau status kualiti air marin berdasarkan parameter-parameter mengikut klasifikasi kelas kegunaan air marin dalam Standard Kualiti Air Marin Malaysia (SKAMM). Lima kelas kegunaan air tersebut adalah Kelas 1 iaitu habitat marin sensitif, Kelas 2 iaitu perikanan (termasuk marikultur), Kelas 3 iaitu industri, aktiviti komersial dan kawasan kediaman pesisir pantai, Kelas E iaitu muara sungai yang terbahagi kepada Interim Kelas E1 (dataran pantai), Interim Kelas E2 (lagun) dan Interim Kelas E3 (rangkaian kompleks).

Di bawah program pengawasan kualiti air marin, Indeks Kualiti Air Marin Malaysia (IKAMM) digunakan untuk menunjukkan tahap pencemaran berdasarkan pengagregatan enam (6) parameter kualiti air marin iaitu oksigen terlarut, faecal coliform, ammonia, nitrat, fosfat dan jumlah pepejal terampai.

Pada tahun 2020, terdapat 368 stesen pengawasan kualiti air marin bagi pantai, muara sungai dan pulau di seluruh negara sebagaimana dalam **Jadual 4.1**. Terdapat sebanyak 188 stesen pengawasan kualiti air marin bagi pantai, 85 stesen bagi muara sungai dan 95 stesen bagi pulau. **Rajah 4.1 (a)** menunjukkan Taburan Stesen Pengawasan Kualiti Air Marin di Semenanjung Malaysia, 2020 manakala **Rajah 4.1 (b)** menunjukkan Taburan Stesen Pengawasan Kualiti Air Marin di Sabah, Sarawak dan Wilayah Persekutuan Labuan, 2020.

Pengukuran parameter-parameter bagi persampelan kualiti air marin di stesen yang ditetapkan dibuat secara in-situ dan analisa makmal. Persampelan kualiti air marin dijalankan secara berjadual dan mengikut kekerapan yang telah ditetapkan iaitu sebanyak enam (6) kali setahun. Terdapat sebanyak 29 parameter yang dijalankan analisis persampelan seperti dalam **Jadual 4.2**.

The Marine Water Quality Monitoring Program was established in Peninsular Malaysia for coastal area and estuaries in 1978 and was extended to cover Sabah and Sarawak in 1985 and island in 1998.

Marine water monitoring stations are established on coastal, estuaries and islands to monitor the status of marine water quality based on parameters according to class classification of marine water use in the Malaysian Marine Water Quality Standard (MMWQS). The five classes of marine water use are Class 1 related to sensitive marine habitats, Class 2 related to fisheries (including mariculture), Class 3 related to industry, commercial activities and coastal settlements, Class E related to estuaries divided into Interim Class E1 (coastal plain), Class E2 (lagoon) and Class E3 (complex distributary network).

Under the marine water quality monitoring programme, the Malaysian Water Quality Index (MMWQI) is used to indicate the level of pollution based on the aggregation of six (6) marine water quality parameters namely dissolved oxygen, faecal coliform, ammonia, nitrate, phosphate and total suspended solids.

In 2020, there were 368 marine water quality monitoring stations for coastal, estuaries and islands nationwide as shown in **Table 4.1**. There were 188 marine water quality monitoring stations for coastal, 85 stations for estuaries and 95 stations for islands. **Figure 4.1 (a)** shows the Distribution of Marine Water Quality Monitoring Stations in Peninsular Malaysia, 2020 while **Figure 4.1 (b)** shows the Distribution of Marine Water Quality Monitoring Stations in Sabah, Sarawak and the Federal Territory of Labuan, 2020.

Measurements of parameters for marine water quality sampling at designated stations were made in-situ and laboratory analysis. Marine water quality sampling was carried out on a scheduled basis and a frequency of six (6) times a year. There are a total of 29 parameters used in sampling analysis as in **Table 4.2**.

Jadual 4.1 menunjukkan Senarai Stesen Pengawasan Kualiti Air Marin, 2020. Manakala **Jadual 4.2** menunjukkan Senarai Parameter Kualiti Air Marin.

Table 4.1 shows the List of Marine Water Quality Monitoring Stations, 2020. While **Table 4.2** shows the List of Marine Water Quality Parameters.

Jadual 4.1 : Senarai Stesen Pengawasan Kualiti Air Marin, 2020
Table 4.1 : List of Marine Water Quality Monitoring Stations, 2020

NEGERI / STATE	BILANGAN STESEN / NUMBER OF STATION	KLASIFIKASI STESEN / STATION CLASSIFICATION	KAWASAN / AREA	NOMBOR STESEN LAMA / OLD STATION NUMBER	NOMBOR STESEN BARU / NEW STATION NUMBER	LOKASI / LOCATION	
						LATITUD / LATITUDE	LONGITUD / LONGITUDE
Perlis	2	Muara Sungai / Estuary	Kuala Sungai Perlis	6401901	MMRE001	6.400070	100.119000
			Kuala Sungai Baru	6201902	MMRE002	6.332420	100.150000
Kedah	9	Pantai / Coastal	Pantai Merdeka	5603905	MMKC001	5.669760	100.369000
			Langkawi Island Resort	6399914	MMKC002	6.296690	99.861000
			Pantai Kok	6397922	MMKC003	6.366070	99.679100
			Pantai Kuah	6398925	MMKC004	6.313553	99.851419
			Pantai Pasir Tengkorak	6499701	MMKC005	6.431230	99.726100
			Pantai Teluk Burau	6396923	MMKC006	6.363910	99.668500
			Pantai Teluk Nibong	6497915	MMKC007	6.360220	99.702200
			Pantai Tengah	6297903	MMKC008	6.279750	99.727500
			Pantai Beras Basah*	NA	MMKC009	6.230860	99.718000
Kedah	4	Muara Sungai / Estuary	Kuala Kedah	6102908	MMKE001	6.104820	100.282000
			Kuala Jerlun	6302925	MMKE002	6.210500	100.238000
			Kuala Segantang Garam*	NA	MMKE003	5.678690	100.373000
			Kuala Sungai Muda*	NA	MMKE004	5.577350	100.341000
	14	Pulau / Island	Singa Besar	7KR01	MMKR001	6.226040	99.735400
			Dayang Bunting	7KR02	MMKR002	6.207250	99.780300
			Dayang Bunting 2*	NA	MMKR003	6.203111	99.781489
			Pulau Perak	7KP01	MMRP001	5.681450	98.936000
			Payar	7KM03	MMKM001	6.063530	100.042000
			Kaca	7KM04	MMKM002	6.071720	100.052000
			Segantang	7KM06	MMKM003	6.043530	99.926100
			Pantai Kuah	7KD07	MMKD001	6.308810	99.851100
			Pantai Chenang	7KD09	MMKD002	6.302670	99.716600
			Tanjung Rhu	7KD010	MMKD003	6.456810	99.821800
Teluk Ewa	7KD08	MMKD004	6.434250	99.755000			
Pasir*	NA	MMKP001	6.453500	99.794900			
Gasing*	NA	MMKP002	6.454130	99.790200			
Dangli*	NA	MMKP003	6.447370	99.777600			

Jadual 4.1 : Senarai Stesen Pengawasan Kualiti Air Marin, 2020
Table 4.1 : List of Marine Water Quality Monitoring Stations, 2020

NEGERI / STATE	BILANGAN STESEN / NUMBER OF STATION	KLASIFIKASI STESEN / STATION CLASSIFICATION	KAWASAN / AREA	NOMBOR STESEN LAMA / OLD STATION NUMBER	NOMBOR STESEN BARU / NEW STATION NUMBER	LOKASI / LOCATION		
						LATITUD / LATITUDE	LONGITUD / LONGITUDE	
Pulau Pinang	17	Pantai / Coastal	Gertak Sanggul	5201919	MMPC001	5.277320	100.194000	
			Kawasan Perindustrian Bayan Lepas 1	5303932	MMPC002	5.309510	100.301000	
			Pantai Bersih	5403906	MMPC003	5.441670	100.378000	
			Pantai Miami	5502901	MMPC004	5.479230	100.268000	
			Pantai Pasir Panjang	5201938	MMPC005	5.297220	100.183000	
				Batu Feringgi (Casuarina)	5402904	MMPC006	5.469440	100.242000
				Luar Pantai Teluk Bahang	5402930	MMPC007	5.462000	100.213000
				Persiaran Gurney	5403902	MMPC008	5.437300	100.313000
				Rumah Pam Baru Perai	5304927	MMPC009	5.354170	100.387000
				Rumah Pam Lama Perai	5303926	MMPC010	5.334450	100.310000
				Selat PP Selatan (Jelutong)	5303911	MMPC011	5.391080	100.329000
				Tanjung Bungah	5402937	MMPC012	5.467420	100.281000
				Teluk Tempoyak	5202923	MMPC013	5.468560	100.294000
				Batu Maung	5202901	MMPC014	5.287831	100.292314
				Pantai Sungai Batu Ferringhi 3*	NA	MMPC015	5.480744	100.253394
				Pantai Sungai Batu Ferringhi 2*	NA	MMPC016	5.477190	100.249000
				Pantai Sungai Batu Ferringhi 1*	NA	MMPC017	5.472800	100.244000
				7	Muara Sungai / Estuary	Kuala Sungai Jawi	5204901	MMPE001
	Kuala Sungai Juru	5303904	MMPE002			5.338890	100.406000	
	Kuala Sungai Kerian	5104901	MMPE003			5.170340	100.424000	
	Kuala Sungai Pinang	5403934	MMPE004			5.400000	100.335000	
	Kuala Sungai Perai	5303908	MMPE005			5.383330	100.367000	
	Kuala Sungai Tengah	5204935	MMPE006			5.211390	100.425000	
	Kuala Sungai Pinang (Balik Pulau)	5202929	MMPE007			5.391550	100.186000	
	9	Pulau / Island	Tanjung Tokong*	NA	MMPP001	5.456290	100.315000	
			Batu Maung	7PD01	MMPD001	5.285240	100.292000	
			Padang Kota	7PD04	MMPD002	5.419210	100.346000	
			Teluk Bahang	7PD03	MMPD003	5.460830	100.214000	
			Aman	7PR05	MMPR001	5.267430	100.394000	
			Jerejak	7PR06	MMPR002	5.333330	100.317000	
			Kendi	7PR07	MMPR003	5.230380	100.182000	
			Rimau	7PR08	MMPR004	5.244150	100.273000	

Jadual 4.1 : Senarai Stesen Pengawasan Kualiti Air Marin, 2020
Table 4.1 : List of Marine Water Quality Monitoring Stations, 2020

NEGERI / STATE	BILANGAN STESEN / NUMBER OF STATION	KLASIFIKASI STESEN / STATION CLASSIFICATION	KAWASAN / AREA	NOMBOR STESEN LAMA / OLD STATION NUMBER	NOMBOR STESEN BARU / NEW STATION NUMBER	LOKASI / LOCATION	
						LATITUD / LATITUDE	LONGITUD / LONGITUDE
Perak	8	Pantai / Coastal	Gedong	7PR09	MMPR005	5.273460	100.390000
			Pantai Pasir Bogak	4205908	MMAC001	4.211760	100.551000
			Pantai Teluk Dalam	4205928	MMAC002	4.250000	100.556000
			Pantai Teluk Batik	4205932	MMAC003	4.187320	100.606000
			Pantai Tanjung Batu	4406927	MMAC004	4.426590	100.595000
			Pantai Teluk Rubiah*	NA	MMAC005	4.160160	100.622000
			Pantai Damai Laut*	NA	MMAC006	4.264120	100.589000
			Pantai Teluk Senangin*	NA	MMAC007	4.293870	100.582000
	6	Muara Sungai / Estuary	Pantai Pasir Panjang	4205924	MMAC008	4.347970	100.568000
			Kuala Sungai Manjung	4205930	MMAE001	4.248410	100.594000
			Kuala Sungai Gula	4906926	MMAE002	4.922690	100.467000
			Kuala Sungai Kurau	4994919	MMAE003	4.994810	100.415000
			Kuala Sungai Tanjung Piandang	5003921	MMAE004	5.076610	100.374000
			Kuala Sungai Sepetang	4806925	MMAE005	4.775600	100.588000
	5	Pulau / Island	Kuala Sungai Perak	4007901	MMAE006	4.000020	100.756000
			Pantai Teluk Gedong	7AR01	MMAR001	4.194210	100.581000
			Pantai Puteri Dewi	7AR02	MMAR002	4.253140	100.544000
Pangkor Laut			7AR03	MMAR003	4.201590	100.547000	
Sembilan			7AR04	MMAR004	4.008530	100.544000	
Selangor	6	Pantai / Coastal	Tukun Perak	7AP05	MMAP001	4.116890	100.561000
			Pantai Bagan Lalang	2616927	MMBC001	2.605400	101.687000
			Pantai Morib	2712902	MMBC002	2.750000	101.439000
			Selat Pulau Babi	3012929	MMBC003	3.007660	101.273000
			Selat Klang Utara	3013908	MMBC004	3.028180	101.351000
			Pantai Remis*	NA	MMBC005	3.200730	101.302000
	10	Muara Sungai / Estuary	Pantai Klanang*	NA	MMBC006	2.789270	101.409000
			Kuala Sungai Sepang	2517922	MMBE001	2.595750	101.713000
			Kuala Sungai Sepang (Kecil)	2612928	MMBE002	2.609870	101.685000
			Kuala Sungai Sepang (Kawalan)	2616926	MMBE003	2.597490	101.690000
			Kuala Sungai Langat (Jugra)	2814925	MMBE004	2.802400	101.407000
			Kuala Sungai Klang	3013909	MMBE005	3.001910	101.389000
			Kuala Sungai Langat (Lumut)	2913903	MMBE006	2.966800	101.309000
Kuala Sungai Buloh	3212930	MMBE007	3.255040	101.300000			

Jadual 4.1 : Senarai Stesen Pengawasan Kualiti Air Marin, 2020
Table 4.1 : List of Marine Water Quality Monitoring Stations, 2020

NEGERI / STATE	BILANGAN STESEN / NUMBER OF STATION	KLASIFIKASI STESEN / STATION CLASSIFICATION	KAWASAN / AREA	NOMBOR STESEN LAMA / OLD STATION NUMBER	NOMBOR STESEN BARU / NEW STATION NUMBER	LOKASI / LOCATION			
						LATITUD / LATITUDE	LONGITUD / LONGITUDE		
Selangor	3	Pulau / Island	Kuala Sungai Selangor	3312915	MMBE008	3.333330	101.225000		
			Kuala Sungai Tenggi	3311931	MMBE009	3.396180	101.167000		
			Kuala Sungai Bernam	3808924	MMBE010	3.850000	100.817000		
			Ketam	7BR01	MMBR001	3.018000	101.258000		
			Angsa	7BR02	MMBR002	3.185560	101.219000		
			Lumut	7BR03	MMBR003	2.998500	101.362000		
Negeri Sembilan	14	Pantai / Coastal	Bagan Pinang	2518915	MMNC001	2.508230	101.828000		
			Telok Sinting	2419908	MMNC002	2.415220	101.941000		
			Port Dickson Bandar	2517907	MMNC003	2.520010	101.798000		
			Port Dickson Batu 4	2518937	MMNC004	2.499710	101.837000		
			Port Dickson Batu 5	2418906	MMNC005	2.495850	101.838000		
			Port Dickson Batu 6	2418916	MMNC006	2.480790	101.847000		
			Port Dickson Batu 7	2418905	MMNC007	2.461230	101.851000		
			Port Dickson Batu 8	2418912	MMNC008	2.454150	101.854000		
			Port Dickson Batu 10	2418914	MMNC009	2.417060	101.856000		
			Port Dickson Janakuasa TNB	2517909	MMNC010	2.542370	101.798000		
			Telok Pelanduk	2419917	MMNC011	2.416630	101.892000		
			Pantai Cermin	2416918	MMNC012	2.414990	101.861000		
			Pantai Teluk Kemang*	NA	MMNC013	2.447770	101.854000		
			Pantai Seri Purnama*	NA	MMNC014	2.443130	101.855000		
	2	Muara Sungai / Estuary	Kuala Sungai Linggi	2319901	MMNE001	2.391010	101.973000		
			Kuala Sungai Lukut	2517910	MMNE002	2.578020	101.788000		
	Melaka	9	Pantai / Coastal	Pulau / Island	Arang	7NP01	MMNP001	2.516470	101.795000
				Pantai Rombang	2221916	MMMC001	2.227280	102.148000	
Pantai Kundur				2221908	MMMC002	2.243190	102.140000		
Pantai Tanjung Bidara				2320909	MMMC003	2.290750	102.088000		
Teluk Gong				2320902	MMMC004	2.339830	102.056000		
Pulau Melaka Point A1				2121915	MMMC005	2.179920	102.243000		
Pulau Melaka Point A2				2121915	MMMC006	2.176440	102.252000		
Pulau Melaka Point B1				2121916	MMMC007	2.183320	102.248000		
Pulau Melaka Point B2				2121916	MMMC008	2.181300	102.255000		
Pantai Klebang				NA	MMMC009	2.216070	102.191000		

Jadual 4.1 : Senarai Stesen Pengawasan Kualiti Air Marin, 2020
Table 4.1 : List of Marine Water Quality Monitoring Stations, 2020

NEGERI / STATE	BILANGAN STESEN / NUMBER OF STATION	KLASIFIKASI STESEN / STATION CLASSIFICATION	KAWASAN / AREA	NOMBOR STESEN LAMA / OLD STATION NUMBER	NOMBOR STESEN BARU / NEW STATION NUMBER	LOKASI / LOCATION	
						LATITUD / LATITUDE	LONGITUD / LONGITUDE
Melaka	8	Muara Sungai / Estuary	Kuala Sungai Melaka	2123903	MMME001	2.185720	102.242000
			Kuala Sungai Sri Melaka	2121914	MMME002	2.206470	102.198000
			Kuala Sungai Merlimau	2124912	MMME003	2.126890	102.414000
			Kuala Sungai Kesang	2186905	MMME004	2.098140	102.489000
	6	Pulau / Island	Kuala Sungai Sebatu	2186904	MMME005	2.107530	102.462000
			Kuala Sungai Melaka 2*	NA	MMME006	2.186872	102.243231
			Kuala Sungai Baru*	NA	MMME007	2.352440	102.033000
			Kuala Sungai Lereh	2221922	MMME008	2.220030	102.176000
Johor	6	Pulau / Island	Upeh (Point A)	7MR02	MMMR001	2.194890	102.205000
			Upeh (Point B)	7MR02	MMMR002	2.189750	102.203000
			Besar (Point A)	7MR01	MMMR003	2.116690	102.332000
			Besar (Point B)	7MR01	MMMR004	2.106720	102.322000
			Undan (Point A)	7MP03	MMMR005	2.048940	102.332000
			Undan (Point B)	7MP03	MMMR006	2.047280	102.335000
	29	Pantai / Coastal	Tanjung Bin	1336975	MMJC001	1.324560	103.557000
			Pelabuhan Tanjung Pelepas	1438943	MMJC002	1.353610	103.543000
			Hadapan Jabatan Laut	1438918	MMJC003	1.382750	103.535000
			Pantai Stulang Laut	1437951	MMJC004	1.467220	103.779000
			Jeti Teluk Jawa	1438918	MMJC005	1.473540	103.848000
			Pelabuhan Pasir Gudang	1428939	MMJC006	1.432550	103.899000
			Hadapan HSAJB	1437920	MMJC007	1.456440	103.746000
			Pantai Lido	1437921	MMJC008	1.465560	103.725000
			Pantai Teluk Mahkota	1841911	MMJC009	1.897810	104.105000
			Pantai Tanjung Leman	2140694	MMJC010	2.145280	104.007000
			Pantai Sri Pantai	2339960	MMJC011	2.379170	103.889000
			Tanjung Merak	1441968	MMJC012	1.362750	104.110000
Tanjung Pengelih	1441967	MMJC013	1.370750	104.089000			
Pantai Tanjong Stapa	1341961	MMJC014	1.342500	104.136000			
Pantai Teluk Gorek	2538958	MMJC015	2.582500	103.805000			
Pantai Air Papan	2538959	MMJC016	2.518060	103.833000			
Jeti Kukup	1334925	MMJC017	1.325000	103.441000			
Pasir Gogok	1441966	MMJC018	1.417440	104.100000			

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						LATITUD / LATITUDE	LONGITUD / LONGITUDE	
Johor			Tanjung Buai	1340973	MMJC019	1.496690	104.045000	
			Pantai Desaru	1542914	MMJC020	1.546670	104.261000	
			Tanjung Sepang	1443969	MMJC021	1.391920	104.108000	
			Tanjung Penyusup	1444920	MMJC022	1.370250	104.280000	
			Pantai Sungai Lurus	1730962	MMJC023	1.728330	103.029000	
			Punggur	1531974	MMJC024	1.684720	103.098000	
			Pantai Penyabung*	NA	MMJC025	2.648740	103.750000	
			Tanjung Resang*	NA	MMJC026	2.573970	103.817000	
			Tanjung Balau*	NA	MMJC027	1.612690	104.261000	
			Batu Layar*	NA	MMJC028	1.446110	104.296000	
			Tanjung Sengat*	NA	MMJC029	1.560730	104.030000	
	6	Muara Sungai / Estuary	Kuala Sungai Segget	1437919	MMJE001	1.455830	103.766000	
			Kuala Sungai Kim-Kim	1439965	MMJE002	1.435140	103.924000	
			Kuala Sungai Johor	1440916	MMJE003	1.484440	104.023000	
			Kuala Sungai Batu Pahat	1729930	MMJE004	1.814510	102.890000	
			Kuala Sungai Muar	2024932	MMJE005	2.052120	102.552000	
			Kuala Sungai Mersing	2438905	MMJE006	2.436810	103.842000	
	8	Pulau / Island	Setindan	7JR01	MMJR001	2.476640	103.858000	
			Babi Tengah	7JR02	MMJR002	2.475490	103.955000	
			Dayang	7JM03	MMJM001	2.470220	104.504000	
			Nanga Besar	7JM08	MMJM002	2.270640	104.129000	
			Sibu Tengah	7JM11	MMJM003	2.181920	104.096000	
			Pemanggil	7JM15	MMJM004	2.569080	104.326000	
			Kukup	7JP17	MMJP001	1.328310	103.437000	
			Pisang	7JP18	MMJP002	1.468280	103.263000	
	Pahang	22	Pantai / Coastal	Pantai Cherating (Club Med A)	4133903 (A)	MMCC001	4.141970	103.409000
				Pantai Cherating (Club Med B)	4133903 (B)	MMCC002	4.127860	103.406000
				Pantai Cherating (Legend A)	4133942 (A)	MMCC003	4.111670	103.386000
				Pantai Cherating (Legend B)	4133942 (B)	MMCC004	4.104610	103.386000
Pantai Muhibbah Balok A				3933901 (A)	MMCC005	3.941630	103.385000	
Pantai Muhibbah Balok B				3933901 (B)	MMCC006	3.923530	103.375000	
Pantai Batu Hitam A				3833915 (A)	MMCC007	3.890310	103.369000	
Pantai Batu Hitam B				3833915 (B)	MMCC008	3.886000	103.368000	

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						LATITUD / LATITUDE	LONGITUD / LONGITUDE
Pahang			Pantai Berserah A	3933941 (A)	MMCC009	3.882280	103.368000
			Pantai Berserah B	3933941 (B)	MMCC010	3.876000	103.369000
			Pantai Teluk Cempedak A	3833910 (A)	MMCC011	3.816670	103.374000
			Pantai Teluk Cempedak B	3833910 (B)	MMCC012	3.810190	103.374000
			Pantai Teluk Gelora A	3833909 (A)	MMCC013	3.803030	103.364000
			Pantai Teluk Gelora B	3833909 (B)	MMCC014	3.802780	103.351000
			Pantai Sepat A	3737915	MMCC015	3.701500	103.339000
			Pantai Sepat B	3633916	MMCC016	3.698860	103.340000
			Pantai Legenda A	3534943 (A)	MMCC017	3.617980	103.413000
			Pantai Legenda B	3534943 (B)	MMCC018	3.550290	103.467000
			Pantai Kuala Api-Api	3235917	MMCC019	3.281190	103.433000
			Pantai Tanjung Batu	3334915	MMCC020	3.205030	103.447000
			Pantai Chendor*	NA	MMCC021	4.164190	103.414000
			Pantai Lanjut*	NA	MMCC022	2.843780	103.472000
	5	Muara Sungai / Estuary	Kuala Kuantan*	NA	MMCE001	3.804820	103.343000
			Kuala Rompin Kecil*	NA	MMCE002	2.822180	103.485000
			Kuala Pahang*	NA	MMCE003	3.530440	103.472000
			Kuala Nenas*	NA	MMCE004	3.080990	103.441000
			Kuala Sungai Balok*	NA	MMCE005	3.934920	103.377000
	9	Pulau / Island	Tioman (Teluk Salang)	7CM01	MMCM001	2.775000	104.117000
Tioman (Kg. Nipah)			7CM01	MMCM002	2.876370	104.152000	
Tulai			7CM05	MMCM003	2.905320	104.107000	
Labas			7CM07	MMCM004	2.895060	104.047000	
Cebeh			7CM04	MMCM005	2.930180	104.099000	
Sepui			7CM08	MMCM006	2.885980	104.067000	
Sembilang			7CM08	MMCM007	2.670060	103.910000	
Seri Buat			7CM03	MMCM008	2.700190	103.898000	
Tokong Bahara			7CM09	MMCM009	2.664240	104.065000	
Terengganu	16	Pantai / Coastal	Pantai Batu Buruk	5331935	MMTC001	5.326540	103.156000
			Pantai Bukit Keluang	5825903	MMTC002	5.806760	102.610000
			Pantai Chendering	5231934	MMTC003	5.271040	103.189000
			Pantai Rantau Abang	4833917	MMTC004	4.872370	103.393000
			KIPK Utara	4634954	MMTC005	4.612850	103.452000

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						LATITUD / LATITUDE	LONGITUD / LONGITUDE
Terengganu	13	Muara Sungai / Estuary	KIPC Tengah	4534955	MMTC006	4.582270	103.466000
			KIPC Selatan	4534956	MMTC007	4.553600	103.477000
			Pantai Rhu 10*	NA	MMTC008	5.650110	102.774000
			Pantai Tok Jembal*	NA	MMTC009	5.400420	103.107000
			Pantai Kelului*	NA	MMTC010	5.190430	103.226000
			Pantai Teluk Ketapang*	NA	MMTC011	5.384920	103.118000
			Pantai Kuala Abang*	NA	MMTC012	4.827430	103.420000
			Pantai Teluk Kalong*	NA	MMTC013	4.283330	103.478000
			Pantai Sura*	NA	MMTC014	4.770190	103.424000
			Pantai Tanjung Bidara*	NA	MMTC015	4.785060	103.438000
			Pantai Kemasik*	NA	MMTC016	4.455950	103.449000
			Kuala Sungai Besut	5825902	MMTE001	5.834110	102.558000
			Kuala Sungai Dungun	4734918	MMTE002	4.781080	103.428000
			Kuala Sungai Ibai	5231949	MMTE003	5.288990	103.176000
			Kuala Sungai Kerteh	4534922	MMTE004	4.514410	103.456000
			Kuala Sungai Marang	5232911	MMTE005	5.209440	103.214000
	Kuala Sungai Paka	4634920	MMTE006	4.655000	103.444000		
	Kuala Sungai Setiu	5627953	MMTE007	5.651890	102.764000		
	Kuala Sungai Terengganu	5331907	MMTE008	5.339790	103.152000		
	Kuala Sungai Kemaman / Chukai	4234929	MMTE009	4.226370	103.447000		
	Tioxide Utara (Kg. Bukit Kuang, Kijal)	4234950	MMTE010	4.278310	103.479000		
	Tioxide Tengah (Pupuk Semangat, Kijal)	4234951	MMTE011	4.270500	103.478000		
	Tioxide Selatan (KSB, T. Kalong)	4234952	MMTE012	4.251140	103.466000		
	Pulau Duyung	5231908	MMTE013	5.334890	103.129000		
	11	Pulau / Island	Gemia	7TR01	MMTR001	5.231060	103.261000
			Perhentian Besar (South)	7TM04	MMTM001	5.894480	102.736000
			Perhentian Besar (West)	7TM05	MMTM002	5.889310	102.751000
			Perhentian Kecil	7TM06	MMTM003	5.917920	102.725000
			Redang (North)	7TM06	MMTM004	5.775610	103.037000
			Redang (South)	7TM08	MMTM005	5.752530	103.003000
			Lang Tengah	7TM11	MMTM006	5.792470	102.890000

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						LATITUD / LATITUDE	LONGITUD / LONGITUDE
Kelantan	6	Pantai / Coastal	Pinang	7TM12	MMTM007	5.747970	103.003000
			Ekor Tebu	7TM13	MMTM008	5.740440	103.029000
			Lima	7TM14	MMTM009	5.769860	103.059000
			Kapas	7TP16	MMTM010	5.216970	103.260000
			Pantai Seri Tujuh	6221910	MMDC001	6.228040	102.117000
			Pantai Cahaya Bulan	6122903	MMDC002	6.196460	102.277000
			Pantai Sabak	6123909	MMDC003	6.179620	102.322000
			Pantai Irama Bachok	6024908	MMDC004	6.066860	102.400000
			Pantai Bisikan Bayu	5825905	MMDC005	5.862590	102.518000
	Pantai Melawi*	NA	MMDC006	5.994650	102.441000		
	6	Muara Sungai / Estuary	Kuala Sungai Golok	6220911	MMDE001	6.232860	102.090000
			Kuala Sungai Kelantan	6222901	MMDE002	6.216850	102.237000
			Kuala Sungai Pengkalan Chepa	6223912	MMDE003	6.185740	102.303000
			Kuala Sungai Pengkalan Datu	6123913	MMDE004	6.169280	102.344000
			Kuala Sungai Kemasin	5824914	MMDE005	6.130060	102.371000
			Kuala Sungai Semerak*	NA	MMDE006	5.897340	102.486000
	2	Pulau / Island	Panjang	7DP01	MMDP001	6.207000	102.258000
			Kundur	7DP02	MMDP002	6.189460	102.292000
Sarawak	23	Pantai / Coastal	Pantai Sematan	1898902	MMQC001	1.827220	109.775000
			Pantai Pandan	1824918	MMQC002	1.765530	109.865000
			Pantai Pasir Putih	1604910	MMQC003	1.661530	110.487000
			Pantai Bako	1704906	MMQC004	1.718060	110.442000
			Pantai Damai	1702904	MMQC005	1.750260	110.308000
			Pantai Tanjung Kembang	1810923	MMQC006	1.824440	111.096000
			Pantai Harmoni Mukah	2920921	MMQC007	2.909720	112.056000
			Pantai Tanjung Batu	3132602	MMQC008	3.210640	113.043000
			Pantai Likau	3230915	MMQC009	3.344260	113.148000
			Pantai Emas	3331903	MMQC010	3.441060	113.224000
			Pantai Piasau	4539918	MMQC011	4.437870	113.994000
			Pantai Brighton	4449917	MMQC012	4.378780	113.970000
			Pantai Esplaned	4339920	MMQC013	4.324580	113.961000
			Pantai Beraya	4238921	MMQC014	4.192480	113.877000
			Pantai Bungai	4137922	MMQC015	4.064570	113.782000

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						LATITUD / LATITUDE	LONGITUD / LONGITUDE	
Sarawak	7		Pantai Belawai	2212913	MMQC016	2.220940	111.208000	
			Pantai Mukah*	NA	MMQC017	2.939740	112.167000	
			Tanjung Kidurong*	NA	MMQC018	3.256010	113.049000	
			Pasir Pandak*	NA	MMQC019	1.698830	110.301000	
			Rambungan*	NA	MMQC020	1.703260	110.108000	
			Sri Tanjung Lawas*	NA	MMQC021	4.971620	115.242000	
			Pantai Luak*	NA	MMQC022	4.284270	113.938000	
			Pasir Panjang*	NA	MMQC023	3.095930	112.836000	
	14	Muara Sungai / Estuary	Kuala Sungai Semantan	1898901	MMQE001	1.811530	109.781000	
			Kuala Sungai Sarawak	1604907	MMQE002	1.641030	110.490000	
			Kuala Sungai Bako	1704905	MMQE003	1.683060	110.423000	
			Kuala Sungai Santubong	1702903	MMQE004	1.701270	110.297000	
			Kuala Batang Krian (Kabong)	1710922	MMQE005	1.788890	111.099000	
			Kuala Batang Rejang	2111909	MMQE006	2.122780	111.189000	
			Kuala Mukah	2920920	MMQE007	2.914660	112.095000	
			Kuala Batang Kemena	3130911	MMQE008	3.181500	113.029000	
			Kuala Tanjung Similajau	3431903	MMQE009	3.517920	113.301000	
			Kuala Sungai Panipah	3332904	MMQE010	3.469670	113.261000	
			Kuala Pantai Nyalau	3431903	MMQE011	3.642830	113.383000	
			Kuala Sungai Baram	4539919	MMQE012	4.597000	113.969000	
			Kuala Sungai Miri	4349915	MMQE013	4.399320	113.978000	
			Kuala Sungai Trusan*	NA	MMQE014	2.875530	111.878000	
	3	Pulau / Island	Satang	7QP01	MMQP001	1.777660	110.165000	
			Talang-Talang Kecil	7QP02	MMQP002	1.893470	109.767000	
			Talang-Talang Besar	7QP03	MMQP003	1.911030	109.777000	
	Sabah	24	Pantai / Coastal	Pantai Teluk Brunei 1	5053901	MMSC001	5.145790	115.520000
				Pantai Teluk Brunei 2	5053902	MMSC002	5.117980	115.528000
Pantai Teluk Brunei 3				5053903	MMSC003	5.161070	115.496000	
Pantai Teluk Brunei 4				5053904	MMSC004	5.175850	115.472000	
Pantai Teluk Brunei 5				5053905	MMSC005	5.203520	115.435000	
Pantai Teluk Brunei 6				5053906	MMSC006	5.094190	115.527000	

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						LATITUD / LATITUDE	LONGITUD / LONGITUDE		
Sabah			Borneo Golf Seawater	5355901	MMSC007	5.550000	115.784000		
			Pantai Manis Papar	5555901	MMSC008	5.744250	115.893000		
			Pantai Melinsung	5565902	MMSC009	5.804740	115.975000		
			Pantai Tanjung Aru (Roll Skating)	5656902	MMSC010	5.933020	116.017000		
			Pantai Tanjung Aru (No. 3)	5656903	MMSC011	5.888760	116.015000		
			Pantai Lok Kawi	5656904	MMSC012	5.860130	116.027000		
			Pantai Dalit Tuaran	6161901	MMSC013	6.188750	116.166000		
			Mangrove Paradise	6161902	MMSC014	6.258570	116.221000		
			Pantai Sabandar	6161903	MMSC015	6.203530	116.175000		
			Pantai Bak-Bak Kudat	6665901	MMSC016	6.945650	116.842000		
			Pasir Putih Sandakan	5580901	MMSC017	5.824230	118.086000		
			Pantai TLDM	5580902	MMSC018	5.838960	118.127000		
			Pantai Batu Sapi	5580903	MMSC019	5.795120	118.040000		
			Pantai Ulu Tungku	5085901	MMSC020	5.012930	118.890000		
			Pantai Sarina Kunak	4481901	MMSC021	4.661390	118.284000		
			Pantai Kg. Lamak	4581902	MMSC022	4.969972	118.236731		
			Pantai Tinagat	4473901	MMSC023	4.222780	117.984000		
			Pantai Tanjung Aru (Rest Lido)	5656901	MMSC024	5.910840	116.008000		
			2	Muara Sungai / Estuary	Kuala Penyu	5453901	MMSE001	5.572730	115.605000
					Muara Sungai Inanam	5050905	MMSE002	6.012720	116.110000
			17	Pulau / Island	Gaya	7SR01	MMSR001	6.013460	116.051000
					Mabul	7SR03	MMSR002	4.248770	118.633000
					Sipadan (N)	7SR04	MMSR003	4.117660	118.628000
					Sipadan (W)	7SR05	MMSR004	4.114170	118.626000
Manukan	7SM09	MMSR005			5.973350	116.005000			
Tiga	7SR10	MMSR006			5.716610	115.651000			
Kapalai	7SR12	MMSR007			4.227460	118.684000			
Molleangan Besar	7SR14	MMSR008			7.082230	117.044000			
Banggi (South)	7SR15	MMSR009			7.111690	117.088000			
Banggi (East)	7SR20	MMSR010			7.136970	117.107000			
Balambangan	7SR16	MMSR011			7.232010	116.913000			
Mantanani Besar	7SR21	MMSR012			6.704930	116.358000			
Sapi	7SM08	MMSM001			6.007270	116.010000			
Kalampunian Besar	7SM11	MMSM002			5.748210	115.676000			

Jadual 4.1 : Senarai Stesen Pengawasan Kualiti Air Marin, 2020
Table 4.1 : List of Marine Water Quality Monitoring Stations, 2020

NEGERI / STATE	BILANGAN STESEN / NUMBER OF STATION	KLASIFIKASI STESEN / STATION CLASSIFICATION	KAWASAN / AREA	NOMBOR STESEN LAMA / OLD STATION NUMBER	NOMBOR STESEN BARU / NEW STATION NUMBER	LOKASI / LOCATION			
						LATITUD / LATITUDE	LONGITUD / LONGITUDE		
Sabah			Selingan	7SP17	MMSP001	6.175350	118.059000		
			Gulisan	7SP18	MMSP002	6.149570	118.056000		
			Bakungan Kecil	7SP19	MMSP003	6.163910	118.109000		
W.P. Labuan	5	Pantai / Coastal	Pulau Papan	5151905	MMLC001	5.254900	115.268000		
			Kiamsam	5151906	MMLC002	5.255260	115.175000		
			Sungai Pagar	5151907	MMLC003	5.273410	115.167000		
			Layang-Layangan	5251902	MMLC004	5.334220	115.193000		
			Tanjung Aru	5251903	MMLC005	5.350600	115.244000		
			7	Pulau / Island	Kuraman	7LM05	MMLM001	5.218750	115.140000
					Rusukan Besar	7LM07	MMLM002	5.190000	115.142000
	Rusukan Kecil	7LM06			MMLM003	5.201780	115.148000		
	Pohon Batu	7LD01			MMLD001	5.380530	115.229000		
	Water Front	7LD02			MMLD002	5.272750	115.249000		
	LubukTemiang	7LD03			MMLD003	5.371870	115.248000		
	Ranca-Ranca	7LD04			MMLD004	5.241920	115.240000		

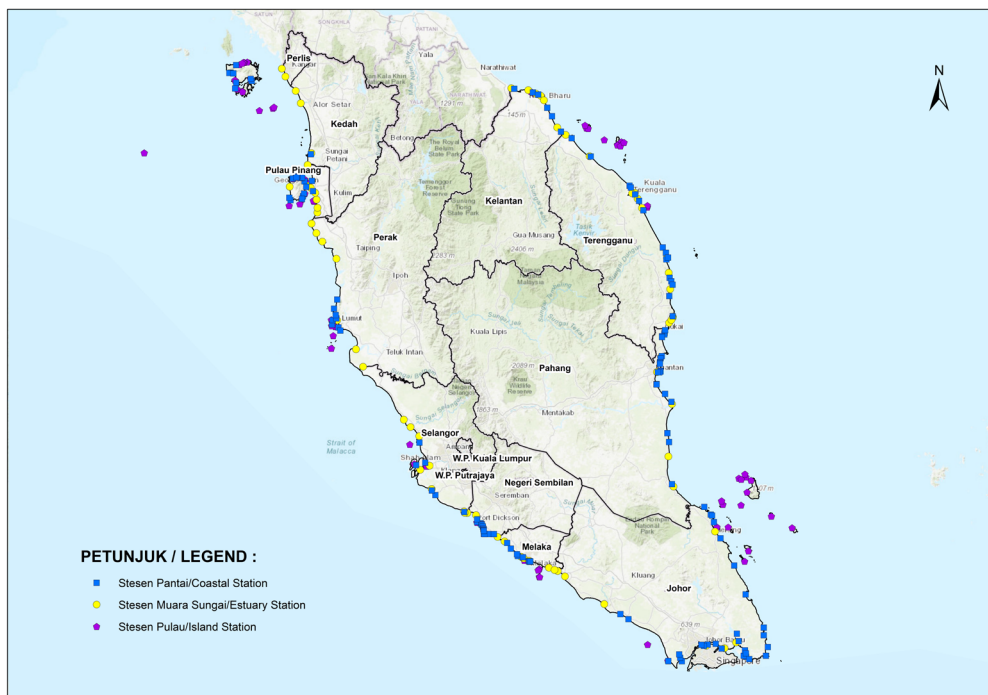
Nota / Note:
* (Stesen baru / New station)
NA (Tidak berkenaan / Not available)

Jadual 4.2 : Senarai Parameter Kualiti Air Marin
Table 4.2 : List of Marine Water Quality Parameters

BIL. / NO.	PARAMETER / PARAMETERS	KOD / CODE	UNIT / UNIT
PENGUKURAN IN-SITU / IN-SITU MEASUREMENTS			
1	Oksigen Terlarut / Dissolved Oxygen	DO	mg/l
2	pH	pH	-
3	Kemasinan / Salinity	Sal	ppt
4	Suhu / Temperature	Temp	°C
5	Kekeruhan / Turbidity	Turb	NTU
6	Konduktiviti / Conductivity	Cond	mS/cm
PENGUKURAN MAKMAL / LABORATORY MEASUREMENTS			
1	Jumlah Pepejal Terapai / Total Suspended Solid	TSS	mg/l
2	Minyak dan Gris / Oil and Grease	O&G	mg/l
3	Bebola Tar / Tarball	Tar	g/100m
4	Merkuri / Mercury	Hg	µg/l
5	Kadmium / Cadmium	Cd	µg/l
6	Kromium / Chromium	Cr ⁶⁺	µg/l

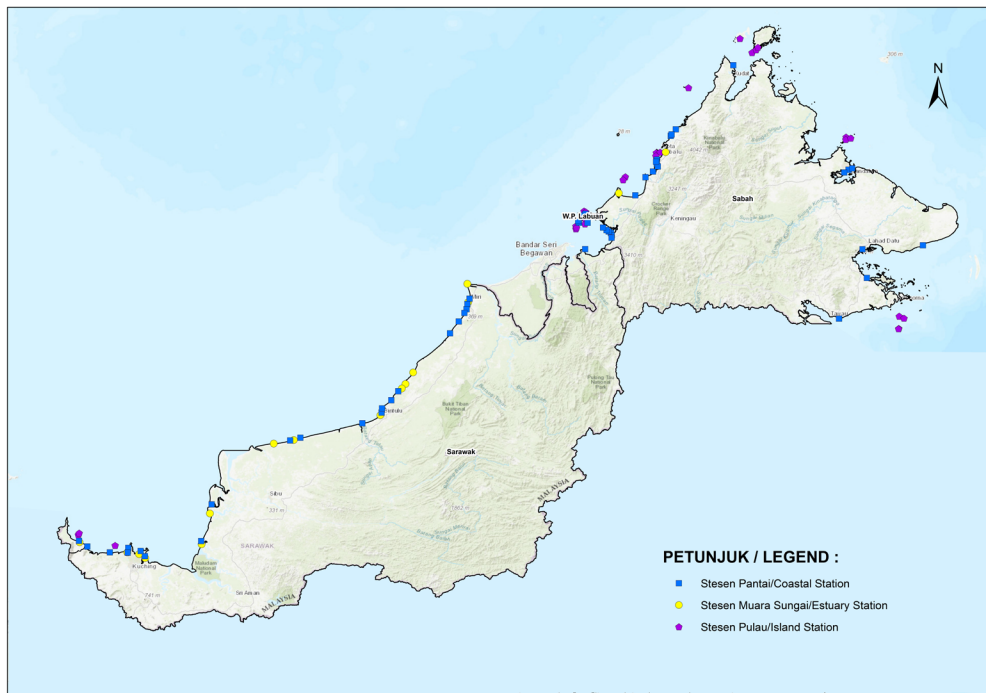
Jadual 4.2 : Senarai Parameter Kualiti Air Marin
Table 4.2 : List of Marine Water Quality Parameters

BIL. / NO.	PARAMETER / PARAMETERS	KOD / CODE	UNIT / UNIT
7	Kuprum / Copper	Cu	µg/l
8	Arsenik / Arsenic	As	µg/l
9	Plumbum / Lead	Pb	µg/l
10	Zink / Zinc	Zn	µg/l
11	Sianida / Cyanide	CN	µg/l
12	Ammonia Tidak Terion / Unionized Ammonia	NH ₃	µg/l
13	Amoniakal Nitrogen / Ammoniacal Nitrogen	NH ₃ -N	µg/l
14	Nitrit / Nitrite	NO ₂	µg/l
15	Nitrat / Nitrate	NO ₃	µg/l
16	Fosfat / Phosphate	PO ₄	µg/l
17	Fenol / Phenol	Phenol	µg/l
18	Tributiltin / Tributyltin	TBT	µg/l
19	Total Coliform	TC	cfu/100
20	Faecal Coliform	FC	cfu/100
21	Escherichia coli	E. coli	cfu/100
22	Enterococci	-	cfu/100
23	Polycyclic Aromatic Hydrocarbons	PAHs	µg/l



Rajah 4.1 (a)
Figure 4.1 (a)

Taburan Stesen Pengawasan Kualiti Air Marin di Semenanjung Malaysia, 2020
Distribution of Marine Water Quality Monitoring Stations in Peninsular Malaysia, 2020



Taburan Stesen Pengawasan Kualiti Air Marin di Sabah, Sarawak dan Wilayah Persekutuan Labuan, 2020

Distribution of Marine Water Quality Monitoring Stations at Sabah, Sarawak and Federal Territory of Labuan, 2020

Rajah 4.1 (b)
Figure 4.1 (b)

PENGAWASAN KUALITI AIR SUNGAI RIVER WATER QUALITY MONITORING

JAS meneruskan program pemantauan kualiti sungai pada 2020 untuk menentukan status kualiti air sungai dan untuk mengesan perubahan dalam kualiti air sungai. Sampel air dikumpulkan dari stesen yang ditetapkan untuk in-situ dan analisis makmal bagi menentukan ciri fizikal-kimia dan biologinya.

Indeks Kualiti Air (IKA) digunakan untuk menunjukkan tahap pencemaran dan kesesuaian yang sesuai dari segi penggunaan air mengikut Standard Kualiti Air Negara (NWQS). IKA mengambil kira parameter Oksigen Terlarut (DO), Keperluan Oksigen Biokimia (BOD), Keperluan Oksigen Kimia (COD), Ammoniacal Nitrogen (NH₃-N), Pepejal Terampai (SS) dan pH.

DOE continued the river water quality monitoring programme in 2020 to determine the status of river water quality as well as to detect any changes in quality. Water samples were collected from designated stations for in-situ and laboratory analysis to determine its physical-chemical and biological characteristics.

The Water Quality Index (WQI) is used to indicate the level of pollution and the corresponding suitability in terms of water use according to the National Water Quality Standards for Malaysia (NWQS). The WQI takes into consideration the parameters of Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Ammoniacal Nitrogen (NH₃-N), Suspended Solid (SS) and pH.

Pada 2020, kualiti air sungai dinilai berdasarkan sejumlah 8,098 sampel yang diambil dari sejumlah 1,353 stesen pemantauan manual yang merangkumi 672 sungai di seluruh Negara seperti dalam **Jadual 4.4**. Sejumlah lima puluh lima (55) stesen daripada rangkaian stesen pengawasan kualiti air sungai tersebut adalah khusus bagi memantau kualiti air sungai di hulu muka sauk yang terpilih seperti dalam **Jadual 4.5**. Persampelan kualiti air sungai dijalankan secara berjadual dan mengikut kekerapan yang telah ditetapkan iaitu 6 kali setahun. Parameter-parameter kualiti air yang diukur merangkumi parameter fizikal, kimia dan biological seperti **Jadual 4.6**.

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020

Jadual 4.5 : Senarai Stesen Pemantauan Muka Sauk Loji Rawatan Air

Jadual 4.6 : Parameter-Parameter Pengukuran Kualiti Air Sungai

Pada tahun 2020, sejumlah 8,098 sampel air sungai telah diuji merangkumi kesemua parameter kualiti air yang diukur. Kualiti air sungai dinilai berdasarkan Indeks Kualiti Air (IKA) dan Standard Kualiti Air Kebangsaan (NWQSM). IKA ditentukan dengan mengambilkira kepentingan enam parameter penunjuk pencemaran utama iaitu Oksigen Terlarut (DO), Keperluan Oksigen Biokimia (BOD), Keperluan Oksigen Kimia (COD), Ammonia Nitrogen (NH₃-N), pH dan Pepejal Terampai (SS).

SEBARAN DATA KUALITI AIR SUNGAI

Data-data kualiti air sungai telah digunakan oleh dua (2) kategori pengguna utama iaitu agensi/jabatan kerajaan dan penuntut institusi pengajian tinggi yang menjalankan kajian berkaitan kualiti air sungai. Pada tahun 2020, sejumlah 115 permohonan data telah diterima oleh JAS melibatkan sejumlah 598,291 data kualiti air sungai. Sebanyak 35% daripada permohonan data kualiti air sungai adalah daripada golongan penyelidik di institusi pengajian tinggi, manakala 30% daripada perunding bagi projek kerajaan, manakala selebihnya adalah dari agensi kerajaan dan pihak swasta. Bilangan permohonan data kualiti air sungai yang diterima oleh JAS pada tahun 2020 adalah seperti yang ditunjukkan oleh **Rajah 4.2**.

In 2020, river water quality was assessed based on a total of 8,098 samples taken from a total of 1,353 manual monitoring stations covering 672 rivers in Malaysia as shown in **Table 4.4**. Fifty five (55) stations from the network were specifically for the purpose of monitoring river water quality upstream at selected water intakes as listed in **Table 4.5**. A scheduled collection of river water quality samplings was done 6 times a year and these were analysed and tested for a range of physical, chemical and biological parameters as shown in **Table 4.6**.

Table 4.4 : List of the Catchments and Rivers Monitored, 2020

Table 4.5 : List of the Water Intake Monitoring Stations

Table 4.6 : River Water Quality Parameters

In 2020, a total of 8,098 river water samples were tested covering all of the water quality parameters. River water quality is appraised based on the Water Quality Index (WQI) and the National Water Quality Standard for Malaysia (NWQSM). The WQI is calculated using a formula derived for six principal parameters namely Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Ammoniacal Nitrogen (NH₃-N), Suspended Solids (SS) and pH.

DISSEMINATION OF RIVER WATER QUALITY DATA

River water quality data were utilized by two (2) categories of users, which are government agencies, and researchers from higher learning institutions. In 2020, a total of 115 data requests were received by DOE covering 598,291 water quality data points. About 35% of the requests were from researchers from higher learning institutions, 30% from consultants for government projects, and the rest from government agencies and the private sector. The number of water quality data requests received by DOE in 2020 is shown in **Figure 4.2**

Jadual 4.3 : Program dan Aktiviti Program Pengawasan Kualiti Air Sungai
Table 4.3 : Programmes and Activities Related to River Water Quality Monitoring Programme

TARIKH / DATE	AKTIVITI & PROGRAM / ACTIVITIES & PROGRAMMES	TEMPAT / VENUE
5 Februari 2020	Mesyuarat Jawatankuasa Penilaian Perunding (JPP) Bil.1/2020 Bagi Projek Kajian Semakan Semula Kriteria Dan Standard Kualiti Air Sungai Malaysia, Jabatan Alam Sekitar-Laporan Kemajuan 2	Jabatan Alam Sekitar Malaysia
15 Julai 2020	Bengkel Untuk Membincangkan Laporan Kemajuan Bagi Kajian Semakan Semula Kriteria Dan Standard Kualiti Air Sungai Malaysia Di Bawah Projek Rancangan Malaysia Ke Sebelas (RMK-11)	Jabatan Alam Sekitar Malaysia
16 Julai 2020	Mesyuarat Jawatankuasa Penilaian Perunding (JPP) Bil.2/2020 Bagi Projek Kajian Semakan Semula Kriteria Dan Standard Kualiti Air Sungai Malaysia, Jabatan Alam Sekitar-Laporan Kemajuan 3	Jabatan Alam Sekitar Malaysia
19 Oktober 2020	Mesyuarat Dan Taklimat Kajian Semakan Semula Kriteria Dan Standard Kualiti Air Sungai Malaysia	Jabatan Alam Sekitar Malaysia
21 Oktober 2020	Mesyuarat Jawatankuasa Penilaian Perunding (JPP) Bil.3/2020 Bagi Projek Kajian Semakan Semula Kriteria Dan Standard Kualiti Air Sungai Malaysia, Jabatan Alam Sekitar-Deraf Laporan Akhir	Jabatan Alam Sekitar Malaysia
17 November 2020	Mesyuarat Jawatankuasa Penilaian Perunding (JPP) Bil.3/2020 Bagi Projek Kajian Semakan Semula Kriteria Dan Standard Kualiti Air Sungai Malaysia, Jabatan Alam Sekitar-Laporan Akhir	Jabatan Alam Sekitar Malaysia

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID				
Perlis	01	Perlis	15	Jarum	1	1RPLS006				
				Jernih	2	1RPLS005 1RPLS004				
				Ngulang	1	1RPLS002				
				Pelarit	1	1RPLS008				
				Perlis	1	1RPLS001				
				Wang Kelian	1	1RPLS009				
				Terusan Mada	2	1RPLS010 1RPLS011				
				Serai	1	1RPLS003				
				Kok Mak	1	1RPLS007				
				Korok	1	1RPLS013				
				Arau	2	1RPLS012 1RPLS014				
				Korok	1	1RPLS015				
				Kisap	1	1KKSP001				
				Kedah	01PLC	Melaka	7	Chenang	1	1KMLK006 1KMLK002
								Melaka	3	1KMLK003 1KMLK007
Petang	1	1KMLK001								
Saga	1	1KMLK004								
Tuba	1	1KMLK005								
Kuah	1	1KKUA001								

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID
Kedah	03	Kedah	18	Ahning	1	1KKDH011
				Changlun	1	1KKDH016
				Janing	1	1KKDH007
				Kedah	1	1KKDH001
				Napoh	1	1KKDH017
						1KKDH002
						1KKDH003
				Padang Terap	5	1KKDH004
						1KKDH009
						1KKDH012
				Pedu	1	1KKDH005
				Pendang	1	1KKDH008
				Sintok	1	1KKDH018
				Tekai	1	1KKDH006
				Temin	1	1KKDH010
				Terusan Lengkuas	1	1KKDH014
				Terusan Mada Selatan	1	1KKDH013
				Terusan Tengah	1	1KKDH015
	04	Merbok	11	Batu	1	1KMBK002
				Bakar Arang	1	1KMBK008
				Bongkok	1	1KMBK003
				Bukit Merah	1	1KMBK006
				Bukit Nanas	1	1KMBK011
				Korok	1	1KMBK009
				Merbok	1	1KMBK001
				Petani	1	1KMBK007
				Tok Pawang	2	1KMBK004
						1KMBK005
				Tupah	1	1KMBK010
	05	Muda	24			1KMUD001
						1KMUD004
						1KMUD005
						1KMUD013
					1KMUD014	
Muda				12	1KMUD015	
					1KMUD016	
					1KMUD018	
					1KMUD019	
					1KMUD023	
					1KMUD024	
					1KMUD025	
Jerong				2	1KMUD002	
					1KMUD003	
Ketil	1	1KMUD006				
Sedim	2	1KMUD008				
		1KMUD017				
Karangan	1	1KMUD009				
		1KMUD010				
Tawar	3	1KMUD020				
		1KMUD007				
Pegang	1	1KMUD011				

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
 Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID	
Kedah	06P	Perai	23	Chepir	1	1KMUD012	
				Gunung Inas	1	1KMUD021	
Jarak				1KPRI018			
				1KPRI019			
P. Pinang				Jarak	1KPRI024		
					1PPRI009		
				1PPRI011			
				1PPRI012			
				Perai	1PPRI004		
					1PPRI003		
				Kubang Semang	1	1PPRI005	
Keladi				1PPRI006			
				1PPRI008			
Kedah				P. Pinang	1PPRI024		
					1	1KPRI015	
Kedah				P. Pinang	Air Melintas	1	1PPRI007
							1KPRI014
Kedah				P. Pinang	Kulim	5	1KPRI016
							1KPRI017
							1KPRI023
P. Pinang				Kedah	Pertama	1	1KPRI025
							1PPRI022
Kedah				P. Pinang	Seluang Bawah	1	1KPRI020
	Seluang	2	1KPRI021				
P. Pinang	06PP	Pinang	18	Seluang	2	1PPRI010	
				Pinang	3	1PPNG003	
						1PPNG021	
						1PPNG008	
				Titi Kerawang	1	1PPNG004	
						1PPNG006	
				Air Itam	3	1PPNG011	
						1PPNG018	
				Jelutung	1	1PPNG010	
						1PPNG015	
						1PPNG016	
				Dondang	1PPNG017		
					1PPNG012		
						1PPNG013	
						1PPNG014	
Air Terjun	1	1PPNG019					
Batu Feringgi	1PPNG001						
	1PPNG002						
Satu	1	1PPNG020					
Ara	1PPRU006						
	Juru	2	1PJR001				
			1PJR002				
			1PJR003				
	Kilang Ubi	1PJR009					
1PJR010							
1PJR011							

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID			
P. Pinang				Pasir	1	1PJR004			
				Permatang Rawa	2	1PJR008 1PJR013			
				Rambai	2	1PJR005 1PJR007			
				Rambai					
	06K 06T	Kluang	5	Kluang	1	1PKLU001			
				Ara	2	1PKLU002 1PKLU003			
				Ara		1PKLU003			
				Relau	1	1PKLU004			
				Dua Besar	1	1PKLU005			
	Bayan Lepas	3	Tiram	2	1PBLS001 1PBLS002				
			Bayan Lepas	1	1PBLS003				
			Chempedak	1	1PJWI003				
	07	Jawi	7	Jawi	1	1PJWI001 1PJWI002 1PJWI004 1PJWI006			
				Junjong	3	1PJWI002 1PJWI004 1PJWI006			
Machang Bubok				1	1PJWI007				
Tengah				1	1PJWI005				
Kedah								2	1PKER002 1PKER005
									1KKER001
P. Pinang					Kerian	14	Kerian	6	1PKER003 1PKER004 1PKER006 1PKER009 1PKER014
			1AKER011						
	Perak	08	Selama				3	1AKER012 1AKER016	
			Terusan Bagan Serai				1	1AKER015	
			Serdang				1	1AKER013	
	P. Pinang							1	1PKER007
Perak		Raja Hitam	8	Manjong	2	1ARHT001 1ARHT002			
				Raja Hitam	3	1ARHT003 1ARHT005 1ARHT008			
				Derhaka	2	1ARHT004 1ARHT006			
				Nyior	1	1ARHT007			
		09	Kurau	7	Air Hitam	1	1AKRU007		
					Ara	2	1AKRU001 1AKRU006		
							1AKRU002 1AKRU003 1AKRU004 1AKRU005		
					Kurau	4	1AKRU003 1AKRU004 1AKRU005		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
 Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID
Perak	10	Sepetang	19	Batu Tegoh	5	1ASPT009
						1ASPT007
						1ASPT012
						1ASPT006
						1ASPT016
				Jana	2	1ASPT013
						1ASPT004
				Lidin	1	1ASPT008
				Limau	1	1ASPT014
				Malai	2	1ASPT002
						1ASPT019
				Sepetang	2	1ASPT001
						1ASPT003
				Nyior	2	1ASPT018
						1ASPT020
				Temerloh	2	1ASPT010
						1ASPT011
				Trong	2	1ASPT017
						1ASPT015
Wangi	4		4			1AWGI001
						1AWGI002
						1AWGI003
						1AWGI004
11	Bruas	Bruas	7	Bruas	3	1ABRU001
						1ABRU004
						1ABRU005
				Dandang	1	1ABRU006
						1ABRU007
				Licin	1	1ABRU002
						1ABRU003
Rotan	2	1APRK003				
		1APRK006				
Perak	13	Perak	86	Batang Padang	3	1APRK009
						1APRK077
						1APRK068
				Behrang	1	1APRK002
						1APRK004
				Berok	1	1APRK005
						1APRK012
				Bidor	3	1APRK013
						1APRK056
				Chenderiang	2	1APRK046
						1APRK066
				Chepor	1	1APRK031
						1APRK032
				Cuar	1	1APRK043
						1APRK044
				Ibol	1	1APRK079
1APRK037						
Kangsar	2	1APRK038				
Kepayang	2					

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
 Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID			
Perak				Kerbau	2	1APRK064 1APRK078			
				Kerdah	2	1APRK041 1APRK053			
			Kinjang	1	1APRK055				
			Kinta	1APRK019	9	1APRK022	9	1APRK024	1APRK025
				1APRK033					
				1APRK034					
				1APRK057					
				1APRK058					
				1APRK063					
				1APRK014					
				1APRK015					
				1APRK016					
			Klian Baru	1APRK017	2	1APRK081	1	1APRK042	
				1APRK081					
			Klian Gunong	1	1APRK060	1	1APRK052		
			Kuang	1	1APRK023				
			Manong	1	1APRK028	2	1APRK039		
			Nyamok	1	1APRK040				
			Perak					18	1APRK001
									1APRK018
									1APRK020
									1APRK045
									1APRK047
									1APRK048
									1APRK051
									1APRK059
									1APRK065
									1APRK071
									1APRK072
									1APRK074
									1APRK080
1APRK082									
1APRK049									
1APRK069									
1APRK070									
Perak (Tasek Temenggor)	1APRK086								
Pinji	1APRK021	2	1APRK036	1	1APRK067				
	1APRK036								
Pulau	1	1APRK030	2	1APRK035					
Raia	2	1APRK084							
Rui	2	1APRK085							

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID								
Perak				Seluang	1	1APRK050								
				Serokai	2	1APRK026 1APRK027								
				Sintang	1	1APRK054								
				Sungkai	4	1APRK007 1APRK008 1APRK073 1APRK075								
					Sungkai Mati	2	1APRK010 1APRK011							
						Tapah	1	1APRK076						
				Teja	1	1APRK083								
				Tesong	1	1APRK062								
				Tumboh	1	1APRK029								
				Woh	1	1APRK061								
Selangor	14	Bernam	18	Bernam	8	1ABNM001 1ABNM002 1ABNM003 1ABNM004 1ABNM005 1ABNM006 2BBNM013 2BBNM016								
						Dusun	1	2BBNM017						
						Slim	3	1ABNM007 1ABNM008						
							Trolak	3	1ABNM009 1ABNM010 1ABNM011					
						Inki		1	1ABNM012					
						Behrang		1	1ABNM014 1ABNM016					
						Slim	1	1ABNM015						
						Selangor	17	Buloh	6	Buloh	6	2BBLH001 2BBLH002 2BBLH003 2BBLH004 2BBLH005 2BBLH006		
												Sepang	4	2BSPG001 2BSPG002 2BSPG003
													Rambai	1
Tengi	4	2BTGI001 2BTGI002 2BTGI003 2BTGI004												
	Selangor	22	Air Hitam Batang Kali Guntong	2 1 1	2BSEL002 2BSEL024 2BSEL003 2BSEL021									

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID								
Selangor	19	Langat	36	Kerling	1	2BSEL006								
				Kundang	1	2BSEL007								
				Rangkap	1	2BSEL012								
				Rawang	1	2BSEL016								
				Selangor					1	2BSEL013				
										2BSEL001				
										2BSEL004				
										2BSEL005				
										2BSEL010				
										2BSEL011				
										2BSEL014				
										2BSEL015				
										2BSEL017				
										2BSEL018				
						2BSEL023								
				Sembah					2	2BSEL009				
										2BSEL019				
								Serendah	1	2BSEL008				
								Anak Chuau	1	2BCHU004				
								Balak	1	2BLGT025				
								Chuau	2	2BCHU001				
										2BCHU002				
								Limau Manis	1	2BCHU003				
								Langat						2BLGT002
														2BLGT003
						2BLGT004								
						2BLGT005								
						2BLGT006								
						2BLGT007								
						2BLGT008								
						2BLGT026								
						2BLGT027								
				Batang Labu					6	2BLGT028				
										2BLGT030				
										2BLGT031				
										2BLGT032				
		2BLGT033												
		2BLGT035												
N. Sembilan					2	3NLGT009								
						3NLGT025								
				Batang Benar	1	3NLGT013								
				Beranang	1	3NLGT019								
				Pajam	2	3NLGT020								
						3NLGT021								
				Batang Nilai	2	3NLGT023								
						3NLGT024								
Selangor					1	3NLGT022								
						3NLGT026								
				Jijan	1	3NLGT026								
				Semenyih	3	2BLGT010								
						2BLGT011								
						2BLGT012								

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID		
Selangor	18	Klang	58	Rinching	2	2BLGT014 2BLGT015		
W.P. KL				Sering	1	2BLGT034		
Selangor				Air Busuk	1	2WKLG041		
				Ampang	2	2BKLG032 2BKLG042		
				Anak Air Batu	1	2BKLG047		
				Batu		5	2BKLG007 2BKLG036 2BKLG028	
							2WKLG056 2WKLG061	
Belongkong					1	2WKLG040		
W.P. KL				Bunus	3	2WKLG006 2WKLG039 2WKLG043		
Selangor				Damansara	5	2BKLG008 2BKLG009 2BKLG017		
				Damansara		5	2BKLG055 2BKLG067 2BKLG020	
							2BKLG027	
					Gombak	5	2WKLG018 2WKLG026 2WKLG060	
				Selangor	Jinjang	4	2BKLG044 2WKLG014 2WKLG031 2WKLG045	
Selangor				Kerayong		4	2BKLG013 2BKLG051 2WKLG046 2WKLG058	
					W.P. KL		3	2BKLG030 2WKLG015 2BKLG048
						Selangor	Klang	
W.P. KL								

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID
Selangor				Kuyoh	2	2BKLG011
W.P. KL						2WKLG052
Selangor				Penchala	3	2BKLG019
W.P. KL						2BKLG054
						2WKLG010
Selangor				Pusu	1	2BKLG021
				Rasau	1	2BKLG003
				Rumput	1	2BKLG033
				Semelah	1	2BKLG025
W.P. KL				Toba	1	2WKLG037
				Utut	1	2WKLG038
		Lukut	1	Lukut Besar	1	3NLKT001
						3NLGI021
						3NLGI009
				Batang Penar	6	3NLGI020
						3NLGI010
						3NLGI027
						3NLGI034
				Batu Hampar	1	3NLGI024
	21	Linggi	34	Chembong	1	3NLGI012
				Empangan Terip	1	3NLGI022
				Jelai	1	3NLGI025
				Kayu Ara	1	3NLGI016
				Kenaboi	1	3NLGI032
					1	3NLGI007
N. Sembilan				Kepayang	1	3NLGI023
				Kundor	1	3NLGI013
						3NLGI001
						3NLGI002
				Linggi	6	3NLGI003
						3NLGI004
						3NLGI005
						3NLGI006
				Muar	1	3NLGI026
				Ngoi Ngoi	1	3NLGI040
				Paroi	1	3NLGI018
				Pedas	1	3NLGI014
				Rembau	1	3NLGI011
				Senawang	1	3NLGI017
				Simin	1	3NLGI015
				Simpang Ampat	1	3MLGI029
Melaka				Siput	2	3MLGI030
						3MLGI031
N. Sembilan				Temiang	2	3NLGI019
						3NLGI033
Melaka				Tuang	1	3MTUG002
N. Sembilan	35P	Pahang	1	Kenaboi	1	3NPHG007
		Baru	1	Baru	1	3MBAR001
						3MMLK008
Melaka	22	Melaka	32	Batang Melaka	3	3MMLK027
						3MMLK028

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID
Melaka				Durian Tunggal	1	3MMLK011
N. Sembilan				Kemunting	1	3NMLK039
				Dusun	1	3NMLK017
				Malim	2	3MMLK014 3MMLK034
Melaka				Melaka	14	3MMLK007 3MMLK009 3MMLK010 3MMLK012 3MMLK013 3MMLK015 3MMLK021 3MMLK022 3MMLK023 3MMLK024 3MMLK025 3MMLK026 3MMLK030 3MMLK032
Melaka				Putat	2	3MMLK029 3MMLK033
				Rembia	2	3MMLK035 3MMLK036
				Seri Melaka	1	3MSMK002
				Sg.udang	1	3MSUD001
N. Sembilan				Tampin	3	3MMLK031 3NMLK038
N. Sembilan				Tampin	1	3NMLK041
				Air Salak	1	3MSMK001
				Chin-Chin	3	3MKSG006 3MKSG008 3MKSG009
	24	Kesang	9	Chohong	2	3MKSG004 3MKSG005
				Kesang	3	3MKSG001 3MKSG002
				Kesang	1	3MKSG003
				Tangkak	1	3MKSG007
Melaka	24A	Merlimau	5	Merlimau	5	3MMLU001 3MMLU002 3MMLU003 3MMLU004 3MMLU005
	23	Duyong	6	Duyong	3	3MDYG001 3MDYG002 3MDYG003
				Gapam	1	3MDYG004
				Punggur	2	3MPGR001 3MPGR002

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID			
Johor	25	Muar	56	Air Panas	1	3JMUA035			
				Belemang	1	3JMUA051			
				Gemas	2	3JMUA036 3NMUA041			
N. Sembilan					Gemencheh	2	3NMUA043 3NMUA045		
				Jelai	1	3NMUA054			
				Jementah	1	3JMUA040			
Johor					Juasseh	3	3JMUA014 3JMUA037 3JMUA045		
N. Sembilan					Kelamah	1	3NMUA044		
				Labis	3	3JMUA011 3JMUA012 3JMUA015			
				Meda	1	3JMUA034			
				Merlimau	1	3JMUA030			
					1	3JMUA020 3JMUA017 3JMUA019 3JMUA022 3JMUA026			
Johor					Muar	25	3JMUA027 3JMUA028 3JMUA029 3JMUA031 3JMUA033 3JMUA039		
							3JMUA041 3JMUA042 3JMUA043 3JMUA046 3JMUA047		
							3NMUA042 3NMUA046 3NMUA047 3NMUA048 3NMUA049 3NMUA050 3NMUA051 3NMUA052 3NMUA053 3NMUA055		
							P.mengkuang	1	3JMUA018
							Pagoh	1	3JMUA049
Johor							Palong	2	3JMUA024 3JMUA025
							Pendol	1	3JMUA050
							Sarang Buaya	1	3JMUA038

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID
Johor	26	Batu Pahat	25	Segamat	3	3JMUA016 3JMUA044 3JMUA048
				Senarut	1	3JMUA021
				Serom	1	3JMUA032
				Simpang Loi	1	3JMUA023
				Tenang	1	3JMUA013
				Amran	1	3JBPT018
				Batang	1	3JBPT020
				Batu Pahat	1	3JBPT001 3JBPT008 3JBPT005 3JBPT016 3JBPT017 3JBPT019 3JBPT023
				Bekok	6	3JBPT007 3JBPT010 3JBPT022 3JBPT011 3JBPT009 3JBPT006 3JBPT025 3JBPT003 3JBPT004 3JBPT021 3JBPT002 3JBPT013 3JBPT012 3JBPT014 3JBPT015 3JBPT024
				Berlian	1	3JBPT007
				Chaah	1	3JBPT010
				Kahang	1	3JBPT022
				Lenik	1	3JBPT011
				Merek	1	3JBPT009
				Merpo	1	3JBPT006
	Panchor	1	3JBPT025			
	Semberong	2	3JBPT003 3JBPT004			
	Semberong Dam	1	3JBPT021			
	Simpang Kanan	2	3JBPT002 3JBPT013			
	Simpang Kiri	3	3JBPT012 3JBPT014 3JBPT015			
	Temehel	1	3JBPT024			
	27A	Air Baloi	3	Air Baloi	3	3JABL001 3JABL002 3JABL003
	28	Segget	5	Segget	5	3JSGT001 3JSGT002 3JSGT003 3JSGT004 3JSGT005
	28D	Tebrau	11	Tebrau	11	3JTRU006 3JTRU008 3JTRU007 3JTRU004 3JTRU009 3JTRU011 3JTRU010 3JTRU001 3JTRU002 3JTRU003 3JTRU005

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID
Johor	28F	Danga	2	Danga	2	3JDGA001 3JDGA002
	28G	Rambah	2	Rambah	2	3JRBH001 3JRBH002
	29B	Kaw. Pasir Gudang	5	Perembi Buluh Tukang Batu Latoh Masai	1 1 1 1 1	3JPGD001 3JPGD002 3JPGD003 3JPGD004 3JPGD005
	27B	Benut	8	Benut Ulu Benut Parit Hj.yassin Machap Dam Pinggan	4 1 1 1 1	3JBNT001 3JBNT002 3JBNT005 3JBNT006 3JBNT003 3JBNT004 3JBNT008 3JBNT007
	28A	Pontian Besar	7	Air Hitam Ayer Merah Pontian Besar	1 1 5	3JPBS001 3JPBS005 3JPBS002 3JPBS003 3JPBS004 3JPBS006 3JPBS007
	28B	Pontian Kecil	2	Pontian Kecil	2	3JPKC001 3JPKC002
	28C	Skudai	11	Melana Skudai Skudai	2 9 1	3JSKU008 3JSKU009 3JSKU001 3JSKU002 3JSKU003 3JSKU004 3JSKU005 3JSKU006 3JSKU007 3JSKU010 3JSKU011
	28E	Kempas	2	Kempas	2	3JKPS001 3JKPS002
	29C	Sanglang	1	Sanglang	1	3JSLG001
	29D	Pulai	4	Pulai Ulu Choh Pulai Dam	2 1 1	3JPLI001 3JPLI002 3JPLI003 3JPLI004
	31C	Kim-Kim	2	Kim-Kim	2	3JKIM001 3JKIM002
	29	Johor	43	Anak Sg. Sayong Belitong Berangan	2 1 1	3JJHR023 3JJHR032 3JJHR038 3JJHR013

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
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NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID
Johor				Bukit Besar	2	3JJHR007 3JJHR009
				Chemangar	1	3JJHR019 3JJHR011 3JJHR014
				Johor	6	3JJHR015 3JJHR040 3JJHR041 3JJHR042
				Layang	1	3JJHR001
				Layau Kiri	1	3JJHR017
				Lebam	1	3JJHR020
				Linggiu	1	3JJHR030
				Panti	1	3JJHR037
				Papan	1	3JJHR034 3JJHR039
				Pelepah	4	3JJHR043 3JJHR044 3JJHR045
				Penggeli	2	3JJHR028 3JJHR031
				Remis	1	3JJHR026
				Santi	1	3JJHR022 3JJHR024
				Sayong	4	3JJHR025 3JJHR027 3JJHR033
				Sebol	1	3JJHR029
				Seluyut	1	3JJHR035
				Semangar	1	3JJHR008
				Semenchu	1	3JJHR018
				Sening	1	3JJHR021
				Serai	1	3JJHR002
				Telor	1	3JJHR012
				Temoh	1	3JJHR016
				Tiram	4	3JJHR003 3JJHR004 3JJHR005 3JJHR006
				Ambat	1	3JSBE005
				Dohol	1	3JSBE001
				Mupur	1	3JSBE009
				Pasir Panjang	1	3JSBE010 3JSBE002 3JSBE004
				Sedili Besar	6	3JSBE006 3JSBE007 3JSBE008 3JSBE011
				Temubor Kanan	1	3JSBE003

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Johor	30B	Sedili Kechil	6	Anak Sedili Kechil	2	3JSKE005 3JSKE006				
				Bahan	2	3JSKE002 3JSKE004				
				Sedili Kechil	2	3JSKE001 3JSKE003				
				30C	Paloi	1	Paloi	1	3JPAL001	
				31A	Mersing	4	Mersing	3	3JMSG001 3JMSG002 3JMSG003	
							Empangan Congok	1	3JMSG004	
	31B	Jemaluang	2	Jemaluang	2	3JJML001 3JJML002				
	32	Endau	29	Anak Sg. Sembrong	1	3JEND007				
				Dengar	1	3JEND010				
				Empangan Labong	1	3JEND027 3JEND019				
				Endau	3	3JEND022 3JEND023				
				Jasin	1	3JEND024				
				Jebong	1	3JEND005				
				Kahang	3	3JEND020 3JEND026 3JEND028				
				Lenga	1	3JEND008				
				Lenggor	2	3JEND009 3JEND029				
				Mamai	1	3JEND015				
				Melatai	1	3JEND017				
				Mengkibol	3	3JEND001 3JEND002 3JEND003				
				Pamol	1	3JEND016				
				Selai	1	3JEND011				
				Semberong	5	3JEND025 3JEND004 3JEND006 3JEND012 3JEND018 3JEND021				
				Singol	1	3JEND013				
				Tamok	1	3JEND014				
				Pahang	35P	Pahang	143	T. Paya Bungor	1	4CPHG002
								Krau	1	4CPHG003
								Chini	1	4CPHG004 4CPHG005
	Mentiga	3	4CPHG042 4CPHG089							
	Lepar	1	4CPHG006							

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Pahang				Pahang	27	4CPHG007
						4CPHG008
						4CPHG010
						4CPHG011
						4CPHG012
						4CPHG013
						4CPHG021
						4CPHG022
						4CPHG023
						4CPHG027
						4CPHG054
						4CPHG055
						4CPHG097
						4CPHG100
						4CPHG104
						4CPHG111
						4CPHG113
						4CPHG124
						4CPHG126
						4CPHG127
						4CPHG131
						4CPHG137
						4CPHG138
						4CPHG139
						4CPHG141
						4CPHG148
						4CPHG150
				Jelai	3	4CPHG0130
						4CPHG096
						4CPHG125
				Kertam	1	4CPHG014
				Luit	1	4CPHG015
				Maran	1	4CPHG016
Kundang	1	4CPHG018				
Bera					5	4CPHG019
						4CPHG020
						4CPHG058
						4CPHG059
						4CPHG063
Semantan					4	4CPHG025
						4CPHG036
						4CPHG061
						4CPHG084
Lipis					3	4CPHG029
						4CPHG030
						4CPHG035
Telang	1	4CPHG032				
Koyan	1	4CPHG033				
Teras					2	4CPHG037
						4CPHG147
Teranum	1	4CPHG038				

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Pahang				Bentong	6	4CPHG040
						4CPHG045
						4CPHG092
						4CPHG133
						4CPHG134
						4CPHG144
				Tasik Chini	10	4CPHG043
						4CPHG060
						4CPHG071
						4CPHG114
						4CPHG108
						4CPHG110
						4CPHG112
						4CPHG115
						4CPHG130
						4CPHG143
				Penjuring	1	4CPHG044
				Telemong	3	4CPHG046
						4CPHG093
				Benus	3	4CPHG094
						4CPHG047
				Tanglir	5	4CPHG118
						4CPHG152
						4CPHG048
						4CPHG053
						4CPHG057
				Jempol	5	4CPHG106
						4CPHG107
						4CPHG049
						4CPHG050
4CPHG087						
Jengka	2	4CPHG088				
		4CPHG121				
Batu	1	4CPHG041				
Tekal	1	4CPHG051				
Teris	3	4CPHG056				
		4CPHG062				
		4CPHG081				
Gapoi	1	4CPHG082				
Teh	1	4CPHG083				
Berkelah	1	4CPHG086				
Retang	1	4CPHG090				
Tahan	1	4CPHG098				
N. Sembilan				Pertang	2	4CPHG105
						3NPHG002
Pahang				Kelau	4	4CPHG109
						4CPHG117
						4CPHG132
						4CPHG145
						4CPHG146
						4CPHG153

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID			
Pahang				Bilit	2	4CPHG119 4CPHG129			
				Perting	1	4CPHG120			
				Raub	1	4CPHG123			
N. Sembilan						3NPHG003 3NPHG004			
				Serting	5	3NPHG005			
Pahang						4CPHG101 4CPHG102			
				Belayar	1	4CPHG135			
				Anak Sg. Lepar	1	4CPHG136			
				Tasik Bera	1	4CPHG140			
				Tembeling	1	4CPHG142			
						4CPHG151			
				Kecau	3	4CPHG091 4CPHG116			
						4CBTM002			
				Bertam	4	4CBTM010 4CBTM011 4CBTM013			
				Burung	1	4CBTM005			
				Habu	1	4CBTM004			
				Lenggok	1	4CBTM003			
				Ringlelet	1	4CBTM001			
				Telom	2	4CBTM008 4CBTM009			
				N. Sembilan					
Triang	3	4CPHG024 4CPHG074							
Terla	2	4CBTM007 4CBTM012							
Tringkap	1	4CBTM006							
Salak	1	4CPHG122							
Ulong	1	4CBTM014							
		4CKTN015							
Pahang	36	Kuantan	8	Kuantan	8	4CKTN016 4CKTN017 4CKTN018 4CKTN019 4CKTN020 4CKTN021 4CKTN002			
						4CEND001 4CEND002			
				32AE	Endau	2	Anak Endau	2	
				33	Rompin	20	Aur	1	4CRPN005
							Bakar	1	4CRPN016
							Jekatih	2	4CRPN012 4CRPN013
							Jekatih		
							Jeram	1	4CRPN006
							Kepasing	1	4CRPN010

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID			
Pahang				Keratong	4	4CRPN011			
					4CRPN018				
					4CRPN021				
					4CRPN022				
				Pontian	1	4CRPN003			
					Pukin	3	4CRPN014		
				4CRPN015					
				4CRPN017					
				Rompin				5	4CRPN004
								4CRPN007	
								4CRPN008	
								4CRPN020	
				Sepayang	1	4CRPN002			
				34M	Merchong	2	Merchong	2	4CMCO002
								4CMCO003	
				34B	Bebar	5	Bebar	2	4CBBR001
								4CBBR002	
Serai	2	4CBBR004							
	4CBBR003								
36	Kuantan	10	Kuantan	1	4CBBR005				
				Belat	1	4CKTN001			
				Galing Besar	2	4CKTN003			
					4CKTN004				
				Pinang	1	4CKTN005			
				Charu	1	4CKTN006			
				Riau	1	4CKTN007			
				Kenau				1	4CKTN010
								1	4CKTN012
								1	4CKTN013
1	4CKTN014								
37	Balok	4	Balok	2	4CBLK001				
				4CBLK002					
				Yior	1	4CBLK003			
				Panjang	1	4CBLK004			
37A	Tonggok	2	Tonggok	2	4CTGK001				
				4CTGK002					
Terengganu	38	Kemaman	10	Cherating	1	4CCHE001			
					4TKMM003				
				Cherul	3	4TKMM004			
					4TKMM010				
					3	4TKMM007			
				Kemaman	4TKMM008				
					4TKMM009				
					Neram	1	4TKMM005		
					Perasing	1	4TKMM006		
					Ransan	1	4TKMM001		
Ransan	1	4TKMM002							
39K	Kertih	2	Kertih	2	4TKTH001				
				4TKTH002					

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
 Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID
Terengganu	40	Paka	7	Besul	1	4TPKA001
				Rengat	1	4TPKA002
				Rasau	2	4TPKA003
						4TPKA004
				Paka	3	4TPKA005
						4TPKA006
						4TPKA007
	41	Dungun	6	Telemboh	1	4TDGN001
						4TDGN002
						4TDGN003
				Dungun	5	4TDGN004
						4TDGN005
						4TDGN006
	42M	Marang	3	Kerak	1	4TMRG001
				Marang	1	4TMRG002
				Temala	1	4TMRG003
	43	Terengganu	15	Berang	2	4TTGG002
						4TTGG011
						4TTGG004
						4TTGG005
				Nerus	6	4TTGG006
						4TTGG010
						4TTGG014
						4TTGG015
				Pueh	2	4TTGG007
						4TTGG008
				Telemong	1	4TTGG012
					4TTGG001	
					4TTGG003	
					4TTGG009	
					4TTGG013	
44	Setiu	7	Chalok	3	4TSTU001	
					4TSTU005	
					4TSTU006	
			Bari	1	4TSTU002	
	Tarom		1	4TSTU003		
	Setiu		2	4TSTU004		
				4TSTU007		
Merang	1	4TMER001				
46	Besut	6	Jertih	1	4TBST001	
					4TBST002	
					4TBST003	
			Besut	5	4TBST004	
					4TBST005	
					4TBST006	
47	Kluang	1	Kluang	1	4TKLU005	
39C	Chukai	6	Ibok	2	4TCKI001	
					4TCKI002	
			Chukai	1	4TCKI003	
					4TCKI004	
			Ruang	2	4TCKI005	

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID			
Terengganu	42I	Ibai	3	Bungkus	1	4TCKI006			
				Ibai	3	4TIBI001 4TIBI002 4TIBI003			
				Landas	1	4TMCA001			
	42L	Merchang	2	Merchang	1	4TMCA002			
				Gali	1	4DKMS006			
	Kelantan	47K	Kemasin	6	Kemasin	2	4DKMS001 4DKMS003 4DKMS002		
Semerak					3	4DKMS004 4DKMS005			
Aring					1	4DKLT013 4DKLT020			
Belatop					3	4DKLT021 4DKLT046			
Ber					1	4DKLT018 4DKLT016			
Berok					3	4DKLT019 4DKLT022			
48		Kelantan	59	Betis	1	4DKLT017 4DKLT037			
				Chiku	2	4DKLT043 4DKLT014			
				Galas	5	4DKLT031 4DKLT032 4DKLT033 4DKLT034			
				Isos	1	4DKLT049 4DKLT001 4DKLT006 4DKLT010			
				Kelantan	7	4DKLT045 4DKLT054 4DKLT055 4DKLT056			
				Kelesa	1	4DKLT015			
				Kenkren	1	4DKLT047			
				Kerilla	2	4DKLT002 4DKLT003			
				Ketil	2	4DKLT036 4DKLT053			
				Lebir	5	4DKLT026 4DKLT027 4DKLT028 4DKLT029 4DKLT058 4DKLT023			
							Nenggiri	3	4DKLT024 4DKLT025
							Muring	1	4DKLT059

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID								
Kelantan				Nal	3	4DKLT007 4DKLT008 4DKLT009								
				Pehi	2	4DKLT011 4DKLT044								
				Pelaur	1	4DKLT048								
				Penangau	1	4DKLT050								
				Pergau	4DKLT004 4DKLT005 4DKLT038 4DKLT039 4DKLT040 4DKLT041 4DKLT051 4DKLT052	8								
					Rasau	1	4DKLT061							
					Relai	2	4DKLT012 4DKLT030							
					Sokor	1	4DKLT042							
					Tuang	1	4DKLT035							
					Golok	49	Golok	8	4DGLK002 4DGLK003 4DGLK004 4DGLK005 4DGLK006	5				
									Jedok	1	4DGLK008			
									Lanas	1	4DGLK007			
				Tasik Garu					1	4DGLK001				
				Pengkalan Chepa					48C	Pengkalan Chepa	6	Raja Gali	1	4DPCH001
												Keladi	1	4DPCH002
												Alor B	1	4DPCH003
Alor Lintah	1	4DPCH004												
Pengkalan Chepa	2	4DPCH005 4DPCH006												
Pengkalan Datu	48D	Pengkalan Datu	4		Pengkalan Datu	3	4DPDT001 4DPDT002 4DPDT003							
				Pasir Hor	1	4DPDT004								
				Kayan	50	Kayan	3	6QKYN001 6QKYN002 6QKYN003	3					
								Semunsam	50S	Semunsam	1	6QSMS001	1	
Sarawak	51	Sarawak	18									Kelantan	1	6QSWK017
				Kuap	2	6QSWK009 6QSWK010								
				Maong Kiri	1	6QSWK011								
				Samarahan	2	6QSWK013 6QSWK014								
				Sarawak	6	6QSWK001 6QSWK003 6QSWK004								

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID	
Sarawak						6QSWK006	
						6QSWK007	
						6QSWK008	
					Sarawak Kanan	1	6QSWK002
					Sarawak Kiri	1	6QSWK005
					Semadang	1	6QSWK016
					Semenggoh	1	6QSWK012
					Tabuan	1	6QSWK015
					Tapah	1	6QSWK018
		59	Balingian	2	Balingian	2	6QBLG001
							6QBLG002
		62	Similajau	2	Similajau	2	6QSML001
							6QSML002
		64	Niah	4	Niah	2	6QNIA001
							6QNIA002
							6QNIA003
							6QNIA004
							6QLBG001
		68	Limbang	5	Limbang	5	6QLBG002
							6QLBG003
							6QLBG004
							6QLBG005
		69	Trusan	1	Trusan	1	6QTSN001
		70	Lawas	3	Lawas	3	6QLWS001
							6QLWS002
							6QLWS003
					Karangan	1	6QSDG001
						1	6QSDG002
							6QSDG003
		52	Sadong	7	Sadong	4	6QSDG004
							6QSDG005
							6QSDG006
				Tarat	1	6QSDG007	
				Ai	2	6QLPR001	
						6QLPR002	
						6QLPR003	
	53	Lupar	8	Lupar	3	6QLPR004	
						6QLPR005	
				Sekerang	1	6QLPR006	
				Seterap	1	6QLPR007	
				Undup	1	6QLPR008	
	54	Saribas	3	Saribas	1	6QSRB001	
				Layar	2	6QSRB002	
						6QSRB003	
	55	Kerian	4	Kerian	2	6QKRN014	
						6QKRN015	
				Seblak	1	6QKRN016	
				Selalang	1	6QKRN017	
	56	Rajang	23	Baloi	1	6QRJG019	
				Binatang	1	6QRJG004	
				Daro	1	6QRJG021	

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID											
Sarawak	67	Baram	5	Baram	4	6QBRM001 6QBRM002 6QBRM003 6QBRM004											
				Tutuh	1	6QBRM005											
Sabah	71	Menggalong	2	Mengalolong	2	5SMGL001 5SMGL002											
	71B	Lingkungan	2	Lingkungan	1	5SLKG001											
	72	Padas	11	Bukau	1	5SLKG002											
				Bunsit	1	5SPDS001											
				Liawan	1	5SPDS002											
				Padas	4	5SPDS003 5SPDS004 5SPDS005 5SPDS011											
				Pangan		1	5SPDS006 5SPDS008										
				Pegalan		3	5SPDS009 5SPDS010										
				Tandulu		1	5SPDS007										
				73	Membakut	1	Membakut	1	5SMBT001								
				74	Kimanis	1	Kimanis	1	5SKMA001								
				74A	Bongawan	1	Bongawan	1	5SBGW001								
				74	Papar	5	Papar	5	5SPPR001 5SPPR002 5SPPR003 5SPPR004 5SPPR005								
	82	Paitan	1						Paitan	1	5SPTN001						
	76	Moyog	4						Moyog	4	5SMYG002 5SMYG001 5SMYG003 5SMYG004						
											77	Tuaran	5	5	Damit	2	5STUA001 5STUA002
															Song Sai	1	5STUA003
				Tuaran	2	5STUA004 5STUA005											
	78	Kedamaian	4	4	Tempasuk	2	5SKDI001 5SKDI002										
					Wariu	1	5SKDI003										
Kedamaian					1	5SKDI004											
78T					Tenghilan	1	Tenghilan	1	5STHL001								
79	Bingkongan	6	6	6	Bandau	1	5SBKG001										
					Menggaris	2	5SBKG002 5SBKG003										
					Bingkongan	2	5SBKG005 5SBKG006										
					Tandek	1	5SBKG004										

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID					
Sabah	80	Bengkoka	2	Bengkoka	2	5SBKK001 5SBKK002					
	83	Sugut	6	Bongkud	1	5SSUG001					
				Lohan	1	5SSUG002					
				Merali	1	5SSUG003					
				Sugut	3	5SSUG004 5SSUG005 5SSUG006					
					84	Labok	7	Kinipir	2	5SLBK001 5SLBK002	
								Liwagu	2	5SLBK003 5SLBK004	
	Maliau	1	5SLBK005								
	Labok	1	5SLBK006								
	Tungud	1	5SLBK007								
	Sualong	1	5SSAP001								
	Sapi	4	5SSAP002 5SSAP003 5SSAP004								
	Mounad	2	Mounad	2	5SMND001 5SMND002						
					87	Segama	3	5SSGM001 5SSGM002 5SSGM003			
	88	Tungku	2	Tungku	2	5STKU001 5STKU002					
	88A	Silabukan	2	Silabukan	2	5SSBK001 5SSBK002					
	89	Tingkeyu	2	Tingkeyu	2	5STKY001 5STKY002					
	91	Tawau	4	Tawau	4	5STWU001 5STWU002 5STWU003 5STWU004					
						91A	Apas	1	5APS001		
						91B	Balung	1	5SBLU001		
						92	Merotai	3	Merotai	3	5SMRT001 5SMRT002 5SMRT003
	93	Umas-Umas	1	5SUSM001							
	94	Brantian	1	5SBTN001							
	95	Kalabakan	3	Kalabakan	3	5SKBK001 5SKBK002 5SKBK003					
						76A	Sembulan	2	Sembulan	2	5SSBL001 5SSBL002
											76B

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau, 2020
Table 4.4 : List of the Catchments and Rivers Monitored, 2020

NEGERI / STATE	KOD WKA / WQH CODE	LEMBANGAN SUNGAI / RIVER BASIN	JUMLAH STESEN / TOTAL STATIONS	SUNGAI DIPANTAU / RIVER MONITORED	BIL. STESEN / NO. OF STATIONS	ID STESEN / STATIONS ID	
Sabah				Darau	1	5SLKS008	
				Menggatal	2	5SLKS006 5SLKS007	
	76C	Telipok	2	Telipok	2	5STLP001 5STLP002	
	85A	Segaliud	2	Segaliud	2	5SSLD001 5SSLD002	
	86	Kinabatangan	10	Karamuak	1	5SKBT006 5SKBT001	
				Kinabatangan	4	5SKBT002 5SKBT004 5SKBT005	
					Koyah	1	5SKBT003
					Leepang	1	5SKBT009
				Menanggul	1	5SKBT008	
				Pin	1	5SKBT010	
				Takala	1	5SKBT007	
				90	Kalumpang	5	Kalumpang
	Pang Burong 2	1	5SKLP004				
	Pang Burong 1	1	5SKLP005				
				1353		1353	

Jadual 4.5 : Senarai Stesen Pemantauan Muka Sauk Loji Rawatan Air
Table 4.5 : List of the Water Intake Monitoring Stations

NEGERI / STATE	LEMBANGAN SUNGAI / RIVER BASIN	KOD WKA / CODE WQR	SUNGAI / RIVER	ID STESEN / STATION ID	LOKASI MUKA SAUK / WATER INTAKE LOCATION
Perlis	Perlis	01	Terusan Mada	2PS13	Muka sauk Loji Rawatan Air Arau Fasa IV
				2PS14	Muka sauk Loji Rawatan Air TTPC, Sg. Baru
Kedah	Melaka	01PLC	Sg. Melaka	2LG05	Ulu Melaka
			Sg. Saga	2LG06	Padang Saga
			Sg. Temin	2KD10	Changloon
	Kedah	03	Sg. Ahning	2KD11	Padang Sanai
			Sg. Padang Terap	2KD12	Kuala Nerang
	Muda	05	Sg. Muda	2MD16	Jeneri
				2MD17	Jeniang
				2MD18	Bukit Selambau
2MD20				Pinang Tunggal	
2MD21				Nami	
P. Pinang	Pinang	06PP	Sg. Satu	2PG12	Batu Feringgi
			Sg. Sedim	2MD19	Bikan
Perak	Kurau	9	Sg. Air Hitam	2KU07	Muka sauk Loji Rawatan Air Jelai
			Sg. Batu Tegoh	2SP18	Muka sauk Loji Rawatan Air Bukit Larut
	Perak	13	Sg. Sauk	2PK61	Muka sauk Loji Rawatan Air Sauk
			Sg. Manong	2PK62	Muka sauk Loji Rawatan Air Manong
			Sg. Woh	2PK63	Muka sauk Loji Rawatan Air Kuala Woh
			Sg. Tesong	2PK64	Muka sauk Loji Rawatan Air Sg. Klah

Jadual 4.5 : Senarai Stesen Pemantauan Muka Sauk Loji Rawatan Air
Table 4.5 : List of the Water Intake Monitoring Stations

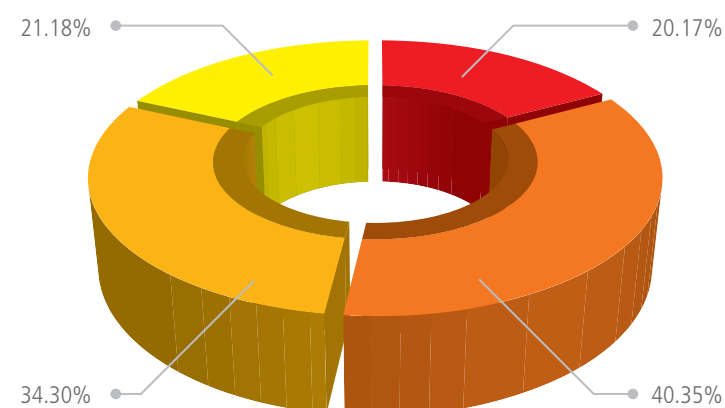
NEGERI / STATE	LEMBANGAN SUNGAI / RIVER BASIN	KOD WKA / CODE WQR	SUNGAI / RIVER	ID STESEN / STATION ID	LOKASI MUKA SAUK / WATER INTAKE LOCATION		
Selangor / Perak	Bernam		Sg. Trolak	2BM14	Muka sauk Loji Rawatan Air Trolak Timur		
			Sg. Gelinting	2BM15	Muka sauk Loji Rawatan Air Ulu Slim		
Selangor	Klang	18	Sg. Gombak	1K53	Muka sauk Loji Rawatan Air Gombak		
	Langat	19	Sg. Semenyih	1L09	Muka sauk Loji Rawatan Air Semenyih		
Melaka	Kesang	24	Sg. Batang Labu	1L26	Muka sauk Loji Rawatan Air Salak Tinggi		
			Sg. Chin-Chin	1KA08	Muka sauk Loji Rawatan Air Chin-chin		
Johor	Muar	25	Sg. Jelai	1MN23	Muka sauk Loji Rawatan Air Dangli		
			Sg. Muar	3MR38	Muka sauk Loji Rawatan Air Gombang		
			Sg. Jementah	3MR39	Muka sauk Loji Rawatan Air Jementah		
	Batu Pahat	26	Sg. Semberong Dam	3BP27	Semberong Dam, Jalan Air Hitam-Kluang		
	Benut	27B	Sg. Machap Dam	3BN10	Machap Dam, Pekan Machap		
	Pulai	29D	Sg. Pulai Dam	3PU04	Pulai Dam, Pekan Ulu Choh, Kangkar Pulai		
Pahang	Bertam	35P	Sg. Endau	32	Sg. Kahang	3ED38	Jalan Felda Kahang Timur, Kluang
			Sg. Terla	2CH14	Muka sauk Loji Rawatan Air Kuala Terla (WTSI)		
			Sg. Bertam	2CH15	Muka sauk Loji Rawatan Air Habu (WWB)		
			Sg. Ulong	2CH16	Brinchang Dam (WTBH)		
			Sg. Triang	4PH93	Muka sauk Loji Rawatan Air Sg. Triang		
	Pahang			Sg. Gapoi	4PH95	Muka sauk Loji Rawatan Air Gapoi	
					4PH96	Jmbtn Sg Jempol Jln Ladang Getah Lubuk Yu ~ Loji Air Sg Jerik	
				Sg. Jempol	4PH97	Jmbtn Sg Jempol Jln Bkt Tajau ~ Jengka 3 (Loji Air Jengka 3)	
				Sg. Mentiga	4PH98	Jmbtn Sg Metiga Jln Muadzam ~ Felda Chini (Loji Air Chini)	
				Terengganu	Terengganu	43	Sg. Terengganu
Kelantan	Kelantan	48	Sg. Chiku	4KE66	Muka sauk Felda Ciku 2 (Syarikat Air Kelantan)		
			Sg. Pahi	4KE67	Muka Sauk Loji Air Pahi (Syarikat Air Kelantan)		
			Sg. Kelantan	4KE68	Muka Sauk Loji Air Kelar Pasir Mas (syarika Air Kelantan)		
	Golok	49	Sg. Jeduk	4GL10	Jamb. Sg Jeduk Kg Bt Gajah Jln Tnh Merah ~ Jeli (Sykt Air Kelantan)		
	Kerian	55	Sg. Selalang	55SG01	Selalang Water Intake		
Sarawak	Rajang	56	Sg. Pakan	56PN01	Pakan Water Intake		
			Sg. Daro	56DR01	Daro Water Intake		
			Sg. Jemoreng	56JG01	Jemoreng Water Intake		
			Sg. Pila Parit	56PL01	Igan Water Intake		
			Mukah	58	Sg. Mukah	58MH05	Mukah Water Intake
Sabah	Padas	72	Sg. Padas	72PD04	Water Intake Jabatan Air Beaufort		
	Papar	75	Sg. Papar	75PP04	Jambatan Sekolah Kebangsaan Mandalipau		
				75PP05	Water Intake Kogopon, Jabatan Air Papar		
JUMLAH/ TOTAL	55	25	49	55			

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

PARAMETER	UNIT
Oksigen Terlarut / Dissolved Oxygen (DO)	mg/l, % saturated
Permintaan Oksigen Biokimia / Biological Oxygen Demand (BOD)	mg/l
Permintaan Oksigen Kimia / Chemical Oxygen Demand (COD)	mg/l
Pepejal Terampai / Suspended Solid (SS)	mg/l
pH	unit
Ammoniacal Nitrogen (NH ₃ -N)	mg/l
Suhu / Temperature	°C
Konduktiviti / Conductivity	µS
Kemasinan / Salinity	ppt
Kekeruhan / Turbidity	NTU
Pepejal terlarut / Dissolved solids	mg/l
Pepejal / Total solids	mg/l
Nitrat / Nitrate (NO ₃)	mg/l
Klorida / Chloride (Cl)	mg/l
Fosfat / Phosphate (PO ₄)	mg/l
Arsenik / Arsenic (As)	mg/l
Merkuri / Mercury (Hg)	mg/l
Kadmium / Cadmium (Cd)	mg/l
Kromium / Chromium (Cr)	mg/l
Plumbum / Lead (Pb)	mg/l
Zink / Zinc (Zn)	mg/l
Kalsium / Calcium (Ca)	mg/l
Ferum / Ferum (Fe)	mg/l
Kalium / Potassium (K)	mg/l
Magnesium / Magnesium (Mg)	mg/l
Natrium / Sodium (Na)	mg/l
Minyak dan Gris / Oil and Grease (O&G)	mg/l
Methylene Blue Active Substances (MBAS)	mg/l
E-coli	cfu/100ml
Total Coliform	cfu/100ml

PERMOHONAN DATA KUALITI AIR SUNGAI MENGIKUT KATEGORI, TAHUN 2020

RIVER WATER QUALITY DATA APPLICATIONS BY CATEGORY, YEAR 2020



Agensi-agensi atau Jabatan Kerajaan / Government Agencies or Departments	20	17%
Penuntut dan Pensyarah IPTA dan IPTS, Pelajar Malaysia di Universiti / kolej Luar Negara / Students and Lecturers of IPTA and IPTS, Malaysian Students in Universities / Colleges Overseas	40	35%
Perunding Swasta yang Dilantik oleh Kerajaan / Government Appointed Private Consultant	34	30%
Pihak Swasta / Private sector	21	18%
	115	100%

■ Agensi-agensi atau Jabatan Kerajaan / Government Agencies or Departments
■ Penuntut dan Pensyarah IPTA dan IPTS, Pelajar Malaysia di Universiti / kolej Luar Negara / Students and Lecturers of IPTA and IPTS, Malaysian Students in Universities / Colleges Overseas

■ Perunding Swasta yang Dilantik oleh Kerajaan / Government Appointed Private Consultant
■ Pihak Swasta / Private sector

KELAS / CLASS	PEMOHON / APPLICANT	BILANGAN PERMOHONAN / NUMBER OF APPLICATIONS	%
I	Pengurusan Tertinggi Kerajaan, Menteri, Timbalan Menteri / Top Management of the Government, Minister, Deputy Minister	0	
II	Ahli Parlimen, ADUN / Member of Parliament, ADUN	0	
III	KSU, TKSU Kementerian Sumber Asli & Alam Sekitar, KPAS, TKPO, TKPP / KSU, TKSU Ministry of Natural Resources & Environment, KPAS, TKPO, TKPP	0	
IV	Bahagian Keselamatan Negara, Majlis/Badan Kontigensi / National Security Division, Council/Contingency Body	0	
V	Agensi-agensi atau Jabatan Kerajaan / Government Agencies or Departments	20	17
VI	Penuntut dan Pensyarah IPTA dan IPTS, Pelajar Malaysia di Universiti / Kolej Luar Negara / Students and Lecturers of IPTA and IPTS, Malaysian Students in Universities / Colleges Abroad	40	35
VII	Perunding Swasta yang Dilantik oleh Kerajaan / Government Appointed Private Consultant	34	30
VIII	Pihak swasta / Private sector	21	18
IX	Orang Perseorangan (Penulis, Journalis Bebas) / Individual (Author, Freelance Journalist)	0	
X	Pertubuhan NGO, CBO dan Media / NGOs, CBOs and the Media	0	
XI	Luar Negara (Badan/agensi, Universiti, Kedutaan, Pesuruhjaya Tinggi) / Overseas (Body/agency, University, Embassy, High Commissioner)	0	
	Jumlah / Total	115	100

Rajah 4.2
Figure 4.2

Bilangan Permohonan Data Air Sungai, 2020
Number of River Water Data Applications, 2020

Jadual 4.7 : Program dan Aktiviti Program Pengawasan Kualiti Air Sungai
Table 4.7 : Programmes and Activities Related to River Water Quality Monitoring Programme

BIL	MESYUARAT/BENGGEL	TARIKH
1	Mesyuarat Jawatankuasa Penilaian Perunding (JPP) Bil.1/2020 Bagi Projek Kajian Semakan Semula Kriteria dan Standard Kualiti Air Sungai Malaysia, Jabatan Alam Sekitar-Laporan Kemajuan 2	5 Februari 2020
2	Bengkel untuk Membincangkan Laporan Kemajuan bagi Kajian Semakan Semula Kriteria dan Standard Kualiti Air Sungai Malaysia di Bawah Projek Rancangan Malaysia ke Sebelas (RMK-11)	15 Julai 2020
3	Mesyuarat Jawatankuasa Penilaian Perunding (JPP) Bil.2/2020 bagi Projek Kajian Semakan Semula Kriteria dan Standard Kualiti Air Sungai Malaysia, Jabatan Alam Sekitar-Laporan Kemajuan 3	16 Julai 2020
4	Mesyuarat dan Taklimat Kajian Semakan Semula Kriteria dan Standard Kualiti Air Sungai Malaysia	19 Oktober 2020
5	Mesyuarat Jawatankuasa Penilaian Perunding (JPP) Bil.3/2020 bagi Projek Kajian Semakan Semula Kriteria dan Standard Kualiti Air Sungai Malaysia, Jabatan Alam Sekitar-Deraf Laporan Akhir	21 Oktober 2020
6	Mesyuarat Jawatankuasa Penilaian Perunding (JPP) Bil.3/2020 bagi Projek Kajian Semakan Semula Kriteria dan Standard Kualiti Air Sungai Malaysia, Jabatan Alam Sekitar-Laporan Akhir	17 November 2020



Barisan Peserta Bengkel Kajian Semakan Semula Standard Kualiti Air Sungai Malaysia
Participants of the Workshop on the Review of the Malaysian River Water Quality Standards



Penerangan dan Soal Jawab oleh Pihak Perunding Kajian
Explanation and Q&A Session with Appointed Consultant

PENGAWASAN KUALITI AIR TANAH **GROUNDWATER QUALITY MONITORING**

PROGRAM-PROGRAM YANG DIJALANKAN **BERKAITAN PENGAWASAN KUALITI AIR TANAH**

Sepanjang tahun 2020, terdapat beberapa aktiviti yang telah dijalankan oleh Seksyen Pengawasan Kualiti Air Tanah, Bahagian Air Dan Marin. Aktiviti-aktiviti tersebut adalah seperti di bawah:

PROGRAM AUDIT STESEN PENGAWASAN KUALITI **AIR TANAH DI JOHOR**

Tujuan program audit ini dijalankan adalah seperti berikut:

1. Menjalankan penilaian terhadap kos penyelenggaraan luaran dan dalaman untuk Seksyen Pengawasan Kualiti Air Tanah yang di lawat.
2. Memastikan kerja persampelan yang dijalankan mengikut Prosedur Operasi Tetap Program Pengawasan Kualiti Air Tanah; dan
3. Mengenalpasti masalah pembangunan tanah di sekitar lokasi stesen pengawasan kualiti air tanah
4. Menyiasat aduan berkaitan stesen-stesen pengawasan kualiti air tanah

Program Audit ini telah dijalankan pada 7 & 8 Januari 2020 oleh pegawai-pegawai Seksyen Pengawasan Kualiti Air Tanah di stesen pengawasan air tanah Tapak Perlupusan Sisa Pepejal Ladang CEP, Kluang, Johor.

PROGRAMMES CONDUCTED BY GROUNDWATER **QUALITY MONITORING SECTION**

In 2020, there were several activities that had been carried out by the Groundwater Quality Monitoring Section, Water and Marine Division. The activities were as follows:

AUDITING OF GROUNDWATER QUALITY **MONITORING STATION IN JOHOR**

The objectives of this Audit programme were :

1. To carry out an assessment of the maintenance cost of Groundwater Quality Monitoring Stations;
2. To ensure the procedure of groundwater quality sampling has strictly followed the Standard Operation Procedure of the Groundwater Quality Monitoring Programme;
3. To identify land development problems around the location of groundwater quality monitoring stations; and
4. To investigate complaints related to groundwater quality monitoring stations

This Audit Programme was conducted on 7 & 8 January 2020 by officers of the Groundwater Quality Monitoring Section at the Groundwater Monitoring Station of the CEP Farm Solid Waste Disposal Site, Kluang, Johor.

Program Audit Stesen Pengawasan Kualiti Air Tanah bersama JAS Johor

Auditing of Groundwater Quality Monitoring Stations with DOE Johor



Membuat Perbincangan Mengenai Tren Kualiti Air Tanah Serta Semakan Terhadap SOP Program Pengawasan Kualiti Air Tanah

Site Discussion on Groundwater Quality Trends as well as a Review of the SOP of the Groundwater Quality Monitoring Program



Analisis Menggunakan Peralatan In-Situ oleh Dijalankan oleh Pegawai-pegawai JAS Johor
In-Situ Analysis Conducted by DOE Johor staff.

Proses Persampelan Air Tanah untuk Dianalisa Kandungannya di Jabatan Kimia, Johor
Sampling of Groundwater to be Analysed at Department of Chemistry, Johor



PROGRAM AUDIT STESEN PENGAWASAN KUALITI AIR TANAH DI MELAKA

Tujuan program audit ini dijalankan adalah seperti berikut:

1. Menjalankan penilaian terhadap kos penyelenggaraan luaran dan dalaman untuk Seksyen Pengawasan Kualiti Air Tanah yang di lawat.
2. Memastikan kerja persampelan yang dijalankan mengikut Prosedur Operasi Tetap Program Pengawasan Kualiti Air Tanah; dan
3. Mengenalpasti masalah pembangunan tanah di sekitar lokasi stesen pengawasan kualiti air tanah
4. Menyiasat aduan berkaitan stesen-stesen pengawasan kualiti air tanah

Program Audit ini telah dijalankan pada 26 Februari 2020 oleh pegawai-pegawai Seksyen Pengawasan Kualiti Air Tanah di stesen pengawasan air tanah Tapak Perlupusan Sisa Pepejal Ladang CEP, Kluang, Johor.

Program Audit Stesen Pengawasan Kualiti Air Tanah bersama JAS Melaka



Kerja-kerja Persampelan Air Tanah Mengikut SOP Program Pengawasan Kualiti Air Tanah
Sampling Process of Groundwater According to SOP of Groundwater Quality Monitoring Programme

AUDITING PROGRAMME OF GROUNDWATER QUALITY MONITORING STATIONS AT MELAKA

The objectives of this Audit programme were as follows:

1. To carry out an assessment regarding the maintenance cost of Groundwater Quality Monitoring Stations;
2. To ensure procedure of groundwater quality sampling has strictly followed the Standard Operation Procedure of the Groundwater Quality Monitoring Programme;
3. To identify land development problems around the location of groundwater quality monitoring stations; and
4. To investigate complaints related to groundwater quality monitoring stations

This Audit Programme was conducted on 26 February 2020 by officers of the Groundwater Quality Monitoring Section at the groundwater monitoring station of the Tabuh Naning Centre of Excellence, Melaka.

Auditing Programme of Groundwater Quality Monitoring Stations with DOE Melaka



Proses untuk Mendapatkan Kedalaman Aras Air Sedang Dijalankan oleh Pegawai JAS Melaka
The Process of Obtaining Water Table Height Being Carried Out by Officers of DOE Melaka

SESI REFRESHER COURSE BAGI PERSAMPELAN DI STESEN PENGAWASAN AIR TANAH BERDASARKAN PROSEDUR OPERASI TETAP (SOP) PROGRAM PENGAWASAN KUALITI AIR TANAH

Sesi ini merupakan cetusan idea dari Pengarah Bahagian Air & Marin sebagai persediaan Unit Pengawasan JAS Negeri seluruh Malaysia sebelum menjalani audit bagi SOP Program Pengawasan Kualiti Air Tanah oleh Jabatan Audit Negara mulai 26 Jun hingga 30 September 2020.

Sesi Refresher Course bagi Persampelan di Stesen Pengawasan Air Tanah Berdasarkan Prosedur Operasi Tetap (SOP) Program Pengawasan Kualiti Air Tanah



Penggunaan Senarai Semak dalam SOP bagi Memastikan Peralatan yang Dibawa ke Tapak adalah Lengkap
The use of Checklists in the SOP to Ensure that the Equipment Brought to the Site is Complete.

REFRESHER COURSE SESSION FOR SAMPLING AT GROUNDWATER MONITORING STATIONS BASED ON STANDARD OPERATING PROCEDURES (SOP) OF THE GROUNDWATER QUALITY MONITORING PROGRAMME

This Refresher Course session is the brainchild of the Director of Water & Marine Division aimed at preparing the respective DOE State Monitoring Units throughout Malaysia before undergoing an audit of the SOP Groundwater Monitoring Programme by the National Audit Department from 26 June to 30 September 2020.

Refresher Course Session for Sampling at Groundwater Surveillance Stations Based on the Standard Operating Procedures (SOP) of the Groundwater Quality Monitoring Programme



Kerja Persampelan Air Tanah Sedang Dijalankan
Sampling of Groundwater is in Progress



Pegawai Menjalankan Analisa In-Situ bagi Sampel Air Tanah yang Diperolehi
Officers Conducted In-Situ Analysis of the Groundwater Samples Obtained

LAIN-LAIN AKTIVITI YANG TELAH DIJALANKAN

Selain daripada aktiviti yang telah dinyatakan di atas, Seksyen Pengawasan Kualiti Air Tanah juga telah menyediakan ulasan dan menghadiri sebanyak 21 Mesyuarat Jawatankuasa Teknikal Penilaian Impak Alam Sekitar (EIA) dan Terma Rujukan EIA (TOR) serta bengkel pembentukan garis panduan-garis panduan EIA. Di samping itu, Seksyen Pengawasan Air Tanah juga telah memproses sebanyak 7 permohonan data yang telah diterima daripada agensi kerajaan dan institusi awam.

OTHER ACTIVITIES COMPLETED

In addition to the activities mentioned above, the Groundwater Quality Monitoring Section has also provided reviews and has attended 20 Environmental Impact Assessment (EIA) Technical Committee Meetings and Terms of Reference (TOR) meetings and workshops on the formation of EIA guidelines. Apart from that, the Groundwater Quality Monitoring Section has also processed 7 applications for data received from government agencies and public institutions.

Program Pengurusan dan Pemuliharaan Sumber Air

Penglibatan JAS dalam Program Pengurusan dan Pemuliharaan Sumber Air adalah memberi input dan khidmat nasihat bagi projek-projek pembangunan dan pengurusan sumber air. Antara Program-program tersebut adalah aktiviti yang dilaksanakan di bawah Dasar Sumber Air Negara (DSAN), National Water Balance Study (NAWABS), Pelan Pengurusan Lembangan Sungai Bersepadu (IRBM), Projek Pembangunan Sistem Maklumat Sumber Air (SMSA) dan lain-lain.

Program Kerjasama Inter-Agensi di Bawah Projek NKEA Greater KL / Klang Valley: River of Life (RoL).

Penglibatan JAS dalam Program RoL yang diterajui oleh Jabatan Pengairan dan Saliran (JPS) terdiri daripada beberapa pecahan mesyuarat dan aktiviti yang menfokuskan pelaporan status terkini kualiti air sungai yang dipantau, status penguatkuasaan terhadap punca-punca yang melepaskan efluen yang dikuatkuasakan Jabatan Alam Sekitar serta membincangkan isu dan penyelesaian masalah di dalam projek pelaksanaan RoL.

JAS meneruskan pemantauan kualiti air sungai di bawah Program River of Life (RoL). Objektif utama RoL adalah untuk membersihkan dan memperbaiki kualiti air di sepanjang 110 km bahagian-bahagian sungai di bawah Lembangan Sungai Klang. JAS berperanan dalam melaporkan kualiti air 35 buah stesen pemantauan di 18 sungai dalam Lembangan tersebut. Senarai 35 stesen pemantauan bagi RoL adalah seperti di **Jadual 4.9**.

Water Management and Conservation Programme

There are various programmes related to water management and conservation that require technical data and input from the DOE. Among them are programmes executed under the National Water Resources Policy (NWRP), National Water Balance Study (NAWABS), Integrated River Basin Management (IRBM), the development of Sistem Maklumat Sumber Air (SMSA) and others.

Inter Agency Collaboration Programme under NKEA Greater KL / Klang Valley : River of Life (RoL) Project.

In the RoL Programme led by Department of Irrigation dan Drainage (DID), DOE collaborated through meetings and activities, focussing on monitoring reports of the existing river water quality, the enforcement status of the effluent sources under the DOE's jurisdiction, as well as discussions on related issues and problem solving with regard to the RoL project implementation.

The Department of Environment continues its involvement in the River of Life Programme. The main objective of the RoL is to clean and improve the water quality of the 110 km stretch of rivers in the Klang River Water Basin. DOE's role is to report the water quality of 35 monitoring stations at 18 rivers of the abovementioned water basin. The list of 35 monitoring stations in the RoL programme is shown in **Table 4.9**.

Jadual 4.8 : Senarai Pelaksanaan Program Pengurusan dan Pemuliharaan Sumber Air
Table 4.8 : List of Water Management and Conservation Programmes

BIL / NO	NAMA MESYUARAT / NAME OF MEETING	TARIKH / DATE
1	Mesyuarat Pasukan Petugas Khas (Task Force) Projek 'River Of Life' Untuk Skop Pembersihan Sungai Bil 1/2020	27 Februari 2020
2	Mesyuarat Pasukan Petugas Khas (Task Force) Projek 'River Of Life' Untuk Skop Pembersihan Sungai Bil 2/2020	27 Ogos 2020
3	Mesyuarat Pasukan Petugas Khas (Task Force) Projek 'River Of Life' Untuk Skop Pembersihan Sungai Bil 3/2020	5 November 2020
4	Mesyuarat Jawatankuasa Penyelarasan dan Pelaksanaan (Coordination And Implementation Committee, CIC) bagi Projek River of Life (RoL) dan Sewerage Non River (SNR) Bil.1/2020	16 Januari 2020
5	Mesyuarat Jawatankuasa Penyelarasan dan Pelaksanaan (Coordination And Implementation Committee, CIC) Bagi Projek River of Life (RoL) dan Sewerage Non River (SNR) Bil.2/2020	18 Februari 2020
6	Mesyuarat Jawatankuasa Penyelarasan dan Pelaksanaan (Coordination And Implementation Committee, CIC) bagi Projek River of Life (RoL) dan Sewerage Non River (SNR) Bil.3/2020	22 Jun 2020

Jadual 4.8 : Senarai Pelaksanaan Program Pengurusan dan Pemuliharaan Sumber Air
Table 4.8 : List of Water Management and Conservation Programmes

BIL / NO	NAMA MESYUARAT / NAME OF MEETING	TARIKH / DATE
7	Mesyuarat Jawatankuasa Penyelarasan dan Pelaksanaan (Coordination And Implementation Committee, CIC) bagi Projek River of Life (RoL) dan Sewerage Non River (SNR) Bil.4/2020	15 Julai 2020
8	Mesyuarat Jawatankuasa Penyelarasan dan Pelaksanaan (Coordination And Implementation Committee, CIC) bagi Projek River of Life (RoL) dan Sewerage Non River (SNR) Bil.6/2020	26 November 2020
9	Lawatan Turun Padang (TUPA) Ke Tapak Pelupusan Sisa Pepejal (TPSP) Taman Beringin	23 November 2020
10	Lawatan Tapak Persampelan RoL	5 Mac 2020
11	Lawatan Tapak Persampelan RoL	6 Julai 2020
12	Mesyuarat Tapak Bil. 2/2020	21 Februari 2020
13	Mesyuarat Tapak Bil. 3/2020	6 Ogos 2020
14	Mesyuarat Progress Report - Implementation of Public Outreach Programme (POP) River Of Life (RoL) Phase 5	21 September 2020
15	Mesyuarat Progress Report - Implementation of Public Outreach Programme (POP) River Of Life (RoL) Phase 3a & 4	21 September 2020
16	Mesyuarat Progress Report - Implementation of Public Outreach Programme (POP) River Of Life (RoL) Phase 3b	17 September 2020
17	Mesyuarat Pembentangan Deraf Laporan Akhir - Implementation of Public Outreach Programme (POP) River Of Life (RoL) Phase 5	4 November 2020
18	Mesyuarat Pembentangan Deraf Laporan Akhir - Implementation of Public Outreach Programme (POP) River Of Life (RoL) Phase 3a & 4	3 November 2020
19	Mesyuarat Pembentangan Deraf Laporan Akhir- Implementation of Public Outreach Programme (POP) River Of Life (RoL) Phase 3b	6 November 2020
20	Mesyuarat Penyelarasan Isu Kebocoran Leachate di Tapak Pelupusan Sisa Pepejal (TPSP) Taman Beringin	9 Disember 2020
21	Mesyuarat Semakan VM Dan Skop Projek di Bawah RoL	18 - 20 Mac 2020
22	Mesyuarat Bersama KPAS Mengenai TPSP Taman Beringin dan RoL	5 November 2020
23	Mesyuarat Kumpulan Kerja Pelaksanaan Dasar Sumber Air Negara (PPPDSAN) - Mesyuarat Kumpulan Kerja 2 (WG2) : Maklumat Sumber Air Bil. 1/2020.	20 Februari 2020
24	Ulasan Terma Rujukan Kajian Dasar Air Negara	12 Jun 2020
25	Mesyuarat Libat Urus Agensi Luar SMSA	9 Mac 2020
26	Mesyuarat Libat Urus Agensi Luar SMSA Bil. 1/2020	7 Ogos 2020
27	Mesyuarat Libat Urus Agensi Luar SMSA Bil. 2/2020	25 Ogos 2020
28	Perbincangan SMSA JAS Bersama Wakil JPS	7 Oktober 2020
29	Mesyuarat Pembentangan Progress Report - Program Pembangunan Water Balance bagi Pengurusan Sumber Air Negara (Fasa 1) NAWABS bagi Lembangan Sungai Klang (Tawaran Semula)	3 Julai 2020
30	Mesyuarat Pembentangan Progress Report - Program Pembangunan Water Balance bagi Pengurusan Sumber Air Negara (Fasa 1) NAWABS bagi Lembangan Sungai Klang (Tawaran Semula)	17 Ogos 2020
31	Mesyuarat Pembentangan Inception Report - Program Pembangunan Water Balance bagi Pengurusan Sumber Air Negara (Fasa 1) National Water Balance Management System (NAWABS) bagi Lembangan Sungai Similajau (Tender Semula)	12 Februari 2020
32	Penyediaan Pelan Pengurusan Lembangan Sungai Bersepadu (IRBM) Sungai Marang Terengganu	Januari 2020

Jadual 4.8 : Senarai Pelaksanaan Program Pengurusan dan Pemuliharaan Sumber Air
Table 4.8 : List of Water Management and Conservation Programmes

BIL / NO	NAMA MESYUARAT / NAME OF MEETING	TARIKH / DATE
33	Mesyuarat Jawatankuasa Teknikal Bagi Laporan Interim No. 2 Projek Off River Storage (ORS) Melaka	2 Mac 2020
34	Kajian Kemungkinan Pembinaan / Menaiktaraf Bunded Storage Padang Saga, Langkawi, Kedah. - Mesyuarat Jawatankuasa Teknikal Bil.1 Bagi Laporan Awalan (Inception Report)	22 Jun 2020
35	Mesyuarat Terma Rujukan Bagi Proposed Integrated Tourism And Resort Centre On Lot 34497 And Lot 34498, Mukim Tanjung Dua Belas, Daerah Kuala Langat, Selangor Darul Ehsan Oleh First Allied Holdings Sdn Bhd	19 Jun 2020

Jadual 4.9 : Senarai Stesen Pemantauan Programme River of Life (RoL)
Table 4.9 : List of River Monitoring Stations in the RoL Programme

LEMBANGAN SUNGAI / RIVER BASIN	SUNGAI DIPANTAU / RIVER MONITORED	BILANGAN STESEN / NUMBER OF STATIONS
Klang	Sg. Batu	4
	Sg. Gombak	3
	Sg. Jinjang	3
	Sg. Klang	6
	Sg. Semelah	1
	Sg. Air Busuk	1
	Sg. Ampang	2
	Sg. Belongkong	1
	Sg. Bunos	3
	Sg. Kerayong	2
	Sg. Keroh	2
	Sg. Toba	1
	Sg. Untut	1
	Sg. Anak Air Batu	1
	Sg. Kuyoh	1
	Sg. Rasau	1
	Sg. Payong	1
	Sg. Penchala	1
Jumlah / Total	18	35

PROGRAM PEMANTAPAN INVENTORI PUNCA PELEPASAN BEBAN PENCEMARAN AIR

Seksyen Audit Beban Pencemaran (SABP), Bahagian Air dan Marin, JAS Ibu Pejabat telah menjalankan pengemaskinian data inventori punca-punca pencemar di sekitar stesen pengawasan kualiti air sungai di bawah Program Pengawasan Kualiti Alam Sekitar

PROGRAMME TO IMPROVE THE INVENTORY OF SOURCES OF WATER POLLUTION LOAD DISCHARGE

The Pollution Load Audit Section (SABP), Water and Marine Division, DOE Headquarters has updated the inventory data on pollutant sources around EQMP river water quality monitoring stations throughout Malaysia, especially for water quality monitoring stations that



Sesi Taklimat dengan Pengarah dan Pegawai JAS Terengganu Briefing Session with the Director of DOE Terengganu and Respective Officers

EQMP terutamanya bagi stesen-stesen pengawasan yang pernah mencatatkan Notification of Pollution Event (NPE) atau yang telah merekodkan penurunan kualiti yang ketara dalam tempoh 2017 dan 2018.

Pada tahun 2020, sebanyak 3 buah stesen pengawasan kualiti air sungai telah dipilih dan diperiksa sebelum pandemik COVID-19 melanda negara. Stesen-stesen tersebut ialah:

- i. Stesen Sg. Langat, Selangor (Intake Bukit Tampoi) - CR08B, bertarikh 11 Februari 2020;
- ii. Stesen Pengawasan Manual Sungai Merlimau (3MMLU003, 3MMLU002, 3MMLU001), bertarikh 24- 26 Februari 2020; dan
- iii. Stesen Pengawasan Manual Sungai Ibai (4TIBI001, 4TIBI002, 4TIBI003), bertarikh 9-12 Mac 2020.

Program ini melibatkan kerjasama pegawai daripada SABP, Seksyen Kawal Selia (SKS), Bahagian Udara JAS Ibu pejabat serta JAS Negeri yang berkaitan.

Objektif program ini adalah untuk menjalankan verifikasi maklumat mengenai punca-punca pencemar yang menyumbang kepada peningkatan paras pencemaran di sekitar stesen pengawasan kualiti air sungai yang telah dikenalpasti.

Antara pengisian program adalah mengadakan taklimat kepada pegawai JAS Negeri berkaitan dan menjalankan pemeriksaan pada stesen pengawasan yang terlibat dan punca- punca pencemar dalam lingkungan

have recorded Notification of Pollution Event (NPE) or who have recorded significant quality declines during the period 2017 and 2018.

In 2020, a total of 3 river water quality monitoring stations were selected and inspected prior to the COVID-19 pandemic hitting this country. The stations were:

- i. Sg. Langat, Selangor (Intake Bukit Tampoi) - CR08B, dated 11 February 2020;
- ii. Sungai Merlimau Manual Surveillance Station (3MMLU003, 3MMLU002, 3MMLU001), dated 24 - 26 February 2020; and
- iii. About 5km radius from Sungai Ibai Manual Surveillance Station (4TIBI001, 4TIBI002, 4TIBI003), dated 9-12 March 2020.

This programme involves the cooperation of officers from the Regulatory Section (SKS) of the SABP, the Air Division, DOE Headquarters; and relevant State DOEs.

The objective of the programme is to conduct information verification of the pollution sources that have contributed to the increase in pollution levels at the identified river water quality monitoring stations.

Among the scope of the programme is the briefing to respective State DOE officers as well as the performing of on-site inspection at selected monitoring stations and the surrounding pollution sources within

5km untuk verifikasi dan mengemaskini data. Selain itu juga, program ini turut melibatkan pengambilan sampel secara in-situ atau persampelan rasmi bagi tujuan penguatkuasaan sekiranya ketidakpatuhan dikesan semasa pemeriksaan.

Pelaksanaan program telah berjaya mengenalpasti punca- punca pencemaran yang telah menyebabkan penurunan kualiti air di stesen pengawasan kualiti air sungai berkenaan. Program ini akan diteruskan ke seluruh Malaysia secara berperingkat pada tahun akan datang bagi memastikan kualiti air sungai di Malaysia dapat dipertingkatkan.

5km range for update and verification of data. In addition, this programme also involves in-situ sampling or formal sampling for enforcement purpose if noncompliance is detected during the inspection.

This programme has successfully managed to verify pollution sources that have caused degradation of water quality at those stations. This programme will be continued in stages to cover the entire country in the coming years in an effort to upgrade and ensure the river water quality.



Persampelan In-Situ di Takat Pelepasan Salah Satu Loji Kumbahan yang Diperiksa di Merlimau
In-Situ Sampling at the Point of Discharge at One of the Inspected Sewage Plants in Merlimau



Persampelan Kualiti Air Sungai Merlimau Menggunakan Alat YSI EXO2 Multiparameter Sonde.
Water Quality Sampling of Merlimau River Using YSI EXO2 Multiparameter Sonde Probe.

BENGKEL PENYELARASAN DAN KOORDINASI NOTIFICATION OF POLLUTION EVENT (NPE) PROGRAM PENGAWASAN KUALITI ALAM SEKITAR (EQMP) BAGI KOMPONEN AIR SUNGAI DAN MARIN

Bengkel Penyelarasan dan Koordinasi Notification Of Pollution Event (NPE) di dalam Program Pengawasan Kualiti Alam Sekitar (EQMP) bagi komponen air sungai dan marin telah diadakan pada 10-14 Ogos 2020 bertempat di Acapella Suites Hotel, Shah Alam, Selangor. Bengkel ini telah dianjurkan dengan usaha sama Bahagian Air dan Marin dan Seksyen Kawal Selia Ibu Pejabat JAS. Bengkel ini telah dirasmikan oleh YBrs. Puan Norlin binti Jaafar, Ketua Pengarah Alam Sekitar dan turut dihadiri oleh YBrs. Encik Wan

WORKSHOP ON COORDINATION OF THE NOTIFICATION POLLUTION EVENT (NPE) IN THE ENVIRONMENTAL QUALITY MONITORING PROGRAMME (EQMP) FOR THE RIVER AND MARINE WATER COMPONENTS

A Workshop on Coordination of the NPE in the EQMP for the river and marine water components was held on from 10 - 14 August 2020 at the Acapella Suites Hotel, Shah Alam, Selangor. The organisation of this workshop was a collaborative effort between the Water and Marine Division and the Regulatory Section of the Department of Environment (DOE) Headquarters. This workshop was officiated by Madam Norlin binti Jaafar, Director General of Department of Environment (DOE) and was also attended by Mr. Wan Abdul Latiff

Abdul Latiff bin Wan Jaafar, Timbalan Ketua Pengarah (Operasi), Pengarah-Pengarah dari Bahagian Air dan Marin, Bahagian Penguatkuasa, Bahagian Teknologi Maklumat, pegawai-pegawai-kanan JAS Ibu Pejabat dan Negeri.

Objektif bengkel ini diadakan adalah untuk membincangkan, memantapkan dan menambahbaik penyelarasan dan koordinasi NPE di bawah Program EQMP bagi komponen air sungai dan marin untuk penyediaan Draf Prosedur Tetap Operasi (PTO) NPE, penyelarasan kemasukan maklumat NPE ke dalam Sistem e-KAS Versi 4.0 yang sedang dibangunkan oleh Bahagian Teknologi Maklumat Ibu Pejabat JAS, dan juga mendapatkan input bagi penyediaan Draf PTO Investigative (IS) EQMP.

Bengkel telah dihadiri oleh seramai 35 orang pegawai yang terdiri daripada ahli-ahli jawatankuasa kerja yang dilantik oleh YBr. Encik Wan Abdul Latiff bin Wan Jaffar, Timbalan Ketua Pengarah (Operasi) JAS, wakil-wakil pejabat JAS Negeri dan Ibu Pejabat, pakar-pakar bidang daripada Pakar Scieno Transwater Sdn. Bhd. iaitu Dr Abdul Rani Abdullah, Dr Hii Yii Siang dan Encik Jeyaprakash Kandasamy. Output bengkel ini adalah draf PTO NPE Sungai, Marin dan IS yang menjadi asas dan tunjang bagi penyelarasan dan koordinasi siasatan NPE serta tindakan IS dalam EQMP.

bin Wan Jaafar, Deputy Director General (Operations); the Directors of the Water and Marine Division, the Enforcement Division, the Information Technology Division; as well as senior-officers of DOE Headquarters and State Offices.

The objectives of this workshop were to discuss, strengthen and improve the coordination of NPE for the river and marine water components under the EQMP Programme which in turn helps in preparing the Draft for the Standard Operation Procedures (SOP) for NPE, in coordinating the input of NPE information into the e-KAS System Version 4.0 which is being developed by the Information Technology Division; and in obtaining input for drafting the SOP for EQMP Investigative Study (IS).

The workshop was attended by a total of 35 officers consisting of working committees appointed by Mr. Wan Abdul Latiff bin Wan Jaffar, Deputy Director General (Operations) DOE, the representative officers of DOE's States and Headquarters, field experts from Pakar Scieno Transwater Sdn. Bhd. namely Dr. Abdul Rani Abdullah, Dr Hii Yii Siang and Mr. Jeyaprakash Kandasamy. The output of this workshop was the Draft of the SOPs for NPE River, Marine and IS which were the basis for the coordination in investigating the NPE as well as IS action taken in EQMP.



Perasmian Bengkel oleh Ketua Pengarah Alam Sekitar Malaysia
The Workshop was Officiated by Director General of Environment Malaysia



Sesi Mesyuarat yang Diadakan dalam Bengkel
Meeting Session Held in the Workshop



Sesi Taklimat yang Dijalankan dalam Bengkel
Briefing Session Conducted in the Workshop

BENKEL SEMAKAN SEMULA PROSEDUR TETAP OPERASI (PTO) PENGAWASAN MARIN MALAYSIA DAN DERAJAT MODUL LATIHAN PENGAWASAN MARIN MALAYSIA

Bengkel semakan semula PTO Pengawasan Marin Malaysia dan Pembangunan Deraf Modul Latihan telah diadakan pada 7 – 11 September 2020 bertempat di Corus Paradise Resort, Port Dickson, Negeri Sembilan. Bengkel ini telah dianjurkan oleh Bahagian Air dan Marin, Ibu Pejabat JAS yang turut dihadiri oleh En. Mohd Hidzir bin Bakar, Pengarah Bahagian Air dan Marin.

Objektif bengkel ini diadakan adalah untuk mendapatkan input dan pandangan daripada pegawai-pegawai JAS yang berpengalaman dalam bidang pengawasan kualiti air marin dan telah dilantik sebagai ahli-ahli kumpulan kerja bagi mengemaskini PTO Pengawasan Marin sedia ada iaitu versi 2011 dan memuktamadkan draf Modul Latihan Pengawasan Marin.

Bengkel telah dihadiri oleh seramai 30 orang yang terdiri daripada ahli-ahli Jawatankuasa Kerja yang dilantik oleh YBr. Encik Wan Abdul Latiff bin Wan Jaffar, Timbalan Ketua Pengarah (Operasi) JAS, wakil-wakil pejabat JAS Negeri dan Ibu Pejabat, pakar-pakar bidang daripada Pakar Scieno Transwater Sdn. Bhd. iaitu Dr Abdul Rani Abdullah, Dr Hii Yii Siang dan Encik Jeyaprakash Kandasamy. Turut hadir sebagai pakar bidang bagi bengkel ini adalah Encik Gopinath Nagaraj daripada Fanli Marine and Consultancy Sdn. Bhd. Output bengkel ini adalah draf PTO Pengawasan

WORKSHOP ON REVIEWING THE STANDARD OPERATING PROCEDURE (SOP) OF MALAYSIA MARINE MONITORING AND THE DRAFT TRAINING MODULE FOR MARINE MONITORING

The workshop on Reviewing the Standard Operating Procedure of Malaysia Marine Monitoring and the Draft Training Module for Marine Monitoring was held from 7 – 11 September 2020 at Corus Paradise Resort, Port Dickson, Negeri Sembilan. This workshop was conducted by the Water and Marine Division, Headquarters of the Department of Environment (DOE). The Director of the Water and Marine Division, En. Mohd Hidzir bin Bakar, was also in attendance at this workshop .

The objective of this workshop was to obtain input and views from DOE officers who were experienced in the field of marine water monitoring and who were appointed members of the working group to update the existing SOP on Marine Monitoring version 2011 and to finalise the draft on the Training Module for Marine Monitoring.

The workshop was attended by a total number of 30 officers consisting of working committees appointed by Mr. Wan Abdul Latiff bin Wan Jaffar, Deputy Director General (Operations) DOE, representative officers of DOE's States and Headquarters, experts from Pakar Scieno Transwater Sdn. Bhd. namely Dr Abdul Rani Abdullah, Dr Hii Yii Siang and Mr. Jeyaprakash Kandasamy. Also in attendance as a field expert was Mr. Gopinath Nagaraj from Fanli Marine and Consultancy Sdn.Bhd. The output of this workshop was the draft of SOPs for Malaysia Marine Monitoring which was



Peserta Bengkel yang Terdiri daripada Pegawai Jabatan Alam Sekitar Negeri dan Ibu Pejabat
Workshop Participants Consisting of Officers from the DOE State Department of Environment and Headquarters

Marin yang telah dikemaskini berdasarkan versi asal pada tahun 2011 dan draf Modul Latihan Pengawasan Marin. Dokumen ini adalah sebagai bahan rujukan dan panduan kepada pegawai-pegawai JAS yang akan menjalankan kerja-kerja pengawasan kualiti air marin dan persampelan marin bagi tujuan siasatan dan kajian khas di persekitaran marin di Malaysia.

MESYUARAT PENYELARASAN PENGAWASAN KUALITI AIR DAN KONTINGENSI TUMPAHAN MINYAK KEBANGSAAN 2020

Mesyuarat Penyelarasan Pengawasan Kualiti Air Dan Kontingensi Tumpahan Minyak Kebangsaan 2020 telah dijalankan pada 25 - 26 November 2020 bertempat di Bilik Mesyuarat Cempaka, JAS Ibu Pejabat.

Mesyuarat ini dijalankan secara fizikal di Bilik Cempaka, JAS Ibu Pejabat serta secara maya menggunakan aplikasi Microsoft Teams dan Zoom Meeting bagi semua pegawai-pegawai JAS Ibu Pejabat yang bekerja dari rumah dan pegawai-pegawai JAS Negeri yang

updated using the original version in 2011, as a basis and also the draft of the Training Module for Marine Monitoring. These documents will be the reference and guide for DOE officers who will be carrying out marine monitoring and marine sampling for investigative purposes, and for special research studies in the marine environment in Malaysia.

WATER QUALITY MONITORING AND OIL SPILL CONTINGENCY COORDINATION MEETING 2020

The Water Quality Monitoring and Oil Spill Contingency Coordination Meeting 2020 was held from 25 - 26 November 2020 at the Cempaka Meeting Room, DOE Headquarters.

This meeting was conducted Face-to-Face as well as virtually through the Microsoft Teams and Zoom Meeting applications with all DOE Headquarters officers who were working from home and State DOE officers who were not able to attend due to the



Mesyuarat Dijalankan Secara Maya Menggunakan Aplikasi Microsoft Teams dan Zoom Meeting
Virtual Meetings Via the Microsoft Teams and Zoom Meeting Applications

tidak dapat hadir memandangkan Perintah Kawalan Pergerakan Bersyarat (PKPB) yang dilaksanakan oleh kerajaan.

Objektif mesyuarat adalah:

- i. Penyelarasan dan pementapan aktiviti pengawasan kualiti air sungai, air marin dan air tanah;
- ii. Penyelarasan aplikasi sistem pengawasan kualiti alam sekitar (EQMP);
- iii. Penyelarasan aktiviti berkaitan kontingensi tumpahan minyak.
- iv. Mendapatkan input daripada pegawai- pegawai di lapangan yang melaksanakan aktiviti pengawasan terutamanya berkaitan perolehan, pembekalan dan penyelenggaraan peralatan pengawasan dan telaga-telaga pengawasan.

Conditional Movement Control Order (PKPB) imposed by the government.

The objectives of the meeting were:

- i. To coordinate and consolidate monitoring activities related to river, marine and groundwater quality ;
- ii. To coordinate the environmental quality monitoring system (EQMP) applications;
- iii. To coordinate activities related to oil spill contingency.
- iv. Obtain input from field officers who conduct monitoring activities related to the procurement, supply, and maintenance of monitoring equipment and monitoring wells.

PROGRAM KAWALAN PENCEMARAN DAN PENGURUSAN TINDAK BALAS TUMPAHAN MINYAK

Pada tahun 2020, Bahagian Air & Marin telah menganjurkan 5 program berkaitan kawalan pencemaran dan pengurusan tindak balas tumpahan minyak (**Jadual 4.10**). Program ini telah dihadiri oleh pegawai JAS, agensi-agensi kerajaan dan swasta di bawah Jawatan- kuasa Kebangsaan Kawalan Tumpahan Minyak (JKKTM) serta pemegang taruh yang berkaitan.

OIL SPILL POLLUTION CONTROL AND RESPONSE MANAGEMENT PROGRAMME

In 2020, the Marine and Water Division organized 5 programmes related to the oil spill pollution control and response management (**Table 4.10**). The programmes were attended by DOE officers, government and private agencies under the National Oil Spill Control Committee (NOSCC) as well as related stakeholders.

Jadual 4.10 : Program dan Tarikh Pelaksanaan
Table 4.10 : Programmes and Dates Conducted

BIL / NO	PROGRAM/BENKEL PROGRAMME/WORKSHOP	TARIKH / DATE
1	Bengkel Hydrocarbon Fingerprinting System (HyFIS) Hydrocarbon Fingerprinting System (HyFIS) Workshop	2 – 3 March 2020
2	Kunjungan Hormat Oleh Ketua Pengarah Alam Sekitar Ke Pejabat Ketua Pengarah Laut Courtesy Visit by Director General of Environment to the Director of Marine Department	6 March 2020
3	Bengkel Pengubalan Draf Peraturan Kawalan Pencemaran Minyak Dari Kapal Dan Instalasi Marin Workshop on Draft Regulation of Oil Pollution Control from Ship and Marine Installation	24 - 26 August 2020
4	Bengkel Pewujudan Pelan 'Oiled Wildlife Response' di Malaysia Workshop on Development of Malaysia Oiled Wildlife Response Plan	1 – 4 Sept 2020
5	Bengkel Lanjutan Pengemaskinian Rancangan Kontingensi Kebangsaan Kawalan Tumpahan Minyak (RKKKTM) Workshop on Reviewing and Updating National Oil Spill Contingency Plan (NOSCP)	22 – 25 Sept 2020

Objektif pengajaran program adalah:

- i. Mendapatkan input/ulasan daripada ahli JKKTM dalam mengemaskini Rancangan Kontingensi Kebangsaan Kawalan Tumpahan Minyak (RKKKTM)
- ii. Membangunkan draf Malaysia Oiled Wildlife Response Plan.
- iii. Mendapatkan input/ ulasan daripada agensi dan pemegang taruh dalam penggubalan draf peraturan kawalan tumpahan minyak
- iv. Membincangkan kerjasama dua-hala antara JAS dan Jabatan Laut Malaysia dalam memperkukuhkan penguatkuasaan
- v. Memberi latihan hands-on penggunaan aplikasi Hydrocarbon Fingerprinting System (HyFIS) kepada pegawai JAS

The objectives of the programmes were :

- i. To obtain input/ comments from the National Oil Spill Control Committee regarding updates on the National Oil Spill Contingency Plan;
- ii. To develop a draft of Malaysia Oiled Wildlife Response Plan;
- iii. To obtain input/ comments from agencies and stakeholders in the drafting of the regulations on oil pollution control;
- iv. To discuss the bilateral cooperation between DOE and the Marine Department of Malaysia in strengthening the enforcement; and
- v. To give hands-on training on the Hydrocarbon Fingerprinting System (HyFIS) to the DOE officers.



Bengkel Hydrocarbon Fingerprinting System (HyFIS) di Bilik ICT JAS Ibu Pejabat Putrajaya pada 2 hingga 3 Mac 2020

Hydrocarbon Fingerprinting System (HyFIS) Workshop at ICT Room, DOE Headquarters, Putrajaya held from 2 - 3 March 2020



Kunjungan Hormat oleh Ketua Pengarah Alam Sekitar ke Ibu Pejabat Jabatan Laut Malaysia, Pelabuhan Klang Selangor pada 6 Mac 2020

Courtesy Visit by Director General of Environment to Marine Department Headquarters, Port Klang Selangor on 6 March 2020





Bengkel Pengubalan Draf Peraturan Kawalan Pencemaran Minyak dari Kapal dan Instalasi Marin di Hotel Bayview, Melaka pada 24 hingga 26 Ogos 2020

Workshop on Draft Regulation of Oil Pollution from Ship and Marine Installation at Bayview Hotel, Melaka held from 24 - 26 August 2020



Bengkel Pewujudan Pelan Oiled Wildlife Response di Malaysia di Klana Beach Resort, Port Dickson pada 1 hingga 4 September 2020

Workshop on Development of Malaysia Oiled Wildlife Response Plan at Klana Beach Resort, Port Dickson Held from 1 - 4 September 2020



Bengkel Lanjutan Pengemaskinian Rancangan Kontingensi Kebangsaan Kawalan Tumpahan Minyak (RKKKTM) di Hotel Imperial Heritage, Melaka pada 22 hingga 25 September 2020

Workshop on Reviewing and Updating the National Oil Spill Contingency Plan (NOSCP) at Imperial Heritage Hotel, Melaka Held from 22 - 25 September 2020.

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

Tabung RFC ini telah ditubuhkan pada 11 Februari 1981 bagi tujuan kegunaan dalam melawan kejadian tumpahan minyak dari kapal-kapal yang melalui Selat Melaka dan Selat Singapura

Pengurusan Tabung ini dilaksanakan secara bergilir-gilir dikalangan tiga (3) buah negara anggota iaitu Malaysia, Singapura dan Indonesia bagi tempoh lima (5) tahun setiap giliran. Pada tahun 2017, pengurusan tabung ini ditadbir oleh JAS Malaysia dan dipengerusikan oleh Ketua Pengarah, Jabatan Alam Sekitar Malaysia untuk tempoh lima (5) tahun.

Di antara aktiviti yang dilaksanakan oleh Jawatankuasa Tabung Pusingan pada tahun 2020 adalah seperti berikut:

- i. Mesyuarat Teknikal RFC secara maya pada 28 Julai 2020 dan dihadiri oleh wakil-wakil dari Maritime Port Authority (MPA) Singapura, Ministry of Transportation of the Republic Indonesia, JAS Malaysia dan Jabatan Laut Malaysia.
- ii. Mesyuarat Jawatankuasa Induk ke-39 RFC secara maya pada 12 November 2020 dan dihadiri oleh ahli-ahli RFC dari Maritime Port Authority (MPA) Singapura, Ministry of Transportation of the Republic Indonesia, JAS Malaysia, Kaunselor Malacca Straits Council of Japan dan wakil dari Jabatan Laut Malaysia.
- iii. Pertandingan Rekacipta Logo RFC dan pembangunan laman web RFC

STRAITS OF MALACCA AND SINGAPORE REVOLVING FUND COMMITTEE (RFC)

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

The Fund is administered on a rotation basis among the three (3) member countries, namely Malaysia, Singapore and Indonesia for a period of five (5) years each. In 2017, the fund was administered by the DOE, Malaysia and chaired by the Director General, Department of Environment Malaysia for a duration of five (5) years.

Among the activities carried out by the RFC in the year 2020 were :

- i. The Virtual RFC on 28th July 2020 attended by delegations from the Maritime Port Authority (MPA) Singapore, Ministry of Transportation of the Republic Indonesia, DOE Malaysia, and Marine Department of Malaysia.
- ii. The Virtual 39th Meeting of the RFC on 12th November 2020 attended by RFC members from Maritime Port Authority (MPA) Singapore, Ministry of Transportation of the Republic Indonesia, DOE Malaysia, Counsellor Malacca Straits Council of Japan and the representative from Marine Department Malaysia.
- iii. The RFC Logo design competition and development of the RFC website.



Mesyuarat Teknikal Revolving Fund Committee (RFC) secara maya pada 28 Julai 2020
The Virtual Revolving Fund Committee Technical Meeting (RFC) on 28 July 2020.



Mesyuarat Jawatankuasa Induk ke-39 Revolving Fund Committee (RFC) secara maya pada 12 November 2020

The Virtual 39th Meeting of the Revolving Fund Committee (RFC) on 12 November 2020

KES PENCEMARAN TUMPAHAN MINYAK DI PERAIRAN MALAYSIA

Sepanjang tahun 2020, sejumlah 30 kes aduan pencemaran tumpahan minyak di perairan Malaysia telah dilaporkan kepada JAS. Daripada jumlah tersebut, siasatan mendapati jumlah kes yang berasas hanya 16 kes manakala 14 kes dikategorikan sebagai kes tidak berasas. Perairan Malaysia di Laut China Selatan telah merekodkan kes tumpahan minyak paling banyak iaitu 8 kes, diikuti Selat Melaka dengan 6 kes dan 2 kes di Selat Johor (**Jadual 4.11**).

Daripada 16 kes tumpahan minyak tersebut, 3 kes adalah berpunca dari kapal, 2 kes berpunca dari pelabuhan/terminal, 1 kes berpunca dari pelantar dan 10 kes adalah berpunca dari punca yang tidak diketahui (**Jadual 4.12**).

OIL SPILL POLLUTION CASES IN MALAYSIAN WATERS

Throughout 2020, there were 30 cases of oil spill pollution in Malaysian waters reported to the DOE. Based on the investigation, only 16 cases had a basis of complaint while 14 cases were categorized baseless. The most number of cases occurred at the South China Sea within Malaysian waters, which recorded 8 cases, followed by the Straits of Malacca with 6 cases and the Straits of Johor, with 2. (**Table 4.11**)

Of the 16 cases of oil spills, 3 cases were caused by shisps, 2 from port/terminal activities, while 1 case was spillage from the platform. There were 10 cases from unknown sources. (**Table 4.12**)

Jadual 4.11: Kes Pencemaran Tumpahan Minyak di Perairan Malaysia pada Tahun 2020
Table 4.11: Oil Spill Pollution Cases in Malaysian Waters in 2020

LOKASI / LOCATION	KAWASAN / AREA		BIL. KES / NO. OF CASES	NEGERI / STATE
Laut China Selatan / South China Sea	Perairan Malaysia / Malaysian Waters	Semenanjung / Peninsular	6	Terengganu (1) Pahang (1) Johor (4)
		Sabah, Sarawak & W.P Labuan	1	Sarawak (1)
	Zon Ekonomi Eksklusif (ZEE) / Exclusive Economic Zone (EEZ)	1	Terengganu (1)	
Laut Sulu / Sulu Sea	Perairan Malaysia / Malaysian Waters	Sabah	-	-
Selat Melaka / Straits of Malacca	Perairan Malaysia / Malaysian Waters		6	Pulau Pinang (3) Negeri Sembilan (1) Melaka (1) Selangor (1)
Selat Johor / Straits of Johor	Perairan Malaysia / Malaysian Waters	Barat / West	-	-
		Timur / East	2	Johor (2)
Jumlah / Total			16	

Jadual 4.12: Bilangan Kes Pencemaran Tumpahan Minyak di Perairan Malaysia Mengikut Punca pada Tahun 2020

Table 4.12: Number of oil Spill Pollution Cases in Malaysian Waters by Source in 2020

PUNCA / SOURCE	KEJADIAN / INCIDENT	BILANGAN / NUMBER
Kapal Vessel	Perlanggaran Collision	1
	Terkandas / karam / Kebakaran Grounding / sink / fire	1
	Penyelenggaraan kapal Ship maintenance activities	1
Pelabuhan/ terminal Port/ terminal	Kebocoran injap Valve leakage	1
	Kebocoran paip pemindah Transfer pipe leakage	1
Pelantar Platform	Tumpahan dari pelantar Spillage from platform	1
Lain-lain Others	Punca tidak dapat dikenal pasti Unknown source	10
	Jumlah Total	16

Seminar Jumlah Beban Harian Maksima (Total Maximum Daily Load, TMDL)

Bahagian Air dan Marin, JAS Ibu Pejabat telah menganjurkan Seminar Jumlah Beban Harian Maksima (Total Maximum Daily Load, TMDL) pada 15 September 2020 di Bilik Cempaka, JAS Ibu Pejabat. Seminar ini bertujuan untuk berkongsi pengalaman, strategi, maklumat dan penemuan kajian-kajian yang telah dijalankan serta pelaksanaan TMDL oleh pelbagai agensi Kerajaan Persekutuan dan Kerajaan Negeri. Seminar ini juga bertujuan memberi kesedaran dan latihan untuk menyebarkan dan membudayakan pelaksanaan TMDL sebagai halatuju kaedah kawalan pencemaran air di seluruh negara.

Seminar ini dirasmikan oleh Encik Mohd Hidzir bin Bakar, Pengarah Bahagian Air dan Marin, JAS Ibu Pejabat. Penceramah-penceramah adalah terdiri daripada wakil daripada Jabatan Alam Sekitar, Pakar Kualiti Air, Pihak Berkuasa Air Negeri dan Agensi berkaitan seperti di Jadual 1.

Seramai 40 orang peserta telah menghadiri seminar ini yang terdiri daripada wakil-wakil Jabatan dan Agensi Kerajaan Persekutuan dan Kerajaan Negeri iaitu daripada Badan Kawal Selia Air, Pihak Berkuasa Tempatan, Agensi Kerajaan berkaitan dan JAS Ibu Pejabat. Selain kehadiran para peserta seminar secara fizikal, seramai 101 orang peserta telah mengikuti seminar secara maya melalui Aplikasi Zoom.

Dengan penganjuran seminar ini, outcome yang diharapkan adalah seperti berikut:

- i. Para peserta mendapat kefahaman yang sama mengenai TMDL, dan mendapat gambaran bagaimana TMDL ini dapat dilaksanakan. Agensi dapat memulakan program berkaitan TMDL dengan pendekatan yang mudah atau dalam skala yang kecil terlebih dahulu;
- ii. Para peserta mendapat maklumat dan inspirasi untuk melaksanakan langkah-langkah way forward meliputi proses perancangan dan pengaturan strategi bagi mengawal punca-punca pencemaran di bawah bidangkuasa masing-masing dalam usaha pemuliharaan sumber air;
- iii. Melahirkan kepentingan dan komitmen sepenuhnya daripada semua pemegang taruh (stakeholders) yang bertanggung-jawab dalam pengurusan sumber air. Komitmen dan kerjasama sepenuhnya daripada semua pemegang taruh untuk menerapkan aspek-aspek kawalan bagi projek pembangunan dan penguatkuasaan ke atas punca pencemaran yang menyumbang kepada beban pencemaran sungai khususnya dalam mengawal punca-punca pencemaran yang

Seminar on Total Maximum Daily Load (TMDL)

The Water and Marine Division, DOE Headquarters organised a Seminar on Total Maximum Daily Load (TMDL) on 15 September 2020 at Cempaka Room, DOE Headquarters. The purpose was to share experiences, strategies, information and findings of TMDL studies that have been conducted and the implementation of TMDL by various Federal and State Government agencies. It also provided awareness and training to disseminate and cultivate the implementation of TMDL as the water pollution control method throughout the country going forward.

This seminar was officiated by Mr. Mohd Hidzir bin Bakar, Director of Water and Marine Division of DOE Headquarters. The speakers consisted of representatives from the Department of Environment, Water Quality Specialists, State Water Authorities and relevant agencies as mentioned in Table 1.

A total of 40 participants attended this seminar which consisted of representatives of Federal and State Government Departments and Agencies, namely from the State Water Authorities, Local Authorities, relevant Government Agencies and DOE Headquarters. In addition to the physical attendance of seminar participants, a total of 101 participants attended the seminar virtually, via Zoom.

With the organisation of this seminar, the expected outcomes were as follows:

- i. Participants gained an uniform understanding of TMDL, and ideas of how TMDL could be implemented. As such, agencies would be able to start TMDL-related programs with a simple approach or on a small scale;
- ii. Participants received information and inspiration to implement the steps going forward including the process of planning and strategizing to control the sources of pollution under their respective jurisdictions in an effort to conserve water resources;
- iii. All stakeholders responsible for managing water resources gave their full support, commitment and cooperation to implement the aspects of control for development and enforcement projects on pollution sources that contribute to the pollution load of rivers, especially in controlling the sources of pollution subject to the jurisdiction of their respective agencies; and

tertakluk di bawah bidangkuasa agensi masing-masing adalah merupakan kunci kejayaan kepada usaha-usaha pemuliharaan sumber air; dan

- iv. Dengan strategi kawalan pencemaran melalui pendekatan TMDL ini, JAS berharap fungsi dan peranan agensi khususnya dalam pengurusan sumber air negara dapat dipertingkatkan dan diperkukuhkan lagi selari dengan tugas-tugas yang diamanahkan kepada Kumpulan Kerja 4 (WG4), Pasukan Petugas Pelaksanaan Dasar Sumber Air Negara, supaya ianya dapat dilaksanakan sepenuhnya dan memenuhi fokus utama dasar yang ditetapkan iaitu jaminan dan kelestarian sumber air Negara.
- iv. With the pollution control strategy through the TMDL approach, DOE hopes that the function and role of agencies, especially in the management of national water resources, can be enhanced and strengthened in line with the tasks entrusted to Working Group 4 (WG4), National Water Resources Policy Implementation Task Force, so that it can be fully implemented and meet the main focus of the policy that has been set, namely the guarantee and sustainability of the National water resources.

Jadual 4.13: Senarai Penceramah dan Tajuk Pembentangan
Table 4.13: List of Speakers and Presentation Titles

BIL. / NO.	PENCERAMAH / SPEAKER	TAJUK / TITLE
1.	En. Mohd Hidzir Bakar Pegawai Bahagian Air dan Marin, Jabatan Alam Sekitar Mr. Mohd Hidzir Bakar Director of Water and Marine Division, Department of Environmental, Headquarters	Halatuju Kawalan Pencemaran Air & TMDL Sg. Semenyih Direction of Water Pollution Control & TMDL of Sg. Semenyih
2.	Dr. Ir. Zaki Zainuddin Pakar Kualiti dan Permodelan Air Dr. Ir. Zaki Zainuddin Water Quality and Modeling Specialist	Sasaran Kualiti Air, Beban Pencemaran dan TMDL Water Quality Targets, Pollution Loading and TMDL
3.	Pn. Faizah Abdul Rahman@ Sulaiman Pegawai Sumber Air, Bahagian Kawal Selia Air, Negeri Melaka Mrs. Faizah Abdul Rahman@ Sulaiman Director of Water Resources, Water Regulatory Authority, State of Melaka	Isu-Isu Pencemaran Sumber Air Negeri Melaka & Langkah Kawalan Melaka State Water Resource Pollution Issues & Control Measures
4.	En. Nazifi Nawawi Pegawai Kawalan Kanan Alam Sekitar, Lembaga Urus Air Selangor Mr. Nazifi Nawawi Senior Environmental Control Officer, Selangor Water Management Authority	Pendekatan TMDL di Dalam Pengurusan Sumber Air TMDL Approach in Water Resource Management
5.	Tn. Hj. Md. Khairi Selamat Pegawai Bahagian Pengurusan Lembangan Sungai, Jabatan Pengairan dan Saliran Tn. Hj. Md. Khairi Selamat Director of River Basin Management Division, Department of Irrigation and Drainage	Kajian Terhadap Pembangunan Jumlah Beban Harian Maksimum (TMDL) bagi Kawasan River of Life (ROL) A Study on the Development of Total Maximum Daily Load (TMDL) for the River of Life (ROL) Area
6.	En. Noor Azme Omar Pegawai Penyelidik, National Hydraulic Research Institute of Malaysia Mr. Noor Azme Omar Research officer, National Hydraulic Research Institute of Malaysia	Kajian Kes- Penyelidikan Nutrient Loading berkaitan Tasik/ Takungan Case Study- Research on Nutrient Loading Related to Lakes / Reservoirs



Penceramah dan Peserta Seminar Total Maximum Daily Load
Speakers and Participants at the Total Maximum Daily Load Seminar



Penceramah Seminar Total Maximum Daily Load
Speakers at the Total Maximum Daily Load Seminar

PROGRAM PENGAWASAN KUALITI ALAM SEKITAR (EQMP) ENVIRONMENTAL QUALITY MONITORING PROGRAMME (EQMP)

EQMP merupakan program yang merangkumi pengumpulan data bagi pemantauan kualiti udara, kualiti air sungai dan kualiti air marin di seluruh Malaysia bagi tujuan melaporkan tahap sebenar kualiti alam sekitar negara dalam usaha untuk memantau, mencegah dan mengawal pencemaran. Sistem pengawasan EQMP akan berperanan sebagai mekanisme amaran awal bagi kejadian pencemaran alam sekitar seperti jerebu, tumpahan minyak, bencana industri dan pelupusan haram buangan serta toksik berbahaya. Ia juga boleh membantu pembuat dasar dan pembuat keputusan ke atas aktiviti penguatkuasaan JAS dan agensi berkaitan dalam menyediakan input kepada perancangan projek-projek pembangunan. Sepanjang tahun 2020, semua stesen-stesen pengawasan beroperasi membekalkan data kualiti alam sekitar kepada pihak JAS. **(Jadual 4.14)**

Berikut disertakan taburan stesen automatik pengawasan kualiti alam sekitar bagi stesen kualiti udara, kualiti air sungai dan kualiti air marin di Malaysia. **(Rajah 4.3)**

Bagi stesen-stesen pengawasan kualiti alam sekitar manual, berikut adalah persampelan manual yang telah dijalankan bagi tahun 2020. **(Jadual 4.15)**

Dalam Komponen Udara, selain daripada stesen automatik dan manual, program EQMP ini juga menyediakan stesen bergerak automatik bagi pengawasan kualiti udara atau Mobile Continuous Air Quality Monitoring (MCAQM) bagi memenuhi aspirasi penempatan stesen pengawasan kualiti udara di seluruh negara. Sebanyak tiga (3) buah stesen pengawasan kualiti udara bergerak disediakan yang mana ditempatkan setiap satu (1) buah di Semenanjung, Sabah dan Sarawak.

EQMP encompasses the collection of data for air quality monitoring, river water quality and marine water quality throughout Malaysia for the purpose of reporting the actual level of the nation's environmental quality in an effort to monitor, prevent and control pollution. The monitoring system of the EQMP will act as an early warning mechanism for the occurrence of environmental pollution such as haze, oil spill, industrial disaster and illegal dumping of toxic and harmful wastes. This can also assist the policy and decision makers on the enforcement of the activities by the DOE and related agencies to provide input to the planning of project developments. Throughout 2020, all the operating monitoring stations supplied environmental quality data to the DOE. **(Table 4.14)**

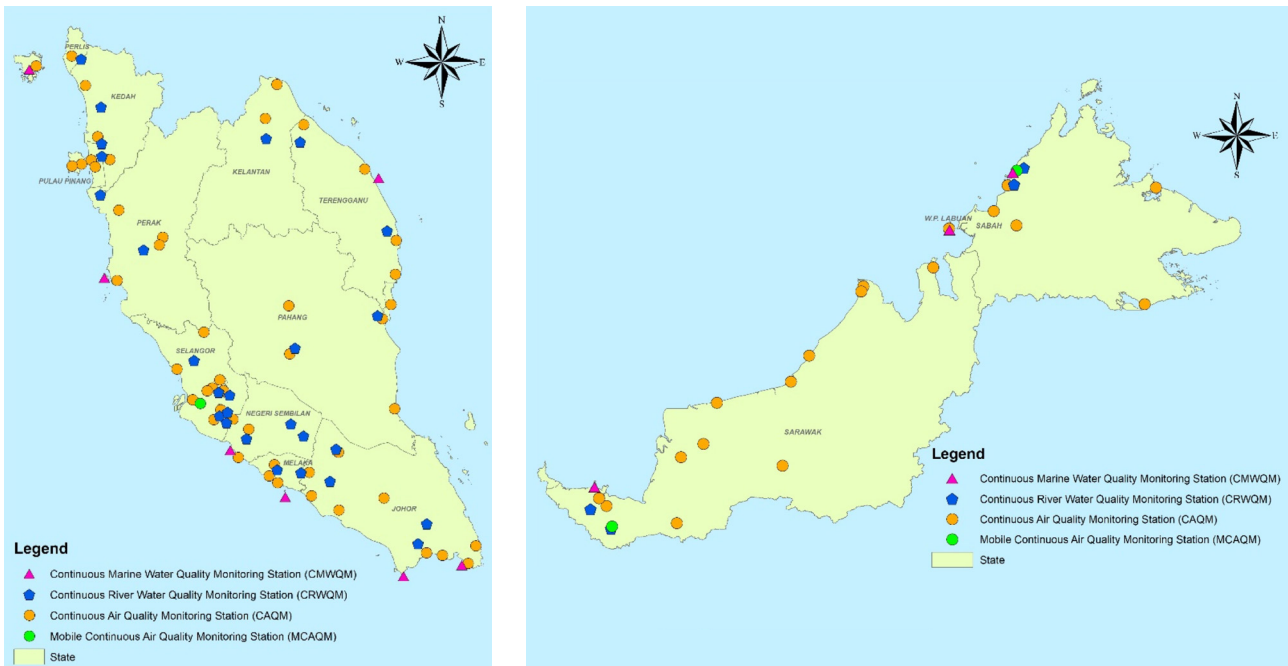
The following is the distribution of the automatic environmental quality stations for air quality, river water quality and marine water quality in Malaysia. **(Figure 4.3)**

For manual environmental quality monitoring stations, the following are the number of manual samplings carried out in 2020. **(Table 4.15)**

For the Air Component, aside from automatic and manual stations, the EQMP programme also provides a mobile automatic air quality monitoring station or Mobile Continuous Air Quality Monitoring (MCAQM) to fulfil the aspiration of placing air quality monitoring stations in all parts of the country. Three (3) mobile environmental ambient air quality stations were provided, one each in the Peninsular, Sabah and Sarawak.

Jadual 4.14 : Bilangan Stesen Pengawasan Kualiti Alam Sekitar di Malaysia
Table 4.14 : The Number of Environmental Quality Monitoring Stations in Malaysia

KOMPONEN/ COMPONENT	STESEN AUTOMATIK/ AUTOMATIC STATION	STESEN MANUAL/ MANUAL STATION	STESEN BERGERAK/ MANUAL STATION
Udara / Air	65	14	3
Air Sungai / River Water	30	1353	7
Air Marin / Marine Water	10	388	4
Jumlah Stesen / Total No. of Stations	105	1735	14



Taburan Lokasi Stesen Automatik bagi Pengawasan Kualiti Udara, Air Sungai dan Air Marin, 2020

Distribution of the Automatic Station Locations for Air, River Water and Marine Water Quality Monitoring, 2020

Rajah 4.3
Figure 4.3



Stesen Pengawasan Kualiti Udara Bergerak yang Ditempatkan di Lokasi Johan Setia, Klang, Selangor bagi Memantau Tahap Kualiti Udara Setempat di Kawasan Tersebut
Mobile Continuous Air Quality Monitoring Station (MCAQM) Placed at Johan Setia, Klang, Selangor to Monitor the Level of Ambient Air Quality at the Specified Location

Jadual 4.15: Bilangan Persampelan Manual Tahun 2020
Table 4.15: The Number of Manual Samplings in 2020

KOMPONEN / COMPONENT	STESEN MANUAL / MANUAL STATION	BILANGAN PERSAMPELAN / TOTAL NO. OF SAMPLING
Udara / Air	14	854
Air Sungai / River Water	1353	8098
Air Marin / Marine Water	388	2208

Jadual 4.16: Senarai Program/Aktiviti/Latihan yang Dilaksanakan Dibawah Program EQMP Sepanjang Tahun 2020
Table 4.16: List of Programmes/Activities/Training Conducted Under the EQMP Programme in 2020

BIL / NO.	TARIKH / DATE	PROGRAM/AKTIVITI/LATIHAN / PROGRAMME/ACTIVITY/TRAINING	LOKASI / LOCATION
1	20 – 23 Januari 2020	Bengkel EQMP Untuk Pengurusan JAS	Dorsett Hotel, Putrajaya
2	2 – 5 Mac 2020	Bengkel Rasionalisasi EQMP	Palm Garden Hotel, Putrajaya
3	8 – 12 Mac 2020	Latihan EQMP Zon Timur	Grand Continental Hotel, Kuala Terengganu
4	10 – 14 Ogos 2020	Latihan Keselamatan Air dan Asas Renang	Acappella Suite Hotel, Shah Alam
5	5 - 9 Oktober 2020	Latihan EQMP Zon Tengah	Villea Port Dickson Hotel, Negeri Sembilan



Bengkel EQMP kepada Pegawai Pengurusan JAS
EQMP Workshop for DOE Management Officers

Jadual 4.17: Senarai Lawatan Rasmi Daripada Pihak Luar ke Pusat Data Alam Sekitar (EDC), JAS Tahun 2020
Table 4.17: List of Official Visits from External Parties to the Environmental Data Center (EDC), DOE Year 2020

BIL / NO.	TARIKH/DATE	LAWATAN RASMI DARI AGENSI AWAM /SWASTA/ OFFICIAL VISITS FROM PUBLIC/SPECIAL AGENCIES
1.	9 Januari 2020	Pegawai Syarikat Alam Sekitar Malaysia Sdn Bhd
2.	21 Januari 2020	Pelajar Universiti Islam Antarabangsa Malaysia
3.	22 Januari 2020	Pegawai-pegawai Gred C29 lantikan baru yang sedang berkursus di Institut Alam Sekitar Malaysia (EiMAS)
4.	4 Februari 2020	Pelajar Universiti Selangor
5.	5 Februari 2020	Pegawai Ibu Pejabat Jabatan Kimia Malaysia
6.	6 Februari 2020	Pegawai Universiti Teknologi Malaysia
7.	10 Februari 2020	Pegawai Jabatan Pertanian Malaysia
8.	12 Februari 2020	Ketua Pengarah Alam Sekitar, Timbalan Ketua Pengarah Alam Sekitar, Pengarah-Pengarah Alam Sekitar Bahagian dan Negeri
9.	13 Mac 2020	YB Menteri Alam Sekitar dan Air dan Timbalan Menteri Alam Sekitar dan Air
10.	13 Mac 2020	Pegawai Radio dan Televisyen Malaysia (RTM)
11.	26 Jun 2020	Pegawai Kementerian Alam Sekitar dan Air
12.	26 Jun 2020	Pegawai Jabatan Audit Negara
13.	24 September 2020	Pegawai-pegawai Gred C41 lantikan baru yang sedang berkursus di Institut Alam Sekitar Malaysia (EiMAS)



Lawatan Rasmi YB Menteri Alam Sekitar dan Air (KASA) ke Pusat Data Alam Sekitar (EDC), JAS
Official Visit by the Honourable Minister of Environment and Water (KASA) to the Environmental Data Centre (EDC), DOE

PROGRAM PENGAWASAN KUALITI UDARA DI KAWASAN INDUSTRI

Sepanjang tahun 2020, program pengawasan di kawasan industri terutamanya di Pasir Gudang diteruskan yang bertujuan memantau tahap kualiti udara terutamanya gas Total Volatile Organic Compounds (TVOC) dan juga Volatile Organic Compounds (VOCs). JAS yang merupakan Jabatan Kerajaan yang menguatkuasakan undang-undang pencemaran alam sekitar yang dihasilkan oleh pihak industri memberikan komitmen sepenuhnya sepanjang tahun 2020.

AIR QUALITY MONITORING PROGRAMME AT INDUSTRIAL AREAS

Throughout 2020, the monitoring programmes at industrial areas especially at Pasir Gudang continued with the aim of monitoring the level of air quality, especially Total Volatile Organic Compounds (TVOC) and Volatile Organic Compounds (VOCs) gases. The DOE, being the Government Agency that enforces the environmental pollution laws produced by the industry, was fully committed toward this end throughout 2020.

Komitmen yang diberikan dari segi kepakaran, kewangan, tenaga kerja dan masa yang digembelngkan oleh seluruh jabatan bagi memastikan pencemaran industri tersebut tidak memberi kesan kepada kesihatan orang awam dan dalam masa yang sama menjalankan penguatkuasaan bagi menjejak dan mengheret penjenayah alam sekitar ke muka pengadilan di bawah bidang kuasa Akta Kualiti Alam Sekeliling 1974.

Pemantauan Kualiti Udara Menggunakan Peralatan Portable Multigas Analyser CEREX

Pemantauan kualiti udara menggunakan peralatan Portable Multigas Analyser CEREX dijalankan di kawasan yang ditetapkan di daerah Pasir Gudang. Program ini diadakan sepanjang bulan Julai hingga Disember 2020.

This commitment is reflected in terms of the expertise, the finance, the work force and the time contributed by the whole department to ensure that the above mentioned industrial pollution was not detrimental to public health and at the same time to carry out enforcements to track and to bring the offenders to court under the jurisdiction of the Environmental Quality Act (EQA) 1974.

Air Quality Monitoring Using CEREX Portable Multigas Analyser

Air quality monitoring using CEREX Portable Multigas Analyser equipment was carried out in designated areas in Pasir Gudang district for the entire period of July to December 2020.



Pemantauan Kualiti Udara Menggunakan Peralatan Portable Multigas Analyser CEREX
Air Quality Monitoring Using CEREX Portable Multigas Analyser Equipment

Pemantauan Kualiti Udara Menggunakan Mobile Gas Chromatography Flame Ionization Detector (MGCFID)

Pemantauan kualiti udara menggunakan peralatan MGCFID diadakan di kawasan yang ditetapkan di daerah Pasir Gudang. Program ini diadakan sepanjang bulan Januari hingga Disember 2020. **Jadual 4.8** menunjukkan senarai lokasi dan tarikh pemantauan yang dijalankan.

Air Quality Monitoring Using Mobile Gas Chromatography Flame Ionization Detector (MGCFID)

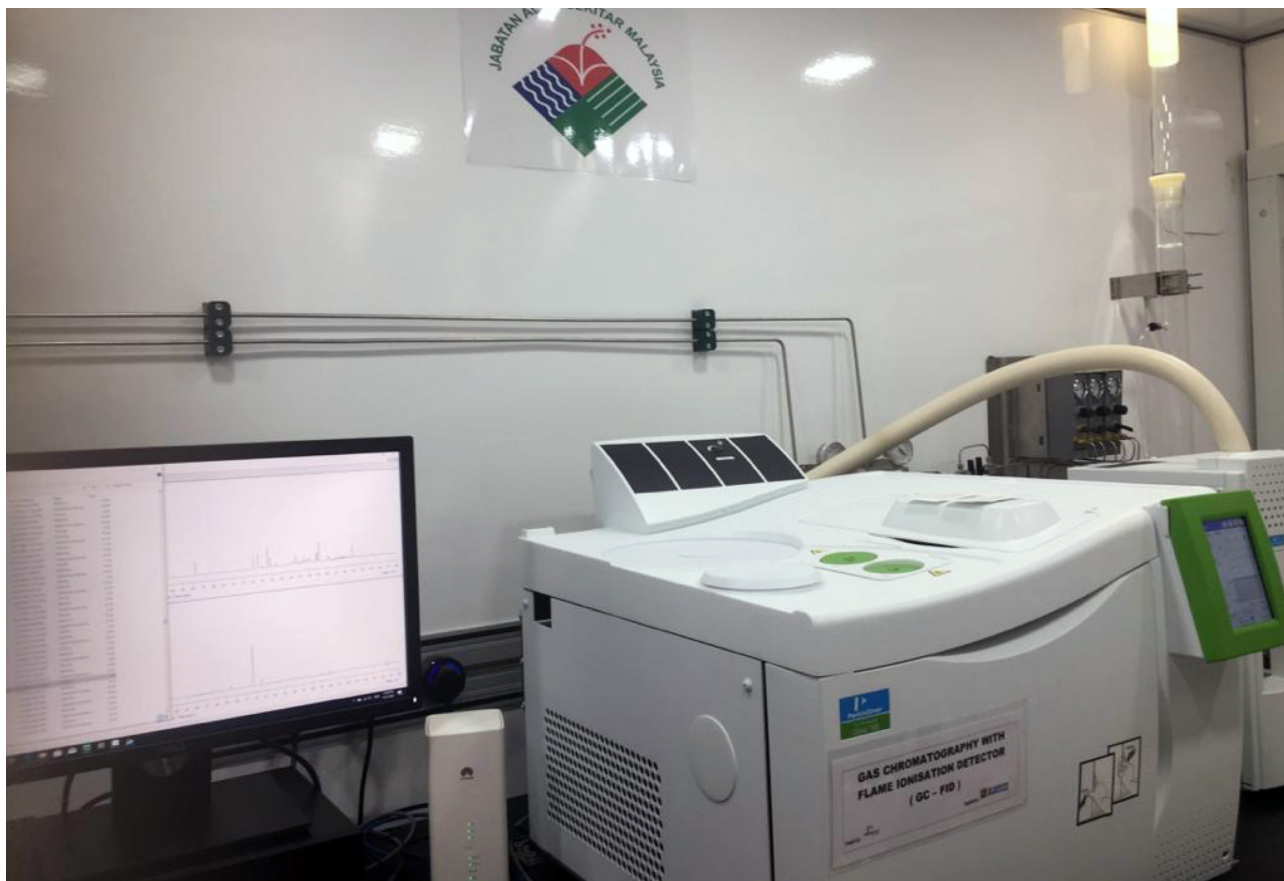
Air quality monitoring using MGCFID equipment was conducted in designated areas in the Pasir Gudang district. This was carried out throughout the period January to December 2020. **Table 4.18** shows a list of locations and dates monitoring was carried out.

Jadual 4.18: Pemantauan Kualiti Udara Menggunakan MGCFID Sepanjang Tahun 2020
Table 4.18: Air Quality Monitoring Using MGCFID in 2020

BIL / NO.	BULAN / MONTH	LOKASI / LOCATION
1.	Februari 2020	Perpustakaan Awam Pasir Gudang
2.	Mac 2020	i. Perpustakaan Awam Pasir Gudang ii. RAPID Petronas, Pengerang
3.	April 2020	Perpustakaan Awam Pasir Gudang
4.	Mei 2020	Perpustakaan Awam Pasir Gudang
5.	Jun 2020	i. Perpustakaan Awam Pasir Gudang ii. Pantech Corporation (M) Sdn Bhd
6.	Julai 2020	i. Perpustakaan Awam Pasir Gudang ii. Loji Rawatan Kumbahan Tanjung Puteri Resort
7.	Ogos 2020	Perpustakaan Awam Pasir Gudang
8.	September 2020	Loji Rawatan Kumbahan Jalan Keluli / Jalan MIEL 1
9.	Oktober 2020	AKK Engineering Sdn Bhd
10.	November 2020	AKK Engineering Sdn Bhd
11.	Disember 2020	i. AKK Engineering Sdn Bhd ii. Arkema Coating Resin Malaysia Sdn Bhd



Stesen Bergerak GCMS dan Stesen Bergerak GC-FID
Mobile GCMS Station and Mobile GC-FID Station



Antara Peralatan di dalam Stesen Bergerak GC-FID
Instruments in the Mobile GC-FID Station

Pemantauan Kualiti Udara Menggunakan Mobile Gas Chromatography - Mass Spectrometry (MGC-MS)

Pemantauan kualiti udara menggunakan peralatan MGCMS diadakan di kawasan yang ditetapkan di daerah Pasir Gudang. Program ini diadakan sepanjang bulan Januari hingga Disember 2020. **Jadual 4.19** menunjukkan senarai lokasi dan tarikh pemantauan yang dijalankan.

Air Quality Monitoring Using Mobile Gas Chromatography – Mass Chromatography (MGC-MS)

Air quality monitoring using MGCMS was conducted in designated areas in the Pasir Gudang district. This was carried out throughout the period January to December 2020. **Table 4.19** shows a list of locations and dates monitoring was carried out.

Jadual 4.19: Pemantauan Kualiti Udara Menggunakan MGC-MS Tahun 2020
Table 4.19: Air Quality Monitoring Using MGC-MS Year 2020

BIL. / NO	LOKASI / LOCATION	TARIKH / DATE
1.	Lotte Chemical Pasir Gudang	1 Mac 2020
2.	PKTK Jalan Keluli 7	1 Mac 2020
3.	Taman Scientex, Senai	23 Januari 2020
4.	Jalan Aman	11 Februari 2020

Jadual 4.19: Pemantauan Kualiti Udara Menggunakan MGC-MS Tahun 2020
Table 4.19: Air Quality Monitoring Using MGC-MS Year 2020

BIL. / NO	LOKASI / LOCATION	TARIKH / DATE
5.	SMK Tanjung Puteri	14 Februari 2020
6.	SK Taman Cendana	15 Februari 2020
7.	Masjid Pasir Gudang	15 Februari 2020
8.	Dewan Muafakat	15 Februari 2020
9.	Klinik Kesihatan Masai	15 Februari 2020
10.	SMK Bandar Seri Alam	15 Februari 2020
11.	SMK Dato' Penggawa Timur	15 Februari 2020
12.	SRJK(T) Plentong	15 Februari 2020
13.	SK Kota Puteri	15 Februari 2020
14.	SMK Tanjung Puteri	15 Februari 2020
15.	SK Taman Rinting 3	15 Februari 2020
16.	Stadium Pasir Gudang	15 Februari 2020
17.	Johor Port	16 Februari 2020
18.	SK Tanjung Puteri Resort	16 Februari 2020
19.	SK Kampung Pasir Putih	16 Februari 2020
20.	SK Perigi Acheh	16 Februari 2020
21.	SK Tanjung Langsung	16 Februari 2020
22.	Masjid Al- Firdaus	16 Februari 2020
23.	SMK Taman Pasir Putih	16 Februari 2020
24.	SK Kota Masai 2	16 Februari 2020
25.	SMK Pasir Gudang 2	16 Februari 2020
26.	Klinik Kesihatan Pasir Gudang	16 Februari 2020
27.	SMK Pasir Gudang 3	16 Februari 2020
28.	SMK Kota Masai	16 Februari 2020
29.	SK Kopok	16 Februari 2020
30.	SMK Taman Scientex	16 Februari 2020
31.	Perpustakaan Awam Pasir Gudang	21 Februari 2020
32.	SMK Tanjung Puteri Resort	27 Jun 2020
33.	Sungai Selangkah	27 Jun 2020
34.	53 Resources Sdn Bhd	27 Jun 2020
35.	Pantech Corporation (M) Sdn Bhd	27 Jun 2020
36.	Teknos (M) Sdn Bhd Jalan Keluli 8	28 Jun 2020
37.	Jalan Selayur 5	28 Jun 2020
38.	Loji Rawatan Kumbahan Tanjung Puteri Resort	28 Jun 2020
39.	Dewan Muafakat Masai	21 Julai 2020
40.	AKK Engineering Sdn Bhd	3 November 2020
41.	Arkema Coating Resins Malaysia Sdn Bhd	18 Disember 2020

Pemantauan Kualiti Udara melalui Stesen TVOC

JAS melalui Kementerian telah memasang sebanyak 25 buah stesen pengawasan gas toksik Total Volatile Organic Compounds (TVOC) menggunakan Photo Ionization Detector (PID) yang akan mengesan gas TVOC dan memberikan amaran awal kepada pihak berkuasa dan orang awam. Daripada 25 stesen PID ini, terdapat 5 stesen meteorologi yang terletak bersebelahan antara satu sama lain untuk mendapatkan data meteorologi tempatan bagi tujuan pemodelan dan mengesan penyerakan pencemar udara. **(Jadual 4.20)**

Air Quality Monitoring Through TVOC Stations

The DOE through the Ministry has acquired and installed 25 Total Volatile Organic Compounds (TVOC) toxic gases monitoring stations using Photo Ionization Detector (PID) which will trace TVOC gases and will trigger an early warning to the authorities as well as to the public. Along with these 25 PID stations, there are 5 meteorological stations situated beside the PID stations to obtain local meteorological data for the purpose of modelling and detecting dispersion of the air pollution. **(Table 4.20)**



HAP 12, Stesen TVOC (kiri) dan Stesen Meteorologi (kanan) di Pasir Gudang, Johor
HAP 12, TVOC Station (left) and Meteorology Station Located in Pasir Gudang, Johor

Jadual 4.20 : Senarai Stesen Pengawasan TVOC
Table 4.20 : List of TVOC Monitoring Stations

BIL / NO.	STESEN / STATION	LOKASI STESEN / LOCATION OF STATION
1	HAP01	Sekolah Kebangsaan Tanjung Langsat
2	HAP02	Sekolah Kebangsaan Kota Masai 2
3	HAP03	Sekolah Menengah Kebangsaan Pasir Putih
4	HAP04	Sekolah Kebangsaan Tanjung Puteri Resort
5	HAP05	Sekolah Kebangsaan Pasir Puteh
6	HAP06	Johor Port Berhad
7	HAP07	Klinik Kesihatan Pasir Gudang
8	HAP08	Sekolah Kebangsaan Pasir Gudang (2)
9	HAP09	Sekolah Menengah Kebangsaan Pasir Gudang 3
10	HAP10	Klinik Kesihatan Masai
11	HAP11	Sekolah Menengah Kebangsaan Pasir Gudang 2
12	HAP12	Stadium Majlis Perbandaran Pasir Gudang
13	HAP13	Masjid Jamek Pasir Gudang
14	HAP14	Sekolah Kebangsaan Taman Rinting 3
15	HAP15	Dewan Muafakat Masai @ Dewanraya Masai
16	HAP16	Sekolah Kebangsaan Taman Cendana
17	HAP17	Sekolah Menengah Kebangsaan Bandar Seri Alam
18	HAP18	Sekolah Menengah Kebangsaan Kota Masai
19	HAP19	Sekolah Menengah Kebangsaan Taman Scientex
20	HAP20	Sekolah Kebangsaan Kopok
21	HAP21	Sekolah Jenis Kebangsaan (Tamil) Ladang Sg Plentong
22	HAP22	Sekolah Kebangsaan Seri Kota Puteri
23	HAP23	Sekolah Menengah Kebangsaan Dato' Penggawa Timur
24	HAP24	Masjid Taman Pasir Putih
25	HAP25	Sekolah Menengah Kebangsaan Tanjung Puteri Resort

*Nota / Note: HAP – Hazard Air Pollutant

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. Di samping itu maklumat hotspots juga diperolehi melalui satelit yang dipantau dan dilaporkan oleh ASEAN Specialised Meteorological Centre (ASMC) yang berpusat di Singapura. Pada tahun 2020 sebanyak 2207 hotspots di seluruh negara telah dilaporkan melalui satelit (**Jadual 4.21**).

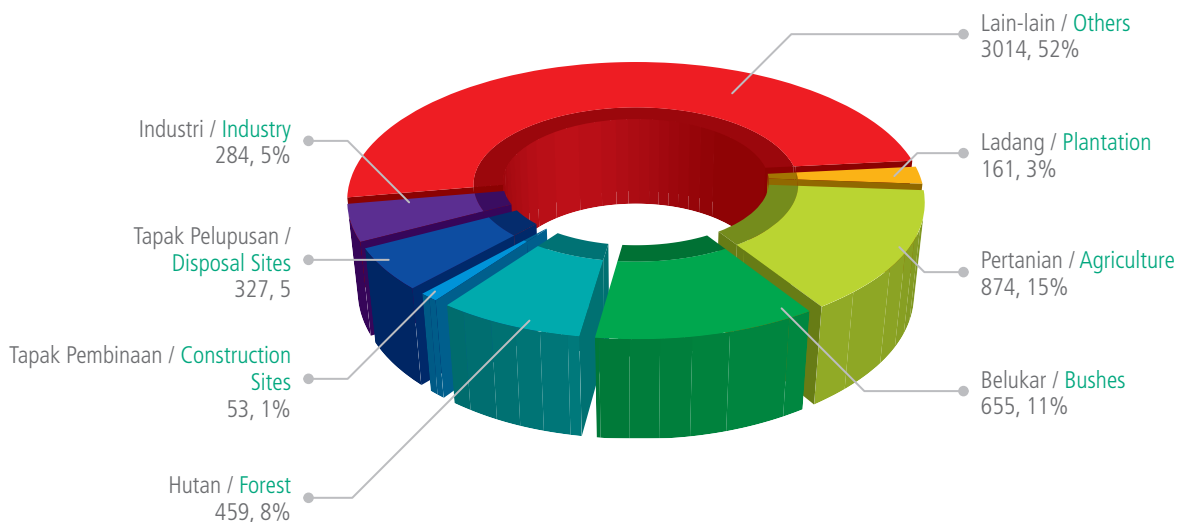
Open burning cases were detected during daily ground surveillance conducted by DOE State Offices at identified fire-prone areas, and which receive frequent public complaints from the public. Besides this, there are also hotspots detected via satellites reported by the ASEAN Specialised Meteorological Centre (ASMC) based in Singapore. In 2020, a total of 2207 hotspots were detected via satellites (**Table 4.21**).

Sebanyak 5827 kes pembakaran terbuka secara keseluruhan telah dikesan pada tahun 2020 (**Jadual 4.22, Jadual 4.23 dan Rajah 4.4**) dan dilaporkan oleh setiap JAS Negeri melalui sistem atas talian dalam JAS iaitu Sistem Elektronik Kawalan Alam Sekitar (e-KAS) dibawah Sub-Modul Pembakaran Terbuka dan Sub-Modul Aduan. Kejadian pembakaran terbuka yang utama sering berlaku adalah pembakaran sampah sarap di kawasan perumahan, pembakaran sampah sarap di tepi bahu jalan dan pembakaran untuk aktiviti keagamaan atau penyembahan yang dikategorikan sebagai lain-lain aktiviti (3014 kes), pertanian (874 kes) dan belukar (655 kes) terutamanya semasa cuaca panas dan kering iaitu pada bulan Mac (931 kes), Februari (696 kes) dan Ogos (613 kes). Daripada 5827 kes pembakaran terbuka tersebut, 477 kes telah dikompaun dengan jumlah kompaun yang dikutip ialah sebanyak RM 472,550.00

Berdasarkan kepada data bilangan hotspot serta pembakaran terbuka bagi tempoh 5 tahun kebelakang iaitu dari tahun 2016 sehingga 2020 (**Rajah 4.5**), tahun 2017 mencatatkan jumlah bilangan hotspot dan kes pembakaran terbuka yang paling rendah. Manakala kes hotspot dan pembakaran terbuka tertinggi dalam tempoh tersebut dicatatkan pada tahun 2020 iaitu bilangan hotspot sebanyak 2207 dan bilangan kes pembakaran terbuka keseluruhan sebanyak 5827 kes.

A total of 5827 open burning cases were detected in 2020 (**Table 4.22, Table 4.23 and Figure 4.4**) and these cases were reported by the DOE State Offices in DOE's internal online system (e-KAS) under the Open Burning Sub-Module and the Complaint Sub-Module. Frequent open burning incidents were found to occur due to activities such as burning of garbage in residential areas, garbage burning by the roadside and burning of any articles as part of religious rites or worshipping activities (categorised as other activities) (3014 cases). There are also incidents in agricultural areas (874 cases) and bushes (655 cases) that normally occur during the hot and dry period in the months of March (931 cases), February (696 cases) and September (613 cases). Out of the 5827 open burning cases detected, 477 cases were issued with compounds amounting to RM 472,550.00

According to the data on hotspot numbers and open burning over the last 5-year period from 2016 to 2020 (**Figure 4.5**), the year 2017 recorded the lowest number of hotspots and open burning cases. The highest number of hotspot and open burning cases during the period was recorded in 2020, with 2207 hotspots and 5827 open burning cases recorded.



Nota / Note : *Lain-lain - Pembakaran sampah sarap di kawasan perumahan, tepi jalan dan aktiviti keagamaan / penyembahan
*Others - Burning garbage in residential areas, streets and religious activities / worship

Rajah 4.4
Figure 4.4

Bilangan Kes Pembakaran Terbuka Mengikut Kategori, 2020
Number Of Open Burning Cases By Category, 2020

Jadual 4.21 : Bilangan Kes Hotspots Dikesan melalui Satelit Mengikut Negeri, 2020 (Sumber: ASMC)
Table 4.21 : Number of Hotspots Detected through Satellite by States, 2020 (Source: ASMC)

NEGERI / STATE	BULAN / MONTH												JUMLAH / TOTAL
	JAN / JAN	FEB / FEB	MAR / MARCH	APRIL / APRIL	MEI / MAY	JUN / JUNE	JULAI / JULY	OGOS / AUG	SEP / SEPT	OKT / OCT	NOV / NOV	DIS / DEC	
Johor	18	40	29	48	3	1	4	7	18	11	2	7	188
Kedah	16	39	87	4	2	0	2	3	0	0	1	1	155
Kelantan	4	12	20	17	3	1	1	7	0	1	0	0	66
Melaka	2	9	4	4	1	1	1	2	1	5	1	2	33
Negeri Sembilan	1	2	3	1	0	0	3	1	0	2	0	0	13
Pahang	10	22	59	113	6	12	16	34	23	7	1	1	304
Perak	20	20	19	5	9	1	1	11	5	1	5	3	100
Perlis	16	9	27	0	0	1	0	0	0	0	0	0	53
Pulau Pinang	0	4	3	0	0	0	0	0	0	0	0	0	7
Sabah	21	31	134	90	70	27	59	81	46	28	15	11	613
Sarawak	12	48	25	21	35	32	13	181	78	29	15	5	494
Selangor	2	35	11	15	2	3	5	13	3	1	3	6	99
Terengganu	2	6	18	13	10	6	8	6	4	4	3	2	82
W.P. Kuala Lumpur / Putrajaya	0	0	0	0	0	0	0	0	0	0	0	0	0
W.P. Labuan	0	0	0	0	0	0	0	0	0	0	0	0	0
Jumlah / Total	124	277	439	331	141	85	113	346	178	89	46	38	2,207
JUMLAH KESELURUHAN / TOTAL :								2,207					

Jadual 4.22 : Bilangan Kes Pembakaran Terbuka mengikut Negeri, 2020
Table 4.22 : Number Of Open Burning Cases by States, 2020

NEGERI / STATE	KATEGORI / CATEGORIES									JUMLAH
	LADANG PLANTATION	PERTANIAN AGRICULTURE	BELUKAR BUSHES	HUTAN FOREST	TAPAK PEMBINAAN CONSTRUCTION SITES	TAPAK PELUPUSAN DISPOSAL SITES	INDUSTRI INDUSTRY	LAIN-LAIN OTHERS*	JUMLAH TOTAL	
Johor	34	46	58	19	8	41	75	402	683	
Kedah	7	113	47	37	2	138	7	133	484	
Kelantan	9	9	9	23	0	1	4	72	127	
Melaka	9	25	23	2	10	6	25	167	267	
Negeri Sembilan	6	7	20	3	1	2	1	275	315	
Pahang	27	29	148	112	5	1	22	128	472	
Perak	2	31	15	2	2	3	6	128	189	
Perlis	2	22	17	8	0	0	0	15	64	
Pulau Pinang	0	71	9	2	4	3	1	402	492	
Sabah	24	392	88	110	3	8	3	240	868	
Sarawak	34	53	145	114	1	0	87	30	464	
Selangor	4	50	22	12	6	119	20	624	857	
Terengganu	3	22	53	15	9	5	33	114	254	
W.P. Kuala Lumpur / Putrajaya	0	4	1	0	2	0	0	268	275	
W.P. Labuan	0	0	0	0	0	0	0	16	16	
Jumlah / Total	161	874	655	459	53	327	284	3014	5,827	
JUMLAH KESELURUHAN / TOTAL :									5,827	

Nota / Note :

*Lain-lain - Pembakaran sampah sarap di kawasan perumahan, tepi jalan dan aktiviti keagamaan/penyembahan

*Others - Burning garbage in residential areas, streets and religious activities / worship

Jadual 4.23 : Bilangan Kes Pembakaran Terbuka mengikut Bulanan, 2020
Table 4.23 : Number of Open Burning Cases by Month, 2020

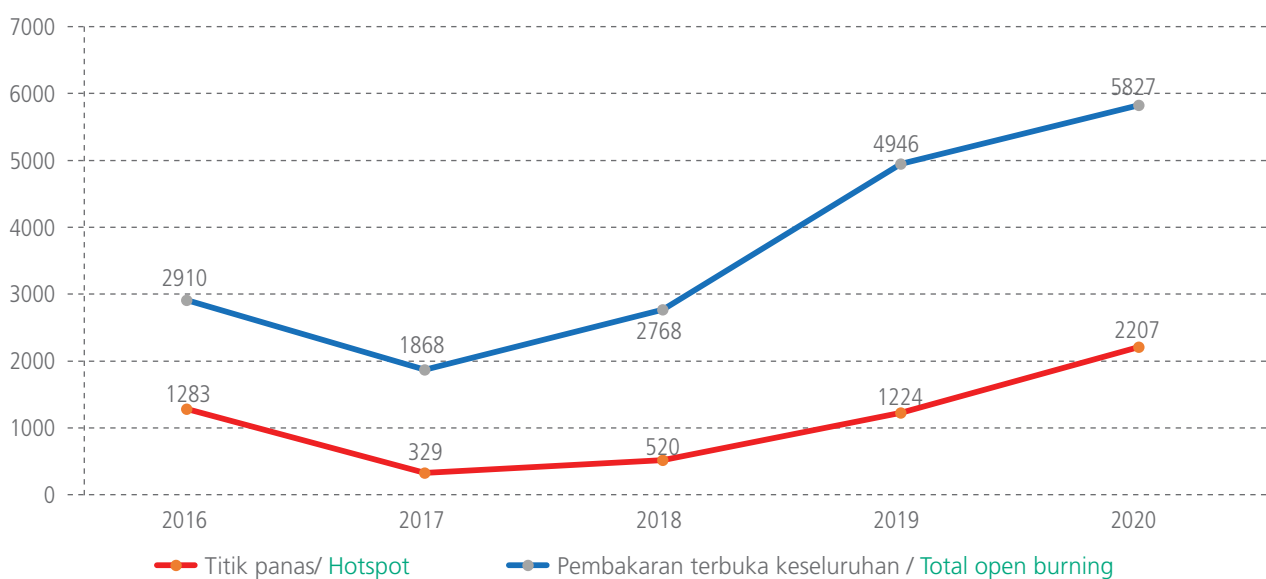
BULAN / MONTH	KATEGORI / CATEGORIES								JUMLAH / TOTAL
	LADANG / PLANTATION	PERTANIAN / AGRICULTURE	BELUKAR / BUSHES	HUTAN / FOREST	TAPAK PEMBINAAN / CONSTRUCTION SITES	TAPAK PELUPUSAN / DISPOSAL SITES	INDUSTRI / INDUSTRY	LAIN-LAIN / OTHERS*	
Januari / January	8	57	73	23	12	68	30	328	599
Februari / February	30	95	82	62	7	69	44	307	696
Mac / March	26	223	131	95	6	59	32	359	931
April / April	16	69	118	85	1	40	35	301	665
Mei / May	8	75	29	12	6	9	27	199	365
Jun / June	11	48	21	10	4	37	13	235	379
Julai / July	12	65	28	15	3	7	17	207	354
Ogos / August	20	107	93	103	5	16	27	242	613
September / September	16	66	51	32	3	8	21	185	382
Oktober / October	9	39	11	14	3	3	19	292	390
November / November	3	18	9	5	2	4	12	215	268
December / December	2	12	9	3	1	7	7	144	185
Jumlah / Total	161	874	655	459	53	327	284	3014	5827

JUMLAH KESELURUHAN / TOTAL : 5,827

Nota / Note :

*Lain-lain - Pembakaran sampah sarap di kawasan perumahan, tepi jalan dan aktiviti keagamaan/penyembahan

*Others - Burning garbage in residential areas, streets and religious activities / worship



Bilangan Hotspot dan Kes Pembakaran Terbuka Keseluruhan dari Tahun 2016 sehingga Tahun 2020

Number of Hotspot and I Open Burning Cases from 2016 to 2020

Rajah 4.5
Figure 4.5

PROGRAM PENCEGAHAN KEBAKARAN TANAH GAMBUT PEATLAND FIRE PREVENTION PROGRAMME

Di bawah program pencegahan kebakaran terbuka tanah gambut bagi mengatasi jerebu telah bermula sejak tahun 2009 di bawah Rancangan Malaysia ke-9. Pengurusan tanah gambut yang lestari adalah sangat penting bagi mencegah berlakunya pembakaran terbuka jerebu setempat. Melalui program ini, pembinaan sekatan saliran (check dam) dan telaga tiub (tube well), kolam takungan air (retention pond) dan pemasangan paip saluran air (water pipe) telah dikenalpasti sebagai kaedah pengurusan air di tanah gambut yang berkesan untuk mencegah dan mengawal pembakaran terbuka.

Program ini melibatkan kerjasama erat pelbagai agensi iaitu JAS, Jabatan Pengairan dan Saliran (JPS), Jabatan Mineral dan Geosains (JMG), Jabatan Perhutanan Negeri Selangor, Jabatan Perhutanan Negeri Sabah dan Majlis Bandaraya Miri (MBM). Projek ini telah dilaksanakan di tujuh (7) buah negeri iaitu Johor, Pahang, Selangor, Kelantan, Sarawak, Sabah dan Terengganu. Projek ini merangkumi aktiviti-aktiviti seperti pembinaan sekatan saliran (check dam) berjumlah 339 buah iaitu Pahang (92), Johor (80), Terengganu (51), Sarawak (43), Kelantan (36), Selangor (23) dan Sabah (14). Di samping itu juga, sebanyak 91 buah telaga air tanah telah dibina iaitu Sarawak (15), Pahang (16), Johor (14), Kelantan (13), Selangor (15), Sabah (11) dan Terengganu (7). Manakala sebanyak 5 buah menara tinjau telah dibina untuk digunakan bagi pemantauan pembakaran terbuka pada musim panas dan kering iaitu masing-masing di Selangor, Pahang, Sarawak dan Sabah. Selain daripada itu, dua (2) buah kolam takungan turut dibina di Hutan Simpanan Kuala Langat Selatan dan Kuala Langat.

Bagi tahun 2020, hanya kerja-kerja menaiktaraf infrastruktur dan tiada pembinaan infrastruktur baharu dilaksanakan. Sebanyak 97 buah sekatan saliran, 87 buah telaga tiub dan 5 buah kolam takungan telah diselenggara merangkumi peruntukan sebanyak RM2,340,000.00.

The Peatland Fire Prevention Programme has been ongoing since 2009 under the 9th Malaysia Plan, primarily to overcome and reduce haze. Sustainable management of peatlands is very important to prevent burning or fire in peatlands which can cause localized haze. Construction of canal blocks (check dams), tube wells, retention ponds and water pipes have been identified as effective methods for water management in peatlands to prevent and control open burning.

The programme involved concerted cooperation with various agencies, such as the DOE, the Department of Irrigation and Drainage (DID), the Minerals and Geoscience Department (MGD), the Selangor Forestry Department, the Sabah Forestry Department and the Miri City Council (MCC). The project has been implemented in seven (7) states, namely Johor, Pahang, Selangor, Kelantan, Sarawak, Sabah and Terengganu. The project includes construction of 339 check dams, Pahang (92), Johor (80), Terengganu (51), Sarawak (43), Kelantan (36), Selangor (23) and Sabah (14). In addition, a total of 91 tube wells were constructed - Sarawak (15), Pahang (16), Johor (14), Kelantan (13), Selangor (15), Sabah (11) and Terengganu (7). A total of 5 watch towers were also constructed to monitor open burning especially during the dry season namely at Selangor, Pahang, Sarawak and Sabah. Besides this, there was also the construction of two (2) retention pools in South Kuala Langat Forest Reserve, Kuala Langat

In 2020, no new infrastructures were built. A total of RM2,340,000.00 was spent last year to maintain 97 check dams, 87 tube wells, and 5 retention ponds.

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

Latar belakang

Malaysia telah meratifikasikan Konvensyen Vienna bagi Perlindungan Lapisan Ozon dan Protokol Montreal mengenai Bahan-bahan Pemusnah Lapisan Ozon pada

Background

Malaysia ratified the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer

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.

Mulai 1 Januari 2015, Methil Bromida yang juga merupakan bahan pemusnah ozon telah dikawal dan hanya dibenarkan untuk kegunaan kuarantin dan aktiviti pra perkapalan. Pelan penghapusan penggunaan hidroklorofluorokarbon (HCFC) sedang dijalankan dan pengimportan HCFC akan dilarang sepenuhnya menjelang tahun 2040 di mana hanya 2.5% sahaja dibenarkan untuk sektor servis mulai tahun 2030.

Pada 21 Oktober 2020, Malaysia telah meratifikasi Pindaan Kigali di bawah Protokol Montreal bagi bahan penipis lapisan ozon di bawah Konvensyen Vienna bagi Perlindungan Lapisan Ozon. Ratifikasi tersebut menunjukkan komitmen negara dalam melindungi alam sekitar khususnya lapisan ozon dan perubahan iklim. Pindaan Kigali ini telah berkuatkuasa mulai 1 Januari 2019. Sehingga kini, 112 negara telah meratifikasi pindaan tersebut termasuk Malaysia.

Pematuhan Terhadap Protokol Montreal

Bagi fasa seterusnya Malaysia perlu menghapuskan penggunaan HCFC secara berperingkat mulai 2013 sehingga dihapuskan sepenuhnya menjelang 2040 seperti yang telah ditetapkan di bawah Protokol Montreal. Bagi mencapai sasaran ini, Pelan Pengurusan Penghapusan HCFC (HPMP) telah digubal yang menggariskan polisi dan strategi jangka panjang untuk menghapuskan penggunaan HCFC mulai tahun 2012 hingga 2040. **Jadual 4.24** menunjukkan strategi dan polisi dalam pelaksanaan HPMP. **Rajah 4.6** merupakan carta yang membandingkan jadual penghapusan HCFC negara di bawah Protokol Montreal dan penggunaan sebenar HCFC di Malaysia. Carta tersebut menunjukkan bahawa Malaysia berjaya mencapai sasaran pengurangan yang ditetapkan setiap tahun sejak tahun 2013 apabila Pelan Pengurusan Penghapusan HCFC mula dilaksanakan di Malaysia. Tahun 2020 menunjukkan pengurangan penggunaan sebanyak 58% berbanding dengan baseline iaitu 515.8 ODPT (Ozone Depleting Potential Tonne).

Pada 1 Januari 2013, selaras dengan pewartaan Perintah Kastam (Larangan Import) 2012 pada 31 Disember 2012 yang berkuatkuasa pada 1 Januari 2013, Malaysia telah melaksanakan sistem kuota bagi mengimport HCFC oleh pengimport yang berdaftar dengan JAS. Permohonan kelulusan permit atau Approved Permit (AP) diproses melalui sistem atas talian, e-Permit mengikut agihan kuota HCFC yang diperuntukkan berdasarkan garis dasar atau tahap

on 29 August 1989. As party to the Montreal Protocol, Malaysia has complied with the obligation to stop importing chlorofluorocarbon (CFC), halon and carbon tetrachloride (CTC) by 1 January 2010.

From January 2015, other ozone depleting substances such as methyl bromide will only be allowed to use for quarantine and pre shipment activities. The plan to phase-out hydrochlorofluorocarbons (HCFC) is ongoing and imports of HCFC will be totally banned by 2040, with only 2.5% being allowed in the servicing sector from 2030.

On 21 October 2020, Malaysia ratified the Kigali Amendment under the Montreal Protocol on substances that deplete the ozone layer under the Vienna Convention for the protection of the ozone layer. The ratification showed the country's commitment in protecting the environment, particularly the ozone layer and climate change. The Kigali Amendment came into force on 1 January 2019. To date, 112 countries have ratified this amendment.

Montreal Protocol's Obligation

Malaysia is obligated to phase out HCFC in stages by 2040 under the Montreal Protocol starting from 2013. To meet the phase out target, the HCFC Phase-out Management Plan (HPMP) was formulated that outlined the policies and long term strategies for the phase-out of HCFC from 2012 to 2040. **Table 4.24** shows the policies and strategies of HPMP. **Figure 4.6** is a chart that compares the HCFC phase out schedule for Malaysia and the actual consumption of HCFC in Malaysia. The chart shows that Malaysia has successfully achieved the reduction target every year since 2013 which marked the beginning of the HCFC Phase Out Management Plan. The consumption in 2020 shows a reduction of 58% compared to the baseline which is 515.8 ODPT (Ozone Depleting Potential Tonne).

On 1 January 2013, Malaysia implemented the quota system for the importation of HCFC. Application for the Approval Permit (AP) was processed by DOE through an online 'e-Permit' system with the total amount of HCFC quota allocated based on the baseline level or freeze limit of 515.8 ODPT (ozone depleting potential tonnes) or 7,900 metric tonnes.

pembekuan berjumlah sebanyak 515.8 ODPT (Ozone Depleting Potential Tonnes) atau sebanyak 7,900 Metrik Tan.

Sistem atas talian, “e-Permit”, telah diwujudkan untuk memproses dan seterusnya meluluskan permohonan import dan eksport HCFC. Sistem atas talian ini melibatkan jaringan di antara pengimport/ pengesport berdaftar HCFC, JAS dan Sistem Maklumat Kastam

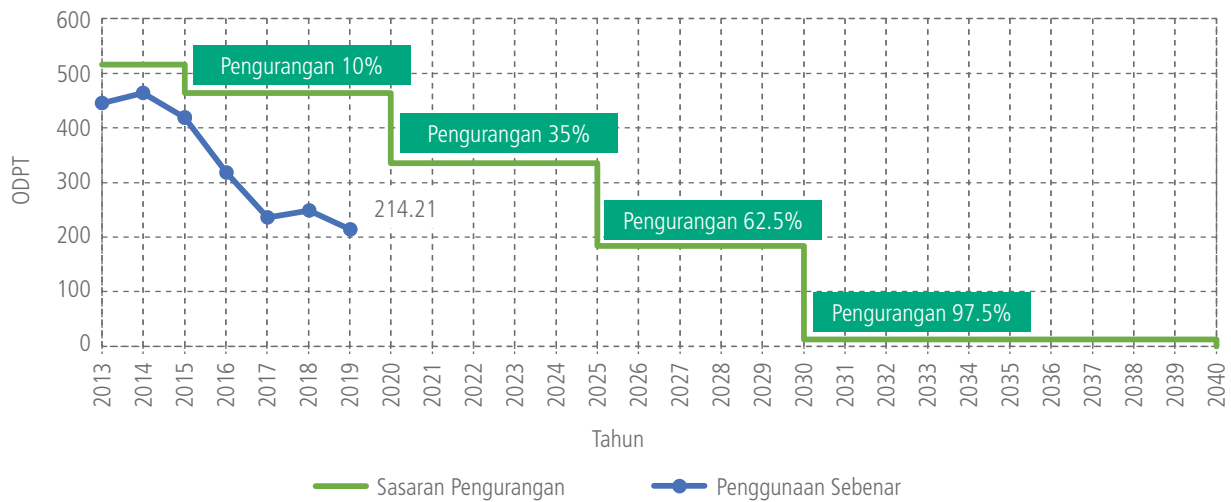
The “e-Permit” online system was developed to process and subsequently approve import and export of HCFC from registered importers and exporters. The online system is a linkage network between the HCFC importers and exporters, Department of Environment

Jadual 4.24 : Dasar dan Tindakan Pengawalseliaan HCFC Phase Out Management Plan (HPMP) (2012-2040)
Table 4.24 : Policies And Regulatory Actions of HCFC Phase Out Management Plan (HPMP) (2012-2040)

TAHUN / YEAR	POLISI DAN TINDAKAN PERUNDANGAN / POLICIES AND REGULATORY ACTIONS
	Mewujudkan sistem AP bagi pengagihan kuota import HCFC berdasarkan baseline atau purata import 2009/2010 <i>Establishment of AP for HCFC import quota based on National average consumption for 2009/2010</i>
2012	Meminda perundangan sedia ada untuk mengawal penggunaan, import, pembuatan, pemasangan produk dan peralatan yang menggunakan HCFC <i>Amend existing legislation for control on the use, import, manufacture, assembly or installation of products and equipment using HCFCs.</i>
2013	Mewujudkan sistem perlesenan untuk mengeksport semula gas HCFC <i>Licence re-export of HCFC chemicals</i>
	Pelaksanaan sistem AP pada 1 Januari 2013 mengikut Jadual Pembekuan Protokol Montreal <i>Implement Approved Permit (AP) system for HCFC import (by Jan 2013)</i>
	Larangan menambah (expansion) atau membina fasiliti pembuatan baru menggunakan HCFC <i>Prohibit expansion of new manufacturing facilities using HCFCs</i>
2015	Promosi menggunakan bahan alternatif melalui pemberian insentif <i>Promote the use of alternatives through incentives</i>
	Latihan dan Pensijilan bagi pekerja yang mengendalikan HCFC <i>Undertake certification of skilled workers trained to handle HCFCs</i>
	Larangan bagi membuat, memasang dan mengimport peralatan penyaman udara menggunakan HCFC yang berkuasa 2.5 hp dan ke bawah (untuk penggunaan dalam Malaysia) <i>Prohibit the manufacture, assembly and import of HCFC-based air-con equipment of 2.5hp and below (for use in Malaysia)</i>
2020	Mewartakan HCFC sebagai bahan terkawal <i>Include HCFCs as restricted gas</i>
	Larangan ke atas pengimportan polyol yang mengandungi HCFC <i>Prohibit import of pre-blended polyols with HCFCs</i>
2025	Larangan membuat, memasang dan mengimport semua barangan dan peralatan yang menggunakan HCFC kecuali bagi penggunaan khas (essential use) <i>Prohibit the manufacture, assembly and import of all products and equipment using HCFCs (except for essential uses)</i>
	Larangan menggunakan HCFC 141b sebagai agen pengembang <i>Prohibit the use of HCFC 141b as blowing agent</i>
2030	Larangan pembuatan dan pemasangan baru sistem pemadam api yang menggunakan HCFC <i>Prohibit the use of HCFC in the manufacturing and installation of new fire extinguishing systems</i>
2035	Larangan pemasangan baru semua barangan dan peralatan yang menggunakan <i>No more new installation of products and equipment using HCFCs</i>
2040	Pemberian AP terhad kepada 2.5% daripada jumlah baseline dan hanya untuk sektor servis sahaja <i>AP limited to 2.5% of baseline and for servicing use only</i>
2040	Larangan mutlak pengimportan HCFC mulai 1 Januari 2040 <i>Total ban on the import and use of HCFCs.</i>

(SMK), Jabatan Kastam DiRaja Malaysia. Sistem ini diwujudkan selaras dengan kehendak strategi HPMP iaitu pelaksanaan sistem Kelulusan Permit (AP) dan kuota bagi kawalan import HCFC. Bagi tahun 2020, sebanyak dua ratus lima puluh satu (251) permohonan untuk mengimport HCFC telah diterima daripada lima belas (15) pengimport berdaftar dan sebanyak enam (6) permohonan untuk mengeksport HCFC telah diterima melalui sistem e-Permit.

Malaysia and the Customs Information System of the Royal Customs of Malaysia. The establishment of this system is in line with the HPMP strategy which is the implementation of Approved Permits (AP) and a quota system for import of HCFC. In 2020, two hundred and fifty one (251) applications for importing HCFC from fifteen (15) registered importers and six (6) applications for exporting HCFC were received through the e-Permit system.



Rajah 4.6
Figure 4.6

Sasaran Pengurangan HCFC dan Penggunaan Sebenar HCFC di Malaysia HCFC Reduction Schedule versus Actual HCFC Consumption in Malaysia

Methyl Bromida

Methyl Bromida yang merupakan bahan pemusnah ozon dikawal selia penggunaannya oleh Jabatan Pertanian, Kementerian Pertanian dan Industri Makanan (sebelum ini dikenali sebagai Kementerian Pertanian dan Industri Asas Tani Malaysia). Mulai tahun 2015 penggunaannya hanya terhad terhadap kuarantin dan pra-perkapalan sahaja.

Pengimportan methyl bromida ke dalam negara dilaksana dan dikawalselia oleh Jabatan Pertanian. Jabatan Pertanian turut mewujudkan dan mengawalselia Skim Perakuan Pensijilan Pewasapan dimana syarikat penyedia rawatan berdaftar perlu menyediakan rawatan pewasapan mengikut standard antarabangsa.

Pelan Pengurusan Penghapusan HCFC Peringkat II

Pada 21 Mac 2011, Kabinet telah meluluskan strategi Pelan Pengurusan Penghapusan HCFC (HPMP). Malaysia telah menerima bantuan kewangan sejumlah USD 9,587,470 bagi pelaksanaan HPMP Peringkat 1 dari Tabung Multilateral Protokol Montreal (MLF).

Methyl Bromide

Methyl Bromide being an ozone depleting substance is being monitored by the Department of Agriculture, Ministry of Agriculture and Food Industries (formerly known as Ministry of Agriculture and Agro-Based Industry Malaysia). Since 2015, the usage has been limited only to quarantine and pre-shipment.

The import export on methyl bromide is handled and monitored by the Agriculture Department. The Agriculture Department also developed the Malaysia Accreditation Fumigation Scheme where the registered accredited company has to provide fumigation treatment according to international standards.

The HCFC Phase-out Management Plan (HPMP) Stage II

On March 21, 2011, the Cabinet approved the HCFC Phase-Out Management Plan (HPMP) strategy. Malaysia received financial assistance amounting to USD 9,587,470 for the implementation of HPMP Stage 1 from the Montreal Protocol Multilateral Fund (MLF).

Pada Mesyuarat ke 77 Executive Committee (ExCOM) for the Implementation of Montreal Protocol yang telah diadakan pada 3 November 2016, mesyuarat telah meluluskan Pelan Pengurusan Penghapusan HCFC Peringkat II berjumlah sebanyak USD 6,138,063 bagi penghapusan 146.24 Ozone Depleting Potential Tonne (ODPT) HCFC. Pelan HPMP Peringkat II ini telah diluluskan bagi projek-projek termasuk penukaran teknologi kepada Ozone Depleting Potential (ODP) sifar dan rendah Global Warming Potential (GWP) kepada enam puluh tujuh (67) industri kecil dan sederhana dari sektor busa, latihan juruteknik servis dan projek-projek bantuan teknikal dalam sektor penyejukan dan penyamanan udara.

Pelaksanaan Pelan HPMP Peringkat II ini adalah dari tahun 2017 sehingga 1 Januari 2022. Pada dua tahun pelaksanaan pelan ini tumpuan adalah kepada sepuluh (10) industri busa yang menggunakan lebih dari 20 MT HCFC 141b bagi penghapusan dalam sektor busa di mana premis-premis ini telahpun berjaya melengkapkan proses penukaran yang melibatkan penghapusan tiga puluh tiga (33.0) Ozone Depleting Potential Tonne (ODPT).

Mesyuarat EXCOM ke 84 yang telah diadakan pada 16 - 20 Disember 2019, telah meluluskan permohonan tranche kedua di bawah Pelan Pengurusan Penghapusan HCFC (HPMP) Peringkat II sejumlah USD 2,475,225.

Seterusnya, pada tahun 2020 sebanyak dua puluh satu (21) premis telah menandatangani memorandum perjanjian dan mula melaksanakan proses penukaran teknologi yang akan melibatkan penghapusan sebanyak enam belas persepuluh lapan tujuh (16.87) ODPT. Tindakan susulan terhadap baki premis yang layak kini sedang giat diambil di dalam usaha memastikan penglibatan premis ini turut serta dalam penghapusan HCFC 141b.

Pada 17 - 21 Februari 2020, satu bengkel bertajuk Workshop on Foam Alternatives and Hand Holding Activities to System Houses and PU Foam Companies HPMP II telah diadakan di Hotel Concorde, Shah Alam. Objektif bengkel adalah memaklumkan kepada pemegang taruh khususnya kepada pengguna bahan HCFC 141b seperti premis pembuatan industri busa, system houses iaitu pembekal bahan kimia alternatif terhadap HCFC 141b serta pembekal mesin serta peralatan mengenai arah tuju pelaksanaan aktiviti penghapusan penggunaan HCFC 141b iaitu sehingga bahan ini tidak dibenarkan diimport ke dalam negara dan digunakan pada 31 Disember 2021.

Penceramah dari JAS, UNDP New York, sistem house, premis yang telah melengkapkan teknologi penukaran serta pakar dalam sektor busa yang juga ahli Technology and Economic Assessment Panel (TEAP) sektor busa telah berkongsi maklumat dan pengetahuan semasa

At the 77th Executive Committee Meeting (ExCOM) for the Implementation of the Montreal Protocol held on 3 November 2016, the HPMP Stage II for a total of USD 6,138,063 for the phase-out of 146.24 ODP Ton HCFC was approved. The HPMP Stage 2 Plan has been approved for projects including the conversion technology of zero ODP and reduce GWP to 67 small and medium industries from the foam sector, the training of service technicians and technical assistance projects in the refrigeration and servicing sector.

The Implementation of the Stage II HPMP Plan is from 2017 to 1 January 2022. The focus during the first two (2) years of this implementation is on the ten (10) foam industries using more than 20 MT HCFC 141b for the phase - out of HCFC 141b in the foam sector. Thirty three (33.0) ODPT of ODS has been phased - out when these companies completed the conversion project.

The 84th EXCOM meeting that was held from 16 - 20 December 2019 has approved USD 2,475,225 being the second tranche under HCFC Phase-out Management Plan Stage II.

Subsequently in 2020, a total of twenty-one (21) foam industries have signed the memorandum of agreement (MoA) and have started implementing the conversion technology which will phase-out sixteen point eighty seven (16.87) ODPT. Follow-up action towards the rest of the approved premises is now actively being carried out to ensure their participation in the efforts of phasing - out of HCFC 141b.

From 17 -21 February 2020, a Workshop on Foam Alternatives and Hand Holding Activities to System Houses and PU Foam Companies HPMP II was held at Concorde Hotel, Shah Alam. The objectives of the workshop were to inform stakeholders, particularly the users of HCFC 141b such as foam manufacturing sectors , system houses who are suppliers of the alternative chemicals to HCFC 141b as well as machine and equipment suppliers on the way forward towards the phasing - out of HCFC 141b, that is until it is prohibited to be imported and used by 31 December 2021.

Speakers from the Department of Environment, UNDP New York, system houses, premises that have completed the conversion technology and foam experts who are also Technology and Economic Assessment Panel (TEAP) members shared their knowledge and information.

bengkel tersebut. Majlis yang telah dirasmikan oleh YBrs. Tuan Timbalan Ketua Pengarah (Operasi) ini telah dihadiri seramai 70 orang peserta.

Bengkel turut merangkumi aktiviti lawatan tapak ke premis busa di seluruh negara yang meliputi pelbagai aplikasi pembuatan busa bagi memberi nasihat dan penerangan “hands-on” mengenai teknologi dan peralatan praktikal yang boleh digunapakai serta penjelasan terperinci mengenai hala tuju negara di dalam pelaksanaan penghapusan HCFC 141b.

The workshop was officiated by the Deputy Director General (Operation) of Environment Malaysia and was attended by 70 participants.

The workshop included ground visits to foam industries on various applications to advise and provide ‘hands-on’ explanation on technology and practical equipment that can be used, as well as detailed explanations on country’s way forward on the phasing out of HCFC 141b.



Projek Penukaran Teknologi dalam Sektor Busa dari Bahan Pemusnah Ozon, HCFC 141b Kepada Bahan Bukan Pemusnah Ozon, Cyclopentane

Conversion Project in Foam Sector from Ozone Depleting Substances, to Non - Ozone Depleting Substances, Cyclopentane

Program Pentauliah Juruteknik Servis (CSTP) Bagi Sektor Penyejukbekuan dan Penyaman Udara (RACs)

Pentauliah kepada juruteknik servis sektor penyejukbekuan dan penyaman udara merupakan salah satu keperluan di dalam Peraturan-Peraturan Kualiti Alam Sekeliling (Pengurusan Refrigeran) 1999. Sektor servis alat penyejukbekuan dan penyaman udara merupakan salah satu penyumbang utama kepada penggunaan HCFC dalam negara. Sehubungan itu, JAS melalui Pusat Latihan Bertauliah (ATC) yang dilantik daripada institut latihan awam dan swasta menganjurkan siri latihan CSTP khusus kepada juruteknik sektor ini sebagai salah satu langkah pematuhan terhadap Protokol Montreal. Penekanan terhadap tatacara dan kod etika yang betul semasa pengendalian refrigeran juga diberikan semasa sesi latihan sebagai usaha untuk mengelakkan pelepasan refrigeran ke persekitaran.

Certified Service Technician Programme (CSTP) for Refrigeration and Air-Conditioning Sectors (RACs)

Certification for service technicians in the refrigeration and air conditioning sectors is one of the requirements under the Environmental Quality Regulations (Refrigerant Management) 1999. The servicing sector for refrigeration and air conditioning equipment is one of the main contributors for HCFC consumption in the country. In this regard, DOE through the appointed Authorized Training Centres (ATC) from government and private training institutes organized a series of CSTP training for the technicians to comply with the Montreal Protocol. The training focused on the right practices and code of ethics during the handling of refrigerants in an effort to prevent the release of refrigerants into the environment.

Sepanjang tahun 2020, sebanyak 40 siri latihan CSTP telah dijalankan untuk melatih dan mentauliahkan juruteknik servis sektor penyejukbekuan dan penyaman udara. Seramai 1,829 orang juruteknik telah mendaftar untuk mendapatkan pentauliahkan dan 1,493 dari juruteknik tersebut telah lulus. JAS juga mengadakan lawatan audit ke ATC yang terpilih semasa mereka menjalankan latihan bagi memastikan sesi latihan dijalankan selaras dengan manual latihan yang telah ditetapkan oleh Jabatan.

JAS juga menyediakan pembangunan kapasiti bagi tenaga pengajar kursus CSTP dan memastikan tenaga pengajar tersebut adalah sentiasa mengikut peredaran masa dan teknologi terkini dalam sektor penyejukbekuan dan penyaman udara. JAS telah mengadakan kursus 'Refresher Course for Master Trainers' kepada tenaga pengajar yang sedia ada secara online berikutan Perintah Kawalan Pergerakan

In 2020, 40 series of CSTP training were organised by ATCs to train and certify technicians in the refrigeration and air conditioning sector. A total of 1,829 technicians enrolled for the training and 1,493 of them were certified. DOE also conducted audits on selected ATCs to ensure that the trainings were implemented in accordance with the training manual, as determined by the Department.

DOE also provided capacity building to the trainers for CSTP training and ensured that the trainers were up to date on the current and latest technologies in the refrigeration and air conditioning sector. DOE organised an online Refresher Course for Master Trainers for the existing trainers due to the Movement Control Order (MCO) imposed by the Government. DOE has also updated and improved the training manual for CSTP to



Refresher Course for Master Trainers yang Dijalankan Secara Atas Talian
Refresher Course for Master Trainers which was Held Virtually

(PKP) yang dikuatkuasakan oleh Kerajaan. Selain itu, JAS telah mengemaskini dan menambahbaik manual latihan kursus CSTP bagi merangkumi alternatif refrigeran bukan bahan pemusnah ozon seperti HFC dan hidrokarbon.

Di bawah komponen pengurusan, koordinasi dan kerjasama, JAS bersama dengan Jabatan Kastam DiRaja Malaysia (JKDM) bercadang mengadakan dua (2) sesi Kursus Kawalan Bahan Pemusnah Ozon, namun susulan Perintah Pergerakan Pergerakan (PKP) akibat pandemik Covid-19 yang telah melanda negara, hanya satu (1) sesi sahaja dapat dilaksanakan. Kursus Kawalan Bahan Pemusnah Oozn telah diadakan dari 02 - 06 Mac 2020 di Johor Bharu, Johor. Seramai 37 orang pegawai penguatkuasa dari JKDM dan JAS telah menghadiri kursus tersebut.

Program ini diadakan bagi menyebarkan maklumat kepada penguatkuasa JKDM dan JAS berkenaan pelaksanaan dan pematuhan terhadap Protokol Montreal, peraturan-peraturan bagi mengawal dan mengawasi pengimportan dan pengeksporan bahan pemusnah ozon. Selaras dengan keperluan negara terhadap Pindaan Kigali mengenai penyusutan Hidrokloroflourokarbon (HFC) yang merupakan gas rumah hijau, Perintah Import Eksport HFC telah digazetkan oleh Jabatan Kastam Di Raja Malaysia. Penerangan mengenai kawalan import eksport HFC ini

include other alternative refrigerants such as HFC and hydrocarbon.

Under the cooperation, coordination and management components, the Department of Environment (DOE) together with the Malaysia Royal Customs Department (MRCD) planned to organise two (2) courses on the Control of Ozone Depleting Substances (ODS). Pursuant to the Movement Control Order (MCO) due to the Covid -19 pandemic, only one (1) session was held from 02 - 06 March 2020 at Johor Bharu, Johor. A total of thirty - seven (37) Malaysia Royal Customs Department and Department of Environment enforcement officers attended this course.

This programme was organized to disseminate information to the enforcement officers of The Royal Malaysia Customs Department and the DOE on the implementation and compliance towards the Montreal Protocol, regulations for controlling and monitoring importation and exportation of the ozone depleting substances. In line with the country's commitment towards the phase-down of HFCs which are potent greenhouse gases, The Royal Malaysia Customs Department gazetted The Order on Import Export of HFC. Relevant explanations on the import export



Sesi Penutup Kursus Kastam Terhadap Bahan Pemusnah Ozon Siri 1/ 2020 yang telah Disempurnakan oleh Timbalan Ketua Pengarah (Operasi) JAS Malaysia

The Closing Ceremony on Customs Training on Ozone Depleting Substances (ODS) Siri 1/2020 by the Deputy Director General of Environment (Operation) Malaysia

turut disampaikan semasa sesi tersebut. Kursus ini turut merangkumi aktiviti di lapangan dimana satu lawatan berobjektif ke pelabuhan Pasir Gudang, Johor turut diadakan dengan objektif bagi memberi pendedahan kepada peserta mengenai tatakkerja pengimportan dan pengeksportan bahan pemusnah ozon di lapangan.

Program dan Kempen Kesedaran

Sempena dengan sambutan Hari Ozon Sedunia yang disambut pada setiap tahun 16 September, pengumuman khas tema “Ozon Untuk Kehidupan : 35 Tahun Perlindungan Lapisan Ozon” telah disiarkan di laman sesawang JAS dan laman sosial di facebook dan Instagram.

Majlis perasmian Sambutan Hari Ozon Sedunia Tahun 2020 ini telah diadakan di Hotel Le Meridien, Putrajaya pada 23 September 2020. Majlis telah disempurnakan oleh YB Dato’ Sri Tuan Ibrahim Bin Tuan Man, Menteri Alam Sekitar dan Air (KASA). Antara dif - dif kehormat yang mengiringi Menteri KASA ini termasuklah Ketua Setiausaha KASA, Dato’ Sri Ir Dr. Zaini Ujang, Resident Representative UNDP, Encik Niloy Barnajee, Ketua Pengarah Alam Sekitar Malaysia, Puan Norlin Jaafar selain pegawai pegawai kanan dari KASA serta JAS Malaysia.

Memandangkan Perintah Kawalan Pergerakan Pemulihan (PKPP) sedang dilaksanakan, bilangan jemputan yang terhad seramai lebih kurang seratus (150) orang termasuk urusetia dengan mengamalkan Prosedur Operasi Standard (SOP). Kemuncak sambutan adalah dimana sebanyak sepuluh (10) buah premis busa yang telah berjaya melengkapkan projek penukaran teknologi dalam tempoh dua tahun pertama pelaksanaan HPMP Peringkat 2 telah menerima Plak Penghargaan di atas penglibatan dan komitmen dalam menjayakan projek penghapusan HCFC 141b.

Sepuluh (10) orang pempamer yang terdiri dari industri penyejukan, pengimport refrigeran dan halon, pusat latihan bertauliah dan syarikat pengutip e wastes menyertai pameran tersebut.

Pelbagai aktiviti promosi dan kesedaran mengenai perlindungan lapisan ozon telah diadakan bagi meningkatkan kesedaran orang ramai. Ianya dimulai dengan Bengkel Prosedur Operasi Tetap Mengenai Peraturan-Peraturan Kualiti Alam Sekeliling (Pengurusan Refrigeran) 2020, Video pengumuman Sambutan Hari Ozon Sedunia pada 16 September 2020 oleh YB Menteri Alam Sekitar dan Air, Wawancara bersama Ketua Pengarah Alam Sekitar Malaysia, Puan Norlin Jaafar bersama akhbar Sinar Harian, sesi Webinar bersama pengurusan JAS, pertandingan video pendek, e-poster dan infografik serta aktiviti sambutan secara serentak yang diadakan oleh JAS negeri.

control were delivered during the session. The training included a ground visit to the Pasir Gudang, Johor port with objectives to expose the participants to the import and export procedures at the point of entry.

Awareness Programmes And Campaigns

In conjunction with the World Ozone Day on the 16 September, special announcements with the theme “Ozone for Life : 35 years of Ozone Protection” were made through the DOE’s website and social media in Facebook and Instagram.

The 2020 World Ozone Day celebration which was held in Le Meridien Putrajaya was officiated by YB Dato’ Sri Tuan Ibrahim Bin Tuan Man, the Minister of Environment and Water (KASA). Among the guests of honour were the Secretary General of KASA, Dato’ Sri Ir Dr. Zaini Ujang, Resident Representative UNDP, Mr. Niloy Banerjee, the Director General of Environment Malaysia, Ms. Norlin Jaafar and senior officials from the Ministry of Environment and Water and the Department of Environment Malaysia.

Due to the ongoing Recovery Movement Control Order (RMCO), strict adherence to SOPs were practised. This meant there was a limited number of guests totalling not more than one hundred and fifty (150) including secretariats. The highlight of the celebration was the plaque giving ceremony by the Minister of Environment and Water to ten (10) foam premises that had completed the technology conversion within the first two years of HPMP Stage II implementation for their commitment and participation in the phasing out of HCFC 141b.

Ten (10) exhibitors, namely from the cooling industry, refrigerant and halon importers, authorised training centres and e-waste collection companies participated in exhibition

Various awareness activities, outreach and promotional activities on saving the ozone layer were held to increase awareness among the public. This included a Workshop on Standard Operating Procedures on Environmental Quality Act (Refrigerant Management) 2020, a video on the launch of Ozone Day Celebration by the Honourable Minister Environment and Water on 16 September 2020, an interview by “Sinar Harian” news agency with the Director General of Environment, Puan Norlin Jaafar, a webinar on saving the ozone layer with the Department of Environment management, and short video, e-poster and infographics competitions were organised, apart from concurrent celebrations at DOE state offices.



Pengumuman di dalam Media Sosial Sempena Hari Ozon Sedunia pada 16 September 2020
Announcement in Social Media in Conjunction with World Ozone Day on September 16, 2020



**YB Menteri dan Dif Kehormat Bersama Para Penerima Plaq dari Industri Busa.
Honourable Minister with Guests of Honour and Plaque Recipient from Foam Sector**

Mesyuarat ke 11 Biro Parti - Parti Kepada Konvensyen Vienna Mengenai Perlindungan Lapisan Ozon dan Mesyuarat ke 31 Parti - Parti kepada Protokol Montreal Mengenai Bahan - Bahan Pemosnah Ozon, 21 November 2020 Dan Mesyuarat ke 12 Parti - Parti kepada Konvensyen Vienna Mengenai Perlindungan Lapisan Ozon (Bahagian 1) dan Mesyuarat ke 31 Parti - Parti kepada Protokol Montreal Mengenai Bahan - Bahan Pemosnah Ozon, 23 - 27 November 2020.

11th Meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer and the 31st Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, held on 21 November 2020 and the 12th Meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer (Part 1) and the 32nd Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, 23 - 27 November 2020.

Susulan pandemik Covid -19 yang telah melanda seluruh dunia serta kawalan rentas sempadan yang sedang berkuatkuasa dikebanyakan negara dilanda pandemik, Mesyuarat ke 11 Biro Parti - Parti Kepada Konvensyen Vienna Mengenai Perlindungan Lapisan Ozon dan Mesyuarat ke 31 Parti - Parti kepada Protokol Montreal Mengenai Bahan - Bahan Pemosnah Ozon telah diadakan pada 21 November 2020 secara atas talian. Urusetia iaitu Sekretariat Ozon di Nairobi telah mengaturkan mesyuarat bersama Presiden dan naib Presiden yang telah dilantik mewakili setiap benua turut disertai oleh Ketua Pengarah Alam Sekitar Malaysia iaitu Puan Norlin Jaafar yang telah dilantik sebagai Naib Presiden kepada Biro Mesyuarat ke 31 Parti-Parti kepada Montreal Protokol mewakili rantau Asia Pasifik. Lantikan ini merupakan satu penghormatan kepada Malaysia sebagai salah sebuah negara A5 yang bersedia menyuarakan pendapat serta penyertaan aktif semasa rundingan.

Pursuant to the global pandemic of Covid-19 pandemic and border controls by most of the affected countries, the 11th Meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer and the 31st Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer was held online on 21 November 2020. The Secretariat, being the Ozone Secretariat at Nairobi organised the meeting together with the appointed President and Vice President from the respective regions. The Director General of Environment Malaysia, Ms. Norlin Jaafar, being the appointed Vice President representing Asia Pacific attended the meeting. The appointment was an honour to Malaysia being one of the nations of the A5 that stands ready to voice opinions as well as be active participations during negotiations.

Mesyuarat telah berbincang dan telah bersetuju terhadap agenda dan keputusan mengenai peta jalan pelaksanaan Mesyuarat ke 12 Konvensyen Vienna (Bahagian 1) dan Mesyuarat ke 32 Parti kepada Protokol Montreal.

Mesyuarat Ke-12 Parti-Parti Kepada Konvensyen Vienna Terhadap Perlindungan Lapisan Ozon (Bahagian I) dan Mesyuarat Ke-32 Parti-Parti Kepada Protokol Montreal Mengenai Bahan - Bahan Pemusnah Ozon telah berlangsung pada 23-27 November 2020. Mesyuarat telah dimulakan dengan Segmen Persediaan iaitu dari 23-26 November 2020 dan diikuti dengan Segmen Peringkat Tinggi pada 27 November 2020.

Delegasi Malaysia diketuai oleh Ketua Pengarah Alam Sekitar Malaysia, Puan Norlin Jaafar dan disertai oleh pegawai - pegawai Bahagian Udara, JAS, Kementerian Alam Sekitar dan Air (KASA), Kementerian Luar Negeri (KLN) dan Suruhanjaya Tinggi Malaysia di Nairobi

Mesyuarat antarabangsa berskala besar yang diadakan atas talian buat julung kalinya telah disertai oleh lebih dari tiga ratus (300) orang delegasi. Mesyuarat seterusnya iaitu Mesyuarat Ke-12 Parti-Parti Kepada Konvensyen Vienna (Bahagian II) dan Mesyuarat Ke-33 Parti-Parti Kepada Protokol Montreal (MOP33) akan diadakan pada 25-29 Oktober 2021 di Nairobi, Kenya.

The meeting deliberated and agreed on the agenda and the implementation road map of the 12th Meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer (Part 1) and the 32nd Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer.

The 12th Meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer (Part 1) and the 32nd Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, was held from 23 -27 November 2020. It started with the Preparatory Segment from 23 - 26 November 2020, followed by the High level Segment on 27 November 2020.

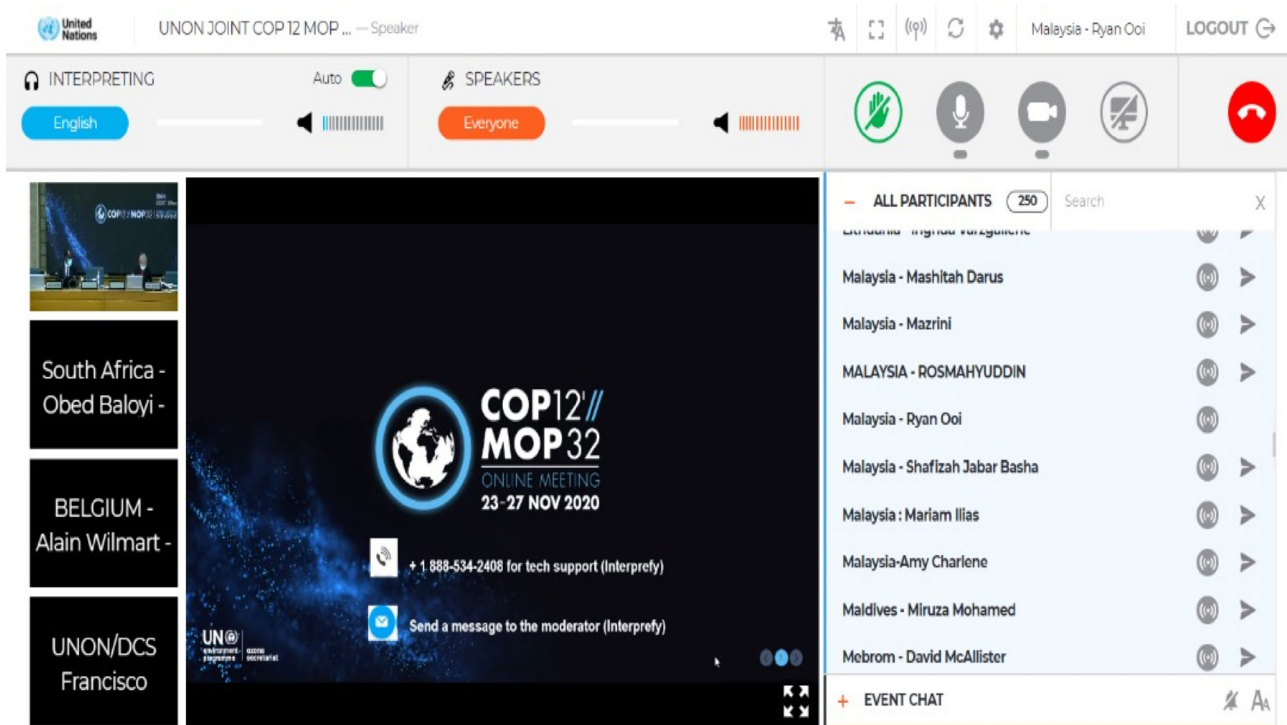
The Malaysian delegation led by the Director General of Environment Malaysia, Ms. Norlin Jaafar had officers from the Air Division, DOE, Ministry of Environment and Water (KASA), Ministry of Foreign Affairs (MOFA) and Malaysia High Commission in Nairobi.

This first large-scale intergovernmental online meeting was attended by more than three hundred (300) delegates. The next meeting, The 12th Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer (Part II) and 33rd Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer will be held from 25-29 October 2021 in Nairobi, Kenya.



Delegasi Malaysia yang Menghadiri Mesyuarat ke 12 Parti - Parti kepada Konvensyen Vienna Mengenai Perlindungan Lapisan Ozon (Bahagian 1) dan Mesyuarat ke 31 Parti - Parti kepada Protokol Montreal Mengenai Bahan - Bahan Pemusnah Ozon dari 23 - 27 November 2020.

Malaysian delegates attended the 12th Meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer (Part 1) and the Thirty-Second Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, 23 - 27 November 2020.



Sesi Atas Talian Segmen Persediaan Mesyuarat Mesyuarat Ke 12 Parti - Parti kepada Konvensyen Vienna Mengenai Perlindungan Lapisan Ozon (Bahagian 1) dan Mesyuarat ke 31 Parti - Parti kepada Protokol Montreal Mengenai Bahan-bahan Pemusnah Ozon, 23 - 26 November 2020.

Online Session on Preparatory Segment of the 12th Meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer (Part 1) and the Thirty-Second Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, 23 - 27 November 2020.

PENGURUSAN BUANGAN TERJADUAL SCHEDULED WASTE MANAGEMENT

Lesen Premis Yang Ditetapkan

Sejumlah 755 lesen dikeluarkan kepada kemudahan baru dan sediaada pada tahun 2020 yang terdiri daripada 192 kemudahan pemerolehan kembali luar tapak bukan e-waste, 13 kemudahan pemerolehan kembali penuh luar tapak bagi e-waste, 106 kemudahan pemerolehan kembali separa luar tapak bagi e-waste, 27 kemudahan penunu buangan terjadual, 9 kemudahan pengolahan luar tapak, 6 kemudahan tapak pelupusan selamat dan 52 kemudahan penstoran luar tapak. Sejumlah 345 lesen dikeluarkan kepada pembawa yang ditetapkan. (Jadual 4.25).

Licenses for Prescribed Premises

A total number of 755 licenses were issued for both existing and new facilities in 2020 which consists of 192 licenses for off-site recovery (non e-waste), 13 licenses for off-site full recovery plants (e-waste), 106 licenses for off-site partial recovery plants (e-waste), 27 licenses for scheduled wastes incinerators, 9 licenses for off-site treatment, 6 licenses for secured landfills and 52 licenses for off-site storage facilities. A total of 345 licenses were issued for prescribed conveyance (Table 4.25).

Jadual 4.25 : Lesen-Lesen yang Dikeluarkan bagi Kemudahan Pemerolehan Kembali, Pengolahan & Pelupusan Buangan Terjadual yang Diluluskan oleh Jabatan Alam Sekitar, 2020

Table 4.25 : Licenses Issued for Recovery Facilities Processing Hazardous Waste Disposal Approved by the Department of Environment, 2020

BIL. / NO.	KEMUDAHAN / FACILITIES	JUMLAH LESEN DIKELUARKAN MENGIKUT NEGERI / NUMBER OF LICENSES 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	64	24	4	22	23	7	29	1	49	8	28	71	5	5	5	345
	Penstoran Luar Tapak / Off Site Storage	5	1	1	3	2	2	1	0	1	6	23	1	0	0	6	52
2	Pemerolehan Kembali Luar Tapak / Off Site Recovery																
a.	Pemerolehan Kembali Luar Tapak (bukan e-Waste) / Off Site Recovery (none e-waste)	36	13	0	12	17	8	23	1	20	2	4	48	6	0	2	192
b.	Pemerolehan Kembali Luar Tapak (penuh e-Waste) / Off Site Recovery (full e-Waste)	1	0	0	0	1	0	0	0	10	0	0	1	0	0	0	13
c.	Pemerolehan Kembali Luar Tapak (separa e-Waste) / Off Site Recovery (partial e-Waste)	24	10	3	9	6	0	2	0	19	1	5	20	2	5	0	106
3	Penunu Buangan Terjadual / Schedule Waste Incinerator	6	0	0	0	2	1	4	0	1	0	8	2	2	0	1	27
4	Pengolahan Di Tanah / Land Treatment Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Pengolahan Luar Tapak / Off Site Treatment Facilities	1	0	0	1	2	0	2	0	0	0	0	2	0	0	1	9
6	Tapak Pelupusan Selamat / Secured Landfill	1	1	0	0	1	1	0	0	0	0	1	0	1	0	0	6
7	Bil. Lesen / No. of License	138	49	8	47	56	19	61	2	100	18	71	145	16	10	15	755
8	Bil. Premis / No. of Premises	74	25	4	25	33	12	32	1	51	10	43	74	11	5	10	410

PELUPUSAN HARAM BUANGAN TERJADUAL ILLEGAL DUMPING OF SCHEDULED WASTES

Bagi tahun 2020, sebanyak tujuh belas (17) kes pelupusan haram buangan terjadual telah direkodkan dan lapan (8) daripada kes tersebut berlaku di Negeri Selangor.

Insiden pelupusan haram ini juga telah menyebabkan penutupan Loji Rawatan Air Selangor Fasa 1, Fasa 2, Fasa 3 dan Loji Rawatan Air Rantau Panjang sebanyak dua (2) kali akibat daripada peningkatan parameter bau melebihi 1 TON di takat pengambilan air mentah Sungai Selangor. Impak daripada pencemaran ini telah menyebabkan gangguan bekalan air kepada hampir 1.2 juta pengguna di Lembah Kelang dan Selangor.

There were seventeen (17) cases of illegal dumping of scheduled wastes recorded in 2020 with eight (8) of the cases being in Selangor.

Some of these illegal dumping cases led to the closure of the Selangor Water Treatment Plant Phase 1, Phase 2, Phase 3 and of Rantau Panjang Water Treatment Plant twice due to the high reading of Threshold Odor Number (TON) of more than 1 TON at Sungai Selangor water intake point. The closure of these water treatment plants caused water shortage affecting almost 1.2 million residents in Klang Valley.

Selain daripada Loji Rawatan Air, insiden pelupusan haram juga telah menyebabkan Loji Kumbahan Indah Water Konsortium (IWK) gagal berfungsi apabila sisa buangan terjadual dibuang ke dalam lurang (manhole) IWK atau lubang tandas premis yang kemudiannya mengalir ke loji kumbahan.

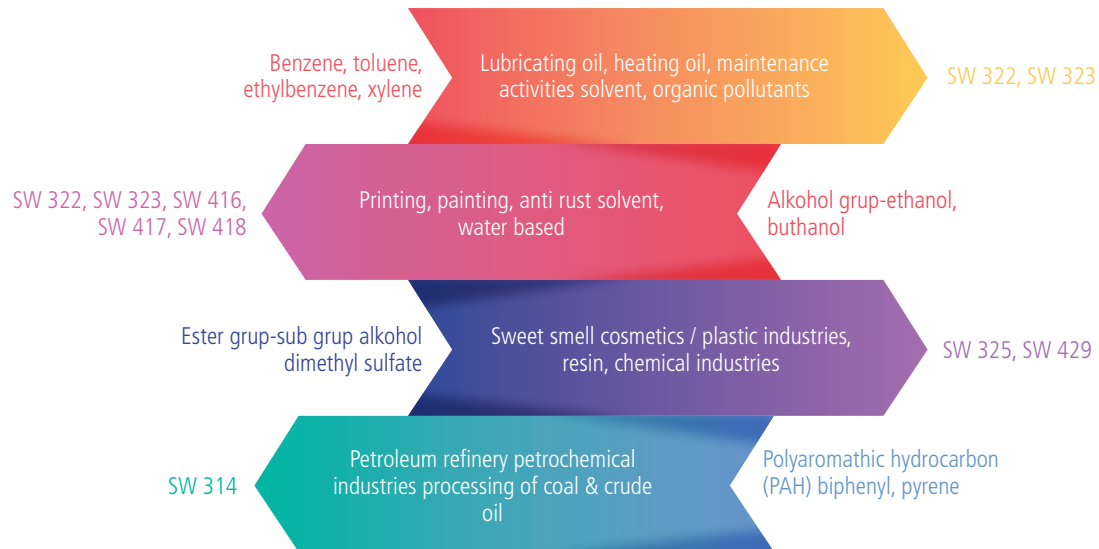
Other than that, some of the illegal dumping incidents also caused a disruption in the operations of the Indah Water Konsortium (IWK) Sewage Treatment Plant as a result of the scheduled wastes being dumped into the IWK manhole or into the premise's lavatory which flows to the sewage treatment plant.



**Loji Kumbahan IWK di Taman Velox, Rawang yang Dicemari oleh Pelupusan Haram Buangan Terjadual.
IWK Sewage Treatment Plant in Taman Velox, Rawang Contaminated with Illegal Dumping of Scheduled Wastes.**



**Penstoran Sisa Bahan Buangan Terjadual yang Tidak Dilesenkan oleh Jabatan Alam Sekitar (JAS) di Taman Velox, Rawang yang Menyebabkan Pencemaran di Loji Kumbahan Tersebut.
Illegal Storage of Scheduled Wastes in Taman Velox, Rawang that Leads to the Contamination of the Sewage Treatment Plant.**



Rajah 4.7
Figure 4.7

Jenis Bahan Buangan Terjadual yang Terlibat dalam Pelupusan Haram pada Tahun 2020 Typical Scheduled Wastes Involved in Illegal Dumping in 2020

Berdasarkan analisis kimia yang dijalankan ke atas buangan terjadual yang dijumpai di lokasi kebanyakan kes pelupusan haram, jenis bahan buangan terjadual yang terlibat adalah bahan buangan berasaskan pelarut (i.e SW 312, SW 313 dan SW 314) dan juga enapcemar (i.e SW 416, SW 417 dan SW 418). Bahan buangan tersebut adalah kebanyakannya dihasilkan daripada industri petrokimia, aktiviti penyelenggaraan kenderaan dan juga industri kosmetik.

Dalam usaha mengekang aktiviti pelupusan haram yang dilakukan oleh pengeluar ataupun pengangkut buangan terjadual, beberapa inisiatif akan dilaksanakan oleh JAS, seperti:-

- i. Mewajibkan pemasangan dan penggunaan GPS Tracking kepada semua pengangkut buangan terjadual;
- ii. Menghadkan waktu operasi lori-lori pengangkut;
- iii. Kawalan ke atas penggunaan lori-lori pengangkut pihak ketiga oleh Premis Yang Ditetapkan Buangan Terjadual; dan
- iv. Memastikan setiap Premis Yang Ditetapkan (Buangan Terjadual) mempunyai perlindungan insuran yang bersesuaian bagi menguruskan buangan terjadual di premis masing-masing sebelum lesen operasi diperbaharui.

According to the chemical analysis of the scheduled wastes, the types of scheduled wastes involved in those aforementioned illegal dumping cases were mainly solvents (i.e SW 312, SW 313 and SW 314) and sludge (i.e SW 416, SW 417 and SW 418). These scheduled wastes are typically generated from petrochemical industries, workshops and cosmetic industries.

In order to curb the illegal disposal of scheduled wastes, the Department of Environment (DOE) is going to implement several initiatives which include:

- i. Imposed mandatory application of GPS Tracking on the scheduled wastes transporters;
- ii. Control the operation time limit of the transporters;
- iii. Stringent monitoring over the use of third-party transporters by the licensed Scheduled Wastes Prescribed Premises; and
- v. Ensuring all Prescribed Premises (Scheduled Wastes) are covered with appropriate insurance coverage related to scheduled wastes management at the premises before approving the scheduled wastes license renewal.

KEMPEN PENGUMPULAN BUANGAN ELEKTRIK DAN ELEKTRONIK DARI ISI RUMAH SEMPENA SAMBUTAN HARI ALAM SEKITAR NEGARA 2020

HOUSEHOLD ELECTRICAL AND ELECTRONIC WASTE COLLECTION CAMPAIGN IN CONJUNCTION WITH NATIONAL ENVIRONMENT DAY 2020

Buangan elektrik dan elektronik atau dikenali sebagai e-waste adalah dikategorikan sebagai buangan terjadual dengan kod SW110 di bawah Jadual Pertama, Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005, Akta Kualiti Alam Sekeliling 1974.

E-waste merupakan barangan elektrik dan elektronik yang telah rosak, tidak berfungsi atau lama/usang. E-waste (SW110) dikategorikan sebagai buangan berbahaya kerana ianya mempunyai komponen berbahaya yang terdiri daripada pemasangan elektrikal dan elektronik yang mengandungi komponen seperti akumulator, suis raksa, kaca daripada tiub sinar katod dan kaca teraktif atau kapasitor bifenil terpoliklorin yang lain, atau yang dicemari dengan kadmium, raksa, plumbum, nikel, kromium, litium, perak, mangan atau bifenil terpoliklorin.

Penjanaan e-waste terbahagi kepada 2 jenis punca iaitu daripada sektor industri dan yang dihasilkan daripada isi rumah. Bagi e-waste yang dijana daripada industri, pengurusannya telah dikawal di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 dari mula dihasilkan sehingga ianya dilupuskan. Pihak Industri adalah bertanggungjawab untuk menghantar e-waste yang dihasilkan ke kemudahan pemerolehan kembali yang dilesenkan oleh JAS.

Manakala bagi e-waste yang dihasilkan dari isi rumah, satu mekanisma iaitu Sistem Pengurusan Buangan Elektrik dan Elektronik di Malaysia yang menegenahkan konsep Extended Producer's Responsibility (EPR) dan shared responsibility yang mana semua pihak berkepentingan (pengeluar/ pengimport, peruncit, pengguna/pengeluar buangan, pengumpul dan pengitar semula) adalah bertanggungjawab melaksanakan peranan masing-masing dalam memastikan pengurusan e-waste yang sempurna dan mesra alam.

Bagi meningkatkan kesedaran orang awam mengenai pengurusan e-waste, Kempen Pengumpulan Buangan Elektrik dan Elektronik dari isi rumah telah dilaksanakan sempena sambutan Hari Alam Sekitar Negara 2020 bermula pada 21 September 2020 sehingga 30 November 2020. Kempen ini adalah bertujuan untuk:

- i Memupuk dan mempertingkatkan sikap keprihatinan dan tanggungjawab orang awam dalam memelihara dan memulihara alam sekitar.
- ii Meningkatkan kesedaran dan kefahaman orang awam mengenai sistem pengurusan e-waste.

Electrical and electronic waste or e-waste is categorised as scheduled wastes with code SW110 under the First Schedule, Environmental Quality (Scheduled Waste) Regulations 2005, Environmental Quality Act 1974.

E-waste is electrical and electronic appliances that are broken, non-working or old/obsolete. E-waste (SW110) is categorized as scheduled waste because it has hazardous components that consist of electrical and electronic assemblies containing components such as accumulators, mercury switches, glass from cathode-ray tubes and other activated glass or polychlorinated biphenyl-capacitors, or contaminated with cadmium, mercury, lead, nickel, chromium, copper, lithium, silver, manganese or polychlorinated biphenyl.

E-waste is generated from 2 types of sources - from industries and households. The management of e-waste generated from industries has been regulated under the Environmental Quality (Scheduled Waste) Regulations 2005 from generation until disposal. It is the responsibility of the respective industries to send their e-waste to the recovery facilities licensed by the DOE.

As for e-waste generated from households, a mechanism known as Electrical and Electronic Waste Management System in Malaysia is being developed that highlights the concept of Extended Producer Responsibility (EPR) and shared responsibility where all stakeholders (manufacturers /importers, retailers, consumers /waste generator, collectors and recyclers) are responsible for playing their role in ensuring that e-waste is managed in an environmentally sound manner.

To increase public awareness on the management of e-waste, Electrical and Electronic Waste Collection Campaigns for households have been conducted in conjunction with the National Environment Day 2020 (NED), held from 21 September - 30 November 2020. The purpose of this campaign was to:

- i Foster and enhance the public's concern and responsibility in preserving and conserving the environment.
- ii Increase awareness and understanding among the public on the e-waste management system.

- iii Meningkatkan kerjasama pemegang taruh dan semua lapisan masyarakat dalam memastikan pengurusan dan pengendalian e-waste dapat dilaksanakan dengan lebih ESM.
- iv Menggalakkan pewujudan pusat pengumpulan e-waste bagi 6 jenis e-waste iaitu mesin basuh, pendingin hawa, televisyen, peti sejuk, telefon bimbit dan komputer.

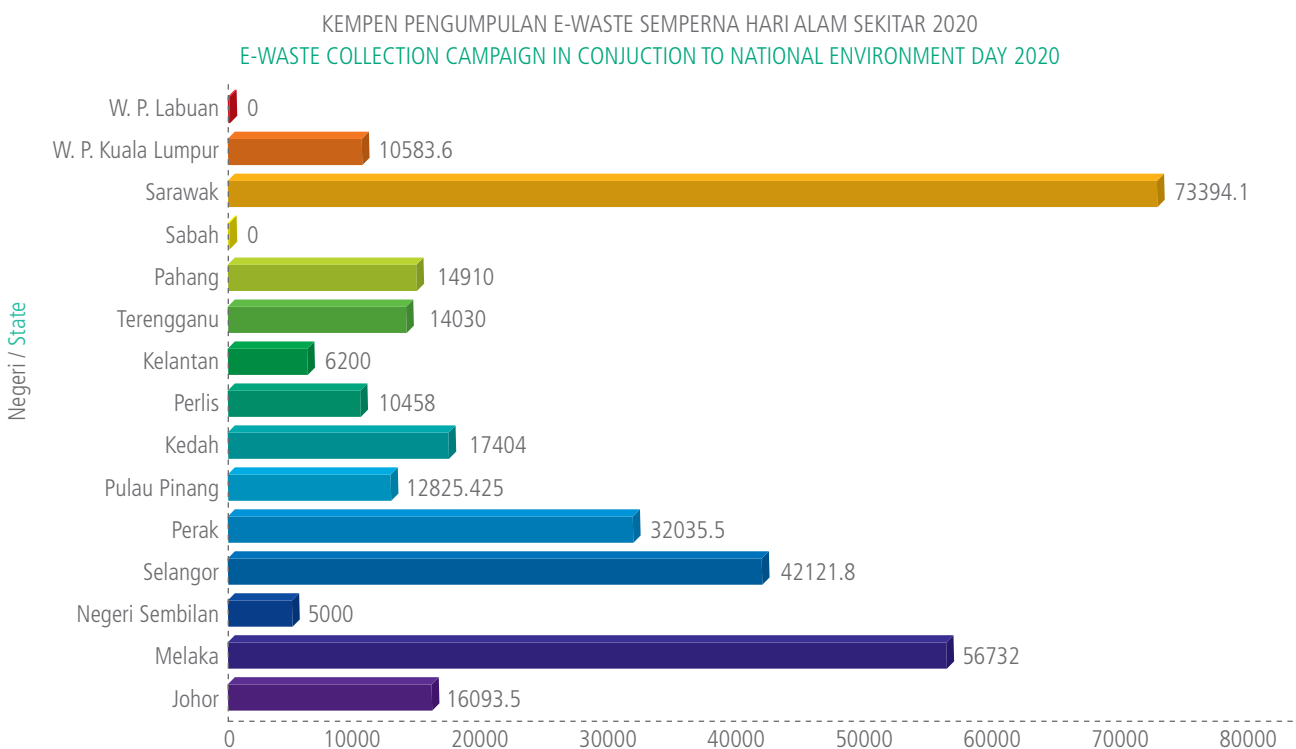
Penglibatan orang awam sepanjang tempoh kempen amatlah memberangsangkan yang mana jumlah keseluruhan pengumpulan e-waste yang berjaya dicatatkan adalah sebanyak 311,787.93 kilogram. Analisis jumlah pengumpulan e-waste setiap negeri adalah seperti di **Rajah 4.8**. Terdapat beberapa negeri seperti Sabah dan Wilayah Persekutuan Labuan yang tidak dapat melaksanakan kempen pengumpulan akibat daripada pandemik Covid-19 dan Perintah Kawalan Pergerakan Diperketatkan (PKPD) yang telah ditetapkan oleh Kerajaan.

Susulan daripada kejayaan Kempen Pengumpulan E-Waste tersebut, Kementerian Alam Sekitar dan Air (KASA) telah mengambil inisiatif untuk menetapkan hari Sabtu terakhir setiap bulan sebagai Hari Pengumpulan E-Waste. Pelaksanaan Hari Pengumpulan E-Waste ini akan bermula pada Januari 2021.

- iii Enhance stakeholders and society's cooperation in ensuring that the handling and management of e-waste is implemented in Environmentally Sound Management (ESM).
- iv Encourage the establishment of e-waste collection centers for 6 e-waste items which are washing machines, air conditioners, televisions, refrigerators, mobile phones and computers.

The public involvement during the campaign was very supportive as the total e-waste successfully collected and recorded came up to 311,787.93 kilograms. The analysis of total e-waste collected in each state is shown in **Figure 4.8**. Some states such as Sabah and the Federal Territory of Labuan were unable to conduct the e-waste collection campaign due to the Covid-19 pandemic and Restricted Movement Control Order (RMCO) that had been implemented by the government.

Following the success of the E-Waste Collection Campaign, the Ministry of Environment and Water (KASA) has taken the initiative to establish every Saturday of the month as E-Waste Collection Day, which will begin from January 2021.



Rajah 4.8
Figure 4.8

Analisis Pengumpulan E-Waste mengikut Negeri
Analysis of E-Waste Collection by State

Selain dari aktiviti pengumpulan e-waste bersempena HASN 2020 ini, aktiviti-aktiviti pusat-pusat pengumpulan e-waste yang berdaftar dan kempen-kempen yang dilaksanakan oleh JAS termasuk JAS Negeri dan Cawangan di sepanjang tahun juga telah berjaya mengutip sebanyak lebih kurang 702.2 MT e-waste secara keseluruhannya bagi tahun 2020.

Besides e-waste collection campaigns during NED 2020, collection activities by the authorised e-waste collection centers and campaigns organised by the DOE State Offices and its branches throughout the year have succeeded in collecting a total of 702.2 MT of e-waste in 2020.

Perlis



Terengganu



Pulau Pinang



Kelantan



Kedah



Perak



Pahang



Negeri Sembilan



Melaka



Wilayah Persekutuan Kuala Lumpur



Johor



Sarawak



PENGURUSAN BAHAN BERBAHAYA KEPADA ALAM SEKITAR ENVIRONMENTALLY HAZARDOUS SUBSTANCES MANAGEMENT

Pembangunan pesat sektor industri di Malaysia telah meningkatkan kuantiti pengilangan dan pengimportan bahan berbahaya kepada alam sekitar di negara kita. Berdasarkan rekod Jabatan, terdapat lebih 500 permohonan import-eksport bahan berbahaya kepada alam sekitar yang diterima serta diproses oleh JAS pada tahun 2020.

Bahan berbahaya ini secara asasnya banyak digunakan di dalam pelbagai sektor industri mahupun perubatan. Memandangkan ianya mempunyai kesan ke atas kesihatan awam dan alam sekitar sekiranya berlaku pendedahan tanpa kawalan maka, Kerajaan Malaysia melalui JAS akan memperkenalkan satu peraturan baru iaitu Peraturan-Peraturan Kualiti Alam Sekeliling (Bahan Berbahaya Kepada Alam Sekitar) 202X bagi tujuan untuk mengawal dan merekodkan kemasukan dan pengilangan bahan berbahaya kepada alam sekitar di negara kita.

Dalam hubungan ini juga, bagi memastikan pengumpulan data bahan berbahaya kepada alam sekitar dapat direkodkan secara sistematik, maka Jabatan turut membangunkan satu sistem atas talian yang dinamakan sebagai MyEHS untuk digunakan oleh pengimport dan pengilang yang berkaitan.

The rapid development of the industrial sectors in Malaysia has increased the quantity of environmentally hazardous substances that are being manufactured as well as being imported, to be used in this country. Based on department records, there were more than 500 applications that were processed for the import/export of environmentally dangerous materials in the year 2020.

These hazardous substances are used in various industrial and medical sectors. As these materials might pose a danger to public health and the environment should there be any unwarranted exposure, The Malaysian Government through the DOE will introduce a new regulation known as the Environmental Quality Act (Environmentally Hazardous Substances) 202X for the purpose of recording entry of imports as well as controlling manufacturing of environmentally hazardous substances.

In this regard, to ensure that the data collection of hazardous materials to the environment will be recorded in a systematic manner, the Department will also develop an online system known as MyEHS to be utilized by the relevant importers and manufacturers.

Bagi tujuan ini, terdapat 11 siri sesi libat urus bersama pelbagai agensi kerajaan mahupun swasta telah diadakan sepanjang tahun 2020 bagi memastikan halatuju pengumpulan maklumat dan kawalan ke atas bahan berbahaya kepada alam sekitar dapat dilaksanakan dengan cekap dan berkesan. JAS akan terus memperkasakan kawalan ke atas bahan berbahaya kepada alam sekitar yang diimport atau dikilang di dalam negara bagi memastikan bahan-bahan ini dapat dikenalpasti, direkod dan seterusnya dapat diuruskan serta dikawal dengan sewajarnya.

As such, there were several engagement sessions involving various Government agencies and the private sector that were held during the year 2020 aimed at ensuring that the collection of data and the control of hazardous materials to the environment can be efficiently and effectively implemented. The DOE will continue to strengthen the control on environmentally hazardous materials that are imported or manufactured in the country to ensure that these materials are identified, recorded and are managed and controlled accordingly.

SESI LIBAT URUS BERKAITAN PEMBANGUNAN PERATURAN BERKAITAN BAHAN BERBAHAYA KEPADA ALAM SEKITAR BAGI TAHUN 2020

STAKEHOLDERS ENGAGEMENT SESSION ON DEVELOPMENT OF REGULATIONS ON ENVIRONMENTALLY HAZARDOUS SUBSTANCES HELD IN 2020

NO. / NUM.	NAMA AGENSI / AGENCY	TARIKH / DATE
1	Lestari - UKM	3 Mac 2020 3 March 2020
2	Atas talian Webinar – Syarikat Swasta Online Webinar – Private Sector	7 April 2020 7 April 2020
3	Atas talian Webinar – Agensi Kerajaan Online Webinar – Government Agencies	16 Julai 2020 16 July 2020
4	Jabatan Standard Malaysia Department Standard Malaysia	22 Julai 2020 22 July 2020
5	Jabatan Keselamatan & Kesihatan Pekerjaan Department of Occupational Safety and Health	27 Julai 2020 27 July 2020
6	Jabatan Kimia Malaysia Chemistry Department of Malaysia	28 Julai 2020 28 July 2020
7	Kementerian Kesihatan Malaysia Ministry of Health	4 September 2020 4 September 2020
8	Chemical Industries Council of Malaysia (CICM) Chemical Industries Council of Malaysia (CICM)	18 Ogos 2020 18 August 2020
9	Petroleum Nasional Berhad (Petronas) Petroleum Nasional Berhad (Petronas)	27 Ogos 2020 27 August 2020
10	JAS Negeri DOE - State	8 September 2020 8 September 2020
11	Industri (30-40 premis) Industry (30-40 premises)	Siri 1: 17 Sept 2020 Siri 1: 17 Sept 2020 Siri 2: 18 Sept 2020 Siri 2: 18 Sept 2020 Siri 3: 28 Sept 2020 Siri 3: 28 Sept 2020 Siri 4: 29 Sept 2020 Siri 4: 29 Sept 2020

**SESI LIBAT URUS BERKAITAN PEMBANGUNAN
PERATURAN BERKAITAN BAHAN BERBAHAYA
KEPADA ALAM SEKITAR BAGI TAHUN 2020**

**STAKEHOLDERS ENGAGEMENT SESSION
ON DEVELOPMENT OF REGULATIONS ON
ENVIRONMENTALLY HAZARDOUS SUBSTANCES
HELD IN 2020**



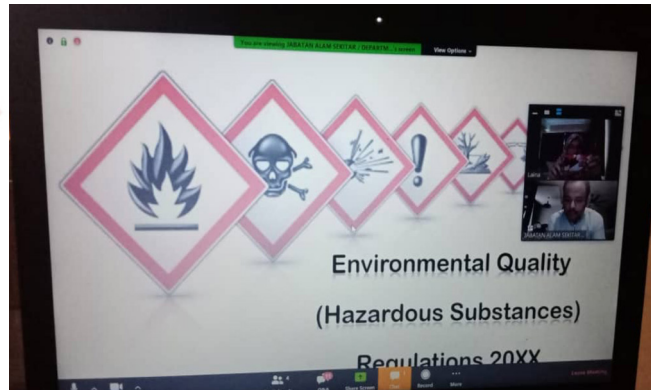
SELAMAT DATANG

**SESI LIBAT URUS BERSAMA PEMEGANG TARUH BAGI
DERAF PERATURAN-PERATURAN KUALITI ALAM
SEKELILING (BAHAN BERBAHAYA KEPADA ALAM
SEKITAR) 20XX**

7 APRIL 2020 (SELASA)

Anjuran:

Bahagian Bahan Berbahaya, Jabatan Alam Sekitar





PEMERIKSAAN PELEPASAN DARIPADA KENDERAAN BERMOTOR ENFORCEMENT ON MOTOR VEHICLES EMISSION

Sepanjang tahun 2020, 1,163,330 buah kenderaan telah didaftarkan iaitu peningkatan 3.88% berbanding tahun 2019. Pecahan keseluruhan kenderaan bermotor yang berdaftar mengikut jenis kenderaan adalah seperti di **Rajah 4.9**. Secara kumulatif sehingga tahun 2020, sebanyak 32,378,172 buah kenderaan bermotor telah didaftarkan di Malaysia.

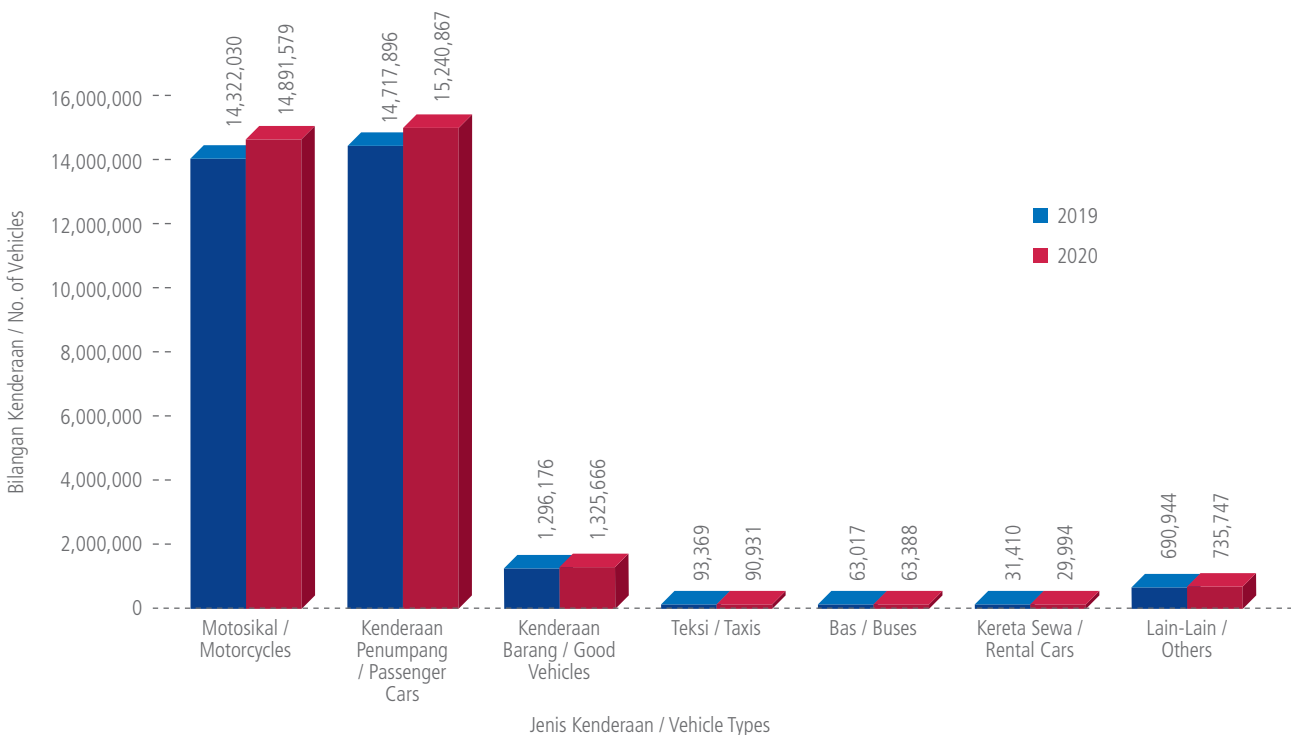
Daripada 1,163,330 buah kenderaan baru yang didaftarkan dalam tahun 2020, kategori motosikal merupakan yang tertinggi iaitu 569,549 unit (48.96 %) kereta 522,971 unit (44.95%), 74,664 unit (6.42%) dari lain-lain jenis kenderaan termasuk lori, bas, van dan sebagainya.

Taburan bilangan kenderaan bermotor di Malaysia mengikut negeri adalah seperti di **Rajah 4.10**. Wilayah Persekutuan (termasuk Kuala Lumpur, Putrajaya dan Labuan) mendahului negeri-negeri lain dengan mempunyai bilangan kenderaan yang tertinggi iaitu sebanyak 6,757,005 unit (atau 20.87%) daripada keseluruhan bilangan kenderaan yang berdaftar di negara ini, diikuti oleh Johor, Selangor, Pulau Pinang dan Perak.

In 2020, a total number of 1,163,330 vehicles were registered, a 3.88% increase as compared to 2019. The breakdown of the total registered vehicles according to vehicle types is given in **Figure 4.9**. Cumulatively, as at 2020, a total of 32,378,172 motor vehicles have been registered in Malaysia.

Of the 1,163,330 number of vehicles registered in 2020, motorcycles made up the highest number with 569,549 units (48.96 %) followed by motorcars 522,971 units (44.95%), while the remaining 74,664 units (6.42%) were the other vehicle types such as lorries, buses, vans and others.

The distribution of registered vehicles throughout the states is given in **Figure 4.10**. The Federal Territory (including Kuala Lumpur, Putrajaya and Labuan) recorded the highest number of vehicles registered, with 6,757,005 units (or 20.87%) followed by Johor, Selangor, Penang and Perak.

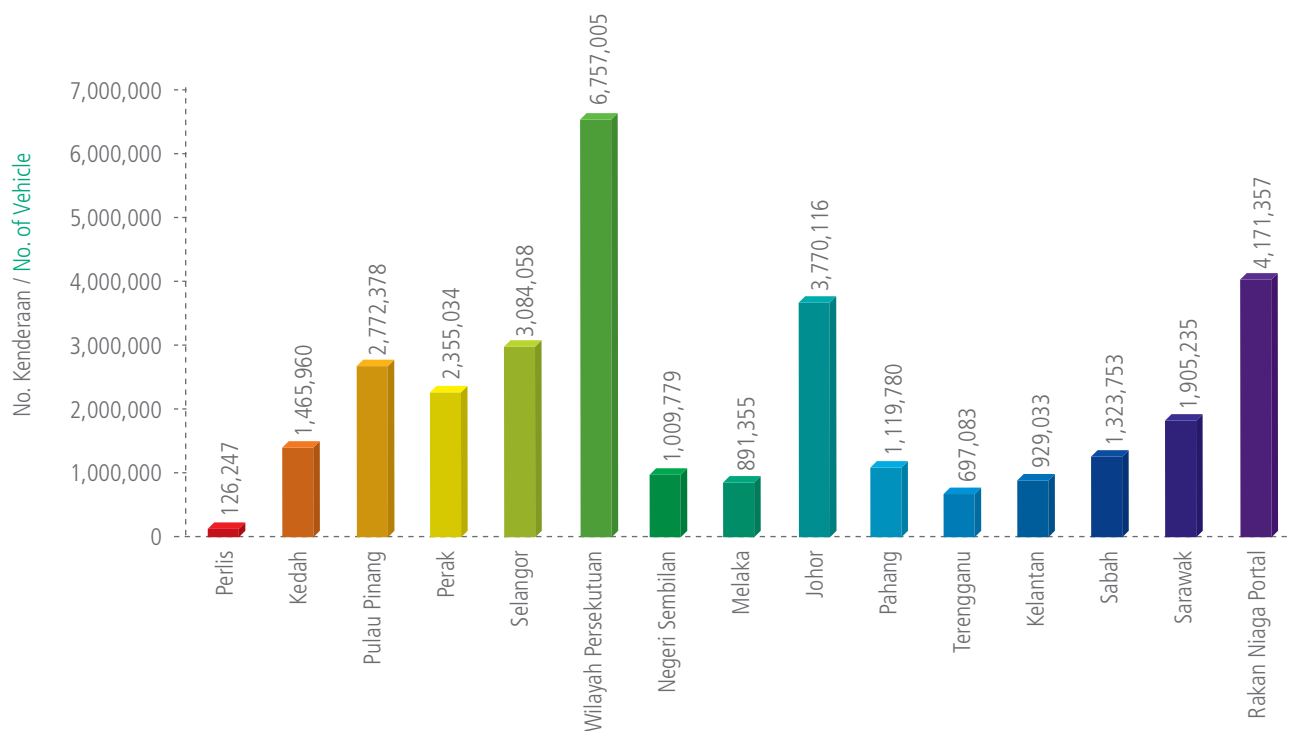


Rajah 4.9
Figure 4.9

Bilangan Kenderaan Bermotor Mengikut Jenis, 2020
Number of Motor Vehicles by Type, 2020

Jadual 4.26 : Bilangan Kenderaan Bermotor mengikut Negeri, 2020
Table 4.26 : No. of Vehicles by States, 2020

	2018	2019	2020		
Perlis	119,307	122,502	126,247	32,378,172	0.39%
Kedah	1,415,311	1,447,083	1,465,960	32,378,172	4.53%
P.Pinang	2,714,710	2,748,131	2,772,378	32,378,172	8.56%
Perak	2,304,319	2,330,180	2,355,034	32,378,172	7.27%
Selangor	2,989,159	3,042,954	3,084,058	32,378,172	9.53%
W.Persekutuan	6,553,527	6,677,481	6,757,005	32,378,172	20.87%
N.Sembilan	984,837	998,945	1,009,778	32,378,172	3.12%
Melaka	875,517	884,034	891,355	32,378,172	2.75%
Johor	3,691,782	3,734,690	3,770,116	32,378,172	11.64%
Pahang	1,085,303	1,103,834	1,119,780	32,378,172	3.46%
Terengganu	661,159	682,210	697,083	32,378,172	2.15%
Kelantan	914,158	921,996	929,033	32,378,172	2.87%
Sabah	1,272,487	1,302,175	1,323,753	32,378,172	4.09%
Sarawak	1,840,640	1,873,798	1,905,235	32,378,172	5.88%
Rakan Niaga Portal	2,534,309	3,344,829	4,171,357	32,378,172	12.88%
Jumlah / Total	29,956,525	31,214,842	32,378,172		



Rajah 4.10
Figure 4.10

Bilangan Kenderaan Bermotor mengikut Negeri, 2020
No. of Vehicles by States, 2020

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) 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 operasi statik secara bersepadu dengan agensi penguatkuasa lain (JPJ & Trafik Polis-PDRM) dan operasi pemerhatian melalui video kamera. Penguatkuasaan melalui video kamera telah dipertingkatkan pada tahun 2020 susulan penularan pandemik Covid-19 yang menghadkan operasi penguatkuasaan pemeriksaan asap hitam kenderaan dilaksanakan di atas jalanraya.

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

Pada tahun 2020, sebanyak 3,558 pemeriksaan penguatkuasaan telah dilaksanakan di seluruh negara. Sejumlah 415,679 buah kenderaan diesel telah diperiksa secara visual. Dari jumlah tersebut, sebanyak 706 buah kenderaan telah dikompaun kerana gagal mematuhi had pelepasan asap hitam sebanyak 50 % kelegapan. Manakala 212 kenderaan telah dikenakan perintah larangan beroperasi sehingga lulus ujian asap semula oleh JAS. Pada keseluruhannya, peratus pematuhan oleh kenderaan diesel adalah 97.27%. Ini adalah penurunan sebanyak 1.34% berbanding dengan tahun 2019.

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 2 pemandu serta pemilik kenderaan kerana gagal menjelaskan kompaun yang telah dikenakan. Sejumlah 3,115 kenderaan diesel juga telah diarahkan untuk menjalankan ujian semula di PUSPAKOM.

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 monitored through the curbside operation in cooperation with other enforcement agencies (RTD & Police Traffic PDRM), camera video surveillance and the AWASI (Area Watch And Sanction Inspection) Programme. Through this programme the DOE's mobile squad would enforce by observing while patrolling as well as stopping and testing diesel vehicles belching excessive smoke. Enforcement via video cameras were enhanced in 2020 following the spread of the Covid-19 pandemic which limits curbside enforcement inspection of emission.

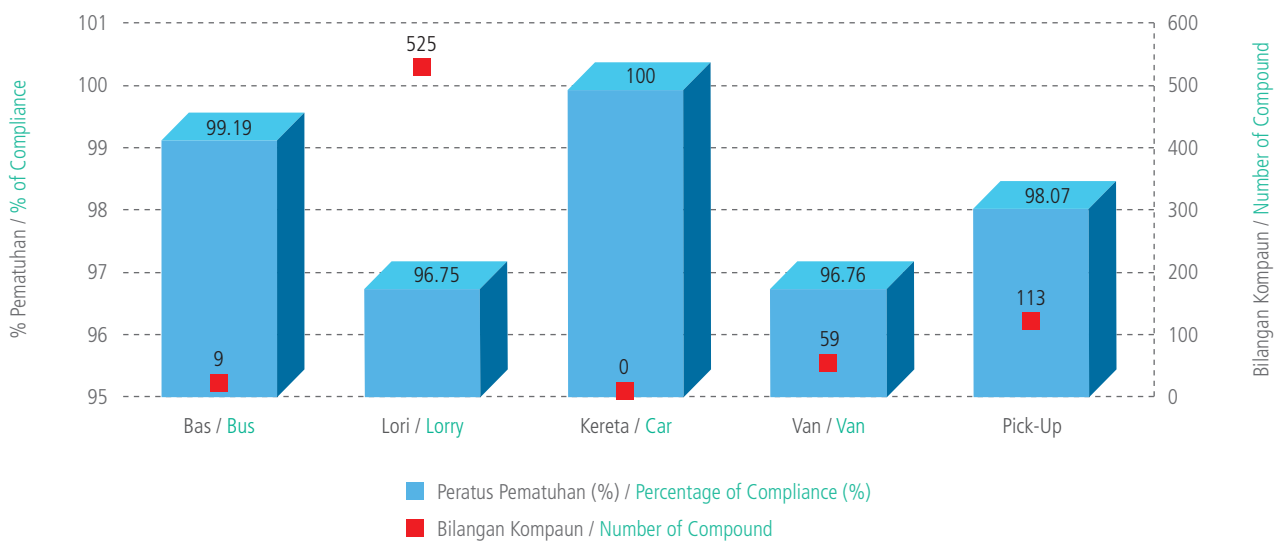
Compounds were issued on-the-spot to the drivers and owners if their vehicles failed to comply with the stipulated smoke limit of 50 % opacity. A prohibition order (prohibiting vehicle use) will be issued if the smoke limit exceeds 70 % opacity.

In 2020, a total of 3,558 enforcement inspections were conducted throughout the country. A total of 415,679 diesel vehicles were visually inspected. Out of these, 706 vehicles were compounded for failing to comply with the 50 % opacity smoke limit while 212 vehicles were issued with a prohibition order. These vehicles will need to be sent for service and smoke retest by the DOE. The percentage of compliance of diesel vehicles to the standard stipulated in the regulations was 97.27%. This is a decrease of 1.34% compared to 2019.

The number of compounds issued to diesel vehicles and their percentage of compliance according to vehicle types 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 action was also taken against 2 drivers and vehicle owners for failing to pay the compounds issued. A total of 3,115 diesel vehicles were instructed to undergo smoke retest at PUSPAKOM.

Jadual 4.27 : Peratus Pematuhan Mengikut Jenis Kenderaan & Bilangan Kompaun, 2020
 Table 4.27 : Percentage of Compliance, According to Type Vehicles and Number of Compound 2020

JENIS KENDERAAN / VEHICLES TYPE	PERATUS PEMATUHAN / PERCENTAGE OF COMPLIANCE (%)	BILANGAN KOMPAUN / NO. OF COMPOUND
Bas / Bus	99.19	9
Lori / Lorry	96.75	525
Kereta / Car	100	0
Van / Van	96.76	59
Pick-Up	98.07	113
	Jumlah / Total	706

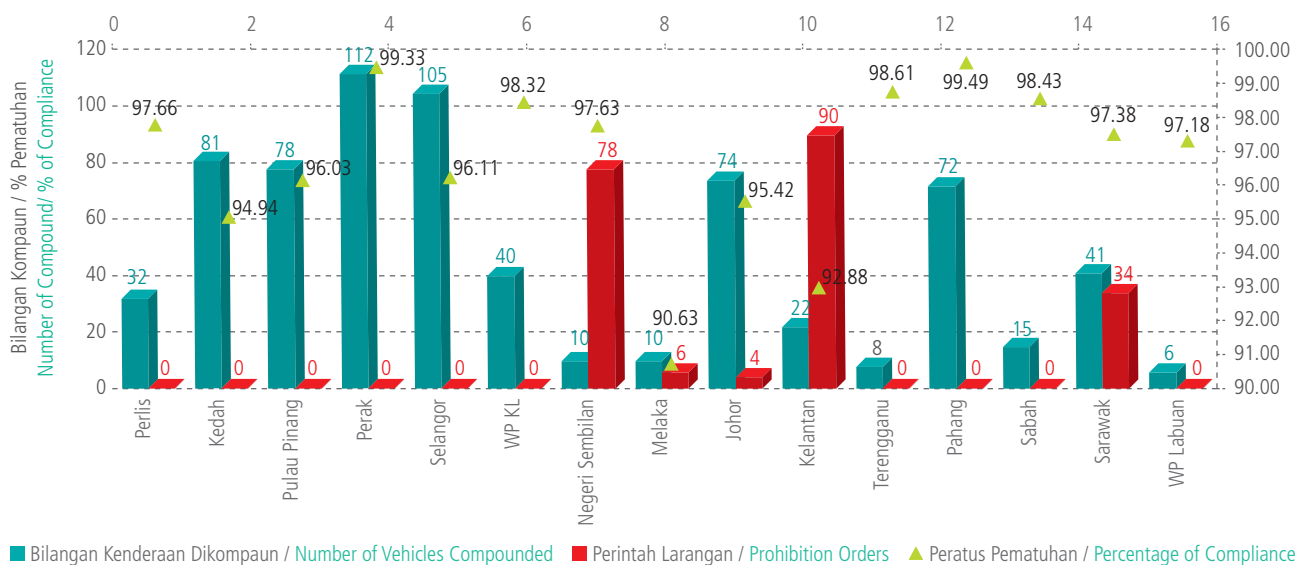


Rajah 4.11
 Figure 4.11

Peratus Pematuhan Mengikut Jenis Kenderaan dan Bilangan Kompaun, 2020
 Percentage of Compliance, According to Type Vehicles and Number of Compound 2020

Jadual 4.27 : Bilangan Kenderaan Dikompaun, Pengeluaran Perintah Larangan & Peratus Pematuhan, 2020
 Table 4.27 : Number of Vehicles Compounded, Number of Prohibition Orders Issued & Percentage of Compliance, 2020

NEGERI / STATE	BILANGAN KOMPAUN / NO. OF COMPOUND	PERINTAH LARANGAN / PROHIBITION ORDERS	PERATUS PEMATUHAN / PERCENTAGE OF COMPLIANCE
Perlis	32	0	97.66
Kedah	81	0	94.94
Pulau Pinang	78	0	96.03
Perak	112	0	99.33
Selangor	105	0	96.11
WP KL	40	0	98.32
Negeri Sembilan	10	78	97.63
Melaka	10	6	90.63
Johor	74	4	95.42
Kelantan	22	90	92.88
Terengganu	8	0	98.61
Pahang	72	0	99.49
Sabah	15	0	98.43
Sarawak	41	34	97.38
WP Labuan	6	0	97.18
Jumlah / Total	706	212	97.00



Bilangan Kenderaan Dikompaun, Pengeluaran Perintah Larangan & Peratus Pematuhan, 2020
 Number of Vehicles Compounded, Number of Prohibition Orders Issued & Percentage of Compliance, 2020

Rajah 4.12
 Figure 4.12

Kawalan Pelepasan Gas CO dan HC Dari Kenderaan Petrol

Sepanjang tahun 2020 sejumlah 860 buah kenderaan berenjin petrol telah diuji pelepasan CO dan HC dengan menggunakan meter gas CO-HC Analyzer melalui kaedah ujian idling di jalan raya. Dari jumlah ini, sebanyak 89 buah kenderaan telah dikompau kerana gagal mematuhi had pelepasan yang ditetapkan. Peratus pematuhan keseluruhannya adalah 90.00% iaitu penurunan sebanyak 4.48% berbanding dengan tahun 2019. 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 pencemar untuk model baru kenderaan yang menggunakan petrol dengan tujuan memperbaiki pelepasan pencemar 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 yang berdasarkan Arahan Majlis 94/12/EEC dan 93/59/EEC. Pada tahun 2020, JAS telah mengeluarkan 31 Sijil Ujian Kelulusan Jenis bagi model baru kenderaan petrol yang akan dipasarkan di Malaysia.

Ujian Kelulusan Jenis (Kenderaan Diesel)

Bagi mengawal pelepasan dari kenderaan berenjin diésel di Malaysia, setiap model baru kenderaan bermotor pada atau selepas 1 Januari 1997 adalah dikehendaki mematuhi standard pelepasan pencemar yang ditetapkan dalam Jadual Kedua, Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Daripada Enjin Diesel), 1996 yang berdasarkan Peraturan No. 49.02 ECE dan Arahan Majlis 93/59/EEC. Pada tahun 2020, Jabatan Alam Sekitar telah mengeluarkan 46 Sijil Ujian Kelulusan Jenis bagi model baru kenderaan diesel yang akan dipasarkan di 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

Control of CO and HC Gas Emissions from Petrol Vehicles

In 2020, a total of 860 petrol engine vehicles were inspected using the CO-HC gas analyser via the idling test method conducted at the curb side. From the above total, 89 vehicles were compounded for failing to comply with the stipulated CO and HC limits. The overall percentage of compliance was 90.00% i.e. an decrease of 4.48% compared to 2019. Warning letters were also issued to drivers for immediate servicing of their vehicles to ensure compliance with the emission limits stipulated in the law.

Type Approval Test (Petrol Vehicle)

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

Any new model motor vehicle that is commissioned on or 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 which is based on Council Directive 94/12/EEC and 93/59/EEC. In 2020, the DOE issued 31 Type Approval Test Certificates for new models of petrol vehicles to be marketed in Malaysia.

Type Approval Test (Diesel Vehicle)

To control emissions from diesel vehicles in Malaysia, each new motor vehicle model on or after January 1, 1997 is required to comply with emission standards prescribed in the Second Schedule, Environmental Quality (Control of Emission from Diesel Engines) Regulations, 1996, which is based on ECE Regulation No.49.02 and Council Directive 93/59/EEC. In 2020, the Department of Environment issued 46 Certificates of Type Approval Test for new model diesel vehicles to be marketed in Malaysia.

Establishment of Approved Testing Facilities

DOE has given accreditation to a number of workshops that have fulfilled the criteria for "Approved Testing Facilities" to assist the public in sending their vehicles for emission testing. These facilities also provide testing

kepada bengkel-bengkel kendaraan yang memenuhi kriteria-kriteria yang telah ditetapkan. Kemudahan ini boleh bertindak sebagai pengujian segera dan kendaraan yang tidak mematuhi diperbaiki di pusat-pusat ini supaya memastikan kendaraan sentiasa mematuhi had pelepasan asap.

Sehingga akhir tahun 2020, sejumlah 140 sijil pengiktirafan telah dikeluarkan kepada bengkel serta pusat-pusat pemeriksaan kendaraan di seluruh negara sebagai "Kemudahan Yang Diluluskan" oleh JAS.

Kawalan Pelepasan Gas Pencemar Daripada Motosikal

Mulai 1 Januari 2016 semua model baru motosikal adalah dikehendaki mematuhi standard EURO3 bagi pelepasan gas pencemar daripada motosikal yang berdasarkan European Committee 97/24/EC amendments 2002/51/EC Chapter 5 ANNEX II sec. 2.2.1.1.5. of 19 July 2002 atau World motorcycle emission test cycle "WMTC" under the European Committee ("EC") 2006/72/EC of 18 August 2006. Pematuhan standard EURO3 bagi model sedia ada motosikal dimulakan pada 1 Januari 2017.

Pada tahun 2020, sebanyak 74 Sijil Kelulusan Jenis telah dikeluarkan kepada pembuat, pemasang dan pengimport motosikal untuk pasaran tempatan.

and repair services for the non-complying vehicles, to ensure they are always in compliance with the emission limits stipulated in the regulations.

By the end of 2020, a total of 140 certificates of accreditation were issued to the workshops and vehicle testing centers throughout the country as "Approved Testing Facilities" by DOE.

Control of Emission from Motorcycles

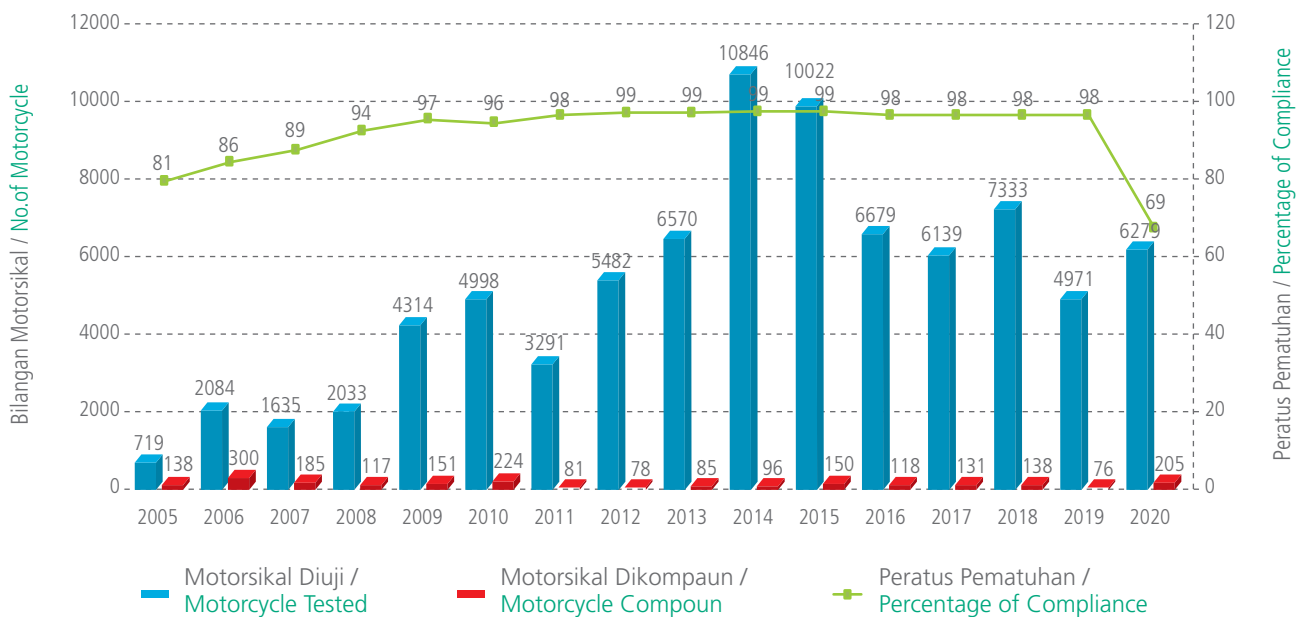
From 1 January 2016, all new motorcycle models are required to comply with the standards EURO3 for gaseous emissions from motorcycles by referring to European Committee 97/24/EC amendments 2002/51/EC Chapter 5 ANNEX II sec. 2.2.1.1.5. of 19 July 2002 or World of motorcycle emission test cycle "WMTC" under the European Committee ("EC") 2006/72 / EC of 18 August 2006. Compliance with the EURO3 emission standards for existing motorcycle models was started on 1 January 2017.

In 2020, a total of 74 Type Approval Test Certificates were issued to the manufacturers, assemblers and importers of motorcycles for the domestic market.

Jadual 4.28 : Peratus Pematuhan Bilangan Motorsikal Diuji dan Bilangan Kompaun (2002 - 2020)

Table 4.28 : Percentage of Compliance, Number of Motorcycle Tested and Compound Issued (2002 - 2020)

TAHUN / YEAR	MOTORSIKAL DIUJI / MOTORCYCLE TESTED	MOTORSIKAL DIKOMPAN / MOTORCYCLE COMPOUNDED	PERATUS PEMATUHAN / PERCENTAGE OF COMPLIANCE
2004	3720	461	87
2005	719	138	81
2006	2084	300	86
2007	1635	185	89
2008	2033	117	94
2009	4314	151	97
2010	4998	224	96
2011	3291	81	98
2012	5482	78	99
2013	6570	85	99
2014	10846	96	99
2015	10022	150	99
2016	6679	118	98
2017	6139	131	98
2018	7333	138	98
2019	4971	76	98
2020	6279	205	69



Rajah 4.13
Figure 4.13

Peratus Pematuhan Bilangan Motorsikal Diuji dan Bilangan Kompaun (2002 - 2020)
Percentage of Compliance, Number Of Motorcycle Tested And Compound Issued (2002 - 2020)

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 2020, sejumlah 6,279 buah motosikal telah ditahan bagi menjalani ujian pelepasan bunyi bising. Dari jumlah ini, 205 penunggang motosikal telah dikompaun kerana melanggar had bunyi bising yang dibenarkan. Peratus pematuhan secara keseluruhannya ialah 69.36% (Rajah 4.13). Ini adalah penurunan sebanyak 29.38% berbanding pada 2019.

Pelaksanaan Operasi Gerak (Ops Gerak)

Pada tahun 2020, Jabatan telah melaksanakan Ops Gerak di seluruh negara bagi meningkatkan lagi pemeriksaan ke atas pelepasan dari kenderaan bermotor. Operasi ini telah dilancarkan selepas Kerajaan mengumumkan penamatan Perintah Kawalan Pergerakan (PKP) yang menyaksikan pembukaan sektor ekonomi dan pergerakan kenderaan di jalanraya. Sebanyak 165 operasi telah dilakukan ke atas 13,148 kenderaan. Susulan daripada penguatkuasaan Ops Gerak, 513 tindakan tawaran kompaun dan 83 tindakan perintah larangan telah dikeluarkan.

Noise from Motor Vehicles

The emission 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 2020, a total of 6,279 motorcycles were detained for the noise inspection. Out of this, 205 motorcyclists were summoned for violating the stipulated noise limits. The overall percentage of compliance was 69.36% (Figure 4.13). This is a decrease of 29.38% compared to 2019.

Implementation of Operasi Gerak (Ops Gerak)

In 2020, the Department implemented Ops Gerak throughout the country to further enhance enforcement inspections on emissions from motor vehicles. The operation was launched following the Government's decision to lift the Movement Control Order (MCO) which saw the opening of the economic sector and the movement of more vehicles on roads. A total of 165 operations were carried out on 13,148 vehicles. As a result of the enforcement of Ops Gerak, a total of 513 compounds and 83 prohibition orders were issued.

KAWALAN TERHADAP PREMIS YANG DITETAPKAN CONTROL OF PRESCRIBED PREMISES

Di bawah Akta Kualiti Alam Sekeliling 1974, premis yang ditetapkan adalah ditakrifkan sebagai premis yang dilesenkan sebagaimana ditetapkan oleh Menteri di bawah Seksyen 18, Akta 127. Premis yang ditetapkan tersebut merangkumi kilang getah asli mentah, kilang kelapa sawit mentah dan kilang yang menjalankan kemudahan pengolahaan dan pelupusan buangan terjadual seperti dinyatakan di bawah Perintah Kualiti Alam Sekeliling (Premis Yang Ditetapkan)(Getah Asli Mentah) 1978, Perintah Kualiti Alam Sekeliling (Premis Yang Ditetapkan)(Kelapa Sawit Mentah) 1977 dan Perintah Kualiti Alam Sekeliling (Premis Yang Ditetapkan)(Kemudahan Pengolahaan dan Pelupusan Buangan Terjadual) 1989. Operasi premis-premis ini adalah tertakluk kepada keperluan Seksyen 18, Akta Kualiti Alam Sekeliling 1974 di mana pemilik premis ini perlu mempunyai lesen daripada JAS bagi menduduki dan/ atau menggunakan premis.

KILANG GETAH ASLI MENTAH

Pada tahun 2020, sejumlah 54 buah kilang getah asli mentah telah dilesenkan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Getah Asli Mentah), 1978. Daripada jumlah ini, 42 buah kilang telah dilesenkan bagi melepaskan efluen yang telah diolah ke alur air 12 buah kilang lagi dibenarkan untuk mengitar semula efluen. **Rajah 4.14** menunjukkan bilangan kilang getah asli mentah mengikut negeri.

Pada tahun 2020 JAS telah menjalankan sejumlah 438 pemeriksaan di lapangan dan pemeriksaan atas talian ke atas 54 buah kilang getah asli mentah yang telah dilesenkan. Pemeriksaan secara atas talian dilaksanakan oleh JAS ke atas kilang-kilang tersebut untuk mematuhi garis panduan yang telah ditetapkan sepanjang tempoh Perintah Kawalan Pergerakan (PKP), Perintah Kawalan Pergerakan Bersyarat (PKPB) dan Perintah Kawalan Pergerakan Pemulihan (PKPP) yang telah berkuatkuasa bermula 18 Mac 2020 bagi membendung pandemik Covid-19. Kilang-kilang yang mempunyai rekod pematuhan yang rendah sebelum ini telah diberi keutamaan untuk pemeriksaan. Tindakan susulan penguatkuasaan yang diambil adalah seperti yang ditunjukkan dalam **Rajah 4.14**.

Sejumlah 32 notis arahan telah dikeluarkan pada tahun 2020 untuk tindakan penambahbaikan bagi mematuhi keperluan perundangan dan sejumlah 15 kompaun turut dikeluarkan kepada kilang-kilang yang berkaitan yang gagal mematuhi Akta Kualiti Alam Sekeliling 1974 dan Peraturan-Peraturan di bawahnya. Sebanyak 3 premis juga telah dikenakan tindakan mahkamah atas kegagalan mematuhi syarat-syarat lesen yang dikeluarkan. (**Rajah 4.14**).

Under the Environmental Quality Act 1974, prescribed premises is defined as licensed premises as prescribed by the Minister under Section 18, Act 127. Such prescribed premises include crude natural rubber factories, crude palm oil mills and facilities for the treatment and disposal of scheduled wastes as stated under the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Order 1978, Environmental Quality (Prescribed Premises) (Crude Palm Oil) Order 1977 and the Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) Order 1989. The operation of these premises is subject to the requirements of Section 18, Environmental Quality Act 1974 whereby the owner of these premises is required to obtain a licence from the DOE to occupy and / or use the premises.

RAW NATURAL RUBBER FACTORIES

In 2020, a total of 54 raw natural rubber factories were licensed under the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations, 1978. From these, 42 mills were licensed to discharge treated effluent into the waterways and the remaining 12 factories are allowed to recycle their effluent. **Figure 4.14** shows the number of raw natural rubber factories according to state.

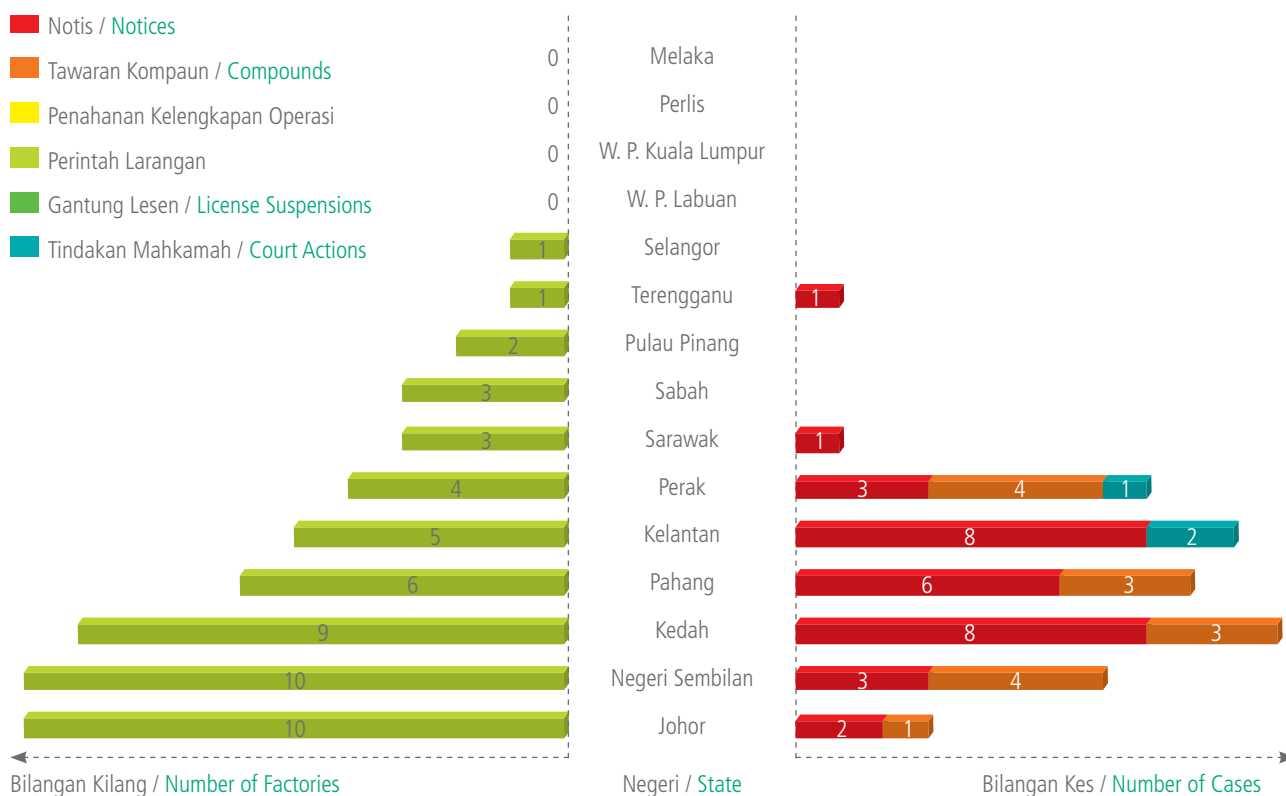
In 2020, DOE conducted a total of 438 field inspections and desktop inspections on 54 licensed natural rubber factories. Desktop enforcement was carried out by DOE on these factories to comply with the guidelines that were set during the period of Movement Control Order (MCO), Conditional Movement Control Order (CMCO) and Recovery Movement Control Order (RMCO) which were in effect from 18 March 2020 by the Government to curb the Covid-19 pandemic. Factories with previously low compliance records were given priority for enforcement inspections. The follow-up action of the enforcement taken is as shown in **Figure 4.14**.

A total of 32 directive notices were issued in 2020 for remedial action in order to comply with legal requirements and a total of 15 compounds were also issued to factories that failed to comply with the Environmental Quality Act 1974 and regulations thereunder. Apart from that, 3 premises were also prosecuted for failure to comply with the conditions of the licence issued. (**Figure 4.14**).

Jadual 4.29 : Bilangan Kilang Getah Asli Mentah & Tindakan Undang-undang terhadap Kilang Getah Asli Mentah, 2020

Table 4.29 : Number of Raw Natural Rubber Factories and Legal Actions against Raw Natural Rubber Factories, 2020

BIL. / NO.	BILANGAN KILANG GETAH / NUMBER OF RUBBER FACTORIES	NEGERI / STATE	NOTIS / NOTICES	TAWARAN KOMPAUN / COMPOUNDS	PENAHANAN KELENGKAPAN OPERASI / DETENTION OF OPERATING EQUIPMENT	PERINTAH LARANGAN / PROHIBITION ORDER	GANTUNG LESEN / LICENSE SUSPENSIONS	TINDAKAN MAHKAMAH / COURT ACTIONS
1	0	Melaka						
2	0	Perlis						
3	0	W.P. Kuala Lumpur						
4	0	W.P. Labuan						
5	1	Selangor						
6	1	Terengganu	1					
7	2	Pulau Pinang						
8	3	Sabah						
9	3	Sarawak	1					
10	4	Perak	3	4				1
11	5	Kelantan	8					2
12	6	Pahang	6	3				
14	9	Kedah	8	3				
13	10	Negeri Sembilan	3	4				
15	10	Johor	2	1				
Jumlah / Total	54		32	15	0	0	0	3



Bilangan Kilang Getah Asli Mentah dan Tindakan Undang-undang terhadap Kilang Getah Asli Mentah, 2020

Number of Raw Natural Rubber Factories and Legal Actions against Raw Natural Rubber Factories, 2020

Rajah 4.14
Figure 4.14

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

Pada tahun 2020, pencapaian pematuhan keseluruhan kilang getah asli mentah yang tertakluk di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Getah Asli Mentah) 1978 adalah 94%.

Status Pematuhan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014

Kilang getah asli mentah tertakluk kepada pematuhan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014. Pada tahun 2020, pencapaian pematuhan keseluruhan oleh kilang getah asli mentah kepada peraturan tersebut adalah 98%

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

Pada tahun 2020, pencapaian pematuhan keseluruhan oleh kilang getah asli mentah bagi Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 adalah 96%.

KILANG KELAPA SAWIT MENTAH

Sejumlah 460 buah kilang kelapa sawit mentah telah dilesenkan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Kelapa Sawit Mentah) 1977 pada tahun 2020. Daripada 460 buah kilang yang dilesenkan, 319 buah kilang telah dilesenkan bagi melepaskan efluen yang diolah ke dalam alur air, 85 buah kilang melupuskan efluen ke atas tanah, 18 buah kilang melupuskan efluen dengan menggunakan gabungan kaedah alur air dan atas tanah. Selain itu, 6 buah kilang menggunakan kaedah kompos dan 32 buah kilang menggunakan gabungan kaedah alur air dan kompos. **Rajah 4.15** menunjukkan taburan bilangan kilang kelapa sawit mentah di Malaysia mengikut negeri.

Pada tahun 2020 JAS telah menjalankan sejumlah 2,496 pemeriksaan di lapangan dan pemeriksaan atas talian ke atas 460 buah kilang kelapa sawit mentah yang telah dilesenkan.

Untuk 2020, pemeriksaan secara atas talian dilaksanakan oleh JAS ke atas kilang-kilang tersebut untuk mematuhi garis panduan yang telah ditetapkan sepanjang tempoh Perintah Kawalan Pergerakan (PKP), Perintah Kawalan Pergerakan Bersyarat (PKPB) dan Perintah Kawalan Pergerakan Pemulihan (PKPP) yang telah berkuatkuasa bermula 18 Mac 2020 bagi membendung pandemik Covid-19. Kilang-kilang yang

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

For 2020, the overall compliance of the raw natural rubber factories under the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations 1978 was 94%.

Status Of Compliance With The Environmental Quality (Clean Air) Regulations 2014

Raw natural rubber factories are subject to compliance with the Environmental Quality (Clean Air) Regulations 2014. In 2020, overall compliance achieved by the raw natural rubber factories with the regulations was 98%.

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

In 2020, the overall compliance achievement for the Environmental Quality (Scheduled Wastes) Regulations 2005 was 96%.

CRUDE PALM OIL MILLS

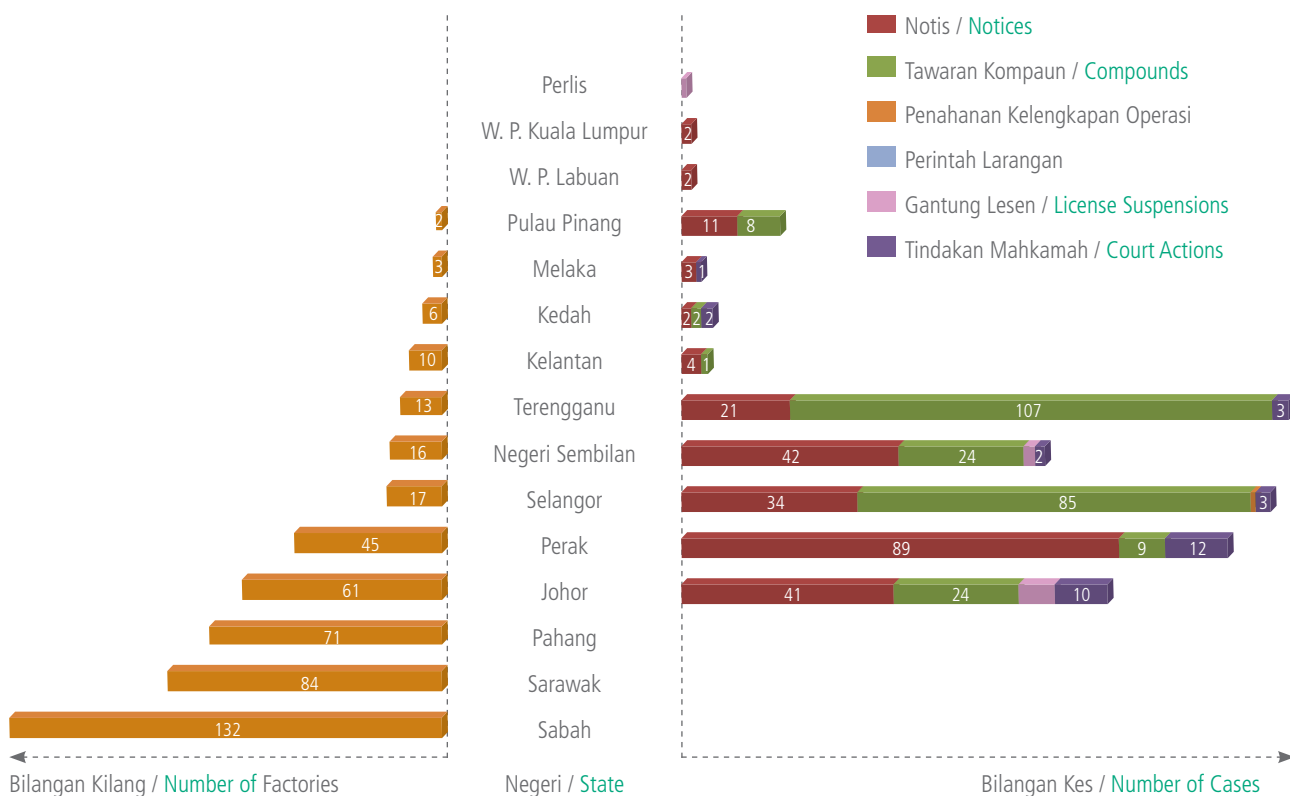
There are 460 palm oil mills licensed under the Environmental Quality (Prescribed Premises) (Crude Palm Oil Mill) Regulations 1977 for 2020. From this number, a total of 319 were given approval to discharge treated effluent into inland waterway, 85 to discharge effluent on land, 18 to discharge effluent by a combination of both inland waterway and land methods. Other than that, 6 factories practiced composting and 32 discharged treated effluent using a combination of inland waterway and composting. **Figure 4.15** shows the distribution of crude palm oil mills in Malaysia according to states.

In 2020, DOE conducted a total of 2,496 field inspections and desktop inspections on 460 licensed oil palm mills.

For 2020, desktop enforcement inspections were carried out by DOE on these factories to comply with the guidelines that were set during the period of Movement Control Order (MCO), Conditional Movement Control Order (CMCO) and Recovery Movement Control Order (RMCO) effective from 18 March 2020 to curb the Covid-19 pandemic. Factories with previously low compliance records were given

Jadual 4.30 : Bilangan Kilang Kelapa Sawit & Tindakan Undang-undang terhadap Kilang Kelapa Sawit, 2020
Table 4.30 : Number of Crude Oil Mills Factories and Legal Actions against Crude Palm Oil Mills, 2020

BIL. / NO.	BIL. KILANG KELAPA SAWIT / NUM. OF OIL PALM FACTORIES	NEGERI / STATE	NOTIS / NOTICES	TAWARAN KOMPAUN / COMPOUNDS	PENAHANAN KELENGKAPAN OPERASI / DETENTION OF OPERATING EQUIPMENT	PERINTAH LARANGAN / PROHIBITION ORDER	GANTUNG LESEN / LICENSE SUSPENSIONS	TINDAKAN MAHKAMAH / COURT ACTIONS
1	0	Perlis						
2	0	W.P Kuala Lumpur						
3	0	W.P Labuan						
4	2	Pulau Pinang					1	
5	3	Melaka	2					
6	6	Kedah	2					
7	10	Kelantan	11	8				
8	13	Terengganu	3					1
9	16	Negeri Sembilan	2	2				2
10	17	Selangor	4	1	1			
11	45	Perak	21	107				3
12	61	Johor	42	24			2	2
13	71	Pahang	34	85				3
14	84	Sarawak	89	9				12
15	132	Sabah	41	24			7	10
Jumlah / Total	460		251	260	1	0	10	33



Rajah 4.15
Figure 4.15

Bilangan Kilang Minyak Kelapa Sawit Mentah dan Tindakan Undang-undang terhadap Kilang Minyak Kelapa Sawit Mentah, 2020
Number of Crude Oil Mills Factories and Legal Actions against Crude Palm Oil Mills, 2020

mempunyai rekod pematuhan yang rendah sebelum ini telah diberi keutamaan untuk diperiksa. Tindakan susulan penguatkuasaan yang diambil adalah seperti yang ditunjukkan dalam **Rajah 4.15**.

Sejumlah 251 notis arahan telah dikeluarkan pada tahun 2020 untuk tindakan penambahbaikan bagi mematuhi keperluan perundangan dan sejumlah 260 kompaun turut dikeluarkan kepada kilang-kilang yang berkaitan yang gagal mematuhi Akta Kualiti Alam Sekeliling 1974 dan Peraturan-Peraturan di bawahnya. Selain daripada itu, 1 premis telah dikenakan Penahanan Operasi Kelengkapan. Sebanyak 10 premis juga telah dikenakan tindakan gantung lesen. Sebanyak 33 premis juga telah dikenakan tindakan mahkamah atas kegagalan mematuhi syarat-syarat lesen yang dikeluarkan.

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

Pada tahun 2020, pencapaian pematuhan keseluruhan kilang kelapa sawit mentah kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Minyak Kelapa Sawit Mentah) 1977 adalah 95%.

Status Pematuhan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014

Kilang minyak kelapa sawit mentah juga tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014. Pada tahun 2020, pencapaian pematuhan keseluruhan oleh kilang minyak kelapa sawit mentah adalah 99%.

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

Pada tahun 2020, pencapaian pematuhan keseluruhan kilang minyak kelapa sawit mentah di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 adalah 98%.

KEMUDAHAN PENGOLAHAN DAN PELUPUSAN BUANGAN TERJADUAL

Sejumlah 408 buah kilang telah dilesenkan oleh JAS di bawah Seksyen 18(1), Akta Kualiti Alam Sekeliling 1974 untuk menguruskan buangan terjadual pada tahun 2020. **Rajah 4.16** menunjukkan bilangan kilang yang dilesenkan mengikut negeri.

Pada tahun 2020 JAS telah menjalankan sejumlah 1,604 pemeriksaan di lapangan dan pemeriksaan atas talian ke atas 408 buah kilang ini. Tindakan susulan pemeriksaan penguatkuasaan yang diambil adalah seperti yang ditunjukkan dalam **Rajah 4.16**.

priority on enforcement inspections. Follow-up action of enforcement taken is as shown in **Figure 4.15**.

A total of 251 directive notices were issued in 2020 to the premises for remedial action to comply with legal requirements and a total of 260 compounds were also issued to factories that failed to comply with the Environmental Quality Act 1974 and the Regulations thereunder. In addition, 1 premise was issued the Detention of Equipment and the licence of 10 premises were also suspended. Apart from that, 33 premises were also prosecuted for failing to comply with the conditions of the licence issued.

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

In 2020, the overall compliance achieved by the crude palm oil mills with the Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulations, 1977 was 95%.

Status Of Compliance With The Environmental Quality (Clean Air) Regulations 2014

Crude palm oil mills are also subject to the Environmental Quality (Clean Air) Regulations 2014. In 2020, the overall compliance achieved for crude palm oil mills was 99%.

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

In 2020, the overall compliance achieved by the palm oil mills for Environmental Quality (Scheduled Wastes) Regulations 2005 was 98%.

SCHEDULED WASTES TREATMENT AND DISPOSAL FACILITIES

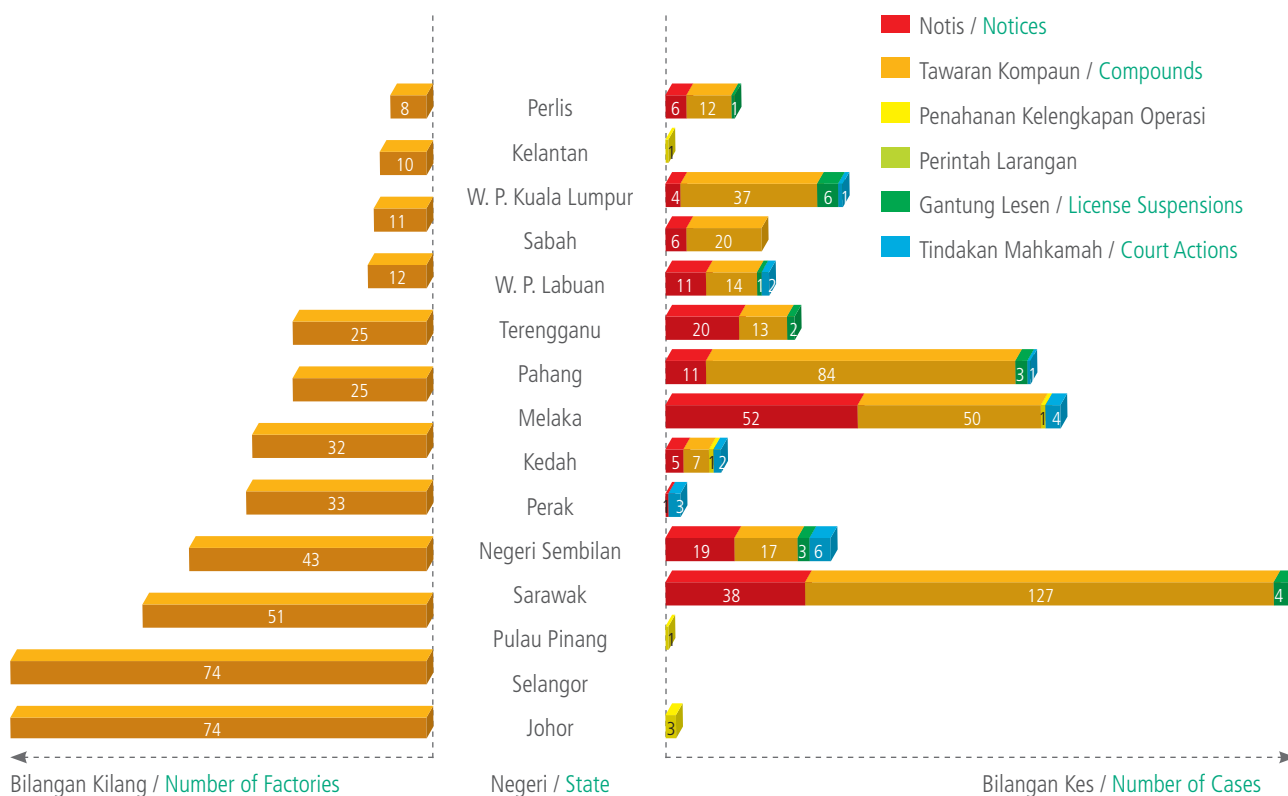
A total of 408 factories have been given licensed by DOE under Section 18 (1), of the Environmental Quality Act 1974 to manage scheduled wastes in 2020. **Figure 4.16** shows the number of factories that have been licensed according to state.

In 2020, DOE conducted a total of 1,604 field inspections and desktop inspections on these 406 factories. The follow-up action of the enforcement taken is as shown in **Figure 4.16**.

Jadual 4.31 : Bilangan Kilang Pemerolehan kembali Buangan Terjadual & Tindakan Undang-undang terhadap Kilang Pemerolehan kembali Buangan Terjadual, 2020

Table 4.31: Number and Legal Actions against Facilities for the Treatment and Disposal Facilities of Scheduled Wastes, 2020

BIL. / NO.	BIL. KILANG KELAPA SAWIT / NUM. OF OIL PALM FACTORIES	NEGERI / STATE	NOTIS / NOTICES	TAWARAN KOMPAUN / COMPOUNDS	PENAHANAN KELENGKAPAN OPERASI / DETENTION OF OPERATING EQUIPMENT	PERINTAH LARANGAN / PROHIBITION ORDER	GANTUNG LESEN / LICENSE SUSPENSIONS	TINDAKAN MAHKAMAH / COURT ACTIONS
1	1	Perlis						
2	4	Kelantan	7		1			
3	5	W.P Kuala Lumpur	3	5				1
4	8	Sabah	6	12			1	
5	10	W.P Labuan						
6	11	Terengganu	4	37			6	1
7	12	Pahang	6	20				
8	25	Melaka	11	14	1		1	2
9	25	Kedah	20	13	1		2	
10	32	Perak	11	84			3	1
11	33	Negeri Sembilan	52	50				4
12	43	Sarawak	5	7				2
13	51	Pulau Pinang	1		1			3
14	74	Selangor	19	17			3	6
15	74	Johor	38	127	3		4	
Jumlah / Total	408		183	386	7	0	20	20



Bilangan Kemudahan Pengolahan dan Pelupusan Buangan Terjadual dan Tindakan Undang-undang Terhadap Kemudahan Pengolahan dan Pelupusan Buangan Terjadual, 2020
Number and Legal Actions Against Facilities for the Treatment and Disposal Facilities of Scheduled Wastes, 2020

Rajah 4.16
Figure 4.16

Sejumlah 183 notis arahan telah dikeluarkan pada tahun 2020 untuk tindakan penambahbaikan bagi mematuhi keperluan perundangan dan sejumlah 386 kompaun turut dikeluarkan kepada kilang-kilang yang berkaitan yang didapati gagal mematuhi Akta Kualiti Alam Sekeliling 1974 dan Peraturan-Peraturan di bawahnya. Selain daripada itu, 7 premis telah dikenakan penahanan operasi kelengkapan dan 20 premis telah dikenakan tindakan gantung lesen. Terdapat 20 premis juga telah dikenakan tindakan mahkamah atas kegagalan mematuhi syarat-syarat lesen yang dikeluarkan.

Status Pematuhan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Kemudahan 1989)

Pada tahun 2020, pencapaian pematuhan keseluruhan kilang telah dilesenkan sebagai Kemudahan Pengolahan dan Pelupusan Buangan Terjadual di bawah Seksyen 18, Akta Kualiti Alam Sekeliling 1974 adalah 87%.

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

Pada tahun 2020, pencapaian pematuhan keseluruhan oleh Kemudahan Pengolahan dan Pelupusan Buangan Terjadual bagi Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009 adalah 96%.

Status Pematuhan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014

Kemudahan Pengolahan dan Pelupusan Buangan Terjadual juga tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014. Pada tahun 2020, pencapaian pematuhan keseluruhan oleh kilang-kilang tersebut adalah 96%.

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

Pada tahun 2020, pencapaian pematuhan keseluruhan Kemudahan Pengolahan dan Pelupusan Buangan Terjadual di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 adalah 93%.

A total of 183 directive notices were issued in 2020 for remedial action to comply with legal requirements and a total of 386 compounds were also issued to related factories that failed to comply with the Environmental Quality Act 1974 and the Regulations thereunder. In addition, 7 premises were issued with the Detention of Equipment order and a total of 20 premises had their licences suspended.. Apart from that, 20 premises were also prosecuted for failure to comply with the conditions of the licence issued.

Status of Compliance With The Environmental Quality (Scheduled Wastes) (Scheduled Wastes Treatment and Disposal Facilities) Regulations 1989

In 2020, the overall compliance of the factories licensed as Scheduled Wastes Treatment and Disposal Facilities under Section 18, Environmental Quality Act 1974 was 87%.

Status of Compliance With The Environmental Quality (Industrial Effluent) Regulations 2009

In 2020, the achievement of overall compliance by these Scheduled Wastes Treatment and Disposal Facilities for Environmental Quality (Industrial Effluent) Regulations 2009 was 96%.

Status of Compliance With The Environmental Quality (Clean Air) Regulations 2014

Scheduled Wastes Treatment and Disposal Facilities are also subject to the Environmental Quality (Clean Air) Regulations 2014. In 2020, the overall compliance achieved by these factories was 96%.

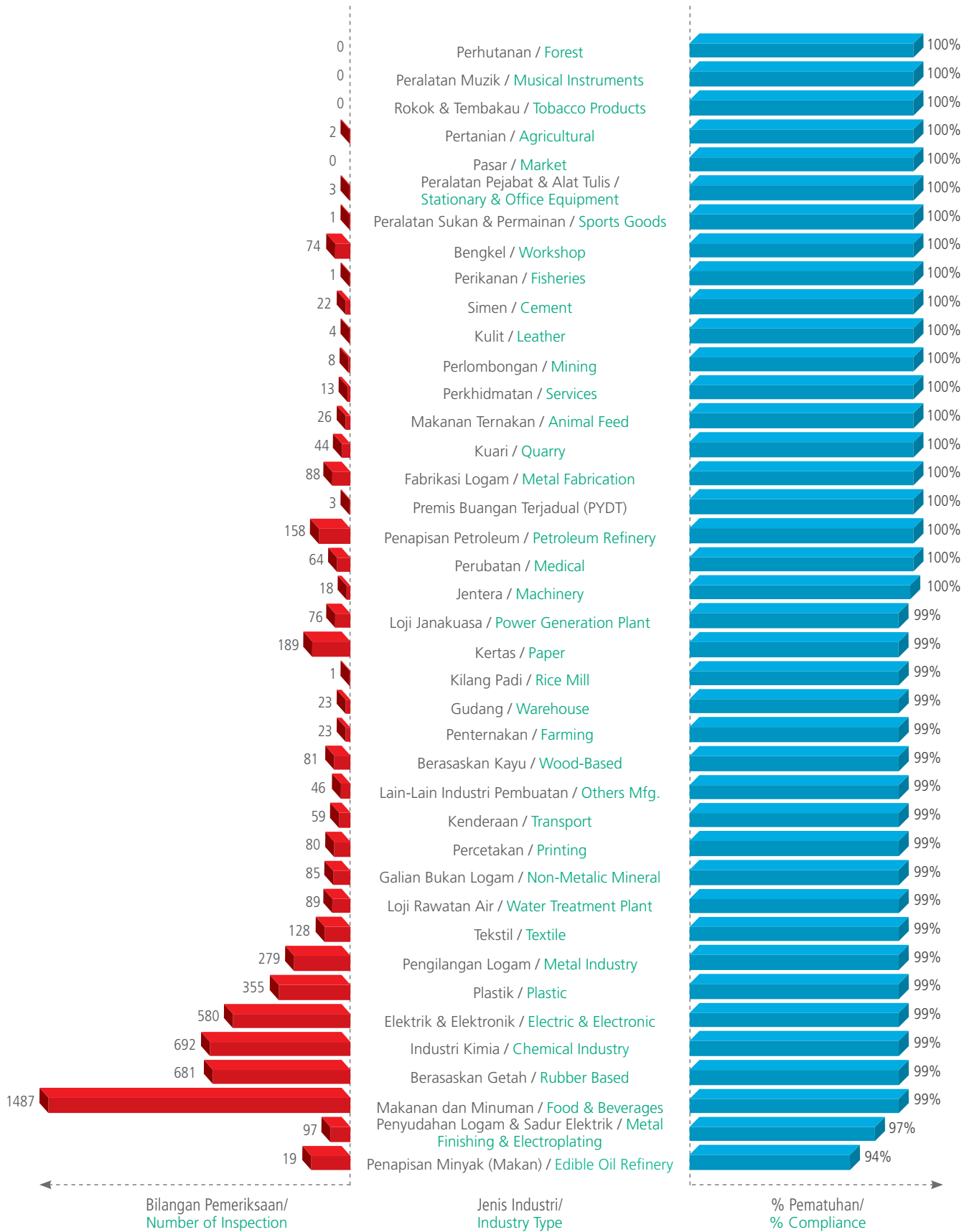
Status of Compliance With The Environmental Quality (Scheduled Wastes) Regulations 2005

In 2020, the overall compliance achieved by these Scheduled Wastes Treatment and Disposal Facilities to the Environmental Quality (Scheduled Wastes) Regulations 2005 was 93%.

Jadual 4.32 : Status Pematuhan Industri terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009, 2020

Table 4.32 : Compliance Status to the Environmental Quality (Effluen) Regulations 2009, 2020

BIL. / NO.	BILANGAN PEMERIKSAAN / NUMBER OF INSPECTIONS	JENIS INDUSTRI / TYPE OF INDUSTRY	% PEMATUHAN / % COMPLIANCE
1	0	Perhutanan / Forest	100%
2	0	Peralatan Muzik / Musical Instruments	100%
3	0	Rokok & Tembakau / Tobacco Products	100%
4	2	Pertanian / Agricultural	100%
5	0	Pasar / Market	100%
6	3	Peralatan Pejabat & Alat Tulis / Stationary & Office Equipment	100%
7	1	Peralatan Sukan & Permainan / Sports Goods	100%
8	74	Bengkel / Workshop	100%
9	1	Perikanan / Fisheries	100%
10	22	Simen / Cement	100%
11	4	Kulit / Leather	100%
12	8	Perlombongan / Mining	100%
13	13	Perkhidmatan / Services	100%
14	26	Makanan Ternakan / Animal Feed	100%
15	44	Kuari / Quarry	100%
16	88	Fabrikasi Logam / Metal Fabrication	100%
17	3	Premis Buangan Terjadual (PYDT)	100%
18	158	Penapisan Petroleum / Petroleum Refinery	100%
19	64	Perubatan / Medical	100%
20	18	Jentera / Machinery	100%
21	76	Loji Janakuasa / Power Generation Plant	99%
22	189	Kertas / Paper	99%
23	1	Kilang Padi / Rice Mill	99%
24	23	Gudang / Warehouse	99%
25	23	Penternakan / Farming	99%
26	81	Berasaskan Kayu / Wood-Based	99%
27	46	Lain-Lain Industri Pembuatan / Others Mfg.	99%
28	59	Kenderaan / Transport	99%
29	80	Percetakan / Printing	99%
30	85	Galian Bukan Logam / Non-Metalic Mineral	99%
31	89	Loji Rawatan Air / Water Treatment Plant	99%
32	128	Tekstil / Textile	99%
33	279	Pengilangan Logam / Metal Industry	99%
34	355	Plastik / Plastic	99%
35	580	Elektrik & Elektronik / Electric & Electronic	99%
36	692	Industri Kimia / Chemical Industry	99%
37	681	Berasaskan Getah / Rubber Based	99%
38	1487	Makanan dan Minuman / Food & Beverages	99%
39	97	Penyudahan Logam & Sadur Elektrik / Metal Finishing & Electroplating	97%
40	192	Penapisan Minyak (Makan) / Edible Oil Refinery	94%
	5772		



Rajah 4.17
Figure 4.17
Status Pamatuhan Industri terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen) 2009, 2020
Compliance Status to the Environmental Quality (Effluen) Regulations 2009, 2020

KAWALAN PREMIS YANG BUKAN DITETAPKAN CONTROL OF NON-PRESCRIBED PREMISES

Premis yang bukan ditetapkan adalah merujuk kepada premis selain dari yang dilesenkan di bawah Seksyen 18, Akta Kualiti Alam Sekeliling 1974 iaitu selain daripada kilang getah asli mentah, kilang kelapa sawit mentah dan kilang yang menjalankan kemudahan pengolahan dan pelupusan buangan terjadual. Premis-premis ini merangkumi kilang-kilang dari pelbagai industri pembuatan dan pengilangan, loji kumbahan, tapak pelupusan sisa pepejal dan sebagainya.

JAS terus komited menjalankan pemeriksaan secara berkala kepada premis-premis yang berisiko menyebabkan pencemaran alam sekitar melalui pemeriksaan di lapangan dengan pendekatan pemeriksaan di lapangan dan pemeriksaan penguatkuasaan atas talian sepanjang tempoh tempoh Perintah Kawalan Pergerakan (PKP), Perintah Kawalan Pergerakan Bersyarat (PKPB) dan Perintah Kawalan Pergerakan Pemulihan (PKPP) berkuatkuasa. Selain itu, JAS turut memperkasakan program penguatkuasaan pada tahun 2020 melalui rondaan di kawasan tumpuan pencemaran termasuk di luar waktu pejabat.

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

Premis-premis yang bukan ditetapkan yang menghasilkan dan melepaskan efluen perindustrian adalah tertakluk kepada pematuhan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009.

Pada tahun 2020, sejumlah 5,772 pemeriksaan lapangan dan pemeriksaan atas talian dilaksanakan ke atas 42 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 kepada peraturan di atas adalah 99.75%. Terdapat 20 kategori industri yang berjaya mencapai pematuhan 100% pada tahun 2020 (**Rajah 4.18**).

Status Pematuhan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014

Premis-premis yang bukan ditetapkan yang melepaskan bahan pencemar ke udara adalah tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014.

Non prescribed premises refers to premises other than those licensed under Section 18, Environmental Quality Act 1974, which are factories other than raw natural rubber factories, crude palm oil mills and facilities for the treatment and disposal of scheduled wastes. These include factories from various manufacturing industries, sewage plants, solid waste landfills and so on.

DOE is committed to conducting regular inspections on premises that have the potential to cause environmental pollution, and this was through field inspections and desktop enforcement inspections throughout the period the Movement Control Order (MCO), Conditional Movement Control Order (CMCO) and Recovery Movement Control Order (RMCO) were in force. In addition, DOE has also strengthened enforcement programmes in 2020 through patrols and inspection at pollution hotspots, including after office hours.

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

The non-prescribed premises that generate and discharge industrial effluents are subject to the Environmental Quality (Industrial Effluents) Regulations, 2009.

In 2020, DOE conducted a total of 5,772 field inspections and desktop inspections on 42 categories of manufacturing industries and other non-prescribed premises that were subject to the Environmental Quality (Industrial Effluents) Regulations, 2009.

The overall compliance achieved by the non-prescribed premises to the above regulation was 99.75%. There were 20 categories of industries that managed to achieve 100% compliance in 2020 (**Figure 4.18**).

Status of Compliance with the Environmental Quality (Clean Air) Regulations 2014

The non-prescribed premises which release pollutants into the air are subject to the Environmental Quality (Clean Air) Regulations 2014.

Sebanyak 8,792 pemeriksaan telah dijalankan kepada premis-premis di atas pada tahun 2020 dan pencapaian pematuhan keseluruhan adalah 99.72%. Terdapat 19 kategori industri berjaya mencapai pematuhan 100% pada tahun 2020 (**Rajah 4.19**).

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

Premis-premis yang bukan ditetapkan yang menghasilkan buangan terjadual tertakluk kepada kawalan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005.

JAS telah menjalankan 11,606 pemeriksaan ke pada premis-premis yang menghasilkan buangan terjadual pada tahun 2020. Pencapaian pematuhan keseluruhan oleh premis yang bukan ditetapkan adalah 99%. Antara kegagalan pematuhan yang direkodkan adalah kegagalan premis untuk mengemukakan pemberitahuan mengenai pengeluaran buangan terjadual kepada JAS, buangan terjadual tidak distor dan tidak dilabel dengan sempurna selain gagal menyimpan rekod inventori buangan terjadual dengan tepat dan terkini sebagaimana kehendak di dalam Peraturan 3, 8, 9, 10 dan 11.

Pada tahun 2020, terdapat 11 kategori industri berjaya mencapai pematuhan 100% terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 (**Rajah 4.20**).

A total of 8,792 inspections were conducted on these premises in 2020 and the overall compliance was 99.72%. A total of 19 categories of industries managed to achieve 100% compliance in 2020 (**Figure 4.19**).

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

The non-prescribed premises that generate scheduled wastes are subject to the Environmental Quality (Scheduled Wastes) Regulations 2005.

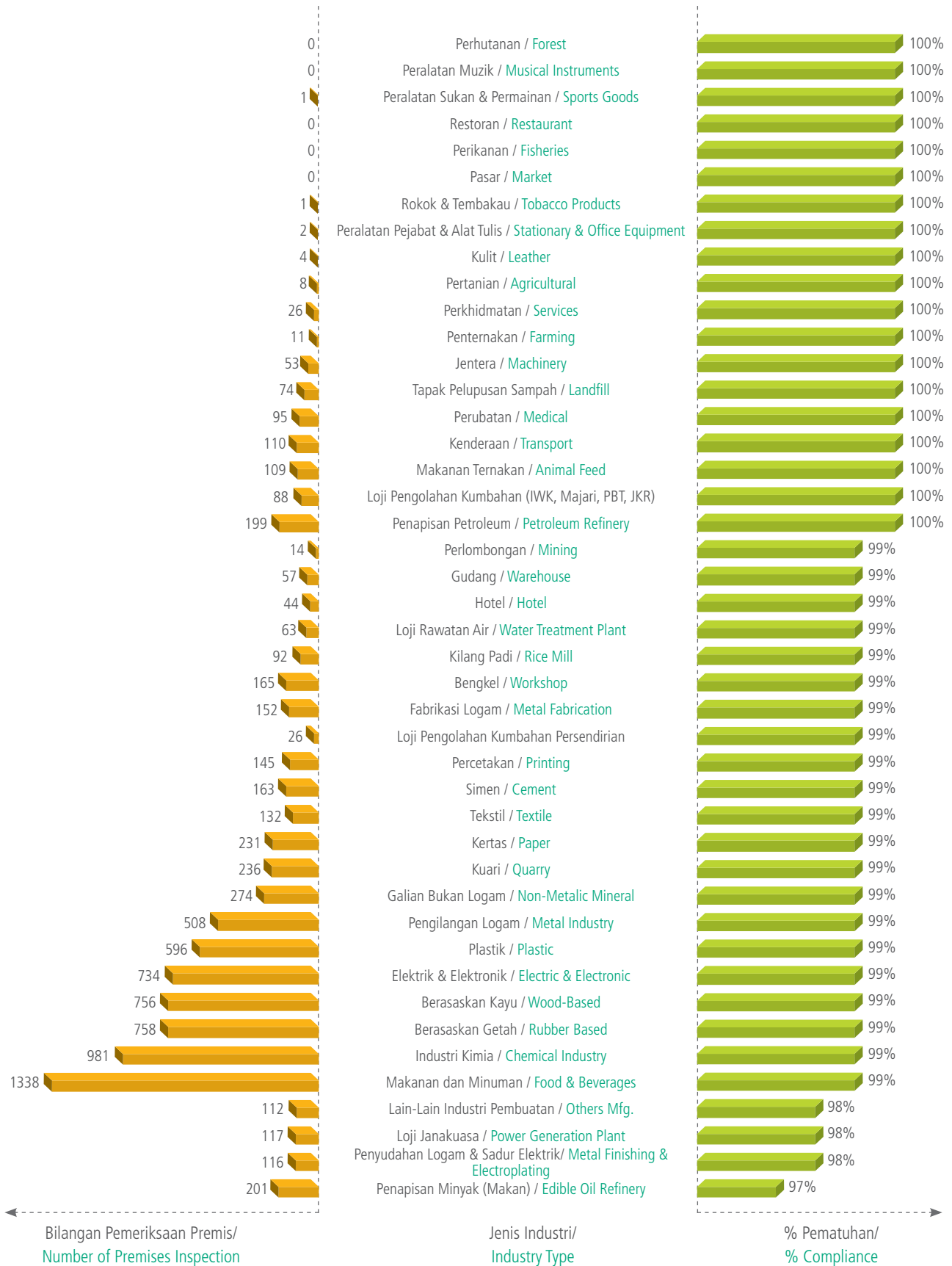
DOE conducted 11,606 inspections on premises that generate scheduled wastes in the year 2020. The achievement of overall compliance by non-prescribed premises was 99%. Among the non-compliances were failing to submit notification on the production of scheduled wastes to DOE, scheduled wastes not kept and properly labeled as well as failing to keep accurate and up-to-date waste inventory records as required in Regulation 3, 8, 9, 10, and 11.

In 2020, 11 categories of industries subject under the Environmental Quality (Scheduled Wastes) Regulations 2005 managed to achieve 100% compliance (**Figure 4.20**).

Jadual 4.33 : Status Pematuhan Industri terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014, 2020

Table 4.33 : Compliance Status to the Environmental Quality (Clean Air) Regulations 2014, 2020

BIL. / NO.	BILANGAN PEMERIKSAAN / NUMBER OF INSPECTIONS	JENIS INDUSTRI / TYPE OF INDUSTRY	% PEMATUHAN / % COMPLIANCE
1	0	Perhutanan / Forest	100%
2	0	Peralatan Muzik / Musical Instruments	100%
3	1	Peralatan Sukan & Permainan / Sports Goods	100%
4	0	Restoran / Restaurant	100%
5	0	Perikanan / Fisheries	100%
6	0	Pasar / Market	100%
7	1	Rokok & Tembakau / Tobacco Products	100%
8	2	Peralatan Pejabat & Alat Tulis / Stationary & Office Equipment	100%
9	4	Kulit / Leather	100%
10	8	Pertanian / Agricultural	100%
11	26	Perkhidmatan / Services	100%
12	11	Penternakan / Farming	100%
13	53	Jentera / Machinery	100%
14	74	Tapak Pelupusan Sampah / Landfill	100%
15	95	Perubatan / Medical	100%
16	110	Kenderaan / Transport	100%
17	109	Makanan Ternakan / Animal Feed	100%
18	88	Loji Pengolahan Kumbahan (IWK, Majari, PBT, JKR)	100%
19	199	Penapisan Petroleum / Petroleum Refinery	100%
20	14	Perlombongan / Mining	99%
21	57	Gudang / Warehouse	99%
22	44	Hotel / Hotel	99%
23	63	Loji Rawatan Air / Water Treatment Plant	99%
24	92	Kilang Padi / Rice Mill	99%
25	165	Bengkel / Workshop	99%
26	152	Fabrikasi Logam / Metal Fabrication	99%
27	26	Loji Pengolahan Kumbahan Persendirian	99%
28	145	Percetakan / Printing	99%
29	163	Simen / Cement	99%
30	132	Tekstil / Textile	99%
31	231	Kertas / Paper	99%
32	236	Kuari / Quarry	99%
33	274	Galian Bukan Logam / Non-Metalic Mineral	99%
34	508	Pengilangan Logam / Metal Industry	99%
35	596	Plastik / Plastic	99%
36	734	Elektrik & Elektronik / Electric & Electronic	99%
37	756	Berasaskan Kayu / Wood-Based	99%
38	758	Berasaskan Getah / Rubber Based	99%
39	981	Industri Kimia / Chemical Industry	99%
40	1338	Makanan dan Minuman / Food & Beverages	99%
41	112	Lain-Lain Industri Pembuatan / Others Mfg.	98%
42	117	Loji Janakuasa / Power Generation Plant	98%
43	116	Penyudahan Logam & Sadur Elektrik / Metal Finishing & Electroplating	98%
44	201	Penapisan Minyak (Makan) / Edible Oil Refinery	97%
	8792		



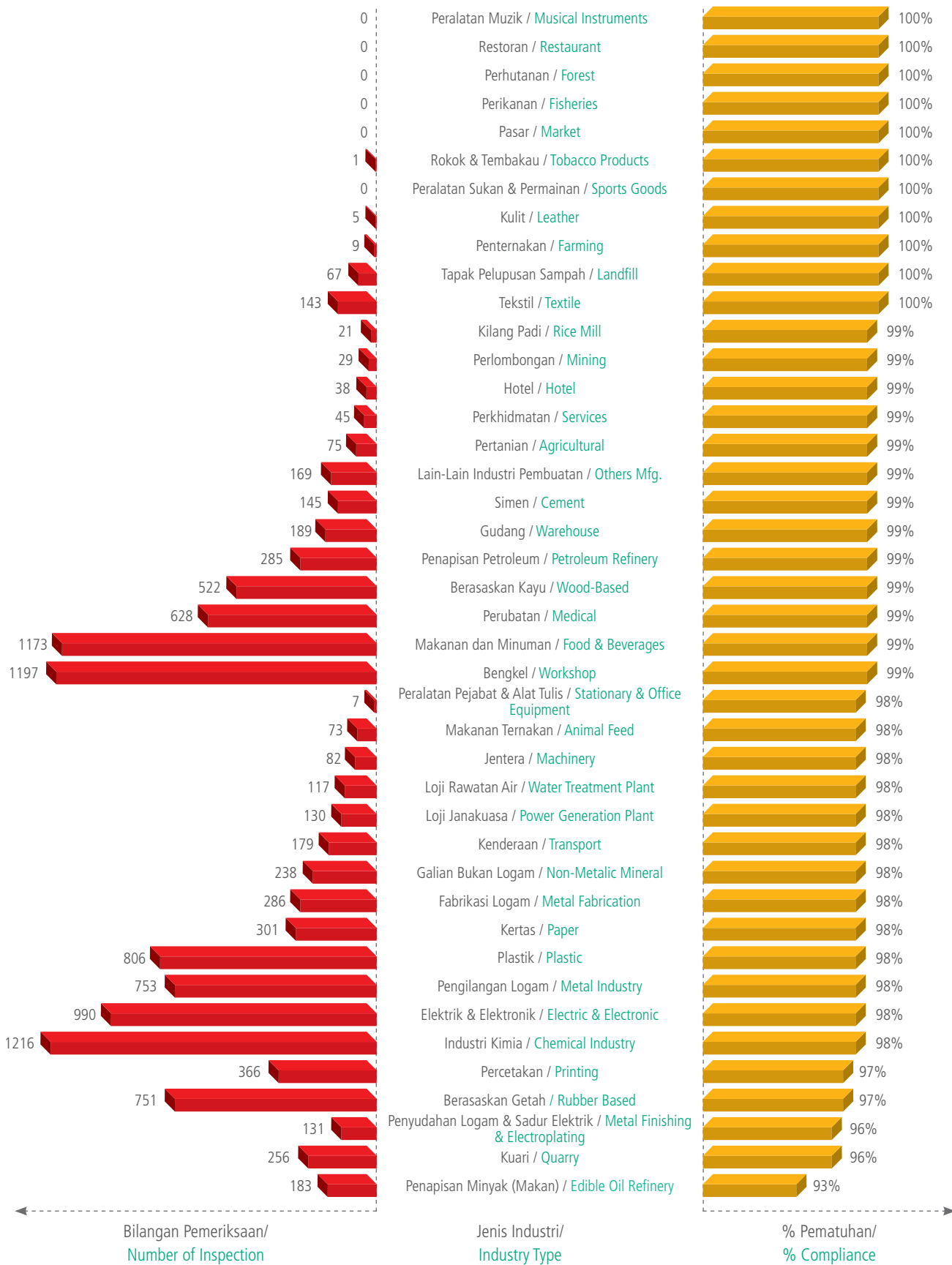
Rajah 4.18
Figure 4.18

Status Pemuatan Industri terhadap Peraturan-Peraturan Kualiti Alam Sekeliling
(Udara Bersih) 2014, 2020
Compliance Status to the Environmental Quality (Clean Air) Regulations 2014, 2020

Jadual 4.34 : Status Pematuhan Industri terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005, 2020

Table 4.34 : Compliance Status to the Environmental Quality (Scheduled Wastes) Regulations 2005, 2020

BIL. / NO.	BILANGAN PEMERIKSAAN / NUMBER OF INSPECTIONS	JENIS INDUSTRI / TYPE OF INDUSTRY	% PEMATUHAN / % COMPLIANCE
1	0	Peralatan Muzik / Musical Instruments	100%
2	0	Restoran / Restaurant	100%
3	0	Perhutanan / Forest	100%
4	0	Perikanan / Fisheries	100%
5	0	Pasar / Market	100%
6	1	Rokok & Tembakau / Tobacco Products	100%
7	0	Peralatan Sukan & Permainan / Sports Goods	100%
8	5	Kulit / Leather	100%
9	9	Penternakan / Farming	100%
10	67	Tapak Pelupusan Sampah / Landfill	100%
11	143	Tekstil / Textile	100%
12	21	Kilang Padi / Rice Mill	99%
13	29	Perlombongan / Mining	99%
14	38	Hotel / Hotel	99%
15	45	Perkhidmatan / Services	99%
16	75	Pertanian / Agricultural	99%
17	169	Lain-Lain Industri Pembuatan / Others Mfg.	99%
18	145	Simen / Cement	99%
19	189	Gudang / Warehouse	99%
20	285	Penapisan Petroleum / Petroleum Refinery	99%
21	522	Berasaskan Kayu / Wood-Based	99%
22	628	Perubatan / Medical	99%
23	1173	Makanan dan Minuman / Food & Beverages	99%
24	1197	Bengkel / Workshop	99%
25	7	Peralatan Pejabat & Alat Tulis / Stationary & Office Equipment	98%
26	73	Makanan Ternakan / Animal Feed	98%
27	82	Jentera / Machinery	98%
28	117	Loji Rawatan Air / Water Treatment Plant	98%
29	130	Loji Janakuasa / Power Generation Plant	98%
30	179	Kenderaan / Transport	98%
31	238	Galian Bukan Logam / Non-Metalic Mineral	98%
32	286	Fabrikasi Logam / Metal Fabrication	98%
33	301	Kertas / Paper	98%
34	806	Plastik / Plastic	98%
35	753	Pengilangan Logam / Metal Industry	98%
36	990	Elektrik & Elektronik / Electric & Electronic	98%
37	1216	Industri Kimia / Chemical Industry	98%
38	366	Percetakan / Printing	97%
39	751	Berasaskan Getah / Rubber Based	97%
40	131	Penyudahan Logam & Sadur Elektrik / Metal Finishing & Electroplating	96%
41	256	Kuari / Quarry	96%
42	183	Penapisan Minyak (Makan) / Edible Oil Refinery	93%
	11606		



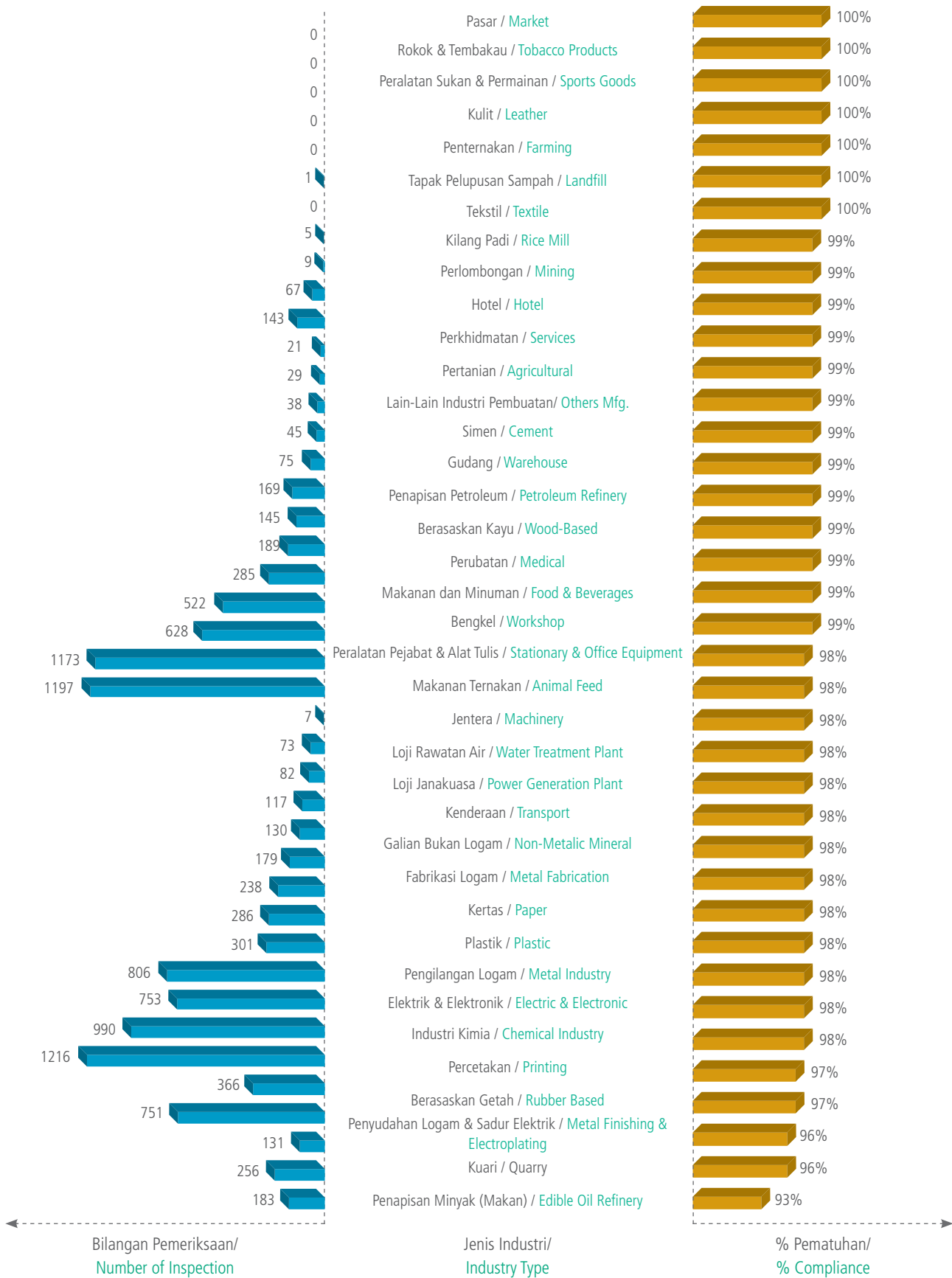
Status Pamatuhan Industri terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005, 2020

Compliance Status to the Environmental Quality (Scheduled Wastes) Regulations 2005, 2020

Rajah 4.19
Figure 4.19

Jadual 4.35 : Status Pematuhan Industri Terhadap Peraturan-Peraturan
Table 4.35 : Kualiti Alam Sekeliling (Buangan Terjadual) 2005, 2020

BIL. / NO.	BILANGAN PEMERIKSAAN / NUMBER OF INSPECTIONS	JENIS INDUSTRI / TYPE OF INDUSTRY	% PEMATUHAN / % COMPLIANCE
1	0	Peralatan Muzik / Musical Instruments	100%
2	0	Restoran / Restaurant	100%
3	0	Perhutanan / Forest	100%
4	0	Perikanan / Fisheries	100%
5	0	Pasar / Market	100%
6	1	Rokok & Tembakau / Tobacco Products	100%
7	0	Peralatan Sukan & Permainan / Sports Goods	100%
8	5	Kulit / Leather	100%
9	9	Penternakan / Farming	100%
10	67	Tapak Pelupusan Sampah / Landfill	100%
11	143	Tekstil / Textile	100%
12	21	Kilang Padi / Rice Mill	99%
13	29	Perlombongan / Mining	99%
14	38	Hotel / Hotel	99%
15	45	Perkhidmatan / Services	99%
16	75	Pertanian / Agricultural	99%
17	169	Lain-Lain Industri Pembuatan / Others Mfg.	99%
18	145	Simen / Cement	99%
19	189	Gudang / Warehouse	99%
20	285	Penapisan Petroleum / Petroleum Refinery	99%
21	522	Berasaskan Kayu / Wood-Based	99%
22	628	Perubatan / Medical	99%
23	1173	Makanan dan Minuman / Food & Beverages	99%
24	1197	Bengkel / Workshop	99%
25	7	Peralatan Pejabat & Alat Tulis / Stationary & Office Equipment	98%
26	73	Makanan Ternakan / Animal Feed	98%
27	82	Jentera / Machinery	98%
28	117	Loji Rawatan Air / Water Treatment Plant	98%
29	130	Loji Janakuasa / Power Generation Plant	98%
30	179	Kenderaan / Transport	98%
31	238	Galian Bukan Logam / Non-Metallic Mineral	98%
32	286	Fabrikasi Logam / Metal Fabrication	98%
33	301	Kertas / Paper	98%
34	806	Plastik / Plastic	98%
35	753	Pengilangan Logam / Metal Industry	98%
36	990	Elektrik & Elektronik / Electric & Electronic	98%
37	1216	Industri Kimia / Chemical Industry	98%
38	366	Percetakan / Printing	97%
39	751	Berasaskan Getah / Rubber Based	97%
40	131	Penyudahan Logam & Sadur Elektrik / Metal Finishing & Electroplating	96%
41	256	Kuari / Quarry	96%
42	183	Penapisan Minyak (Makan) / Edible Oil Refinery	93%



Status Pematuhan Industri Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005, 2020

Compliance Status to the Environmental Quality (Scheduled Wastes) Regulations 2005, 2020

Rajah 4.20
Figure 4.20

TINDAKAN PENGUATKUASAAN KE ATAS PREMIS ENFORCEMENT ACTION ON PREMISES

Sejumlah 378 kes premis yang tidak patuh kepada Akta Kualiti Alam Sekeliling 1974 dan Peraturan-Peraturan di bawahnya telah dituduh di mahkamah jenayah untuk tahun 2020 dengan pungutan denda berjumlah RM 5,147,000.00. Tindakan-tindakan penguatkuasaan lain yang telah diambil ke atas premis yang didapati melakukan kesalahan di bawah Akta 127 adalah sebanyak 2,593 notis arahan telah dikeluarkan supaya premis 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) 2014 dan Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005. Selain itu 7,513 kompaun telah ditawarkan kepada premis atas kegagalan mematuhi peruntukan perundangan sebagaimana dinyatakan di atas. Selain daripada itu, sejumlah 178 premis telah dikenakan penahanan operasi kelengkapan dan 37 premis dikenakan perintah larangan untuk beroperasi. Manakala sebanyak 30 premis telah dikenakan tindakan gantung lesen.

JAS juga menggalakkan industri untuk menggunakan teknologi kawalan pencemaran yang efisien, amalan pengeluaran bersih serta pematuhan sendiri bagi mengelakkan operasi premis menyebabkan pencemaran alam sekitar sekaligus memastikan pematuhan sepenuhnya kepada Akta Kualiti Alam Sekeliling 1974. Pihak industri juga dinasihatkan untuk mewujudkan sistem pengurusan alam sekitar yang baik dan digalakkan untuk mendapatkan pensijilan ISO 14000.

PELAKSANAAN OPERASI GEMPUR (OPS GEMPUR)

JAS pada tahun 2020 telah mengambil inisiatif berimpak tinggi dengan melaksanakan Ops Gempur, iaitu operasi penguatkuasaan bersasar ke atas premis yang tertakluk kepada Akta Kualiti Alam Sekeliling 1974 secara besar-besaran ke arah menangani isu-isu pencemaran alam sekitar. Operasi ini dilaksanakan di seluruh Negara secara berkala dan turut dijalankan secara bersepadu dengan penglibatan langsung dari pelbagai agensi penguatkuasa yang berkaitan mengikut bidang kuasa masing-masing bagi meningkatkan lagi keberkesanan pemeriksaan premis.

Melalui Ops Gempur ini, pemilihan penguatkuasaan diutamakan terhadap premis atau punca-punca pencemaran terutamanya yang terletak di hulu takat pengambilan air, operasi premis yang mendapat aduan yang kerap, menghasilkan beban pencemar yang tinggi, sering dikenakan tindakan penguatkuasaan,

A total of 378 cases where premises did not comply with the Environmental Quality Act 1974 and the Regulations thereunder were prosecuted in criminal court in 2020 with an accumulated fine of RM 5,147,000.00. Other enforcement actions that have been taken on premises which were found to have committed offenses under Act 127 were the issuance of 2,593 directive notices to instruct the premises to take appropriate action in complying with the Environmental Quality Act, 1974, Environmental Quality Regulations (Industrial Effluent) 2009, Environmental Quality (Clean Air) Regulations 2014 and Environmental Quality (Scheduled Wastes) Regulations 2005. In addition, 7,513 compounds were issued to premises for failure to comply with legal provisions as stated above. Other than that, a total of 178 premises were imposed with Detention of Equipment and 37 premises were issued with a Prohibition Order to operate. Meanwhile, 30 premises had their licences suspended.

DOE also encourages industries to implement efficient pollution control technology, cleaner production practices and self-compliance to ensure the operation of the premises will not cause environmental pollution while ensuring full compliance with the Environmental Quality Act 1974. Industries are also advised to establish a good environmental management system and encouraged to obtain ISO 14000 certification.

IMPLEMENTATION OF OPERATION GEMPUR (OPS GEMPUR)

DOE, in 2020, initiated a high-impact programme through the implementation of Ops Gempur, a targeted and large-scale enforcement activity to premises subject to the Environmental Quality Act 1974 addressing environmental pollution issues. These operations were conducted nationwide on a regular basis and were also carried out with cooperation from various relevant enforcement agencies according to their respective jurisdictions to further enhance the effectiveness of inspections.

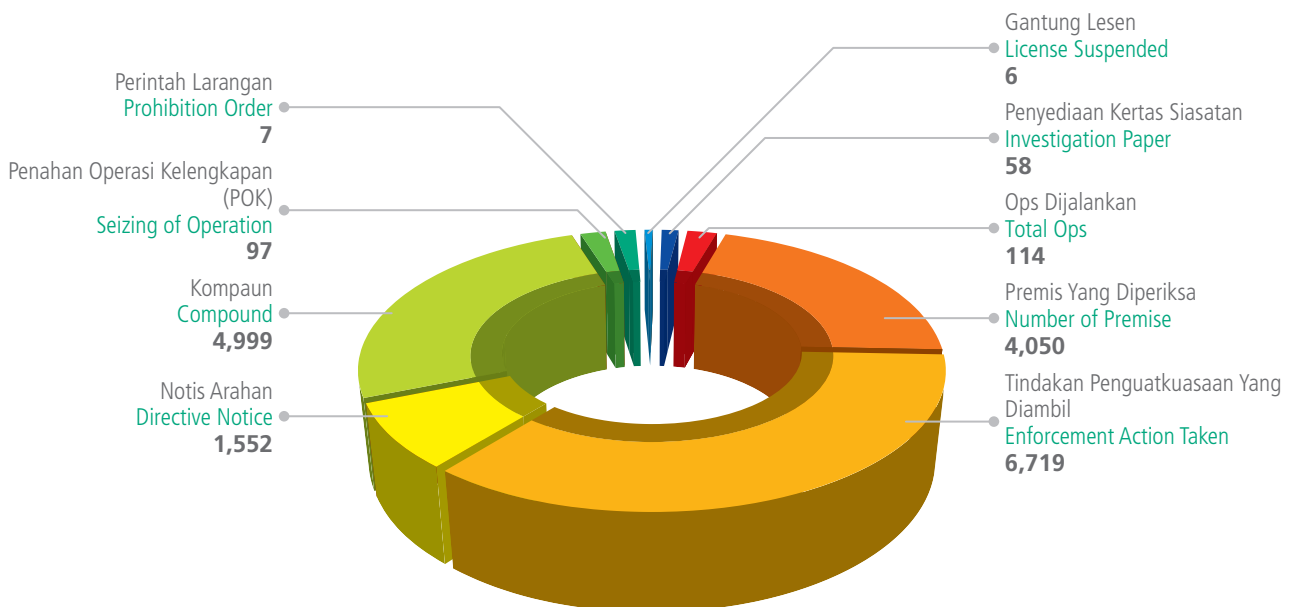
Through this Ops Gempur, enforcement was focused on the premises or pollution sources located upstream of water intake, premises where public complaints have been recorded frequently, that produce high pollutant loads, premises that are repeat offenders where enforcement action has been taken before,

premises menghasilkan buangan terjadual dalam kuantiti yang tinggi, premis yang terletak di kawasan yang mempunyai isu alam sekitar dan premis yang terletak di lembangan sungai yang tercemar.

premises producing high quantity of scheduled wastes or located in areas that have environmental issues or in polluted river basins.

Untuk tahun 2020, JAS telah menjalankan sebanyak 114 Ops Gempur di seluruh Negara yang melibatkan pemeriksaan ke atas 4,050 premis yang terdiri dari pelbagai jenis industri. Sebanyak 6,719 tindakan penguatkuasaan di bawah Akta Kualiti Alam Sekeliling 1974 telah diambil ke atas premis yang gagal mematuhi peruntukan Akta tersebut. Rumusan tindakan penguatkuasaan melalui Ops Gempur yang telah diambil oleh JAS pada tahun 2020 adalah seperti **rajah 4.21**.

For the period of 1 January 2020 to 31 December 2020, DOE conducted 114 operations nationwide involving inspections of 4,050 premises of various types of industries. A total of 6,719 enforcement actions under the Environmental Quality Act 1974 were taken against premises found to be not in compliance with the legislation. A summary of enforcement actions taken during 2020 is as shown in **figure 4.21** below.



Rajah 4.21
Figure 4.21

Ringkasan Tindakan Penguatkuasaan bagi Ops Gempur untuk Tahun 2020 Summary of Enforcement Actions for Ops Gempur for 2020

Selangor telah menjalankan 11 siri Ops Gempur sepanjang tahun 2020 melibatkan pemeriksaan ke atas 1,333 premis. Susulan berlakunya kejadian pencemaran sungai sehingga menyebabkan henti tugas Loji Rawatan Air, beberapa siri Ops Gempur tersebut turut melibatkan kerjasama pasukan penguatkuasa dari JAS Negeri Sembilan, JAS Wilayah Persekutuan Kuala Lumpur dan JAS Ibu Pejabat. Selain daripada itu, beberapa Ops Gempur yang dijalankan di peringkat negeri juga turut dilaksanakan secara bersepadu dengan agensi-agensi penguatkuasa lain seperti Pihak Berkuasa Negeri, Suruhanjaya Perkhidmatan Air Negara (SPAN), Badan Kawal Selia Air Negeri, Indah Water Konsortium Sdn Bhd (IWK), Operator Loji Rawatan Air dan lain-lain agensi bagi membolehkan tindakan penguatkuasaan yang lebih tegas dapat diambil terhadap kesalahan

The State of Selangor conducted 11 series of Ops Gempur throughout 2020 involving inspections on 1,333 premises. Due to the occurrence of river pollution incidents which caused the Water Treatment Plant to cease operation, a few series of the Ops Gempur also involved enforcement teams from DOE Negeri Sembilan, DOE Federal Territory of Kuala Lumpur and DOE Headquarters. Apart from that, some series of the Ops Gempur conducted at the state level was also implemented in an integrated manner with other enforcement agencies such as the Local Authority, Suruhanjaya Perkhidmatan Air Negara (SPAN), State Water Regulatory Authority, Indah Water Konsortium Sdn Bhd (IWK), Water Treatment Plants Operators and other agencies. This was to ensure stricter enforcement action could be taken against premises

yang dilakukan mengikut bidang kuasa jabatan/ agensi masing-masing.

JAS ingin menegaskan bahawa semua pihak yang tertakluk kepada perundangan alam sekitar perlu mengambil langkah proaktif yang sewajarnya agar operasi premis tidak akan menyumbang kepada pencemaran alam sekitar dan menjejaskan kesejahteraan masyarakat. Setiap tindakan dan keputusan yang diambil juga hendaklah mengambil kira elemen kelestarian alam sekitar kerana alam sekitar adalah tanggungjawab kita bersama.

Komitmen dari semua pihak adalah amat penting bagi memastikan kualiti alam sekitar tidak terjejas walaupun aktiviti perindustrian dan pembangunan pesat dijalankan. Bumi ini bukanlah milik kita namun dipinjam dari anak cucu kita. Tanggungjawab menjaga alam sekitar adalah tanggungjawab bersama bagi memastikan kelangsungan alam sekitar yang mampan untuk dinikmati semua.

that committed offences in accordance with the respective department/ agency's jurisdiction.

DOE would like to emphasize that all parties subject to environmental legislation must take appropriate proactive measures so that the operation of the premises will not contribute to environmental pollution and affect the well-being of the community. Every action and decision taken must also consider the element of environmental sustainability because environment conservation is our shared responsibility.

Commitment from all stakeholders is very important to ensure that the quality of the environment is not affected despite the rapid industrial and development activities carried out. This earth is not ours but borrowed from our grandchildren. The responsibility to care of the environment is a shared responsibility to ensure the sustainability of a conducive environment for all to enjoy.



Proses Penyitaan Operasi Kelengkapan di Premis
Seizure Process of Equipment Operations on Premises



Ops Gempur yang Disertai YBM KASA dan YBhg. KSU KASA
Ops Gempur accompanied by YBM KASA and YBhg. KSU KASA



Persampelan Efluen oleh Pegawai JAS
Effluent Discharge Sampling by DOE Officers



Pemeriksaan bersama Wakil-Wakil Premis semasa Ops Gempur
Inspection with Premise's Representatives during Ops Gempur

TINDAKAN UNDANG-UNDANG LEGAL ACTION

Pendakwaan

Pada tahun 2020, sejumlah **405** kes kesalahan di bawah Akta Kualiti Alam Sekeliling (AKAS) 1974 telah didakwa di mahkamah dengan denda yang dikenakan berjumlah **RM 5,866,000.00** dan denda penjara selama **12** hari. (Rajah 4.22)

Daripada jumlah keseluruhan kes tersebut, sebanyak 68 (16.79%) kes mahkamah adalah melibatkan kesalahan di bawah Seksyen 34A(1), Akta Kualiti Alam Sekeliling 1974 dengan jumlah denda sebanyak RM 1,635,000.00. Sebanyak 75 (18.51%) kes mahkamah melibatkan kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009 dengan jumlah denda sebanyak RM1,265,000.00 sementara 262 (64.70%) kes yang selebihnya melibatkan kesalahan-kesalahan lain di bawah AKAS 1974.

Kompaun

Sejumlah **10,222** kompaun telah dikeluarkan sepanjang tahun 2020 kepada premis dan perseorangan untuk pelbagai kesalahan di bawah AKAS 1974. Pecahan mengikut kesalahan adalah seperti di **Rajah 4.23**.

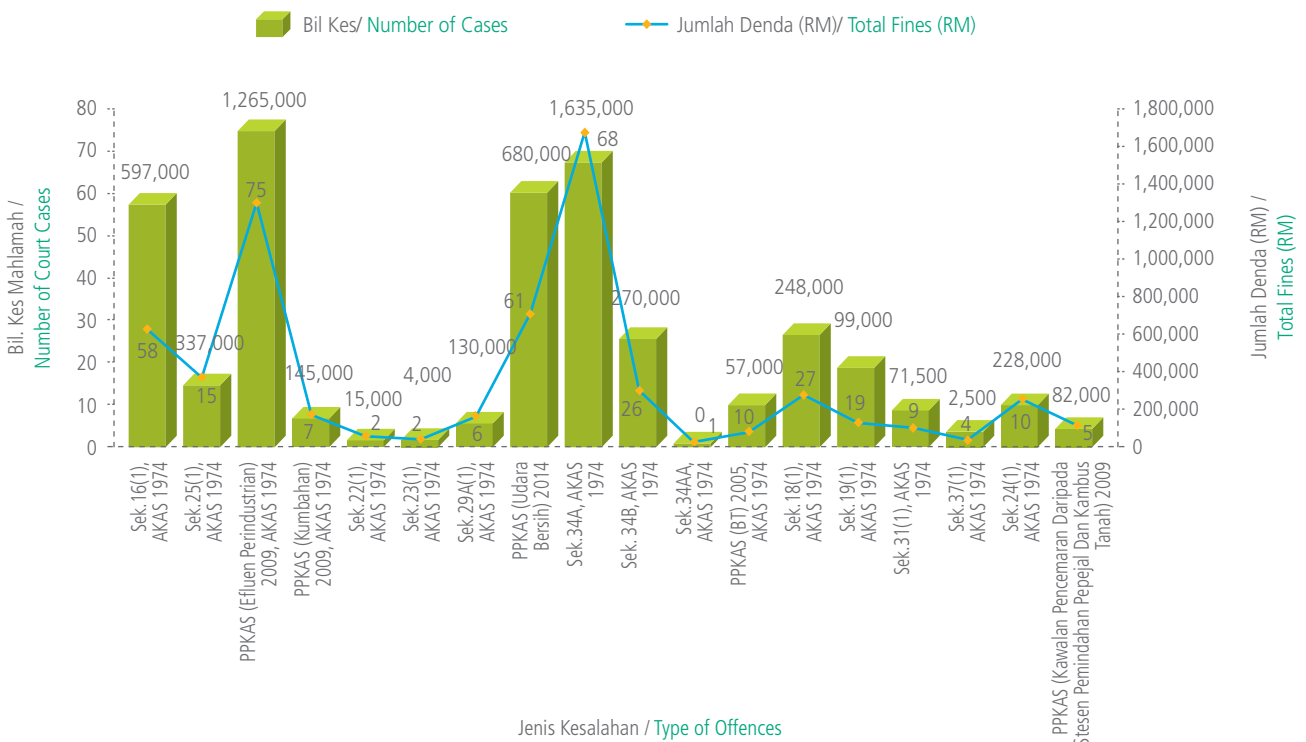
Prosecution

In 2020, a total of **405** cases were prosecuted under the Environmental Quality Act (EQA) 1974 with fines totalling **RM 5,866,000.00** and imprisonment for **12** days. (Figure 4.22)

From the overall cases, 68 (16.79%) court cases were offences under Section 34A(1), Environmental Quality Act (EQA) 1974 with a total fine of RM 1,635,000.00. There were 75 (18.51%) court cases which were offences under Environmental Quality (Industrial Effluent) Regulations 2009 with a total fine of RM 1,265,000.00 while the remaining 262 (64.70%) cases were for various other offences under the EQA 1974.

Compounds

10,222 compounds were issued in 2020 against premises and individuals for various offences under the EQA 1974. **Figure 4.23** shows the breakdown of offences as mentioned.



Rajah 4.22
Figure 4.22

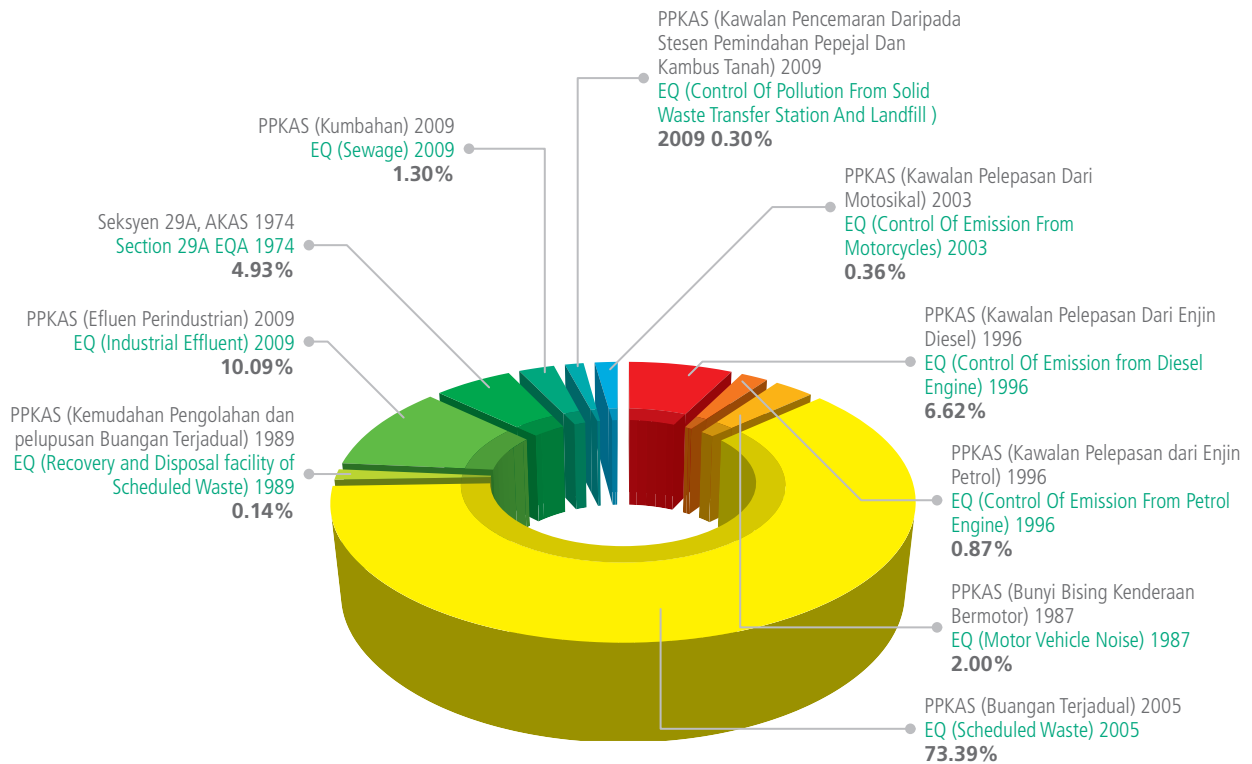
Bilangan Kes Mahkamah dan Denda, 2020
Number of Court Cases and Fines, 2020

Jadual 4.36 : Bilangan Kes Mahkamah dan Denda, 2020
Table 4.36 : Number of Court Cases and Fines, 2020

SEKSYEN / PERATURAN / SECTION / REGULATION	BIL KES / NUMBER OF CASES	JUMLAH DENDA (RM) / TOTAL FINES (RM)
Sek.16(1), AKAS 1974	58	597,000
Sek.25(1), AKAS 1974	15	337,000
PPKAS (Efluen Perindustrian) 2009, AKAS 1974	75	1,265,000
PPKAS (Kumbahan) 2009, AKAS 1974	7	145,000
Sek.22(1), AKAS 1974	2	15,000
Sek.23(1), AKAS 1974	2	4,000
Sek.29A(1), AKAS 1974	6	130,000
PPKAS (Udara Bersih) 2014	61	680,000
Sek.34A, AKAS 1974	68	1,635,000
Sek. 34B, AKAS 1974	26	270,000
Sek.34AA, AKAS 1974	1	0
PPKAS (BT) 2005, AKAS 1974	10	57,000
Sek.18(1), AKAS 1974	27	248,000
Sek.19(1), AKAS 1974	19	99,000
Sek.31(1), AKAS 1974	9	71,500
Sek.37(1), AKAS 1974	4	2,500
Sek.24(1), AKAS 1974	10	228,000
PPKAS (Kawalan Pencemaran Daripada Stesen Pemindahan Pepejal Dan Kambus Tanah) 2009	5	82,000

Jadual 4.37 : Bilangan Kes Kompaun mengikut Pecahan PPKAS, 2020
Table 4.37 : Number of Compound Cases according to Environmental Quality Regulations, 2020

SEKSYEN / PERATURAN / SECTION / REGULATION	JUMLAH / TOTAL	PERATUS / PERCENTAGE
PPKAS (Kawalan Pelepasan Dari Enjin Diesel) 1996	677	6.62%
PPKAS (Kawalan Pelepasan dari Enjin Petrol) 1996	89	0.87%
PPKAS (Bunyi Bising Kenderaan Bermotor) 1987	204	2.00%
PPKAS (Buangan Terjadual) 2005,	7502	73.39%
PPKAS (Kemudahan Pengolahan dan pelupusan Buangan Terjadual) 1989	14	0.14%
PPKAS (Efluen Perindustrian) 2009	1031	10.09%
Seksyen 29A, AKAS 1974	504	4.93%
PPKAS (Kumbahan) 2009	133	1.30%
PPKAS (Kawalan Pencemaran Daripada Stesen Pemindahan Pepejal Dan Kambus Tanah) 2009	31	0.30%
PPKAS(KPDM)2003	37	0.36%
Jumlah	10222	100%



Rajah 4.23
Figure 4.23

Bilangan Kes Kompaun mengikut Pecahan PPKAS, 2020
Number of Compound Cases according to Environmental Quality Regulations, 2020

MAKLUMBALAS TERHADAP PENGADUAN AWAM RESPONSE TO PUBLIC COMPLAINTS

Pada tahun 2020, sejumlah 10,818 aduan pencemaran alam sekitar telah diterima oleh Jabatan Alam Sekitar. 8,856 kes aduan telah diambil tindakan di bawah peruntukan Akta Kualiti Alam Sekeliling (AKAS) 1974 dan peraturan-peraturan di bawahnya oleh pejabat JAS Negeri, manakala 1,962 kes aduan adalah diluar bidangkuasa JAS dan telah dirujuk kepada agensi lain yang berkaitan untuk diambil tindakan. **(Rajah 4.24)**

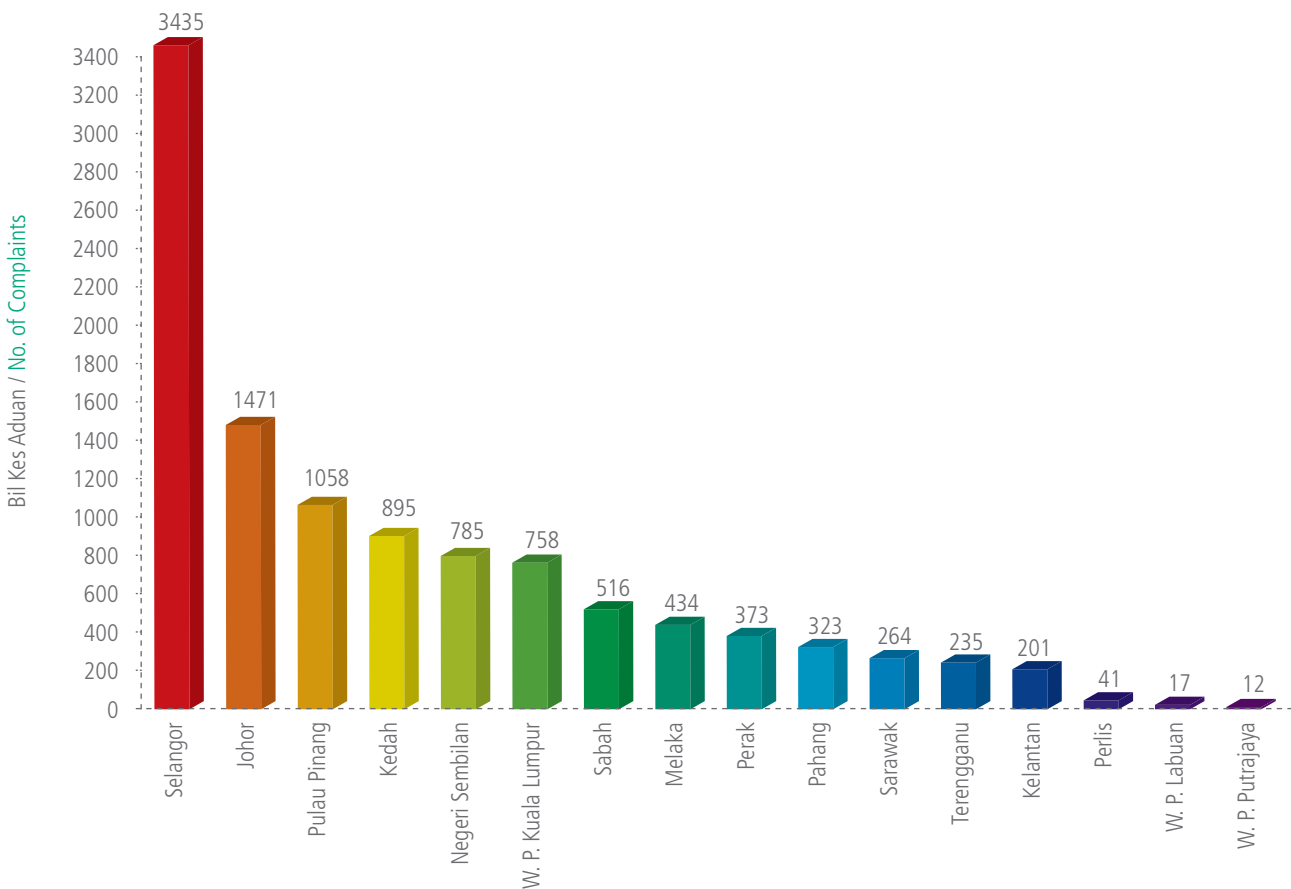
Pada tahun 2020, Selangor menerima aduan yang tertinggi iaitu sebanyak 3,435 kes (31.24%), diikuti oleh Johor sebanyak 1,471 kes (13.38%) dan Pulau Pinang sebanyak 1,058 kes (9.62%). Wilayah Persekutuan Putrajaya menerima aduan yang paling sedikit iaitu sebanyak 12 kes (0.11%) dan diikuti dengan Wilayah Persekutuan Labuan iaitu sebanyak 17 kes (0.15%).

The Department of Environment received 10,818 environmental pollution complaints in the year 2020. Of these, 8,856 were under the Environmental Quality Act, 1974 and investigated by the State DOE Offices, while the remaining 1,962 cases were outside the jurisdiction of DOE and were referred to other relevant agencies. **(Figure 4.24)**

In 2020, Selangor recorded 3,435 (31.24%) complaints, the highest number received, followed by Johor 1,471 (13.38%) and Pulau Pinang 1,058 (9.62%). The Federal Territory of Putrajaya recorded the least number of complaints received with 12 (0.11%) followed by Federal Territory of Labuan with 17 (0.15%).

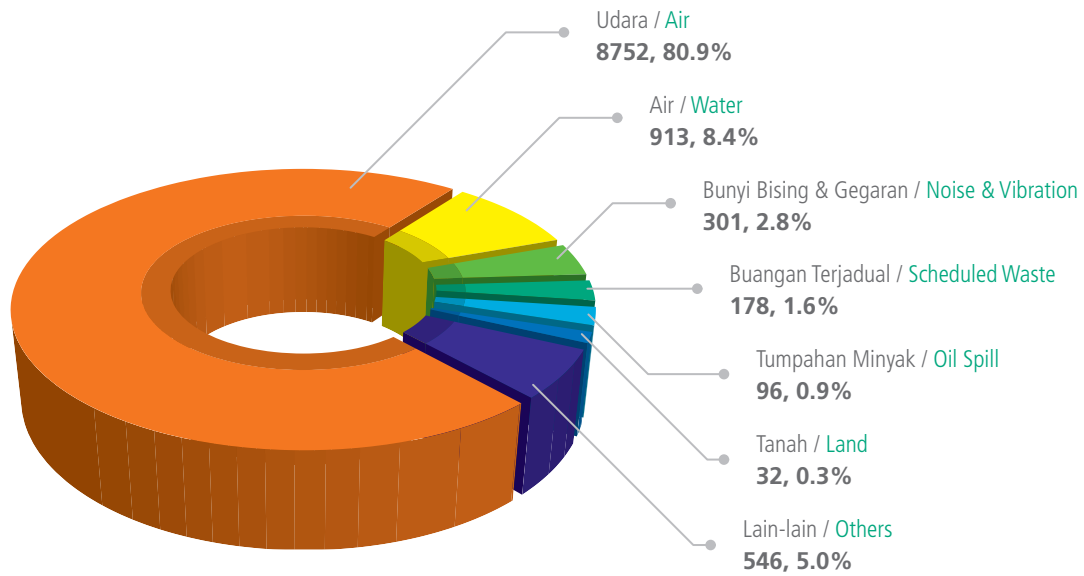
Seperti tahun-tahun yang sebelumnya, bilangan aduan pencemaran yang tertinggi adalah berkaitan dengan pencemaran udara iaitu sebanyak 8,752 kes (80.9%), sebanyak 913 kes (8.44%) berkaitan pencemaran air, sebanyak 301 kes (2.8%) berkaitan pencemaran bunyi, sebanyak 178 kes (1.65%) berkaitan buangan terjadual, sebanyak 96 kes (0.89%) berkaitan tumpahan minyak, sebanyak 32 kes (0.3%) berkaitan pencemaran tanah dan sebanyak 546 kes (5.05%) lain-lain aduan (**Rajah 4.25**).

As in the previous years, most of the complaints received were related to air pollution 8,752 (80.9%), followed by 913 (8.44%) related to water pollution, 301 (2.8%) to noise pollution, 178 (1.65%) on illegal dumping of scheduled or toxic wastes, 96 related to (0.89%) oil spillage, 32 (0.3%) to land pollution and 546 (5.05%) were other complaints (**Figure 4.25**).



Rajah 4.24
Figure 4.24

Bilangan Aduan mengikut Negeri, 2020
Number of Complaints by State, 2020



Rajah 4.25
Figure 4.25

Bilangan Kes Aduan mengikut Jenis, 2020
Number of Complaint Cases by Types, 2020



Mesyuarat Penyelarasan Tindakan Penguatkuasaan Aduan 2020, 11 Mac 2020, Bilik Mesyuarat Cempaka, JAS Ibu Pejabat Putrajaya
Complaint Enforcement Action Coordination Meeting 2020, 11 March 2020, Cempaka Meeting Room, DOE Putrajaya Headquarters



Bengkel Penguatkuasaan ke Atas Kontena Sisa Buangan Plastik, 11 September 2020, Pelabuhan Klang (Barat), Selangor

Enforcement Workshop on Plastic Waste Containers, 11 September 2020, Port Klang (West), Selangor



Bengkel Penguatkuasaan ke Atas Kontena Sisa Buangan Plastik, 11 September 2020, Pelabuhan Klang (Barat), Selangor

Enforcement Workshop on Plastic Waste Containers, 11 September 2020, Port Klang (West), Selangor

Bab 5

Chapter 5



**MENGARUSPERDANA
INDUSTRI HIJAU
MAINSTREAMING GREEN
INDUSTRY PRACTICES**

MENGARUSPERDANA INDUSTRI HIJAU MAINSTREAMING GREEN INDUSTRY PRACTICES

MEMPERKASAKAN AMALAN INDUSTRI HIJAU DALAM KALANGAN PERUSAHAAN KECIL DAN SEDERHANA (PKS) KE ARAH PERTUMBUHAN HIJAU MAINSTREAMING GREEN INDUSTRY PRACTICES AMONG SMALL AND MEDIUM ENTERPRISES (SME) TOWARDS GREEN GROWTH

Di bawah Rancangan Malaysia kesebelas (RMK-11) Seksyen Industri Hijau (SIH), Bahagian Penguatkuasa telah merancang pelbagai program dan projek sebagai menyokong hasrat dan wawasan Negara Malaysia mencapai status Negara Maju menjelang tahun 2020.

Dengan tema Mengarusperdana Amalan Industri Hijau Dalam Kalangan Perusahaan Kecil dan Sederhana (PKS) Ke Arah Pertumbuhan Hijau, SIH telah menetapkan matlamat RMK-11 iaitu untuk memperkukuhkan amalan Industri Hijau dalam kalangan PKS ke arah Pengeluaran Lestari dan untuk mengurangkan pelepasan gas rumah hijau (GHG).

Diantara objektif program adalah untuk :

1. Menyokong inisiatif pengurangan jejak karbon (carbon footprint), selaras dengan hasrat negara untuk mengurangkan intensiti pelepasan gas rumah kaca (Greenhouse gas - GHG) daripada Keluaran Dalam Negara Kasar sebanyak 45% menjelang 2030 berbanding intensiti pelepasan GHG pada tahun 2005.
2. Menyokong usaha penghijauan industri (greening of industry)
3. Menerapkan budaya pematuhan sendiri terkawal dan mewujudkan PKS yang berdaya saing dan mesra alam
4. Meningkatkan pematuhan PKS terhadap keperluan perundangan alam sekitar
5. Meningkatkan penggunaan sumber secara lestari selaras dengan 2030 Agenda for Sustainable Development Goals (SDG).

Under the Eleventh Malaysia Plan (RMK-11) the Green Industry Section (SIH), DOE planned to implement various projects and programmes to support the national vision of becoming a developed country in 2020.

With the theme of Mainstreaming Green Industry Practices Among Small And Medium Enterprises (SME) Towards Green Growth, SIH is committed to deliver its RMK-11 programme which aims to strengthen Green Industry practices among SME towards sustainable production and to reduce Green House Gases (GHG) emission.

The objectives of the programme were:

1. To support the Carbon Foot Print reduction initiative in line with the national target to reduce 45 % of Green House Gases intensity by year 2030 based on the GHG emission intensity in year 2005;
2. To support the greening of industry initiative;
3. To inculcate Guided Self Regulation (GSR) and to create competitive and environmental friendly SMEs;
4. To increase SME environmental compliance; and
5. To Increase sustainable resources consumption in line with the 2030 Agenda for Sustainable Development Goals (SDG).

Berikut adalah projek dan aktiviti yang telah dilaksanakan pada tahun 2020:

PROGRAM PENYELIDIKAN DAN PEMBANGUNAN PREMIS DEMONSTRASI AMALAN INDUSTRI HIJAU

Program Penyelidikan dan Pembangunan (R&D) Premis Demonstrasi Amalan Industri Hijau

Objektif utama program adalah untuk membangunkan premis demonstrasi Amalan Industri Hijau yang akan menjadi contoh dan galakkan kepada industri untuk melaksanakan amalan Industri Hijau di dalam operasi premis masing-masing.

Pada tahun 2020 program R&D Premis Demonstrasi Amalan Industri Hijau diteruskan dengan pelaksanaan aktiviti pemantauan prestasi dan promosi Latihan Pengeluaran Bersih (CP) Untuk Pembangunan Premis Demonstrasi Amalan Industri Hijau Bagi Kilang Minyak Kelapa Sawit Mentah.

Di antara aktiviti program yang telah dilaksanakan adalah seperti berikut:

1. Lawatan pemantauan prestasi amalan Industri Hijau melalui konsep pengeluaran Bersih di premis kilang minyak kelapa sawit mentah.
2. Melaksanakan bengkel/seminar bagi mempromosikan pelaksanaan Amalan Industri Hijau Kilang Minyak Kelapa Sawit Mentah untuk pengusaha premis minyak kelapa sawit mentah dan juga sektor industri yang lain di Malaysia.

Semua aktiviti telah dilaksanakan mengikut jadual dan mencapai objektif yang telah disasarkan.

PROGRAM BANTUAN KHIDMAT NASIHAT PENGELUARAN BERSIH (CP) KEPADA PERUSAHAAN KECIL & SEDERHANA (PKS)

Program Khidmat Nasihat Industri Hijau kepada PKS dan Industri lain secara dalaman

Berbanding pada tahun sebelum ini program khidmat nasihat kepada PKS dan industri lain dilaksanakan oleh perunding latihan yang dilantik. Namun begitu oleh kerana tidak ada peruntukan dibawah projek pembangunan, pada tahun 2020 projek Audit CP kepada PKS telah dilaksanakan secara dalaman oleh pegawai SIH sendiri. Senarai premis yang terlibat adalah seperti di **Jadual 5.1**.

Laporan Terperinci Audit CP akan memberi maklumat profil operasi PKS dan cadangan-cadangan opsyen Pengeluaran Bersih yang boleh dilaksanakan oleh pihak PKS dan juga maklumat tentang jumlah jejak karbon

The following are the projects and activities undertaken in 2020:

RESEARCH AND DEVELOPMENT OF GREEN INDUSTRY PREMISES

Research and Development (R&D) of Green Industry Demonstration Premises

The main objective of this programme was to develop Green Industry Practices Premises as a show case and to encourage other industries especially SMEs to implement Green Industry Practices in their operation.

In 2020, the R&D Programme of Green Industry continued with the activity of monitoring performance and promoting the programme "Latihan Pengeluaran Bersih (CP) Untuk Pembangunan Premis Demonstrasi Amalan Industri Hijau Bagi Kilang Minyak Kelapa Sawit Mentah.

The activities under this phase includes:

1. Inspecting Performance monitoring of Green Industry Practices through Cleaner Production concept in Crude Palm Oil Mills;
2. Organizing a workshop/seminar on Promotion of Green Industry Implementation in Crude Palm Oil Mill for crude palm oil mill owner and other industries in Malaysia.

All the above activities were successfully implemented and the targeted objectives were achieved.

CLEANER PRODUCTION AUDIT ASSISTANCE FOR SMALL AND MEDIUM ENTERPRISES (SME)

Green Industry Advisory Services for SMEs and other industries.

In 2019, The Cleaner Production Audit Assistance project for SMEs was conducted by an appointed training consultant. In 2020, however, due to budget constraints, the Cleaner Production Training for SMEs towards Development of Green Industry Demonstration Site programme was carried out internally, by the SIH officers themselves. The list of premises involved in the programme is stated in **Table 5.1**.

A detailed CP Audit Report will contain information profiles of the operations of the SMEs and proposed CP options proposed by the SMEs and their implementation. The document will also report on the total carbon

yang telah dihasilkan daripada keseluruhan operasi pengeluaran PKS. Pihak PKS seterusnya dapat menilai cadangan opsyen CP yang boleh dilaksanakan kearah pengurangan jejak karbon bagi premis PKS tersebut. Peserta PKS juga didedahkan dengan pengalaman dan pengetahuan tentang Pengeluaran Bersih.

MEMPERKUKUKKAN MEKANISMA INSTITUSI INDUSTRI HIJAU

Salah satu skop Program 'Memperkasakan Amalan Industri Hijau Dalam Kalangan PKS Ke Arah Pertumbuhan Hijau' di bawah Rancangan Malaysia Kesebelas RMK-11 adalah Memperkukuhkan Mekanisma Institusi Industri Hijau. Senarai aktiviti yang telah dilaksanakan pada tahun 2020 adalah seperti di dalam **Jadual 5.2**.

Mesyuarat, Bengkel dan Sesi Penerangan Prosedur Tetap Operasi Pengeluaran Bersih untuk Pegawai JAS Negeri.

Diantara program yang telah dilaksanakan dibawah skop tersebut adalah melaksanakan taklimat Amalan Industri Hijau dan Standard Operating Procedure of Cleaner Production On Site Inspection (SOPCP) kepada Pegawai JAS Negeri. Pada tahun 2020 dua (2) taklimat SOPCP telah berjaya dilaksanakan iaitu di JAS Cawangan Kuala Pilah yang turut melibatkan pegawai dari JAS Negeri Sembilan. Selain daripada itu taklimat SOPCP juga telah diberikan kepada pegawai JAS Selangor dan JAS Melaka semasa program lawatan teknikal di premis demonstrasi amalan Industri Hijau iaitu premis KKS Tanah Merah

Selain daripada itu dibawah skop yang sama, Bengkel Dan Minilab Penambahbaikan & Pemurnian Dokumen 'Guidelines For Green Industry Auditor' telah diadakan di MTree Hotel Puchong dari 21 hingga 23 September 2020. Mesyuarat telah dipengerusikan oleh Pengarah Bahagian Penguatkuasa iaitu Tn. Hj. Shafe'ee bin Yasin. Mesyuarat dihadiri oleh pegawai JAS Negeri dan Ibu Pejabat seramai 17 orang peserta.

Tujuan bengkel ini diadakan adalah untuk mengadakan perbincangan bagi penambahbaikan & pemurnian dokumen Guidelines For Green Industry Auditor. Bengkel juga bertujuan sebagai platform perkongsian maklumat terkini berkaitan Amalan Industri Hijau khususnya konsep CP kepada pegawai-pegawai JAS yang telah kompeten CePCPA dan meningkatkan dan memperkukuhkan pegawai JAS dalam melaksanakan program Pengeluaran Bersih kepada pihak industri.

footprint of the SME. Therefore, these SMEs will be able to identify which CP options can be implemented to reduce the amount of carbon footprint in their operations. SME participants will gain experience and knowledge of Cleaner Production. Prior to the audit being carried out, the representatives / participants of this programme were given exposure to knowledge of and experience to the implementation of CP.

STRENGTHENING GREEN INDUSTRY INSTITUTIONAL MECHANISMS

One of the scopes under Mainstreaming Green Industry Practices Among SME Towards Green Growth in RMK-11 is Strengthening Green Industry Institutional Mechanisms. The list of activities conducted in year 2020 are stated in **Table 5.2**.

Meetings, Briefings and Workshops on Cleaner Production Standard Operating Procedures for DOE State Offices

Among the programmes conducted was the organisation of Roadshows for Green Industry and Standard Operating Procedures of Cleaner Production - On Site Inspection (SOPCP) for DOE officers. In 2020 two (2) roadshows SOPCP were successfully organized which included a roadshow in DOE Kuala Pilah Branch in which officers from DOE Negeri Sembilan also participated. Other than that the briefing of SOPCP was also delivered to DOE officers from DOE Selangor and Melaka during technical visits at Green Industry Demonstration Premises at KKS Tanah Merah.

Under the same scope, a Workshop and Minilab to revise and fine tune the document, of 'Guidelines For Green Industry Auditors' was organized at MTree Hotel Puchong from 21 to 23 September 2020. The workshop was officiated by the Director of Enforcement Division Tn. Haji Shafe'ee bin Yasin. The meeting was attended by 17 officers from State DOEs and from the DOE Head Office.

The objectives of the workshop were to discuss and updates the contents of Guidelines For Green Industry Auditors. The workshop also acts as an information sharing platform of Green Industry practices and CP for DOE officer specifically CePCPA competent officers and to enhance capacity building of DOE officers in implementing Standard Operating Procedures of Cleaner Production during an on site inspection.

Program Lawatan Teknikal bagi Tujuan Pembelajaran di Premis Demonstrasi Amalan Industri Hijau bagi Mempromosikan Amalan Industri Hijau bagi Kilang Minyak Kelapa Sawit (KKS) Mentah

Pada 26 September 2020, program lawatan teknikal dan pembelajaran telah diadakan di Rumah Kelab Ladang Tanah Merah dan KKS Tanah Merah (Sime Darby Plantation Berhad), Port Dickson, Negeri Sembilan. Program ini telah dirasmikan oleh Pengarah JAS Negeri Sembilan Y.Brs. Puan Azuri Azizah Binti Saedon. Program telah dihadiri oleh seramai 25 peserta terdiri daripada pegawai JAS Ibu Pejabat dan JAS negeri.

Technical visit and Learning Programme at Green Industry Demonstration Premises for Promotion of Green Industry Practices in Crude Palm Oil Mill (KKS)

On 26 September 2020, this programme was successfully organized at the Club House of Ladang Tanah Merah and KKS Tanah Merah (Sime Darby Plantations Berhad). The seminar was launched by the Director of DOE Negeri Sembilan Y.Brs. Puan Azuri Azizah Binti Saedon. The programme attracted 25 participants from DOE Head Office and State offices.

Jadual 5.1 : Senarai Premis Bagi Program Latihan CP Kepada PKS
Table 5.1 : List of Premises Involve in CP Training Programme for SME

BIL. / NO	PREMIS / PREMISES	TARIKH / DATE	BILANGAN OPSYEN CP DIJANA / NO OF CP OPTION
1.	Hayat Maju Sdn Bhd Lot 209, Jalan Parit 13, Kg Tok Khalifah, 45300 Sungai Besar, Sabak Bernam, Negeri Selangor.	16 Disember 2020 / 16 th December 2020	10

Jadual 5.2 : Program Memperkukuhkan Mekanisma Institusi Industri Hijau Tahun 2020
Table 5.2 : Strengthening Green Industry Institutional Mechanisms Program Year 2020

BIL. / NO.	TARIKH / DATE	NAMA SYARIKAT / ORGANISASI / PROGRAM	LOKASI / LOCATION	CATATAN / NOTE
1.	15 September 2020 15 th September 2020	Roadshow dan Taklimat JAS Negeri Roadshow and DOE State Briefing.	Jabatan Alam Sekitar Cawangan Kuala Pilah, Negeri Sembilan	Taklimat dan praktikal berkaitan Amalan Industri Hijau dan SOPCP. Briefing and practical (hands-on) on Green Industry Practices and SOPCP.
2.	21-23 September 2020 21-23 September 2020	Bengkel Dan Minilab Penambahbaikan & Permurnian Dokumen 'Guidelines For Green Industry Auditor' Workshop and Minilab for Revision of 'Guidelines For Green Industry Auditor' document.	Mtree Hotel Puchong, Negeri Selangor.	Bengkel dan perbincangan bersama kumpulan pakar/ SME Industri Hijau untuk mengemaskini dokumen 'Guidelines For Green Industry Auditor'. Workshop and discussion with DOE Subject Matter Expert on Green Industry for the revision of 'Guidelines For Green Industry Auditor' document.
3.	29 September 2020 29 th September 2020	Program Lawatan Teknikal Bagi Tujuan Pembelajaran Di Premis Demonstrasi Amalan Industri Hijau Technical visit and learning programme at Green Industry Demonstration premises.	Kilang Kelapa Sawit Tanah Merah, Port Dickson, Negeri Sembilan.	Perkongsian Maklumat berkaitan amalan Industri Hijau di premis minyak kelapa sawit mentah kepada pegawai JAS dan industri. Sharing of information on Green Industry Practices in crude palm oil mill for DOE officers and industry

Sebanyak tiga (3) kertas kerja disampaikan oleh para penceramah. Kertas kerja pertama adalah Program Latihan Industri Hijau Ke Arah Pembangunan Premis Demonstrasi Amalan Industri Hijau Dan Faedahnya Kepada Industri yang disampaikan oleh Ketua SIH iaitu Pn. Zuraini Siam. Kertas kerja kedua adalah Program Latihan Pengeluaran Bersih Untuk Pembangunan Premis Demonstrasi Amalan Industri Hijau bagi Kilang Kelapa Sawit Mentah melalui Kaedah Pengeluaran Bersih yang telah disampaikan oleh En. Saiful Azam Bin Mahmud dari Sirim Berhad. Manakala untuk kertas kerja ketiga yang bertajuk Amalan Industri Hijau (Cleaner Production) Perkongsian Pengalaman Industri telah disampaikan oleh Tn. Hj. Shokeri Bin Jab iaitu Pengurus KKS Tanah Merah, (Sime Darby Plantations Berhad).

Three (3) working papers were presented at the seminar; the first entitled “Program Latihan Industri Hijau Ke Arah Pembangunan Premis Demonstrasi Amalan Industri Hijau Dan Faedahnya Kepada Industri” was presented by the Head of Green Industry Unit, Pn. Zuraini Siam. The second paper entitled “Program Latihan Pengeluaran Bersih Untuk Pembangunan Premis Demonstrasi Amalan Industri Hijau bagi Kilang Kelapa Sawit Mentah Melalui Kaedah Pengeluaran Bersih” was presented by En. Saiful Azam Bin Mahmud from Sirim Berhad while the third presentation was by Tn. Hj. Shokeri Bin Jab Mill Manager of KKS Tanah Merah (Sime Darby Plantations Berhad), who shared his experience as a KKS manager involved in the Green Industry Programme.

Program Latihan Pengeluaran Bersih dan Bantuan Khidmat Nasihat kepada Perusahaan Kecil & Sederhana (PKS)

Cleaner Production Training and Advisory Services For Small & Medium Enterprise (SMEs)



Bagi Aktiviti-Aktiviti yang Dijalankan di Bawah Program Memperkukuhkan Institusi Industri Hijau dalam Kalangan Pegawai Jabatan Alam Sekitar pada 21-23 September 2020

The Program Strengthening Green Industry Institutions Among Environment Department Officers from 21-23 September 2020



Program Promosi Unit Industri Hijau

Green Industry Promotion Programme



Sesi Pendaftaran Program Lawatan Teknikal bagi Tujuan Pembelajaran di Premis Demonstrasi Amalan Industri Hijau di Rumah Kelab Ladang Tanah Merah

Registration Session of Technical Visit and Learning Program at Green Industry Demonstration Premises at Tanah Merah Plantation Club House.

Perasmian Program Lawatan Teknikal bagi Tujuan Pembelajaran di Premis Demonstrasi Amalan Industri Hijau yang berlangsung pada 29 September 2020 oleh Pengarah JAS Negeri Sembilan Puan Azuri Azizah Binti Saedon

Opening Ceremony of Technical Visit and Learning Program at Green Industry Demonstration premises 29 September 2020 by the Director of DOE Negeri Sembilan Puan Azuri Azizah Binti Saedon.



Peserta yang Hadir Seminar Amalan Industri Hijau bagi Kilang Minyak Kelapa Sawit Mentah yang berlangsung pada 29 September 2020.

Attendees of the Green Industry Practices Seminar for Crude Palm Oil Mill on 29 September 2020.

Bab 6

Chapter 6



**HAL EHWAL ALAM SEKITAR
ANTARABANGSA
INTERNATIONAL
ENVIRONMENTAL AFFAIRS**

HAL EHWAL ALAM SEKITAR ANTARABANGSA INTERNATIONAL ENVIRONMENTAL AFFAIRS

MALAYSIA – NEGARA-NEGARA KESATUAN EROPAH (EU) KE MALAYSIA

Kunjungan Hormat oleh Duta-Duta dari Negara- Negara EU ke Malaysia

Pada 8 September 2020, JAS Malaysia telah menerima kunjungan hormat Delegasi EU ke Malaysia yang terdiri daripada Duta-duta Negara Eropah ke Malaysia iaitu dari Belgium, Itali, Sepanyol, dan Sweden, serta Charge D’Affaires dari Austria, Jerman dan EU.

Delegasi tersebut telah disambut oleh YBrs. Timbalan Ketua Setiausaha (TKSU) Dr Nagulendran A/L Kangayatkarasu, YBrs Puan Norlin Binti Jaafar, Ketua Pengarah Jabatan Alam Sekitar, pengurusan tertinggi JAS dan semua Pengarah/Wakil Bahagian JAS Ibupejabat.

Kunjungan hormat ini bertujuan untuk meneroka bidang kerjasama masa depan yang akan bermanfaat bagi kedua-dua pihak Malaysia dan negara-negara European Union (EU).

Selain itu, JAS juga berkongsi pengalaman dalam pengendalian pencemaran udara dan pengurusan kawalan pelepasan pencemaran, polisi JAS mengenai larangan pengimportan plastik terpakai ke Malaysia selain untuk meneroka peluang untuk meningkatkan kerjasama yang ada antara JAS dan Negara-negara EU semasa sesi kunjungan hormat tersebut.

Asean Working Group On Environmental Education (AWGEE)

AWGEE ini merupakan satu platform untuk kerjasama antara negara ASEAN (AMS) berkaitan perlindungan alam sekitar melalui pendidikan alam sekitar yang efektif. Iaitu melalui programme kesedaran yang boleh menyesuaikan dan bertindak berdasarkan situasi dan keadaan alam sekitar semasa, komuniti ASEAN yang berdaya tahan serta proactive kearah pencapaian pembangunan lestari global.

AWGEE adalah satu kerjasama serantau yang dianggotai oleh sepuluh (10) buah negara ASEAN iaitu Brunei Darussalam, Kemboja, Indonesia, Lao PDR, Malaysia, Myanmar, Filipina, Singapura, Thailand dan Viet Nam.

MALAYSIA – EUROPEAN UNION (EU) COUNTRIES TO MALAYSIA

Courtesy Visit by the European Union (EU) Delegations to Malaysia.

On 8 September, 2020, the DOE Malaysia received a courtesy visit from the The EU Delegation to Malaysia. The delegation consisted of the Ambassadors from EU countries to Malaysia, which are from Belgium, Italy, Spain, and Sweden, as well as Charge’ D’Affaires from Austria, Germany and EU.

The delegation was welcomed by YBrs. Dr Nagulendran a/l Kangayatkarasu, Deputy Secretary General of Ministry of Environment and Water, Mrs. Norlin Binti Jaafar, Director General of the Department of Environment, top management of DOE and all Directors / Representatives of the Departments at the Headoffice.

This courtesy visit aimed to explore areas of future cooperation that will benefit both parties.

In addition, the DOE also shared experiences in air pollution control and pollution control management; and DOE’s policy on the restriction of import/export of used plastic, besides exploring opportunities to enhance the cooperation between DOE and all EU countries on issues related to the environment.

Asean Working Group On Environmental Education (AWGEE)

AWGEE is a platform to enhance collaboration among ASEAN Member States (AMS) to promote environmental protection through effective environmental education and awareness programmes that enhance capacity and capability to adapt and respond to current and emerging environmental scenarios, with a dynamic, sustainable, resilient ASEAN Community that will proactively contribute to the achievement of global sustainable development goals.

AWGEE is a regional cooperation which involves ten (10) ASEAN countries including Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam.

Mesyuarat tahunan AWGEE ke -12 telah di adakan secara dalam talian pada 23 July 2020. Mesyuarat AWGEE ke 12 ini telah dipengerusikan oleh Brunei dan dihadiri oleh wakil daripada semua sepuluh (10) AMS. Delegasi AWGEE Malaysia telah diketuai oleh Puan Norlin Jaafar, Ketua Pengarah Jabatan Alam Sekitar.

Asean Working Group On Coastal And Marine Environment (AWGCME)

AWGCME adalah satu kerjasama serantau yang dianggotai oleh sepuluh (10) buah AMS iaitu Brunei Darussalam, Kemboja, Indonesia, Lao PDR, Malaysia, Myanmar, Filipina, Singapura, Thailand dan Viet Nam.

Mesyuarat tahunan AWGCME merupakan platform bagi meningkatkan usaha sama di kalangan negara-negara ASEAN untuk menggalakkan aktiviti dan pembentukan dasar berkaitan dengan pencegahan dan kawalan pencemaran marin di rantau ini.

Mesyuarat ini juga turut melibatkan organisasi seperti ASEAN Centre for Biodiversity (ACB), Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Coral Triangle Initiative-Coral Reefs, Fisheries and Food Security (CTI-CFF) Regional Interim Secretariat, dan Mangrove for Future/International Union for Conservation of Nature (IUCN).

Pada tahun 2019, Bahagian Kawalan Pencemaran, Kementerian Tenaga, Sains, Teknologi, Alam Sekitar dan Perubahan Iklim (MESTECC) telah mengambil alih tugas sebagai National Focal Point (NFP) daripada JAS dan menyelaraskan pelaksanaan program / aktiviti berkaitan di peringkat kebangsaan serta akan mewakili Malaysia ke mesyuarat, program atau aktiviti yang dianjurkan oleh AWGCME.

Tugas sebagai National Focal Point (NFP) untuk ASEAN Working Group on Coastal and Marine Environment (AWGCME) ini masih diteruskan oleh Kementerian Alam Sekitar dan Air (KASA) dan Jabatan Alam Sekitar turut terlibat sebagai ahli

Bay Of Bengal Large Marine Ecosystem (BOBLME)

Jabatan Perikanan Malaysia merupakan agensi penyelarasan bagi peringkat Malaysia. JAS sebagai ahli Jawatankuasa Bertindak Nasional yang akan turut memberi input dan makluman berkaitan untuk pembentukan satu Strategic Action Plan (SAP) untuk rantau ini.

BOBLME adalah bertujuan untuk menghasilkan satu Strategic Action Programme (SAP) untuk rantau ini. SAP tersebut telah dipersetujui dan ditandatangani

The 12th annual meeting of the AWGEE was conducted virtually on 23 July 2020, chaired by Brunei and attended by all ten (10) AMS. The Malaysia AWGEE delegation was lead by Mdm Norlin Jaafar, Director General, Department of Environment.

Asean Working Group On Coastal And Marine Environment (AWGCME)

The AWGCME is a regional cooperation which involves ten (10) AMS - Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam.

AWGCME's annual meeting is a platform to enhance collaboration among AMS to promote activities and work on policy development in the area of marine pollution control and prevention.

This meeting also received the participation of other organisations, such as the ASEAN Centre for Biodiversity (ACB), Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), The Coral Triangle Initiative-Coral Reefs, Fisheries and Food Security (CTI-CFF) Regional Interim Secretariat and the Mangrove for Future/International Union for Conservation of Nature (IUCN).

In 2019, the Pollution Control Division, Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) took over the role as the National Focal Point (NFP), from DOE and in coordinating the implementation of programmes / activities as well as in representing Malaysia at meetings, programmes or activities organized by AWGCME

The Ministry of Environment and Water has continued the role as the National Focal Point (NFP) for ASEAN Working Group on Coastal and Marine Environment (AWGCME) and DOE plays an important role as a member.

Bay Of Bengal Large Marine Ecosystem (BOBLME)

The Department of Fisheries is the National Coordinator for Malaysia. The DOE plays an important role as a member of the National Task Force (NTF) in providing input and relevant information related to the formation of the regional Strategic Action Plan (SAP).

The BOBLME Project is to develop regional Strategic Action Programme (SAP). This SAP was agreed and signed by the Secretary General, Ministry of Agriculture

oleh Ketua Setiausaha Kementerian Pertanian dan Industri Asas Tani dan Ketua Setiausaha Kementerian Sumber Asli dan Alam Sekitar pada 28 Ogos 2015

BOBLME merupakan projek kerjasama serantau yang melibatkan lapan (8) buah negara di persisiran Teluk Bengal iaitu Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand. Projek ini dibentuk bertujuan menambahbaik kehidupan penduduk pantai menerusi kerjasama pengurusan perikanan dan alam sekitar di peringkat serantau..

and Agro-Based Industry and Ministry of Natural Resources and Environment on 28th August 2015.

The BOBLME is a regional cooperation project comprises eight countries surrounding the Bay of Bengal namely Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand. The BOBLME Project aims is to improve the lives of the coastal population through improved regional management of the Bay of Bengal environment and its fisheries.



Sesi Kunjungan Hormat Delegasi European Union ke Jabatan Alam Sekitar pada 8 September 2021
Courtesy Visit Session of the European Union Delegation to the Department of the Environment on 8 September 2021



Mesyuarat Ke-12 Kumpulan Kerja ASEAN mengenai Pendidikan Alam Sekitar (AWGEE) melalui Mesyuarat Zum, pada 23 Julai 2020
The 12th Meeting of ASEAN Working Group on Environmental Education (AWGEE) via Zoom Meeting, on 23rd July 2020

BAY OF BENGAL LARGE MARINE ECOSYSTEM (BOBLME)

BOBLME adalah projek kerjasama serantau yang melibatkan lapan (8) buah negara di persisiran Teluk Bengal iaitu Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand. Projek ini dibentuk bertujuan menambahbaik kehidupan penduduk pantai menerusi kerjasama pengurusan perikanan dan alam sekitar di peringkat serantau.

Projek BOBLME ini telah bermula semenjak April 2009 di mana Food and Agriculture Organization (FAO) adalah agensi pelaksana (executing agency). Jabatan Perikanan Malaysia merupakan agensi penyelar (National Coordinator) bagi peringkat Malaysia. Ketua Pengarah Alam Sekitar telah dilantik sebagai Project Steering Committee (Environment) dan Ketua Pengarah Perikanan sebagai Project Steering Committee (Fisheries) untuk Malaysia di bawah projek ini.

Output utama projek BOBLME adalah menghasilkan satu Strategic Action Programme (SAP) untuk rantau ini. SAP tersebut telah dipersetujui dan ditandatangani oleh Ketua Setiausaha Kementerian Pertanian dan Industri Asas Tani dan Ketua Setiausaha Kementerian Sumber Asli dan Alam Sekitar pada 28 Ogos 2015.

Pada tahun 2020, Jabatan Perikanan Malaysia (DOF) telah menganjurkan beberapa sesi perbincangan bersama-sama KASA serta JAS dalam membincangkan hala tuju dan komitmen KASA dan JAS dalam pelaksanaan Fasa Ke-2, Projek BOBLME bagi tahun 2021-2025.

The BOBLME is a regional cooperation project comprises eight countries surrounding the Bay of Bengal namely Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand. The aim of the Bay of Bengal Large Marine Ecosystem (BOBLME) Project is to improve the lives of the coastal populations through improved regional management of the Bay of Bengal environment and its fisheries.

The BOBLME Project was initiated in April 2009 and the Food and Agriculture Organization FAO is the executing agency. The Department of Fisheries is the National Coordinator for Malaysia. The Director General of the Department of Environment and the Director General of the Department of Fisheries were appointed as the representative in the Project Steering Committee (Environment) and Project Steering Committee (Fisheries) for Malaysia, respectively.

The main output of the BOBLME Project is to develop a regional Strategic Action Programme (SAP). This SAP was agreed and signed by the Secretary General, Ministry of Agriculture and Agro-Based Industry and Ministry of Natural Resources and Environment on 28 August 2015.

In 2020, the Department of Fisheries Malaysia (DOF) organized several discussion sessions with the Ministry of Environment and Water and DOE in discussing the way forward and commitment of KASA and DOE in the implementation of Phase 2, BOBLME Project 2021-2025.



Cameron Highlands

Bab 7

Chapter 7



**PROGRAM-PROGRAM PROMOSI
DAN KESEDARAN
PROMOTIONAL AND
AWARENESS PROGRAMME**

PROGRAM-PROGRAM PROMOSI DAN KESEDARAN PROMOTIONAL AND AWARENESS PROGRAMME

PROGRAM KOMUNIKASI, PENDIDIKAN DAN KESEDARAN AWAM COMMUNICATION, EDUCATION AND PUBLIC AWARENESS PROGRAMME (CEPA)

Negara-negara di seluruh dunia sedang menghadapi cabaran alam sekitar seperti pencemaran air, pencemaran tanah dan kehilangan habitat hidupan liar. Akibat daripada penggunaan sumber semula jadi secara tidak lestari yang berlanjutan sejak seratus tahun dahulu telah membawa kepada kesan yang tidak diinginkan seperti pencemaran udara, pemanasan global, kekurangan sumber air bersih dan tanah yang tercemar. Walaupun Malaysia adalah kaya dengan pelbagai sumber dan lanskap yang asli, perindustrian yang pesat, aktiviti pembangunan dan pertumbuhan penduduk yang pesat akan membawa kepada kesan yang buruk kepada persekitaran hidup dan generasi akan datang.

CEPA adalah kaedah yang telah diterimapakai untuk menggerakkan para pemegang taruh ke arah memahami dan mengamalkan penggunaan sumber semulajadi secara lestari. Ini bertujuan untuk meningkatkan tahap kesedaran, pengetahuan dan kemahiran di kalangan masyarakat di negara ini melalui pelbagai aktiviti pendidikan dan latihan yang bertujuan untuk menyokong tindakan dan perubahan tingkah laku masyarakat.

Sikap dan tingkah laku yang mesra alam disertai dengan kemahiran yang relevan akan mendorong masyarakat ke arah gaya hidup yang bercirikan kediaman dan pejabat yang lestari. Sikap seperti ini juga akan memupuk tanggungjawab bersama terhadap perlindungan alam sekitar dan kepelbagaian biodiversiti melalui perkongsian strategik di kalangan pemegang taruh. Peningkatan kesedaran alam sekitar diharapkan dapat membantu mengarusperdanakan kesedaran masyarakat mengenai perlindungan alam sekitar dalam agenda pembangunan nasional.

Pelan Strategik JAS 2011-2020 Teras Strategik 1 yang bertujuan untuk mengubah pemikiran dan sikap prihatin masyarakat di dalam pemeliharaan dan pemuliharaan alam sekitar dirancang untuk dicapai melalui strategi berikut:

i. Memperkukuhkan kerjasama antara agensi kerajaan, sektor swasta, badan bukan kerajaan (NGO) dan pemimpin masyarakat dalam perlindungan dan pengurusan alam sekitar;

Countries all over the world are facing environmental challenges ranging from water pollution to land degradation and loss of wildlife habitats. The unsustainable use of our natural resources in the past hundred years or so, has led to undesirable effects such as polluted air, global warming, scarcity of clean water and contaminated lands. Although Malaysia is blessed with an abundance of resources and pristine landscapes, rapid industrialisation, urbanisation, and population growth have imposed an adverse impact on our living environment and in turn on our future generations.

CEPA strategy is an accepted tool to move stakeholders towards understanding and adopting sustainable use of natural resources. It is aimed at raising the level of environmental awareness, knowledge and skills among nations through a range of education and training activities focussed at supporting community action and behavioral change.

Having an environmentally friendly outlook and behaviour accompanied by relevant skills will drive society towards a lifestyle characterized by sustainable living spaces and workplaces. This will also foster a collective responsibility toward environmental protection and biodiversity conservation through building of ethical partnerships between stakeholders. It is hoped that increased environmental awareness will help to mainstream public awareness on environmental protection in the national development agenda.

The DOE Strategic Plan 2011-2020 Strategic Thrust 1 which aimed at transforming mindsets and instilling a caring attitude toward the preservation and conservation of the environment was based on the following strategies: -

i. To strengthen the cooperation between government agencies, private sectors, non-governmental organisations (NGOs) and community leaders in environmental protection and management;

- ii. Memastikan bahawa semua pembuat keputusan di sektor awam dan swasta, pengguna sumber, NGO dan masyarakat mempunyai komitmen dan akauntabiliti yang tinggi terhadap perlindungan alam sekitar dalam merekabentuk, merancang dan melaksanakan program/ aktiviti;
- iii. Mengambil bahagian dalam usaha serantau dan global ke arah pemuliharaan dan peningkatan alam sekitar secara aktif dan berkesan; dan
- iv. Meningkatkan keberkesanan program kesedaran, pendidikan dan penyebaran maklumat alam sekitar.

Sehubungan itu, JAS telah melaksanakan pelbagai program dan aktiviti mengenai kesedaran alam sekitar serta menyebarkan maklumat kepada semua lapisan masyarakat untuk membina komuniti yang mementingkan kelestarian alam sekitar.

Ini adalah seiring dengan Pelan Transformasi Jabatan di mana mulai tahun 2013, JAS telah meningkatkan perkongsian pintar dan strategik dalam pelaksanaan program kesedaran alam sekitar sebagai salah satu langkah proaktif untuk menangani masalah alam sekitar. Program atau aktiviti yang dianjurkan oleh JAS dengan kerjasama Rakan Strategik Alam Sekitar sama ada melalui Memorandum Persefahaman (MoU) atau tanpa MoU adalah melibatkan agensi kerajaan, Institusi Pengajian Tinggi (IPT), sekolah, industri (GLC dan sektor swasta), Badan Berkanun, dan NGO.

Berdasarkan objektif program kesedaran yang dirancang, Jabatan Alam Sekitar di peringkat Ibu Pejabat dan Pejabat Negeri telah mengadakan pelbagai program berkaitan alam sekitar yang meliputi pelbagai kumpulan sasaran seperti: pemimpin masyarakat, kanak-kanak, pelajar sekolah rendah dan menengah, pelajar institusi pengajian tinggi, industri dan swasta, badan bukan kerajaan, orang awam dan agensi kerajaan.

Program Kesedaran Alam Sekitar merangkumi yang berikut:

- a. Kempen dan Pendidikan Alam Sekitar:
 - i. Ceramah Sekolah / IPT
 - ii. Ceramah Industri
 - iii. Ceramah Umum
 - iv. Pameran alam sekitar
 - v. Seminar / Bengkel / Forum / Dialog
 - vi. Anugerah Sekolah Lestari (Sekolah Lestari Anugerah Alam Sekitar, SLAAS)
 - vii. Program Pengumpulan E-Waste
 - viii. Kem Kesedaran Alam Sekitar (KEKAS)
 - ix. Penghijauan Bumi dan Penanaman Pokok
 - x. Kempen Elakkan Plastik Sekali Guna

- ii. To ensure that all decision makers in the public and private sectors, resource users, NGOs and the public have high commitment and accountability towards environmental protection in designing, planning and implementing their respective programmes/ activities;
- iv. To actively and effectively participate in regional and global efforts towards environmental conservation and improvement; and
- vi. Enhance the effectiveness of awareness programmes, education and dissemination of environmental information.

In this regard, the DOE implemented various programmes and activities on environmental awareness as well as on disseminating information to all walks of life to build a community that cares about environmental sustainability.

This is in line with the Department's Transformation Plan whereby starting 2013, DOE has enhanced smart and strategic partnerships in the implementation of environmental awareness programmes as one of the proactive measures to address environmental issues. Programmes or activities organised by DOE with the cooperation of the Environmental Strategic Partner (Rakan Strategik Alam Sekitar) either through a Memorandum of Understanding (MoU) or without an MoU, involves government agencies, Institutions of Higher Learning (IPT), schools, industries (GLCs and private sectors), Statutory Bodies, and NGOs.

Based on the objectives of the awareness programme, the DOEs at Headquarters and State levels organised various environmental related programmes aimed at various target groups such as: community leaders, children, primary and secondary school students, students of institutions of higher learning, industries, the private sector, non-governmental organisations, public and local communities and government agencies.

The Environmental Awareness Programme covered the following:

- a. Environmental Campaign and Education:
 - i. Schools/ IPT Talks
 - ii. Industry Talks
 - iii. Public Talks
 - iv. Environmental exhibitions
 - v. Seminars/ Workshops / Forums/ Dialogues
 - vi. Sustainable School Awards (Sekolah Lestari Anugerah Alam Sekitar, SLAAS)
 - vii. E-Waste collection programmes
 - viii. Environmental Awareness Camps (KEKAS)
 - ix. Earth Greening and Tree Planting Activities
 - x. No Single-Use Plastic Campaigns

- | | |
|--|--|
| <ul style="list-style-type: none"> xi. Plogging xii. Pertandingan Debat Alam Sekitar xiii. Enviro-Hiking / Larian / Aktiviti Berjalan Kaki <p>b. Sambutan</p> <ul style="list-style-type: none"> i. Hari Bumi ii. Hari Alam Sekitar Sedunia (WED) iii. Ozon iv. Hari Alam Sekitar Negara (HASN) <p>c. Program Rakan Alam Sekitar (RAS) yang melibatkan komuniti</p> <p>d. Libat Urus bersama Rakan Strategik JAS</p> <p>e. Penyebaran maklumat alam sekitar:</p> <ul style="list-style-type: none"> i. Pengumuman melalui media massa ii. Pengumuman melalui media sosial (Facebook, Twitter, Instagram, Youtube) | <ul style="list-style-type: none"> xi. Plogging xii. Environmental Debate Competitions xiii. Enviro-Hikings/ Runs/ Walks <p>b. Celebration:</p> <ul style="list-style-type: none"> i. Earth Day ii. World Environment Day (WED) iii. Ozon iv. National Environment Day (HASN) <p>c. Friends of the Environment programmes involving the community</p> <p>d. Joint Programmes / Engagements with DOE's Strategic Partners</p> <p>e. Dissemination of information on the environment:</p> <ul style="list-style-type: none"> i. Announcements through the mass media ii. Announcements via social media (Facebook, Twitter, Instagram, Youtube) |
|--|--|

PROGRAM KESEDARAN ALAM SEKITAR PERINGKAT SEKOLAH ENVIRONMENTAL AWARENESS PROGRAMME FOR SCHOOL LEVEL

Program kesedaran terhadap pemeliharaan dan pemuliharaan alam sekitar di Malaysia telah diterapkan seawal anak-anak berada di pra-sekolah lagi. Penerapan awal ini bukan sahaja mengambil peribahasa “Melentur Buluh Biarlah Dari Rebungnya” malahan ianya adalah satu usaha untuk membudayakan tabiat kecintaan terhadap alam sekitar di dalam jiwa anak-anak sedari kecil.

JAS seluruh Malaysia pada tahun 2020, telah menjalankan dan merangka pelbagai program kesedaran di peringkat pra-sekolah dan sekolah sebagai salah satu komitmen berterusan Jabatan dalam usaha memastikan kesedaran terhadap alam sekitar dapat dicapai kepada anak-anak dan pelajar. Walaupun negara dan dunia di landa pandemik COVID-19 pada tahun ini dan banyak program yang telah dirangka tidak dapat dijalankan secara fizikal, Jabatan tetap mengambil inisiatif untuk menjalankan program-program ini melalui mekasma norma baharu.

Sepanjang tahun 2020, terdapat 27 jenis aktiviti kesedaran telah dijalankan oleh JAS seluruh negara. Antara aktiviti-aktiviti tersebut adalah KeKAS, aktiviti bersama pra- sekolah/ autisme, aktiviti pengumpulan e-waste, Sekolah Lestari-Anugerah Alam Sekitar (SLAAS), dan pelbagai pertandingan rekapipta samada melalui atas talian dan fizikal telah diadakan seperti di Jadual 1. Sebanyak 871 bilangan program kesedaran alam sekitar telah direkodkan seluruh Malaysia berdasarkan 27 aktiviti yang telah disenaraikan.

Awareness programmes on environmental preservation and conservation in Malaysia have been instilled from pre-school years among children. This early introduction is an effort to nurture and cultivate the love for environment in children from an early age.

In 2020, the State DOE nationwide, conducted and designed various awareness programmes at pre-school and school levels as one of the Department's ongoing commitment efforts in ensuring environmental awareness is achieved among children and students. Despite the whole world being hit by the COVID-19 pandemic this year resulting in many of the programmes not being able to be physically implemented, the Department still took the initiative to run these programmes following the new norm.

Throughout 2020, there were 27 types of awareness activities conducted by the DOE throughout the country. These activities such as Environmental Awareness Camps (KEKAS), pre-school / autism joint activities, e-waste collection activities, Sustainable Schools-Environmental Awards (SLAAS), and various invention competitions either virtually or physically were held as shown in Schedule 1. A total of 871 environmental awareness programmes were conducted throughout Malaysia based on 27 activities that have been listed.



**Program Bersama Pra-Sekolah
Pre-School Joint Programme**



**Program Kem Kesedaran Alam Sekitar (KeKAS)
Environmental Awareness Camp Programme (KeKAS)**

Program jalinan kerjasama bersempena sambutan Hari Alam Sekitar Negara 2020 Peringkat Sekolah antara aktiviti terbanyak yang telah dijalankan oleh JAS negeri pada tahun ini iaitu sebanyak 539 program. Sambutan Hari Alam Sekitar Negara (HASN) yang dulunya dikenali sebagai Minggu Alam Sekitar Malaysia (MASM) merupakan satu acara tahunan yang telah dianjurkan susulan termaktubnya Deklarasi Langkawi Mengenai Alam Sekitar pada Oktober 1989. Semenjak tahun 1991, JAS telah merancang dan melaksanakan pelbagai aktiviti sebagai usaha berterusan kerajaan untuk menerap dan meningkatkan kesedaran alam sekitar dikalangan masyarakat Malaysia. MASM disambut pada setiap tahun dari 21 hingga 27 Oktober bersempena dengan Hari Alam Sekitar Malaysia yang jatuh pada 21 Oktober. Pada tahun ini HASN disambut dengan tema "Alam Sekitar Tanggugjawab Bersama".

The collaborative programme in conjunction with the celebration of National Environmental Day 2020 at the School Level carried out by the state DOE this year was one with the highest number of activities with 539 programmes. The National Environmental Day (HASN) celebration, formerly known as Malaysian Environment Week (MASM) is an annual event organized following the Langkawi Declaration on the Environment in October 1989. Since 1991, the DOE has planned and implemented various activities as a reflection of the continuous effort by the government to inculcate and increase awareness among the Malaysian community. MASM is celebrated annually from 21 - 27 October in conjunction with Malaysia Environmental Day which is on 21 October. This year HASN was celebrated with the theme "Environment is a Shared Responsibility".



Pertandingan Mesej Alam Sekitar sempena HASN 2020
Environmental Message Competition in conjunction with HASN 2020



Program bersempena Sambutan Hari Alam Sekitar Negara 2020
Programme in conjunction with the National Environment Day 2020 Celebration

Aktiviti pengumpulan e-waste di sekolah juga antara aktiviti kedua tertinggi yang direkodkan pada tahun 2020 iaitu sebanyak 98 program bagi seluruh Malaysia. E-waste adalah buangan elektrik dan elektronik yang mengandungi logam-logam berharga

The school e-waste collection activity was among the second highest activity recorded in 2020 with 98 programmes carried out nationwide. E-waste is electrical and electronic waste that contains metals which can be reused as raw materials for new electrical

yang boleh digunakan semula sebagai bahan mentah untuk penghasilan peralatan elektrik dan elektronik yang baharu. Walaubagaimanapun e-waste juga mengandungi logam berat yang berbahaya kepada manusia dan alam sekitar.

and electronic equipment production. However, e-waste also contains heavy metals that are harmful to humans and the environment.



**Program Pengumpulan E-waste di Sekolah
E-waste Collection Programme in Schools**



**Program Kesedaran di Sekolah Seluruh Negara pada Tahun 2020
Awareness Programmes in Schools Nationwide in 2020**

Oleh itu, kitar semula e-waste adalah merupakan kaedah terbaik bagi memastikan pengurusan, pengendalian e-waste dilaksanakan secara mesra alam atau environmentally sound management. Program ini secara tidak langsung memberi pendedahan kepada warga sekolah bahawa bahan buangan elektrik dan elektronik yang telah rosak boleh dilupus ke tempat yang betul untuk dikitar semula dan dasingkan bagi memperoleh kembali bahan berfaedah atau sumber bernilai yang mampu menyumbang kepada pembangunan lestari dan pemeliharaan alam sekitar.

Lain-lain program kesedaran yang telah dijalankan seluruh Malaysia sepanjang tahun 2020 adalah seperti ceramah kesedaran alam sekitar (51 program), pameran (38 program), hebahan informasi kaedah norma baharu (30 aktiviti) dan lain-lain program seperti yang ditunjukkan dalam **Jadual 7.1**.

Therefore, e-waste recycling is the best method to ensure the management and operation of e-waste is implemented in an environmentally friendly or environmentally sound manner. This programme indirectly gives exposure and awareness to the school community that damaged electrical and electronic waste can be disposed in an appropriate place for recycling and segregation to recover useful materials or valuable resources which are able to contribute to sustainable development and environmental protection.

Other awareness programmes conducted nationwide throughout 2020, such as environmental awareness talks (51 programmes), exhibitions (38 programmes), information dissemination of new norm methods (30 activities) are as shown in **Table 7.1**.

Antara aktiviti-aktiviti norma baharu yang telah dipraktikkan oleh Jabatan sepanjang tempoh Perintah Kawalan Pergerakan (PKP) dan Perintah Kawalan Pergerakan Bersyarat (PKPB) adalah seperti webinar untuk promosi SLAAS yang telah dijalankan oleh JAS Selangor, Wilayah Persekutuan Kuala Lumpur, Sarawak, Kelantan dan Pahang.

Among the new norm activities that have been practised by the Department during the period of Movement Control Order (PKP) and Conditional Movement Control Order (PKPB) are webinars for the promotion of Sustainable Schools-Environmental Awards conducted by the State Departments of Selangor, Federal Territory of Kuala Lumpur, Sarawak, Kelantan and Pahang.

Terdapat juga aktiviti lain yang telah dijalankan secara atas talian iaitu pertandingan mewarna secara atas talian enam (6) program, pertandingan melukis poster / e-poster lima (5) program, pertandingan mencipta montaj, dan pertandingan fotografi masing-masing empat (4) program, pertandingan infografik sempena Hari Alam Sekitar Negara 2020 dua (2) program, pertandingan mencipta logo rakan alam sekitar, video trash hero challenge dan programe just 1 minute talk, malaysia cleanup day tiktok challenge video masing-masing satu (1) program.

There were also other activities that were conducted online, namely six (6) coloring contests, five (5) poster / e-poster competitions, four (4) montage creation competitions and photography competition each, two (2) infographic competitions in conjunction with National Environment Day 2020, environmental friend logo creation competition, and one (1) activity each of video trash hero challenge and a "Just 1 minute talk" programme, as well as a Malaysia cleanup day Tiktok challenge video.



Program yang Dijalankan Secara Atas Talian mengikut Norma Baharu
Programmes Conducted Online According to the New Norms

Jadual 7.1 : Program Kesedaran Alam Sekitar Peringkat Sekolah
Table 7.1 : Environmental Awareness Programme for School Level

NEGERI / STATE	PROGRAM DAN AKTIVITI / PROGRAMMES AND ACTIVITIES	JUMLAH PROGRAM DAN AKTIVITI / NUMBER OF PROGRAMMES AND ACTIVITIES
Perlis	Aktiviti Pengumpulan E-Waste, Hebahan / Seminar / Penyertaan Sekolah Lestari-Anugerah Alam Sekitar (Webinar / Fizikal), Pameran Alam Sekitar E-Waste Collection Activities, Announcements / Seminars / Sustainable School Participation-Environmental Awards (Webinar / Physical), Environmental Exhibition	9
Kedah	Aktiviti pra-sekolah bersama TASKA/TADIK, Pembudayaan ESTECC di Sekolah - aktiviti berkaitan sains teknologi dan inovasi, Ceramah Alam Sekitar, Gotong-royong, Kuiz Alam Sekitar, Mesyuarat Bersama Jabatan Pendidikan Negeri / Pejabat Pendidikan Daerah, Hebahan Informasi Alam Sekitar Melalui WhatsApp Guru-guru Pre-school activities with TASKA/TADIK, ESTECC Cultivation in Schools - activities related to science technology and innovation, Environmental Talks, communal work, Environmental Quizzes, Meetings with State Education Department / District Education Office, Environmental Information Announcement via WhatsApp Teachers	17
Pulau Pinang	Ceramah Alam Sekitar, Pameran Alam Sekitar, Kuiz Alam Sekitar, Mesyuarat Bersama Jabatan Pendidikan Negeri / Pejabat Pendidikan Daerah, Program Sajak / Puisi, Pertandingan Mencipta Montaj, Pertandingan Melukis Poster / e-poster, Pertandingan Mewarna Secara Atas Talian Environmental Talks, Environmental Exhibitions, Environmental Quizzes, Meetings with State Education Department / District Education Office, Poetry Program, Montage Creation Competition, Poster / e-poster Drawing Competition, Online Coloring Competition	11
Perak	Aktiviti Pengumpulan E-Waste, Hebahan / Seminar / Penyertaan Sekolah Lestari-Anugerah Alam Sekitar (Webinar / Fizikal), Ceramah Alam Sekitar, Pameran Alam Sekitar, Gotong-royong, Kuiz Alam Sekitar, Mesyuarat Bersama Jabatan Pendidikan Negeri / Pejabat Pendidikan Daerah, Video Trash Hero Challenge dan Programe Just 1 Minute Talk, Festival Sains Negara E-Waste Collection Activities, Announcements / Seminars / Participation in Sustainable Schools-Environmental Awards (Webinar / Physical), Environmental Talks, Environmental Exhibitions, communal work, Environmental Quiz, Joint Meetings of State Education Department / District Education Office, Video Trash Hero Challenge and Programme Just 1 Minute Talk, National Science Festival	46
Selangor	Hebahan / Seminar / Penyertaan Sekolah Lestari-Anugerah Alam Sekitar (Webinar / Fizikal), Ceramah Alam Sekitar, Pertandingan Bercerita Kanak-kanak, Mesyuarat Bersama Jabatan Pendidikan Negeri / Pejabat Pendidikan Daerah, Hebahan Informasi Alam Sekitar Melalui WhatsApp Guru-guru Announcements / Seminars / Participation in Sustainable Schools- Environmental Awards (Webinars / Physical), Environmental Talks, Children's Storytelling Competitions, Meetings with State Education Department / District Education Office, Environmental Information Announcement Via WhatsApp Teachers	7
W.P. Kuala Lumpur & W.P. Putrajaya	Hebahan / Seminar / Penyertaan Sekolah Lestari-Anugerah Alam Sekitar (Webinar / Fizikal), Pameran Alam Sekitar, Program Sisa ke Seni, Program Sajak / Puisi, Pertandingan Mewarna Secara Atas Talian Announcements / Seminars / Sustainable School Participation- Environmental Awards (Webinar / Physical), Environmental Exhibition, Waste to Art Programme, Poetry Program, Online Coloring Contest	6

Jadual 7.1 : Program Kesedaran Alam Sekitar Peringkat Sekolah
Table 7.1 : Environmental Awareness Programme for School Level

NEGERI / STATE	PROGRAM DAN AKTIVITI / PROGRAMMES AND ACTIVITIES	JUMLAH PROGRAM DAN AKTIVITI / NUMBER OF PROGRAMMES AND ACTIVITIES
Negeri Sembilan	<p>Aktiviti pra-sekolah bersama TASKA/TADIK, Pembudayaan ESTECC di Sekolah - aktiviti berkaitan sains teknologi dan inovasi, Aktiviti Pengumpulan E-Waste, Hebahan / Seminar / Penyertaan Sekolah Lestari-Anugerah Alam Sekitar (Webinar / Fizikal), Ceramah Alam Sekitar, Pameran Alam Sekitar, Gotong-royong, Mesyuarat Bersama Jabatan Pendidikan Negeri / Pejabat Pendidikan Daerah, Hebahan Informasi Alam Sekitar Melalui WhatsApp Guru-guru, Jalinan Kerjasama Sambutan Hari Alam Sekitar Negara 2020 Peringkat Sekolah, Pertandingan Melukis Poster / e-poster, Festival Sains Negara</p> <p>Pre-school activities with TASKA/TADIK, ESTECC Cultivation in Schools - activities related to science technology and innovation, E-Waste Collection Activities, Announcements / Seminars / Sustainable School Participation- Environmental Awards (Webinar / Physical), Environmental Talks, Nature Exhibitions Around, communal work, Joint Meeting of State Education Department / District Education Office, Environmental Information Announcement Via WhatsApp Teachers, Collaboration of National Environment Day 2020 Celebration at School Level, Poster / e-poster Drawing Competition, National Science Festival</p>	513
Melaka	<p>Kem Kesedaran Alam Sekitar (KeKAS), Aktiviti Pengumpulan E-Waste, Hebahan / Seminar / Penyertaan Sekolah Lestari-Anugerah Alam Sekitar (Webinar / Fizikal), Mesyuarat Bersama Jabatan Pendidikan Negeri / Pejabat Pendidikan Daerah, Hebahan Informasi Alam Sekitar Melalui WhatsApp Guru-guru, Jalinan Kerjasama Sambutan Hari Alam Sekitar Negara 2020 Peringkat Sekolah, Program Sisa ke Seni, Pertandingan Infografik Sempena Hari Alam Sekitar Negara 2020</p> <p>Environmental Awareness Camp (KeKAS), E-Waste Collection Activities, Announcements / Seminars / Sustainable School Participation- Environmental Awards (Webinar / Physical), Meeting with State Education Department / District Education Office, Environmental Information Announcement Via WhatsApp Teachers , Collaboration on National Environment Day 2020 Celebration at School Level, Waste to Art Program, Infographic Competition in Conjunction with National Environment Day 2020</p>	131
Johor	<p>Kem Kesedaran Alam Sekitar (KeKAS), Aktiviti Pengumpulan E-Waste, Hebahan / Seminar / Penyertaan Sekolah Lestari-Anugerah Alam Sekitar (Webinar / Fizikal), Ceramah Alam Sekitar, Pameran Alam Sekitar, Gotong- royong, Hebahan Informasi Alam Sekitar Melalui WhatsApp Guru-guru</p> <p>Environmental Awareness Camp (KeKAS), E-Waste Collection Activities, Announcements / Seminars / Sustainable School Participation- Environmental Awards (Webinar / Physical), Environmental Talks, Environmental Exhibitions, communal work, Environmental Information Announcement Via WhatsApp Teachers</p>	9
Pahang	<p>Aktiviti pra-sekolah bersama TASKA/TADIK, Pembudayaan ESTECC di Sekolah - aktiviti berkaitan sains teknologi dan inovasi, Hebahan / Seminar / Penyertaan Sekolah Lestari-Anugerah Alam Sekitar (Webinar / Fizikal), Ceramah Alam Sekitar, Pameran Alam Sekitar, Pertandingan Mewarna Secara Atas Talian, Pertandingan Fotografi</p> <p>Pre-school activities with TASKA/TADIK, ESTECC Cultivation in Schools - activities related to science technology and innovation, Announcements / Seminars / Sustainable School Participation-Environmental Awards (Webinar / Physical), Environmental Talks, Environmental Exhibitions, Top Coloring Competition Online, Photography Competition</p>	23

Jadual 7.1 : Program Kesedaran Alam Sekitar Peringkat Sekolah
Table 7.1 : Environmental Awareness Programme for School Level

NEGERI / STATE	PROGRAM DAN AKTIVITI / PROGRAMMES AND ACTIVITIES	JUMLAH PROGRAM DAN AKTIVITI / NUMBER OF PROGRAMMES AND ACTIVITIES
Terengganu	<p>Aktiviti pra-sekolah bersama TASKA/TADIKA, Ceramah Alam Sekitar, Permainan Interaktif, Pertandingan Mencipta Montaj, Pertandingan Mencipta Logo Rakan Alam Sekitar</p> <p>Pre-school activities with TASKA/TADIKA, Environmental Talks, Interactive Games, Montage Creation Competition, Rakan Alam Sekitar Logo Creation Competition</p>	7
Kelantan	<p>Aktiviti pra-sekolah bersama TASKA/TADIKA, Hebahan / Seminar / Penyertaan Sekolah Lestari-Anugerah Alam Sekitar (Webinar / Fizikal), Pameran Alam Sekitar, Mesyuarat Bersama Jabatan Pendidikan Negeri / Pejabat Pendidikan Daerah, Hebahan Informasi Alam Sekitar Melalui WhatsApp Guru-guru, Program Sisa ke Seni, Pertandingan Mencipta Montaj, Pertandingan Infografik Sempena Hari Alam Sekitar Negara 2020, Pertandingan Mewarna Secara Atas Talian, Pertandingan Fotografi</p> <p>Pre-school activities with TASKA/TADIKA, Announcement / Seminar / Sustainable School Participation-Environmental Award (Webinar / Physical), Environmental Exhibition, Joint Meeting of State Education Department / District Education Office, Environmental Information Announcement Via WhatsApp Teachers, Waste to Art Program, Montage Creation Competition, Infographic Competition in conjunction with National Environment Day 2020, Online Coloring Competition, Photography Competition</p>	15
Sarawak	<p>Kem Kesedaran Alam Sekitar (KeKAS), Aktiviti pra-sekolah bersama TASKA/TADIKA, Aktiviti di Pusat Autisme Kanak-kanak, Pembudayaan ESTECC di Sekolah - aktiviti berkaitan sains teknologi dan inovasi, Aktiviti Pengumpulan E-Waste, Hebahan/ Seminar / Penyertaan Sekolah Lestari- Anugerah Alam Sekitar (Webinar / Fizikal), Ceramah Alam Sekitar, Pameran Alam Sekitar, Gotong-royong, Kuiz Alam Sekitar, Webinar Bersama Warga Sekolah, Mesyuarat Bersama Jabatan Pendidikan Negeri / Pejabat Pendidikan Daerah, Hebahan Informasi Alam Sekitar Melalui WhatsApp Guru-guru, Jalinan Kerjasama Sambutan Hari Alam Sekitar Negara 2020 Peringkat Sekolah, Program Sisa ke Seni, Pertandingan Mewarna Secara Atas Talian, Video Trash Hero Challenge dan Programe Just 1 Minute Talk, Festival Sains Negara</p> <p>Environmental Awareness Camp (KeKAS), Pre-school activities with TASKA/TADIKA, Activities at the Autism Center for Children, ESTECC Cultivation in Schools - activities related to technology and innovation science, E-Waste Collection Activities, Announcements / Seminars / Sustainable School Participation -Environmental Awards (Webinar / Physical), Environmental Talks, Environmental Exhibitions, communal work, Environmental Quizzes, Webinars with School People, Meetings with State Education Department / District Education Office, Environmental Information Announcement Via WhatsApp Teachers , Collaboration on National Environment Day 2020 Celebration at School Level, Waste to Art Program, Online Coloring Competition, Video Trash Hero Challenge and Programme Just 1 Minute Talk, National Science Festival</p>	44

Jadual 7.1 : Program Kesedaran Alam Sekitar Peringkat Sekolah
Table 7.1 : Environmental Awareness Programme for School Level

NEGERI / STATE	PROGRAM DAN AKTIVITI / PROGRAMMES AND ACTIVITIES	JUMLAH PROGRAM DAN AKTIVITI / NUMBER OF PROGRAMMES AND ACTIVITIES
W.P. Labuan	Aktiviti di Pusat Autisme Kanak-kanak, Hebahan / Seminar / Penyertaan Sekolah Lestari-Anugerah Alam Sekitar (Webinar / Fizikal), Ceramah Alam Sekitar, Kuiz Alam Sekitar, Hebahan Informasi Alam Sekitar Melalui WhatsApp Guru-guru, Pertandingan Melukis Poster / e-poster, Pertandingan Fotografi, Malaysia Cleanup Day Tiktok Challenge Video Activities at Children's Autism Center, Announcements / Seminars / Sustainable School Participation-Environmental Awards (Webinar / Physical), Environmental Talks, Environmental Quizzes, Environmental Information Announcement Via WhatsApp Teachers, Poster Drawing Competition / e-poster , Photography Competition, Malaysia Cleanup Day Tiktok Challenge Video	11
Sabah	Pembudayaan ESTECC di Sekolah - aktiviti berkaitan sains teknologi dan inovasi, Ceramah Alam Sekitar, Pameran Alam Sekitar, Mesyuarat Bersama Jabatan Pendidikan Negeri / Pejabat Pendidikan Daerah, Hebahan Informasi Alam Sekitar Melalui WhatsApp Guru-guru, Jalinan Kerjasama Sambutan Hari Alam Sekitar Negara 2020 Peringkat Sekolah, Program Sajak / Puisi, Pertandingan Mencipta Montaj, Pertandingan Melukis Poster / e-poster, Pertandingan Fotografi ESTECC Cultivation in Schools - activities related to science and technology science, Environmental Talks, Environmental Exhibitions, Meetings with State Education Department / District Education Office, Environmental Information Announcement via WhatsApp Teachers, National Environment Day 2020 Celebration Cooperation at School Level, Poetry Program, Montage Creation Competition, Poster / e-poster Drawing Competition, Photography Competition	22
JUMLAH KESELURUHAN OVERALL TOTAL		871

PROGRAM KESEDARAN ALAM SEKITAR PERINGKAT PENGAJIAN TINGGI ENVIRONMENTAL AWARENESS PROGRAMME FOR HIGHER LEVEL EDUCATION

PERTANDINGAN TESIS 3 MINIT ALAM SEKITAR TAHUN 2020

Pertandingan Tesis 3 Minit (3MT) Alam Sekitar telah diadakan pada 21 Disember 2020 bertempat di Bangunan LESTARI, Universiti Kebangsaan Malaysia (UKM), Bangi. Majlis penutup secara rakaman atas talian telah disempurnakan oleh Yang Berusaha Puan Norlin Jaafar, Ketua Pengarah, Jabatan Alam Sekitar Malaysia.

3 MINUTE THESIS ON ENVIRONMENT COMPETITION OF YEAR 2020

The 3 Minute Thesis On Environment Competition was held on 21 December 2020 at the LESTARI Building, National University of Malaysia (UKM) in Bangi and was officiated through an online recording by Puan Norlin Jaafar, Director General of Malaysian Department of Environmental (DOE).

Pertandingan 3MT 2020 merupakan salah satu Program Kesedaran Alam Sekitar berbentuk ilmiah akademik yang julung kali diadakan oleh JAS. Pertandingan ini diadakan bersempena Sambutan HASN Tahun 2020 dengan kerjasama daripada Kementerian Pengajian Tinggi, Dewan Bahasa dan Pustaka dan Institut Alam Sekitar dan Pembangunan (LESTARI), UKM. Tujuan utama pertandingan adalah bagi mengetengahkan percambahan idea-idea inovasi yang bernas bagi kaedah mengawal pencemaran kepada alam sekitar.

Kategori tesis yang dipertandingkan adalah kategori Bahasa Melayu dan terbuka kepada siswa dari Institusi Pengajian Tinggi (IPT) seluruh Malaysia. Pertandingan ini pada peringkat tapisan awal diadakan secara atas talian iaitu penyertaan melalui Facebook RAS dengan menggunakan #Enviro3MT2020. Terdapat dua kategori yang dipertandingkan iaitu bagi pelajar prasiswazah dan juga pascasiswazah. Sebanyak 23 penyertaan diterima melalui Borang Google dan dinilai terus pada peringkat tapisan kedua.

The 3 Minute Thesis On Environment Competition is an inaugural event and is one of the Environmental Awareness programmes organised by DoE. The competition was held in conjunction with the National Environment Day, 2020 in collaboration with the Ministry of Higher Education, Dewan Bahasa dan Pustaka and the Institute for Environment and Development (LESTARI), UKM. The main purpose was to develop and share new ideas and approaches on controlling environmental pollution.

The 3MT competition was only in the Malay language Category and was open to all Malaysian Institutes of higher education (IPT) students. The initial rounds to shortlist was held online where participation was via posting their short video on Rakan Alam Sekitar Facebook using with #Enviro3MT2020. There were two categories in this competition – for those currently pursuing their first degrees and the second category was for post graduate students. As it was the first time a competition such as this was being held, there were only 23 participations received by DoE.

Jadual 7.2 : Senarai Peserta Peringkat Akhir
Table 7.2 : List of Finalists

BIL / NO.	PRASISWAZAH / UNDERGRADUATES	NAMA IPT / IPT NAME
1	Kelly Cheong	UTHM
2	Aqilah Zakiah Binti Jahani	UTHM
3	Siti Nur Fatehah Ibrahim Idham	UTHM
4	Andrew Soh Wee Shong	UTHM
5	Sitti Hajar Binti Gaffar	UMS
6	Mogesh A/L Sababathy	UMT
7	Nur Aqilah Izdihari Binti Azmi	UTHM
8	Puteri Nurhazeera Iqbal Azaham	UPM
9	Muhammad Naziff Ahamad Said	UPM
10	Mohd Fahad Bin Saleem	UKM

BIL / NO.	PRASISWAZAH / UNDERGRADUATES	NAMA IPT / IPT NAME
1	Khairunnisa Binti Khairudin	UiTM
2	Rabiatul Amirah Binti Ramli	UMS
3	Khairul Azhar Bin Abd Razak	UTHM
4	Mohamad Khairul Hafizi Bin Rahimi	UKM
5	Lau Gee Een	UPM
6	Nurul Adilah Binti Shahrul Faizal	UiTM Perlis
7	Muhammad Azri Bin Muhd Yusop	UPM
8	Azim Haziq Bin Zainuddin	UPM

Barisan panel hakim bagi peringkat tapisan kedua terdiri daripada pegawai-pegawai dari JAS, Jabatan Pendidikan Tinggi (JPT) dan DBP. Sepuluh (10) siswa prasiswazah dan lapan (8) siswa pascasiswazah telah melepasi tapisan kedua dan kemudian bertanding secara maya di peringkat akhir. Senarai nama peserta yang layak ke peringkat akhir adalah seperti **Jadual 7.2**.

Hadiah tempat pertama atau johan bagi 3MT Alam Sekitar Tahun 2020 telah membawa pulang wang tunai berjumlah RM1,500.00 bagi kedua-dua kategori, prasiswazah dan pascasiswazah beserta sijil penghargaan dan trofi. Manakala tempat kedua atau naib johan menerima wang tunai berjumlah RM1,000.00 beserta sijil penghargaan dan plak dan tempat ketiga menerima wang tunai berjumlah RM700.00 beserta sijil penghargaan dan plak. Bagi hadiah saguhati iaitu dari tempat keempat sehingga kesepuluh pula menerima wang tunai berjumlah RM200.00 beserta sijil penghargaan. Senarai nama pemenang bagi kedua-dua kategori adalah seperti **Jadual 7.3** dan **Jadual 7.4**.

The judges for the final round were appointed from DOE, Jabatan Pendidikan Tinggi (JPT) and DBP. Ten (10) first degree students and eight (8) post graduate students were selected for the final round. The list of participants who reached the final round is shown in **Table 7.2**. The finalists competed via a virtual platform.

The winner for The 3MT on Environment Competition 2020 received a cash prize worth RM1,500.00 for both categories with a certificate of appreciation and a plaque. The runner-up received a cash prize worth RM1,000.00 with a certificate of appreciation and plaque, while the third place had a cash prize worth RM700.00 with a certificate and a plaque. Consolation prizes were worth RM200.00 each with a certificate of appreciation. The list of winners for both categories is as in **Table 7.3** and **Table 7.4**.

Jadual 7.3 : Senarai Pemenang Pertandingan Tesis 3 Minit Alam Sekitar Tahun 2020 Kategori Prasiswazah
Table 7.3 : List of Winner for First Degree Category

	NAMA PELAJAR / STUDENT NAME	NAMA IPT / IPT NAME
JOHAN / 1 st	Mohd Fahad Bin Saleem	Universiti Kebangsaan Malaysia
NAIB JOHAN / 2 nd	Aqilah Zakiah Binti Jahani	Universiti Tun Hussein Onn Malaysia
TEMPAT KETIGA / 3 rd	Andrew Soh Wee Shong	Universiti Tun Hussein Onn Malaysia

Jadual 7.4 : Senarai Pemenang Pertandingan Tesis 3 Minit Alam Sekitar Tahun 2020 Kategori Pascasiswazah
Table 7.4 : List of Winner For Post Graduate Category

	NAMA PELAJAR / STUDENT NAME	NAMA IPT / IPT NAME
JOHAN / 1 st	Azim Haziq Bin Zainuddin	Universiti Putra Malaysia
NAIB JOHAN / 2 nd	Lau Gee Een	Universiti Putra Malaysia
TEMPAT KETIGA / 3 rd	Mohamad Khairul Hafizi Bin Rahimi	Universiti Kebangsaan Malaysia



Pertandingan yang Diadakan secara Hibrid di mana Panel Penilai dan Urus Setia Hadir secara Fizikal manakala Peserta secara Dalam Talian melalui Aplikasi Zoom
Hybrid Competition where the Panel of Assessors and Secretariat are Physically Present while Participants are Online through the Zoom Application



Bilik Panel Penilai dan Urus Setia adalah berasingan semasa Majlis berlangsung.
 The Assessor Panel Room and the Secretariat are separate during the Ceremony.



Barisan Panel Penilai yang terdiri daripada JAS, Lestari UKM, JPT dan DBP
 The Assessing Panel consisting of DOE, Lestari UKM, JPT and DBP



Johan bagi Kedua-dua Kategori
 Champion for Both Categories

Bab 8

Chapter 8



**PENGURUSAN TEKNOLOGI
MAKLUMAT
INFORMATION TECHNOLOGY (IT)
MANAGEMENT**

PENGURUSAN TEKNOLOGI MAKLUMAT INFORMATION TECHNOLOGY (IT) MANAGEMENT

PENGUJIAN PRESTASI SISTEM

Apakah pengujian prestasi sistem

Apakah pengujian prestasi sistem Fasa untuk mengenal pasti tingkah laku dan prestasi sistem apabila sesuatu beban kerja yang diberikan untuk jangka masa tertentu. Pengujian ini akan menggunakan aplikasi pemantau prestasi sistem yang akan mengenal pasti, mengumpul, memantau dan melaporkan tahap operasi keseluruhan sistem.

Bagaimana ia berfungsi?

Terdapat aplikasi pemantau prestasi sistem yang sedia digunakan secara percuma dan berbayar. Antaranya aplikasi JMeter, Dynatrace dan BlazeMeter yang akan dipasang pada pelayan sistem aplikasi serta komputer simulasi. Aplikasi ini akan mewujudkan persekitaran simulasi bagi sistem dengan memberi beban kerja pada jangka masa tertentu. Aplikasi pemantau akan merekodkan semua tingkah laku sistem dan melaporkan semua isu yang dikenalpasti pada sistem. Antara laporan yang akan dikeluarkan adalah :

- ✓ Isu kekurangan sumber (bottleneck)
- ✓ Isu konfigurasi pelayan
- ✓ Isu konfigurasi aplikasi
- ✓ Isu kesilapan dan pengecualian sistem

Faedah Pengujian Prestasi

- Pentadbir sistem dan organisasi berupaya mengenalpasti masalah yang perlu ditambah baik dari segi konfigurasi aplikasi dan kapasiti perkakasan.
- Pengenalpastian dan penyelesaian masalah dari awal membolehkan sistem lebih stabil apabila digunakan dan mengelakkan system crash dan perlahan ketika capaian.
- Pentadbir sistem juga boleh mengetahui jangkaan jumlah beban dan bilangan pengguna yang membuat capaian ke sistem dan membuat perancangan jangka panjang bagi pembangunan kapasiti sistem.

SYSTEM PERFORMANCE TESTING

What is system performance testing?

The test phase is to identify the behaviour and performance of a system when specific workload is given for a certain period of time. This test will use a system performance monitoring application that will identify, collect, monitor and report the overall operating level of the system.

How does it work?

There are system performance monitoring applications available for free and on a paid basis. Among them are JMeter, Dynatrace and BlazeMeter applications that will be installed on application system servers as well as simulation computers. This application will create a simulation environment for the system by providing workload at a specific time period. The monitoring application will record all system behavior and report all issues identified on the system. The reports that will be produced concern the following:

- ✓ Resources issues (bottleneck)
- ✓ Server configuration issues
- ✓ Application configuration issues
- ✓ System errors and exceptions issues

Performance Testing Benefits

- System administrators and organisations are able to identify problems that need to be improved in terms of application configuration and hardware capacity.
- Initial identification and troubleshooting allow the system to be more stable when in use and to avoid system crashes and slowing down during access time.
- System administrators are able to find out the expected total load and number of concurrent accesses by users as well as for planning long-term system capacity development.

PEMBANGUNAN SISTEM APLIKASI : SISTEM myCEP

Apakah itu sistem myCEP?

myCEP adalah singkatan daripada 'Malaysian Certified Environmental Practitioner'.

Sistem ini merupakan platform pendaftaran dan pembaharuan pendaftaran bagi jururunding EIA secara atas talian.

Pemilik Sistem : Bahagian Penilaian, JAS Ibu Pejabat

Siapakah pengguna Sistem myCEP?

Skim pendaftaran terbuka untuk mana-mana individu yang berkelayakan. Terdapat tiga (3) kategori pendaftaran di bawah skim ini :

- ✓ Pembantu Jururunding (AC)
- ✓ Jururunding EIA (C)
- ✓ Pakar Subjek (SS)

Pemohon boleh memilih kategori khusus yang sesuai dengan kelayakan akademik, kemahiran dan pengalaman.

Latihan Penggunaan Sistem myCEP

Latihan penggunaan Sistem myCEP telah dijalankan pada **12 Mac 2020**



Peranan Jururunding

Semua Jururunding EIA menggunakan sistem ini bagi proses pendaftaran dan pembaharuan secara digital dan menggantikan sepenuhnya proses manual. Ia secara tidak langsung akan meningkatkan pembudayaan ICT di Jabatan Alam Sekitar.

SYSTEM APPLICATION DEVELOPMENT : myCEP SYSTEM

What is the myCEP System?

myCEP stands for 'Malaysian Certified Environmental Practitioner'.

This system allows EIA's Consultants to register and renew their practitioner certificate online.

Owner of System : EIA Division, DOE Headquarters

Who are the users of the myCEP System?

The registration scheme is open to any qualified individual. There are three (3) categories of registration under this scheme:

- ✓ Assistant Consultant (AC)
- ✓ EIA Consultant (C)
- ✓ Subject Specialist (SS)

Applicants are able to choose specific categories that commensurate with their academic qualifications, skills and experiences

Training on the use of the myCEP System

The training was conducted on **12 March 2020**.

Role of the Consultant

All EIA Consultants are encouraged to use this system for their registration and renewal process in order to transform the process from manual to digital. This transformation indirectly uplifts the ICT culture in the Department of Environment.

PROGRAM PENINGKATAN KEMAHIRAN ICT

Penjanaan Kod QR

1. Layari laman sesawang yang menyediakan perkhidmatan menjana kod QR. Antaranya :
 1. <https://www.qrcode-monkey.com>
 2. <https://www.qr-code-generator.com>
 3. <https://www.the-qrcodegenerator.com>
 4. <http://goqr.me>

Nota: Terdapat laman percuma dan berbayar

2. Masukkan URL atau pautan yang ingin ditukar kepada kod QR. Contoh :
<https://www.doe.gov.my>

Tips!

Sekiranya anda ingin berkongsi fail seperti gambar atau dokumen, muat naik fail terlebih dahulu pada aplikasi storan awan seperti Google Drive / One Drive / Dropbox dan masukkan pautan tersebut di ruangan URL untuk janaan kod QR.

3. Penjanaan kod QR oleh laman sesawang yang dipilih. Guna aplikasi pengimbas kod QR atau kamera pada telefon bimbit untuk mengimbas kod
4. Kod QR **sedia untuk digunakan!**

ICT SKILLS IMPROVEMENT PROGRAMME

QR CODE GENERATOR

1. Visit the websites that provide QR Code generator service :

1. <https://www.qrcode-monkey.com>
2. <https://www.qr-code-generator.com>
3. <https://www.the-qrcode-generator.com>
4. <http://goqr.me>

Note: There are free-for-use and paid sites

2. Enter the URL or link that you need to convert to a QR Code. Example:

<https://www.doe.gov.my>

Tips!

If you want to share files such as pictures or documents, upload the file to a cloud storage application such as Google Drive / One Drive / Dropbox then enter the link in the URL field to generate a QR code

3. The QR code is generated by the chosen websites. Use the QR code scanner or camera app on your mobile phone to scan the code.

4. The QR code **is ready to be used!**



Penggunaan Kod QR bagi program jabatan
Example usage of QR code for DOE's programme

Etika Ketika Menghadiri Mesyuarat Sidang VIDEO

1. Talian Internet

- Pastikan langganan data mencukupi
- Tidak menggunakan Wi-fi awam
- Aktifkan fungsi "Switch to audio only" jika menghadapi masalah rangkaian

2. Perkakasan

- Menguji perkakasan seperti kamera/ video/ mikrofon, dan pastikan berfungsi dengan baik.
- Pastikan bekalan bateri komputer mencukupi.

3. Video

- Pakai pakaian yang sopan.
- Pastikan persekitaran paparan video adalah kemas.

Video Conferencing Ethics

1. Internet Line

- Make sure the data subscription is sufficient.
- Do not use public Wi-Fi .
- Activate the "Switch to audio only" function if you encounter network problems.

2. Hardware

- Test hardware such as cameras/ videos/ microphones and make sure the devices work well.
- Make sure the computer battery is sufficiently charged.

3. Video

- Dress respectfully .
- Make sure the background surroundings shown over the video are neat.

4. Mikrofon

- Pastikan persekitaran tidak bising dan jauh dari bunyi seperti kipas.
- Mute mikrofon semasa menyertai mesyuarat. Hanya aktifkan mikrofon apabila ingin bercakap.
- Digalakkan menggunakan earphone/headphone with microphone,

5. Skrin

- Sekiranya berkongsi skrin, pastikan wallpaper yang sesuai digunakan. Tutup semua aplikasi yang tidak digunakan.

6. Umum

- Maklumkan kepada pengerusi sekiranya perlu meninggalkan mesyuarat.

4. Microphone

- Make sure the surrounding is quiet and move away from any source of noise, such as a fan.
- Mute the microphone while you are in the meeting, activate the microphone only when you need to speak .
- Use of earphones/ headphones with microphone is encouraged.

5. Screen

- Use appropriate wallpaper when sharing a screen.
- Close all applications that are not being used.

6. General

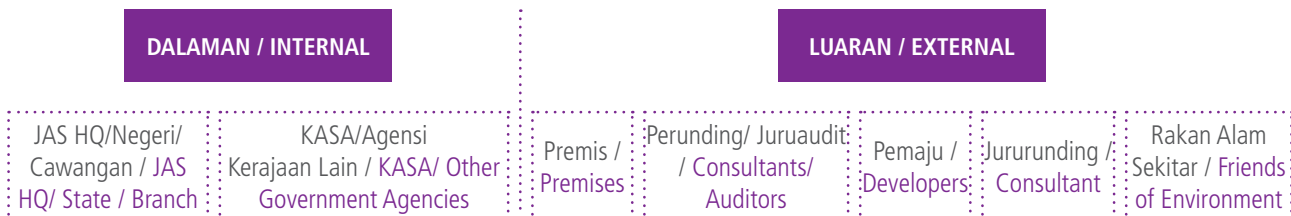
- Please inform the chairperson when you need to leave the meeting.

ARKITEKTUR BISNES JAS JAS BUSINESS ARCHITECTURE

MEDIUM PERKHIDMATAN / SERVICES' MEDIUM



PENGGUNA PERKHIDMATAN / SERVICES' USERS



PERKHIDMATAN UTAMA / MAIN SERVICES

PENILAIAN / ASSESSMENT	PENGAWASAN / MONITORING	PENGUATKUASAAN / ENFORCEMENT	KOMUNIKASI STRATEGIK / STRATEGIC COMMUNICATION	KOMPETENSI / COMPETENCIES
Penilaian Kesan Alam Sekeliling (EIA) / Environmental Impact Assessment (EIA)	Pengawasan Kualiti Udara / Air Quality Monitoring	Kawalan Premis Yang Ditetapkan / Control of Prescribed Premises	Promosi Pendidikan & Kesedaran Alam Sekitar kepada Industri / Promotion of Environmental Education & Awareness to Industries	Pelaksanaan Program Latihan/ Persijilan JAS / DOE Training/ Certification Program
Input Pembangunan / Development Input	Pengawasan Kualiti Air Marin / Marine Water Quality Monitoring	Kawalan Premis Yang Bukan Ditetapkan / Control of Non-Prescribed Premises	Promosi Pendidikan & Kesedaran Alam Sekitar kepada Pelajar & Orang Awam / Promotion of Environmental Education & Awareness to Students & Public	Pelaksanaan Program Latihan/ Persijilan Industri / Industrial Training/ Certification Program
Keberanian Bertulis / Written Approval	Pengawasan Kualiti Air Sungai / River Water Quality Monitoring	Maklumbalas Pengaduan Awam / Public Complaint Feedback	Perhubungan Badan dan Agensi Luar Negara / Foreign Relations	
	Pengawasan Kualiti Air Tanah / Groundwater Quality Monitoring	Tindakan Undang-undang / Legal Action		
	Pengurusan Buangan Terjadual & Tanah Tercemar / Scheduled Waste Management & Contaminated Land	Industri Hijau / Green Industry		

PERKHIDMATAN SOKONGAN / SUPPORT SERVICES

PENTADBIRAN & KEWANGAN / FINANCIAL ADMINISTRATION				TEKNOLOGI MAKLUMAT / INFORMATION TECHNOLOGY			
Pengurusan Sumber Manusia / Human Resource Management	Pengurusan Kewangan & Akaun / Financial Management & Account	Pengurusan Aset & Stor / Asset & Store Management	Pentadbiran / Administration	Pengurusan Infrastruktur Rangkaian dan Pusat Data / Network Infrastructure and Data Center Management	Pembangunan & Penyelenggaraan Maklumat Spatial / Development & Maintenance of Spatial Information	Pembangunan & Penyelenggaraan Aplikasi / Application Development & Maintenance	Pengurusan Dasar & Latihan: ICT / ICT Policy Management & Training

SISTEM APLIKASI YANG MENYOKONG PERKHIDMATAN/ FUNGSI / APPLICATION SYSTEM

OPERASI / OPERATION 23		EKSEKUTIF / EXECUTIVE 4		PEMBANGUNAN / DEVELOPMENT 17		PENTADBIRAN / ADMINISTRATION 17	
EQMP	SPPIH	ADMS (Ramalan Pencemaran Udara)		EKMC	Portal EIMAS	VIMS	eTerimaan
eCSTP	eAduan	Executive Information System (EIS EQMP)		NRCEP	Portal JAS	Direktori	MySikap
MYEHS	OER	Environmental Big Data		GEOSPAS	eLibrary/KOHA	DTA	MyMesyuarat
VTA	iRemote	Dashboard		MyRAS	E-Museum	Sistem Pengurusan Fail	Sistem Pengurusan Aseta
eMAINS	HyFIS			Portal EIA	Media Sosial	1GFMAS	ePerolehan
m-FORCE	Oil Map Trajectory			Portal Intranet	eParticipation	HRMIS	SpotMe
CEMS	APIMS (MyIPU)			Portal EWaste	Portal GIVC	SPPII	ePejabat
eSWIS	eKASv.4			Portal RAS	Sistem Latihan Bersepadu		
MyCEP	eNotifikasi						
eKASv.3	SPEIA						
NECC	ESDR						

Petunjuk / Legend :

Digunakan / Used	Dalam Pembangunan / In Development	To Be	Sistem Agensi Pusat / Central Agency System
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DATA / DATA

LUARAN / EXTERNAL		DALAMAN / INTERNAL		
Hidrologi (JPS) / Hydrology (JPS)	Fasiliti (MACGDI) / Facilities (MACGDI)	Pengawasan / Supervision	Spatial / Spatial	Efluen / Effluent
Lot, Topografi (JUPEM) / Lot, Topography (JUPEM)	Cuaca (MET) / Weather (MET)	Pemeriksaan / Inspection	EIA / EIA	Waste / Waste
Gunatanah (PLAN) / Land Use (PLAN)	Media Sosial / Social Media	Tindakan / Action	Jururunding / Consultant	Hotspot / Hotspot
Hotspot (ASMC) / Hotspot (ASMC)		Pelesenan / License	KPI / KPI	Tumpahan minyak / Oil Spill
		SIMPAS (Maklumat Premis) / SIMPAS / (Premise Info)	Audit / Audit	Juruteknik servis / Service Technician
		Penguatkuasaan / Enforcement	IPU / IPU	Aduan / Complaint
		RAS / RAS	Pelepasan bahan cemar udara (CEMS) / Emissions of air pollutants (CEMS)	

AGENSI LUAR YANG BERHUBUNG DENGAN JAS / EXTERNAL AGENCIES CONNECTED TO DOE

Industri / Industry	Juruaudit / Auditor	Jururunding / Consultant	Badan Kerajaan / Government	NGO / NGO
Rakan Strategik / Strategic Partner	Pemaju Projek / Project Developer	IPTA/IPTS / IPTA/IPTS	Orang Awam / Public	

BAHAGIAN / CAWANGAN YANG DIKAWALSELIA / REGULATED DIVISIONS/ BRANCHES

Udara / Air	Air & Marin / Water & Marine	Bahan Berbahaya / Hazardous Substances	Komunikasi Strategik / Strategic Communication	
Penguatkuasaan / Enforcement	Penilaian / Assessment	EiMAS / EiMAS	Pentadbiran & Kewangan / Administration And Finance	ICT / ICT

TEKNOLOGI / TECHNOLOGY

Pusat Data / Data Center	Disaster Recovery Centre / Disaster Recovery Centre	Rangkaian ICT / ICT Network	Keselamatan ICT / ICT Security	Pangkalan Data / Database
Peralatan ICT / ICT Equipment	Internet Benda / Internet of Thing	Pengkomputeran Awan / Public Computing	Kecerdasan Buatan / Artificial Intelligence	Hub Integrasi / Integration Hub

Petunjuk / Guidance :

Sedia ada / Existing	To Be / To Be
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AKRONIM SISTEM APLIKASI JABATAN ALAM SEKITAR ACRONYM OF DOE APPLICATION SYSTEMS

BIL / NO	SISTEM APLIKASI / APPLICATION SYSTEM	URL / URL
SEKTOR OPERASI/ OPERATION SECTOR		
1	Sistem Elektronik Kawalan Alam Sekitar (eKAS)	www.ekas.doe.gov.my
2	Sistem Continous Emission Monitoring System (CEMS)	https://cems.doe.gov.my/
3	Sistem Integrated Remote Monitoring System (iREMOTE)	https://iremote.doe.gov.my/
4	Sistem Environmental Quality Monitoring Programme (EQMP)	https://eqmp.doe.gov.my/
5	Sistem Air Pollutant Index of Malaysia (APIMS/MyIPU)	http://apims.doe.gov.my
6	National Environmental Control Centre (NECC)	http://necc.doe.gov.my/
7	Sistem Electronic Certification Service Technician Programme (eCSTP)	https://ecstp.doe.gov.my/
8	Sistem Environmental Mainstreaming Tools (EMAINS)	https://emains.doe.gov.my/
9	Portal dan Sistem Environmentally Hazardous Substances Notification And Registration (myEHS)	https://myehs.doe.gov.my/portal/ehsnr/
10	Online Environmental Reporting (OER)	https://oer.doe.gov.my/
11	Sistem Mobile Enforcement (m-FORCE) (<i>stand alone</i> sistem yang dipasang pada <i>rugged tablet</i> Pegawai Penguatkuasa JAS)	Tidak Berkaitan
12	Sistem Pengurusan dan Pemantauan Industri Hijau (SPPIH)	https://spjih.doe.gov.my/
13	Sistem Electronic Aduan (eADUAN)	https://eaduan.doe.gov.my
14	Sistem Notifikasi Udara (eNotifikasi)	Pembangunan
15	Sistem Environmental Spatial Data Repository - ESDR	Pembangunan
16	Sistem Vehicle Type Approval (VTA)	https://vta.doe.gov.my/
17	Sistem Certification Environmental Practitioner (myCEP)	https://mycep.doe.gov.my/
18	Sistem Pemantauan EIA (SPEIA)	http://speia.doe.gov.my/login
19	Sistem Air Data Management System (ADMS)	https://adms.doe.gov.my
20	Sistem Oil Spill Trajectory	Tidak Berkaitan
21	Sistem Hydrocarbon Fingerprinting (HyFis)	https://hyfis.doe.gov.my
SEKTOR PEMBANGUNAN/ DEVELOPMENT SECTOR		
22	Sistem Geospatial Alam Sekitar (GeoSpAS)	https://geospas.doe.gov.my/
23	Sistem Rakan Alam Sekitar (MYRAS)	https://myras.doe.gov.my
24	Sistem Laporan Erosion & Sediment Control (ESC)	http://eia.doe.gov.my/
25	Sistem Kehadiran Pejabat (DTA)	http://dta.doe.gov.my
26	Sistem Perpustakaan Atas Talian (KOHA)	http://elibrary.doe.gov.my
27	Sistem Pengurusan Fail	http://spf.doe.gov.my
28	Sistem Direktori JAS	http://apps.doe.gov.my/directorylogin/
29	Sistem Pengurusan Pelawat (VIMS)	http://apps.doe.gov.my/vims/
30	Laman Web Rasmi Jabatan Alam Sekitar	https://www.doe.gov.my/portalv1
31	Portal Informasi Alam Sekitar (myEnviro)	https://myenviro.doe.gov.my
32	Laman Intranet JAS	https://www.doe.gov.my/portal_intranet
33	Laman Web Enviro Knowledge Management Centre	https://enviro2.doe.gov.my/ekmc
34	Laman Web Enviro MUSEUM	https://enviro2.doe.gov.my/emuseum/
35	Laman Web Institut Alam Sekitar Malaysia (EiMAS)	https://www.doe.gov.my/eimasv2
36	Laman Web Rakan Alam Sekitar	https://ras.doe.gov.my/v2/
37	Laman Web Bahan Buangan Elektrik Isi Rumah	https://ewaste.doe.gov.my
38	Laman Web Pusat Visual Industri Hijau	https://cp.doe.gov.my/cpvc/

Bab 9

Chapter 9



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

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

Sebagai sebuah Pusat Kecemerlangan dalam Pengurusan Alam Sekitar di Malaysia, EiMAS bukan sahaja berperanan dalam meningkatkan kompetensi warga JAS malah bertanggungjawab dalam melaksanakan pelan latihan berasaskan pengetahuan, praktikal, kompetensi dan pembelajaran berterusan dalam bidang alam sekitar termasuklah kepada agensi-agensi kerajaan yang lain, organisasi, industri tempatan dan juga agensi-agensi alam sekitar antarabangsa.

Jumlah perjawatan EiMAS sehingga 31 Disember 2020 adalah 50 perjawatan dengan pengisian sebanyak 48 perjawatan.

PROGRAM LATIHAN EiMAS KEPADA PEGAWAI DAN KAKITANGAN JAS 2020

EiMAS telah membangunkan program latihan dalam bidang pengurusan alam sekitar dan kawalan pencemaran, serta perhatian telah diberikan kepada pembangunan modal insan yang dapat melindungi dan menguruskan alam sekitar secara menyeluruh seperti dalam **Rajah 9.1** dan **Jadual 9.1**.

The role of the EiMAS is no longer one of just upgrading the skills of the Department of Environment staff, but is more importantly one of being responsible for implementing training plans based on the knowledge, skills, competencies and continuous learning for those in the environmental field which includes government agencies, organisations, local industries and also international environmental agencies.

Total appointments in EiMAS as at 31st December 2020 were 50 posts. Of these 50 posts, 48 posts have been filled.

EiMAS TRAINING PROGRAMME FOR DOE OFFICERS AND STAFF 2020

EiMAS has developed its training programmes on environmental management and pollution control and more attention has been given to develop human capital capable of protecting and managing the environment in a holistic manner as in **Figure 9.1** and **Table 9.1**.

Jadual 9.1 : Senarai Program Latihan EiMAS, 2020

Table 9.1 : EiMAS Training Programmes List, 2020

BIL. / NO.	PROGRAM LATIHAN / TRAINING PROGRAMMES	TARIKH / DATE	PESERTA / PARTICIPANTS
PENGURUSAN KUALITI AIR / WATER QUALITY MANAGEMENT			
1.	Bengkel Penguukuhan (Penyediaan FTR) bagi Kursus Profesional Alam Sekitar Kawalan Pencemaran Air <i>Reinforcement Workshop (Preparation of FTR) for Certified Environmental Professionals in Water Pollution Control</i>	9-13 Mac 2020 9–13 March 2020	19
2.	Kursus Kompetensi Protokol Persampelan, Pengawetan dan Pengendalian Sampel Efluen bagi Tujuan Penguatkuasaan untuk Penolong Pegawai Kawalan Alam Sekitar Sekitar Lantikan Baru Tahun 2020: Bahagian I (Sesi Atas Talian) <i>Competency Course on Sampling Protocol, Preservation and Handling of Effluent Samples for Enforcement Purposes for New Assistant Environmental Control Officers 2020: Part I (Online Sessions)</i>	20-22 Julai 2020 20–22 July 2020	29
3.	Kursus Kompetensi Protokol Persampelan, Pengawetan dan Pengendalian Sampel Efluen bagi Tujuan Penguatkuasaan untuk Penolong Pegawai Kawalan Alam Sekitar Sekitar Lantikan Baru Tahun 2020: Bahagian II (Hands-On) <i>Competency Course on Sampling Protocol, Preservation and Handling of Effluent Samples for Enforcement Purposes for New Assistant Environmental Control Officers 2020: Part II (Hands-On)</i>	8-9 September 2020 8–9 September 2020	28
JUMLAH TOTAL			76

Jadual 9.1 : Senarai Program Latihan EiMAS, 2020
Table 9.1 : EiMAS Training Programmes List, 2020

BIL. / NO.	PROGRAM LATIHAN / TRAINING PROGRAMMES	TARIKH / DATE	PESERTA / PARTICIPANTS
PENGURUSAN BUANGAN TERJADUAL / SCHEDULED WASTE MANAGEMENT			
1.	Bengkel dan Mesyuarat Penyediaan Modul Kursus Amalan Pengurusan Terbaik (BMP) untuk Buangan Terjadual - Siri 1 Workshop and Meeting on the Preparation of Course Module for Scheduled Waste Best Management Practices (BMP) - Series 1	18-20 Februari 2020 18-20 February 2020	9
2.	Pensijilan Profesional Alam Sekitar Sekitar dalam Pemeriksaan Terjadual (CePSWI) -Siri 1 Certified Environmental Professional in Scheduled Waste Inspection (CePSWI) -Series 1	2-6 Mac 2020 2-6 March 2020	26
3.	Kursus Kompetensi Protokol Persampelan Buangan Terjadual - Siri 1 Competency Course on Scheduled Waste Sampling Protocol – Series 1	13-16 Julai 2020 13-16 July 2020	16
4.	Bengkel dan Mesyuarat Penyediaan Modul Kursus Amalan Pengurusan Terbaik (BMP) untuk Buangan Terjadual - Siri 2 Workshop and Meeting on the Preparation of Course Module for Scheduled Waste Best Management Practices (BMP) - Series 2	25-26 Ogos 2020 25-26 August 2020	9
5.	Kursus Kompetensi Protokol Persampelan Buangan Terjadual - Siri 2 Competency Course on Scheduled Waste Sampling Protocol – Series 2	7-11 September 2020 7-11 September 2020	18
6.	Pensijilan Profesional Alam Sekitar dalam Pemeriksaan Buangan Terjadual (CePSWI) -Siri2 Certified Environmental Professional in Scheduled Waste Inspection (CePSWI) -Series	5-9 Oktober 2020 5-9 October 2020	18
JUMLAH TOTAL			96
PENGURUSAN ALAM SEKITAR DAN KESAN KEPADA ALAM SEKITAR / ENVIRONMENTAL MANAGEMENT AND IMPACT ASSESSMENT			
1.	Bengkel Penambahbaikan Modul dan Bank Soalan CePEOEIA & LDP2M2 Workshop on Improvements of CePEOEIA & LDP2M2 Module and Question Bank	3-4 Februari 2020 3-4 February 2020	10
2.	Kursus Prosedur dan Semakan Laporan EIA Course on Procedure and Review of EIA Report	10-14 Februari 2020 10-14 February 2020	14
3.	Kursus Kawalan Kerja Tanah, Pemeriksaan dan Tindakan Mitigasi (LDP2M2), JAS Course on Land Disturbing Pollution Prevention & Mitigation Measures (LDP2M2) Inspection (JAS)	2-6 Mac 2020 2-6 March 2020	24
4.	Bengkel Penambahbaikan Modul & Bank Soalan EIA Consultant & Environmental Auditor Workshop on Improvements of EIA Consultant and Environment Auditor Modules and Question Bank	10-11 Mac 2020 10-11 March 2020	10
5.	Kursus Asas Pemodelan Hidraulik, Kualiti Air dan Kualiti Udara Course on Fundamentals of Hydraulic Modelling, Water Quality and Air Quality	24-28 Ogos 2020 24-28 August 2020	13
6.	Persijilan Profesional Alam Sekitar dalam Pembangunan dan Operasi Projek EIA Certified Environmental Officer in EIA Project Development and Operation (CePEOEIA)	28 September-2 Oktober 2020 28 September-2 October 2020	37
JUMLAH TOTAL			108

Jadual 9.1 : Senarai Program Latihan EiMAS, 2020
Table 9.1 : EiMAS Training Programmes List, 2020

BIL. / NO.	PROGRAM LATIHAN / TRAINING PROGRAMMES	TARIKH / DATE	PESERTA / PARTICIPANTS
PERUNDANGAN DAN PENGUATKUASAAN / ENVIRONMENTAL LEGISLATION AND ENFORCEMENT			
1.	Kursus Amali tentang Penyediaan Kertas Siasatan Course on Preparation of Investigation Papers	24-27 Februari 2020 24-27 February 2020	38
2.	Kursus Penguatkuasaan Praktikal Practical Enforcement Course	16-17 Mac 2020 16-17 March 2020	37
3.	Kursus Pengendalian serta Penyimpanan Keterangan Gambar Digital dan Hands on Fotografi Penyiasatan Course on Digital Image Caption Storage and Investigative Photography	19-23 Julai 2020 19-23 July 2020	21
4.	Kursus Amali tentang Penyediaan Kertas Siasatan Course on Preparation of Investigation Paper	19-23 Julai 2020 19-23 July 2020	22
5.	Kursus Penyiasatan & Penguatkuasaan Pembakaran Terbuka Course on Investigation and Enforcement of Open Burning	16-19 Ogos 2020 16-19 August 2020	21
JUMLAH TOTAL			139
PENGURUSAN KUALITI UDARA / AIR QUALITY MANAGEMENT			
1.	Kursus Percubaan Profesional Alam Sekitar dalam Pemasangan dan Pengoperasian CEMS dalam Industri Trial Run Course on Certified Environmental Professional in Installation and Operation of CEMS in Industries (CePCEMS)	24-28 Februari 2020 24-28 February 2020	12
2.	Kursus Persijilan Penguji Ujian Pelepasan Asap Kenderaan (Diesel & Petrol) - Fleet Operator (FO)/ Kemudahan yang Dilesenkan (KYDL) Certification Course on Vehicle Smoke Emission Tester (Diesel and Petrol) – Fleet Operator (FO)/ Licensed Facilities	2-4 Mac 2020 2-4 March 2020	17
3.	Kursus Pemantauan Pelepasan Industri dari Sumber Tetap Course on Industrial Emission Monitoring of Stationary Sources	10-13 Ogos 2020 10-13 August 2020	19
4.	Kursus Persijilan Profesional Alam Sekitar dalam Pemeriksaan Penggahar Course on Certified Environmental Professional in Scrubber Inspection (CEPSI)	12-16 Oktober 2020 12-16 October 2020	19
5.	Bengkel Kompetensi Pencemaran Udara dari Kenderaan Bermotor Competency Workshop on Air Pollution from Motor Vehicles	19–22 Oktober 2020 19-22 October 2020	8
JUMLAH TOTAL			75
PENGURUSAN KUALITI / QUALITY MANAGEMENT			
1.	Kursus Asas Pegawai Baharu bagi Penolong Pegawai Kawalan Alam Sekitar Gred C29 Basic Course for the New Assistant Environmental Control Officers Grade C29	15 Januari–7 Februari 2020 15 January-7 February 2020	28
2.	Kursus Asas Pegawai Baharu Bagi Penolong Pegawai Kawalan Alam Sekitar Gred C41 Basic Course for the New Environmental Control Officers Grade C41	21 September–2 Oktober 2020 21 September-2 October 2020	28
JUMLAH TOTAL			56
TEKNOLOGI MAKLUMAT & KOMUNIKASI / INFORMATION & COMMUNICATION TECHNOLOGY			
1.	Kursus Pengurusan dan Pelupusan Aset ICT Course on Management and Disposal of ICT Assets	2-3 September 2020 2-3 September 2020	30
JUMLAH TOTAL			30

Jadual 9.1 : Senarai Program Latihan EiMAS, 2020
Table 9.1 : EiMAS Training Programmes List, 2020

BIL. / NO.	PROGRAM LATIHAN / TRAINING PROGRAMMES	TARIKH / DATE	PESERTA / PARTICIPANTS
PERPUSTAKAAN & MAKLUMAT / LIBRARY & INFORMATION			
1.	Bengkel Fotografi dan Penulisan Kapsyen bagi Penyelaras E-Museum Jabatan Alam Sekitar (JAS) Workshop on Photography and Caption Writing for Department of Environment (DOE) E-Museum Coordinator	10-11 Mac 2020 10-11 March 2020	20
JUMLAH TOTAL			20



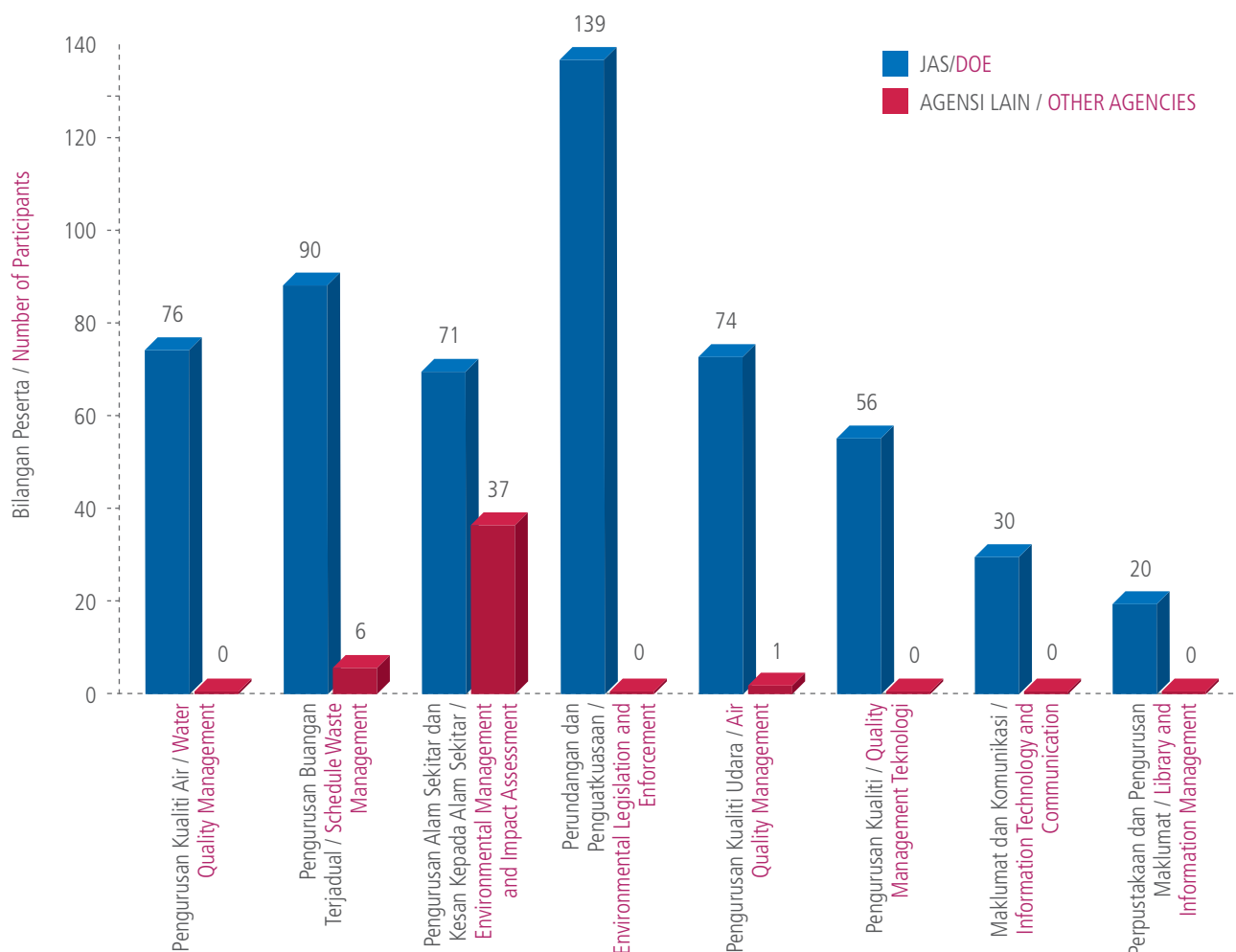
28 Program Latihan / Training Programmes | 600 Peserta / Participants

Rajah 9.1
Figure 9.1

Program Latihan EiMAS kepada Pegawai dan Kakitangan JAS 2020
EiMAS Training Programmes to Doe Staff 2020

Rajah 9.1 menunjukkan jumlah Program Latihan yang telah dilaksanakan oleh EiMAS mengikut Kategori Kursus kepada kakitangan JAS. Sebanyak 28 latihan/kursus telah dilaksanakan dengan jumlah kehadiran seramai 600 peserta. Beberapa program latihan yang telah dirancang tidak dapat dilaksanakan berikutan Perintah Kawalan Pergerakan (PKP) yang telah diisytiharkan oleh Kerajaan Malaysia sepanjang bulan Mac sehingga Disember 2020 akibat penularan pandemik COVID-19.

Figure 9.1 shows the number of Training Programmes that have been implemented by EiMAS according to Course Category for DOE staff. A total of 28 trainings/courses were implemented with the attendance of 600 participants. Some programmes that were planned could not be conducted due to adherence to the Malaysian Movement Control Order (MCO) which was declared by the Government of Malaysia from March to December 2020, as a result of the spread of the COVID-19 pandemic.



Rajah 9.2
Figure 9.2

Bilangan Peserta Mengikut Kategori Kursus Number of DOE Participants by Course Category

Rajah 9.2 menunjukkan bilangan peserta mengikut kategori kursus bagi program latihan EiMAS pada tahun 2020.

Daripada 600 orang peserta yang menyertai program latihan yang dilaksanakan, 557 orang peserta (92.83%) adalah kakitangan Jabatan Alam Sekitar (JAS), manakala selebihnya adalah peserta dari agensi-agensi lain yang berkaitan.

PROGRAM LATIHAN KOMPETENSI EiMAS KEPADA PEGAWAI INDUSTRI 2020

Bagi tahun 2020, Key Performance Indicator (KPI) yang telah ditetapkan untuk bilangan pegawai industri yang dilatih adalah seramai 800 orang. Bilangan ini adalah rendah berbanding tahun-tahun sebelum berikutan penularan pandemik COVID-19. Kursus-kursus yang terlibat adalah bagi kursus-kursus kompetensi seperti dalam **Jadual 9.2**.

Figure 9.2 shows the number of participants by course category for EiMAS Training Programmes conducted in the year 2020.

Out of the 600 participants, 557 participants (92.83%) were from the Department of Environment (DOE) while the rest were participants from other related agencies.

EiMAS COMPETENCY TRAINING PROGRAMMES FOR INDUSTRY OFFICERS 2020

For the year 2020, the Key Performance Indicator (KPI) set for the number of trained industry personnel was 800. The number is lower compared to previous years due to the COVID-19 pandemic. The competency courses are as stated in **Table 9.2**.

Jadual 9.2: Senarai Program Latihan Kompetensi EiMAS kepada Pegawai Industri, 2020
Table 9.2: EiMAS Competency Training Programmes for Industries Officers, 2020

BIL. / NO.	PROGRAM LATIHAN / TRAINING PROGRAMMES	TARIKH / DATE	PESERTA / PARTICIPANTS
KURSUS KOMPETENSI PROFESIONAL ALAM SEKITAR BAGI OPERATOR BEG PENAPIS (CePBFO) / COMPETENCY COURSE FOR CERTIFIED ENVIRONMENTAL PROFESSIONALS IN BAG FILTERS OPERATION			
1	CePBFO Bil. 010/ 2020	12 Oktober 2020 12 October 2020	10
2	CePBFO Bil. 09/ 2020	28 September 2020 28 September 2020	16
3	CePBFO Bil. 07/ 2020	7 September 2020 7 September 2020	11
4	CePBFO Bil. 08/ 2020	7 September 2020 7 September 2020	11
5	CePBFO Bil. 06/ 2020	10 Ogos 2020 10 August 2020	18
6	CePBFO Bil. 05/ 2020	6 Julai 2020 6 July 2020	15
7	CePBFO Bil. 04/ 2020	16 Mac 2020 16 March 2020	16
8	CePBFO Bil. 03/ 2020	2 Mac 2020 2 March 2020	13
9	CePBFO Bil. 02/ 2020	10 Februari 2020 10 February 2020	16
10	CePBFO Bil. 01/ 2020	20 Januari 2020 20 January 2020	15
JUMLAH TOTAL			141
KURSUS KOMPETENSI PROFESIONAL ALAM SEKITAR BAGI OPERATOR SISTEM PENGOLAHAN EFLUEN INDUSTRI (PROSES RAWATAN BIOLOGI) (CePIETSO BP) / COMPETENCY COURSE FOR ENVIRONMENTAL PROFESSIONALS IN THE OPERATION OF INDUSTRIAL EFFLUENT TREATMENT SYSTEMS (BIOLOGICAL TREATMENT PROCESS)			
1	CePIETSO BP Bil. 04/2021	27 September 2020 27 September 2020	16
2	CePIETSO BP Bil. 03/2020	9 Ogos 2020 9 August 2020	12
3	CePIETSO BP Bil. 02/2020	8 Mac 2020 8 March 2020	25
4	CePIETSO BP Bil. 01/2020	16 Februari 2020 16 February 2020	10
JUMLAH TOTAL			63
KURSUS KOMPETENSI PROFESIONAL ALAM SEKITAR BAGI OPERATOR LOJI RAWATAN LARUT RESAPAN (CePLTPO) / COMPETENCY COURSE FOR CERTIFIED ENVIRONMENTAL PROFESSIONALS IN LEACHATE TREATMENT PLANT OPERATION			
1	CePLTPO Bil. 01/2020	10 Ogos 2020 10 August 2020	15
JUMLAH TOTAL			15

Jadual 9.2: Senarai Program Latihan Kompetensi EiMAS kepada Pegawai Industri, 2020
Table 9.2: EiMAS Competency Training Programmes for Industries Officers, 2020

BIL. / NO.	PROGRAM LATIHAN / TRAINING PROGRAMMES	TARIKH / DATE	PESERTA / PARTICIPANTS
KURSUS KOMPETENSI PROFESIONAL ALAM SEKITAR BAGI OPERATOR SISTEM PENGOLAHAN EFLUEN PERINDUSTRIAN (PROSES RAWATAN KIMIA FIZIKAL) (CePIETSO – PCP) /			
COMPETENCY COURSE FOR CERTIFIED ENVIRONMENTAL PROFESSIONALS IN THE OPERATION OF INDUSTRIAL EFFLUENT TREATMENT SYSTEMS (PHYSICAL CHEMICAL TREATMENT PROCESS)			
1	CePIETSO PCP Bil. 15/2021	21 Disember 2020 21 December 2020	0
2	CePIETSO PCP Bil. 14/2020	5 Oktober 2020 5 October 2020	12
3	CePIETSO PCP Bil. 13/2020	28 September 2020 28 September 2020	12
4	CePIETSO PCP Bil. 12/2020	7 September 2020 7 September 2020	9
5	CePIETSO PCP Bil. 11/2020	24 Ogos 2020 24 August 2020	12
6	CePIETSO PCP Bil. 10/2020	20 Julai 2020 20 July 2020	8
7	CePIETSO PCP Bil. 09/2020	6 Julai 2020 6 July 2020	8
8	CePIETSO PCP Bil. 08/2020	22 Jun 2020 22 June 2020	7
9	CePIETSO PCP Bil. 05/2020	16 Mac 2020 16 March 2020	0 - PKP
10	CePIETSO PCP Bil. 04/2020	2 Mac 2020 2 March 2020	24
11	CePIETSO PCP Bil. 03/2020	17 Februari 2020 17 February 2020	27
12	CePIETSO PCP Bil. 02/2020	3 Februari 2020 3 February 2020	22
13	CePIETSO PCP Bil. 01/2020	6 Januari 2020 6 January 2020	10
JUMLAH TOTAL			151
KURSUS KOMPETENSI PROFESIONAL ALAM SEKITAR BAGI PENGURUSAN BUANGAN TERJADUAL (CePSWaM) /			
COMPETENCY COURSE FOR CERTIFIED ENVIRONMENTAL PROFESSIONALS IN SCHEDULED WASTE MANAGEMENT			
1	CePSWaM Bil. 18/2021	20 Disember 2020 20 December 2020	PKPB
2	CePSWaM Bil. 25/2020	2 November 2020 2 November 2020	PKPB
3	CePSWaM Bil. 26/2020	2 November 2020 2 November 2020	PKPB
4	CePSWaM Bil. 24/2020	12 Oktober 2020 12 October 2020	PKPB
5	CePSWaM Bil. 16/2020	11 Oktober 2020 11 October 2020	28
6	CePSWaM Bil. 17/2020	11 Oktober 2020 11 October 2020	27

Jadual 9.2: Senarai Program Latihan Kompetensi EiMAS kepada Pegawai Industri, 2020
Table 9.2: EiMAS Competency Training Programmes for Industries Officers, 2020

BIL. / NO.	PROGRAM LATIHAN / TRAINING PROGRAMMES	TARIKH / DATE	PESERTA / PARTICIPANTS
7	CePSWaM Bil. 23/2020	5 Oktober 2020 5 October 2020	25
8	CePSWaM Bil. 14/2020	28 September 2020 28 September 2020	24
9	CePSWaM Bil. 15/2020	28 September 2020 28 September 2020	35
10	CePSWaM Bil. 22/2020	28 September 2020 28 September 2020	21
11	CePSWAM Bil. 04/2020	27 September 2020 27 September 2020	10
12	CePSWaM Bil. 13/2020	21 September 2020 21 September 2020	18
13	CePSWaM Bil. 20/2020	21 Septemebr 2020 21 September 2020	36
14	CePSWaM Bil. 21/2020	21 September 2020 21 September 2020	10
15	CePSWaM Bil. 18/2020	7 September 2020 7 September 2020	25
16	CePSWaM Bil. 19/2020	7 September 2020 7 September 2020	25
17	CePSWAM Bil. 03/2020	7 September 2020 7 September 2020	16
18	CePSWaM Bil. 12/2020	24 Ogos 2020 24 August 2020	21
19	CePSWaM Bil. 17/2020	24 Ogos 2020 24 August 2020	24
20	CePSWaM Bil. 16/2020	23 Ogos 2020 23 August 2020	28
21	CePSWaM Bil. 11/2020	10 Ogos 2020 10 August 2020	24
22	CePSWaM Bil. 14/2020	10 Ogos 2020 10 August 2020	24
23	CePSWaM Bil. 15/2020	10 Ogos 2020 10 August 2020	12
24	CePSWaM Bil. 02/2020	10 Ogos 2020 10 August 2020	11
25	CePSWaM Bil. 13/2020	3 Ogos 2020 3 August 2020	33
26	CePSWaM Bil. 09/2020	20 Julai 2020 20 July 2020	28
27	CePSWaM Bil. 10/2020	20 Julai 2020 20 July 2020	26
28	CePSWaM Bil. 08/2020	12 Julai 2020 12 July 2020	17
29	CePSWaM Bil. 12/2020	6 Julai 2020 6 July 2020	21

Jadual 9.2: Senarai Program Latihan Kompetensi EiMAS kepada Pegawai Industri, 2020
Table 9.2: EiMAS Competency Training Programmes for Industries Officers, 2020

BIL. / NO.	PROGRAM LATIHAN / TRAINING PROGRAMMES	TARIKH / DATE	PESERTA / PARTICIPANTS
30	CePSWaM Bil. 07/2020	6 Julai 2020 6 July 2020	8
31	CePSWaM Bil. 11/2020	29 Jun 2020 29 June 2020	13
32	CePSWaM Bil. 06/2020	29 Jun 2020 29 June 2020	18
33	CePSWaM Bil. 10/2020	22 Jun 2020 22 June 2020	13
34	CePSWaM Bil. 09/2020	16 Mac 2020 16 March 2020	PKP
35	CePSWaM Bil. 04/2020	8 Mac 2020 8 March 2020	36
36	CePSWaM Bil. 03/2020	2 Mac 2020 2 March 2020	34
37	CePSWaM Bil. 08/2020	2 Mac 2020 2 March 2020	39
38	CePSWaM Bil. 02/2020	24 Mac 2020 24 March 2020	28
39	CePSWaM Bil. 07/2020	23 Mac 2020 23 March 2020	36
40	CePSWaM Bil. 05/2020	17 Februari 2020 17 February 2020	24
41	CePSWaM Bil. 06/2020	17 Februari 2020 17 February 2020	17
42	CePSWaM Bil. 01/ 2020	17 Februari 2020 17 February 2020	15
43	CePSWaM Bil. 01/2020	10 Februari 2020 10 February 2020	24
44	CePSWaM Bil. 04/2020	10 Februari 2020 10 February 2020	16
45	CePSWaM Bil. 03/2020	3 Februari 2020 3 February 2020	24
46	CePSWaM Bil. 02/2020	20 Januari 2020 20 January 2020	11
47	CePSWaM Bil. 01/2020	6 Januari 2020 6 January 2020	6
JUMLAH TOTAL			931
KURSUS KOMPETENSI PROFESIONAL ALAM SEKITAR BAGI OPERATOR PENGGAHAR (CePSO) / COMPETENCY COURSE FOR CERTIFIED ENVIRONMENTAL PROFESSIONALS IN SCRUBBERS OPERATION			
1	CePSO Bil. 07/2020	5 Oktober 2020 5 October 2020	10
2	CePSO Bil. 06/2020	21 September 2020 21 September 2020	17
3	CePSO Bil. 05/2020	24 Ogos 2020 24 August 2020	14

Jadual 9.2: Senarai Program Latihan Kompetensi EiMAS kepada Pegawai Industri, 2020
Table 9.2: EiMAS Competency Training Programmes for Industries Officers, 2020

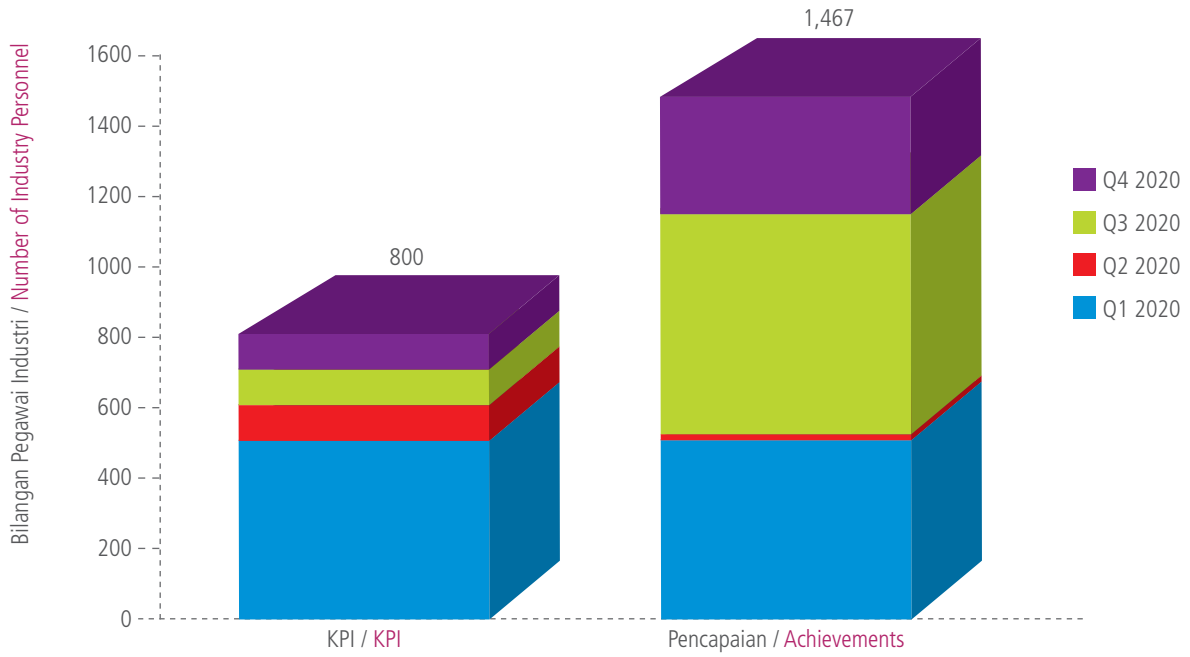
BIL. / NO.	PROGRAM LATIHAN / TRAINING PROGRAMMES	TARIKH / DATE	PESERTA / PARTICIPANTS
4	CePSO Bil. 04/2020	3 Ogos 2020 3 August 2020	7
5	CePSO Bil. 03/2020	13 Julai 2020 13 July 2020	14
6	CePSO Bil. 02/2020	9 Mac 2020 9 March 2020	16
7	CePSO Bil. 01/2020	24 Februari 2020 24 Februaty 2020	22
JUMLAH TOTAL			100
KURSUS KOMPETENSI PROFESIONAL ALAM SEKITAR BAGI OPERATOR LOJI RAWATAN KUMBAHAN (CePSTPO) / COMPETENCY COURSE FOR CERTIFIED ENVIRONMENTAL PROFESSIONALS IN SEWAGE TREATMENT PLANT OPERATION			
1	CePSTPO Bil. 05/2021	12 Oktober 2020 12 October 2020	PKPB
2	CePSTPO Bil. 04/2020	3 Ogos 2020 3 August 2020	8
3	CePSTPO Bil. 01/2020	24 Februari 2020 24 February 2020	23
JUMLAH TOTAL			31
KURSUS KOMPETENSI PROFESIONAL ALAM SEKITAR BAGI RAWATAN EFLUEN KILANG MINYAK KELAPA SAWIT (CePPOME) / COMPETENCY COURSE FOR CERTIFIED ENVIRONMENTAL PROFESSIONALS IN THE TREATMENT OF PALM OIL MILL EFFLUENT			
1	CePPOME Bil. 05/2021	21 September 2020 21 September 2020	12
2	CePPOME Bil. 04/2020	13 Julai 2020 13 July 2020	7
3	CePPOME Bil. 01/2020	10 Februari 2020 10 February 2020	16
JUMLAH TOTAL			35

Sepanjang tahun 2020, EiMAS telah berjaya melatih seramai 1,467 orang pegawai industri seperti di **Rajah 9.3**.

Bilangan kehadiran pegawai industri mengikut jenis kursus kompetensi pada tahun 2020 menunjukkan kursus Certified Environmental Professional in Scheduled Waste Management (CePSWaM) mencatat bilangan peserta yang tertinggi sebanyak 931 peserta bersamaan 63%, seperti yang ditunjukkan dalam **Rajah 9.4**.

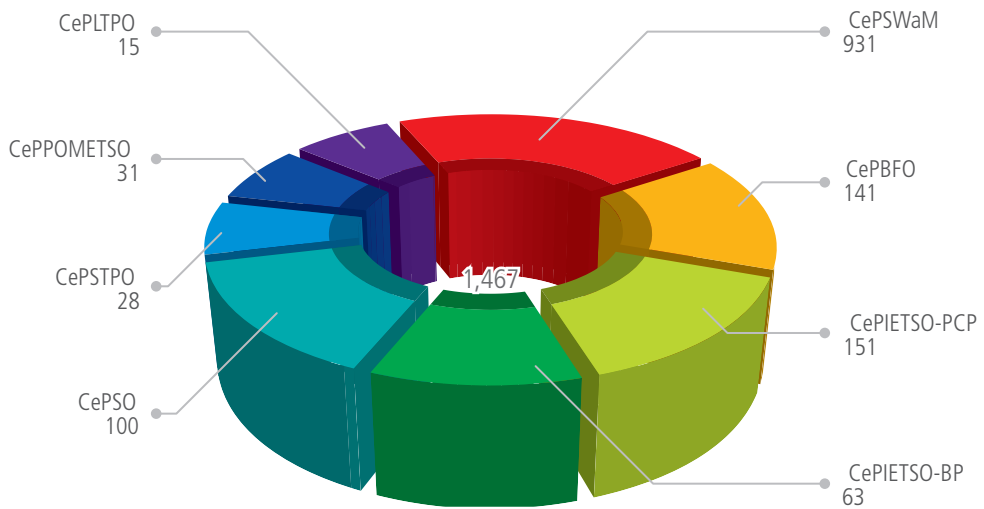
Throughout the year 2020, EiMAS successfully trained 1,467 industry personnel as shown in **Figure 9.3**.

Attendance of industrial personnel according to the types of competency courses in 2020 indicates that the course for Certified Environmental Professional in Scheduled Waste Management (CePSWaM) recorded the highest number of participants, 931 participants by 63%, as shown in **Figure 9.4**.



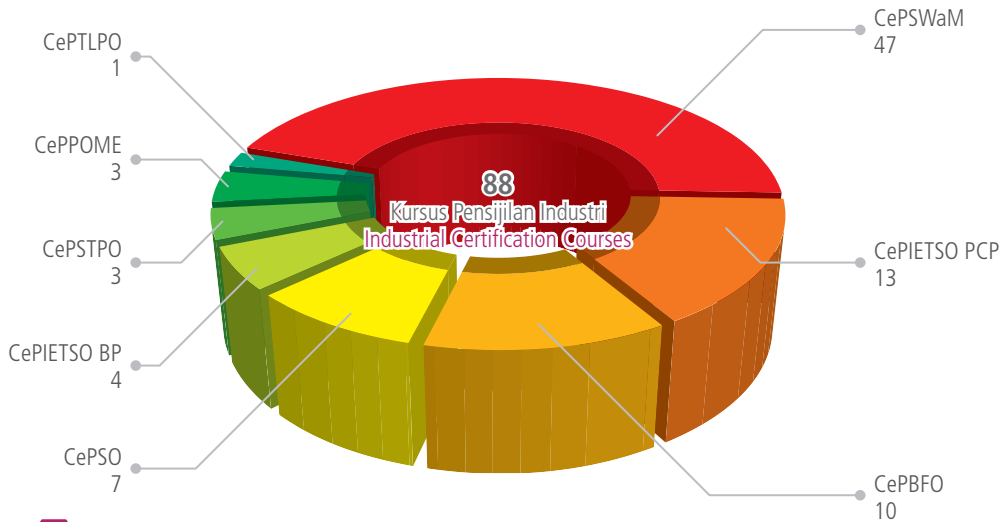
Bilangan Pegawai Industri Dilatih berbanding Petunjuk Prestasi Utama yang ditetapkan bagi Tahun 2020
Number of Industry Personnel Trained Against Key Performance Indicator (KPI) Set for the Year 2020

Rajah 9.3
Figure 9.3



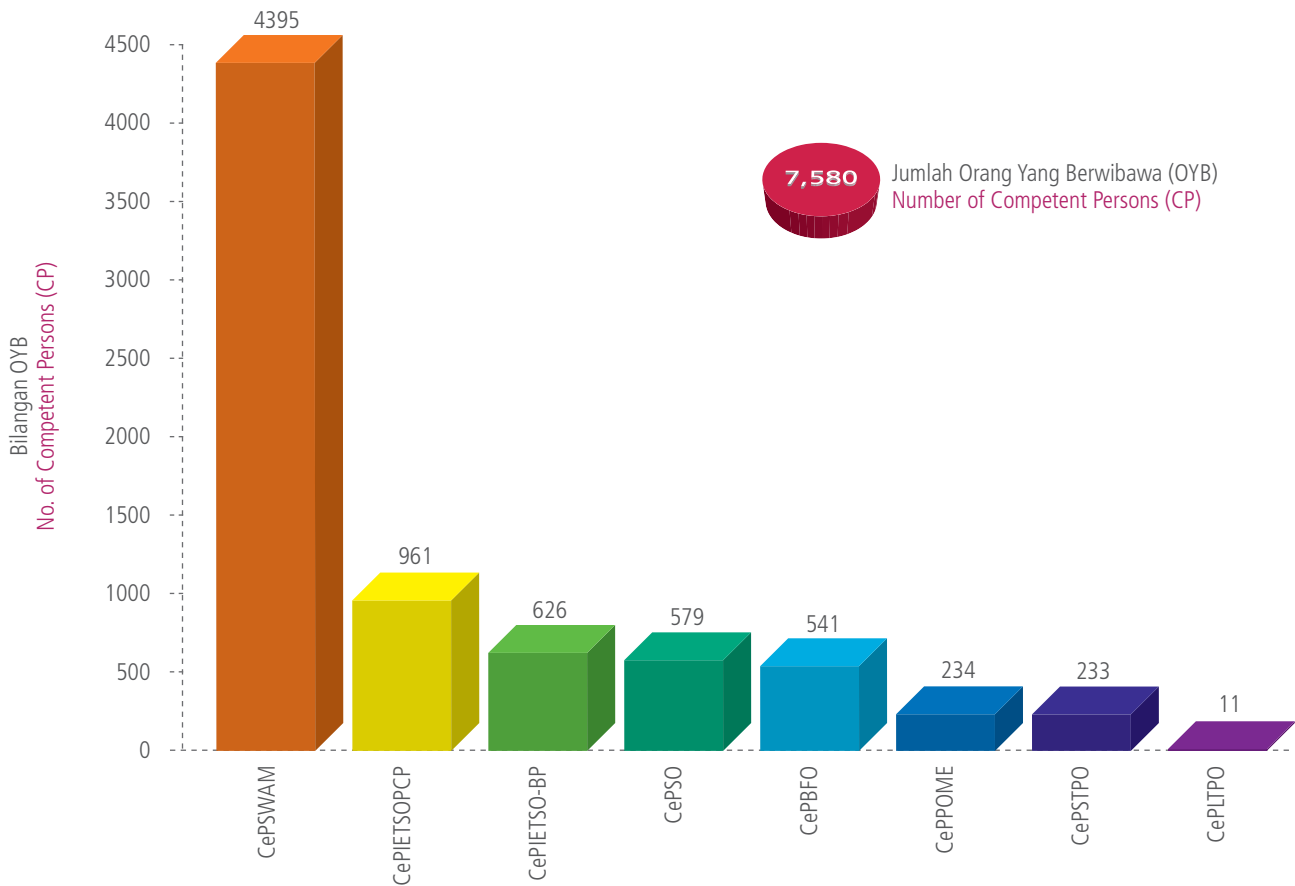
Pegawai Industri dilatih Mengikut Kursus Kompetensi, 2020
Number of Industry Personnel Trained According to Types of Competency Courses, 2020

Rajah 9.4
Figure 9.4



Rajah 9.5
Figure 9.5

Bilangan Kursus Pensijilan Industri yang Dianjurkan, 2020
Number of Industry Certification Courses Conducted, Year 2020



Rajah 9.6
Figure 9.6

Bilangan Orang yang Berwibawa (OYB) Pegawai Industri di Malaysia mengikut Jenis Pensijilan pada 31 Disember 2020
Number of Competent Persons of Industry Personnel in Malaysia according to Type of Certification as at 31st December 2020

Sepanjang tahun 2020, sebanyak 8 jenis kursus pensijilan industri telah dilaksanakan dengan jumlah 88 siri kursus, seperti yang ditunjukkan dalam **Rajah 9.5**.

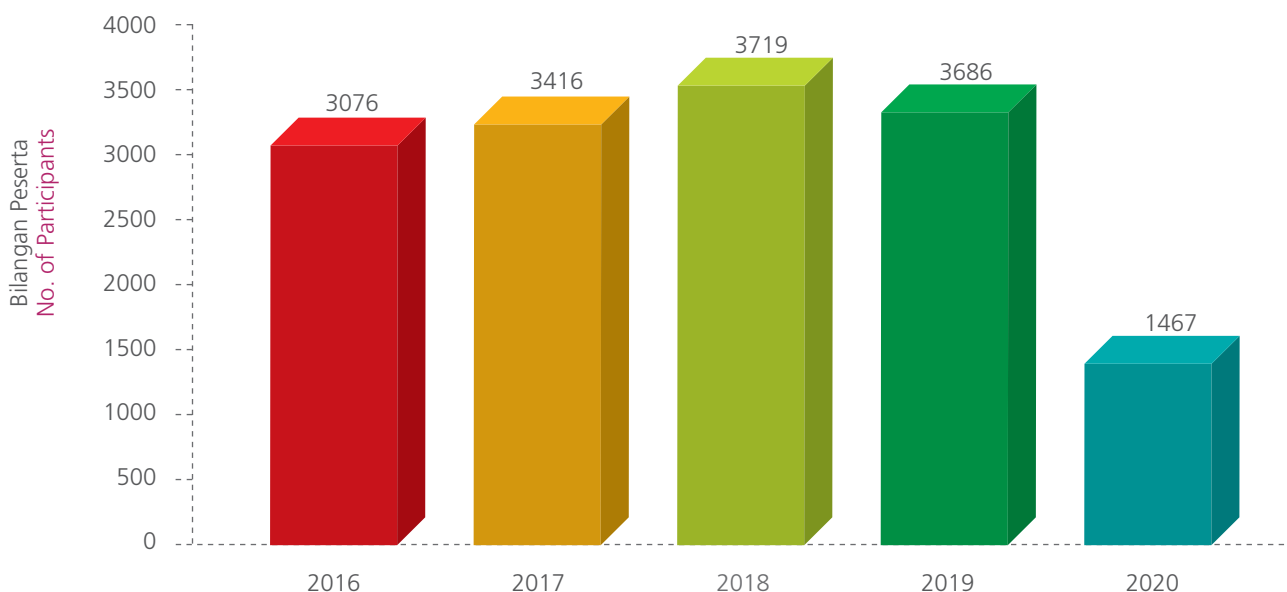
Rajah 9.6 menunjukkan sehingga 31 Disember 2020, EiMAS telah berjaya mengiktiraf seramai 7,580 orang pegawai industri di Malaysia sebagai Orang Yang Berwibawa selaras dengan kehendak Seksyen 49A, Akta Kualiti Alam Sekeliling 1974.

Bilangan kehadiran pegawai industri sebagai peserta bagi kursus pensijilan untuk 5 tahun terkini dari 2016 hingga 2020 menunjukkan tren yang baik iaitu mempunyai peningkatan yang signifikan untuk setiap tahun, sepertimana ditunjukkan di dalam **Rajah 9.7**. Walau bagaimanapun pada tahun 2020, akibat penularan pandemik COVID-19 di Malaysia menyebabkan Perintah Kawalan Pergerakan (PKP) dikuatkuasakan. Ini menyebabkan kebanyakan kursus tidak dapat dijalankan dan bilangan peserta juga terpaksa dikurangkan selaras dengan Prosedur Operasi Standard oleh Majlis Keselamatan Negara (MKN).

Throughout 2020, a total of 8 types of industrial certification courses were conducted with a total of 88 series of courses, as shown in **Figure 9.5**.

Figure 9.6 shows that as at 31st December 2020, EiMAS has successfully certified a total of 7,580 industry personnel in Malaysia as Competent Persons in accordance with the requirements of Section 49A of the Environmental Quality Act, 1974.

The attendance of industry personnel as participants for industry certification courses in the last 5 years from 2016 to 2020, shows a remarkable trend with a significant increase each year, as shown in **Figure 9.7**. However, in 2020 with the COVID-19 pandemic, where Malaysia has imposed the Movement Control Order (MCO), most training activities were cancelled and the number of participants reduced in accordance with the Standard Operating Procedure (SOP) of the National Security Council.



Rajah 9.7
Figure 9.7

Bilangan Kehadiran Peserta Kursus Pegawai Industri Bagi 5 Tahun Terkini (2016 – 2020)
Attendance of Industry Personnel as Course Participants for the Last 5 Years (2016 – 2020)

KURSUS ASAS PEGAWAI BAHARU JABATAN ALAM SEKITAR TAHUN 2020.

Bagi tahun 2020, Institut Alam Sekitar Malaysia (EiMAS) telah menganjurkan dua (2) Program Kursus Asas Pegawai Baharu Jabatan Alam Sekitar (JAS) yang telah diadakan pada 13 Januari sehingga 7 Februari 2020 untuk Penolong Pegawai Kawalan Alam Sekitar dan pada 21 September sehingga 2 Oktober 2020 untuk Pegawai Kawalan Alam Sekitar.

BASIC COURSE FOR NEW OFFICERS OF THE DEPARTMENT OF ENVIRONMENT 2020.

For the year 2020, the Environment Institute of Malaysia (EiMAS) organized two (2) Basic Courses for New Officers of the Department of Environment (DOE) which were held on 13 January until 7 February 2020 for Assistant Environmental Control Officers and on 21 September until 2 October 2020 for the Environmental Control Officers.



Peserta Kursus Asas Penolong Pegawai Kawalan Alam Sekitar Baharu bersama Pengarah EiMAS pada 15 Januari 2020

Participants of New Assistant Environmental Control Officers Basic Course with the Director of EiMAS Director on 15 January 2020



Peserta Kursus Dibekalkan dengan Buku Akta Kualiti Alam Sekeliling 1974
Course Participants are Provided with the Environmental Quality Act 1974 Book



Peserta Kursus Asas Pegawai Alam Sekitar Baharu bersama Pengarah EiMAS pada 2 Oktober 2020
Participants of New Environmental Control Officer Basic Course with the Director of EiMAS
on 2nd October 2020

Seramai 55 orang pegawai baru JAS terlibat dalam kedua-dua kursus asas tersebut yang merupakan pegawai lantikan baharu tahun 2020/2021 di JAS.

A total of 55 new DOE officers were involved in both the basic courses for newly appointed officers in 2020/2021 in the DOE.

Pelbagai aktiviti bagi telah dijalankan bagi mencapai objektif kursus tersebut melalui pelbagai kaedah pembelajaran secara holistik termasuklah ceramah, pembelajaran di lapangan dan sesi lawatan luar.

Various activities were carried out to achieve the objectives of the course through various holistic learning methods including talks, field learning and outdoor sessions.

PERPINDAHAN PUSAT LATIHAN AMALI SISTEM KAWALAN PENCEMARAN UDARA KE INSTITUT ALAM SEKITAR MALAYSIA (EiMAS)

RELOCATION OF THE PRACTICAL TRAINING CENTRE FOR AIR POLLUTION CONTROL SYSTEM TO THE INSTITUTE OF ENVIRONMENT MALAYSIA (EiMAS)

Bermula pada 15 Januari 2020, Pusat Latihan Amali Sistem Kawalan Pencemaran Udara, Bandar Baru Bangi telah ditutup sepenuhnya bagi membolehkan proses pemindahan Pusat tersebut ke premis Institut Alam Sekitar Malaysia (EiMAS). Perpindahan ini mengambil tempoh masa selama 6 bulan. Dengan adanya Pusat Latihan Amali tersebut di EiMAS dapat membantu melancarkan dan memudahkan lagi pelaksanaan kursus dan Latihan berkaitan Kawalan Pencemaran Udara.

Beginning 15 January 2020, the Air Pollution Control System Practical Training Centre, at Bandar Baru Bangi was fully closed to enable the Centre's transfer process to the Malaysian Institute of Environment (EiMAS) premise. This transfer process took about 6 months. This availability of the Practical Training Centre in EiMAS will assist and facilitate the courses and trainings related to Air Pollution Control.



Lawatan Tapak Pembinaan Pusat Latihan Amali Sistem Kawalan Pencemaran Udara oleh YBrs. Dr. Norhazni bt Mat Sari, Timbalan Ketua Pengarah (Pembangunan) dan Puan Siti Zaleha bt Ibrahim, S.M.S., Pengarah Institut Alam Sekitar Malaysia (EiMAS) pada 2 Februari 2020

Site Visit to the Practical Training Centre for Air Pollution Control System by Dr. Norhazni bt Mat Sari, Deputy Director General (Development) and Ms. Siti Zaleha Binti Ibrahim, S.M.S., Director of EiMAS



YB Dato' Tuan Ibrahim bin Tuan Man, Menteri Alam Sekitar dan Air (KASA), YBhg. Dato' Seri Ir. Dr. Zaini bin Ujang, Ketua Setiausaha KASA Melawat Pusat Latihan Amali Sistem Kawalan Pencemaran Udara dengan diiringi oleh YBrs. Dr. Norhazni bt Mat Sari, Timbalan Ketua Pengarah (Pembangunan) dan Puan Siti Zaleha bt Ibrahim, S.M.S., Pengarah Institut Alam Sekitar Malaysia (EiMAS)

YB Dato' Tuan Ibrahim bin Tuan Man, Minister of Ministry of Environment and Water, YBhg. Dato' Seri Ir. Dr. Zaini bin Ujang, Secretary General of KASA Visit the Practical Training Centre for Air Pollution Control System Accompanied by Dr. Norhazni bt Mat Sari, Deputy Director General (Development) and Ms. Siti Zaleha bt Ibrahim, S.M.S., Director of EiMAS

KURSUS PERSIJILAN PROFESIONAL ALAM SEKITAR DALAM PEMBANGUNAN DAN OPERASI PROJEK EIA (CePEOEIA)

Pada tahun 2020, bagi memenuhi keperluan Seksyen 49A, Akta Kualiti Alam Sekeliling, 1974 dan Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015, EiMAS telah menjalankan Kursus CePEOEIA kepada **37** orang peserta pada 28 September - 2 Oktober 2020 di Hotel Bangi Resort, Bandar Baru Bangi. Kursus ini merupakan kursus yang wajib dihadiri oleh Environmental Officer (EO) bagi projek EIA sebelum diiktiraf sebagai Orang Yang Berwibawa oleh JAS.

COURSE ON CERTIFIED PROFESSIONAL ENVIRONMENTAL OFFICER IN EIA PROJECT DEVELOPMENT AND OPERATION (CePEOEIA)

In 2020, to fulfil the requirements under Section 49A Environmental Quality Act 1974 and Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, EiMAS conducted a CePEOEIA Course for **37** participants from 28 September – 2 October 2020 in Bangi Resort Hotel, Bandar Baru Bangi. Attendance was compulsory for Environmental Officers (EO) in the EIA Project before being recognised as Competent Persons by DOE.



Pengarah EiMAS Bersama Penceramah dan Peserta Kursus CePEOEIA di Hotel Bangi Resort pada 28 September 2020

Director of EiMAS with Speakers and Course Participants CePEOEIA in Bangi Resort Hotel



Perbincangan Peserta Kursus CePEOEIA semasa Sesi Tugas dalam Kumpulan
Discussion among CePEOEIA Participants during Group Assignment Sessions



Peserta Kursus CePEOEIA Meninjau Kawasan Latihan Amali bagi Land Disturbing Pollution Prevention and Mitigation Measures (LDP²M²)

Course Participants of CePEOEIA Visit the Practical Training Area for Land Disturbing Pollution Prevention and Mitigation Measures (LDP²M²)

PERSIDANGAN EiMAS DENGAN ORANG YANG BERWIBAWA (OYB) INDUSTRI DAN SESI EiMAS BERTEMU PELANGGAN

Institut Alam Sekitar Malaysia (EiMAS) julung-julung kalinya telah menganjurkan Persidangan EiMAS dengan Orang Yang Berwibawa (OYB) Industri dan Sesi EiMAS Bertemu Pelanggan Sesi 1/2020, pada Julai 2020. Seramai 60 orang peserta yang terdiri daripada OYB Industri dan Penyedia Latihan EiMAS telah hadir untuk bersama-sama berkongsi idea dan pandangan bagi memantapkan lagi program latihan EiMAS dalam pengurusan alam sekitar.

Antara objektif utama program ini diadakan ialah untuk:

- 1) Memberi peluang kepada OYB dan pelanggan EiMAS untuk terus berkomunikasi dengan EiMAS;

EiMAS WITH INDUSTRY COMPETENT PERSONS (CP) CONFERENCE AND EiMAS CUSTOMER SERVICE SESSIONS

The Environment Institute of Malaysia (EiMAS) organized the first EiMAS Conference with Industry Competent Persons (CP) and EiMAS Customer Service Sessions 1/2020, on July 2020. A total of 60 participants comprising CP Industry and EiMAS Training Providers were present to share their ideas and views to further strengthen EiMAS' training programmes in environmental management.

Main objectives of this programme were to:

- 1) Provide opportunities for CP and EiMAS customers to continue communications with EiMAS;

- 2) Memberi ruang dan peluang kepada pelanggan EiMAS mengetahui maklumat terkini tentang pematuhan dan pengurusan alam sekitar serta program latihan yang disediakan;
 - 3) Memberikan khidmat nasihat, berkongsi pandangan dan cadangan secara dua hala dengan OYB; dan
 - 4) Mengeratkan hubungan antara EiMAS dan OYB.
- 2) Provide space and opportunities for EiMAS customers to stay up-to-date on environmental compliance and management as well as training programmes provided;
 - 3) Provide advice, share opinions and suggestions in two-way communication with CP; and
 - 4) To strengthen the relationship between EiMAS and CP.



Persidangan EiMAS dengan OYB Industri dan Sesi EiMAS Bertemu Pelanggan pada 16 Julai 2020
EiMAS Conference with Industry Competent Persons on 16 July 2020



Pn. Noor Baizzura Azizan bt Mohamad Ali Azizan, Ketua Pusat Kompetensi dan Pensijilan Industri, Pn. Siti Zaleha bt Ibrahim, S.M.S., Pengarah EiMAS serta En. Zaidi bin Mohamed, Ketua Pusat Bahan Berbahaya semasa Sesi Dialog bersama Peserta Persidangan EiMAS dengan OYB Industri dan Sesi EiMAS Bertemu Pelanggan

Pn. Noor Baizzura Azizan bt Mohamad Ali Azizan, Head of Competency and Certification Centre, Ms. Siti Zaleha bt Ibrahim, S.M.S., Director of EiMAS and Mr. Zaidi bin Mohamed, Head of Hazardous Materials Centre during a Dialogue Session with the Participants of EiMAS and Industry Competence Persons Conference

LAWATAN KERJA YB MENTERI ALAM SEKITAR DAN AIR KE EiMAS

YB Dato' Sri Tuan Ibrahim Tuan Man, Menteri Alam Sekitar dan Air (KASA) telah mengadakan lawatan kerja ke Institut Latihan Alam Sekitar Malaysia (EiMAS). Ketua Setiausaha, Timbalan Ketua Setiausaha (Alam Sekitar) KASA dan Ketua Pengarah, Timbalan Ketua Pengarah (Pembangunan) JAS juga turut serta dalam lawatan kerja tersebut. Taklimat telah disampaikan oleh Puan Siti Zaleha bt Ibrahim, S.M.S., Pengarah EiMAS. YB Menteri juga telah dibawa melawat ke Pusat Latihan Amali Kawalan Pencemaran Udara, Perpustakaan EiMAS, Dewan Kuliah, ICT Edu Centre, Asrama dan Auditorium EiMAS.

OFFICIAL VISIT BY MINISTER OF ENVIRONMENT AND WATER TO EiMAS

YB Dato' Sri Tuan Ibrahim Tuan Man, Minister of Environment and Water (KASA) visited the Environment Institute of Malaysia (EiMAS). The Secretary General, Deputy Secretary General (Environment), Director General, Deputy Director General (Development) of DOE also participated in the official visit. The briefing was by Puan Siti Zaleha bt Ibrahim, S.M.S., EiMAS Director. The Minister was also taken to visit the Air Pollution Control Practical Training Centre, EiMAS Library, Lecture Hall, ICT Edu Centre, EiMAS Dormitory and Auditorium.



Lawatan Kerja YB Menteri Alam Sekitar dan Air (KASA) ke EiMAS pada 22 Disember 2020
Official Visit by Minister of the Ministry of Environment and Water to EiMAS
 on 22 December 2020



YB Menteri dan Ketua Setiausaha KASA Melawat Perpustakaan dengan Diiringi oleh Puan Pengarah EiMAS
The Minister and Secretary General of KASA Visit the Library Accompanied by Director of EiMAS



Bengkel Pengukuhan (Penyediaan FTR) Bagi Kursus Certified Environmental Professional In Water Pollution Control : 9 - 13 Mac 2020 di EiMAS.

Enhancement Workshop (FTR Preparation) for Certified Environmental Professionals In Water Pollution Control: 9 -13 March at EiMAS



Kursus Kompetensi Protokol Persampelan, Pengawetan dan Pengendalian Sampel Efluen Bagi Tujuan Penguatkuasaan Untuk Penolong Pegawai Kawalan Alam Sekitar Sekitar Lantikan Baru Tahun 2020: Bahagian I (Sesi Atas Talian): 20-22 Julai 2020 di EiMAS

Competency Course On Effluent Sampling, Preservation and Handling Protocol For Enforcement for New Assistant Environmental Control Officers in 2020: Part I (Online Session): 20 -22 July 2020 at EiMAS



Bengkel dan Mesyuarat Penyediaan Modul Kursus Best Management Practices (BMPs) for Scheduled Waste pada 25-26 Ogos yang Dihadiri oleh Pegawai JAS Ibu Pejabat dari Bahagian Bahan Berbahaya, Pegawai Geocycle Environmental Services Sdn. Bhd. dan Pegawai EiMAS dari Pusat Bahan Berbahaya.

Workshop and Meeting on Preparation of Course Module 'Best Management Practices (BMPs) on 25-26 August Attended by DOE Headquarters Officers from Hazardous Substances Division, Geocycle Environmental Services Sdn. Bhd. and EiMAS Officers from the Hazardous Substances Center.



Kursus Kompetensi Protokol Persampelan, Pengawetan dan Pengendalian Sampel Efluen Bagi Tujuan Penguatkuasaan Untuk Penolong Pegawai Kawalan Alam Sekitar Sekitar Lantikan Baru Tahun 2020: Bahagian II (Sesi Hands-On): 8-9 September 2020 di EiMAS

Competency Course in Effluent Sampling, Preservation and Handling Protocol For Enforcement for the new intake Environmental Assistant Officers in 2020: Part II (Hands-On Session): 8 -9 September 2020 at EiMAS



Kursus Kompetensi Persampelan Buangan Terjadual pada 7-11 September 2020 di EiMAS. Peserta Kursus Sedang Menjalani Ujian Kompetensi Persampelan Buangan Terjadual.

Competency Course on Scheduled Waste Sampling from 7-11 September 2020 at EiMAS. Participants Underwent Scheduled Waste Sampling Test



Puan Fenny Wong Nyuk Yin dari Bahagian Penguatkuasaan JAS Ibu Pejabat Sedang Menerangkan berkaitan Basal Konvensyen dalam Kursus Certified Environmental Professional in Scheduled Wastes Inspection (CePSWI) pada 5-9 Oktober 2020 di EiMAS

Madam Fenny Wong Nyuk Yin from Enforcement Division DOE Head Quarters Explaining Basel Convention Requirements in the Course of Certified Environmental Professional in Scheduled Wastes Inspection (CePSWI) on 5- 9 Oktober 2020 at EiMAS.



Latihan Sistem National Registry of Certified Environmental Professional (NRCEP) 2020 untuk Penyedia Latihan dan Pegawai Tadbir Negeri pada 28-29 September 2020 di Hotel Grand Lexis, Port Dickson.

Hands-On Training on National Registry of Certified Environmental Professional (NRCEP) System 2020 for Training Providers and State Administrators on 28-29 September 2020 in Grand Lexis Hotel, Port Dickson.

Bab 10

Chapter 10



PERKHIDMATAN PERPUSTAKAAN **LIBRARY SERVICES**

PERKHIDMATAN PERPUSTAKAAN LIBRARY SERVICES

LAPORAN TAHUNAN PERPUSTAKAAN JABATAN ALAM SEKITAR 2020 DEPARTMENT OF ENVIRONMENT LIBRARY ANNUAL REPORT 2020

Perpustakaan JAS telah melaksanakan beberapa program dan aktiviti sepanjang Tahun 2020 termasuklah penyediaan perkhidmatan kepada pengguna secara offline dan online.

The DOE Library implemented several offline and online programmes and activities throughout 2020 for the benefit of all users.

PENGGUNA

Sebanyak 200 rekod kemasukan pengguna ke Perpustakaan JAS telah dicatatkan pada Tahun 2020 meliputi:

- 156 pengguna adalah dari luar seperti Pelajar IPT, Pensyarah, Perunding EIA, orang awam
- 44 pengguna terdiri dari warga JAS.

USERS

A total of 200 user entries into the DOE Library were recorded in 2020 and this comprised :

- 156 external users such as IPT Students, Lecturers, EIA Consultants, the general public
- 44 users consisting of DOE staff.

PINJAMAN

Sebanyak 120 buah bahan rujukan telah dipinjam oleh warga JAS yang melibatkan buku berkaitan dengan:

- Akta
- Peraturan
- Undang-undang
- Buku ilmiah berkenaan alam sekitar.

LOANS

A total of 120 reference materials were borrowed by DOE staff related to:

- Acts
- Regulations
- Laws
- Scientific books on the environment.

PINJAMAN ANTARA PERPUSTAKAAN

Perpustakaan JAS juga menyediakan perkhidmatan Pinjaman Antara Perpustakaan dan ianya dilakukan oleh Pegawai JAS bagi meminjam buku diluar perpustakaan JAS. Keseluruhan bahan bacaan yang dipinjam adalah sebanyak 25 naskah dengan melibatkan 2 buah perpustakaan iaitu:

- Perpustakaan Kementerian Tenaga dan Sumber Asli
- Perpustakaan Jabatan Perdana Menteri

LOANS BETWEEN LIBRARIES

The DOE Library also provides Interlibrary Loan services for DOE Officers. The reading material borrowed totalled 25 copies from two (2) libraries:

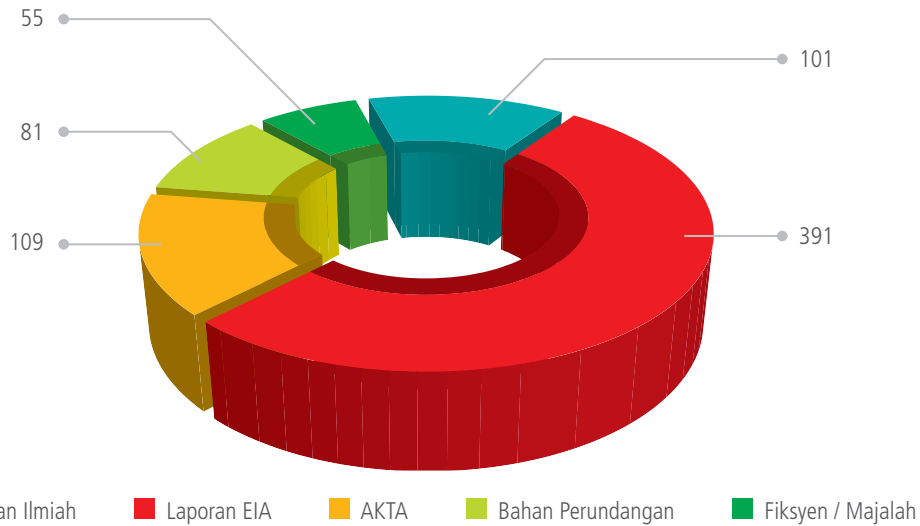
- Ministry of Energy and Natural Resources Library
- Prime Minister's Department Library

PERKHIDMATAN RUJUKAN

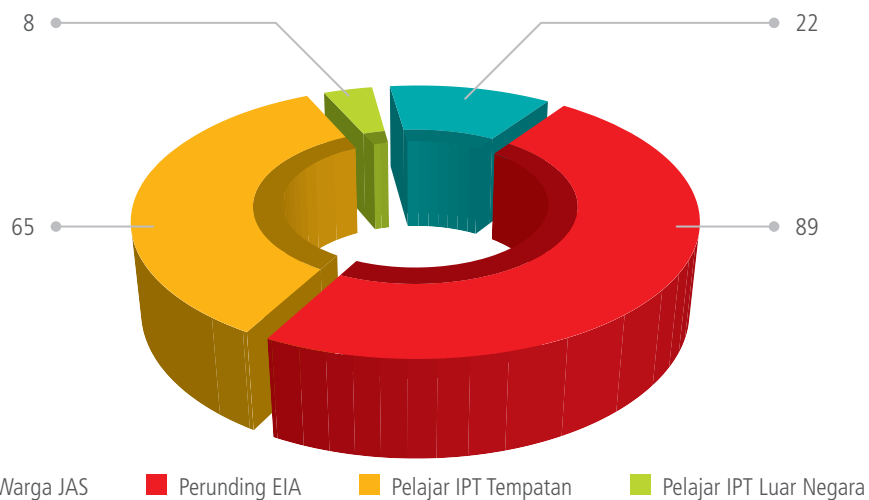
Berdasarkan rekod pada Tahun 2020, pengguna Perpustakaan JAS telah membuat rujukan sebanyak 250 bahan dengan melibatkan 200 pengguna secara fizikal. Perpustakaan menerima sebanyak 180 Pertanyaan rujukan ini adalah melalui email, telefon dan perkhidmatan kaunter yang melibatkan bahan bacaan tertentu seperti EIA, Akta, buku panduan dan juga perkhidmatan online.

REFERENCE SERVICES

In 2020, 250 materials were referred to by 200 users. The library received 180 reference inquiries via email, telephone and counter services including certain reading materials such as EIAs, Acts, handbooks, as well as online services.



Rajah 10.1
Figure 10.1
Jumlah Bahan Dirujuk
Number of Materials Referred



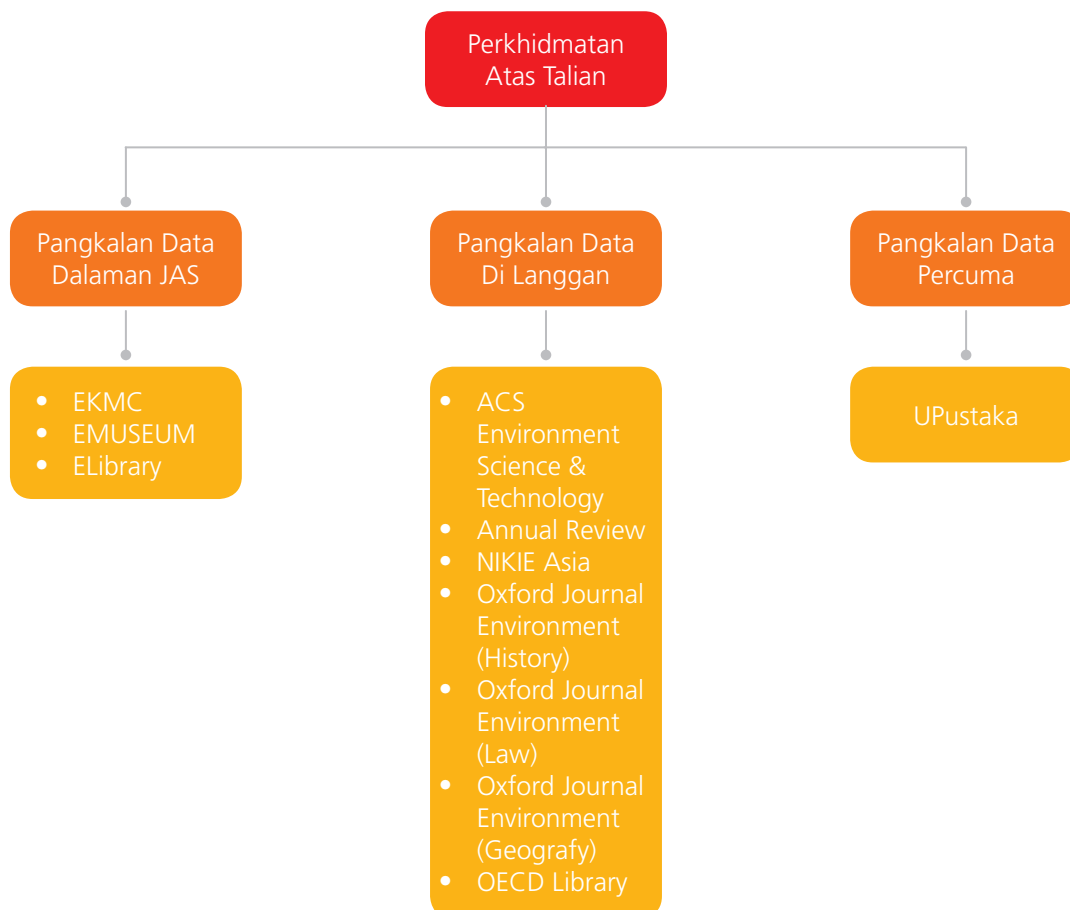
Rajah 10.2
Figure 10.2
Jumlah Pengguna Membuat Rujukan
Number of Users Making References

PERKHIDMATAN ATAS TALIAN (ONLINE DATABASE)

Berikut merupakan Perkhidmatan Atas Talian (Online Database) yang ditawarkan oleh Perpustakaan kepada warga JAS.

ONLINE SERVICES (ONLINE DATABASE)

The following are the Online Services (Online Database) offered by the Library to DOE staff.



Perkhidmatan atas talian merupakan pilihan utama bagi pengguna Perpustakaan JAS dalam mengakses maklumat. Statistik 2020 menunjukkan jumlah pengguna bagi perkhidmatan atas talian (online) ini adalah :

- Enviro Knowledge Management Centre (EKMC) - 270,864
- Enviro Museum (EMUSEUM) – 61,654

Sehingga hari ini EKMC telah mencapai tahap akses paling tinggi sejak 2014 iaitu 2.9 juta pengguna berbanding dengan EMUSEUM dan ELIBRARY. Usaha berterusan telah dibuat bagi menambah lagi koleksi bahan rujukan digital di EKMC bagi membantu pengguna memenuhi keperluan maklumat mereka.

Dengan adanya perkhidmatan ini, ia membolehkan warga JAS mengakses pelbagai maklumat seperti e-Journal, e-book, e-akhbar, e-majalah dan e-artikel

Online services are the main channel for DOE Library users to access information. The 2020 statistics show that the users for this online service are from :

- Enviro Knowledge Management Centre (EKMC) - 270,864
- Enviro Museum (EMUSEUM) - 61,654

EKMC has achieved the highest level of access since 2014 which is 2.9 million users compared to EMUSEUM and ELIBRARY. Continuous efforts have been made to add more digital reference materials at EKMC to help users meet their information needs.

With this service, DOE staff has access to various sources of information such as e-Journals, e-books, e-newspapers, e-magazines and e-articles.



Sehingga 31 Disember 2020, jumlah kandungan maklumat digital Perpustakaan JAS adalah seperti berikut :

- EKMC - 19,160
- EMUSEUM - 49,137
- EJOURNAL - 9
- PANGKALAN DATA PERCUMA- 2

Semua maklumat ini boleh diakses melalui atas talian sama ada dalam pejabat JAS mahupun di luar JAS.

As at 31 December 2020, the total digital information content of the DOE Library is as follows:

- EKMC - 19,160
- EMUSEUM - 49,137
- EJOURNAL - 9
- FREE DATABASE- 2

All this information can be accessed online either within the DOE office or externally too .

LAWATAN

Perpustakaan Jabatan Alam Sekitar telah menerima lawatan beberapa Jabatan iaitu:

- Mahkamah Persekutuan
- Majlis Keselamatan Negara

Lawatan mereka bertujuan untuk mempelajari pengurusan perpustakaan dan pengurusan maklumat secara atas talian yang dibangunkan oleh Perpustakaan JAS iaitu

- EKMC
- EMUSEUM
- ELIBRARY

AKTIVITI PERPUSTAKAAN

Pada tahun 2020, sebanyak 14 aktiviti telah dilaksanakan oleh Perpustakaan JAS yang melibatkan warga JAS iaitu:

- Bengkel Infografik
- Bengkel Literasi Maklumat Digital
- Bengkel EKMC dan EMUSEUM
- Bengkel Open Athens
- Pertandingan Fotografi sempena Program Jom Baca 10 Minit
- Program World# Quran Hour
- Sambutan Bulan Kemerdekaan- Trivia Kemerdekaan
- Library 2u@JAS (secara maya)
- Enviro Knowledge Sharing – Ejournal dan Ebook
- Lawatan Penandaarasan dan Bengkel Emuseum dan EKMC – Petronas Resources Center
- Lawatan Penandaarasan ke Perpustakaan Kuala Lumpur
- Hebahan Perkhidmatan Perpustakaan
- Khidmat Nasihat kepada Perpustakaan Majlis Keselamatan Negeran dan Palace of Justice
- Anugerah Perpustakaan JAS

VISIT

Several Government Departments visited the DOE Library, such as:

- The Palace of Justice
- The National Security Council

The aim of these visits was to learn about the management of the library as well as the online information management developed by the DOE Library including:

- EKMC
- EMUSEUM
- ELIBRARY

LIBRARY ACTIVITIES

In 2020, a total of 14 activities were implemented by the DOE Library and participated by DOE staff. These activities were as follows:

- Infographic Workshop
- Digital Information Literacy Workshop
- EKMC and EMUSEUM Workshop
- Athens Open Workshop
- Photography Competition in conjunction with the Read 10 Minutes Program
- World# Quran Hour Program
- Independence Month Celebration- Independence Trivia
- Library 2u@JAS (virtually)
- Enviro Knowledge Sharing - Journals and Ebooks
- Benchmarking Visit and Emuseum and EKMC Workshop - Petronas Resources Centre
- Benchmarking Visit to Kuala Lumpur Library
- Library Service Announcement
- Advisory Services to the National Security Council Library and the Palace of Justice
- DOE Library Award

ANTARA AKTIVITI PERPUSTAKAAN JAS SEPANJANG TAHUN 2020 ACTIVITIES OF THE DOE LIBRARY IN 2020

BENGKEL DIGITAL LITERASI MAKLUMAT / DIGITAL INFORMATION LITERACY WORKSHOP

Tempat / Venue: Bilik ICT, Jabatan Alam Sekitar / ICT Room, Department of Environment

Tarikh / Date: 13 Februari 2020 / 13 February 2020

Bilangan Penyertaan / Number of Entries: 30 orang / 30 participants
(Penyertaan warga JAS HQ / Participation of DOE HQ staff)



BENGKEL INFOGRAFIK / INFOGRAPHIC WORKSHOP

Tempat / Venue: Bilik ICT, Jabatan Alam Sekitar / ICT Room, Department of Environment

Tarikh / Date: 15-16 Januari 2020 / 15-16 January 2020

Bilangan Penyertaan / Number of Entries: 60 orang / 60 participants
(Penyertaan warga JAS HQ / Participation of DOE HQ staff)



BENGKEL EKMC DAN EMUSEUM / EKMC AND EMUSEUM WORKSHOP

Tempat / Venue: Aplikasi Zoom Meeting / Zoom Meeting Application

Tarikh / Date: 6 April 2020 / 6 April 2020

Bilangan Penyertaan / Number of Entries: 30 orang / 30 participants
(Penyertaan warga JAS HQ / Participation of DOE HQ staff)





Lawatan ke Petronas Resource Centre
Visit to Petronas Resource Center



Lawatan ke Petronas Resource Centre
Visit to Petronas Resource Center



Lawatan ke Perpustakaan Kuala Lumpur
Visit to Kuala Lumpur Library

KUIZ MALAYSIA PRIHATIN : SEMPERNA SAMBUTAN HARI MALAYSIA 2020

TAHUN 2020

HEBAHAN MAKLUMAT 19,160

PENGUNTA 153,454

140 PENYERTAAN

PEMENANG PERTAMA
Mohamad Bahar bin Mohamad Fahmi
Bahagian Komunikasi Strategik
Malaysia Prihatin tema kebangsaan
Bangkitkan semangat setiap insan.
Harga nilai erti kemerdekaan
Jangan rosakkan semangat
perseorangan.

PEMENANG KEDUA
Mahd Khasari bin Zainal @ Abu Mansor
JAS Pulau Pinang
Malaysia Prihatin tema dipilih,
Untuk Sambutan Hari Merdeka,
Rakyat Malaysia yakin dan bakti,
Perubahan keharmonian dan tidak terleka

PEMENANG KETIGA
Amir Hamzah bin Musa
JAS W.P. Labuan
Menanam bunga di hujung halaman,
Bunga ditanam seri cemerlang,
Malaysia Prihatin jadikan simalan,
Meyakini semangat Negara
gemilang

<https://enviro2.doe.gov.my/ekmc/>

ENVIRO KNOWLEDGE MANAGEMENT CENTRE

Pangkalan Data yang mempunyai maklumat berkaitan Jabatan Alam Sekitar seperti - Laporan Kualiti Alam Sekeliling, Laporan Tahunan, Infografi, Pustaka, Gea Panduan dan pelbagai berita menarik.

70% Malaysia
15% United States of America
8% United Kingdom
5% Australia
2% Other Countries

CAPAIAN PENGGUNA

ALAM SEKITAR TANGGUNGJAWAB BERSAMA (A.T.T.B.B.)

TRIVIA KEMERDEKAAN

PERPUSTAKAAN JABATAN ALAM SEKITAR

TRIVIA KEMERDEKAAN

ALAM SEKITAR TANGGUNGJAWAB BERSAMA

ENVIRO MUSEUM

Emuseum merupakan resipitori hebahan maklumat bergambar segala aktiviti Jabatan Alam Sekitar

PENGUNTA 51,454

KANDUNGAN 49,137

5% Malaysia
95% Other Countries

<https://enviro2.doe.gov.my/museum>

ALAM SEKITAR TANGGUNGJAWAB BERSAMA (A.T.T.B.B.)

Hebatnya Bangun Awal Pagi

Alasan mengapa bangun awal sangat penting?

Muhammad Suhadi

BERPAGI PAGI MENCARI REZEKI PASTI ADA BERKAT DAN KEJAYAAN

#jombocabuku

ALAM SEKITAR TANGGUNGJAWAB BERSAMA (A.T.T.B.B.)

PERINTAH KAWALAN PERGERAKAN (MOVEMENT CONTROL ORDER)

18th March - 14th April 2020

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Perpustakaan JAS

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NEW BOOK IN THE HOUSE

TAJUK BUKU: ECO-SHIFT: HOLISTIC TRANSFORMATION TOWARDS ENVIRONMENTAL SUSTAINABILITY

PENULIS: SAANI USMAN

PERSEKUTUAN PENERBITAN DAN BUKU MALAYSIA (P.P.D.B.M.)

ISBN: 978-9959-0-0000-0

CLASSIFICATION: 630.001.0000.0000.0000

LOCATION: PERPUSTAKAAN JABATAN ALAM SEKITAR

ECO-SHIFT: HOLISTIC TRANSFORMATION TOWARDS ENVIRONMENTAL SUSTAINABILITY

BY PUSAT BUKU DAN BUKU MALAYSIA

Eco-shift means making radical changes that involve transformation in the way of thinking, decision-making, in a community or corporation, eco-shift means holistic transformation of an entity in its philosophy, policies, strategies, governance, decision-making, financial, technical systems, standard operating procedures and practices for environmental sustainability. Eco-shift begins with a state of initial and decision framework that could lead to major changes in national policies, corporate strategies, personal lifestyle and cultural transformation.

COVID 19

Elak Keluar Ke Tempat AWAM Tanpa Sebab

Apa Yang Anda Boleh Lakukan adalah Tambah ILMU Berkaitan Alam Sekitar di EKMC

Layari <https://enviro2.doe.gov.my/ekmc/>

#hapusCOVID19

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Jom Baca Bersama

جوم باچ برسام

23 April 2020 11.00 pagi
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Sempena HARI BUKU & HAK CIPTA SEDUNIA

#malysiamembaca #dudukrumah #bacadirumah

ALAM SEKITAR TANGGUNGJAWAB BERSAMA (A.T.T.B.B.)

JABATAN ALAM SEKITAR

Hebahan dan Pertandingan Announcement and Competition