KEMENTERIAN SUMBER ASLI
DAN KELESTARIAN ALAM
JABATAN ALAM SEKITAR

LAPORAN TAHUNAN

Jabatan Alam Sekitar

ANNUAL REPORT | DEPARTMENT OF ENVIRONMENT

2023



ALAM SEKITAR TANGGUNGJAWAB BERSAMA

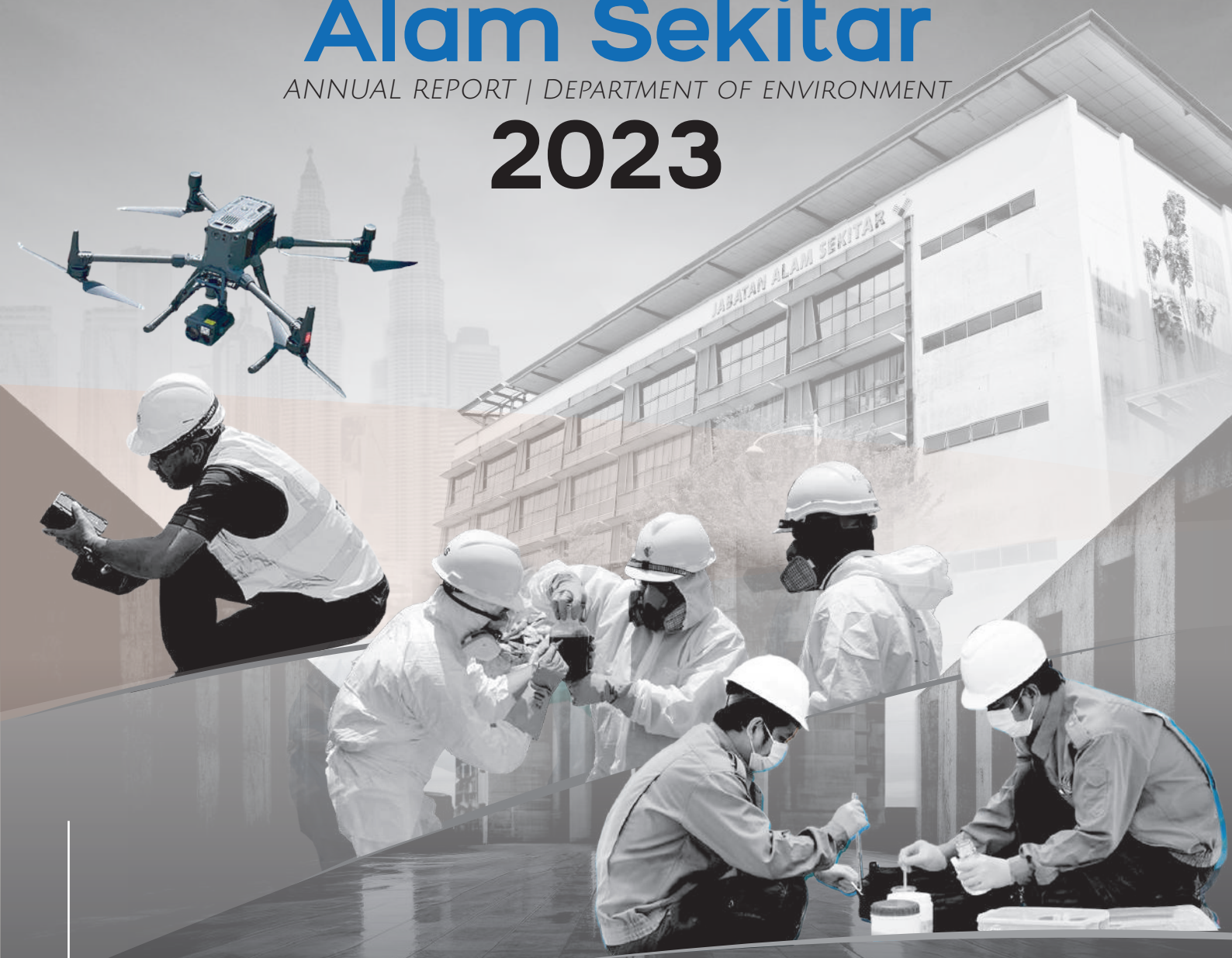
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Department of Environment, Malaysia
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Printed on Woodfree Paper

ISSN 2636-9842

Designed and Printed by:
Visual Print Sdn. Bhd.
No. 47, 47-1, Jalan Damai Raya 1,
Alam Damai, Cheras
56000 Kuala Lumpur




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Prakata / Preface

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



Jabatan Alam Sekitar dengan sukacitanya membentangkan Laporan Tahunan 2023 yang merangkumi pencapaian dan pelaksanaan program pada tahun tersebut. Selari dengan misi Jabatan ini, "Memastikan Pembangunan Lestari di Dalam Proses Memajukan Negara" dan visi "Pemuliharaan Alam Sekitar Untuk Kesejahteraan Rakyat", JAS meneruskan mandat yang diberi untuk mentadbir Akta Kualiti Alam Sekeliling, 1974.

Penekanan yang berterusan diberikan dalam usaha mencegah dan mengawal pencemaran air, pencemaran udara dan pengurusan buangan terjadual. Pemeriksaan ke atas punca-punca pencemaran dan tindakan undang-undang telah diambil ke atas pihak-pihak yang melakukan kesalahan.

The Department of Environment wishes to present the 2023 Annual Report which provides an account of its achievements and programme implementations in that year. In line with the department's mission "To Ensure Sustainable Development in the Process of Nation Building" and vision, "Environmental Conservation for the Wellbeing of the People", DOE continues its mandate to administer the Environmental Quality Act (EQA), 1974.

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

Sejumlah 543 laporan EIA telah diterima dan diproses oleh JAS pada tahun 2023. Daripada bilangan ini, sebanyak 487 laporan bagi aktiviti yang tertakluk di bawah Jadual Pertama, Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015, dan 56 laporan bagi aktiviti yang tertakluk di bawah Jadual Kedua perintah tersebut.

Pada tahun 2023, sejumlah 409 kesalahan di bawah Akta Kualiti Alam Sekeliling 1974 (AKAS 1974) telah didakwa di mahkamah dan telah disabitkan kesalahan dengan denda yang dikenakan berjumlah RM 6,371,00.00.

JAS terus mempromosi program kesedaran dan pendidikan alam sekitar serta penyebaran maklumat kepada pelbagai peringkat masyarakat sebagai usaha berterusan dalam membangunkan masyarakat mesra alam di negara ini.

Saya ingin mengambil kesempatan ini untuk merakamkan penghargaan kepada semua pihak yang telah memberikan sokongan dan komitmen mereka kepada JAS dalam melaksanakan tugas murni untuk alam sekitar yang sihat dan lestari serta meningkatkan kualiti kehidupan.

"Alam Sekitar, Tanggungjawab Bersama"



DATO' WAN ABDUL LATIFF BIN WAN JAFFAR
Ketua Pengarah Jabatan Alam Sekitar
Director-General, Department of Environment

A total of 543 EIA reports were received and processed by the DOE in 2023. Of these, 487 were reports of activities specified in this First Schedule of Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, and 56 reports were of activities that are subject to the Second Schedule of the order.

In 2023, a total of 409 offences under the Environmental Quality Act 1974 (EQA 1974) were prosecuted in court and were convicted with fines totalling RM 6,371,00.00.

DOE continues to promote environmental education and awareness programmes as well as disseminate information to various levels of the society towards building an environmentally friendly society in the country.

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

"Environment, Our Shared Responsibility"



BAB/
CHAPTER

01

MAKLUMAT KORPORAT
CORPORATE PROFILE

PENGENALAN / INTRODUCTION

Akta Kualiti Alam Sekeliling (AKAS) 1974, telah diwartakan pada Mac 1974 dan mula dikuatkuasakan pada 15 April 1975. Penguatkuasaan AKAS 1974 ini mewujudkan keperluan untuk satu agensi yang bertanggungjawab dalam melaksanakan tugas tersebut. Jabatan Alam Sekitar (JAS) adalah agensi kerajaan yang bertanggungjawab dalam menguruskan isu-isu berkaitan alam sekitar, melaksanakan penguatkuasaan terhadap pencemaran alam sekitar, dan merancang kawalan pencemaran seperti yang ditetapkan dalam AKAS 1974.

The Environmental Quality Act (EQA) 1974 was promulgated in March 1974 and came into force on 15 April 1975. The enforcement requirements of EQA 1974 led to the establishment of an agency responsible for carrying out these tasks. The Department of Environment (DOE) is a government agency responsible for managing environmental issues, enforcing regulations on environmental pollution sources, and planning pollution control measures under EQA 1974.

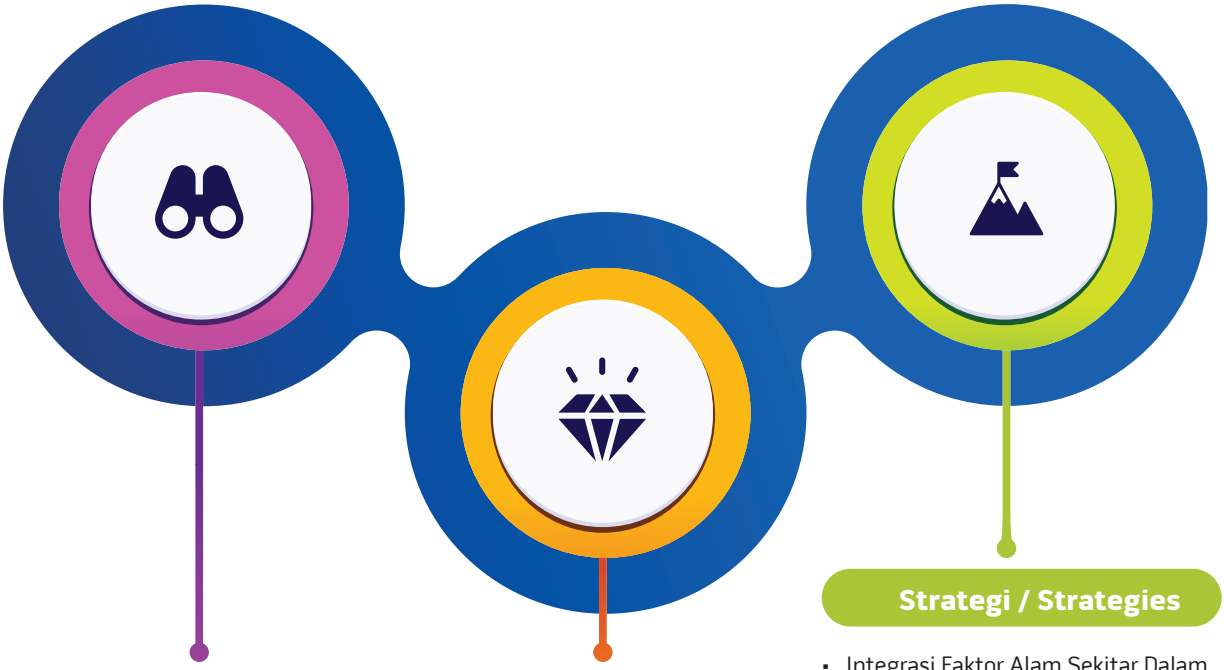
JAS pertama kali ditubuhkan sebagai Bahagian Alam Sekitar di bawah Kementerian Kerajaan Tempatan dan Alam Sekitar pada 15 April 1975. Bahagian ini kemudian dipindahkan di bawah Kementerian Sains, Teknologi dan Alam Sekitar pada Mac 1976. Demi menjaga dan memulihara alam sekitar, Bahagian Alam Sekitar dinaiktaraf menjadi Jabatan Alam Sekitar Malaysia pada 1 September 1983. Pada Mac 2004, JAS diletakkan di bawah Kementerian Sumber Asli dan Alam Sekitar. Pada tahun 2018, JAS ditempatkan di bawah naungan Kementerian Tenaga, Sains, Teknologi, Alam Sekitar dan Perubahan Iklim dan seterusnya pada Mac 2020, JAS berada di bawah Kementerian Alam Sekitar dan Air. Kini JAS bernaung di bawah Kementerian Sumber Asli dan Kelestarian Alam.

DOE was initially established as the Environmental Division under the Ministry of Local Government and Environment on 15 April 1975. The division was later placed under the Ministry of Science, Technology and Environment in March 1976. In recognition of the importance of environmental conservation and preservation, the Environmental Division was upgraded to a Department known as the Department of Environment Malaysia on 1 September 1983. In March 2004, DOE was placed under the Ministry of Natural Resources and Environment. In 2018, it was placed under the auspices of the Ministry of Energy, Science, Technology, Environment and Climate Change and subsequently in March 2020 DOE was placed under the Ministry of Environment and Water. Now, DOE is one of the agencies under the Ministry of Natural Resources and Environmental Sustainability.



Putrajaya, Malaysia

VISI, MISI & STRATEGI / VISION, MISSION & STRATEGIES



Visi / Vision

Memastikan Pembangunan Lestari di dalam Proses Memajukan Negara
To Ensure Sustainable Development in the Process of Nation Building

Misi / Mission

Pemuliharaan Alam Sekitar untuk Kesejahteraan Rakyat
Environmental Conservation for the Well-being of the People

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

LOGO JABATAN / DEPARTMENT'S LOGO

Reka bentuk ini terdiri daripada sepasang tangan dan bunga kebangsaan, iaitu Bunga Raya.

Ia juga berkonsepkan bentuk gasing serta wau (layang-layang) yang merupakan simbol kebangsaan dan menggambarkan identiti kebangsaan.

The design consists of a pair of hands and the national flower, Hibiscus.

It incorporates the shapes of Gasing (top) and Wau (kite) into the concept which symbolize national identity.



Pengertian Simbolik Logo
Symbolic Meaning of the Logo

Gasing Yang Berputar - Ia mengambarkan kedinamikan, kejujuran dan pendekatan seimbang JAS dalam perlindungan alam sekitar.

Layang-layang Yang Meninggi - Ia menggambarkan peningkatan kesedaran nasional terhadap alam sekitar.

Sepasang Tangan - Sepasang tangan melambangkan perlindungan alam sekitar dan pemuliharaan warisan semula jadi. Ia juga merupakan keupayaan JAS untuk menjaga dan untuk menguatkuasakan.

Bunga Raya - Ia adalah simbol kebangsaan yang mengambarkan semangat patriotisme dan keberanian dalam menghadapi cabaran yang mendatang.

Keseluruhan - Unsur-unsur semulajadi, termasuk akuatik daratan, dan suasana yang diwakili oleh gelombang air(akuatik), bunga raya(daratan) dan biru langit (atmosfera)

Spinning Top - It depicts the dynamism, honesty, and balanced approach of environmental protection by DOE.

Kite Flying High - It represents the increase in environmental awareness among citizens.

A Pair of Hands – It symbolizes environmental preservation and natural heritage conservation. It also represents DOE's ability to protect and conduct enforcement.

Hibiscus - It is a national symbol that depicts the spirit of patriotism and courage in facing future challenges.

Wholeness - Natural elements, including land, aquatic, and atmosphere which are represented by waves (aquatic), hibiscus (land), and blue sky (atmospheric).

Pengertian Warna Logo / Meaning of the Logo Colour

Hijau - Melambangkan persekitaran hijau, perlindungan dan pemuliharaan semula jadi terutamanya tumbuh-tumbuhan semulajadi termasuk gunung dan bukit.

Biru - Air yang bersih dan udara bersih, perlindungan dan pemuliharaan sumber air dan udara bersih termasuk lapisan ozon.

Merah - Bersemangat dan keberanian dalam menguatkuasakan undang-undang dan peraturan mengenai perlindungan alam sekitar

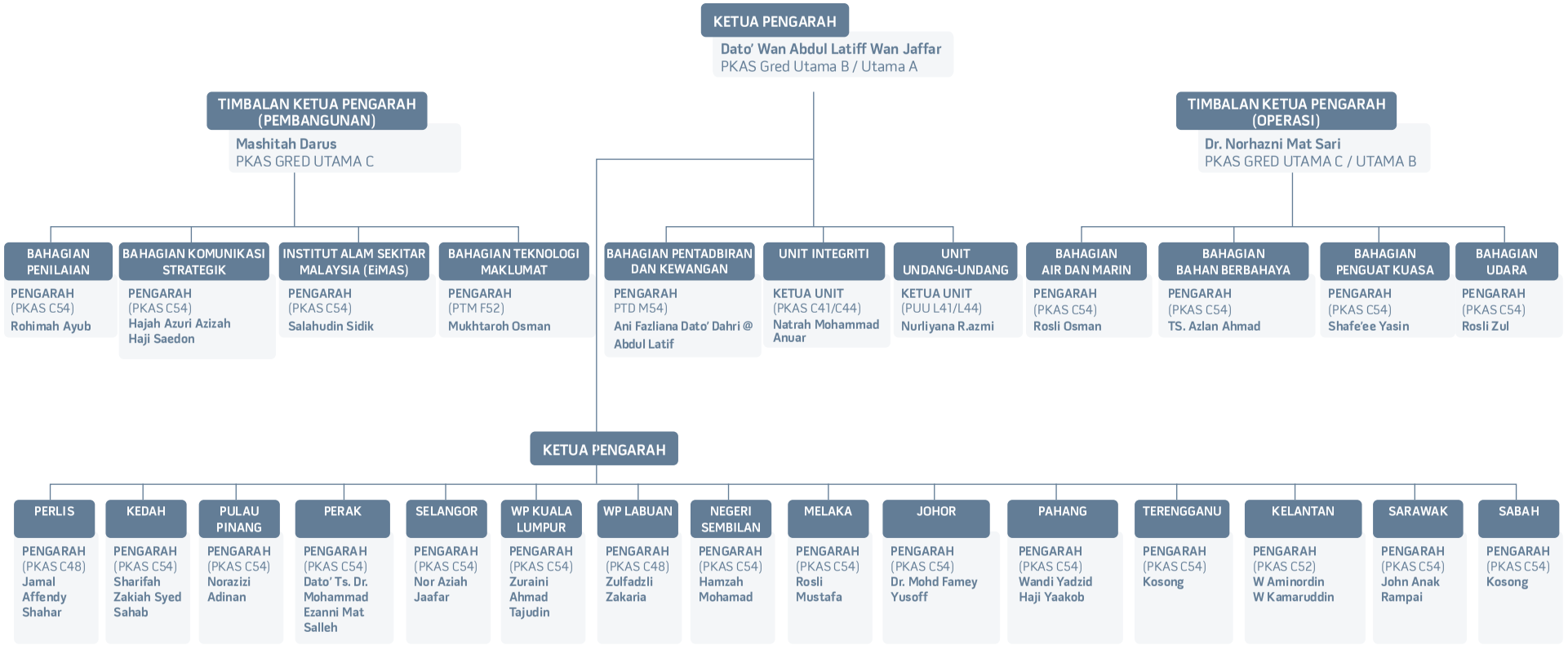


Green - Symbolizes green environment, protection, and natural conservation especially flora including mountains and hills.

Blue - Clean water and air, protection and conservation of water resources and air including the ozone layer.

Red - Enthusiasm and courage in enforcing laws and regulations for environmental protection.

CARTA ORGANISASI / ORGANIZATION CHART



PENGURUSAN SUMBER MANUSIA DAN KEWANGAN
HUMAN RESOURCES AND FINANCIAL MANAGEMENT

PERBELANJAAN PEMBANGUNAN JAS 2023

Jabatan Alam Sekitar telah menerima peruntukan Pembangunan sebanyak RM81,581,190.00 bagi Tahun 2023. Dengan peruntukan sedemikian, sebanyak 15 projek telah berjaya dilaksanakan dengan prestasi perbelanjaan sebanyak 92.91%.

PERBELANJAAN PERUNTUKAN MENGURUS 2023

Peruntukan Mengurus yang telah diluluskan bagi tahun 2023 adalah sebanyak RM115,450,600.00. Manakala, Peruntukan Dipinda pada 31 Disember 2023 adalah sebanyak RM124,123,590.00. Anggaran Peruntukan Mengurus Tahun 2023 mengikut Objek Am adalah seperti di **Jadual 1.1**.

DEVELOPMENT EXPENDITURE OF DOE IN 2023

Department of Environment received an allocation of RM81,581,190.00 for development expenditure in 2023. With that allocation, 15 projects were successfully completed, with performance expenditure at 92.91%.

OPERATING EXPENDITURE 2023

The approved Operating Expenditure for 2023 was RM 115,450,600.00. However, this was amended on 31 December 2023 to RM124,123,590.00. The estimated Operating Expenditure for 2023 is shown in **Table 1.1**.

Jadual 1.1: Perbelanjaan Peruntukan Mengurus 2023
Table 1.1: Operating Expenditure 2023

OBJEK AM (OA) GENERAL OBJECT	PERIHAL OBJEK AM DESCRIPTION OF GENERAL OBJECT	PERUNTUKAN DILULUSKAN APPROVED ALLOCATION (RM)	PERUNTUKAN DIPINDA AMENDED ALLOCATION (RM)
10000	Emolumen / Emolument	92,000,000.00	97,533,870.00
20000	Perkhidmatan & Bekalan Services and Supplies	22,150,600.00	25,374,262.00
30000	Aset / Assets	480,000.00	475,335.00
40000	Pemberian dan Kenaan Bayaran Tetap Grants and Fixed Charges	820,000.00	740,123.00
JUMLAH KESELURUHAN OVERALL TOTAL		**115,450,600.00**	**124,123,590.00**

PENGURUSAN SUMBER MANUSIA

- Jumlah perjawatan di Jabatan Alam Sekitar sehingga 31 Disember 2023 ialah 1,528 dengan pengisian sejumlah 1,410 bersamaan dengan 92.28%.
- Selaras dengan konsep pembelajaran secara berterusan, semua warga kerja JAS digalakkan mengikuti pelbagai kursus yang dianjurkan. Bagi tahun 2023, 99.4% daripada keseluruhan bilangan anggota JAS telah menjalani kursus melebihi 4 hari dengan jayanya.
- Seramai 116 pegawai Jabatan telah diraikan dalam Majlis Anugerah Perkhidmatan Cemerlang Tahun 2022 yang diadakan pada 11 Julai 2023 bertempat di Dewan Baiduri, Wisma Sumber Asli.

HUMAN RESOURCES MANAGEMENT

- The total number of positions in the Department of Environment until 31 December 2023 is 1,528 with a total of 1,410 filling equal to 92.28%.
- In line with the concept of continuous learning, all DOE employees are encouraged to attend various organised courses. For the year 2023, 99.4% of the total number of DOE members have successfully undergone courses of more than 4 days.
- A total of 116 Departmental officers were celebrated in the 2022 Excellent Service Award Ceremony held on 11 July 2023 at Dewan Baiduri, Wisma Sumber Asli.

Jadual 1.2: Maklumat Pengurusan Sumber Manusia JAS 2023
Table 1.2: DOE Human Resources Management Information 2023

PERATUSAN PENGISIAN PERJAWATAN THE PERCENTAGE OF OCCUPANCY 93.24%	PERATUSAN PEGAWAI MENGHADIRI KURSUS THE PERCENTAGE OF OFFICERS WHO ATTENDED COURSES 99.4%	ANUGERAH PERKHIDMATAN CEMERLANG (APC) / EXCELLENT SERVICE AWARDS (ESA)
Perjawatan JAS sehingga 31 Disember 2023 Occupancy as at 31st December 2023 **Jumlah perjawatan:** Positions: **1,528** **Kekosongan yang diisi:** Occupied: **1,410** **Kekosongan:** Vacancy: **118**	• 1,402 orang pegawai JAS menghadiri kursus selama 4 hari dan lebih pada tahun 2023. 1,402 DOE officers attended courses for 4 days or more in 2023.	• 116 orang pegawai JAS yang menerima APC 116 DOE officers received ESA • Majlis APC Jabatan Alam Sekitar telah diadakan pada 11 Julai 2023 The Department of Environment ESA event was held on 11 July 2023.

Jadual 1.3: Pecahan Pegawai JAS Mengikut Jantina
Table 1.3: Breakdown of DOE Officers by Gender

LELAKI MALE	WANITA FEMALE
782	628

Jadual 1.4: Pecahan Mengikut Perjawatan Pegawai
Table 1.4: Breakdown of Positions

PEGAWAI TEKNIKAL TECHNICAL OFFICERS	PEGAWAI BUKAN TEKNIKAL NON-TECHNICAL OFFICERS
1,028	382

ANUGERAH PERKHIDMATAN CEMERLANG (APC) 2022

Majlis Anugerah Perkhidmatan Cemerlang JAS Tahun 2022 telah diadakan pada 11 Julai 2023 lalu bertempat di Dewan Baiduri, Wisma Sumber Asli. Pelaksanaan Majlis APC ini adalah pertama kali dianjurkan oleh Jabatan Alam Sekitar lanjutan daripada keputusan pihak Kementerian untuk menyerahkan pelaksanaan Majlis APC untuk dilaksanakan Jabatan masing-masing

Majlis ini telah dilaksanakan secara sederhana tetapi meriah di mana seramai 116 orang pegawai JAS telah terpilih untuk menerima penganugerahan ini.

EXCELLENT SERVICE AWARDS (ESA) 2022

The DOE Excellent Service Award Ceremony 2022 was held on 11 July 2023 at Dewan Baiduri, Wisma Sumber Asli. The Department of Environment has organised ESA ceremony for the first time following the Ministry's decision to hand over the implementation of the ESA ceremony to the respective Departments.

This ceremony was carried out in a simple but lively manner and a total of 116 DOE officers were selected to receive this award.



▲ Majlis Anugerah Perkhidmatan Cemerlang JAS Tahun 2022
DOE Excellent Service Award Ceremony 2022



▲ Majlis Anugerah Perkhidmatan Cemerlang JAS Tahun 2022
DOE Excellent Service Award Ceremony 2022

KURSUS PEMANTAPAN PROFESIONALISME

Pada 14 hingga 16 Ogos 2023 yang lalu, Bahagian Pentadbiran dan Kewangan melalui Seksyen Sumber Manusia telah menganjurkan Kursus Pemantapan Profesionalisme JAS bertempat di Outward Bound Malaysia, Lumut, Perak. Kursus ini terbuka kepada semua pegawai gred 29 dan ke atas.

Kursus Pemantapan Profesionalisme JAS ini dilaksanakan dengan objektif utama seperti di bawah:

- Meningkatkan keupayaan dan kemahiran kepimpinan para pegawai Jabatan;
- Mewujudkan pembudayaan organisasi cemerlang di kalangan pegawai dan kakitangan JAS;
- Mengukuhkan jalinan hubungan profesional dan kerjasama yang baik sesama warga Jabatan;
- Membantu warga Jabatan untuk bukan sahaja sihat dari sudut fizikal, tetapi juga sihat dari sudut pengurusan emosi; dan
- Meningkatkan kemahiran komunikasi pegawai dalam organisasi.

PROFESSIONALISM STRENGTHENING COURSE

On 14 to 16 August 2023, the Administration and Finance Division through the Human Resources Section organised the DOE Professionalism Strengthening Course located at Outward Bound Malaysia, Lumut, Perak. This course is open to all officers of grade 29 and above.

This DOE Professionalism Strengthening Course is implemented with the main objectives as below:

- Improve the ability and leadership skills of Department officials;
- Create an excellent organisational culture among DOE officers and staff;
- Strengthen professional relationships and good cooperation among Department members;
- Assist the officers of the Department to not only be healthy physically, but also healthy emotionally; and
- Improve communication skills of staff in the organisation.



▲ Aktiviti ketika Kursus Pemantapan Profesionalisme 14 - 16 Ogos 2023
Activities at the Professionalism Strengthening Course, 14 - 16 August 2023

KURSUS PRA PERSARAAN

Kursus Pra Persaraan Jabatan Alam Sekitar Tahun 2023 telah diadakan pada 29 hingga 31 Mei 2023 bertempat di Holiday Villa Beach Resort Cherating, Pahang.

Kursus anjuran Seksyen Sumber Manusia, Jabatan Alam Sekitar ini dikendalikan oleh JETT Training & Trading dan telah melibatkan seramai 19 orang pegawai JAS seluruh Malaysia yang bakal bersara pada tahun 2023 dan 2024.

Kursus selama 3 hari 2 malam ini disediakan bagi memberikan persediaan-persediaan asas serta maklumat yang diperlukan kepada bakal pesara bagi menghadapi hari-hari persaraan dan mendapatkan persaraan idaman yang bahagia, terutamanya dalam memberikan panduan dalam penyediaan dokumentasi dan memberikan sedikit pendedahan berkaitan IQ dan EQ (kehidupan dan kewangan) para bakal pesara.

Para peserta juga turut diberikan latihan praktikal teknik pernafasan dan senaman menggunakan kaedah Tai Chi iaitu satu kaedah senaman yang menggabungkan beberapa pergerakan sederhana perlahan yang baik untuk kesihatan badan secara keseluruhan.

PRE RETIREMENT COURSE

The Department of the Environment Pre Retirement Course 2023 was held on 29 to 31 May 2023 at the Holiday Villa Beach Resort Cherating, Pahang.

This course was organised by the Human Resources Section, Department of the Environment and was conducted by JETT Training & Trading which involved a total of 19 DOE officers from all over Malaysia who will retire in 2023 and 2024.

This 3 day 2 night course was conducted to provide basic preparations and information needed for future retirees to face the days of retirement and achieve the happy retirement of their dreams, especially in providing guidance in document preparation as well as providing some exposure related to IQ and EQ (life and finances) of future retirees.

The participants were also given practical training in breathing techniques and exercise using the Tai Chi method, which is an exercise method that combines several slow movements that are good for overall body health.



▲ Kursus Pra Persaraan, 29 hingga 31 Mei 2023
Pre Retirement Course, 29 to 31 May 2023

BAB/
CHAPTER

02

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

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) AND INPUT FOR DEVELOPMENT PLANNING

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

EIA merupakan salah satu alat perancangan dalam pengurusan kelestarian alam sekitar dengan mengenalpasti, meramal dan menilai impak terhadap alam sekitar serta memberikan maklumat terhadap kualiti alam sekitar semasa dan jangkaan kualiti yang akan diterima akibat sesuatu pembangunan. Selain itu, Laporan EIA turut mengenalpasti langkah mitigasi bagi meminimumkan kesan kepada alam sekeliling sebelum sesuatu projek dilaksanakan.

EIA is a planning tool in the management of environmental sustainability. It identifies, predicts, and evaluates impacts on the environment and provides information on the current and expected quality of the environment as a result of development activity. The EIA Report will also identify mitigation measures to offset potential adverse effects on the environment prior to project implementation.

Penilaian kepada Laporan EIA akan menjadi input dalam memandu arah pihak berkuasa meluluskan projek memuktamadkan keputusan sesuatu cadangan pembangunan.

EIA Report assessment provides inputs that guide the authority in making final decisions on a proposed development project.

Bagi memastikan EIA dapat menyumbang sepenuhnya dalam proses membuat keputusan untuk memastikan pengurusan alam sekitar yang lebih baik, prosedur dan pelaksanaan EIA yang dinamik perlu ditambahbaik dari semasa ke semasa seiring dengan pembangunan teknologi dan perkembangan ekonomi dunia.

To ensure that EIA fully contributes to the decision-making process for improved environmental management, dynamic EIA procedures and implementation need to be periodically improved in line with technological and world economic development.

Pelaksanaan EIA yang berkesan akan dapat memastikan pertimbangan alam sekitar diberikan penekanan dengan jelas dan digabungkan dalam proses membuat keputusan dan seterusnya dapat menggalakkan pembangunan yang lestari yang mampu memberikan kesejahteraan dan kemakmuran kepada kehidupan rakyat.

An effective EIA implementation will ensure that environmental considerations are clearly emphasised and incorporated into the decision-making process, as this will promote sustainable development for the well-being and prosperity of the people.

LAPORAN EIA 2023

Sejumlah 543 Laporan EIA telah diterima dan dinilai oleh JAS pada tahun 2023 berbanding 523 laporan EIA pada tahun 2022 (**Rajah 2.1**). Laporan EIA tersebut adalah sebanyak 487 (89.7%) laporan bagi aktiviti yang tertakluk di bawah Jadual Pertama, Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015, manakala 56 (10.3%) laporan bagi aktiviti yang tertakluk di bawah Jadual Kedua perintah tersebut. Dari tahun 2009 sehingga kini sejumlah 5,124 Laporan EIA diterima oleh Jabatan.

EIA REPORTS 2023

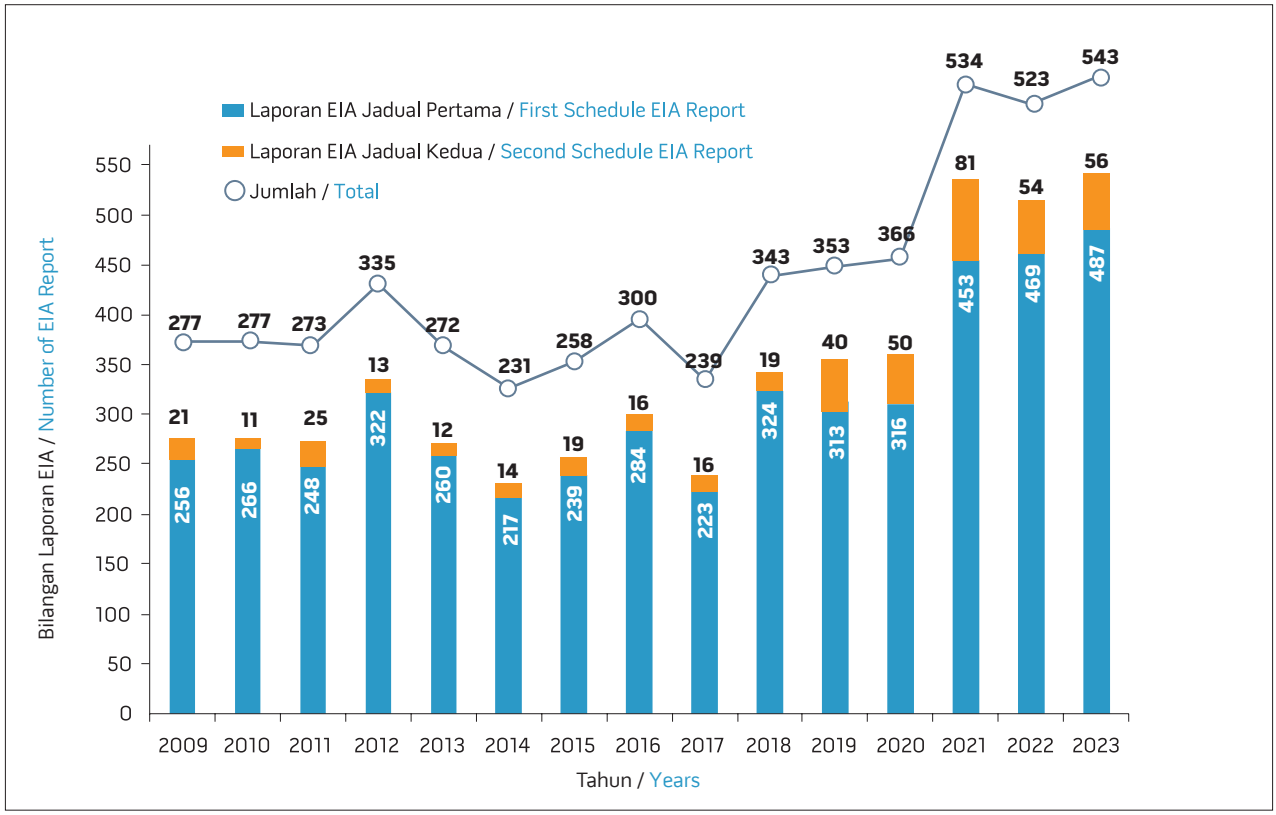
A total of 543 EIA Reports were received and reviewed by the DOE in 2023, compared to 523 in 2022 (**Figure 2.1**). Of this figure, 487 (89.7%) were reports of activities under the First Schedule of the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, while 56 (10.3%) were reports of activities under the Second Schedule of the Order. Since 2009, the Department has received 5,124 EIA Reports.

Selangor menerima bilangan Laporan EIA tertinggi pada tahun 2023 iaitu sebanyak 100 (18.5%) laporan, diikuti dengan Kelantan sebanyak 70 (12.9%) laporan, dan Pahang sebanyak 61 (11.3%) laporan (**Rajah 2.2**). **Rajah 2.3** menunjukkan status keputusan Laporan EIA dengan jumlah laporan yang diterima oleh JAS Negeri.

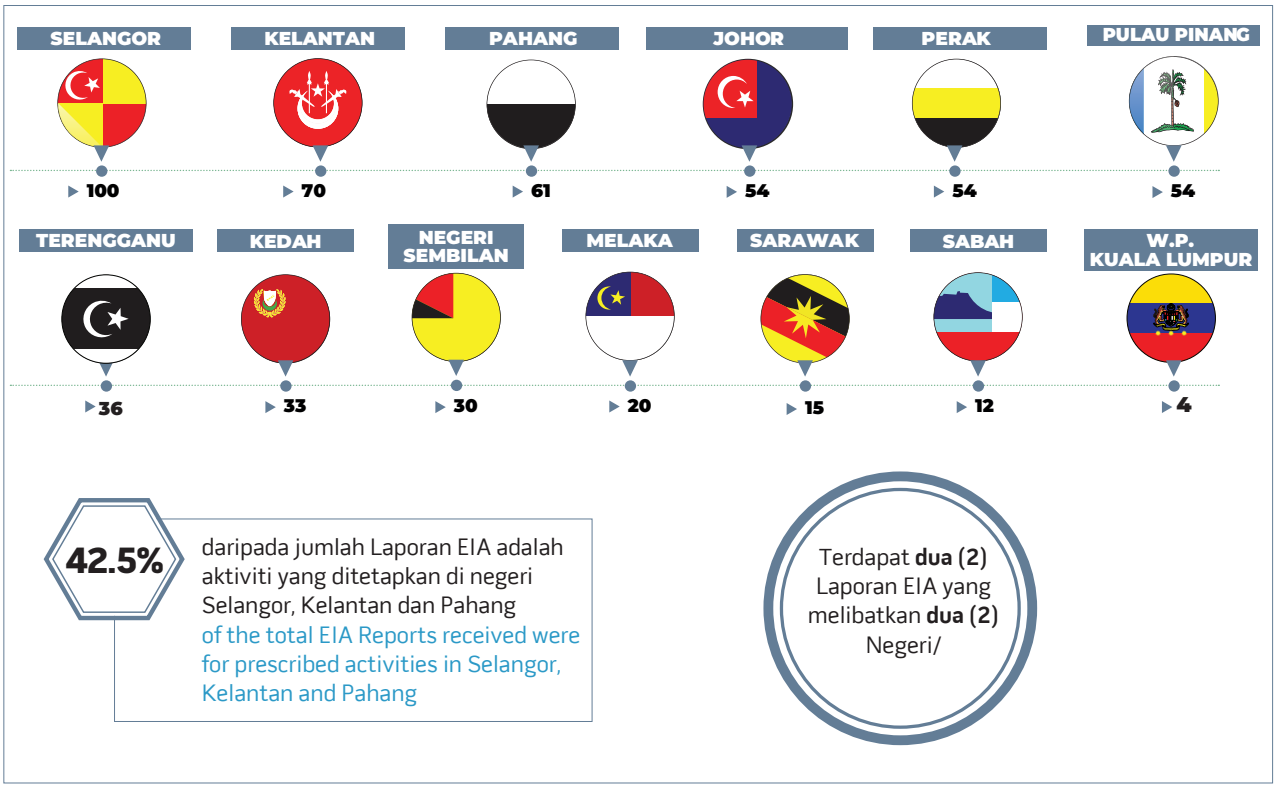
Rajah 2.4 menunjukkan Laporan EIA yang diterima berdasarkan aktiviti yang ditetapkan. Aktiviti pengolahan dan pelupusan buangan merupakan yang paling banyak diterima pada tahun 2023 iaitu sebanyak 184 (33.9%) laporan, diikuti aktiviti berkaitan perhutanan sebanyak 82 (15.1%) laporan dan aktiviti berkaitan pembangunan di kawasan cerun sebanyak 60 (11.0%) laporan.

Selangor received the highest number of EIA Reports in 2023, with 100 (18.5%) reports, followed by Kelantan with 70 (12.9%) reports and Pahang with 61 (11.3%) reports (**Figure 2.2**). The total number of reports received by the State DOE is shown in **Figure 2.3**.

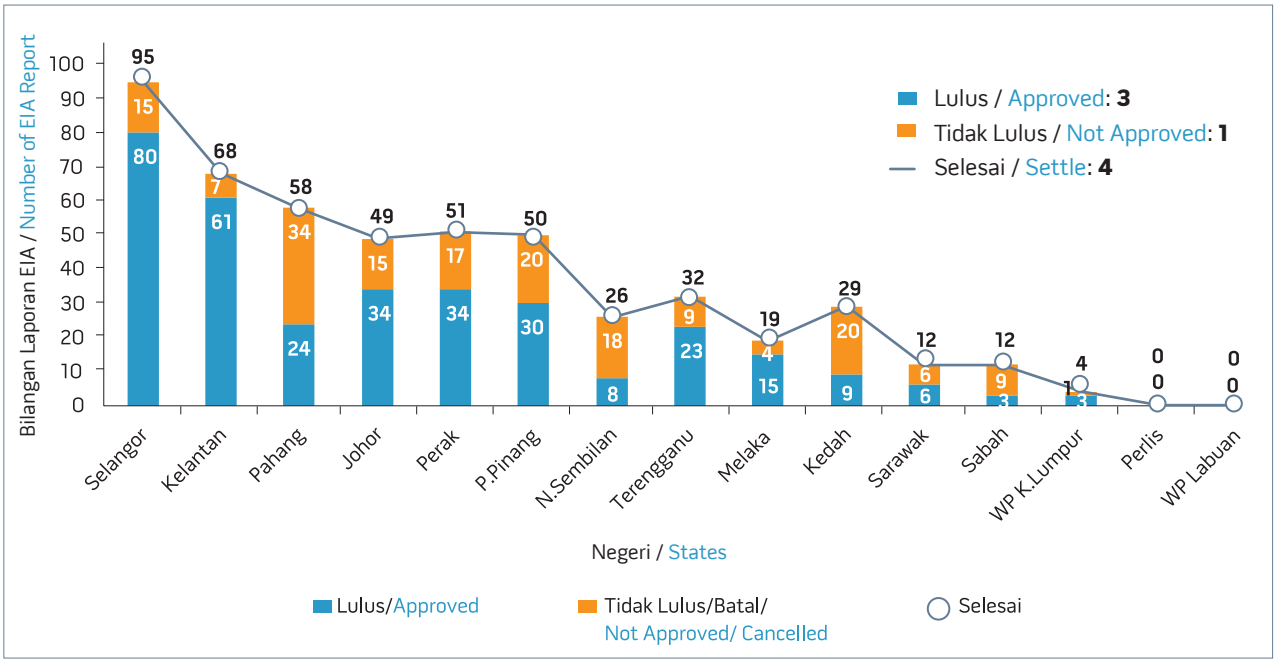
Figure 2.4 illustrates the EIA Reports received based on prescribed activities. Reports on waste treatment and disposal activities in 2023 were most received, with 184 (33.9%) reports, followed by forestry activities with 82 (15.1%) reports and activities related to the development in slope areas with 60 (11.0%) reports.



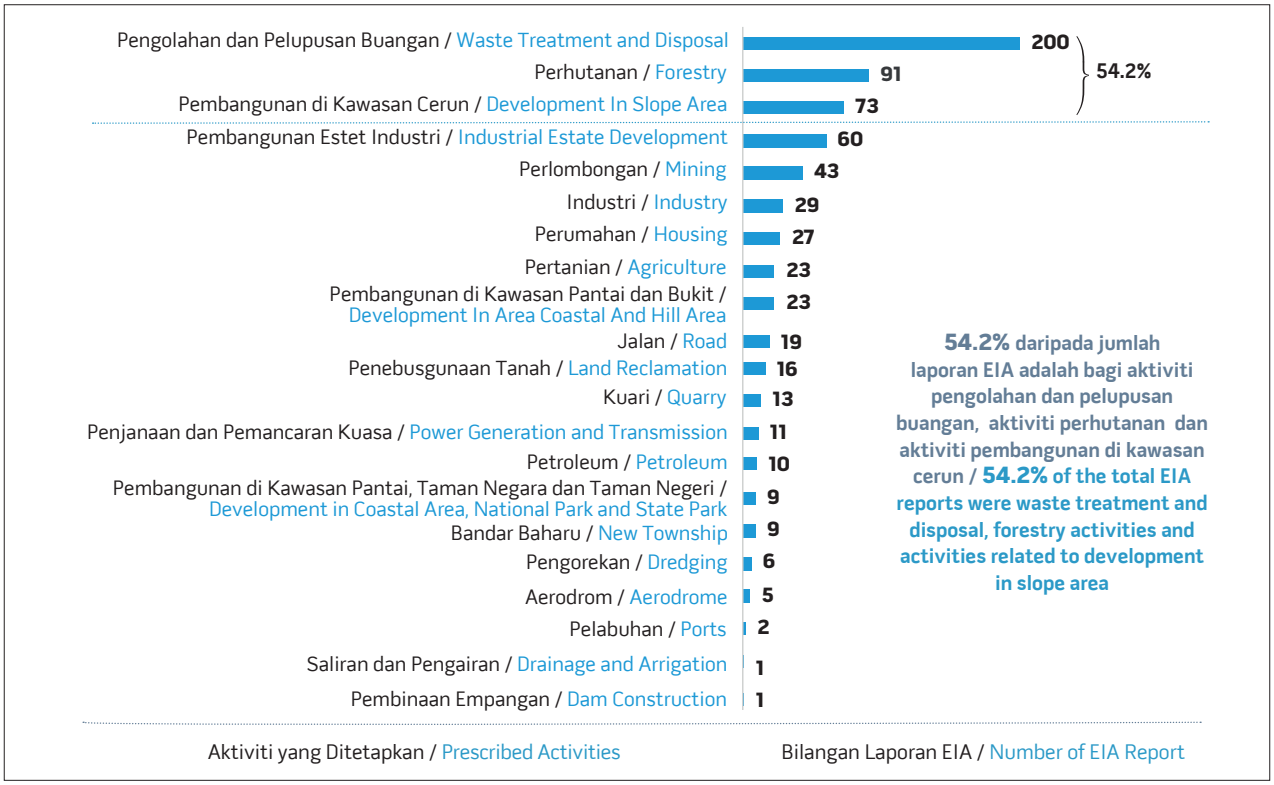
Rajah 2.1: Bilangan Laporan EIA yang Diterima mengikut Tahun
Figure 2.1: The Number of EIA Reports Received by Years



Rajah 2.2: Bilangan Laporan EIA yang Diterima mengikut Negeri, 2023
Figure 2.2: The Number of EIA Reports Received by State, 2023



Rajah 2.3: Penerimaan dan Keputusan Laporan EIA mengikut Negeri, 2023
Figure 2.3: EIA Reports Received, and Results of EIA Reports by State in 2023



Rajah 2.4: Bilangan Laporan EIA yang Diterima mengikut Aktiviti yang Ditetapkan, 2023
Figure 2.4: Number of EIA Reports Received by Prescribed Activities, 2023

PENGUATKUASAAN PROJEK EIA

Penguatkuasaan projek EIA dilaksanakan melalui kaedah pemeriksaan di lapangan dan juga pemeriksaan secara *desktop*. Sejumlah 2,063 siasatan penguatkuasaan samada di darat atau badan air telah dijalankan pada tahun 2023 untuk mengenal pasti status fasa pembangunan dan pematuhan kepada syarat kelulusan EIA (**Rajah 2.5**). Daripada jumlah itu, sebanyak 86% didapati patuh kepada syarat-syarat kelulusan EIA manakala 14% pula tidak patuh.

Dalam masa yang sama, sepanjang tahun 2023 sebanyak 666 pemeriksaan secara dekstop telah dijalankan (**Rajah 2.6**). Daripada jumlah itu, sebanyak 95% pemeriksaan didapati patuh manakala 5% tidak patuh pemeriksaan secara *desktop*. Pemeriksaan secara *desktop* bertujuan memastikan pemantauan pematuhan secara berterusan melalui sistem dalam talian yang diperkenalkan oleh JAS serta melalui laporan-laporan yang perlu dikemukakan kepada JAS secara berkala.

Daripada siasatan yang dijalankan, tindakan penguatkuasaan telah diambil merangkumi pengeluaran 321 notis arahan dan 29 kompaun. Sebanyak 49 pertuduhan kes telah didakwa di mahkamah kerana

EIA PROJECT ENFORCEMENT

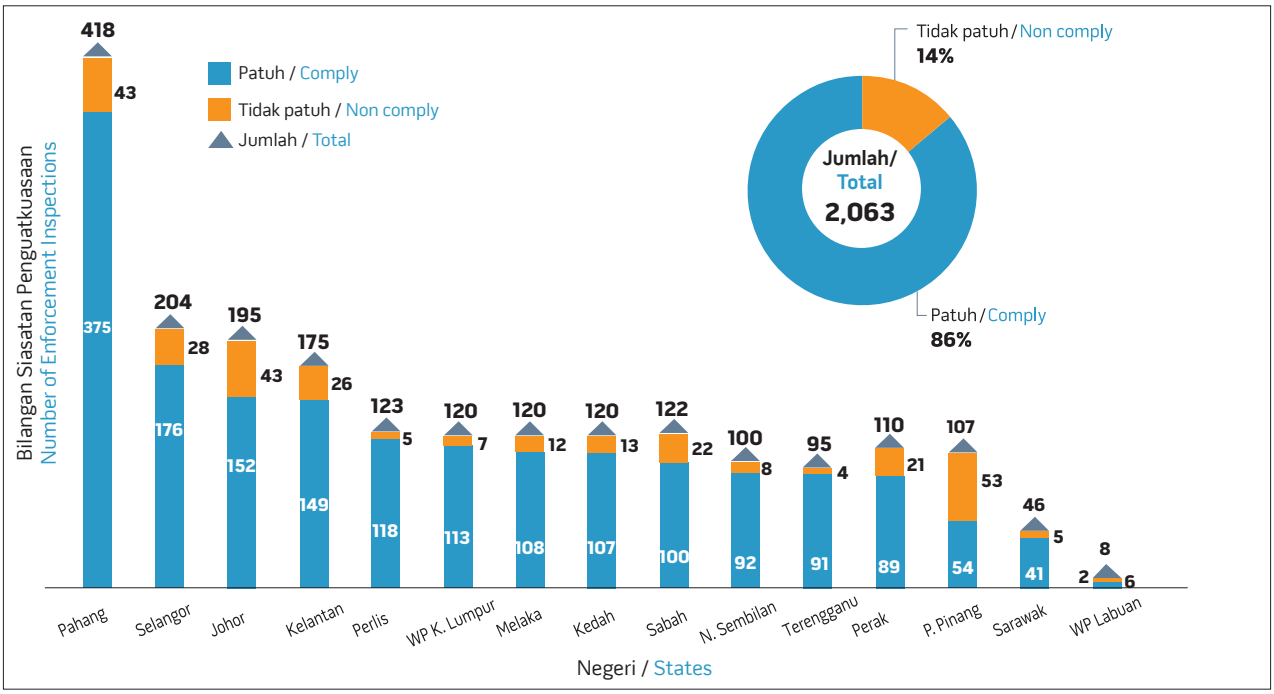
The enforcement of the EIA project is carried out through field inspection methods and desktop inspection. A total of 2,063 enforcement inspections (on land or water) were conducted in 2023 to identify the status of the development phase and compliance with EIA conditions requirements (**Figure 2.5**). Of the total figure, 86% complied with EIA approval conditions, while 14% were non-compliant.

In 2023, 666 desktop enforcement were carried out (**Figure 2.6**). 95% were compliant, while 5% were non-compliant. Desktop enforcements are aimed at ensuring continuous monitoring for compliance through the online system introduced by DOE, as well as through reports submitted to DOE on a periodical basis.

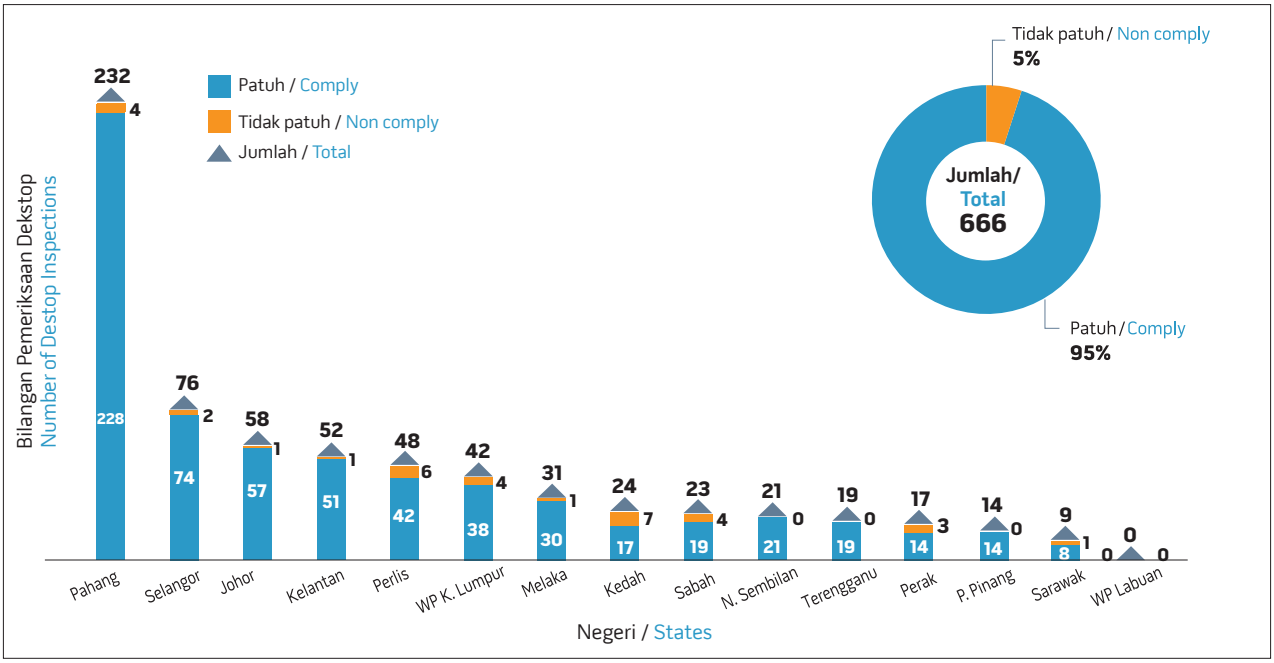
Based on the inspections conducted, enforcement actions involved the issuance of 321 notices and 29 compounds. A total of 49 non-compliance cases were charged in court with penalties amounting to

tidak mematuhi syarat-syarat kelulusan EIA dengan jumlah denda sebanyak RM 1,099,000.00 bagi kesalahan di bawah Seksyen 34A(6), Akta Kualiti Alam Sekeliling 1974. Selain itu, sebanyak 7 perintah larangan bagi aktiviti yang ditetapkan di bawah Seksyen 34AA, Akta Kualiti Alam Sekeliling 1974 juga telah dikeluarkan bagi kesalahan serius berkaitan pematuhan syarat kelulusan EIA (**Rajah 2.7**).

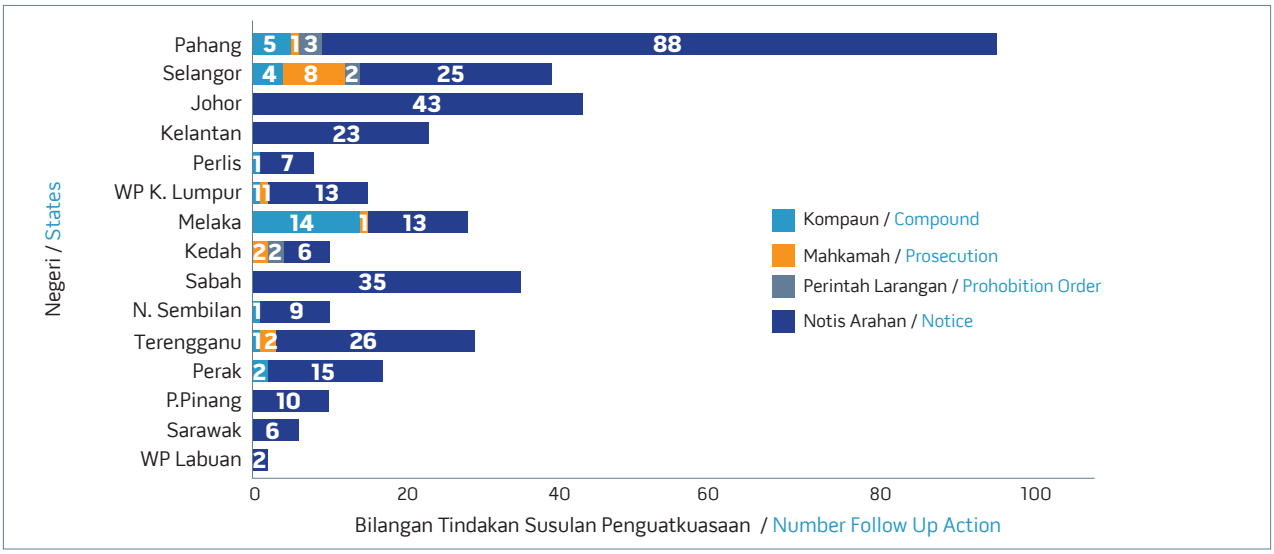
RM 1,099,000.00, pursuant to Section 34A (6), Environment Quality Act 1974. In addition, 7 prohibition orders for prescribed activities under Section 34AA, Environmental Quality Act 1974, were also issued for serious offences related to compliance with EIA approval conditions (**Figure 2.7**).



Rajah 2.5: Siasatan Penguatkuasaan Projek EIA, 2023
Figure 2.5: EIA Project Enforcement Inspections in 2023



Rajah 2.6: Pemeriksaan *Dekstop* Projek EIA, 2023
Figure 2.6: EIA Project Desktop Inspections in 2023



Rajah 2.7: Tindakan Susulan Penguatkuasaan Projek EIA, 2023
Figure 2.7: Follow Up Action of EIA Project Enforcement in 2023



◂ Aktiviti Penguatkuasaan EIA di Tapak Projek Infrastruktur / EIA Enforcement Activity at Infrastructure Project Site





▲ Aktiviti Penguatkuasaan EIA di Tapak Projek Perhutanan EIA Enforcement Activity at Forestry Project Site





▲ Aktiviti Penguatkuasaan EIA di Tapak Projek Lombong EIA Enforcement Activity at Mining Project Site

PERINTAH LARANGAN ATAU PERINTAH BERHENTI KERJA

Peruntukan undang-undang di bawah Seksyen 34AA, Akta Kualiti Alam Sekeliling 1974 (Pindaan 2012) membolehkan Ketua Pengarah Kualiti Alam Sekeliling mengeluarkan perintah larangan atau perintah berhenti kerja kepada orang yang menjalankan aktiviti yang ditetapkan dalam tiga (3) keadaan iaitu:

i. Tanpa kelulusan Laporan EIA;
ii. Mencabuli apa-apa syarat yang dilampirkan di dalam kelulusan Laporan EIA; atau
iii. Pada pendapat Ketua Pengarah adalah dijalankan mengikut cara yang mungkin menyebabkan kerosakan alam sekeliling.

Perintah larangan atau perintah berhenti kerja itu boleh dikeluarkan bagi maksud menghalang aktiviti yang ditetapkan daripada berterusan seperti berikut:

i. Secara mutlak atau bersyarat;
ii. Bagi apa-apa tempoh sebagaimana yang ditentukan oleh Ketua Pengarah; atau
iii. Sehingga kehendak untuk meremedi sebagaimana yang diarahkan oleh Ketua Pengarah telah dipatuhi.

Sejak 2013, JAS telah mengenakan sejumlah 76 tindakan perintah larangan terhadap projek EIA. Dalam tahun 2023, sejumlah 7 bilangan perintah larangan telah dikeluarkan melibatkan satu (1) aktiviti pertanian, tiga (3) aktiviti kitar semula sisa pepejal dan pengolahan buangan terjadual, satu (1) aktiviti penambakan dan dua (2) aktiviti kuari. Pada tahun 2023 juga, sebanyak tiga (3) perintah larangan yang dikenakan telah ditarik balik melibatkan satu (1) aktiviti pertanian, satu (1) aktiviti pengolahan buangan terjadual dan satu (1) aktiviti kitar semula sisa pepejal (**Rajah 2.8**).

PROHIBITION ORDER OR STOP WORK ORDER

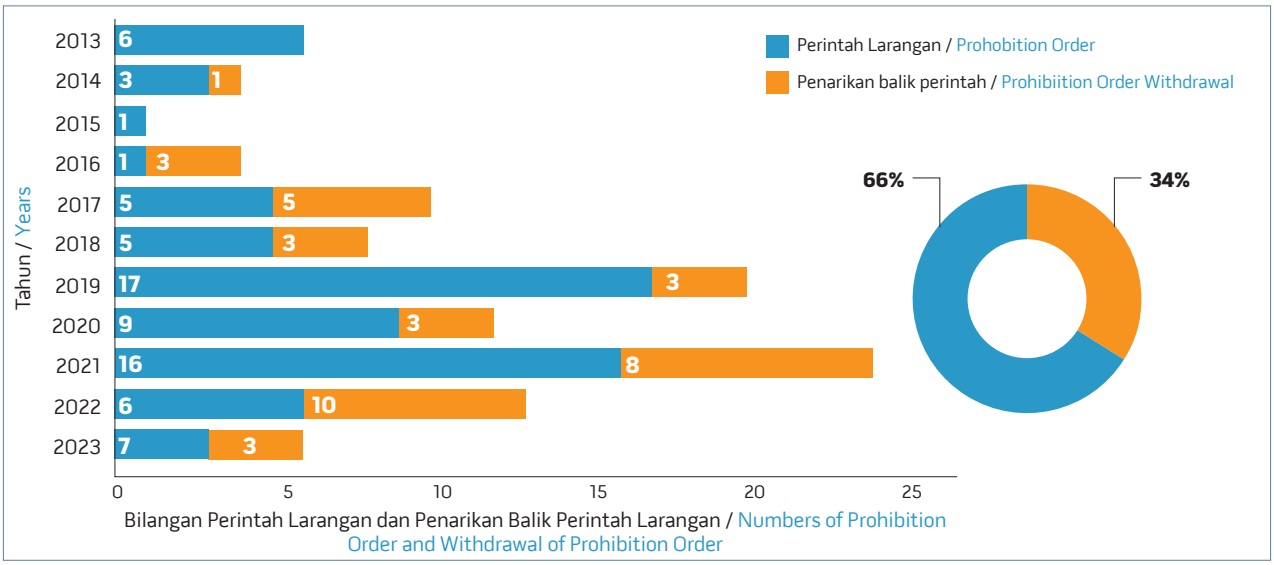
The legal provisions under Section 34AA, Environmental Quality Act 1974 (Amendment 2012) allow the Director General of Environmental Quality to issue a prohibition order or stop work order to the person who perform the prescribed activities in three (3) circumstances, which are:

i. Without EIA Report approval;
ii. Violation of conditions attached to the EIA Report; or
iii. In the opinion of the Director General is performed in a way that could cause environmental damage.

A prohibition order or stop work order may be issued to prevent the prescribed activities from continuing as follows:

i. Absolutely or conditionally;
ii. For any period as determined by the Director-General; or
iii. Until remedial actions as directed by the Director General are obeyed.

Since 2013, DOE has imposed 76 prohibition order actions against EIA project. In 2023, 7 prohibition orders were issued involving one (1) agriculture activity, three (3) solid waste recycling and recovery schedule waste activities, one (1) reclamation activity and two (2) quary activities. In addition, three (3) prohibition order charges were withdrawn, involving one (1) agriculture activity, one (1) recovery of scheduled waste activities and one (1) solid waste recycling activities (**Figure 2.8**).



Rajah 2.8: Statistik Perintah Larangan dan Penarikan Balik Perintah Larangan
Figure 2.8: Statistic of Prohibition Order and Withdrawal of Prohibition Order



▲ Aktiviti Pemantauan terhadap Perintah Larangan
Monitoring Activities against Prohibition Orders



▲ Aktiviti Pemantauan terhadap Perintah Larangan / Monitoring Activities against Prohibition Orders

PELAN PENGURUSAN ALAM SEKITAR (EMP)

EMP merupakan komponen penting dalam pelaksanaan projek EIA kerana ia merupakan salah satu elemen untuk memastikan pematuhan terhadap syarat-syarat kelulusan Laporan EIA dan seterusnya pematuhan terhadap perundangan yang berkaitan dengan alam sekitar.

EMP yang disediakan oleh Penggerak Projek akan menggariskan strategi dan tindakan yang perlu dilaksanakan berdasarkan amalan pengurusan terbaik untuk melindungi alam sekitar. Sehubungan itu, EMP akan memastikan segala cadangan di dalam Laporan EIA berjaya dilaksanakan dalam fasa rekabentuk akhir, pembinaan dan operasi sesuatu projek EIA.

EMP adalah dokumen yang perlu disemak dan dikemaskini berdasarkan pelbagai perubahan yang berlaku. Faktor perubahan ini berkemungkinan disebabkan oleh perubahan pada butiran projek, kawasan persekitaran dan penambahan langkah kawalan untuk mematuhi piawaian yang ditetapkan di dalam kelulusan Laporan EIA.

Sepanjang tahun 2023, sebanyak 507 EMP telah diterima dan diproses oleh JAS (**Rajah 2.9**). Daripada jumlah itu, sebanyak 449 (89%) adalah daripada aktiviti yang tertakluk di bawah Jadual Pertama, Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015, manakala 58 (11%) bagi aktiviti yang tertakluk di bawah Jadual Kedua perintah tersebut.

Selangor menerima bilangan EMP tertinggi pada tahun 2023 iaitu sebanyak 111 (22%), diikuti dengan Kelantan sebanyak 70 (14%) dan Pahang serta Pulau Pinang masing-masing sebanyak 54 (11%).

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

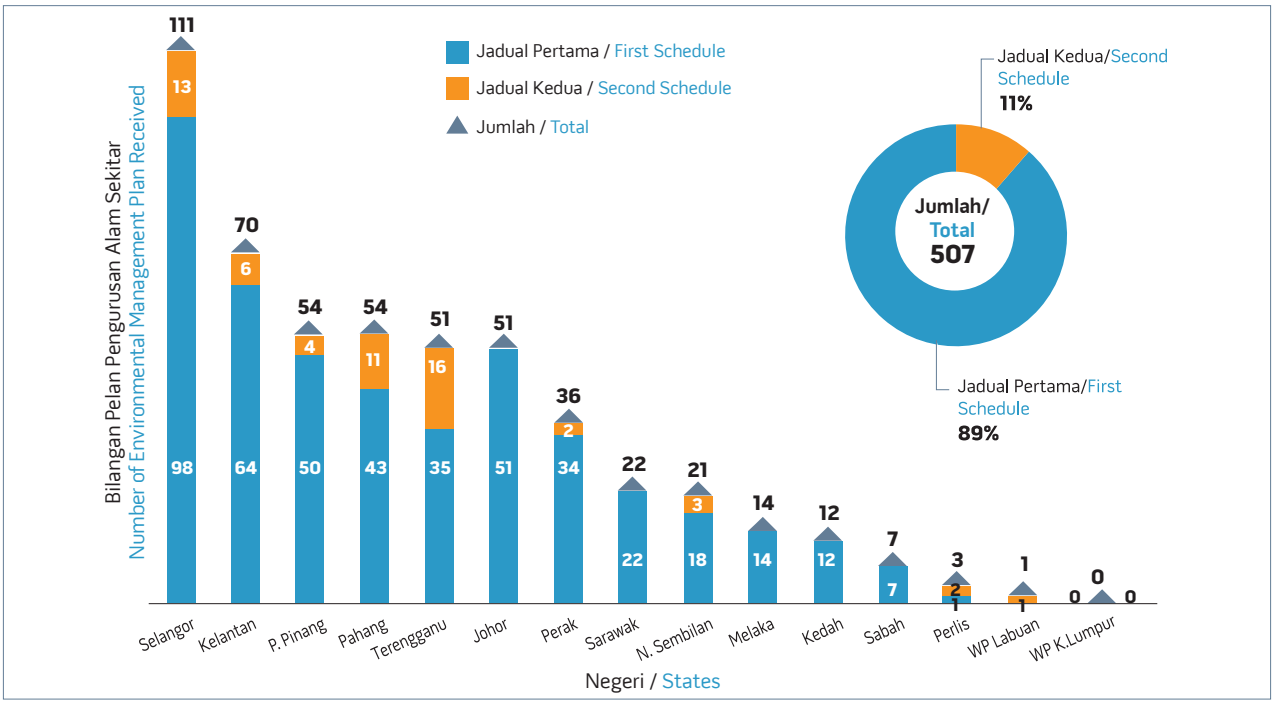
The EMP is an important element in the implementation of EIA projects as it ensures compliance with the approval conditions of the EIA report and compliance with legislation related to the environment.

The EMP prepared by Project Proponents will outline strategies and actions that need to be implemented based on Best Management Practices to protect the environment. Accordingly, the EMP will ensure the successful implementation of all recommendations in the EIA Report, especially in the final design stage, construction, and operation of an EIA project.

The EMP is a document that needs to be reviewed and updated based on changes that take place. The change factor is likely caused by changes of project details, surrounding areas, and the addition of control measures to ensure compliance with the standards set in the approval of the EIA Report.

In 2023, a total of 507 EMPs were received and processed by DOE (**Figure 2.9**). 449 (89%) activities were under the First Schedule of the Environment Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, while 58 (11%) were under the Second Schedule of the Order.

Selangor recorded the highest number of EMP in 2023, with 111 (22%), followed by Kelantan with 70 (14%), and Pahang and Pulau Pinang with 54 (11%).



Rajah 2.9: Bilangan Pelan Pengurusan Alam Sekitar yang Diterima, 2023
Figure 2.9: Number of Environmental Management Plan Received, 2023

SKIM PENDAFTARAN JURURUNDING EIA

Skim Pendaftaran Jururunding EIA telah mula diperkenalkan pada 1 Jun 2007. Pendaftaran Jururunding EIA ini adalah satu keperluan undang-undang di bawah Seksyen 34A, Akta Kualiti Alam Sekeliling, 1974 (Pindaan 2012) yang mewajibkan semua jururunding EIA atau orang yang layak berdaftar dengan JAS untuk menjalankan kajian EIA dan mengemukakan Laporan EIA kepada JAS.

Pendaftaran adalah terbuka kepada semua individu dan mempunyai lima (5) kategori pendaftaran iaitu *EIA Consultant* (C), *Subject Consultant* (CS), *Subject Specialist* (SS), *Assistant Consultant* (AC) & *Assistant Consultant & Subject Specialist* (ACS).

Sepanjang tahun 2023, sejumlah 144 permohonan baharu telah diterima dan sebanyak 115 permohonan telah diluluskan pendaftaran bagi pelbagai kategori. Manakala sejumlah 81 permohonan pembaharuan telah diterima sepanjang tahun 2023 dan 72 permohonan telah diluluskan.

Sehingga 31 Disember 2023, sebanyak 633 individu telah berdaftar di bawah Skim Pendaftaran Jururunding EIA melalui sistem *Malaysian Certified Environmental Practitioner* (myCEP), di mana 151 orang adalah EIA Consultant (C), 84 orang *Subject Consultant* (CS), 223 orang adalah *Subject Specialist* (SS), 169 orang adalah *Assistant Consultant* (AC) dan 6 orang adalah *Assistant Consultant & Subject Specialist* (ACS). **Jadual 2.1** menunjukkan pecahan bilangan jururunding EIA dan peratusan mengikut kategori.

EIA CONSULTANT REGISTRATION SCHEME

The EIA Consultant Registration Scheme was first introduced on 1 June 2007. The registration of EIA consultants is a legal requirement under Section 34A, Environmental Quality Act, 1974 (Amendment 2012), which requires all EIA consultants or qualified persons to register with DOE before conducting EIA studies and submit the EIA Report to DOE.

Registration is open for individuals and divided into five (5) categories, namely, EIA Consultant (C), Subject Consultant (CS), Subject Specialist (SS), Assistant Consultant (AC) and Assistant Consultant & Subject Specialists (ACS).

During 2023, a total of 144 new applications were received and a total of 115 applications were approved for various categories. A total of 81 renewal applications were received throughout the year 2023 and 72 applications were approved.

As of 31 December 2023, 633 individuals were registered under the EIA Consultant Registration Scheme through the Malaysian Certified Environmental Practitioner (myCEP) system, of which 151 were EIA Consultants (C), 84 were Subject Consultants (CS), 223 were Subject Specialists (SS), 169 were Assistant Consultants (AC), and 6 were Assistant Consultants & Subject Specialists (ACS). **Table 2.1** shows the breakdown of EIA consultants and percentage by category.

Jadual 2.1: Bilangan Jururunding EIA
Table 2.1: Number of EIA Consultants

BIL. NO.	KATEGORI CATEGORY	BILANGAN JURURUNDING NUMBERS OF CONSULTANT	PERATUSAN PERCENTAGE
1.	*EIA Consultant* (C)	151	23.9
2.	*Subject Consultant* (CS)	84	13.3
3.	*Subject Specialist* (SS)	223	35.2
4.	*Assistant Consultant* (AC)	169	26.7
5.	*Assistant Consultant & Subject Specialist* (ACS)	6	0.9
	JUMLAH / TOTAL	**633**	**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 Sekitar yang berdaftar dengan JAS sahaja.

Sepanjang tahun 2023, sebanyak 12 permohonan baharu telah diterima dan 10 daripadanya telah didaftarkan sebagai Juruaudit Alam Sekitar. Manakala bagi permohonan pembaharuan, pihak Jabatan telah menerima 27 permohonan di mana 24 permohonan telah diluluskan (**Jadual 2.2**). Sehingga 31 Disember 2023, sebanyak 114 orang individu telah didaftarkan sebagai Juruaudit Alam Sekitar.

Skim pendaftaran ini diadakan bagi memenuhi keperluan di bawah Seksyen 33A, Akta Kualiti Alam Sekeliling 1974 yang menyatakan hanya orang yang layak sahaja dibenarkan menjalankan audit alam sekeliling. Pelaksanaan audit dan pelaporan audit alam sekeliling haruslah mengikut prosedur dan garis panduan yang telah ditetapkan oleh JAS.

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

Pada tahun 2023, sebanyak 675 audit alam sekeliling di bawah Seksyen 33A, Akta Kualiti Alam Sekeliling 1974 telah dijalankan ke atas projek pembangunan yang tertakluk kepada Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekitar) 2015 (**Rajah 2.10**).

ENVIRONMENTAL AUDIT REGISTRATION SCHEME

The Environmental Audit Registration Scheme was first introduced in June 2009. Starting from 1 December 2009, DOE only accepts compliance audit reports prepared by Environmental Auditors registered with DOE.

In 2023, the Department received 12 new applications, of which 10 were registered as Environmental Auditors. As for renewal applications, the Department received 27 applications, of which 24 applications were approved (**Table 2.2**). As of 31 December 2023, 114 individuals were registered as Environmental Auditors.

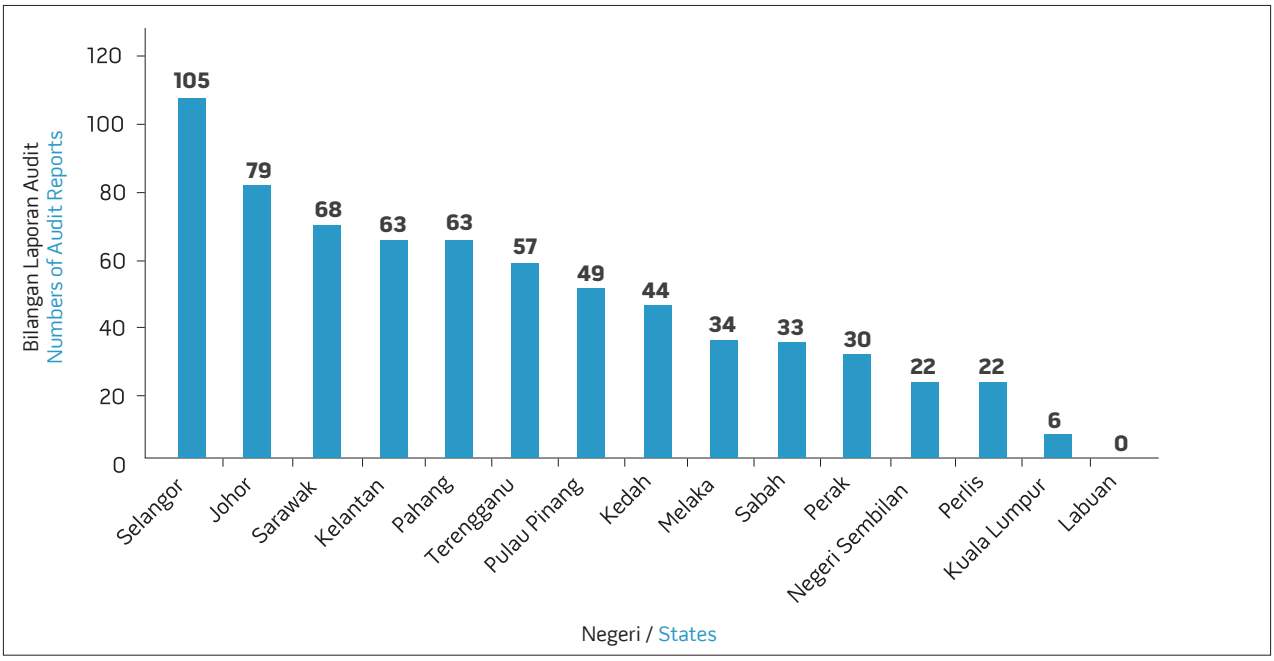
The registration scheme is established to fullfill the requirements under Section 33A Environmental Quality Act 1974, which states that only qualified persons are allowed to conduct environmental audits. Audits and its reporting must be conducted and prepared in accordance with the procedures and guidelines established by the department.

Auditing is one of the self-regulatory methods implemented to ensure continuous compliance with the Environmental Quality Act 1974.

In 2023, a total of 675 environmental audits were conducted under Section 33A, Environment Quality Act 1974, for development projects prescribed under the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 **(Figure 2.10**).

Jadual 2.2: Jumlah Permohonan Juruaudit Alam Sekitar yang Diluluskan bagi Tahun 2023
Table 2.2: Number of Approved Environmental Auditor Applications in 2023

JENIS PERMOHONAN TYPES OF APPLICANTS	JUMLAH PERMOHONAN NO. OF APPLICANTS	JUMLAH LULUS NO. OF APPLICATIONS APPROVED	PERATUSAN LULUS PERCENTAGE APPROVED
Baharu / New	11	10	90.9 %
Pembaharuan / Renew	26	24	92.3 %



Rajah 2.10: Bilangan Audit Alam Sekeliling bagi Projek EIA mengikut Negeri, 2023
Figure 2.10: Number of Environmental Audits for EIA Projects by State, 2023

PERMOHONAN KELULUSAN MENJALANKAN AKTIVITI EKPLORASI 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. Aktiviti eksplorasi minyak dan gas ini tidak tertakluk kepada Perintah Kualiti Alam Sekeliling (Aktiviti yang ditetapkan) (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 bidang kuasa 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 Kos Sara Hidup (KPDN) 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.

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

The exploration of oil and gas is the initial process of identifying the resource location for oil and gas for the development of an oil and gas production field. This oil and gas exploration activity is not subject to the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015.

Most offshore oil and gas exploration fields are located within the EEZ. The approval of projects within the EEZ area is under the purview of the Consideration Committee. Approval of application is subject to Section 21 (1) and Section 22 of the Exclusive Economic Zone Act 1984 (Act 311) coordinated by the Ministry of Domestic Trade and Cost of Living (KPDN), which acts as the secretariat.

The members of the committee are from various federal agencies, including DOE. The committee evaluates and approves applications for construction work, operation or use of any island, artificial installations or structures, cable, and pipeline installation in the EEZ.

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 yang diselaraskan oleh Majlis Keselamatan Negara (MKN) sebagai urusetia. Pada tahun 2023, JAS telah menerima sebanyak 28 permohonan pembangunan di dalam kawasan ZEE dan telah dinilai oleh JAS Negeri yang berkaitan iaitu 4 di Terengganu, 20 di Sarawak dan 4 di Sabah.

INPUT ALAM SEKITAR KEPADA PERANCANGAN PEMBANGUNAN

Pada tahun 2023, sejumlah 14,244 input alam sekitar telah diberikan oleh Pejabat JAS Negeri kepada penggerak projek, Kerajaan Negeri, Pihak Berkuasa Tempatan, Pejabat Tanah serta serta agensi-agensi lain yang berkaitan (**Rajah 2.11**).

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

Di pihak Ibu Pejabat JAS, input alam sekitar turut diberikan kepada agensi seperti Kementerian Perumahan dan Kerajaan Tempatan (KPKT), *Malaysian Investment Development Authority* (MIDA), Kementerian Perdagangan Dalam Negeri dan Kos Sara Hidup (KPDN) dan Kementerian Sumber Asli dan Kelestarian Alam (NRES) 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.

Inisiatif penubuhan Unit Pusat Setempat (OSC) di semua PBT di Semenanjung Malaysia telah mula diperkenalkan sejak tahun 2007 dengan objektif untuk menyelaras pelbagai permohonan pembangunan melalui satu sistem dan prosedur yang telus dan seragam.

Fungsi dan peranan OSC telah diperkasakan dengan mewujudkan sistem OSC secara atas talian. OSC 3.0 telah diperkenalkan pada 1 Jun 2014 bagi mengatasi masalah kelewatan kelulusan pemajuan.

Sistem OSC 3.0 plus online telah dinaik taraf kepada platform atas talian untuk menerima dan memproses permohonan pemajuan termasuk permohonan yang berkaitan dengan Kebenaran Merancang oleh setiap Pihak Berkuasa Tempatan (PBT).

Apart from evaluating the EIA report for oil and gas field development activities within the EEZ area, DOE is also responsible for providing input for the committee for approval of projects not subject to the Environmental Quality (Environmental Impact Asessment) Order 2015 coordinated by the National Security Council (MKN) (Secretariat) who acts as the secretariat. In 2023, DOE received 28 applications for development within the EEZ area evaluated by the relevant State DOE - 4 in Terengganu, 20 in Sarawak and 4 in Sabah.

ENVIRONMENTAL INPUT FOR DEVELOPMENT PLANNING

In 2023, a total of 14,244 environmental inputs were provided to project proponents, State Government, Local Authorities, and Land Offices as well as other related agencies by the State DOE Office **(Figure 2.11)**.

Technical input provided were relevant to ensure environmental legal requirements were complied with and appropriate considerations were given to environmental aspects in the decision-making process of a development plan.

The DOE headquarters also provided environmental inputs to agencies such as the Ministry of Housing and Local Government (KPKT), Malaysian Investment Development Authority (MIDA), Ministry of Domestic Trade and Cost of Living (KPDN), and Ministry of Natural Resources and Environmental Science (NRES) on the coordination of development planning, local and foreign industrial investment, local plans, national physical plan study, studies on environmentally sensitive areas, development of oil and gas fields, activities in highlands and others.

The initiative to establish a One Stop Centre unit (OSC) in all local authorities in Peninsular Malaysia began in 2007 to coordinate various development applications using one system and procedure that is transparent and uniform.

The function and role of OSC were enhanced with the establishment of the OCS online system. OCS 3.0 was introduced on 1 June 2014 to overcome the delay in the approval process.

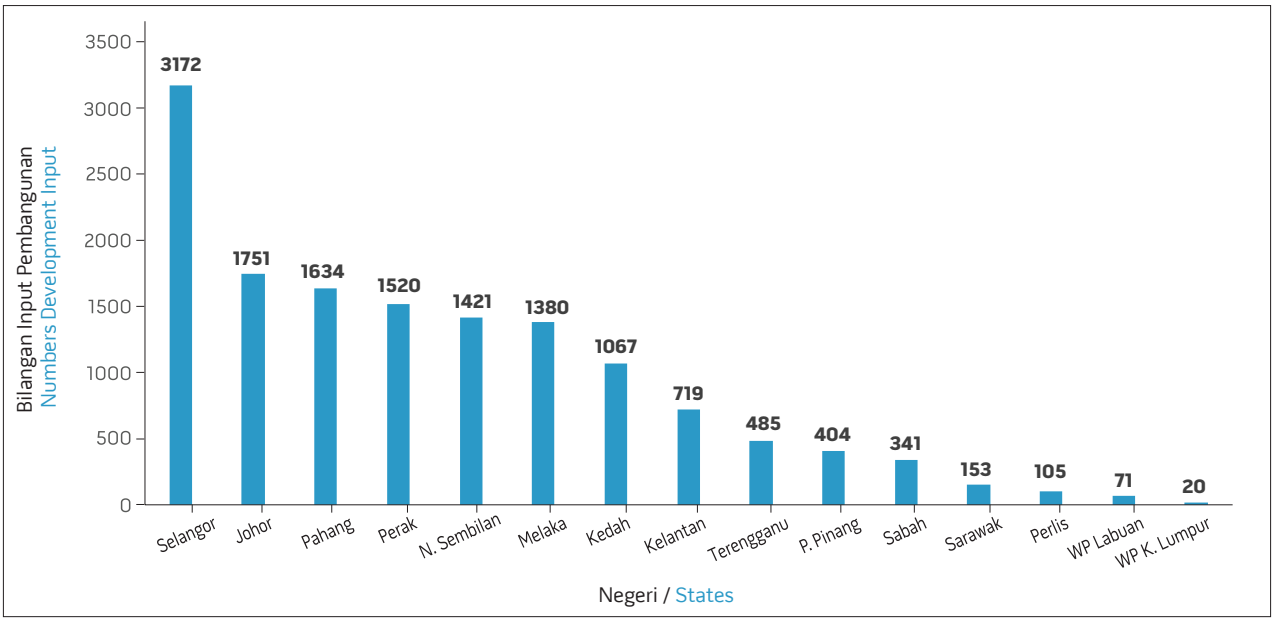
The OSC 3.0 plus online system has been upgraded to an online platform to allow it to receive and process development applications, including those related to Planning Permission by each Local Authority (PBT).

JAS Negeri adalah antara Agensi Teknikal Luar (ATL) yang bertanggungjawab untuk mengemas kini permohonan yang telah diterima bagi membuat pertimbangan keputusan permohonan pemajuan.

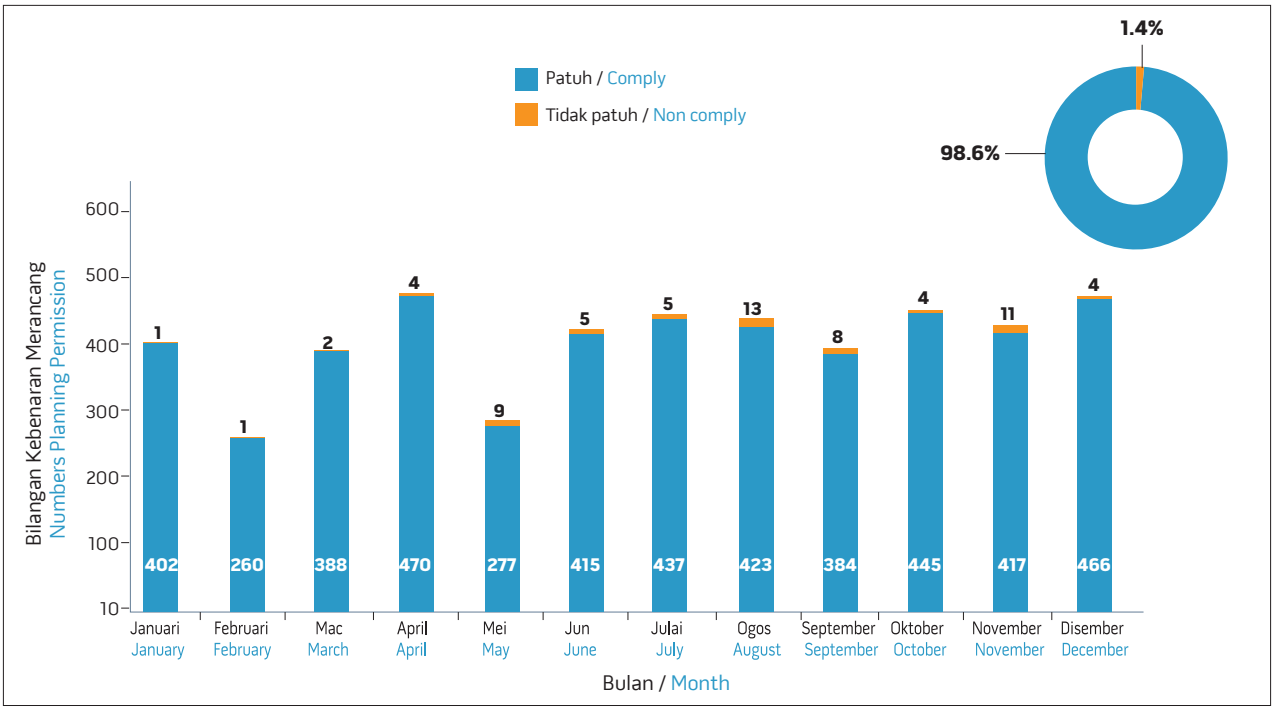
The State DOE is one of the External Technical Agencies (ETA) responsible for updating applications received for consideration.

Pada tahun 2023, JAS telah menerima sebanyak 4,851 permohonan dalam sistem OSC 3.0 plus online. **Rajah 2.12** menunjukkan pematuhan 98.6% ulasan teknikal JAS kepada sistem OSC 3.0 plus online.

In 2023, DOE received 4,851 applications in the OSC 3.0 plus online system. **Figure 2.12** shows a 98.6% compliance of DOE technical comments to the OSC 3.0 plus online system.



Rajah 2.11: Bilangan Input Alam Sekitar kepada Perancangan Pembangunan mengikut Negeri, 2023
Figure 2.11: Number of Environmental Input for Development Planning by States, 2023



Rajah 2.12: Statistik Pematuhan OSC 3.0 Plus Online - Kebenaran Merancang mengikut Bulan, 2023
Figure 2.12: Statistic of OSC 3.0 Plus Compliance - Planning Permission by Month, 2023

PROJEK RANCANGAN MALAYSIA KEDUA BELAS (RMKe-12): PROJEK PEMANTAPAN PELAKSANAAN PENILAIAN ALAM SEKITAR DI MALAYSIA

Di bawah RMKe-12, JAS sedang melaksanakan projek Pemantapan Pelaksanaan Penilaian Alam Sekitar Di Malaysia. Bagi tahun 2023, terdapat terdapat dua (2) kajian di bawah projek ini yang telah diluluskan iaitu:

i. Kajian Pembentukan Lembaga Alam Sekitar; dan

ii. Kajian Bagi Penggubalan Peraturan-Peraturan Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) (PPKAS EIA) 20XX

Kajian Pembentukan Lembaga Alam Sekitar di bawah Rancangan Malaysia Kedua Belas

Kajian Pembentukan Lembaga Alam Sekitar telah dijalankan di bawah Rancangan Malaysia Kedua Belas bagi tempoh selama 10 bulan bermula Februari 2023 sehingga November 2023. Kajian ini bertujuan untuk menyelaraskan pengurusan 'orang yang layak' dan 'orang yang berwibawa' serta menambah baik proses-proses berkaitan termasuk pendaftaran, pembaharuan, prestasi, kualiti kerja, tanggungjawab, kod etika dan kos penawaran servis profesional.

TWELFTH MALAYSIAN PLAN PROJECT (12MP): PROJECT TO STRENGTHEN THE IMPLEMENTATION OF ENVIRONMENTAL ASSESSMENT IN MALAYSIA

Under the Twelfth Malaysian Plan, the DOE is implementing Strengthening Implementation of Environmental Assessment Project in Malaysia. For 2023, there are two (2) studies under this project that have been approved which are:

i. Study on the Establishment of Environmental Board; and

ii. Study on Drafting of Environmental Quality Regulations (Prescribed Activities) (Environmental Impact Assessment) (EQ EIA) 20XX

Study on the Establishment of Environmental Board Under the Twelfth Malaysian Plan

A study on the Establishment of Environmental Board was carried out under the Twelfth Malaysian Plan for 10 months duration from February 2023 until November 2023. This study aims to coordinate all matters with regards to management of 'qualified person' and 'competent person' as well as to enhance its related processes which include registration, renewal, performance, quality of work, responsibility, code of ethics, and cost of offering professional services.

Objektif utama kajian projek ini adalah seperti berikut:
The main objectives of this study are as follows:

Membangunkan rangka kerja bagi pembentukan Lembaga Alam Sekitar yang merangkumi semua aspek dari peringkat awal sehingga ke cadangan penubuhan **Develop** a framework for the establishment of Environmental Board that includes all aspects from the initial stage up to the proposed establishment	**Mengenal pasti** keperluan peruntukan perundangan bagi pembentukan organisasi Lembaga Alam Sekitar dan seterusnya menggubal perundangan tersebut **Identify** the requirements on legislative provisions for the establishment of the Environmental Board and later drafting the legislation	**Mengenal pasti** kaedah yang terbaik dan selaras bagi pembentukan Lembaga Alam Sekitar **Identify** the best method for the establishment of the Environmental Board	**Mengkaji** keperluan sumber peruntukan kewangan sama ada "*self-sustain*" atau peruntukan daripada Kerajaan **Study** the need for financial allocation sources, whether "self-sustain" or allocation from the Government

Bagi mendapatkan input Kajian Pembentukan Lembaga Alam Sekitar ini, sembilan (9) sesi libat urus dan dua (2) siri bengkel telah diadakan melibatkan 245 pemegang taruh di kalangan agensi dan badan/individu professional seperti berikut:

a. Jabatan Alam Sekitar
b. Agensi Kerajaan & Pihak Berkuasa Tempatan
c. Badan profesional
d. Institusi penyelidikan
e. Pertubuhan Bukan Kerajaan
f. Organisasi berkaitan persekitaran
g. Universiti tempatan
h. Penggerak projek
i. Jururunding EIA dan Juruaudit Alam Sekitar

Kajian ini telah membantu JAS mengenal pasti tindakan yang perlu diambil dan tempoh masa pelaksanaan ke arah penubuhan Lembaga Alam Sekitar. Sumber kuasa penubuhan dan fungsi Lembaga ini juga perlu dimasukkan di dalam pindaan Akta Kualiti Alam Sekeliling 1974.

For the purpose of obtaining information for the Study on the Establishment of Environmental Board, nine (9) engagement sessions and two (2) series of workshops were conducted involving 245 stakeholders which consists of agencies, professionals bodies/individuals as follows:

a. Department of Environment
b. Government Agencies & Local Authorities
c. Professional bodies
d. Research institutions
e. Non-Governmental Organizations
f. Organizations related to the environment
g. Local universities
h. Project proponents
i. EIA consultants and auditors

This study has helped DOE to identify actions that need to be taken and the implementation period towards the Establishment of Environmental Board. The source for establishment power and functions of this Environmental Board should also be included in the amendments of Environmental Quality Act 1974.



◂ Sesi Libat Urus 1 bersama Jururunding EIA dan Juruaudit pada 26 Julai 2023 di Institut Alam Sekitar Malaysia (E*i*MAS)
1st Session of Stakeholder Engagement with EIA Consultants and Auditors on the 26 July 2023 at the Environment Institute of Malaysia (E*i*MAS)



▸ Sesi Libat Urus 2 bersama Semua Pihak Berkepentingan pada 13 hingga 15 September 2023 di Acapella Suite & Hotel, Shah Alam
2nd Session of Stakeholder Engagement with All Related Stakeholders on from the 13 to 15 September 2023 at Acapella Suite & Hotel, Shah Alam

Kajian Bagi Penggubalan Peraturan-Peraturan Kualiti Alam Sekeliling (Aktiviti yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) (PPKAS EIA) 20XX

Kajian Bagi Penggubalan Peraturan-Peraturan Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) (PPKAS EIA) 20XX telah dijalankan di bawah Rancangan Malaysia Kedua Belas bagi tempoh selama 20 bulan bermula dariSeptember 2023 sehingga Mei 2025.

Objektif utama kajian projek ini adalah seperti berikut:

a. Membentuk kajian dokumen Analisis Impak (Regulatory Impact Statement, RIS) PPKAS EIA 20XX yang memenuhi kehendak pihak Malaysia Productivity Corporation (MPC).

b. Membentuk draf Peraturan EIA di bawah Seksyen 34A, Akta Kualiti Alam Sekeliling 1974.

Bagi tahun 2023, beberapa siri mesyuarat Jawatankuasa Penilai Perunding telah diadakan iaitu pada 22 Jun 2023 dan 28 Ogos 2023 bagi mengesahkan terma rujukan dan melantik perunding bagi menjalankan kajian.

Syarikat perunding yang berdaftar di bawah Kementerian Kewangan telah dilantik pada 7 September 2023 bagi melaksanakan kajian tersebut dalam tempoh yang dipersetujui.

Pihak Jabatan telah merancang untuk mengatur beberapa siri *focus group discussion* dengan agensi-agensi yang berkepentingan bagi mendapatkan input untuk penyediaan draf peraturan yang akan dibangunkan.

Kajian ini akan membantu Jabatan bagi menyediakan satu peraturan yang komprehensif dalam menguat kuasakan tadbir urus EIA di Malaysia.

Study on Drafting Environmental Quality Regulations (Prescribed Activities) (Environmental Impact Assessment) (EQ EIA) 20XX

The Study on Drafting Environmental Quality Regulations (Prescribed Activities) (Environmental Impact Assessment) (EQ EIA) 20XX was conducted under the Twelfth Malaysian Plan for a period of 20 months from September 2023 until May 2025.

The main objectives of this study are:

a. Form a study of the Impact Analysis document (Regulatory Impact Statement, RIS) (EQ EIA) 20XX that meets Malaysia Productivity Corporation (MPC) requirements.

b. Drafting EIA Regulation related to Section 34A, Environmental Quality Act 1974.

For 2023, a series of *mesyuarat Jawatankuasa Penilai Perunding* had been conducted on 22 June 2023 and 28 August 2023 to endorse the Terms of Reference, TOR and also appoint the consultant to conduct this study.

A consulting company registered with the Ministry of Finance was appointed on 7 September 2023 to conduct this study within the timeline agreed.

The Department has planned to organize a series of focus group discussions with related agencies to obtain input for the preparation of draft regulations.

This study will help the Department to provide a comprehensive regulation in enforcing EIA governance in Malaysia.

KERJASAMA DAN LAWATAN TEKNIKAL JABATAN ALAM SEKITAR DENGAN PIHAK BERKEPENTINGAN

Jabatan Alam Sekitar (JAS) secara aktif turut melaksanakan libat urus bersama pihak berkepentingan dalam memberikan khidmat nasihat perancangan pembangunan, dan penyelarasan polisi berkaitan pengurusan alam sekitar khususnya melibatkan pembangunan projek berimpak tinggi yang memacu pembangunan negara.

Lawatan teknikal juga dilaksanakan dengan kerjasama pihak berkepentingan untuk memantapkan keupayaan pembangunan modal insan bagi semua pihak terlibat.

COLLABORATION AND TECHNICAL VISIT DEPARTMENT OF ENVIRONMENT WITH STAKEHOLDERS

Department of Environment (DOE) actively engages with stakeholders to ensure that administrative affairs run smoothly. The Department of Environment (DOE) actively engages with stakeholders in development planning input and coordinating policies related to environmental management, especially involving the development of high-impact projects in spurring the development of the country.

Technical visits are also being arranged with the collaboration of stakeholders to enhance the capacity buildings for all parties.

Sesi Keterlibatan dengan Pihak Berkepentingan

Pada tahun 2023, JAS telah mengadakan beberapa sesi keterlibatan dengan pihak berkepentingan antaranya bersama pihak Jabatan Mineral dan Geosains Malaysia (JMG), Jabatan Kerja Raya Malaysia (JKR) dan PLANMalaysia. Sesi keterlibatan ini diadakan bagi menjalinkan kesefahaman dalam penerusan menambah baik serta memudah cara perkhidmatan bagi prosedur dan pemprosesan Laporan Penilaian Kesan Kepada Alam Sekeliling (EIA) seterusnya membantu pelaksanaan bagi projek-projek kerajaan secara lestari.

Stakeholder Engagement Session

In 2023, DOE has held several engagement sessions with stakeholders including the Department of Mineral and Geoscience Malaysia (JMG), Malaysian Public Works Department (JKR) and PLANMalaysia. The engagement session was held to establish an understanding in continuing improvement and facilitatating the procedures and processing of the Environmental Impact Assessment Report (EIA) to help the implementation of government projects in a sustainable manner.



▲ Sesi Libat Urus antara JAS dan JKR, 18 Oktober 2023
Engagement Session with DOE and JKR, 18 October 2023





▲ Sesi Libat Urus antara JAS dan PLANMalaysia, 14 Disember 2023
Engagement Session with DOE and PLANMalaysia, 14 December 2023

Majlis Pelancaran Handbook "*Environmental Best Management Practices Grid Development's Project Site*"

Bahagian Penilaian, Jabatan Alam Sekitar (JAS) bersama-sama Tenaga Nasional Berhad (TNB) telah menerbitkan satu *handbook* yang bertajuk "*Environmental Best Management Practices Grid Developments Project Site*".

Handbook ini telah dilancarkan bersama oleh YBrs. Timbalan Ketua Pengarah Pembangunan (TKPP) JAS, Puan Mashitah binti Darus dan *Chief Grid Officer* (CGO), Grid Division TNB, Ir. Dev Anandan pada 16 Mei 2023 bertempat di Hotel Dorsett, Putrajaya. Majlis pelancaran ini telah dihadiri oleh 200 orang peserta terdiri daripada JAS Ibu Pejabat dan JAS Negeri, TNB, serta kontraktor–kontraktor TNB.

Handbook ini merupakan panduan kepada semua kakitangan bagi projek pembangunan Grid TNB termasuk kontraktor dan semua pihak yang berkaitan bagi amalan pengurusan terbaik (BMP) berhubung dengan pengurusan alam sekitar semasa peringkat pembinaan di tapak projek. Kandungan buku panduan ini adalah berdasarkan amalan pengurusan terbaik (BMP) yang telah dilaksanakan oleh pihak TNB semasa pembangunan projek talian pemancar.

Justeru itu, gandingan informasi secara teori dan praktikal dari kedua-dua belah pihak telah diadunkan dalam menghasilkan panduan ini dapat memberikan gambaran yang jelas berkaitan pelaksanaan *best management practise* dalam pelaksanaan projek transmission line yang dijalankan bagi menjamin pembangunan yang lebih lestari.

Launching Ceremony of Handbook "Environmental Best Management Practices Grid Development's Project Site"

Assessment Division, Department of Environment (DOE) together with Tenaga Nasional Berhad (TNB) have published a handbook titled "Environmental Best Management Practices Grid Developments Project Site".

This handbook was jointly launched by Deputy Director General (Development) of DOE, Puan Mashitah binti Darus and Chief Grid Officer (CGO), TNB Grid Division, Ir. Dev Anandan on 16 May 2023 at Hotel Dorsett, Putrajaya. The launch ceremony was attended by 200 participants including Headquarters and State DOE, various departments from TNB and TNB contractors.

This handbook is a guidance to all staff for the TNB Grid development project including contractors and all related parties for best management practices (BMP) regarding environmental management during the construction stage at the project site. The content of this handbook is based on the best management practices (BMP) implemented by TNB during the development of the transmission line project.

Therefore, a combination of theoretical and practical information from both parties has been blended in producing this handbook to give a clear picture of the implementation of best management practices in the implementation of transmission line projects to ensure sustainable development.



▲ Pelancaran *Handbook "Environmental Best Management Practices Grid Developments Project Site"*
Launching of "Environmental Best Management Practices Grid Developments Project Site" Handbook





◂ Penyerahan *Handbook* dan Acara Penyiraman Pokok Hutan sebagai Simbolik ESG
Handing Over the Handbook and Watering Forest Trees Activities as Symbolic of ESG



▴ Majlis Pelancaran *Handbook* "*Environmental Best Management Practices Grid Development's Project Site*"
Launching Ceremony for Environmental Best Management Practices Grid Development's Project Site Handbook

Lawatan Teknikal Timbalan Ketua Pengarah (Pembangunan) Jabatan Alam Sekitar ke Projek East Coast Rail Link (ECRL) Seksyen 8

Jabatan Alam Sekitar (JAS) telah mengadakan lawatan teknikal ke Projek ECRL Seksyen 8 di Gombak pada 25 September 2023 bagi memantau pematuhan projek kepada syarat-syarat kelulusan Laporan EIA dan Akta Kualiti Alam Sekeliling 1974.

Lawatan teknikal ini telah diketuai oleh YBrs. Puan Mashitah binti Darus, Timbalan Ketua Pengarah (Pembangunan) Jabatan Alam Sekitar dan turut serta pengarah-pengarah dan pegawai-pegawai JAS dari Bahagian Penilaian, Ibu Pejabat dan JAS Negeri Selangor.

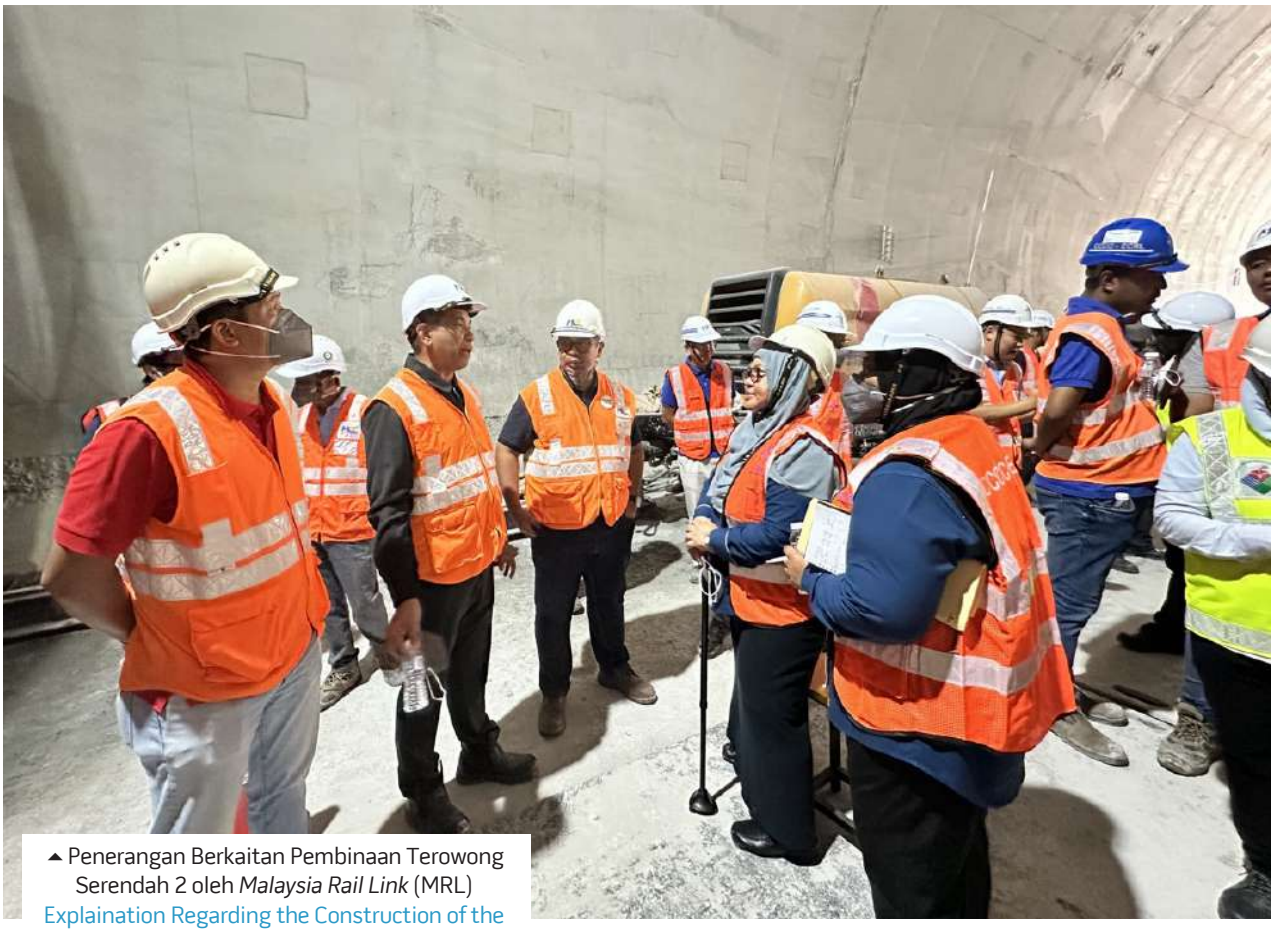
Projek ini merupakan salah satu projek berimpak tinggi yang dilaksanakan dalam sektor infrastruktur dan jaringan pengangkutan yang memberi manfaat kepada rakyat. Projek ini dilaksanakan oleh Malaysia Rail Link (MRL) Sdn. Bhd. dan dijangka siap pada hujung tahun 2026.

Deputy Director General (Development) of Department of Environment Technical Visit to the East Coast Rail Link (ECRL) Section 8 Project

Department of Environment (DOE) held a technical visit to the ECRL Section 8 Project in Gombak on 25 September 2023 to monitor the compliance of the project towards the conditions of approval of the EIA Report and the Environmental Quality Act 1974.

This technical visit was led by Puan Mashitah binti Darus, Deputy Director General (Development) of Department of Environment and also participating DOE directors and officers from the Assessment Division, Headquarters and DOE Selangor.

This project is one of the high-impact projects which is implemented in the infrastructure and transport network sector that will give beneficial impact to the people. This project is implemented by Malaysia Rail Link (MRL) Sdn. Bhd. and is expected to be completed by the end of 2026.



▲ Penerangan Berkaitan Pembinaan Terowong Serendah 2 oleh *Malaysia Rail Link* (MRL)
Explaination Regarding the Construction of the Serendah 2 Tunnel by Malaysia Rail Link (MRL)



◂ Barisan Pegawai Jabatan Alam Sekitar (JAS) bersama MRL Sdn. Bhd.
Department of Environment (JAS) Officers with MRL Sdn. Bhd.



▴ Penerangan berkaitan pemantauan kualiti air sungai oleh pihak MRL
Explaination Related to River Water Quality Monitoring by MRL



▸ Sesi Bergambar di hadapan Terowong Serendah 2
Photo Session in front of the Serendah 2 Tunnel



BAB/
CHAPTER
03

PENGAWASAN DAN PENGUATKUASAAN
MONITORING AND ENFORCEMENT

PENGAWASAN DAN PENGUATKUASAAN MONITORING AND ENFORCEMENT

PENGAWASAN KUALITI AIR SUNGAI

Jabatan Alam Sekitar (JAS) meneruskan program pemantauan kualiti sungai pada 2023 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 Kebangsaan (NWQS). IKA mengambil kira parameter Oksigen Terlarut (DO), Permintaan Oksigen Biokimia (BOD), Permintaan Oksigen Kimia (COD), Ammoniakal Nitrogen (NH3-N), Pepejal Terampai (SS) dan pH.

Pada 2023, kualiti air sungai dinilai berdasarkan sejumlah 8,118 sampel yang diambil dari sejumlah 1,353 stesen pengawasan kualiti air sungai manual yang merangkumi 672 sungai di seluruh negara seperti dalam **Jadual 3.1.**

RIVER WATER QUALITY MONITORING

The Department of Environment (DOE) continues the river water quality monitoring programme in 2023 to determine the status of river water quality and to detect changes in river water 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 uses according to the National Water Quality Standards for Malaysia (NWQS). The WQI takes into consideration parameters of Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Ammoniacal Nitrogen (NH3-N), Suspended Solid (SS) and pH.

In 2023, river water quality was assessed based on a total of 8,118 samples taken from a total of 1,353 manual river water quality monitoring stations covering 672 rivers in Malaysia as shown in **Table 3.1.**

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Perlis	Sg. Perlis	Sg. Arau	1RPLS012
		Sg. Arau	1RPLS014
		Sg. Empangan Timah Tasoh	1RPLS015
		Sg. Jarum	1RPLS006
		Sg. Jernih	1RPLS004
		Sg. Jernih	1RPLS005
		Sg. Kok Mak	1RPLS007
		Sg. Korok	1RPLS013
		Sg. Ngulang	1RPLS002
		Sg. Pelarit	1RPLS008
		Sg. Perlis	1RPLS001
		Sg. Serai	1RPLS003
		Sg. Terusan Mada	1RPLS010
		Sg. Terusan Mada	1RPLS011
		Sg. Wang Kelian	1RPLS009

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Kedah	Sg. Kedah	Sg. Ahning	1KKDH011
		Sg. Changlun	1KKDH016
		Sg. Janing	1KKDH007
		Sg. Kedah	1KKDH001
		Sg. Napoh	1KKDH017
		Sg. Padang Terap	1KKDH002
		Sg. Padang Terap	1KKDH003
		Sg. Padang Terap	1KKDH004
		Sg. Padang Terap	1KKDH009
		Sg. Padang Terap	1KKDH012
		Sg. Pedu	1KKDH005
		Sg. Pendang	1KKDH008
		Sg. Sintok	1KKDH018
		Sg. Tekai	1KKDH006
		Sg. Temin	1KKDH010
		Sg. Terusan Lengkuas	1KKDH014
		Sg. Terusan Mada Selatan	1KKDH013
		Sg. Terusan Tengah	1KKDH015
	Sg. Kerian	Sg. Kerian	1KKER001
	Sg. Kisap	Sg. Kisap	1KKSP001
	Sg. Kuah	Sg. Kuah	1KKUA001
	Sg. Merbok	Sg. Bakar Arang	1KMBK008
		Sg. Batu	1KMBK002
		Sg. Bongkok	1KMBK003
		Sg. Bukit Merah	1KMBK006
		Sg. Bukit Nanas	1KMBK011
		Sg. Korok	1KMBK009
		Sg. Merbok	1KMBK001
		Sg. Petani	1KMBK007
		Sg. Tok Pawang	1KMBK004
		Sg. Tok Pawang	1KMBK005
		Sg. Tupah	1KMBK010
	Sg. Muda	Sg. Chepir	1KMUD012
		Sg. Gunung Inas	1KMUD021
		Sg. Jerong	1KMUD002
		Sg. Jerong	1KMUD003
		Sg. Karangan	1KMUD009
		Sg. Ketil	1KMUD007
		Sg. Muda	1KMUD001
		Sg. Muda	1KMUD004
		Sg. Muda	1KMUD005
		Sg. Muda	1KMUD013
		Sg. Muda	1KMUD014

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Kedah	Sg. Muda	Sg. Muda	1KMUD015
		Sg. Muda	1KMUD016
		Sg. Muda	1KMUD018
		Sg. Muda	1KMUD019
		Sg. Muda	1KMUD023
		Sg. Muda	1KMUD024
		Sg. Muda	1KMUD025
		Sg. Pegang	1KMUD011
		Sg. Sedim	1KMUD008
		Sg. Sedim	1KMUD017
		Sg. Tawar	1KMUD006
		Sg. Tawar	1KMUD010
		Sg. Tawar	1KMUD020
	Sg. Perai	Sg. Jarak	1KPRI018
		Sg. Jarak	1KPRI019
		Sg. Jarak	1KPRI024
		Sg. Keladi	1KPRI015
		Sg. Kulim	1KPRI014
		Sg. Kulim	1KPRI016
		Sg. Kulim	1KPRI017
		Sg. Kulim	1KPRI023
		Sg. Kulim	1KPRI025
		Sg. Seluang	1KPRI021
		Sg. Seluang Bawah	1KPRI020
	Sg. Ulu Melaka	Sg. Chenang	1KMLK006
		Sg. Melaka	1KMLK002
		Sg. Melaka	1KMLK003
		Sg. Melaka	1KMLK007
		Sg. Petang	1KMLK001
		Sg. Saga	1KMLK004
		Sg. Tuba	1KMLK005
Pulau Pinang	Sg. Bayan Lepas	Sg. Bayan Lepas	1PBLS003
		Sg. Tiram	1PBLS001
		Sg. Tiram	1PBLS002
	Sg. Jawi	Sg. Chempedak	1PJWI003
		Sg. Jawi	1PJWI001
		Sg. Junjong	1PJWI002
		Sg. Junjong	1PJWI004
		Sg. Junjong	1PJWI006
		Sg. Machang Bubok	1PJWI007
		Sg. Tengah	1PJWI005
	Sg. Juru	Sg. Ara	1PJRU006
		Sg. Juru	1PJRU001

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Pulau Pinang	Sg. Juru	Sg. Juru	1PJRU012
		Sg. Kilang Ubi	1PJRU002
		Sg. Kilang Ubi	1PJRU003
		Sg. Kilang Ubi	1PJRU009
		Sg. Kilang Ubi	1PJRU010
		Sg. Kilang Ubi	1PJRU011
		Sg. Pasir	1PJRU004
		Sg. Permatang Rawa	1PJRU008
		Sg. Permatang Rawa	1PJRU013
		Sg. Rambai	1PJRU005
		Sg. Rambai	1PJRU007
	Sg. Kerian	Sg. Kechil	1PKER002
		Sg. Kechil	1PKER005
		Sg. Kerian	1PKER003
		Sg. Kerian	1PKER004
		Sg. Kerian	1PKER006
		Sg. Kerian	1PKER009
		Sg. Kerian	1PKER014
		Sg. Serdang	1PKER007
	Sg. Kluang	Sg. Ara	1PKLU002
		Sg. Ara	1PKLU003
		Sg. Dua Besar	1PKLU005
		Sg. Kluang	1PKLU001
		Sg. Relau	1PKLU004
	Sg. Perai	Sg. Air Melintas	1PPRI007
		Sg. Jarak	1PPRI009
		Sg. Jarak	1PPRI011
		Sg. Jarak	1PPRI012
		Sg. Kereh	1PPRI006
		Sg. Kereh	1PPRI008
		Sg. Kereh	1PPRI024
		Sg. Kubang Semang	1PPRI005
		Sg. Perai	1PPRI003
		Sg. Perai	1PPRI004
		Sg. Pertama	1PPRI022
		Sg. Seluang Bawah	1PPRI010
	Sg. Pinang	Sg. Air Itam	1PPNG006
		Sg. Air Itam	1PPNG011
		Sg. Air Itam	1PPNG018
		Sg. Air Terjun	1PPNG019
		Sg. Batu Feringghi	1PPNG001

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Pulau Pinang	Sg. Pinang	Sg. Batu Feringghi	1PPNG002
		Sg. Dondang	1PPNG012
		Sg. Dondang	1PPNG013
		Sg. Dondang	1PPNG014
		Sg. Dondang	1PPNG015
		Sg. Dondang	1PPNG016
		Sg. Dondang	1PPNG017
		Sg. Jelutong	1PPNG010
		Sg. Pinang	1PPNG003
		Sg. Pinang	1PPNG008
		Sg. Pinang	1PPNG021
		Sg. Satu	1PPNG020
		Sg. Titi Kerawang	1PPNG004
Perak	Sg. Bernam	Sg. Bernam	1ABNM001
		Sg. Bernam	1ABNM002
		Sg. Bernam	1ABNM003
		Sg. Bernam	1ABNM004
		Sg. Bernam	1ABNM005
		Sg. Bernam	1ABNM006
		Sg. Gelinting	1ABNM015
		Sg. Inki	1ABNM012
		Sg. Slim	1ABNM007
		Sg. Slim	1ABNM008
		Sg. Slim	1ABNM011
		Sg. Trolak	1ABNM009
		Sg. Trolak	1ABNM010
		Sg. Trolak	1ABNM014
	Sg. Bruas	Sg. Bruas	1ABRU001
		Sg. Bruas	1ABRU004
		Sg. Bruas	1ABRU005
		Sg. Dandang	1ABRU006
		Sg. Licin	1ABRU007
		Sg. Rotan	1ABRU002
		Sg. Rotan	1ABRU003
	Sg. Kerian	Sg. Selama	1AKER011
		Sg. Selama	1AKER012
		Sg. Selama	1AKER016
		Sg. Semang	1AKER013
		Sg. Terusan Bagan Serai	1AKER015
	Sg. Kurau	Sg. Air Hitam	1AKRU007
		Sg. Ara	1AKRU001
		Sg. Ara	1AKRU006

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Perak	Sg. Kurau	Sg. Kurau	1AKRU002
		Sg. Kurau	1AKRU003
		Sg. Kurau	1AKRU004
		Sg. Kurau	1AKRU005
	Sg. Perak	Sg. Batang Padang	1APRK003
		Sg. Batang Padang	1APRK006
		Sg. Batang Padang	1APRK009
		Sg. Behrang	1APRK077
		Sg. Berok	1APRK068
		Sg. Bidor	1APRK002
		Sg. Bidor	1APRK004
		Sg. Bidor	1APRK005
		Sg. Chenderiang	1APRK012
		Sg. Chenderiang	1APRK013
		Sg. Chepor	1APRK056
		Sg. Cuar	1APRK046
		Sg. Ibol	1APRK066
		Sg. Kampar	1APRK031
		Sg. Kampar	1APRK032
		Sg. Kangsar	1APRK043
		Sg. Kangsar	1APRK044
		Sg. Kangsar	1APRK079
		Sg. Kepayang	1APRK037
		Sg. Kepayang	1APRK038
		Sg. Kerbau	1APRK064
		Sg. Kerbau	1APRK078
		Sg. Kerdah	1APRK041
		Sg. Kerdah	1APRK053
		Sg. Kinjang	1APRK055
		Sg. Kinta	1APRK019
		Sg. Kinta	1APRK022
		Sg. Kinta	1APRK024
		Sg. Kinta	1APRK025
		Sg. Kinta	1APRK033
		Sg. Kinta	1APRK034
		Sg. Kinta	1APRK057
		Sg. Kinta	1APRK058
		Sg. Kinta	1APRK063
		Sg. Klah	1APRK014
		Sg. Klah	1APRK015
		Sg. Klian Baru	1APRK016
		Sg. Klian Baru	1APRK017
		Sg. Klian Gunong	1APRK081

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Perak	Sg. Perak	Sg. Kuang	1APRK042
		Sg. Manong	1APRK060
		Sg. Nyamok	1APRK052
		Sg. Pari	1APRK023
		Sg. Pari	1APRK028
		Sg. Pelus	1APRK039
		Sg. Pelus	1APRK040
		Sg. Perak	1APRK001
		Sg. Perak	1APRK018
		Sg. Perak	1APRK020
		Sg. Perak	1APRK045
		Sg. Perak	1APRK047
		Sg. Perak	1APRK048
		Sg. Perak	1APRK049
		Sg. Perak	1APRK051
		Sg. Perak	1APRK059
		Sg. Perak	1APRK065
		Sg. Perak	1APRK069
		Sg. Perak	1APRK070
		Sg. Perak	1APRK071
		Sg. Perak	1APRK072
		Sg. Perak	1APRK074
		Sg. Perak	1APRK080
		Sg. Perak	1APRK082
		Sg. Perak	1APRK086
		Sg. Pinji	1APRK021
		Sg. Pinji	1APRK036
		Sg. Pulau	1APRK067
		Sg. Raia	1APRK030
		Sg. Raia	1APRK035
		Sg. Rui	1APRK084
		Sg. Rui	1APRK085
		Sg. Seluang	1APRK050
		Sg. Serokai	1APRK026
		Sg. Serokai	1APRK027
		Sg. Sintang	1APRK054
		Sg. Sungkai	1APRK007
		Sg. Sungkai	1APRK008
		Sg. Sungkai	1APRK073
		Sg. Sungkai	1APRK075
		Sg. Sungkai Mati	1APRK010

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Perak	Sg. Perak	Sg. Sungkai Mati	1APRK011
		Sg. Tapah	1APRK076
		Sg. Teja	1APRK083
		Sg. Tesong	1APRK062
		Sg. Tumboh	1APRK029
		Sg. Woh	1APRK061
	Sg. Raja Hitam	Sg. Derhaka	1ARHT004
		Sg. Derhaka	1ARHT006
		Sg. Manjong	1ARHT001
		Sg. Manjong	1ARHT002
		Sg. Nyior	1ARHT007
		Sg. Raja Hitam	1ARHT003
		Sg. Raja Hitam	1ARHT005
		Sg. Raja Hitam	1ARHT008
	Sg. Sepetang	Sg. Batu Tegoh	1ASPT006
		Sg. Batu Tegoh	1ASPT007
		Sg. Batu Tegoh	1ASPT009
		Sg. Batu Tegoh	1ASPT012
		Sg. Batu Tegoh	1ASPT016
		Sg. Jana	1ASPT004
		Sg. Jana	1ASPT013
		Sg. Lidin	1ASPT008
		Sg. Limau	1ASPT014
		Sg. Malai	1ASPT002
		Sg. Malai	1ASPT019
		Sg. Nyior	1ASPT018
		Sg. Nyior	1ASPT020
		Sg. Sepetang	1ASPT001
		Sg. Sepetang	1ASPT003
		Sg. Temerloh	1ASPT010
		Sg. Temerloh	1ASPT011
		Sg. Trong	1ASPT015
		Sg. Trong	1ASPT017
	Sg. Wangi	Sg. Deralik	1AWGI001
		Sg. Deralik	1AWGI002
		Sg. Wangi	1AWGI003
		Sg. Wangi	1AWGI004
Selangor	Sg. Bernam	Sg. Bernam	2BBNM013
		Sg. Bernam	2BBNM016
		Sg. Dusun	2BBNM017
	Sg. Buloh	Sg. Buloh	2BBLH001
		Sg. Buloh	2BBLH002

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Selangor	Sg. Buloh	Sg. Buloh	2BBLH003
		Sg. Buloh	2BBLH004
		Sg. Buloh	2BBLH005
		Sg. Buloh	2BBLH006
	Sg. Klang	Sg. Ampang	2BKLG032
		Sg. Ampang	2BKLG042
		Sg. Anak Air Batu	2BKLG047
		Sg. Batu	2BKLG007
		Sg. Batu	2BKLG036
		Sg. Damansara	2BKLG008
		Sg. Damansara	2BKLG009
		Sg. Damansara	2BKLG017
		Sg. Damansara	2BKLG055
		Sg. Damansara	2BKLG067
		Sg. Gombak	2BKLG020
		Sg. Gombak	2BKLG027
		Sg. Jinjang	2BKLG044
		Sg. Kerayong	2BKLG013
		Sg. Kerayong	2BKLG051
		Sg. Keroh	2BKLG030
		Sg. Klang	2BKLG005
		Sg. Klang	2BKLG006
		Sg. Klang	2BKLG016
		Sg. Klang	2BKLG022
		Sg. Klang	2BKLG023
		Sg. Klang	2BKLG024
		Sg. Klang	2BKLG034
		Sg. Klang	2BKLG050
		Sg. Kuyoh	2BKLG011
		Sg. Penchala	2BKLG019
		Sg. Penchala	2BKLG054
		Sg. Pusu	2BKLG021
		Sg. Rasau	2BKLG003
		Sg. Rumput	2BKLG033
		Sg. Semelah	2BKLG025
	Sg. Langat	Sg. Anak Chuau	2BCHU004
		Sg. Balak	2BLGT025
		Sg. Batang Labu	2BLGT028
		Sg. Batang Labu	2BLGT030
		Sg. Batang Labu	2BLGT031
		Sg. Batang Labu	2BLGT032
		Sg. Batang Labu	2BLGT033

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Selangor	Sg. Langat	Sg. Batang Labu	2BLGT035
		Sg. Chuau	2BCHU001
		Sg. Chuau	2BCHU002
		Sg. Langat	2BLGT002
		Sg. Langat	2BLGT003
		Sg. Langat	2BLGT004
		Sg. Langat	2BLGT005
		Sg. Langat	2BLGT006
		Sg. Langat	2BLGT007
		Sg. Langat	2BLGT008
		Sg. Langat	2BLGT026
		Sg. Langat	2BLGT027
		Sg. Limau Manis	2BCHU003
		Sg. Rinching	2BLGT014
		Sg. Rinching	2BLGT015
		Sg. Semenyih	2BLGT010
		Sg. Semenyih	2BLGT011
		Sg. Semenyih	2BLGT012
		Sg. Sering	2BLGT034
	Sg. Selangor	Sg. Air Hitam	2BSEL002
		Sg. Air Hitam	2BSEL024
		Sg. Batang Kali	2BSEL003
		Sg. Guntong	2BSEL021
		Sg. Kanching	2BSEL007
		Sg. Kerling	2BSEL006
		Sg. Kundang	2BSEL012
		Sg. Rangkap	2BSEL016
		Sg. Rawang	2BSEL013
		Sg. Selangor	2BSEL001
		Sg. Selangor	2BSEL004
		Sg. Selangor	2BSEL005
		Sg. Selangor	2BSEL010
		Sg. Selangor	2BSEL011
		Sg. Selangor	2BSEL014
		Sg. Selangor	2BSEL015
		Sg. Selangor	2BSEL017
		Sg. Selangor	2BSEL018
		Sg. Selangor	2BSEL023
		Sg. Sembah	2BSEL009
		Sg. Sembah	2BSEL019
		Sg. Serendah	2BSEL008

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Selangor	Sg. Sepang	Sg. Rambai	2BSPG004
		Sg. Sepang	2BSPG001
		Sg. Sepang	2BSPG002
		Sg. Sepang	2BSPG003
	Sg. Tengi	Sg. Tengi	2BTGI001
		Sg. Tengi	2BTGI002
		Sg. Tengi	2BTGI003
		Sg. Tengi	2BTGI004
WP Kuala Lumpur	Sg. Klang	Sg. Air Busuk	2WKLG041
		Sg. Batu	2WKLG028
		Sg. Batu	2WKLG056
		Sg. Batu	2WKLG061
		Sg. Belongkong	2WKLG040
		Sg. Bunos	2WKLG006
		Sg. Bunos	2WKLG039
		Sg. Bunos	2WKLG043
		Sg. Gombak	2WKLG018
		Sg. Gombak	2WKLG026
		Sg. Gombak	2WKLG060
		Sg. Jinjang	2WKLG014
		Sg. Jinjang	2WKLG031
		Sg. Jinjang	2WKLG045
		Sg. Kerayong	2WKLG046
		Sg. Kerayong	2WKLG058
		Sg. Keroh	2WKLG015
		Sg. Keroh	2WKLG048
		Sg. Klang	2WKLG001
		Sg. Klang	2WKLG002
		Sg. Klang	2WKLG003
		Sg. Klang	2WKLG004
		Sg. Klang	2WKLG049
		Sg. Kuyoh	2WKLG052
		Sg. Penchala	2WKLG010
		Sg. Toba	2WKLG037
		Sg. Untut	2WKLG038
Negeri Sembilan	Sg. Langat	Sg. Batang Benar	3NLGT013
		Sg. Batang Labu	3NLGT009
		Sg. Batang Labu	3NLGT025
		Sg. Batang Nilai	3NLGT023
		Sg. Batang Nilai	3NLGT024
		Sg. Beranang	3NLGT019
		Sg. Buan	3NLGT022

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Negeri Sembilan	Sg. Langat	Sg. Jijan	3NLGT026
		Sg. Pajam	3NLGT020
		Sg. Pajam	3NLGT021
	Sg. Linggi	Sg. Batang Penar	3NLGI009
		Sg. Batang Penar	3NLGI010
		Sg. Batang Penar	3NLGI020
		Sg. Batang Penar	3NLGI021
		Sg. Batang Penar	3NLGI027
		Sg. Batang Penar	3NLGI034
		Sg. Batu Hampar	3NLGI024
		Sg. Chembong	3NLGI012
		Sg. Empangan Terip	3NLGI022
		Sg. Jelai	3NLGI025
		Sg. Kayu Ara	3NLGI016
		Sg. Kenaboi	3NLGI032
		Sg. Kepayong	3NLGI007
		Sg. Kepayong	3NLGI023
		Sg. Kundur Besar	3NLGI013
		Sg. Linggi	3NLGI001
		Sg. Linggi	3NLGI002
		Sg. Linggi	3NLGI003
		Sg. Linggi	3NLGI004
		Sg. Linggi	3NLGI005
		Sg. Linggi	3NLGI006
		Sg. Muar	3NLGI026
		Sg. Ngoi Ngoi	3NLGI040
		Sg. Paroi	3NLGI018
		Sg. Pedas	3NLGI014
		Sg. Rembau	3NLGI011
		Sg. Senawang	3NLGI017
		Sg. Simin	3NLGI015
		Sg. Temiang	3NLGI019
		Sg. Temiang	3NLGI033
	Sg. Lukut	Sg. Lukut	3NLKT001
	Sg. Melaka	Sg. Dusun	3NMLK017
		Sg. Kemunting	3NMLK039
		Sg. Tampin	3NMLK038
		Sg. Tampin	3NMLK041
	Sg. Muar	Sg. Gemas	3NMUA041
		Sg. Gemencheh	3NMUA043

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Negeri Sembilan	Sg. Muar	Sg. Gemencheh	3NMUA045
		Sg. Jelai	3NMUA054
		Sg. Kelamah	3NMUA044
		Sg. Muar	3NMUA042
		Sg. Muar	3NMUA046
		Sg. Muar	3NMUA047
		Sg. Muar	3NMUA048
		Sg. Muar	3NMUA049
		Sg. Muar	3NMUA050
		Sg. Muar	3NMUA051
		Sg. Muar	3NMUA052
		Sg. Muar	3NMUA053
		Sg. Muar	3NMUA055
	Sg. Pahang	Sg. Pertang	3NPHG002
		Sg. Serting	3NPHG003
		Sg. Serting	3NPHG004
		Sg. Serting	3NPHG005
		Sg. Triang	3NPHG006
Melaka	Sg. Baru	Sg. Baru	3MBAR001
	Sg. Duyong	Sg. Duyong	3MDYG001
		Sg. Duyong	3MDYG002
		Sg. Duyong	3MDYG003
		Sg. Gapam	3MDYG004
		Sg. Punggur	3MPGR001
		Sg. Punggur	3MPGR002
	Sg. Kesang	Sg. Chin-Chin	3MKSG006
		Sg. Chin-Chin	3MKSG008
		Sg. Chin-Chin	3MKSG009
		Sg. Chohong	3MKSG004
		Sg. Chohong	3MKSG005
		Sg. Kesang	3MKSG001
		Sg. Kesang	3MKSG002
		Sg. Kesang	3MKSG003
		Sg. Tangkak	3MKSG007
	Sg. Linggi	Sg. Simpang Ampat	3MLGI029
		Sg. Siput	3MLGI030
		Sg. Siput	3MLGI031
		Sg. Tuang	3MTUG002
	Sg. Melaka	Sg. Batang Melaka	3MMLK008
		Sg. Batang Melaka	3MMLK027
		Sg. Batang Melaka	3MMLK028

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Melaka	Sg. Melaka	Sg. Durian Tunggal	3MMLK011
		Sg. Malim	3MMLK014
		Sg. Malim	3MMLK034
		Sg. Melaka	3MMLK007
		Sg. Melaka	3MMLK009
		Sg. Melaka	3MMLK010
		Sg. Melaka	3MMLK012
		Sg. Melaka	3MMLK013
		Sg. Melaka	3MMLK015
		Sg. Melaka	3MMLK021
		Sg. Melaka	3MMLK022
		Sg. Melaka	3MMLK023
		Sg. Melaka	3MMLK024
		Sg. Melaka	3MMLK025
		Sg. Melaka	3MMLK026
		Sg. Melaka	3MMLK030
		Sg. Melaka	3MMLK032
		Sg. Putat	3MMLK029
		Sg. Putat	3MMLK033
		Sg. Rembia	3MMLK035
		Sg. Rembia	3MMLK036
		Sg. Tampin	3MMLK031
	Sg. Merlimau	Sg. Merlimau	3MMLU001
		Sg. Merlimau	3MMLU002
		Sg. Merlimau	3MMLU003
		Sg. Merlimau	3MMLU004
		Sg. Merlimau	3MMLU005
	Sg. Seri Melaka	Sg. Air Salak	3MSMK001
		Sg. Seri Melaka	3MSMK002
		Sg. Sg.Udang	3MSUD001
	Sg. Tuang	Sg. Tuang	3MTUG001
Johor	Sg. Air Baloi	Sg. Air Baloi	3JABL001
		Sg. Air Baloi	3JABL002
		Sg. Air Baloi	3JABL003
	Sg. Batu Pahat	Sg. Amran	3JBPT018
		Sg. Bantang	3JBPT020
		Sg. Batu Pahat	3JBPT001
		Sg. Bekok	3JBPT005
		Sg. Bekok	3JBPT008
		Sg. Bekok	3JBPT016
		Sg. Bekok	3JBPT017

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Johor	Sg. Batu Pahat	Sg. Bekok	3JBPT019
		Sg. Bekok	3JBPT023
		Sg. Berlian	3JBPT007
		Sg. Chaah	3JBPT010
		Sg. Kahang	3JBPT022
		Sg. Lenik	3JBPT011
		Sg. Merek	3JBPT009
		Sg. Merpo	3JBPT006
		Sg. Panchor	3JBPT025
		Sg. Semberong	3JBPT003
		Sg. Semberong	3JBPT004
		Sg. Semberong Dam	3JBPT021
		Sg. Simpang Kanan	3JBPT002
		Sg. Simpang Kanan	3JBPT013
		Sg. Simpang Kiri	3JBPT012
		Sg. Simpang Kiri	3JBPT014
		Sg. Simpang Kiri	3JBPT015
		Sg. Temehel	3JBPT024
	Sg. Benut	Sg. Benut	3JBNT001
		Sg. Benut	3JBNT002
		Sg. Benut	3JBNT005
		Sg. Benut	3JBNT006
		Sg. Machap Dam	3JBNT008
		Sg. Parit Hj.Yassin	3JBNT004
		Sg. Pinggan	3JBNT007
		Sg. Ulu Benut	3JBNT003
	Sg. Danga	Sg. Danga	3JDGA001
		Sg. Danga	3JDGA002
	Sg. Endau	Sg. Anak Sg. Semberong	3JEND007
		Sg. Dengar	3JEND010
		Sg. Empangan Labong	3JEND027
		Sg. Endau	3JEND019
		Sg. Endau	3JEND022
		Sg. Endau	3JEND023
		Sg. Jasin	3JEND024
		Sg. Jebong	3JEND005
		Sg. Kahang	3JEND020
		Sg. Kahang	3JEND026
		Sg. Kahang	3JEND028
		Sg. Lenga	3JEND008
		Sg. Lenggor	3JEND009

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Johor	Sg. Endau	Sg. Lenggor	3JEND029
		Sg. Mamai	3JEND015
		Sg. Melatai	3JEND017
		Sg. Mengkibol	3JEND001
		Sg. Mengkibol	3JEND002
		Sg. Mengkibol	3JEND003
		Sg. Paloh	3JEND016
		Sg. Pamol	3JEND011
		Sg. Selai	3JEND025
		Sg. Semberong	3JEND004
		Sg. Semberong	3JEND006
		Sg. Semberong	3JEND012
		Sg. Semberong	3JEND018
		Sg. Semberong	3JEND021
		Sg. Singol	3JEND013
		Sg. Tamok	3JEND014
	Sg. Jemaluang	Sg. Jemaluang	3JJML001
		Sg. Jemaluang	3JJML002
	Sg. Johor	Sg. Anak Sg. Sayong	3JJHR023
		Sg. Anak Sg. Sayong	3JJHR032
		Sg. Belitong	3JJHR038
		Sg. Berangan	3JJHR013
		Sg. Bukit Besar	3JJHR007
		Sg. Bukit Besar	3JJHR009
		Sg. Chemangar	3JJHR019
		Sg. Johor	3JJHR011
		Sg. Johor	3JJHR014
		Sg. Johor	3JJHR015
		Sg. Johor	3JJHR040
		Sg. Johor	3JJHR041
		Sg. Johor	3JJHR042
		Sg. Layang	3JJHR001
		Sg. Layau Kiri	3JJHR017
		Sg. Lebam	3JJHR020
		Sg. Linggiu	3JJHR030
		Sg. Panti	3JJHR037
		Sg. Papan	3JJHR034
		Sg. Pelepah	3JJHR039
		Sg. Pelepah	3JJHR043
		Sg. Pelepah	3JJHR044
		Sg. Pelepah	3JJHR045

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Johor	Sg. Johor	Sg. Penggeli	3JJHR028
		Sg. Penggeli	3JJHR031
		Sg. Remis	3JJHR026
		Sg. Santi	3JJHR022
		Sg. Sayong	3JJHR024
		Sg. Sayong	3JJHR025
		Sg. Sayong	3JJHR027
		Sg. Sayong	3JJHR033
		Sg. Sebol	3JJHR029
		Sg. Seluyut	3JJHR035
		Sg. Semangar	3JJHR008
		Sg. Semenchu	3JJHR018
		Sg. Sening	3JJHR021
		Sg. Serai	3JJHR002
		Sg. Telor	3JJHR012
		Sg. Temoh	3JJHR016
		Sg. Tiram	3JJHR003
		Sg. Tiram	3JJHR004
		Sg. Tiram	3JJHR005
		Sg. Tiram	3JJHR006
	Sg. Kaw. Pasir Gudang	Sg. Buluh	3JPGD002
		Sg. Latoh	3JPGD004
		Sg. Masai	3JPGD005
		Sg. Perembi	3JPGD001
		Sg. Tukang Batu	3JPGD003
	Sg. Kempas	Sg. Kempas	3JKPS001
		Sg. Kempas	3JKPS002
	Sg. Kim-Kim	Sg. Kim-Kim	3JKIM001
		Sg. Kim-Kim	3JKIM002
	Sg. Mersing	Sg. Empangan Congok	3JMSG004
		Sg. Mersing	3JMSG001
		Sg. Mersing	3JMSG002
		Sg. Mersing	3JMSG003
	Sg. Muar	Sg. Air Panas	3JMUA035
		Sg. Belemang	3JMUA051
		Sg. Gemas	3JMUA036
		Sg. Jementah	3JMUA040
		Sg. Juasseh	3JMUA014
		Sg. Juasseh	3JMUA037
		Sg. Juasseh	3JMUA045

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Johor	Sg. Muar	Sg. Labis	3JMUA011
		Sg. Labis	3JMUA012
		Sg. Labis	3JMUA015
		Sg. Meda	3JMUA034
		Sg. Merbudu	3JMUA030
		Sg. Merlimau	3JMUA020
		Sg. Muar	3JMUA017
		Sg. Muar	3JMUA019
		Sg. Muar	3JMUA022
		Sg. Muar	3JMUA026
		Sg. Muar	3JMUA027
		Sg. Muar	3JMUA028
		Sg. Muar	3JMUA029
		Sg. Muar	3JMUA031
		Sg. Muar	3JMUA033
		Sg. Muar	3JMUA039
		Sg. Muar	3JMUA041
		Sg. Muar	3JMUA042
		Sg. Muar	3JMUA043
		Sg. Muar	3JMUA046
		Sg. Muar	3JMUA047
		Sg. P.Mengkuang	3JMUA018
		Sg. Pagoh	3JMUA049
		Sg. Palong	3JMUA024
		Sg. Palong	3JMUA025
		Sg. Pendol	3JMUA050
		Sg. Sarang Buaya	3JMUA038
		Sg. Segamat	3JMUA016
		Sg. Segamat	3JMUA044
		Sg. Segamat	3JMUA048
		Sg. Senarut	3JMUA021
		Sg. Serom	3JMUA032
		Sg. Simpang Loi	3JMUA023
		Sg. Tenang	3JMUA013
	Sg. Paloi	Sg. Paloi	3JPAL001
	Sg. Pontian Besar	Sg. Air Hitam	3JPBS001
		Sg. Ayer Merah	3JPBS005
		Sg. Pontian Besar	3JPBS002
		Sg. Pontian Besar	3JPBS003
		Sg. Pontian Besar	3JPBS004
		Sg. Pontian Besar	3JPBS006
		Sg. Pontian Besar	3JPBS007

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Johor	Sg. Pontian Kecil	Sg. Pontian Kecil	3JPKC001
		Sg. Pontian Kecil	3JPKC002
	Sg. Pulai	Sg. Pulai	3JPLI001
		Sg. Pulai	3JPLI002
		Sg. Pulai Dam	3JPLI004
		Sg. Ulu Choh	3JPLI003
	Sg. Rambah	Sg. Rambah	3JRBH001
		Sg. Rambah	3JRBH002
	Sg. Sanglang	Sg. Sanglang	3JSLG001
	Sg. Sedili Besar	Sg. Ambat	3JSBE005
		Sg. Dohol	3JSBE001
		Sg. Mupur	3JSBE009
		Sg. Pasir Panjang	3JSBE010
		Sg. Sedili Besar	3JSBE002
		Sg. Sedili Besar	3JSBE004
		Sg. Sedili Besar	3JSBE006
		Sg. Sedili Besar	3JSBE007
		Sg. Sedili Besar	3JSBE008
		Sg. Sedili Besar	3JSBE011
		Sg. Temubor Kanan	3JSBE003
	Sg. Sedili Kecil	Sg. Anak Sedili Kecil	3JSKE005
		Sg. Anak Sedili Kecil	3JSKE006
		Sg. Bahan	3JSKE002
		Sg. Bahan	3JSKE004
		Sg. Sedili Kecil	3JSKE001
		Sg. Sedili Kecil	3JSKE003
	Sg. Segget	Sg. Segget	3JSGT001
		Sg. Segget	3JSGT002
		Sg. Segget	3JSGT003
		Sg. Segget	3JSGT004
		Sg. Segget	3JSGT005
	Sg. Skudai	Sg. Melana	3JSKU008
		Sg. Melana	3JSKU009
		Sg. Skudai	3JSKU001
		Sg. Skudai	3JSKU002
		Sg. Skudai	3JSKU003
		Sg. Skudai	3JSKU004
		Sg. Skudai	3JSKU005
		Sg. Skudai	3JSKU006
		Sg. Skudai	3JSKU007
		Sg. Skudai	3JSKU010
		Sg. Skudai	3JSKU011

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Johor	Sg. Tebrau	Sg. Bala	3JTRU008
		Sg. Pandan	3JTRU007
		Sg. Plentong	3JTRU004
		Sg. Sebulung	3JTRU009
		Sg. Sengkuang	3JTRU011
		Sg. Tampoi	3JTRU010
		Sg. Tebrau	3JTRU001
		Sg. Tebrau	3JTRU002
		Sg. Tebrau	3JTRU003
		Sg. Tebrau	3JTRU005
		Sg. Tebrau	3JTRU006
Pahang	Sg. Anak Endau	Sg. Anak Endau	4CAED001
		Sg. Anak Endau	4CAED002
	Sg. Balok	Sg. Balok	4CBLK001
		Sg. Balok	4CBLK002
		Sg. Panjang	4CBLK004
		Sg. Yior	4CBLK003
	Sg. Bebar	Sg. Bebar	4CBBR001
		Sg. Bebar	4CBBR002
		Sg. Merba	4CBBR005
		Sg. Serai	4CBBR003
		Sg. Serai	4CBBR004
	Sg. Cherating	Sg. Cherating	4CCHE001
	Sg. Kuantan	Sg. Belat	4CKTN001
		Sg. Charu	4CKTN006
		Sg. Galing Besar	4CKTN003
		Sg. Galing Besar	4CKTN004
		Sg. Kenau	4CKTN010
		Sg. Kuantan	4CKTN002
		Sg. Kuantan	4CKTN015
		Sg. Kuantan	4CKTN016
		Sg. Kuantan	4CKTN017
		Sg. Kuantan	4CKTN018
		Sg. Kuantan	4CKTN019
		Sg. Kuantan	4CKTN020
		Sg. Kuantan	4CKTN021
		Sg. Pandan	4CKTN012
		Sg. Pinang	4CKTN005
		Sg. Reman	4CKTN014
		Sg. Riau	4CKTN007
		Sg. Talam	4CKTN013

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Pahang	Sg. Merchong	Sg. Merchong	4CMCO002
		Sg. Merchong	4CMCO003
	Sg. Pahang	Sg. Anak Sg. Lepar	4CPHG136
		Sg. Batu	4CPHG056
		Sg. Belayar	4CPHG135
		Sg. Bentong	4CPHG040
		Sg. Bentong	4CPHG045
		Sg. Bentong	4CPHG092
		Sg. Bentong	4CPHG133
		Sg. Bentong	4CPHG134
		Sg. Bentong	4CPHG144
		Sg. Benus	4CPHG047
		Sg. Benus	4CPHG118
		Sg. Benus	4CPHG152
		Sg. Bera	4CPHG019
		Sg. Bera	4CPHG020
		Sg. Bera	4CPHG058
		Sg. Bera	4CPHG059
		Sg. Bera	4CPHG063
		Sg. Berkelah	4CPHG098
		Sg. Bertam	4CBTM002
		Sg. Bertam	4CBTM010
		Sg. Bertam	4CBTM011
		Sg. Bertam	4CBTM013
		Sg. Bilut	4CPHG119
		Sg. Bilut	4CPHG129
		Sg. Burung	4CBTM005
		Sg. Chini	4CPHG004
		Sg. Gapoi	4CPHG086
		Sg. Habu	4CBTM004
		Sg. Jelai	4CPHG0130
		Sg. Jelai	4CPHG096
		Sg. Jelai	4CPHG125
		Sg. Jempol	4CPHG049
		Sg. Jempol	4CPHG050
		Sg. Jempol	4CPHG087
		Sg. Jempol	4CPHG088
		Sg. Jempol	4CPHG121
		Sg. Jengka	4CPHG041
		Sg. Jengka	4CPHG051
		Sg. Kecau	4CPHG091
		Sg. Kecau	4CPHG116

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Pahang	Sg. Pahang	Sg. Kecau	4CPHG151
		Sg. Kelau	4CPHG117
		Sg. Kelau	4CPHG145
		Sg. Kelau	4CPHG146
		Sg. Kelau	4CPHG153
		Sg. Kertam	4CPHG014
		Sg. Koyan	4CPHG033
		Sg. Krau	4CPHG003
		Sg. Kundang	4CPHG018
		Sg. Lenggok	4CBTM003
		Sg. Lepar	4CPHG006
		Sg. Lipis	4CPHG029
		Sg. Lipis	4CPHG030
		Sg. Lipis	4CPHG035
		Sg. Luit	4CPHG015
		Sg. Maran	4CPHG016
		Sg. Mentiga	4CPHG005
		Sg. Mentiga	4CPHG042
		Sg. Mentiga	4CPHG089
		Sg. Pahang	4CPHG007
		Sg. Pahang	4CPHG008
		Sg. Pahang	4CPHG010
		Sg. Pahang	4CPHG011
		Sg. Pahang	4CPHG012
		Sg. Pahang	4CPHG013
		Sg. Pahang	4CPHG021
		Sg. Pahang	4CPHG022
		Sg. Pahang	4CPHG023
		Sg. Pahang	4CPHG027
		Sg. Pahang	4CPHG054
		Sg. Pahang	4CPHG055
		Sg. Pahang	4CPHG097
		Sg. Pahang	4CPHG100
		Sg. Pahang	4CPHG104
		Sg. Pahang	4CPHG111
		Sg. Pahang	4CPHG113
		Sg. Pahang	4CPHG124
		Sg. Pahang	4CPHG126
		Sg. Pahang	4CPHG127
		Sg. Pahang	4CPHG131
		Sg. Pahang	4CPHG137
		Sg. Pahang	4CPHG138

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Pahang	Sg. Pahang	Sg. Pahang	4CPHG139
		Sg. Pahang	4CPHG141
		Sg. Pahang	4CPHG148
		Sg. Pahang	4CPHG150
		Sg. Penjuring	4CPHG044
		Sg. Pertang	4CPHG132
		Sg. Perting	4CPHG120
		Sg. Raub	4CPHG123
		Sg. Retang	4CPHG105
		Sg. Ringlet	4CBTM001
		Sg. Salak	4CPHG122
		Sg. Semantan	4CPHG025
		Sg. Semantan	4CPHG036
		Sg. Semantan	4CPHG061
		Sg. Semantan	4CPHG084
		Sg. Serting	4CPHG101
		Sg. Serting	4CPHG102
		Sg. T. Paya Bungor	4CPHG002
		Sg. Tahan	4CPHG109
		Sg. Tanglir	4CPHG048
		Sg. Tanglir	4CPHG053
		Sg. Tanglir	4CPHG057
		Sg. Tanglir	4CPHG106
		Sg. Tanglir	4CPHG107
		Sg. Tasik Bera	4CPHG140
		Sg. Tasik Chini	4CPHG043
		Sg. Tasik Chini	4CPHG060
		Sg. Tasik Chini	4CPHG071
		Sg. Tasik Chini	4CPHG108
		Sg. Tasik Chini	4CPHG110
		Sg. Tasik Chini	4CPHG112
		Sg. Tasik Chini	4CPHG114
		Sg. Tasik Chini	4CPHG115
		Sg. Tasik Chini	4CPHG130
		Sg. Tasik Chini	4CPHG143
		Sg. Teh	4CPHG090
		Sg. Tekal	4CPHG062
		Sg. Telang	4CPHG032
		Sg. Telemong	4CPHG046
		Sg. Telemong	4CPHG093
		Sg. Telemong	4CPHG094
		Sg. Telom	4CBTM008

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Pahang	Sg. Pahang	Sg. Telom	4CBTM009
		Sg. Tembeling	4CPHG142
		Sg. Teranum	4CPHG038
		Sg. Teras	4CPHG037
		Sg. Teras	4CPHG147
		Sg. Teris	4CPHG081
		Sg. Teris	4CPHG082
		Sg. Teris	4CPHG083
		Sg. Terla	4CBTM007
		Sg. Terla	4CBTM012
		Sg. Triang	4CPHG024
		Sg. Triang	4CPHG074
		Sg. Tringkap	4CBTM006
		Sg. Ulong	4CBTM014
	Sg. Rompin	Sg. Aur	4CRPN005
		Sg. Bakar	4CRPN016
		Sg. Jekatih	4CRPN012
		Sg. Jekatih	4CRPN013
		Sg. Jeram	4CRPN006
		Sg. Kepasing	4CRPN010
		Sg. Keratong	4CRPN011
		Sg. Keratong	4CRPN018
		Sg. Keratong	4CRPN021
		Sg. Keratong	4CRPN022
		Sg. Pontian	4CRPN003
		Sg. Pukin	4CRPN014
		Sg. Pukin	4CRPN015
		Sg. Pukin	4CRPN017
		Sg. Rompin	4CRPN004
		Sg. Rompin	4CRPN007
		Sg. Rompin	4CRPN008
		Sg. Rompin	4CRPN020
		Sg. Rompin	4CRPN030
		Sg. Sepayang	4CRPN002
	Sg. Tonggok	Sg. Tonggok	4CTGK001
		Sg. Tonggok	4CTGK002
Terengganu	Sg. Besut	Sg. Besut	4TBST002
		Sg. Besut	4TBST003
		Sg. Besut	4TBST004
		Sg. Besut	4TBST005
		Sg. Besut	4TBST006
		Sg. Jertih	4TBST001

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Terengganu	Sg. Chukai	Sg. Bungkus	4TCKI006
		Sg. Chukai	4TCKI003
		Sg. Ibok	4TCKI001
		Sg. Ibok	4TCKI002
		Sg. Ruang	4TCKI004
		Sg. Ruang	4TCKI005
	Sg. Dungun	Sg. Dungun	4TDGN002
		Sg. Dungun	4TDGN003
		Sg. Dungun	4TDGN004
		Sg. Dungun	4TDGN005
		Sg. Dungun	4TDGN006
		Sg. Telemboh	4TDGN001
	Sg. Ibai	Sg. Ibai	4TIBI001
		Sg. Ibai	4TIBI002
		Sg. Ibai	4TIBI003
	Sg. Kemaman	Sg. Cherul	4TKMM003
		Sg. Cherul	4TKMM004
		Sg. Cherul	4TKMM010
		Sg. Kemaman	4TKMM007
		Sg. Kemaman	4TKMM008
		Sg. Kemaman	4TKMM009
		Sg. Neram	4TKMM005
		Sg. Perasing	4TKMM006
		Sg. Ransan	4TKMM001
		Sg. Ransan	4TKMM002
	Sg. Kertih	Sg. Kertih	4TKTH001
		Sg. Kertih	4TKTH002
	Sg. Kluang	Sg. Kluang	4TKLU005
	Sg. Marang	Sg. Kerak	4TMRG001
		Sg. Marang	4TMRG002
		Sg. Temala	4TMRG003
	Sg. Merang	Sg. Merang	4TMER001
	Sg. Merchang	Sg. Landas	4TMCA001
		Sg. Merchang	4TMCA002
	Sg. Paka	Sg. Besul	4TPKA001
		Sg. Paka	4TPKA005
		Sg. Paka	4TPKA006
		Sg. Paka	4TPKA007
		Sg. Rasau	4TPKA003
		Sg. Rasau	4TPKA004
		Sg. Rengat	4TPKA002

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Terengganu	Sg. Setiu	Sg. Bari	4TSTU002
		Sg. Chalok	4TSTU001
		Sg. Chalok	4TSTU005
		Sg. Chalok	4TSTU006
		Sg. Setiu	4TSTU004
		Sg. Setiu	4TSTU007
		Sg. Tarom	4TSTU003
	Sg. Terengganu	Sg. Berang	4TTGG002
		Sg. Berang	4TTGG011
		Sg. Nerus	4TTGG004
		Sg. Nerus	4TTGG005
		Sg. Nerus	4TTGG006
		Sg. Nerus	4TTGG010
		Sg. Nerus	4TTGG014
		Sg. Nerus	4TTGG015
		Sg. Pueh	4TTGG007
		Sg. Pueh	4TTGG008
		Sg. Telemong	4TTGG012
		Sg. Terengganu	4TTGG001
		Sg. Terengganu	4TTGG003
		Sg. Terengganu	4TTGG009
		Sg. Terengganu	4TTGG013
Kelantan	Sg. Golok	Sg. Golok	4DGLK002
		Sg. Golok	4DGLK003
		Sg. Golok	4DGLK004
		Sg. Golok	4DGLK005
		Sg. Golok	4DGLK006
		Sg. Jedok	4DGLK008
		Sg. Lanas	4DGLK007
		Sg. Tasik Garu	4DGLK001
	Sg. Kelantan	Sg. Aring	4DKLT013
		Sg. Belatop	4DKLT020
		Sg. Belatop	4DKLT021
		Sg. Belatop	4DKLT046
		Sg. Ber	4DKLT018
		Sg. Berok	4DKLT016
		Sg. Berok	4DKLT019
		Sg. Berok	4DKLT022
		Sg. Betis	4DKLT017
		Sg. Chiku	4DKLT037
		Sg. Chiku	4DKLT043
		Sg. Galas	4DKLT014

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Kelantan	Sg. Kelantan	Sg. Galas	4DKLT031
		Sg. Galas	4DKLT032
		Sg. Galas	4DKLT033
		Sg. Galas	4DKLT034
		Sg. Isos	4DKLT049
		Sg. Kelantan	4DKLT001
		Sg. Kelantan	4DKLT006
		Sg. Kelantan	4DKLT010
		Sg. Kelantan	4DKLT045
		Sg. Kelantan	4DKLT054
		Sg. Kelantan	4DKLT055
		Sg. Kelantan	4DKLT056
		Sg. Kelesa	4DKLT015
		Sg. Kenkren	4DKLT047
		Sg. Kerilla	4DKLT002
		Sg. Kerilla	4DKLT003
		Sg. Ketil	4DKLT036
		Sg. Ketil	4DKLT053
		Sg. Lebir	4DKLT026
		Sg. Lebir	4DKLT027
		Sg. Lebir	4DKLT028
		Sg. Lebir	4DKLT029
		Sg. Lebir	4DKLT058
		Sg. Muring	4DKLT059
		Sg. Nal	4DKLT007
		Sg. Nal	4DKLT008
		Sg. Nal	4DKLT009
		Sg. Nenggiri	4DKLT023
		Sg. Nenggiri	4DKLT024
		Sg. Nenggiri	4DKLT025
		Sg. Pehi	4DKLT011
		Sg. Pehi	4DKLT044
		Sg. Pelaur	4DKLT048
		Sg. Penangau	4DKLT050
		Sg. Pergau	4DKLT004
		Sg. Pergau	4DKLT005
		Sg. Pergau	4DKLT038
		Sg. Pergau	4DKLT039
		Sg. Pergau	4DKLT040
		Sg. Pergau	4DKLT041
		Sg. Pergau	4DKLT051

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Kelantan	Sg. Kelantan	Sg. Pergau	4DKLT052
		Sg. Rasau	4DKLT061
		Sg. Relai	4DKLT012
		Sg. Relai	4DKLT030
		Sg. Sokor	4DKLT042
		Sg. Tuang	4DKLT035
	Sg. Kemasin	Sg. Gali	4DKMS006
		Sg. Kemasin	4DKMS001
		Sg. Kemasin	4DKMS003
		Sg. Semerak	4DKMS002
		Sg. Semerak	4DKMS004
		Sg. Semerak	4DKMS005
	Sg. Pengkalan Chepa	Sg. Alor B	4DPCH003
		Sg. Alor Lintah	4DPCH004
		Sg. Keladi	4DPCH002
		Sg. Pengkalan Chepa	4DPCH005
		Sg. Pengkalan Chepa	4DPCH006
		Sg. Raja Gali	4DPCH001
	Sg. Pengkalan Datu	Sg. Pasir Hor	4DPDT004
		Sg. Pengkalan Datu	4DPDT001
		Sg. Pengkalan Datu	4DPDT002
		Sg. Pengkalan Datu	4DPDT003
Sarawak	Sg. Balingian	Sg. Balingian	6QBLG001
		Sg. Balingian	6QBLG002
	Sg. Baram	Sg. Baram	6QBRM001
		Sg. Baram	6QBRM002
		Sg. Baram	6QBRM003
		Sg. Baram	6QBRM004
		Sg. Tutuh	6QBRM005
	Sg. Kayan	Sg. Kayan	6QKYN001
		Sg. Kayan	6QKYN002
		Sg. Kayan	6QKYN003
	Sg. Kemena	Sg. Kemena	6QKMN001
		Sg. Kemena	6QKMN002
		Sg. Kemena	6QKMN003
		Sg. Kemena	6QKMN004
		Sg. Sibiu	6QKMN005
	Sg. Kerian	Sg. Kerian	6QKRN014
		Sg. Kerian	6QKRN015
		Sg. Seblak	6QKRN016
		Sg. Selalang	6QKRN017

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Sarawak	Sg. Lawas	Sg. Lawas	6QLWS001
		Sg. Lawas	6QLWS002
		Sg. Lawas	6QLWS003
	Sg. Limbang	Sg. Limbang	6QLBG001
		Sg. Limbang	6QLBG002
		Sg. Limbang	6QLBG003
		Sg. Limbang	6QLBG004
		Sg. Limbang	6QLBG005
	Sg. Lupar	Sg. Ai	6QLPR001
		Sg. Ai	6QLPR002
		Sg. Lupar	6QLPR003
		Sg. Lupar	6QLPR004
		Sg. Lupar	6QLPR005
		Sg. Sekerang	6QLPR006
		Sg. Seterap	6QLPR007
		Sg. Undup	6QLPR008
	Sg. Miri	Sg. Adong	6QMRI001
		Sg. Dalam	6QMRI002
		Sg. Lutong	6QMRI003
		Sg. Lutong	6QMRI004
		Sg. Miri	6QMRI005
		Sg. Miri	6QMRI006
		Sg. Padang Liku	6QMRI007
	Sg. Mukah	Sg. Mukah	6QMKH001
		Sg. Mukah	6QMKH002
		Sg. Mukah	6QMKH003
		Sg. Mukah	6QMKH004
		Sg. Mukah	6QMKH005
	Sg. Niah	Sg. Niah	6QNIA001
		Sg. Niah	6QNIA002
		Sg. Sekaloh	6QNIA003
		Sg. Sekaloh	6QNIA004
	Sg. Oya	Sg. Oya	6QOYA001
		Sg. Oya	6QOYA002
		Sg. Oya	6QOYA003
	Sg. Rajang	Sg. Baloi	6QRJG019
		Sg. Binatang	6QRJG004
		Sg. Daro	6QRJG021
		Sg. Jemoreng	6QRJG022
		Sg. Julau	6QRJG005
		Sg. Kanowit	6QRJG006

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Sarawak	Sg. Rajang	Sg. Meradong	6QRJG003
		Sg. Pakan	6QRJG020
		Sg. Pila Parit	6QRJG023
		Sg. Rajang	6QRJG008
		Sg. Rajang	6QRJG009
		Sg. Rajang	6QRJG010
		Sg. Rajang	6QRJG011
		Sg. Rajang	6QRJG012
		Sg. Rajang	6QRJG013
		Sg. Rajang	6QRJG014
		Sg. Rajang	6QRJG015
		Sg. Rajang	6QRJG016
		Sg. Rajang	6QRJG017
		Sg. Rajang	6QRJG018
		Sg. Salim	6QRJG007
		Sg. Sarikei	6QRJG001
		Sg. Sarikei	6QRJG002
	Sg. Sadong	Sg. Karangan	6QSDG001
		Sg. Karangan	6QSDG002
		Sg. Sadong	6QSDG003
		Sg. Sadong	6QSDG004
		Sg. Sadong	6QSDG005
		Sg. Sadong	6QSDG006
		Sg. Tarat	6QSDG007
	Sg. Sarawak	Sg. Kelantan	6QSWK017
		Sg. Kuap	6QSWK009
		Sg. Kuap	6QSWK010
		Sg. Maong Kiri	6QSWK011
		Sg. Samarahan	6QSWK013
		Sg. Samarahan	6QSWK014
		Sg. Sarawak	6QSWK001
		Sg. Sarawak	6QSWK003
		Sg. Sarawak	6QSWK004
		Sg. Sarawak	6QSWK006
		Sg. Sarawak	6QSWK007
		Sg. Sarawak	6QSWK008
		Sg. Sarawak Kanan	6QSWK002
		Sg. Sarawak Kiri	6QSWK005
		Sg. Semadang	6QSWK016
		Sg. Semenggoh	6QSWK012
		Sg. Tabuan	6QSWK015
		Sg. Tapah	6QSWK018

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Sarawak	Sg. Saribas	Sg. Layar	6QSRB002
		Sg. Layar	6QSRB003
		Sg. Saribas	6QSRB001
	Sg. Semunsam	Sg. Semunsam	6QSMS001
	Sg. Sibuti	Sg. Kabuloh	6QSBT001
		Sg. Kabuloh	6QSBT002
		Sg. Kejapil	6QSBT003
		Sg. Satap	6QSBT004
		Sg. Sibuti	6QSBT005
		Sg. Sibuti	6QSBT006
	Sg. Similajau	Sg. Similajau	6QSML001
		Sg. Similajau	6QSML002
	Sg. Suai	Sg. Suai	6QSUA001
	Sg. Tatau	Sg. Tatau	6QTTU001
	Sg. Trusan	Sg. Trusan	6QTSN001
Sabah	Sg. Apas	Sg. Apas	5SAPS001
	Sg. Balung	Sg. Balung	5SBLU001
	Sg. Bengkoka	Sg. Bengkoka	5SBKK001
		Sg. Bengkoka	5SBKK002
	Sg. Bingkongan	Sg. Bandau	5SBKG001
		Sg. Bingkongan	5SBKG005
		Sg. Bingkongan	5SBKG006
		Sg. Menggaris	5SBKG002
		Sg. Menggaris	5SBKG003
		Sg. Tandek	5SBKG004
	Sg. Bongawan	Sg. Bongawan	5SBGW001
	Sg. Brantian	Sg. Brantian	5SBTN001
	Sg. Kalabakan	Sg. Kalabakan	5SKBK001
		Sg. Kalabakan	5SKBK002
		Sg. Kalabakan	5SKBK003
	Sg. Kalumpang	Sg. Kalumpang	5SKLP001
		Sg. Kalumpang	5SKLP002
		Sg. Kalumpang	5SKLP003
		Sg. Pang Burong 1	5SKLP004
		Sg. Pang Burong 2	5SKLP005
	Sg. Kedamaian	Sg. Kedamaian	5SKDI004
		Sg. Tempasuk	5SKDI001
		Sg. Tempasuk	5SKDI002
		Sg. Wariu	5SKDI003
	Sg. Kimanis	Sg. Kimanis	5SKMA001
	Sg. Kinabatangan	Sg. Karamuak	5SKBT006
		Sg. Kinabatangan	5SKBT001

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Sabah	Sg. Kinabatangan	Sg. Kinabatangan	5SKBT002
		Sg. Kinabatangan	5SKBT004
		Sg. Kinabatangan	5SKBT005
		Sg. Koyah	5SKBT003
		Sg. Leepang	5SKBT009
		Sg. Menanggul	5SKBT008
		Sg. Pin	5SKBT010
		Sg. Takala	5SKBT007
	Sg. Labok	Sg. Kinipir	5SLBK001
		Sg. Kinipir	5SLBK002
		Sg. Labok	5SLBK006
		Sg. Liwagu	5SLBK003
		Sg. Liwagu	5SLBK004
		Sg. Maliau	5SLBK005
		Sg. Tungud	5SLBK007
	Sg. Lakutan	Sg. Lakutan	5SLKT001
	Sg. Likas	Sg. Darau	5SLKS008
		Sg. Inanam	5SLKS001
		Sg. Inanam	5SLKS002
		Sg. Inanam	5SLKS003
		Sg. Likas	5SLKS004
		Sg. Likas	5SLKS005
		Sg. Menggatal	5SLKS006
		Sg. Menggatal	5SLKS007
	Sg. Lingkungan	Sg. Bukau	5SLKG002
		Sg. Lingkungan	5SLKG001
	Sg. Membakut	Sg. Membakut	5SMBT001
	Sg. Menggalong	Sg. Menggalong	5SMGL001
		Sg. Menggalong	5SMGL002
	Sg. Merotai	Sg. Merotai	5SMRT001
		Sg. Merotai	5SMRT002
		Sg. Merotai	5SMRT003
	Sg. Mounad	Sg. Mounad	5SMND001
		Sg. Mounad	5SMND002
	Sg. Moyog	Sg. Moyog	5SMYG001
		Sg. Moyog	5SMYG002
		Sg. Moyog	5SMYG003
		Sg. Moyog	5SMYG004
	Sg. Padas	Sg. Bunsit	5SPDS001
		Sg. Liawan	5SPDS002
		Sg. Padas	5SPDS003
		Sg. Padas	5SPDS004

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Sabah	Sg. Padas	Sg. Padas	5SPDS005
		Sg. Padas	5SPDS011
		Sg. Pangatan	5SPDS006
		Sg. Pegalan	5SPDS008
		Sg. Pegalan	5SPDS009
		Sg. Pegalan	5SPDS010
		Sg. Tandulu	5SPDS007
	Sg. Paitan	Sg. Paitan	5SPTN001
	Sg. Papar	Sg. Papar	5SPPR001
		Sg. Papar	5SPPR002
		Sg. Papar	5SPPR003
		Sg. Papar	5SPPR004
		Sg. Papar	5SPPR005
	Sg. Sapi	Sg. Sapi	5SSAP002
		Sg. Sapi	5SSAP003
		Sg. Sapi	5SSAP004
		Sg. Sualong	5SSAP001
	Sg. Segaliud	Sg. Segaliud	5SSLD001
		Sg. Segaliud	5SSLD002
	Sg. Segama	Sg. Segama	5SSGM001
		Sg. Segama	5SSGM002
		Sg. Segama	5SSGM003
	Sg. Sembulan	Sg. Sembulan	5SSBL001
		Sg. Sembulan	5SSBL002
	Sg. Silabukan	Sg. Silabukan	5SSBK001
		Sg. Silabukan	5SSBK002
	Sg. Sugut	Sg. Bongkud	5SSUG001
		Sg. Lohan	5SSUG002
		Sg. Merali	5SSUG003
		Sg. Sugut	5SSUG004
		Sg. Sugut	5SSUG005
		Sg. Sugut	5SSUG006
	Sg. Tawau	Sg. Tawau	5STWU001
		Sg. Tawau	5STWU002
		Sg. Tawau	5STWU003
		Sg. Tawau	5STWU004
	Sg. Telipok	Sg. Telipok	5STLP001
		Sg. Telipok	5STLP002
	Sg. Tenghilan	Sg. Tenghilan	5STHL001
	Sg. Tingkayu	Sg. Tingkayu	5STKY001
		Sg. Tingkayu	5STKY002

Jadual 3.1: Senarai Lembangan Sungai dan Sungai-Sungai yang Dipantau mengikut Stesen, 2023
Table 3.1: List of the Catchments and Rivers Monitored by Station, 2023

NEGERI STATE	LEMBANGAN BASIN	SUNGAI RIVER	NOMBOR STESEN STATION NUMBER
Sabah	Sg. Tuaran	Sg. Damit	5STUA001
		Sg. Damit	5STUA002
		Sg. Song Sai	5STUA003
		Sg. Tuaran	5STUA004
		Sg. Tuaran	5STUA005
	Sg. Tungku	Sg. Tungku	5STKU001
		Sg. Tungku	5STKU002
	Sg. Umas-Umas	Sg. Umas-Umas	5SUSM001

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 3.2**. 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 biologi seperti **Jadual 3.3**.

Fifty-five (55) stations from the network are specifically assigned to monitor river water quality at the upstream of selected water intakes for water supply facilities as listed in **Table 3.2**. River water samplings are carried out periodically 6 times a year and are analysed and tested for physical, chemical, and biological parameters as shown in **Table 3.3**.

Jadual 3.2: Senarai Stesen Pemantauan Muka Sauk Loji Rawatan Air
Table 3.2: List of the Water Intake Monitoring Station

NEGERI STATE	LEMBANGAN SUNGAI RIVER BASIN	SUNGAI RIVER	STATION ID ID STATION	MUKA SAUK WATER INTAKE
Perlis	Sg. Perlis	Sg. Terusan Mada	1RPLS010	Loji Rawatan Air Arau Fasa IV
		Sg. Terusan Mada	1RPLS011	Loji Rawatan Air TTPC, Sg. Baru
Kedah	Sg. Ulu Melaka	Sg. Melaka	1KMLK003	Ulu Melaka
		Sg. Saga	1KMLK004	Padang Saga
	Sg. Kedah	Sg. Ahning	1KKDH011	Padang Sanai
		Sg. Padang Terap	1KKDH012	Kuala Nerang
		Sg. Temin	1KKDH010	Changloon
	Sg. Muda	Sg. Muda	1KMUD014	Jeneri
		Sg. Muda	1KMUD015	Jeniang
		Sg. Muda	1KMUD016	Bukit Selambau
		Sg. Muda	1KMUD018	Pinang Tunggal
		Sg. Muda	1KMUD019	Nami
		Sg. Sedim	1KMUD017	Bikan
P.Pinang	Sg. Pinang	Sg. Satu	1PPNG020	Batu Feringgi
Perak	Sg. Bernam	Sg. Gelinting	1ABNM015	Loji Rawatan Air Ulu Slim
		Sg. Trolak	1ABNM014	Loji Rawatan Air Trolak Timur
	Sg. Kurau	Sg. Air Hitam	1AKRU007	Loji Rawatan Air Jelai
	Sg. Perak	Sg. Manong	1APRK060	Loji Rawatan Air Manong
		Sg. Perak	1APRK059	Loji Rawatan Air Sauk
		Sg. Tesong	1APRK062	Loji Rawatan Air Sg. Klah
		Sg. Woh	1APRK061	Loji Rawatan Air Kuala Woh

Jadual 3.2: Senarai Stesen Pemantauan Muka Sauk Loji Rawatan Air
Table 3.2: List of the Water Intake Monitoring Station

NEGERI STATE	LEMBANGAN SUNGAI RIVER BASIN	SUNGAI RIVER	STATION ID ID STATION	MUKA SAUK WATER INTAKE
Perak	Sg. Sepetang	Sg. Batu Tegoh	1ASPT016	Loji Rawatan Air Bukit Larut
Selangor	Sg. Klang	Sg. Gombak	2BKLG020	Loji Rawatan Air Gombak
	Sg. Langat	Sg. Batang Labu	2BLGT028	Loji Rawatan Air Salak Tinggi
		Sg. Semenyih	2BLGT010	Loji Rawatan Air Semenyih
Johor	Sg. Batu Pahat	Sg. Semberong Dam	3JBPT021	Semberong Dam
	Sg. Benut	Sg. Machap Dam	3JBNT008	Machap Dam
	Sg. Endau	Sg. Kahang	3JEND026	Jalan Felda Kahang Timur, Kluang
	Sg. Muar	Sg. Jelai	3NMUA054	Loji Rawatan Air Dangi
		Sg. Jementah	3JMUA040	Loji Rawatan Air Jementah
	Sg. Muar	Sg. Muar	3JMUA039	Loji Rawatan Air Gombang
	Sg. Pulai	Sg. Pulai Dam	3JPLI004	Pulai Dam
Melaka	Sg. Kesang	Sg. Chin-Chin	3MKSG008	Muka sauk Loji Rawatan Air Chin-chin
Pahang	Sg. Pahang	Sg. Bertam	4CBTM013	Loji Rawatan Air Habu
		Sg. Gapoi	4CPHG086	Muka sauk Loji Rawatan Air Gapoi
		Sg. Jempol	4CPHG087	Loji Air Sg Jerik
		Sg. Jempol	4CPHG088	Loji Air Jengka 3
		Sg. Mentiga	4CPHG089	Loji Air Chini
		Sg. Terla	4CBTM012	Loji Rawatan Air Kuala Terla
		Sg. Triang	4CPHG074	Loji Rawatan Air Sg. Triang
		Sg. Ulong	4CBTM014	Brinchang Dam
Terengganu	Sg. Terengganu	Sg. Terengganu	4TTGG013	Loji Air Serada
Kelantan	Sg. Golok	Sg. Golok	4DGLK003	Syarikat Air Kelantan
	Sg. Kelantan	Sg. Chiku	4DKLT043	Felda Ciku 2
		Sg. Kelantan	4DKLT045	Loji Air Kelar, Pasir Mas
		Sg. Pehi	4DKLT044	Loji Air Pahi
Sabah	Sg. Padas	Sg. Padas	5SPDS011	Water Intake Jabatan Air Beaufort
	Sg. Papar	Sg. Papar	5SPPR004	Sekolah Kebangsaan Mandalipau
		Sg. Papar	5SPPR005	Water Intake Kogopon
Sarawak	Sg. Kerian	Sg. Selalang	6QKRN017	Selalang Water Intake
	Sg. Mukah	Sg. Mukah	6QMKH005	Mukah Water Intake
	Sg. Rajang	Sg. Daro	6QRJG021	Daro Water Intake
		Sg. Jemoreng	6QRJG022	Jemoreng Water Intake
		Sg. Pakan	6QRJG020	Pakan Water Intake
		Sg. Pila Parit	6QRJG023	Igan Water Intake

Jadual 3.3: Parameter-Parameter Pengukuran Kualiti Air Sungai
Table 3.3: River Water Quality Parameters

PARAMETER	UNIT
Oksigen Terlarut / Dissolved Oxygen (DO)	mg/l, % saturated
Permintaan Oksigen Biokimia / Biochemical 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 / Calsium (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

Pada tahun 2023, sejumlah 8,118 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 (NWQS). IKA ditentukan dengan mengambil kira kepentingan enam parameter penunjuk pencemaran utama iaitu Oksigen Terlarut (DO), Keperluan Oksigen Biokimia (BOD), Keperluan Oksigen Kimia (COD), Ammoniakal Nitrogen (NH_3-N), pH dan Pepejal Terampai (SS).

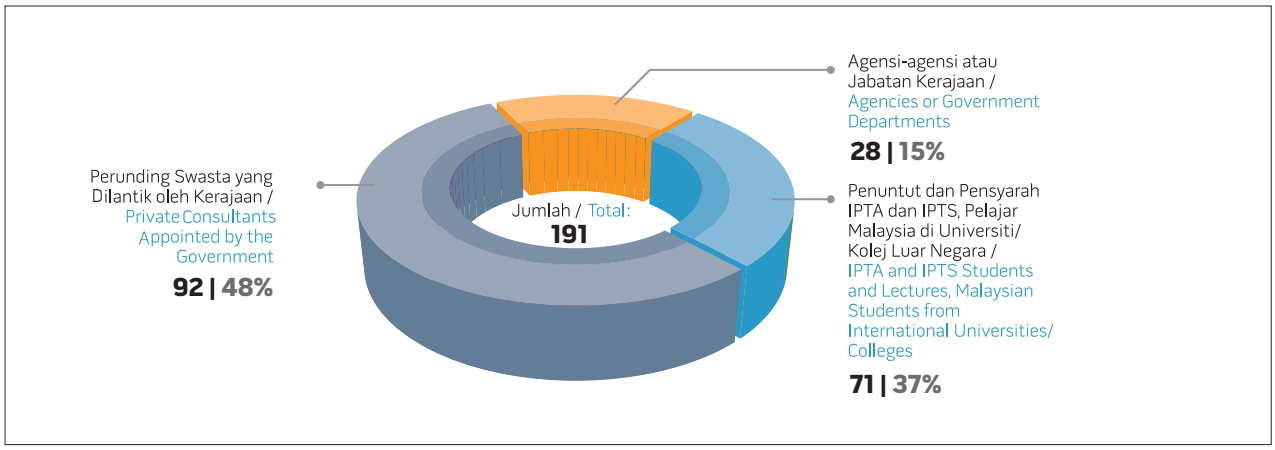
In 2023, a total 8,118 river water samples were tested covering all the water quality parameters. River water quality is assessed based on Water Quality Index (WQI) and National Water Quality Standard for Malaysia (NWQS). The WQI is determined by considering the importance of six main pollution indicator parameters which are Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Ammoniacal Nitrogen (NH_3-N), Suspended Solids (SS) and pH.

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 2023, sejumlah 191 permohonan data telah diterima oleh JAS. Sebanyak 37% daripada permohonan data kualiti air sungai adalah daripada golongan penyelidik di institusi pengajian tinggi dan 48% daripada perunding bagi projek kerajaan, manakala selebihnya adalah dari agensi kerajaan. Bilangan permohonan data kualiti air sungai yang diterima oleh JAS pada tahun 2023 adalah seperti yang ditunjukkan oleh **Rajah 3.1**.

Dissemination of River Water Quality Data

River water quality data were utilized by two (2) categories of user which are government agencies, and researchers from higher learning institutions. In 2023, a total of 191 data request were received by DOE. About 37% of the requests were from researchers from higher learning institutions, and 48% from consultant for government project, and the rest from government agencies. The number of water quality data request received by DOE in 2023 is as shown in **Figure 3.1.**



Rajah 3.1: Bilangan Permohonan mengikut Kategori Kelas Pemohon, bagi Tahun 2023
Figure 3.1: The Number of Applications by Applicant Class Category, for the Year 2023

Program dan Aktiviti yang Dijalankan Berkaitan Pengawasan Kualiti Air Sungai

Pada tahun 2023, beberapa program dan aktiviti pengawasan kualiti sungai telah dijalankan seperti yang disenaraikan di dalam **Jadual 3.4**.

Programmes and Activities Carried Out Related to River Water Quality Monitoring

In 2023, there were several river quality monitoring activities and programs that had been carried out as listed in **Table 3.4**.

Jadual 3.4: Program dan Aktiviti Program Pengawasan Kualiti Air Sungai
Table 3.4: Programs and Activities Related to River Water Quality Monitoring Programme

TARIKH / DATE	AKTIVITI & PROGRAM / ACTIVITIES & PROGRAMMES	TEMPAT / VENUE
6 Jan 2023 6 Jan 2023	Lawatan Kerja Pegawai Jas Ibu Pejabat ke Stesen Pengawasan Kualiti Air Sungai Automatik CR08B Sungai Langat, Selangor / Head Quarters DOE Officials Work Visit to Automatic River Water Quality Monitoring Station CR08B Sungai Langat, Selangor	Sungai Langat, Selangor
13 Jan 2023 13 Jan 2023	Kerja-Kerja Persampelan dan Lawatan Kerja di Stesen Pengawasan Kualiti Air Sungai Manual 2BSPG004, Lembangan Sg Sepang, Sg. Rambai, Negeri Sembilan / Sampling Works and Work Visits at Manual River Water Quality Monitoring Station 2BSPG004, Sg Sepang Basin, Sg. Rambai, Negeri Sembilan	Sg. Rambai, Negeri Sembilan

Jadual 3.4: Program dan Aktiviti Program Pengawasan Kualiti Air Sungai
Table 3.4: Programs and Activities Related to River Water Quality Monitoring Programme

TARIKH / DATE	AKTIVITI & PROGRAM / ACTIVITIES & PROGRAMMES	TEMPAT / VENUE
25 Jan 2023 25 Jan 2023	Mesyuarat Permohonan Data Kualiti Air serta Lawatan ke Environment Data Centre (EDC) oleh Jabatan Pengairan dan Saliran (JPS) ke Jabatan Alam Sekitar (JAS) dan Sesi Perkongsian Ilmu bagi Program Pembangunan *Water Balance* bagi Pengurusan Sumber Air Negara (Fasa 2) – *National Water Balance Management System* (NAWABS) Water Quality Data Application Meeting and Visit to the Environment Data Center (EDC) by the Department of Irrigation and Drainage (JPS) to the Department of Environment (DOE) and Knowledge Sharing Session for the Water Balance Development Programme for National Water Resource Management (Phase 2) - National Water Balance Management System (NAWABS)	Putrajaya
08 Feb 23 08 Feb 23	Lawatan Tapak ke Stesen Pengawasan Kualiti Air Sungai Automatik CR05A, Sungai Bogak, Perak / Site Visit to Automatic River Water Quality Monitoring Station CR05A, Sungai Bogak, Perak	Perak
08 Feb 23 08 Feb 23	Persampelan Kualiti Air Sungai Manual di Stesen 1PKER003 Sg Kerian, Kedah / Manual River Water Quality Sampling at Station 1PKER003 Sg Kerian, Kedah	Kedah
09 Feb 23 09 Feb 23	Lawatan Tapak dan Kerja-kerja Persampelan bagi Kualiti Air Sungai di Stesen Pengawasan Kualiti Air Sungai Manual di Pulau Pinang bagi Stesen 1PPRI006 (Sg Kereh), 1PPRI007 (Sg Air Melintas), 1PPRI004 (Sg Perai) dan 1PPRI009 (Sg Jarak) / Site Visits and Sampling Works for River Water Quality at the Manual River Water Quality Monitoring Station in Penang for Stations 1PPRI006 (Sg Kereh), 1PPRI007 (Sg Air Melintas), 1PPRI004 (Sg Perai), and 1PPRI009 (Sg Jarak)	Pulau Pinang
09 Feb 23 09 Feb 23	Lawatan Tapak ke Stesen Pengawasan Kualiti Air Sungai Automatik CR04P, Sg Kulim, Pulau Pinang / Site Visit to Automatic River Water Quality Monitoring Station CR04P, Sg Kulim, Penang	Pulau Pinang
13 Mac 2023 13 Mar 2023	Majlis Apresasi Sempena Anugerah Bandar Mampan Terbaik 2022 Appreciation Ceremony in Conjunction with the Best Sustainable City Award 2022	Majlis Bandaraya Kuantan
20 Julai 2023 20 July 2023	Pembentangan Kertas Pertimbangan 'Peranan Bersepadu oleh Kerajaan Persekutuan dan Kerajaan Negeri yang Perlu Diambil bagi Menangani Kemerosotan Kualiti Air Sungai di Malaysia Berdasarkan kepada Laporan Status Kualiti Air Sungai Negara' yang Disampaikan oleh Y.Brs. Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi), Jabatan Alam Sekitar / Presentation of the Consideration Paper 'Integrated Role by the Federal Government and State Government that Needs to be Taken to Address the Degradation of River Water Quality in Malaysia Based on the National River Water Quality Status Report' Presented by Y.Brs. Dr. Norhazni binti Mat Sari, Deputy Director General (Operations), Department of Environment	Putrajaya
15 Ogos 2023 15 August 2023	Bicara Eksekutif Bertajuk 'Impak Banjir Terhadap Sungai di Malaysia' Anjuran Jabatan Alam Sekitar Putrajaya / Executive Talk Titled 'Impact of Floods on Rivers in Malaysia' Organized by the Putrajaya Department of Environment	Dalam Talian
24 Ogos 2023 24 August 2023	Kerja-kerja Persampelan dan Sesi Demonstrasi Persampelan Kualiti Air Sungai di Langkawi, Kedah / Sampling Work and River Water Quality Sampling Demonstration Session in Langkawi, Kedah	Sungai Saga, Langkawi, Kedah
24 Ogos 2023 24 August 2023	Lawatan Kerja ke Loji Rawatan Air Padang Saga, Pulau Langkawi, Kedah Work Visit to Water Treatment Plant Padang Saga, Langkawi, Kedah	Padang Saga, Langkawi, Kedah

Jadual 3.4: Program dan Aktiviti Program Pengawasan Kualiti Air Sungai
Table 3.4: Programs and Activities Related to River Water Quality Monitoring Programme

TARIKH / DATE	AKTIVITI & PROGRAM / ACTIVITIES & PROGRAMMES	TEMPAT / VENUE
22-25 Ogos 2023 22-25 August 2023	Bengkel Memuktamadkan Hasil Kajian Semakan Semula Kriteria dan Standard Kualiti Air Sungai Malaysia / Workshop on Finalizing the Results of the Review of Malaysian River Water Quality Criteria and Standards	Langkawi, Kedah
31 Oktober 2023 31 October 2023	Pembentangan Kertas Pertimbangan 'Peranan Bersepadu oleh Kerajaan Persekutuan dan Kerajaan Negeri yang Perlu Diambil bagi Menangani Kemerosotan Kualiti Air Sungai di Malaysia Berdasarkan kepada Laporan Status Kualiti Air Sungai Negara' di Majlis Air Negara yang Dipengerusikan oleh YAB Perdana Menteri, Dato' Seri Anwar bin Ibrahim Presentation of the Consideration Paper 'Integrated Role by the Federal and State Governments that Need to be Taken to Address the Degradation of River Water Quality in Malaysia Based on the National River Water Quality Status Report' at the National Water Council Chaired by YAB Prime Minister, Dato' Seri Anwar bin Ibrahim	Putrajaya
19 Sep 2023 19 Sep 2023	Lawatan Kerja dan Mesyuarat Penyelarasan Status Sungai Kim-Kim Bil 3.2023 / Work Visit and Coordination Meeting of Kim-Kim River Status No. 3.2023	Pasir Gudang, Johor
21 Sep 2023 21 Sep 2023	Lawatan Kerja bagi Kerja Baikpulih Deployment di Stesen Pengawasan Kualiti Air Sungai Automatik CR10B, Sg Labu, Selangor / Work Visit for Deployment Repair Work at Automatic River Water Quality Monitoring Station CR10B, Sg Labu, Selangor	Sepang, Selangor
11 Nov 2023 11 Nov 2023	Penyertaan Program CSR '*Tree Planting Programme*' di Forest Reserve Institute Malaysia (FRIM) dengan Anjuran Petronas / Participation in the 'Tree Planting Programme' CSR Programme at the Forest Reserve Institute Malaysia (FRIM), Organized by Petronas	Forest Reserve Institute Malaysia (FRIM)





▸ Penerangan Berkaitan Peralatan GEOLUX RSS-2-300WL yang Disampaikan oleh Surechem Sdn. Bhd
Briefing on GEOLUX RSS-2-300WL Equipment Presented by Surechem Sdn. Bhd.





▸ Kerja-kerja Persampelan Kualiti Air Sungai di Stesen Manual 2BSPG004, Sungai Rambai, Negeri Sembilan oleh PSTW Sdn Bhd / River Water Quality Sampling Works at Manual Station 2BSPG004, Sungai Rambai, Negeri Sembilan by PSTW Sdn. Bhd.







▸ Mesyuarat Permohonan Data Kualiti Air dan Lawatan Kerja Jabatan Pengairan dan Saliran (JPS) ke *Environmental Data Centre* (EDC), Jabatan Alam Sekitar (JAS) / Water Quality Data Application Meeting and Visit to the Environment Data Center (EDC) by the Department of Irrigation and Drainage (JPS) to the Department of Environment (DOE)





▸ Lawatan Tapak JAS Ibu Pejabat bersama Pihak PSTW ke Stesen CR05A, Sungai Bogak
Site Visit to Automatic River Water Quality Monitoring Station CR05A, Sungai Bogak, Perak





▸ Lawatan Tapak dan Kerja-kerja Persampelan di Stesen 1PKER003 Sg Kerian, Kedah / Site Visit and Sampling Works at Station 1PKER003 Sg Kerian, Kedah











▸ Lawatan Tapak dan Kerja-kerja Persampelan bagi Kualiti Air Sungai di Stesen Pengawasan Kualiti Air Sungai Manual di Pulau Pinang bagi Stesen 1PPRI006 (Sg Kereh), 1PPRI007 (Sg Air Melintas), 1PPRI004 (Sg Perai) dan 1PPRI009 (Sg Jarak) / Site Visits and Sampling Works for River Water Quality at the Manual River Water Quality Monitoring Station in Penang for Stations 1PPRI006 (Sg Kereh), 1PPRI007 (Sg Air Melintas), 1PPRI004 (Sg Perai) and 1PPRI009 (Sg Jarak)





▸ Lawatan Tapak JAS Ibu Pejabat ke Stesen Pengawasan Kualiti Air Sungai Automatik, CR04P, Sg Kulim bersama JAS Pulau Pinang dan PSTW
DOE Headquarters Site Visit to Automatic River Water Quality Monitoring Station, CR04P, Sg Kulim together with DOE Penang and PSTW









▸ Pembentangan Kertas Pertimbangan 'Peranan Bersepadu oleh Kerajaan Persekutuan dan Kerajaan Negeri yang Perlu Diambil bagi Menangani Kemerosotan Kualiti Air Sungai di Malaysia Berdasarkan kepada Laporan Status Kualiti Air Sungai Negara / Presentation of the Consideration Paper 'Integrated Role by the Federal Government and State Government that Needs to be Taken to Address the Degradation of River Water Quality in Malaysia Based on the National River Water Quality Status Report' Presented by YBrs. Dr. Norhazni binti Mat Sari, Deputy Director General (Operations), Department of Environment

▸ Bicara Esekutif Bertajuk 'Impak Banjir terhadap Sungai di Malaysia' telah Diadakan pada 15 Ogos 2023 dengan Panel Penceramah Puan Zuhainim binti Abd. Ghafar, Jabatan Alam Sekitar (JAS) Ibu Pejabat dan Encik Shahar bin Md Salleh, Jabatan Pengairan dan Saliran (JPS) / The Executive Talk Entitled 'Impact of Floods on Rivers in Malaysia' was Held on 15 August 2023 with a Panel of Speakers Mrs. Zuhainim binti Abd. Ghafar, Department of Environment (DOE) Headquarters and Mr. Shahar bin Md Salleh, Department of Irrigation and Drainage (JPS)





◂ Sesi Demonstrasi dan Penerangan kepada Pegawai JAS, LUAS, SPAN dan Perunding Berkaitan Persampelan Kualiti Air Sungai Manual di Stesen 1KMLK004 Sungai Saga di Langkawi, Kedah oleh PSTW Sdn. Bhd.
Demonstration and Information Session for DOE, LUAS, SPAN Officials and Consultants Related to Manual River Water Quality Sampling at Station 1KMLK004 Sungai Saga in Langkawi, Kedah by PSTW Sdn. Bhd.





▴ Lawatan Kerja ke Loji Rawatan Air Padang Saga, Pulau Langkawi, Kedah
Work Visit to Water Treatment Plant Padang Saga, Langkawi, Kedah





▴ Bengkel Memuktamadkan Hasil Kajian Semakan Semula Kriteria dan Standard Kualiti Air Sungai Malaysia / Workshop on Finalizing the Results of the Review of Malaysian River Water Quality Criteria and Standards



◂ Mesyuarat Penyelarasan Status Kualiti Air Sungai Kim-Kim Bil 3/2023 yang Dipengerusikan oleh YB Tuan Raven Kumar Krishnasamy, Pengerusi Jawatankuasa Pelancongan, Alam Sekitar, Warisan dan Budaya Negeri Johor/ Kim-Kim River Water Quality Status Coordination Meeting No. 3/2023 chaired by YB Tuan Raven Kumar Krishnasamy, Chairman of the Johor State Tourism, Environment, Heritage, and Culture Committee





▴ Keadaan Tanah Runtuh yang Menyebabkan Kerja Baikpulih Deployment Dijalankan di Stesen Pengawasan Kualiti Air Sungai Automatik CR10B, Sg Labu, Selangor / Landslide Conditions that Caused Deployment Repair Work to be Carried Out at the Automatic River Water Quality Monitoring Station CR10B, Sg Labu, Selangor





▴ Pembentangan Kertas Pertimbangan 'Peranan Bersepadu oleh Kerajaan Persekutuan dan Kerajaan Negeri yang Perlu Diambil bagi Menangani Kemerosotan Kualiti Air Sungai di Malaysia Berdasarkan kepada Laporan Status Kualiti Air Sungai Negara' di Majlis Air Negara yang Dipengerusikan oleh YAB Perdana Menteri, Dato' Seri Anwar bin Ibrahim / Presentation of the Consideration Paper 'Integrated Role by the Federal and State Governments that Need to be Taken to Address the Degradation of River Water Quality In Malaysia Based on the National River Water Quality Status Report' at the National Water Council Chaired by YAB Prime Minister, Dato' Seri Anwar bin Ibrahim





◂ Penyertaan Program CSR 'Tree Planting Programme' di Forest Reserve Institute Malaysia (FRIM) Anjuran Petronas / Participation in the 'Tree Planting Programme' CSR Programme at the Forest Reserve Institute Malaysia (FRIM), Organized by Petronas

PENGAWASAN KUALITI AIR TANAH

Program-Program yang Dijalankan Berkaitan Pengawasan Kualiti Air Tanah

Sepanjang tahun 2023, terdapat beberapa aktiviti yang telah dijalankan oleh Seksyen Pengawasan Kualiti Air Tanah, Bahagian Air dan Marin. Aktiviti- aktiviti tersebut adalah seperti dibawah:

Program Audit di Stesen Pengawasan Kualiti Air Tanah di Perak, WPKL dan Negeri Sembilan

Tujuan program audit ini dijalankan adalah seperti berikut:

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

GROUNDWATER QUALITY MONITORING

Programmes Conducted by Groundwater Quality Monitoring Section

In 2023, 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 Programme at Groundwater Quality Monitoring Station In Perak, WPKL and Negeri Sembilan

The objectives of this Audit program are:

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



▲ Pengukuran Kedalaman Aras Air Tanah Dilaksanakan Sebelum Kerja-Kerja Pesampelan Dimulakan
Depth Measurement of Groundwater Level was Carried Out Before the Sampling Work Began by DOE Perak Officers during the Groundwater Monitoring System Audit Programme on 8 June 2023



▲ Analisis Menggunakan Peralatan In-Situ Dijalankan oleh Pegawai-Pegawai JAS WP Kuala Lumpur Semasa Program Audit Sistem Pengawasan Air Tanah pada 15-16 Ogos 2023
Analysis Using In-Situ Equipment was Carried Out by DOE WP Kuala Lumpur Officers during the Groundwater Monitoring System Audit Programme on 15-16 August 2023



◂ Pegawai JAS Negeri Sembilan Mengumpul Sampel Air Tanah untuk Melaksanakan Analisis Kumpulan bagi Parameter Bakteria
DOE Negeri Sembilan Officials Collected the Groundwater Samples for Group Analysis of Bacterial Parameters



▸ Program Audit Pengawasan Kualiti Air Tanah secara Atas Talian bersama JAS Terengganu
Groundwater Quality Monitoring Online Audit Programme with DOE Terengganu

Projek Rancangan Malaysia Kedua Belas: Penambahan Rangkaian Stesen Pengawasan Kualiti Air Tanah Kebangsaan

Mesyuarat Teknikal bersama Bahagian Perkhidmatan Makanikal & Elektrikal, JPS bersama Seksyen Pengawasan Kualiti Air Tanah, JAS dijalankan secara berkala bagi membentangkan kemajuan projek dan menyelesaikan isu-isu berbangkit. Mesyuarat dijalankan secara bersemuka dan di atas talian.

Twelfth Malaysian Plan Project: Addition to National Groundwater Quality Monitoring Station Network

Technical meetings with the Mechanical & Electrical Services Division, JPS with the Groundwater Quality Monitoring Section, DOE are held periodically to present project progress and resolve arising issues. Meetings are conducted face-to-face and online.



▸ Mesyuarat Teknikal bersama Bahagian Perkhidmatan Makanikal & Elektrikal, JPS
Technical meetings with the Mechanical & Electrical Services Division, JPS



Pelaksanaan Think Tank JAS: Perbincangan Penggunaan Data Air Tanah bersama JAS-JMG Bil. 1

Mesyuarat pada 21 November 2013 ini telah dihadiri oleh pegawai dari Seksyen Pengawasan Air Tanah, Bahagian Air dan Marin dan Bahagian Teknologi Maklumat, Ibu Pejabat JAS. Jabatan Mineral dan Geosains Malaysia pula diwakili oleh Pengarah Cawangan Pengurusan Maklumat, En Zulkiflee bin Che Soh serta pegawai-pegawai dari Ibu Pejabat dan Negeri. Mesyuarat ini telah dipengerusikan oleh Tuan Pengarah Bahagian Air dan Marin Jabatan Alam Sekitar, En. Rosli bin Osman.

Mesyuarat ini bertujuan untuk membincangkan cadangan memperluaskan lagi penggunaan data air tanah JAS untuk dijadikan input ke dalam sistem MyGEMS di bawah pihak JMG.

DOE Think Tank Implementation: Discussion on the use of Groundwater Data with JAS-JMG No. 1

The meeting on 21 November 2013 was attended by officials from the Groundwater Monitoring Section, Water and Marine Division and Information Technology Division, DOE Headquarters. The Department of Minerals and Geosciences Malaysia was represented by the Director of the Information Management Branch, Mr. Zulkiflee bin Che Soh as well as officials from the Headquarters and the State. This meeting was chaired by the Director of the Water and Marine Division of the Department of the Environment, Mr. Rosli bin Osman.

This meeting aims to discuss the plan of further expanding the use of DOE groundwater data as input into the MyGEMS system under the JMG.

Projek Rancangan Malaysia Kedua Belas: Sesi Libat Urus Pindaan Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pencemaran daripada Stesen Pemindahan Sisa Pepejal dan Kambus Tanah) 2009

Objektif sesi libat urus ini diadakan adalah untuk mendapatkan input dan maklum balas dari peserta cadangan pindaan Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pencemaran Daripada Stesen Pemindahan Sisa Pepejal Dan Kambus Tanah) 2009 dengan mengambil kira 7 elemen dalam penyediaan dokumen Analisa Impak Peraturan (RIA) yang akan dibimbing oleh penceramah dan fasilitator dari Malaysia Productivity Corporation (MPC).

Twelfth Malaysian Plan Project: Engagement Session on Amendment of Environmental Quality Regulations (Control of Pollution from Solid Waste Tansfer Stations and Landfills) 2009

The objective of this engagement session is to obtain input and feedback from the participants on the proposed amendments to the Environmental Quality Regulations (Pollution Control from Solid Waste Transfer Stations and Landfills) 2009 by considering 7 elements in the preparation of the Regulatory Impact Analysis (RIA) document that will be guided by speakers and facilitators from Malaysia Productivity Corporation (MPC).

Sesi libat urus yang diadakan pada 2 hingga 4 Oktober 2023 di Mardhiyyah Hotel & Suites, Shah Alam ini telah dirasmikan oleh YBrs. Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi) Jabatan Alam Sekitar.

Seramai 25 orang pegawai Jabatan Alam Sekitar Ibu Pejabat dan Negeri, wakil dari *Malaysia Productivity Corporation* (MPC), Kementerian Perumahan Kerajaan Tempatan (KPKT) dan Jabatan Pengurusan Sisa Pepejal Negara (JPSPN) telah menghadirkan diri,

Output bengkel ini adalah draf dokumen RIA yang dibincangkan dan perancangan lanjut bagi melengkapkan dokumen tersebut dengan penganjuran sesi seranta bersama pemegang taruh yang terlibat secara langsung dengan permakaian peraturan ini.

This engagement session which was held from 2 to 4 October 2023 at Mardhiyyah Hotel & Suites, Shah Alam was inaugurated by YBrs. Dr Norhazni binti Mat Sari, Deputy Director General (Operations) of the Department of Environment.

A total of 25 officials from the Headquarters and State Department of Environment, representatives from the Malaysia Productivity Corporation (MPC), the Ministry of Local Government Housing (KPKT) and the National Solid Waste Management Department (JPSPN).

The output of this workshop is a draft of RIA Document that was discussed and further plan to complete the document by organizing a publicity session with stakeholders who are directly involved with this regulation.



▲ Peserta-peserta Sesi Libat Urus Menyuarakan Input dan Maklum Balas Cadangan Pindaan Peraturan-peraturan Kualiti Alam Sekeliling (Kawalan Pencemaran daripada Stesen Pemindahan Sisa Pepejal dan Kambus Tanah) 2009.
The Participants of the Engagement Session Voiced Input and Feedback on Proposed Amendments to the Environmental Quality Regulations (Pollution Control from Solid Waste Transfer Stations and Landfills) 2009

PROGRAM KAWALAN PENCEMARAN DAN PENGURUSAN TINDAK BALAS TUMPAHAN MINYAK

Pada tahun 2023, Bahagian Air dan Marin, Jabatan Alam Sekitar (JAS) telah menganjurkan empat belas (14) program berkaitan kawalan dan pengurusan tindak balas tumpahan minyak (**Jadual 3.5**). Program ini telah dihadiri oleh pegawai JAS, agensi-agensi kerajaan dan swasta di bawah Jawatankuasa Operasi Tumpahan Minyak Kebangsaan (*National Oil Spill Operation Committee,* NOSC) serta pemegang taruh yang berkaitan.

Objektif penganjuran program yang dijalankan adalah:

i. Mendapatkan input/ulasan daripada ahli Jawatankuasa berkenaan Pelan Kontingensi Tumpahan Minyak Malaysia dengan nama singkatan tunggal MOSCoP (*Malaysia Oil Spill Contingency Plan*) serta memuktamadkan Pelan Tindak Balas Hidupan Liar yang Dicemari Minyak Malaysia dengan nama singkatan tunggal MOWReP (*Malaysia Oiled Wildlife Response Plan*).

ii. Mendapatkan input/ ulasan daripada pemegang taruh yang terdiri daripada agensi kerajaan dan swasta dalam projek Rancangan Malaysia Kedua Belas iaitu bagi Kajian Mekanisme Pelaksanaan Pematuhan Kepada Pelan Tindak Balas Tumpahan Minyak, Draf Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pencemaran Minyak di Laut) 20XX, Draf Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pencemaran Minyak di Laut) (Pencaruman Kepada Kumpulan Wang Alam Sekeling) 20XX dan Kajian Pemerkasaan Pangkalan Data *Hydrocarbon Fingerprinting System* (HyFiS) Bagi Meningkatkan Keupayaan Sistem Dalam Menjalankan Pemadanan Profil Minyak Hidrokarbon

iii. Memberi latihan dan pendedahan kepada pegawai JAS dan ahli Jawatankuasa dalam operasi tindak balas melawan tumpahan minyak di perairan Malaysia.

iv. Memberi latihan *hands-on* penggunaan Aplikasi *Oilmap for Oil Spill Trajectory* kepada pegawai JAS dan pemegang taruh yang berkaitan.

OIL SPILL POLLUTION CONTROL AND RESPONSE MANAGEMENT PROGRAMS

In 2023, Marine and Water Division has organized fourteen (14) programs related to oil spill pollution control and response management (**Table 3.5**). Officers from the Department of Environment (DOE), government and private agencies under the National Oil Spill Control Committee (NOSC) as well as other stakeholders, attended these programs.

The objectives of the programs are:

i. To obtain input/comments from the Committee Members for updating the Malaysia Oil Spill Contingency Plan (MOSCoP), and to finalize the Malaysia Oiled Wildlife Response Plan (MOWReP)

ii. To obtain input/ comment from stakeholders which include government and private agencies in the projects under Twelfth Malaysian Plan: Study in the Mechanism for Compliance Implementation of the Oil Spill Response Plan, the draft of Environmental Quality (Control of Oil Pollution at Sea) Regulations 20XX, the draft of Environmental Quality (Control of Oil Pollution at Sea) (Contribution to the Environmental Fund) Regulations 20XX and the Study in Empowering Hydrocarbon Fingerprinting System (HyFiS) Database by Improving the System's Capability to Carry Out Hydrocarbon Oil Profile Matching

iii. To conduct training for the officers from the Department of Environment (DOE) and the Committee Members in oil spill response operations within Malaysian waters

iv. To give hands-on training of Oilmap for Oil Spill Trajectory to the DOE officers and related stakeholders.

Jadual 3.5: Senarai Program yang telah Dilaksanakan
Table 3.5: The List of Programme Conducted

BIL. NO.	PROGRAM PROGRAMME	TARIKH DATE
1	Bengkel *Oiled Wildlife Response* Wilayah Sabah dan Wilayah Persekutuan Labuan The Workshop on Oiled Wildlife Response for the Sabah and Federal Territory of Labuan Region	8-10 Mac 2023 8-10 March 2023
2	Lawatan Kerja ke Jabatan Meteorologi Malaysia Official Visit to the Department of Meteorology Malaysia	15 Mac 2023 15 March 2023
3	Bengkel dan Taklimat bagi Draf Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pencemaran Minyak di Laut) 20XX dan Draf Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pencemaran Minyak di Laut) (Pencaruman Kepada Kumpulan Wang Alam Sekeliling) 20XX / The Workshops and Presentation on the Draft of Environmental Quality (Control of Oil Pollution at Sea) Regulations 20XX and the Draft of Environmental Quality (Control of Oil Pollution at Sea) (Contribution to the Environmental Fund) Regulations 20XX	9-11 Mei 2023 9-11 May 2023
4	Latihan Hands-on Aplikasi *Oilmap for Oil Spill Trajectory* bagi Wilayah Borneo Hands-on Training of Oilmap for Oil Spill Trajectory Application for Borneo Region	23-25 Mei 2023 23-25 May 2023
5	Sesi Perbincangan antara JAS- MOT/JLM berkaitan IMO *Member State Audit Scheme* (IMSAS) / The Discussion between DOE- MOT/Marine Department regarding IMO Member State Audit Scheme (IMSAS)	27 Jun 2023 27 June 2024
6	Sesi Libat Urus Kajian Mekanisma Pelaksanaan Pematuhan Pelan Tindak Balas Kawalan Tumpahan Minyak Siri 1/2023 Stakeholder Engagement on the Study of Mechanism for Compliance Implementation of the Oil Spill Response Plan Series 1/2023	4-7 Julai 2023 4-7 July 2023
7	Sesi Libat Urus Siri 1/2023 Projek Kajian Pemerkasaan Pangkalan Data *Hydrocarbon Fingerprinting System* (HyFiS) bagi Meningkatkan Keupayaan Sistem dalam Menjalankan Pemadanan Profil Minyak Hidrokarbon / Stakeholder Engagement on the Study of Empowering Hydrocarbon Fingerprinting System (HyFiS) Database by Improving the System's Capability to Carry Out Hydrocarbon Oil Profile Matching Series 1/2023	11-13 Julai 2023 11-13 July 2023
8	Mesyuarat Jawatankuasa Operasi Tumpahan Minyak Kebangsaan National Oil Spill Operation Committee Meeting	25 Julai 2023 25 July 2023
9	Kunjungan Hormat Delegasi Maritime and Port Authority Brunei Darussalam (MPABD) ke Pejabat Jabatan Alam Sekitar bagi Perbincangan berkaitan *Standard Operating Procedures in Joint Oil Spill Combating in the South China Sea including Brunei Bay for Brunei-Malaysia* / Courtesy Visit from the Delegation of the Maritime and Port Authority of Brunei Darussalam (MPABD) to the Environmental Department Office to Discuss on the Standard Operating Procedures in Joint Oil Spill Combating in the South China Sea Including Brunei Bay for Brunei-Malaysia	7 Ogos 2023 7 August 2023
10	Sesi Libat Urus *Oiled Wildlife Response* Wilayah Utara Stakeholders Engagement on Oiled Wildlife Response for Northern Region	14-17 Ogos 2023 14-17 August 2023
11	Sesi *Focus Group Discussion* (FGD) secara Maya bagi Kajian Mekanisme Pelaksanaan Pematuhan Pelan Tindak Balas Kawalan Tumpahan Minyak Secara dalam Talian Online Focus Group Discussion (FGD) on the Study of Mechanism for Compliance Implementation of the Oil Spill Response Plan	23 Ogos 2023 23 August 2023
12	Sesi Libat Urus Siri 2/2023 Projek Kajian Pemerkasaan Pangkalan Data *Hydrocarbon Fingerprinting System* (HyFiS) bagi Meningkatkan Keupayaan Sistem dalam Menjalankan Pemadanan Profil Minyak Hidrokarbon / Stakeholder Engagement on the Study of Empowering Hydrocarbon Fingerprinting System (HyFiS) Database by Improving the System's Capability to Carry Out Hydrocarbon Oil Profile Matching Series 2/2023	5-7 Sept 2023 5-7 Sept 2023

Jadual 3.5: Senarai Program yang telah Dilaksanakan
Table 3.5: The List of Programme Conducted

BIL. NO.	PROGRAM PROGRAMME	TARIKH DATE
13	Sesi Libat Urus Pembangunan Kajian Mekanisma Pelaksanaan Pematuhan Pelan Tindak Balas Kawalan Tumpahan Minyak Siri 2/2023 / Stakeholder Engagement on the Study of Mechanism for Compliance Implementation of the Oil Spill Response Plan Series 2/2023	20-22 Sept 2023 20-22 Sept 2023
14	Sesi Perbincangan Pasukan Kerja JAS-JLM bagi Kerjasama Dua Hala dalam Penguatkuasaan dan Tindak Balas Kes Pencemaran di Laut Task Force Discussion between DOE-Marine Department on the Two Ways Collaboration in Enforcement and Response of Pollution Cases at the Sea	13 Oktober 2023 13 October 2023



◂ Bengkel *Oiled Wildlife Response* Wilayah Sabah dan Labuan pada 8-10 Mac 2023 di Sabah International Convention Centre (SICC), Sabah
Workshop on Oiled Wildlife Response for Sabah dan Labuan Region on 9-10 Mac 2023 at Sabah International Convention Centre (SICC), Sabah



▸ Lawatan Kerja ke Jabatan Meteorologi Malaysia, Petaling Jaya, Selangor pada 15 Mac 2023
Official Visit to the Department of Meteorology Malaysia on 15 March 2023



▸ Bengkel dan Taklimat bagi Draf Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pencemaran Minyak di Laut) 20XX dan Draf Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pencemaran Minyak di Laut) (Pencaruman kepada Kumpulan Wang Alam Sekeling) 20XX pada 9 hingga 11 Mei 2023 di Hotel Concorde, Shah Alam / The Workshops and Presentation on the Draft of Environmental Quality (Control of Oil Pollution at Sea) Regulations 20XX and the Draft of Environmental Quality (Control of Oil Pollution at Sea) (Contribution to the Environmental Fund) Regulations 20XX on 9 to 11 May 2023 at Concorde Hotel, Shah Alam



▸ Latihan Hands-on Penggunaan Aplikasi *Oilmap for Oil Spill Trajectory* bagi Zon Borneo pada 23-25 Mei 2023 di Hotel Meritz, Miri / Hands-on Training on Oilmap Application for Oil Spill Trajectory for the Borneo Region on 23-25 May 2023 at the Meritz Hotel, Miri



◂ Sesi Perbincangan JAS-MOT/ JLM berhubung IMO *Member State Audit Scheme* (IMSAS) pada 27 Jun 2023 di Jabatan Alam Sekitar, Putrajaya
The Discussion between DOE-MOT/Marine Department Regarding the IMO Member State Audit Scheme (IMSAS) on 27 June 2023 at the Department of Environment, Putrajaya



▸ Sesi Libat Urus Kajian Mekanisma Pelaksanaan Pematuhan Pelan Tindak Balas Kawalan Tumpahan Minyak Siri 1/2023 pada 4-7 Julai 2023 di Residence Inn Cherating, Pahang
Stakeholder Engagement on the Study of Mechanism for Compliance Implementation of the Oil Spill Response Plan Series 1/2023 on 5-7 July 2023 at Residence Inn Cherating, Pahang



▴ Sesi Libat Urus Kajian Pemerkasaan Pangkalan Data *Hydrocarbon Fingerprinting System* (HyFiS) bagi Meningkatkan Keupayaan Sistem dalam Menjalankan Pemadanan Profil Minyak Hidrokarbon Siri 1/2023 Pada 11-13 Julai 2023 di Hotel Best Western i-City, Shah Alam
Stakeholder Engagement on the Study of Empowering Hydrocarbon Fingerprinting System (HyFiS) Database by Improving the System's Capability to Carry Out Hydrocarbon Oil Profile Matching Series 1/2023 on 11-13 July 2023 at Best Western i-City Hotel, Shah Alam



▴ Mesyuarat Jawatankuasa Operasi Tumpahan Minyak Kebangsaan pada 23 Julai 2023 di Hotel Concorde, Shah Alam
National Oil Spill Operation Committee Meeting on 23 July 2023 at Concorde Hotel, Shah Alam

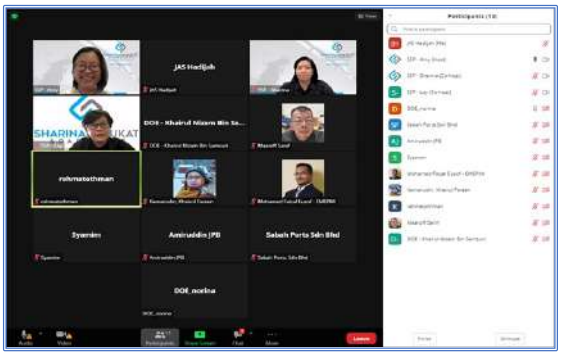


▲ Kunjungan Hormat Delegasi *Maritime and Port Authority* Brunei Darussalam (MPABD) pada 7 Ogos 2023 di Jabatan Alam Sekitar, Putrajaya
Courtesy Visit from the Delegation of the Maritime and Port Authority of Brunei Darussalam (MPABD) on 7 August 2023 at the Department of Environmental, Putrajaya



▲ Sesi Libat Urus *Oiled Wildlife Response* Wilayah Utara pada 14-17 Ogos 2023 di De Baron Langkawi, Kedah
Stakeholders Engagement on Oiled Wildlife Response for Northern Region on 14-17 August 2023 at De Baron Langkawi, Kedah





▲ Sesi *Focus Group Discussion* (FGD) secara Maya bagi Kajian Mekanisme Pelaksanaan Pematuhan Pelan Tindak Balas Kawalan Tumpahan Minyak secara dalam Talian pada 23 Ogos 2023
Online Focus Group Discussion (FGD) on the Study of Mechanism for Compliance Implementation of the Oil Spill Response Plan on 23 August 2023



▲ Sesi Libat Urus Kajian Pemerkasaan Pangkalan Data *Hydrocarbon Fingerprinting System* (HyFiS) bagi Meningkatkan Keupayaan Sistem dalam Menjalankan Pemadanan Profil Minyak Hidrokarbon Siri 2/2023 pada 5-7 September 2023 di Hotel Amerin, Johor Bharu
Stakeholder Engagement on the Study of Empowering Hydrocarbon Fingerprinting System (HyFiS) Database by Improving the System's Capability to Carry Out Hydrocarbon Oil Profile Matching Series 2/2023 on 5-7 September 2023 at Amerin Hotel, Johor Bharu



▲ Sesi Libat Urus Kajian Mekanisma Pelaksanaan Pematuhan Pelan Tindak Balas Kawalan Tumpahan Minyak Siri 2/2023 pada 20-22 September 2023 di Noble Resort Hotel, Melaka
Stakeholders Engagement on the Study of Mechanism for Compliance Implementation of the Oil Spill Response Plan Series 2/2023 on 20 to 22 September 2023 at Noble Resort Hotel, Melaka



▶ Sesi Perbincangan Pasukan Kerja JAS-JLM bagi Kerjasama Dua Hala dalam Penguatkuasaan dan Tindak Balas Kes Pencemaran di Laut pada 13 Oktober 2023 di Jabatan Alam Sekitar, Putrajaya
Task Force Discussion between DOE-Marine Department on the Two Ways Collaboration in Enforcement and Response of Pollution Cases at the Sea on 13 October 2023 at the Department of Environmental, Putrajaya

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

Tabung Revolving Fund Committee (RFC) ini telah ditubuhkan pada 11 Februari 1981 bagi tujuan melawan kejadian tumpahan minyak dari kapal-kapal yang melalui Selat Melaka dan Selat Singapura.

Pengurusan Tabung ini dilaksanakan secara bergilir-gilir dalam kalangan tiga (3) buah negara anggota iaitu Indonesia, Malaysia dan Singapura bagi tempoh lima (5) tahun setiap giliran. Pengurusan Malaysia ke atas tabung ini telah tamat pada pada 31 Mac 2022. Mulai dari 1 April 2022 sehingga 31 Mac 2027, pengurusan tabung ini akan ditadbir urus oleh pihak Singapura.

STRAITS OF MALACCA AND SINGAPORE REVOLVING FUND COMMITTEE (RFC)

The Revolving 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 management of this Fund is carried out on a rotational basis among the three (3) member countries, namely Indonesia, Malaysia, and Singapore, for a period of five (5) years each. Malaysia's management of the Fund concluded on 31 March 2022. Starting from 1 April 2022, until 31 March 2027, the management of this Fund is being undertaken by Singapore.

Aktiviti yang telah dilaksanakan pada tahun 2023 adalah seperti berikut:

1. Mesyuarat Teknikal *Revolving Fund Committee* (RFC) pada 15 Februari 2023 di Royal Plaza on Scotts, Singapura
2. Lawatan lapangan ke *Oil Spill Response Limited* (OSRL) Facilities, Singapura pada 16 Februari 2023
3. *International Chemical and Oil Pollution Conference and Exhibition* (ICOPCE) ke-13 (ICOPCE) pada 26 April 2023 di Pusat Pameran dan Konvensyen Marina Bay Sands, Singapura
4. Mesyuarat Jawatankuasa Induk ke-42 *Revolving Fund Committee* (RFC) pada 20-21 Julai 2023 di Hotel Rendezvous, Singapura
5. Lawatan lapangan ke *Singapore Maritime Gallery* pada 21 Julai 2023

The activities carried out by the RFC in the year 2023 were:

1. The Revolving Fund (RFC) Technical Meeting took place on 15 February 2023 at Royal Plaza on Scotts, Singapore
2. Field trip to Oil Spill Response Limited (OSRL) Facilities in Singapore on 16 February 2023
3. The 13th International Chemical and Oil Pollution Conference and Exhibition (ICOPCE) on 26 April 2023 at Marina Bay Sands Expo and Convention Centre, Singapore
4. The 42nd Revolving Fund Committee (RFC) Meeting on 17 February 2023 at Rendezvous Hotel in Singapore
5. Trip to Singapore Maritime Gallery on 21 July 2023



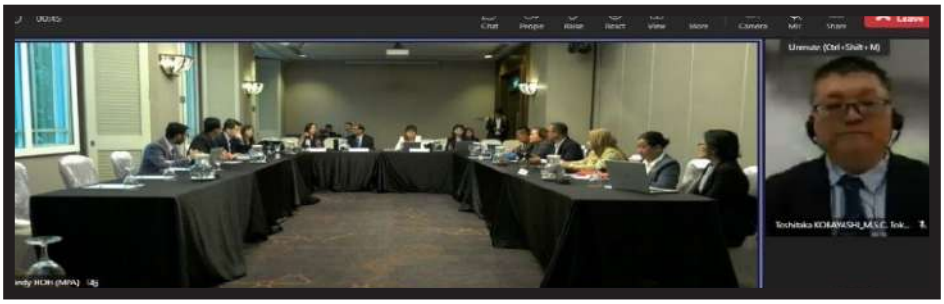
◂ Mesyuarat Teknikal *Revolving Fund Committee* (RFC) pada 15 –16 Februari 2023 di Royal Plaza on Scotts, Singapura
The Revolving Fund (RFC) Technical Meeting on 15-16 February 2023 at Royal Plaza on Scotts, Singapore



▸ Lawatan Lapangan ke *Oil Spill Response Limited* (OSRL) Facilities, Singapura pada 16 Februari 2023
Field Trip to Oil Spill Response Limited (OSRL) Facilities in Singapore on 17 November 2022



◂ Mesyuarat secara Hibrid Jawatankuasa Induk ke-42 *Revolving Fund Committee* (RFC) pada 20 Julai 2023 di Hotel Rendezvous, Singapura
The Hybrid 42nd Revolving Fund Committee (RFC) Meeting on 20 July 2023 at Rendezvous Hotel, Singapore



▸ Mesyuarat secara Hibrid Jawatankuasa Induk ke-42 *Revolving Fund Committee* (RFC) pada 20 Julai 2023 di Hotel Rendezvous, Singapura
The Hybrid 42nd Revolving Fund Committee (RFC) Meeting on 20 July 2023 at Rendezvous Hotel, Singapore





▴ Lawatan ke *Singapore Maritime Gallery* pada 21 Julai 2023
Trip to Singapore Maritime Gallery on 21 July 2023

Kes Pencemaran Tumpahan Minyak di Perairan Malaysia

Sepanjang tahun 2023, sejumlah sepuluh (10) kes pencemaran tumpahan minyak di perairan Malaysia telah dilaporkan kepada Jabatan Alam Sekitar. Laut China Selatan telah merekodkan kes tumpahan minyak sebanyak 6 kes, Selat Melaka 3 kes dan 1 kes di Selat Johor (**Jadual 3.6**).

Daripada sepuluh (10) kes kejadian tumpahan minyak tersebut, 5 kes adalah berpunca daripada operasi kapal dan 5 kes pula dari punca yang tidak diketahui (**Jadual 3.7**).

Oil Spill Pollution Cases at Malaysian Waters

In 2023, the Department of Environment has received reports of ten (10) cases of oil spill pollution in Malaysian waters. Six cases were recorded within the South China Sea, 3 cases in the Straits of Malacca and 1 case occurred within the Straits of Johor (**Table 3.6**).

Out of the ten cases of oil spill incidents, five (5) cases were due to vessels operation and another five (5) cases were from unknown sources (**Table 3.7**).

Jadual 3.6: Kes Pencemaran Tumpahan Minyak di Perairan Malaysia pada Tahun 2023
Table 3.6: Cases of Oil Spill Pollution at Malaysia Waters in Year 2023

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 (2) Johor (2) Labuan (1) Pahang (1)
		Sabah, Sarawak & W.P Labuan	-	-
	Zon Ekonomi Eksklusif (ZEE) Exclusive Economic Zone (EEZ)		0	-
Laut Sulu **Sulu Sea**	Perairan Malaysia Malaysian Waters	Sabah	-	-
Selat Melaka **Straits of Malacca**	Perairan Malaysia Malaysian Waters		3	Melaka (1) Perak (1) Selangor (1)
Selat Johor **Straits of Johor**	Perairan Malaysia/ Malaysian Waters	Barat / West Timur / East	1 -	Johor (1) -
		JUMLAH / TOTAL	10	

Jadual 3.7: Bilangan Kes Pencemaran Tumpahan Minyak di Perairan Malaysia mengikut Punca pada Tahun 2023
Table 3.7: The Number of Oil Spill Pollution Cases at Malaysia Waters by Source in Year 2023

PUNCA SOURCE	KEJADIAN INCIDENT	BILANGAN NUMBER
Kapal Vessel	Perlanggaran Collision	-
	Terkandas / karam / kebakaran Grounding / sink / fire	3
	Penyelenggaraan kapal Ship maintenance activities	2
Pelabuhan / Terminal Port / Terminal	Kebocoran injap Valve leakage	-
	Kebocoran paip pemindah Transfer pipe leakage	-
Pelantar Platform	Tumpahan dari pelantar Spillage from platform	-
Lain-lain Others	Punca tidak dapat dikenal pasti Unknown source	5
	JUMLAH / TOTAL	10

Lawatan Kerja ke Makmal Chemsain Konsultant di Bukit Jelutong, Shah Alam

Ibu Pejabat Jabatan Alam Sekitar telah mengadakan lawatan kerja ke Makmal Chemsain Konsultant di Bukit Jelutong, Shah Alam pada 7 Mac 2023. Sesi lawatan kerja ini telah diketuai oleh YBrs. Dr Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi) dan turut disertai oleh Encik Rosli bin Osman, Pengarah Bahagian Air dan Marin (BAM) dan pegawai-pegawai dari Bahagian Air dan Marin serta Seksyen Kawalselia Konsesi dan Pengawasan. Lawatan tersebut juga turut disertai oleh para penyelidik dan pegawai daripada Pusat Pencerapan Bumi, Universiti Kebangsaan Malaysia serta pegawai-pegawai dari Jabatan Kimia Malaysia Petaling Jaya. Tujuan lawatan adalah untuk mempelajari kaedah analisis logam berat bagi sampel air laut (ambien) dengan menggunakan peralatan *Inductively Coupled Plasma-Mass Spectrometry* (ICP-MS). Lawatan tersebut juga telah disambut oleh Dr. Rani Abdullah, Ketua Pegawai Eksekutif, Pakar Scieno Transwater Sdn. Bhd. dan Dr. John Chan Sung Tong, Pengarah Syarikat Chemsain Konsultant Sdn. Bhd.

Work Tour Programme to Chemsain Konsultant Laboratory in Bukit Jelutong, Shah Alam

The Headquarters of the Department of Environment (DOE) conducted a work tour to the Chemsain Konsultant Laboratory in Bukit Jelutong, Shah Alam on 7 March 2023. This work tour was led by YBrs. Dr. Norhazni binti Mat Sari, Deputy Director General (Operations) and also attended by Mr. Rosli bin Osman, Director of the Water and Marine Division (BAM), and staff from the Water and Marine Division, and the Concession and Supervisory Program Regulation Section. The visit was also attended by researchers and staff from the Earth Observation Centre, Universiti Kebangsaan Malaysia, as well as staff from the Department of Chemistry Malaysia, Petaling Jaya. The purpose of the visit was to study the method of heavy metal analysis for ambient seawater samples using Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) equipment. The visit was also welcomed by Dr. Rani Abdullah, Chief Executive Officer, Scieno Transwater Sdn. Bhd., and Dr. John Chan Sung Tong, Director of Chemsain Konsultant Sdn. Bhd.



▸ Program Lawatan Kerja ke Makmal Chemsain Konsultant di Bukit Jelutong, Shah Alam
Work Tour Programme to Chemsain Konsultant Laboratory in Bukit Jelutong, Shah Alam

Program Lawatan Kerja ke Stesen Pengawasan Kualiti Air Marin Manual di Negeri Johor di bawah Program Pengawasan Kualiti Alam Sekitar (EQMP)

Bahagian Air dan Marin dari Ibu Pejabat Jabatan Alam Sekitar (JAS) telah mengadakan Program Lawatan Kerja ke Stesen Pengawasan Kualiti Air Marin Manual di negeri Johor di bawah Program Pengawasan Kualiti Alam Sekitar (EQMP) dari 11 hingga 13 April 2023 dengan kerjasama Seksyen Kawalselia Konsesi dan Pengawasan dan Pakar Scieno Transwater Sdn. Bhd. Program tersebut diketuai oleh YBrs. Dr Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi) dan juga turut disertai oleh YBrs. Encik Rosli bin Osman, Pengarah Bahagian Air dan Marin, Ibu Pejabat JAS, YBrs. Dr. Mohd Famey Yusoff, Pengarah JAS Negeri Johor, wakil dari Bahagian Penilaian, wakil dari JAS Negeri Johor serta pegawai-pegawai dari Bahagian Air dan Marin.

Tujuan program lawatan tersebut diadakan adalah sebagai tinjauan teknikal di lapangan bagi pemantauan Stesen Pengawasan Kualiti Air Marin Manual di bawah Program EQMP.

Work Tour Programme to the Manual Marine Water Quality Monitoring Station in the State of Johor Under the Environmental Quality Monitoring Program (EQMP)

The Water and Marine Division, Department of Environment (DOE) Headquarters, organized a Work Tour Programme to the Manual Marine Water Quality Monitoring Station in the state of Johor under the Environmental Quality Monitoring Programme (EQMP) from 11 to 13 April 2023 in collaboration with the Concession and Supervisory Programme Regulation Section and Pakar Scieno Transwater Sdn. Bhd. The programme was led by YBrs. Dr. Norhazni binti Mat Sari, Deputy Director General (Operations), and was also attended by YBrs. Mr. Rosli bin Osman, Director of the Water and Marine Division, DOE Headquarters, YBrs. Dr. Mohd Famey Yusoff, Director of DOE Johor State, representatives from the Assessment Division, representatives from DOE Johor State, as well as officers from the Water and Marine Division.

The purpose of the programme was to conduct a technical field inspection for monitoring of the Manual Marine Water Quality Monitoring Station under the EQMP Programme.



▲ Program Lawatan Kerja ke Stesen Pengawasan Kualiti Air Marin Manual di Negeri Johor di bawah Program Pengawasan Kualiti Alam Sekitar (EQMP)
Work Tour Programme to the Manual Marine Water Quality Monitoring Station in the State of Johor under the Environmental Quality Monitoring Programme (EQMP)

Sesi Libat Urus Peraturan-Peraturan Kualiti Alam Sekeliling Sektor Air: Siri 1/2023

Sesi ini dijalankan pada 23 hingga 26 Mei 2023 bertempat di Hotel Avillion, Port Dickson, Negeri Sembilan.

Stakeholder Engagement Session on Enviromental Quality Regulations for Water Sector: Siries 1/2023

The session was held from 23 to 26 May 2023 at Avillion Hotel, Port Dickson, Negeri Sembilan.

Objektif Sesi ini adalah:
The Objectives of the Session are:

Menyediakan input dan maklum balas peserta, wakil perunding dan universiti yang terlibat bagi pindaan dan keperluan perundangan termasuk garis panduan berkaitan dengan Peraturan 4 & Peraturan 5, PPKAS (Efluen Perindustrian) 2009

To prepare input and feedback from participants, representative from consultants and universities involved for the amendment and regulation requirement including guidelines related to Environmental Quality (Industrial Effluent) Regulations 2009

Menyediakan asas keperluan pindaan/ gubalan baharu terhadap PPKAS (Efluen Perindustrian) 2009

To prepare justification for the amendment or new drafting for Environmental Quality (Industrial Effluent) Regulations 2009



▲ Peserta Sesi Libat Urus bersama Timbalan Ketua Pengarah (Operasi)
Stakeholder Engagement Participant with Deputy Director General (Operation)



◀ Perbincangan Berkumpulan Peserta semasa Program
Participant's Group Discussion during Programme

Sesi Libat Urus dan Pemukiman Pengharmonian Dokumen Panduan Mengenai Reka Bentuk dan Operasi Sistem Pengolahan Efluen Perindustrian

Sesi ini dijalankan pada 28 hingga 30 Ogos 2023 bertempat di Hotel Concorde Shah Alam, Selangor.

Stakeholder Engagement Session on the Harmonization of Guidance Documents on the Design and Operation of Industrial Effluent Treatment Systems

The session was held from 28 to 30 August 2023 at Concorde Hotel Shah Alam, Selangor.

Objektif Sesi ini adalah:
The Objectives of the Session are:

Menyelaras prosedur semakan notifikasi di JAS Negeri terutamanya bagi pemberitahuan bertulis alat kawalan pencemaran air

To coordinate notification review procedure by the State DOE especially on written notification for the water pollution control system

Mendapatkan input dan maklum balas peserta sesi libat urus dan agensi luar yang dijemput bagi pembangunan sistem atas talian bagi pemberitahuan bertulis sistem pengolahan efluen perindustrian (SPEP)

To gather input and feedback from participants and other agencies for the development of an online system for written notification of the industrial effluent treatment system (IETS)

Mengemas kini maklumat dalam dokumen garis panduan berkaitan PPKAS (EP) 2009

To update the information in Environmental Quality (Industrial Effluent) Regulations 2009 related guideline documents



▲ Sesi Perbincangan Kumpulan
Group Discussion of Programme Participants



▶ Sesi Pembentangan Peserta
Group Presentation Session

Sesi Libat Urus dan Pemukiman Pengharmonian Dokumen Panduan Mengenai Reka Bentuk dan Operasi Sistem Pengolahan Efluen Perindustrian Siri 2/2023

Sesi ini dijalankan pada 9 hingga 11 Oktober 2023 bertempat di AmanSari Residence Resort, Johor Bahru.

Stakeholder Engagement Session on the Harmonization of Guidance Documents on the Design and Operation of Industrial Effluent Treatment Systems Siries 2/2023

The session was held from 9 to 11 October 2023 in AmanSari Residence Resort, Johor Bahru.

Sesi ini Diadakan bagi Mencapai Objektif berikut:
The Objectives of the Session are:

Menyelaras prosedur semakan notifikasi di JAS Negeri terutamanya bagi pemberitahuan bertulis alat kawalan pencemaran air
To coordinate notification review procedure by the State DOE especially on written notification for the water pollution control system

Mendapatkan input dan maklum balas peserta sesi libat urus yang juga terdiri daripada pemain industri
To gather input and feedback from participants comprising the industry sector



▲ Sesi Bergambar Kumpulan
Group Photo



▶ Sesi Soal Jawab bersama Peserta
Q&A Session

Sesi Pengujian Sistem EKAS dan Sistem myPremis bagi Modul Notifikasi Air

Sesi ini dijalankan pada 29 hingga 31 Oktober 2023 bertempat di Hotel Concorde Shah Alam, Selangor

System Testing Session for EKAS and myPremis System for Water Notification Module

The session was held from 29 to 31 October 2023 in Concorde Hotel Shah Alam, Selangor.

Sesi Pengujian ini Diadakan bagi Mencapai Objektif berikut:
The Objectives of the Session are:

Mendapatkan input dan maklum balas peserta yang dijemput bagi pembangunan sistem atas talian bagi pemberitahuan bertulis sistem pengolahan efluen perindustrian (SPEP)
To gather input and feedback from participants for the development of an online system for written notification of the industrial effluent treatment system (IETS)

Memuktamadkan spesifikasi yang telah dibincangkan dalam sesi sebelum ini
To finalize the specifications that have been discussed in the previous session



▲ Sesi Bergambar Kumpulan
Group Photo Session



▶ Sesi Perkongsian Kemahiran bersama Peserta
Group Discussion of Program Participants

PROGRAM PENGAWASAN KUALITI ALAM SEKITAR (EQMP)

Program Pengawasan Kualiti Alam Sekitar atau 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 mekanisma amaran awal bagi kejadian pencemaran alam sekitar seperti jerebu, tumpahan minyak, bencana industri dan pelupusan haram buangan yang toksik dan berbahaya. Ia juga boleh membantu pembuat dasar dan pembuat keputusan ke atas aktiviti penguatkuasaan Jabatan Alam Sekitar dan agensi berkaitan termasuk menyediakan input kepada perancangan projek-projek pembangunan. Sepanjang tahun 2023, semua stesen pengawasan beroperasi membekalkan data kualiti alam sekitar kepada pihak Jabatan Alam Sekitar (JAS).

ENVIRONMENTAL QUALITY MONITORING PROGRAMME (EQMP)

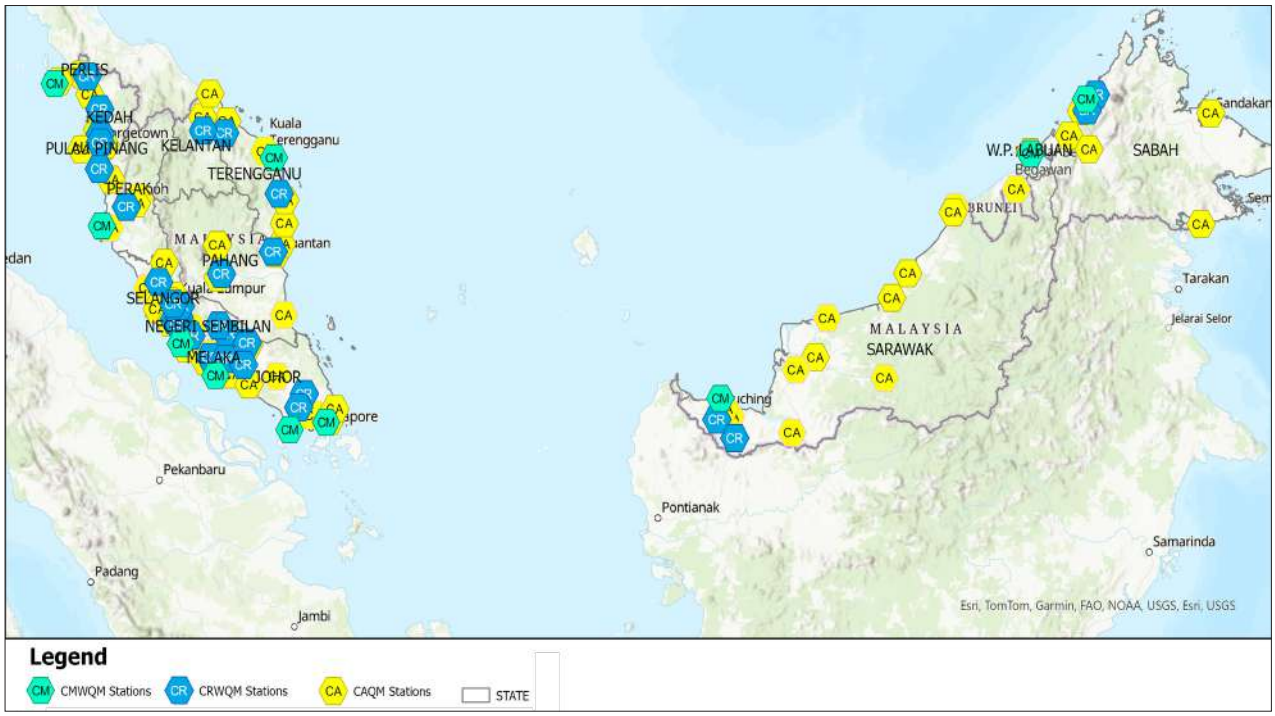
The Environmental Quality Monitoring Programme or EQMP is a programme which is made up of data collections for air quality monitoring, river water quality, and marine water quality throughout Malaysia for the purpose of reporting the actual level of the nation's environmental quality in an effort to 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 Department of Environment (DOE) and related agencies to provide input to the planning of project developments. Throughout 2023, all the monitoring stations had operated in supplying environmental quality data to the Department of Environment (DOE).

Jadual 3.8: Bilangan Stesen Pengawasan Kualiti Alam Sekitar di Malaysia
Table 3.8: The Number of Environmental Quality Monitoring Station in Malaysia

KOMPONEN COMPONENT	STESEN AUTOMATIK AUTOMATIC STATION	STESEN MANUAL MANUAL STATION	STESEN BERGERAK MOBILE 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**	**1755**	**14**

Berikut disertakan taburan stesen pengawasan kualiti alam sekitar automatik bagi stesen kualiti udara, kualiti air sungai dan kualiti air marin di Malaysia.

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



Rajah 3.2: Taburan Lokasi Stesen Automatik bagi Pengawasan Kualiti Udara, Air Sungai dan Air Marin, 2023
Figure 3.2: Distribution of the Locations for Air, River Water and Marine Water Quality Monitoring Automatic Stations, 2023

Bagi stesen-stesen pengawasan kualiti alam sekitar manual, berikut adalah persampelan manual yang telah dijalankan bagi tahun 2023:

For manual environmental quality monitoring stations, the followings are the number of manual samplings which had been carried out in 2023:

Jadual 3.9: Bilangan Persampelan Manual Tahun 2023
Table 3.9: The Number of Manual Samplings in 2023

KOMPONEN COMPONENT	STESEN MANUAL MANUAL STATION	FREKUENSI PERSAMPELAN SAMPLING FREQUENCY	BILANGAN PERSAMPELAN TOTAL NO. OF SAMPLING
Udara Air	14	Setiap 6 hari Every 6 days	2158
Air Sungai River Water	1353	6 kali setahun 6 times a year	8118
Air Marin Marine Water	388	6 kali setahun 6 times a year	2268

Dalam Komponen Udara, selain daripada stesen automatik dan manual, program EQMP ini juga menyediakan stesen bergerak automatik bagi pengawasan kualiti udara iaitu *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 Malaysia, Sabah dan Sarawak. Gambar di bawah menunjukkan stesen pengawasan kualiti udara bergerak yang ditempatkan di Semenanjung Malaysia iaitu di Johan Setia, Klang, Selangor bagi memantau tahap kualiti udara setempat di kawasan tersebut.

For Air Component, aside from automatic and manual station, the EQMP programme also provides a mobile automatic air quality monitoring station which is Mobile Continuous Air Quality Monitoring (MCAQM) to fulfil the aspiration of placing air quality monitoring stations in all parts of the country. A number of three (3) mobile environmental ambient air quality stations are provided where each one is placed in Peninsular Malaysia, Sabah, and Sarawak respectively. The mobile air quality monitoring station placed at Peninsular Malaysia, which is at Johan Setia, Klang, Selangor to monitor the level of ambient air quality at the specified location as shown in the photo below.



◂ Stesen Pengawasan Kualiti Udara Bergerak (MCAQM)
Mobile Continuous Air Quality Monitoring Station (MCAQM)

Jadual 3.10: Senarai Program/Aktiviti/Latihan yang Dilaksanakan di bawah Program EQMP Sepanjang Tahun 2023
Table 3.10: List of Programme/Activity/Training Conducted Under the EQMP Programme Throughout 2023

BIL NO.	TARIKH DATE	PROGRAM/AKTIVITI/LATIHAN PROGRAMME/ACTIVITY/TRAINING	LOKASI LOCATION
1	11/6/2023 - 15/06/2023 (5 hari / days)	Program Pengawasan Kualiti Alam Sekitar Komponen Udara, Komponen Air Sungai dan Komponen Air Marin - Zon Utara / Environmental Quality Monitoring Programme for Air Components, River Water Components, and Marine Water Components - North Zone	Alor Setar, Kedah
2	19/06/2023-23/06/2023 (5 hari / days)	Program Pengawasan Kualiti Alam Sekitar Komponen Udara, Komponen Air Sungai dan Komponen Air Marin - Zon Sabah / Environmental Quality Monitoring Programme for Air Components, River Water Components, and Marine Water Components - Sabah Zone	Kota Kinabalu, Sabah
3	07/08/2023 -10/08/2023 (4 hari / days)	Keselamatan dalam Air River and Marine Safety and Health (Water Safety) / Safety in Water - River and Marine Safety and Health (Water Safety)	Kem Bina Semangat, Kuala Kubu Bharu, Selangor
4	20/08/2023 - 24/08/2023 (5 hari / days)	Program Pengawasan Kualiti Alam Sekitar Komponen Udara, Komponen Air Sungai dan Komponen Air Marin - Zon Timur / Environmental Quality Monitoring Programme for Air Components, River Water Components, and Marine Water Components - East Zone	Kuantan, Pahang
5	06/11/2023 - 10/11/2023 (5 hari / days)	Program Pengawasan Kualiti Alam Sekitar Komponen Udara, Komponen Air Sungai dan Komponen Air Marin - Zon Tengah / Environmental Quality Monitoring Programme for Air Components, River Water Components, and Marine Water Components - Central Zone	Shah Alam, Selangor
6	18/09/2023 - 22/09/2023 (5 hari / days)	Program Pengawasan Kualiti Alam Sekitar Komponen Udara, Komponen Air Sungai dan Komponen Air Marin - Zon Selatan / Environmental Quality Monitoring Programme for Air Components, River Water Components, and Marine Water Components - South Zone	Kota Tinggi, Johor
7	23/10/2023 - 25/10/2023 (3 hari / days)	Modeling Komponen Udara (ALOHA dan HYSPLIT) Air Component Modeling (ALOHA and HYSPLIT)	Puchong, Selangor
8	09/10/2023 - 12/10/2023 (4 hari / days)	Modeling Komponen Sungai dan Marin (QUAL2K dan WASP) Modeling River and Marine Components (QUAL2K and WASP)	W.P Putrajaya
9	16/10/2023 - 20/10/2023 (5 hari / days)	Program Pengawasan Kualiti Alam Sekitar Komponen Udara, Komponen Air Sungai dan Komponen Air Marin - Zon Sarawak / Environmental Quality Monitoring Programme for Air Components, River Water Components, and Marine Water Components - Sarawak Zone	Kuching, Sarawak
10	20/11/2023 - 24/11/2023 (5 hari / days)	Modeling Komponen Udara (AERMOD) / Air Component Modeling (AERMOD)	Kuala Lumpur
11	16/01/2023 -19/01/2023 (4 hari days/ days)	Annual EQMP Report / Annual EQMP Report	Kuala Lumpur
12	9/10/2023 (1 hari / days)	EQMP Educational Programme (Program Bersama Media I) EQMP Educational Programme (Programme with Media I)	Kuala Lumpur
13	3/8/2023 - 4/8/2023 (2 hari / days)	EQMP Educational Programme (Sketsa Alam Sekitar Peringkat Sekolah Menengah) / EQMP Educational Programme (Secondary School Level Environmental Sketch)	Bangi, Selangor
14	30/11/2023 (1 hari / day)	EQMP Educational Programme (Program Bersama Media II - Blogger & Influencer) / EQMP Educational Programme (Programme with Media II - Blogger & Influencer)	Putrajaya

Jadual 3.11: Senarai Lawatan Rasmi daripada Pihak Luar ke Pusat Data Alam Sekitar (EDC) di bawah Program EQMP Sepanjang Tahun 2023
Table 3.11: List of Official Visits from Outside Parties to Environmental Data Center (EDC) Under the EQMP Programme Throughout 2023

BIL NO.	TARIKH DATE	LAWATAN RASMI DARI AGENSI AWAM /SWASTA OFFICIAL VISITS FROM PUBLIC/PRIVATE AGENCIES
1.	25/1/2023	Lawatan Pegawai dari Jabatan Pengairan dan Saliran / Official Visit from the Department of Irrigation and Drainage
2.	8/3/2023	Lawatan Pegawai dari Jabatan Perancangan Bandar dan Desa (PLAN Malaysia) / Official Visit from the Town and Country Planning Department (PLANMalaysia)
3.	21/3/2023	Lawatan Pensyarah dan Pelajar dari Universiti Malaysia Pahang / Lecturer and Student Visit from Universiti Malaysia Pahang
4.	3/4/2023	Lawatan Pengurusan Atasan NRECC iaitu YBM Tuan Nik Nazmi bin Nik Ahmad & KSU YBhg. Dato' Haji Rosli bin Isa / NRECC's Top Management, visit (YBM Tuan Nik Nazmi bin Nik Ahmad and KSU YBhg. Dato' Haji Rosli bin Isa)
5.	29/5/2023	Lawatan Pegawai Lantikan Baru Jabatan Alam Sekitar / Visit from Newly Appointed Officials of Department of Environment
6.	6/7/2023	Global Environment Centre (GEC) / Global Environment Centre (GEC)
7.	7/8/2023	Lawatan dari Pegawai Negara Brunei / Visit from Brunei Officials
8.	13/12/2023	Lawatan Pensyarah dan Pelajar dari UITM Sungai Buloh / Visits from Lecturers and Students of UiTM Sungai Buloh
9.	27/12/2023	Lawatan Pensyarah dan Pelajar dari UNIKL MICET / Lecturer and Student Visit from UNIKL MICET

Bencana Pencemaran Industri

Sepanjang tahun 2023, program pengawasan di kawasan industri Pasir Gudang diteruskan yang bertujuan memantau tahap kualiti udara terutamanya gas *Total Volatile Organic Compounds* (TVOC) dan juga *Volatile Organic Compounds* (VOCs). Jabatan Alam Sekitar yang merupakan Jabatan Kerajaan yang menguatkuasakan undang-undang pencemaran alam sekitar yang dihasilkan oleh pihak industri memberikan komitmen sepenuhnya sepanjang tahun 2023.

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

Industrial Pollution Disaster

Throughout 2023, the monitoring programmes in the Pasir Gudang industrial area continued with the aim of monitoring the level of air quality, especially Total Volatile Organic Compounds (TVOC) and Volatile Organic Compounds (VOCs) gases. The Department of Environment which is the Government Department that enforces environmental pollution laws produced by the industry is fully committed throughout 2023.

The commitments given in terms of expertise, financial, work force, and time which were contributed by the whole department to ensure that the industrial disaster episode did not worsen the public's health and at the same time carried out enforcements to track and bring the offenders to court under the jurisdiction of the Environmental Quality Act (EQA) 1974.

Pemerkasaan Pemantauan Kualiti Udara dan Gas Toksik di Pasir Gudang, Johor

JAS melalui Kementerian telah melaksanakan pemantauan kualiti udara dan gas toksik di Pasir Gudang bermula pada tahun 2019 dan diteruskan sehingga kini.

JAS telah memasang sebanyak 25 buah stesen pengawasan gas toksik *Total Volatile Organic Compounds* (TVOC) menggunakan *Photo Ionization Detector* (PID)

Empowerment of Air Quality and Toxic Gases Monitoring at Pasir Gudang, Johor

DOE through the Ministry has carried out air quality and toxic gas monitoring in Pasir Gudang starting from 2019 and continues until now.

DOE had installed 25 Total Volatile Organic Compounds (TVOC) toxic gases monitoring stations using Photo Ionization Detector (PID) which trace TVOC gases and

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.

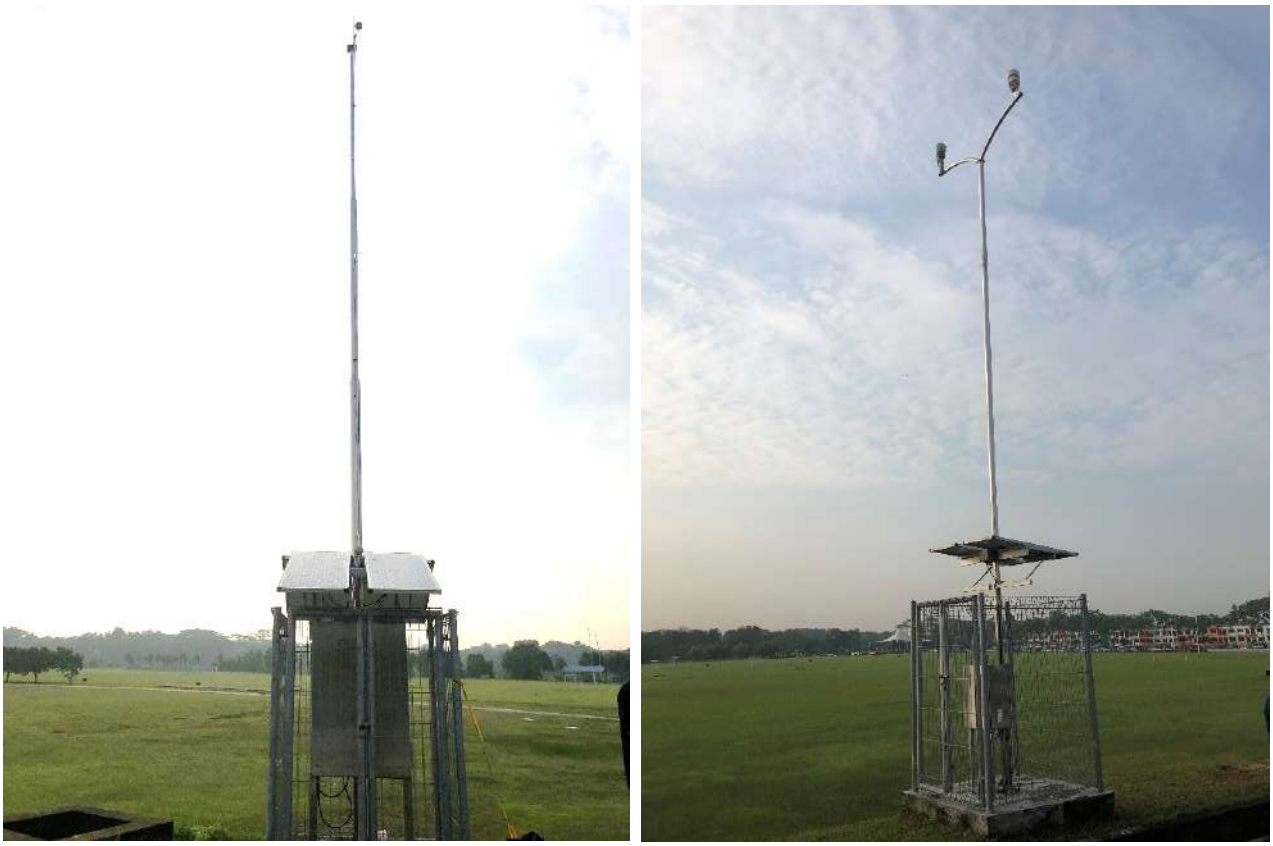
trigger warning system to the authorities as well as to the public. Amongst the 25 PID stations, there were 5 meteorological stations situated next to each other in order to obtain local meteorological data for the purpose of modelling and detect dispersion of the air pollution.

Selain itu, JAS juga telah membuat perolehan satu (1) unit *Mobile Gas Chromatography Mass Spectrometry* (GCMS) dan satu (1) unit *Mobile Gas Chromatography Flame Ionization Detector* (GCFID).

Besides, DOE had also acquired one (1) unit of Mobile Gas Chromatography Mass Spectrometry (GCMS) and one (1) unit of Mobile Gas Chromatography Flame Ionization Detector (GCFID).

Jadual 3.12: Lokasi Stesen Pengawasan *Total Volatile Organic Compounds* (TVOC)
Table 3.12: Location of Total Volatile Organic Compounds (TVOC) Monitoring Stations

BIL. NO.	LOKASI STESEN LOCATION OF STATION
1	Sekolah Kebangsaan Tanjong Langsat
2	Sekolah Kebangsaan Kota Masai 2
3	Sekolah Menengah Kebangsaan Pasir Putih
4	Sekolah Kebangsaan Tanjung Puteri Resort
5	Sekolah Kebangsaan Pasir Puteh
6	Johor Port Berhad
7	Klinik Kesihatan Pasir Gudang
8	Sekolah Kebangsaan Pasir Gudang (2)
9	Sekolah Menengah Kebangsaan Pasir Gudang 3
10	Klinik Kesihatan Masai
11	Sekolah Menengah Kebangsaan Pasir Gudang 2
12	Stadium Majlis Perbandaran Pasir Gudang
13	Masjid Jamek Pasir Gudang
14	Sekolah Kebangsaan Taman Rinting 3
15	Dewan Muafakat Masai @ Dewanraya Masai
16	Sekolah Kebangsaan Taman Cendana
17	Sekolah Menengah Kebangsaan Bandar Seri Alam
18	Sekolah Menengah Kebangsaan Kota Masai
19	Sekolah Menengah Kebangsaan Taman Scientex
20	Sekolah Kebangsaan Kopok
21	Sekolah Jenis Kebangsaan (Tamil) Ladang Sg Plentong
22	Sekolah Kebangsaan Seri Kota Puteri
23	Sekolah Menengah Kebangsaan Dato' Penggawa Timur
24	Masjid Taman Pasir Putih
25	Sekolah Menengah Kebangsaan Tanjung Puteri Resort



▸ Stesen TVOC (kiri) dan Stesen Meteorologi di Stadium Pasir Gudang, Johor
TVOC Station (left) and Meteorology Station at Pasir Gudang Stadium, Johor





▸ Stesen Bergerak GCMS (kiri) dan Stesen Bergerak GCFID (kanan)
Mobile GCMS Station (left) and Mobile GCFID Station (right)

PENGUATKUASAAN TERHADAP AKTIVITI PEMBAKARAN TERBUKA

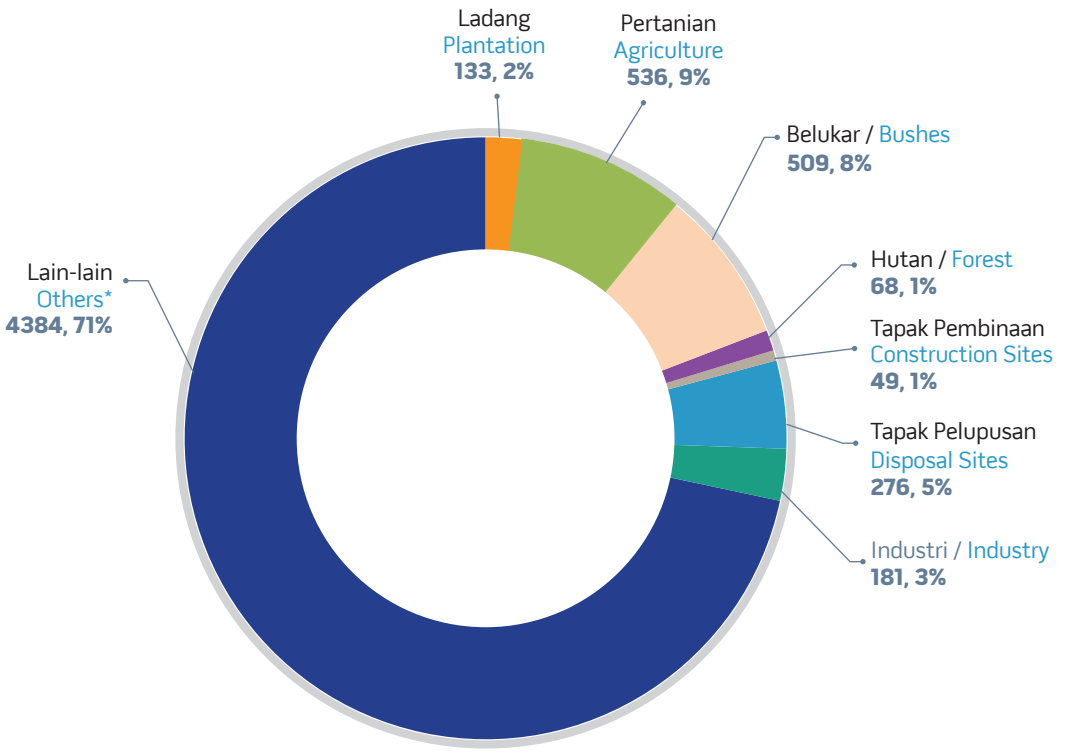
Kes pembakaran terbuka dikesan melalui operasi rondaan mencegah pembakaran terbuka yang dilaksanakan oleh JAS Negeri di kawasan-kawasan yang dikenal pasti sebagai kawasan yang berisiko berlaku kebakaran dan sering menerima aduan daripada orang awam. Di samping itu maklumat *hotspots* juga diperolehi melalui satelit yang dipantau dan dilaporkan oleh *ASEAN Specialised Meteorological Centre (*ASMC) yang berpusat di Singapura. Pada tahun 2023, sebanyak 805 *hotspots* di seluruh negara telah dilaporkan melalui satelit (**Jadual 3.13**).

Sebanyak 6,136 kes pembakaran terbuka secara keseluruhan telah dikesan pada tahun 2023 (**Jadual 3.14**, **Jadual 3.15** dan **Rajah 3.3**) dan dilaporkan oleh setiap JAS Negeri melalui sistem atas talian dalaman 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. Aktiviti-aktiviti ini dikategorikan sebagai lain-lain aktiviti (4,384 kes). Terdapat juga insiden kebakaran dari aktiviti pertanian (536 kes) dan belukar (509 kes) terutamanya semasa cuaca panas dan kering iaitu pada bulan Oktober (646 kes), Jun (614 kes) dan Mei (600 kes). Daripada 6,136 kes pembakaran terbuka tersebut, 87 kes telah dikompaun dengan jumlah kompaun yang dikutip ialah sebanyak RM 103,800.00 dan 5 kes dikenakan tindakan mahkamah dengan jumlah kutipan denda sebanyak RM50,000.00.

ENFORCEMENT AGAINST OPEN BURNING ACTIVITIES

Open burning cases were detected during daily ground surveillance conducted by DOE State Offices at identified fire-prone areas, which received frequent 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 2023, a total of 805 hotspots were detected via satellites (**Table 3.13**).

A total of 6,136 open burning cases were detected in 2023 (**Table 3.14, Table 3.15**, and **Figure 3.3**) 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. These were categorised as other activities (4,384 cases). There were also fire incidents in agricultural areas (536 cases) and bushes (509 cases) that especially occurred during the hot and dry period in the months of October (646 cases), June (614 cases), and May (600 cases). Out of the 6,136 open burning cases detected, 87 cases were issued with compounds amounting to RM 103,800.00 and 5 cases were subject to court action with a total fine of RM50,000.00.



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 3.3: Bilangan Kes Pembakaran Terbuka mengikut Kategori, 2023
Figure 3.3: Number of Open Burning Cases by Categories, 2023

Jadual 3.13: Bilangan Kes Hotspots Dikesan melalui Satelit mengikut Negeri, 2023 (Sumber: ASMC)
Table 3.13: Number of Hotspots Detected through Satellite by States, 2023 (Source: ASMC)

NEGERI STATE	BULAN / MONTH												
	Jan Jan	Feb Feb	Mac March	April April	Mei May	Jun June	Julai July	Ogos Aug	Sep Sept	Okt Oct	Nov Nov	Dis Dec	Jumlah Total
Johor	0	3	2	8	3	3	2	3	5	14	0	1	**44**
Kedah	2	1	6	2	1	0	0	0	0	0	0	1	**13**
Kelantan	0	0	2	8	4	0	3	2	0	0	0	0	**19**
Melaka	0	1	3	0	0	0	0	0	2	0	1	0	**7**
Negeri Sembilan	0	0	0	0	1	1	0	0	0	0	0	0	**2**
Pahang	2	0	7	28	15	13	11	10	3	5	1	2	**97**
Perak	1	2	3	3	0	6	2	3	2	1	1	2	**26**
Perlis	1	5	8	0	0	0	0	0	0	0	0	0	**14**
Pulau Pinang	0	0	0	0	1	0	0	0	0	0	0	0	**1**
Sabah	5	2	11	25	17	12	22	22	12	7	13	11	**159**
Sarawak	6	1	4	17	15	26	120	101	31	16	5	11	**353**
Selangor	0	0	0	1	1	12	3	4	0	2	1	1	**25**
Terengganu	0	1	1	13	9	3	4	0	9	3	1	1	**45**
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	**17**	**16**	**47**	**105**	**67**	**76**	**167**	**145**	**64**	**48**	**23**	**30**	**805**
JUMLAH KESELURUHAN / TOTAL													**805**

Jadual 3.14: Bilangan Kes Pembakaran Terbuka mengikut Negeri, 2023
Table 3.14: Number of Open Burning Cases by States,2023

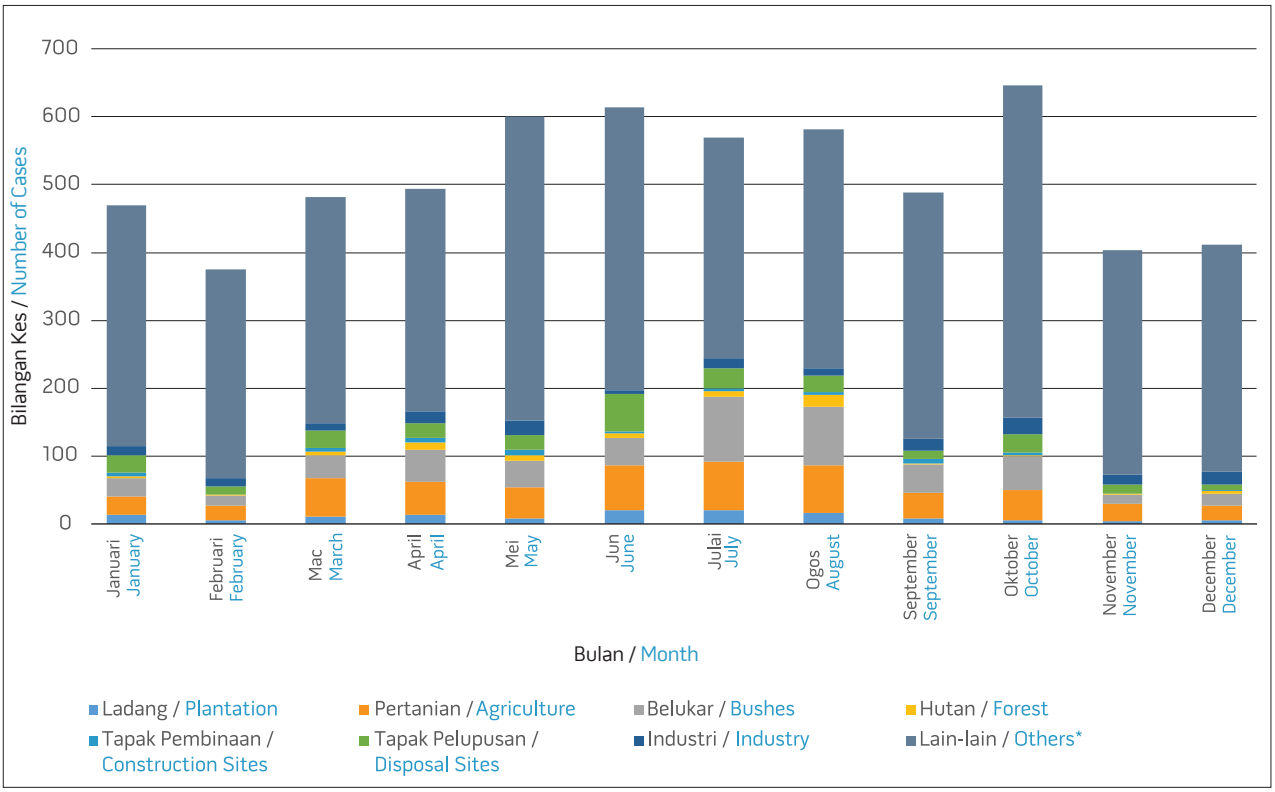
NEGERI / STATE	KATEGORI / CATEGORIES								
	LADANG / PLANTATION	PERTANIAN / AGRICULTURE	BELUKAR / BUSHES	HUTAN / FOREST	TAPAK PEMBINAAN / CONSTRUCTION SITES	TAPAK PELUPUSAN / DISPOSAL SITES	INDUSTRI / INDUSTRY	LAIN-LAIN / OTHERS*	JUMLAH / TOTAL
Johor	26	57	50	1	2	45	42	627	**850**
Kedah	10	15	15	0	4	10	25	192	**271**
Kelantan	6	6	12	2	0	16	3	78	**123**
Melaka	6	26	28	0	3	12	8	330	**413**
Negeri Sembilan	6	7	8	1	1	5	7	238	**273**
Pahang	9	22	73	19	4	1	6	176	**310**
Perak	6	32	4	1	7	15	6	238	**309**
Perlis	4	11	13	0	0	0	0	22	**50**
Pulau Pinang	3	45	6	9	3	4	11	394	**475**
Sabah	4	161	27	9	1	4	1	137	**344**
Sarawak	30	89	210	25	2	2	12	149	**519**
Selangor	22	42	42	0	10	157	43	1272	**1588**
Terengganu	1	9	13	1	3	3	17	118	**165**
W.P. Kuala Lumpur/ Putrajaya	0	12	8	0	9	2	0	404	**435**
W.P. Labuan	0	2	0	0	0	0	0	9	**11**
Jumlah / Total	**133**	**536**	**509**	**68**	**49**	**276**	**181**	**4384**	**6,136**
JUMLAH KESELURUHAN / TOTAL							6,136		

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

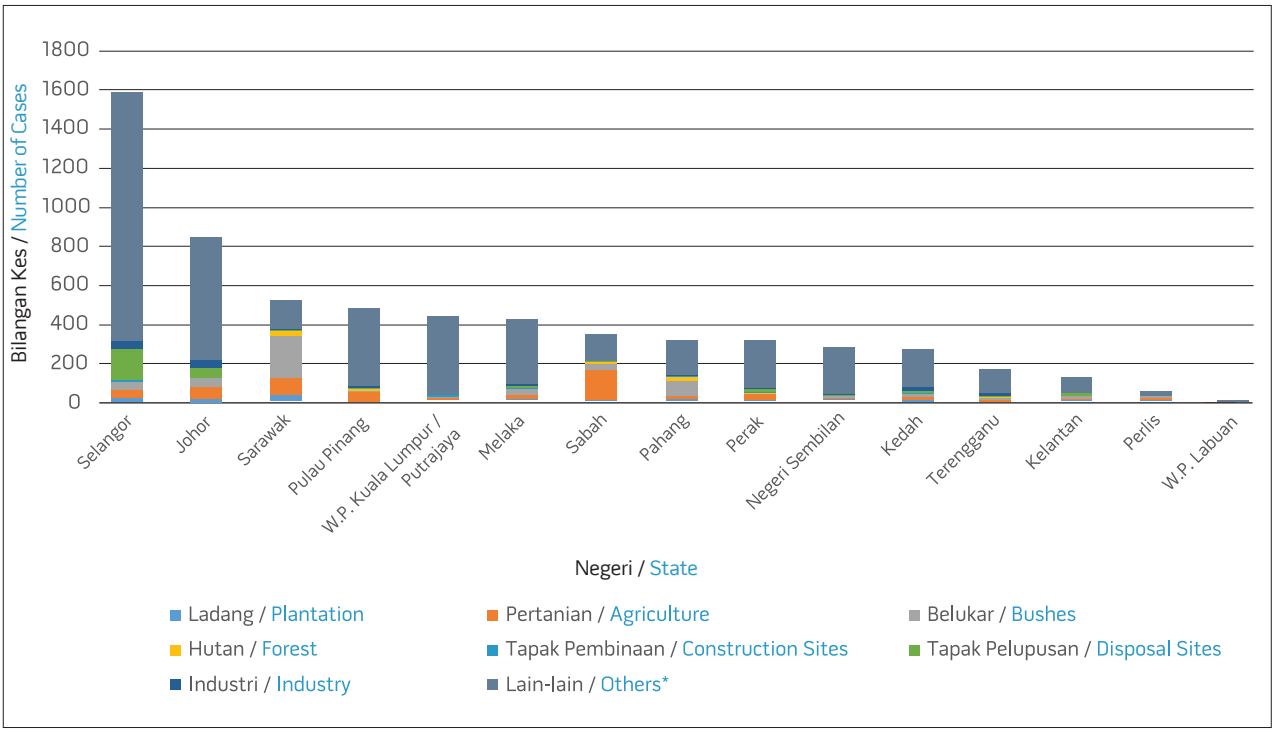
Jadual 3.15: Bilangan Kes Pembakaran Terbuka Bulanan, 2023
Table 3.15: Number of Open Burning Cases by Month, 2023

BULAN / MONTH	KATEGORI / CATEGORIES								
	LADANG / PLANTATION	PERTANIAN / AGRICULTURE	BELUKAR / BUSHES	HUTAN / FOREST	TAPAK PEMBINAAN / CONSTRUCTION SITES	TAPAK PELUPUSAN / DISPOSAL SITES	INDUSTRI / INDUSTRY	LAIN-LAIN / OTHERS*	JUMLAH / TOTAL
Januari / January	14	27	26	3	6	25	14	354	469
Februari / February	6	21	15	1	0	13	12	307	375
Mac / March	11	56	35	5	5	26	10	334	482
April / April	14	48	47	11	7	22	17	328	494
Mei / May	8	46	39	9	7	22	22	447	600
Jun / June	20	66	41	7	3	55	5	417	614
Julai / July	21	71	96	8	4	29	15	326	570
Ogos / August	16	71	86	17	5	24	10	352	581
September / September	8	38	42	1	7	12	18	363	489
Oktober / October	6	44	50	1	4	27	24	490	646
November / November	4	26	14	1	0	13	15	331	404
Disember / December	5	22	18	4	1	8	19	335	412
Jumlah / Total	133	536	509	68	49	276	181	4384	6,136
JUMLAH KESELURUHAN / TOTAL							6,136		

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 3.4: Bilangan Kes Pembakaran Terbuka Bulanan, 2023
Figure 3.4: Number of Open Burning Cases by Month, 2023



Rajah 3.5: Bilangan Kes Pembakaran Terbuka mengikut Negeri, 2023
Figure 3.5: Number of Open Burning Cases by States, 2023

PROTOKOL MONTREAL DAN PERLINDUNGAN LAPISAN OZON

Malaysia telah meratifikasikan Konvensyen Vienna bagi Perlindungan Lapisan Ozon dan Protokol Montreal mengenai Bahan-bahan Pemusnah Lapisan Ozon pada 29 Ogos 1989. Sebagai negara Parti kepada Protokol Montreal, Malaysia telah memenuhi tanggungjawab untuk menghentikan pengimportan klorofluorokarbon (CFC), halon dan karbon tetraklorida (CTC) mulai 1 Januari 2010. Manakala bahan pemusnah ozon seperti Metil Bromida telah dikawal pengimportan mulai 1 Januari 2015 untuk tujuan kegunaan kuarantin dan pra penghantaran melalui kapal.

Pelan Pengurusan Penghapusan HCFC (HPMP) Peringkat I yang bermula pada tahun 2012 telah selesai dilaksanakan pada tahun 2016. Pelaksanaan HPMP Peringkat I telah berjaya menghapuskan penggunaan HCFC sebanyak 111.85 ODPT. Peringkat II HPMP bermula pada tahun 2017 dan telah selesai dilaksanakan pada tahun 2023. Pelaksanaan HPMP Peringkat II telah berjaya menghapuskan penggunaan HCFC sebanyak 153.62 *Ozone Depleting Potential Tonne* (ODPT). Penghapusan penggunaan HCFC akan diteruskan dalam HPMP Peringkat III yang akan bermula pada tahun 2024. Pengimportan HCFC akan menjadi larangan mutlak pada tahun 2040.

Ketika Mesyuarat Parti kepada Protokol Montreal Ke-28 di Kigali, Rwanda pada 15 Oktober 2016, satu persetujuan telah dicapai untuk mengurangkan penggunaan HFC secara berperingkat. Perjanjian yang dikenali sebagai Pindaan Kigali (KA) telah mula berkuat kuasa pada 1 Januari 2019. Bahan HFC telah ditambah sebagai bahan kawalan di bawah Protokol Montreal dan pelan pengurangan HFC telah diwujudkan. Sebagai negara parti kepada protocol ini, Malaysia telah meratifikasi Pindaan Kigali (KA) pada 21 Oktober 2020.

Pematuhan Terhadap Protokol Montreal dan Pelaksanaan Pelan Pengurusan Penghapusan HCFC (HPMP) Peringkat II

Malaysia wajib menghapuskan penggunaan HCFC secara berperingkat bermula pada tahun 2013. Bagi mencapai sasaran ini, Pelan Penghapusan HCFC (HPMP) telah digubal dan menggariskan polisi dan strategi jangka masa panjang untuk menghapuskan penggunaan HCFC mulai tahun 2012 hingga 2040. **Jadual 3.16** menunjukkan polisi dan strategi perundangan dalam pelaksanaan HPMP.

MONTREAL PROTOCOL AND PROTECTION OF THE OZONE LAYER

Malaysia ratified the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer on 29 August 1989. As a Party to the Montreal Protocol, Malaysia has complied to the obligation to stop importing chlorofluorocarbon (CFC), halon, and carbon tetrachloride (CTC) by 1 January 2010. While ozone-depleting substances such as Methyl Bromide have been controlled for import from 1 January 2015 for the purpose of quarantine and pre-shipment by ship.

The Stage I HCFC Phase-out Management Plan (HPMP), initiated in 2012, was successfully concluded in 2016. Through the implementation of Stage I HPMP, the consumption of HCFCs had been effectively phased out, resulting in a reduction of 111.85 ODPT. The Stage II HCFC Phase-out initiated in 2017, was successfully concluded in 2023. Through the implementation of Stage II HPMP, the consumption of HCFCs has been effectively phased out, resulting in a reduction of 153.62 Ozone Depleting Potential Tonne (ODPT). HCFC use elimination will continue in HPMP Stage III, starting in 2024. The importation of HCFCs will be completely banned by 2040.

During the 28th Meeting of Parties to the Montreal Protocol in Kigali, Rwanda on 15 October 2016, an agreement was reached to gradually reduce the use of HFCs. This agreement, known as the Kigali Amendment (KA), became effective on 1 January 2019, adding HFCs as controlled substances under the protocol and establishing a phasedown plan for their reduction. As a signatory to the protocol, Malaysia ratified the Kigali Amendment (KA) on 21 October 2020.

Compliance with the Montreal Protocol and HCFC Phase-Out Management Plan (HPMP) Stage-2 Implementation

As a member party to the Montreal Protocol, Malaysia is obligated to phase out HCFCs in stages starting from 2013. To achieve this goal, Malaysia formulated the HCFC Phase-out Management Plan (HPMP), outlining policies and long-term strategies for the phase-out process from 2012 to 2040. **Table 3.16** presents the policies and regulatory strategies of HPMP.

Pada tahun 2023, jumlah penggunaan bahan HCFC di Malaysia adalah sebanyak 2805.80 metrik tan atau bersamaan dengan 153.62 ODPT. Berbanding dengan garis dasar penggunaan HCFC yang ditetapkan pada 2013 yang berada pada 515.76 ODPT, Malaysia telah berjaya mencapai pengurangan ketara sebanyak 362.14 ODPT dalam penggunaan HCFC. **Rajah 3.6** menunjukkan pencapaian Malaysia untuk penghapusan HCFC berbanding dengan Jadual Penghapusan HCFC yang ditetapkan di bawah Protokol.

In 2023, Malaysia's consumption of HCFC materials amounted to 2805.80 metric tons, equivalent to 153.62 ODPT. In comparison to the HCFC consumption baseline set in 2013, which stood at 515.76 ODPT, Malaysia has successfully achieved a significant reduction of 362.14 ODPT in HCFC consumption. **Figure 3.6** shows Malaysia's achievement of HCFC phase-out compared to the HCFC phase-out schedule as specified in the Protocol.

Sejak tahun 2013, JAS mewujudkan sistem permit kelulusan (AP) bagi mengawal dan mengagih kuota import HCFC berdasarkan garis dasar yang ditetapkan. Permohonan AP dan pemprosesan kelulusan dilaksanakan melalui sistem dalam talian, e-Permit, yang melibatkan jaringan di antara pengimport/ pengeksport HCFC berdaftar dengan Jabatan Alam Sekitar dan Sistem Maklumat Kastam (SMK), Jabatan Kastam Diraja Malaysia (JKDM). Pada tahun 2023, sebanyak 1563 permohonan untuk mengimport HCFC telah diterima daripada 79 pengimport berdaftar dan tiada permohonan untuk mengeksport HCFC diterima.

Since 2013, the DOE implemented the Approved Permit (AP) system to control HCFC import, and export quotas based on established baselines. AP applications and approvals are processed through the online system known as e-Permit, which facilitates communication and coordination among HCFC importers or exporters registered with the Department of Environment and Customs Information System (SMK), under the jurisdiction of the Royal Malaysian Customs Department (JKDM). In 2023, 1563 import applications were received from 79 registered importers, while no export applications were submitted through e-Permit.

Pelaksanaan penukaran teknologi di bawah HPMP II adalah sangat mencabar bagi pengusaha busa kecil dan sederhana (SME) yang terjejas akibat pandemik COVID-19. Walau bagaimanapun, sehingga Disember 2023, sebanyak 42 pengusaha busa telah berjaya menyelesaikan penukaran tersebut dan semua pengusaha busa yang dikenal pasti telah menggunakan alternatif mesra ozon sama ada melalui inisiatif projek penukaran teknologi atau peralihan secara persendirian.

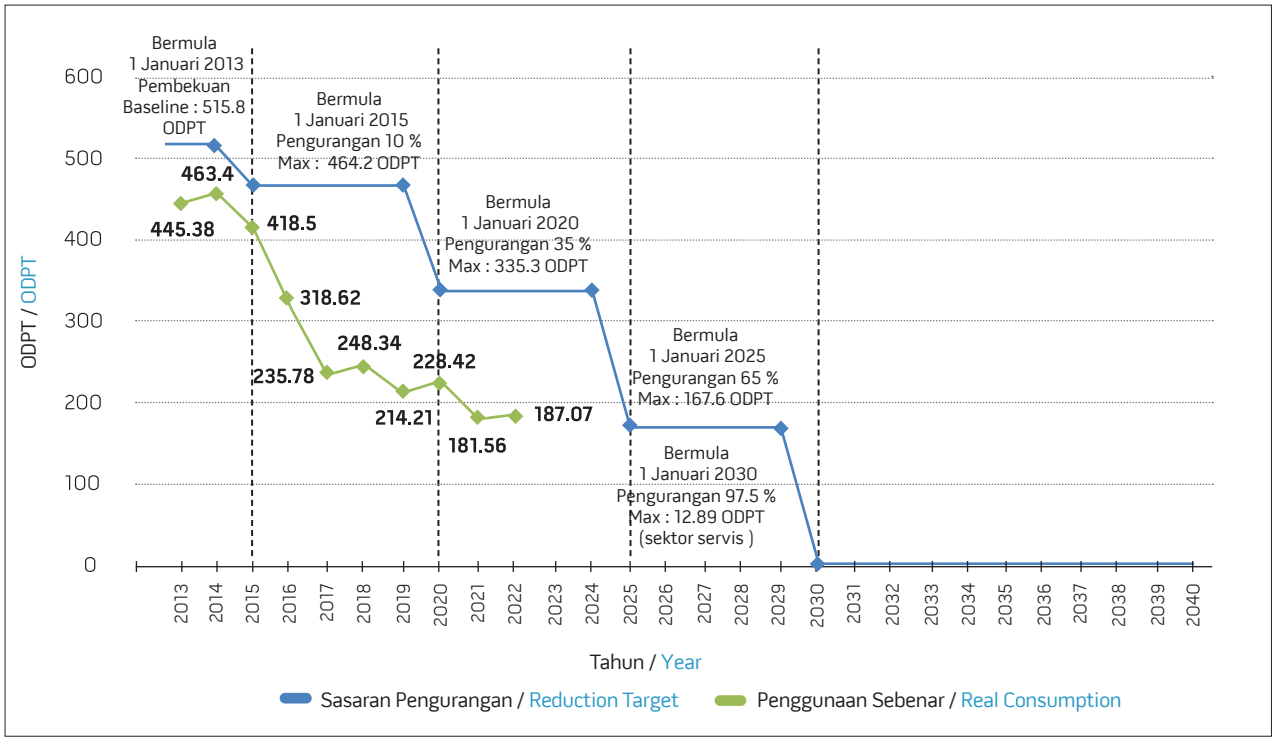
Implementing technology conversion under HPMP II is very challenging for small and medium enterprises (SMEs), especially in the past few years when businesses were hit badly due to the COVID-19 pandemic. However, despite some setbacks, 42 foam enterprises successfully completed conversion as of December 2023, and all identified foam manufacturers have embraced ozone-friendly alternatives, either through project conversion initiatives or independently transitioned.

Larangan penggunaan HCFC-141b dalam sektor busa telah bermula pada 1 Januari 2023 dan tiada lagi peruntukan kuota serta permit bagi pengimportan HCFC-141b kecuali 1 ODPT untuk kegunaan dalam sektor pelarut. Bagi bantuan teknikal, En. Zhang Peng, pakar busa antarabangsa daripada China telah mengadakan perundingan individu pada 4 hingga 6 September 2023. Inisiatif ini adalah penting bagi membantu pengusaha busa menangani sebarang isu teknikal yang timbul semasa proses penukaran dan menambah baik keperluan keselamatan susulan peralihan kepada bahan agen pengembang mudah terbakar. Selain itu, seminar mengenai keselamatan dan kelestarian dalam poliuretana busa turut diadakan pada 8 September 2023 yang menghimpunkan kepakaran tempatan dan luar negara bagi menangani aspek kritikal keselamatan dan kelestarian dalam industri ini.

The prohibition on the use of HCFC-141b in the foam sector began on 1 January 2023, and there are no more quota allocations or permits for the importation of HCFC-141b except for 1 ODPT for use in the solvent sector. Recognizing the need for technical assistance, Mr. Zhang Peng, an international foam expert from China, conducted one-to-one consultations with eight foam enterprises from 4 to 6 September 2023. This initiative is crucial to assist in addressing any technical issues that arise during the conversion process and to enhance safety measures following the transition to flammable blowing agents. Additionally, a seminar on safety and sustainability in polyurethane foam was also held on 8 September 2023, bringing together expertise from both local and overseas perspectives to address critical aspects of safety and sustainability in the industry.

Jadual 3.16: Polisi dan Strategi Perundangan bagi Pelan Pengurusan Penghapusan HCFC (HPMP) (2012-2040)
Table 3.16: Policies and Regulatory Strategies for HCFC Phase Out Management Plan (HPMP) (2012-2040)

TAHUN YEAR	POLISI DAN RANGKA KERJA PERUNDANGAN POLICY AND REGULATORY FRAMEWORK
2012	Mewujudkan sistem AP bagi pengagihan kuota import HCFC berdasarkan garis dasar atau purata import 2009/2010 Establishment of AP for HCFC import quota based on national average consumption for 2009/2010
	Meminda perundangan sedia ada untuk mengawal penggunaan, import, pembuatan, pemasangan produk dan peralatan yang menggunakan HCFC Amend existing legislation for control on the use, import, manufacture, assembly or installation of products and equipment using HCFCs
2013	Mewujudkan sistem perlesenan untuk mengeksport semula gas HCFC Licence re-export of HCFC chemicals
	Pelaksanaan sistem AP pada 1 Januari 2013 mengikut Jadual Pembekuan Protokol Montreal Implement Approved Permit (AP) system for HCFC import (by Jan 2013)
	Larangan menambah (expansion) atau membina fasiliti pembuatan baru menggunakan HCFC Prohibit expansion of new manufacturing facilities using HCFCs
	Promosi menggunakan bahan alternatif melalui pemberian insentif Promote the use of alternatives through incentives
	Latihan dan Pensijilan bagi pekerja yang mengendalikan HCFC Training and Certification for workers handling HCFCs
2015	Larangan bagi membuat, memasang dan mengimport peralatan penyaman udara menggunakan HCFC yang berkuasa 2.5 hp dan ke bawah (untuk penggunaan dalam Malaysia) Prohibit the manufacture, assembly, and import of HCFC-based air conditioner equipment of 2.5hp and below (for use in Malaysia)
	Mewartakan HCFC sebagai bahan terkawal Gazetted HCFCs as controlled substances
	Larangan ke atas pengimportan polyol yang mengandungi HCFC Prohibit import of pre-blended polyols with HCFCs
2020	Larangan membuat, memasang dan mengimport semua barangan dan peralatan yang menggunakan HCFC kecuali bagi penggunaan khas (essential use) Prohibit the manufacture, assembly, and import of all products and equipment using HCFCs (except for essential uses)
	Larangan menggunakan HCFC 141b sebagai agen pengembang Prohibit the use of HCFC 141b as blowing agent
	Larangan pembuatan dan pemasangan baru sistem pemadam api yang menggunakan HCFC Prohibit the use of HCFC in the manufacturing and installation of new fire extinguishing systems
2025	Larangan pemasangan baru semua barangan dan peralatan yang menggunakan HCFC Prohibition of new installations of all goods and equipment that use HCFCs
2030	Pemberian AP terhad kepada 2.5% daripada jumlah baseline dan hanya untuk sektor servis sahaja AP limited to 2.5% of baseline and for servicing use only
2040	Larangan mutlak pengimportan HCFC mulai 1 Januari 2040 Total ban on the import and use of HCFCs from 1 January 2040



Rajah 3.6: Pencapaian Penghapusan HCFC di Malaysia
Figure 3.6: HCFC Phase-out Achievement in Malaysia

Selaras dengan obligasi di bawah Protokol Montreal, Malaysia telah mula mengawal pengimportan, pengilangan atau pemasangan kelengkapan penyejukbekuan dan penyaman udara yang berasaskan HCFC pada 1 Disember 2022. Dalam prosedur baharu ini, JAS mengeluarkan surat kelulusan sebagai pra-syarat kepada pengimport atau pengilang untuk memperolehi *Certificate of Approval* (COA) atau *Release Letter* (RL) daripada Suruhanjaya Tenaga (ST). Sistem e-Permit dari JAS telah dinaik taraf dan berintegrasi dengan sistem e-Kelengkapan dari ST untuk memudahkan proses permohonan secara dalam talian oleh pengimport dan pengilang peralatan. Pada tahun 2023, sebanyak 2315 permohonan surat kelulusan telah diterima daripada 117 pengilang dan pengimport melalui sistem e-Permit.

Persediaan Pelan Pelaksanaan Kigali (KIP)

Pada 21 Oktober 2020, Malaysia telah meratifikasikan Pindaan Kigali yang bertujuan untuk mengurangkan penggunaan Hidrofluorokarbon (HFC) iaitu bahan alternatif kepada bahan pemusnah ozon yang memiliki Potensi Pemanasan Global (GWP) yang sangat tinggi.

Sebagai negara parti Artikel 5 dalam Kumpulan 1, Malaysia wajib untuk membekukan penggunaan HFC pada garis dasar bermula pada 1 Januari 2024 dan mengurangkan penggunaan HFC secara berperingkat sebanyak 80% menjelang tahun 2045. Pengiraan garis

In compliance with obligations under the Montreal Protocol, Malaysia began regulating the importation, manufacture, or installation of HCFC-based refrigeration and air conditioning equipment on 1 December 2022. As part of the new procedure, the DOE mandates the issuance of an approval letter as a prerequisite for importers or manufacturers to acquire a Certificate of Approval (COA) or Release Letter (RL) from the Energy Commission (EC). To streamline the online application process for equipment importers and manufacturers, the DOE's e-Permit system has been enhanced and integrated with the EC's e-Equipment system. In 2023, 2315 approval letter applications were received from 117 manufacturers and importers through the e-Permit system.

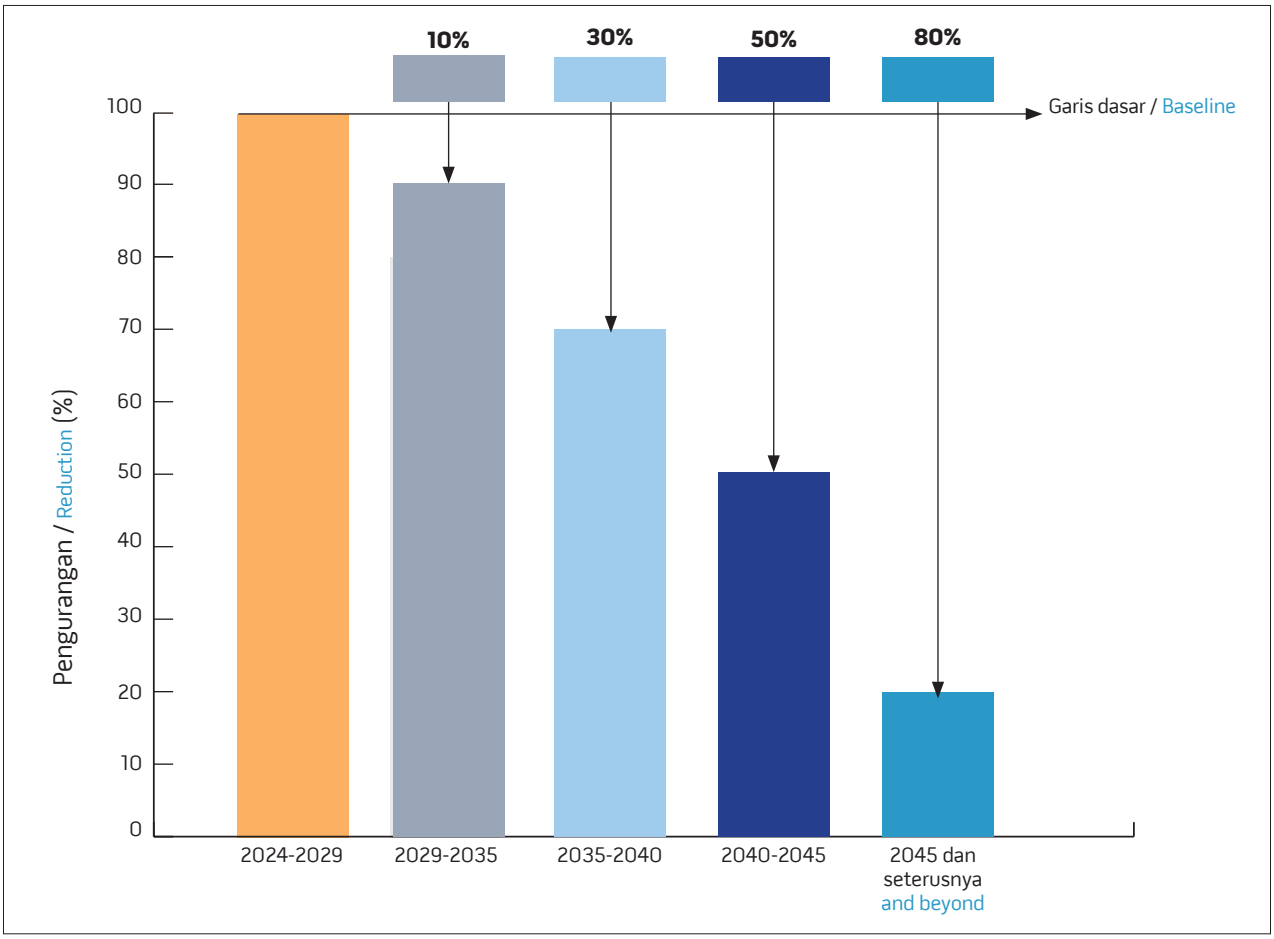
Preparation of Kigali Implementation Plan (KIP)

On the 21 October 2020, Malaysia ratified the Kigali Amendment under the Montreal Protocol for phase-down Hydrofluorocarbons (HFC) which is high Global Warming Potential (GWP) substances that are being used as alternative to HCFC.

As a signatory to the Kigali Amendment, Malaysia falls under Article 5 (Group 1) and is obligated to reduce HFC consumption by 80% from the baseline by the year 2045. The freeze baseline is determined by calculating the average HFC consumption between 2020 and 2022,

dasar penggunaan HFC adalah berdasarkan kepada purata penggunaan HFC bagi tahun 2020 hingga 2022 dan bertambah dengan 65% daripada garis dasar penggunaan HCFC. **Rajah 3.7** menunjukkan Jadual Pengurangan Penggunaan HFC di bawah Obligasi Protokol Montreal.

along with an additional 65% from the HCFC baseline. Effective from 1 January 2024, Malaysia will maintain HFC consumption at the freeze baseline level. **Figure 3.7** shows the HFC Consumption Phase-down Schedule Under the Montreal Protocol Obligations.



Rajah 3.7: Pengurangan Penggunaan HFC di bawah Obligasi Protokol Montreal
Figure 3.7: HFC Consumption Phase-down Schedule Under the Montreal Protocol Obligations

Persediaan Pelan Pelaksanaan Kigali (KIP) bagi pengurangan penggunaan bahan HFC telah bermula sejak 2017 dengan bantuan daripada Bank Dunia. Pada tahun 2022, kajian soal selidik bagi mengemas kini data penggunaan HFC di Malaysia bagi tahun 2020 hingga 2022 dan penyediaan KIP bagi menggariskan polisi, pelan dan strategi untuk pengurangan bahan HFC dalam negara telah dilaksanakan.

The preparation of the Kigali Implementation Plan (KIP) for reducing the use of HFC substances began in 2017 with the assistance of the World Bank. In 2022, a survey was conducted to update the data on HFC consumption in Malaysia for the years 2020 to 2022, and the preparation of the KIP to outline policies, plans, and strategies for the reduction of HFC substances within the country was carried out.

Pada tahun 2023, beberapa sesi libat urus bagi persediaan KIP telah dilaksanakan bagi tujuan untuk memberi penerangan mengenai polisi, pelan dan strategi pengurangan bahan HFC dalam negara kepada agensi-agensi Kerajaan, pengimport, industri dan persatuan yang berkaitan. Sesi libat urus ini telah

In 2023, several engagement sessions for the preparation of the KIP were conducted to provide explanations on policies, plans, and strategies for the reduction of HFC substances within the country to relevant government agencies, importers, industries, and related associations. The engagement sessions took place at Cyberview

diadakan di Hotel *Cyberview Resort and Spa,* Cyberjaya pada 22 hingga 24 Mac 2023 dan Hotel Pulse Grande, Putrajaya pada 23 Jun 2023. Persediaan KIP telah selesai pada suku tahun ketiga tahun 2023. Dana bagi pelaksanaan KIP telah diluluskan dalam Mesyuarat ke-93 *Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol*.

Pembangunan Kapasiti Pegawai Penguatkuasa

Di bawah komponen pengurusan, koordinasi dan kerjasama, JAS telah bekerjasama dengan Jabatan Kastam Diraja Malaysia (JKDM) untuk mengadakan Kursus Kawalan Bahan Pemusnah Ozon bagi tujuan perkongsian maklumat baharu dan kesedaran kepada penguatkuasa JKDM dan JAS berkaitan pelaksanaan dan pematuhan terhadap Protokol Montreal, peruntukan undang-undang untuk mengawal dan mengawasi pengimportan serta pengeksportan bahan pemusnah ozon.

Pada tahun 2023, JAS bersama JKDM dan Akademi Kastam Diraja Malaysia (AKMAL) telah menganjurkan 2 siri Kursus Kawalan Bahan Pemusnah Ozon. Siri pertama telah diadakan pada 13 hingga 16 Jun 2023 di KSL Esplanade Hotel, Klang, Selangor dan seramai 33 peserta yang terdiri daripada pegawai penguatkuasa JKDM dan JAS telah menyertai kursus ini.

Siri kedua telah diadakan di The Light Hotel, Pulau Pinang dari 17 hingga 20 Oktober 2023 di mana seramai 40 peserta telah menyertai kursus ini.

Resort and Spa, Cyberjaya from 22 to 24 March 2023, and at Hotel Pulse Grande, Putrajaya, on 23 June 2023. The preparations for KIP were completed in the Third Quarter of 2023. The funding for the implementation of the KIP was approved at the 93rd Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol.

Capacity Building of Enforcement Officers

As part of the management, coordination, and cooperation initiative, DOE has collaborated with the Royal Malaysian Customs Department (JKDM) to hold an Ozone Depleting Substances Control Course for the purpose of sharing new information and awareness to JKDM and DOE enforcement officers related to the implementation and compliance with the Montreal Protocol. The course specifically focused on the regulations and related legislation to control and monitor the import and export of ODS.

In 2023, DOE in collaboration with the JKDM and the Royal Malaysian Customs Academy (AKMAL), successfully organized 2 series of Ozone Depleting Substances Control Courses. The first series was conducted at the KSL Esplanade Hotel, Klang, Selangor from 13 to 16 Jun 2023, with a total participation of 33 enforcement officers from JKDM and the DOE.

The second series of Ozone Depleting Substances Control Course was conducted at The Light Hotel, Pulau Pinang, from 17 to 20 October 2023. A total of 40 participants attended this course.



▸ Kursus Kawalan Bahan Pemusnah Ozon Siri 1/2023
Ozone Depleting Substances Control Course Series 1/2023



▸ Kursus Kawalan Bahan Pemusnah Ozon Siri 2/2023
Ozone Depleting Substances Control Course Series 2/2023

Program Pentauliahan Juruteknik Servis (CSTP) bagi Sektor Penyejukbekuan dan Penyaman Udara (RACs)

Sejak tahun 2007, di bawah National CFC Phase-out Plan, Program CSTP telah mula diperkenalkan dan dilaksanakan bagi memberi latihan amalan baik dalam penyelenggaraan sistem penyejukbekuan dan penyaman udara.

Pada tahun 2023, sebanyak 241 siri latihan pensijilan telah dianjurkan oleh Pusat Latihan Bertauliah (ATC) untuk melatih dan mentauliahkan seramai 1916 juruteknik dalam sektor RAC. Pegawai JAS turut menjalankan audit pengawasan terhadap ATC yang terpilih bagi memastikan latihan dilaksanakan mengikut manual latihan dan Prosedur Operasi Standard (SOP) yang ditetapkan oleh JAS. Sepanjang tahun 2023, sebanyak 55 audit telah dilaksanakan oleh pegawai JAS semasa latihan pensijilan dijalankan di ATC.

Sehingga tahun 2023, secara kumulatif, JAS telah mentauliahkan sebanyak 26,064 juruteknik, 325 master trainer dan 64 ATC.

Jabatan Alam Sekitar di bawah Seksyen Perlindungan Ozon, Bahagian Udara dengan kerjasama *United Nations Environment Programme* (UNEP) telah mengadakan Program *Training of Master Assessor on Competency-Based Assessment on Good Servicing Practices in Refrigeration and Air-Conditioning Servicing Sector* pada 28 hinggga 30 November 2023 di UniKL MFI, Bandar Baru Bangi, Selangor.

Program ini telah dirasmikan oleh Tuan Haji Shafe'ee Yasin, Pengarah Bahagian Penguatkuasa, JAS bersama-sama Prof. Madya Dr. Tengku Mohd Azahar Tuan

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

Since 2007, under the National CFC Phase-out Plan, the CSTP programme had been introduced and implemented. This programme is designed to offer training in best practices for the maintenance of refrigeration and air conditioning systems.

In 2023, a total of 241 series of training were organized by the ATCs to train and certify a total of 1916 technicians in the RAC sector. DOE officials also conducted surveillance audits on selected ATCs to ensure that the training was implemented in accordance with the training manual and Standard Operating Procedure (SOP), as determined by DOE. Throughout 2023, a total of 55 audits were carried out by the DOE's officials during certification training conducted at ATC.

Until 2023, cumulatively DOE has certified a total number of 26,064 technicians, 325 master trainers, and 64 ATCs.

The Department of Environment under The Ozone Protection Section, Air Division in collaboration with the United Nations Environment Programme (UNEP) held a Programme Training of Master Assessor on Competency-Based Assessment on Good Servicing Practices in Refrigeration and Air-Conditioning Servicing Sector from 28 to 30 November 2023 at UniKL MFI, Bandar Baru Bangi, Selangor.

The programme was officiated by Mr. Haji Shafe'ee Yasin, Director of the Enforcement Division, DOE together with Assoc. Prof. Dr. Tengku Mohd Azahar Tuan Dir,

Dir, Dekan UniKL MFI dan Mr. Pipat Poopeerasupong, Pegawai Pengurusan Program UNEP OzonAction Asia dan Pasifik. Program tersebut dipimpin oleh Mr. Michael Moller, Pengajar dan Perunding UNEP dalam bidang penyelenggaraan sistem penyejukbekuan dan pendingin hawa (*Refrigeration and Air Conditioning* – RAC).

Program selama tiga (3) hari ini disertai oleh 23 peserta yang terdiri daripada master assesor yang terpilih dari Malaysia, Indonesia, Iran, Cambodia, Lao PDR, Mongolia, Vietnam, Pakistan, Bangladesh dan Sri Lanka. Program tersebut bertujuan untuk memperkukuhkan pengetahuan, kemahiran dan teknik master assessor dalam menjalankan penilaian kompetensi juruteknik servis dalam amalan baik semasa menjalankan penyelenggaraan alat RAC.

Antara topik yang dibincangkan adalah termasuk reka bentuk, kurikulum, metodologi penilaian dan keperluan serta penglibatan industri. Peserta-peserta juga berkongsi amalan penilaian yang dilaksanakan di negara masing-masing dan cabaran-cabaran yang dihadapi semasa menjalankan penilaian kompetensi juruteknik servis.

Dean of UniKL MFI, and Mr. Pipat Poopeerasupong, UNEP OzonAction Asia and the Pacific Programme Management Officer. The programme was led by Mr. Michael Moller, UNEP Instructor and Consultant in the field of refrigeration and air conditioning maintenance.

The three (3) day programme was attended by 23 participants comprising master assessors selected from Malaysia, Indonesia, Iran, Cambodia, Lao PDR, Mongolia, Vietnam, Pakistan, Bangladesh, and Sri Lanka. The programme aimed to strengthen the knowledge, skills, and techniques of master assessors in conducting competency assessments for service technicians in good practices while performing RAC equipment maintenance.

Topics discussed included design, curriculum, assessment methodology, industry requirements, and involvement. Participants also shared assessment practices implemented in their respective countries and the challenges faced when conducting competency assessments for service technicians.



▲ Program Pentauliahan Juruteknik Servis (CSTP) bagi Sektor Penyejukbekuan dan Penyaman Udara (RACs)
Certification of Service Technician Programme (CSTP) for Refrigeration and Air-Conditioning Sectors (RACs)



▲ Program *Training of Master Assessor on Competency-Based Assessment on Good Servicing Practices in Refrigeration and Air-Conditioning Servicing Sector*
Training of Master Assessor on Competency-Based Assessment on Good Servicing Practices in Refrigeration and Air-Conditioning Servicing Sector Programme

Program dan Kempen Kesedaran

Tema sambutan Hari Ozon Sedunia pada tahun 2023 adalah *'Montreal Protocol: Fixing the Ozone Layer and Reducing Climate Change"*. Majlis sambutan Hari Ozon Sedunia 2023 telah diadakan pada 3 Oktober 2024 dan disempurnakan oleh YBhg. Dato' Mohamad Razif bin Haji Abd Mubin, Timbalan Ketua Setiausaha (Tenaga, Alam Sekitar dan Perubahan Iklim), Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim.

Sambutan kali ini berkonsepkan pameran dan forum dalam bentuk kesedaran awam. Sesi forum yang melibatkan panel-panel pakar daripada Suruhanjaya Tenaga, Jabatan Meteorologi Malaysia dan Universiti Kebangsaan Malaysia. Forum ini bertujuan untuk berkongsi maklumat dan meningkatkan kesedaran orang awam berkenaan pemulihan lapisan ozon, pengurangan perubahan iklim dan pengurusan tenaga elektrik yang efisien.

Buku *Healing the Ozone Layer – Our Story* yang memaparkan kejayaan Malaysia dalam pelaksanakan Protokol Montreal telah dilancarkan dalam majlis ini. Sambutan pada kali ini juga menyaksikan penerimaan sijil penghargaan kepada lapan (8) pengusaha pembuatan busa yang berjaya melaksanakan projek penukaran teknologi di bawah HPMP Peringkat II.

Penyampaian anugerah *Europe & Central Asia Montreal Protocol Award for Customs and Enforcement Officers (5th edition)* daripada *United Nations Environment Programme* (UNEP) turut disampaikan oleh YBhg. Dato' Mohamad Razif bin Haji Abd Mubin kepada YBhg. Dato' Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar. Penganugerahan ini mengiktiraf komitmen pegawai penguatkuasa JAS dalam menangani perdagangan haram bahan pemusnah ozon antara negara-negara Kesatuan Eropah dan Asia Tengah.

Hari Ozon Sedunia yang diraikan pada tahun 2023 bukan hanya dilaksanakan di peringkat kebangsaan, malahan pejabat-pejabat JAS Negeri turut sama menjayakan pelbagai program kesedaran perlindungan lapisan ozon antaranya seperti *Envirohunt, Fun Run for Our Ozone 2023* dan *Ozone Race*, sesi Seminar Penipisan Lapisan Ozon, Pertandingan Video Pendek, Kuiz Lindungi Lapisan Ozon, program tanaman pokok serta pameran alam sekitar dilaksanakan bersama agensi-agensi seperti Institut Pengajian Tinggi Awam, pertubuhan bukan Kerajaan dan pihak swasta.

Awareness Programmes and Campaigns

The theme for the World Ozone Day in 2023 is 'Montreal Protocol: Fixing the Ozone Layer and Reducing Climate Change.' The celebration for World Ozone Day 2023 took place on 3 October 2024, and was officiated by YBhg. Dato' Mohamad Razif bin Haji Abd Mubin, Deputy Secretary-General (Energy, Environment, and Climate Change), Ministry of Natural Resources, Environment, and Climate Change.

The celebration featured an exhibition and a public awareness forum. The forum held involved expert panels from the Energy Commission, Malaysian Meteorological Department, and Universiti Kebangsaan Malaysia. The aim of the forum was to share information and raise public awareness regarding ozone layer recovery, climate change reduction, and efficient electricity management.

The book titled 'Healing the Ozone Layer – Our Story,' which highlights Malaysia's success in implementing the Montreal Protocol, was launched during the event. The celebration also witnessed the presentation of certificates of appreciation to eight (8) foam manufacturing entrepreneurs who successfully implemented technology conversion projects under the HPMP Phase II.

The presentation of the Europe & Central Asia Montreal Protocol Award for Customs and Enforcement Officers (5th edition) by the United Nations Environment Programme (UNEP) was also made by YBhg. Dato' Dato' Mohamad Razif bin Haji Abd Mubin to YBhg. Dato' Wan Abdul Latiff bin Wan Jaffar, Director General of Department of Environment. This award recognizes the commitment of DOE enforcement officers in addressing illegal trade of ozone-depleting substances between European Union and Central Asian countries.

World Ozone Day celebrated in 2023 is not only observed at the national level but also at the DOE state offices, contributing to various awareness programmes for ozone layer protection. These included activities such as Envirohunt, Fun Run for Our Ozone 2023, Ozone Race, Ozone Layer Depletion Seminar, Short Video Competition, Ozone Layer Protection Quiz, tree planting programmes, and environmental exhibitions conducted in collaboration with public institutions of higher learning, non-governmental organizations, and private entities.



◂ Ucapan Perasmian Disampaikan oleh Timbalan Ketua Setiausaha (Tenaga, Alam Sekitar dan Perubahan Iklim), Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim
Opening Remarks by the Deputy Secretary General (Energy, Environment and Climate Change), Ministry of Natural Resources, Environment and Climate Change



▸ Sambutan Hari Ozon Sedunia 2023 Peringkat Kebangsaan di M Resorts & Hotel
National Level Celebration of World Ozone Day 2023 at M Resort & Hotel



▲ Pameran sempena Sambutan Hari Ozon Sedunia 2023
Exhibition in Conjunction with the Celebration of World Ozone Day 2023



▲ Pelancaran Buku *Healing the Ozone Layer – Our Story*
Launching of the Book Healing the Ozone Layer – Our Story

Mesyuarat Parti kepada Protokol Montreal ke-35 (MOP35)

Mesyuarat MOP35 telah diadakan di Nairobi, Kenya dari 23 hingga 27 Oktober 2023. Ketua delegasi Malaysia yang menghadiri ke Mesyuarat MOP35 *High Level Segment* ialah Dato' Wan Abdul Latiff Wan Jaffar, Ketua Pengarah Alam Sekitar. Delegasi Malaysia yang turut hadir mesyuarat tersebut ialah Tuan Haji Shafee'ee Yasin, Pengarah Bahagian Penguatkuasa, JAS, Puan Mazrini Mohmad dari Kementerian Alam Sekitar dan Air (KASA), Encik Ryan Ooi Chean Weai dan Puan Siti Khairani Abdullah dari Seksyen Perlindungan Ozon, Jabatan Alam Sekitar.

Dalam Mesyuarat MOP35, ketua delegasi telah menyampaikan pendirian negara berkenaan dengan kesediaan negara dalam pelaksanaan KIP bagi pengurangan penggunaan HFC di Malaysia dan akan sentiasa berusaha untuk mematuhi obligasi di bawah Protokol Montreal.

Gabungan Mesyuarat Persidangan Negara Parti Ke-13 (COP13) dan Mesyuarat Negara Parti Ke-36 (MOP36) Kepada Protokol Montreal bagi Bahan-bahan Pemusnah Lapisan Ozon akan diadakan pada 28 Oktober hingga 1 November 2024 di Bangkok, Thailand.

The 35th Meeting of the Parties to the Montreal Protocol (MOP35)

The MOP35 meeting was convened in Nairobi, Kenya, from 23 to 27 October 2023. The Malaysian delegation during the MOP35 High Level Segment Meeting was led by Dato' Wan Abdul Latiff Wan Jaffar, Director General of Department of Environment. Joining the delegation were Mr. Haji Shafe'ee Yasin, Director of the Enforcement Division, DOE, Mrs. Mazrini Mohmad from the Ministry of Environment and Water (KASA), Mr. Ryan Ooi Chean Weai, and Mrs. Siti Khairani Abdullah from the Ozone Protection Section, Department of Environment.

In the MOP35 Meeting, the head of delegation conveyed the country's position regarding its readiness to implement the KIP for reducing HFC usage in Malaysia and pledged to continuously strive to comply with obligations under the Montreal Protocol.

The Combined Meeting 13th Conference of the Parties (COP13) and 36th Meeting of the Parties (MOP36) to the Montreal Protocol on Substances that Deplete the Ozone Layer will be held on 28 October 2024 – 1 November 2024 and the venue will be in Bangkok, Thailand.



▲ Mesyuarat Ke-35 *Meeting of the Parties* (MOP35) *to the Montreal Protocol* 23 – 27 Oktober 2023, Nairobi, Kenya
The 35th Meeting of the Parties (MOP35) to the Montreal Protocol 23 – 27 October 2023, Nairobi, Kenya



▲ Ketua Pengarah Alam Sekitar Menyampaikan Ucapan Pendirian Negara di Mesyuarat ke-35 *Meeting of The Parties (MOP35) to the Montreal Protocol 23* – 27 Oktober 2023, Nairobi, Kenya
The Director General Department of Environment Deliver a Speech of Country Position at the 35th Meeting of the Parties (MOP35) to the Montreal Protocol 23 – 27 October 2023, Nairobi, Kenya

PERSEDIAAN KE ARAH PELAKSANAAN MEKANISME PENGURUSAN BUANGAN ELEKTRIK DAN ELEKTRONIK (E-WASTE) DI MALAYSIA

Buangan elektrik dan elektronik (e-waste) merupakan bahan berbahaya atau dikenali sebagai buangan terjadual di Malaysia disebabkan oleh kandungan bahan berbahaya yang boleh memberi kesan kepada kesihatan manusia dan alam sekitar. Pengurusan e-waste juga telah menjadi perhatian dan agenda utama di seluruh dunia berikutan peningkatan kuantiti penjanaan, perkembangan teknologi dan kebergantungan pengguna terhadap peralatan elektrik dan elektronik serta peningkatan populasi, taraf hidup dan urbanisasi.

1. Pembangunan Mekanisme Pengurusan Buangan Elektrik dan Elektronik (E-waste) di Malaysia

Sebagai agensi yang bertanggungjawab ke atas pengurusan buangan terjadual di Malaysia, Jabatan Alam Sekitar (JAS) telah membangunkan Mekanisme Pengurusan e-waste di Malaysia. Mekanisme ini mengetengahkan prinsip ekonomi kitaran (*circular economy*) dan konsep tanggungjawab pengeluar diperluaskan (*Extended Producer Responsibility, EPR*) di mana pihak pengeluar bertanggungjawab untuk memastikan pengurusan peralatan elektrik dan elektronik secara mesra alam selepas produk mencapai jangka hayat. Mekanisme ini juga menerapkan konsep tanggungjawab bersama (*shared responsibility*) di kalangan pihak berkepentingan.

Terdapat enam (6) jenis e-waste yang akan dikawal di bawah mekanisme ini iaitu televisyen, peti sejuk, pendingin hawa, mesin basuh, komputer / komputer peribadi dan telefon bimbit. Di bawah mekanisme ini, kerangka perundangan sedang digubal bertujuan untuk mengawal selia pengurusan, pengendalian dan pelupusan peralatan elektrik dan elektronik bermula daripada peringkat penghasilan produk sehingga dilupuskan sebagai e-waste.

PREPARATION TOWARDS IMPLEMENTATION OF ELECTRICAL AND ELECTRONIC WASTE (E-WASTE) MANAGEMENT MECHANISM IN MALAYSIA

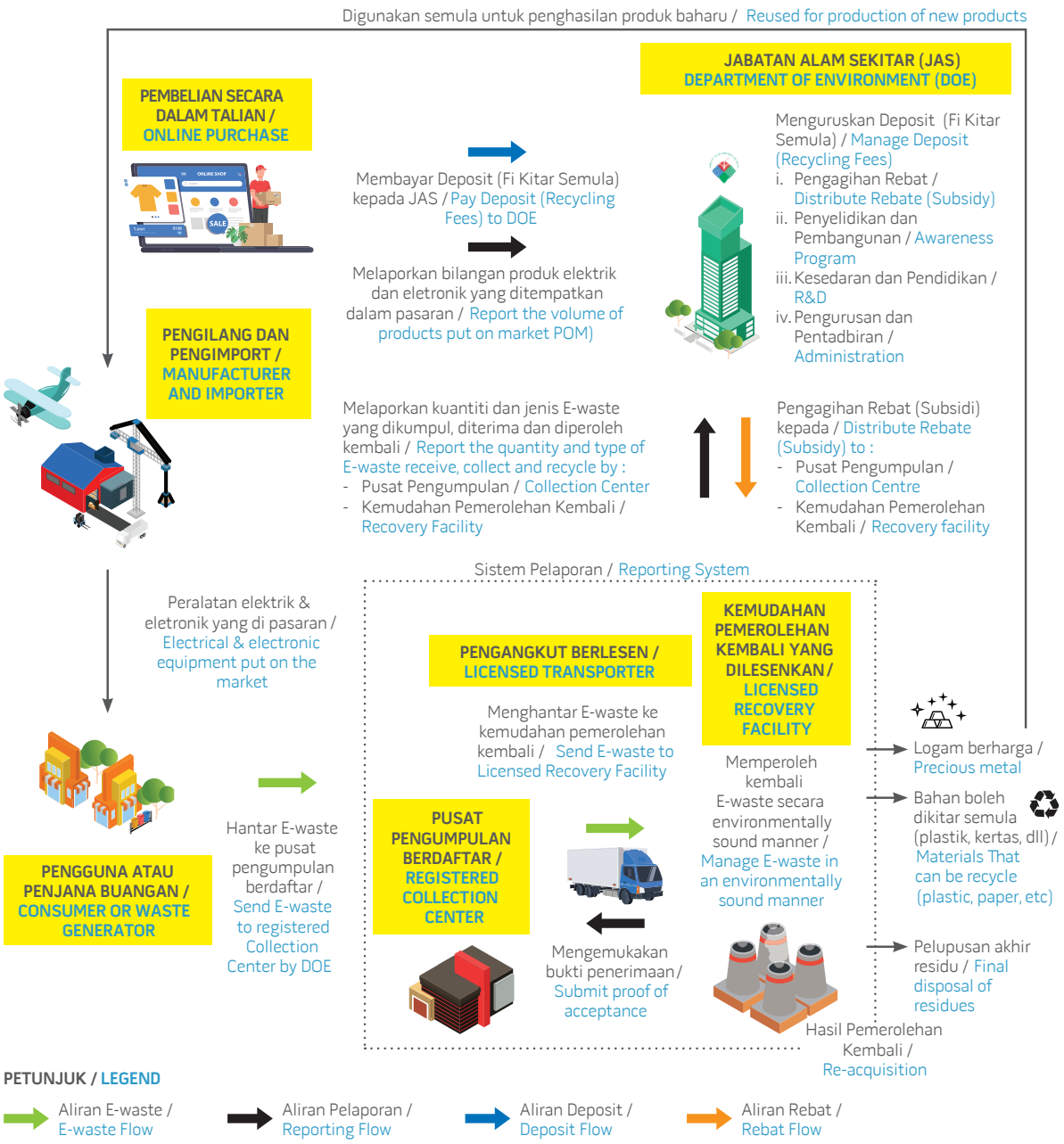
Electrical and electronic waste (e-waste) is a hazardous waste or known as scheduled waste in Malaysia due to its hazardous substances that may pose harmful effects to human health and the environment. e-waste management has become a global agenda and concern due to the increase in quantity of e-waste generation following the advancement of technology, user dependency on electrical and electronic equipment as well as increase in population, standard of living, and urbanization.

1. Development of Electrical and Electronic Waste Management Mechanism (E-waste) in Malaysia

As the agency responsible for the scheduled waste management in Malaysia, Department of Environment (DOE) has established an e-waste Management Mechanism. This mechanism highlights the principle of circular economy (CE) and extended producer responsibility (EPR) concept where the producer is responsible to ensure environmentally sound management of its electrical and electronic product after it reached end of life. This mechanism also applies the concept of shared responsibility among its stakeholders.

There are six (6) types of e-waste that will be controlled under this mechanism, namely televisions, refrigerators, air conditioners, washing machines, computers/ laptops, and mobile phones. Under this mechanism, legislation framework is currently being drafted to regulate the management, operation, and disposal of electrical and electronic equipment from production until it is disposed as e-waste.





Kerangka Mekanisme Pengurusan E-waste di Malaysia / E-waste Management Mechanism Framework in Malaysia

2. Kerjasama Teknikal (TC) dengan Japan International Corporation Agency (JICA)

Projek kerjasama teknikal untuk fasa ketiga (TC3) sedang berjalan dengan memfokuskan kepada pengukuhan pelaksanaan mekanisme pengurusan e-waste di Malaysia yang merangkumi pematuhan kepada aliran e-waste dan aliran pelaporan e-waste serta pengurusan kewangan e-waste. Beberapa sesi perkongsian telah diadakan oleh pihak JICA bagi menerangkan kaedah analisa yang digunakan dalam menentukan unjuran data *Put on Market* (POM), unjuran penjanaan e-waste menjelang tahun 2030 dan penentuan kadar fi dan subsidi.

2. Technical Cooperation (TC) with Japan International Corporation Agency (JICA)

The third phase of technical cooperation project (TC3) is ongoing focusing on strengthening the implementation of e-waste management mechanisms in Malaysia which includes compliance to the e-waste flow and e-waste reporting flow as well as e-waste financial management. Several discussion sessions were held related to the projections analysis of Put on Market (POM) data and the generation of e-waste in Malaysia by 2030. Several sharing sessions were conducted by JICA to explain on the projection analysis method applied in determining the Put on Market (POM) data, projection of e-waste generation by 2030 and determination of fee and subsidy rates.

Selain itu, JAS dan JICA juga telah membangunkan sistem e-manifest bertujuan untuk mengenal pasti dan mengkaji status pergerakan e-waste (aliran e-waste) yang diterima oleh pusat pengumpulan dan kemudahan pemerolehan kembali. Sistem ini berkeupayaan untuk merekod data-data oleh pihak berkepentingan iaitu pengilang / pengimport, pusat pengumpulan dan kemudahan pemerolehan kembali.

In addition, DOE and JICA have also developed an e-manifest system with the purpose to identify and review the status of e-waste movement (e-waste flow) received by collection centers and recovery facilities. The system is capable to record data by stakeholders, namely manufacturers/ importers, collection centers, and recovery facilities.

Sistem tersebut telah digunakan di dalam Projek Perintis Pengumpulan dan Pemerolehan Kembali e-waste bagi Pelaksanaan Mekanisme Pengurusan e-waste di Malaysia. Projek Perintis tersebut telah dijalankan selama enam (6) bulan bermula daripada 26 Julai 2023 hingga 25 Januari 2024. Sebanyak lapan (8) pusat pengumpulan, lima (5) kemudahan pemerolehan kembali (separa) dan tiga (3) kemudahan pemerolehan kembali (penuh) telah menyertai projek perintis ini.

The system is used in the Pilot Project of e-waste Collection and Recovery for the Implementation of e-waste Management Mechanism in Malaysia. The pilot project was conducted for six (6) months starting on 26 July 2023 to 25 January 2024. A total of eight (8) collection centers, five (5) recovery facilities (partial), and three (3) recovery facilities (full) had participated in the pilot project.

Objektif Projek Perintis ini adalah untuk:
The Objectives of the Pilot Project are to:

Mengenal pasti isu berkaitan aliran e-waste dan pelaporan selepas pelaksanaan mekanisme pengurusan e-waste **Identify issues** related to the e-waste flow and reporting flow for the implementation of e-waste management mechanism	**Mengenal pasti status** e-waste yang dihantar oleh pusat pengumpulan ke kemudahan pemerolehan kembali **Identify the status** of e-waste sent by the registered collection center to the recovery facility	**Mengenal pasti kebolehlaksanaan** dan daya maju proses standard bagi pemerolehan kembali e-waste **Identify the feasibility** and viability of standard process for e-waste recovery	**Mengenal pasti daya maju** dan kelestarian keseluruhan kitaran pengurusan e- waste **Identify the viability** and sustainability of the entire e-waste management cycle



▲ Perbincangan bersama Pihak JICA berkenaan Analisis *Data Put on Market* dan Penjanaan E-waste
Discussion with JICA on Data Analysis Put on Market and E-waste Generation



▲ Mesyuarat Pelaksanaan Projek Perintis E-waste
Meeting on Implementation of E-waste Pilot Project

3. Sesi Libat Urus bersama Pihak Berkepentingan

Bagi memastikan kefahaman semua pihak berkepentingan dan melancarkan pelaksanaan mekanisme pengurusan e-waste di Malaysia, beberapa sesi libat urus telah diadakan bersama agensi Kerajaan, kemudahan pemerolehan kembali luar tapak e-waste, pusat pengumpulan yang berdaftar dan juga sektor informal.

i. Sesi Libat Urus Bersama Kemudahan Pemerolehan Kembali dan Sektor Informal

Sesi libat urus bersama kemudahan pemerolehan kembali dan sektor informal telah diadakan pada 19 Januari 2023 bertujuan untuk memberi penerangan dan penjelasan lanjut berkenaan pelaksanaan mekanisme pengurusan e-waste, keperluan undang-undang dan syarat-syarat dalam pengendalian enam (6) item kawalan e-waste tersebut. Selain itu, sesi libat urus ini juga diadakan untuk mendapatkan maklum balas berkaitan isu dan cabaran di kalangan pihak berkepentingan dalam melaksanakan mekanisme serta menarik lebih banyak pihak berkepentingan untuk menyertai mekanisme pengurusan e-waste ini.

3. Stakeholder Engagement Session

To ensure understanding of all stakeholders and smooth implementation of the e-waste management mechanism in Malaysia, several engagement sessions were conducted with Government agency, e-waste off-site recovery facilities, registered collection centers, and the informal sector.

i. Engagement Session with Recovery Facility and Collection Centre

An engagement session with recovery facilities and informal sector was conducted on 19 January 2023 to provide further explanation and clarification regarding the implementation of the e-waste management mechanism, legal requirements, and its conditions in handling the six (6) control items. Apart from that, the engagement session was also held to obtain feedback pertaining to the issues and challenges among stakeholders in implementing the mechanism as well as encourage more stakeholders to participate in the e-waste management mechanism.



▸ Sesi Libat Urus bersama Kemudahan Pemerolehan Kembali pada 19 Januari 2023
Engagement Sesson with Recovery Facilities



▸ Sesi Libat Urus bersama Sektor Informal pada 19 Januari 2023
Engagement Session with Informal Sector

ii. Sesi Libat Urus bersama Agensi Kerajaan

Sesi libat urus bersama dengan agensi kerajaan seperti Kementerian Kewangan (MOF), Kementerian Perdagangan Antarabangsa dan Industri (MITI), Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim (NRECC), Kementerian Pembangunan Kerajaan Tempatan (KPKT), Jabatan Pengurusan Sisa Pepejal Negara (JPSPN), Suruhanjaya Perkhidmatan Air Negara (SPAN), Perbadanan Pengurusan Sisa Pepejal dan Pembersihan Awam (SWCorp), Lembaga Kemajuan Tanah Persekutuan (FELDA) dan Japan International Cooperation Agency (JICA) telah diadakan pada 9 - 11 Ogos 2023. Sesi libat urus ini diadakan bertujuan untuk mendapatkan maklumat dan mengkaji kaedah serta bentuk penubuhan organisasi yang bersesuaian bagi mentadbir urus Mekanisme Pengurusan e-waste di Malaysia. Beberapa cadangan telah dikemukakan dalam sesi libat urus tersebut. JAS sedang meneliti dengan lebih lanjut berkaitan entiti dan kaedah penubuhan yang bersesuaian bagi mentabir urus secara keseluruhan pelaksanaan mekanisme pengurusan e-waste tersebut.

ii. Engagement Session with Government Agency

Engagement sessions with government agencies such as the Ministry of Finance (MOF), Ministry of International Trade and Industry (MITI), Ministry of Natural Resources, Environment and Climate Change (NRECC), Ministry of Local Government Development (KPKT), National Solid Waste Management Department (JPSPN), National Water Services Commission (SPAN), Solid Waste Management and Public Cleansing Corporation (SWCorp), Federal Land Development Authority (FELDA) and Japan International Cooperation Agency (JICA) were held on 9 - 11 August 2023. The engagement session was conducted to obtain information and examine the best methods and forms of organization establishment to administer the e-waste Management Mechanism in Malaysia. There are a few suggestions presented in the engagement session and DOE is currently reviewing the best entity and method of establishment to administer the overall implementation of the e-waste management mechanism.



▲ Sesi Libat Urus bersama Agensi Kerajaan
Engagement Session with Government Agency

iii. Sesi Libat Urus bersama JAS Negeri

Bagi mengatur persediaan ke arah pelaksanaan Mekanisme Pengurusan e-waste secara keseluruhan, satu sesi libat urus telah diadakan bersama JAS Negeri pada 14 - 15 Mac 2023. Sesi libat urus ini telah melibatkan seramai 40 orang pegawai daripada JAS Negeri. Sesi libat urus ini telah diadakan bagi membincangkan dan memberi penerangan dengan lebih lanjut berkaitan pelaksanaan mekanisme pengurusan e-waste termasuk peruntukan dasar, syarat dan keperluan yang perlu dipatuhi oleh pihak-pihak berkepentingan yang terlibat. Selain itu, sesi libat urus tersebut juga telah diadakan bagi membincang, merancang dan merangka strategi pelaksanaan bagi program-program *Communication, Education and Public Awareness* (CEPA) berkaitan e-waste dan mencadangkan penetapan Petunjuk Prestasi Utama (KPI) bagi sasaran pengumpulan e-waste oleh setiap JAS negeri.

iii. Engagement Session with DOE State

To prepare towards the implementation of e-waste Management Mechanism, an engagement session was held with representatives from DOE State Offices on 14 - 15 March 2023. The engagement session involved a total of 40 officials from the DOE State Offices. The engagement session was held to discuss and provide more information regarding the implementation of the e-waste management mechanism including policy, conditions, and requirements that must be complied with by the stakeholders. In addition, the engagement session was also held to discuss, plan, and formulate an implementation strategy for the Communication, Education and Public Awareness (CEPA) program related to e-waste and propose Key Performance Indicators (KPI) for e-waste collection targets by each DOE State Office.



◂ Sesi Libat Urus bersama JAS Negeri
Engagement Session with DOE States Office

4. Program Kesedaran berkaitan E-waste

i. Webinar/ Ceramah

Dalam usaha untuk meningkatkan kesedaran orang awam berkaitan pengurusan e-waste, JAS yang diwakili oleh Puan Nur Lizrin binti Johari, Ketua Penolong Pengarah, Bahagian Bahan Berbahaya, JAS Ibu Pejabat telah terlibat dalam beberapa siri webinar dan simposium anjuran JAS Negeri dan agensi-agensi swasta seperti Tenaga Nasional Berhad (TNB), TNB Grid, Sapura dan Vestigo Petroleum. Antara webinar dan simposium tersebut adalah:

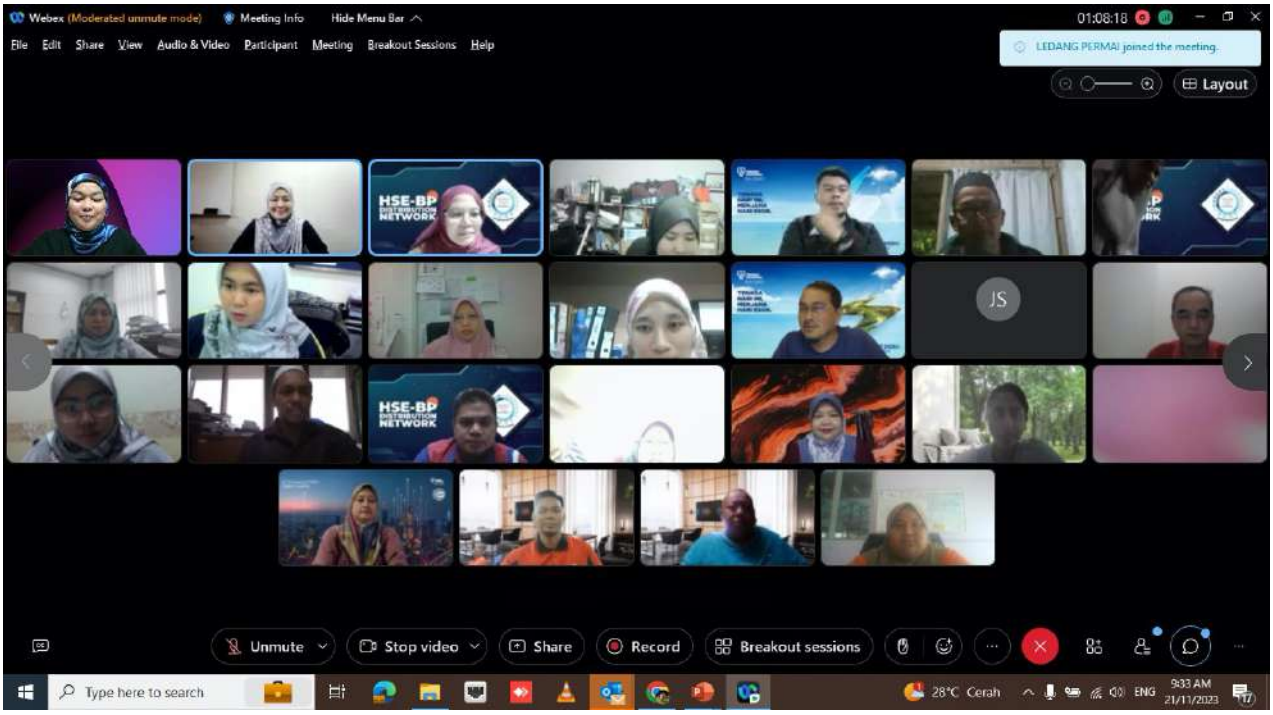
4. E-waste Awareness Programme

i. Webinars/ Talks

In effort to increase public awareness regarding e-waste management, DOE, represented by Mrs. Nur Lizrin binti Johari, Principal Assistant Director, Hazardous Substances Division, DOE Headquarters was involved in several webinars and symposiums organized by DOE State and private agencies such as Tenaga Nasional Berhad (TNB), TNB Grid, Sapura, and Vestigo Petroleum. Among the webinars and symposiums are:

- TNB HSE *Symposium* yang diadakan pada 25 Mei dan 30 November 2023 di TNB Bangsar
- Webinar TNB pada 17 Julai 2023
- Webinar oleh JAS Pahang pada 18 Julai 2023
- Sesi taklimat kepada hakim bagi Debat Alam Sekitar pada 17 Ogos 2023
- Webinar anjuran Vestigo Petroleum di Menara Binjai pada 23 Ogos 2023
- Symposium HSE oleh TNB di Ulu Kinta, Perak pada 16 September 2023
- Webinar anjuran TNB Grid pada 18 Oktober 2023
- Seminar Akta Kualiti Alam Sekeliling anjuran JAS Sabah pada 18 November 2023
- Webinar anjuran Sapura pada 17 November 2023
- Webinar anjuran TNB pada 21 November 2023
- Slot Selamat Pagi Malaysia pada 12 Oktober 2023
- Forum sempena Hari Alam Sekitar Negara (HASN) anjuran UPM pada 31 Oktober 2023
- Simposium *Certified Environmental Professional in Scheduled Waste Management* (CePSWAM) TNB 2023 pada 30 November 2023
- Taklimat sempena *Sustainability Symposium* UGC 2023 anjuran UiTM pada 7 Disember 2023

- TNB HSE Symposium held on 25 May and 30 November 2023 at TNB Bangsar
- TNB Webinar on 17 July 2023
- Webinar by JAS Pahang on 18 July 2023
- Briefing session for judges for the Environmental Debate on 17 August 2023
- Webinar organized by Vestigo Petroleum at Menara Binjai on 23 August 2023
- HSE Symposium by TNB in Ulu Kinta, Perak on 16 September 2023
- Webinar organized by TNB Grid on 18 October 2023
- Environmental Quality Act Seminar organized by DOE Sabah on 18 November 2023
- Webinar organized by Sapura on 17 November 2023
- Webinar organized by TNB on 21 November 2023
- A slot in Selamat Pagi Malaysia on 12 October 2023
- Forum in conjunction with National Environment Day (HASN) organized by UPM on 31 October 2023
- Symposium of Certified Environmental Professional in Scheduled Waste Management (CePSWAM) TNB 2023 on 30 November 2023
- A talk in conjunction with Sustainability Symposium UGC 2023 organized by UITM on 7 December 2023



▲ Webinar berkaitan E-waste
Webinar on E-waste



▲ Slot Selamat Pagi Malaysia
A Slot in Selamat Pagi Malaysia



▲ Simposium CePSWaM TNB 2023
Symposium CePSWaM TNB 2023



▲ Seminar Akta Kualiti Alam Sekeliling Anjuran JAS Sabah
Environmental Quality Act Seminar Organized by DOE Sabah



▶ Forum sempena Hari Alam Sekitar Negara (HASN) Anjuran UPM
Forum in Conjunction with National Environment Day (HASN) Organized by UPM

Selain itu, JAS juga telah menyertai Program Duta Guru (PDG) Simposium Kebangsaan 2023 anjuran Yayasan PETRONAS bersama Yayasan Teach For Malaysia (TFM) pada 18 Oktober 2023 bertempat di Mövenpick Hotel and Convention Centre KLIA, Sepang, Selangor. Program Duta Guru ini bertujuan untuk mengukuhkan kemahiran 4,500 orang guru STEM yang akan bertindak sebagai guru teladan bagi memperkasakan mutu Kemahiran Berfikir Aras Tinggi (KBAT) melalui pendidikan STEM. Pihak JAS telah dijemput untuk membuat pameran berkaitan pengurusan e-waste sebagai advokasi untuk memupuk kesedaran di kalangan guru dan memberi pendedahan berkaitan kepentingan pengurusan e-waste serta memberi pengetahuan mengenai amalan kitar semula e-waste secara *environmentally sound management* (ESM) dan mesra alam.

In addition, DOE has also participated in the 2023 National Symposium Teacher Ambassador Program (PDG) organized by the PETRONAS Foundation together with the Teach for Malaysia (TFM) Foundation on 18 October 2023 at the Mövenpick Hotel and Convention Center KLIA, Sepang, Selangor. The Teacher Ambassador Program aims to strengthen the skills of 4,500 STEM teachers who will act as exemplary teachers to empower the quality of Higher-Level Thinking Skills (HTS) through STEM education. DOE has been invited to hold an exhibition related to e-waste management as an advocacy to foster awareness among teachers and highlights the importance of e-waste management apart from providing knowledge on environmentally sound management (ESM) of e-waste recycling practices.



▲ Pameran Berkaitan Peralatan E-waste
Exhibition Regarding E-waste



▶ Penerangan Berkenaan E-waste kepada Pelajar Sekolah
Explanation Regarding E-waste to Students

ii. Program Sekolahku Warrior E-waste

Program Sekolahku Warrior E-waste merupakan salah satu program di bawah pelan Communication, Education and Public Awareness (CEPA). Program ini telah diadakan pada bulan Julai hingga Oktober 2023 dengan penglibatan sekolah-sekolah di seluruh negara. Program ini diadakan bertujuan untuk memberi pendedahan dan pengetahuan serta meningkatkan kesedaran orang awam khususnya warga sekolah tentang kepentingan pengurusan e-waste secara ESM atau mesra alam. Terdapat dua (2) aktiviti yang telah dijalankan di bawah program ini iaitu:

a) Minggu Cakna E-waste

Minggu Cakna e-waste merupakan minggu perkongsian informasi berkenaan e-waste kepada warga sekolah. Selain itu, terdapat juga aktiviti sampingan yang telah dijalankan seperti pengumpulan e-waste, pengucapan awam berkenaan e-waste oleh pelajar, permainan e-waste, kuiz, pertandingan mewarna dan pelbagai lagi aktiviti anjuran pihak sekolah. Sebanyak 88 buah sekolah yang terdiri daripada sekolah-sekolah di negeri Kelantan, Kedah, Melaka, Perak, Pulau Pinang, Selangor, Negeri Sembilan, Terengganu, Sabah, Johor, Sarawak dan Perlis telah menyertai dan menjayakan aktiviti minggu cakna ini.

ii. Sekolahku Warrior E-waste Programme

My School E-waste Warrior programme is one of the programmes under the Communication, Education and Public Awareness (CEPA) plan. The programme was conducted from July to October 2023 which involved schools throughout the country. The programme was held to provide exposure and knowledge as well as to increase awareness among the public, especially school children, about the importance of managing e-waste in an environmentally sound manner (ESM). There were two (2) activities that had been carried out under this programme namely:

a) Cakna E-waste Week

Cakna e-waste Week is an information sharing week about e-waste to school members. There were a few activities being carried out such as e-waste collection, public speaking about e-waste by students, e-waste games, quizzes, drawing competitions and various other activities organized by the school. A total of 88 schools from the states of Kelantan, Kedah, Melaka, Perak, Pulau Pinang, Selangor, Negeri Sembilan, Terengganu, Sabah, Johor, Sarawak, and Perlis have participated in the Cakna e-waste week.



▲ Minggu Cakna E-waste oleh SMK Raja Perempuan Ipoh
Cakna E-waste Week by SMK Raja Perempuan Ipoh

b) Pertandingan Pantomim

Pertandingan ini terbahagi kepada dua (2) kategori iaitu kategori Sekolah Rendah dan Sekolah Menengah. Pertandingan Pantomim telah membawa tema "Merdekakan Diri daripada E-Waste". Sebanyak 45 penyertaan secara keseluruhan telah diterima daripada Sekolah Rendah dan Sekolah Menengah. Penyertaan adalah terdiri daripada sekolah dari Kelantan, Pahang, Kuala Lumpur, Kedah, Selangor, Negeri Sembilan, Pulau Pinang, Perak, Terengganu, Sarawak dan Melaka. Pertandingan tersebut telah dimenangi oleh Sekolah Kebangsaan Bandar Laguna Merbok dari Kedah bagi Kategori Sekolah Rendah dan Sekolah Menengah Jenis Kebangsaan Sam Tet dari Ipoh, Perak bagi Kategori Sekolah Menengah.

b) Pantomime Competition

The competition is divided into two (2) categories which are Primary School and Secondary School. The Pantomime competition's theme was "Free Yourself from e-waste". A total of 45 participations have been received from Primary Schools and Secondary Schools. The participants were from schools in the states of Kelantan, Pahang, Kuala Lumpur, Kedah, Selangor, Negeri Sembilan, Penang, Perak, Terengganu, Sarawak, and Malacca. The winner of the competition was Sekolah Kebangsaan Bandar Laguna Merbok from Kedah for the Primary School Category and Sekolah Menengah Jenis Kebangsaan Sam Tet from Ipoh, Perak for the Secondary School Category.



▲ Pertandingan Pantomim (Kategori Sekolah Rendah)
Pantomime Competition (Primary School Category)



▲ Pertandingan Pantomim (Kategori Sekolah Menengah) / Pantomime Competition (Secondary School Category)

iii Karnival Jom E-Waste 2023

Dalam usaha meningkatkan kesedaran dan kefahaman serta memupuk tanggungjawab orang awam mengenai pengurusan e-waste di Malaysia, Karnival Jom E-Waste telah diadakan pada 14 Oktober 2023 bertempat di Metro Point Complex (MPC), Kajang. Karnival ini telah dirasmikan oleh YBhg. Dato' Mohamad Razif bin Hj. Abd. Mubin, Timbalan Ketua Setiausaha (Tenaga, Alam Sekitar dan Perubahan Iklim), Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim (NRECC). Turut hadir sama ialah YBhg. Dato' Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah JAS, YBhg. Tuan Haji Najmuddin bin Jemain, Yang Dipertua Majlis Perbandaran Kajang, YBrs. Dr Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi), JAS dan YBrs. Puan Mashitah binti Darus, Timbalan Ketua Pengarah (Pembangunan), JAS.

Program ini turut disokong oleh rakan-rakan strategik seperti MKH Berhad, Picasso, Petroliam Nasional Berhad (PETRONAS), Cenviro, Air Selangor, Prasarana Malaysia Berhad, Alfa & Friends, Alam Flora Environment Solution (AFES), Tenaga Nasional Berhad, Malakoff Corporation Berhad, Honor, Durioo Plus and Micron Technology

iii. Jom E-Waste Carnival 2023

In effort to enhance awareness, understanding and foster public's responsibility on e-waste management in Malaysia, Jom E-Waste Carnival was held on 14 October 2023 at Metro Point Complex (MPC) Kajang. This program was officiated by YBrs. Dato' Mohamad Razif bin Hj Abd Mubin, Deputy Secretary General (Energy, Environment and Climate Change) Ministry of Natural Resources, Environment and Climate Change (NRECC). The carnival was also attended by YBhg. Dato' Wan Abdul Latiff bin Wan Jaffar, Director General, DOE, YBhg. Tuan Haji Najmuddin bin Jemain, Chairman of Kajang Municipal Council, YBrs. Dr Norhazni binti Mat Sari, Deputy Director General (Operations), DOE, and YBrs. Puan Mashitah binti Darus Deputy Director General (Development), DOE.

The programme was also supported by strategic partners such as MKH Berhad, Picasso, Petroliam Nasional Berhad (PETRONAS), Cenviro, Air Selangor, Prasarana Malaysia Berhad, Alfa & Friends, Alam Flora Environment Solution (AFES), Tenaga Nasional Berhad, Malakoff Corporation Berhad, Honor, Durioo Plus, and Micron Technology

di atas inisiatif dan komitmen dalam melaksanakan agenda Sustainable Development Goals (SDG) dan Environmental, Social and Governance (ESG) ke arah mewujudkan alam sekitar yang lestari.

Antara aktiviti yang telah dijalankan adalah Slot Sembang Santai E-waste dengan penampilan khas oleh Dr. Soo Wincci bersama tiga (3) orang panel jemputan iaitu dari JAS, Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi), Dr. En. Mohd Shamsul Izuan Che Musa, panel dari MCMC dan Pn Noor Hanida binti Che Ismail, panel dari sekolah selaku guru Sekolah Kebangsaan Taman Sungai Besi Indah. Terdapat pameran reruai dan pocket talk oleh rakan strategik, program pengumpulan e-waste, penampilan khas maskot Mina Mila dan maskot e-waste iaitu E-cha, persembahan pemenang pantomim, aktiviti mewarna kanak-kanak, kuiz interaktif kahoot dan kaunter online poll mengenai pelaksanaan mekanisme pengurusan e-waste dan konsep *Extended Producer Responsibility* (EPR).

as their initiatives and commitment in implementing the Sustainable Development Goals (SDG) and Environmental, Social and Governance (ESG) agenda towards creating a sustainable environment.

There were many activities carried out during the event such as Sembang Santai E-waste with a special appearance by Dr. Soo Wincci together with three (3) panelists namely Dr. Norhazni binti Mat Sari, Deputy Director General (Operation), Dr. En. Mohd Shamsul Izuan Che Musa, panel from MCMC, and Pn Noor Hanida binti Che Ismail, a teacher from Sekolah Kebangsaan Taman Sungai Besi Indah. There were also booth exhibition and pocket talk session by strategic partners, e-waste collection program, special appearance by mascot Mina Mila and e-waste mascot E-cha, a performance by pantomime winner, children's coloring activities, kahoot interactive quiz, and online poll counter on the implementation of the e-waste management mechanism and the Extended Producer Responsibility (EPR) concept during the event.



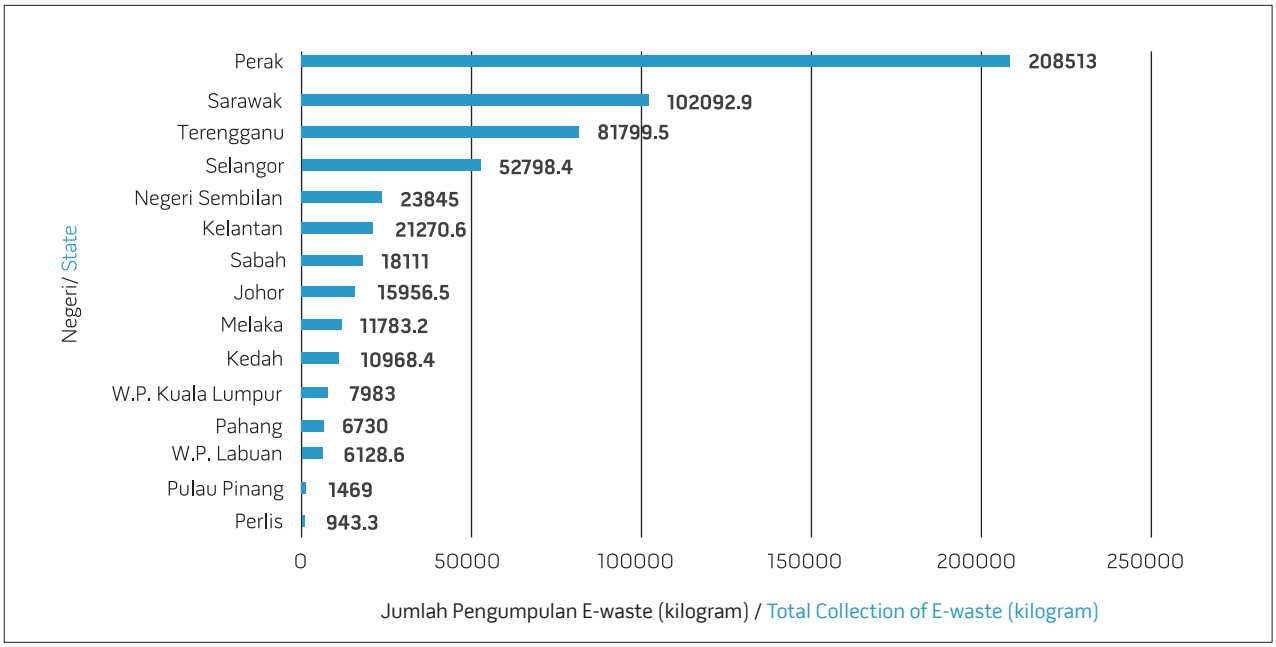
▲ Program dan Aktiviti Sepanjang Karnival Jom E-Waste 2023 di Metro Point Complex (MPC), Kajang
Programmes and Activities Throughout Jom E-Waste Carnival 2023 at Metro Point Complex (MPC), Kajang

iv. Program Pengumpulan E-waste mengikut Negeri

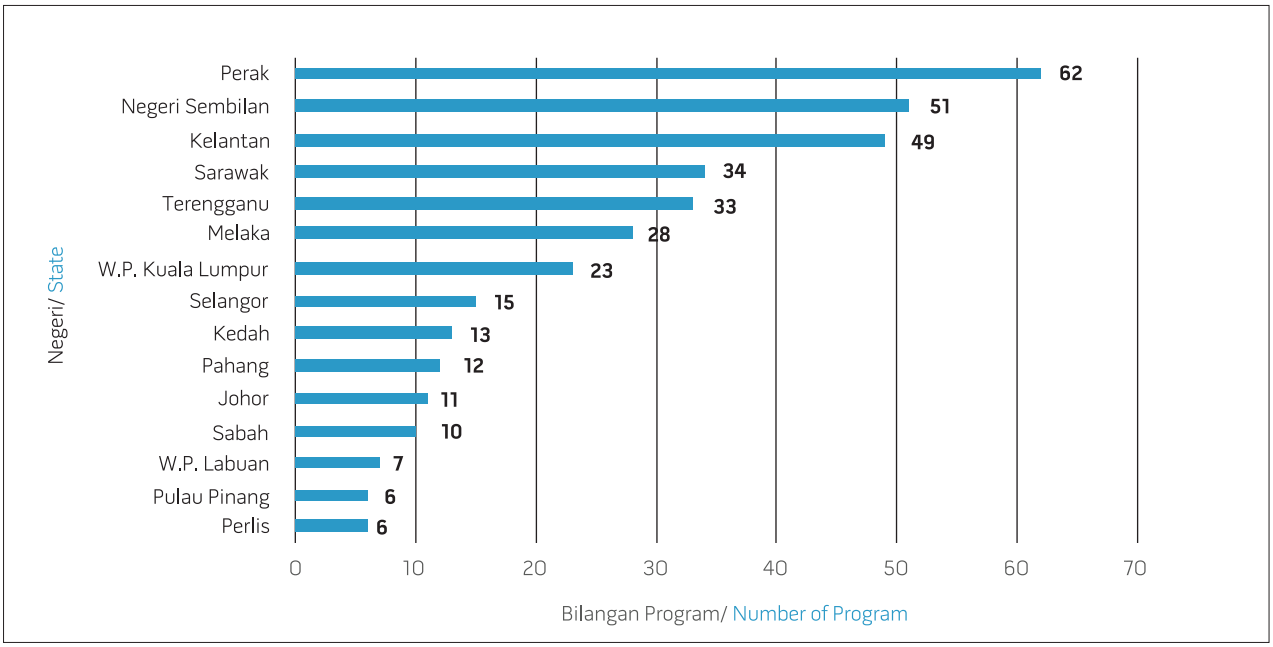
Selaras dengan inisiatif yang telah diperkenalkan oleh Kerajaan iaitu Sabtu terakhir setiap bulan sebagai Hari Pengumpulan e-waste dan penetapan sasaran pengumpulan e-waste sebanyak 1000 tan metrik bagi tahun 2023, sebanyak 360 aktiviti pengumpulan e-waste telah direkodkan oleh semua JAS Negeri pada tahun ini. Daripada aktiviti pengumpulan tersebut, sebanyak 595,280 kg (595.28 tan metrik) e-waste telah berjaya dikumpul. Analisis jumlah pengumpulan e-waste setiap negeri adalah seperti yang tertera di **Rajah 3.8**. Terdapat penurunan sebanyak 24% jumlah kutipan e-waste berbanding tahun 2022. Ini menunjukkan bahawa tahap kesedaran orang awam masih berada pada tahap rendah. Oleh itu, kempen kesedaran berkaitan e-waste terutamanya kepada masyarakat luar bandar masih perlu dipergiat lagi bagi meningkatkan kadar pengumpulan e-waste. Berdasarkan rekod pengumpulan e-waste bagi tahun 2023, JAS Negeri Perak telah mencatatkan jumlah pengumpulan e-waste tertinggi sebanyak 216,323 kg (216.3 tan metrik) dan jumlah kempen pengumpulan e-waste tertinggi sebanyak 62 program (**Rajah 3.9**).

iv. E-waste Collection Program by State

Based on the initiative introduced by the Government which is last Saturday of the month as e-waste Collection Day and e-waste collection target of 1000 metric tons for the year 2023, 360 e-waste collection activities have been recorded to be carried out by all State DOEs this year. From the collection activities, a total of 595,280 kg (595.28 metric tons) of e-waste has been successfully collected. The analysis on amount of e-waste collected by DOE state is shown in **Figure 3.8**. There is a decrease of 24% in the amount of e-waste collected compared to 2022. This shows that the level of public awareness is still low and awareness campaigns related to e-waste, especially to rural communities, need to be intensified to increase the e-waste collection rate. Based on the record of e-waste collection for the year 2023, DOE State Perak has recorded the highest total e-waste collection of 216,323 kg (216.3 metric tons) and the highest total e-waste collection campaign of 62 programs **(Figure 3.9)**.



Rajah 3.8: Data Pengumpulan E-waste mengikut Negeri Tahun 2023
Figure 3.8: E-waste Collection Data by State in 2023



Rajah 3.9: Bilangan Program Pengumpulan E-waste yang Dijalankan oleh JAS Negeri Tahun 2023
Figure 3.9: E-waste Collection Programmes Conducted by DOE State in 2023

PERSIDANGAN NEGARA ANGGOTA (COP BRS) BAGI KONVENSYEN BASEL DAN KONVENSYEN ROTTERDAM TAHUN 2023

Conference of the Parties for Basel, Rotterdam and Stockholm Conventions (COP BRS) merupakan persidangan dwi-tahunan yang dianjurkan oleh Sekretariat Konvensyen Basel, Konvensyen Rotterdam dan Konvensyen Stockholm bagi membincangkan hala tuju serta tanggungjawab negara ahli terhadap perdagangan antarabangsa dan pergerakan merentasi sempadan bagi bahan kimia berbahaya dan buangan berbahaya. Malaysia telah meratifikasi dua Konvensyen iaitu Konvensyen Basel pada 8 Oktober 1993 dan Konvensyen Rotterdam pada 4 September 2002.

Selaras dengan matlamat kedua-dua konvensyen tersebut ke arah menjaga kesihatan manusia dan alam sekitar, prosedur *Prior Informed Consent* (PIC) telah diguna pakai bagi menggalakkan negara anggota berkongsi maklumat berkaitan perdagangan bahan kimia berbahaya dan pergerakan merentasi sempadan buangan berbahaya yang disenaraikan di dalam Annex di bawah kedua-dua konvensyen tersebut.

Sehubungan dengan itu, pada 1-12 Mei 2023, persidangan COP BRS 2023 telah diadakan di Geneva, Switzerland dan telah dihadiri oleh wakil negara daripada Kementerian Sumber Asli dan Kelestarian Alam (NRES), Jabatan Alam Sekitar (JAS), Jabatan Pengurusan Sisa Pepejal Negara (JPSPN) dan Wakil Konsulat Malaysia

THE CONFERENCE OF THE PARTIES (COP BRS) FOR THE BASEL AND ROTTERDAM CONVENTIONS 2023

The biennial Conference of the Parties (COP BRS), hosted by the Secretariat of the Basel, Rotterdam, and Stockholm Conventions, convenes to discuss the strategies and responsibilities of member states regarding the international trade and transboundary movement of hazardous chemicals and wastes. Malaysia has ratified the Basel Convention on October 8, 1993, and the Rotterdam Convention on September 4, 2002.

Aligned with the objectives of both conventions aimed at protecting human health and the environment, the Prior Informed Consent (PIC) procedure has been implemented to promote member states' sharing of information on the trade of hazardous chemicals and the transboundary movement of hazardous wastes listed in the Annexes under these conventions.

In connection with this, the COP BRS 2023 conference was convened in Geneva, Switzerland from May 1-12, 2023. Representatives from Malaysia's Ministry of Natural Resources and Environmental Sustainability (NRES), Department of Environment (DOE), Department of National Solid Waste Management (DNSWM), and the Malaysian

di Geneva. Tema persidangan COP BRS 2023 adalah *'Accelerating Action: Targets for the Sound Management of Chemicals and Waste'*.

A. Persidangan COP-16 Konvensyen Basel di bawah COP BRS 2023

Konvensyen Basel adalah satu perjanjian antarabangsa yang bertujuan untuk mengawal selia pergerakan merentasi sempadan bagi buangan berbahaya dan pelupusannya dengan cara yang mesra alam. Konvensyen ini diwujudkan untuk melindungi kesihatan manusia dan alam sekitar daripada kesan negatif pengurusan buangan berbahaya yang tidak selamat dan tidak terkawal. Di Malaysia, pelaksanaan Konvensyen Basel dipantau oleh JAS selaku *National Focal Point* (NFC), bagi memastikan pematuhan terhadap peraturan berkaitan pengimportan, pengeksportan, dan pengurusan buangan berbahaya mengikut Akta Kualiti Alam Sekeliling 1974 dan perundangan lain di dalam negara.

Rumusan hasil perbincangan COP-16, Konvensyen Basel pada kali ini adalah seperti berikut:

(i) **Pengemaskinian Garispanduan Teknikal Pengurusan Buangan Plastik yang Mesra Alam:** COP-16 menerima dan mengesahkan pengemaskinian garispanduan teknikal bagi pengurusan buangan plastik supaya dilaksanakan secara mesra alam. Langkah ini bertujuan untuk memastikan buangan plastik dikelola dengan cara yang tidak membahayakan alam sekitar dan manusia.

(ii) **Garispanduan Teknikal Pergerakan Merentas Sempadan E-waste dan Peralatan Elektrik dan Elektronik Terpakai:** COP-16 menerima pakai garis panduan teknikal am mengenai pergerakan merentas sempadan sisa elektrik dan elektronik serta peralatan elektrik dan elektronik terpakai, khususnya mengenai perbezaan antara sisa dan bukan sisa di bawah Konvensyen Basel.

(iii) **Pelaksanaan Penggunaan Prosedur *Prior Informed Consent* (PIC):** COP-16 memulakan usaha untuk memperbaiki fungsi prosedur PIC yang membolehkan negara pengimport mempertimbangkan maklumat berkaitan bahan berbahaya sebelum meluluskan pengimportan bahan buangan berbahaya.

(iv) **Pembangunan Kerangka Strategik Baharu:** COP-16 telah memulakan usaha untuk membangunkan kerangka strategik baru yang bertujuan untuk meningkatkan pelaksanaan dan keberkesanan konvensyen secara keseluruhan.

Consulate in Geneva attended the conference. The theme of COP BRS 2023 was 'Accelerating Action: Targets for the Sound Management of Chemicals and Waste'.

A. The COP-16 Conference of the Basel Convention under the COP BRS 2023:

The Basel Convention is an international treaty aimed at regulating the transboundary movement and disposal of hazardous wastes in an environmentally sound manner. It was established to protect human health and the environment from the adverse effects of unsafe and uncontrolled hazardous waste management. In Malaysia, the implementation of the Basel Convention is overseen by the DOE as the National Focal Point (NFP), ensuring compliance with regulations governing the import, export, and management of hazardous wastes under the Environmental Quality Act 1974 and other legislation within the country.

The summary of COP-16 Basel Convention discussions is as follows:

(i) **Technical Guidelines for the Environmentally Sound Management of POPs and Plastic Waste**: COP-16 adopted and confirmed the updated technical guidelines for managing POPs and plastic waste in an environmentally friendly manner. This step aims to ensure that plastic waste is handled in a way that does not harm the environment or human health.

(ii) **Technical Guidelines for the Transboundary Movement of E-waste and Used Electrical and Electronic Equipment:** COP-16 adopted general technical guidelines on the transboundary movement of electrical and electronic waste as well as used electrical and electronic equipment, particularly regarding the distinction between waste and non-waste under the Basel Convention.

(iii) **Implementation of the Prior Informed Consent (PIC) Procedure:** COP-16 initiated efforts to enhance the functionality of the PIC procedure, allowing importing countries to consider information regarding hazardous substances before approving the importation of hazardous waste materials.

(iv) **Development of a New Strategic Framework:** COP-16 has begun efforts to develop a new strategic framework aimed at enhancing the implementation and effectiveness of the convention as a whole.

B. Persidangan COP-11 Konvensyen Rotterdam di bawah COP BRS 2023

Konvensyen Rotterdam adalah perjanjian antarabangsa yang bertujuan untuk mengawal perdagangan global bahan kimia berbahaya melalui mekanisme prosedur PIC. Konvensyen ini bertujuan melindungi kesihatan manusia dan alam sekitar dengan memastikan negara pengimport diberi maklumat yang mencukupi tentang sifat berbahaya bahan kimia sebelum membuat keputusan untuk menerima atau menolak import bahan tersebut. Di Malaysia, pelaksanaan konvensyen ini melibatkan pengawalan ketat terhadap import dan eksport bahan kimia berbahaya, pengawasan dan penguatkuasaan oleh JAS selaku Designated National Authority Kimia Industri (DNA-C) dan Lembaga Racun Makhluk Perosak (Pesticide Board) di bawah Jabatan Pertanian selaku *Designated National Authority Pesticide* (DNA-P) dengan kerjasama beberapa agensi pelaksana yang berkaitan dengan pengurusan bahan kimia berbahaya dan sisa berbahaya.

Rumusan hasil perbincangan COP-11, Konvensyen Rotterdam pada kali ini adalah seperti berikut:

(i) **RC COP-11** telah menerima sebanyak 15 keputusan di mana 8 daripadanya merupakan isu-isu yang dibincangkan bersama di dalam Konvensyen Stockholm dan Konvensyen Basel antara lainnya merangkumi pengukuhan kerjasama dikalangan negara anggota, bantuan teknikal, pencegahan dan penguatkuasaan terhadap isu perdagangan haram dan pentadbiran.

(ii) **Penyenaraian Bahan Kimia Baharu di dalam Annex III:** COP-11 telah bersetuju untuk menyenaraikan Terbufos (pesticide) ke dalam Annex III, Konvensyen Rotterdam pada kali ini. Manakala 6 lagi bahan kimia masih belum dapat disenaraikan iaitu *Paraquat, Chrysotile Asbestos, the inclusion of fenthion (ultra-low-volume formulations at or above 640 g active ingredient/L), Acetochlor, Iprodione, and Carbosulfan*.

(iii) **Cadangan Penambahan Annex Baharu:** Cadangan untuk mewujudkan satu Annex baharu di dalam teks Konvensyen Rotterdam telah dibuat oleh beberapa negara anggota. Perbincangan mengenai perkara ini telah mendapat perhatian yang serius di dalam COP-11. Annex VIII telah dicadangkan bertujuan untuk menyenaraikan bahan kimia yang telah diluluskan oleh *Chemical Review Committee* (CRC) tetapi tidak mendapat persetujuan di dalam COP. Perbincangan mengenai perkara ini berlarutan dan akan bersambung di COP-12.

(iv) **Program-program pelaksanaan dan pematuhan** (compliance committee) bagi tahun 2024-2025 telah dipersetujui.

B. COP-11 Conference of the Rotterdam Convention under the COP BRS 2023:

The Rotterdam Convention is an international treaty designed to oversee global trade in hazardous chemicals through the PIC procedure. Its goal is to safeguard human health and the environment by ensuring that importing countries receive sufficient information about the hazardous properties of chemicals before deciding whether to accept or reject their import. In Malaysia, the implementation of this convention involves stringent control over the import and export of hazardous chemicals, overseen and enforced by the DOE as the Designated National Authority for Industrial Chemicals (DNA-C) and the Pesticide Board under the Department of Agriculture as the Designated National Authority for Pesticides (DNA-P). This is carried out in collaboration with various relevant agencies responsible for managing hazardous chemicals and wastes.

The summary of COP-11 Rotterdam Convention discussions is as follows:

(i) **RC COP-11** has adopted a total of 15 decisions, 8 of which are joint issues discussed within the Stockholm Convention and the Basel Convention, including strengthening cooperation among member countries, technical assistance, prevention, and enforcement against issues of illegal traffic and trade and clearing-house mechanism.

(ii) **Addition of New Chemicals to Annex III:** During COP-11, consensus was reached to include Terbufos (a pesticide) in Annex III of the Rotterdam Convention. However, the listing of six other chemicals remains pending, including Paraquat, Chrysotile Asbestos, the inclusion of fenthion (ultra-low-volume formulations at or above 640 g active ingredient/L), Acetochlor, Iprodione, and Carbosulfan.

(iii) **Proposal for Addition of a New Annex:** A proposal to establish a new Annex within the text of the Rotterdam Convention was made by several member states. Discussions on this matter received serious attention during COP-11. Annex VIII was proposed to list chemicals that have been approved by the Chemical Review Committee (CRC) but did not receive approval in COP. Discussions on this matter are ongoing and will continue in COP-12.

(iv) **The programme of work** of the Compliance Committee for 2024-2025 was also adopted.

BENGKEL *WORLD CUSTOM ORGANIZATION* (WCO) *SUB-REGIONAL WORKSHOP ON CUSTOMS INTERCONNECTIVITY PROCESS HARMONIZATION FOR TRANSBOUNDARY MOVEMENT OF E-WASTE*

Pada 17-21 Julai 2023, En. Norhisham Abdul Hamid dari Seksyen Konvensyen telah menghadiri Bengkel *World Custom Organization* (WCO) *Sub-Regional Workshop on Customs Interconnectivity Process Harmonization for Transboundary Movement of e-waste* di Mombasa, Kenya. Bengkel ini juga telah dihadiri bersama dengan seorang pegawai Jabatan Kastam Diraja Malaysia. Wakil dari Malaysia telah membentangkan polisi negara berkaitan pengimportan dan pengeksportan e-waste dan telah memberi kerjasama dalam membentuk draf *Regional Action Plan* bagi pengimportan dan pengeksportan e-waste di kalangan Negara Afrika Timur.

Di dalam bengkel tersebut, negara-negara peserta dapat berkongsi maklumat dan pengetahuan berkaitan Pergerakan Rentas Sempadan e-waste bersama dengan Negara Afrika Timur dan seterusnya dapat mempertingkatkan kerjasama antara pihak Jabatan Kastam dan Pihak Berkuasa Alam Sekitar dalam menguatkuasakan pengimportan berkaitan e-waste.

Pada masa yang sama, bengkel ini dapat membantu pihak Negara Afrika Timur dalam membentuk *Regional Action Plan* berkenaan *Trade Facilitation Agreement* yang menyentuh tentang *Multilateral Environmental Agreement* seperti Konvensyen Basel dan Protokol Montreal.

WORLD CUSTOM ORGANIZATION (WCO) SUB-REGIONAL WORKSHOP ON CUSTOMS INTERCONNECTIVITY PROCESS HARMONIZATION FOR TRANSBOUNDARY MOVEMENT OF E-WASTE

On 17 – 21 July 2023, Mr. Norhisham Abdul Hamid from the Convention Section attended the World Custom Organization (WCO) Sub-Regional Workshop on Customs Interconnectivity Process Harmonization for Transboundary Movement of e-waste in Mombasa, Kenya. This workshop was also attended by an officer from the Royal Malaysian Customs Department. The representatives from Malaysia presented the country's policy regarding the import and export of e-waste in the workshop as_well as cooperated in forming the draft of Regional Action Plan for the import and export of e-waste among East African Countries.

During the workshop, the participating countries were able to share information and knowledge related to the Cross-Border Movement of e-waste together with the East African Country and subsequently were able to enhance cooperation between the Customs Department and the Environmental Authority in enforcing the importation related to e-waste.

At the same time, this workshop was able to assist the East African Country in forming a Regional Action Plan regarding the Trade Facilitation Agreement related to Multilateral Environmental Agreements such as the Basel Convention and the Montreal Protocol.



▲ Peserta Bengkel *World Custom Organization* (WCO) *Sub-Regional Workshop on Customs Interconnectivity Process Harmonization for Transboundary Movement of e-waste*
Participants of the World Custom Organization (WCO) Sub-Regional Workshop on Customs Interconnectivity Process Harmonization for Transboundary Movement of e-waste

PROGRAM "*WASTE MANAGEMENT STUDY TOUR IN JAPAN*"

Program *Waste Management Study Tour in Japan* telah diadakan dari 12 - 18 November 2023 bertempat di Tokyo, Jepun. Program ini dianjurkan oleh Japan Environmental Sanitation Center (JESC) di bawah program kerjasama di antara Malaysia dengan Kementerian Alam Sekitar, Jepun.

Objektif program ini adalah untuk memberi kefahaman berkenaan kaedah/ tindakan yang boleh diambil oleh Kerajaan Pusat dan Pihak Berkuasa Tempatan untuk menambah baik pengurusan sisa pepejal/ buangan terjadual termasuk mempromosikan kesedaran berkaitan "dari buangan kepada tenaga".

Program ini telah dihadiri oleh Puan Shafariza binti Shamsudin dari Bahagian Bahan Berbahaya, Jabatan Alam Sekitar Putrajaya dan Puan Noraini Ajlaa binti Omar dari Jabatan Alam Sekitar Negeri Selangor. Turut hadir adalah Encik Ahmad Zuhairi bin Muzakir, Timbalan Ketua Pengarah (Pengurusan), Jabatan Pengurusan Sisa Pepejal Negara dan Ir. Zulkifli bin Tamby Chik, Timbalan Ketua Pegawai Eksekutif (Teknikal), SWCorp Malaysia.

Program ini melibatkan sesi taklimat di beberapa buah kemudahan yang menguruskan buangan elektrik dan elektronik daripada isi rumah.

Pihak Kementerian Alam Sekitar, Jepun turut mengadakan perbincangan bagi mendapatkan input awal berhubung cadangan projek di bawah ASEAN-Japan Resource Circulation Partnerships on e-waste and Critical Minerals (ARCPEC) dan kerjasama dua hala dengan Malaysia. Antara outcome yang dijangka daripada program ini adalah menyokong negara-negara ASEAN untuk membangunkan mekanisme peraturan, standard, pemantauan dan penguatkuasaan yang diperlukan untuk pengumpulan, peleraian, kitar semula dan pemerolehan kembali buangan dan pelupusan buangan akhir, mengurangkan kesan alam sekitar yang berkaitan dan meningkatkan kesihatan manusia.

PROGRAMME OF WASTE MANAGEMENT STUDY TOUR IN JAPAN

The Waste Management Study Tour in Japan programme was held from 12 – 18 November 2023 in Tokyo, Japan. This programme was organized by Japan Environmental Sanitation Center (JESC) under a collaboration programme between Malaysia and the Ministry of Environment, Japan.

The objective of this programme was to provide understanding regarding methods/ actions that can be taken by the Federal Government and Local Authorities to improve the management of solid waste/ scheduled waste including promoting awareness related to "waste to energy".

This program was attended by Mrs. Shafariza binti Shamsudin from the Hazardous Substances Division, Department of Environment Putrajaya and Mrs. Noraini Ajlaa binti Omar from the Department of Environment Selangor. Also present were Encik Ahmad Zuhairi bin Muzakir, Deputy Director General (Management), National Solid Waste Management Department and Ir. Zulkifli bin Tamby Chik, Deputy Chief Executive Officer (Technical), SWCorp Malaysia.

The programme attended involved a briefing session at several facilities that manage electrical and electronic waste from households.

The Ministry of Environment, Japan also held discussions to obtain initial input regarding project proposals under the ASEAN-Japan Resource Circulation Partnerships on e-waste and Critical Minerals (ARCPEC) and bilateral cooperation with Malaysia. Among the expected outcomes of this programme was to support ASEAN countries to develop the necessary regulatory, standard, monitoring and enforcement mechanisms for the collection, dismantling, recycling and recovery of resources and final treatment of waste, reducing associated environmental footprints, and improving human health.



▲ Perbincangan di antara Kementerian Alam Sekitar, Jepun, Jabatan Pengurusan Sisa Pepejal Malaysia, Jabatan Alam Sekitar berkaitan Pelaksanaan Program *ASEAN-Japan Resource Circulation Partnerships on E-waste and Critical Minerals* (ARCPEC) dan Kerjasama Dua Hala dengan Malaysia / Discussions between the Ministry of Environment, Japan, Department of Solid Waste Management Malaysia, Department of Environment Related to the Implementation of the ASEAN-Japan Resource Circulation Partnerships on E-waste and Critical Minerals (ARCPEC) Program and Bilateral Cooperation with Malaysia





◀ Sesi Pembelajaran sepanjang Program "*Waste Management Study Tour in Japan*" Learning Sessions throughout the "Waste Management Study Tour in Japan" Program



BENGKEL VERIFIKASI KEPERLUAN PENGGUNA BAGI NAIK TARAF SISTEM *ELECTRONIC SCHEDULE WASTE INFORMATION SYSTEM* eSWIS

Bengkel Verifikasi Keperluan Pengguna bagi Naik Taraf Sistem *Electronic Schedule Waste Information System* eSWIS telah diadakan di Hotel Bangi Resort, Bangi dari 4 - 6 Oktober 2023. Bengkel ini telah dianjurkan dengan kerjasama Bahagian Bahan Berbahaya dan Bahagian Teknologi Maklumat Jabatan Alam Sekitar Ibu Pejabat dengan pembekal untuk perkhidmatan naik taraf sistem eSWIS iaitu Syarikat Opensoft Technologies Sdn. Bhd. Bengkel ini telah dirasmikan oleh Timbalan Ketua Pengarah Operasi, Dr. Norhazni binti Mat Sari dan turut dihadiri oleh Pengarah Bahagian Bahan Berbahaya, Ts. Azlan bin Ahmad.

Seramai 30 orang peserta telah menghadiri bengkel ini yang terdiri daripada pegawai dari ibu pejabat dan JAS Negeri serta pihak pembekal. Tujuan bengkel ini adalah untuk mendapatkan input dan spesifikasi keperluan pengguna daripada pegawai-pegawai Jabatan Alam Sekitar bagi memastikan pembangunan sistem eSWIS baharu kelak mengikut spesifikasi dan dapat memenuhi keperluan dan kehendak semua pihak berkepentingan terlibat. Segala input, idea dan pandangan yang diperolehi sepanjang 3 hari bengkel akan digunakan di dalam pembangunan sistem eSWIS yang baharu.

USER REQUIREMENT VERIFICATION FOR THE UPGRADING OF ELECTRONIC WORKSHOP SCHEDULED WASTE INFORMATION SYSTEM eSWIS

A workshop session entitled "User Requirement Verification for the Upgrading of eSWIS Systems" was held in Bangi, from 4 - 6 October 2023. This workshop was jointly organized by the Hazardous Substances Division, Information Technology Division from Department of Environment (DOE) Putrajaya and Opensoft Technologies Sdn. Bhd as the vendor for the upgrading services of the eSWIS System. It was officiated by the Deputy Director General (Operation), Dr. Norhazni binti Mat Sari, and was attended by the Director of the Hazardous Substances Division, Ts. Azlan bin Ahmad.

A total of 30 participants were present, including officials from DOE headquarters, state, and the vendor. The purpose of this workshop was to gather ideas, feedback, and user requirement specification from the officers. This is to ensure that the development of the new eSWIS System adheres to specifications and meets the needs and requirements of all stakeholders involved. The outcome from this workshop will be used in the development of the new eSWIS System.



▲ Peserta Bengkel Verifikasi Keperluan Pengguna bagi Naik Taraf Sistem *Electronic Schedule Waste Information System* (eSWIS)
Participants of the User Requirement Verification for the Upgrading of Electronic Scheduled Waste Information System (eSWIS) Workshop

PENGUATKUASAAN KE ATAS PREMIS

Kawalan ke Atas Premis yang Ditetapkan

Di bawah Akta Kualiti Alam Sekeliling (AKAS) 1974, premis yang ditetapkan adalah ditakrifkan sebagai premis yang dilesenkan sebagaimana ditetapkan oleh Menteri di bawah Seksyen 18, AKAS 1974. Premis yang ditetapkan tersebut adalah kilang getah asli mentah, kilang minyak kelapa sawit mentah dan kilang atau kemudahan pengolahan atau 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) (Minyak Kelapa Sawit Mentah) 1977 atau Perintah Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Kemudahan Pengolahan dan Pelupusan Buangan Terjadual) 1989. Operasi premis-premis ini adalah tertakluk kepada keperluan Seksyen 18, AKAS 1974 di mana pemilik premis ini perlu mempunyai lesen daripada Jabatan Alam Sekitar (JAS) bagi menduduki dan/atau menggunakan premis.

Kilang Getah Asli Mentah

Pada tahun 2023, sejumlah 44 buah kilang getah asli mentah telah dilesenkan dan tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Getah Asli Mentah), 1978. Daripada jumlah ini, 27 buah kilang telah dilesenkan bagi melepaskan efluen yang telah diolah ke alur air, satu (1) ke atas tanah manakala 16 buah kilang lagi dibenarkan untuk mengitar semula efluen. **Rajah 3.10** menunjukkan bilangan kilang getah asli mentah mengikut negeri.

Pada tahun 2023 JAS telah menjalankan sejumlah 153 pemeriksaan ke atas 44 buah kilang getah asli mentah yang telah dilesenkan. Tindakan penguatkuasaan diambil ke atas kilang yang gagal mematuhi AKAS 1974 dan Peraturan-peraturan di bawahnya. Dalam hal ini, sejumlah 11 Notis Arahan telah dikeluarkan untuk tindakan penambahbaikan bagi mematuhi keperluan perundangan. Tindakan susulan penguatkuasaan yang diambil adalah seperti yang ditunjukkan dalam **Rajah 3.10**.

ENFORCEMENT ON THE PREMISES

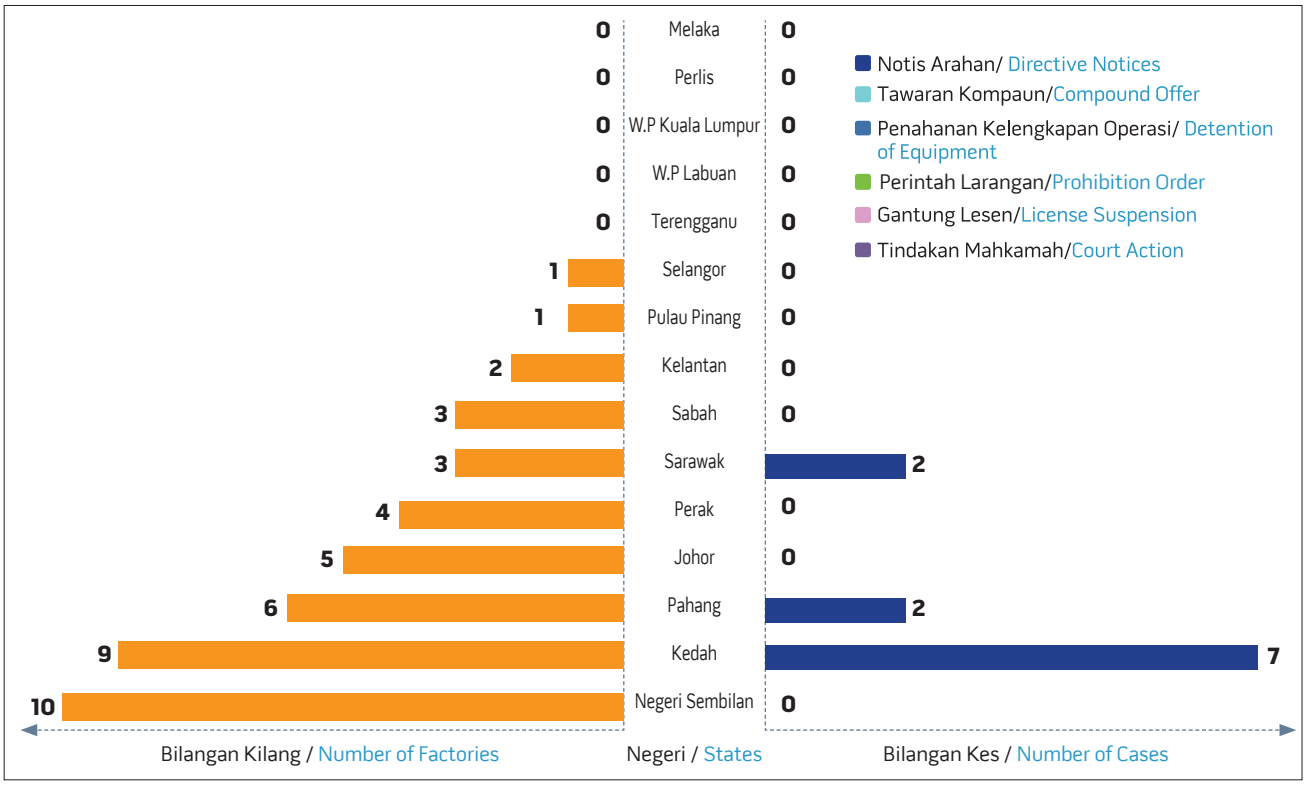
Control of Prescribed Premises

Under the Environmental Quality Act (EQA) 1974, prescribed premise is defined as licensed premises as prescribed by the Minister under Section 18, EQA 1974. The prescribed premises are raw natural rubber factory, crude palm oil mills and factories or facilities for the treatment or 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 or 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, EQA 1974 whereby the owner of the premises is required to obtain license from the Department of Environment (DOE) to occupy and/or use the premises.

Raw Natural Rubber Factories

In 2023, a total of 44 raw natural rubber factories were licensed and subjected to Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations, 1978. Of these, 27 factories were licensed to discharge treated effluent into the waterways, one (1) factory to practice land disposal and the remaining 16 factories were allowed to recycle their effluent. **Figure 3.10** displays the number of raw natural rubber factories by state.

In 2023, a total of 153 inspections on 44 licensed natural rubber factories were conducted by DOE. Enforcement actions were taken on the factories that failed to comply with the EQA 1974 and its regulations thereunder. A total of 11 Directive Notices were issued for remedial action in order to comply with legal requirements. The enforcement follow-up actions taken are as shown in **Figure 3.10**.



Rajah 3.10: Bilangan Kilang Getah Asli Mentah dan Tindakan Undang-Undang Terhadap Kilang Getah Asli Mentah, 2023

Figure 3.10: Number of Raw Natural Rubber Factories and Legal Actions Against Raw Natural Rubber Factories, 2023

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

  Pada tahun 2023, pencapaian pematuhan keseluruhan kilang getah asli mentah kepada Peraturan-peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Getah Asli Mentah) 1978 adalah 98%.

- **Status Pematuhan terhadap Peraturan-peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014**

  Kilang getah asli mentah tertakluk kepada Peraturan-peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014. Pada tahun 2023, pencapaian pematuhan keseluruhan oleh kilang getah asli mentah kepada peraturan tersebut adalah 95%.

- **Status Pematuhan terhadap Peraturan-peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005**

  Pada tahun 2023, pencapaian pematuhan keseluruhan oleh kilang getah asli mentah kepada Peraturan-peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 adalah 100%.

- **Status of Compliance to the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations 1978**

  For 2023, the overall compliance of the raw natural rubber factories to the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations 1978 was 98%.

- **Status of Compliance to the Environmental Quality (Clean Air) Regulations 2014**

  Raw natural rubber factories are subject to the Environmental Quality (Clean Air) Regulations 2014. In 2023, the overall compliance achieved by raw natural rubber factories to the regulations was 95%.

- **Status of Compliance to the Environmental Quality (Scheduled Wastes) Regulations 2005**

  In 2023, the overall compliance by raw natural rubber factories to the Environmental Quality (Scheduled Wastes) Regulations 2005 was 100%.

Kilang Minyak Kelapa Sawit Mentah

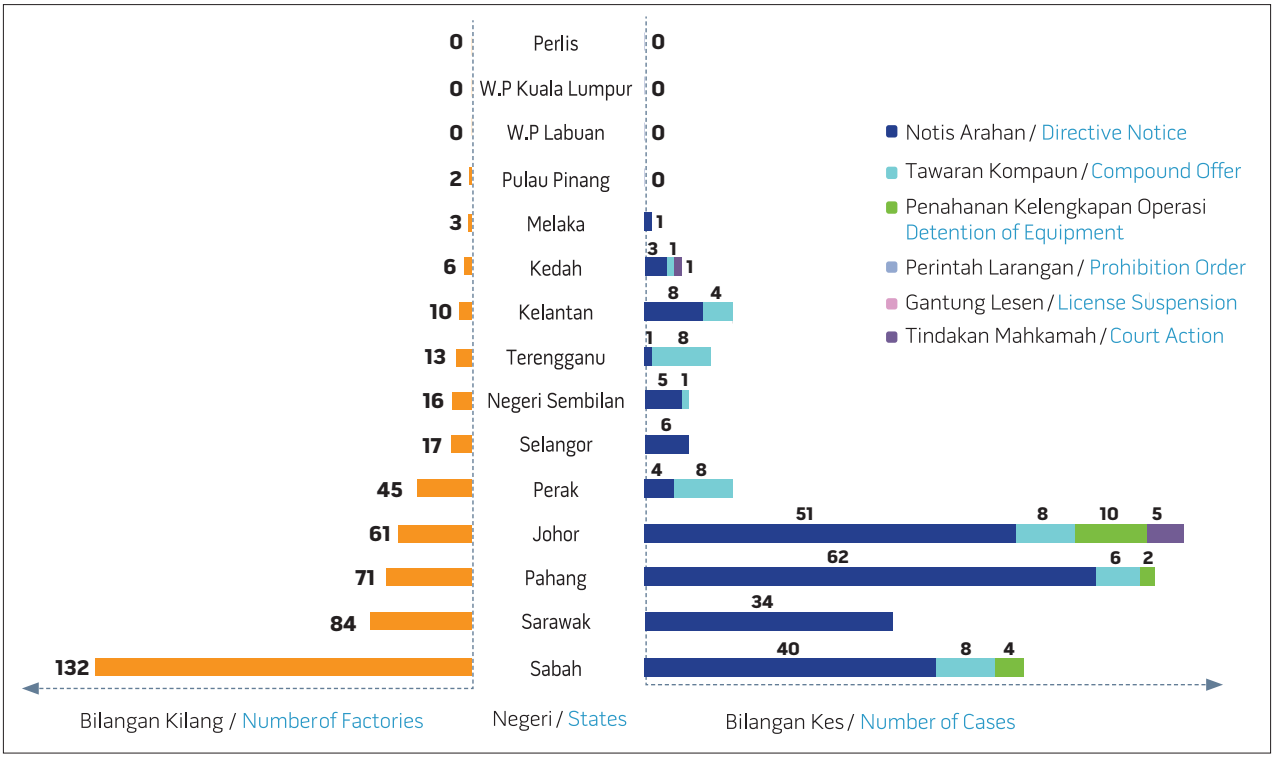
Sejumlah 456 buah kilang minyak kelapa sawit mentah telah dilesenkan pada tahun 2023 dan kilang adalah tertakluk kepada Peraturan-peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Minyak Kelapa Sawit Mentah) 1977. Daripada jumlah ini, 380 buah kilang telah dibenarkan melepaskan efluen terolah ke dalam alur air, 69 buah kilang melupuskan efluen ke atas tanah, dan tujuh (7) buah kilang melupuskan efluen dengan menggunakan gabungan kaedah alur air dan atas tanah. **Rajah 3.11** menunjukkan taburan bilangan kilang minyak kelapa sawit mentah di Malaysia mengikut negeri.

Pada tahun 2023, JAS telah menjalankan sejumlah 1,626 pemeriksaan ke atas 456 buah kilang minyak kelapa sawit mentah yang telah dilesenkan. Sejumlah 215 notis arahan telah dikeluarkan pada tahun 2023 untuk tindakan penambahbaikan bagi mematuhi keperluan perundangan. Di samping itu, sejumlah 44 kompaun turut dikeluarkan kepada kilang-kilang yang telah gagal mematuhi AKAS 1974 dan Peraturan-peraturan di bawahnya. Selain itu, 16 buah kilang telah dikenakan Penahanan Operasi Kelengkapan dan enam (6) buah kilang juga telah dikenakan tindakan mahkamah atas kegagalan mematuhi syarat-syarat lesen yang dikeluarkan. Tindakan susulan penguatkuasaan yang diambil adalah seperti yang ditunjukkan dalam **Rajah 3.11**.

Crude Palm Oil Mills

456 palm oil mills were licensed in 2023 and these mills are subject to the Environmental Quality (Prescribed Premises) (Crude Palm Oil Mill) Regulations 1977. Of this number, a total of 380 were allowed to discharge treated effluent into inland watercourse, 69 to practice land disposal, seven (7) to discharge effluent by a combination of inland watercourse and land. **Figure 3.11** shows the distribution of crude palm oil mills in Malaysia by states.

In 2023, DOE conducted a total of 1,626 inspections on 456 licensed crued palm oil mills. A total of 215 directive notices were issued in 2023 for remedial action to comply with legal requirements. Apart from that, a total of 44 compounds were issued to factories that failed to comply with the EQA 1974 and the Regulations thereunder. Other than that, 16 mills were issued the Detention of Equipment and six (6) mills were prosecuted for failing to comply with the conditions of the license issued. The enforcement follow-up actions taken are as shown in **Figure 3.11**.



Rajah 3.11: Bilangan Kilang Minyak Kelapa Sawit Mentah dan Tindakan Undang-Undang Terhadap Kilang Minyak Kelapa Sawit Mentah, 2023

Figure 3.11: Number of Crude Palm Oil Mills Factories and Legal Actions Against Crude Palm Oil Mills, 2023

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

  Pada tahun 2023, pencapaian pematuhan keseluruhan kilang minyak kelapa sawit mentah kepada Peraturan-peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Minyak Kelapa Sawit Mentah) 1977 adalah 92%.

- **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. Pencapaian pematuhan keseluruhan oleh kilang minyak kelapa sawit mentah bagi tahun 2023 adalah 94%.

- **Status Pematuhan terhadap Peraturan-peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005**

  Pada tahun 2023, pencapaian pematuhan keseluruhan kilang minyak kelapa sawit mentah kepada Peraturan-peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 adalah 99%.

Kemudahan Pengolahan dan Pelupusan Buangan Terjadual

Sejumlah 431 buah premis telah dilesenkan oleh JAS di bawah Seksyen 18(1), AKAS 1974 untuk menguruskan buangan terjadual pada tahun 2023. **Rajah 3.12** menunjukkan bilangan premis yang dilesenkan mengikut negeri.

Pada tahun 2023, JAS telah menjalankan sejumlah 1,386 pemeriksaan ke atas 431 premis yang beroperasi untuk mengolah atau melupuskan buangan terjadual. Tindakan susulan pemeriksaan penguatkuasaan yang diambil ke atas premis-premis yang gagal mematuhi AKAS 1974 dan peraturan-peraturan di bawahnya adalah seperti yang ditunjukkan dalam **Rajah 3.12**. Sejumlah 113 notis arahan telah dikeluarkan pada tahun 2023 untuk tindakan penambahbaikan bagi mematuhi keperluan perundangan dan sejumlah 89 kompaun turut dikeluarkan kepada premis-premis yang didapati gagal mematuhi perundangan tersebut. Selain daripada itu, lapan (8) premis telah dikenakan Penahanan Operasi Kelengkapan, empat (4) premis telah di Gantung Lesen dan dua belas (12) premis juga telah dikenakan tindakan mahkamah atas kegagalan mematuhi syarat-syarat lesen yang dikeluarkan.

- **Status of Compliance to the Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulations 1977**

  In 2023, the overall compliance achieved by the crude palm oil mills to the Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulations, 1977 was 92%.

- **Status of Compliance to the Environmental Quality (Clean Air) Regulations 2014**

  Crude palm oil mills are also subject to the Environmental Quality (Clean Air) Regulations 2014. In 2023, the overall compliance achieved by crude palm oil mills was 94%.

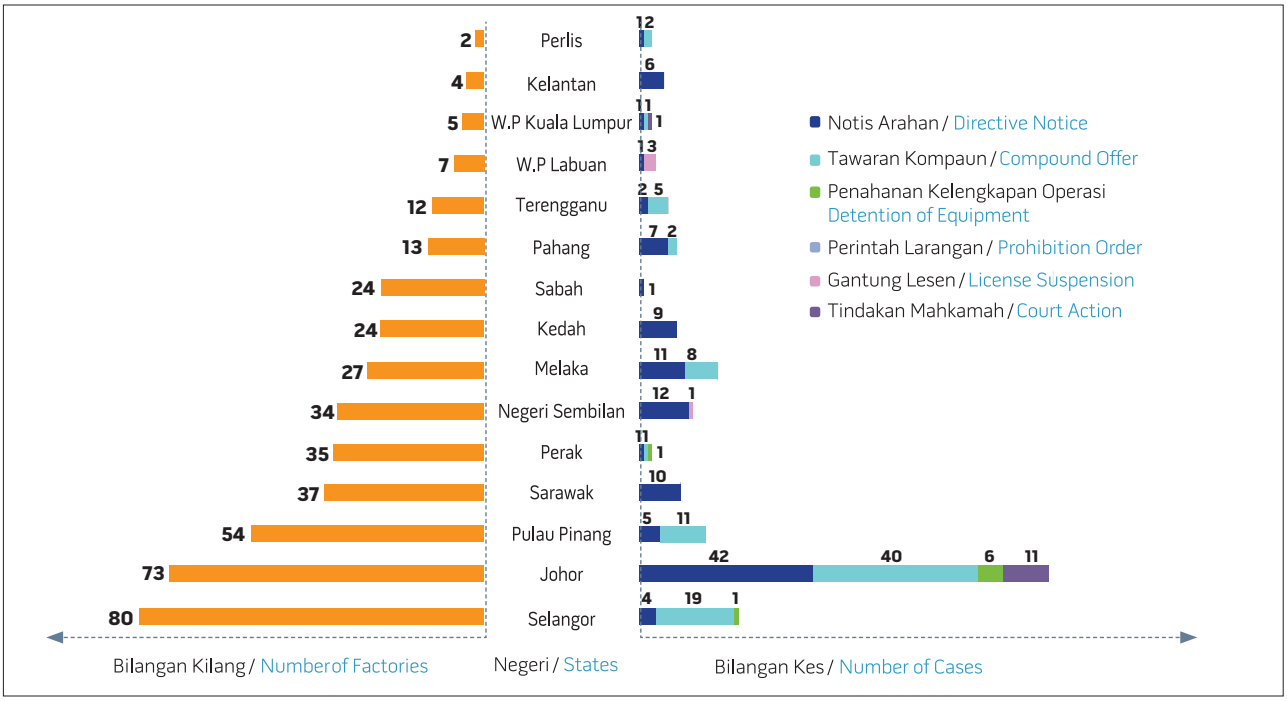
- **Status of Compliance to the Environmental Quality (Scheduled Wastes) Regulations 2005**

  In 2023, the overall compliance of Environmental Quality (Scheduled Wastes) Regulations 2005 achieved by the crude palm oil mills was 99%.

Scheduled Wastes Treatment and Disposal Facilities

A total of 431 premises were licensed by DOE under Section 18 (1), of the EQA 1974 to manage scheduled wastes in 2023. **Figure 3.12** shows the number of premises licensed by states.

In 2023, DOE conducted a total of 1,386 inspections on these 431 premises that operate to treat and dispose scheduled wastes. The enforcement action taken on premises that failed to comply with the EQA 1974 and the Regulations thereunder is as shown in **Figure 3.12**. A total of 113 directive notices were issued in 2023 for remedial action to comply with legal requirements and a total of 89 compounds were also issued to related premises that failed to comply with the legislation. In addition, eight (8) premises were subject to the Detention of Equipment, the license of four (4) premises were suspended and twelve (12) premises have been prosecuted for failure to comply with the conditions of the license issued.



Rajah 3.12: Bilangan Kemudahan Pengolahan dan Pelupusan Buangan Terjadual dan Tindakan Undang-Undang terhadap Kemudahan Pengolahan dan Pelupusan Buangan Terjadual, 2023

Figure 3.12: Number and Legal Actions Againsts Facilities for the Treatment and Disposal Facilities of Scheduled Wastes, 2023

- **Status Pematuhan terhadap Peraturan-peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Kemudahan Pengolahan dan Pelupusan Buangan Terjadual) 1989**

  Pada tahun 2023, pencapaian pematuhan keseluruhan oleh Kemudahan Pengolahan dan Pelupusan Buangan Terjadual adalah 87%.

- **Status Pematuhan terhadap Peraturan-peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009**

  Pada tahun 2023, pencapaian pematuhan keseluruhan oleh Kemudahan Pengolahan dan Pelupusan Buangan Terjadual kepada Peraturan-peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009 adalah 85%.

- **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 2023, pencapaian pematuhan keseluruhan oleh premis-premis tersebut adalah 84%.

- **Status Pematuhan terhadap Peraturan-peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005**

  Pada tahun 2023, pencapaian pematuhan keseluruhan Kemudahan Pengolahan dan Pelupusan Buangan Terjadual kepada Peraturan-peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 adalah 93%.

- **Status of Compliance to the Environmental Quality (Scheduled Wastes) (Scheduled Wastes Treatment and Disposal Facilities) Regulations 1989**

  In 2023, the overall compliance by the licensed Facilities for the Treatment and Disposal of Scheduled Wastes was 87%.

- **Status of Compliance to the Environmental Quality (Industrial Effluent) Regulations 2009**

  In 2023, the overall compliance by these Scheduled Wastes Treatment and Disposal Facilities to the Environmental Quality (Industrial Effluent) Regulations 2009 was 85%.

- **Status of Compliance to 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 2023, the overall compliance of these premises was 84%.

- **Status of Compliance to the Environmental Quality (Scheduled Wastes) Regulations 2005**

  In 2023, the overall compliance of Scheduled Wastes Treatment and Disposal Facilities to the Environmental Quality (Scheduled Wastes) Regulations 2005 93%.



▸ Pemeriksaan di Kilang Kelapa Sawit Mentah
Inspection at Crude Palm Oil Mills

KAWALAN KE ATAS PREMIS YANG BUKAN DITETAPKAN

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

JAS pada tahun 2023 telah menjalankan 16,646 pemeriksaan ke atas 12,035 premis yang bukan ditetapkan di seluruh Negara melalui pendekatan pemeriksaan di lapangan dan pemeriksaan atas talian bagi membanteras pencemaran alam sekitar. Dalam hal ini, JAS turut menetapkan sasaran untuk meningkatkan pematuhan AKAS 1974 bagi lapan (8) sektor industri yang mempunyai pematuhan yang rendah berdasarkan rekod sebelum ini, iaitu (i) pembuatan produk logam, kecuali mesin dan kelengkapan; (ii) pembuatan kertas dan produk kertas; (iii) pembuatan logam asas; (iv) pembuatan produk getah dan plastik; (v) pembuatan produk galian bukan logam lain; (vi) pembuatan produk makanan; (vii) pembuatan kimia dan produk kimia; dan (viii) pembuatan kok dan produk petroleum bertapis.

CONTROL ON NON-PRESCRIBED PREMISES

Non-prescribed premises refers to premises other than those licensed under Section 18, EQA 1974, which are those other than raw natural rubber factories, crude palm oil mills, and premises for the treatment and disposal of scheduled waste. These include factories from various manufacturing industries, sewage treatment system, solid waste landfills, water treatment plant, and others.

DOE in 2023 has conducted 16,646 inspection on 12,035 non-prescribed premises throughout the country through field and desktop enforcement in order to combat environmental pollution. In this case, DOE also targeted to improve EQA 1974's compliance for eight (8) industrial sectors that has been identified to have low compliance based on previous records, which are (i) manufacture of fabricated metal products, except machinery and equipment; (ii) manufacture of paper and paper products; (iii) manufacture of basic metals; (iv) manufacture of rubber and plastic products; (v) manufacture of other non-metallic mineral products; (vi) manufacture of food products; (vii) manufacture of chemicals and chemicals products; and (viii) manufacture of coke and refined petroleum products.

Selain itu, pemantauan ke atas premis-premis melalui program rondaan dan pengawasan udara menggunakan dron di kawasan tumpuan pencemaran pada waktu pejabat dan di luar waktu pejabat turut dilaksanakan oleh JAS sepanjang tahun.

- **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 Peraturan-peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009. Pada tahun 2023, sejumlah 1,326 pemeriksaan telah dijalankan ke atas 943 premis dari 35 kategori industri pembuatan dan lain-lain premis yang bukan ditetapkan yang tertakluk kepada Peraturan-peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009.

  Pencapaian pematuhan keseluruhan kepada peraturan tersebut adalah 96%. Terdapat 24 kategori industri yang merekodkan pematuhan 100% pada tahun 2023 seperti yang ditunjukkan dalam **Rajah 3.13**.

- **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. Sebanyak 2,703 pemeriksaan telah dijalankan pada tahun 2023 yang melibatkan 2,102 premis dari 50 kategori industri pembuatan dan lain-lain premis yang bukan ditetapkan yang tertakluk kepada peraturan tersebut. Pencapaian pematuhan keseluruhan adalah 99%. Terdapat 26 kategori industri yang berjaya mencapai pematuhan 100% pada tahun 2023 seperti yang ditunjukkan dalam **Rajah 3.14**.

- **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 5,868 pemeriksaan ke atas 4,754 premis dalam kategori industri pembuatan dan lain-lain premis yang bukan ditetapkan yang tertakluk kepada peraturan tersebut pada tahun 2023. Pencapaian pematuhan keseluruhan oleh premis yang bukan ditetapkan adalah 99%.

Pada tahun 2023, terdapat 25 kategori industri yang berjaya mencapai pematuhan 100% terhadap Peraturan-peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 seperti yang ditunjukkan dalam **Rajah 3.15**.

Aside from that, DOE has also carried out patrols program and aerial surveillance using drones at pollution hotspots within and after office hours throughout the year.

- **Status of Compliance to the Environmental Quality (Industrial Effluent) Regulations 2009**

  The non-prescribed premises that generate and discharge industrial effluents are subject to the Environmental Quality (Industrial Effluent) Regulations, 2009. In 2023, DOE has conducted a total of 1,326 inspections on 943 premises in 35 categories of manufacturing industries and other non-prescribed premises that were subjected to the Environmental Quality (Industrial Effluent) Regulations, 2009.

  The overall compliance achieved by the non-prescribed premises to the regulation was 96%. There were 24 categories of industries that recorded 100% compliance in 2023 as shown in **Figure 3.13**.

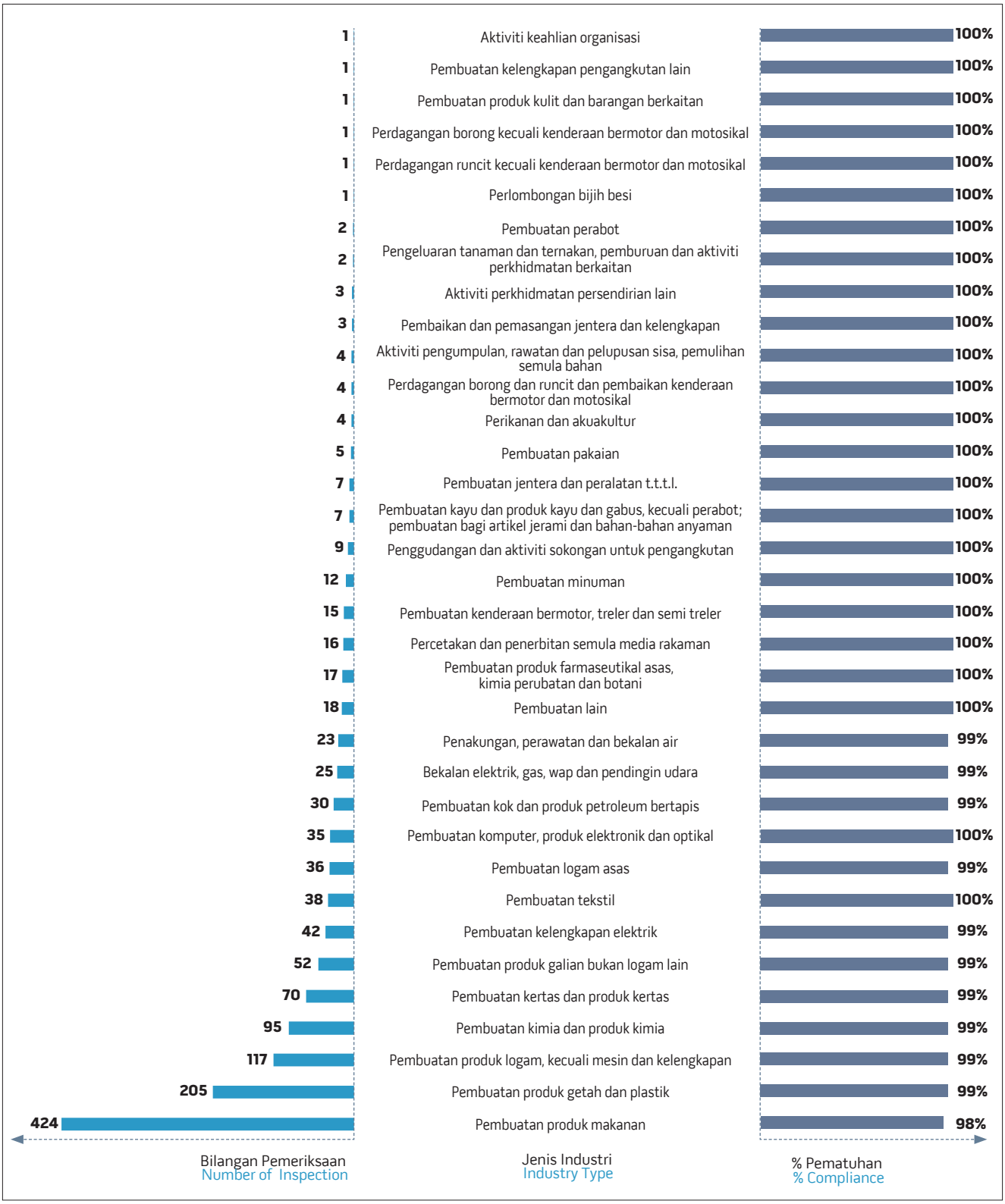
- **Status of Compliance to the Environmental Quality (Clean Air) Regulations 2014**

  The non-prescribed premises which releases pollutants into the air are subject to the Environmental Quality (Clean Air) Regulations 2014. A total of 2,703 inspections were conducted on on 2,102 premises in 50 categories of manufacturing industries and other non-prescribed premises that were subject to the Environmental Quality (Clean Air) Regulations 2014. The overall compliance was 99%. A total of 26 categories of industries have managed to achieve 100% compliance in 2023 as shown in **Figure 3.14**.

- **Status of Compliance to the Environmental Quality (Scheduled Wastes) Regulations 2005**

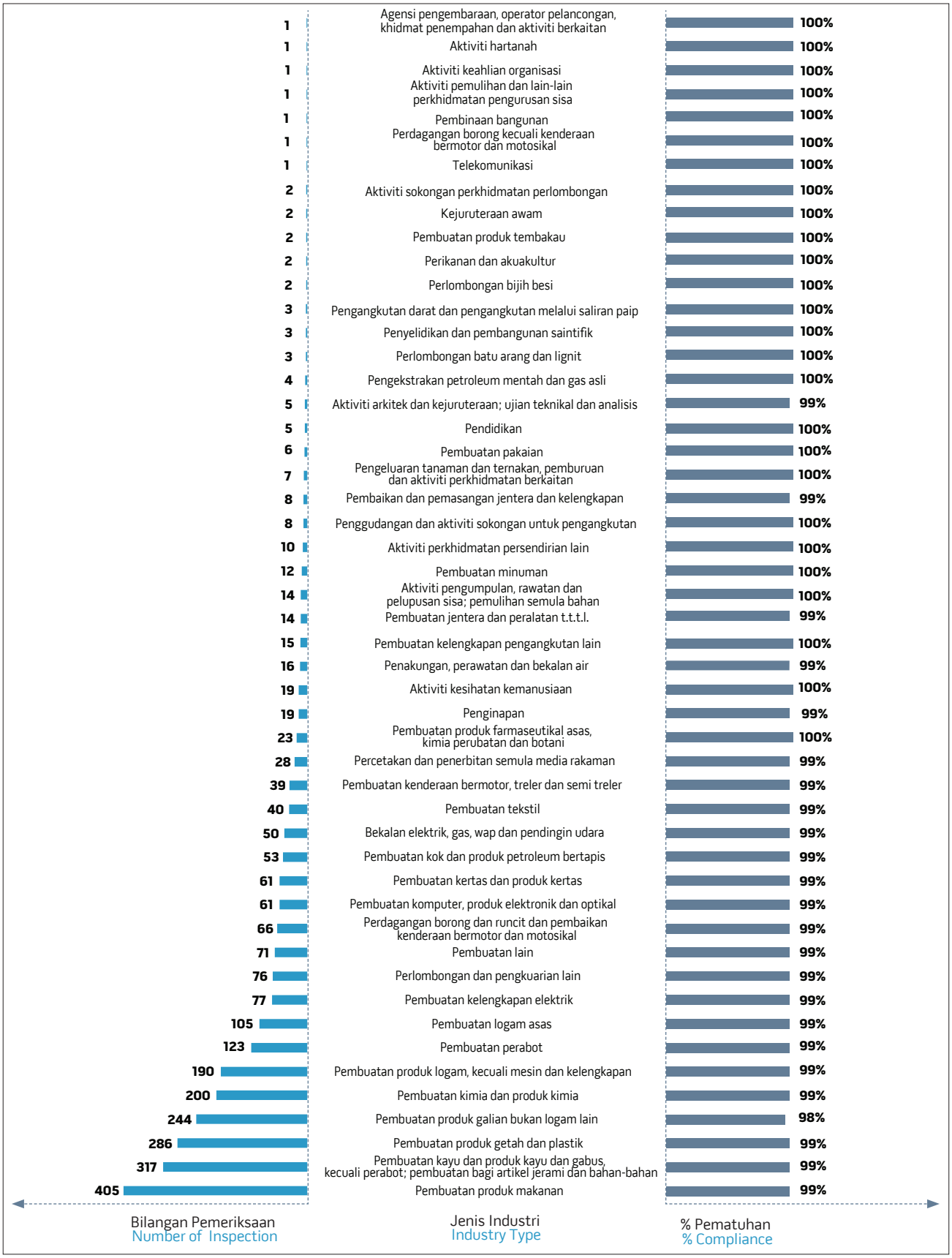
  The non-prescribed premises that generate scheduled wastes are subject to the Environmental Quality (Scheduled Wastes) Regulations 2005. DOE has conducted 5,868 inspections on 4,754 premises in categories of manufacturing industry and other non-prescribed premises that were subject to the Environmental Quality (Scheduled Wastes) Regulations 2005 in the year 2023. The overall compliance by non-prescribed premises was 99%.

In 2023, 25 categories of industries subject to the Environmental Quality (Scheduled Wastes) Regulations 2005 managed to achieve 100% compliance as shown in **Figure 3.15.**



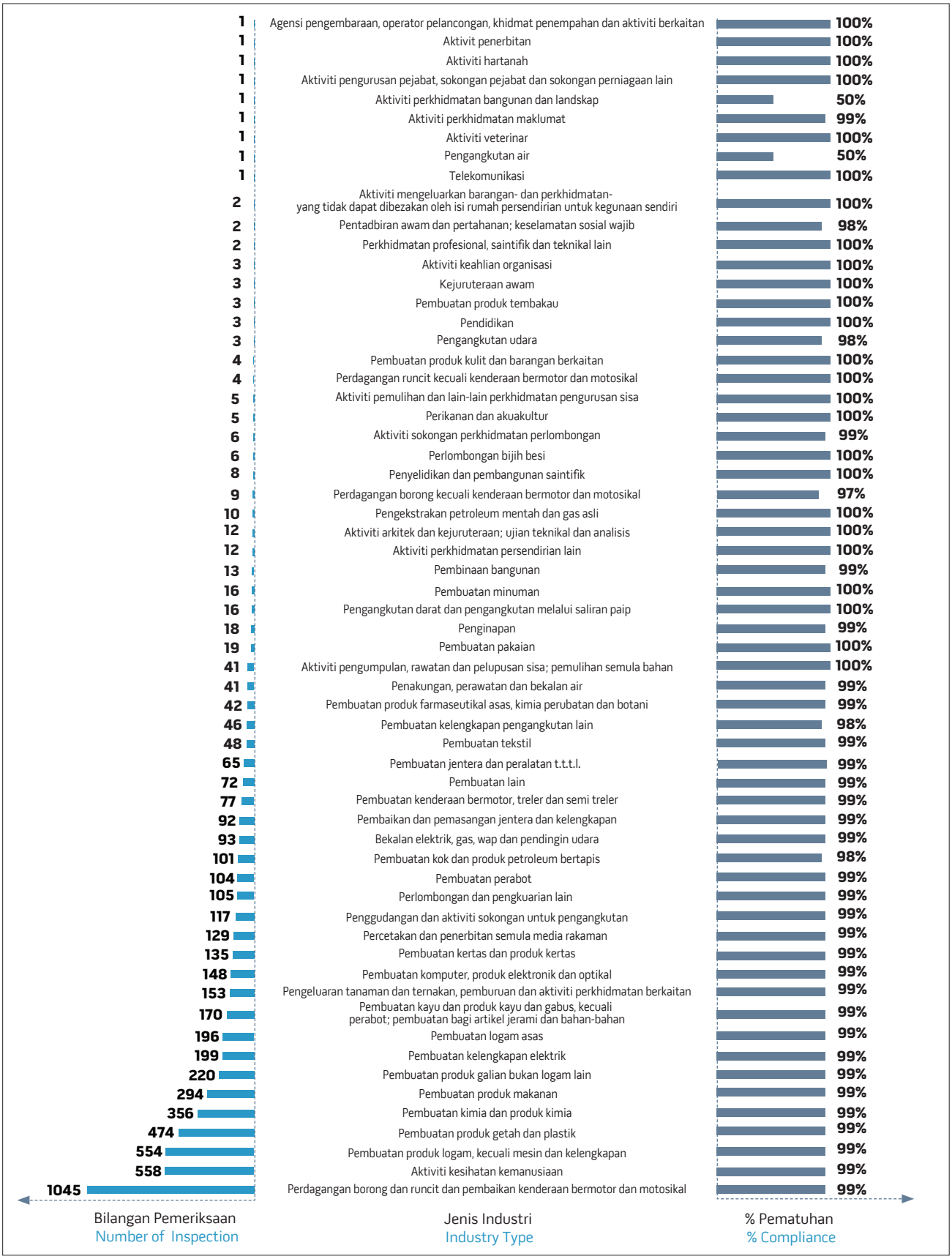
Rajah 3.13: Status Pematuhan Industri terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009, 2023

Figure 3.13: Compliance Status to the Environmental Quality (Industrial Effluent) Regulations 2009, 2023



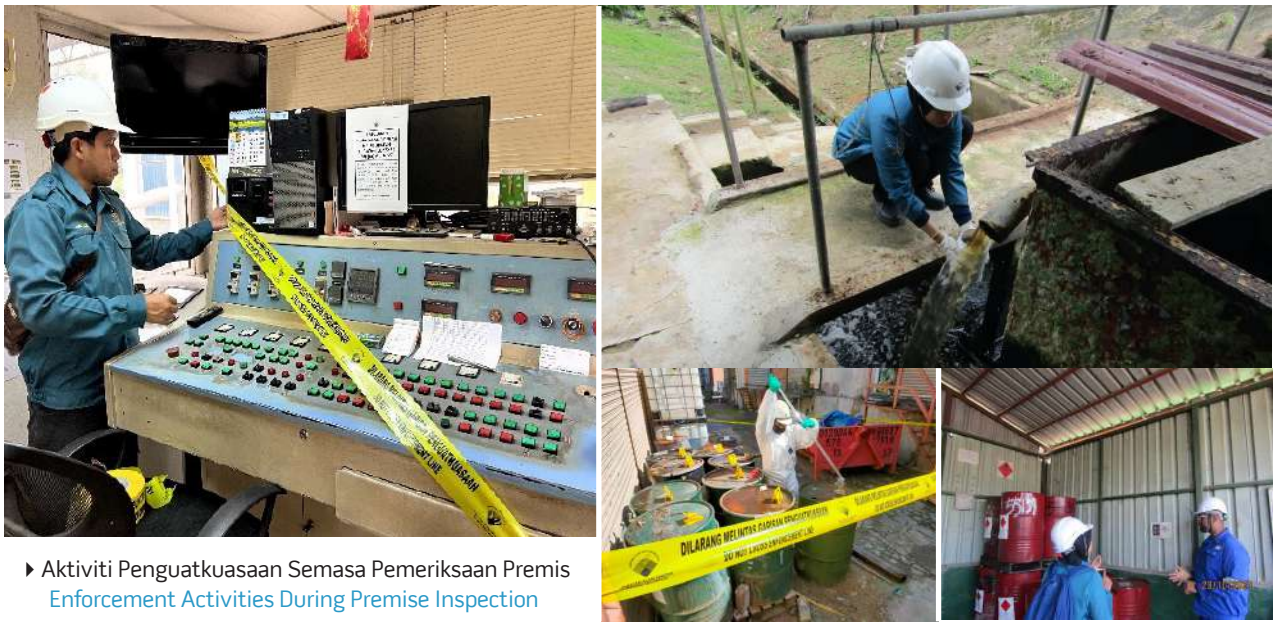
Rajah 3.14: Status Pematuhan Industri terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014, 2023

Figure 3.14: Compliance Status to the Environmental Quality (Clean Air) Regulations 2014, 2023



Rajah 3.15: Status Pematuhan Industri terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005, 2023

Figure 3.15: Compliance Status to the Environmental Quality (Scheduled Wastes) Regulations 2005, 2023



Aktiviti Penguatkuasaan Semasa Pemeriksaan Premis
Enforcement Activities During Premise Inspection

TINDAKAN PENGUATKUASAAN KE ATAS PREMIS

Pada tahun 2023, sejumlah 368 kes pertuduhan di bawah AKAS 1974 yang melibatkan premis telah didenda di mahkamah dengan jumlah denda sebanyak RM 6,341,000.00. Tindakan-tindakan penguatkuasaan lain yang telah diambil ke atas premis yang didapati melakukan kesalahan di bawah AKAS 1974 adalah pengeluaran 1,848 notis arahan supaya premis mengambil tindakan yang sewajarnya bagi perundangan yang berkaitan. Selain itu 2,274 kompaun telah dikeluarkan kepada premis atas kegagalan mematuhi peruntukan perundangan sebagaimana dinyatakan di atas. Sejumlah 126 premis juga telah dikenakan Penahanan Operasi Kelengkapan dan empat (4) premis dikenakan Perintah Larangan untuk beroperasi, manakala sebanyak empat (4) premis telah dikenakan tindakan Gantung Lesen.

Pihak industri hendaklah sentiasa memastikan premis masing-masing dilengkapi dengan sistem kawalan pencemaran yang sesuai dan berkesan bagi memastikan operasi premis tidak menyebabkan pencemaran alam sekitar. Selain itu, konsep amalan pengeluaran bersih juga boleh diterapkan dan pendekatan pematuhan kendiri melalui pelaksanaan tujuh (7) alat pengarusperdanaan alam sekitar yang digariskan oleh JAS boleh diterapkan dalam organisasi sebagai usaha ke arah pematuhan 100% kepada AKAS 1974.

ENFORCEMENT ACTION ON PREMISES

A total of 368 cases were prosecuted in criminal court in 2023 with an accumulated fine of RM 6,341,000.00. Other enforcement actions that have been taken on premises which were found to have committed offences under EQA 1974 were the issuance of 1,848 directive notices to instruct the premises to take appropriate action in complying with related legislation. In addition, 2,274 compounds were given to premises for failure to comply with legal provisions as stated above. Other than that, a total of 126 premises were issued Detention of Equipment and four (4) premise were issued Prohibition Order to operate, while four (4) premises have had their license suspended.

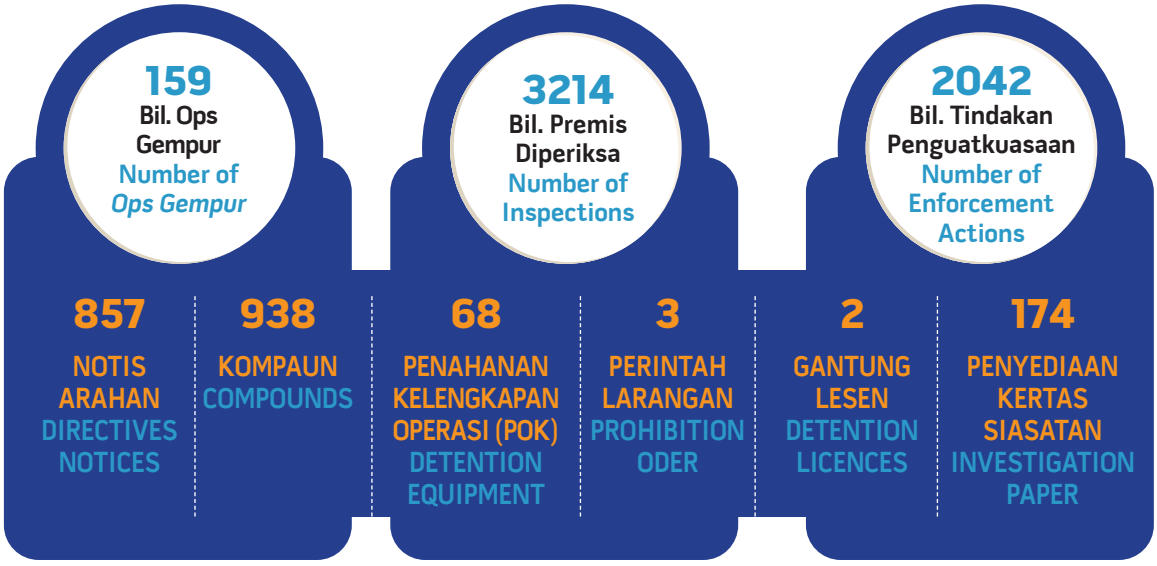
The industries are obliged to implement suitable and efficient pollution control system to ensure that the operation of their premis does not cause environmental pollution. In addition, the concept of cleaner production practices can also be applied and the approach of self-compliance through the implementation of seven (7) environmental mainstreaming tools outlined by DOE can be inculcated within the organization as an effort toward 100% compliance of EQA 1974.

Pelaksanaan Operasi Gempur (Ops Gempur)

Operasi penguatkuasaan bersasar dalam skala besar melalui inisiatif Ops Gempur secara berkala di seluruh Negara telah dilaksanakan oleh JAS sejak tahun 2020. Ops Gempur ini menyasarkan premis-premis yang terletak di hulu takat pengambilan air, operasi premis yang mendapat aduan yang kerap, premis yang menghasilkan beban pencemar yang tinggi, sering dikenakan tindakan penguatkuasaan, premis 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. Beberapa siri Ops Gempur yang dijalankan di peringkat negeri juga turut dilaksanakan secara bersepadu dengan agensi-agensi penguatkuasa lain seperti Pihak Berkuasa Tempatan, 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 yang dilakukan mengikut bidang kuasa agensi masing-masing.

Implementation of *Operasi Gempur* (*Ops Gempur*)

Ops Gempur, a large-scale enforcement activities that were carried out on periodic basis throughout the Nation has been initiated by DOE since 2020. The implementation of *Ops Gempur* targeted premises located at the upstream of the water intake, premises where public complaints have been recorded, premises that produce high pollutant loads, or repeated offences frequently, premises generating high quantity of scheduled wastes or located in areas that have environmental issues or in polluted river basins. A few series of the *Ops Gempur* conducted at the state level were also carried out with cooperation from other enforcement agencies such as the Local Authority, the National Water Services Commission (SPAN), State Water Regulatory Authorities, Indah Water Konsortium Sdn. Bhd. (IWK), Water Treatment Plants Operators and other agencies to allow stricter enforcement action taken by the authorities of respective agencies against offences committed.



Rajah 3.16: Tindakan Penguatkuasaan melalui Ops Gempur yang telah Diambil oleh JAS pada Tahun 2023
Figure 3.16: Summary of Enforcement Actions Taken by DOE in 2023

Bagi tempoh 1 Januari 2023 sehingga 31 Disember 2023, JAS telah menjalankan 159 Ops Gempur di seluruh Negara yang melibatkan pemeriksaan ke atas 3,214 premis yang terdiri dari pelbagai kategori industri. Sebanyak 2,042 tindakan penguatkuasaan di bawah AKAS 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 2023 adalah seperti **Rajah 3.16**.

For the period of 1 January 2023 to 31 December 2023, DOE has conducted 159 Ops Gempur nationwide involving inspections of 3,214 premises from various categories of industries. A total of 2,042 enforcement actions under the EQA 1974 were taken against premises that failed to comply with the legislation. A summary of enforcement actions taken during 2023 is as shown in **Figure 3.16**.

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.

All parties that are subjected to the 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.

"Alam Sekitar Tanggungjawab Bersama". Setiap tindakan dan keputusan yang diambil hendaklah sentiasa mengambil kira elemen kelestarian alam sekitar bagi memastikan kepesatan aktiviti pembangunan dan perindustrian tidak menjejaskan kualiti alam sekitar.

"Environment, Our Shared Responsibility". The element of environmental sustainability should be considered in every action and decision taken to ensure that the quality of the environment will not be affected despite the rapid industrial and development activities.

PEMERIKSAAN PELEPASAN DARIPADA KENDERAAN BERMOTOR

ENFORCEMENT ON MOTOR VEHICLES EMISSION

Sepanjang tahun 2023, sebanyak 1,533,332 buah kenderaan baharu telah didaftarkan di Malaysia. Pecahan keseluruhan kenderaan bermotor yang berdaftar mengikut jenis kenderaan adalah seperti yang tertera pada **Rajah 3.17**. Secara kumulatif sehingga tahun 2023, sebanyak 36,626,135 buah kenderaan bermotor telah didaftarkan di Malaysia.

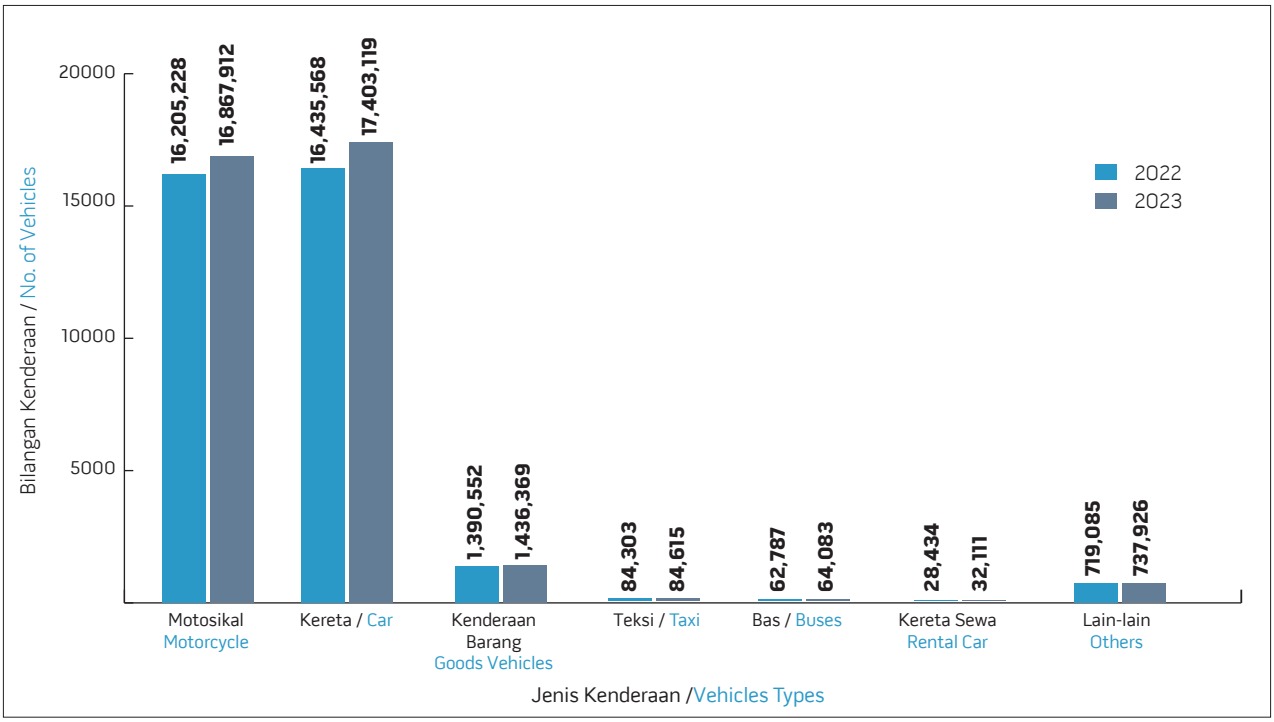
Throughout the year of 2023, 1,533,332 new vehicles were registered in Malaysia. The breakdown of the total registered vehicles according to vehicle type is shown in **Figure 3.17**. Cumulatively, as of 2023, 36,626,135 motor vehicles were registered in Malaysia.

Daripada 1,533,332 buah kenderaan baharu yang didaftarkan dalam tahun 2023, kategori kereta merupakan yang tertinggi iaitu 821,634 unit (53.58%) diikuti motosikal sebanyak 642,329 unit (41.89%), dan sebanyak 69,369 unit (4.52%) adalah dari lain-lain jenis kenderaan termasuk lori, bas, van dan sebagainya.

Out of 1,533,332 new vehicles registered in 2023, cars made up the highest number with 821,634 units (53.58%), followed by motorcycles with 642,329 units (41.89 %), while 69,369 units (4.52%) were other vehicle types which include lorries, buses, vans, and others.

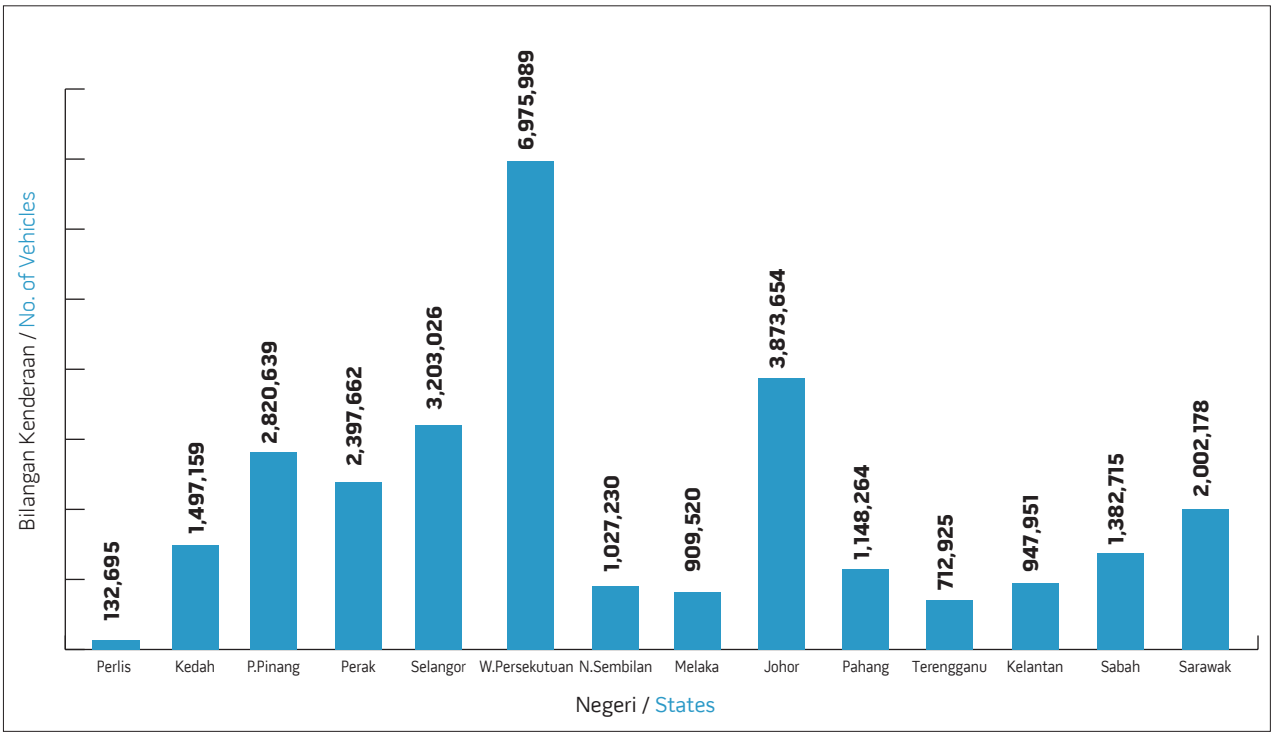
Taburan bilangan kenderaan bermotor di Malaysia mengikut negeri adalah seperti di **Rajah 3.18**. Wilayah Persekutuan (termasuk Kuala Lumpur, Putrajaya dan Labuan) mendahului negeri-negeri lain dengan mempunyai bilangan kenderaan yang tertinggi iaitu sebanyak 6,975,989 unit (19.04%) daripada keseluruhan bilangan kenderaan yang berdaftar di negara ini, diikuti oleh Johor, Selangor, Pulau Pinang dan Perak.

The distribution of registered vehicles in Malaysia according to states is given in **Figure 3.18**. The Federal Territories (including Kuala Lumpur, Putrajaya, and Labuan) recorded the highest number of registered vehicles with 6,975,989 units (19.04%) followed by Johor, Selangor, Penang, and Perak.



Rajah 3.17: Pecahan Keseluruhan Kenderaan Bermotor yang Berdaftar mengikut Jenis Kenderaan (Sumber: Jabatan Pengangkutan Jalan, 2023)

Figure 3.17: Total Registered Vehicles according to Vehicle Type (Source: Road Transport Department, 2023)



Rajah 3.18: Taburan Bilangan Kenderaan Bermotor di Malaysia mengikut Negeri, 2023

Figure 3.18: The Distribution of Registered Vehicles According to States, 2023

Kawalan Pelepasan Asap dan Gas daripada Kenderaan Bermotor

Pelepasan asap serta gas-gas pencemar seperti karbon monoksida (CO), hidrokarbon (HC), oksida-oksida nitrogen (NOx) 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.

Control of Smoke and Gaseous Emissions from Motor Vehicles

Carbon Monoxide (CO), Hydrocarbons (HC), Nitrogen Oxides (NOx) as well Particulate Matter (PM) emitted from motor vehicle exhausts, are regulated under the Environmental Quality (Control of Emissions from Diesel Engines) Regulations 1996 and Environmental Quality (Emission Control of Emission from Petrol Engines) Regulations 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.

Control of Black Smoke Emission from Diesel Vehicles

The control of black smoke emission from diesel vehicle exhausts is monitored through curbside operation with other enforcement agencies (RTD & Royal Malaysia Police Traffic) and camera video surveillance.

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

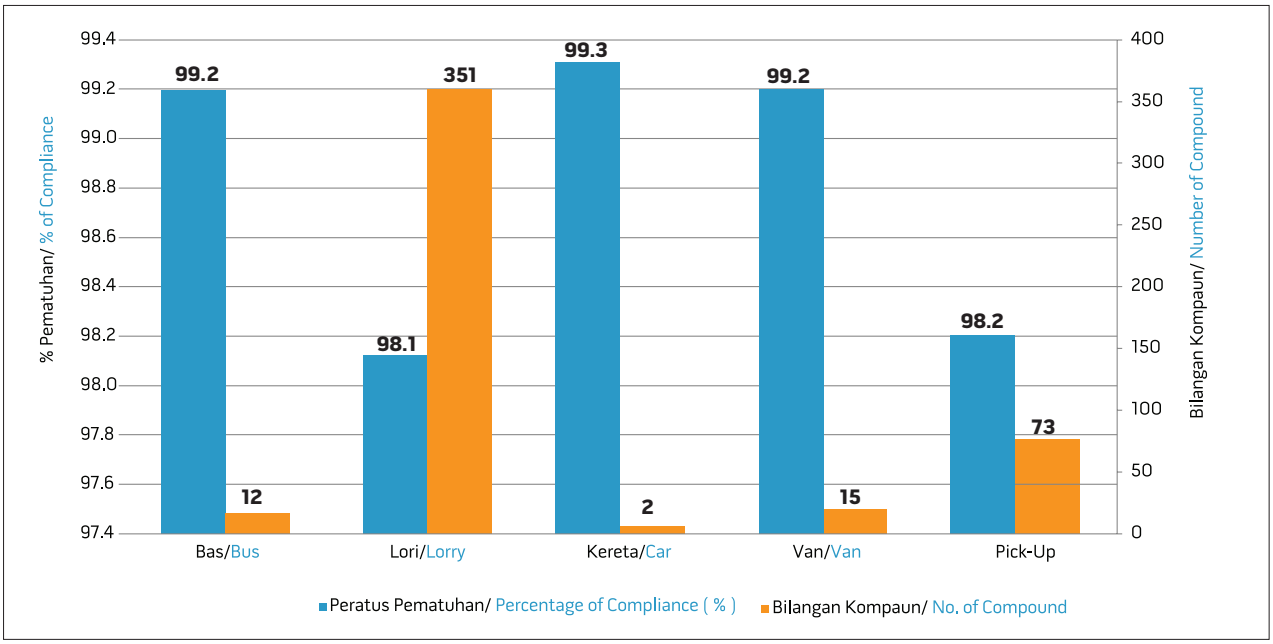
Compounds were issued to drivers and vehicle owners who failed to comply with the stipulated smoke limit of 50% opacity. Compounds and prohibition orders (prohibiting vehicle use) would be issued if smoke emitted by the vehicles exceeded 70% opacity.

Pada tahun 2023, sebanyak 5,842 pemeriksaan penguatkuasaan telah dilaksanakan di seluruh negara. Sejumlah 391,731 buah kenderaan diesel telah diperiksa dan sebanyak 453 buah kenderaan telah dikompaun kerana gagal mematuhi had pelepasan asap hitam sebanyak 50% kelegapan. Manakala 66 kenderaan telah dikenakan perintah larangan beroperasi sehingga lulus ujian asap semula oleh JAS. Pada keseluruhannya, peratus pematuhan oleh kenderaan diesel adalah 98.27%. Ini mencatatkan sedikit peningkatan 0.06% berbanding dengan tahun 2022.

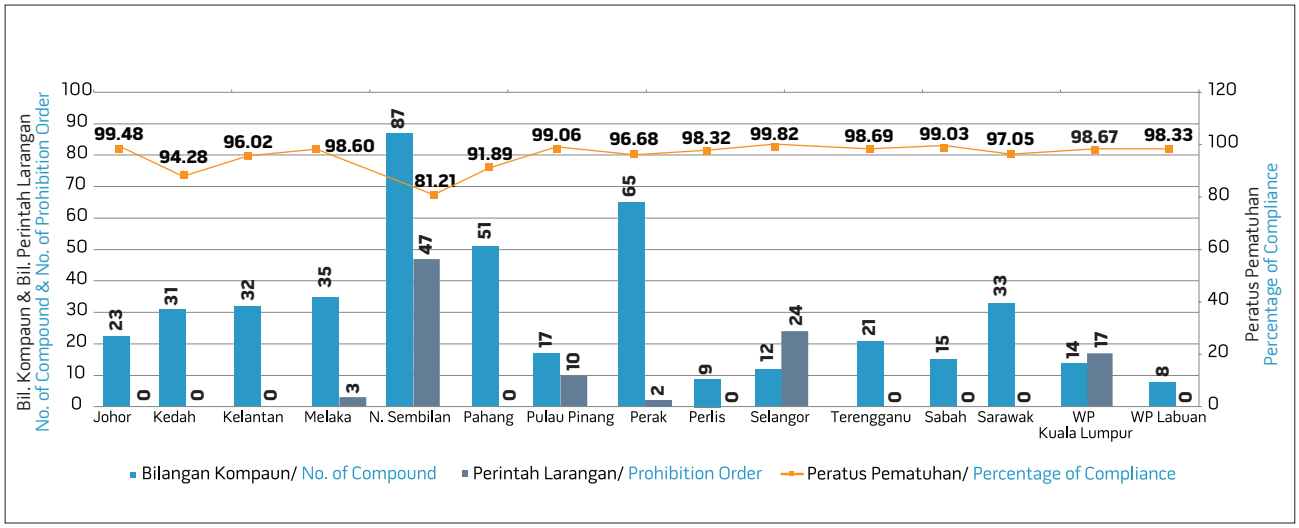
In 2023, 5,842 enforcement inspections were conducted throughout the country. A total of 391,731 diesel vehicles were visually inspected. Out of these, 453 were compounded for failing to comply with the 50% opacity smoke limit, while 66 vehicles were issued with prohibition order. These vehicles will need to be sent for service and smoke retest by DOE. The percentage of compliance of diesel vehicles to the standard stipulated in the regulations was 98.27%. This is an increase of 0.06% compared to 2022.

Bilangan kenderaan diesel yang dikompaun dan peratus pematuhan mengikut jenis kenderaan adalah seperti di **Rajah 3.19**. **Rajah 3.20** pula menunjukkan bilangan kenderaan dikompaun, pengeluaran perintah larangan serta peratus pematuhan mengikut negeri. Tindakan mahkamah juga telah diambil ke atas tujuh (7) pemandu serta pemilik kenderaan kerana gagal menjelaskan kompaun yang telah dikenakan. Sejumlah 1,533 kenderaan diesel juga telah diarahkan untuk menjalankan ujian semula di PUSPAKOM.

The number of compounds issued to diesel vehicles and their percentage of compliance according to vehicle type are shown in **Figure 3.19**. **Figure 3.20** shows the number of vehicles compounded, number of prohibition orders issued, and the percentage of compliance according to states. Court actions were also taken against seven (7) drivers and vehicle owners for failing to pay the compound issued. A total of 1,533 diesel vehicles were also instructed to undergo smoke retest at PUSPAKOM.



Rajah 3.19: Bilangan Kenderaan Diesel yang Dikompaun dan Peratus Pematuhan mengikut Jenis Kenderaan, 2023
Figure 3.19: The Number of Compounds Issued to Diesel Vehicles and Percentage of Compliance According to Vehicle Type, 2023



Rajah 3.20: Bilangan Kenderaan Diesel Dikompaun, Perintah Larangan yang Dikeluarkan & Peratus Pematuhan mengikut Negeri, 2023
Figure 3.20: Number of Diesel Vehicles Compounded, Number of Prohibition Orders Issued & Percentage of Compliance by States, 2023

Kawalan Pelepasan Gas CO dan HC daripada Kenderaan Petrol

Sepanjang tahun 2023, sejumlah 751 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 42 buah kenderaan telah dikompaun kerana gagal mematuhi had pelepasan yang ditetapkan. Peratus pematuhan keseluruhannya adalah 94.41% iaitu penurunan sebanyak 3.02% berbanding dengan tahun 2022. 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.

Control of CO and HC Gas Emissions from Petrol Vehicles

Throughout the year of 2023, a total of 751 petrol engine vehicles were inspected at the roadside for CO and HC emissions using the CO-HC Analyzer gas meter idling test method. 42 vehicles were compounded for failing to comply with the CO and HC standards stipulated under the regulations. The overall percentage of compliance was 94.41%, which is a decrease of 3.02% as compared to 2022. Warning letters were issued to drivers instructing them to send their vehicles for immediate servicing so that the vehicles will not continue to emit gaseous above the standards stipulated by the law.

Ujian Kelulusan Jenis (Kenderaan Petrol)

Malaysia telah memperkenalkan standard pelepasan pencemar untuk model baharu kenderaan yang menggunakan petrol dengan tujuan untuk meningkatkan kualiti udara dengan menggunakan rekabentuk enjin baharu dan teknologi kawalan pelepasan.

Mana-mana model baharu kenderaan bermotor pada atau selepas 1 Julai 2020 adalah dikehendaki mematuhi standard pelepasan pencemar Euro IV berdasarkan Arahan Majlis 70/220/EEC UN R83-05 atau Arahan Majlis 70/220/EEC seperti mana pindaan oleh 98/69/EC dan 2003/76/EC.

Pada tahun 2023, JAS telah mengeluarkan 52 Sijil Ujian Kelulusan Jenis bagi model baharu kenderaan petrol yang akan dipasarkan di Malaysia.

Type Approval Test (Petrol Vehicle)

Malaysia had established exhaust emission standards for new models of petrol-powered vehicles to improve exhaust emission by using new engine designs and emission control technologies.

Any new model of motor vehicles that are commissioned on or after 1 July 2020 is required to comply with pollutant emission standards Euro IV based on Council Directive 70/220/EEC UN R83-05 or Council Directive 70/220/EEC as amended by 98/69/EC and 2003/76/EC.

In 2023, Department of Environment has issued 52 Type Approval Test Certificates for new petrol vehicles to be marketed in Malaysia.

Ujian Kelulusan Jenis (Kenderaan Diesel)

Bagi mengawal pelepasan dari kenderaan berenjin diesel di Malaysia, setiap model baharu kenderaan bermotor pada atau selepas 1 Oktober 2022 adalah dikehendaki mematuhi standard pelepasan pencemar Euro IV berdasarkan Peraturan No. 49.05 ECE dan Arahan Majlis 93/59/EEC UNR83-05 atau Arahan Majlis 70/220/EEC seperti mana pindaan oleh 98/69/EC dan 2003/76/EC atau berdasarkan UNR49-05 atau Arahan 1999/96/EC atau Arahan 2005/55/5C atau Arahan 2005/78/EC atau Arahan 2006/51/EC.

Pada tahun 2023, JAS telah mengeluarkan 55 Sijil Ujian Kelulusan Jenis bagi model baharu kenderaan diesel yang akan dipasarkan di Malaysia.

Type Approval Test (Diesel Vehicle)

To control emissions from diesel engine vehicles in Malaysia, each new model of motor that are commissioned vehicles on or after 1 October 2022 must comply with the emission standards Euro IV based on Regulation No. 49.05 ECE and Council Directive 93/59/EEC UNR83-05 or Council Directive or Council Directive 70/220/EEC as amended by 98/69/EC and 2003/76/EC or based on UNR49-05 or Directive 1999/96/EC or Directive 2005/55/5C or Directive 2005/78/EC or Directive 2006/51/EC.

In 2023, DOE has issued 55 Type Approval Test Certificates for new diesel vehicles to be marketed in Malaysia.

KEMUDAHAN YANG DILULUSKAN (KYDL)

JAS telah memberi pengiktirafan kepada bengkel-bengkel kenderaan yang memenuhi kriteria-kriteria yang telah ditetapkan bagi memudahkan orang awam menghantar kenderaan mereka untuk menjalani ujian pelepasan asap dan gas. Kemudahan ini boleh bertindak sebagai pengujian segera di mana kenderaan yang tidak patuh diperbaiki di pusat-pusat yang dilesenkan ini supaya dapat memastikan kenderaan sentiasa mematuhi had pelepasan asap.

Sehingga akhir tahun 2023, sejumlah 56 sijil pengiktirafan telah dikeluarkan kepada bengkel serta pusat-pusat pemeriksaan kenderaan di seluruh negara sebagai KYDL oleh JAS.

KAWALAN PELEPASAN GAS PENCEMAR DARIPADA MOTOSIKAL

Mulai 1 Januari 2020 semua model baharu motosikal adalah dikehendaki mematuhi standard Euro IV bagi pelepasan gas pencemar daripada motosikal berdasarkan *Worldwide Harmonized Motorcycle Test Cycle* (WMTC) Commission for Europe (EU) 168/2013/EU 15 January 2012. Pematuhan Standard Euro IV bagi model sedia ada motosikal dimulakan pada 1 Januari 2023.

Pada tahun 2023, sebanyak 163 Sijil Kelulusan Jenis telah dikeluarkan kepada pembuat, pemasang dan pengimport motosikal untuk pasaran tempatan.

BUNYI BISING KENDERAAN BERMOTOR

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

Operasi penguatkuasaan bagi mengawal pelepasan bunyi bising daripada motosikal telah dilaksanakan oleh pejabat-pejabat JAS Negeri dengan kerjasama Trafik Polis, Polis Diraja Malaysia (PDRM). Pada 2023, sejumlah 9,949 buah motosikal telah ditahan bagi menjalani ujian pelepasan bunyi bising. Daripada jumlah ini, 962 penunggang motosikal telah dikompaun kerana melanggar had bunyi bising yang dibenarkan. Peratus pematuhan secara keseluruhannya ialah 48.1% **(Rajah 3.21)**. Ini adalah peningkatan sebanyak 2.1% berbanding dengan 2022.

APPROVED TESTING FACILITIES (KYDL)

DOE has given accreditation to workshops which fulfilled criteria as "Approved Testing Facilities" to assist public in sending their vehicles for emission testing. These facilities also provide testing and repair services for the non-complying vehicles, to ensure that they are always in compliance with the emission limits stipulated in the regulations.

By the end of 2023, a total of 56 certificates of accreditation were issued to the workshops and vehicle testing centers throughout the country as "Approved Testing Facilities" by DOE.

CONTROL OF GAS EMISSION FROM MOTORCYCLES

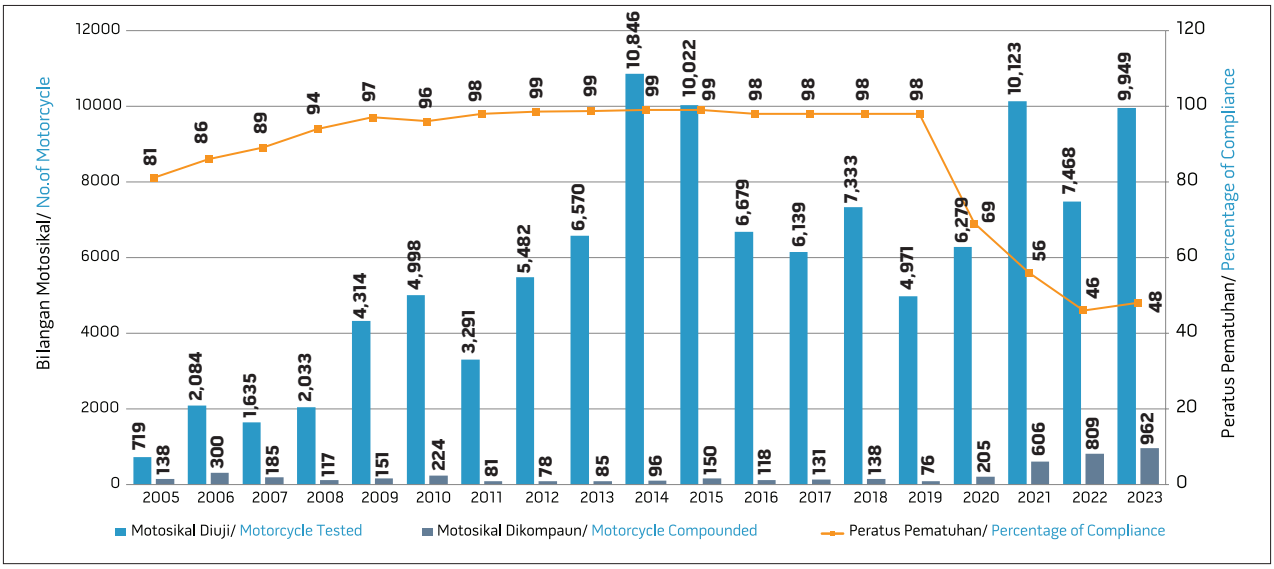
Starting from 1 January 2020, all new motorcycle models are required to comply with Euro IV standards for gas emissions pollutants based on Worldwide Harmonized Motorcycle Test Cycle (WMTC) commission for Europe (EU) 168/2013/EU 15 January 2012. Compliance with Euro IV standards for existing motorcycle models started on 1 January 2023.

In 2023, 163 Type Approval Certificates were issued to manufacturers, motorcycle assemblers, and importers for the local market.

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 noise from motorcycles were conducted by DOE of state with cooperation from Traffic Branch, Royal Malaysia Police (PDRM). In 2023, a total of 9,949 motorcycles were inspected for noise emission level. Out of this, 962 motorcyclists were compounded for emitting noise above the stipulated standards. The overall percentage of compliance is 48.1% **(Figure 3.21)** an increase of 2.1% compared to 2022.



Rajah 3.21: Peratus Pematuhan Bilangan Motosikal Diuji Tahap Bunyi Bising dan Bilangan Kompaun bagi Tempoh 2005 sehingga 2023
Figure 3.21: Percentage of Compliance of Motorcycles Tested for Noise Emission and Compounds Issued from Year 2005 to 2023

PELAKSANAAN OPERASI GERAK (OPS GERAK)

Pada tahun 2023, Jabatan telah melaksanakan Ops Gerak di seluruh negara bagi meningkatkan lagi pemeriksaan ke atas pelepasan daripada kenderaan bermotor. Sebanyak 443 operasi telah dilakukan ke atas 23,604 kenderaan. Susulan penguatkuasaan Ops Gerak tersebut, 1,347 tindakan tawaran kompaun dan 66 tindakan perintah larangan telah dikeluarkan.

ENFORCEMENT THROUGH '*OPERASI GERAK*' (*OPS GERAK*)

In the year 2023, DOE has carried out *Ops Gerak* to enhance its enforcement strategies and actions against incompliant emissions from motor vehicles. A total of 443 operations were conducted involving 23,604 motor vehicles. Following the enforcement of Ops Gerak, 1,347 compounds and 66 prohibition orders were issued.



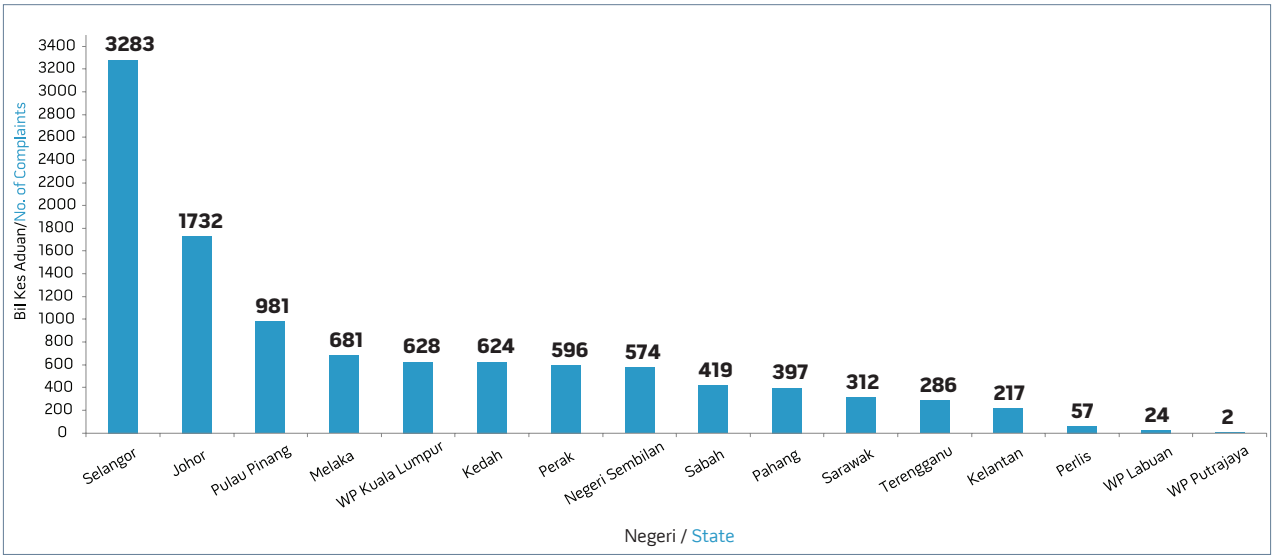
▲ Operasi Kenderaan Bermotor yang telah Dijalankan di Seluruh Negara pada Tahun 2023
'Motor Vehicle Operations' Conducted Throughout the Nation in 2023

MAKLUM BALAS TERHADAP PENGADUAN AWAM

Pada tahun 2023, sejumlah 10,813 aduan pencemaran alam sekitar telah diterima oleh Jabatan Alam Sekitar. 7,966 kes aduan telah diambil tindakan di bawah peruntukan Akta Kualiti Alam Sekeliling (AKAS) 1974 dan peraturan-peraturan di bawahnya oleh pejabat JAS Negeri, manakala 2,847 kes aduan adalah di luar bidangkuasa JAS dan telah dirujuk kepada agensi lain yang berkaitan untuk diambil tindakan (**Rajah 3.22**).

RESPONSE TO PUBLIC COMPLAINTS

The Department of Environment received 10,813 environmental pollution complaints in the year of 2023. Out of these, 7,966 were under the Environmental Quality Act, 1974 and investigated by the State DOE Offices, while the remaining 2,847 cases were outside the jurisdiction of DOE and were referred to other relevant agencies (**Figure 3.22**).



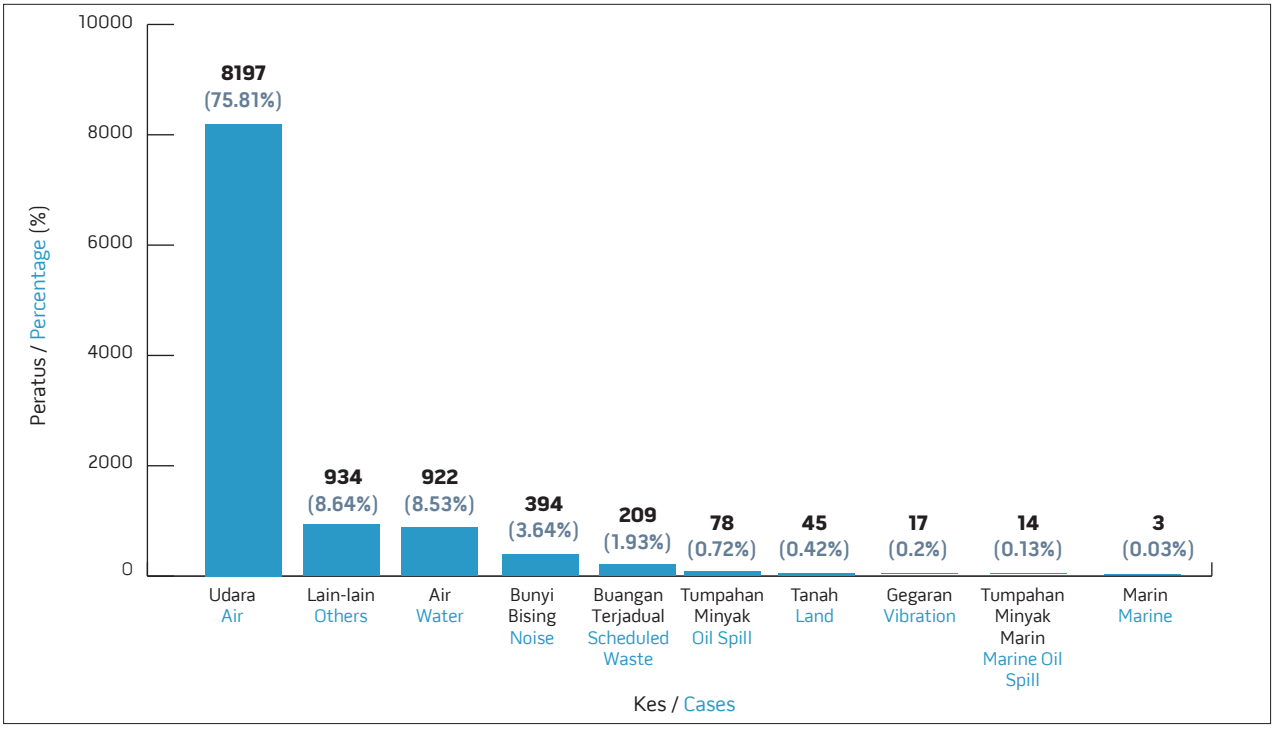
Rajah 3.22: Bilangan Aduan mengikut Negeri, 2023
Figure 3.22: Number of Complaints by State, 2023

Pada tahun 2023, Selangor menerima aduan yang tertinggi iaitu sebanyak 3,283 kes (30.36%), diikuti oleh Johor sebanyak 1,732 kes (16.02%) dan Pulau Pinang sebanyak 981 kes (9.07%). Wilayah Persekutuan Putrajaya menerima aduan yang paling sedikit iaitu sebanyak 2 kes (0.02%) dan diikuti dengan Wilayah Persekutuan Labuan iaitu sebanyak 24 kes (0.22%).

Seperti tahun-tahun yang sebelumnya, bilangan aduan pencemaran yang tertinggi adalah berkaitan dengan pencemaran udara iaitu 8,197 kes (75.81%), 922 kes (8.53%) berkaitan pencemaran air, 411 kes (3.8%) berkaitan pencemaran bunyi dan gegaran, 209 kes (1.93%) berkaitan buangan terjadual, 92 kes (0.85%) berkaitan tumpahan minyak, 3 kes (0.03%) berkaitan marin, 45 kes (0.42%) berkaitan pencemaran tanah dan 934 kes (8.64%) adalah lain-lain aduan (**Rajah 3.23**).

In the year 2023, Selangor recorded the highest number of complaints received at 3,283 (30.36%) cases, followed by Johor 1,732 (16.02%) and Pulau Pinang 981 (9.07%). Federal Territory of Putrajaya recorded the least number of complaints received with 2 (0.02%) complaints and followed by Federal Territory of Labuan 24 cases (0.22%).

As in the previous years, most of the complaints received were related to air pollution 8,197 (75.81%), followed by 922 (8.53%) water pollution, 411 (3.8%) noise pollution and vibration, 209 (1.93%) on illegal dumping of scheduled or toxic wastes, 92 (0.85%) oil spillage, 3 (0.03%) marine, 45 (0.42%) land pollution and 934 (8.64%) of other complaints **(Figure 3.23)**.



Rajah 3.23: Bilangan Kes Aduan mengikut Jenis, 2023
Figure 3.23: Number of Complaint Cases by Types, 2023



▲ Lawatan Turun Padang YB Menteri Sumber Asli, Alam Sekitar dan Perubahan Iklim (NRECC) bersama YB Timbalan Menteri Kementerian Pembangunan Kerajaan Tempatan (KPKT) ke Tapak Sampah Haram di Twin Palms, Sungai Long dan Black Water Lake, Bandar Mahkota Cheras pada 30 Mei 2023
The Honourable Minister of Natural Resouces, Environment and Climate Change (NRECC) together with the Honourable Deputy Minister of the Ministry of Local Government Development (KPKT)'s Trip to the Illegal Waste Disposal Site at the Twin Palms, Sungai Long, and Black Water Lake, Bandar Mahkota Cheras on 30 May 2023



▲ Lawatan Turun Padang YB Menteri Sumber Asli, Alam Sekitar dan Perubahan Iklim (NRECC) bersama YB Timbalan Menteri Kementerian Pembangunan Kerajaan Tempatan (KPKT) ke Tapak Sampah Haram di Twin Palms, Sungai Long dan Black Water Lake, Bandar Mahkota Cheras pada 30 Mei 2023
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▼ Lawatan Penguatkuasaan ke Kilang Makanan Ikan di Branang, Selangor pada 16 Januari 2023
Enforcement Visit to Fish Food Factory in Branang, Selangor on 16 January 2023





▲ Lawatan Penguatkuasaan ke Kilang Makanan Ikan di Branang, Selangor pada 16 Januari 2023
Enforcement Visit to Fish Food Factory in Branang, Selangor on 16 January 2023



▲ Lawatan Penguatkuasaan ke Kilang Makanan Ikan di Branang, Selangor pada 16 Januari 2023
Enforcement Visit to Fish Food Factory in Branang, Selangor on 16 January 2023



▲ Lawatan Penguatkuasaan ke Kilang Kitar Semula Kertas di Bentong, Pahang pada 13 Februari 2023
Enforcement Visit to Paper Recycling Factory in Bentong, Pahang on 13 February 2023



▲ Aduan Tumpahan Minyak Daratan di Johor pada 26 Mac 2023
Onshore Oil Spill Complaints in Johor on 26 March 2023



▲ Aduan Pelupusan Haram Buangan Terjadual di Johor pada 25 September 2023
Illegal Disposal of Scheduled Waste Complaints in Johor on 25 September 2023



▲ Aduan Pelupusan Haram Buangan Terjadual di Terengganu pada 1 Januari 2023
Illegal Disposal of Scheduled Waste Complaints in Terengganu on 1 January 2023

LEMBAGA RAYUAN KUALITI ALAM SEKELILING BAGI TAHUN 2023

Lembaga Rayuan Kualiti Alam Sekeliling di bawah Seksyen 36, Akta Kualiti Alam Sekeliling (AKAS) 1974 telah ditubuhkan sejak tahun 1974 semasa pembentukan AKAS 1974. Lembaga Rayuan ini ditubuhkan bertujuan untuk mendengar dan membuat keputusan berhubung dengan kes-kes rayuan terhadap keputusan Ketua Pengarah Kualiti Alam Sekeliling sepertimana yang ditetapkan di bawah Seksyen 35, AKAS 1974.

Pelantikan Pengerusi, Timbalan Pengerusi dan Ahli Panel adalah selama tiga (3) tahun bermula pada 28 Oktober 2020 sehingga 28 Oktober 2023. Senarai Pengerusi, Timbalan Pengerusi dan Ahli Panel adalah seperti di **Jadual 3.17.**

Pada tahun 2023, Lembaga Rayuan Kualiti Alam Sekeliling telah bersidang sebanyak sembilan (9) kali bagi mendengar Notis Rayuan berhubung dengan Rayuan Terhadap Keputusan Ketua Pengarah Kualiti Alam Sekeliling Yang Meluluskan Dengan Syarat EIA

ENVIRONMENTAL QUALITY APPEAL BOARD FOR YEAR 2023

The Environmental Quality Appeal Board under Section 36, Environmental Quality Act (EQA) 1974 has been established since 1974 during the formation of the EQA 1974. The Appeal Board was established to hear and decide on appeal cases against decisions of Director General of Environmental Quality as prescribed under Section 35, EQA 1974.

The appointment of the Chairman, Deputy Chairman and Panel Members is for three (3) years starting from 28 October 2020 until 28 October 2023. The list of Chairman, Deputy Chairman and Appeal Board Panel Members is as shown in **Table 3.17.**

In 2023, the Environmental Quality Appeal Board met nine (9) times to hear the Notice of Appeal in relation to the appeal against the decision made by the Director General, Department of Environment Malaysia which approved with conditions the Detailed Environmental

Bagi Projek "*Proposed Development of A Permanent Disposal Facility (Pdf) For Water Leach Purification (WLP) Residue On Lot 31375*, Gebeng Industrial Estate (GIE), Mukim Sungai Karang, Kuantan, Pahang"".

Impact Assessment (EIA) Report for the project "Proposed Development Of A Permanent Disposal Facility (PDF) For Water Leach Purification (WLP) Residue On Lot 31375, Gebeng Industrial Estate (GIE), Mukim Sungai Karang, Kuantan, Pahang".

Pada 27 Oktober 2023, Lembaga Rayuan telah memutuskan untuk menolak rayuan yang difailkan oleh Tetuan Theiva Lingam yang mewakili empat (4) perayu yang membuat rayuan terhadap Keputusan Ketua Pengarah Kualiti Alam Sekeliling Yang Meluluskan Dengan Syarat-Syarat EIA Bagi Projek "*Proposed Development of a Permanent Disposal Facility (PDF) For Water Leach Purification (WLP) Residue On Lot 31375*, Gebeng Industrial Estate (GLE), Mukim Sungai Karang, Kuantan, Pahang. Keempat-empat perayu juga diperintahkan untuk membayar pampasan sebanyak RM28,000.00 kepada Ketua Pengarah Kualiti Alam Sekeliling sebagai Responden Pertama dalam kes ini.

On 27 October 2023, the Appeal Board has decided to dismiss the appeal filed by Mr. Theiva Lingam representing four (4) appellants who appealed against the Decision of the Director General of Environmental Quality Approving the EIA Conditions for the Project "Proposed Development of a Permanent Disposal Facility (PDF) For Water Leach Purification (WLP) Residue on Lot 31375, Gebeng Industrial Estate (GLE), Mukim Sungai Karang, Kuantan, Pahang. The four appellants were also ordered to pay compensation of RM28,000.00 to the Director General of Environmental Quality as the First Respondent in this case.

Jadual 3.17: Senarai Pengerusi, Timbalan Pengerusi dan Ahli Panel Lembaga Rayuan
Table 3.17: List of Chairman, Deputy Chairman and Panel Members of the Appeal Board

BIL. / NO.	JAWATAN / POST	NAMA / NAME
1	Pengerusi / Chairman	Yang Arif Puan Rozina binti Ayob
2	Timbalan Pengerusi / Deputy Chairman	Yang Arif Tuan Zulqarnain bin Hassan
3	Ahli Panel / Panel Member	Prof. Dato' Ir. Dr. Abu Bakar bin Jaafar
4	Ahli Panel / Panel Member	Prof. Dato' ChM. Dr. Mazlin bin Mokhtar
5	Ahli Panel / Panel Member	Prof. Madya Dr. Ramdzani bin Abdullah
6	Ahli Panel / Panel Member	Puan Lakshmi Lavanya Rama Iyer

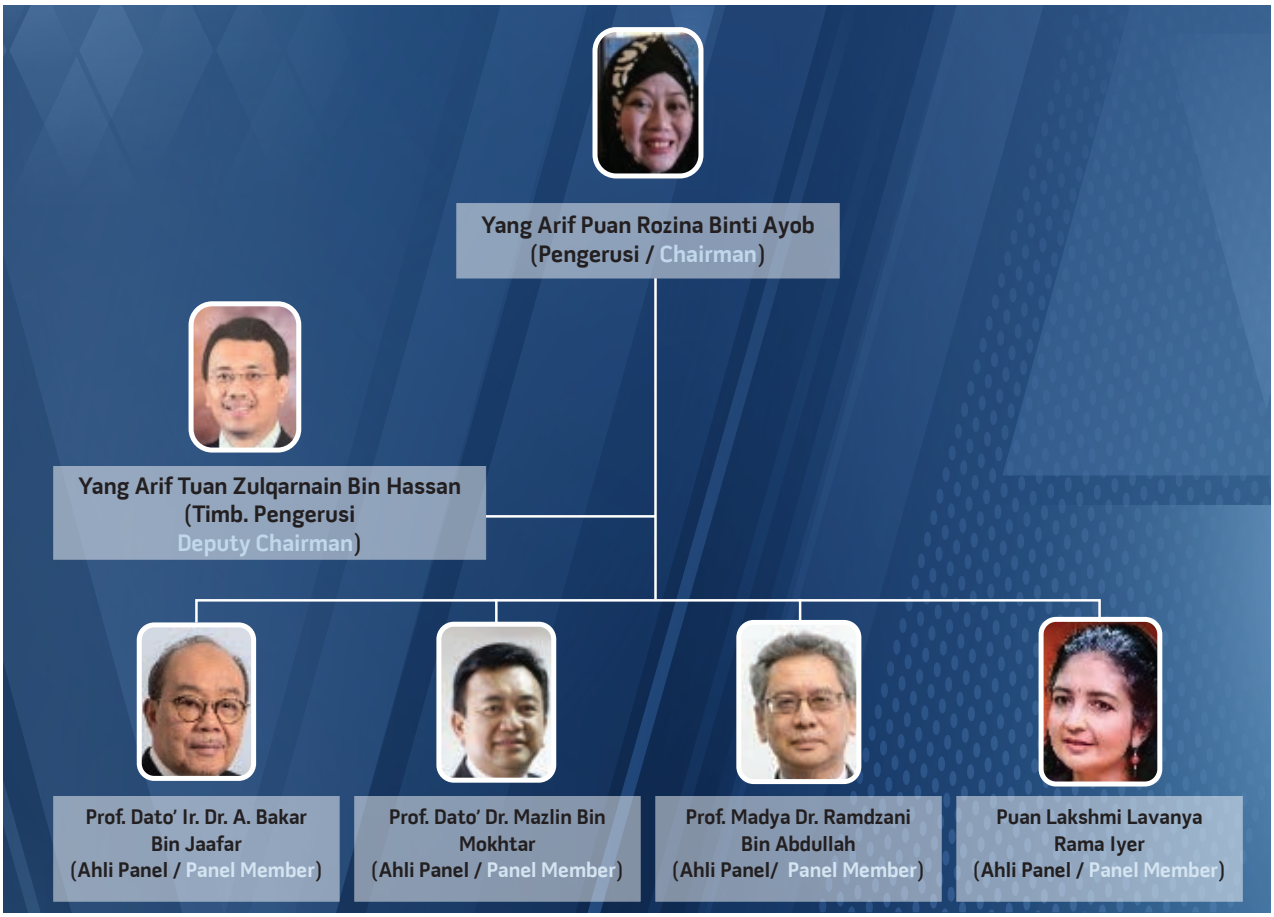


▲ Lembaga Rayuan bersama Sekretariat Lembaga Rayuan
The Appeal Board with the Secretariat of Appeal Board





▲ Sidang Lembaga Rayuan
Appeal Board Session



Rajah 3.24: Carta Organisasi Pengerusi, Timbalan Pengerusi dan Ahli Panel Lembaga Rayuan
Figure 3.24: Organizational Chart of the Chairman, Deputy Chairman and Appeal Board Panel Members

TINDAKAN UNDANG-UNDANG

Pendakwaan

Pada tahun 2023, sejumlah 409 kesalahan di bawah Akta Kualiti Alam Sekeliling 1974 telah didakwa di mahkamah dan telah disabitkan kesalahan dengan denda yang dikenakan berjumlah RM6,371,00.00 (**Rajah 3.25).**

Daripada jumlah keseluruhan kes tersebut, sebanyak 128 (31%) kes mahkamah adalah melibatkan kesalahan di bawah Peraturan-peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009 dengan jumlah denda sebanyak RM3,008,000.00. Sebanyak 49 (12%) kes mahkamah melibatkan kesalahan di bawah Seksyen 34A, Akta Kualiti Alam Sekeliling 1974 dengan jumlah denda sebanyak RM1,099,000.00 sementara 232 (57%) kes yang selebihnya melibatkan kesalahan-kesalahan lain di bawah Akta Kualiti Alam Sekeliling 1974.

Kompaun

Sejumlah 3,395 kompaun telah dikeluarkan sepanjang tahun 2023 kepada premis dan individu untuk pelbagai kesalahan di bawah Akta Kualiti Alam Sekeliling 1974. Pecahan mengikut kesalahan adalah seperti di **Rajah 3.26**.

LEGAL ACTION

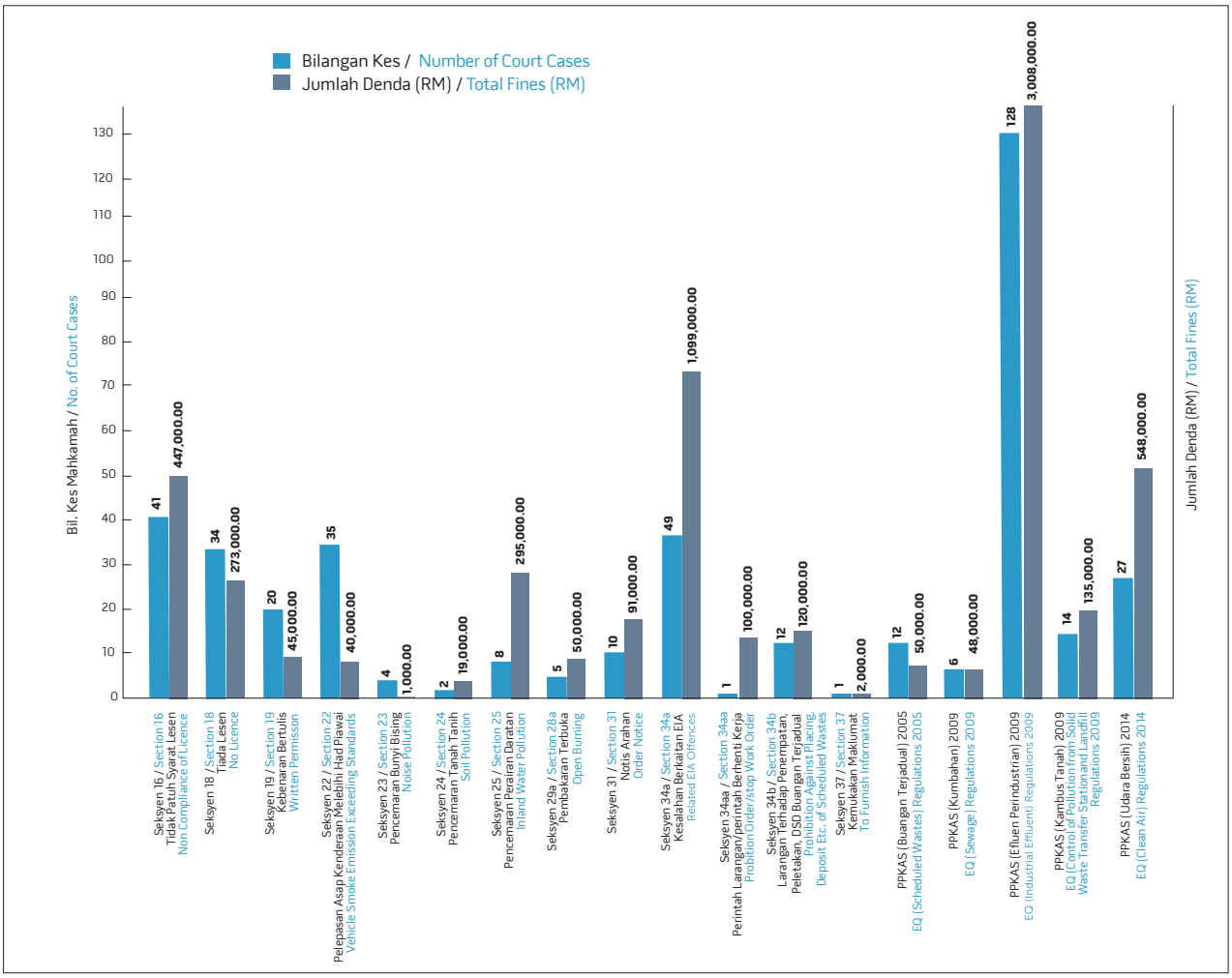
Prosecution

In 2023, a total of 409 offences under the Environmental Quality Act 1974 were prosecuted in court and were convicted with a total fines of RM6,371,00.00 (**Figure 3.25**).

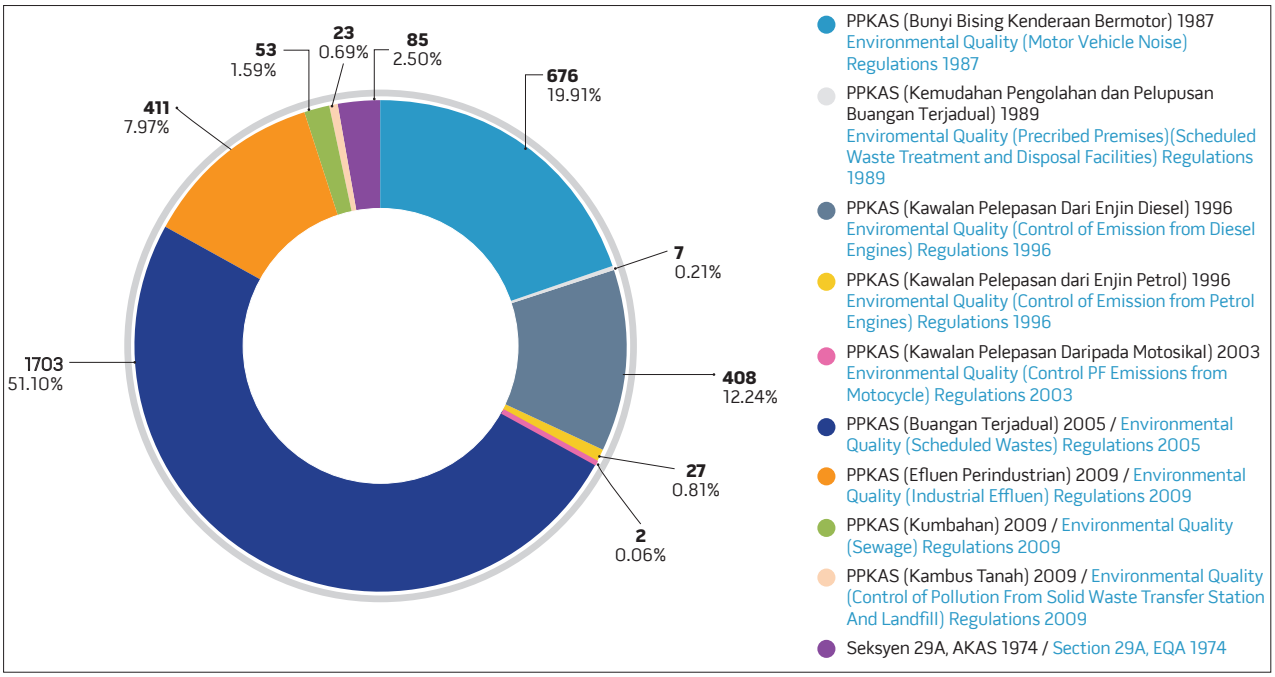
Out of this total, 128 (31%) court cases involved offences under Environmental Quality (Industrial Effluent) Regulations 2009 with a total fine of RM3,008,000.00. There were 49 (12%) court cases involved offences under Section 34A, Environmental Quality Act 1974 with a total fine of RM1,099,000.00 while the remaining 232 (57%) cases were prosecuted for various other offences under the Environmental Quality Act 1974.

Compounds

A total of 3,395 compounds were issued in 2023 against premises and individual for various offences under the Environmental Quality Act 1974. Fraction by offences is shown in **Figure 3.26**.



Rajah 3.25: Bilangan Kes Mahkamah dan Denda, 2023
Figure 3.25: Number of Court Cases and Fines, 2023



Rajah 3.26: Bilangan Kes Kompaun mengikut Kesalahan, 2023
Figure 3.26: Number of Compound Cases according to Offence, 2023

PENGURUSAN LOGISTIK DAN KEUPAYAAN PENGUATKUASAAN

Aktiviti penguatkuasaan adalah tugas atau fungsi utama Jabatan Alam Sekitar (JAS) dalam mentadbir Akta 127. Di bawah Rancangan Malaysia Kedua Belas (RMKe-12), untuk tempoh lima (5) tahun bermula dari tahun 2021 hingga tahun 2025, sebanyak RM10 juta diperuntukkan untuk memperkasa pasukan-pasukan penguatkuasa dengan peralatan-peralatan terkini yang terdapat dipasaran.

Permohonan bajet yang dibuat untuk RMKe-12 adalah berdasarkan kepada pencapaian dan kekangan yang dihadapi pada RMK-11. Bagi memastikan JAS sentiasa dalam keadaan siap siaga untuk menjalankan tugas pada bila-bila masa, maka setiap pegawai penguatkuasa perlu dibekalkan dengan alat pelindung diri yang lengkap dan mencukupi.

Sebanyak RM1,033,500.00 juta peruntukan diluluskan bagi perolehan untuk Tahun 2023 dan peruntukan dipinda berjumlah RM1,933,500.00. Jumlah perbelanjaan adalah sebanyak RM1,930,137.00 (99.83%).

Bagi Peruntukan P10 iaitu Projek Berimpak Tinggi Untuk Kesejahteraan Rakyat, sebanyak RM6,500,000.00 telah diperuntukkan. Jumlah perbelanjaan adalah sebanyak RM6,433,829.81 (99.93%).

Untuk Peruntukan Belanja Mengurus, sebanyak RM500,000.00 telah diperuntukkan dan jumlah perbelanjaan adalah sebanyak RM498,347.00 (99.67%) bagi penyediaan pakaian seragam dan kelengkapan pegawai JAS.

Senarai peralatan yang telah diperolehi adalah seperti di **Jadual 3.18** dan **3.19**.

LOGISTICS MANAGEMENT AND ENFORCEMENT CAPABILITIES

Enforcement activities are the main duties or functions of the Department of Environment (DOE) in implementing the provisions under Act 127. Under the Twelfth Malaysia Plan (12MP), for a period of five (5) years starting from 2021 to 2025, a total of RM10 million has been allocated to empower the enforcement teams with the latest equipment available in the market.

The budget applications made for the 12MP are based on the achievements and constraints faced in the 11MP. To ensure that DOE is always in a state of readiness to carry out duties at any time, each enforcement officer must be provided with complete and adequate personal protective equipment.

An amount of RM1,033,500.00 million was allocated and approved for procurement for the Year 2023 and the amended allocation amounted to RM1,933,500.00. The total expenditure is RM1,930,137.00 (99.83%). The list of equipment that has been procured is shown in the table below.

For the P10 Allocation which is a High Impact Project for the People's Well-being, the amount of RM6,500,000.00 has been allocated. The total expenditure is RM6,433,829.81 (99.93%).

For the Managing Expenses Allocation, RM500,000.00 has been allocated and the total expenditure is RM498,347.00 (99.67%) for the provision of uniforms and equipment for DOE officers.

The list of equipment that has been procured is shown in **Table 3.18** and **3.19**.

Jadual 3.18: Senarai Peralatan yang telah Diperolehi di bawah Peruntukan RMKe-12
Table 3.18: List of Equipment that has been Procured under the 12MP Budget

BIL. NO.	PEROLEHAN / PROCUREMENT	
1.	Multi Probe Pro DSS - 17 unit Multi Probe Pro DSS - 17 unit	
2.	Sound Level Meter – 14 unit Sound Level Meter – 14 units	
3.	Membekal Kelengkapan Persampelan – 11 item Supplying Sampling Equipment – 11 items	
4.	Kelengkapan Persampelan Buangan Terjadual – 5 item Supply Scheduled Waste Equipment – 5 items	
5.	PPE dan Stok Teknikal – 6 item PPE and Technical Stock – 6 items	
6.	Buffer Solution untuk YSI Pro DSS – 30 Set Buffer Solution for YSI Pro DSS – 30 sets	
7.	Trolley Pilot Case & Bag Kerja Pegawai – 32 unit & 1,046 unit Trolley Pilot Case & Officer Work Bag – 32 units & 1,046 units	
8.	Trolley LP Smoke Meter – 12 unit Trolley LPA Smoke Meter – 12 units	
9.	Tactical Flashlight – 60 unit Tactical Flashlight – 60 units	
10.	Subwaran ke JAS Melaka Subwarran to DOE Melaka	
11.	Subwaran ke JAS Sabah Subwarran to DOE Sabah	

Jadual 3.19 Senarai Peralatan yang telah Diperolehi di bawah Peruntukan P10
Table 3.19 List of Equipment that has been Procured under the P10 Budget

BIL. NO.	PEROLEHAN / PROCUREMENT	
1.	Toyota Hilux – 18 unit Toyota Hilux – 18 unit	
2.	Proton X70 – 17 unit Proton X70 – 17 units	
3.	Nissan Serena – 3 unit Nissan Serena – 3 units	
4.	Kamera Kompak Digital – 37 unit Compact Digital Camera– 37 units	
5.	Kamera Video – 18 unit Handycam – 18 units	
6.	Perakam Suara – 30 unit Voice Recorder – 30 units	
7.	Vest Keselamatan – 1,300 unit High Visibility Vest – 1,300 units	
8.	Kelengkapan Pasukan Kenderaan Motor – 11 item Motor Vehicle Team Equipment – 11 items	
9.	Respirator & Cartridge – 425 set Respirator & Cartridge – 425 sets	

Pengurusan Buangan Terjadual

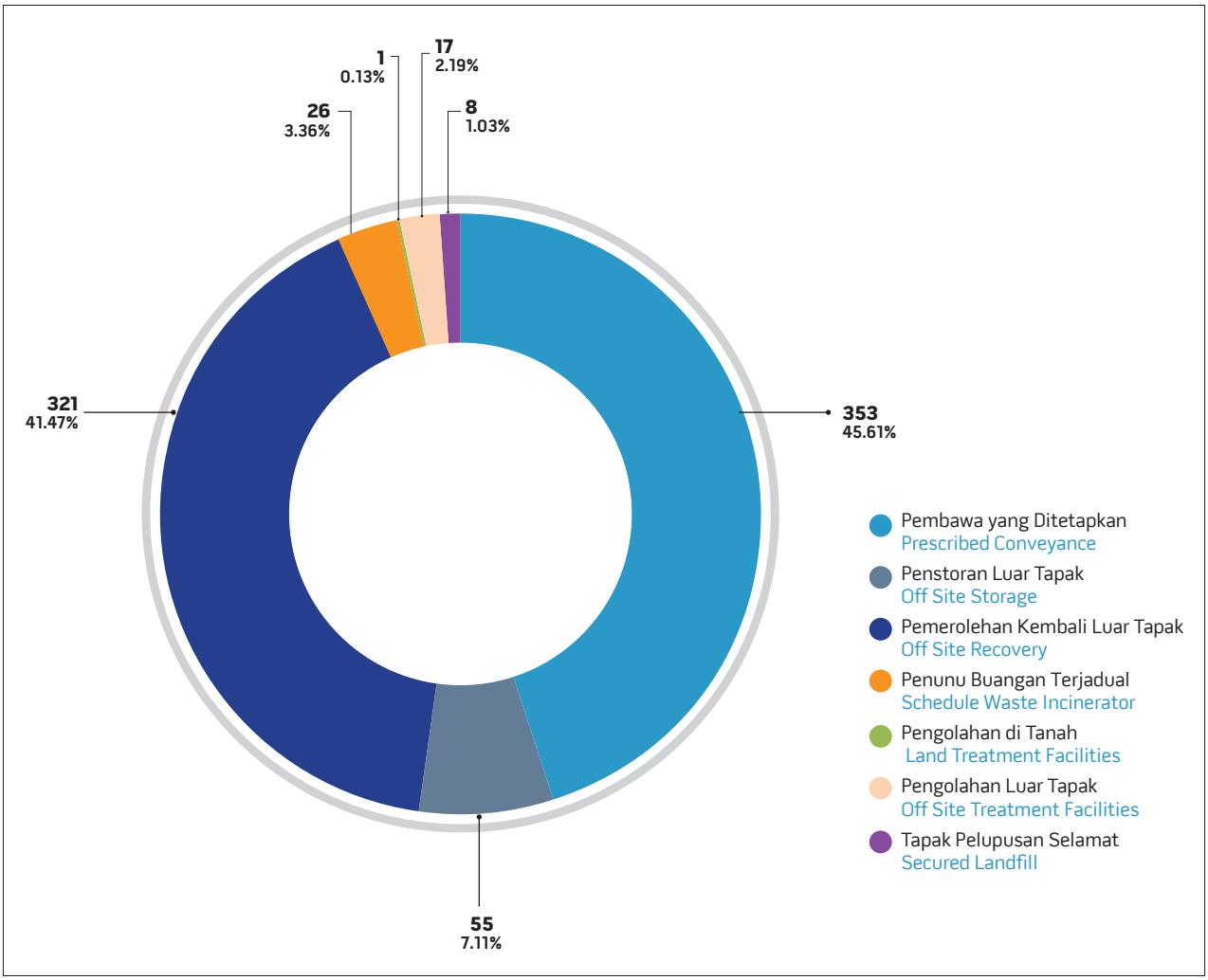
Lesen Premis yang Ditetapkan

Sejumlah 774 lesen telah dikeluarkan kepada kemudahan baru dan sedia ada pada tahun 2023 yang terdiri daripada 201 kemudahan pemerolehan kembali luar tapak bukan e-waste, 17 kemudahan pemerolehan kembali penuh luar tapak bagi e-waste, 103 kemudahan pemerolehan kembali separa luar tapak bagi e-waste, 26 kemudahan penunu buangan terjadual, 17 kemudahan pengolahan luar tapak, 8 kemudahan tapak pelupusan selamat, 55 kemudahan penstoran luar tapak dan sejumlah 353 lesen telah dikeluarkan kepada pembawa yang ditetapkan **(Rajah 3.27** dan **Jadual 3.20).**

Scheduled Waste Management

Licences for Prescribed Premises

A total number of 774 licences were issued for both existing and new facilities in the year 2022 which consists of 201 licences for off-site recovery (non e-waste), 17 licences for off-site full recovery plants (e-waste), 103 licences for off-site partial recovery plants (e-waste), 26 licences for scheduled wastes incinerators, 17 licences for off-site treatment facility, 8 licences for secured landfills, 55 licences for off-site storage facilities, and a total of 353 licences were issued for prescribed conveyance **(Figure 3.27** and **Table 3.20).**



Rajah 3.27: Jumlah Lesen Dikeluarkan, 2023
Figure 3.27: Number of Licences Issued , 2023

Jadual 3.20: Lesen-Lesen yang Dikeluarkan bagi Kemudahan Pemerolehan Kembali, Pengolahan & Pelupusan Buangan Terjadual yang Diluluskan oleh Jabatan Alam Sekitar, 2023

Table 3.20: Licences Issued for Recovery Facilities Processing Hazardous Waste Disposal Approved by the Department of Environment, 2023

BIL. NO.	KEMUDAHAN FACILITIES	JUMLAH LESEN DIKELUARKAN MENGIKUT NEGERI / NUMBER OF LICENCES ISSUED BY STATE															
		JOHOR	KEDAH	KELANTAN	MELAKA	NEGERI SEMBILAN	PAHANG	PERAK	PERLIS	PULAU PINANG	SABAH	SARAWAK	SELANGOR	TERENGGANU	WILAYAH PERSEKUTUAN (K. LUMPUR)	WILAYAH PERSEKUTUAN (LABUAN)	JUMLAH TOTAL
1.	Pembawa yang Ditetapkan Prescribed Conveyance	66	23	4	23	22	6	32	3	51	9	30	68	7	5	4	**353**
	Penstoran Luar Tapak Off Site Storage	2	0	1	3	1	1	2	0	1	6	24	1	0	0	13	**55**
2	Pemerolehan Kembali Luar Tapak Off Site Recovery																
	a. Pemerolehan Kembali Luar Tapak (bukan e-waste) Off Site Recovery (non e-waste)	35	12	1	14	17	8	25	1	25	3	6	47	5	0	2	**201**
	b. Pemerolehan Kembali Luar Tapak (penuh e-waste) Off Site Recovery (full e-waste)	2	0	0	0	1	0	1	0	7	0	0	6	0	0	0	**17**
	c. Pemerolehan Kembali Luar Tapak (separa e-waste) Off Site Recovery (partial e-waste)	26	9	3	7	7	0	3	2	18	1	5	15	2	5	0	**103**
3.	Penunu Buangan Terjadual Schedule Waste Incinerator	7	0	0	0	2	2	2	0	1	0	7	2	2	0	1	**26**
4.	Pengolahan di Tanah Land Treatment Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**1**
5.	Pengolahan Luar Tapak Off Site Treatment Facilities	1	1	0	1	5	0	3	0	0	1	2	2	0	0	1	**17**
6.	Tapak Pelupusan Selamat Secured Landfill	1	1	0	0	1	1	0	0	0	0	2	1	1	0	0	**8**
7.	Bil. Lesen / No. of Licence	140	47	9	48	56	18	68	6	104	20	77	142	17	10	12	**774**
8.	Bil. Premis / No. of Premise	63	24	4	23	26	13	35	3	52	8	37	71	10	5	6	**380**

BAB/
CHAPTER

04

MENGARUSPERDANA AMALAN INDUSTRI HIJAU

MAINSTREAMING GREEN INDUSTRY PRACTICES



MENGARUSPERDANA AMALAN INDUSTRI HIJAU MAINSTREAMING GREEN INDUSTRY PRACTICES

PEMANTAPAN AMALAN INDUSTRI HIJAU DALAM KALANGAN INDUSTRI MELALUI KONSEP PENCEGAHAN PENCEMARAN

Jabatan Alam Sekitar (JAS) meneruskan komitmen bagi memastikan Amalan Hijau serta merealisasikan tekad kerajaan untuk mempertahankan khazanah semula jadi negara, ke arah memastikan masa depan yang lebih bermakna untuk semua. Justeru JAS, melalui Seksyen Industri Hijau (SIH), telah merancang pelbagai program dan projek untuk menyokong hasrat Kerajaan mencapai kelestarian dan kestabilan alam sekitar.

Pada tahun 2023, JAS terus menyokong usaha negara mencapai Matlamat Pembangunan Lestari (SDG) dan juga usaha penyepaduan Alam Sekitar, Sosial dan Tadbir Urus (ESG). Bagi menyokong hasrat tersebut, SIH telah merangka beberapa program yang relevan dengan hasrat kerajaan. Masih mengekalkan tema Pemantapan Amalan Industri Hijau Dalam Kalangan Industri Melalui Konsep Pencegahan Pencemaran, SIH telah menetapkan matlamat Rancangan Malaysia Kedua Belas (RMKe-12) iaitu untuk memperkukuhkan amalan Industri Hijau dalam kalangan Perusahaan Kecil dan Sederhana (PKS) ke arah Pengeluaran Lestari dan untuk mengurangkan pelepasan gas rumah hijau (GHG).

Di antara objektif program yang telah mendapat mandat dan kelulusan Unit Perancang Ekonomi (EPU) untuk dilaksanakan pada tahun 2023 adalah:

STRENGTHENING GREEN INDUSTRY PRACTICES THROUGH POLLUTION PREVENTION CONCEPT

Department of Environment (DOE) is committed to ensure Green Practices and realize the government determination to sustain our precious environment. Therefore, the Department through Green Industries Section (SIH), continuously organise various programmes and projects to support the government's aspiration to achieve environmental sustainability and stability.

In the year 2023, DOE continues to support the country's efforts to achieve the Sustainable Development Goals (SDGs) as well as efforts to integrate Environmental, Social and Governance (ESG).To support these aspiration, SIH has planned several programmes that are relevant to the government's aspiration.. With the theme of Mainstreaming Green Industry Practices Among Small and Medium Enterprises (SME) Towards Green Growth, SIH is committed to deliver its Twelfth Malaysia Plan (12MP) programme objective to strengthen Green Industry practices among Small and Medium Enterprises (SME) towards sustainable production and to reduce Greenhouse Gases (GHG) emission.

The objectives of the programme that had been mandated and approved by Economic Planning Unit (EPU) to be implemented in the year 2023:



Memperkukuhkan Institusi Industri Hijau dalam JAS
Strengthen the Green Industry Institution within the department



Meningkatkan Pematuhan Industri Terhadap Perundangan Alam Sekitar
Increase the Compliance of Environment Regulations



Menyokong Komitmen Kerajaan Terhadap ESG
Support Government's Commitment Towards ESG

Berikut adalah program dan aktiviti yang telah dilaksanakan pada tahun 2023:

PROGRAM BANTUAN KHIDMAT NASIHAT PENGELUARAN BERSIH (CP) KEPADA PERUSAHAAN KECIL & SEDERHANA (PKS)

Program Khidmat Nasihat Industri Hijau kepada Perusahaan Kecil dan Sederhana (PKS) dan Industri lain di Malaysia bagi Sektor Penyudahan Logam dan Sadur Elektrik

Program Khidmat Nasihat ini adalah satu program yang dirancang bagi membimbing pihak industri dan memberikan latihan serta pendedahan kepada pihak industri untuk mencapai Amalan Hijau melalui konsep Pengeluaran Bersih (CP). Program ini juga dilaksanakan mengikut sektor industri yang spesifik.

Pada tahun 2023, program ini memfokuskan kepada sektor industri Penyudahan Logam dan Sadur Elektrik. Program ini melibatkan premis industri yang telah dikenal pasti di Negeri Selangor dan juga Pulau Pinang.

Program ini telah dilaksanakan bersama-sama pihak perunding yang telah dipilih. Lima (5) premis (**Jadual 4.1**) bagi sektor tersebut yang telah diberi khidmat nasihat serta bimbingan adalah Shui Woo Electroplating Ind. Sdn. Bhd., Guang Heng Electroplating (M) Sdn. Bhd., FP Ree Electroplating, Ulision Electroplating Sdn. Bhd. dan Han Te Industries (M) Sdn. Bhd.

Bantuan khidmat nasihat ini merangkumi sesi latihan berkaitan konsep CP dan penggunaan Sistem Pengurusan dan Pemantauan Industri Hijau (SPPIH). Premis yang terpilih dalam program ini perlu melengkapkan SPPIH dengan aktiviti CP yang dilaksanakan di premis masing-masing.

Hasil daripada program ini, satu draf garis panduan yang dikenali sebagai Garis Panduan Pelaksanaan Amalan Industri Hijau Sektor Penyudahan Logam dan Sadur Elektrik telah dibangunkan. Garis panduan ini akan menjadi rujukan dalam mengaplikasikan amalan CP secara berterusan ke arah mencapai Industri Hijau.

These are the projects and activities that had been executed in 2023:

CLEANER PRODUCTION (CP) CONSULTATION SERVICES PROGRAM FOR SMALL AND MEDIUM INDUSTRY (SME)

Green Industry Consultation Services for Small and Medium Industry (SME) and other Industries related to Metal Finishing and Electroplating in Malaysia

The implementation of this consultation services is part of the initiatives to guide the industries by providing training as an exposure to the concept of CP. This programme was carried out by specific sector of industry.

In year 2023, the programme focused on Metal Finishing and Electroplating industrial sector. It was conducted within the identified premises throughout Selangor and Penang.

The programme was done in attendance of appointed consultant by the Department. Five (5) selected premises (**Table 4.1**) of the sector that have been given advice and guidance are Shui Woo Electroplating Ind. Sdn. Bhd., Guang Heng Electroplating (M) Sdn. Bhd., FP Ree Electroplating, Ulision Electroplating Sdn. Bhd., and Han Te Industries (M) Sdn. Bhd.

The consultation services comprise exposition on CP concept and familiarization on the use of Green Industries Administration and Monitoring System (*Sistem Pengurusan dan Pemantauan Industri Hijau* - SPPIH). Selected premises of the program are required to fill in information of their CP activities into the SPPIH system.

As an output of the program, a draft of Guideline on Green Industry Practices of Metal Finishing and Electroplating had been produced. This guideline is useful as a guidance and reference for the industries to apply CP concept in their premises to achieve Green Industry objectives.

Jadual 4.1: Senarai Premis bagi Program Latihan Bantuan dan Khidmat Nasihat Pengeluaran Bersih kepada PKS dan Industri Lain di Malaysia
Table 4.1: List of Premises for Clean Production Training and Consultation Programme for SME and Other Industries in Malaysia

BIL. NO.	TARIKH DATE	NAMA PREMIS PREMISES NAME	ALAMAT PREMIS PREMISES ADDRESS	BIL. OPSYEN NO. OPTION
1.	15 Jun 2023 15 June 2023	Shui Woo Electroplating Ind. Sdn. Bhd.	No. 41 & 43, Jalan Seruling 58, Taman Klang Jaya, 41200 KLANG	4
2.	26 Jun 2023 26 June 2023	Ulision Electroplating Sdn. Bhd.	No.1, Solok Selat Selatan 21A, Sobena Jaya Industrial Estate, 42000 PORT KLANG	5
3.	27 Jun 2023 27 June 2023	Guang Heng Electroplating (M) Sdn. Bhd.	Lot 3286, 5 1/2 Mile, Jalan Kapar, Rantau Panjang, 42100, KLANG	5
4.	10 Julai 2023 10 July 2023	FP Reel Electroplating	8, Jalan Selat Selatan 14, Persiaran Selat Selatan, 42000, PORT KLANG.	5
5.	12 Julai 2023 12 July 2023	Han Te Industries (M) Sdn. Bhd.	Lot 258, Lorong Perusahaan 10, Kawasan Perusahaan Perai, 13600 PERAI	2

MEMPERKUKUHKAN MEKANISMA INSTITUSI INDUSTRI HIJAU

Program Pemeriksaan Penguatkuasaan Prosedur Tetap Operasi Pengeluaran Bersih (PTOCP)

Bagi penambahbaikan berterusan, SIH telah turut mengambil bahagian dalam program PTOCP yang diadakan oleh JAS Negeri. Pelaksanaan program ini adalah salah satu inisiatif yang diambil untuk memantapkan JAS Negeri dalam melaksanakan program PTOCP. Hasil dapatan audit pemeriksaan ini akan diteliti oleh SIH untuk pengemaskinian PTOCP dan untuk penambaikan berterusan dari semasa ke semasa selaras dengan kehendak ESG.

Senarai premis yang terlibat dengan pemeriksaan PTOCP adalah seperti yang tertera di **Jadual 4.2**.

STRENGTHENING GREEN INDUSTRY INSTITUTIONAL MECHANISMS

Enforcement on Standard Operating Procedure of Cleaner Production (PTOCP)

The objective of the programme is to ensure continuous improvement on CP implementation by the industries. It is also to encourage DOE officers in promoting CP to the industries. SIH also gives full support to State DOE officers during the programme. Any findings discovered during the process will be analysed by SIH. The PTOCP will be updated to ensure that it is in line with ESG needs.

List of inspected premises are shown in **Table 4.2**.

Jadual 4.2: Senarai Premis bagi Pemeriksaan PTOCP
Table 4.2: List of Premises for PTOCP Inspection

BIL. NO.	TARIKH DATE	NEGERI STATE	JENIS INDUSTRI INDUSTRY TYPE	NAMA KILANG FACTORY NAME
1	13 Jun 2023 13 June 2023	Perak	KKS	Cahaya Muda Oil Mill
2	21 Jun 2023 21 June 2023	Melaka	Makanan	Julie Manufacturing Sdn. Bhd. (Plant 3)
3	7 Julai 2023 7 Julai 2023	Sabah	KKS	TAMACO Palm Oil Mill
4	7 Ogos 2023 7 August 2023	Perlis	Minuman	HPA Industries Sdn. Bhd.
5	8 Ogos 2023 8 August 2023	Kedah	KKS	Sungai Dingin Palm Oil Mill
6	9 Ogos 2023 9 August 2023	P. Pinang	Makanan	Lucky Food Sdn. Bhd.
7	5 Sept. 2023 5 Sept. 2023	Johor	KKS	Ban Dung Palm Oil Industries Sdn. Bhd.
8	2 Okt. 2023 2 Oct. 2023	Pahang	KKS	KKS Jengka 8

Hebahan dan Sesi Perkongsian

Beberapa siri libat urus telah dilaksanakan oleh SIH dalam memperkukuhkan mekanisma institusi industri hijau khususnya di JAS. Sesi libat urus bagi membincangkan pembangunan draf Pelaksanaan Amalan Industri Hijau bagi Sektor Penyudahan Logam dan Sadur Elektrik (*Electroplating*) serta membincangkan terma rujukan (TOR) bagi projek kajian di bawah RMke-12 telah diadakan pada 31 Julai 2023 sehingga 3 Ogos 2023 bertempat di Hotel Lexis, Port Dickson, Negeri Sembilan. Sesi libat urus ini adalah susulan daripada program Khidmat Nasihat dan Bimbingan Pengeluaran Bersih. Sesi libat urus ini telah dihadiri oleh pegawai-pegawai kanan JAS, agensi-agensi yang berkaitan dan juga pihak perunding.

Selain daripada itu, bengkel pengemaskinian PTOCP turut dijalankan bagi memberi pendedahan kepada pegawai-pegawai JAS dan juga agensi berkaitan seperti MBKT, SPAN Negeri Terengganu, SPAN Negeri Kelantan, UPEN Negeri Terengganu, UPEN Negeri Kelantan, Persatuan Batik Negeri Terengganu, Wakil Premis Batik dan wakil Premis Pertima. Peserta bengkel juga diberi pendedahan berkaitan peranan CP dalam mendepani ESG yang telah diadakan pada 6 hingga 10 November 2023 di Hotel Grand Puteri, Kuala Terengganu. Program ini juga melibatkan lawatan pelaksanaan program CP di premis Nor Arfa Batik dan juga premis Pertima.

Pada tahun 2023 SIH juga telah menerbitkan tiga (3) buku Garis Panduan Pelaksanaan Amalan Industri Hijau bagi tiga (3) sektor yang berbeza iaitu Garis Panduan Pelaksanaan Amalan Industri Hijau bagi Sektor Fabrikasi Logam, Garis Panduan Pelaksanaan Amalan Industri Hijau bagi Sektor Pembuatan Kertas dan juga Garis Panduan Pelaksanaan Amalan Industri Hijau bagi Sektor Sarung Tangan Getah. Garis Panduan ini adalah sebagai rujukan bagi melaksanakan program CP di premis masing-masing.

Announcement and Sharing Session

A few series of workshop were conducted by SIH to strengthen green industry institutional mechanism. A workshop of Green Industry Practices for Metal Finishing and Electroplating Sector was conducted on 31 July 2023 to 3 August 2023 in Lexis Hotel, Port Dickson. This workshop was a continuation of Green Industry Consultation Services for Small and Medium Industry (SME) and other industries related to Metal Finishing and Electroplating in Malaysia. It was attended by DOE senior officers, other relevant agencies, and consultant firms.

Apart from that, workshop to update the PTOCP was held in order to familiarize the CP concept among DOE state officers and other agencies such as Majlis Perbandaran Kuala Terengganu (MBKT), SPAN Negeri Terengganu, SPAN Negeri Kelantan, Unit Perancang Ekonomi (UPEN) Negeri Terengganu, Unit Perancang Ekonomi (UPEN) Negeri Kelantan, Terengganu Batik Association, and Pertima Terengganu Sdn. Bhd. The workshop was successfully held on 6 to 10 November 2023 in Hotel Grand Puteri, Kuala Terengganu. Participants were also brought to visit Nor Arfa Batik Sdn. Bhd. and Pertima Terengganu Sdn. Bhd. as part of the programme.

In addition, throughout the year, SIH has published three (3) series of Guideline of Green Industry Practices. They are Guideline of Green Industry Practices for Metal Fabrication Sector, Guideline of Green Industry Practices for Paper and Pulp Sector, and Guideline of Green Industry Practices for Latex Glove Sector. These publications are essential reference for industries to practise CP in their respected premises.









▸ Program Latihan Pengeluaran Bersih dan Bantuan Khidmat Nasihat kepada Perusahaan Kecil & Sederhana (PKS) di Malaysia
Cleaner Production Training and Consultation Services for Small & Medium Enterprise (SME) in Malaysia



▲ Sesi Libat Urus Penyediaan Garis Panduan Pelaksanaan Amalan Industri Hijau Sektor Penyudahan Logam dan Sadur Elektrik (Electroplating) / Workshop on Green Industry Practices Implementation Guideline for Metal Finishing and Electroplating



▸ Bengkel Pengemaskinian PTOCP
Workshop on PTOCP Revision

BAB/
CHAPTER

05

HAL EHWAL ALAM SEKITAR ANTARABANGSA

INTERNATIONAL ENVIRONMENTAL AFFAIRS



HAL EHWAL ALAM SEKITAR ANTARABANGSA
INTERNATIONAL ENVIRONMENTAL AFFAIRS

HAL EHWAL ALAM SEKITAR ANTARABANGSA - HUBUNGAN PELBAGAI HALA
INTERNATIONAL ENVIRONMENTAL AFFAIRS - MULTILATERAL COOPERATION

MESYUARAT EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)-NET 2030 RANTAU ASIA-PASIFIK

Mesyuarat Serantau Asia-Pasifik ESD-Net 2030 dengan tema '*Transforming Education for a Sustainable Asia-Pacific Region*' telah diadakan di Bali, Indonesia pada 12 hingga 14 Jun 2023.

Mesyuarat ini dianjurkan bersama oleh Pejabat Wilayah Multisektoral UNESCO di Bangkok dan UNESCO Jakarta dengan kerjasama Kementerian Pendidikan, Kebudayaan, Penyelidikan dan Teknologi (MoECRT) Republik Indonesia dengan sokongan Kerajaan Jepun.

Mesyuarat tersebut telah dijalankan secara hibrid dan telah menghimpunkan 163 pihak berkepentingan dari 21 Negara Anggota di seluruh rantau ini. Antara yang hadir ialah wakil daripada Kementerian Pendidikan dan Suruhanjaya Kebangsaan UNESCO, organisasi antarabangsa seperti *United Nations Children's Fund (UNICEF), ASEAN, Southeast Asian Ministers of Education Organization* (SEAMEO), Global Partnership for Education (GPE) dan Save the Children International, serta penyelidik, ahli akademik, badan-badan bukan kerajaan (NGO), sektor swasta dan organisasi belia di mana semua pihak komited untuk memajukan ESD.

Mesyuarat itu telah mencapai beberapa objektif utama: 1) menilai kemajuan ESD untuk Inisiatif Negara 2030 di rantau Asia-Pasifik; 2) menyediakan negara dengan bahan dan sumber yang diperlukan untuk mempromosi dan menyepadukan ESD dengan berkesan ke dalam sistem pendidikan; dan 3) memupuk kerjasama dan penyelarasan antara Kementerian Pendidikan dan rakan strategik di peringkat nasional, serantau dan global.

THE EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)-NET 2030 ASIA-PACIFIC REGIONAL MEETING

The ESD-Net 2030 Asia-Pacific Regional Meeting, convened with the theme 'Transforming Education for a Sustainable Asia-Pacific Region', was held in Bali, Indonesia from 12 to 14 June 2023.

The meeting was co-organised by the UNESCO Multisectoral Regional Offices in Bangkok (UNESCO Bangkok) and Jakarta (UNESCO Jakarta), in collaboration with the Ministry of Education, Culture, Research, and Technology (MoECRT) of the Republic of Indonesia and with the generous support of the Government of Japan.

The meeting was conducted via hybrid and has brought together 163 key stakeholders from 21 Member States across the region. Among the many attendees were representatives from Ministries of Education and UNESCO National Commissions, international organisations such as United Nations Children's Fund (UNICEF), ASEAN, Southeast Asian Ministers of Education Organization (SEAMEO), Global Partnership for Education (GPE) and Save the Children International, as well as researchers, academia, non-governmental organizations (NGOs), private sector, and youth organisations which are all committed to advancing ESD.

The meeting achieved several key objectives: 1) assessing the progress of ESD for 2030 Country Initiatives in the Asia-Pacific region; 2) providing countries with the necessary tools and resources to effectively promote and integrate ESD into their educational systems; and 3) fostering collaboration and coordination between the Ministry of Education and strategic partners at national, regional, and global levels.



▲ Delegasi yang menghadiri "*The ESD-Net 2030 Asia-Pacific Regional Meeting*" di Bali, Indonesia. Malaysia telah diwakili oleh Hajah Azuri Azizah binti Haji Saedon, Pengarah Bahagian Komunikasi Strategik, JAS, Malaysia bersama wakil Kementerian Pendidikan Malaysia / Delegates Attending "The ESD-Net 2030 Asia-Pacific Regional Meeting" in Bali, Indonesia. Malaysia was represented by Hajah Azuri Azizah binti Haji Saedon, Director of Strategic Communications Division, DOE, Malaysia together with representative from the Ministry of Education Malaysia



▲ Barisan Panel semasa Perbincangan berkenaan *Transforming Education for a Sustainable Asia-Pacific Region* / Panel Lineup during the Discussion on Transforming Education for a Sustainable Asia-Pacific Region

ASEAN *WORKING GROUP ON ENVIRONMENTAL EDUCATION* (AWGEE) KE-15

Mesyuarat AWGEE ke-15 yang telah berlangsung pada 13–14 Julai 2023 di Kuala Lumpur merupakan pertemuan bersemuka pertama selepas penularan pandemik COVID-19, di mana ia juga menandakan bahawa selepas 10 tahun, Malaysia telah dipilih semula untuk menjadi tuan rumah. Pada kali ini, Kemboja merupakan Pengerusi AWGEE.

Walau bagaimanapun, Pengerusi AWGEE tidak dapat mempengerusikan Mesyuarat AWGEE ke-15 dan telah memberi mandat kepada Malaysia sebagai tuan rumah untuk melantik Dato' Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah, Jabatan Alam Sekitar (JAS), Malaysia sebagai Timbalan Pengerusi untuk mempengerusikan mesyuarat tersebut.

Mesyuarat AWGEE ke-15 menerima kehadiran delegasi dari Negara Brunei, Indonesia, Malaysia, Myanmar, Singapura, Thailand dan Vietnam, sementara wakil dari Lao PDR dan Filipina hadir secara dalam talian. Mesyuarat juga telah dihadiri oleh Sekretariat ASEAN (ASEC), Rakan ASEAN (*ASEAN Partners*) yang terdiri daripada *ASEAN Centre for Biodiversity (ACB), ASEAN-Japan Centre* (AJC), EU SWITCH-Asia, *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) dan Cerdas Antisipasi Risiko Bencana Indonesia (CAR!).

Delegasi Malaysia ke mesyuarat AWGEE ke-15 telah diketuai oleh Hajah Mashitah binti Darus, Timbalan Ketua Pengarah (Pembangunan), JAS. Turut hadir adalah Hajah Azuri Azizah binti Haji Saedon, Pengarah Bahagian Komunikasi Strategik, JAS bersama dengan wakil daripada Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim (NRECC), Kementerian Ekonomi, Kementerian Pendidikan Malaysia, Kementerian Pendidikan Tinggi dan Institut Alam Sekitar dan Pembangunan (LESTARI).

Semasa mesyuarat AWGEE ke-15, ASEC telah melaporkan keputusan berkaitan Mesyuarat ASEAN dan perkara-perkara yang berkaitan, perbincangan mengenai status pelaksanaan Pelan Tindakan AWGEE serta berkongsi pengetahuan dan pengalaman berkaitan kesedaran alam sekitar dalam sistem pendidikan di antara Negara Anggota ASEAN (AMS) dan Rakan ASEAN. Malaysia juga telah berkongsi pengalaman dalam pelaksanaan Sekolah Lestari (*Eco Schools*) di Malaysia.

15TH ASEAN WORKING GROUP ON ENVIRONMENTAL EDUCATION (AWGEE)

The 15th AWGEE meeting was convened on 13–14 July 2023 in Kuala Lumpur and it was the first face-to-face meeting after the spread of the COVID-19 pandemic, which also marked that after 10 years, Malaysia was re-elected to host the meeting. During this time, Cambodia was the Chairperson of AWGEE.

However, the Chairperson of AWGEE was unable to chair the 15th AWGEE meeting and had mandated Malaysia as the host to appoint Dato' Wan Abdul Latiff bin Wan Jaffar, Director General, Department of Environment (DOE), Malaysia as Vice Chairperson to chair the meeting.

The 15th AWGEE meeting was attended by delegations from Brunei, Indonesia, Malaysia, Myanmar, Singapore, Thailand, and Vietnam while Lao PDR and the Philippines were present online. The meeting was also attended by ASEAN Secretariat (ASEC), ASEAN Partners consisting of the ASEAN Center for Biodiversity (ACB), ASEAN-Japan Center (AJC), EU SWITCH-Asia, *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ), and Indonesia's Smart Anticipation of Disaster Risk (CAR!).

The Malaysian delegation to the 15th AWGEE meeting was led by Hajah Mashitah binti Darus, Deputy Director General (Development), DOE, Hajah Azuri Azizah binti Haji Saedon, Director of Strategic Communications Division, DOE together with representatives from the Ministry of Natural Resources, Environment and Climate Change (NRECC), Ministry of Economy, Ministry of Education Malaysia, Ministry of Higher Education, and Environment and Development Institute (LESTARI).

During the 15th AWGEE meeting, ASEC reported on the results of the ASEAN meeting and related matters, discussions on the status of the implementation of the AWGEE Action Plan, and shared knowledge and experience related to environmental awareness in the education system between ASEAN Member States (AMS) and ASEAN Partners. Malaysia also shared its experience in the implementation of "*Sekolah Lestari*" (Eco Schools) in Malaysia.



▲ Delegasi-delegasi daripada Brunei, Indonesia, Malaysia, Myanmar, Singapura, Thailand dan Vietnam yang Menyertai Mesyuarat AWGEE ke-15 secara Fizikal di Kuala Lumpur
Delegates from Brunei, Indonesia, Malaysia, Myanmar, Singapore, Thailand and Vietnam who Attended the 15th AWGEE Meeting Physically in Kuala Lumpur



◀ Dato' Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah, JAS, Malaysia sebagai Timbalan Pengerusi Mempengerusikan Mesyuarat AWGEE ke-15
Dato' Wan Abdul Latiff bin Wan Jaffar, Director General, DOE, Malaysia as Vice Chairperson Chaired the 15th AWGEE Meeting



▲ Wakil daripada Sekretariat ASEAN semasa Mesyuarat AWGEE ke-15 / Representatives from ASEAN Secretariat during the 15th AWGEE Meeting



▲ Delegasi Malaysia ke AWGEE ke-15 telah Diketuai oleh Hajah Mashitah binti Darus, Timbalan Ketua Pengarah (Pembangunan), JAS / The Malaysian Delegation to the 15th AWGEE was Led by Hajah Mashitah binti Darus, Deputy Director General (Development), DOE

LAWATAN DELEGASI *ASEAN WORKING GROUP ON ENVIRONMENTAL EDUCATION* (AWGEE) KE SEKOLAH MENENGAH KEBANGSAAN SERI KERAMAT, SELANGOR, PADA 14 JULAI 2023

Semasa mesyuarat AWGEE ke-15, Malaysia telah berkongsi pengalaman dalam pelaksanaan Sekolah Lestari (*Eco Schools*) di Malaysia. Delegasi mesyuarat AWGEE ke-15 telah diberi peluang untuk melawat Sekolah Menengah Kebangsaan Seri Keramat pada 14 Julai 2024, di Selangor yang merupakan pemenang Sekolah Lestari Anugerah Alam Sekitar (SLAAS) sesi 2020-2022.

Lawatan ini diketuai oleh Hajah Mashitah binti Darus, Timbalan Ketua Pengarah (Pembangunan), JAS, dengan matlamat untuk berkongsi pengalaman Malaysia dalam melaksanakan Sekolah Lestari. Lawatan ini juga menjadi panduan kepada semua delegasi mengenai penanda aras bagi pelaksanaan Sekolah Lestari di Malaysia dalam memupuk nilai murni dan pembudayaan alam sekitar di kalangan warga sekolah.

SLAAS telah bermula seawal tahun 2005 dan mempraktikkan lima (5) komponen: pengurusan, kurikulum, kokurikulum, penghijauan dan elemen khas. Program ini berjaya dilaksanakan melalui kerjasama erat antara JAS dan KPM, serta rakan strategik, LESTARI. Sambutan dan penyertaan sekolah-sekolah di seluruh Malaysia dalam program SLAAS cukup memberangsangkan dan menunjukan peningkatan setiap tahun.

VISIT OF THE ASEAN WORKING GROUP ON ENVIRONMENTAL EDUCATION (AWGEE) DELEGATION TO *SEKOLAH MENENGAH KEBANGSAAN SERI KERAMAT,* SELANGOR ON 14 JULY 2023

During the 15th AWGEE Meeting, Malaysia shared its experience in the implementation of Eco Schools in Malaysia. The delegations of the 15th AWGEE Meeting were given the opportunity to visit *Sekolah Menengah Kebangsaan Seri Keramat* on 14 July 2024, in Selangor which is the winner of the Environmental Award Sustainable School (SLAAS) session 2020-2022.

The visit was led by Hajah Mashitah binti Darus, Deputy Director General (Development), DOE, with the aim of sharing Malaysia's experience in implementing Sustainable Schools (Eco Schools). This visit also served as a guide for all delegations on the benchmark in implementing Sustainable Schools in Malaysia to foster virtuous values and environmental culture among schoolchildren.

SLAAS started as early as 2005 and practices five (5) components in its formation consisting of management, curriculum, co-curriculum, greening and special elements. This program has been successfully implemented with close cooperation between DOE and Ministry of Education Malaysia as well as strategic partner, LESTARI. The response and participation of schools throughout Malaysia to the SLAAS program are very encouraging and shows an increase every year.



◂ Lawatan Delegasi AWGEE ke Sekolah Menengah Kebangsaan Seri Keramat, Selangor
AWGEE Delegation Visit to Sekolah Menengah Kebangsaan Seri Keramat, Selangor



◂ Lawatan Delegasi AWGEE ke Persekitaran Sekolah Menengah Kebangsaan Seri Keramat, Selangor
Visit of the AWGEE Delegation to the surroundings of Sekolah Menengah Kebangsaan Seri Keramat, Selangor



▸ Sesi Penerangan oleh Pelajar kepada Delegasi AWGEE berkenaan Penyulingan *Lemon Myrtle* / Briefing Session by Students to the AWGEE Delegation on Lemon Myrtle Distillation



▲ Sesi Penerangan oleh Pelajar kepada Delegasi AWGEE berkenaan Kaedah Penanaman Pokok Lemon Myrtle
Briefing Session by Students to the AWGEE Delegation on the Method of Planting Lemon Myrtle Trees

MAJLIS ANUGERAH *ASEAN ECO-SCHOOLS* KE-4 DAN ANUGERAH *ASEAN YOUTH ECO-CHAMPIONS* (AYECA) YANG KE-2

Majlis Anugerah *ASEAN Eco-Schools* ke-4 dan Anugerah AYECA ke-2 telah diadakan di Vientiane, Lao PDR pada 23 Ogos 2023. Majlis anugerah berprestij ini telah dihadiri oleh Yang Berhormat Dato' Sri Huang Tiong Sii, Timbalan Menteri Sumber Asli, Alam Sekitar dan Perubahan Iklim (NRECC) dan Dato' Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah, JAS, Malaysia, sebagai *National Focal Point* (NFP) Malaysia bagi AWGEE.

Anugerah *ASEAN Eco-Schools* bertujuan mengiktiraf usaha teladan sekolah lestari di kalangan AMS dalam menyemai kesedaran alam sekitar dalam setiap aspek pendidikan kepada pelajar mereka dan masyarakat sekitar. Malaysia telah mencalonkan pemenang SLAAS bagi kitaran ketujuh untuk mewakili negara bagi kedua-dua kategori Anugerah *ASEAN Eco-Schools* ke-4 iaitu kategori sekolah menengah dan rendah. Sekolah Menengah St. Patrick, Sabah, menerima Anugerah *ASEAN Eco-Schools* ke-4 bagi sekolah menengah, manakala Sekolah Kebangsaan Putra, Perlis, mewakili

THE 4TH ASEAN ECO-SCHOOLS AWARD AND 2ND ASEAN YOUTH ECO-CHAMPIONS AWARD (AYECA) CEREMONY

The 4th ASEAN Eco-Schools Award and the 2nd AYECA ceremony were held in Vientiane, Lao PDR, on 23 August 2023. This prestigious award ceremony was attended by the Honourable Dato' Sri Huang Tiong Sii, Deputy Minister of Natural Resources, Environment, and Climate Change (NRECC), and Dato' Wan Abdul Latiff bin Wan Jaffar, Director General, DOE, Malaysia, as the National Focal Point (NFP) for Malaysia for the AWGEE.

The ASEAN Eco-Schools award aims to recognize exemplary efforts of eco schools in AMS in inculcating environmental awareness in every aspect of education to their students and surrounding communities. Malaysia has nominated the winner of the SLAAS for the seventh cycle to represent the country at the 4th ASEAN Eco-Schools Awards in both secondary and primary school categories. *Sekolah Menengah St. Patrick*, Sabah, received the ASEAN 4th Eco-Schools Award for secondary school category, while *Sekolah Kebangsaan Putra*, Perlis, represented Malaysia in the primary school category.

Malaysia dalam kategori sekolah rendah. Encik Lee Ken Voon, Pengetua, dan Encik Jafri bin Othman, Guru Besar kedua-dua sekolah telah menghadiri majlis tersebut. Semasa sesi tersebut, Encik Lee Ken Voon, pengetua Sekolah Menengah St. Patrick membentangkan dan berkongsi dengan semua delegasi ASEAN kisah kejayaan pelaksanaan sekolah Lestari di sekolah beliau.

Mr. Lee Ken Voon, Principal, and Mr. Jafri bin Othman, Headmaster of both schools, attended the ceremony. During this session, Mr. Lee Ken Voon, principal of *Sekolah Menengah St. Patrick* presented and shared with all ASEAN delegations the success story of their sustainable school implementation.

AYECA mengiktiraf warga belia AMS berumur antara 18 hingga 35 tahun yang telah memberikan sumbangan cemerlang kepada perlindungan alam sekitar. JAS dengan kerjasama Kementerian Belia dan Sukan (KBS), telah mencalonkan Encik Tan Wei Kang bagi kategori junior dan Encik Beh Zeng Kang bagi kategori senior; kedua-duanya mewakili Malaysia untuk AYECA ke-2. Encik Beh Zeng Kang juga diberi peluang untuk berkongsi pengalaman dan program yang telah beliau laksanakan.

The AYECA recognises young AMS citizens between the age of 18 and 35 who have made outstanding contributions to environmental protection. DOE, collaborating with the Ministry of Youth and Sports (KBS), has nominated Mr. Tan Wei Kang for the junior category, and Mr. Beh Zeng Kang for the senior category; both represented Malaysia for the 2nd AYECA. Mr. Beh Zeng Kang was also given the opportunity to share experiences and the programmes that have been implemented by him.



◂ Barisan Penerima Anugerah *Eco-Schools* ke-4 dan AYECA ke-2 bersama Yang Berhormat Dato' Sri Huang Tiong Sii, Timbalan Menteri NRECC dan Dato' Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah, JAS, Malaysia
The Recipients of the 4th Eco-Schools Award and the 2nd AYECA with the Honorable Dato' Sri Huang Tiong Sii, Deputy Minister of NRECC, and Dato' Wan Abdul Latiff bin Wan Jaffar, Director General, DOE, Malaysia



◂ En. Lee Ken Voon, Pengetua, Sekolah Menengah St. Patrick, Sabah Menerima Anugerah *ASEAN Eco-Schools* ke-4 bagi Kategori Sekolah Menengah
Mr. Lee Ken Voon, Principal, Sekolah Menengah St. Patrick, Sabah Received the 4th ASEAN Eco-Schools Award for the Secondary School Category



▲ En. Jafri bin Othman, Guru Besar, Sekolah Kebangsaan Putra, Perlis Menerima Anugerah *ASEAN Eco-Schools* ke-4 bagi Kategori Sekolah Rendah / Mr. Jafri bin Othman, Headmaster, Sekolah Kebangsaan Putra, Perlis Received the 4th ASEAN Eco-Schools Award for the Primary School Category



▲ En. Tan Wei Kang, Pemenang bagi Kategori Senior untuk AYECA ke-2 / Mr. Tan Wei Kang, Winner of the Senior Category for the 2nd AYECA

BENGKEL TEMATIK UNTUK MENINGKATKAN KESEDARAN DAN KOMUNIKASI DI BAWAH PROTOKOL MONTREAL

Seksyen Perhubungan Antarabangsa, Bahagian Komunikasi Strategik, JAS, Malaysia telah menghadiri Bengkel Tematik untuk Meningkatkan Kesedaran dan Komunikasi di bawah Protokol Montreal pada 23-24 November 2023 di Phuket, Thailand. *United Nations Environment Programme (UNEP) Compliance Assistance Programme (CAP) Regional Office for Asia and the Pacific (ROAP)* menganjurkan bengkel tematik berdasarkan hasil mesyuarat *South Asia (SA) Network* di Maldives dan mesyuarat *South East Asia (SEA) Network* di Vietnam. Ia juga merupakan sebahagian daripada rancangan kerja UNEP OzonAction 2023 di bawah Dana Pelbagai Hala (MLF) untuk pelaksanaan Protokol Montreal.

THE THEMATIC WORKSHOP TO ENHANCE AWARENESS AND COMMUNICATION UNDER MONTREAL PROTOCOL

The International Relation Section, Strategic Communication Division, DOE, Malaysia, attended the Thematic Workshop to Enhance Awareness and Communication under the Montreal Protocol on 23-24 November 2023 in Phuket, Thailand. The United Nations Environment Programme (UNEP) Compliance Assistance Programme (CAP) Regional Office for Asia and the Pacific (ROAP) held this thematic workshop in early 2023, based on the outcomes of the South Asia (SA) Network Meeting in the Maldives and the South East Asia (SEA) Network Meeting in Vietnam. It is also part of the UNEP OzonAction 2023 work plan under the Multilateral Fund (MLF) for the implementation of the Montreal Protocol.

Bengkel tematik itu bertujuan untuk mengukuhkan pembangunan kapasiti *National Ozone Officers* (NOO), terutamanya dalam bidang komunikasi dan kesedaran tentang Protokol Montreal, dan seterusnya menyediakan Perancangan Komunikasi dan Jangkauan Tahunan 2024 bagi *National Ozone Unit* (NOU) untuk negara Asia Selatan dan Asia Tenggara. Bengkel ini telah melibatkan sebelas (11) NOO dari negara Asia Selatan dan Asia Tenggara seperti China, Bhutan, Filipina, Indonesia, Iran, Kemboja, Malaysia, Mongolia, Nepal, Pakistan dan Thailand. Sebelas (11) NOO yang menyertai bengkel tematik secara langsung adalah ahli *Working Groups on Communications for the Montreal Protocol* (WGCMP).

Semasa bengkel tematik tersebut berlangsung, Bengkel Latihan *Advanced National Ozone Officers* (NOO) dan Masyuarat Rangkaian Bersama bagi National *Ozone Officers* (NOO) dari negara Asia Selatan dan Asia Tenggara telah diadakan serentak di mana delegasi Malaysia diwakili oleh Seksyen Perlindungan Ozon, Bahagian Udara, JAS, Malaysia. Bengkel Latihan *Advanced National Ozone Officers* (NOO) yang dijadualkan pada 20-21 November 2024 merupakan bengkel latihan lanjutan yang dirancang untuk melatih NOO di negara masing-masing yang bertanggungjawab melaksanakan program Protokol Montreal. Ini adalah kesinambungan daripada Latihan NOO Baharu, yang menyediakan NOO supaya dapat menangani masalah baru dalam mematuhi keperluan Protokol Montreal, khususnya Pindaan Kigali dan pengurangan penggunaan hidrofluorokarbon (HFC).

Mesyuarat Rangkaian Bersama *National Ozone Officers* (NOO) telah diadakan pada 22-24 November 2024 bagi menyediakan platform kepada pegawai NOO dari negara Asia Selatan dan Asia Tenggara untuk berkongsi pengalaman dalam melaksanakan aktiviti dan program di bawah Protokol Montreal di negara masing-masing. Antara perkara yang dibincangkan ialah keputusan Mesyuarat Parti ke-35 dan Mesyuarat Jawatankuasa Eksekutif ke-92 dan ke-93, cabaran-cabaran dalam persediaan Pelan Pelaksanaan Kigali (KIP), pembangunan sistem kuota import bagi HFC serta kecekapan tenaga dalam sistem penyejukan dan pengurusan refrigeran. Wakil Malaysia juga diberi peluang untuk membentangkan isu-isu dan cabaran dalam membangunkan sistem kuota import bagi HFC semasa mesyuarat itu. Sistem kuota merupakan salah satu keperluan dan penting di bawah Pindaan Kigali, yang memainkan peranan penting dalam memastikan negara mematuhi sasaran pengurangan HFC yang telah ditetapkan.

The thematic workshop aims to strengthen the capacity development of National Ozone Officers (NOO), especially in the field of communication and awareness for the Montreal Protocol, and further prepare the 2024 Annual Communications and Outreach Planning for the National Ozone Unit (NOU) for South Asian and Southeast Asian countries. The workshop has involved eleven (11) NOOs from South Asian and Southeast Asian countries such as China, Bhutan, the Philippines, Indonesia, Iran, Cambodia, Malaysia, Mongolia, Nepal, Pakistan, and Thailand. The eleven (11) NOOs who directly participated in the thematic workshop are members of the Working Groups on Communications for the Montreal Protocol (WGCMP).

During the thematic workshop, the Advanced National Ozone Officers (NOO) Training Workshop and the Joint Network Meeting of SA and SEA National Ozone Officers (NOO) were also held concurrently. Malaysian delegation was represented by the Ozone Protection Section, Air Division, DOE, Malaysia. The Advanced National Ozone Officers (NOO) Training Workshop, which is scheduled for 20-21 November 2024, is an advanced training workshop designed to train NOOs in their respective countries who are in charge of executing Montreal Protocol programmes. It is a continuation of the New NOO Training, which prepared the NOO to tackle new problems in complying with Montreal Protocol requirements, specifically the Kigali Amendment and the reduction of hydrofluorocarbon (HFC) use.

On the other hand, the Joint Network Meeting of SA and SEA National Ozone Officers was held on 22-24 November 2024 to provide a platform for NOO officials from South Asian and Southeast Asian countries to share experiences in implementing activities and programmes under the Montreal Protocol in their respective countries. Among the matters discussed are the results from the 35th Party Meeting and the Executive Committee Meeting (92nd and 93rd), challenges in the preparation of the Kigali Implementation Plan (KIP), the development of an import quota system for HFC, as well as energy efficiency in refrigeration systems and refrigerant management. The Malaysian representative was given the opportunity to present the issues and challenges of developing an import quota system for HFC during the meeting. The quota system is one of the requirements and crucial under the Kigali Amendment, which plays an important role in ensuring that the country complies with the HFC reduction targets that have been set.

Mesyuarat Sesi Bersama telah diadakan dengan Mesyuarat Rangkaian yang lain pada penghujung hari terakhir 24 November 2024, termasuk NOO dari bengkel tematik. Tujuan mesyuarat ini adalah untuk membincangkan cadangan, maklum balas, penilaian dan rumusan penutup yang berkaitan dengan mesyuarat, terutamanya untuk memastikan agenda di bawah Pindaan Kigali diteruskan kerana semua negara sedang bersiap sedia untuk melaksanakan pengurangan HFC di negara masing-masing, serta peningkatan Komunikasi, Pendidikan dan Kesedaran Awam (CEPA) yang berkaitan dengan Protokol Montreal.

The Joint Session Meeting was held with other Network Meetings at the conclusion of the final day on 24 November 2024, including NOO from the thematic workshop. The purpose of these meetings was to discuss recommendations, feedback, evaluation, and closure related to the meeting, especially to ensure that the agendas under the Kigali Amendment to be continued as all countries are preparing to implement HFC reduction in their respective countries, as well as enhancement of the Communication, Education, and Public Awareness (CEPA) related to the Montreal Protocol.



▲ Delegasi dan Sekretariat Bengkel Tematik untuk Meningkatkan Kesedaran dan Komunikasi di bawah Protokol Montreal
Delegation and Secretariat of the Thematic Workshop to Enhance Awareness and Communication under Montreal Protocol



◀ Sesi Perbincangan semasa Bengkel Tematik untuk Meningkatkan Kesedaran dan Komunikasi di Bawah Protokol Montreal / Discussion Session During the Thematic Workshop to Enhance Awareness and Communication under Montreal Protocol

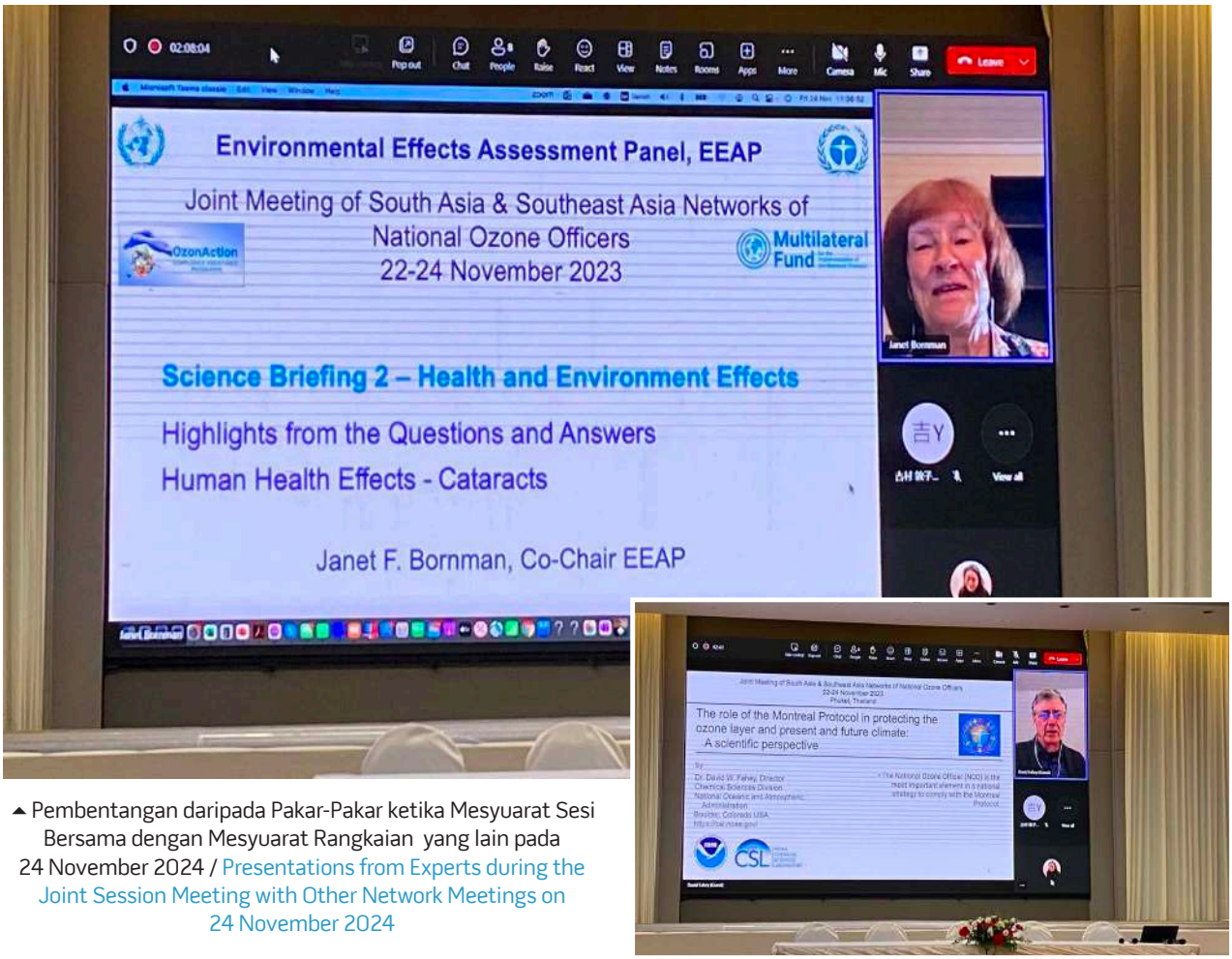


◂ Bengkel Latihan *Advanced National Ozone Officers* (NOO) pada 20-21 November 2024 di Phuket, Thailand / Advanced National Ozone Officers (NOO) Training Workshop from 20-21 November 2024 in Phuket, Thailand





▴ Mesyuarat Rangkaian bersama *National Ozone Officers* (NOO) dari Negara Asia Selatan dan Asia Tenggara pada 22-24 November 2024 di Phuket, Thailand / Joint Network Meeting of SA and SEA National Ozone Officers (NOO) from 20-21 November 2024 in Phuket, Thailand



▲ Pembentangan daripada Pakar-Pakar ketika Mesyuarat Sesi Bersama dengan Mesyuarat Rangkaian yang lain pada 24 November 2024 / Presentations from Experts during the Joint Session Meeting with Other Network Meetings on 24 November 2024

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

MESYUARAT *MALAYSIA-SINGAPORE JOINT COMMITTEE ON THE ENVIRONMENT EXPERT GROUP ON VEHICULAR EMISSIONS* (MSJCE EG (VE))

Mesyuarat *Malaysia-Singapore Joint Committee on the Environment Expert Group on Vehicular Emissions* (MSJCE EG (VE)) yang dianjurkan oleh *National Environment Agency* (NEA), Singapura sebagai tuan rumah telah berlangsung secara bersemuka pada 16 Mei 2023 di Singapura selepas pertemuan terakhir pada April 2021 secara dalam talian disebabkan oleh penularan wabak COVID-19 dan sekatan perjalanan ke luar negara.

Mesyuarat tersebut telah dipengerusikan bersama oleh Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi), Jabatan Alam Sekitar (JAS), Malaysia dan Puan Tan Li Yen, Pengarah Kumpulan, *Clean Environment Group, National Environment Agency* (NEA), Singapura. Mesyuarat MSJCE EG (VE) telah dihadiri oleh

THE MALAYSIA-SINGAPORE JOINT COMMITTEE ON THE ENVIRONMENT EXPERT GROUP ON VECHICULAR EMISSIONS (MSJCE EG (VE)) MEETING

The Malaysia-Singapore Joint Committee on the Environment Expert Group on Vehicular Emissions (MSJCE EG (VE)) Meeting, hosted by the National Environment Agency (NEA), Singapore, took place face-to-face on 16 May 2023, in Singapore, following the previous meeting in April 2021 via video conferencing due to the spread of the COVID-19 epidemic and travel restrictions abroad.

The meeting was co-chaired by Dr. Norhazni binti Mat Sari, Deputy Director General (Operation), Department of Environment (DOE), Malaysia, and Miss Tan Li Yen, Group Director, Clean Environment Group, National Environment Agency (NEA), Singapore. The MSJCE EG (VE) meeting was attended by the Singapore

delegasi Singapura daripada *Ministry of Sustainability and the Environment* (MSE) dan NEA, Singapura. Delegasi Malaysia pula diwakili oleh pegawai-pegawai JAS daripada Bahagian Udara, Bahagian Penguatkuasa, Bahagian Air dan Marin, Bahagian Bahan Berbahaya, Bahagian Komunikasi Strategik, Institut Alam Sekitar Malaysia (E*i*MAS) dan JAS Negeri Johor.

Semasa Mesyuarat MSJCE EG (VE), kedua-dua negara telah membincangkan dan berkongsi maklumat/ pengalaman mengenai kawalan pelepasan kenderaan dari segi piawaian pelepasan kenderaan, teknologi, penguatkuasaan, usaha serta alternatif lain dalam mengawal pencemaran pelepasan kenderaan bagi meminimumkan kesannya terhadap alam sekitar dan kesihatan awam. Selepas mesyuarat, delegasi Malaysia berpeluang untuk melawat ke VICOM (Bukit Batok) *Inspection Centre*, Singapura.

delegation from the Ministry of Sustainability and the Environment (MSE) and NEA, Singapore. The Malaysia delegation was represented by DOE officials from the Air Division, Enforcement Division, Water and Marine Division, Hazardous Substances Division, Strategic Communications Division, Environment Institute of Malaysia (E*i*MAS), and DOE State of Johor.

During the MSJCE EG (VE) Meeting, the two countries discussed and shared information/experience on vehicle emission control, including vehicle emission standards, technology, enforcement, efforts, and other alternatives to minimise the environmental and public health impact of vehicle emissions. Following the meeting, the Malaysian delegation had the opportunity to visit the VICOM (Bukit Batok) Inspection Centre, Singapore.



▲ Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi), JAS, Malaysia dan Puan Tan Li Yen, Pengarah Kumpulan, *Clean Environment Group*, NEA, Singapura telah Mempengerusikan bersama Mesyuarat MSJCE EG (VE)
Dr. Norhazni binti Mat Sari, Deputy Director General (Operation), DOE, Malaysia, and Miss Tan Li Yen, Group Director, Clean Environment Group, NEA, Singapore Co-Chaired the MSJCE EG (VE) Meeting



◂ Delegasi Malaysia dan Singapura ketika Mesyuarat MSJCE EG (VE)
Delegations from Malaysia and Singapore during the MSJCE EG (VE) Meeting



▴ semasa Lawatan di VICOM (Bukit Batok) *Inspection Centre*, Singapura
during a Visit at VICOM (Bukit Batok) Inspection Centre, Singapore

MESYUARAT *MALAYSIA-SINGAPORE JOINT COMMITTEE ON THE ENVIRONMENT EXPERT GROUP* (SOJ RELATED ACTIVITIES)

Mesyuarat *Malaysia-Singapore Joint Committee on the Environment Expert Group (MSJCE EG (SOJ Related Activities))* telah diadakan pada 17 Mei 2023 di Singapura ia juga merupakan pertemuan yang pertama secara bersemuka selepas mesyuarat secara dalam talian pada April 2021 disebabkan oleh penularan wabak COVID-19 dan sekatan perjalanan ke luar negara.

Mesyuarat tersebut telah dipengerusikan bersama oleh Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi), JAS, Malaysia dan Puan Tan Li Yen, Pengarah

THE MALAYSIA-SINGAPORE JOINT COMMITTEE ON THE ENVIRONMENT EXPERT GROUP (SOJ RELATED ACTIVITIES) MEETING

The meeting of the Malaysia-Singapore Joint Committee on the Environment Expert Group (MSJCE EG (SOJ Related Activities)) was held on 17 May 2023 in Singapore. It was also the first face-to-face meeting after an online meeting in April 2021 due to the spread of the COVID-19 and travel restrictions abroad.

The meeting was co-chaired by Dr. Norhazni binti Mat Sari, Deputy Director General (Operations), DOE, Malaysia, and Ms. Tan Li Yen, Group Director, Clean Environment

Kumpulan, *Clean Environment Group*, NEA, Singapura. Mesyuarat MSJCE EG (*SOJ Related Activities*) telah dihadiri oleh wakil pegawai JAS daripada Bahagian Penguatkuasa, Bahagian Air dan Marin, Bahagian Udara, Bahagian Bahan Berbahaya, Bahagian Komunikasi Strategik, EiMAS dan JAS Negeri Johor.

Kehadiran delegasi Malaysia daripada agensi lain adalah seperti Jabatan Kastam Diraja Malaysia, Agensi Penguatkuasaan Maritim Malaysia, Lembaga Pelabuhan Johor, Jabatan Kimia Malaysia, Jabatan Bomba dan Penyelamat Malaysia, Bahagian Perancangan Ekonomi Negeri Johor, Ibu Pejabat Polis Daerah Iskandar Puteri dan Pihak Berkuasa Wilayah Pembangunan Iskandar (IRDA). Manakala, kehadiran wakil agensi Singapura adalah terdiri daripada MSE, NEA, Singapura, *Singapore Civil Defence Force dan Maritime and Port Authority of Singapore*.

Mesyuarat tersebut diadakan bagi menyelaraskan pendirian kedua-dua buah negara berhubung isu-isu alam sekitar yang melibatkan Selat Johor, tindakan kawalan pencemaran dan kualiti alam sekitar seperti kualiti air di perairan Selat Johor, pengurusan bahan kimia dan buangan berbahaya dan hal-hal berkaitan keselamatan dan kerjasama di dalam pengurusan kecemasan dan kawalan pencemaran tumpahan minyak dan bahan kimia.

Group, NEA, Singapore. The MSJCE EG (SOJ Related Activities) meeting was attended by representatives from DOE officials from the Enforcement Division, Water and Marine Division, Air Division, Hazardous Materials Division, Strategic Communications Division, EiMAS, and Johor State DOE.

Other Malaysian delegations are from other agencies such as the Royal Malaysian Customs Department, Malaysia Maritime Enforcement Agency, Johor Port Authority, Malaysia Chemical Department, Fire and Rescue Department Malaysia, Johor State Economic Planning Division, Iskandar Puteri District Police Headquarters, and Iskandar Regional Development Authority (IRDA). Meanwhile, Singapore representatives are from MSE, NEA, Singapore, Singapore Civil Defence Force, and the Maritime and Port Authority of Singapore.

The meeting was held to coordinate the stance of both countries on environmental issues involving the Straits of Johor, pollution control action and environmental quality such as water quality in the Straits of Johor, chemical and hazardous waste management and matters related to safety and cooperation in chemicals and oil spill emergency response and pollution control.



▲ Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Operasi), JAS, Malaysia dan Puan Tan Li Yen, Pengarah Kumpulan, *Clean Environment Group*, NEA, Singapura telah Mempengerusikan-Bersama Mesyuarat MSJCE EG (*SOJ Related Activities*) / Dr. Norhazni binti Mat Sari, Deputy Director General (Operation), DOE, Malaysia, and Miss Tan Li Yen, Group Director, Clean Environment Group, NEA, Singapore Co-Chaired the MSJCE EG (SOJ Related Activities) Meeting



▲ Delegasi Malaysia bersama Pengerusi-Bersama Kedua-dua Negara semasa Mesyuarat MSJCE EG (*SOJ Related Activities*) / Malaysia Delegation with the Co-Chairs of Both Countries during the MSJCE EG Meeting (SOJ Related Activities)



▲ Delegasi Singapura bersama Pengerusi-Bersama kedua-dua Negara semasa Mesyuarat MSJCE EG (*SOJ Related Activities*)
Singapore Delegation with the Co-Chairs of Both Countries during the MSJCE EG Meeting (SOJ Related Activities)



▶ Delegasi Malaysia dan Singapura semasa Mesyuarat MSJCE EG (*SOJ Related Activities*)
Malaysia and Singapore Delegation during the MSJCE EG (SOJ Related Activities) Meeting

MESYUARAT *MALAYSIA-SINGAPORE JOINT COMMITTEE ON THE ENVIRONMENT WORKING GROUP*

Mesyuarat *Malaysia-Singapore Joint Committee on the Environment Working Group* (MSJCE WG) ke-19 telah diadakan pada 5-6 September 2023 di Singapura. Mesyuarat dipengerusikan secara bersama oleh Dato' Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah, Jabatan Alam Sekitar (JAS), Malaysia dan Encik Wong Kang Jet, Ketua Pegawai Eksekutif, *National Environment Agency* (NEA), Singapura

Mesyuarat tersebut telah melibatkan kehadiran delegasi Malaysia iaitu daripada JAS, Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim (NRECC) dan sembilan (9) agensi lain: Jabatan Peguam Negara, Kementerian Luar Negara, Majlis Keselamatan Negara, Jabatan Laut Malaysia, Lembaga Pelabuhan Johor, Jabatan Pengairan dan Saliran, Pusat Hidrografi Nasional, Agensi Angkasa Malaysia dan Bahagian Perancang Ekonomi Negeri Johor.

Kehadiran delegasi Singapura pula adalah terdiri daripada NEA, Singapura dan sepuluh (10) agensi lain: *Ministry of Sustainability and the Environment* (MSE), *Ministry of Foreign Affairs, Attorney-General's Chambers, Ministry of National Development, Maritime and Port Authority, Public Utilities Board, Housing and Development Board, National Parks Board, dan Jurong Town Council*.

Mesyuarat ini diadakan bagi menyelaraskan pendirian kedua-dua negara berhubung isu-isu alam sekitar yang melibatkan Selat Johor, tindakan kawalan pencemaran dan kualiti alam sekitar seperti kenderaan bermotor, kualiti air di perairan Selat Johor, pengurusan bahan kimia dan buangan berbahaya, hal-hal berkaitan keselamatan dan kerjasama di dalam pengurusan kecemasan dan kawalan pencemaran tumpahan minyak dan bahan kimia.

Selain dari itu, perbincangan mengenai kerjasama antara institut latihan kedua-dua negara, *Singapore Environment Institute* (SEI) dan EiMAS, juga telah berlangsung berhubung dengan inisiatif dan program di bawah pembangunan kapasiti.

Malaysia juga telah berkongsi mengenai Latihan Kecemasan Bersama bagi Tumpahan Bahan Kimia yang ke-13 yang telah diadakan dengan jayanya pada 26 Julai 2023 di lokasi *Second Crossing* di antara dua negara. Malaysia juga telah berkongsi mengenai Program Ekologi Laut dan Komuniti Malaysia di Selat Johor.

THE MALAYSIA-SINGAPORE JOINT COMMITTEE ON THE ENVIRONMENT WORKING GROUP MEETING

The 19th Meeting of the Malaysia-Singapore Joint Committee on the Environment Working Group (MSJCE WG) was held on 5-6 September 2023 in Singapore. The meeting was co-chaired by Dato' Wan Abdul Latiff bin Wan Jaffar, Director General, Department of Environment (DOE), Malaysia, and Mr. Wong Kang Jet, Chief Executive Officer, National Environment Agency (NEA), Singapore.

The meeting involved the presence of Malaysia delegations namely DOE, Ministry of Natural Resources, Environment and Climate Change (NRECC), and nine (9) other agencies: Attorney General's Chambers, Ministry of Foreign Affairs, National Security Council, Marine Department Malaysia, Johor Port Authority, Department of Irrigation and Drainage, Royal Malaysia Navy (National Hydrographic Centre), Malaysian Space Agency, and Johor State Economic Planning Division.

The delegations from Singapore included NEA, Singapore, and ten (10) other agencies: Ministry of Sustainability and the Environment (MSE), Ministry of Foreign Affairs, Attorney-General's Chambers, Ministry of National Development, Maritime and Port Authority, Public Utilities Board, Housing and Development Board, National Parks Board, and Jurong Town Council.

The meeting was held to coordinate the common interests and country positions between both countries regarding environmental issues involving the Strait of Johor, pollution control actions, and the environment quality such as motor vehicles, water quality in the waters of the Strait of Johor, management of chemicals and hazardous waste, and matters related to safety and cooperation in emergency management and pollution control of oil and chemical spills.

Further to that, collaboration between the training institutes of both countries, the Singapore Environment Institute (SEI), and EiMAS, was deliberated on the initiatives and programmes under the capacity building.

Malaysia has also shared about the 13th Joint Emergency Exercise for Chemical Spill which was successfully held on 26 July 2023 at the Second Crossing location between the two countries. Malaysia also shared about the Malaysian Community and Marine Ecology Programme in the Johor Strait.



▲ Dato' Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah, JAS, Malaysia dan Encik Wong Kang Jet, Ketua Pegawai Eksekutif, NEA, Singapura Mempengerusikan-Bersama Mesyuarat MSJCE WG ke-19
Dato' Wan Abdul Latiff bin Wan Jaffar, Director General, DOE, Malaysia and Mr. Wong Kang Jet, Chief Executive Officer, NEA, Singapore Co-Chaired the 19th MSJCE WG Meeting



◀ Pengerusi-Bersama Mesyuarat MSJCE WG ke-19 bersama Barisan Agensi dari Malaysia dan Singapura
Co-Chairman of the 19th MSJCE WG Meeting with Malaysia and Singapore Agencies



▲ Delegasi Malaysia dan Singapura semasa Mesyuarat MSJCE WG ke-19 / Malaysia and Singapore Delegation during the 19th MSJCE WG Meeting



▲ Delegasi Malaysia untuk Mesyuarat MSJCE WG ke-19
Malaysia Delegation for the 19th MSJCE WG Meeting



BAB/
CHAPTER

06

PROGRAM-PROGRAM PROMOSI DAN KESEDARAN

PROMOTIONAL AND AWARENESS PROGRAMMES

PROGRAM-PROGRAM PROMOSI DAN KESEDARAN
PROMOTIONAL AND AWARENESS PROGRAMMES

BENGKEL PEMURNIAN MANUSKRIP "BUKU PENGURUSAN ALAM SEKITAR DI MALAYSIA" BAGI KERJASAMA PENERBITAN ILMIAH JABATAN ALAM SEKITAR DAN DEWAN BAHASA DAN PUSTAKA & BENGKEL PENULISAN PROFESSIONAL (TEKS UCAPAN DAN PENULISAN GAYA DEWAN)

Jabatan Alam Sekitar (JAS) sebagai usaha meningkatkan penerbitan buku ilmiah JAS terutamanya dalam bidang alam sekitar, satu Bengkel Pemurnian Manuskrip "Buku Pengurusan Alam Sekitar di Malaysia" bagi Kerjasama Penerbitan Ilmiah Jabatan Alam Sekitar dan Dewan Bahasa dan Pustaka & Bengkel Penulisan Professional (Teks Ucapan dan Penulisan Gaya Dewan) telah dianjurkan oleh Seksyen Penerbitan dan Perpustakaan (Bahagian Komunikasi Strategik), Jabatan Alam Sekitar dari 15 hingga 18 Mei 2023 di Hotel Concorde, Shah Alam.

Bengkel diadakan sebagai kesinambungan Bengkel Membina Penulis JAS bagi kerjasama Penerbitan Ilmiah JAS dan Dewan Bahasa Pustaka (DBP) yang telah diadakan pada 13 hingga 15 September 2022. Bengkel yang dianjurkan menggunakan Peruntukan Mengurus di bawah Pelan Operasi Latihan (POL). Bengkel ini antara lain bertujuan untuk:

i. Meningkatkan penerbitan buku ilmiah Jabatan dalam bidang alam sekitar bagi menyampaikan usaha dan tindakan JAS dalam menangani isu alam sekitar;

ii. Menggalakkan budaya menulis pegawai JAS selain menyediakan platform bagi pegawai-pegawai JAS yang berpengalaman berkongsi pengetahuan melalui penulisan; dan

iii. Membangunkan kapasiti pegawai dalam kemahiran penulisan professional.

WORKSHOP ON MANUSCRIPT POLISHING FOR "ENVIRONMENTAL MANAGEMENT IN MALAYSIA" BOOK – DEPARTMENT OF ENVIRONMENT PUBLICATION IN COLLABORATION WITH DEWAN BAHASA DAN PUSTAKA (DBP) & WORKSHOP ON PROFESSIONAL WRITING

The Department of the Environment (DOE) has planned to increase its scientific publication, especially in the environmental management field. With this aim, DOE has organized a Workshop on Manuscript Polishing for "Environmental Management in Malaysia" Book in collaboration with Dewan Bahasa dan Pustaka (DBP) and a Workshop on Professional Writing from 15 to 18 May 2023 at Concorde Hotel, Shah Alam.

The workshop was held as a continuation of the DOE Writers Training Workshop for the collaboration of DOE Scientific Publications and DBP which was held on 13 to 15 September 2022. This workshop was organized using the Operation Expenditure under the *Pelan Operasi Latihan* (POL). The objectives of the workshop are to:

i. Increase the publication of the Department's scientific books in the field of the environment to convey the efforts and actions of DOE in dealing with environmental issues;

ii. Cultivate writing culture among DOE officers in addition to providing a platform for experienced DOE officers to share knowledge through writing; and

iii. Develop the capacity of officers in professional writing skills.

Bengkel telah dihadiri oleh pegawai-pegawai Jabatan Alam Sekitar Ibu Pejabat & Negeri serta pegawai-pegawai daripada agensi lain iaitu DBP dan INTAN ini telah dirasmikan oleh YBrs. Puan Mashitah binti Darus, Timbalan Ketua Pengarah (Pembangunan) JAS. Turut hadir pada bengkel tersebut adalah Pengarah Komunikasi Strategik, Puan Hajah Azuri Azizah binti Haji Saedon dan Pengarah JAS W.P. Kuala Lumpur, Puan Zuraini binti Ahmad Tajudin. Editor Bahagian Buku Umum DBP terdiri daripada Puan Munirah binti Ghazali dan Puan Nurfarhana Binti Hamzah.

Bengkel ini telah mencapai objektif yang disasarkan di mana draf Kertas Cadangan Judul (KCJ) bagi panduan kepada penghasilan sebuah manuskrip akhir yang lengkap bagi penerbitan Buku Pengurusan Alam Sekitar di Malaysia telah disediakan dan disasarkan dapat diterbitkan pada tahun 2024.

The workshop, which was attended by officials from the Headquarters and State Department of Environment as well as officials from other agencies such as DBP and INTAN, was officiated by YBrs. Puan Mashitah binti Darus, Deputy Director General (Development) DOE. Also present at the workshop were Director of Strategic Communications, Puan Hajah Azuri Azizah binti Haji Saedon, and Director of DOE W.P. Kuala Lumpur, Puan Zuraini binti Ahmad Tajudin. The editors of the General Books Section of DBP are Mrs. Munirah binti Ghazali and Mrs. Nurfarhana binti Hamzah.

This workshop has achieved the targeted objective where a draft of *Kertas Cadangan Judul* (KCJ) to guide the publication of a complete final manuscript for the Environmental Management in Malaysia Book has been prepared. It is targeted to be published in 2024.



▸ Peserta Bengkel Bergambar bersama Pn TKP(P) Mashitah binti Darus / Participants and the Deputy Director General of Development at the Workshop



▸ Bengkel Dilancarkan oleh YBrs. Pn TKP(P) Mashitah binti Darus
The Workshop was Officiated by the Deputy Director General of Development



▸ Sesi *Recap* Kandungan Setiap Bab oleh Penulis
Recap Session of the Book Content by the Writers





▸ Ceramah Penulisan Professional (Teks Ucapan dan Penulisan Gaya Dewan) oleh Pegawai INTAN
Officer from INTAN Delivering Lecture on Professional Writing

PELANCARAN BUKU "*TOGETHER, PROTECTING THE ENVIRONMENT: SYNERGIZING STEWARDSHIP AND COMMITMENTS*" TERBITAN JABATAN ALAM SEKITAR

Peranan Jabatan Alam Sekitar telah menjadi semakin rumit dan mencabar pada masa kini oleh kerana isu pencemaran alam sekitar yang semakin kompleks dan juga bagi memenuhi pelbagai dasar, perjanjian berkaitan alam sekitar (*Multi-Lateral Environmental Agreements*) dan komitmen di peringkat global yang melibatkan Malaysia sebagai negara parti.

Untuk mencari penyelesaian yang kreatif dan inovatif dalam mengatasi cabaran alam sekitar yang dihadapi oleh negara pada masa kini, kecekapan dan keberkesanan tindakan penguatkuasaan dan pematuhan terhadap Akta Kualiti Alam Sekeliling 1974 akan terus dipertingkatkan. Di samping itu, tindakan bersepadu di antara agensi-agensi berkaitan di peringkat persekutuan dan negeri harus diperkasa agar isu-isu alam sekitar dapat ditangani dengan lebih berkesan.

Jabatan Alam Sekitar dengan kerjasama Kelab Kebajikan dan Sukan Jabatan Alam Sekitar Putrajaya (KESAS) telah menganjurkan "Simposium Pematuhan Akta Kualiti Alam Sekeliling 1974 & Pemerkasaan Pemantauan Kualiti Alam Sekitar" pada 15 dan 16 Mac 2023 di Mövenpick Hotel & Convention Centre KLIA, Sepang, Selangor.

Satu Majlis Pelancaran buku "*Together, Protecting the Environment: Synergizing Stewardship and Commitments*" yang telah diterbitkan oleh JAS dengan kerjasama Syarikat Pakar Scieno TW Sdn. Bhd. telah disempurnakan oleh YBrs. En. Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Jabatan Alam Sekitar.

Buku ini diterbitkan untuk menyampaikan topik-topik perbincangan penting yang menganalisa pendekatan dan pelbagai inisiatif pencegahan dalam menangani kes-kes pencemaran terkini. Buku ini antara lain memuatkan sebanyak 18 bab yang merangkumi isu-isu tadbir urus alam sekitar, peranan EIA, pengurusan kualiti udara, air dan buangan terjadual, dan pelan komunikasi bagi krisis alam sekitar.

Faktor-faktor inilah yang telah memberi inspirasi kepada JAS untuk menerbitkan buku ilmiah ini, yang diharapkan dapat menyuntik semangat, bertindak sebagai mangkin, selain daripada mencetuskan idea dan inspirasi kepada tindakan selanjutnya di kalangan pembaca yang disasarkan yang meliputi pembuat polisi dan dasar, institusi perundangan, ahli politik, masyarakat, pusat-pusat latihan dan pembangunan modal insan, penjawat awam, badan-badan NGO, pemimpin masyarakat, ahli-ahli akademik dan pempengaruh.

LAUNCHING OF "TOGETHER, PROTECTING THE ENVIRONMENT: SYNERGIZING STEWARDSHIP AND COMMITMENTS" BOOK PUBLISHED BY DEPARTMENT OF ENVIRONMENT

The role of the Department of Environment has become increasingly complicated and challenging nowadays due to the increasingly complex issue of environmental pollution and to fulfil various policies, agreements related to the environment (Multi-Lateral Environmental Agreements) and commitments at the global level involving Malaysia as a party.

To find creative and innovative solutions to overcome the environmental challenges the country faces today, the efficiency and effectiveness of enforcement actions and compliance with the Environmental Quality Act 1974 need continuous improvement. In addition, concerted action between relevant agencies at the federal and state levels should be strengthened so that environmental issues can be dealt with more effectively.

The Department of Environment in collaboration with the Welfare and Sports Club of DOE Putrajaya (KESAS) has organized a "Symposium on Compliance with the Environmental Quality Act 1974 & Empowerment of Environmental Quality Monitoring" on the 15 and 16 March 2023 at Mövenpick Hotel & Convention Center KLIA, Sepang, Selangor.

Launching ceremony for the book "Together, Protecting the Environment: Synergizing Stewardship and Commitments" which was published by DOE in collaboration with Pakar Scieno TW Sdn. Bhd. was held at the symposium and was officiated by YBrs. Mr. Wan Abdul Latiff bin Wan Jaffar, Director General of Department of Environment.

This book was published to present important discussion topics that analyze the approach and various prevention initiatives in dealing with recent cases of pollution. This book contains 18 chapters which cover environmental governance issues, the role of EIA, air quality management, water and scheduled waste, and communication plans for environmental crisis.

These factors have inspired DOE to publish this scholarly book, which is expected to inspire and act as a catalyst, apart from inspiring readers and the targeted audience which includes policy and decision makers, legal institutions, politicians, communities, training centres and human capital development, civil servants, NGO bodies, community leaders, academics, and influencers.

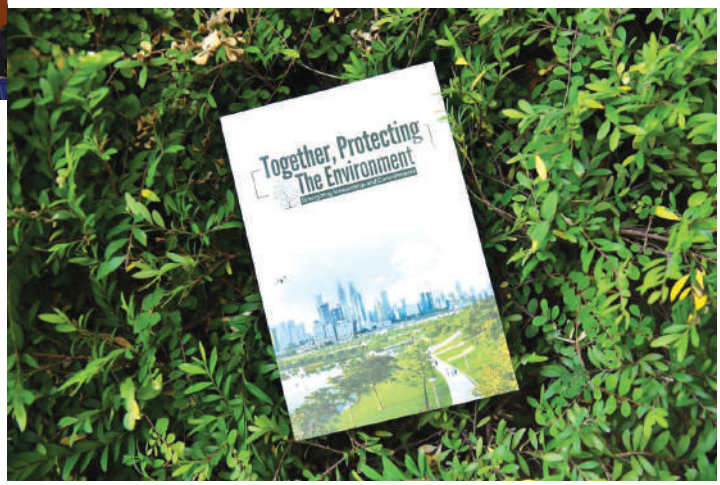


▲ Gimik Pelancaran Buku *"Together, Protecting the Environment: Synergizing Stewardship and Commitments"* / Launch Gimmick of the Book "Together, Protecting the Environment: Synergizing Stewardship and Commitments"





▶ Penulis-Penulis Buku *"Together, Protecting the Environment: Synergizing Stewardship and Commitments"* / The Writers of the Book "Together, Protecting the Environment: Synergizing Stewardship and Commitments"



▶ Buku *"Together, Protecting the Environment: Synergizing Stewardship and Commitments"*
The Book titled "Together, Protecting the Environment: Synergizing Stewardship and Commitments"

PELANCARAN BUKU "*SUSTAINABLE DEVELOPMENT GOALS - MAINSTREAMING ENVIRONMENTAL AGENDA*" TERBITAN JABATAN ALAM SEKITAR SEMPENA MAJLIS PERHIMPUNAN BULANAN JABATAN ALAM SEKITAR

Jabatan Alam Sekitar (JAS) memainkan peranan yang amat penting di dalam mencapai Matlamat Pembangunan Mampan (*Sustainable Development Goals*). JAS telah memberikan penekanan dan fokus tertentu di bawah bidang kuasanya bagi mencapai kelestarian alam sekitar. Justeru itu, inisiatif-inisiatif dan aktiviti yang dilaksanakan oleh JAS telah terarah dan selari dengan agenda ini.

JAS telah mengambil inisiatif untuk mendokumentasikan perjalanan dan sumbangan JAS sejak dari awal penubuhannya hingga kini melalui sebuah lagi penerbitan buku ilmiah yang bertajuk "*Sustainable Development Goals: Mainstreaming Environmental Agenda*" yang diterbitkan pada tahun 2022 melalui peruntukan Rancangan Malaysia Kedua Belas (RMKe-12) di bawah skop Pemerkasaan & Pembudayaan Komunikasi, Pendidikan dan Kesedaran Alam Sekitar.

Buku ini telah dilancarkan oleh YBhg. Dato' Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Jabatan Alam Sekitar pada 6 Oktober 2023 semasa Perhimpunan Bulanan JAS Bil.5 Tahun 2023. Turut hadir adalah YBrs. Puan Ani Fazliana binti Dato' Dahri@Abdul Latif, Pengarah Bahagian Pentadbiran dan Kewangan JAS serta Puan Hajah Azuri Azizah binti Haji Saedon, Pengarah Bahagian Komunikasi Strategik JAS. Buku ini menyediakan maklumat dan fakta bergambar mengenai komitmen berterusan warga JAS melalui program penguatkuasaan, pengawasan dan aktiviti-aktiviti pendidikan dan kesedaran yang dilaksanakan bagi 10 daripada keseluruhan 17 SDG yang berkait rapat dengan bidang kuasa dan peranan JAS iaitu SDG 4, SDG 6, SDG 7, SDG 11, SDG 12, SDG 13, SDG 14, SDG 15 dan SDG 16.

Buku ini juga akan menjadi medium penyampaian maklumat yang berkesan kepada pembaca bagi memupuk kesedaran alam sekitar di kalangan masyarakat melalui buku mengenai peranan Jabatan Alam Sekitar dalam usaha kelestarian alam sekitar di peringkat nasional dan global.

JAS berharap agar buku ini dapat menjadi sumber inspirasi kepada semua warga JAS untuk berusaha dengan lebih gigih dan komited dalam melaksanakan strategi pencegahan pencemaran serta pengawasan dan pemantauan kualiti alam sekitar sekaligus mendokong slogan "Alam Sekitar Tanggungjawab Bersama".

LAUNCHING OF "SUSTAINABLE DEVELOPMENT GOALS - MAINSTREAMING ENVIRONMENTAL AGENDA" BOOK PUBLISHED BY THE DEPARTMENT OF ENVIRONMENT IN CONJUNCTION WITH THE DOE MONTHLY ASSEMBLY

The Department of Environment (DOE) plays a very important role in achieving the Sustainable Development Goals. DOE has given emphasis and focus under its jurisdiction to achieve environmental sustainability. Therefore, the initiatives and activities implemented by DOE have been directed and aligned with this agenda.

DOE has taken the initiative to document the journey and contribution of the department since its establishment until today through the publication of another scholarly book entitled "Sustainable Development Goals: Mainstreaming Environmental Agenda" which was published in 2022 using the Twelfth Malaysia Plan (12MP) budget allocation under the Communication, Education, and Public Awareness scope.

This book was launched by YBhg. Dato' Wan Abdul Latiff bin Wan Jaffar, Director General of the Department of Environment on 6 October 2023 during the DOE Monthly Assembly. Also present were YBrs. Mrs. Ani Fazliana binti Dato' Dahri@Abdul Latif, Director of the Administration and Finance Division, and Mrs. Hajah Azuri Azizah binti Haji Saedon, Director of the Strategic Communications Division. This book provides illustrated information and facts about the continuous commitment of DOE officers through enforcement programs, monitoring and communication, education, and public awareness activities implemented for 10 of the 17 SDGs which are closely related to the jurisdiction and role of DOE, namely SDG 4, SDG 6, SDG 7, SDG 11, SDG 12, SDG 13, SDG 14, SDG 15, and SDG 16.

This book will also be an effective medium for dissemination of information to readers to foster environmental awareness among the community through a book which promotes the role of DOE in environmental sustainability efforts at the national and global level.

DOE hopes that this book can be a source of inspiration for all its officers to work hard and enhance their commitments towards implementing pollution prevention strategies as well as environmental quality monitoring in supporting the slogan "Environment, Our Shared Responsibility".



▲ Gimik Pelancaran Buku "*Sustainable Development Goals: Mainstreaming Environmental Agenda*"
Book Launch Gimmick of the "Sustainable Development Goals: Mainstreaming Environmental Agenda"

BENGKEL MEMUKTAMADKAN KANDUNGAN LAPORAN KUALITI ALAM SEKELILING (EQR) 2022

Bengkel Memuktamadkan Kandungan Laporan Kualiti Alam Sekeliling (EQR) 2022 telah dianjurkan oleh Bahagian Komunikasi Strategik pada 8 Ogos 2023 di Bilik Mesyuarat Ixora, Ibu Pejabat Jabatan Alam Sekitar, Putrajaya.

Penerbitan Laporan EQR ini adalah bagi memenuhi keperluan Seksyen 3(1)(i) Akta Kualiti Alam Sekeliling 1974. Laporan Tahunan JAS diterbitkan untuk melaporkan pelbagai aktiviti, sumbangan, kejayaan dan pencapaian JAS sebagai bukti komitmen warga JAS dalam memberikan perkhidmatan yang terbaik kepada rakyat.

Bengkel ini melibatkan *person-in-charge* (PIC) yang terdiri daripada pegawai-pegawai JAS dari Bahagian Air dan Marin, Bahagian Udara, Bahagian Bahan Berbahaya dan Bahagian Komunikasi Strategik Ibu Pejabat. Ia telah dirasmikan oleh YBrs. Puan Mashitah binti Darus, Timbalan Ketua Pengarah (Pembangunan) JAS. Wakil daripada syarikat pembekal yang dilantik turut hadir bagi kerja-kerja pengemaskinian draf.

WORKSHOP TO FINALISE THE CONTENT OF ENVIRONMENTAL QUALITY REPORT (EQR) 2022

The Workshop to Finalise the Content of Environmental Quality Report (EQR) 2022 was organized by the Strategic Communications Division on 8 August 2023 at Ixora Meeting Room, Department of Environment Headquarters, Putrajaya.

The EQR Report is published to meet the requirements stipulated under Section 3(1)(i) of the Environmental Quality Act 1974. The DOE Annual Report is published to disseminate information on various activities, contributions, successes, and achievements of DOE as evidence of DOE's commitment in providing the best service to the nation.

The workshop was attended by DOE officers from Water and Marine Division, Air Division, Hazardous Substances Division, and Strategic Communication Division Headquarters. It was officiated by Puan Mashitah binti Darus, Deputy Director General (Development). Representative from the appointed printing company also attended the workshop to improve and update the draft.

Objektif utama bengkel ini dianjurkan adalah bagi menyemak dan memastikan draf akhir laporan yang disediakan oleh pihak pembekal telah menepati kehendak bahagian-bahagian yang terlibat dan pengurusan tertinggi Jabatan.

The main objective of this workshop is to verify and ensure that the final draft of the report designed by the printing company meets the requirements of the divisions involved and the Department's top management.

Output daripada bengkel ini adalah satu set lengkap *mock-up* akhir Laporan Kualiti Alam Sekeliling (EQR) 2022 yang sempurna bagi tujuan percetakan. Penambahbaikan yang telah dibuat termasuk infografik rumusan laporan kualiti di permulaan setiap bab.

The output from this workshop is a complete set of final mock-up of Environmental Quality Report (EQR) 2022 prior to printing. Improvements have been made which include infographics summarizing the quality report at the beginning of each chapter.

Bengkel yang diadakan ini telah mencapai objektif yang disasarkan di mana pegawai-pegawai yang hadir telah memberikan komitmen yang tinggi dalam melaksanakan tanggungjawab yang diamanahkan dan diharapkan penerbitan Laporan Kualiti Alam Sekeliling (EQR) 2022 adalah lebih baik terutamanya dari segi kualiti.

This workshop has achieved the targeted objective in which the officers present had given their highest commitment in carrying out the entrusted responsibilities and it is hoped that the quality of the Environmental Quality Report (EQR) for the year 2022 will be significantly improved.



▸ Perasmian Bengkel oleh YBrs. Puan Mashitah binti Darus, Timbalan Ketua Pengarah (Pembangunan) JAS
Workshop was Officiated by Puan Mashitah binti Darus, DOE Deputy Director General (Development)



▲ Aktiviti Perbincangan yang Dijalankan semasa Bengkel Berlangsung
Discussion Activities Carried Out during the Workshop



▲ Wakil dari Bahagian Komunikasi Strategik sedang Melakukan Pembentangan / Representative from the Strategic Communication Division is Giving a Presentation

UNIT KOMUNIKASI KORPORAT, JABATAN ALAM SEKITAR

Unit Komunikasi Korporat bertanggungjawab mengurus semua aspek komunikasi dalaman dan luaran Jabatan. Peranan utama unit ini adalah untuk memastikan mesej organisasi disampaikan dengan jelas dan konsisten kepada semua pihak berkepentingan, termasuk pekerja, pelanggan, media dan masyarakat umum.

Pada tahun 2023, pelbagai program telah dirangka dan diselaraskan dalam memperkasakan penyampaian perkhidmatan melalui pelbagai platform media massa dan media sosial sebagai salah satu usaha menyampaikan mesej kepada kumpulan sasar.

Antara program yang telah dilaksanakan adalah Sesi Libat Urus bersama Ketua-Ketua Agensi Media untuk membina jaringan komunikasi dan memperkukuhkan mesej kepada semua kelompok masyarakat selaras dengan Akta Kualiti Alam Sekeliling 1974 bertepatan dengan *tagline* jabatan iaitu "Alam Sekitar Tanggungjawab Bersama".

Platform seperti Sesi Libat Urus Ketua Pengarah Alam Sekitar bersama Ketua-Ketua Agensi Media ini amat penting diadakan dalam membina dan mengekalkan imej positif organisasi. Unit ini juga bertanggungjawab dalam memastikan komunikasi yang jelas dan efektif dengan semua pihak melalui pelbagai program yang dijalankan.

Program sebegini membantu organisasi mencapai tujuannya, mengatasi cabaran, dan memperkukuh reputasi di mata umum. Objektif utama program kesedaran alam sekitar bersama media adalah bertujuan untuk meningkatkan pemahaman kepada semua pihak di dalam industri untuk menyokong usaha dalam mempertingkatkan kesedaran masyarakat berhubung amalan hijau, gaya hidup lestari, impak pencemaran dan lain-lain. Selain itu program ini juga bertujuan untuk menyemai dan meningkatkan kesedaran berhubung kepentingan untuk membudayakan dalam kalangan masyarakat untuk peka dan prihatin terhadap isu alam sekitar serta mengetahui penyebab serta kesan utama.

Jalinan kerjasama bersama media dalam penyaluran maklumat yang tepat kepada masyarakat perlu dijalankan untuk memperkasakan kolabarasi penyaluran maklumat dua hala bersama media berhubung su-isu pencemaran alam sekitar dan langkah pencegahan dalam usaha mendidik masyarakat berhubung isu ini. Melaksanakan promosi untuk disebarluaskan kepada umum dan mendapatkan input melalui sesi libat urus bersama media juga antara indikator utama unit ini dalam memperkukuhkan penyampaian perkhidmatan Jabatan.

CORPORATE COMMUNICATION UNIT, DEPARTMENT OF ENVIRONMENT

The Corporate Communications Unit is responsible for managing all aspects of the Department's internal and external communications. The main role of this unit is to ensure that the organization's messages are delivered clearly and consistently to all stakeholders, including employees, customers, media, and the society.

In 2023, various programmes were designed and coordinated to enhance service delivery through various mass media and social media platforms as part of efforts to convey messages to target groups.

Among the programmes implemented was the Engagement Session with Heads of Media Agencies to build communication networks and reinforce messages to all segments of society in line with the Environmental Quality Act 1974, in accordance with the department's tagline "Environment, Our Shared Responsibility".

Platforms such as the Director General of Environmental Engagement Session with Heads of Media Agencies are crucial for building and maintaining a positive organizational image. This unit is also responsible for ensuring clear and effective communication with all parties through various programmes conducted.

Such programmes help the organization achieve its goals, overcome challenges, and strengthen its reputation in the eyes of the public. The primary objective of environmental awareness programmes with the media is to enhance understanding among all parties in the industry to support efforts to increase public awareness regarding green practices, sustainable lifestyles, pollution impacts, and more. Additionally, these programmes also aim to instil and raise awareness about the importance of cultivating a culture within the community that is sensitive and concerned about environmental issues, as well as understanding the main causes and effects.

Collaborating with the media to disseminate accurate information to the public is essential to empower two-way information flow regarding environmental pollution issues and preventive measures in effort to educate the public about these issues. Promoting this information widely to the public and gathering input through engagement sessions with the media are also key indicators for this unit in strengthening the Department's service delivery.

Pelaksanaan program sebegini merupakan satu pendekatan yang amat perlu dilaksanakan secara berkala dan mempunyai kesinambungan dalam usaha untuk memperkasakan penyampaian perkhidmatan agensi.

Program ini juga dapat mempertingkatkan jaringan komunikasi di antara media dan Jabatan dalam usaha memastikan kelestarian alam sekitar kekal terpelihara kerana Alam Sekitar Tanggungjawab Bersama.

Bagi berkongsi maklumat di semua platform media sosial, satu sesi interaktif Ketua Pengarah Jabatan Alam Sekitar (JAS), Yang Berbahagia Dato' Wan Abdul Latiff bin Wan Jaffar disertai pengurusan tertinggi JAS telah diadakan bersama pempengaruh dan media pada 30 Oktober 2023.

The implementation of such programmes is a crucial approach that needs to be carried out periodically and with continuity in efforts to enhance the service delivery of the agency.

This programme can also enhance the communication network between the media and the Department in effort to ensure the sustainability of the environment remains preserved because the Environment is Our Shared Responsibility.

Aimed to share information across all social media platforms, an interactive session with the Director General of the Department of Environment (DOE), Yang Berbahagia Dato' Wan Abdul Latiff bin Wan Jaffar, accompanied by the top management of DOE was held with influencers and media on 30 October 2023.



◂ Sesi Perkongsian bersama Pengurusan Tertinggi JAS
Sharing Session with the Top Management of DOE



▴ Perkongsian Ketua Pengarah Jabatan Alam Sekitar bersama Media berkaitan Isu-isu Alam Sekitar
Director General of the Department of Environment's sharing session with the Media on Environmental Issues

Pelaksanaan program ini bertujuan untuk meningkatkan kesedaran berhubung pemuliharaan alam sekitar melalui pelbagai medium iaitu melalui kolobarasi bersama pempengaruh dan media. Jalinan kerjasama secara aktif amat perlu dilaksanakan seiring dengan keperluan dan tren semasa. Program ini juga termasuk sesi *hands-on* mengenai kaedah persampelan yang melibatkan peralatan yang digunakan oleh JAS, dikongsi dengan media untuk menyampaikan mesej yang jelas kepada orang ramai.Selain dari itu, program sebegini juga membantu Jabatan untuk mendapatkan input melalui sesi dialog bersama media dalam memperkukuhkan penyampaian perkhidmatan Jabatan.

The implementation of this programme aims to increase awareness regarding environmental conservation through various medium by collaborating with influencers and the media. Active collaboration needs to be carried out in line with current needs and trends. This programme also included hands-on sessions on sampling methods involving equipment used by the DOE, shared with the media to convey clear messages to the public. Additionally, such programmes help the Department to gather input through dialogue sessions with the media to strengthen the Department's service delivery.

Jabatan melihat kepentingan sokongan pempengaruh dan media dalam menyebarkan mesej berhubung pemeliharaan dan pemuliharaan alam sekitar ini amat perlu diperkukuhkan melalui jaringan kerjasama untuk meluaskan liputan terhadap fungsi dan peranan yang dimainkan oleh Jabatan dalam membudayakan pemuliharaan alam sekitar sebagai satu gaya hidup. Melalui program sebegini juga ROI kepada agensi dapat ditingkatan dengan liputan lebih meluas melalui kerjasama erat bersama pempengaruh dan agensi media.

The Department sees the importance of support from influencers and the media in spreading messages about environmental preservation and conservation. This support needs to be strengthened through collaborative networks to broaden the coverage of the Department's functions and roles in promoting environmental conservation as a way of life. Through such programmes, the ROI for the agency can also be increased with wider coverage through close cooperation with influencers and media agencies.

Usaha memantapkan perkongsian maklumat melalui platform media sosial terus diperkasakan melalui penganjuran Bengkel Pemantapan Media Sosial di peringkat Jabatan. Program yang melibatkan penyelaras media negeri dan Ibu Pejabat ini memberikan ruang kepada seluruh peserta untuk berkongsi pendekatan terbaik melalui platform media sosial.

Efforts to enhance information sharing through social media platforms are continuously strengthened through the organization of the Social Media Enhancement Workshop at the Department level. The programme that involved state media coordinators and headquarters, provides an opportunity for all participants to share best practices through social media platforms.

Bengkel ini membantu penyelaras media sosial memahami cara penggunaan platform media sosial yang efektif, dari dasar hingga strategi lanjutan. Ini termasuk pengelolaan konten, penggunaan alat analitik

This workshop helped social media coordinators to understand effective ways to use social media platforms, from basic to advanced strategies. This includes content management, as well as the use of analytics tools, and



▲ Sesi Interaktif bersama Pempengaruh dan Media
Interactive Session with Influencers and Media



▲ Sesi Perkongsian Ketua Pengarah Jabatan Alam Sekitar bersama Pempengaruh dan Media
Director General of Department of Environment's sharing session with the Influencers and Media

dan pengaturan privasi. Bengkel ini juga berkongsi strategi terbaik pemasaran, kaedah meningkatkan visibiliti dan berinteraksi dengan pelanggan secara lebih efektif.

Selain itu, bengkel ini mendedahkan peserta kepada berbagai teknik kreatif dalam pembuatan konten, infografik, penulisan caption yang menarik dan pembuatan video. Ini membantu dalam membuat konten yang lebih menarik dan mampu menarik perhatian penonton.

Dalam dunia perkongsian maklumat di media sosial tanpa sempadan, bengkel ini membantu para peserta mengikuti perkembangan terkini, termasuk ciri platform baharu dan perubahan algoritma yang boleh memberi kesan kepada strategi media sosial.

privacy settings. The workshop also shared the best strategies for marketing, methods to increase visibility, and to interact with customers more effectively.

Additionally, the workshop exposed the participants to various creative techniques in content creation, infographics, writing engaging captions, and video production. This helped in creating more attractive content that can capture the audience's attention.

In a world of unlimited information sharing on social media, this workshop helped participants stay updated with the latest developments, including new platform features and algorithm changes that can impact social media strategies.



▲ Sesi Fotografi bersama Penyelaras Media Sosial Jabatan Alam Sekitar / Photography *Session with the Social Media Coordinator of the Department of Environment*



▲ Garis Panduan Penggunaan Media Sosial Jabatan Alam Sekitar / Guidelines for the Use of Social Media Sessions of the Department of the Environment

PROGRAM PENDIDIKAN ALAM SEKITAR PERINGKAT SEKOLAH

Program Sekolah Lestari Anugerah Alam Sekitar (SLAAS) telah memasuki kitar kesembilan bagi sesi 2023/2024. Sepanjang 18 tahun perjalanan program ini, sebanyak 1,363 buah sekolah menengah dan kebangsaan seluruh Malaysia telah menyertainya. Program ini dapat diteruskan sehingga kini kerana kerjasama yang erat daripada Kementerian Pendidikan Malaysia (KPM) yang juga merupakan rakan kerjasama sedari awal pembentukan program ini. Selain KPM, Institut Alam Sekitar dan Pembangunan (LESTARI) Universiti Kebangsaan Malaysia (UKM) juga merupakan tulang belakang dan penasihat utama bagi perjalanan program ini.

ENVIRONMENTAL EDUCATION PROGRAMME AT SCHOOL LEVEL

The Sustainable Schools – Environmental Award (SLAAS) Programme has entered its ninth cycle for the 2023/2024 session. During the 18 years of this programme, a total of 1,363 secondary and primary schools throughout Malaysia have participated. This programme has been able to continue until now because of the close cooperation from the Ministry of Education (MOE) Malaysia who has also been a partner since its inception. In addition to MOE, the Environment and Development Institute (LESTARI) of Universiti Kebangsaan Malaysia (UKM) is also the main backbone and advisor for the journey of this programme.

Promosi SLAAS Peringkat Kebangsaan: DidikTV KPM

Sebagai rakan kerjasama yang erat, KPM telah mempromosikan SLAAS di dalam slot DidikTV KPM. DidikTV KPM merupakan TV Pendidikan melalui rangkaian televisyen pendidikan Malaysia yang dimiliki, dihasilkan dan dikendalikan oleh usaha sama antara Bahagian Teknologi Pendidikan Kementerian Pendidikan Malaysia dan Media Prima Berhad. Menerusi slot tersebut, Puan Zuraini binti Siam selaku Ketua Sekyen, Pendidikan Alam Sekitar telah mempromosikan Modul Kelab Alam Sekitar Sekolah (KASS). Modul ini mengandungi sebelas aktiviti utama yang berkaitan dengan kelestarian alam sekitar yang boleh dilakukan ketika aktiviti kokurikulum di sekolah.

Berdasarkan rekod terkini KPM, seramai 103,486 murid dari sekolah rendah dan menengah telah menganggotai Kelab Alam Sekitar di sekolah. Jumlah ini memberi gambaran bahawa di peringkat akar umbi, ramai duta-duta kecil kelestarian alam sekitar kini diberi pendidikan dan pendedahan yang optimum dalam menjayakan usaha melahirkan generasi pelapis negara yang membudayakan gaya hidup lestari. Aktiviti Kelab Alam Sekitar Sekolah ini merupakan pemangkin bagi penyertaan sekolah dalam program SLAAS.

Promotion of SLAAS at National Level: DidikTV, MOE

As a close cooperation partner, MOE has promoted SLAAS in MOE's DidikTV slot. MOE's DidikTV is Education TV through a Malaysian educational television network owned, produced, and operated by a joint venture between the Education Technology Division of the Ministry of Education Malaysia and Media Prima Berhad. Through the slot, Mrs. Zuraini binti Siam as Head of Section, Environmental Education has promoted the School Environmental Club Module (KASS). This module contains eleven main activities on environmental sustainability that can be conducted during co-curricular activities at school.

Based on the latest MOE records, total of 103,486 students from primary and secondary schools have joined the Environmental Club at school. This amount gives the impression that at the grassroots level, many small ambassadors of environmental sustainability are now given optimal education and exposure in the effort to create a generation of national leaders who cultivate sustainable lifestyle. The School's Environmental Club activities are also the catalyst for the school's participation in the SLAAS programme.



◂ Bual Bicara Program Sembang Aktif
Sembang Aktif Programme Talk



▲ Modul Kelab Alam Sekitar Sekolah Terbitan JAS
School Environmental Club Module Published by DOE



▲ Program Didik TV
Didik TV's Programme

Program Ceramah Promosi SLAAS

Bahagian Komunikasi Strategik, Jabatan Alam Sekitar Ibu Pejabat adalah merupakan pembuat dasar yang melibatkan hala tuju bagi pelaksanaan program kesedaran di negeri-negeri. Walau bagaimanapun, pada tahun 2023, Bahagian Komunikasi Strategik telah turun padang ke dua (2) buah sekolah kebangsaan di Putrajaya iaitu Sekolah Kebangsaan Presint 18 (2) dan Sekolah Kebangsaan Presint 17 bagi sama-sama mempromosikan SLAAS bersempena Sambutan Hari Bumi. Pelbagai aktiviti bersepadu mengenai kesedaran alam sekitar telah dilaksanakan bersama murid-murid seperti permainan interaktif, kuiz, pertandingan mewarna dan ceramah. Promosi ini adalah kerjasama daripada pelbagai seskyen di bawah Bahagian Komunikasi Strategik seperti Rakan Alam Sekitar, Perpustakaan dan Unit Sambutan.

SLAAS Promotional Talk Programme

The Strategic Communications Division, DOE Headquarters is a policy maker that involves the direction for the implementation of awareness programmes in the states. However, in 2023, the Strategic Communications Division went to two (2) primary schools in Putrajaya which are Sekolah Kebangsaan Presint 18 (2) and Sekolah Kebangsaan Presint 17 to jointly promote SLAAS in conjunction with the Earth Day Celebration. Various integrated activities on environmental awareness were implemented with the students such as interactive games, quizzes, colouring competitions, and talks. This promotion is an integrated combination under Strategic Communications Division such as Environment Partners, Library and Reception Unit.



◂ Penyampaian Hadiah semasa Program Ceramah Promosi SLAAS di SK Presint 17
Prize Giving during the SLAAS Promotional Talk Programme at SK Presint 17



▸ Sesi Ceramah berkenaan Pengamalan Gaya Hidup Lestari bersama SLAAS
Talk Session on Sustainable Lifestyle Practise with SLAAS



▲ Sesi Bergambar semasa Program Ceramah Promosi SLAAS
Photo Session during the SLAAS Promotional Talk Programme

Lawatan ke Sekolah Penerima Anugerah SLAAS Sesi 2020-2022

Tahun 2023 merupakan tahun promosi bagi program SLAAS sesi 2023/2024. Sehubungan itu, bagi menarik minat dan seterusnya sebagai rujukan kepada sekolah-sekolah yang berminat menyertai program SLAAS, satu video promosi telah dihasilkan. Video promosi ini merangkumi pelaksanaan oleh sekolah terhadap lima (5) komponen utama SLAAS yang terdiri daripada pengurusan, kurikulum, kokurikulum, penghijauan dan elemen khas.

Isi kandungan video promosi SLAAS ini adalah rakaman lawatan yang telah dijalankan ke atas dua buah sekolah yang telah menerima Anugerah Sekolah Lestari sesi 2020-2022 bagi kategori sekolah menengah dan kebangsaan. BKS bersama-sama dengan JAS Selangor dan JAS Kedah telah melawat ke Sekolah Menengah Kebangsaan Seri Keramat, Selangor dan Sekolah Kebangsaan Air Merah, Kedah. Kedua-dua sekolah ini telah membuktikan bahawa pembentukan sekolah lestari telah meningkatkan prestasi dalam pembelajaran dan peningkatan peratusan kehadiran ke sekolah.

Visit to SLAAS Award Recipient Schools for Session 2020-2022

The year 2023 is a promotional year for the SLAAS programme session 2023/2024. Accordingly, in order to attract interest and to be further used as a reference to schools that are interested in participating in the SLAAS programme, a promotional video had been produced. This promotional video includes the school's implementation of the five (5) main components of SLAAS which consist of management, curriculum, co-curriculum, greening, and special elements.

The content of this SLAAS promotional video is a recording of a visit to two schools that have received the Sustainable School Award for the 2020-2022 session, respectively, for the secondary and primary school categories. This division together with DOE Selangor and DOE Kedah visited Sekolah Menengah Kebangsaan Seri Keramat, Selangor and Sekolah Kebangsaan Air Merah, Kedah. Both of these schools have proven that the formation of sustainable schools has improved performance in learning and increase the percentage of school attendance.



▲ Sesi Bergambar bersama Guru SK Air Merah, Kedah
Photo Session with Teachers of SK Air Merah, Kedah



▲ Murid-murid Menjalankan Aktiviti Menanam Pokok
Students Carrying Out Tree Planting Activities



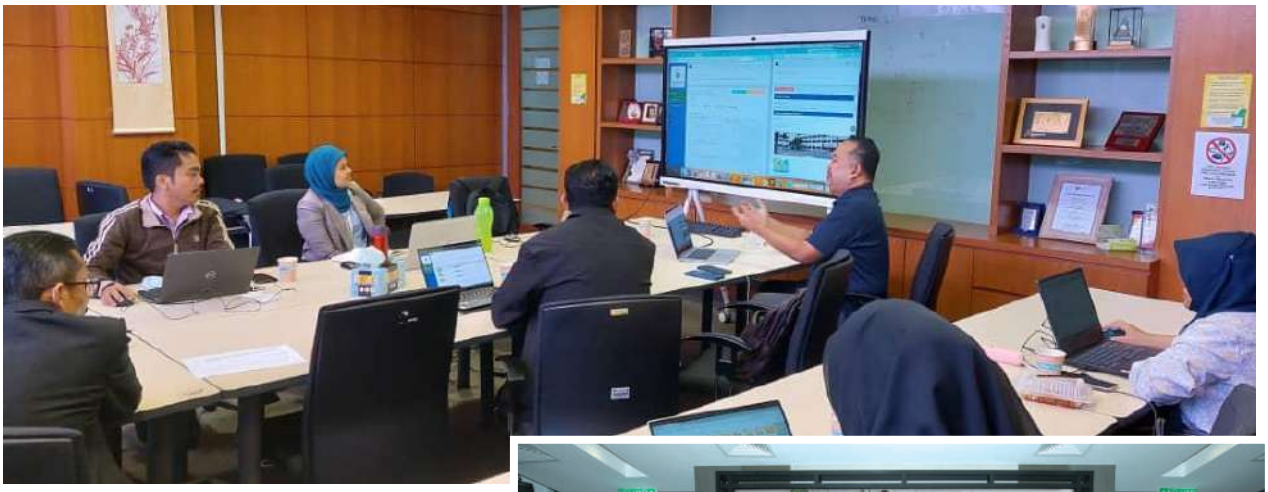
▲ Sesi Bergambar bersama Guru SMK Seri Keramat, Selangor
Photo Session with Teachers of SMK Seri Keramat, Selangor



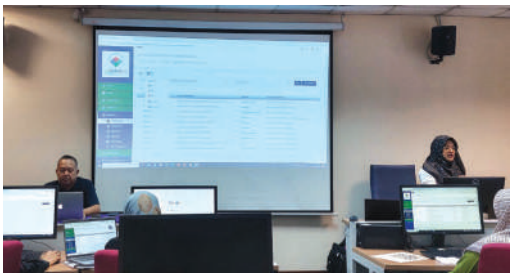
▲ Sesi Lawatan ke Tapak Projek di dalam SMK Seri Keramat
Visit to the Project Site at SMK Seri Keramat



▲ Sesi Ceramah kepada Pelajar SMK Seri Keramat
Talk Session to SMK Seri Keramat Students



▲ Bengkel Ujian Penerimaan Akhir Sistem Aplikasi SLAAS
SLAAS Application System Final Acceptance Test Workshop





▲ Bengkel Ujian Penerimaan Akhir Sistem Aplikasi SLAAS
SLAAS Application System Final Acceptance Test Workshop

Pembangunan Sistem Aplikasi SLAAS

Sebagai satu lonjakan paradigma, Bahagian Komunikasi Strategik telah membangunkan Sistem Aplikasi Sekolah Lestari Anugerah Alam Sekitar (SLAAS). Hal ini adalah bagi mengikuti peredaran teknologi semasa dan menarik lebih ramai penyertaan dari sekolah-sekolah seluruh Malaysia. Pembangunan sistem ini adalah sebagai pemudah cara kepada pegguna dan juga pentadbir sistem terutamanya dalam penganalisaan data-data yang dicerap. Beberapa siri bengkel telah diadakan sepanjang pembangunan sistem ini antaranya adalah Bengkel Spesifikasi Keperluan Pengguna (URS) dan Ujian Penerimaan Pengguna (UAT) bagi memastikan sistem ini memenuhi keperluan semua pihak pemegang taruh yang terdiri daripada guru-guru sekolah, para panel penilai SLAAS, pegawai KPM, LESTARI UKM dan pegawai JAS.

Sistem ini dibangunkan dengan menggunakan peruntukan di bawah Rancangan Malaysia Kedua Belas (RMKe-12) iaitu skop Pemerkasaan dan Pembudayaan Komunikasi, Pendidikan dan Kesedaran Alam Sekitar.

SLAAS Application System Development

As a paradigm shift, Strategic Communications Division has developed the Sustainable School - Environmental Award Application System (SLAAS). This is to keep up with current technology and attract more participation from schools throughout Malaysia. The development of this system is to facilitate the user and also the system administrator especially in the analysis of the observed data. A series of workshops have been held throughout the development of this system, including the User Requirements Specification Workshop (URS) and User Acceptance Test (UAT) to ensure that the system meets the needs of all stakeholders consisting of school teachers, SLAAS assessment panels, KPM officers, LESTARI UKM, and DOE officials.

This system was developed using allocations under the Twelfth Malaysia Plan (12MP) which is the scope of Communication Empowerment and Cultivation, Education, and Environmental Awareness.









▲ Bengkel Ujian Penerimaan Pengguna Sistem Aplikasi SLAAS
SLAAS Application System User Acceptance Test Workshop

Bengkel Libat Urus Promosi SLAAS bersama Jabatan Pendidikan Negeri (JPN) dan Pejabat Pendidikan Daerah (PPD)

Program SLAAS ini adalah merupakan satu program usahasama bersama Kementerian Pendidikan Malaysia (KPM) semenjak tahun 2005 lagi. Sehubungan itu, program libat urus bersama pegawai-pegawai JAS, Jabatan Pendidikan Negeri (JPN) dan Pejabat Pendidikan Daerah (PPD) merupakan acara tahunan yang wajib dilaksanakan dalam memacu dan menggerakkan program SLAAS. JPN dan PPD merupakan tunjang kepada kejayaan program dan merupakan penghubung kepada sekolah-sekolah.

Sebagai kaedah mempromosi SLAAS di seluruh Malaysia, bengkel promosi dan libat urus yang menghimpunkan 80 pegawai-pegawai dari JAS, (LESTARI) UKM, KPM, JPN, PPD dan beberapa orang guru dari seluruh negara telah diadakan pada 24 hingga 25 Julai 2023 di Kuala Terengganu. Pegawai-pegawai JPN dan PPD merupakan duta atau agen yang akan menyebarkan maklumat SLAAS di daerah dan negeri masing-masing.

SLAAS Promotion Engagement Workshop with State Department of Education (JPN) and District Education Office (PPD)

This SLAAS programme is a joint venture programme with the Ministry of Education (MOE) Malaysia since 2005. Accordingly, the engagement programme with DOE officials, State Education Department (JPN) and District Education Office (PPD) is an annual event that must be implemented in driving and mobilizing the SLAAS programme. JPN and PPD are the backbone of the programme's success and are the link to the schools.

As a method of promoting SLAAS throughout Malaysia, a promotional and engagement workshop that brought together 80 officials from DOE, UKM's (LESTARI), MOE, JPN, PPD, and some teachers from all over the country were held on 24 to 25 July 2023 in Kuala Terengganu. JPN and PPD officers are ambassadors or agents who will disseminate SLAAS information in their respective regions and states.



▲ Sesi Bergambar Semasa Bengkel
Photo Session during the Workshop



▲ Sesi Bergambar Semua Peserta Bengkel
Photo Session of all Workshop Participants



▶ Perasmian Bengkel oleh Puan Hajah Azuri Azizah binti Haji Saedon, Pengarah Bahagian Komunikasi Strategik, Jabatan Alam Sekitar Ibu Pejabat
Opening Ceremony of the Workshop by Mrs. Hajah Azuri Azizah binti Haji Saedon, Director of the Strategic Communication Division, Department of Environment Headquarters

Program Promosi SLAAS Peringkat JAS Negeri Seluruh Malaysia

Tahun 2023 adalah merupakan tahun bagi program promosi SLAAS. Bagi tujuan tersebut, JAS Ibu Pejabat telah menyalurkan peruntukan pembangunan dan mengurus sebanyak RM 2,000.00 bagi setiap negeri. Aktiviti promosi utama yang telah dilaksanakan oleh JAS Negeri adalah program libat urus bersama JPN, PPD dan guru-guru sekolah. Libat urus ini adalah penting sebagai usaha menarik minat sekolah untuk menyertai SLAAS dan memberi pemahaman kepada guru-guru tentang pengamalan gaya hidup lestari yang sebenarnya telah lama diterapkan di sekolah-sekolah.

SLAAS Promotion Programme State DOE Level Throughout Malaysia

The year 2023 is the year for the SLAAS promotion programme. For that purpose, DOE Headquarters has channelled development and management allocations amounting to RM 2,000.00 for each state. The main promotional activity that has been implemented by the state DOE is a programme involving JPN, PPD, and school teachers. This involvement is important as an effort to attract the interest of schools to participate in SLAAS and to give teachers an understanding of the practice of sustainable lifestyle that has actually been implemented in schools for a long time.



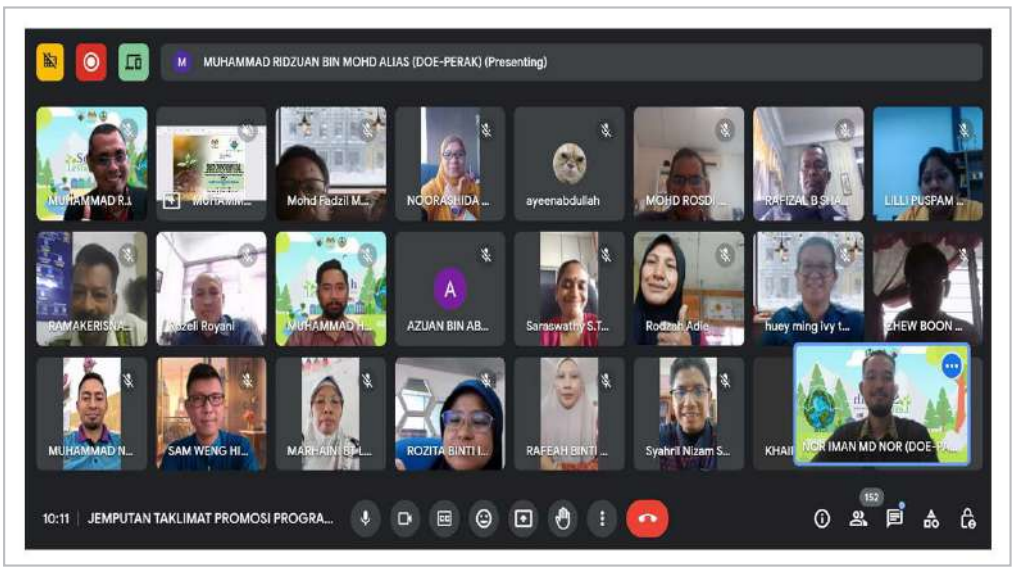
◂ Taklimat Promosi SLAAS oleh JAS Kedah
SLAAS Promotion Briefing by DOE Kedah



▴ Bengkel Promosi SLAAS oleh JAS W.P. Labuan
SLAAS Promotion Workshop by DOE W.P. Labuan



▴ Bengkel Promosi SLAAS oleh JAS Negeri Sembilan
SLAAS Promotion Workshop by DOE Negeri Sembilan



◂ Bengkel Promosi SLAAS oleh JAS Perak
SLAAS Promotion Workshop by DOE Perak



▸ Taklimat Promosi SLAAS oleh JAS Terengganu
SLAAS Promotion Briefing by DOE Terengganu





▲ Bengkel Promosi SLAAS oleh JAS Selangor / SLAAS Promotion Workshop by DOE Selangor

PERTANDINGAN DEBAT ALAM SEKITAR ANTARA INSTITUSI PENDIDIKAN TINGGI KE-29 TAHUN 2023

Jabatan Alam Sekitar (JAS) dengan kerjasama Kementerian Pendidikan Tinggi (KPT), Majlis Debat Universiti Malaysia (MADUM), Dewan Bahasa dan Pustaka (DBP) dan Universiti Tun Hussein Onn Malaysia (UTHM) telah menganjurkan Pertandingan Debat Alam Sekitar antara Institusi Pendidikan Tinggi (IPT) ke–29 secara hibrid iaitu peringkat awal secara maya manakala peringkat suku akhir, separuh akhir dan akhir secara fizikal di IPT tuan rumah, sebagai satu pendekatan baharu sejak tahun 2022 yang lalu. Pertandingan telah bermula dari 19 hingga 27 Ogos 2023 bersempena Sambutan Hari Alam Sekitar Negara 2023.

Pertandingan Debat Alam Sekitar (DAS) ini bermatlamat untuk meningkatkan pengetahuan mahasiswa, bakal pemimpin yang akan menerajui tampuk kepimpinan negara pada masa hadapan berkenaan isu, dasar dan polisi alam sekitar di peringkat negara Malaysia dan antarabangsa. Debat Alam Sekitar antara IPT merupakan program tahunan sejak tahun 1991 yang dianjurkan oleh

THE 29TH ANNUAL ENVIRONMENTAL DEBATE COMPETITION AMONG HIGHER EDUCATIONAL INSTITUTIONS 2023

The Department of Environment (DOE), in collaboration with the Ministry of Higher Education (MOHE), Malaysian University Debating Council (MADUM), Institute of Language and Literature (DBP), and Universiti Tun Hussein Onn Malaysia (UTHM) organized the 29th Environmental Debate Competition among Higher Education Institutions (HEI) in hybrid format. The preliminary rounds were conducted virtually, while the quarter-finals, semi-finals, and finals were held physically at the hosting HEI. This marked a new approach since the year 2022. The competition took place from 19 to 27 August 2023 in conjunction with the National Environment Day Celebration 2023.

The Environmental Debate Competition (DAS) aims to enhance the knowledge of students, who are future leaders destined to lead the country regarding environmental issues, policies, and strategies at both national and international levels. The Environmental Debate Competition among HEIs is an annual programme that has been held since 1991, organized by DOE in

JAS dengan kerjasama Kementerian Pengajian Tinggi, Majlis Debat Universiti Malaysia (MADUM) dan Dewan Bahasa dan Pustaka. Pertandingan debat ini dikendalikan secara debat ala–parlimen dan juga debat terbuka (debat biasa). Penentuan pasukan yang bertanding sama ada berperanan sebagai kerajaan atau pembangkang dibuat menggunakan kaedah sistem '*bracket power match*' untuk peringkat pusingan awal. Kedudukan setiap pasukan dibuat berdasarkan menang/kalah, juri, julat kemenangan dan markah keseluruhan. Pertandingan peringkat awal yang dijalankan secara maya melibatkan lima (5) pusingan. Lapan (8) pasukan terbaik dipilih untuk ke peringkat suku akhir dan empat (4) pasukan yang menang pula ke peringkat separuh akhir dan seterusnya dua (2) pasukan terbaik bertanding di peringkat akhir. Senarai pasukan IPT yang menyertai pertandingan pada tahun 2023 adalah seperti di **Jadual 6.1**.

collaboration with the Ministry of Higher Education, Malaysian University Debating Council (MADUM), and Institute of Language and Literature (DBP). This debate competition employs both parliamentary and open debate formats. The teams' roles, either as the government or opposition, are determined using the "bracket power match" system in the preliminary rounds. Teams' positions are based on wins/losses, judges' scores, victory margins, and overall points. The preliminary rounds, conducted virtually, consisted of five (5) rounds. The top eight (8) teams proceeded to the quarter-finals, while the four (4) winning teams advanced to the semi-finals. Subsequently, the two (2) best teams competed in the finals. The list of participating HEI teams in year 2023 is shown at **Table 6.1**

Jadual 6.1: Senarai Pasukan Institusi Pendidikan Tinggi yang Menyertai Pertandingan
Table 6.1: List of Higher Educational Institution Teams Participated in the Competition

BIL. NO.	PASUKAN INSTITUSI PENDIDIKAN TINGGI HIGHER EDUCATIONAL INSTITUTION TEAM
1	Universiti Tun Hussein Onn Malaysia (UTHM)
2	Universiti Islam Antarabangsa Malaysia (UIAM)
3	Universiti Multimedia (MMU)
4	Universiti Pendidikan Sultan Idris (UPSI)
5	University Poly-Tech Malaysia (UPTM)
6	Universiti Kuala Lumpur (UniKL)
7	Universiti Teknologi MARA (UiTM)
8	Universiti Kebangsaan Malaysia (UKM)
9	Universiti Utara Malaysia (UUM)
10	IPG Kampus Kent Tuaran, Sabah
11	Universiti Malaysia Terengganu (UMT)
12	Universiti Teknologi Petronas (UTP)
13	Universiti Tenaga Nasional (UNITEN)
14	Universiti Sultan Zainal Abidin (UniSZA)
15	IPG Kampus Pendidikan Teknik, Negeri Sembilan
16	Universiti Sains Malaysia (USM)
17	Universiti Malaysia Kelantan (UMK)
18	Universiti Sains Islam Malaysia (USIM)
19	Universiti Malaya (UM)
20	IPG Kampus Temenggong Ibrahim, Johor
21	Universiti Putra Malaysia (UPM)
22	Universiti Pertahanan Nasional Malaysia (UPNM)
23	Universiti Malaysia Sabah (UMS)
24	IPG Kampus Tun Abdul Razak, Sarawak
25	Universiti Malaysia Pahang Al-Sultan Abdullah (UMPSA)
26	Universiti Selangor (UNISEL)

Jadual 6.1: Senarai Pasukan Institusi Pendidikan Tinggi yang Menyertai Pertandingan
Table 6.1: List of Higher Educational Institution Teams Participated in the Competition

BIL. NO.	PASUKAN INSTITUSI PENDIDIKAN TINGGI HIGHER EDUCATIONAL INSTITUTION TEAM
27	Universiti Malaysia Perlis (UniMAP)
28	IPG Kampus Dato' Razali Ismail, Terengganu
29	IPG Malaysia (IPGM)
30	Universiti Malaysia Sarawak (UNIMAS)

Pertandingan Debat Alam Sekitar antara IPT ke-29 Tahun 2023 ini telah diadakan di Universiti Tun Hussein Onn Malaysia (UTHM) bermula dari 25 hingga 27 Ogos 2023 bersempena sambutan Hari Alam Sekitar Negara (HASN) 2023. Program kesedaran alam sekitar yang lain turut dianjurkan selain perdebatan bagi memberi galakan kepada pelajar dan orang awam untuk lebih mencintai alam sekitar seperti pameran lestari dan program sisipan Rakan Alam Sekitar (RAS) yang diadakan di sekitar kampus UTHM, Batu Pahat, Johor.

Pertandingan peringkat akhir yang diadakan pada 27 Ogos 2023 telah berlangsung di Dewan Sultan Ibrahim (DSI) UTHM di antara pasukan Universiti Sains Malaysia (USM) dan Universiti Kebangsaan Malaysia (UKM) dengan usul perdebatan yang bertajuk "Dewan Ini Menyokong Penempatan Semula Pelarian Iklim sebagai Tindak Balas Kemanusiaan terhadap Perubahan Iklim". Majlis perasmian dan penyampaian hadiah telah disempurnakan oleh Ketua Pengarah Alam Sekitar, Yang Berbahagia Dato' Wan Abdul Latiff bin Wan Jaffar yang membacakan teks ucapan perasmian YB Menteri Sumber Asli, Alam Sekitar dan Perubahan Iklim, sambil diiringi oleh Yang Berbahagia Profesor Ir. Ts. Dr. Ruzairi bin Abdul Rahim, Naib Canselor UTHM dan disaksikan oleh YBhg. Prof. Sr. Ts. Dr. Hj. Lokman Hakim bin Hj. Ismail, Timbalan Naib Canselor (Hal Ehwal Pelajar & Alumni) UTHM merangkap Pengerusi Majlis Debat Universiti Malaysia (MADUM).

Johan bagi Pertandingan Debat Alam Sekitar antara IPT membawa pulang wang tunai berjumlah RM8,000.00 berserta sijil penyertaan, piala iringan dan Piala Pusingan Menteri Sumber Asli, Alam Sekitar dan Perubahan Iklim. Manakala naib johan pula menerima wang tunai berjumlah RM5,000.00 beserta piala iringan dan sijil penyertaan. Dua pasukan pencapaian separuh akhir menerima wang tunai RM1,500.00, plak dan sijil penyertaan. Pendebat terbaik peringkat akhir menerima wang tunai RM1,500, plak dan sijil penyertaan. Manakala pendebat terbaik liga menerima wang tunai RM1,000.00, plak dan sijil penyertaan. Senarai nama pemenang-pemenang adalah seperti yang tertera di **Jadual 6.2**.

The 29th Environmental Debate Competition among Higher Education Institutions (HEIs) in 2023 was held at Universiti Tun Hussein Onn Malaysia (UTHM) from 25 to 27 August 2023, in conjunction with the celebration of National Environment Day (HASN) 2023. Other environmental awareness programmes were also organized alongside the debate to encourage students and the public to appreciate the environment more, such as sustainable exhibitions and the Environmental Partner (RAS) insertion programme held around the UTHM campus in Batu Pahat.

The final round of the competition held on 27 August 2023 took place at the Sultan Ibrahim Hall (DSI) of UTHM between the teams from Universiti Sains Malaysia (USM) and Universiti Kebangsaan Malaysia (UKM) with a debate proposal titled "This House Supports Climate Refugee Resettlement as a Humanitarian Response to Climate Change". The opening ceremony and prize presentation were officiated by the Director-General of the Environment, Dato' Wan Abdul Latiff bin Wan Jaffar, who delivered the opening speech on behalf of the Minister of Natural Resources, Environment, and Climate Change, accompanied by Professor Ir. Ts. Dr. Ruzairi bin Abdul Rahim, the Vice-Chancellor of UTHM. The event was witnessed by Professor Sr. Ts. Dr. Hj. Lokman Hakim bin Hj. Ismail, the Deputy Vice-Chancellor (Student Affairs & Alumni) of UTHM, who also serves as the Chairman of the Malaysian University Debating Council (MADUM).

The champion of the Environmental Debate Competition among HEIs received a cash prize of RM8,000.00 along with participation certificates, an accompanying trophy, and the Minister of Natural Resources, Environment and Climate Change Round Trophy. The runner-up received a cash prize of RM5,000.00, an accompanying trophy, and participation certificates. Two semi-finalist teams were awarded RM1,500.00 in cash, plaques, and participation certificates. The Best Debater of the final round received a cash prize of RM1,500, a plaque, and a participation certificate. Additionally, the Best Debater of the league was awarded RM1,000.00 in cash, a plaque, and a participation certificate. The list of winners' names is as shown in **Table 6.2.**

Jadual 6.2: Senarai Pemenang Pertandingan Debat Alam Sekitar antara IPT ke-29 Tahun 2023
Table 6.2: The list of Winners of the 29th Environmental Debate Competition among Higher Education Institutions (HEIs) in Year 2023

KATEGORI CATEGORY	NAMA PESERTA DEBAT DEBATERS NAME	PASUKAN TEAM
JOHAN WINNER	(1) Nursyazana binti Haron (2) Abdullah bin Nudin (3) Muhamad Hafizi bin Mohd Hanafi (4) Mohamad Firdaus bin Kasah Hamid@Kasmidy	USM
NAIB JOHAN 1ST RUNNER UP	(1) Muhammad Iman bin Azhar (2) Hafiz Hafizi bin Norependi (3) Adliesyamil Yaasin bin Azman (4) Muhamad Badrul Naim bin Mohd Besri	UKM
SEPARUH AKHIR SEMI-FINAL	(1) Sharifah Nurjiha Binti Syed Mohatha (2) Mohammad Khairul Hilmi bin Mustapha (3) Muhammad Uwais bin Sobri (4) Nur Anis Amira binti Anuar	UniKL
SEPARUH AKHIR SEMI-FINAL	(1) Anfaal binti Yazi (2) Balqis binti Azmi (3) Daeng Mohd Fikhri bin Eyuki (4) Muhammad Irsyad bin Rosli	IPGM
PENDEBAT TERBAIK AKHIR FINALS BEST DEBATER	Muhamad Hafizi bin Mohd Hanafi	USM
PENDEBAT TERBAIK LIGA LEAGUE BEST DEBATER	Nur Syahirah Balqis binti Shahrulnizam	UIAM



▲ Perarakan Masuk Piala Pusingan Pertandingan Debat Alam Sekitar antara Institusi Pendidikan Tinggi (IPT) ke-29
The Entrance Procession of the Round Trophy for the 29th Annual Environmental Debate Competition among Higher Educational Institutions (HEIs)



◂ Pertandingan Akhir Debat Alam Sekitar antara IPT di antara Pasukan Universiti Sains Malaysia (USM) dan Universiti Kebangsaan Malaysia (UKM) / The Final Round of the Environmental Debate among Higher Educational Institutions (HEIs) between Universiti Sains Malaysia (USM) and Universiti Kebangsaan Malaysia (UKM)



▲ Para Pemenang Pertandingan Debat Alam Sekitar antara Institusi Pendidikan Tinggi (IPT) ke–29 / The Winners of the 29th Environmental Debate Competition among Higher Education Institutions (HEIs)



◂ Para Peserta Debat Berkumpul di Atas Talian Sebelum Pertandingan Bermula / The Debate Participants Gather Online Before the Competition Begins



▲ Finalis Pertandingan Debat Alam Sekitar antara Institusi Pendidikan Tinggi (IPT) kali ke–29 The Finalists of the 29th Annual Environmental Debate Competition among Higher Educational Institutions (HEIs)



▲ Johan Pertandingan Debat Alam Sekitar antara Institusi Pendidikan Tinggi (IPT) ke–29 The Champion of the 29th Annual Environmental Debate Competition among Higher Educational Institutions (HEIs)



◂ Sekretariat Penganjuran Debat daripada JAS Mengendalikan Pusingan Awal secara Atas Talian
The Debate Secretariat from DOE is Handling the Preliminary Round Online



◂ Jawatankuasa Pelajar UTHM yang Mengendalikan Pusingan Awal secara Atas Talian
The UTHM Student Committee Handling the Preliminary Round Online



▴ Pengerusi MADUM bersama Sekretariat JAS dan UTHM Memantau Pelaksanaan Pertandingan / The MADUM Chairman along with the DOE and UTHM Secretariats are Monitoring the Implementation of the Competition



◂ Buku Program Pertandingan
The Programme Booklet of the Competition

STATUS PELAKSANAAN KAMPUS LESTARI - ANUGERAH ALAM SEKITAR OLEH JABATAN ALAM SEKITAR (JAS) TAHUN 2023

Kajian Pembangunan Garis Panduan dan Pembentukan Kampus Lestari – Anugerah Alam Sekitar (KLAAS)

Kajian Pembangunan Garis Panduan dan Pembentukan Kampus Lestari – Anugerah Alam Sekitar (KLAAS) telah selesai dilaksanakan pada September 2022. Melalui kajian ini, beberapa *output* dan *outcome* telah dihasilkan antaranya seperti berikut:-

IMPLEMENTATION STATUS OF SUSTAINABLE CAMPUS - ENVIRONMENTAL AWARD BY THE DEPARTMENT OF ENVIRONMENT (DOE) IN 2023

Development Study of Guidelines and Formation of Sustainable Campus - Environmental Award (KLAAS)

Development Study of Guidelines and Formation of Sustainable Campus - Environmental Award (KLAAS) was completed in September 2022. Several outputs and outcomes have been produced through this study, including:

***OUTPUT* DAN *OUTCOME* / OUTPUTS AND OUTCOMES**

- Laporan Akhir Kajian / Final Study Report
- Garis Panduan KLAAS / KLAAS Guidelines
- Manual Penilaian KLAAS / Assessment Manual for KLAAS
- Laporan Kebolehlaksanaan dan Kebolehgunaan KLAAS / Feasibility and Usability Report for KLAAS

Berdasarkan kajian yang telah dijalankan, pelaksanaan KLAAS ini kelak akan melibatkan lima (5) kategori iaitu:-

Kementerian Pendidikan Tinggi (KPT):

i. Universiti Awam (UA)
ii. Institusi Pendidikan Tinggi Swasta (IPTS)
iii. Politeknik
iv. Kolej Komuniti

Kementerian Pendidikan Malaysia (KPM):

v. Institut Pendidikan Guru (IPG)

Based on the study, the implementation of KLAAS will involve five (5) categories, namely:-

Ministry of Higher Education (MoHE):

i. Public Universities (UA)
ii. Private Higher Education Institutions (IPTS)
iii. Polytechnics
iv. Community Colleges

Ministry of Education Malaysia (MOE):

v. Teacher Education Institutes (IPG)

JAS masih dalam peringkat mengatur perbincangan dan penyelarasan bersama pemegang taruh terutamanya pihak Kementerian Pendidikan Tinggi (KPT) dan Kementerian Pendidikan Malaysia (KPM). Perkara ini penting dalam membantu JAS membuat keputusan berhubung kebolehlaksanaan KLAAS ini bagi memastikan Program KLAAS dapat direalisasikan dengan jayanya di negara ini.

The DOE is still in the process of organizing discussions and coordination with stakeholders, especially the Ministry of Higher Education (MoHE) and the Ministry of Education Malaysia (MOE). This matter is crucial in assisting DOE in making decisions regarding the feasibility of the KLAAS initiative to ensure that the KLAAS Programme can be successfully implemented in the country.

Projek Perintis KLAAS (UPM dan UiTM)

JAS juga melalui peruntukan di bawah projek pembangunan RMKe-12 telah melaksanakan Projek Perintis KLAAS dengan durasi setahun sebagai kesinambungan daripada projek kajian tersebut. IPT contoh yang terpilih untuk menjalankan projek perintis ini ialah Universiti Putra Malaysia (UPM) dan Universiti Teknologi MARA (UiTM).

Pilot Project on KLAAS (UPM and UiTM)

DOE has also implemented the Pilot Project on Sustainable Campus through allocations under the RMKe-12 development project, with a duration of one year as a continuation of the above-mentioned study. The selected HEIs to carry out this pilot project are Universiti Putra Malaysia (UPM) and Universiti Teknologi MARA (UiTM).

Sebanyak tiga (3) sub-projek yang dilaksanakan oleh UPM iaitu:

UPM implemented a total of three (3) sub-projects namely:

Sub-Projek 1 / Sub-Project 1	Sub-Projek 2 / Sub-Project 2	Sub-Projek 3 / Sub-Project 3
Pengkomposan Sisa Makanan Timbunan Statik Berudara Composting of Static Airfield Food Waste	Pengurusan Sisa Elektronik terhadap Pemampanan Kampus UPM Serdang Electronic Waste Management for UPM Serdang Campus	Pengitaran Sisa Bahan Binaan Fizikal sebagai Alternatif Penghasilan Elemen-Elemen Kejur Bagi Kegunaan Senibina Landskap di UPM Recycling of Physical Construction Waste as an Alternative Production of Landscape Architecture Elements for Use in UPM

Manakala sebanyak empat (4) sub-projek yang dilaksanakan oleh UiTM melalui Pusat Hijau UiTM iaitu:-

Meanwhile, UiTM implemented a total of four (4) sub-projects through the UiTM Green Centre, namely:-

Sub-Projek 1 Sub-Project 1	Sub-Projek 2 Sub-Project 2	Sub-Projek 3 Sub-Project 3	Sub-Projek 4 Sub-Project 4
Acquisitation of Sustainable Water Resource in UiTM Via Rainwater Harvesting System	*Vertical Green Wall*	*Solar Powered Bus Shelter*	*Tree Campus Mapping UiTM System (Tree-CaMus)*

Projek perintis ini telah tamat pada 31 Disember 2023.

This pilot project concluded on 31 December 2023.

Pada 31 Oktober 2023, Pusat Strategi dan Perhubungan Korporat UPM telah menganjurkan sambutan Hari Alam Sekitar Negara Peringkat UPM 2023. JAS telah dijemput hadir menjayakan program sambutan ini antaranya penglibatan panel dalam Forum Pelestarian Pengurusan Sisa di Kampus dan juga pameran alam sekitar lestari. UPM juga telah memberikan perkongsian kisah kejayaan Projek Perintis KLAAS UPM dalam program tersebut.

On 31 October 2023, the Centre for Strategic and Corporate Communication UPM organized the celebration of National Environmental Day 2023 at UPM. The DOE was invited to participate in the event which include involvement in panel discussions on Waste Management Conservation on Campus Forum and an exhibition on sustainable environment. UPM also shared the success story of the UPM KLAAS Pilot Project during the programme.

Pada 7 Disember 2023 pula, Pusat Hijau UiTM telah menganjurkan program *Sustainability Symposium UGC 2023 "Way Forward for Sustainability Campus"*. JAS telah dijemput hadir menjayakan program sambutan ini antaranya penglibatan sebagai panel penceramah dalam simposium. UiTM juga telah memberikan perkongsian kisah kejayaan Projek Perintis KLAAS UiTM dalam program tersebut. JAS juga telah dijemput hadir bagi perasmian perhentian bas berkuasa solar UiTM.

On 7 December 2023, the UiTM Green Centre organized the Sustainability Symposium UGC 2023 "Way Forward for Sustainability Campus". DOE was invited to contribute to the success of this event, including participation as a panel speaker in the symposium. UiTM also shared the success story of the UiTM KLAAS Pilot Project during the programme. DOE was also invited to attend the inauguration of UiTM's solar-powered bus shelter.

Sesi Libat Urus KLAAS

Libat Urus KLAAS telah diadakan pada 7 Jun 2023 bertempat di Ideas Hotel, Kuala Lumpur anjuran Seksyen Pendidikan Alam Sekitar, Bahagian Komunikasi Strategik, Jabatan Alam Sekitar. Program libat urus ini telah dihadiri oleh pegawai-pegawai Jabatan Alam Sekitar yang mengendalikan program Komunikasi, Pendidikan dan Kesedaran Awam (CEPA) di Ibu Pejabat

Engagement Session on KLAAS

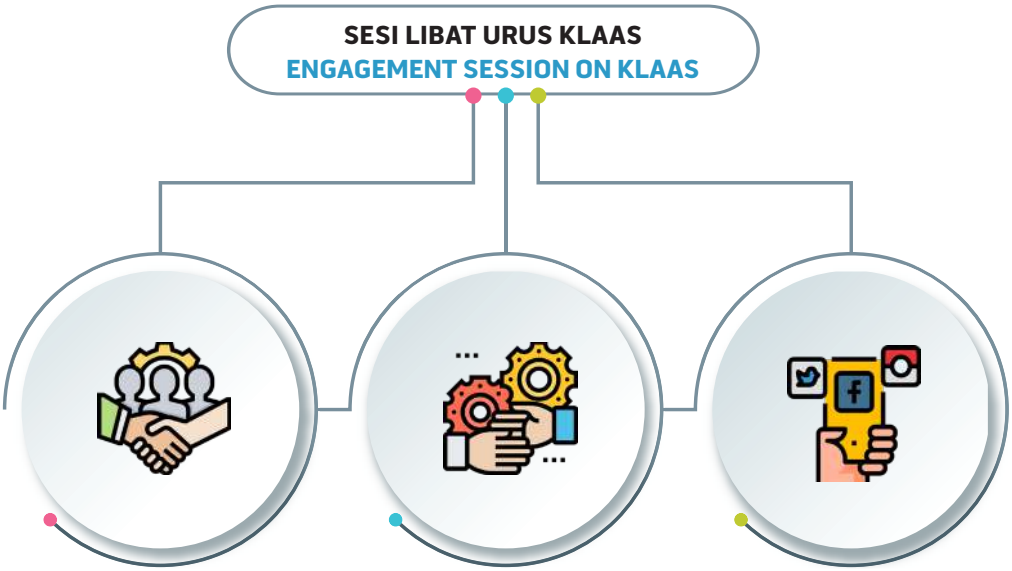
The Engagement on KLAAS was held on 7 June 2023 at Ideas Hotel, Kuala Lumpur, organized by the Environmental Education Section, Strategic Communication Division, Department of Environment. This engagement programme was attended by officers from the Department of Environment who oversee the Communication, Education, and Public Awareness

dan juga Negeri. Selain itu, terdapat juga kehadiran pegawai daripada Kementerian Pendidikan Tinggi (KPT), Kementerian Pendidikan Malaysia (KPM), Institut Alam Sekitar dan Lestari (LESTARI, UKM) serta wakil daripada IPT seluruh negara.

(CEPA) programme at the Headquarters and State levels. Additionally, there were representatives from the Ministry of Higher Education (MoHE), Ministry of Education Malaysia (MOE), Institute of Environment and Development (LESTARI, UKM), as well as representatives from universities nationwide.

Hasil daripada sesi libat urus yang dijalankan ialah seperti berikut:

The outcomes of the management workshop were as follows:



MEMBANTU memantapkan fungsi JAS yang bertanggungjawab terhadap penganjuran KLAAS di peringkat IPT di seluruh Malaysia
ASSISTING in strengthening the functions of the Department of Environment responsible for organizing KLAAS at the HEI level throughout Malaysia

PENGUMPULAN maklumat dan pengenalpastian untuk penambahbaikan dari aspek Institusi Pendidikan Tinggi (IPT) bagi pelaksanaan KLAAS
COLLECTION of information and identification for improvements regarding Higher Education Institutions (HEIs) for the implementation of KLAAS

PENYEBARAN maklumat berterusan berkenaan pembudayaan alam sekitar dapat dicapai di kalangan semua pemegang taruh yang terlibat dalam pelaksanaan KLAAS
CONTINUOUS dissemination of information regarding environmental conservation culture can be achieved among all stakeholders involved in the implementation of KLAAS



▲ Para Peserta Sesi Libat Urus
The Participants of the Engagement Session



▲ Pembentangan oleh Perunding dari UPM Consultancy & Services Sdn. Bhd.
Presentation by the Consultant from UPM Consultancy & Services Sdn. Bhd.



▲ Perasmian Sesi Libat Urus oleh Pn. Hajah Azuri Azizah binti Haji Saedon, Pengarah Bahagian Komunikasi Strategik JAS / The Opening of the Engagement Session by Mrs. Hajah Azuri Azizah binti Haji Saedon, Director of the Strategic Communication Division, Department of Environment

▲ Pembentangan dan Libat Urus sedang Berlangsung
Presentation and Engagement are Ongoing



◀ Kehadiran Sambutan Hari Alam Sekitar Negara Peringkat UPM 2023
The Attendance of the UPM National Environmental Day Celebration 2023



▲ Pemenang Pertandingan Pengumpulan Sisa E-waste di UPM
The Winner of the E-waste Collection Competition at UPM



▲ Kehadiran Program *Sustainability Symposium* UGC 2023 "*Way Forward For Sustainability Campus*"
The Attendance of Sustainability Symposium UGC 2023 "Way Forward For Sustainability Campus"



▲ Projek Perhentian Bas Berkuasa Solar yang telah Siap di Kampus UiTM
The Solar-Powered Bus Shelter Project that has been Completed on the UiTM Campus



▲ Majlis Perasmian Perhentian Bas Berkuasa Solar UiTM / The Inauguration Ceremony of the Solar-Powered Bus Shelter at UiTM



▶ Timbalan Ketua Pengarah (Pembangunan) JAS Memberikan Kata Aluan di dalam Simposium / The Deputy Director General (Development) of the DOE Delivered a Welcome Address at the Symposium

Bengkel Pengenalan dan Libat Urus Kebolehlaksanaan KLAAS

Bengkel Pengenalan dan Libat Urus Kebolehlaksanaan KLAAS pula telah dilaksanakan pada 25 hingga 27 Julai 2023 bertempat di Primula Beach Hotel, Kuala Terengganu anjuran Seksyen Pendidikan Alam Sekitar, Bahagian Komunikasi Strategik, Jabatan Alam Sekitar. Bengkel ini telah dihadiri oleh pegawai-pegawai Jabatan Alam Sekitar yang mengendalikan program Komunikasi, Pendidikan dan Kesedaran Awam (CEPA) di Ibu Pejabat dan juga Negeri. Selain itu, terdapat juga kehadiran pegawai daripada Kementerian Pendidikan Tinggi (KPT), Kementerian Pendidikan Malaysia (KPM), Institut Alam Sekitar dan Lestari (LESTARI, UKM) serta turut dihadiri oleh wakil IPT seperti Universiti Teknologi MARA (UiTM), Universiti Putra Malaysia (UPM) dan Universiti Malaysia Terengganu (UMT).

Bengkel ini dirasmikan oleh Puan Hajah Mashitah binti Darus, Timbalan Ketua Pengarah (Pembangunan) JAS yang turut dihadiri oleh Puan Hajah Azuri Azizah binti

Workshop on Introduction and Engagement of KLAAS

The Workshop on Introduction and Management of KLAAS was held from 25 to 27 July 2023 at Primula Beach Hotel, Kuala Terengganu, organized by the Environmental Education Section, Strategic Communication Division, Department of Environment. This workshop was attended by officers from the Department of Environment responsible for the Communication, Education, and Public Awareness (CEPA) programme at both Headquarters and State levels. Additionally, there were representatives from the Ministry of Higher Education (MOHE), Ministry of Education Malaysia (MOE), Institute of Environment and Development (LESTARI, UKM), as well as representatives from universities such as Universiti Teknologi MARA (UiTM), Universiti Putra Malaysia (UPM), and Universiti Malaysia Terengganu (UMT).

This workshop was inaugurated by Puan Hajah Mashitah binti Darus, Deputy Director General (Development) of DOE, and was attended by Puan Hajah Azuri Azizah binti

Haji Saedon, Pengarah Bahagian Bahagian Komunikasi Strategik, JAS Ibu Pejabat dan Encik Ramli bin Abd. Rahman, Pengarah JAS Negeri Terengganu bertujuan untuk memberikan pendedahan dan perkongsian bersama pihak berkepentingan iaitu pegawai JAS, KPT, KPM dan semua IPT di Malaysia bagi hala tuju kebolehlaksanaan KLAAS ini di peringkat yang seterusnya.

Para peserta bengkel juga dibawa melawat ke salah sebuah IPT di Malaysia iaitu Universiti Malaysia Terengganu (UMT) yang terletak berhampiran dengan lokasi bengkel dijalankan pada 27 Julai 2023 bagi memberi perkongsian amalan kelestarian yang telah dilaksanakan di kampus UMT. Delegasi JAS dan para peserta bengkel telah disambut oleh Profesor Ts. Dr. Mohd Zamri bin Ibrahim, Timbalan Naib Canselor (Akademik dan Antarabangsa) UMT serta para pensyarah yang lain. Peserta didedahkan dengan aktiviti eko-kampus UMT serta lawatan ke Galeri Institut Oseanografi dan Sekitaran (INOS), dan tempat penetasan *Institute of Tropical Aquaculture and Fisheries* (AKUATROP). JAS dengan berbesar hati mengucapkan penghargaan kepada pihak pengurusan UMT kerana sudi menerima kunjungan dan memberikan perkongsian kepada peserta bengkel mengenai amalan kelestarian UMT.

JAS melalui Kementerian Sumber Asli dan Kelestarian Alam (NRES) sedang menyusun kolaborasi yang padu bersama KPT dan KPM agar IPT di Malaysia menjadi pemangkin utama dalam usaha kelestarian alam sekitar negara.

Haji Saedon, Director of the Strategic Communication Division, Headquarters of DOE, and Encik Ramli bin Abd. Rahman, Director of DOE Terengganu State, aiming to provide exposure and sharing with stakeholders, including DOE officers, MoHE, MOE and all HEIs in Malaysia, regarding the direction of the feasibility of KLAAS initiative in the next phase.

The workshop participants were also taken to visit one of the HEIs in Malaysia, Universiti Malaysia Terengganu (UMT), located near the workshop venue, conducted on 27 July 2023, to share sustainability practices implemented at the UMT campus. The DOE delegation and workshop participants were welcomed by Prof. Ts. Dr. Mohd Zamri bin Ibrahim, Deputy Vice Chancellor (Academic and International) of UMT, as well as other lecturers. Participants were exposed to UMT's eco-campus activities and visited the Institute of Oceanography and Environment (INOS) Gallery, and the Institute of Tropical Aquaculture and Fisheries (AKUATROP) hatchery. DOE sincerely appreciates the management of UMT for graciously hosting the visit and sharing sustainability practices with workshop participants.

DOE, through the Ministry of Natural Resources and Environment (NRES), is currently forging strong collaborations with MoHE and MOE to make HEIs in Malaysia as the main drivers in the country's environmental sustainability efforts.



▲ Para Peserta Bengkel Bergambar bersama Pengurusan Atasan JAS
The Workshop Participants taking Group Photo with Top Management of DOE



▲ Perbincangan Kumpulan di antara Peserta Bengkel / Group Discussion among Workshop Participants



▲ Gambar Berkumpulan semasa Lawatan ke Kampus UMT yang merupakan sebahagian dari Agenda Bengkel / Group Photo during the Visit to UMT Campus as part of the Workshop Agenda



▶ Gambar Berkumpulan Usai Taklimat dan Pembentangan Kampus Lestari di Dewan Kuliah UMT
Group Photo After the Briefing and Presentation on Sustainable Campus at the UMT Lecture Hall

LAWATAN MAHASISWA INSTITUSI PENDIDIKAN TINGGI KE JABATAN ALAM SEKITAR IBU PEJABAT PADA TAHUN 2023

Jabatan Alam Sekitar Ibu Pejabat telah menerima kunjungan daripada mahasiswa Program Sarjana Muda Kesihatan Awam Universiti Teknologi MARA (UiTM) Sungai Buloh, dan mahasiswa jurusan Ijazah Sarjana Muda Pengurusan Alam Sekitar dan Teknologi Kelestarian (BEMST), Universiti Kuala Lumpur (UniKL) MICET pada Disember 2023.

Kunjungan daripada UiTM dan UniKL ini telah disambut oleh Puan Hajah Azuri Azizah binti Haji Saedon, Pengarah Bahagian Komunikasi Strategik, JAS. Lawatan ini merupakan satu peluang bagi mahasiswa memahami peranan dan tanggungjawab JAS dalam menjaga dan memulihara serta memelihara alam sekitar. Sebagai agen utama dalam melaksanakan dasar-dasar alam sekitar negara, JAS merasakan lawatan ini akan memberikan pandangan yang berbeza

VISIT OF STUDENTS FROM HIGHER EDUCATION INSTITUTIONS TO THE HEADQUARTERS OF THE DEPARTMENT OF ENVIRONMENT IN 2023

The Headquarters of the Department of Environment received visits from students of the Bachelor of Public Health Programme at Universiti Teknologi MARA (UiTM) Sungai Buloh, and students majoring in Bachelor of Environmental Management and Sustainability Technology (BEMST) at Universiti Kuala Lumpur (UniKL) MICET in December 2023.

The visits from UiTM and UniKL were welcomed by Puan Hajah Azuri Azizah binti Haji Saedon, Director of the Strategic Communication Division, Department of Environment. This visit provided an opportunity for students to understand the role and responsibilities of the Department of Environment in conserving and preserving the environment. As the main agency responsible for implementing the nation's environmental policies, the Department of Environment believes that this visit will

mengenai cabaran dan usaha dalam pemuliharaan alam sekitar yang kita cintai.

Di samping bidang tugas utama JAS yang melaksanakan aktiviti penguatkuasaan di bawah Akta Kualiti Alam Sekeliling 1974, JAS juga melaksanakan tugas-tugas berkaitan komunikasi, pendidikan dan kesedaran awam (CEPA). CEPA adalah kaedah yang telah diterima pakai 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. Pengisian lawatan separuh hari ini sedikit sebanyak dapat memenuhi keperluan kurikulum bagi pelajar-pelajar yang terlibat, antaranya tayangan video korporat JAS, pengenalan kepada JAS, Penilaian Kesan kepada Alam Sekeliling, lawatan ke Enviro Library dan lawatan ke Pusat Data Alam Sekitar (EDC).

offer a different perspective on the challenges and efforts in conserving our beloved environment.

In addition to the Department of Environment's main responsibilities of enforcing activities under the Environmental Quality Act 1974, the Department also carries out communication, education, and public awareness (CEPA) tasks. CEPA is a method adopted to motivate stakeholders towards understanding and practicing sustainable use of natural resources. It aims to enhance awareness, knowledge, and skills among the public in this country through various educational and training activities aimed at supporting community actions and behavioral changes. The half-day visit programme has somewhat met the curriculum requirements for the participating students, including viewing the Department of Environment's corporate video, an introduction to the Department of Environment, Environmental Impact Assessment, a visit to the Enviro Library, and a visit to the Environmental Data Center (EDC).



▲ Menyambut Kedatangan Mahasiswa UiTM Kampus Sungai Buloh
Welcoming the Arrival of UiTM Sungai Buloh Campus Students



▲ Mahasiswa Melawat ke Pusat Data Alam Sekitar (EDC) / The Students Visited the Environmental Data Center (EDC)



▲ Menyambut Kedatangan Mahasiswa UniKL MICET
Welcoming the Arrival of UniKL MICET Students



▲ Mahasiswa UniKL MICET sedang Mendengar Taklimat / The Students of UniKL MICET are Attending A Briefing

SEKSYEN MEDIA, BAHAGIAN KOMUNIKASI STRATEGIK, JABATAN ALAM SEKITAR

Seksyen media bertanggungjawab untuk menguruskan semua aspek komunikasi dan platform media sosial. Fungsi dan tugas unit secara umumnya meliputi:

MEDIA SECTION, STRATEGIC COMMUNICATION DIVISION, DEPARTMENT OF ENVIRONMENT

The media section is responsible for managing all aspects of communication and social media platforms. The functions and tasks of the unit generally include:



MENYEDIAKAN HEBAHAN:
Seksyen media menyediakan bahan hebahan berbentuk poster, infografik, banner, bunting dan video bertujuan untuk menyampaikan informasi dan program berkaitan Jabatan kepada orang awam.

PROVIDING MATERIALS:
The media section provides communication materials in the form of posters, infographics, banners, buntings, and videos aimed at conveying information and departmental programs to the public.



MERANCANG STRATEGI KOMUNIKASI:
Unit media merancang strategi komunikasi yang berkesan untuk meningkatkan imej dan visibiliti organisasi serta terlibat dalam merancang acara, kempen dan promosi.

DESIGNING COMMUNICATION STRATEGIES:
The media unit designs effective communication strategies to enhance the organization's image and visibility, and is involved in designing events, campaigns, and promotions.



MENJAWAB PERTANYAAN MEDIA:
Unit media menjawab pertanyaan dan permintaan maklumat dari orang awam melalui media sosial dan sistem e-aduan.

RESPONDING TO MEDIA INQUIRIES:
The media unit responds to inquiries and information requests from the public through social media and the e-complaint system.



MENGURUSKAN MEDIA SOSIAL:
Menyelaras dan menguruskan akaun media sosial Jabatan seperti Facebook, Instagram, YouTube dan X (Twitter). Seksyen ini menyelaras, menyedia dan memantau semua kandungan, berinteraksi dengan pengikut dan memantau maklum balas orang ramai terhadap Jabatan.

MANAGING SOCIAL MEDIA:
Coordinating and managing departmental social media accounts such as Facebook, Instagram, YouTube, and X (Twitter). This section coordinates, prepares, and monitors all content, interacts with followers, and monitors public feedback on the department.



MEMANTAU LIPUTAN MEDIA:
Unit media memantau liputan media tentang Jabatan untuk mengetahui pendapat orang ramai dan bertindak balas jika diperlukan.

MONITORING MEDIA COVERAGE:
The media unit monitors media coverage of the department to understand public opinion and respond if necessary.



MELAKSANAKAN PENILAIAN DAN ANALISIS:
Unit media menilai keberkesanan strategi komunikasi yang dilaksanakan. Unit media juga menganalisis media sosial, respons orang ramai dan prestasi media sosial untuk memperbaiki strategi pada masa akan datang.

CONDUCTING EVALUATION AND ANALYSIS:
The media unit evaluates the effectiveness of implemented communication strategies. It also analyses social media, public response, and social media performance to improve strategies in the future.



MENGENDALIKAN 'LIVE STREAMING':
Seksyen media mengendalikan 'live streaming' bagi acara, program dan webinar Jabatan yang dijalankan secara atas talian.

PROVIDING TECHNICAL ASSISTANCE FOR EVENTS AND PROGRAMS:
The media section assists the department in providing technical tools and skills for departmental events and programs such as National Environment Day (HASN), seminars, and international meetings. Some of the technical assistance provided include audio, video, multimedia, and live feed video (MCP) recordings.



MENYEDIAKAN BANTUAN TEKNIKAL ACARA DAN PROGRAM:
Seksyen media membantu Jabatan dalam menyediakan alatan dan kemahiran teknikal dalam acara dan program Jabatan seperti Hari Alam Sekitar Negara (HASN) , seminar dan mesyuarat antarabangsa. Antara bantuan teknikal yang disediakan adalah seperti audio, video, multimedia dan rakaman live feed video (MCP).

MANAGING LIVE STREAMING:
The media section manages live streaming for departmental events, programs, and webinars conducted online.

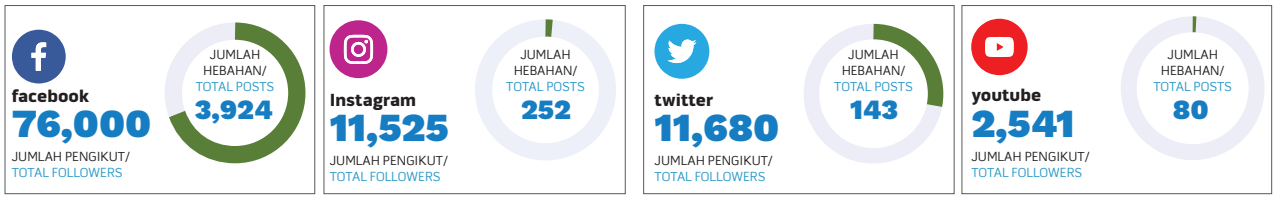
Pada tahun 2023, Seksyen Media telah berjaya menghasilkan 105 hebahan media sosial, 1 pantun alam, 195 grafik, 78 video, 126 sesi fotografi, 11 bicara santai dan mengendalikan 95 siaran langsung di media sosial, Zoom dan Google Meet.

Pada tahun 2023 juga, Jabatan Alam Sekitar telah melaksanakan pelbagai aktiviti dan hebahan di media sosial bagi meningkatkan interaksi bersama orang awam dan meningkatkan kesedaran mengenai program dan matlamat Jabatan. Berikut adalah pencapaian media sosial Jabatan bagi tahun 2023:

In 2023, the Media Section successfully produced 105 social media posts, 1 nature poem, 195 graphics, 78 videos, 126 photography sessions, 11 informal talks, and conducted 95 live broadcasts on social media, Zoom, and Google Meet.

In 2023, the Department of Environment implemented various activities and social media posts to increase interaction with the public and raise awareness about the department's programs and goals. Here are the department's social media achievements for 2023:

PENCAPAIAN MEDIA SOSIAL JABATAN BAGI TAHUN 2023 / DEPARTMENT'S SOCIAL MEDIA ACHIEVEMENTS FOR 2023



Dari tahun ke tahun, terdapat peningkatan interaksi pengguna yang signifikan, dengan jumlah *like*, komen dan *share* yang meningkat setiap tahun.

Sepanjang tahun 2023, boleh disimpulkan bahawa aktiviti di media sosial Jabatan Alam Sekitar telah berjalan dengan baik dan telah memberi impak yang positif kepada orang awam.

There has been a significant increase in user interaction from year to year, with the number of likes, comments, and shares increasing each year.

Throughout 2023, it can be concluded that the activities on the Department of Environment's social media platforms have been successful and have had a positive impact on the public.

ANUGERAH LANGKAWI – KELESTARIAN ALAM SEKITAR

Anugerah Langkawi – Kelestarian Alam Sekitar (ALKAS) adalah satu bentuk pengiktirafan oleh Jabatan Alam Sekitar (JAS) kepada individu dan organisasi yang telah memberi sumbangan yang signifikan kepada kelestarian alam sekitar. ALKAS telah dimulakan pada tahun 1991 dan penerima ALKAS memperolehi sijil pengiktirafan daripada Duli Yang Maha Mulia Seri Paduka Baginda Yang di-Pertuan Agong, plak penghargaan daripada Yang Berhormat Menteri dan wang tunai sebanyak RM10,000.

Pada tahun 2023, JAS telah menerima sebanyak 10 calon individu dan 9 calon organisasi bagi ALKAS Sesi 2022/2023. Penilaian Peringkat Pertama telah diadakan pada 20 & 21 Mac 2023 di Hotel Geno, Shah Alam. Jawatankuasa penilaian peringkat pertama adalah terdiri daripada pegawai kanan JAS dan dipengerusikan oleh YBrs. Puan Timbalan Ketua Pengarah (Pembangunan).

Seterusnya Penilaian Peringkat Kedua ALKAS telah diadakan pada 1 Jun 2023 di Ibu Pejabat JAS yang telah dipengerusikan oleh YBhg. Dato' Ketua Pengarah

LANGKAWI AWARD – ENVIRONMENTAL SUSTAINABILITY

Anugerah Langkawi – Kelestarian Alam Sekitar (ALKAS) is a recognition by Department of Environment (DOE) to individuals and organisations that have made significant contributions to environmental sustainability. ALKAS was started in 1991 and the recipients will be awarded a certificate of recognition from His Majesty Yang di-Pertuan Agong, a plaque of appreciation from Honorable Minister, and RM10,000 in cash.

In 2023, DOE has received 10 individual candidates and 9 organizational candidates for ALKAS Session 2022/2023. The First Stage Assessment was held on 20 & 21 March 2023 at Hotel Geno, Shah Alam. The first stage assessment committee consists of DOE senior officers and was chaired by YBrs. Madam Deputy Director General (Development).

The Second Stage Assessment of ALKAS was held on 1 June 2023 at the DOE Headquarters chaired by YBhg. Dato' Director General of Environment. The second stage

Alam Sekitar. Jawatankuasa penilaian peringkat kedua terdiri daripada pengurusan tertinggi JAS dan panel jemputan (walau bagaimanapun panel jemputan tidak dapat hadir). Jawatankuasa penilaian peringkat kedua dan Jawatankuasa Pemutus telah menetapkan tiada penerima bagi ALKAS Sesi 2022/2023 dan ALKAS dibuka semula untuk sesi 2023/2024.

SAMBUTAN BERTEMAKAN ALAM SEKITAR

Terdapat tiga (3) hari utama bertemakan alam sekitar yang disambut oleh JAS iaitu Hari Bumi, Hari Alam Sekitar Sedunia dan Hari Alam Sekitar Negara. JAS menggunakan paltform ketiga-tiga hari ini untuk mempromosi dan menganjurkan pelbagai program kesedaran dalam usaha melestarikan alam sekitar kepada orang awam. **Jadual 6.3** menunjukkan tarikh dan tema sambutan hari bertemakan alam sekitar pada tahun 2023.

Sambutan-sambutan ini bertujuan untuk meningkatkan dan mengukuhkan jalinan kerjasama antara Kementerian, JAS, Kerajaan Negeri dan Rakan Strategik dalam mempromosi kesedaran dan kelestarian alam sekitar di samping pembudayaan gaya hidup lestari di kalangan rakyat Malaysia. Bermula tahun 2020, sambutan secara hibrid telah dilakukan di mana program dijalankan secara dalam talian dan fizikal. Pelaksanaan secara hibrid ini membantu penyebaran secara meluas aktiviti yang dijalankan dengan penggunaan platfom media sosial JAS.

Antara program yang dijalankan sepanjang sambutan bertemakan alam sekitar adalah sesi webinar berkaitan alam sekitar, kayuhan hijau, penanaman pokok, pemberian beg plastik guna semula, pengumpulan buangan elektrikal dan elektronik dan lain-lain lagi. Program-program yang telah dijalankan mengikut hari bertemakan alam sekitar adalah seperti di **Jadual 6.4.** Jangkauan menyeluruh kepada ketiga-tiga program tersebut mencecah 1 juta berikutan aktiviti yang dijalankan adalah meliputi seluruh negara.

Hari Alam Sekitar Negara (HASN) diumpamakan sebagai sambutan hari raya bagi sektor alam sekitar di mana ianya diraikan pada 21 Oktober setiap tahun. Bagi tahun 2023, Negeri Johor Darul Ta'zim telah dilantik untuk menjadi tuan rumah bagi sambutan HASN Peringkat Kebangsaan. HASN Peringkat Kebangsaan telah disambut di Hutan Bandar MBIP, Mutiara Rini, Johor Bahru pada 21 Oktober 2023. HASN 2023 telah dirasmikan oleh Duli Yang Maha Mulia (DYMM) Raja Zarith Sofiah binti Almarhum Sultan Idris Shah, Permaisuri Johor. Keberangkatan DYMM Tuanku Permaisuri Johor ke HASN 2023 adalah sebagai simbolik kepada peranan istimewa dan signifikan golongan wanita dalam usaha kelestarian alam sekitar.

assessment committee and an external panel (however the external panel was absent). The second stage assessment committee and the Decision Committee have decided that there are no recipients for ALKAS Session 2022/2023 and ALKAS is reopened for session 2023/2024.

ENVIRONMENT THEMED CELEBRATION

There are three (3) main environment-themed days celebrated by DOE, which are Earth Day, World Environment Day, and National Environment Day. DOE uses these three platforms to promote and organize various awareness programmes on environmental sustainability for the public. **Table 6.3** shows the date and theme for the environment-themed day celebration in 2023.

These celebrations aimed to increase and strengthen the cooperation between the Ministry, DOE, State Government, and Strategic Partners in promoting environmental awareness and sustainability in addition to cultivating a sustainable lifestyle among Malaysians. Starting in 2020, a hybrid celebration had been done, i.e. the programme was conducted online and physically. This hybrid implementation helps the widespread dissemination of activities carried out via DOE social media platforms.

Among the activities carried out throughout the environment-themed celebration are webinar sessions related to the environment, green cycling, tree planting, giving reusable plastic bags, collection of electrical and electronic waste and others. The activities that have been carried out according to environment-themed days are as shown in **Table 6.4**. The overall outreach of the three programmes reached 1 million as the activities were carried out for the entire country.

National Environment Day (HASN) is a symbol of *hari raya* celebration for the environment sector where it is celebrated on 21 October every year. For the year 2023, the State of Johor Darul Ta'zim had been appointed to host the National Level HASN celebration. The National Level HASN was celebrated at Hutan Bandar MBIP, Mutiara Rini, Johor Bahru on 21 October 2023. HASN 2023 was officiated by Her Majesty Raja Zarith Sofiah binti Almarhum Sultan Idris Shah, Queen of Johor. The departure of DYMM Tuanku Permaisuri Johor to HASN 2023 is symbolic of the special and significant role of women in environmental sustainability efforts.

Jadual 6.3: Tarikh dan Tema Sambutan Bertemakan Alam Sekitar 2023
Table 6.3: Date and Theme of Environmental Day Celebration 2023

SAMBUTAN / CELEBRATION	TARIKH / DATE	TEMA / THEME
Hari Bumi Earth Day	22 April 2023 22 April 2023	Melabur di Planet Kita Invest in Our Planet
Hari Alam Sekitar Sedunia World Environment Day	5 Jun 2023 5 June 2023	Hentikan Pencemaran Plastik Beat Plastic Pollution
Hari Alam Sekitar Negara National Environment Day	21 Oktober 2023 21 October 2023	Alam Sekitar Tanggungjawab Bersama Environment is Our Shared Responsibility

Jadual 6.4: Program Sambutan Bertemakan Alam Sekitar 2023
Table 6.4: Program Organized during Environmental Day Celebration 2023

SAMBUTAN / CELEBRATION	PROGRAM / PROGRAMME
Hari Bumi Earth Day	i. *Enviro Cycling Putrajaya* / Putrajaya Enviro Cycling ii. Pertandingan mewarna kanak-kanak / Children's coloring contest iii. Kempen hindari plastik sekali guna / Campaign to avoid single-use plastic iv. Bicara Eksekutif "Risiko Pembangunan di Kawasan Cerun: Strategi Pengurusan dan Kawalannya" Executive Talk on "Development Risks in Slope Areas: Management and Control Strategies" v. Simposium Pematuhan AKAS 1974 & Pemerkasaan Pemantauan Kualiti Alam Sekitar Symposium of EQA 1974 Compliance & Empowerment of Environmental Quality Monitoring vi. Hebahan poster "Green Ramadan" / Promotion of "Green Ramadan" posters
Hari Alam Sekitar Sedunia World Environment Day	i. Enviro-Hiking Bukit Tunggul / Bukit Tunggul Enviro-Hiking ii. Program Doodling Sekolah Putrajaya Presint 18(2) / Sekolah Kebangsaan Putrajaya Presint 18 (2) Doodling Programme iii. Hebahan poster "Kenali Jabatan Alam Sekitar" / "Know the Department of Environment" poster announcement iv. Bicara Eksekutif "Jerebu dan Tanggungjawab Pihak Berkepentingan" / Executive Talk on "Haze and Stakeholder Responsibilities" v. Pertandingan Sketsa Alam Sekitar Peringkat Sekolah Menengah / Environmental Sketch Competition for High School Level vi. Bicara Eksekutif "Impak Banjir Terhadap Sungai di Malaysia" / Executive Talk on "Impact of Floods on Rivers in Malaysia"
Hari Alam Sekitar Negara National Environment Day	i. *Soft Launch* Hari Alam Sekitar Negara / National Environment Day Soft Launch
	ii. Sesi Temu Bual Selamat Pagi Malaysia / Selamat Pagi Malaysia Interview Session
	iii. Bicara Eksekutif "Pengurusan Buangan Terjadual yang Holistik" / Executive Talk on "Holistic Scheduled Waste Management"
	iv. Pengumpulan e-waste Peringkat Negeri Johor / Johore State Level e-waste collection
	v. Larian Udara Bersih / Clean Air Run
	vi. Pertandingan Mewarna Peringkat Negeri Johor / Johore State Level Coloring Competition
	vii. Pertandingan Dekorasi Kek Peringkat Negeri Johor / Johore State Level Cake Decorating Competition
	viii. Bicara Eksekutif "Penguatkuasaan AKAS 1974 ke Arah Pembangunan Mampan" Executive Talk on "Enforcement of EQA 1974 towards Sustainable Development"
	ix. Program Plogging Pantai Desaru / Desaru Beach Plogging Programme



▲ Poster Hari Bumi 2023
Earth Day 2023 Poster



▲ Poster Hari Alam Sekitar Sedunia 2023
World Environment Day 2023 Poster



▲ Poster Hari Alam Sekitar Negara 2023
National Environment Day 2023 Poster



▲ Program *Enviro Cycling*, Berbasikal sambil Membersihkan Taman Sempena Hari Bumi 2023
Enviro Cycling Programme, Cycling and Plogging in the Park in Conjunction with Earth Day 2023





▲ Program Mewarna sempena Hari Bumi 2023 yang Diadakan Semasa Musim Cuti Sekolah / Coloring Programme in Conjunction with Earth Day During School Holiday



▲ Pertandingan Sketsa Alam Sekitar Peringkat Sekolah Menengah Sempena Hari Alam Sekitar Sedunia 2023
Sketsa Alam Sekitar Competition for High School Level in Conjunction with World Environment Day 2023





▲ Enviro Hiking Bersama Ahli Rakan Alam Sekitar di Bukit Tunggul, Sepang Sempena Hari Alam Sekitar Sedunia 2023
Enviro Hiking with Rakan Alam Sekitar at Bukit Tunggul, Sepang in Conjunction with World Environment Day 2023





▲ Hari Alam Sekitar Negara 2023 yang telah Dirasmikan oleh DYMM Raja Zarith Sofiah binti Almarhum Sultan Idris Shah, Permaisuri Johor
National Environment Day 2023 was Officiated by Her Majesty Raja Zarith Sofiah binti Almarhum Sultan Idris Shah, Queen of Johor





▲ Antara Program yang Diadakan Sempena Hari Alam Sekitar Negara 2023, Pertandingan Mewarna dan Dekorasi Kek Alam Sekitar
Among the Programmes Held in Conjunction with National Environment Day 2023, Coloring Contest and Environmental Cake Decoration



▲ Larian Udara Bersih dan Gambut *Explorace* yang telah Diadakan semasa Sambutan Hari Alam Sekitar Negara 2023
Larian Udara Bersih and *Gambut* Explorace that was Held during the Celebration of National Environment Day 2023

PROGRAM RAKAN ALAM SEKITAR (RAS)

Program Rakan Alam Sekitar (RAS) telah menjangkau usia 15 tahun sejak mula dilancarkan pada 4 Jun 2009. Fokus terkini program ini adalah membudayakan gaya hidup lestari di kalangan ahli RAS bagi meningkatkan kesedaran dan komitmen mereka dalam melestarikan alam sekitar di Malaysia bermula dengan amalan lestari yang diamalkan dalam kehidupan seharian. Seramai 183,839 individu telah menyatakan komitmen melestarikan alam sekitar dengan mendaftar sebagai ahli RAS. Antara aktiviti kelestarian alam sekitar yang dilaksanakan sepanjang tahun 2023 adalah pembersihan pantai, penanaman pokok, kayuhan hijau, *enviro-hiking* dan penghargaan khas kepada setiap kluster Program RAS.

FRIENDS OF THE ENVIRONMENT (RAS) PROGRAMME

The Friends of the Environment (RAS) Programme was launched 15 years ago on 4 June 2009. The latest focus of this program is to cultivate a sustainable lifestyle among RAS members to increase their awareness and commitment in preserving the environment in Malaysia starting with sustainable practices in everyday life. A total of 183,839 individuals have expressed their commitment to preserve the environment by registering as RAS members. Among the environmental sustainability activities carried out throughout 2023 are beach cleaning, tree planting, enviro-cycling, enviro-hiking, and special appreciation to each RAS Programme cluster.



▲ Aktiviti Pembersihan Pantai di Lotus Desaru Beach & Resort Spa, Johor dengan Kerjasama Strategik Tenaga Nasional Berhad (TNB)
Beach Cleaning Activities at Lotus Desaru Beach & Resort Spa, Johore in Strategic Collaboration with Tenaga Nasional Berhad (TNB)



▶ Aktiviti Penanaman Pokok di Institut Penyelidikan Perhutanan Malaysia (FRIM), Selangor dengan Kerjasama Strategik *Project Delivery & Technology* (PD&T) PETRONAS / Tree Planting Activities at the Forestry Research Institute of Malaysia (FRIM), Selangor in Strategic Collaboration with Project Delivery & Technology (PD&T) PETRONAS



▲ Aktiviti Penanaman Pokok Bakau di Taman Rekreasi Paya Bakau, Kampung Sijangkang, Selangor dengan Kerjasama Strategik Prasarana Malaysia Berhad (Prasarana)
Mangrove Tree Planting Activities at Taman Rekreasi Paya Bakau, Kampung Sijangkang, Selangor in Strategic Collaboration with Prasarana Malaysia Berhad (Prasarana)



▲ Penghargaan Khas RAS – Kluster Komuniti kepada Kelab Alami, Tanjung Kupang sempena Sambutan Hari Alam Sekitar Negara (HASN) Peringkat Kebangsaan 2023 di Johor
Special Appreciation of RAS - Community Cluster to Kelab Alami, Tanjung Kupang in conjunction with the Celebration of National Environment Day (HASN) 2023 in Johore

PAMERAN ALAM SEKITAR

JAS komited dalam menyampaikan maklumat kelestarian alam sekitar kepada masyarakat menggunakan pelbagai platform. Antaranya adalah melalui pameran alam sekitar. JAS Ibu pejabat telah menyertai sebanyak sebelas (11) pameran alam sekitar yang dianjurkan oleh JAS serta jemputan yang diterima daripada agensi lain dan rakan strategik.

ENVIRONMENTAL EXHIBITIONS

DOE is committed to deliver environmental sustainability information to the community using various platforms. Among them are through environmental exhibitions. DOE headquarters has participated in as many as eleven (11) environmental exhibitions organized by DOE as well as invitations received from other agencies and strategic partners.





▲ Pameran sempena Sambutan Hari Alam Sekitar Negara (HASN) Peringkat Kebangsaan 2023 di Johor
Exhibition in conjunction with the Celebration of National Environment Day (HASN) 2023 in Johore

BAB/
CHAPTER

07

PENGURUSAN TEKNOLOGI MAKLUMAT

INFORMATION TECHNOLOGY MANAGEMENT



PENGURUSAN TEKNOLOGI MAKLUMAT INFORMATION TECHNOLOGY MANAGEMENT

Bahagian Teknologi Maklumat (BTM) membantu Jabatan Alam Sekitar dalam memperkasakan pengurusan alam sekitar melalui pengautomasian tugas-tugas pengurusan, pengawasan dan penguatkuasaan alam sekitar ke arah pelaksanaan tugas-tugas dengan lebih cepat, tersusun dan terkini selaras dengan pelaksanaan dasar, strategi dan keperluan bisnes Jabatan menerusi penggunaan teknologi maklumat.

BTM bertanggungjawab menyedia, membangun, menaik taraf dan melaksana perluasan sistem pengurusan dan kawalan pencemaran alam sekitar secara elektronik serta memperkasakan infrastruktur ICT Jabatan bagi memberi perubahan perkhidmatan pengurusan alam sekitar dengan menyokong aktiviti-aktiviti penguatkuasaan, pemantauan dan kawalan alam sekitar menerusi penggunaan teknologi maklumat.

PEMBANGUNAN SISTEM MYEHS

MyEHS merupakan sistem yang digunakan oleh Bahagian Bahan Berbahaya bagi memproses permohonan industri berkaitan import dan eksport bahan kimia berbahaya (EHS) kepada alam sekitar. Sistem ini mula dibangunkan pada Jun 2022 dan pembangunan sistem telah siap sepenuhnya pada Jun 2023 seperti dijadualkan. Sistem ini boleh dilayari melalui pautan https://myehs.doe.gov.my.

Sepanjang tahun 2023, beberapa siri bengkel bagi pengujian sistem telah diadakan. Pengujian sistem merupakan aktiviti penting dalam proses pembangunan sistem untuk memastikan sistem disiapkan mengikut spesifikasi yang ditetapkan. Selain itu, sesi latihan penggunaan sistem yang melibatkan pegawai JAS dan pihak industri juga telah diadakan.

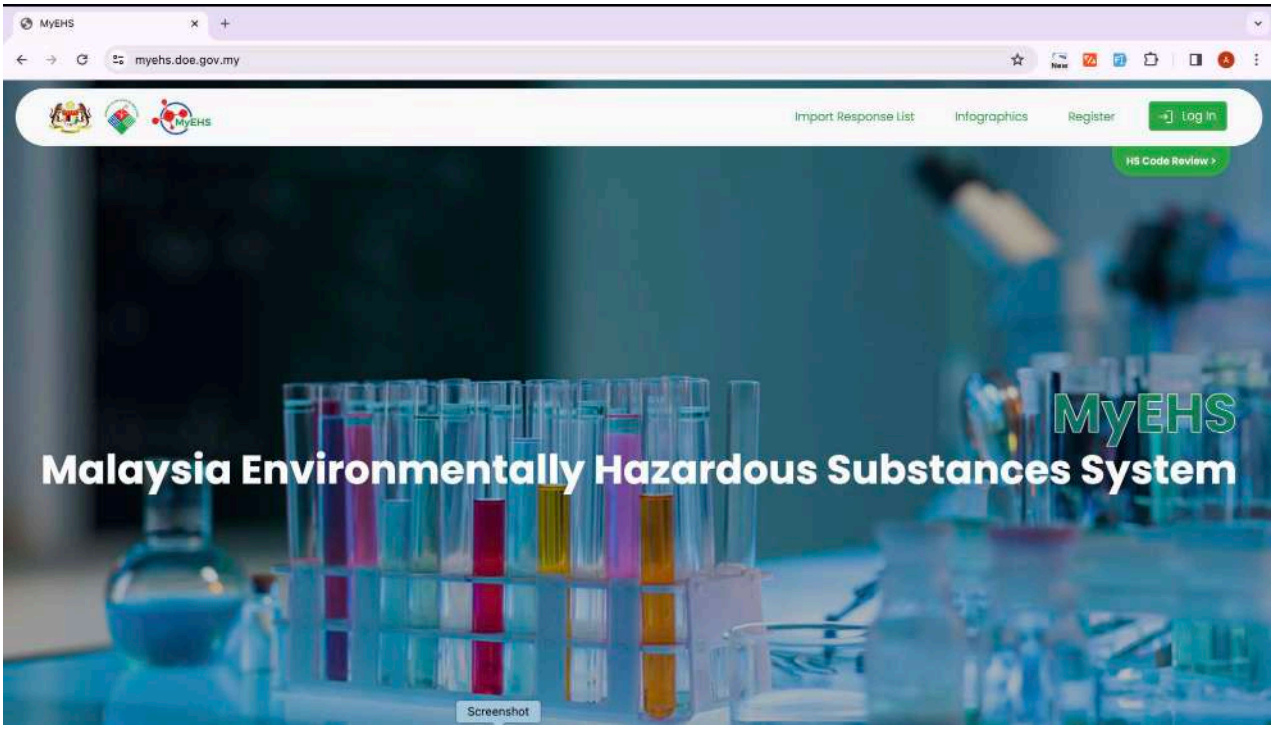
The Information Technology Division (ITD) assists the Department of Environment in streamlining environmental management through the automation of environment management, monitoring, and enforcement tasks towards the fulfilment of tasks in a faster, more structured, and updated manner in line with the implementation of the Department's policies, strategies, and business requirements using information technology.

The ITD is responsible for preparing, developing, upgrading, and implementing the management systems and controlling environmental pollution electronically as well as strengthening the ICT infrastructure of the Department to transform environmental management services by supporting environmental enforcement, monitoring, and control activities using information technology.

MYEHS SYSTEM DEVELOPMENT

MyEHS is a system used by Hazardous Substances Division to process application for import and export of environmentally hazardous substances (EHS) from industries. The development of the system has begun in June 2022 and was successfully developed in June 2023 as scheduled. The system can be accessed via https://myehs.doe.gov.my.

Throughout the year 2023, several workshops of system testing have been conducted. System testing is a critical phase in the software development lifecycle where the entire software system is tested as a whole. It is conducted to verify that all the components of the system work together as intended and meet the specified requirements. Training sessions on the use of the system involving DOE officials and the industry representatives have also been held.



▲ Paparan Muka Hadapan Sistem MyEHS
MyEHS System Front View



▲ Sesi Latihan Penggunaan Sistem MyEHS
Training Session for MyEHS System



▶ Sesi Latihan Penggunaan Sistem MyEHS
Training Session for MyEHS System

MyJAS ADUAN

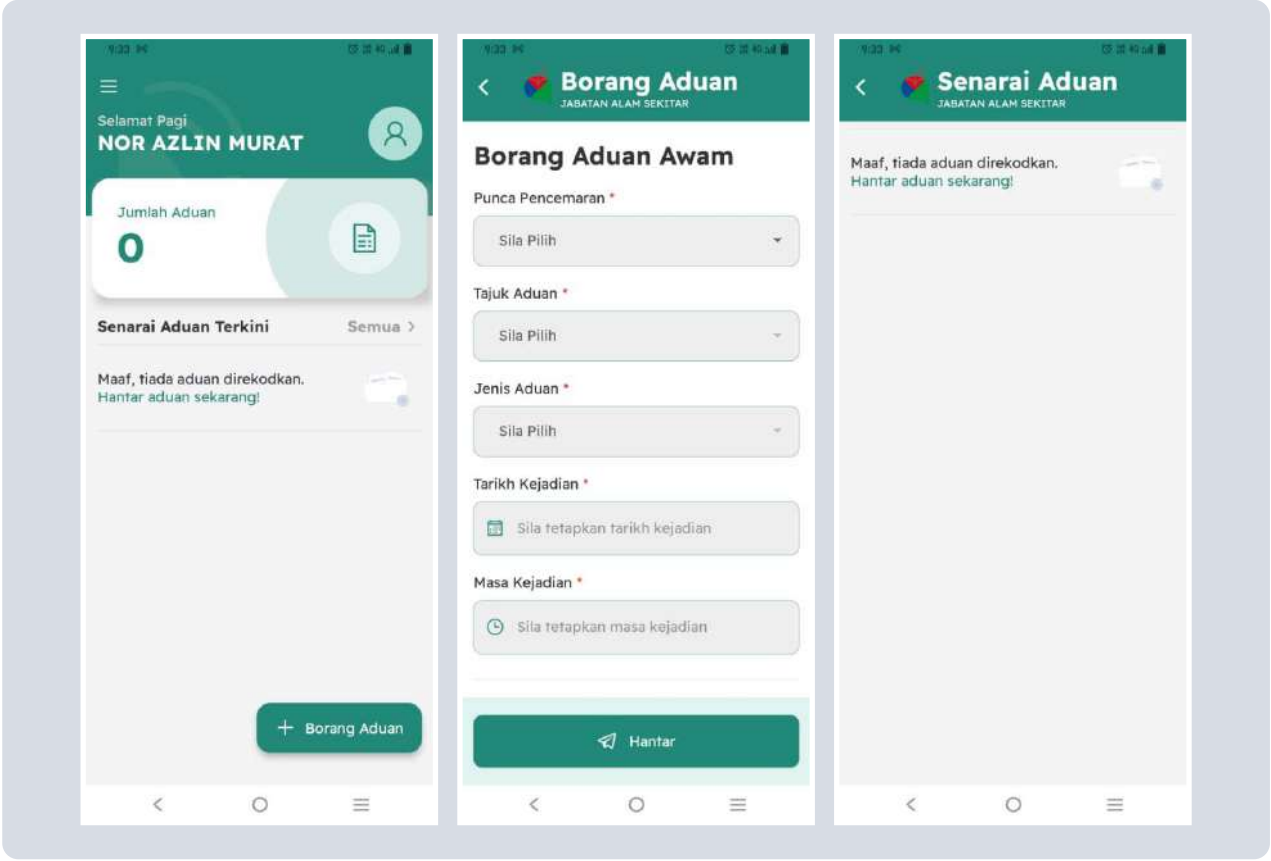
Aplikasi mobil (*Mobile Apps)* MyJAS Aduan telah dibangunkan bersama Sistem eAduan versi baharu pada tahun 2021. Ia merupakan saluran yang memudahkan orang awam untuk membuat aduan alam sekitar. MyJAS Aduan boleh dimuat turun dari Play Store (Android dan Huawei) dan Apple Store (iOS).

Aplikasi ini memudahkan orang awam untuk mendaftar, membuat aduan, menyenaraikan sejarah (*history*) aduan yang telah dibuat dan menyemak status aduan. Ia membolehkan pemantauan dan penguatkuasaan dijalankan oleh JAS dan membantu pengadu menyemak tindakan yang telah diambil oleh JAS.

MyJAS *ADUAN*

MyJAS *Aduan*'s Mobile Apps was developed in 2021 via *eAduan* System. It assists the public to make environmental complaints easier. MyJAS *Aduan* can be downloaded from the Play Store (Android and Huawei) and the Apple Store (iOS).

The new application makes it easy for the public to register, lodge complaints, list the history of complaints that have been made, and check the status of their complaints. It enables monitoring and enforcement by DOE and helps complainants review the actions taken by DOE.



▲ Paparan Aplikasi Mobil MyJAS Aduan
MyJAS *Aduan's* Mobile Apps Display

NAZIRAN ICT TAHUN 2023: MENINGKATKAN KESELAMATAN DAN KECEKAPAN SISTEM TEKNOLOGI MAKLUMAT

Audit naziran ICT adalah aspek penting dalam memastikan keselamatan, kebolehpercayaan, dan kecekapan sistem teknologi maklumat dalam suatu organisasi. Sepanjang tahun 2023, telah dilaksanakan tiga (3) siri naziran ICT untuk memastikan infrastruktur ICT sedia ada dalam keadaan tersedia, produktif dan dapat digunakan dengan baik (**Jadual 7.1**). Aktiviti naziran yang dijalankan termasuk menyemak kebolehupayaan elemen ICT dalam menyokong sistem penyampaian JS. Pelaksanaan naziran ICT ini selaras dengan objektif P26: Program Penyelenggaraan Infrastruktur ICT, Pelan Strategik Pendigitalan (PSP) JAS 2021-2030.

ICT INSPECTION SERIES 2023: IMPROVING THE SECURITY AND EFFICIENCY OF INFORMATION TECHNOLOGY SYSTEMS

An ICT audit is an important aspect for ensuring the security, reliability, and efficiency of information technology systems in an organization. The three (3) series of ICT inspections have been implemented to ensure that the existing ICT infrastructure is available, productive, and can be used properly (**Table 7.1**). The monitoring activities include checking up the capabilities of ICT elements in supporting the DOE delivery system. The implementation of this ICT vision is in line with the objectives of P26: ICT Infrastructure Maintenance Program, DOE 2021-2030 Digitization Strategic Plan (PSP).

Jadual 7.1: Lokasi Naziran
Table 7.1: Locations of Inspection

SIRI / SERIES	TARIKH NAZIRAN / DATE	LOKASI / LOCATION
1	16-17 Januari 2023 / 16-17 January 2023	JAS Melaka / DOE Melaka
2	20 Februari 2023 / 20 February 2023	JAS Tawau / DOE Tawau
	21 Februari 2023 / 21 February 2023	JAS Sabah / DOE Sabah
	22 Februari 2023 / 22 February 2023	JAS Labuan / DOE Labuan
3	24 Ogos 2023 / 24 August 2023	JAS WPKL / DOE WPKL

Elemen naziran yang dilaksanakan sepanjang tahun 2023:

1. Tadbir Urus ICT
   a. Tatacara Perolehan ICT
   b. Pematuhan Polisi Keselamatan Siber (PKS)
   c. Latihan ICT
   d. Agenda ICT dalam Mesyuarat Pengurusan
2. Peralatan *Endpoint* ICT
3. Peralatan Rangkaian dan Pelayan (*Server*)
4. Ketersediaan Capaian Internet
5. Keselamatan dan Pengurusan Risiko ICT
6. GIS
7. Aplikasi

Audit naziran ICT adalah komponen utama dalam memastikan sistem teknologi maklumat beroperasi dengan efisien dan optimum. Siri naziran ini telah membawa kepada beberapa penemuan penting dan meningkatkan peluang penambahbaikan pada masa akan datang bagi memastikan bahawa ekosistem ICT di JAS terus memenuhi keperluan semasa dan masa depan.

The inspections are conducted based on these elements:

1. ICT Governance
   a. ICT Procurement Procedures
   b. Cyber Security Policy Compliance
   c. ICT training
   d. ICT Agenda in Management Meetings
2. ICT Endpoint Equipment
3. Network Equipment and Servers
4. Availability of Internet Access
5. ICT Security and Risk Management
6. GIS
7. Application

An ICT monitoring audit is a key component in ensuring that the information technology system operates efficiently and optimally. The audit has led to several important findings and increased opportunities for improvement in the future.

PENGURUSAN DRON JABATAN

Sehingga 31 Disember 2023, Jabatan Alam Sekitar telah mempunyai 89 unit dron pelbagai model dan fungsi yang ditempatkan di JAS Negeri dan Cawangan seluruh Malaysia. Sebanyak 932 penerbangan yang melibatkan 702.7 jam penerbangan telah dilaksanakan sepanjang tahun bagi tujuan penguatkuasaan, pengawasan, pemetaan udara dan lain-lain tugas yang berkaitan Jabatan.

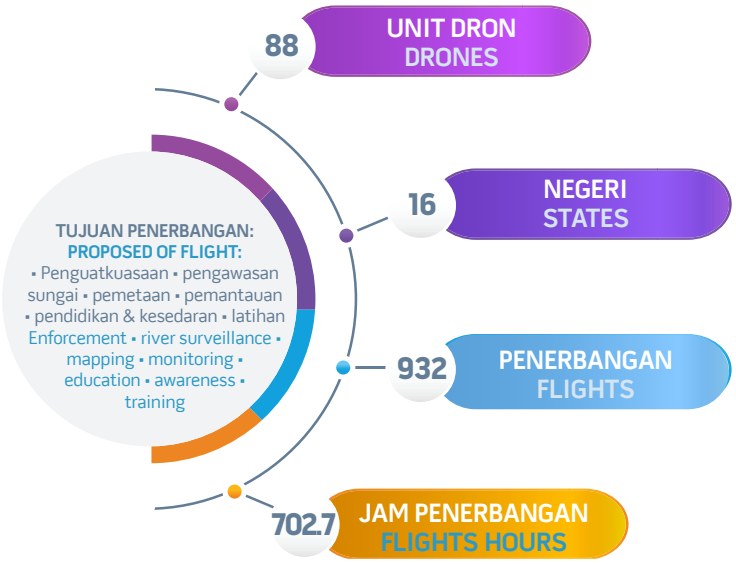
Pada tahun ini juga, rekod penerbangan dron yang dilaksanakan oleh pilot dron JAS telah mula direkodkan dalam aplikasi Log Penerbangan yang dibangunkan dalam sistem GeoSpAS. Menerusi aplikasi ini, data-data hasil penerbangan dron dapat diproses bagi menghasilkan data raster untuk rujukan pegawai Jabatan.

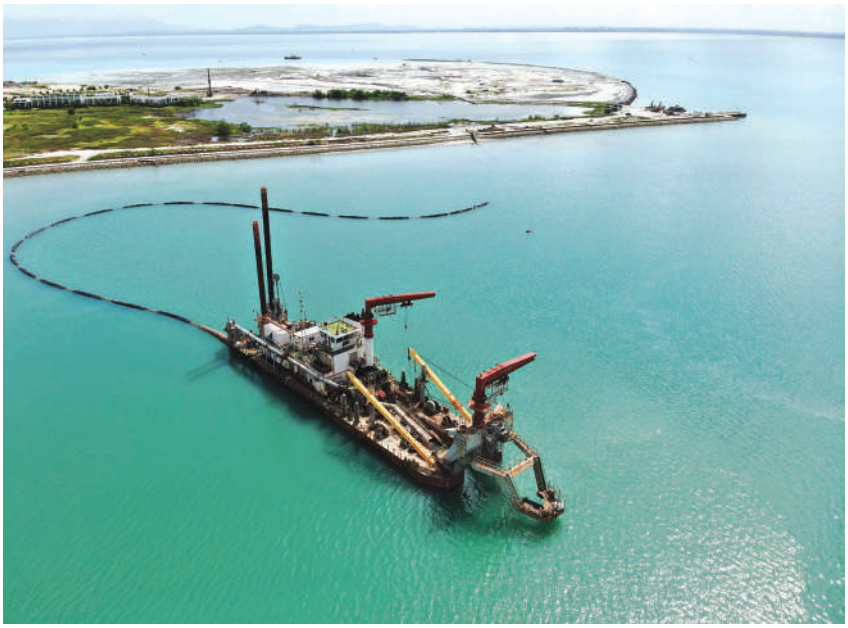
DRONE MANAGEMENT

As of 31 December 2023, the Department of Environment has 89 units of drones of various models and functions stationed in DOE States and Branches throughout Malaysia. A total of 932 flights involving 702.7 flight hours were carried out throughout the year for the purpose of enforcement, surveillance, aerial mapping, and other duties related to the Department.

Also, this year, drone flight records carried out by DOE drone pilots have begun to be recorded in the Flight Log application developed in the GeoSpAS system. Through this application, data from drone flights can be processed to produce raster data as reference for Department officials.

▸ Penggunaan Dron / Drone Usage

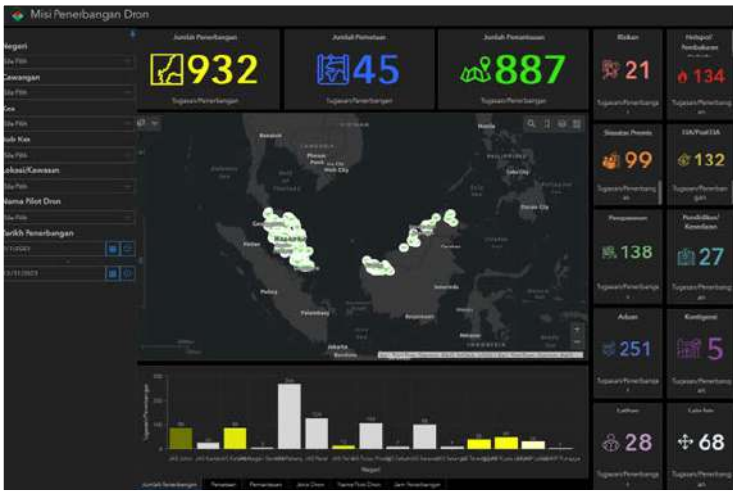




▲ Pemantauan Menggunakan Dron Matrice 300 RTK di Kawasan Projek EIA Penambakan Laut
Monitoring using the Matrice 300 RTK Drone in the EIA Project Area of Sea Reclamation



▸ Penyiasatan Pembakaran Terbuka Menggunakan Dron di Kawasan Pembalakan
Open Burning Investigation Using Drones in Logging Areas



◂ Paparan dalam Aplikasi Log Penerbangan yang Merekodkan Data-Data Penerbangan Dron yang Dilakukan oleh Pilot Dron JAS / Display in the Flight Log Application that Records Drone Flight Data Performed by DOE Drone Pilots

Persidangan Dron JAS

Seksyen Geospatial, Bahagian Teknologi Maklumat, JAS Ibu Pejabat telah mengadakan Program Pemantapan Teknologi Dron dalam Pengurusan Imej Raster di JAS yang telah berlangsung di Hotel Adya, Langkawi, Kedah.

Program ini telah dirasmikan oleh YBrs. Tuan Haji Shafe'ee bin Yasin, Pengarah Bahagian Penguatkuasa, JAS Ibu Pejabat dan turut dihadiri oleh Puan Sharifah Zakiah binti Syed Sahab, Pengarah Jabatan Alam Sekitar Negeri Kedah dan Puan Mukhtaroh binti Osman, Pengarah Bahagian Teknologi Maklumat, JAS Ibu Pejabat.

Objektif program ini diadakan adalah sebagai platfom perkongsian ilmu daripada juruterbang dron JAS yang telah mendapat Sijil *Remote Pilot Competency* yang diperakui oleh CAAM dan juga menjadi medan perkongsian pengalaman serta kisah kejayaan oleh JAS Negeri tentang penggunaan dron dalam penguatkuasaan alam sekitar.

DOE Drone Conference

The Geospatial Section, Information Technology Division, DOE Headquarters held a Drone Technology Strengthening Program in Raster Image Management at DOE which took place at the Adya Hotel, Langkawi, Kedah.

This program was inaugurated by YBrs. Tuan Haji Shafe'ee bin Yasin, Director of Enforcement Division, DOE Headquarters and was also attended by Mrs. Sharifah Zakiah binti Syed Sahab, Director of Kedah State Environment Department, and Mrs. Mukhtaroh binti Osman, Director of Information Technology Division, DOE Headquarters.

This program is held as a knowledge sharing platform from DOE drone pilots who have obtained the Remote Pilot Competency Certificate Certified by CAAM and also as a field for experience-sharing session from the State DOE through success stories about the use of drones in environmental enforcement.

Acara kemuncak program diadakan Majlis Penganugerahan bagi memberi pengiktirafan atas sumbangan dan komitmen pegawai JAS dalam penguatkuasaan melalui dron dan pengurusan data imej dron bagi tahun 2022/2023. Turut diadakan majlis pemakaian lencana skuad dron bagi pilot dron yang baru. Anugerah ini merupakan satu pengiktirafan dan penghormatan tertinggi daripada Jabatan Alam Sekitar kepada juruterbang dan skuad dron yang telah memberikan sumbangan dalam bidang penguatkuasaan dan pengawasan alam sekitar.

Tiga kategori anugerah telah diberikan iaitu:

i. **Penyelaras Dron Terbaik:** Puan Shahlena binti Abd Aziz, JAS Johor
ii. **Juruterbang Dron Terbaik:** En. Mohd Aza bin Isamail, JAS Kelantan
iii. **Skuad Dron Terbaik:** Skuad Dron JAS Pulau Pinang

The highlight of the program was the Award Ceremony to recognize the contribution and commitment of DOE officials in drone enforcement and drone image data management for the year 2022/2023. A drone squad badge application ceremony was also held for new drone pilots. This award is the highest recognition and honor from Department of Environment to drone pilots and squads who have contributed in the field of environmental enforcement and surveillance.

The three categories of awards that have been given are:

i. **Best Drone Coordinator:** Puan Shahlena binti Abd Aziz, DOE Johor
ii. **Best Drone Pilot:** Mr. Mohd Aza bin Isamail, DOE Kelantan
iii. **Best Drone Squad:** DOE Penang Drone Squad



▲ Sesi Perkongsian Kisah Kejayaan Penggunaan Dron dalam Penyiasatan / A Success Story Sharing Session on the Use of Drones in Investigations



▶ Penerima Anugerah Dron 2023 Bergambar Kenangan dengan Pengarah Bahagian Penguatkuasa, Pengarah JAS Kedah dan Pengarah Bahagian Teknologi Maklumat
Recipients of the 2023 Drone Award took a Memorable Photo with Director of Enforcement Division, Director of DOE Kedah, and Director of Information Technology Division

Kursus / Latihan / Bengkel

Bagi memastikan kecekapan dan teknik pengendalian dron di kalangan pilot sentiasa dalam keadaan baik dan bersedia, sebanyak 12 bengkel, seminar dan kursus telah dilaksanakan sepanjang tahun 2023. Bengkel dan kursus ini merangkumi pelbagai peringkat dari tahap asas sehinggalah kursus dron lanjutan. Untuk rekod, Jabatan telah mempunyai seramai 10 juruterbang dron yang telah mendapat sijil kompetensi *Remote Pilot Certificate of Competency-Basic* (RCoC-B).

Kesimpulannya, penubuhan Skuad Dron Jabatan Alam Sekitar telah memberi satu dimensi baru dalam mengukuhkan strategi penguatkuasaan dan pengurusan alam sekitar seiring dengan perkembangan pesat aspek teknologi.

Course / Training / Workshop

In order to ensure the drone handling skills and techniques among pilots are always in good condition and ready, a total of 12 workshops, seminars, and courses have been implemented throughout the year 2023. These workshops and courses covered various levels from basic level to advanced drone courses. For the record, the Department has a total of 10 drone pilots who have obtained the Remote Pilot Certificate of Competency-Basic (RCoC-B).

In conclusion, the establishment of the Department of Environment Drone Squad has given a new dimension in strengthening environmental enforcement and management strategies in line with the rapid development of technological aspects.



◂ Latihan Praktikal Pengendalian Dron Matrice 300 RTK kepada Pilot Dron Zon Timur Dikendalikan oleh Juruterbang yang telah Mendapat Kompetensi RCoB-B
Matrice 300 RTK Drone Practical Training for Eastern Zone Drone Pilots Conducted by Pilots who have Obtained RCoB-B Competency



▸ Latihan Bulanan Skuad Dron JAS Putrajaya dan JAS Kuala Lumpur
Monthly Training of Drone Squads DOE Putrajaya and DOE Kuala Lumpur

SISTEM GEOSPATIAL ALAM SEKITAR (GeoSpAS)

Sistem GeoSpAS yang dikendalikan oleh Seksyen Geospatial, Bahagian Teknologi Maklumat telah dinaik taraf kepada sistem yang lebih mesra pengguna kepada pegawai-pegawai JAS di mana sistem ini merangkumi aplikasi-aplikasi dari dalam portal yang boleh dibangunkan sendiri oleh pegawai JAS.

Pada tahun 2023, sistem GeoSpAS yang telah dinaik taraf telah mula digunakan secara menyeluruh bagi menggantikan sistem GeoSpAS yang lama. Sebagai permulaan, taklimat penggunaan sistem ini diberikan kepada Pengarah-Pengarah JAS Negeri semasa Mesyuarat Pengarah-Pengarah pada 13 Mac 2023. Seksyen Geospatial telah mengambil inisiatif dengan mengadakan taklimat secara terus kepada pengguna di JAS Negeri dengan mengadakan *road tour* untuk hebahan pengenalan mengenai Sistem GeoSpAS Versi 4.0 kepada semua JAS Negeri. Tujuan utama siri hebahan ini diadakan adalah untuk memberi pendedahan kepada semua pegawai JAS tentang penggunaan Sistem GeoSpAS Versi 4.0 yang baru.

ENVIRONMENTAL GEOSPATIAL SYSTEM (GeoSpAS)

The GeoSpAS application system managed by the Geospatial Section, Information Technology Division has been upgraded to a more user-friendly system for DOE officers where this system includes applications from within the portal that can be developed by DOE officers themselves.

In 2023, the upgraded GeoSpAS system was put into full use to replace the old GeoSpAS system. A briefing on the use of this system was given to the State DOE Directors during the Directors' Meeting on 13 March 2023. The Geospatial Section has taken the initiative by holding a briefing directly to users at the State DOE by holding a road tour to introduce the GeoSpAS System Version 4.0 to all State DOEs. The main purpose of this announcement series is to give exposure to all DOE officials about the use of the new GeoSpAS Version 4.0 System.



▲ Halaman Utama Sistem GeoSpAS / Main Page of GeoSpAS System



◂ Taklimat Dimensi Baru Sistem GeoSpAS dan Aplikasi Portal GIS kepada Timbalan Ketua Pengarah Pembangunan, Pengarah-Pengarah Negeri dan Bahagian
Briefing on the New Dimensions of the GeoSpAS System and GIS Portal Application to the Deputy Director General of Development, State Directors, and Divisional Directors



▸ Taklimat Dimensi Baru Sistem GeoSpAS dan Aplikasi Portal GIS di JAS Pulau Pinang
Briefing on the New Dimensions of the GeoSpAS System and GIS Portal Application at DOE Pulau Pinang



◂ Taklimat Dimensi Baru Sistem GeoSpAS dan Aplikasi Portal GIS di JAS Sabah
Briefing on the New Dimensions of the GeoSpAS System and GIS Portal Application in DOE Sabah

Geoinnovation Awards 2023

Aplikasi Modul Umum yang terkandung di dalam Sistem GeoSpAS telah tercalon di antara 50 aplikasi geospatial terbaik semasa majlis Geoinnovation Awards 2023 anjuran Esri Malaysia. Anugerah yang dibuat secara tahunan ini merupakan penghargaan kepada agensi-agensi di Malaysia yang membangunkan teknologi geospatial dengan efektif dalam memajukan bidang kuasa masing-masing ke arah penyelesaian masalah globalisasi semasa.

Geoinnovation Awards 2023

The General Module application contained in the GeoSpAS System has been nominated among the 50 best geospatial applications during the Geoinnovation Awards 2023 organized by Esri Malaysia. This annual award is an appreciation to agencies in Malaysia that develop geospatial technology effectively in advancing their respective jurisdictions towards solving the current globalization problem.

Kursus / Latihan / Bengkel / Seminar

Sepanjang tahun 2023, sebanyak 10 kursus dan seminar telah dihadiri dan dikendalikan oleh Seksyen Geospatial. Kursus dan seminar ini adalah bagi memastikan pengguna sistem GeoSpAS dan pegawai Seksyen Geospatial sentiasa peka dengan keperluan semasa teknologi geospatial.

Course / Training / Workshop / Seminar

Throughout the year 2023, a total of 10 courses and seminars were attended and conducted by the Geospatial Section. This course and seminar are conducted to ensure GeoSpAS system users and Geospatial Section officers are always aware of the current needs of geospatial technology.



▲ Kursus Sistem Geospatial Alam Sekitar kepada Pegawai JAS di EiMAS
Environmental Geospatial Systems Course for DOE officials at EiMAS



▶ Simposium *'Supercharged by ESRI'* yang Dihadiri oleh Pegawai Seksyen Geospatial
Symposium 'Supercharged by ESRI' Attended by Geospatial Section Officers

BAB/
CHAPTER

08

INSTITUT ALAM SEKITAR MALAYSIA (E*i*MAS)

ENVIRONMENT INSTITUTE OF MALAYSIA (E*i*MAS)



INSTITUT ALAM SEKITAR MALAYSIA (E*i*MAS)
ENVIRONMENT INSTITUTE OF MALAYSIA (E*i*MAS)

Sebagai sebuah Pusat Kecemerlangan dalam Pengurusan Alam Sekitar di Malaysia, E*i*MAS bukan sahaja berperanan dalam meningkatkan kompetensi warga Jabatan Alam Sekitar 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.

E*i*MAS as a Center of Excellence in Environmental Management in Malaysia conducts staff training for the department and other government agencies, organizations, local industries, and international environmental agencies. The training programmes focus on enhancing knowledge and competency in practical environmental practices through continuous learning.

Jumlah perjawatan E*i*MAS sehingga 31 Disember 2023 adalah 50 perjawatan dengan pengisian sebanyak 48 perjawatan.

The total staffing is 50, while up to 31 December 2023, only 48 posts were filled.

PROGRAM LATIHAN E*i*MAS KEPADA PEGAWAI DAN KAKITANGAN JAS 2023

E*i*MAS 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 **Jadual 8.1**. Sebanyak 52 latihan/kursus telah dilaksanakan dengan jumlah kehadiran seramai 1565 peserta.

E*i*MAS TRAINING PROGRAMME FOR DOE OFFICIALS AND STAFF 2023

E*i*MAS has developed a training programme in the field of environmental management and pollution control, and attention has been given to the development of human capital that can protect and manage the environment comprehensively as shown in **Table 8.1**. A total of 52 trainings/courses were implemented with the attendance of 1565 participants.

Jadual 8.1: Senarai Program Latihan E*i*MAS 2023
Table 8.1: E*i*MAS Training Programme List 2023

BIL. NO.	PENGURUSAN KUALITI AIR WATER QUALITY MANAGEMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Kursus Peralatan Pengukuran Kualiti Air / Course on Instruments for Water Quality Measurement	13 - 15 Februari 13 – 15 February	29
2.	Bengkel Penyediaan Modul Pembelajaran bagi Kursus Notifikasi Sistem Pengolahan Efluen Perindustrian – Rekabentuk dan Operasi Workshop on the Preparation of Training Module for the Course of Industrial Effluent Treatment System's Notification – Design and Operation	20 - 23 Februari 20 – 23 February	16
3.	Kursus Kompetensi Protokol Persampelan, Pengawetan dan Pengendalian Sampel Efluen bagi Tujuan Penguatkuasaan / Course on Competency in the Protocol of Sampling, Preservation, and Handling of Effluent Samples for Enforcement Purposes	13 - 16 Mac 13 – 16 March	17
4.	Bengkel Penambahbaikan Modul Kompetensi Kawalan Pencemaran Air Workshop on the Improvement of Competency Module for Water Pollution Control	8 -11 Mei 8 – 11 May	9
5.	Kursus Pensijilan Profesional Alam Sekitar dalam Pemeriksaan Sistem Pengolahan Efluen Perindustrian / Course on Certified Environmental Professional in Industrial Effluent Treatment System Inspection (CePIETSI)	15 - 24 Mei 15 – 24 May	18
6.	Program Pembangunan Kepakaran Pegawai JAS dalam Bidang Kawalan Pencemaran Air / Expertise Development Programme in Water Pollution Control for DOE Officials	19 – 22 Jun 19 – 22 June	13

Jadual 8.1: Senarai Program Latihan E*i*MAS 2023
Table 8.1: E*i*MAS Training Programme List 2023

BIL. NO.	PENGURUSAN KUALITI AIR WATER QUALITY MANAGEMENT	TARIKH DATE	PESERTA PARTICIPANTS
7.	Kursus Pensijilan Profesional Alam Sekitar dalam Pemeriksaan Sistem Pengolahan Efluen Kilang Kelapa Sawit / Course on Certified Environmental Professional in Palm Oil Mill Effluent Treatment System Inspection (CePPOMETSI)	24 – 28 Julai 24 – 28 July	21
8.	Kursus Pensijilan Profesional Alam Sekitar dalam Pemeriksaan Sistem Pengolahan Kumbahan (CePSTPI) / Course on Certified Environmental Professional in Sewage Treatment Plant Inspection (CePSTPI)	2 - 10 Oktober 2 – 10 October	7
	JUMLAH / TOTAL		**130**

BIL. NO.	PENGURUSAN KUALITI UDARA AIR QUALITY MANAGEMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Bengkel Penggubalan Soalan Peperiksaan Kursus Pensijilan Penguji Ujian Pelepasan Asap dan Gas Kenderaan Bermotor Workshop on Reviewing Exam Questions for Certified Motor Vehicle Emission Tester Course (Diesel, Petrol & Noise)	21- 22 Februari 21 - 22 February	10
2.	Kursus Komponen dan Graf Prestasi Kipas (Fans Performance Curve) Course on Components and Performance Curve Fan	28 Februari 28 February	94
3.	Bengkel "*A Guidebook on Performance Monitoring of Electrostatic Precipitator* (ESP)" Bil. 1/2023 / Workshop on "A Guidebook on Performance Monitoring of Electrostatic Precipitator (ESP)" No. 1/2023	9 Mac 9 March	10
4.	Kursus Pensijilan Penguji Ujian Pelepasan Asap Kenderaan (Diesel & Petrol) bagi Kemudahan yang Diluluskan dan Pengendali Berkumpulan Bil. 1/2023 / Course on Certified Motor Vehicle Emission Tester (Diesel & Petrol) for Approved Facilities and Fleet Operators No. 1/2023	13-15 Mac 13 -15 March	25
5.	Kursus Pensijilan Penguji Ujian Pelepasan Asap Kenderaan Bermotor (Diesel, Petrol & Bunyi Bising) / Course on Certified Motor Vehicle Emission Tester (Diesel, Petrol & Noise) for DOE Officials	13-15 Mac 13 -15 March	7
6.	Kursus Pensijilan Penguji Ujian Pelepasan Asap Kenderaan (Diesel, Petrol & Bunyi Bising) / Course on Certified Motor Vehicle Emission Tester (Diesel, Petrol & Noise) for DOE Officials	9-11 Mei 9 -11 May	17
7.	Kursus Pensijilan Penguji Ujian Pelepasan Asap Kenderaan (Diesel, Petrol & Bunyi Bising) untuk Pegawai JAS / Course on Certified Motor Vehicle Emission Tester (Diesel, Petrol & Noise) for DOE Officials	24 - 26 Mei 24 - 26 May	12
8.	Bengkel "*A Guidebook on Performance Monitoring of Electrostatic Precipitator* (ESP)" Bil. 2/2023 / Workshop on "A Guidebook on Performance Monitoring of Electrostatic Precipitator (ESP)" No. 2/2023	29- 30 Mei 29- 30 May	10
9.	Lawatan Teknikal ke Stesen Janakuasa Sultan Azlan Shah, Seri Manjung, Perak Darul Ridzuan (Pemendak Elektrostatik) Technical Visit to Sultan Azlan Shah Power Station, Seri Manjung, Perak Darul Ridzuan (Electrostatic Precipitator)	21 Jun 21 June	15
10.	Kursus Reka Bentuk Beg Penapis Pengumpul Habuk Course on Design of Dust Collector Bag Filter	21- 24 Ogos 21- 24 August	12
11.	Kursus Profesional Alam Sekitar dalam Pemeriksaan Penggahar (CePSI) Course on Certified Environmental Professional in Scrubber Inspection (CePSI)	4- 8 September 4- 8 September	18
12.	Kursus Profesional Alam Sekitar dalam Pemeriksaan Beg Penapis Pengumpul Habuk (CePBFI) / Course on Certified Environmental Professional in Bag Filter Inspection (CePBFI)	11-15 September 11-15 September	17
13.	Kursus Pensijilan Penguji Ujian Pelepasan Kenderaan (Diesel & Petrol) untuk Kemudahan yang Diluluskan dan Pengendali Berkumpulan Siri 2 dan 3 Bagi Tahun 2023 / Course on Certified Motor Vehicle Emissions Tester (Diesel & Gasoline) for Approved Facilities and Fleet Operators Series 2 and 3 for 2023	9 - 11 Oktober 9 – 11 October	54
	JUMLAH / TOTAL		**301**

Jadual 8.1: Senarai Program Latihan E*i*MAS 2023
Table 8.1: E*i*MAS Training Programme List 2023

BIL. NO.	PENGURUSAN BUANGAN TERJADUAL SCHEDULE WASTE ARRANGEMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Kursus Pensijilan Profesional Alam Sekitar dalam Pemeriksaan Buangan Terjadual (CePSWI) / Certified Environmental Professional in Scheduled Waste Inspection (CePSWI)	6 – 10 Mac 6 – 10 March	29
2.	Kursus Electronic Scheduled Waste Information System (eSWIS) Course on Electronic Scheduled Waste Information System (eSWIS)	9 – 11 Mei 9 – 11 May	25
3.	Kursus Pensijilan Protokol Persampelan Buangan Terjadual (CePSWaSP) Siri 2 / Course on Certified Person in Scheduled Waste Sampling Protocol (CePSWaSP) Series 2	15 – 18 Mei 15 – 18 May	33
4.	Kursus Amalan Pengurusan Terbaik Buangan Terjadual - Pengurusan Khas / Course on BMPs for Scheduled Waste – Special Management	8 – 11 Ogos 8 – 11 August	23
5.	Kursus Identifikasi dan Klasifikasi Buangan Terjadual Course on Identification and Classification of Scheduled Waste	5 – 7 September 5 – 7 September	15
	JUMLAH / TOTAL		**125**

BIL. NO.	PERUNDANGAN DAN PENGUATKUASAAN ENVIRONMENTAL LEGISLATION AND ENFORCEMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Kursus Pengendalian Keterangan Gambar Digital & Praktikal Fotografi Penyiasatan / Course in Digital Image Evidence Management and Practical Investigative Photography	27 Februari – 2 Mac 27 February – 2 March	29
2.	Kursus Lanjutan Pegawai Pendakwa Advanced Course on Prosecuting Officers	6 - 10 Mac 6 – 10 March	20
3.	Kursus Pematuhan Terhadap Akta Kualiti Alam Sekeliling (AKAS) 1974 / Course on Compliance with Environmental Quality Act (EQA) 1974	12-14 April 12 – 14 April	33
4.	Kursus Penyiasatan & Penguatkuasaan Pembakaran Terbuka Course on Investigation & Enforcement of Open Burning	13 - 15 Jun 13 – 15 June	19
5.	Kursus Penguatkuasaan Praktikal Course on Practical Enforcement	3 - 6 Julai 3 – 6 July	17
6.	Kursus Pemahaman dan Kemahiran Tangkapan Course on Comprehension and Skill in Arrest	11 - 15 Sept 11 – 15 September	
7.	Kursus Teknik Pemeriksaan Saksi Course on Witness Examination Techniques	5 Oktober 5 October	64
	JUMLAH / TOTAL		**208**

BIL. NO.	PENGURUSAN ALAM SEKITAR DAN KESAN KEPADA ALAM SEKITAR ENVIRONMENTAL MANAGEMENT AND ENVIRONMENTAL IMPACT ASSESSMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Kursus Prosedur Penilaian Laporan Kesan kepada Alam Sekeliling (EIA) / Environmental Impact Assessment (EIA) Report Assessment Procedure Course	13 – 15 Mac 13 – 15 March	17
2.	Kursus Langkah Pencegahan & Kawalan Pencemaran daripada Aktiviti Gangguan Tanah (LDP2M2) / Course on Land Disturbing, Pollution Prevention & Mitigation Measure (LDP2M2)	8 – 12 Mei 8 – 12 May	25
3.	Kursus Pensijilan Profesional Pegawai Alam Sekitar dalam Projek EIA (CePEOEIA) / Course on Certified Professional Environmental Officer in EIA Projects (CePEOEIA)	29 Mei – 2 Jun 29 May – 2 June 10 – 14 Julai 10 – 14 July	27 26
	JUMLAH / TOTAL		**95**

Jadual 8.1: Senarai Program Latihan E*i*MAS 2023
Table 8.1: E*i*MAS Training Programme List 2023

BIL. NO.	PENGURUSAN KUALITI QUALITY MANAGEMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Kursus *Train The Trainer* (TTT) Train The Trainer (TTT) Course	27 Februari - 3 Mac 27 February – 3 March	20
2.	Kursus Asas Pegawai Baharu JAS 2023 Induction Course for DOE Officials 2023	8 Mei - 2 Jun 8 May – 2 June	18
3.	Kursus "*The Leader in You*" Course on "The Leader in You"	6 - 8 Jun 6 – 8 June	22
4.	Kursus Pembentukkan Insan Cemerlang dan Kerja Berpasukan Course on Individual Excellence & Teamwork	22 - 24 Ogos 22 – 24 August	22
5.	Seminar Masa Depan Mampan: Mengintegrasi Prinsip Alam Sekitar, Sosial dan Tadbir Urus (ESG) / *Seminar* for a Sustainable Future: Integrating Environment, Social and Governance (ESG) Principles	26 September 26 September	50
6.	Bengkel Kajian *Training Needs Analysis* (TNA) dan Pelan Operasi Latihan (POL) untuk Tahun 2024 / Workshop on Training Needs Analysis (TNA) and Training Operation Plan (POL) for the Year 2024	24 - 26 Oktober 24 – 26 October	22
7.	Kursus Integriti - Seminar Pemerkasaan Psikologi dan Kerohanian dalam Pembangunan Modal Insan ke Arah Membentuk Pegawai Berintegriti Tinggi - (13 Negeri) / Integrity Course - Psychological and Spiritual Empowerment Seminar in Human Capital Development Towards Forming High Integrity Officers - (13 States)	Mac - Oktober March – October	390
	JUMLAH / TOTAL		544

BIL. NO.	TEKNOLOGI MAKLUMAT & KOMUNIKASI INFORMATION & COMMUNICATION TECHNOLOGY	TARIKH DATE	PESERTA PARTICIPANTS
1.	Kursus Sistem Latihan Bersepadu (SLB) untuk Pentadbir Sistem Integrated Training System (SLB) for Course Administrator	28 Feb – 2 Mac 28 Feb - 2 March	13
2.	Bengkel Kajian Keperluan Pengguna bagi Projek Naik Taraf Portal Institut Alam Sekitar Malaysia (E*i*MAS) User Requirement Specification Workshop for EiMAS's Portal Enhancement Project	7 – 8 Jun 7 – 8 June	18
3.	Kursus Sistem Aplikasi Geospatial Alam Sekitar (MyGeoSpAS) Course on Environmental Geospatial System (MyGeoSpAS)	1 - 3 Ogos 1 – 3 August	18
4.	Kursus Microsoft Office Microsoft Office Training	28 - 30 Ogos 28 – 30 August	16
5.	Kursus Visualisasi Data Menggunakan Microsoft Power BI Course on Data Visualization using Microsoft Power BI	7 - 8 November 7 – 8 November	22
	JUMLAH / TOTAL		87

BIL. NO.	PERPUSTAKAAN DAN PENGURUSAN MAKLUMAT LIBRARY AND KNOWLEDGE MANAGEMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Bengkel Reka Bentuk Poster Kreatif Workshop on Creative Poster Design	31 Mei – 1 Jun 31 May – 1 June	15
	JUMLAH / TOTAL		15

BIL. NO.	PENTADBIRAN DAN KEWANGAN ADMINISTRATION AND FINANCE	TARIKH DATE	PESERTA PARTICIPANTS
1.	Bengkel Pematuhan Kewangan bagi Tatacara Perolehan Kerajaan Siri 1 / Workshop on Government Procurement Procedures Series 1	8 – 9 Ogos 8 – 9 August	30
2.	Bengkel Pematuhan Kewangan bagi Tatacara Perolehan Kerajaan Siri 2 / Workshop on Government Procurement Procedures Series 2	26 September 26 September	30
	JUMLAH / TOTAL		60



BILANGAN KURSUS
NUMBER OF COURSES

52



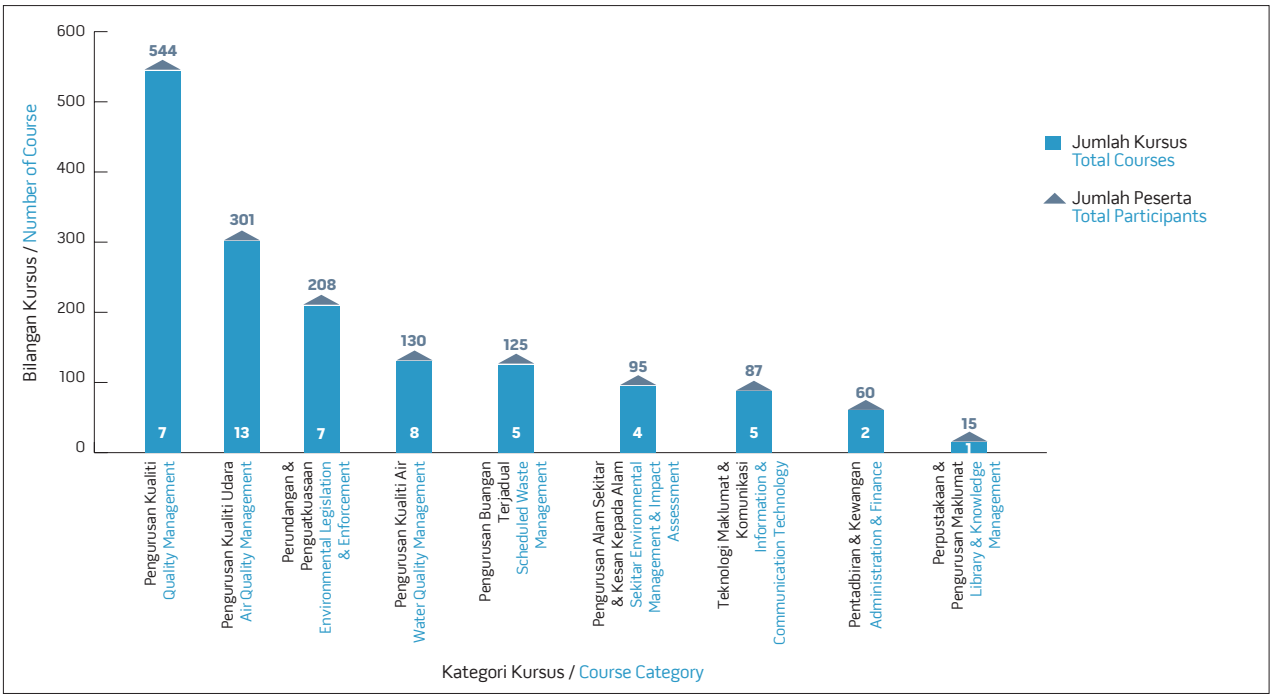
BILANGAN PESERTA
NUMBER OF PARTICIPANTS

1565

Rajah 8.1: Jumlah Kursus yang Dilaksanakan dan Pegawai JAS Dilatih bagi Tahun 2023
Figure 8.1: Number of Courses and DOE Officials Trained for 2023

Rajah 8.2 menunjukkan Program Latihan yang telah dilaksanakan oleh E*i*MAS mengikut kategori kursus kepada kakitangan JAS. Sebanyak 52 latihan/kursus telah dilaksanakan dengan jumlah kehadiran seramai 1565 peserta.

Figure 8.2 shows Training Programmes that have been conducted by E*i*MAS according to course category to DOE staff. A total of 52 trainings/courses were implemented with the attendance of 1565 participants.



Rajah 8.2: Bilangan Kursus dan Bilangan Pegawai JAS Dilatih Mengikut Kategori Kursus
Figure 8.2: Number of Courses and DOE Officials Trained by Course Category

Pusat Bahan Berbahaya, E*i*MAS telah melaksanakan kursus Kompetensi Protokol Persampelan. Kursus ini telah dilaksanakan selama 4 hari di Hotel Merdeka Palace, Kuching Sarawak. Seramai 33 orang pegawai dari JAS negeri Sarawak telah menghadiri kursus tersebut. Kursus tersebut dilaksanakan bagi memberi kemahiran kepada pegawai JAS negeri untuk menjalankan kerja-kerja persampelan buangan terjadual. Kursus ini adalah untuk memberi pendedahan kepada pegawai-pegawai JAS berkaitan protokol dan kaedah persampelan buangan terjadual yang betul.

Hazardous Substances Centre of E*i*MAS has conducted the Competency Protocol Sampling course for four (4) days at Hotel Merdeka Palace in Kuching, Sarawak. Thirty-three participants from DOE Sarawak State Office attented the course. The initiative was to provide more opportunities for DOE state officials to acquire the necessary skill in waste sampling. The course aimed to expose DOE officials to waste sampling protocols and methods.



▲ Pengenalan kepada Kursus Kompetensi Protokol Persampelan Buangan Terjadual yang Diadakan di Hotel Merdeka Palace, Sarawak Disampaikan oleh Ts. Zaidi bin Mohamed@ Awang (Ketua Pusat Bahan Berbahaya, E*i*MAS)
Introduction to Scheduled Waste Sampling Protocol Competency Presented by Ts. Zaidi bin Mohamed@Awang (Head of Hazardous Substances Centre, E*i*MAS) Held at Merdeka Palace Hotel, Sarawak



Kursus Pensijilan Penguji Ujian Pelepasan Kenderaan (Diesel Dan Petrol) untuk Kemudahan yang Diluluskan dan Pengendali Berkumpulan Siri 2 dan 3 bagi Tahun 2023

Kursus ini telah diadakan pada 9 hingga 11 Oktober 2023.

Kursus ini mendapat penyertaan yang menggalakkan iaitu seramai 54 peserta yang majoritinya adalah daripada PUSPAKOM.

Kursus ini bersifat kompetensi merangkumi teori dan amali bagi memberi pengetahuan dan kemahiran pengendalian alat meter asap dan meter gas kenderaan.

Vehicle Emissions Tester Certification Course (Diesel And Gasoline) For Approved Facilities and Fleet Operator Series 2 and 3 for 2023

This course was held from 9 to 11 October 2023.

This course received encouraging participation, with a total of 54 participants, the majority of whom were from PUSPAKOM.

This competency-based course included theory and practice to provide knowledge and skills in operating smoke and gas meters.

Kursus Reka E-Poster Hebahan Maklumat Secara Kreatif

E-Poster Design Course For Creative Information Dissemination



◂ Peserta Kursus semasa Sesi Latihan Rekabentuk e-Poster
e-Poster Design Training Session

Kursus selama dua hari telah dilaksanakan dengan penyertaan seramai 15 orang peserta yang terdiri daripada pegawai E*i*MAS. Objektif utama kursus ini adalah untuk memberikan pendedahan dan kemahiran tambahan kepada peserta mengenai kaedah menyediakan informasi dan hebahan secara kreatif, berkesan dan menarik menggunakan perisian *Affinity Designer.* Keberkesanan dan kejayaan bengkel dapat dilihat melalui penilaian peserta yang sangat baik yang mana kesemua peserta menyatakan kemahiran dan pengetahuan asas dalam reka bentuk *(design)* bertambah baik. Ia dapat digunakan dalam menghasilkan e-poster berkaitan bidang tugas masing-masing.

The two-day course was attended by 15 officials from E*i*MAS. The primary objective was to enhance their skills and knowledge in communicating information and messages attractively and creatively using Affinity Designer. The effectiveness and success of the workshop was demonstrated by the excellent participant evaluation, with all participants reporting improved design skills and basic knowledge. The knowledge gained can be used to create e-posters relevant to their respective work areas.



▴ Peserta yang Menghadiri Kursus Anjuran Pusat Penilaian
Participants of the Assessment Centre Course

Penilaian Kesan Kepada Alam Sekitar

Pada tahun 2023, sebanyak empat (4) kursus kepada pegawai Jabatan Alam Sekitar dan 11 kursus kepada industri dan pengamal alam sekitar telah dilaksanakan. Kursus kepada industri dan pengamal sekitar yang merupakan keperluan di bawah perundangan Akta Kualiti Alam Sekeliling (AKAS) 1974 yang memerlukan Jururunding EIA dan Juruaudit Alam Sekitar berdaftar dengan Jabatan Alam Sekitar di bawah Skim Pendaftaran Jururunding EIA dan Skim Pendaftaran Juruaudit Alam Sekitar serta keperluan Orang yang Berwibawa di bawah Seksyen 49A AKAS 1974.

Kursus-kursus kepada pegawai Jabatan Alam Sekitar adalah bagi meningkatkan ilmu dalam melaksanakan tugas untuk penilaian laporan EIA dan juga menjalankan kerja-kerja penguatkuasaan pematuhan syarat-syarat kelulusan laporan EIA.

Environmental Impact Assessment

In 2023, a total of four (4) courses for Department of Environment officials and 11 courses for industry and environmental practitioners have been implemented. Course for industry and environmental practitioners is a requirement under the legislation of the Environmental Quality Act (EQA) 1974 which requires EIA Consultants and Environmental Auditors to be registered with the Department of Environment under the EIA Consultant Registration Scheme and the Environmental Auditor Registration Scheme as well as the requirements of Competent Persons under Section 49A EQA 1974.

The purposes of the course for Department of Environment officials is to improve knowledge in the task of evaluating EIA reports and in conducting enforcement for compliance with the conditions of EIA report approvals.



◂ Latihan Amali di Lapangan bagi Kursus CePEOEIA
Field Practical Training for CePEOEIA Course



▴ Peserta Menduduki Peperiksaan yang Dijalankan
Participants Sitting for the Exam

Kursus Pengurusan Gred C44 - *The Leader In You*

Kursus '*The Leader in You*' ini julung kali dianjurkan dengan kerjasama *Razak School of Government* (RSOG) pada 6 hingga 8 Jun 2023 di Hotel Ideas, Kuala Lumpur yang melibatkan 21 pegawai JAS di kalangan Ketua Cawangan Jabatan Alam Sekitar (JAS) seluruh negara.

Objektif program adalah untuk mendedahkan kepada peserta mengenai lima elemen kompetensi kepimpinan bagi pegawai sektor awam di Malaysia iaitu Autentik, Tangkas dan Adaptif, Strategik, Keterampilan Eksekutif dan Transformatif.

Kursus ini wajar diteruskan dan diperluaskan kepada semua pegawai JAS bermula dari Gred C41 agar dapat memberikan manfaat dan pendedahan mengenai aspek kepimpinan dalam JAS di peringkat awal.

Management Course Grade C44 - The Leader In You

'The Leader in You' course was organized for the first time in collaboration with the Razak School of Government (RSOG) from 6 to 8 June 2023 at Ideas Hotel, Kuala Lumpur, involving 21 officials from the Department of Environment (DOE) Head of Branch nationwide.

The programme's objective was to expose participants to the five leadership competency elements for public sector officers in Malaysia, namely Authentic, Agile and Adaptive, Strategic, Executive Presence, and Transformative.

This course should be continued and expanded to all DOE officials starting from Grade C41 to provide benefits and exposure to leadership aspects within DOE at early stage.



◂ Gambar Peserta Kursus bersama Pengarah E*i*MAS dan Penganjur Bersama Wakil RSOG.
Photo of Course Participants with E*i*MAS Director and Organizers with RSOG Representative.

Kursus Asas Pegawai Baharu JAS 2023

Kursus ini telah dijalankan selama 4 minggu iaitu pada 8 Mei hingga 2 Jun 2023 di Institut Alam Sekitar Malaysia (E*i*MAS) yang telah melibatkan seramai 18 orang pegawai baharu dilantik Jabatan Alam Sekitar (JAS). Di antara objektif kursus ini adalah memberi pengetahuan dan pendedahan kepada peserta kursus mengenai tanggungjawab dan bidang tugas pegawai di Jabatan Alam Sekitar (JAS). Fokus kursus ini juga adalah supaya setiap pegawai di JAS mahir dalam penggunaan Akta Kualiti Alam Sekeliling (AKAS) 1974, Arahan Tetap Operasi Penguatkuasaan (ATOP), Prosedur Tindakan Operasi (PTO) dan polisi jabatan. Pengisian kursus dimulakan seawal 6.30 pagi dengan aktiviti senaman serta kawad di bawah seliaan pegawai dari Angkatan Pertahanan Awam (APM) dan berakhir pada jam 7.00 malam selepas sesi senaman petang.

Basic Course For New DOE Officials 2023

This course was conducted for 4 weeks from 8 May to 2 June 2023 at Environmental Institute of Malaysia (EiMAS), involving a total of 18 newly appointed officials from the Department of Environment (DOE). The objective of this course was to provide knowledge and exposure to participants about the responsibilities and duties of officials in the Department of Environment (DOE). The focus of this course was also for each officials to be proficient in the use of the Environmental Quality Act (EQA) 1974, Standard Operating Procedures, and departmental policies. The course started as early as 6.30 am with exercise activities and parades under the supervision of officers from the Civil Defense Force (APM) and ended at 7.00 pm after the late afternoon exercise session.



▲ Kursus Pemahaman dan Kemahiran Tangkapan
Course in Comprehension and Skills in Arrest



Program Pembangunan Kepakaran Pegawai JAS dalam Bidang Kawalan Pencemaran Air pada 19 – 22 Jun 2023 di Kuching, Sarawak

Program ini telah disertai oleh 13 orang peserta yang dipilih berdasarkan kriteria yang ditetapkan seperti mempunyai kompetensi CePSTPI/CePLTPI dan pengalaman dalam melaksanakan program penguatkuasaan. Objektif program ini adalah untuk membangunkan kepakaran pegawai-pegawai JAS mengenai sistem kawalan pencemaran air. Program pada kali ini memberi fokus kepada teknologi-teknologi yang digunakan dalam sistem pengolahan enapcemar septik dan sistem pengolahan larut resapan. Dua premis yang dilawat semasa program ini adalah Trienekens (Sarawak) Sdn. Bhd. dan SAR-Alam Indah Sdn. Bhd.

Expertise Development Programme in Water Pollution Control for DOE Officials on 19 – 22 June 2023 in Kuching, Sarawak

This programme was attended by 13 participants who were selected based on established criteria such as having CePSTPI/CePLTPI competency and experience in implementing enforcement programme. The objective of this programme was to develop the expertise of DOE officials in water pollution control systems. The programme focused on technologies used in septic sludge treatment systems and leachate treatment systems. Two visited premises during this programme were Trienekens (Sarawak) Sdn. Bhd. and SAR-Alam Indah Sdn. Bhd.



▲ Bengkel Penyediaan Modul Pembelajaran bagi Kursus Notifikasi Sistem Pengolahan Efluen Perindustrian – Rekabentuk dan Operasi pada 20 - 23 Februari 2023 di Hotel Lexis, Port Dickson, Negeri Sembilan
Workshop on the Preparation of Training Module for the Course of Industrial Effluent Treatment System's Notification – Design and Operation on 20– 23 February 2023 at Lexis Hotel, Port Dickson, Negeri Sembilan



▲ Kursus Peralatan Pengukuran Kualiti Air pada 13 - 15 Februari 2023 di E*i*MAS
Course on Instruments for Water Quality Measurement on 13 – 15 February at E*i*MAS





▲ Latihan Praktikal di Lapangan semasa Kursus Pensijilan Profesional Alam Sekitar dalam Pemeriksaan Sistem Pengolahan Kumbahan (CePSTPI) pada 2 - 10 Oktober 2023 di Loji Rawatan Kumbahan Pantai 2
The Field Practical Training during Course on Certified Environmental Professional in Sewage Treatment Plant Inspection (CePSTPI) on 2 – 10 October 2023 at Pantai 2 Sewage Treatment Plant



◀ Aktiviti Latihan Fizikal Kursus Pemahaman dan Kemahiran Tangkapan
Physical Training during Course on Comprehension and Skills in Arrest



▶ Sesi *Mock Trial* semasa Kursus Lanjutan Pegawai Pendakwa
Mock Trial Session during Advanced Course on Prosecuting Officers

PROGRAM LATIHAN KOMPETENSI E*i*MAS KEPADA PEGAWAI INDUSTRI 2023

E*i*MAS telah menawarkan kursus-kursus pensijilan industri dalam pengurusan alam sekitar mengikut keperluan Akta Kualiti Alam Sekeliling 1974. Pada tahun 2023, sebanyak sepuluh (10) jenis kursus pensijilan industri telah dilaksanakan dengan jumlah 217 siri kursus. Kursus-kursus yang terlibat adalah seperti di **Jadual 8.2.**

Sepanjang tahun 2023, E*i*MAS telah berjaya melatih seramai 5,038 peserta industri.

E*i*MAS COMPETENCY TRAINING PROGRAMME FOR INDUSTRY OFFICERS 2023

E*i*MAS has offered industry certification courses in environmental management in accordance with the requirements of the Environmental Quality Act 1974. In year 2023, ten (10) industrial certification courses were conducted with a total of 217 series of courses. The competency courses are as shown in **Table 8.2.**

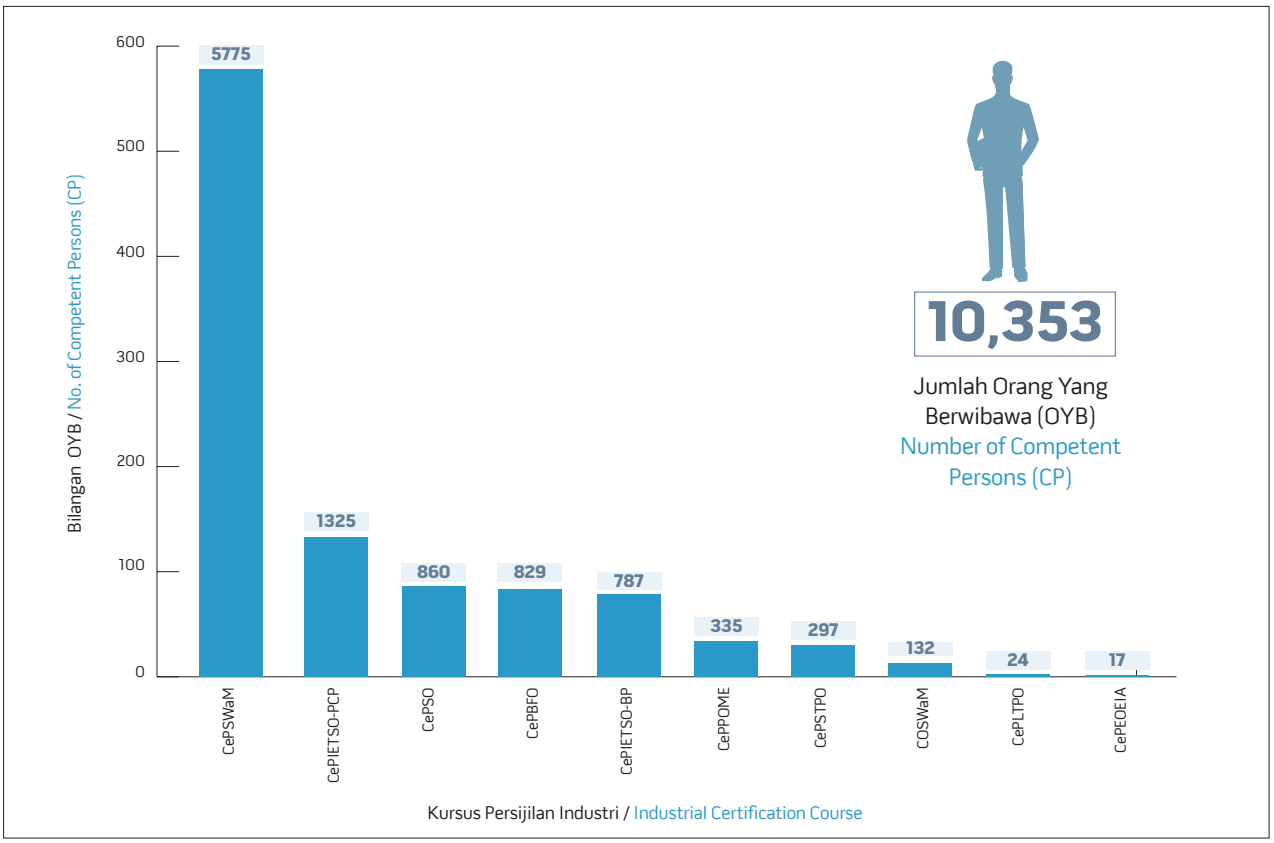
Throughout the year 2023, E*i*MAS has successfully trained 5,038 industry participants.

Jadual 8.2: Senarai Program Latihan Kompetensi E*i*MAS kepada Pegawai Industri
Table 8.2: E*i*MAS Competency Training Programmes for Industries Officers

BIL. NO.	PENGURUSAN ALAM SEKITAR DAN KESAN KEPADA ALAM SEKITAR ENVIRONMENTAL MANAGEMENT AND IMPACT ASSESSMENT	BIL. PENGANJURAN KURSUS NO. COURSE ORGANIZATION	PESERTA PARTICIPANTS
1.	**(CePBFO)** Kursus Profesional Alam Sekitar Bertauliah dalam Pengoperasian Penapis Beg / Course for Certified Environmental Professional in Bag Filters Operation	26	496
2.	**(CePSO)** Kursus Profesional Alam Sekitar Bertauliah dalam Pengoperasian Pengahar / Course for Certified Environmental Professional in Scrubbers' Operation	18	392
3.	**(CePIETSO BP)** Kursus Profesional Alam Sekitar Bertauliah dalam Pengoperasian Sistem Efluen Perindustrian (Proses Biologikal) / Course on Certified Environmental Professional in the Operation of Industrial Effluent Treatment Systems (Biological Treatment Process)	15	330
4.	**(CePLTPO)** Kursus Profesional Alam Sekitar Bertauliah dalam Pengoperasian Loji Rawatan Larut Resap / Course for Certified Environmental Professional in Leachate Treatment Plant Operation	2	15
5.	**(CePIETSO – PCP)** Kursus Profesional Alam Sekitar Bertauliah dalam Pengoperasian Sistem Efluen Perindustrian (Proses Kimia) / Course for Certified Environmental Professional in the Operation of Industrial Effluent Treatment Systems (Physical Chemical Treatment Process)	30	703
6.	**(CePSWaM)** Kursus Profesional Alam Sekitar Bertauliah dalam Pengurusan Buangan Terjadual / Course for Certified Environmental Professional in Scheduled Waste Management	103	2519
7.	**(CePSTPO)** Kursus Profesional Alam Sekitar Bertauliah dalam Pengoperasian Sistem Rawatan Kumbahan / Course for Certified Environmental Professional in Sewage Treatment Plant Operation	7	168
8.	**(CePPOME)** Kursus Profesional Alam Sekitar Bertauliah dalam Pengoperasian Sistem Rawatan Efluen Kilang Kelapa Sawit / Course for Certified Environmental Professional in the Treatment of Palm Oil Mill Effluent (Pond Processes)	6	89

Jadual 8.2: Senarai Program Latihan Kompetensi E*i*MAS kepada Pegawai Industri
Table 8.2: EiMAS Competency Training Programmes for Industries Officers

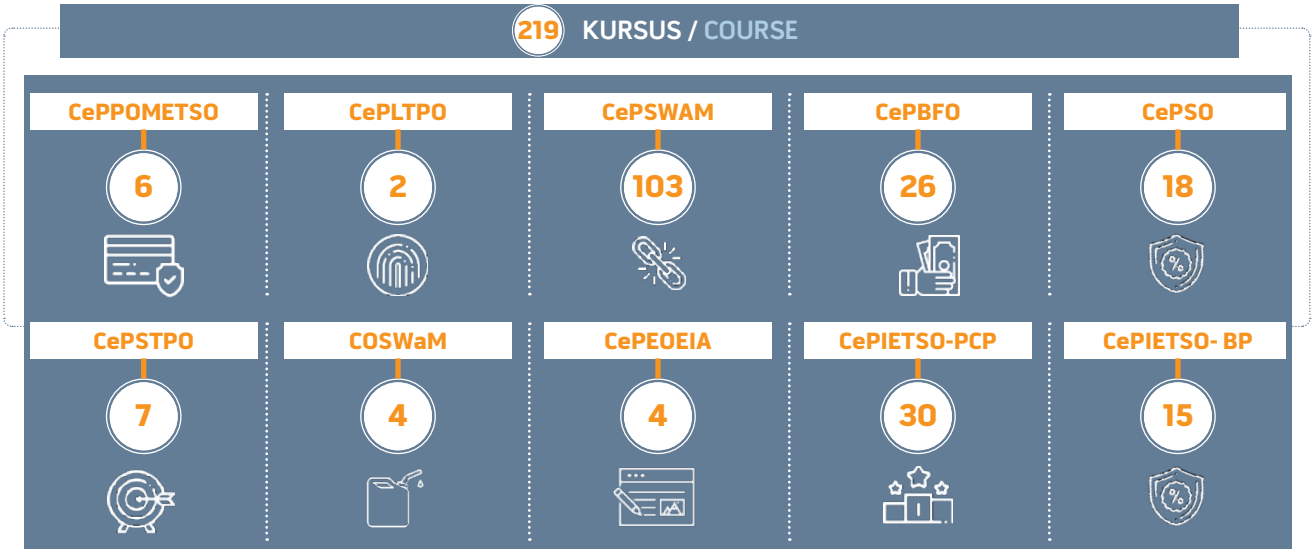
BIL. NO.	PENGURUSAN ALAM SEKITAR DAN KESAN KEPADA ALAM SEKITAR ENVIRONMENTAL MANAGEMENT AND IMPACT ASSESSMENT	BIL. PENGANJURAN KURSUS NO. COURSE ORGANIZATION	PESERTA PARTICIPANTS
9.	**(CePEOEIA)** Kursus Profesional Pegawai Alam Sekitar bagi Projek EIA Certified Professional Environmental Officer in EIA Project	4	66
10.	**(COSWaM)** Kursus Operator Bertauliah dalam Pengurusan Buangan Terjadual Course for Certified Operator in Scheduled Waste Management	4	132
	JUMLAH / TOTAL		**5,038**



Rajah 8.3: Bilangan Orang yang Berwibawa (OYB) Pegawai Industri di Malaysia mengikut Jenis Pensijilan pada 31 Disember 2023
Figure 8.3: Number of Competent Persons of Industry Personnel in Malaysia according to Type of Certification as of 31 December 2023

Rajah 8.3 menunjukkan sehingga 31 Disember 2023, E*i*MAS telah berjaya mengiktiraf seramai 10,353 orang pegawai industri di Malaysia sebagai Orang yang Berwibawa selaras dengan kehendak Seksyen 49A, Akta Kualiti Alam Sekeliling 1974.

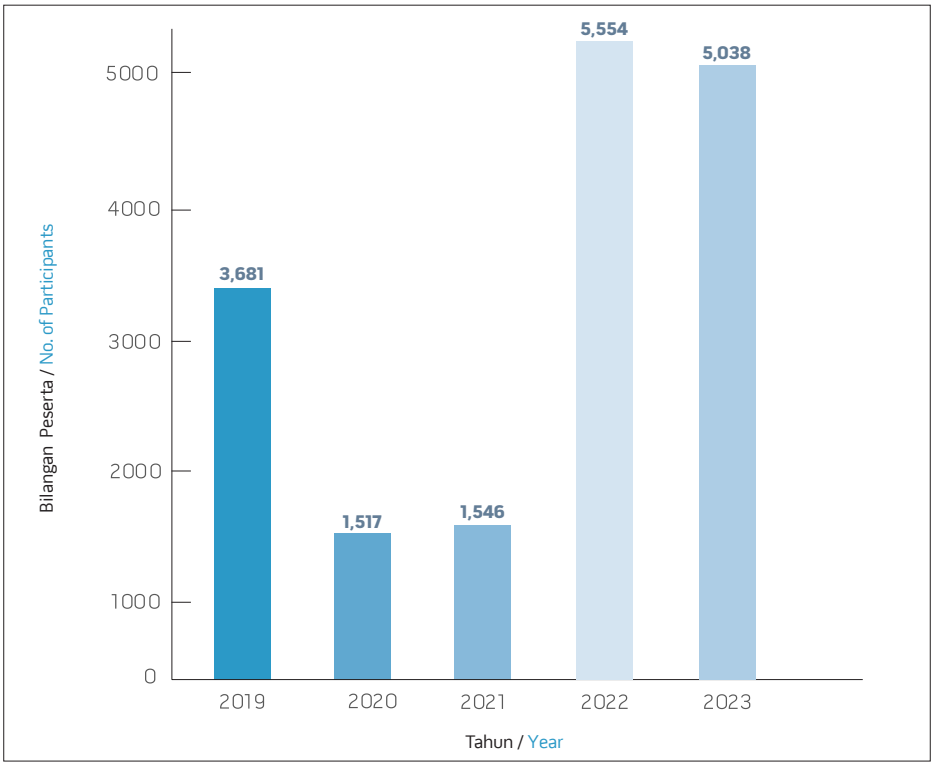
Figure 8.3 shows that as at 31 December 2023, EiMAS has successfully certified a total of 10,353 industry personnel in Malaysia as Competent Persons in accordance with the requirements of Section 49A of the Environmental Quality Act, 1974.



Rajah 8.4: Bilangan Kursus Pensijilan Industri yang Dianjurkan, 2023
Figure 8.4: Number of Industry Certification Courses Conducted, 2023

Sepanjang tahun 2023, sebanyak sepuluh (10) jenis kursus pensijilan industri telah dilaksanakan dengan jumlah 217 siri kursus seperti yang ditunjukkan dalam **Rajah 8.4.** Kursus Operator Bertauliah dalam Pengurusan Buangan Terjadual (COSWaM), merupakan kursus pensijilan terkini yang telah mendapat sambutan dari peserta industri automotif semenjak ia mula diperkenalkan pada tahun 2022.

During 2023, a total of ten (10) types of industrial certification courses were conducted with a total of 217 series of courses, as shown in **Figure 8.4.** The Certified Operator Course in Scheduled Waste Management (COSWaM) is the latest certification course introduced and it has been well received by the automotive industry participants since it was first offered in 2022.



Rajah 8.5: Bilangan Kehadiran Peserta Kursus Pegawai Industri bagi 5 Tahun Terkini (2019 – 2023)
Figure 8.5: Attendance of Industry Personnel as Course Participants for the Last 5 Years (2019 – 2023)

Bilangan kehadiran pegawai industri sebagai peserta bagi kursus pensijilan untuk 5 tahun terkini dari 2019 hingga 2023 seperti mana di dalam **Rajah 8.5.** Kehadiran peserta bagi tahun 2023 menunjukkan penurunan 18%. Ini berkemungkinan disebabkan oleh industri masih berada dalam tempoh menstabilkan ekonomi selepas PKP.

The attendance of industry personnel as participants for industry certification courses in the last 5 years from 2019 to 2023 is as shown in **Figure 8.5.** The attendance of participants for the year 2023 has decreased by 18%, this is likely due to the industry being in the period of stabilizing the economy after the MCO period.



◂ Peserta Menduduki Peperiksaan COSWaM
Participants Sitting for the COSWaM Exam



▲ Peserta Menduduki Peperiksaan COSWaM
Participants Sitting for the COSWaM Exam



▲ Peserta Menjalankan Tugasan COSWaM
Participants Carrying Out COSWaM Tasks



▲ Penyerahan Bahan Sampel untuk Tugasan Berkumpulan
Submission of Sample Materials for Group Assignments



▲ Peserta COSWaM di Hotel The Light, Pulau Pinang
COSWaM Participants at The Light Hotel, Penang



▲ Peserta COSWaM di Hotel Grandis, Kota Kinabalu
COSWaM Participants at Grandis Hotel, Kota Kinabalu

BAB/
CHAPTER

09

PERKHIDMATAN PERPUSTAKAAN

LIBRARY SERVICES



PERPUSTAKAAN JABATAN ALAM SEKITAR
DEPARTMENT OF ENVIRONMENT LIBRARY

PERANAN PERPUSTAKAAN
LIBRARY ROLE

Perpustakaan Jabatan Alam Sekitar merupakan pusat kecemerlangan literasi maklumat dan pusat penyimpanan maklumat berkaitan Jabatan Alam Sekitar

As a centre of excellence for information literacy and information storage related to the Department of Environment

Berperanan untuk membekalkan, memelihara dan menyalurkan maklumat dalam pelbagai bentuk dan medium kepada warga JAS

As a platform for providing, nurturing, and channeling information in various forms and mediums to DOE officials

Menyediakan persekitaran pembacaan yang kondusif kepada warga JAS

As an area providing a conducive reading environment for DOE officials

PERKHIDMATAN PERPUSTAKAAN / LIBRARY SERVICES

Antara perkhidmatan yang disediakan adalah:
Library services include:



Lain-Lain Aktiviti Perpustakaan

Khidmat nasihat perpustakaan;

- Bekerjasama dalam pelaksanaan program, latihan dan pengurusan perpustakaan;
- Mempelbagaikan bahan digital yang berkualiti;
- Menyelaras maklumat di Enviro Knowledge Management Centre (EKMC), Enviro Museum (EMUSEUM), ELIBRARY dan media sosial;
- Pembangunan Portal Perpustakaan [Perpustakaan Enviro Digital @JAS (EDL)];
- Lawatan kerja luar (Perpustakaan); dan
- Menyediakan Pelaporan Statistik Enviro Knowledge Management Centre (EKMC), Enviro Museum (EMUSEUM), setiap bulan kepada semua Bahagian dan JAS Negeri.

Other Library Activities

Advisory service;

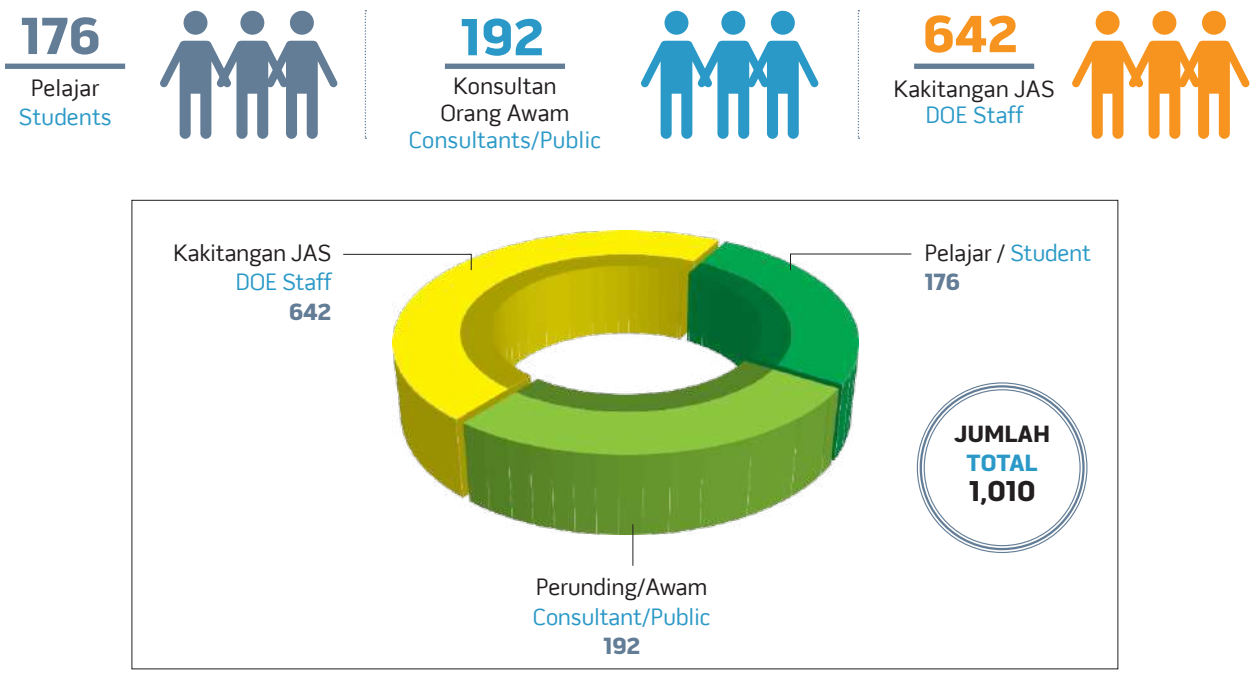
- Cooperate in training and programmes held for DOE;
- Diversify quality digital content;
- Coordinate in gather information for Enviro Knowledge Management Centre (EKMC), Enviro Museum (EMUSEUM), ELIBRARY, and social media;
- Development of Library Portal [Enviro Digital Library @JAS (EDL)];
- Conduct library visits; dan
- Prepare Statistical Report for Enviro Knowledge Management Centre (EKMC), Enviro Museum (EMUSEUM), once a month to DOE divisions and states.

Pengunjung Perpustakaan

Sepanjang tahun 2023, Perpustakaan JAS telah merekodkan peningkatan kunjungan pengguna berbanding pada tahun sebelumnya. Terdapat peningkatan sebanyak 41% dengan jumlah pengunjung seramai 1,010 orang. Peningkatan kunjungan pengguna pada tahun ini menunjukkan perkhidmatan perpustakaan mengalami peningkatan berikutan penambahan kepada perkhidmatan bahan atas talian (buku dan jurnal elektronik). Pecahan bilangan pengunjung adalah seperti berikut:

Library Visitors

During the year 2023, DOE Library recorded an increase in user visits compared to the previous year. There were 41% increase with the number of visitors of 1010 people. Library services have improved due to the addition of online material services (books and electronic journals). Library visitors are segregated as follows:



Rajah 9.1: Bilangan Pengunjung Perpustakaan
Figure 9.1: Number of Library Visitors

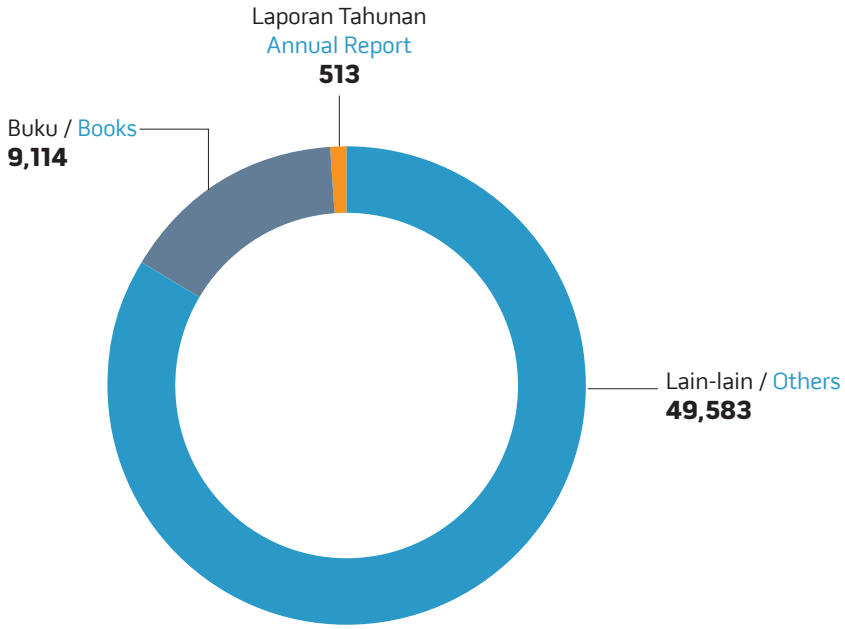
Pembangunan Koleksi

Perpustakaan JAS telah mengambil inisiatif menambah koleksi elektronik bahan perpustakaan pada tahun 2023. Kini, Perpustakaan JAS menyediakan koleksi digital (buku elektronik) melalui platfom Proquest dan dua (2) jurnal elektronik iaitu Journal of American Chemical Science (ACS) dan Springer Nature. Secara keseluruhannya, pada tahun 2023, Perpustakaan JAS menyediakan sebanyak 59,210 koleksi termasuk koleksi fizikal dan elektronik dengan pecahan seperti berikut:

Development Of Library Material

DOE Library has taken the initiative to increase the electronic collection of library materials in 2023. Currently, the DOE library provides a digital collection (ebook) through the Proquest platform and two (2) electronic journals, namely the Journal of American Chemical Science (ACS) and Springer Nature. In total in 2023, DOE Library provided 59,210 collections including physical and electronic collections with the following breakdown:





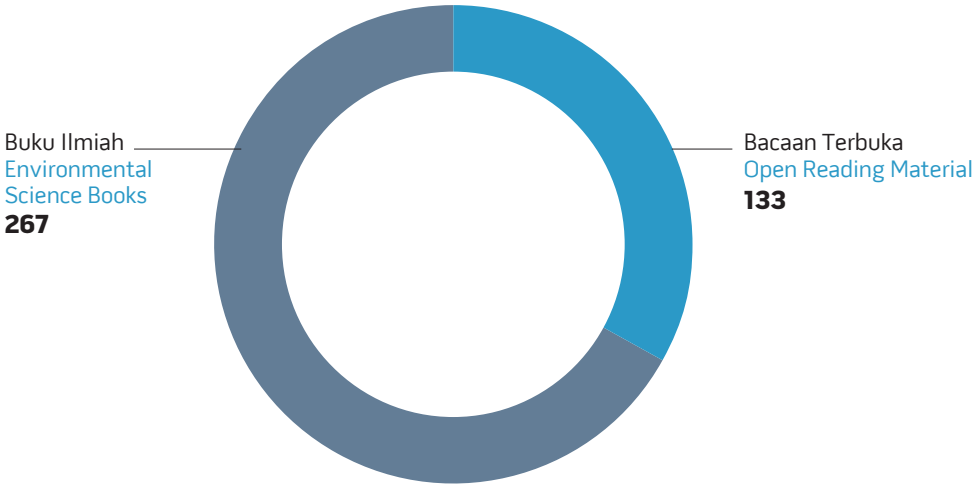
Rajah 9.2: Bilangan Koleksi Bacaan
Figure 9.2: Number of Reading Collection

Pinjaman Bahan Perpustakaan

Penyediaan bahan koleksi terbaru perpustakaan turut meningkatkan penggunaan perpustakaan terutamanya transaksi pinjaman dan penggunaan bahan perpustakaan. Sepanjang tahun 2023, rekod pinjaman bahan telah mencapai sebanyak 400 bahan. Purata transaksi pinjaman yang dilakukan adalah merangkumi:

Library Materials Loan

Having relevant and up-to-date reading material also increases the use of the library. Library materials loan recorded a maximum number of 400 throughout 2023. The breakdown of material loan transactions is as follows:



Rajah 9.3: Bilangan Pinjaman Bahan Bacaan
Figure 9.3: Number of Reading Material Loan

Pinjaman Antara Perpustakaan

Perkhidmatan ini telah diperkenalkan di JAS bagi membantu pegawai dan kakitangan JAS yang menyambung pengajian atau menduduki ujian kenaikan pangkat mendapatkan bahan yang tidak tersedia di jabatan. Transaksi Pinjaman Antara Perpustakaan akan dilakukan apabila terdapat permintaan daripada kakitangan JAS. Bagi tahun 2023, transaksi pinjaman adalah sebanyak dua (2) kali melibatkan Perpustakaan Kementerian Tenaga dan Sumber Asli dengan pinjaman buku sebanyak empat (4) naskah.

Interlibrary Loan

This service has been introduced at DOE to provide DOE officials and staff who are continuing their studies or sitting for exams, to obtain materials that are not available in the DOE library. Interlibrary Loan will be carried out when there is a request from a DOE staff. For 2023, Interlibrary loan occurred twice involving the Library of Ministry of Energy and Natural Resources with a loan of four (4) books.

Permohonan *International Standard Book Number* (ISBN)

Perkhidmatan ini telah diperkenalkan di JAS bagi membantu penerbitan bahan bacaan Jabatan Alam Sekitar. Bagi tahun 2023, sebanyak 10 permohonan ISBN telah dikemukakan ke Perpustakaan Negara Malaysia bagi sepuluh (10) penerbitan baru JAS.

Applications for International Standard Book Number (ISBN)

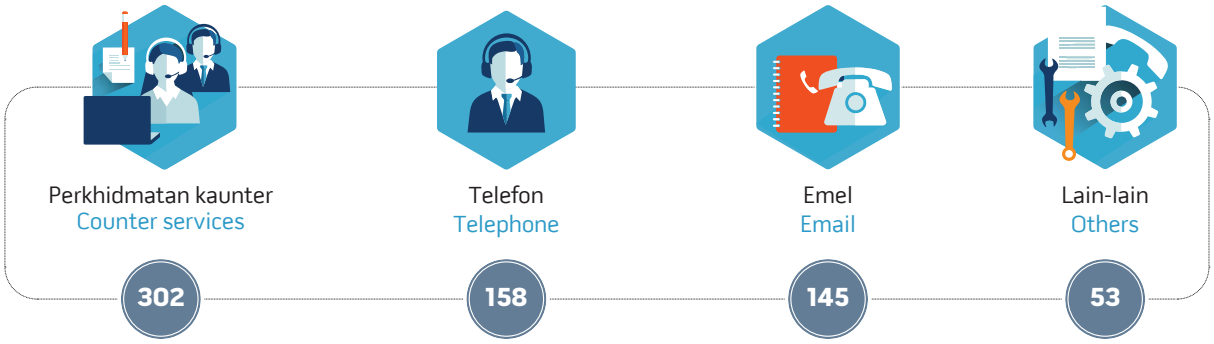
This service has been introduced in DOE to help the publication of reading material for the Department of Environment. For the year 2023, a total of ten (10) ISBN applications have been submitted to the National Library of Malaysia for ten (10) new publications.

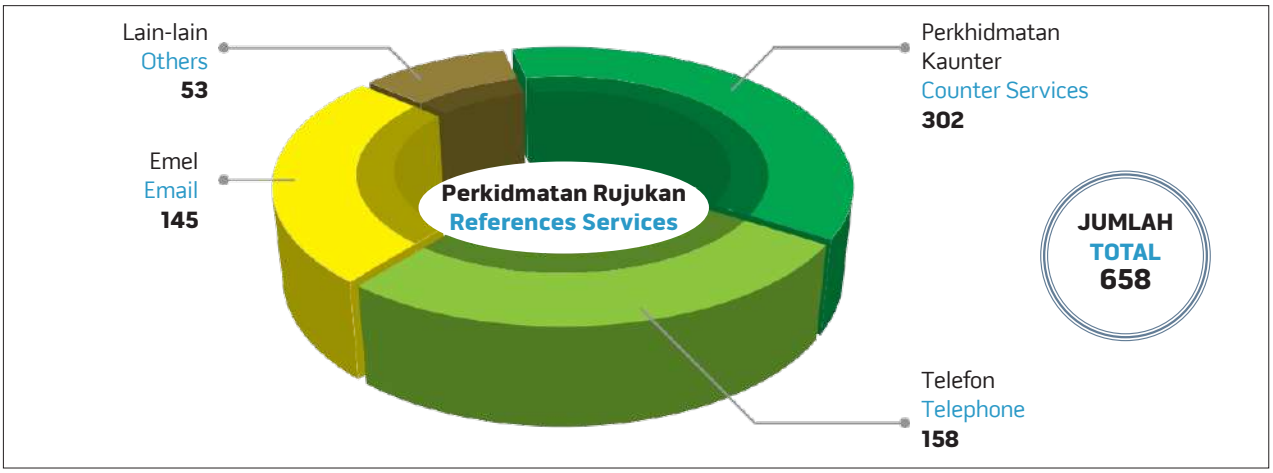
Perkhidmatan Rujukan

Berdasarkan rekod pada tahun 2023, sebanyak 1,010 pengguna Perpustakaan JAS telah membuat rujukan 400 bahan. Perpustakaan JAS telah menerima sebanyak 658 pertanyaan rujukan melalui emel, telefon dan perkhidmatan kaunter yang melibatkan bahan bacaan tertentu seperti Laporan EIA, Akta, buku panduan dan juga perkhidmatan atas talian.

Reference Service

Based on records in the year 2023, a total of 1,010 users of the DOE Library have made references to 400 materials. The DOE library has received a total of 508 reference inquiries via email, phone, and counter services involving certain reading materials such as EIA Reports, Acts, guidebooks, and online services. The breakdown is as follows;





Rajah 9.4: Kaedah Pertanyaan Rujukan
Figure 9.4: Method of Enquiry

Perkhidmatan Atas Talian

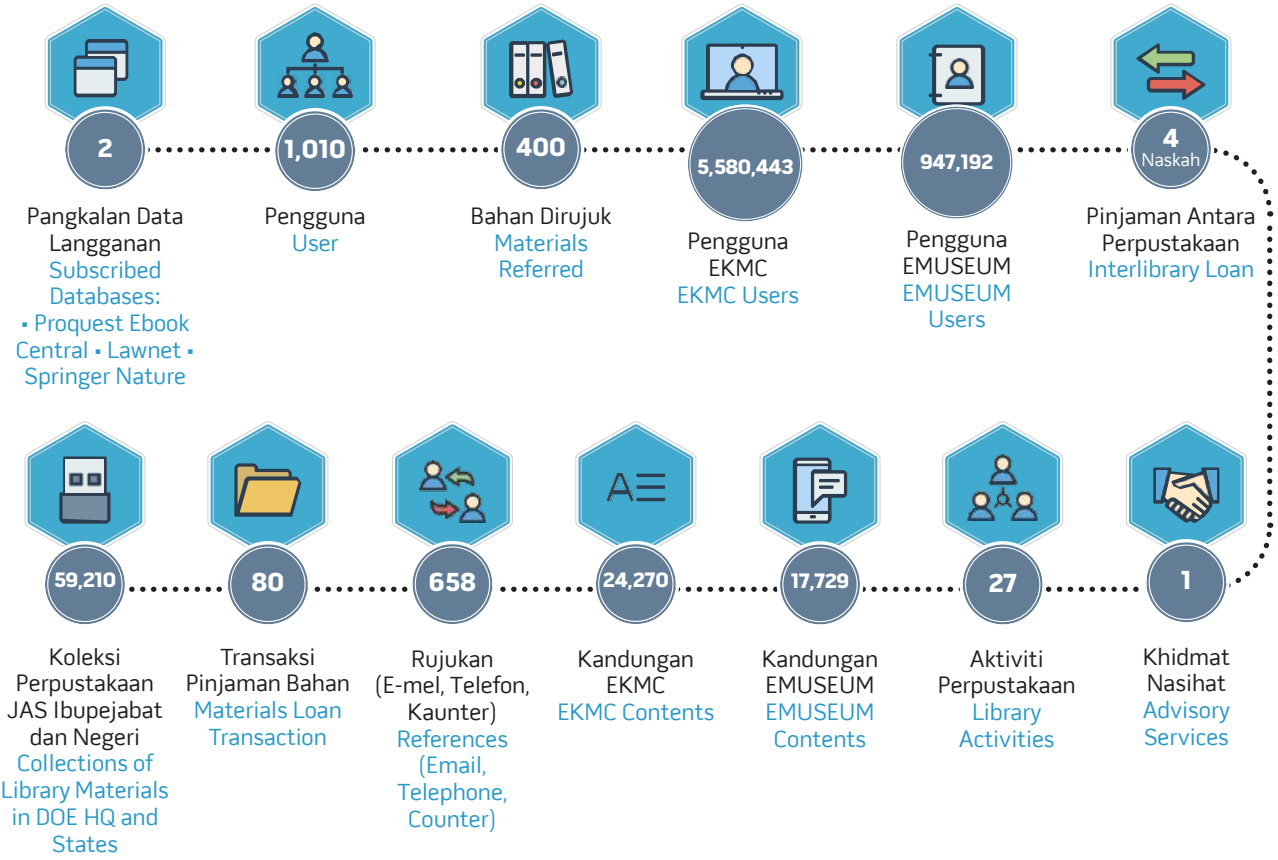
Perpustakaan JAS juga menyediakan Perkhidmatan Atas Talian yang terdiri daripada dua (2) platfom repositori yang dibangunkan oleh JAS dan dua (2) pangkalan data langganan dan akses percuma kepada pangkalan data U-Pustaka. Sehingga tahun 2023, Perkhidmatan Atas Talian menjadi sumber paling aktif digunakan secara meluas oleh pengguna perpustakaan. Statistik tahun 2023 mendapati bahawa peningkatan pengguna sistem EKMC dan EMUSEUM kekal meningkat dengan pencapaian sebanyak 689,306 (35%) untuk EKMC, manakala pencapaian EMUSEUM juga menunjukkan peningkatan ketara dengan jumlah penggunaan sebanyak 253,833 (38%).

Online Service

DOE Library also provides Online Services consisting of two (2) repository platforms developed by the DOE and two (2) subscription databases and free access to the library database. For 2023, Online Services was the most active resource widely used by library users. The statistics of 2023 found that users of the EKMC and EMUSEUM systems continued to increase with user numbers reaching 689,306 (35%) for EKMC, while that of EMUSEUM also shows a significant increase, with a total of 253,833 users (38%).

Jadual 9.1: Penggunaan Platfom Repositori Perpustakaan
Table 9.1: Usage of Library Repository Platform

PENGKALAN DATA DATABASE	PENGGUNA USER	HITS HITS	PENGGUNA USER (2016-2022)
Enviro Knowledge Management Centre (EKMC) Enviro Knowledge Management Centre (EKMC)	689,306	123,373	5,580,443
Enviro Museum (EMUSEUM) Enviro Museum (EMUSEUM)	253,833	100,246	947,192



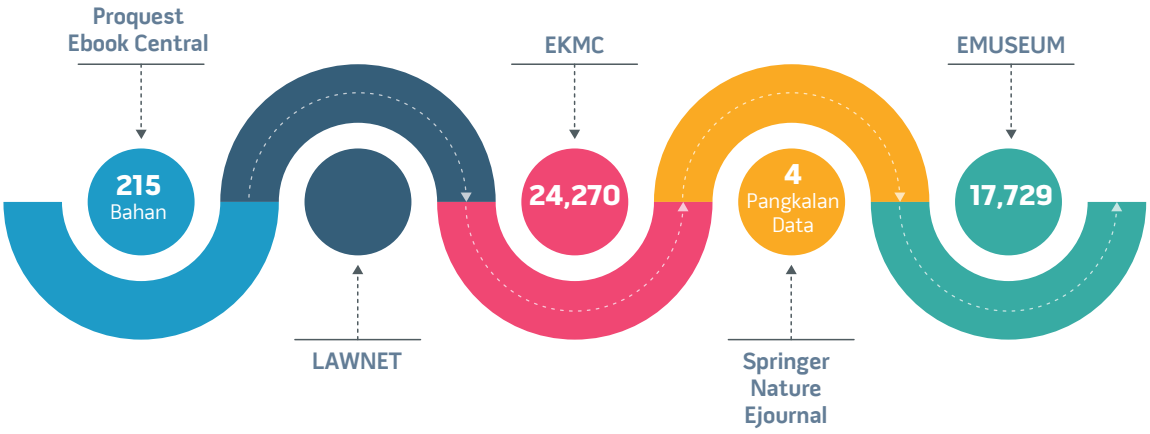
Rajah 9.5: Perkhidmatan Perpustakaan
Figure 9.5: Library Services

Kandungan Maklumat Digital Yang Tersedia

Sehingga 31 Disember 2023, jumlah kandungan maklumat digital Perpustakaan JAS adalah seperti berikut:

Digital Information Content Available

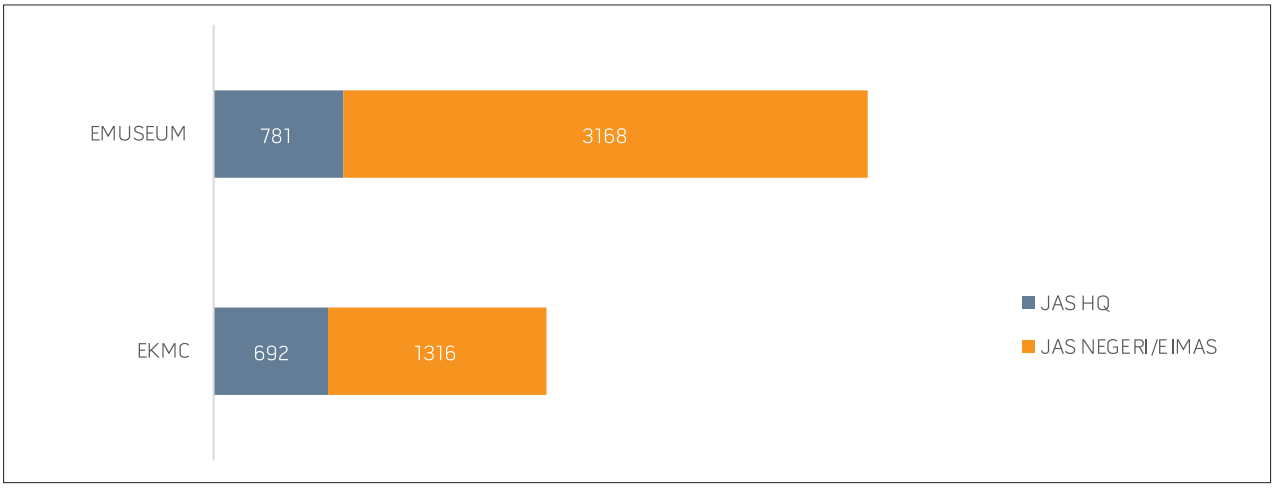
As at 31 December 2023, the total of information content at the DOE Library is as follows:



Rajah 9.6: Maklumat Digital Perpustakaan JAS yang Tersedia
Figure 9.6: Available Digital Information Content of DOE Library

Sehingga hari ini, EKMC telah mencapai tahap akses paling tinggi sejak 2014 iaitu 5.5 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.

EKMC has reached the highest level of access since 2014 with 5.5 million users currently. Continuous efforts have been made to enhance and increase the collection of digital reference materials in an attempt to provide the best quality of reading material and services to users.



Rajah 9.7: Jumlah Keseluruhan Kemasukan Data/Bahan Tahun 2023 (EKMC & EMUSEUM)
Figure 9.7: Overall Data Entry in 2023 (EKMC)

Aktiviti Galakan Membaca 2023

Pada tahun 2023, sebanyak dua puluh tujuh (27) aktiviti telah dilaksanakan oleh Perpustakaan JAS yang melibatkan warga JAS iaitu:

Library Programmes And Activities 2023

In 2023, a total of twenty seven (27) activities were implemented DOE Library participated by DOE staff as follows:

1.	Lawatan Penandaarasan dari Perpustakaan Kementerian Pengajian Tinggi. Benchmarking Visit from the Library of Ministry of Higher Education;
2.	Hebahan Perpustakaan Enviro Digital @JAS; Enviro Digital Library @DOE Information Dissemination;
3.	Pertandingan Mewarna sempena Hari Bumi Coloring Contest for World Earth Day;
4.	Program World# Quran Hour 2023@JAS; Programme World# Quran Hour 2023@DOE;
5.	Program Cuti Sekolah: Sesi Mewarna; School Holiday Programme: Coloring Session;
6.	Program Eksplorasi dan Bicara Intelek Siri 1 Exploration Programme and Intellectual Talk Series 1;
7.	Program Resensi Kelestarian Alam Sekitar di Sekolah Kebangsaan Putrajaya Presint 17(1) Resentional Environmental Sustainability Programme at Sekolah Kebangsaan Putrajaya Presint 17(1)
8.	Lawatan Post-Naik taraf Perpustakaan Enviro Digital @JAS Melaka; Post Visit to Enviro Digital Library @DOE Malacca;
9.	Lawatan Post-Naik taraf Perpustakaan ke JAS Negeri Sembilan; Post Visit to Enviro Digital Library @DOE Negeri Sembilan;
10.	Lawatan Post-Naik taraf Perpustakaan ke E*i*MAS; Post Visit to Enviro Digital Library @DOE E*i*MAS;

11.	Lawatan Post-Naik taraf Perpustakaan ke JAS Selangor; Post Visit to Enviro Digital Library @DOE Selangor;
12.	Lawatan Post-Naik taraf Perpustakaan ke JAS Pahang. Post Visit to Enviro Digital Library @DOE Pahang;
13.	Lawatan Post-Naik taraf Perpustakaan ke JAS Terengganu Post Visit to Enviro Digital Library @DOE Terengganu;
14.	Lawatan Post-Naik taraf Perpustakaan ke JAS Pulau Pinang Post Visit to Enviro Digital Library @DOE Penang;
15.	Lawatan Post-Naik taraf Perpustakaan ke JAS Kedah Post Visit to Enviro Digital Library @DOE Kedah;
16.	Lawatan Post-Naik taraf Perpustakaan ke JAS Perlis Post Visit to Enviro Digital Library @DOE Perlis;
17.	Lawatan Post-Naik taraf Perpustakaan ke JAS Kuala Lumpur Post Visit to Enviro Digital Library @DOE Kuala Lumpur;
18.	Lawatan Post-Naik taraf Perpustakaan ke JAS Sarawak Post Visit to Enviro Digital Library @DOE Sarawak;
19.	Lawatan Post-Naik taraf Perpustakaan ke JAS Perak Post Visit to Enviro Digital Library @DOE Perak;
20.	Program Eksplorasi Digital dan Bicara Intelek Siri 2 Exploration Programme and Intellectual Talk Series 2;
21.	Program Bicara Intelek Siri 3 Intellectual Talk Programme Series 3 Year 2023;
22.	Bengkel URS dan Semakan Krisa bagi Pembangunan Laman Sesawang, Sistem Keselamatan dan Aplikasi Mobil (E-Kiosk) URS and KRISA Documentation Review Workshop for Website, Library Security System and Mobile Application Development (E-Kiosk);
23.	Sesi Latihan Pengguna Buku Elektronik (E-Book) dan Jurnal Elektronik (E-Jurnal); DOE Electronic Book (E-Book) and Electronic Journal (E-Journal) Training Session;
24.	Sesi Latihan Pengguna Sistem Keselamatan dan E-Kiosk; Library Security System and E-Kiosk Training Session;
25.	Lawatan Sambil Belajar dari Pelajar Jurusan Ijazah Sarjana Muda Pengurusan Alam Sekitar dan Teknologi Kelestarian UniKL, MICET; Visit from Degree Student, Bachelor's Degree in Environmental Management and Sustainability Technology UniKL, MICET;
26.	Lawatan Sambil Belajar Universiti Teknologi Mara; Visit from Universiti Teknologi Mara;
27.	Bengkel Latihan Laman Sesawang, Sistem Keselamatan dan Aplikasi Mobil (E-Kiosk). Training for Website, Library Security System and Mobile Application Development (E-Kiosk);



Perpustakaan JAS, Ibu pejabat /
DOE Library, Headquarters



▲ Lawatan Penandaarasan dari Perpustakaan Kementerian Pengajian Tinggi
Benchmarking Visit from Library of the Ministry of Higher Education

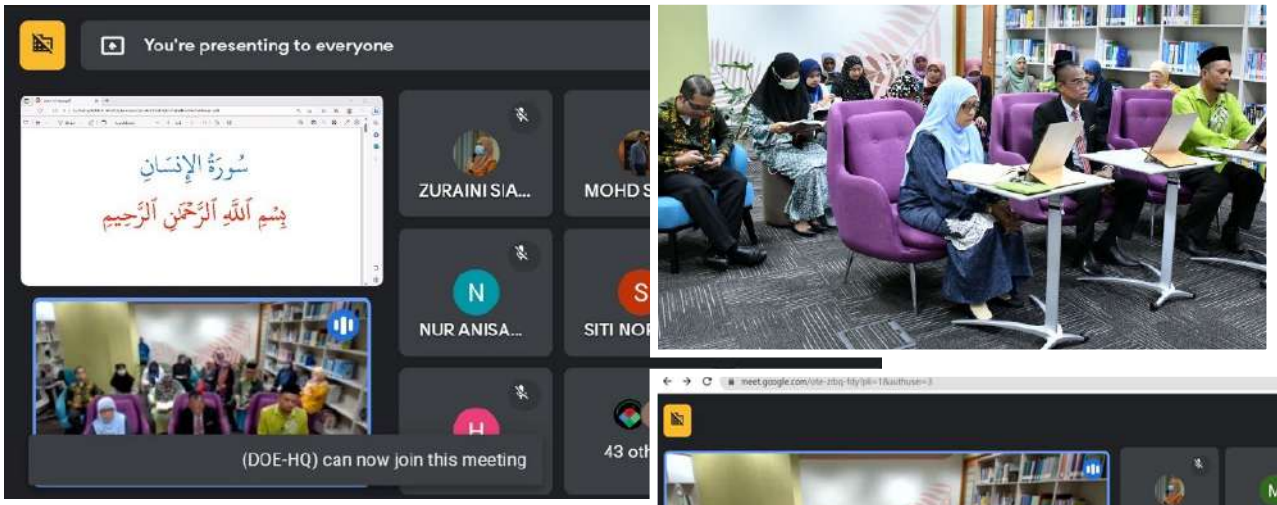




▲ Hebahan Perpustakaan Enviro Digital @JAS
Enviro Digital Library @DOE Information Dissemination



▲ Pertandingan Mewarna Sempena Hari Bumi
Coloring Contest for World Earth Day





▲ Program World# Quran Hour 2023@JAS
World# Quran Hour 2023@DOE Programme





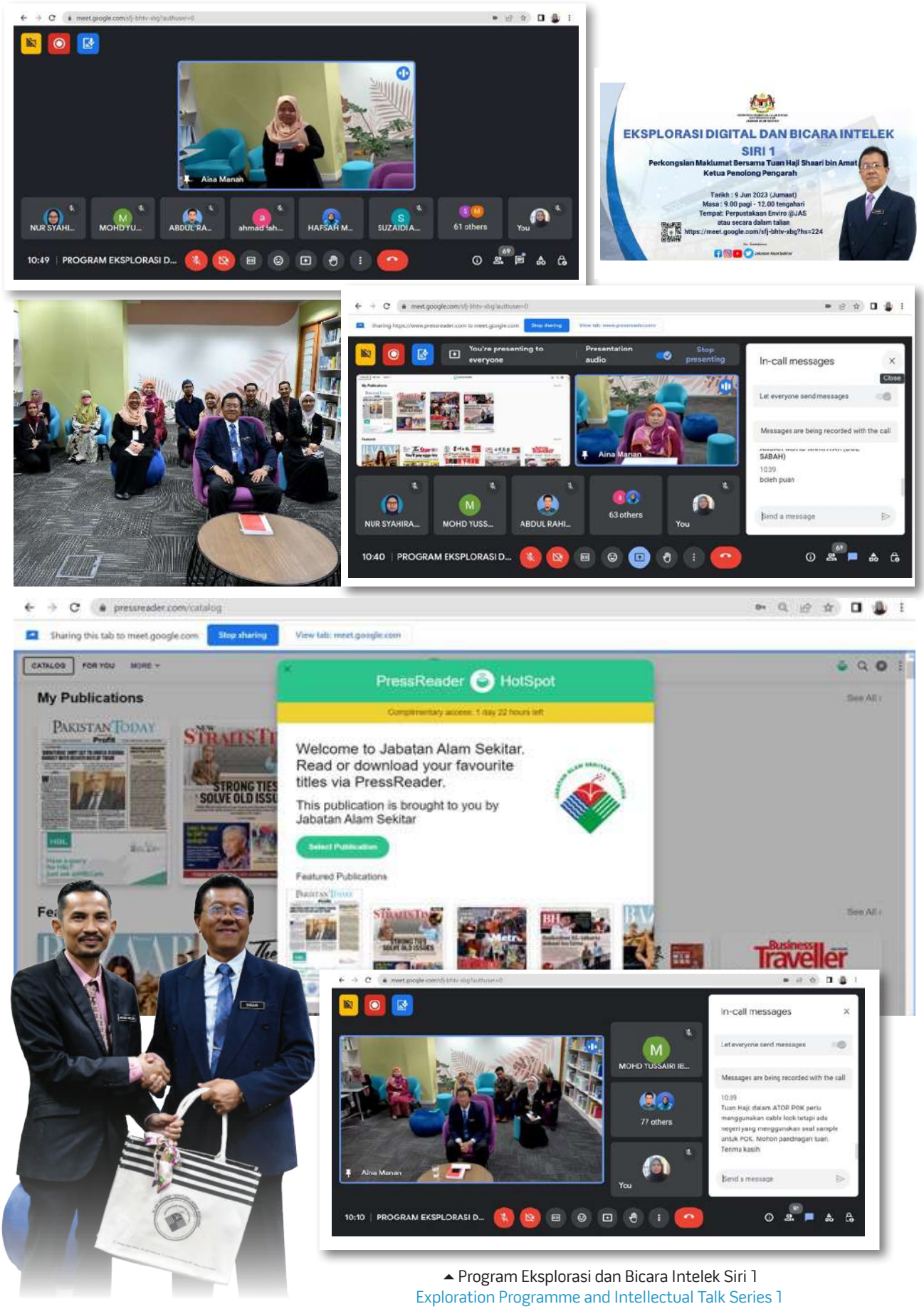








◂ Program Cuti Sekolah @JAS
School Holiday Programme @ DOE



▲ Program Eksplorasi dan Bicara Intelek Siri 1
Exploration Programme and Intellectual Talk Series 1



▲ Program Resensi Kelestarian Alam Sekitar di Sekolah Kebangsaan Putrajaya Presint 17(1)
Resentional Environmental Sustainability Programme at Sekolah Kebangsaan Putrajaya Presint 17(1)



▲ Lawatan Post-Naik Taraf Perpustakaan Enviro Digital @ E*i*MAS
Post Visit to Enviro Digital Library @E*i*MAS





▲ Lawatan Post-Naik Taraf Perpustakaan Enviro Digital @JAS Selangor
Post Visit to Enviro Digital Library @DOE Selangor





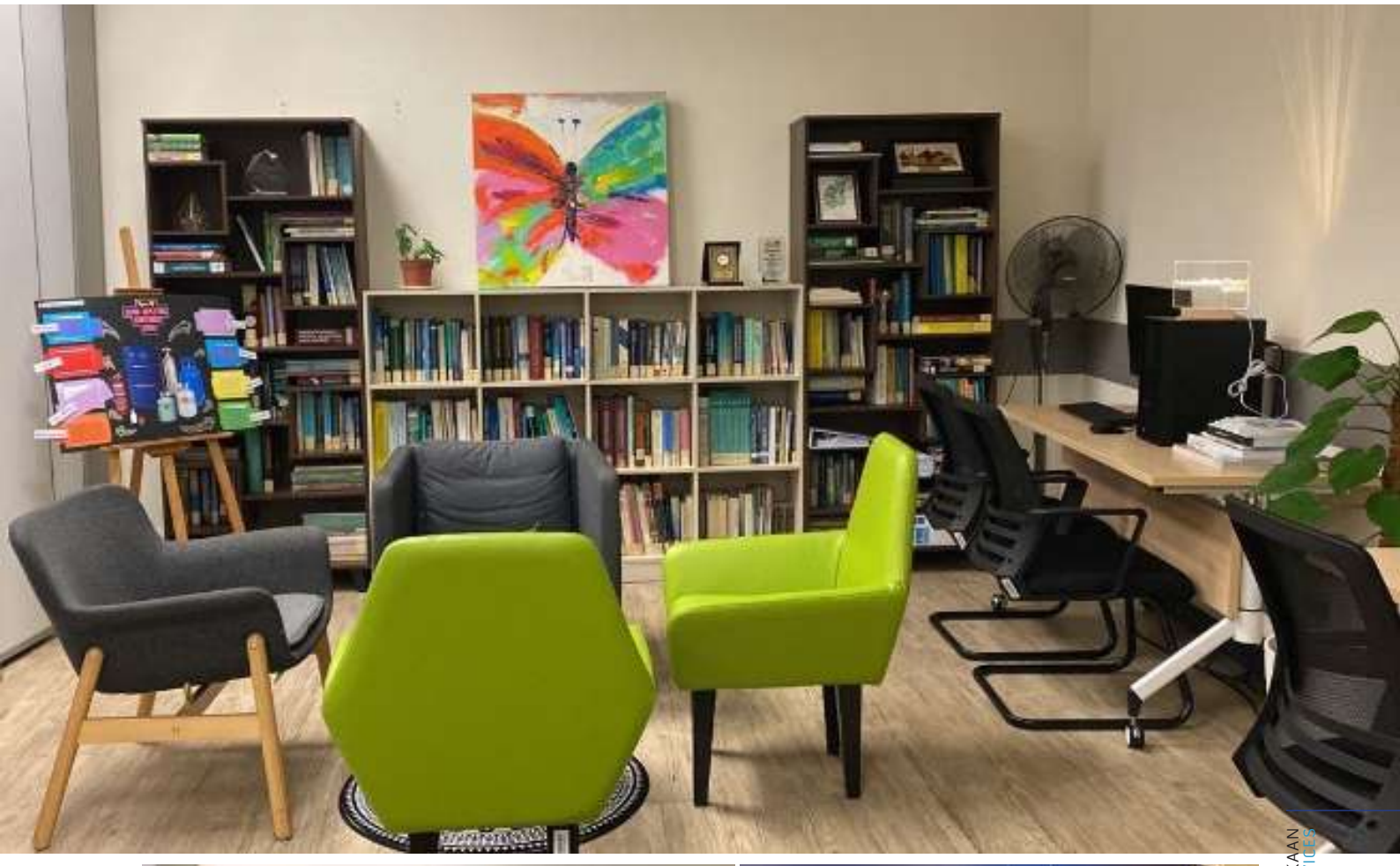
▲ Lawatan Post-Naik taraf Perpustakaan Enviro Digital @JAS Pulau Pinang
Post Visit to Enviro Digital Library @DOE Penang







▲ Lawatan Post-Naik taraf Perpustakaan Enviro Digital @JAS Kedah
Post Visit to Enviro Digital Library @DOE Kedah





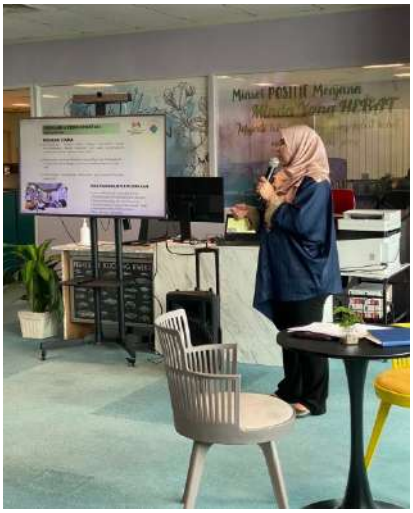




▲ Lawatan Post-Naik taraf Perpustakaan Enviro Digital @ JAS Kuala Lumpur
Post Visit to Enviro Digital Library @DOE Kuala Lumpur



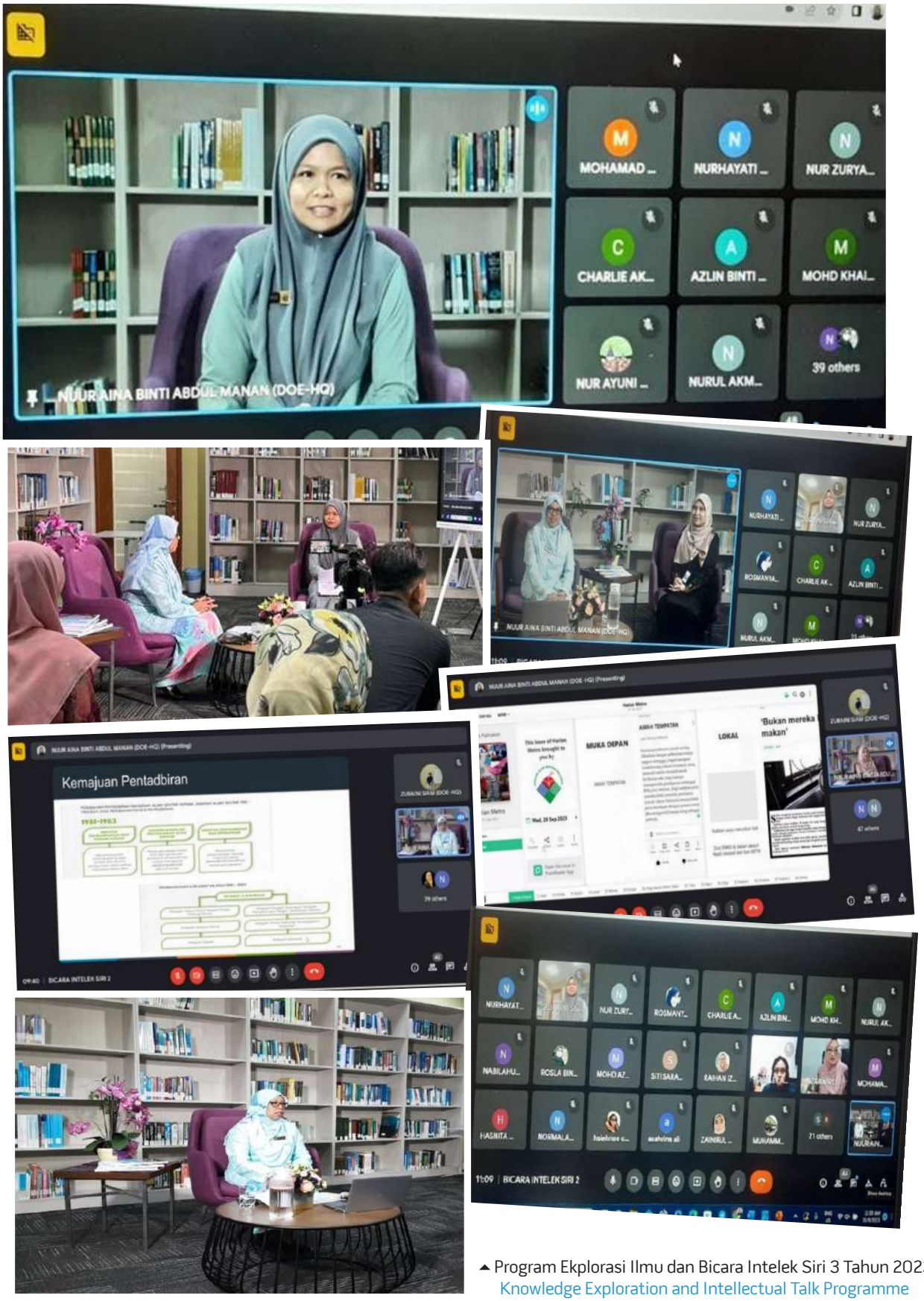








▲ Lawatan Post-Naik taraf Perpustakaan Enviro Digital @JAS Sarawak
Post Visit to Enviro Digital Library @DOE Sarawak



▲ Program Ekplorasi Ilmu dan Bicara Intelek Siri 3 Tahun 2023
Knowledge Exploration and Intellectual Talk Programme Series 3 Year 2023



▸ Program Bicara Intelek Siri 3 Tahun 2023
Intellectual Talk Programme Series 3 Year 2023



▸ Bengkel URS dan Semakan Krisa bagi Pembangunan Laman Sesawang, Sistem Keselamatan dan Aplikasi Mobil (E-Kiosk)
URS and KRISA Documentation Review Workshop for Website, Library Security System, and Mobile Application Development (E-Kiosk)



▲ Sesi Latihan Pengguna Sistem Keselamatan dan E-Kiosk
Library Security System and E-Kiosk Training Session







▲ Lawatan Sambil Belajar dari Pelajar Jurusan Ijazah Sarjana Muda Pengurusan Alam Sekitar dan Teknologi Kelestarian UniKL, MICET
Visit from Bachelor's Degree in Environmental Management and Sustainability Technology UniKL, MICET students







▲ Lawatan Sambil Belajar Universiti Teknologi Mara
Visit from Universiti Teknologi Mara











▲ Bengkel Latihan Laman Sesawang, Sistem Keselamatan dan Aplikasi Mobil (E-Kiosk)
Training for Website, Library Security System, and Mobile Application Development (E-Kiosk)

Projek di Bawah Rancangan Malaysia Kedua Belas

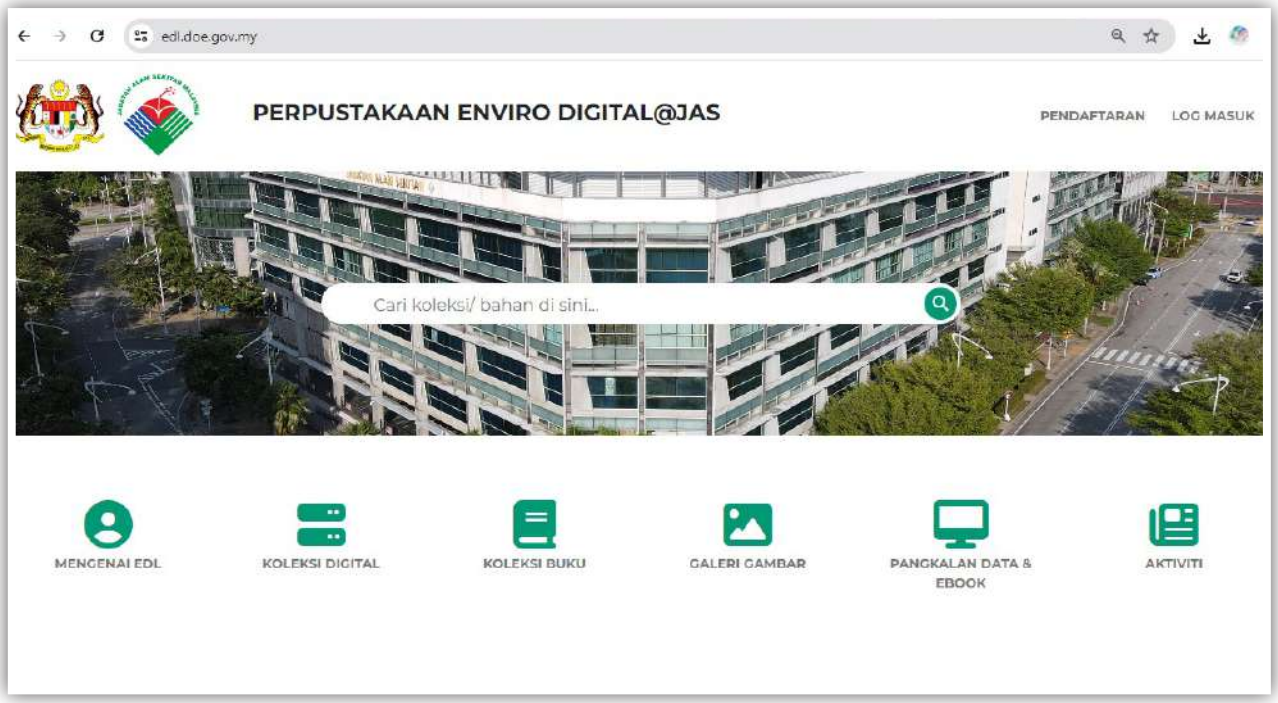
Pada tahun 2023, Bahagian Komunikasi Strategik, Jabatan Alam Sekitar telah berjaya mendapatkan peruntukan bagi menjalankan projek di bawah Skop Pemerkasaan dan Pembudayaan Komunikasi, Pendidikan dan Kesedaran Alam Sekitar. Perpustakaan JAS telah diberikan sebahagian peruntukan bagi menjalankan Projek Menaik Taraf Perpustakaan Digital Jabatan Alam Sekitar Negeri dan Eimas. Sehingga tahun 2022, perpustakaan telah berjaya melaksanakan beberapa projek berikut:

1. Perkhidmatan Pembangunan Laman Sesawang (Off the Shelf), Pembangunan Aplikasi Mobil dan Sistem Keselamatan Perpustakaan bagi Perpustakaan Jabatan Alam Sekitar
2. Membekal buku elektronik (E-Book) dan jurnal elektronik (E-Jurnal) untuk Perpustakaan Jabatan Alam Sekitar;
3. Penyaluran kewangan (waran) bagi pembangunan Perpustakaan JAS W.P. Labuan;
4. Mereka bentuk, menerbit dan mendigitalkan bahan terbitan JAS (Buku Pantun Alam).

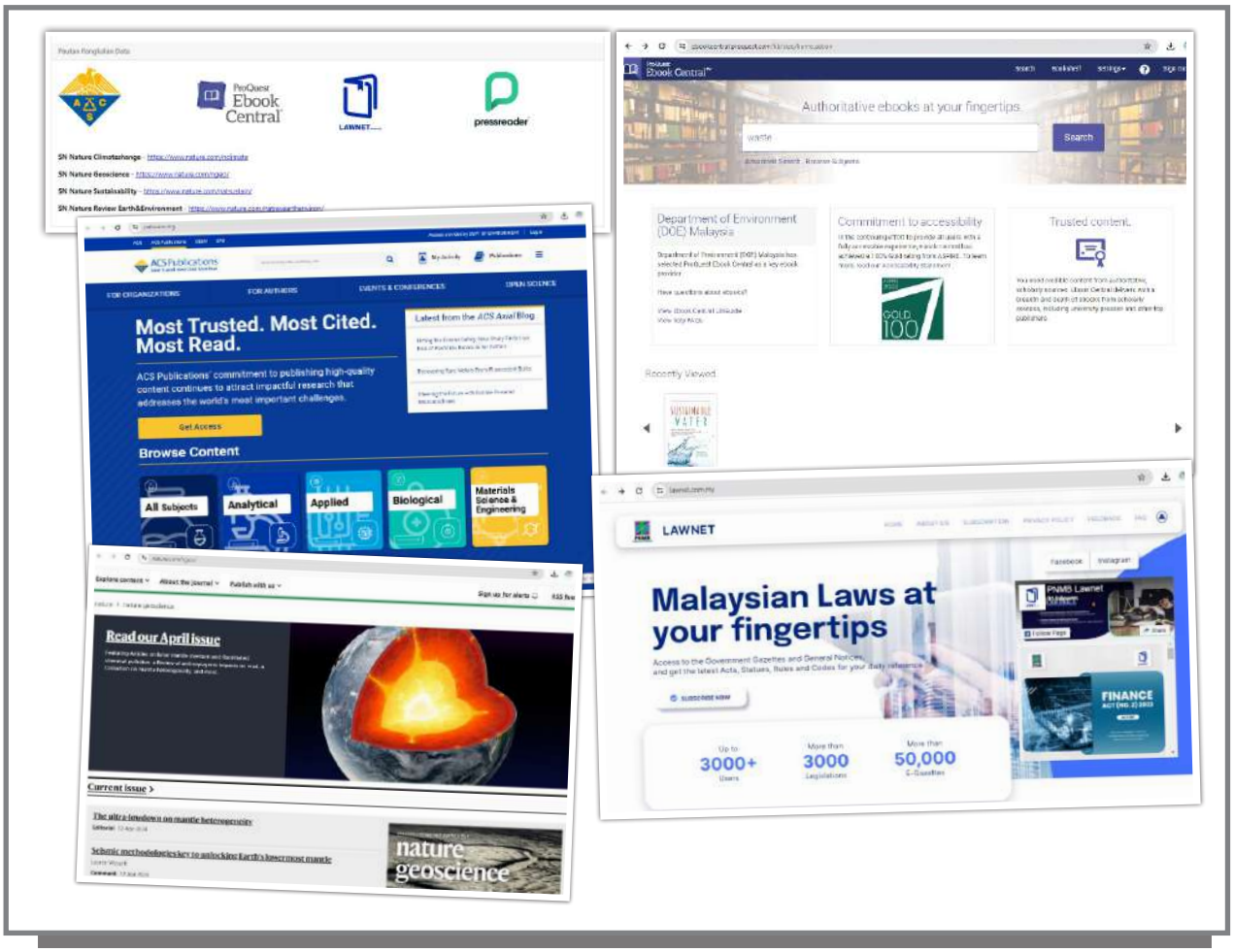
Twelfth Malaysia Plan Project

In 2023, the Strategic Communication Division, Department of Environment successfully obtained allocations to carry out projects under the Scope of Communication Empowerment and Cultivation, Education and Environmental Awareness. The DOE Library was given a partial allocation to carry out the Digital Library Upgrade Project of the State Department of Environment and Eimas. As of 2022, the library has successfully implemented several of the following projects:

1. Website development services (Off the Shelf), Mobile Application Development, and Library Security System for the Department of Environment Library;
2. Subscribe electronic books (E-Books) and electronic journals (E-Journals) for the Department of Environment Library;
3. Warrant for DOE Labuan Library for library development;
4. Design, publish, and digitizing materials published by JAS (Pantun Alam Book);



▲ Perkhidmatan Pembangunan Laman Sesawang (Off the Shelf), Pembangunan Aplikasi Mobile dan Sistem Keselamatan Perpustakaan bagi Perpustakaan Jabatan Alam Sekitar.
Website Development Services (Off the Shelf), Mobile Application Development, and Library Security System for the Environment Department Library.



▲ Membekal Buku Elektronik (E-Book) dan Jurnal Elektronik (E-Jurnal) untuk Perpustakaan JAS
Subscribe Electronic Books (E-Books) and Electronic Journals (E-Journals) for the DOE Library



▲ Penyaluran Kewangan (Waran) bagi Pembangunan Perpustakaan JAS W.P. Labuan
Warrant for DOE Labuan Library for Library Development



▲ Mereka Bentuk, Menerbit dan Mendigitalkan Bahan Terbitan JAS (Buku Pantun Alam)
Design, Publish, and Digitizing Materials Published by DOE (Pantun Alam Book)

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