



KEMENTERIAN SUMBER ASLI,  
ALAM SEKITAR DAN PERUBAHAN IKLIM  
Ministry of Natural Resources,  
Environment and Climate Change

JABATAN ALAM SEKITAR  
Department of Environment

# LAPORAN TAHUNAN

# 2022

## ANNUAL REPORT





KEMENTERIAN SUMBER ASLI,  
ALAM SEKITAR DAN PERUBAHAN IKLIM  
Ministry of Natural Resources,  
Environment and Climate Change

JABATAN ALAM SEKITAR  
Department of Environment

# LAPORAN TAHUNAN

# 2022

## ANNUAL REPORT



An aerial photograph of a city, likely Kuala Lumpur, Malaysia. The image shows a complex multi-level highway interchange in the middle ground. In the foreground, there are several residential buildings with tiled roofs and some greenery. In the background, a dense urban skyline is visible, featuring several tall skyscrapers, including one with a distinctive blue and white facade. The sky is bright and slightly hazy, suggesting a clear day.

**Department of Environment, Malaysia**

Copyright 2022 DOE

This publication may be reproduced in whole or in part and in any form for educational or non-profit purpose without special permission from the copyright holder; provided acknowledgement of the source is made and a copy is sent to the Department of Environment. No use of this publication may be made for resale or any other commercial purpose whatsoever without prior permission in writing from the Department of Environment, Malaysia

Printed on Woodfree Paper

ISSN 2636-9842

**Designed and Printed by:**

Sasyaz Holdings Sdn. Bhd. (219275-V)  
31-2, Jalan PJU 7/16A,  
Mutiara Damansara,  
47810 Petaling Jaya, Selangor, Malaysia

Tel : 03-7803-3754



Kuala Lumpur, Malaysia

# KANDUNGAN CONTENTS

**6 PRAKATA  
PREFACE**

**8 MISI DAN VISI  
MISSION AND VISSION**

**8 STRATEGI  
STRATEGIES**

**BAB 1 | CHAPTER 1**

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

**BAB 2 | CHAPTER 2**

**13 PENGURUSAN SUMBER MANUSIA DAN KEWANGAN  
HUMAN RESOURCES AND FINANCIAL MANAGEMENT**

**BAB 3 | CHAPTER 3**

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

18 Laporan EIA 2022  
EIA Report 2022

21 Penguatkuasaan Projek EIA  
EIA Project Enforcement

24 Perintah Larangan Atau Perintah Berhenti Kerja  
Prohibition Order Or Stop Work Order

26 Pelan Pengurusan Alam Sekitar (EMP)  
Environmental Management Plan (EMP)

28 Skim Pendaftaran Jururunding EIA  
EIA Consultant Registration Scheme

29 Skim Pendaftaran Juruaudit Alam Sekitar  
Environmental Audit Registration Scheme

30 Permohonan Kelulusan Menjalankan Aktiviti Eklorasi Di  
Dalam Kawasan Zon Ekonomi Eksklusif (ZEE)  
Applications To Approve Exploration Activities In The Exclusive  
Economic Zone (EEZ)

31 Input Alam Sekitar Kepada Perancangan Pembangunan  
Environmental Input For Development Planning

33 Projek Rancangan Malaysia Ke-12 (RMKe-12) : Projek  
Pematapan Pelaksanaan Penilaian Alam Sekitar Di Malaysia  
12<sup>th</sup> Malaysia Plan (RMKe-12): Project To Consolidate The  
Implementation Of Environmental Assessment In Malaysia

40 Isu Projek EIA  
EIA Project Issues

42 Libat Urus Strategik Dengan Pihak Berkepentingan  
Strategic Management With Stakeholder

44 Kunjungan Hormat  
Courtesy Visit

**BAB 4 | CHAPTER 4**

**45 PENGAWASAN DAN PENGUATKUASAAN  
MONITORING AND ENFORCEMENT**

52 Program Kawalan Pencemaran Dan Pengurusan Tindak Balas  
Tumpahan Minyak  
Oil Spill Pollution Control And Response Management  
Program

59 Kes Pencemaran Tumpahan Minyak Di Perairan Malaysia  
Oil Spills Pollution Cases At Malaysian Waters

60 Pengawasan Kualiti Air Tanah  
Groundwater Quality Monitoring

64 Pengawasan Kualiti Air Sungai  
River Water Quality Monitoring

98 Sebaran Data Kualiti Air Sungai  
Dissemination Of River Water Quality Data

106 Program Pengawasan Kualiti Alam Sekitar (EQMP)  
Environmental Quality Monitoring Programme (EQMP)

112 Bencana Pencemaran Industri  
Industrial Pollution Disaster

112 Pemerkasaan Pemantauan Kualiti Udara Dan Gas Toksik Di  
Pasir Gudang, Johor  
Empowerment Of Air Quality And Toxic Gases Monitoring At  
Pasir Gudang, Johor

114 Program Pencegahan Kebakaran Tanah Gambut  
Peatland Fire Prevention Programme

116 Penguatkuasaan Terhadap Aktiviti Pembakaran Terbuka  
Enforcement Against Open Burning Activities

121 Protokol Montreal Dan Perlindungan Lapisan Ozon  
Montreal Protocol And Protection Of The Ozone Layer

121 Pematuhan Terhadap Protokol Montreal  
Compliance With The Montreal Protocol

123 Status Pelaksanaan Pelan Pengurusan Penghapusan HCFC  
(HPMP) Peringkat II  
Status Of HCFC Phase-Out Management Plan (HPMP) Stage-2  
Implementation

124 Persediaan Pelan Pelaksanaan Kigali (KIP)  
Preparation Of Kigali Implementation Plan (KIP)

125 Pembangunan Kapasiti Pegawai Penguatkuasa  
Capacity Building For Enforcement Officers

128 Program Dan Kempen Kesedaran  
Awareness Programs And Campaigns

132 Pengurusan Buangan Terjadual  
Scheduled Waste Management

132 Lesen Premis Yang Ditetapkan  
Licences For Prescribed Premises

134 Projek RMKe-12: Kajian Pengiraan Kadar Kutipan Ses Dan  
Pengurusan Ses Dalam Pengurusan Buangan Terjadual  
RMKe-12 Project: A Study To Calculate The Cess Collection  
Rates And Cess Management In Scheduled Waste  
Management

162 Penguatkuasaan Ke Atas Premis  
Enforcement On The Premises

162 Kawalan Ke Atas Premis Yang Ditetapkan  
Control Of Prescribed Premises

167 Kawalan Ke Atas Premis Yang Bukan Ditetapkan  
Control On Non-Prescribed Premises

170 Tindakan Penguatkuasaan Ke Atas Premis  
Enforcement Action On Premises

173 Pelaksanaan Operasi Gempur (Ops Gempur)  
Implementation Of Operasi Gempur (Ops Gempur)

- 175 Pemeriksaan Pelepasan Daripada Kenderaan Bermotor  
Enforcement On Motor Vehicles Emission
- 176 Kawalan Pelepasan Asap Dan Gas Dari Kenderaan Bermotor  
Control Of Smoke And Gaseous Emissions From Motor Vehicles
- 177 Kawalan Pelepasan Asap Hitam Dari Kenderaan Diesel  
Control Of Black Smoke Emission From Diesel Vehicles
- 178 Kawalan Pelepasan Gas CO Dan HC Dari Kenderaan Petrol  
Control Of CO And HC Gas Emissions From Petrol Vehicles
- 179 Ujian Kelulusan Jenis (Kenderaan Petrol)  
Type Approval Test (Petrol Vehicle)
- 179 Ujian Kelulusan Jenis (Kenderaan Diesel)  
Type Approval Test (Diesel Vehicle)
- 179 Kemudahan Yang Diluluskan (KYDL)  
Approved Testing Facilities (KYDL)
- 180 Kawalan Pelepasan Gas Pencemar Daripada Motosikal  
Control Of Gas Emission From Motorcycles
- 180 Bunyi Bising Kenderaan Bermotor  
Noise From Motor Vehicles
- 180 Pelaksanaan Operasi Gerak (Ops Gerak)  
Enforcement Through 'Operasi Gerak' (Ops Gerak)
- 182 Maklumbalas Terhadap Pengaduan Awam  
Response To Public Complaints
- 186 Lembaga Rayuan Kualiti Alam Sekeliling Bagi Tahun 2022  
Environmental Quality Appeal Board For The Year 2022
- 189 Tindakan Undang-Undang  
Legal Action

## **BAB 5 | CHAPTER 5**

- 191 **MENGARUSPERDANA AMALAN INDUSTRI HIJAU  
MAINSTREAMING GREEN INDUSTRY PRACTICES**
- 192 Pemantapan Amalan Industri Hijau Dalam Kalangan Industri  
Melalui Konsep Pencegahan Pencemaran  
Mainstreaming Green Industry Practices Among Small And  
Medium Enterprises (SME) Through Pollution Prevention  
Concept

## **BAB 6 | CHAPTER 6**

- 199 **HAL EHWAL ALAM SEKITAR ANTARABANGSA  
INTERNATIONAL ENVIRONMENTAL AFFAIRS**
- 200 Hal Ehwat Alam Sekitar Antarabangsa - Hubungan Pelbagai  
Hala  
International Environmental Affairs - Multilateral Cooperation
- 202 Hal Ehwat Alam Sekitar Antarabangsa – Kerjasama Dua Hala  
International Environmental Affairs – Bilateral Cooperation

## **BAB 7 | CHAPTER 7**

- 211 **PROGRAM-PROGRAM PROMOSI DAN KESEDARAN  
PROMOTIONAL AND AWARENESS PROGRAMMES**
- 212 Program Pendidikan Alam Sekitar Peringkat Sekolah  
Environmental Education Programmes At School Level
- 217 Pertandingan Debat Alam Sekitar Antara Institusi Pendidikan  
Tinggi Kali Ke-28 Tahun 2022  
The 28<sup>th</sup> Annual Environmental Debate Competition Among  
Higher Educational Institutions, 2022
- 224 Speech & Persuasion Training Untuk Pegawai Jabatan Alam  
Sekitar (JAS)  
Speech & Persuasion Training For Officers Of The Department  
Of Environment (DOE)
- 226 Anugerah Langkawi – Kelestarian Alam Sekitar  
Langkawi Award – Environmental Sustainability

- 227 Sambutan Bertemakan Alam Sekitar  
Environment Themed Celebration
- 228 Program Rakan Alam Sekitar (RAS)  
Friends of the Environment (RAS) Programme
- 228 Pameran Alam Sekitar  
Environmental Exhibitions
- 237 Media dan Komunikasi Korporat  
Media and Corporate Communications

## **BAB 8 | CHAPTER 8**

### **241 PENGURUSAN TEKNOLOGI MAKLUMAT INFORMATION TECHNOLOGY MANAGEMENT**

- 246 Aplikasi Mudah Alih MyDOE  
MyDOE Mobile Application
- 247 Sistem Pemantauan EIA (SPEIA)  
EIA Monitoring System (SPEIA)
- 249 Naiktaraf Rangkaian Local Area Network (LAN)  
Local Area Network (LAN) Upgrade
- 249 Latihan Teknikal Active Directory Domain Service (ADDS)  
Active Directory Domain Service (ADDS) Technical Training
- 250 Polisi Keselamatan Siber Versi 1.0  
DOE Cyber Security Policy Version 1.0
- 250 Sistem e-Pejabat  
e-Pejabat System
- 252 Kompendium Sistem Aplikasi JAS  
Compendium of DOE Application Systems
- 253 Pengurusan Dron Jabatan  
DOE's Drone Management
- 256 Sistem Geospatial Alam Sekitar (GeoSpAS)  
Environmental Geospatial System (GeoSpAS)
- 262 Pelan Strategik Pendigitalan Jabatan Alam Sekitar Tahun 2021-  
2030  
Department of Environment Digitalisation Strategic Plan 2021-  
2030
- 264 Pelan Analitik Data Raya Jabatan Alam Sekitar Tahun 2021 -  
2030  
Department of Environment Data Analytics Plan 2021-2030

## **BAB 9 | CHAPTER 9**

### **269 INSTITUT ALAM SEKITAR MALAYSIA (Ei/MAS) ENVIRONMENT INSTITUTE OF MALAYSIA (Ei/MAS)**

- 278 Program Pusat Bahan Berbahaya  
Programmes Conducted By The Hazardous Substances  
Centre
- 280 Penilaian Kesan Kepada Alam Sekitar  
Environmental Impact Assessment
- 282 Sistem Latihan Bersepadu (SLB)  
Integrated Training System (SLB)
- 283 Penjenamaan Semula Dan Naik Taraf Perpustakaan Enviro  
Digital@Ei/MAS  
Rebranding And Upgrading Of Enviro Digital Library@Ei/MAS

## **BAB 10 | CHAPTER 10**

### **289 PERKHIDMATAN PERPUSTAKAAN LIBRARY SERVICES**

- 290 Perpustakaan Jabatan Alam Sekitar  
Environment Department Library

## PRAKATA PREFACE

Jabatan Alam Sekitar dengan sukacitanya membentangkan Laporan Tahunan 2022 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 2022 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 523 laporan EIA telah diterima dan diproses oleh JAS pada tahun 2022. Daripada bilangan ini, sebanyak 469 laporan bagi aktiviti yang tertakluk di bawah Jadual Pertama, Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015, dan 54 laporan bagi aktiviti yang tertakluk di bawah Jadual Kedua perintah tersebut.

Pada tahun 2022, sejumlah 469 kesalahan di bawah Akta Kualiti Alam Sekeliling 1974 (AKAS 1974) telah didakwa di mahkamah dan telah disabitkan kesalahan dengan denda yang dikenakan berjumlah RM 6,901,300.00 dan tempoh penjara selama tiga (3) hari.

A total of 523 EIA reports were received and processed by the DOE in 2022. Of these, 469 were reports of activities specified in this First Schedule of Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, and 54 reports were of activities that are subject to the Second Schedule of the order.

In 2022, a total of 469 offences under the Environmental Quality Act 1974 (EQA 1974) were prosecuted in court and were convicted with fines totalling RM 6,901,300.00 and imprisonment for three (3) days.

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”

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”



**Dato' Wan Abdul Latiff bin Wan Jaffar**  
Ketua Pengarah Jabatan Alam Sekitar  
Director-General, Department of  
Environment



**MISI / MISSION**  
 Memastikan Pembangunan Lestari di  
 dalam Proses Memajukan Negara /  
**To Ensure Sustainable Development in  
 The Process of Nation Building**



**VISI / VISION**  
 Pemuliharaan Alam Sekitar untuk  
 Kesejahteraan Rakyat /  
**Environmental Conservation for the  
 Well-being of The People**



📍 Sekinchan, Selangor, Malaysia

## 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

CHAPTER 1

# BAB 1

## MAJLIS KUALITI ALAM SEKELILING (EQC)

ENVIRONMENTAL  
QUALITY COUNCIL (EQC)



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

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

Satu sesi taklimat Majlis Kualiti Alam Sekeliling (EQC) oleh Pengerusi EQC, YBhg. Dato' Dr. Nadzri bin Yahaya kepada YB Menteri Alam Sekitar dan Air telah diadakan pada 8 Disember 2021.

Sesi taklimat tersebut merangkumi perkara-perkara seperti berikut:-

- i. Pembentangan Hasil Mesyuarat EQC Tahun 2021;
- ii. Pembentangan syor Jawatankuasa Kecil Bagi Membincangkan Teknologi *Refuse Derived Fuel* (RDF) Menggunakan Buangan Terjadual (JKK-RDF); dan
- iii. Pembentangan Status Terkini Langkah-Langkah yang Telah Diambil oleh Pasukan Petugas Pencemaran Sungai Kereh Daripada Pengoperasian Ladang Ternak Khinzir di Kampong Selamat, Seberang Perai Utara Pulau Pinang.

Proses pelantikan ahli EQC bagi penggal ke-17 yang baharu sedang dilaksanakan dan dijangka akan dimuktamadkan pada tahun 2023.

The tenure for EQC members is three (3) years, from 1<sup>st</sup> June 2019 until 31<sup>st</sup> May 2022. The list of EQC members for the 16<sup>th</sup> term is shown in **Table 1.1**.

A briefing session by the Chairman of Environmental Quality Council (EQC), YBhg. Dato' Dr. Nadzri bin Yahaya to the YB Minister of Environment and Water was held on 8<sup>th</sup> December 2021.

The briefing session included the following matters:-

- i. Outcomes of the EQC Meeting in 2021;
- ii. Recommendations from the Sub-Committee for the Discussion on Refuse Derived Fuel (RDF) Technology Utilizing Scheduled Waste (JKK-RDF); and
- iii. Updates on Actions Taken by Task Force for Sungai Kereh Pollution from Pig Farm Effluent in Kampong Selamat, Penang.

The process of appointing EQC members for the 17<sup>th</sup> term is expected to be finalised in 2023.

Jadual 1.1 : Senarai Ahli Majlis Kualiti Alam Sekeliling (EQC) Penggal Ke-16 (1 Jun 2019 - 31 Mei 2022)

**Table 1.1 : List of Environmental Quality Council (EQC) Members for the 16<sup>th</sup> Term  
(1<sup>st</sup> June 2019 - 31<sup>st</sup> May 2022)**

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

Jadual 1.1 : Senarai Ahli Majlis Kualiti Alam Sekeliling (EQC) Penggal Ke-16 (1 Jun 2019 - 31 Mei 2022)  
 Table 1.1 : List of Environmental Quality Council (EQC) Members for the 16<sup>th</sup> Term  
 (1<sup>st</sup> June 2019 - 31<sup>st</sup> May 2022)

BIL./ NO.	PERWAKILAN/ DELEGATION	NAMA AHLI/ COUNCIL MEMBER
5.	Kementerian Perdagangan Dalam Negeri Koperasi dan Kepenggunaan / Ministry of Domestic Trade and Consumer Affairs	Pengarah, Bahagian Penyelidikan dan Dasar Kepenggunaan, Kementerian Perdagangan Dalam Negeri dan Hal Ehwal Pengguna / Director, Research and Consumer Policy Division, Ministry of Domestic Trade and Consumer Affairs
6.	Kementerian Pertanian dan Industri Makanan / Ministry of Agriculture and Food Industries	Setiausaha Bahagian, Bahagian Dasar dan Perancangan Strategik, Kementerian Pertanian dan Industri Makanan / Division Secretary, Policy and Strategic Planning Division, Ministry of Agriculture and Food Industries
7.	Kementerian Sumber Manusia / Ministry of Human Resources	Pengarah, Jabatan Keselamatan dan Kesihatan Pekerjaan (JKKP) Negeri Selangor, Kementerian Sumber Manusia / Director, Selangor State Department of Occupational Safety and Health (DOSH), Ministry of Human Resources
8.	Kementerian Pengangkutan / Ministry of Transport	Timbalan Ketua Setiausaha (Dasar), Kementerian Pengangkutan / Deputy Secretary General (Policy), Ministry of Transport
9.	Kementerian Perumahan dan Kerajaan Tempatan / Ministry of Housing and Local Government	Ketua Pengarah, Jabatan Pengurusan Sisa Pepejal Negara, Kementerian Perumahan dan Kerajaan Tempatan / Director General, National Solid Waste Management Department, Ministry of Housing and Local Government
10.	Kementerian Kesihatan Malaysia / Ministry of Health Malaysia	Timbalan Pengarah, Cawangan Regulatori, Bahagian Perkhidmatan Kejuruteraan, Kementerian Kesihatan Malaysia / Deputy Director, Regulatory Branch, Engineering Services Division, Ministry of Health Malaysia
11.	Kerajaan Negeri Sabah / Sabah State Government	Setiausaha Tetap Kementerian Pelancongan, Kebudayaan Dan Alam Sekitar Sabah / Permanent Secretary, Ministry of Tourism, Culture and Environment Sabah  Ahli Ganti / Alternate Member:  Pengarah Jabatan Perlindungan Alam Sekitar Sabah / Director, Sabah Environment Protection Department (EPD)
12.	Kerajaan Negeri Sarawak / Sarawak State Government	Setiausaha Tetap, Kementerian Pembangunan Bandar dan Sumber Asli Sarawak / Permanent Secretary, Ministry of Urban Development and Natural Resources Sarawak  Ahli Ganti / Alternate Member:  Kontroller, Lembaga Sumber Asli dan Alam Sekitar, Sarawak / Controller, Natural Resources and Environment Board, Sarawak
13.	Wakil Industri Petroleum / Representative from The Petroleum Industry	Puan Ungku Haslina Bt. Ungku Mohamed Tahir, Ketua Jabatan Alam Sekitar & Prestasi Sosial, PETRONAS / Head of Environment and Social Performance, PETRONAS  Ahli Ganti / Alternate Member:  Encik Mohd Azhar bin Ab Shatar, Ketua Jabatan Alam Sekitar & Prestasi Sosial, PETRONAS / Head of Environment and Social Performance, PETRONAS
14.	Wakil Industri Kelapa Sawit / The Palm Oil Industry Representative	Encik Johari Meor Ngah, Persatuan Minyak Sawit Malaysia / Malaysian Palm Oil Association  Ahli Ganti / Alternate Member:  Encik Johari Salleh, Persatuan Minyak Sawit Malaysia / Malaysian Palm Oil Association

Jadual 1.1 : Senarai Ahli Majlis Kualiti Alam Sekeliling (EQC) Penggal Ke-16 (1 Jun 2019 - 31 Mei 2022)  
 Table 1.1 : List of Environmental Quality Council (EQC) Members for the 16<sup>th</sup> Term  
 (1<sup>st</sup> June 2019 - 31<sup>st</sup> May 2022)

BIL./ NO.	PERWAKILAN/ DELEGATION	NAMA AHLI/ COUNCIL MEMBER
15.	Wakil Persekutuan Pekilang-Pekilang Malaysia (FMM) / Representative from Federation of Malaysian Manufacturers	YBhg. Dato' Hj. Mizanur Rahman Ghani, Ahli Majlis dan Pengerusi FMM Environmental Management Committee / Council Member and Chairman of FMM Environmental Management Committee  Ahli Ganti / Alternate Member:  Encik K.N. Gobinathan, Timbalan Pengerusi FMM Environmental Management Committee / Deputy Chairman of FMM Environmental Management Committee
16.	Wakil Industri Getah / Representative from The Rubber Industry	Encik Lim Sum Teck, Naib Presiden Persatuan Pengilang Produk Getah Malaysia (MRPMA) / Vice President Malaysian Rubber Products Manufacturer Association (MRPMA)  Ahli Ganti / Alternate Member:  Encik Chin Hon Meng, Naib Presiden Persatuan Pengilang Produk Getah Malaysia (MRPMA) / Vice President Malaysian Rubber Products Manufacturers Association (MRPMA)
17.	Wakil Kakitangan Akademik / Representative from the Academic Staff	YBhg. Prof. Emeritus Dato' Dr. Ibrahim Komoo, Rakan Sejawat, Institut Persekitaran dan Pembangunan (LESTARI), Universiti Kebangsaan Malaysia / Principal Fellow Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia  Ahli Ganti / Alternate Member:  Tiada / None
18.	Wakil Pertubuhan yang Berpengalaman Mengenai Alam Sekitar / Representative from Registered Organisations Knowledgeable in Matters Pertaining to the Environment	Puan Meenakshi Raman Presiden, Sahabat Alam Malaysia / President, Sahabat Alam Malaysia  Ahli Ganti / Alternate Member:  Theivanai Amarthalingam Penasihat Undang-Undang Sahabat Alam Malaysia / Legal Advisor, Sahabat Alam Malaysia
19.	Wakil Pertubuhan yang Berpengalaman Mengenai Alam Sekitar / Representative from Registered Organisations Knowledgeable in Matters Pertaining to the Environment	Puan Saradambal Srinivasan Ketua Dasar, Dana Hidupan Liar Dunia Program Terrestrial Semenanjung Malaysia / Policy Lead, Peninsular Malaysia Terrestrial Programme, World Wildlife Fund  Ahli Ganti / Alternate Member:  Tiada / None

CHAPTER 2

# BAB 2

## **PENGURUSAN SUMBER MANUSIA DAN KEWANGAN** HUMAN RESOURCES AND FINANCIAL MANAGEMENT



## PENGURUSAN SUMBER MANUSIA DAN KEWANGAN HUMAN RESOURCES AND FINANCIAL MANAGEMENT

### PERBELANJAAN PEMBANGUNAN JAS 2022

Jabatan Alam Sekitar telah menerima peruntukan Pembangunan sebanyak RM83,775,680.00 bagi Tahun 2022. Dengan peruntukan sedemikian, sebanyak 16 projek telah berjaya dilaksanakan dengan prestasi perbelanjaan sebanyak 98.56%.

### BELANJA MENGURUS 2022

Belanja Mengurus yang telah diluluskan bagi tahun 2022 adalah sebanyak RM114,345,300.00. Manakala, Peruntukan Dipinda pada 31 Disember 2022 adalah sebanyak RM114,421,300.00. Anggaran Belanja Mengurus Tahun 2022 mengikut Objek Am adalah seperti di **Jadual 2.1**.

### DEVELOPMENT EXPENDITURE OF DOE IN 2022

Department of Environment received an allocation of RM83,775,680.00 for development expenditure in 2022. With that allocation, 16 projects were successfully completed, with performance expenditure at 98.56%.

### OPERATING EXPENDITURE 2022

The approved Operating Expenditure for 2022 was RM114,345,300.00. However, this was amended on 31<sup>st</sup> December 2022 to RM114,421,300.00. The estimated Operating Expenditure for 2022 is shown in **Table 2.1**.

Jadual 2.1 : Belanja Mengurus 2022  
Table 2.1 : Operating Expenditure 2022

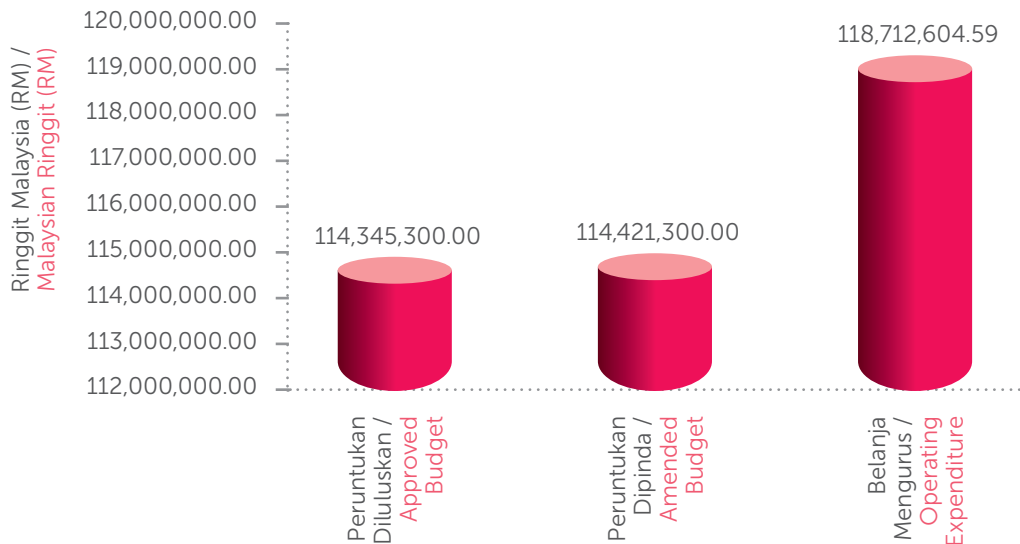
OBJEK AM / GENERAL OBJECT	PERIHAL OBJEK AM / DESCRIPTION OF GENERAL OBJECT	PERUNTUKAN DILULUSKAN (RM)/ APPROVED ALLOCATION (RM)	PERUNTUKAN DIPINDA (RM)/ AMENDED ALLOCATION (RM)
10,000	Emolumen / <b>Emolument</b>	89,683,200.00	89,683,200.00
20,000	Perkhidmatan dan Bekalan / <b>Services and Supplies</b>	23,627,100.00	23,394,285.00
30,000	Aset / <b>Assets</b>	500,000.00	883,118.00
40,000	Pemberian dan Kenaan Bayaran Tetap / <b>Grants and Fixed Charges</b>	535,000.00	460,697.00
<b>JUMLAH KESELURUHAN / OVERALL TOTAL</b>		<b>114,345,300.00</b>	<b>114,421,300.00</b>

## PERBELANJAAN MENGURUS 2022

JAS telah membelanjakan sebanyak RM118,712,604.59 iaitu sebanyak 103.75% daripada Peruntukan Dipinda. Maklumat Perbelanjaan Mengurus Tahun 2022 adalah seperti di **Rajah 2.1**.

## OPERATING EXPENDITURE 2022

DOE has spent RM118,712,604.59 which is 103.75% of the Amended Budget. Details of Operating Expenditure for 2022 are shown in **Figure 2.1**.



Rajah 2.1: Perbelanjaan Mengurus 2022  
Figure 2.1: Operating Expenditure 2022

Jadual 2.2 : Maklumat Pengurusan Sumber Manusia JAS 2022  
Table 2.2 : DOE Human Resources Management Information 2022

PERATUSAN PENGISIAN PERJAWATAN / THE PERCENTAGE OF OCCUPANCY	PERATUSAN PEGAWAI MENGHADIRI KURSUS / THE PERCENTAGE OF OFFICERS WHO ATTENDED COURSES 2022	ANUGERAH PERKHIDMATAN CEMERLANG (APC) / EXCELLENT SERVICE AWARDS (ESA)
<b>93.24%</b>	<b>100%</b>	
<ul style="list-style-type: none"> <li>Perjawatan JAS sehingga 31 Disember 2022 / <b>Occupancy as at of 31<sup>st</sup> December 2022</b></li> <li>Jumlah perjawatan: 1,539 <b>Positions: 1,539</b></li> <li>Kekosongan yang diisi: 1,435 <b>Occupied: 1,435</b></li> <li>Kekosongan: 104 <b>Vacancy: 104</b></li> </ul>	<ul style="list-style-type: none"> <li>1,429 orang pegawai JAS menghadiri kursus selama 4 hari dan lebih pada tahun 2022 / <b>1,429 DOE officers attended courses for 4 days or more in 2022</b></li> </ul>	<ul style="list-style-type: none"> <li>116 orang pegawai JAS yang menerima APC pada tahun 2020 dan 2021 / <b>116 DOE officers received in 2020 and 2021</b></li> <li>Majlis APC Kementerian Alam Sekitar dan Air Tahun 2020 dan 2021 telah diadakan pada 28 Mac 2022 / <b>The 2020 and 2021 ESA Ministry of Environment and Water event was held on 28<sup>th</sup> March 2022</b></li> </ul>

Jadual 2.3 : Pecahan Pegawai JAS Mengikut Jantina  
Table 2.3 : Breakdown Of DOE Officers By Gender

LELAKI / MALE	WANITA / FEMALE
813	622

Jadual 2.4 : Pecahan Mengikut Perjawatan Pegawai  
Table 2.4 : Breakdown of Positions

PEGAWAI TEKNIKAL / TECHNICAL OFFICERS	PEGAWAI BUKAN TEKNIKAL / NON-TECHNICAL OFFICERS
1,130	409

CHAPTER 3

# BAB 3

## **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.

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

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.

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.

### LAPORAN EIA 2022

Sejumlah 523 laporan EIA telah diterima dan dinilai oleh JAS pada tahun 2022 berbanding 534 laporan EIA pada tahun 2021 (**Rajah 3.1**). Laporan EIA tersebut adalah sebanyak 469 (85%) laporan bagi aktiviti yang tertakluk di bawah Jadual Pertama, Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015, manakala 54 (15%) laporan bagi aktiviti yang tertakluk di bawah Jadual Kedua perintah tersebut. Dari tahun 2009 sehingga kini sejumlah 4,581 Laporan EIA diterima oleh Jabatan.

Selangor menerima bilangan laporan EIA tertinggi pada tahun 2022 iaitu sebanyak 96 (18.4%) laporan, diikuti dengan Kelantan sebanyak 68 (13.0%)

The 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 minimise potential adverse effects on the environment prior to project implementation.

EIA Report assessments provide inputs that guide the authority to finalise decisions on a proposed development project.

To ensure EIA's full contribution 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.

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 citizens.

### EIA REPORT 2022

A total of 523 EIA reports were received and reviewed by the DOE in 2022, compared to 534 in 2021 (**Figure 3.1**). Of this figure, 469 (85%) were reports of activities under the First Schedule of the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, while 54 (15%) were reports of activities under the Second Schedule of the Order. Since 2009, the Department has received 4,581 EIA reports.

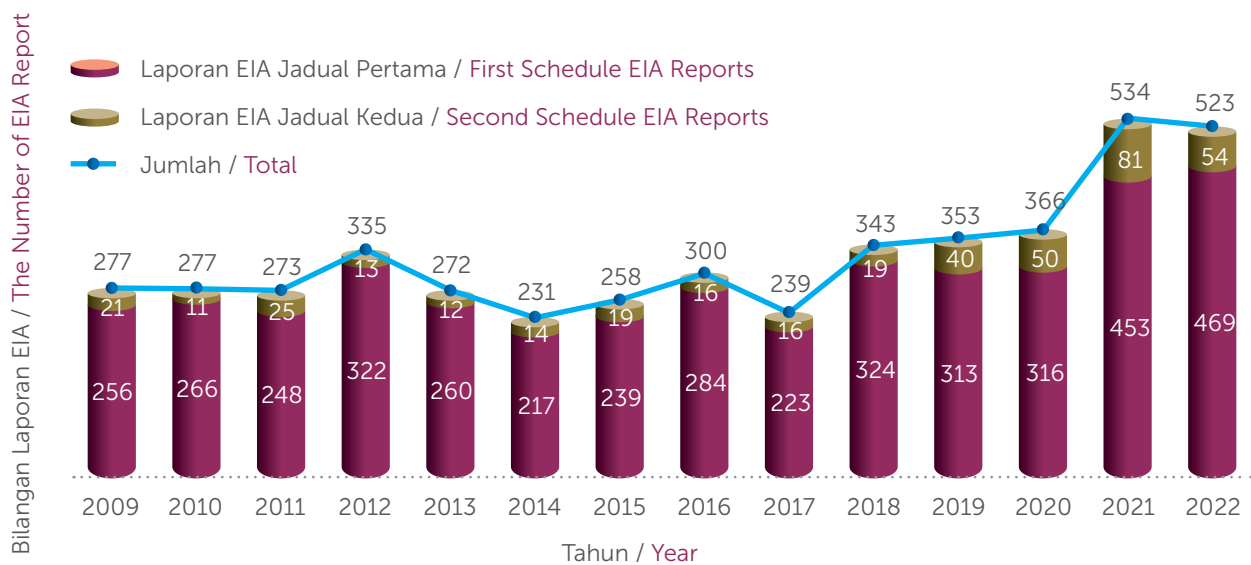
Selangor received the highest number of EIA reports in 2022, with 96 (18.4%) reports, followed by Kelantan with 68 (13.0%) reports, with Pahang and

laporan, Pahang dan Johor masing-masing sebanyak 59 (11.3%) laporan (**Rajah 3.2**). **Rajah 3.3** menunjukkan status keputusan Laporan EIA dengan jumlah laporan yang diterima oleh JAS Negeri.

**Rajah 3.4** menunjukkan Laporan EIA yang diterima berdasarkan aktiviti yang ditetapkan. Aktiviti pengolahan dan pelupusan buangan merupakan yang paling banyak diterima pada tahun 2022 iaitu sebanyak 152 (25.9%) laporan, diikuti aktiviti berkaitan perhutanan sebanyak 88 (15.0%) laporan dan aktiviti berkaitan pembangunan di kawasan cerun sebanyak 56 (9.5%) laporan.

Johor with 59 (11.3%) reports (**Figure 3.2**). The total number of reports received by DOE States is shown in **Figure 3.3**.

**Figure 3.4** illustrates the EIA Reports received based on prescribed activities. EIA Reports on waste treatment and disposal activities in 2022 were the most received, with 152 (25.9%) reports, followed by forestry activities with 88 (15.0%) and activities related to the development in slope areas with 56 (9.5%) reports.



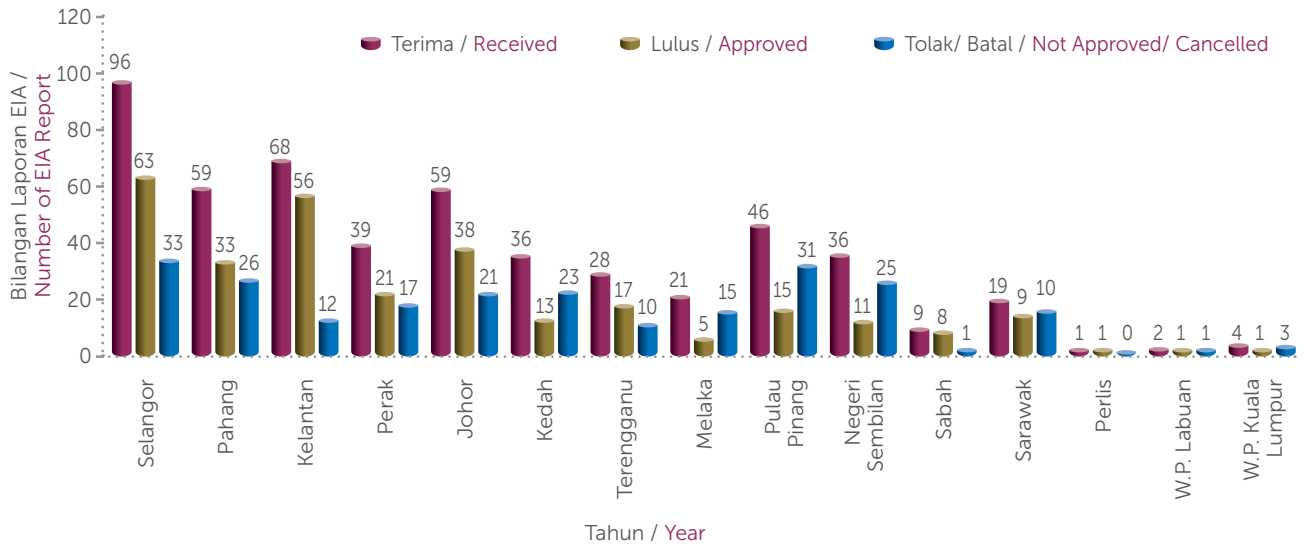
Rajah 3.1 : Bilangan Laporan EIA yang Diterima mengikut Tahun  
Figure 3.1 : The Number of EIA Reports Received by Years



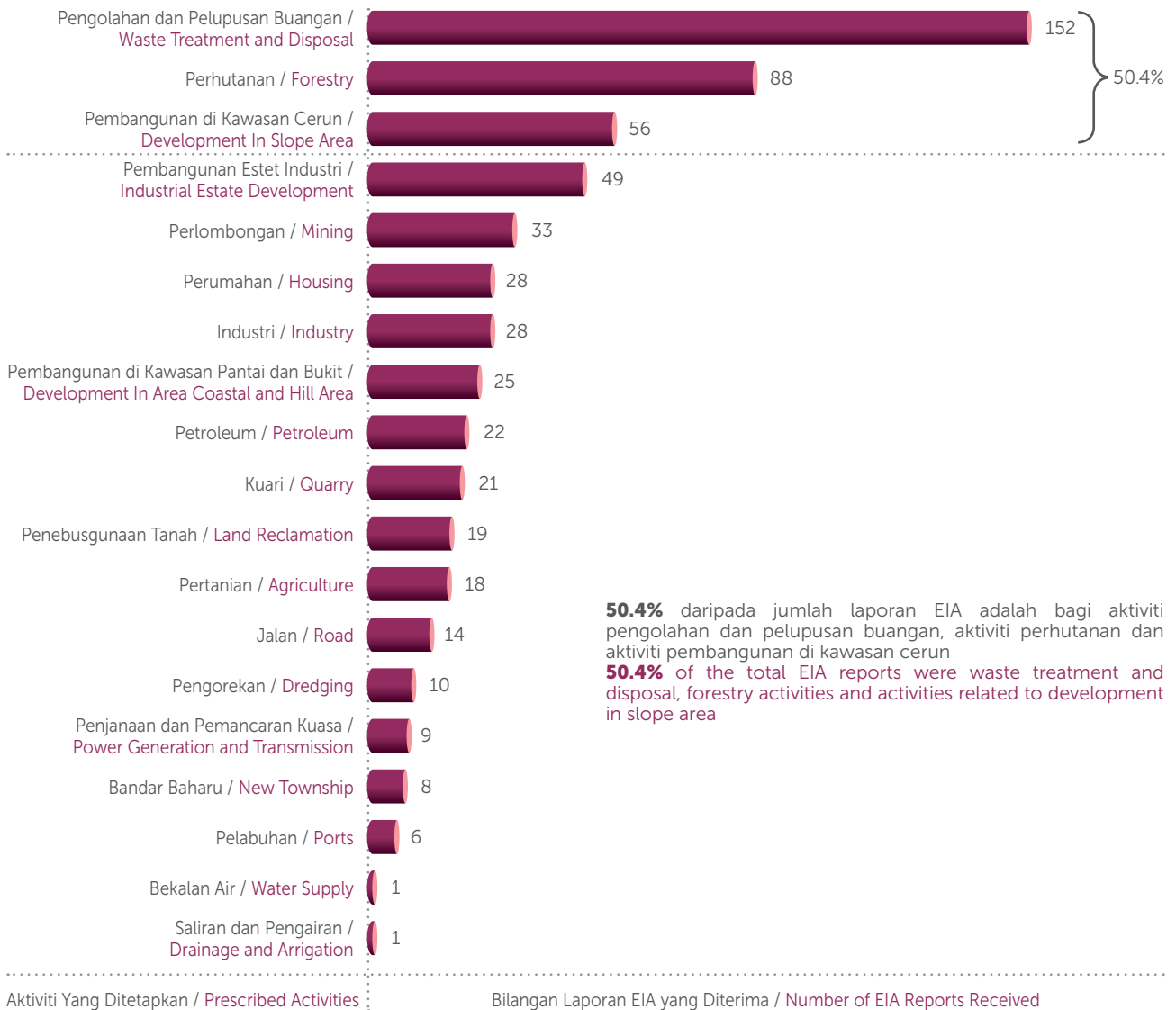
54.0% daripada jumlah laporan EIA adalah aktiviti yang ditetapkan di negeri Selangor, Kelantan, Pahang dan Johor

54.0% of the total EIA reports received were for prescribed activities in Selangor, Kelantan, Pahang and Johor

Rajah 3.2 : Bilangan Laporan EIA yang Diterima mengikut Negeri, 2022  
Figure 3.2 : The Number of EIA Reports Received by State, 2022



Rajah 3.3 : Penerimaan dan Keputusan Laporan EIA mengikut Negeri, 2022  
 Figure 3.3 : EIA Reports Received, and Results of EIA Reports by State in 2022



Rajah 3.4 : Bilangan Laporan EIA yang Diterima mengikut Aktiviti Yang Ditetapkan, 2022  
 Figure 3.4 : Number of EIA Reports Received by Prescribed Activities, 2022

## PENGUATKUASAAN PROJEK EIA

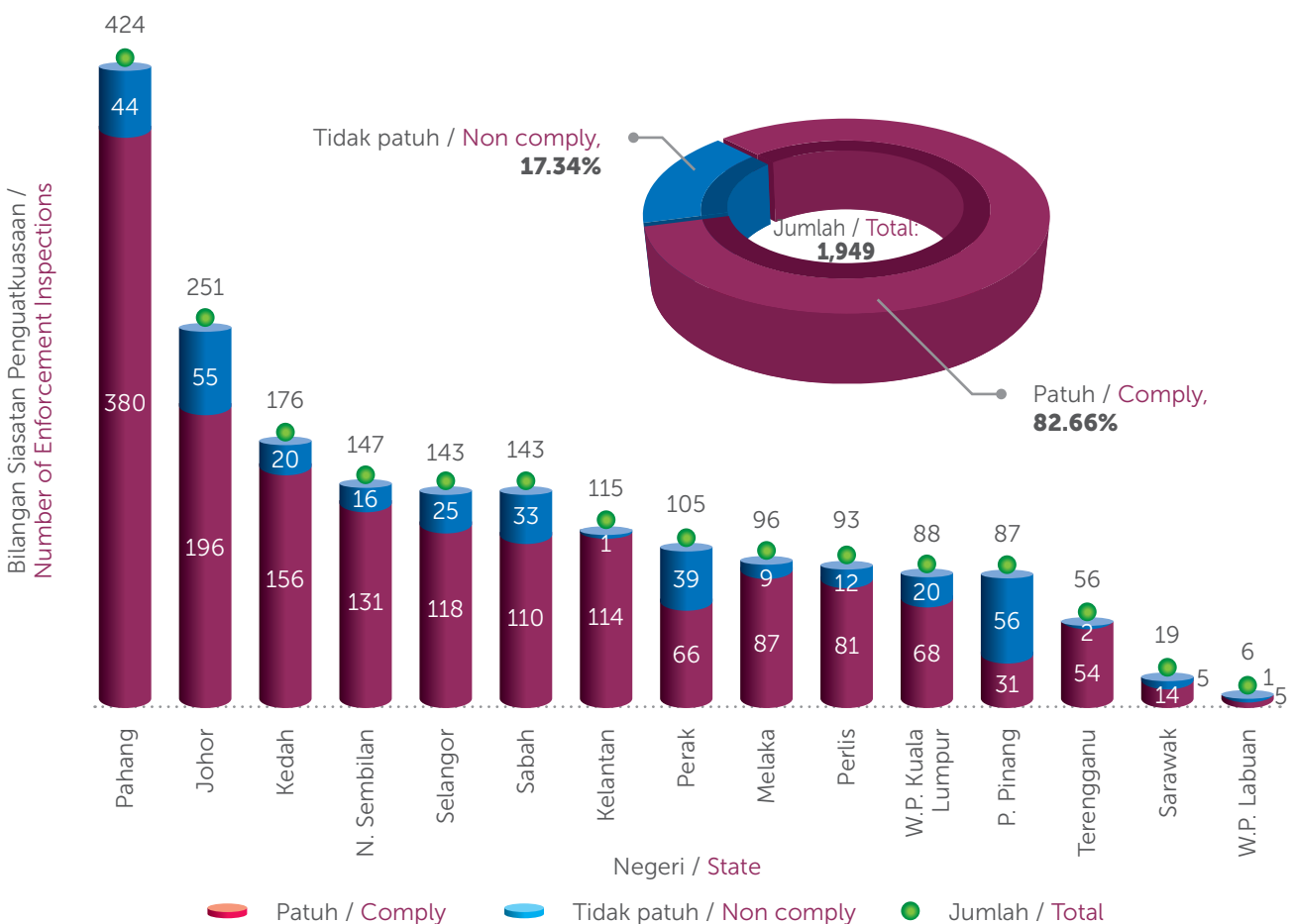
Penguatkuasaan projek EIA dilaksanakan melalui kaedah pemeriksaan di lapangan dan juga pemeriksaan secara desktop. Sejumlah 1,949 siasatan penguatkuasaan samada di darat atau badan air telah dijalankan pada tahun 2022 untuk mengenalpasti status fasa pembangunan dan pematuhan kepada syarat kelulusan EIA (**Rajah 3.5**). Daripada jumlah itu, sebanyak 83% adalah patuh kepada syarat-syarat kelulusan EIA manakala 17% pula adalah tidak patuh.

Sepanjang tahun 2022 sebanyak 537 pemeriksaan secara dekstop telah dijalankan (**Rajah 3.6**). Daripada jumlah itu sebanyak 89% pemeriksaan adalah patuh manakala 11% adalah tidak patuh pemeriksaan secara desktop. Pemeriksaan secara desktop adalah 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.

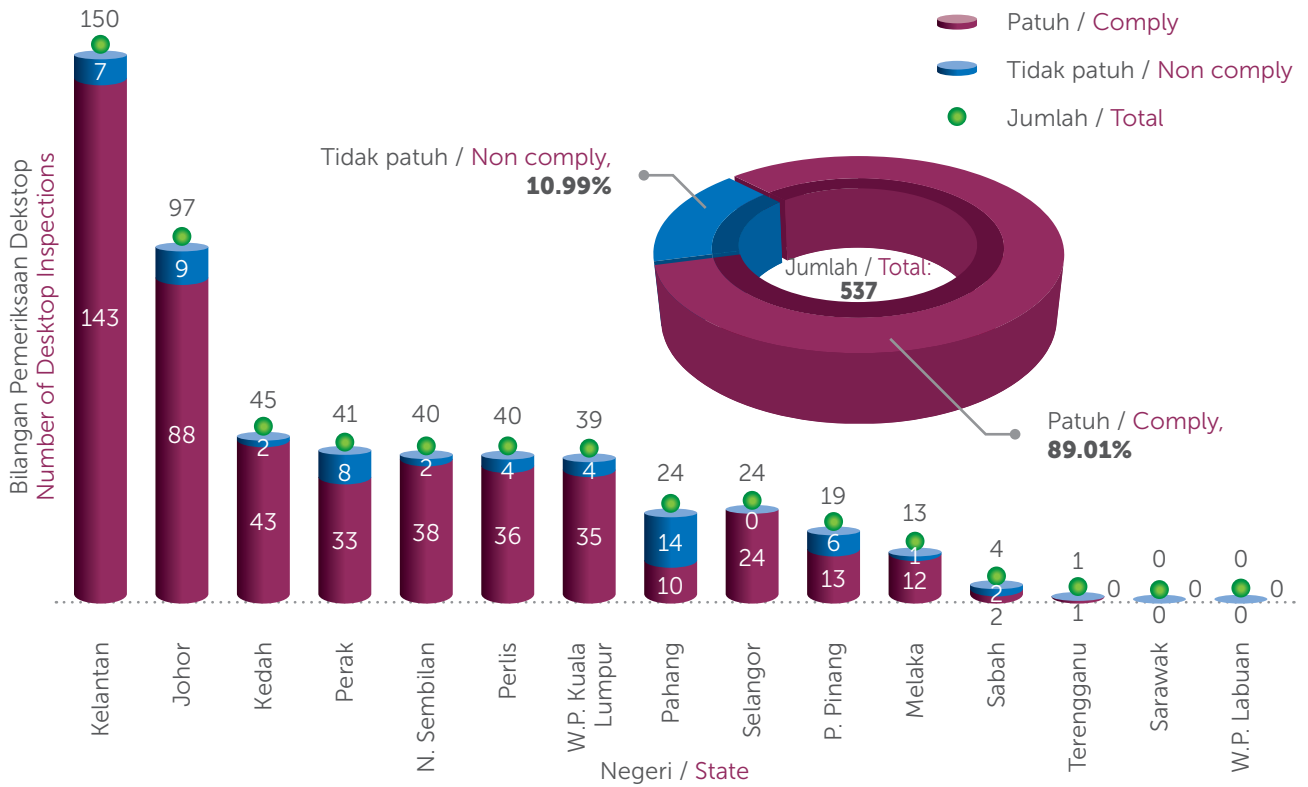
## EIA PROJECT ENFORCEMENT

The enforcement of the EIA project is carried out through field inspection methods and also desktop inspection. A total of 1,949 enforcement inspections (on land or water) were conducted in 2022 to identify the status of the development phase and compliance with EIA conditions requirements (**Figure 3.5**). Of the total figure, 83% complied with EIA approval conditions, while 17% were non-compliant.

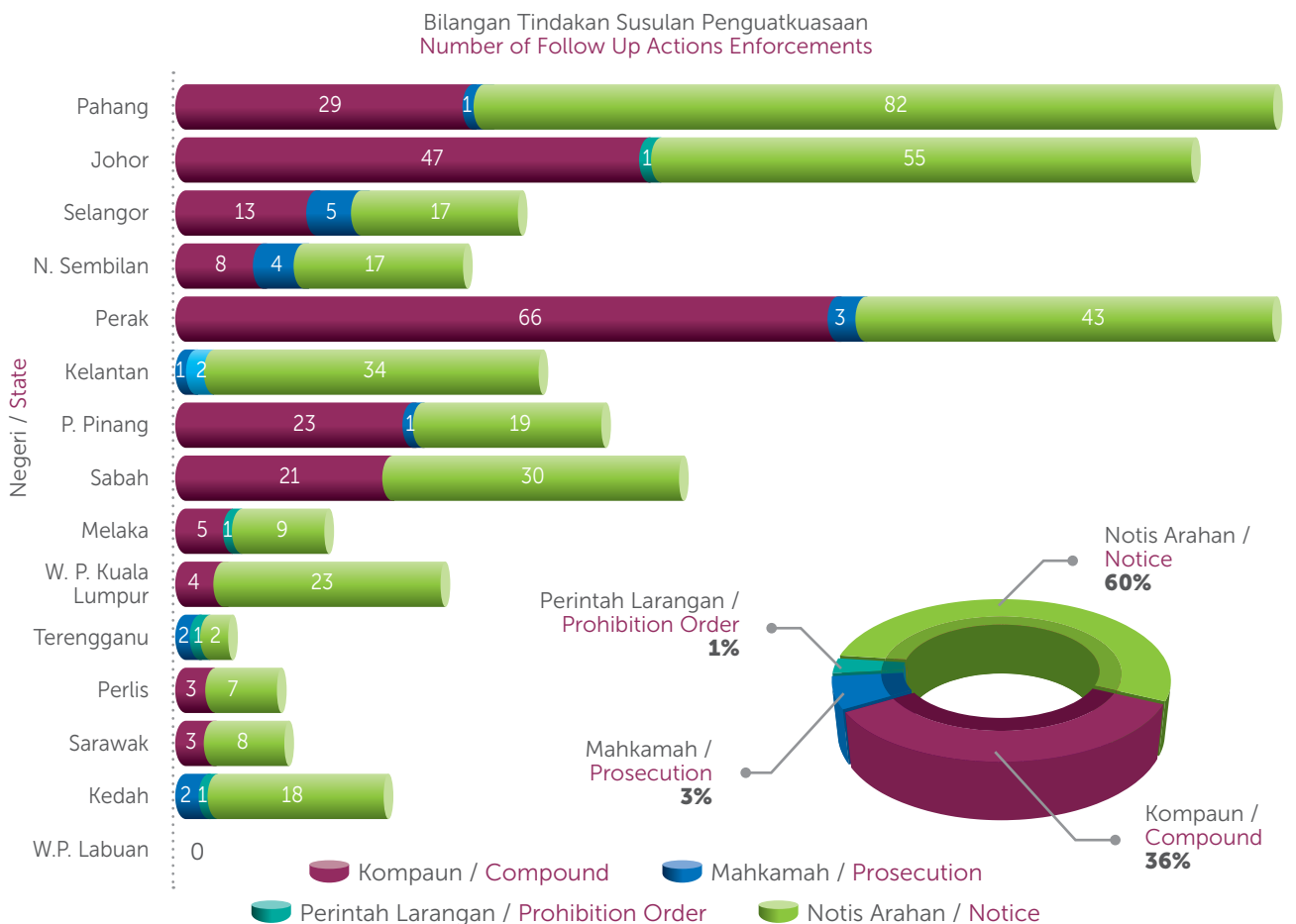
In 2022, 537 desktop enforcements were carried out (**Figure 3.6**). 89% were compliant, while 11% were non-compliant. Desktop enforcements are aimed at ensuring continuous monitoring for compliance through the online system introduced by DOE, as well as through reports submitted to DOE on a periodical basis.



Rajah 3.5 : Siasatan Penguatkuasaan Projek EIA, 2022  
 Figure 3.5 : EIA Project Enforcement Inspections, 2022



Rajah 3.6 : Pemeriksaan Dekstop Projek EIA, 2022  
Figure 3.6 : EIA Project Desktop Inspections, 2022



Rajah 3.7 : Tindakan Susulan Penguatkuasaan Projek EIA 2022  
Figure 3.7 : Follow up Actions of EIA Project Enforcements, 2022

Daripada siasatan yang dijalankan, tindakan penguatkuasaan telah diambil merangkumi 364 notis arahan dan 222 kompaun dikeluarkan. Sebanyak 51 pertuduhan kes telah didakwa di mahkamah kerana tidak mematuhi syarat-syarat kelulusan EIA dengan jumlah denda sebanyak RM 1,331,500.00 bagi kesalahan di bawah Seksyen 34A(6), Akta Kualiti Alam Sekeliling 1974. Selain itu, sebanyak 6 perintah larangan bagi aktiviti yang ditetapkan di bawah Seksyen 34AA, Akta Kualiti Alam Sekeliling 1974 juga telah dikeluarkan bagi kesalahan serius berkaitan ketidakpatuhan syarat kelulusan EIA (**Rajah 3.7**).

Based on the inspections conducted, enforcement actions involved the issuance of 364 notices and 222 compounds. A total of 51 non-compliance cases were charged in court with a penalty amounting to RM 1,331,500.00, pursuant to Section 34A(6), Environment Quality Act 1974. In addition, 6 prohibition orders for prescribed activities under Section 34AA, Environmental Quality Act 1974, were also issued for serious offences related to noncompliance with EIA approval conditions (**Figure 3.7**).



Aktiviti Penguatkuasaan EIA di Tapak Projek Perumahan  
EIA Enforcement Activity at Housing Project Site



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



Aktiviti Penguatkuasaan EIA di Tapak Projek Ladang Hutan  
EIA Enforcement Activity at Forestry 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 pada 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.

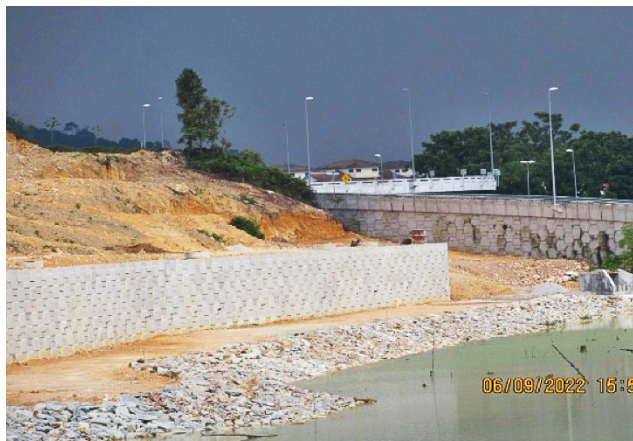
### PROHIBITION ORDER OR STOP WORK ORDER

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 those who have performed the prescribed activities in three (3) circumstances, which is:

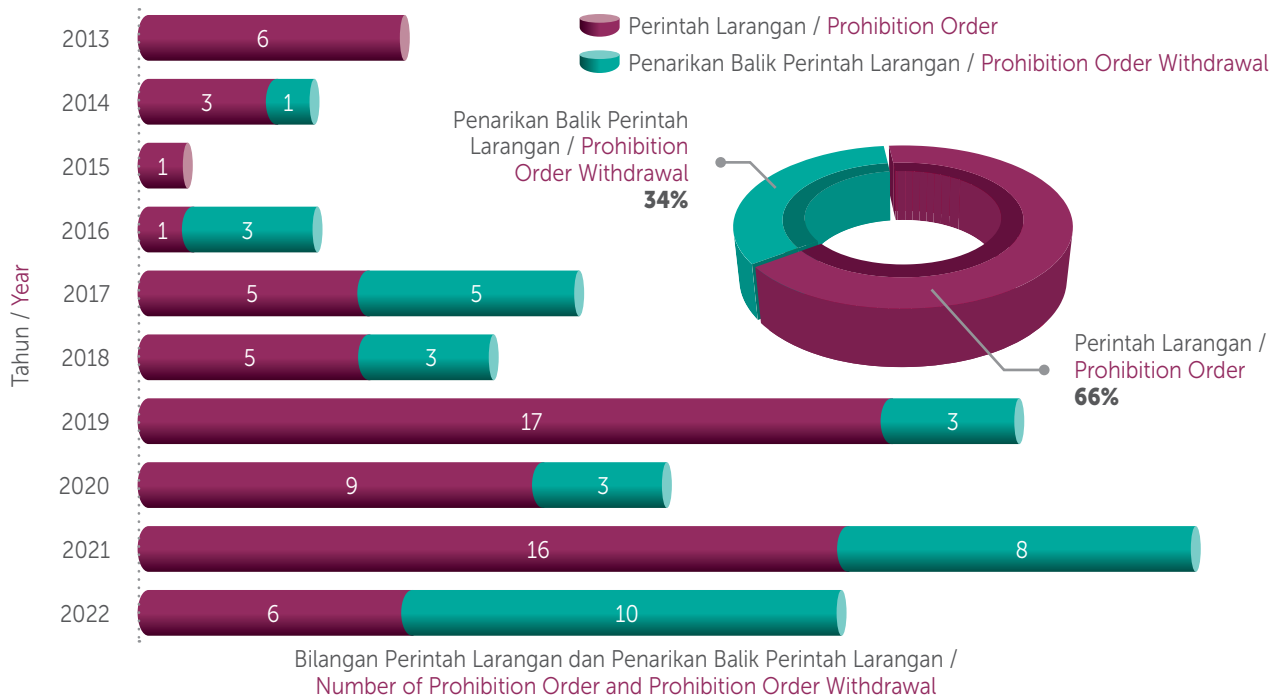
- i. Without EIA Report approval;
- ii. Violation of conditions attached to of the EIA Report; or
- iii. In the opinion of the Director General is performed in a way that could cause environmental damage.

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 action as directed by the Director General is complied with.



Aktiviti Pemantauan terhadap Perintah Larangan  
Monitoring Activities concerning Prohibition Orders



Rajah 3.8 : Statistik Perintah Larangan dan Penarikan Balik Perintah Larangan  
 Figure 3.8 : Prohibition Order and Withdrawal of Prohibition Order Statistics

Sejak 2013, JAS telah mengenakan sejumlah 69 tindakan perintah larangan terhadap projek EIA. Dalam tahun 2022, sejumlah 6 bilangan perintah larangan telah dikeluarkan melibatkan satu (1) aktiviti pertanian, dua (2) aktiviti kitar semula sisa pepejal dan dua (2) aktiviti perlombongan. Pada tahun 2022 juga, sebanyak sepuluh (10) perintah larangan yang dikenakan telah ditarik balik melibatkan satu (1) aktiviti pembangunan estet, satu (1) aktiviti pembinaan lebuhraya, dua (2) aktiviti pengolahan buangan terjadual dan enam (6) aktiviti kitar semula sisa pepejal. (**Rajah 3.8**).

### 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.

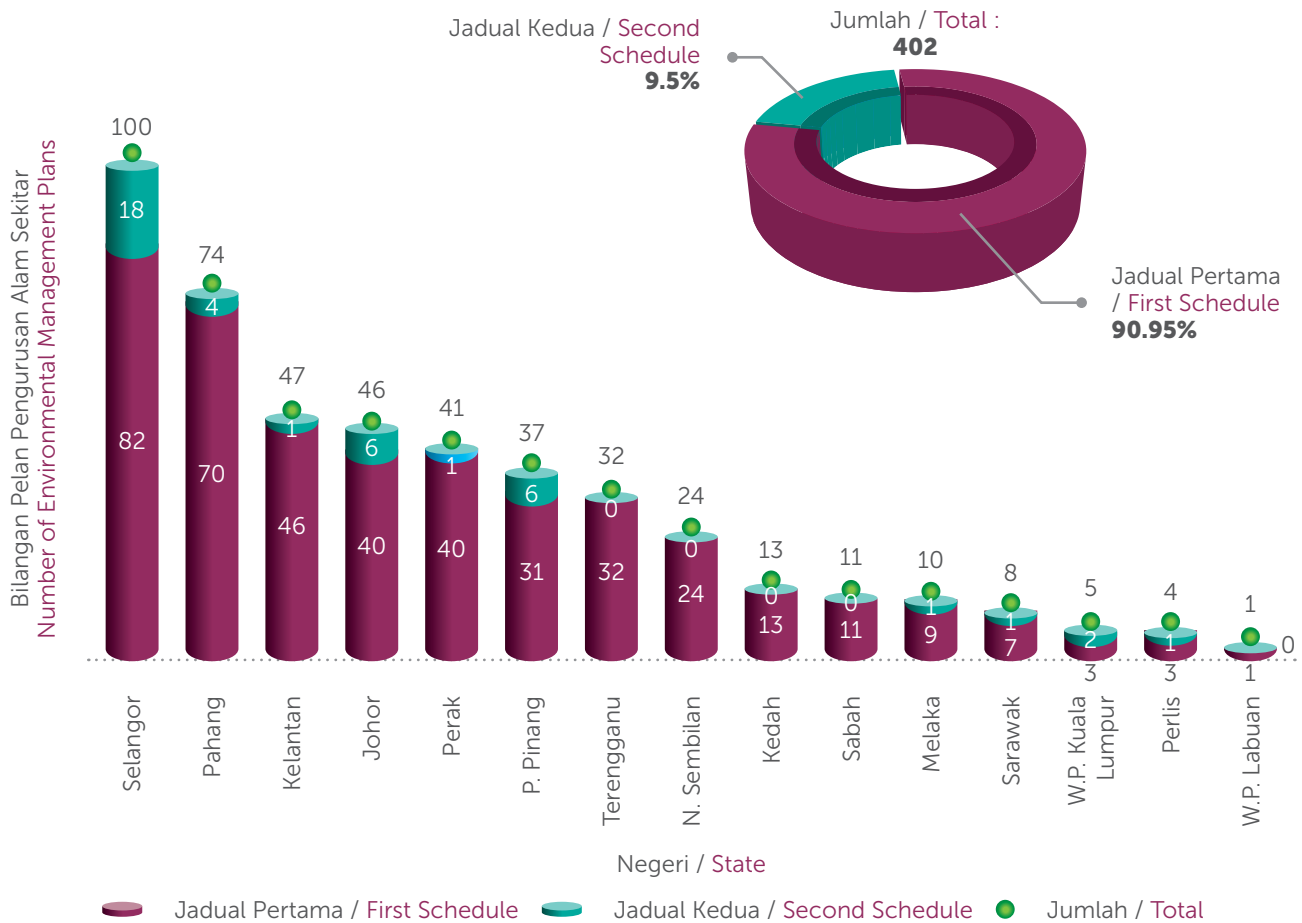
EMP yang disediakan oleh Penggerak Projek akan menggariskan strategi dan tindakan yang perlu dilaksanakan berdasarkan amalan pengurusan terbaik untuk melindungi alam sekitar. Sehubungan itu, EMP akan memastikan segala cadangan di dalam Laporan EIA berjaya dilaksanakan dalam fasa rekabentuk akhir, pembinaan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

Since 2013, DOE has imposed 69 prohibition order actions against projects. In 2022, 6 prohibition orders were issued involving one (1) agriculture activity, two (2) solid waste recycling activities and two (2) mining activities. In addition, ten (10) prohibition order charges were withdrawn, involving one (1) estate development activity, one (1) construction of highway activity, two (2) recovery of scheduled waste activities and six (6) solid waste recycling activities. (**Figure 3.8**).

### ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The EMP is an important component 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.



Rajah 3.9 : Bilangan Pelan Pengurusan Alam Sekitar Diterima, 2022  
Figure 3.9 : Number of Environmental Management Plans Received, 2022

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

Sepanjang tahun 2022, sebanyak 453 EMP telah diterima dan diproses oleh JAS (**Rajah 3.9**). Daripada jumlah itu, sebanyak 412 (91%) adalah daripada aktiviti yang tertakluk di bawah Jadual Pertama, Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015, manakala 41 (9%) bagi aktiviti yang tertakluk di bawah Jadual Kedua perintah tersebut.

Selangor menerima bilangan EMP tertinggi pada tahun 2022 iaitu sebanyak 100 (22.1%), diikuti dengan Pahang sebanyak 74 (16.3%) dan Kelantan sebanyak 47 (10.4%).

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 to 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 2022, a total of 453 EMPs were received and processed by DOE (**Figure 3.9**). 412 (91%) activities were under the First Schedule of the Environment Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, while 41 (9%) were under the Second Scheduled of the Order.

Selangor recorded the highest number of EMP in 2022, with 100 (22.1%), followed by Pahang with 74 (16.3%), and Kelantan with 47 (10.4%).

## SKIM PENDAFTARAN JURURUNDING EIA

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

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

Sepanjang tahun 2022, sejumlah 186 permohonan baharu telah diterima dan sebanyak 112 permohonan telah diluluskan pendaftaran bagi pelbagai kategori. Manakala bagi permohonan pembaharuan, sejumlah 123 permohonan telah diterima dan 118 permohonan telah diluluskan.

Sehingga 31 Disember 2022, sebanyak 553 individu telah berdaftar di bawah Skim Pendaftaran Jururunding EIA melalui sistem *Malaysian Certified Environmental Practitioner (myCEP)*, di mana 132 orang adalah Jururunding EIA (C), 82 orang Jururunding EIA & Pakar Subjek (CS), 193 orang adalah Pakar Subjek (SS), 142 orang adalah Pembantu Jururunding (AC) dan 4 orang adalah Pembantu Jururunding & Pakar Subjek (ACS). **Jadual 3.1** menunjukkan pecahan mengikut bidang utama.

## EIA CONSULTANT REGISTRATION SCHEME

The EIA Consultant Registration Scheme was first introduced on 1<sup>st</sup> 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 the DOE before conducting EIA studies.

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 Specialist (ACS).

Throughout the year 2022, a total of 186 new applications were received and a total of 112 applications were approved for registration for various categories. As for renewal applications, a total of 123 applications were received and 118 applications were approved.

As at 31<sup>st</sup> December 2022, 553 individuals were registered under the EIA Consultant Registration Scheme through the Malaysian Certified Environmental Practitioner (myCEP) system, of which 132 were EIA Consultants (C), 82 were Subject Consultants (CS), 193 were Subject Specialists (SS), 142 were Assistant Consultants (AC), and 4 were Assistant Consultants & Subject Specialists (ACS). **Table 3.1** shows the breakdown of categories of EIA consultants.

Jadual 3.1 : Bilangan Jururunding  
Table 3.1 : Number of EIA Consultants

BIL./ NO.	KATEGORY / CATEGORY	BILANGAN JURURUNDING / NUMBERS OF CONSULTANT	PERATUSAN / PERCENTAGE
1.	Jururunding EIA EIA Consultant	132	23.9
2.	Jururunding EIA & Pakar Subjek Subject Consultant (CS)	82	14.8
3.	Pakar Subjek Subject Specialist (SS)	193	34.9
4.	Pembantu Jururunding Assistant Consultant (AC)	142	25.7
5.	Pembantu Jururunding & Pakar Subjek Assistant Consultant & Subject Specialist (ACS)	4	0.7
<b>JUMLAH / TOTAL</b>		<b>553</b>	<b>100</b>

Selain itu, sebanyak dua (2) kali sesi Kursus Induksi Jururunding EIA telah dilaksanakan pada tahun 2022. Kursus Induksi pertama dilaksanakan pada 5-9 September manakala kali kedua adalah pada 19-23 September 2022. Seramai 64 orang peserta telah menghadiri kursus ini dan menduduki peperiksaan induksi. Kursus ini merupakan syarat wajib untuk setiap individu hadir dan lulus peperiksaan sebelum memohon untuk berdaftar sebagai jururunding EIA.

### SKIM PENDAFTARAN JURUAUDIT ALAM SEKITAR

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

Bagi tahun 2022, sebanyak 40 permohonan baharu telah diterima dan 37 daripadanya telah didaftarkan sebagai Juruaudit Alam Sekeliling. Manakala bagi permohonan pembaharuan, pihak Jabatan telah menerima 20 permohonan dan 19 permohonan telah diluluskan (**Jadual 3.2**). Sehingga 31 Disember 2022, sebanyak 108 orang individu telah didaftarkan sebagai Juruaudit Alam Sekeliling.

In addition, two (2) sessions of the EIA Consultant Induction Course were conducted in 2022. First Induction Course were held on 5<sup>th</sup> to 9<sup>th</sup> September 2022, while the second on 19<sup>th</sup> to 23<sup>rd</sup> September 2022. A total of 64 participants attended this course and sat for the induction exam. This course is a mandatory requirement for every individual to attend, and pass the exam before applying to be registered as an EIA consultant.

### ENVIRONMENTAL AUDIT REGISTRATION SCHEME

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

In 2022, the Department received 40 new applications, and 37 were registered as Environment Auditors. As for renewal applications, the Department received 20 applications, and 19 applications were approved (**Table 3.2**). As at 31<sup>st</sup> December 2022, 108 individuals were registered as Environmental Auditors.

Jadual 3.2 : Jumlah Permohonan Juruaudit Alam Sekeliling yang Diluluskan bagi Tahun 2022  
Table 3.2 : Number of Approved Environmental Auditor Applications in 2022

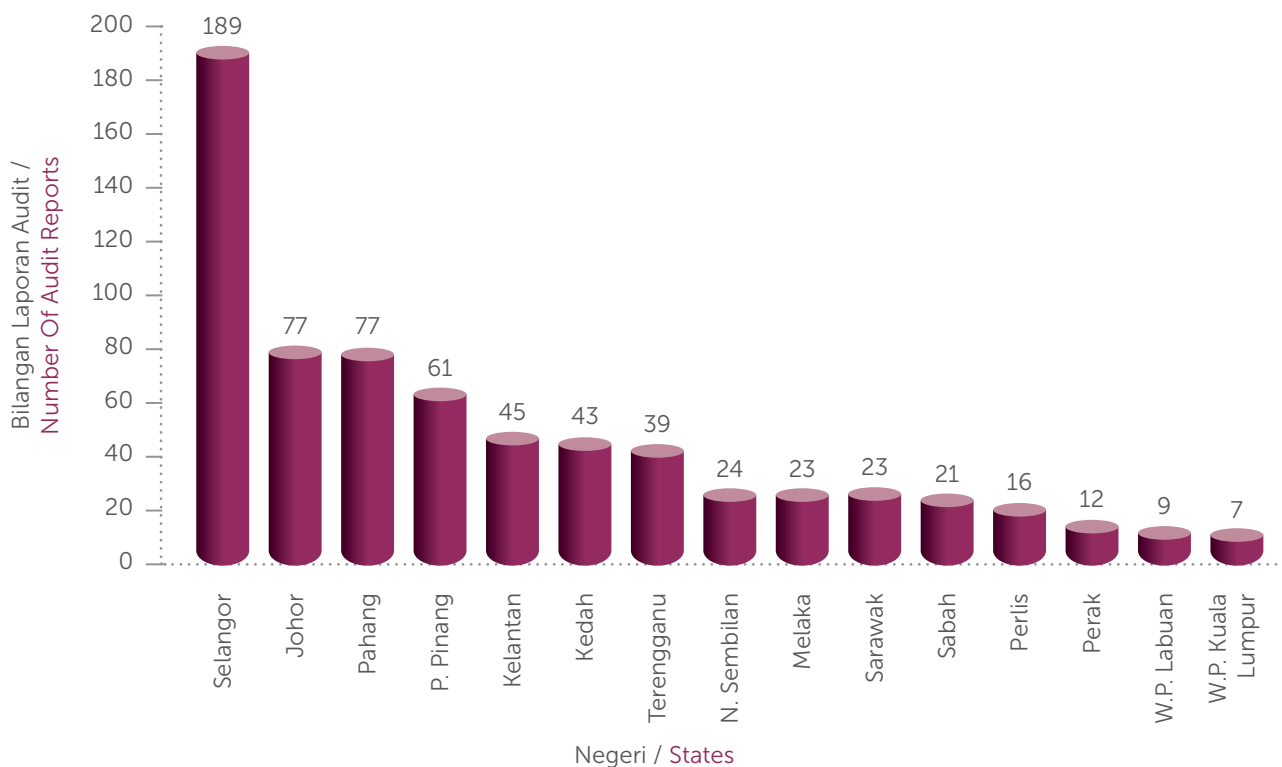
JENIS PERMOHONAN/ TYPES OF APPLICANT	JUMLAH PERMOHONAN/ NO. OF APPLICANTS	JUMLAH LULUS/ NO. OF APPLICATIONS APPROVED	PERATUSAN LULUS/ PERCENTAGE APPROVED
Baharu / New	40	37	92.5 %
Pembaharuan / Renew	20	19	95 %

Tujuan utama skim pendaftaran ini adalah untuk memastikan hanya orang yang layak sahaja dibenarkan menjalankan audit alam sekeliling seperti dikehendaki di bawah Seksyen 33A, Akta Kualiti Alam Sekeliling 1974. Pelaksanaan audit dan pelaporan audit alam sekeliling adalah mengikut prosedur dan garis panduan yang ditetapkan.

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

The main objective of the registration scheme is to ensure that only qualified persons are allowed to conduct an environmental audit as required under Section 33A Environmental Quality Act 1974. Audit and its reporting are in accordance with the established procedures and guidelines.

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



Rajah 3.10 : Bilangan Audit Alam Sekeliling bagi Projek EIA mengikut Negeri, 2022  
Figure 3.10 : Number of Environmental Audit for EIA Projects by State, 2022

Bagi tahun 2022, sebanyak 666 audit alam sekeliling di bawah Seksyen 33A, Akta Kualiti Alam Sekeliling 1974 telah dijalankan bagi aktiviti-aktiviti yang tertakluk dibawah Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015 (**Rajah 3.10**).

### 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.

In 2022, a total of 666 environmental audits were conducted under Section 33A, Environment Quality Act 1974, for activities under the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 (**Figure 3.10**).

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

The exploration of oil and gas is the initial process of identifying the location of the source 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.

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

Selain daripada menilai laporan EIA bagi aktiviti pembangunan medan minyak dan gas di dalam kawasan ZEE, JAS juga turut bertanggungjawab memberikan input kepada JKZEE bagi permohonan kelulusan projek yang tidak tertakluk kepada Perintah Kualiti Alam Sekeliling (Penilaian Kesan Kepada Alam Sekeliling) 2015 yang diselaraskan oleh Majlis Keselamatan Negara (MKN) sebagai urusetia. Pada tahun 2022, JAS telah menerima sebanyak 27 permohonan pembangunan di dalam kawasan ZEE ini dan telah dinilai oleh JAS Negeri yang berkaitan iaitu 26 di Sarawak dan 1 di Sabah.

### INPUT ALAM SEKITAR KEPADA PERANCANGAN PEMBANGUNAN

Pada tahun 2022, sejumlah 13,568 input alam sekitar telah diberikan oleh Pejabat JAS Negeri kepada penggerak projek, Kerajaan Negeri, Pihak Berkuasa Tempatan, Pejabat Tanah serta agensi-agensi lain yang berkaitan. (Rajah 3.11).

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.

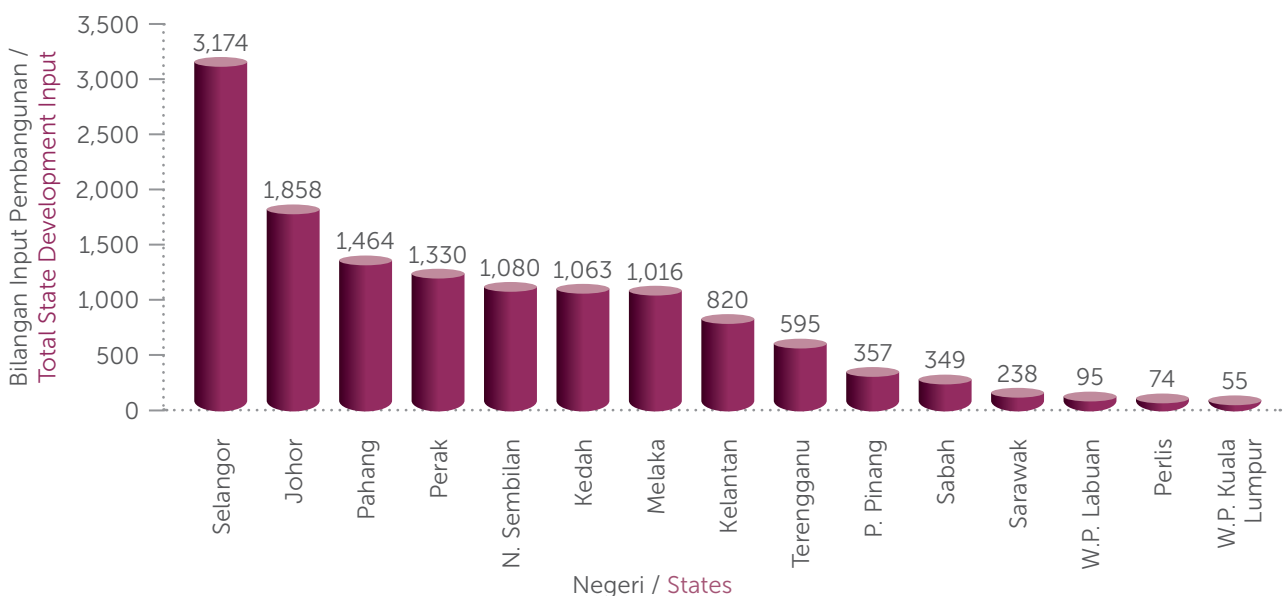
The members of the committee are from various federal agencies, including DOE. The committee evaluates and approves applications for construction work, operation or use of any island, artificial installations or structures, cable and pipeline installation in the EEZ.

Apart from evaluating the EIA report for oil and gas field development activities within the EEZ area, DOE is also responsible for providing input to the committee for approval of projects not subject to the Environmental Quality (Environmental Impact Assessment) Order 2015 coordinated by the National Security Council (MKN) (Secretariat) which acts as the Secretariat. In 2022, DOE received 27 applications for development within the EEZ area that were evaluated by the relevant State DOEs, namely 26 in Sarawak and 1 in Sabah.

### ENVIRONMENTAL INPUT FOR DEVELOPMENT PLANNING

In 2022, a total of 13,568 environmental inputs were provided to project proponents, State Governments, Local Authorities, and Land Offices as well as other related agencies by the State DOEs (Figure 3.11).

Technical inputs 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.



Rajah 3.11 : Bilangan Input Alam Sekitar kepada Perancangan Pembangunan mengikut Negeri, 2022  
Figure 3.11 : The number of Environmental Inputs towards Development Planning by States in 2022

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, Alam Sekitar dan Perubahan Iklim (NRECC) 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.

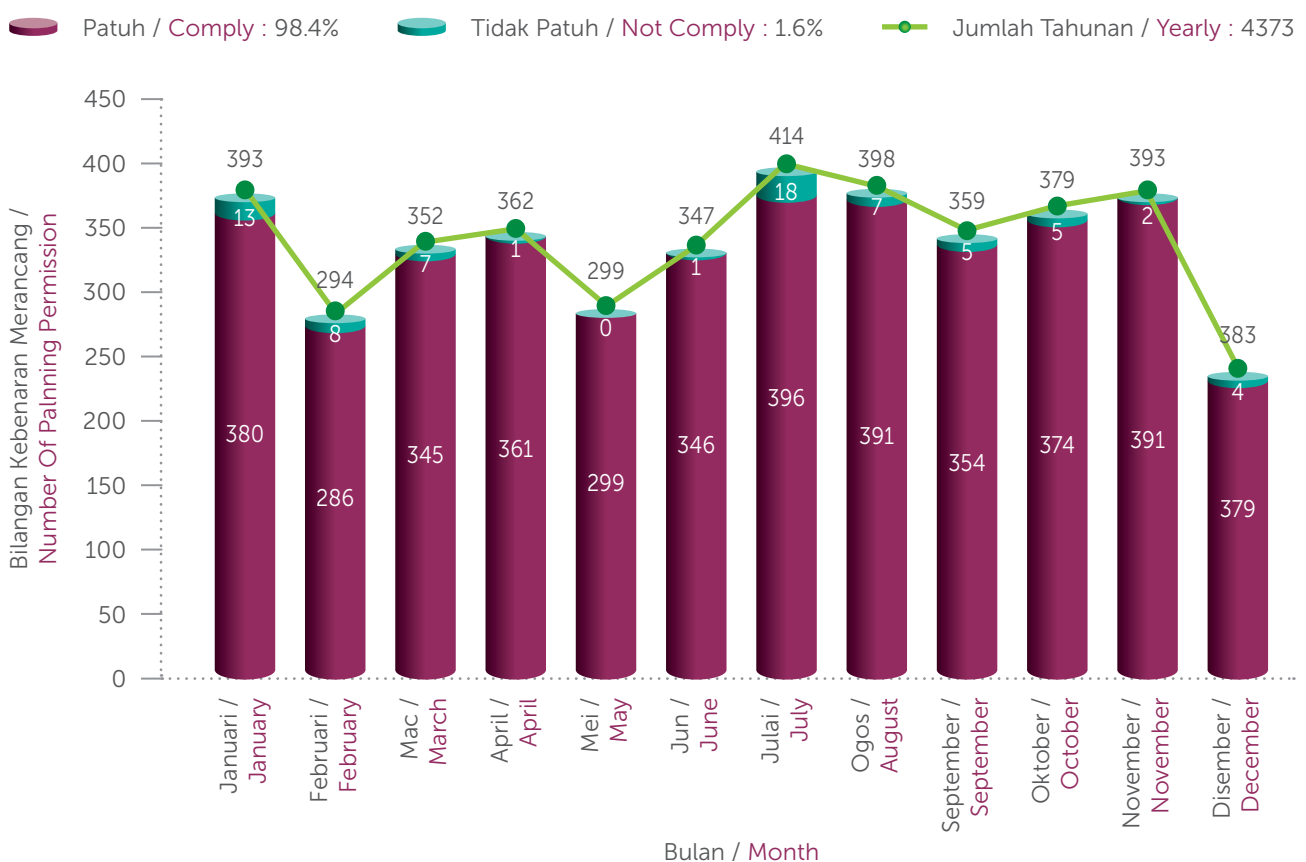
Inisiatif penubuhan Unit Pusat Setempat (OSC) di semua Pihak Berkuasa Tempatan (PBT) di Semenanjung Malaysia telah mula diperkenalkan sejak tahun 2007 dengan objektif untuk menyelaraskan pelbagai permohonan pemajuan melalui satu sistem dan prosedur yang telus dan seragam.

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

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, Environment and Climate Change (NRECC) 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 etc.

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 OSCs were enhanced with the establishment of the OSC online system. OSC 3.0 was introduced on 1<sup>st</sup> June 2014 to overcome the delay in granting approval.



Rajah 3.12 : Statistik Pematuhan OSC 3.0 Plus Online kepada Kebenaran Merancang mengikut Bulan, 2022  
Figure 3.12 : Compliance with OSC 3.0 Plus Online for Planning Approvals by months in 2022

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

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

Pada tahun 2022, JAS telah menerima sebanyak 4,373 permohonan dalam sistem OSC 3.0 plus online. **Rajah 3.12** menunjukkan pematuhan 98.4% ulasan teknikal JAS kepada sistem OSC 3.0 plus online.

### **PROJEK RANCANGAN MALAYSIA KE-12 (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 2022, terdapat terdapat empat (4) skop kajian di bawah projek ini yang telah diluluskan.

Dua (2) skop adalah merupakan projek sambungan dari tahun 2021, iaitu:

- i. Pengukuhan Dokumen Panduan/ Garis Panduan Penilaian Kepada Alam Sekeliling; dan
- ii. Pengukuhan Skim Juruaudit Alam Sekeliling dan Jururunding EIA

Manakala dua (2) lagi skop merupakan projek baharu iaitu:

- iii. Kajian Kebolehlaksanaan Strategic Environmental Assesment (SEA) Di Peringkat Penyediaan Polisi Pembangunan Di Malaysia; dan
- iv. Pemantapan Penguatkuasaan EIA.

Syarikat perunding yang berdaftar di bawah Kementerian Kewangan telah dilantik bagi melaksanakan Projek Pengukuhan Dokumen Panduan/ Garis Panduan Penilaian Kepada Alam Sekeliling untuk tempoh 15 bulan, dari 28 Jun 2021 sehingga 28 September 2022.

Hasil kajian adalah:

- i. Garis panduan kepada pelabur;
- ii. Garis panduan penempatan industri di Malaysia;
- iii. Garis panduan prosedur EIA; dan
- iv. Prosedur tetap operasi (PTO) penilaian laporan EIA.

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).

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

In 2022, DOE received 4,373 applications over the OSC 3.0 plus online system. **Figure 3.12** shows a 98.4% compliance of DOE technical comments to the OSC 3.0 plus online system.

### **12<sup>th</sup> MALAYSIA PLAN (RMKe-12): PROJECT TO CONSOLIDATE THE IMPLEMENTATION OF ENVIRONMENTAL ASSESSMENT IN MALAYSIA**

Under the RMKe-12, the DOE is implementing a project to consolidate the Implementation of Environmental Assessment in Malaysia. For 2022, there were four (4) scopes of study under this project that were approved.

Two (2) study scopes were a continuation from 2021 namely:

- i. Strengthening the Document Guidelines/ Environmental Assessment Guidelines; and
- ii. Strengthening the Environmental Auditor and EIA Consultant Schemes.

While another two (2) scopes for new project were:

- iii. A Feasibility Study of Strategic Environmental Assessment (SEA) at the Development Policy Preparation Stage in Malaysia; and
- iv. Enhancement of EIA Enforcement.

A consulting company registered with the Ministry of Finance was appointed to conduct the Strengthening of Guidelines documents / Environmental Assessment Guidelines for 15 months, 28<sup>th</sup> Jun 2021 until 28<sup>th</sup> September 2022.

The outputs of this study were:

- i. Guidelines for Investors;
- ii. Guidelines for Siting of Industries in Malaysia;
- iii. EIA Procedure guidelines; and
- iv. Standard Operating Procedure (SOP) EIA Review Report.

Bagi projek kajian Pengukuhan Skim Juruaudit Alam Sekeliling dan Jururunding EIA, perunding alam sekitar telah dilantik untuk tempoh 15 bulan iaitu sehingga 28 September 2022.

Output atau hasil kajian adalah:

- Garis Panduan Audit Alam Sekeliling;
- Garis Panduan Skim Pendaftaran Juruaudit Alam Sekeliling;
- Garis Panduan Skim Pendaftaran Jururunding EIA; dan
- Prosedur Tetap Operasi (PTO) Penilaian, Permohonan Skim Pendaftaran Juruaudit Alam Sekeliling dan Jururunding EIA.

Kesemua dokumen di bawah kedua-dua kajian akan disediakan bersama-sama bahan taklimat bagi tujuan hebahan dan pengajaran serta bahan promosi berbentuk infografik. Kesemua dokumen ini dijangka diterbitkan dalam tahun 2023.

Perancangan projek Pengukuhan Dokumen Panduan / Garis Panduan Penilaian Kepada Alam Sekeliling adalah seperti di **Rajah 3.13**. Pada tahun 2022, mesyuarat dan beberapa sesi Perbincangan Kumpulan Disasar (FGD) telah dilaksanakan seperti di **Jadual 3.3**.

For the project on Strengthening the Environmental Auditor and EIA Consultant Schemes, an environmental consultant was appointed for a period of 15 months, which was until 28<sup>th</sup> September 2022.

The outcomes of this study were:

- Guidelines for Environmental Audits;
- Guidelines for Registration of Environment Auditor Schemes;
- Guidelines for Registration of EIA Consultant Schemes; and
- Standard Operating Procedures (SOPs), for evaluation of the Application of the Environmental Auditors and EIA Consultants Scheme Registration.

All documents under both studies will be prepared together with the briefing materials for publicity and teaching purposes, including promotional materials in the form of infographics. These documents are expected to be published in 2023.

The planning of the project on Strengthening of Document Guidelines / Environmental Assessment Guidelines is shown in **Figure 3.13**. In 2022, meetings and several Focus Group Discussion (FGD) sessions were carried out, as shown in **Table 3.3**.



Hasil / Output :

- Garispanduan Penempatan Industri / Guideline for Siting and Zoning of Industries
- Garispanduan kepada Pelabur / Investor's Guide
- Garispanduan Prosedur EIA / EIA Procedure Guideline
- PTO Penilaian Laporan EIA / SOP for EIA Review Report
- Bahan taklimat (dwibahasa) berserta video / Briefing material (bilingual) & video
- Bahan pameran berbentuk infografik / Promotion materials in infographic

Rajah 3.13 : Perancangan Pengukuhan Dokumen Panduan / Garis Panduan Penilaian kepada Alam Sekeliling

Figure 3.13 : Planning the Strengthening of Document Guidelines / Environmental Assessment Guidelines

Jadual 3.3 : Senarai Tarikh Mesyuarat / Perbincangan Kumpulan Disasar bagi Projek Pengukuhan Dokumen Panduan / Garis Panduan Penilaian kepada Alam Sekeliling, 2022  
Table 3.3 : Dates of Focus Group Discussions (FGD) for Strengthening of the Document Guidelines / Environmental Assessment Guidelines, 2022

TARIKH / DATE	PERBINCANGAN KUMPULAN DISASAR / FOCUS GROUP DISCUSSIONS
<b>KEMASKINI GARISPANDUAN KEPADA PELABUR DAN GARISPANDUAN PENEMPATAN INDUSTRI / REVIEW OF GUIDELINES FOR INVESTORS AND GUIDELINES FOR SITING OF INDUSTRIES</b>	
15 - 16 Februari 2022 / 15 <sup>th</sup> - 16 <sup>th</sup> February 2022	<ul style="list-style-type: none"> <li>Jabatan Alam Sekitar Ibu Pejabat / Department of Environment Headquarters</li> <li>Jabatan Alam Sekitar Negeri / Department of Environment State Offices</li> </ul>
9 - 10 Mac 2022 / 9 <sup>th</sup> - 10 <sup>th</sup> March 2022	<ul style="list-style-type: none"> <li>Kementerian Perdagangan Antarabangsa dan Industri (MITI) / Ministry of International Trade and Industry (MITI)</li> <li>Lembaga Pembangunan Pelaburan Malaysia (MIDA) / Malaysia Investment Development Authority (MIDA)</li> <li>Jabatan Kerajaan Tempatan (JKT) / Local Government Departments</li> <li>Jabatan Pengairan dan Saliran (JPS) / Department of Irrigation and Drainage (DID)</li> <li>PlanMalaysia Ibu Pejabat / PlanMalaysia Headquarters</li> <li>PlanMalaysia Negeri / PlanMalaysia State Offices</li> <li>Unit Perancang Ekonomi Negeri (UPEN) / State Economic Planning Units</li> <li>Pihak Berkuasa Tempatan (PBT) / Local Authorities</li> <li>Persatuan Industri / Industrial Associations</li> <li>Agensi Pembangunan Wilayah / Regional Development</li> <li>Agencies Jururunding EIA / EIA Consultants</li> <li>Penggerak Projek / Project Proponents</li> </ul>
14 - 16 Jun 2022 / 14 <sup>th</sup> - 16 <sup>th</sup> June 2022	<ul style="list-style-type: none"> <li>Kementerian Perdagangan Antarabangsa dan Industri (MITI) / Ministry of International Trade and Industry (MITI)</li> <li>Lembaga Pembangunan Pelaburan Malaysia (MIDA) / Malaysia Investment Development Authority (MIDA)</li> <li>PlanMalaysia Ibu Pejabat / PlanMalaysia Headquarters</li> <li>Unit Perancang Ekonomi Negeri (UPEN) / State Economic Planning Units</li> <li>Pihak Berkuasa Tempatan (PBT) / Local Authorities</li> <li>Jururunding EIA / EIA Consultants</li> <li>Jabatan Alam Sekitar Ibu Pejabat / Department of Environment Headquarters</li> <li>Jabatan Alam Sekitar Negeri / Department of Environment State Offices</li> </ul>
<b>GARISPANDUAN PROSEDUR EIA DAN PROSEDUR TETAP OPERASI PENILAIAN LAPORAN EIA / EIA GUIDELINES ON PROCEDURES AND STANDARD OPERATING PROCEDURES FOR EIA REVIEW REPORTS</b>	
20 Januari 2022 / 20 <sup>th</sup> January 2022	<ul style="list-style-type: none"> <li>Jabatan Alam Sekitar Ibu Pejabat / Department of Environment Headquarters</li> </ul>
15-16 Februari 2022 / 15 <sup>th</sup> -16 <sup>th</sup> February 2022	<ul style="list-style-type: none"> <li>Jabatan Alam Sekitar Ibu Pejabat / Department of Environment Headquarters</li> <li>Jabatan Alam Sekitar Negeri / Department of Environment State Offices</li> </ul>
9 - 10 Mac 2022 / 9 <sup>th</sup> - 10 <sup>th</sup> March 2022	<ul style="list-style-type: none"> <li>Jabatan Alam Sekitar Ibu Pejabat / Department of Environment Headquarters</li> <li>Jabatan Alam Sekitar Negeri / Department of Environment State Offices</li> <li>Jururunding EIA / EIA Consultants</li> </ul>
14 - 16 Jun 2022 / 14 <sup>th</sup> - 16 <sup>th</sup> June 2022	<ul style="list-style-type: none"> <li>Jabatan Alam Sekitar Ibu Pejabat / Department of Environment Headquarters</li> <li>Jabatan Alam Sekitar Negeri / Department of Environment State Offices</li> <li>Jururunding EIA / EIA Consultants</li> </ul>

Bagi projek Pengukuhan Skim Juruaudit Alam Sekeliling dan Jururunding EIA, perancangan projek adalah seperti di **Rajah 3.14**. Pada tahun 2022, mesyuarat dan beberapa sesi FGD yang telah dilaksanakan adalah seperti di **Jadual 3.4**.

Project planning for 'Strengthening the Environmental Auditor Scheme' and the EIA Consultants is shown in **Figure 3.14**. Meetings and several Focus Group Discussions (FGD) sessions were carried out in 2022 which are shown in **Table 3.4**.



Hasil / Output :

- Garis Panduan Audit Alam Sekeliling / Guidelines for Environmental Audit;
- Garis Panduan Skim Pendaftaran Juruaudit Alam Sekeliling / Guidelines for Environmental Auditor Registration Scheme;
- Garis Panduan Skim Pendaftaran Jururunding EIA / Guidelines for EIA Consultant Registration; dan
- PTO Penilaian Permohonan Skim Pendaftaran Juruaudit Alam Sekeliling dan Skim Pendaftaran Jururunding EIA.
- Bahan taklimat (dwibahasa) berserta video / Briefing material (bilingual) & video
- Bahan pameran berbentuk infografik / Promotion materials in infographic

Rajah 3.14 : Perancangan Pengukuhan Skim Juruaudit Alam Sekeliling dan Jururunding EIA  
Figure 3.14 : Plan for the Strengthening of the Environmental Auditor and EIA Consultants Schemes

Jadual 3.4 : Senarai Tarikh Mesyuarat / Perbincangan Kumpulan Disasar bagi Projek Pengukuhan Skim Juruaudit Alam Sekeliling dan Jururunding EIA, 2022

Table 3.4 : Dates of Focus Group Discussions (FGD) on Project to Reinforce the Environmental Auditor Scheme and EIA Consultants, 2022

TARIKH / DATE	PERBINCANGAN KUMPULAN DISASAR / FOCUS GROUP DISCUSSION
17-18 Februari 2022 / 17 <sup>th</sup> - 18 <sup>th</sup> February 2022	<ul style="list-style-type: none"> <li>• Jabatan Alam Sekitar Ibu Pejabat / Department of Environment Headquarters</li> <li>• Jabatan Alam Sekitar Negeri / Department of Environment State Offices</li> <li>• Juruaudit Alam Sekeliling / Environmental Auditors</li> <li>• Jururunding EIA / EIA Consultants</li> <li>• Penggerak Projek / Project Proponents</li> <li>• Agensi Kerajaan / Government Agencies</li> </ul>
26 April 2022 / 26 <sup>th</sup> April 2022	<ul style="list-style-type: none"> <li>• Juruaudit Alam Sekeliling / Environmental Auditors</li> <li>• Jururunding EIA / EIA Consultants</li> </ul>
7-9 Jun 2022 / 7 <sup>th</sup> - 9 <sup>th</sup> June 2022	<ul style="list-style-type: none"> <li>• Jabatan Alam Sekitar Ibu Pejabat / Department of Environment Headquarters</li> <li>• Jabatan Alam Sekitar Negeri / Department of Environment State Offices</li> </ul>
24 Jun 2022 / 24 <sup>th</sup> June 2022	<ul style="list-style-type: none"> <li>• Juruaudit Alam Sekeliling / Environmental Auditors</li> <li>• Jururunding EIA / EIA Consultants</li> </ul>
1 Julai 2022 / 1 <sup>st</sup> July 2022	<ul style="list-style-type: none"> <li>• Juruaudit Alam Sekeliling / Environmental Auditors</li> <li>• Jururunding EIA / EIA Consultants</li> </ul>
2 - 3 Ogos 2022 / 2 <sup>nd</sup> - 3 <sup>rd</sup> August 2022	<ul style="list-style-type: none"> <li>• Jabatan Alam Sekitar Ibu Pejabat / Department of Environment Headquarters</li> <li>• Jabatan Alam Sekitar Negeri / Department of Environment State Offices</li> <li>• Juruaudit Alam Sekeliling / Environmental Auditors</li> <li>• Jururunding EIA / EIA Consultants</li> <li>• Penggerak Projek / Project Proponents</li> <li>• Agensi Kerajaan / Government Agencies</li> </ul>

Manakala bagi projek Kajian Kebolehlaksanaan *Strategic Environmental Assessment (SEA)* Di Peringkat Penyediaan Polisi Pembangunan Di Malaysia, satu seminar telah dianjurkan pada 26 Oktober 2022 bertajuk '*Strategic Environmental Assessment (SEA) di Malaysia*' yang telah diadakan pada 26 Oktober 2022.

Sebanyak empat (4) kertas kerja telah diadakan bagi memberi pendedahan, pemahaman serta mendapat pandangan berkaitan pelaksanaan SEA di Malaysia. Seminar dihadiri oleh pegawai-pegawai JAS dan kumpulan sasar terdiri daripada agensi-agensi yang merancang dasar dan polisi pembangunan di Malaysia. Empat (4) kertas kerja yang telah dibentang bagi mencapai objektif ini adalah seperti di **Jadual 3.5**.

Bagi skop Pementapan Penguatkuasaan EIA, beberapa dokumen dan video telah disediakan dan beberapa bengkel telah dilaksanakan bagi memperkukuh perundangan berkaitan penguatkuasaan EIA seperti di **Jadual 3.6**.

Under the Feasibility Study of Strategic Environmental Assessment (SEA) at the Development Policy Preparation Stage in Malaysia project, a seminar was held on 26<sup>th</sup> October 2022 entitled '*Strategic Environmental Assessment (SEA) in Malaysia*'.

A total of four (4) paper work were given to give an exposure, understanding and to get opinion the implementation of SEA in Malaysia. Regarding Seminar were attended by DOE officer and the target group from the agencies that plan and develop policies in the Malaysia. A total of four (4) paper work were present to achieve this objective, as shown in **Table 3.5**.

Under the scope of EIA Enforcement Strengthening Project, several documents and videos were prepared and several workshops were held to strengthen legislation related to EIA enforcement as in **Table 3.6**.

Jadual 3.5: Senarai Pembentangan Semasa Seminar '*Strategic Environmental Assessment (SEA) di Malaysia*', 26 Oktober 2022.

Table 3.5 : List of Presentations during Seminar of '*Strategic Environmental Assessment (SEA) in Malaysia*' 26<sup>th</sup> October 2022.

Pembentang / Presenter	Tajuk Pembentangan / Presentation Title
YBhg. Datin Paduka Dr.Dahlia binti Rosly Persatuan SIA Malaysia / <i>Malaysian Association Of SIA</i>  (Mantan Ketua Pengarah PlanMalaysia / <i>Former Director-General, PlanMalaysia</i> )	Penilaian Alam Sekitar Secara Strategik : Tinjauan Antarabangsa / <i>Strategic Environmental Assessment: An International Overview</i>
TPr Ishak bin Ariffin Iktisas Environment Sdn. Bhd	Pengalaman Pelaksanaan SEA Di Malaysia / <i>An Experience in the Implementation of SEA in Malaysia</i>
Dr. Halimatun Saadiah binti Hashim Majlis Penasihat / <i>Advisory Council</i> Pertubuhan Perancang Malaysia / <i>Malaysian Institute Of Planner</i>	Mainstreaming Environmental Considerations in Policy, Plan, & Programmes (PPPs) through Strategic Environmental Assessment (SEA) in Malaysia
En. Mohd Sukuran bin Taib Pengarah / <i>Director</i> Bahagian Rancangan Fizikal Negara / <i>National Physical Plan Division</i> PLANMalaysia / <i>PLANMalaysia</i>	Perundangan Pelaksanaan SEA Di Malaysia / <i>Legislation of SEA Implementation in Malaysia</i>

Jadual 3.6 : Output bagi Projek Pemantapan Penguatkuasaan EIA  
Table 3.6 : Outputs for the EIA Enforcement Strengthening Project

Output / Output	Perincian / Details
Dokumen / Document	<ul style="list-style-type: none"> <li>Dokumen Prosedur Tetap Operasi (PTO) Penguatkuasaan EIA / EIA Enforcement Standard Operating Procedure (SOP) Document</li> <li>Buku Mewah - Kawalan Hakisan Dan Kelodakan Bagi Tanaman Sayuran Di Kawasan Tanah Tinggi / Coffee Table Book - Erosion And Siltation Control For Vegetable Crops In Highland Areas</li> </ul>
Video / Video	<ul style="list-style-type: none"> <li>Video Montaj untuk Sistem SPEIA, Video Ringkas Penggunaan Sistem SPEIA untuk Pengguna Luar dan JAS Negeri / Montage Video for SPEIA System, Brief Video on the Usage of SPEIA System for External Users and DOE State Officers</li> <li>Video penguatkuasaan pemeriksaan di dalam badan air oleh Pasukan Penyelam JAS / Enforcement video of inspections in water bodies by the DOE Diving Team</li> </ul>
Bengkel / Workshop	<ul style="list-style-type: none"> <li>Bengkel Amali SPEIA Bersama JAS Negeri, 28 - 30 September 2022 / Hands - On Workshop on SPEIA With DOE State Offices, 28<sup>th</sup> - 30<sup>th</sup> September 2022</li> <li>Bengkel Pemantapan Penguatkuasaan EIA - Prosedur Tetap Operasi (PTO) Skuba, 4 - 5 Julai 2022 / Workshop on EIA Enforcement Consolidation – Standard Operating Procedure (SOP) of Scuba, 4<sup>th</sup> - 5<sup>th</sup> July 2022</li> <li>Bengkel Pensijilan Penyelaman Air Terbuka Untuk Pasukan Penyelam Baru JAS, 20 - 22 Julai 2022 / Workshop on Open Water Diving Certification For New DOE Diver Team, 20<sup>th</sup> - 22<sup>nd</sup> July 2022</li> <li>Bengkel Pensijilan Lanjutan Bagi Pasukan Penyelam JAS Sedia Ada – Penyelaman Air Terbuka Lanjutan, 20 - 22 Julai 2022 / Workshop on Advanced Certification for Existing DOE Diving Team – Advance Open Water Diving, 20<sup>th</sup> - 22<sup>nd</sup> July 2022</li> <li>Bengkel Pemantapan Teknikal Bagi Penyelam Komersil (Penyelaman Pesisir Pantai) &amp; Penyelaman Fotografi Dalam Air, 3 - 5 Ogos 2022 / Workshop on Technical Strengthening for Commercial Divers (Inshore diving) &amp; Underwater Photographer Diving, 3<sup>rd</sup> - 5<sup>th</sup> August 2022</li> <li>Bengkel Memuktamadkan Dokumen Panduan Penguatkuasaan EIA-Prosedur Tetap Operasi (PTO) Skuba, 19 - 21 September 2022 / Workshop on Finalisation of the EIA Enforcement Document Guidelines -Standard Operating Procedures (SOP) of Scuba Diving, 19<sup>th</sup> - 21<sup>st</sup> September 2022</li> <li>Bengkel Memuktamadkan Dokumen Panduan Penguatkuasaan EIA-Prosedur Tetap Operasi (PTO) Skuba, 19 - 21 September 2022 / Workshop on Finalization on the EIA Enforcement Guidance Document-Standard Operating Procedures (SOP) of Scuba, 19<sup>th</sup> - 21<sup>st</sup> September 2022</li> </ul>



Seminar Penilaian Alam Sekitar Strategik (SEA) di Malaysia, 26 Oktober 2022  
Seminar on Strategic Environmental Assessment (SEA) in Malaysia, 26<sup>th</sup> October 2022



Bengkel Pengukuhan Skim Juruaudit Alam Sekeliling dan Jururunding EIA, 2 - 3 Ogos 2022  
Workshop on Reinforcing the Environmental Auditor and EIA Consultant Schemes, 2<sup>nd</sup> - 3<sup>rd</sup> August 2022



Bengkel Semakan Pengukuhan Dokumen Panduan / Garis Panduan Penilaian Kepada Alam Sekeliling,  
14 - 16 Jun 2022  
Review Workshop on The Reinforcement of Document Guidelines / Environmental Assessment  
Guidelines, 14<sup>th</sup> - 16<sup>th</sup> June 2022



Bengkel Pemantapan Teknikal Bagi Penyelam Komersil (Penyelaman Pesisir Pantai) & Penyelaman Fotografi Dalam Air, 3 - 5 Ogos 2022

Workshop on Technical Empowerment for Commercial Divers (Inshore diving) & Underwater Photographer Diving, 3<sup>rd</sup> - 5<sup>th</sup> August 2022

### ISU PROJEK EIA

Bencana geologi yang berlaku pada 4 Julai 2022 di Sungai Kupang, Baling, Kedah telah mengakibatkan tiga (3) orang terkorban, 17 buah rumah musnah atau rosak, 3,546 penduduk terjejas dan kerugian dianggarkan berjumlah RM25.91 juta. Apa yang berlaku adalah hujan lebat lampau di kawasan tanah tinggi Gunung Inas telah mencetus kejadian puluhan tanah runtuh secara serentak, diikuti oleh fenomena aliran puing di empat (4). Cabang sungai utama, diakhiri dengan tragedi banjir puing dan banjir lumpur di kawasan dataran rendah iaitu Kampung Iboi dan beberapa kampung di hilirnya.

Punca kejadian ialah fenomena geologi langka iaitu Aliran Puing, sama seperti yang terjadi di Sungai Lubok Panjang, Jerai; Sungai Lui, Hulu Langat; dan Sungai Telemung, Bentong pada tahun 2021. Dalam tragedi ini, kuasa pemusnah bencana banjir puing ditingkatkan lagi oleh kandungan kelodak yang tinggi akibat hakisan aktif di Ladang Hutan Kompartmen 8 Hutan Simpan Kekal Gunung Inas. Aliran puing ialah fenomena proses geologi berangkai yang bermula dengan tanah runtuh, disusuli dengan aliran puing, banjir puing dan banjir lumpur.

JAS telah terlibat menjadi salah satu agensi di dalam Pasukan Khas Siasatan Bencana – Tragedi Baling 2022 yang diketuai oleh Kementerian Tenaga dan Sumber Asli (KeTSA).

Laporan Kajian Bencana Geologi Banjir Puing 2022 Sungai Kupang, Baling, Kedah telah diterbitkan pada 5 Ogos 2022 oleh Kementerian Tenaga dan Sumber Asli (KeTSA).

### EIA PROJECT ISSUES

The geological disaster that occurred on 4<sup>th</sup> July 2022 in Sungai Kupang, Baling, Kedah resulted in three (3) deaths, 17 houses destroyed or damaged, 3,546 residents injured and losses estimated at RM25.91 million. The heavy rains in the highlands of Gunung Inas triggered landslides simultaneously, followed by the phenomenon of debris flows in four (4) main river branches, ending with the tragedy of debris floods and mud floods in the low-lying areas, i.e. Kampung Iboi and some of villages at downstream.

The cause of the incident is the occurrence of a rare geological phenomenon called Debris Flow, similar to that which occurred in Sungai Lubok Panjang, Jerai; Lui River, Hulu Langat; and Sungai Telemung, Bentong in 2021. In this tragedy, the destructive power of the debris flood disaster was further increased by the high silt content due to active erosion in the Forest Farm of Compartment 8 of the Gunung Inas Permanent Forest Reserve. Debris flows are phenomenon of series geological processes that begin with landslides, followed by debris flows, debris floods and mud floods.

DOE has been involved as one of the agencies in the Special Disaster Investigation Team - Baling Tragedy 2022 led by the Ministry of Energy and Natural Resources (KeTSA).

The 2022 Debris Flood Geological Disaster Study Report of Sungai Kupang, Baling, Kedah was published on 5<sup>th</sup> August 2022 by the Ministry of Energy and Natural Resources (KeTSA).



Gambaran Sekitar Kawasan yang Terjejas  
Picture of Effected Area

## LIBAT URUS STRATEGIK DENGAN PIHAK BERKEPENTINGAN

Pada tahun 2022, JAS telah mengadakan beberapa Libat Urus Strategik dengan pihak berkepentingan antaranya bersama pihak Jabatan Kerja Raya Malaysia (JKR) dan PLANMalaysia. Sesi keterlibatan ini diadakan bagi menjalinkan kesefahaman dalam penerusan menambahbaik serta memudahcara perkhidmatan bagi prosedur dan pemprosesan Laporan Penilaian Kesan Kepada Alam Sekeliling (EIA) seterusnya membantu memacu pembangunan bagi projek-projek kerajaan secara lestari.

## STRATEGIC ENGAGEMENT WITH STAKEHOLDER

In 2022, DOE held some strategic engagement sessions with stakeholders including the Malaysian Public Works Department (JKR) and PLANMalaysia. The engagement session was held to establish an understanding in continuing improvement and facilitating the delivery of procedures and processing of the Environmental Impact Assessment Report (EIA) thus helping to spur the development of government projects in a sustainable manner.



Sesi Libat Urus antara JAS dan PLANMalaysia, 25 April 2022  
An Engagement Session with DOE and PLANMalaysia, 25<sup>th</sup> April 2022



Sesi Libat Urus antara JAS dan JKR, 13 September 2022  
An Engagement Session with DOE and JKR, 13<sup>th</sup> September 2022

## KUNJUNGAN HORMAT

Pada 9 Ogos 2022, Jabatan Alam Sekitar telah menerima kunjungan hormat daripada EXCO Kerajaan Negeri Terengganu dan Pejabat Tanah dan Galian (PTG) Negeri Terengganu yang diketuai oleh YB Dato' Tengku Hassan bin Tengku Omar (EXCO Perdagangan, Perindustrian, Pembangunan Wilayah dan Kesejahteraan Pentadbiran). Turut hadir adalah Pengarah PTG Terengganu YBhg. Dato' Zulkifli bin Ali dan Pengarah PLANMalaysia Negeri Terengganu, Dr. Abu Bakar bin Mat. Kunjungan ini diadakan pada bertujuan untuk membincangkan isu berkaitan aktiviti – aktiviti yang tertakluk kepada penyediaan Laporan EIA di bawah Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015 seperti Aktiviti Perlombongan. Sesi perbincangan kunjungan hormat ini telah dipengerusikan oleh Ketua Pengarah Alam Sekitar Malaysia, Encik Wan Abdul Latiff bin Wan Jaffar.


## COURTESY VISIT

On 9<sup>th</sup> August 2022, the Department of Environment received a courtesy visit from the Terengganu State EXCO and the Terengganu State Land and Mines Office (PTG) which is led by YB Dato' Tengku Hassan bin Tengku Omar (EXCO for Trade, Industry, Regional Development and Administrative Welfare). Also present was Terengganu PTG Director YBhg. Dato' Zulkifli bin Ali and Director of PLANMalaysia Terengganu, Dr. Abu Bakar bin Mat. This visit was held to discuss issues related to activities that are subject to the preparation of an EIA Report under the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 such as Mining Activities. The discussion was chaired by the Director General of Environment Malaysia, Mr. Wan Abdul Latiff bin Wan Jaffar.



Kunjungan Hormat daripada EXCO Kerajaan Negeri Terengganu dan Pejabat Tanah dan Galian (PTG) Negeri Terengganu

A Courtesy Visit from the Terengganu State EXCO and the Terengganu State Land and Mines Office (PTG)

 Kuala Lipis, Pahang, Malaysia

CHAPTER 4

# B A B 4

## PENGAWASAN DAN PENGUATKUASAAN MONITORING AND ENFORCEMENT



## PENGAWASAN DAN PENGUATKUASAAN MONITORING AND ENFORCEMENT

### LAWATAN LAPANGAN KAJIAN SIASATAN NOTIFICATION OF POLLUTION EVENT (NPE)

Seksyen Audit Beban Pencemaran (SABP), Bahagian Air dan Marin, Jabatan Alam Sekitar Ibu Pejabat telah menjalankan Program Kajian Siasatan bagi stesen pemantauan kualiti air yang menerima kekerapan amaran yang tinggi.

Pada tahun 2022, SABP dengan kerjasama pihak PSTW telah menjalankan kajian lapangan di stesen automatik CR12W, Sg. Klang pada 11 Mac 2022 berdasarkan kriteria yang telah digariskan di dalam PTO NPE Sungai di bawah Program EQMP.

Objektif kajian lapangan ini dijalankan adalah untuk:

- Mengenal pasti punca berlakunya amaran yang kerap bagi parameter Oksigen Terlarut (DO); dan
- Mengenal pasti punca pencemaran signifikan yang menyumbang kepada insiden tersebut.



Stesen Pemantauan Kualiti Air Automatik CR12W,  
Sg. Klang  
Automatic Water Quality Monitoring Station  
CR12W, Sg. Klang

### INVESTIGATIVE STUDY NOTIFICATION OF POLLUTION EVENT (NPE) SITE VISIT

The Pollution Load Audit Section (SABP), Water and Marine Division, Department of Environment, Headquarters has carried out an Investigative Study on water quality monitoring stations that frequently receive high alert warnings.

In 2022, SABP in collaboration with PSTW conducted a field study at the automatic station CR12W, Sg. Klang on 11<sup>th</sup> March 2022 based on criteria stated in river NPE under EQMP Programme.

The objectives of this field study are to:

- Identify the cause of frequent warnings for Dissolved Oxygen (DO) parameters; and
- Identify the source of significant pollution that has contributed to the incident.



Analisis Pengukuran Kualiti Air Secara In Situ  
Sedang Dijalankan bersama Pihak PSTW  
Analysis of Water Quality Measurement (In Situ)  
Being Carried Out Together with PSTW

### **BENKEL DRAF PINDAAN PERATURAN- PERATURAN KUALITI ALAM SEKELILING (EFLUEN PERINDUSTRIAN) 202X DI BAWAH PERUNTUKAN PROJEK PEMBANGUNAN RMKe-12**

Pada tahun 2022, Seksyen Audit Beban Pencemaran (SABP), Bahagian Air dan Marin, Jabatan Alam Sekitar Ibu Pejabat telah menjalankan tiga (3) siri bengkel bagi Draf Pindaan Peraturan- Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 202X Di Bawah Peruntukan Projek Pembangunan RMKe-12.

Objektif bengkel ini dijalankan adalah untuk:

- i. Mengenal pasti dan merangka strategi pelaksanaan program semakan semula peraturan;
- ii. Menjalankan penilaian terhadap perbincangan yang telah dijalankan pada bengkel sebelum ini serta input dari pakar; dan
- iii. Merangka draf pindaan yang akan di perhalusi oleh peringkat tertinggi untuk diteliti atau di perhalusi lagi sebelum dimuktamadkan.

### **WORKSHOP ON ENVIRONMENTAL QUALITY (INDUSTRIAL EFFLUENT) REGULATIONS 202X AMENDMENT OF THE DRAFT UNDER ALLOCATION OF THE RMKe-12 DEVELOPMENT PROJECT**

In 2022, the Pollutant Load Audit Section (SABP), Water and Marine Division, Environment Department of the Headquarters conducted three (3) series of workshops for the Amendment Draft of the Environmental Quality (Industrial Effluent) Regulations 202X under the RMKe-12 Development Project Allocation.

The objectives of this workshop were to:

- i. Identify and formulate a strategy for the implementation of the program to revise the rules;
- ii. Carry out an evaluation of the discussions that have been carried out in previous workshops as well as input from experts; and
- iii. Draw up draft amendments that will be refined by the highest level to be examined or refined again before finalisation.



Peserta Bengkel Siri 1, Putrajaya.  
Participant of Workshop Series 1, Putrajaya



Peserta Bengkel Siri 2, Kota Bharu, Kelantan  
Participant of Workshop Series 2, Kota Bharu, Kelantan



Peserta Bengkel Siri 3, Institut Alam Sekitar Malaysia (EiMAS)  
Participant of Workshop Series 3, Environment Institute of Malaysia (EiMAS)

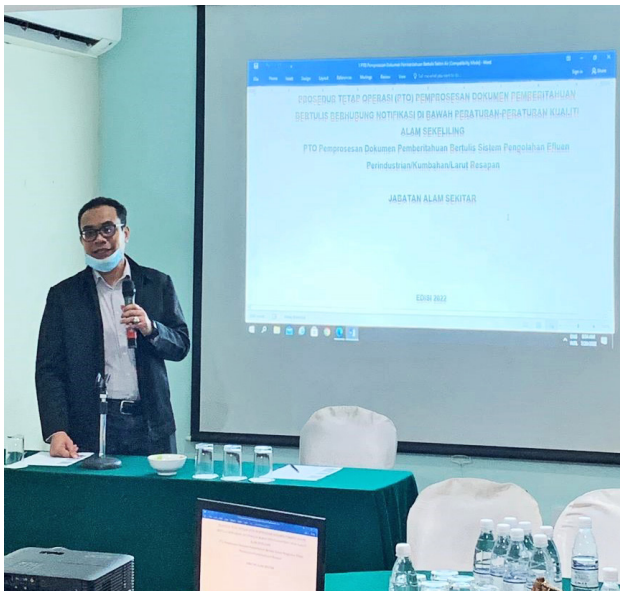
## PERBINCANGAN PEMBANGUNAN SISTEM NOTIFIKASI KAWALAN PENCEMARAN AIR DI BAWAH AGENDA MESYUARAT JAWATANKUASA ANTI RASUAH (JAR)

Seksyen Audit Beban Pencemaran (SABP), Bahagian Air dan Marin, Jabatan Alam Sekitar Ibu Pejabat juga telah dipertanggungjawabkan bagi menjalankan menyelaraskan pembangunan Sistem Notifikasi Kawalan Pencemaran Air yang mana perkara ini turut dipantau daripada semasa ke semasa dalam Mesyuarat Jawatankuasa Anti Rasuah (JAR).

Perbincangan ini dijalankan bersama dengan bengkel bagi Draf Pindaan Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 202X Di Bawah Peruntukan Projek Pembangunan RMKe-12.

Objektif perbincangan ini dijalankan adalah untuk:

- i. Mengenal pasti dan merangka strategi pelaksanaan pembangunan program;
- ii. Mengadakan perbincangan bagi menilai penambahbaikan dan cadangan sistem; dan
- iii. Merangka draf awalan bagi PTO pelaksanaan system untuk diperhalusi.



Taklimat daripada Ketua Kursus mengenai Perjalanan Program  
Briefing from the Course Leader on Programme

## DISCUSSION OF THE DEVELOPMENT OF THE WATER POLLUTION CONTROL NOTIFICATION SYSTEM UNDER THE ANTI-CORRUPTION COMMITTEE (JAR) MEETING AGENDA

The Pollution Load Audit Section (SABP), Water and Marine Division, Headquarters Environment Department has also been responsible for coordinating the development of the Water Pollution Control Notification System, which is also monitored from time to time in the Anti-Corruption Committee Meetings (JAR).

This discussion was conducted in conjunction with the workshop for the Draft Amendment of Environmental Quality (Industrial Effluent) Regulations 202X Under the RMKe-12 Development Project Allocation.

The objectives of this discussion were to:

- i. Identify and formulate programme development implementation strategies;
- ii. Hold discussions to evaluate system improvements and suggestions; and
- iii. Prepare a preliminary draft for PTO system implementation to be refined.



Perbincangan Berkumpulan Peserta Program  
Group Discussion by Program Participants

**LAWATAN KERJA BAHAGIAN AIR DAN MARIN, JABATAN ALAM SEKITAR KE JABATAN KIMIA MALAYSIA PETALING JAYA - SESI PERKONGSIAN ILMU MENGENAI ANALISIS LOGAM BERAT BAGI SAMPEL AIR LAUT (AMBIEN)**

Bahagian Air dan Marin, Ibu Pejabat Jabatan Alam Sekitar Putrajaya telah mengadakan lawatan kerja ke Seksyen Logam Surihan, Bahagian Kualiti Alam Sekitar, Jabatan Kimia Malaysia Petaling Jaya pada 15 November 2022 untuk menyertai sesi perkongsian ilmu mengenai analisis logam berat bagi sampel air laut (ambien) dengan menggunakan peralatan Inductively Coupled Plasma-Mass Spectrometry (ICP-MS). Sesi lawatan kerja ini telah diketuai oleh Encik Rosli bin Osman, Pengarah Bahagian Air dan Marin (BAM) yang disertai oleh sembilan (9) orang pegawai BAM, lima (5) orang penyelidik serta pegawai daripada Pusat Pencerapan Bumi, Universiti Kebangsaan Malaysia. Jabatan Alam Sekitar (JAS) amat menghargai kesudian Jabatan Kimia Malaysia Petaling Jaya yang diketuai oleh Dr. Nazarudin bin Mohamed@Ibrahim, Pengarah Bahagian Kualiti Alam Sekitar untuk menerima rombongan JAS dan berkongsi ilmu mengenai analisis logam berat di samping mengeratkan kerjasama antara JAS dan pihak Jabatan Kimia Malaysia.

**WORKING VISIT OF WATER AND MARINE DIVISION, DEPARTMENT OF ENVIRONMENT TO DEPARTMENT OF CHEMISTRY MALAYSIA PETALING JAYA - KNOWLEDGE SHARING SESSION ON HEAVY METAL ANALYSIS FOR SEA WATER SAMPLES (AMBIENT)**

The Water and Marine Division, Department of Environment (DOE) Headquarters organised a working visit to the Environmental Quality Division, Department of Chemistry on 15<sup>th</sup> November 2022. The purpose of the visit was to participate in a knowledge sharing session on heavy metal analysis for sea water samples (ambient) by using Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) equipment. This working visit session was led by Encik Rosli bin Osman, Director of the Water and Marine Division (BAM) who was joined by nine (9) BAM officers, five (5) researchers and officers from the Centre for Earth Observation, National University of Malaysia. The Department of Environment (DOE) greatly appreciates the willingness of the Department of Chemistry led by Dr. Nazarudin bin Mohamed@Ibrahim, Director of the Environmental Quality Division to receive the DOE delegation and share the knowledge on heavy metal analysis in addition to strengthening cooperation between the DOE and the Department of Chemistry Malaysia.



Lawatan Kerja Bahagian Air Dan Marin, JAS ke Jabatan Kimia Malaysia  
Working Visit from Water and Marine Division, DOE to Department of Chemistry Malaysia

### PROGRAM LAWATAN KERJA KE STESEN PENGAWASAN KUALITI AIR MARIN AUTOMATIK (CM02M) PULAU UN DAN, MELAKA DI BAWAH PROGRAM PENGAWASAN KUALITI ALAM SEKITAR (EQMP)

Bahagian Air dan Marin, Jabatan Alam Sekitar (JAS) Ibu Pejabat telah mengadakan Program Lawatan Kerja Ke Stesen Pengawasan Kualiti Air Marin Automatik (CM02M) Pulau Undan, Melaka di bawah Program Pengawasan Kualiti Alam Sekitar (EQMP) pada 21 September 2022 dengan kerjasama Seksyen Kawalselia Konsesi dan Program Pengawasan. Program tersebut disertai oleh Yang Berusaha Encik Rosli bin Osman, Pengarah Bahagian Air dan Marin, JAS Ibu Pejabat dan 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 Automatik di bawah Program EQMP.

### FIELD VISIT PROGRAM TO THE CONTINUOUS MARINE WATER QUALITY MONITORING STATION (CM02M) PULAU UN DAN, MELAKA UNDER THE ENVIRONMENTAL QUALITY MONITORING PROGRAM (EQMP)

The Water and Marine Division, Department of Environment (DOE) Headquarters, organized a Field Visit Program to the Continuous Marine Water Quality Monitoring Station (CM02M) at Pulau Undan, Melaka, under the Environmental Quality Monitoring Program (EQMP) on 21<sup>st</sup> September 2022, in collaboration with the Concession and Supervisory Program Regulation Section. The program was attended by Encik Rosli bin Osman, Director of the Water and Marine Division, DOE Headquarters, and officers from the Water and Marine Division.

The purpose of the field visit program was to conduct a technical inspection of the Continuous Marine Water Quality Monitoring Station under the EQMP.



Lawatan Kerja Ke Stesen Pengawasan Kualiti Air Marin Automatik di Pulau Undan, Melaka  
Field Visit Program to the Continuous Marine Water Quality Monitoring Station at Pulau Undan, Melaka

## PROGRAM KAWALAN PENCEMARAN DAN PENGURUSAN TINDAK BALAS TUMPAHAN MINYAK

Pada tahun 2022, Bahagian Air & Marin, Jabatan Alam Sekitar (JAS) telah menganjurkan sepuluh (10) program kawalan pencemaran dan pengurusan tindak balas tumpahan minyak (**Jadual 4.1**). Program ini telah dihadiri oleh pegawai JAS, agensi-agensi kerajaan dan swasta di bawah Jawatankuasa Kebangsaan Kawalan Tumpahan Minyak (JKKTM) atau nama baharu Jawatankuasa Operasi 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 dalam pengemaskinian Rancangan Kontingensi Kebangsaan Kawalan Tumpahan Minyak (RKKKTM) yang telah dijenamakan semula sebagai Pelan Kontingensi Tumpahan Minyak Malaysia dengan nama singkatan tunggal MOSCoP (*Malaysia Oil Spill Contingency Plan*) serta memuktamadkan Pelan Tindak Balas Hidupan Liar yang terjejas oleh Minyak Malaysia dengan nama singkatan tunggal MOWReP (*Malaysia Oiled Wildlife Response Plan*);

## OIL SPILL POLLUTION CONTROL AND RESPONSE MANAGEMENT PROGRAM

In 2022, the Marine and Water Division organised ten (10) programmes on oil spill pollution control and response management (**Table 4.1**). Officers from the Department of Environment (DOE), government and private agencies under the National Oil Spill Control Committee (NOSCC) or its new name, the National Operation Committee (NOC), as well as other stakeholders, attended these programmes.

The objectives of the programs were :

- i. To obtain input / comments from Committee members in updating the National Oil Spill Contingency Plan (NOSCP), which has now been rebranded as the Malaysia Oil Spill Contingency Plan (MOSCoP), and to finalise the Malaysia Oiled Wildlife Response Plan (MOWReP);



Bengkel Sesi Libat Urus Pemegang Taruh Siri 3 bagi Kajian Pembentukan Draf Peraturan Kawalan Pencemaran Minyak di Laut dan Kadar Levi Alam Sekitar pada 9 - 10 Februari 2022

Stakeholders Engagement Workshop Series 3 for the Study on Development of Draft Regulations for Oil Pollution Control at Sea and Environmental Levy Rate on 9<sup>th</sup> - 10<sup>th</sup> February 2022

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>ii. Mendapatkan input/ ulasan daripada pemegang taruh yang terdiri daripada agensi kerajaan dan swasta dalam projek Rancangan Malaysia Ke-12 iaitu Kajian Pembentukan Draf Peraturan Kawalan Pencemaran Minyak di Laut dan Kadar Levi Alam Sekitar;</li> <li>iii. Memberi latihan dan pendedahan kepada pegawai JAS dan ahli Jawatankuasa dalam operasi tindak balas melawan tumpahan minyak serta pengurusan tuntutan dan pampasan bagi kejadian tumpahan minyak di perairan Malaysia; dan</li> <li>iv. Memberi latihan <i>hands-on</i> penggunaan <i>Hydrocarbon Fingerprinting System (HyFiS)</i> kepada pegawai JAS.</li> </ul> | <ul style="list-style-type: none"> <li>ii. To obtain input/ comment from stakeholders comprising government and private agencies in the 12<sup>th</sup> Malaysia Plan: The Study Project in Drafting Regulations on Oil Pollution Control at the Marine and the Rate of Environmental Levy;</li> <li>iii. To train and provide exposure to the officers from the Department of Environment (DOE) and the Committee Members to oil spill response operations, as well as the management of claims and compensation for oil spill incidents within Malaysian waters; and</li> <li>iv. To give hands-on training on the use of Hydrocarbon Fingerprinting System (HyFiS) to the DOE officers.</li> </ul> |
|--|---|

Jadual 4.1 : Tarikh Pelaksanaan Program  
Table 4.1 : The Date of Programs

BIL NO	PROGRAM ATAU BENGKEL PROGRAM OR WORKSHOP	TARIKH DATE
1	Bengkel Sesi Libat Urus Pemegang Taruh Siri 3 dan 4 Bagi Kajian Pembentukan Draf Peraturan Kawalan Pencemaran Minyak Di Laut Dan Kadar Levi Alam Sekitar/ Stakeholders Engagement Workshop Series 3 and 4 for The Study on Development of Draft Regulations for Oil Pollution Control at Sea and Environmental Levy Rate	Siri 3: 9 - 10 Feb 2022 Siri 4: 28 - 30 Mac 2022/ Series 3: 9 <sup>th</sup> - 10 <sup>th</sup> Feb 2022 Series 4: 28 <sup>th</sup> - 30 <sup>th</sup> March 2022
2	Bengkel Libat Urus Mekanisma Kawalan Tumpahan Minyak Siri 1/2022 Workshop on Oil Spill Control Mechanism Series 1/2022	15 - 17 Mac 2022/ 15 <sup>th</sup> - 17 <sup>th</sup> March 2022
3	Bengkel Hands-On Penggunaan Hydrocarbon Fingerprinting System (HyFiS)/ Hands-on Workshop on the Use of Hydrocarbon Fingerprinting System (HyFiS)	28 - 29 Jun 2022/ 28 <sup>th</sup> - 29 <sup>th</sup> June 2022
4	Bengkel Oiled Wildlife Response Wilayah Timur Siri 1 Workshop on Oiled Wildlife Response Eastern Region Series 1	19 - 21 Julai 2022/ 19 <sup>th</sup> - 21 <sup>st</sup> July 2022
5	Webinar Pengurusan 'Produced Water'/ Webinar on Produced Water Management	4 Ogos 2022/ 4 <sup>th</sup> Aug 2022
6	Bengkel Oiled Wildlife Response Wilayah Selatan Siri 2 Workshop on Oiled Wildlife Response Southern Region Series 2	22 - 25 Ogos 2022/ 22 <sup>nd</sup> - 25 <sup>th</sup> Aug 2022
7	Bengkel Pengharmonian dan Terjemahan Pelan MOSCoP dan Pelan MOWReP/ Workshop for Harmonisation and Translation of MOSCoP Plan and MOWReP Plan	19 - 22 Sept 2022/ 19 <sup>th</sup> - 22 <sup>nd</sup> Sept 2022/
8	Bengkel Pemahaman Fungsi Hydrocarbon Fingerprinting System (HyFiS) Di Malaysia Workshop on Understanding the Function of Hydrocarbon Fingerprinting System (HyFiS) in Malaysia	27 - 29 Sept 2022/ 27 <sup>th</sup> - 29 <sup>th</sup> Sept 2022
9	Bengkel Oiled Wildlife Response Wilayah Sarawak Siri 3 Workshop on Oiled Wildlife Response Sarawak Region Series 3	10 - 13 Okt 2022/ 10 <sup>th</sup> - 13 <sup>th</sup> Oct 2022 2022
10	Bengkel Latihan Penggunaan Aplikasi Oilmap For Oil Spill Trajectory/ Training Workshop on the Used of Oilmap For Oil Spill Trajectory Application	19 - 21 Okt 2022/ 19 <sup>th</sup> - 21 <sup>st</sup> Oct 2022



Sesi Libat Urus Pemegang Taruh Siri 4 bagi Kajian Pembentukan Draf Peraturan Kawalan Pencemaran Minyak di Laut dan Kadar Levi Alam Sekitar pada 28 - 30 Mac 2022  
Stakeholders Engagement Workshop Series 4 for the Study on Development of Draft Regulations for Oil Pollution Control at Sea and Environmental Levy Rate on 28<sup>th</sup> - 30<sup>th</sup> March 2022



Bengkel Mekanisma Kawalan Tumpahan Minyak Siri 1/2022 pada 15 - 17 Mac 2022  
Workshop on Oil Spill Control Mechanism Series 1/2022 on 15<sup>th</sup> - 17<sup>th</sup> March 2022



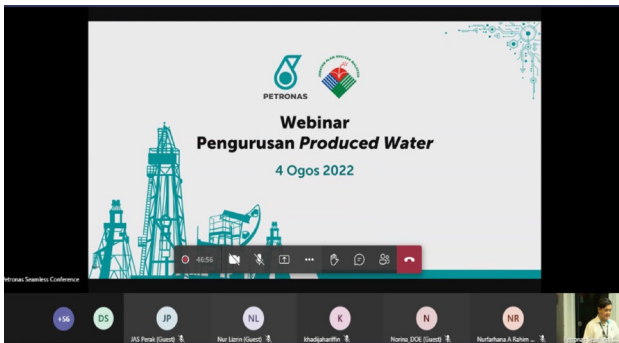
Bengkel Hands-On Penggunaan Hydrocarbon Fingerprinting System (HyFiS) pada 28 - 29 Jun 2022

Hands-on Workshop on the Use of a Hydrocarbon Fingerprinting System (HyFiS) on 28<sup>th</sup> - 29<sup>th</sup> June 2022



Bengkel Oiled Wildlife Response Wilayah Timur Siri 1 telah Djalankan pada 19 - 21 Julai 2022

Workshop on Oiled Wildlife Response Eastern Region Series 1 on 19<sup>th</sup> - 21<sup>st</sup> July 2022



Webinar Pengurusan 'Produced Water' pada 4 Ogos 2022

Webinar on Produced Water Management on 4<sup>th</sup> August 2022



Bengkel Oiled Wildlife Response Wilayah Selatan Siri 2 telah Djalankan pada 22 - 25 Ogos 2022

Workshop on Oiled Wildlife Response Western Region Series 2 on 22<sup>nd</sup> - 25<sup>th</sup> August 2022



Bengkel Pengharmonian dan Terjemahan Pelan MOSCoP dan Pelan MOWReP Djalankan pada 19 - 22 September 2022

Workshop for Harmonisation and Translation of the MOSCoP Plan and MOWReP Plan on 19<sup>th</sup> - 22<sup>nd</sup> September 2022



Bengkel Pemahaman Fungsi Hydrocarbon Fingerprinting System (HyFiS) Di Malaysia pada 27 - 29 September 2022

Workshop on Understanding the function of Hydrocarbon Fingerprinting System (HyFiS) in Malaysia on 27<sup>th</sup> - 29<sup>th</sup> September 2022



Bengkel Latihan Penggunaan Aplikasi Oilmap For Oil Spill Trajectory pada 19 - 21 Oktober 2022  
Training Workshop on the Use of Oilmap for Oil Spill Trajectory Application on 19<sup>th</sup> - 21<sup>st</sup> October 2022



Bengkel Oiled Wildlife Response Wilayah Sarawak Siri 3 pada 25 - 28 Oktober 2022  
Workshop on Oiled Wildlife Response Sarawak Region Series 3 on 25<sup>th</sup> - 28<sup>th</sup> October 2022

### 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 31 Mac 2022. Bermula dari 1 April 2022 hingga 31 Mac 2027 pengurusan tabung ini ditadbir oleh pihak Singapura.

Aktiviti yang telah dilaksanakan pada tahun 2022 adalah seperti berikut:

- i. Majlis Penyerahan Tabung Pusingan Selat Melaka dan Selat Singapura (Tabung RFC) daripada Kerajaan Malaysia kepada Kerajaan Singapura pada 16 November 2022 di Furama Riverfront Hotel, Singapura;
- ii. Mesyuarat Jawatankuasa Induk ke-41 *Revolving Fund Committee* (RFC) pada 16 November 2022 di Furama Riverfront Hotel, Singapura dan dihadiri oleh ahli-ahli RFC dari *Ministry of Transportation of the Republic Indonesia*, Jabatan Alam Sekitar Malaysia, Jabatan Laut Malaysia, *Maritime Port Authority* (MPA) Singapura dan *Kaunselor Malacca Straits Council of Japan*; dan
- iii. Lawatan lapangan ke *Raffles Lighthouse*, Singapura pada 17 November 2022.

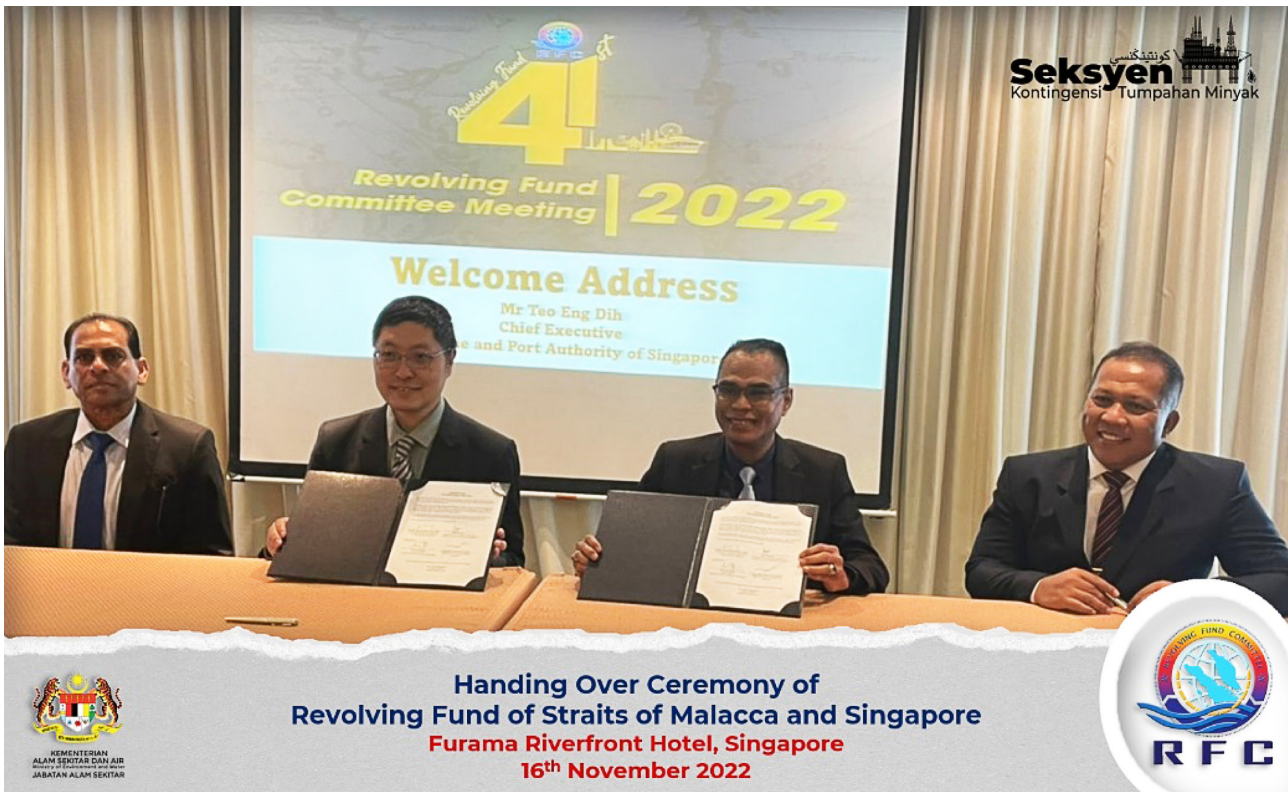
### STRAITS OF MALACCA AND SINGAPORE REVOLVING FUND COMMITTEE (RFC)

The *Revolving Fund* was established on 11<sup>th</sup> February 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<sup>st</sup> March 2022. Starting from 1<sup>st</sup> April 2022, until 31<sup>st</sup> March 2027, the management of this Fund is being undertaken by Singapore.

The activities carried out by the RFC in the year 2022 were:

- i. The Handover Ceremony of the *Revolving Fund* (RFC Fund) from the Government of Malaysia to the Government of Singapore, which took place on 16<sup>th</sup> November 2022, at Furama Riverfront Hotel, Singapore;
- ii. The 41<sup>st</sup> *Revolving Fund Committee* (RFC) meeting took place on 16<sup>th</sup> November 2022, at Furama Riverfront Hotel in Singapore. The meeting was attended by RFC members from the Ministry of Transportation of the Republic of Indonesia, the Department of Environment Malaysia, the Marine Department of Malaysia, the *Maritime Port Authority* (MPA) of Singapore, and the *Counsellor of the Malacca Straits Council of Japan*; and
- iii. A Field trip to *Raffles Lighthouse* in Singapore is scheduled for 17<sup>th</sup> November 2022.



**Handing Over Ceremony of  
Revolving Fund of Straits of Malacca and Singapore**  
Furama Riverfront Hotel, Singapore  
16<sup>th</sup> November 2022

Majlis Penyerahan Tabung Pusingan Selat Melaka dan Selat Singapura (Tabung RFC) daripada Kerajaan Malaysia kepada Kerajaan Singapura pada 16 November 2022 di Furama Riverfront Hotel, Singapura  
The Handover Ceremony of Revolving Fund (RFC Fund) from Malaysia to Singapore on 16<sup>th</sup> November 2022 at Furama Riverfront Hotel, Singapore



Mesyuarat Jawatankuasa Induk ke-41 Revolving Fund Committee (RFC) pada 16 November 2022 di Furama Riverfront Hotel, Singapura  
The 41<sup>st</sup> Revolving Fund Committee (RFC) Meeting on 16<sup>th</sup> November 2022 at Furama Riverfront Hotel, Singapore



Mesyuarat Jawatankuasa Induk ke-41 Revolving Fund Committee (RFC) pada 16 November 2022 di Furama Riverfront Hotel, Singapura  
The 41<sup>st</sup> Revolving Fund Committee (RFC) Meeting on 16<sup>th</sup> November 2022 at Furama Riverfront Hotel, Singapore



Lawatan Lapangan ke Raffles Lighthouse, Singapura pada 17 November 2022  
Field Trip to Raffles Lighthouse in Singapore Scheduled for 17<sup>th</sup> November 2022

## KES PENCEMARAN TUMPAHAN MINYAK DI PERAIRAN MALAYSIA

Sepanjang tahun 2022, sejumlah tiga (3) kes pencemaran tumpahan minyak di perairan Malaysia yang telah dilaporkan kepada Jabatan Alam Sekitar. Perairan Malaysia di Laut China Selatan telah merekodkan kes tumpahan minyak sebanyak 2 kes dan 1 kes Zon Ekonomi Eksklusif (**Jadual 4.2**).

Daripada tiga (3) kes kejadian tumpahan minyak tersebut, satu (1) kes adalah berpunca operasi pelabuhan/ terminal, satu (1) kes berpunca dari pelantar dan satu (1) kes adalah dari punca yang tidak diketahui (**Jadual 4.3**).

## OIL SPILLS POLLUTION CASES AT MALAYSIAN WATERS

In 2022, the Department of Environment received reports of three (3) cases of oil spill pollution in Malaysian waters. Two cases were recorded within Malaysia's waters in the South China Sea, and one case occurred within the Exclusive Economic Zone (EEZ) (**Table 4.2**).

Out of the three 3 cases of oil spill incidents, one (1) case was caused by port/terminal operations, one (1) case originated from a platform, and one (1) case had an unknown source (**Table 4.3**).

Jadual 4.2 : Kes Pencemaran Tumpahan Minyak di Perairan Malaysia pada Tahun 2022  
Table 4.2 : Oil Spill Pollution Cases at Malaysian Waters in Year 2022

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

Jadual 4.3 : Bilangan Kes Pencemaran Tumpahan Minyak di Perairan Malaysia Mengikut Punca pada Tahun 2022

Table 4.3 : The Number of Oil Spill Pollution Cases at Malaysian Waters by Source in Year 2022

PUNCA / SOURCE	KEJADIAN / INCIDENT	BILANGAN / NUMBER
Kapal / Vessel	Perlanggaran / Collision	-
	Terkandas/karam/Kebakaran / Grounding/sink/fire	-
	Penyelenggaraan kapal / Ship maintenance activities	-
Pelabuhan / terminal / Port / terminal	Kebocoran injap / Valve leakage	1
	Kebocoran paip pemindah / Transfer pipe leakage	-
Pelantar / Platform	Tumpahan dari pelantar / Spillage from platform	1
Lain-lain / Others	Punca tidak dapat dikenal pasti / Unknown source	1
<b>Jumlah / Total</b>		<b>3</b>

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

### PENGAWASAN KUALITI AIR TANAH

Seksyen Pengawasan Kualiti Air Tanah (SPAT) terus komited sepanjang tahun 2022 dengan menjalankan beberapa aktiviti dengan jayanya seperti berikut:

#### Program Audit Stesen Pengawasan Kualiti Air Tanah

Program audit stesen pengawasan kualiti air tanah adalah program yang dijalankan oleh SPAT setiap tahun. Tujuan program audit ini adalah:

- i. Menilai semula peruntukan penyelenggaraan luaran dan dalaman yang diberi untuk mengkaji pelaksanaannya;
- ii. Memastikan kerja persampelan yang dijalankan mengikut Prosedur Operasi Tetap Program Pengawasan Kualiti Air Tanah supaya analisa yang dijalankan memberi maklumat yang tepat; dan
- iii. Mengenal pasti masalah pembangunan tanah di sekitar lokasi stesen pengawasan kualiti air tanah yang berpotensi mencemar kualiti air tanah.

Beberapa stesen pengawasan air tanah telah diaudit sepanjang tahun 2022 ini iaitu stesen-stesen di Kedah dan Johor.



Keadaan Stesen Pengawasan Kualiti Air Tanah MW(7)-K610014-1-6.22 yang Terletak di Sekolah Kebangsaan Darul Uloom, Kepala Batas, Kedah  
Condition of Groundwater Quality Monitoring Station MW(7)-K610014-1-6.22 Located at Sekolah Kebangsaan Darul Uloom, Kepala Batas, Kedah

## PROGRAMMES CARRIED OUT RELATED TO GROUNDWATER QUALITY MONITORING

### GROUNDWATER QUALITY MONITORING

The Groundwater Quality Monitoring Section (SPAT) continued their commitment throughout 2022 by successfully carrying out the following activities :

#### Groundwater Quality Monitoring Station Audit Programme

The groundwater quality monitoring station audit programme is one that is conducted by SPAT annually. The objectives of this audit programme are to:

- i. Re-evaluate the external and internal maintenance provisions provided to review their implementation;
- ii. Ensure that the sampling work carried out is in accordance with the Standard Operating Procedures of the Groundwater Quality Monitoring Programme so that the analysis carried out provides accurate information; and
- iii. Identify land development problems around the location of groundwater quality monitoring stations that have the potential to contaminate groundwater quality.

Several groundwater monitoring stations have been audited throughout 2022, namely the stations in Kedah and Johor.



Keadaan Stesen Pengawasan Kualiti Air Tanah MW(7)-R610014-2-9.34 yang terletak di Sekolah Kebangsaan Kepala Batas, Kedah  
Condition of Groundwater Quality Monitoring Station MW(7)-R610014-2-9.34 Located at Sekolah Kebangsaan Kepala Batas, Kedah



Kerja-kerja Persampelan Air Tanah sedang dijalankan oleh Pegawai-pegawai JAS Kedah di Stesen Pengawasan Kualiti Air Tanah MW(7)-K610014-1-6.22 yang Terletak di Sekolah Kebangsaan Darul Uloom, Kepala Batas, Kedah

Groundwater Sampling Work is Being Carried Out by DOE Kedah Officer at the Ground Water Quality Monitoring Station MW(7)-K610014-1-6.22 which is Located at Darul Uloom Primary School, Kepala Batas, Kedah

### Sambutan Hari Air Sedunia 2022 Peringkat Jabatan Alam Sekitar

Jabatan Alam Sekitar (JAS) dengan kerjasama Universiti Tun Hussein Onn Malaysia (UTHM) telah mengadakan Sambutan Hari Air Sedunia 2022 Peringkat Jabatan Alam Sekitar di Sungai Kim Kim, Pasir Gudang, Johor. Program ini diadakan dengan mematuhi SOP COVID-19 yang telah ditetapkan oleh pihak Majlis Keselamatan Negara (MKN). Hari Air Sedunia yang disambut pada 22 Mac setiap tahun bertujuan untuk memperbaharui tekad dan azam serta memberi fokus kepada kepentingan sumber air selain usaha mempelopori pembangunan sumber air secara mampan. Tema tahun ini adalah Melestarikan Sumber Air: Memanfaatkan Air Bawah Tanah. Tema ini merupakan satu tanda komitmen yang menunjukkan bahawa air bawah tanah mempunyai kepentingan yang perlu dilihat dan dijaga.



Penggunaan Peruntukan penyelenggaraan untuk Pembinaan Platform Konkrit bagi Memudahkan Akses Pegawai di Stesen Pengawasan Kualiti Air Tanah, MW(7)-K3-1-8.45 di Kulim Hi-Tech, Kedah

Usage of Maintenance Budget for Construction of a Concrete Platform to Facilitate Access for Officers at the Groundwater Quality Monitoring Station, MW(7)-K3-1-8.45 at Kulim Hi-Tech, Kedah

### Celebration of World Water Day 2022 Department of Environment Level

The Department of Environment (DOE) in collaboration with Universiti Tun Hussein Onn Malaysia (UTHM) held the World Water Day 2022 Celebration at Sungai Kim Kim, Pasir Gudang, Johor. This programme was held in compliance with the COVID-19 SOPs that were set by the National Security Council (MKN). World Water Day, which is celebrated on March 22<sup>nd</sup> every year, aims to renew determination and to focus on the importance of water resources in addition to pioneering the sustainable development of water resources. This year's theme was Groundwater: Making the Invisible Visible. This theme reflects the importance of groundwater in that it needs to be seen and taken care of.

Program di Sungai Kim Kim, Pasir Gudang ini diserikan dengan kehadiran En. Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar, Dr Nor Amani Filzah binti Mohd Kamil, Pensyarah UTHM dan penyelidik utama Pusat Micropollutant Research Centre (MPRC), UTHM, pensyarah dan pelajar-pelajar UTHM, guru-guru sekolah di Pasir Gudang, pegawai JAS ibu pejabat dan JAS Negeri Johor serta wakil dari pihak industri di Pasir Gudang.

The programme at Sungai Kim Kim, Pasir Gudang was enhanced by the presence of Mr. Wan Abdul Latiff bin Wan Jaffar, Director General of Environment, Dr Nor Amani Filzah binti Mohd Kamil, UTHM Lecturer and lead researcher at the Micropollutant Research Center (MPRC), UTHM, UTHM lecturers and students, school teachers in Pasir Gudang, DOE officials from the headquarters and Johor State DOE as well as representatives from industries in Pasir Gudang.



Pegawai-pegawai Jabatan Alam Sekitar Negeri Johor Sedang Memberi Penerangan Mengenai Kerja-kerja Persampelan Air Tanah yang Dilakukan Sebanyak Empat (4) Kali Setahun  
The Field Officers of the Johor State Department of Environment Giving Information About the Groundwater Sampling Works that are Carried Out Four (4) Times a Year



Kerja-kerja Persampelan Kualiti Air Tanah Sedang Dilaksanakan  
Groundwater Quality Sampling Works Being Implemented



Kerja-kerja Persampelan Kualiti Air Tanah Sedang Dilaksanakan oleh Pegawai-pegawai Jabatan Alam Sekitar Negeri Johor  
Groundwater Quality Sampling Work Being Carried Out by Officers of the Johor State Environment Department



Penerangan Berkaitan Persampelan Kualiti Air Tanah oleh Pegawai Jabatan Alam Sekitar Negeri Johor  
Information Related to Groundwater Quality Sampling by Johor State Environment Department Officials

### Seminar Kepentingan Air Tanah : “Mengubah Persepsi”

Bagi tujuan meningkatkan kesedaran pihak berkepentingan dan masyarakat untuk menyedari kepentingan melindungi air tanah ini dan apa yang telah dilaksanakan oleh JAS berkaitan air tanah, maka suatu seminar telah diadakan pada 27 September 2022 bertempat di Pusat Kecemerlangan JAS untuk Bahan Berbahaya dan Industri Hijau JAS Cawangan Taboh Naning, Melaka. Seminar ini dihadiri oleh wakil-wakil agensi di bawah KASA, agensi-agens persekutuan dan negeri, pegawai-pegawai JAS Ibu Pejabat, JAS Melaka, JAS N.Sembilan dan JAS Johor, ahli-ahli akademik dan pelajar-pelajar.

Ini adalah merupakan satu platform untuk menyampaikan perkara ini supaya ianya dapat memberi kesedaran dan pengetahuan kepada semua pihak yang berkepentingan dan mengubah persepsi bahawa air tanah ini masih perlu dilindungi sepanjang masa walaupun ianya berada di bawah tanah yang tidak kelihatan.

Selain itu, ianya juga sebagai satu platform untuk perkongsian maklumat ke atas kaedah-kaedah persampelan air tanah yang telah dijalankan oleh JAS di samping meningkatkan pematuhan ke atas Standard Kualiti Air Tanah Kebangsaan.

### Seminar on The Importance of Ground Water: “Changing Perceptions”

In order to increase the awareness of stakeholders and the community on the importance of protecting this groundwater and on what has been implemented by DOE related to groundwater, a seminar was held on 27<sup>th</sup> September 2022 at the DOE Center of Excellence for Hazardous Materials and Green Industry DOE Taboh Naning Branch, Malacca. This seminar was attended by representatives of agencies under KASA, federal and state agencies, DOE Headquarters, DOE Melaka, DOE N. Sembilan and DOE Johor, academics and students.

This seminar was a platform to help change perceptions of the importance that groundwater should be given and that while groundwater is not visible, there is a need to protect it at all times as its impact is widespread.

In addition, it is also a platform for sharing information on groundwater sampling methods that have been carried out by DOE in addition to improving compliance with the National Groundwater Quality Standard.

**SEMINAR**

**"KEPENTINGAN AIR TANAH: MENGUBAH PERSEPSI"**

SELASA 27 SEPTEMBER 2022  
8.30 PAGI - 2.00 PETANG

Bersama:

Puan Zuhainim binti Abdul Ghafar

Puan Intan Suzana binti Sulong

Encik Razip bin Ismail

Bertempat di:  
JAS CAWANGAN TABOH NANING,  
TABUH NANING, 78000 ALOR GAJAH, MELAKA

Jabatan Alam Sekitar

Seminar Kepentingan Air Tanah: “Mengubah Persepsi”  
Seminar on the Importance of Ground Water: “Changing Perceptions”



Para Peserta Sedang Diberi Taklimat Berkaitan Cara-cara Persampelan Kualiti Air Tanah yang Dijalankan oleh Jabatan Alam Sekitar  
 The Participants Being Briefed on the Ground Water Quality Sampling Methods Conducted by the Environment Department



Seminar ini Dihadiri oleh Wakil-wakil Agensi di Bawah KASA, Agensi-agensi Persekutuan dan Negeri, Pegawai-pegawai JAS Ibu Pejabat, JAS Melaka, JAS N.Sembilan dan JAS Johor, Ahli-ahli Akademik dan Pelajar-pelajar  
 This Seminar was Attended by Representatives of Agencies Under KASA, Federal and State Agencies, DOE Headquarters, DOE Melaka, DOE N. Sembilan and DOE Johor, Academics and Students

## PENGAWASAN KUALITI AIR SUNGAI

Jabatan Alam Sekitar (JAS) meneruskan program pemantauan kualiti sungai pada 2022 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 (NH<sub>3</sub>-N), Pepejal Terampai (SS) dan pH.

Pada 2022, kualiti air sungai dinilai berdasarkan sejumlah 8,136 sampel yang diambil dari sejumlah 1,353 stesen pengawasan kualiti air sungai manual yang merangkumi 672 sungai di seluruh Negara seperti dalam **Jadual 4.4**.

## RIVER WATER QUALITY MONITORING

The Department of Environment (DOE) continued the monitoring of river water quality programme in 2022. This monitoring is done to determine the status of river water quality and to detect changes in quality. Water samples are 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 the parameters of Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Ammoniacal Nitrogen (NH<sub>3</sub>-N), Suspended Solid (SS) and pH.

In 2022, river water quality was assessed based on a total of 8,136 samples taken from a total of 1,353 manual river water quality monitoring stations involving 672 rivers in Malaysia as shown in **Table 4.4**.

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

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
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		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
 Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER	
Kedah	Sg. Merbok	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	
		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			

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Kedah	Sg. Ulu Melaka	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
		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
	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

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
 Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMOR STESEN / STATION NUMBER		
Pulau Pinang	Sg. Perai	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		
		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		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Perak	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
		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	

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
 Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
		Sg. Kinta	1APRK058
		Sg. Kinta	1APRK063
		Sg. Klah	1APRK014
		Sg. Klah	1APRK015
		Sg. Klian Baru	1APRK016
		Sg. Klian Baru	1APRK017
		Sg. Klian Gunong	1APRK081
		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

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER	
Perak	Sg. Perak	Sg. Sungkai	1APRK008	
		Sg. Sungkai	1APRK073	
		Sg. Sungkai	1APRK075	
		Sg. Sungkai Mati	1APRK010	
		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	

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Selangor	Sg. Buloh	Sg. Buloh	2BBLH001
		Sg. Buloh	2BBLH002
		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 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

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. 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	
	Sg. Sepang	Sg. Rambai	2BSPG004
Sg. Sepang	Sg. Sepang	2BSPG001	
Sg. Sepang	Sg. Sepang	2BSPG002	

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Selangor	Sg. Sepang	Sg. Sepang	2BSPG003
	Sg. Tenggi	Sg. Tenggi	2BTGI001
		Sg. Tenggi	2BTGI002
		Sg. Tenggi	2BTGI003
		Sg. Tenggi	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
		Sg. Jijan	3NLGT026
		Sg. Pajam	3NLGT020
		Sg. Pajam	3NLGT021
	Sg. Linggi	Sg. Batang Penar	3NLGI009
		Sg. Batang Penar	3NLGI010

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER	
Negeri Sembilan	Sg. Linggi	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	
		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		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Negeri Sembilan	Sg. Muar	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
		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
		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		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Melaka	Sg. Melaka	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
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
		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	

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022

Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER	
Johor	Sg. Batu Pahat	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	
		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. Endau	Sg. Semberong	3JEND018
			Sg. Semberong	3JEND021
			Sg. Singol	3JEND013
			Sg. Tamok	3JEND014
		Sg. Jemaluang	Sg. Jemaluang	3JJML001
	Sg. Jemaluang		3JJML002	

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Johor	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
		Sg. Peggeli	3JJHR028
		Sg. Peggeli	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	

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
 Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Johor	Sg. Kaw. Pasir Gudang	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. Muar	Sg. Mersing	3JMSG003
		Sg. Air Panas	3JMUA035
		Sg. Belemang	3JMUA051
		Sg. Gemas	3JMUA036
		Sg. Jementah	3JMUA040
		Sg. Juasseh	3JMUA014
		Sg. Juasseh	3JMUA037
		Sg. Juasseh	3JMUA045
		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		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Johor	Sg. Muar	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
	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	

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022

Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Johor	Sg. Segget	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. Tebrau	Sg. Skudai	3JSKU011
		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	
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		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER	
Pahang	Sg. Kuantan	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	
		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		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
 Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Pahang	Sg. Pahang	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
		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		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Pahang	Sg. Pahang	Sg. Pahang	4CPHG111
		Sg. Pahang	4CPHG113
		Sg. Pahang	4CPHG124
		Sg. Pahang	4CPHG126
		Sg. Pahang	4CPHG127
		Sg. Pahang	4CPHG131
		Sg. Pahang	4CPHG137
		Sg. Pahang	4CPHG138
		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		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Pahang	Sg. Pahang	Sg. Tekal	4CPHG062
		Sg. Telang	4CPHG032
		Sg. Telemong	4CPHG046
		Sg. Telemong	4CPHG093
		Sg. Telemong	4CPHG094
		Sg. Telom	4CBTM008
		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

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Terengganu	Sg. Besut	Sg. Besut	4TBST004
		Sg. Besut	4TBST005
		Sg. Besut	4TBST006
	Sg. Chukai	Sg. Jertih	4TBST001
		Sg. Bungkus	4TCKI006
		Sg. Chukai	4TCKI003
		Sg. Ibok	4TCKI001
		Sg. Ibok	4TCKI002
		Sg. Ruang	4TCKI004
		Sg. Ruang	4TCKI005
		Sg. Dungun	Sg. Dungun
	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. Merang	Sg. Kerak	4TMRG001
		Sg. Marang	4TMRG002
		Sg. Temala	4TMRG003
		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	

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022

Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Terengganu	Sg. Paka	Sg. Rengat	4TPKA002
	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
Sg. Galas	4DKLT031		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
 Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Kelantan	Sg. Kelantan	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
Sg. Pergau	4DKLT052		
Sg. Rasau	4DKLT061		
Sg. Relai	4DKLT012		
Sg. Relai	4DKLT030		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022

Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Kelantan	Sg. Kelantan	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. Pengkalan Datu	Sg. Raja Gali	4DPCH001
		Sg. Pasir Hor	4DPDT004
		Sg. Pengkalan Datu	4DPDT001
Sg. Pengkalan Datu		4DPDT002	
Sarawak	Sg. Balingian	Sg. Pengkalan Datu	4DPDT003
		Sg. Balingian	6QBLG001
	Sg. Baram	Sg. Balingian	6QBLG002
		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
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	

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Sarawak	Sg. Limbang	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
	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. Balo	6QRJG019
		Sg. Binatang	6QRJG004
		Sg. Daro	6QRJG021
		Sg. Jemoreng	6QRJG022
		Sg. Julau	6QRJG005
		Sg. Kanowit	6QRJG006
		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		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022

Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Sarawak	Sg. Rajang	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
	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	

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Sarawak	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
		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		

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Sabah	Sg. Labok	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
		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

Jadual 4.4 : Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2022  
Table 4.4 : List of the Catchments and Rivers Monitored, 2022

NEGERI / STATE	LEMBANGAN / BASIN	SUNGAI / RIVER	NOMBOR STESEN / STATION NUMBER
Sabah	Sg. Sapi	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
	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 55 stesen daripada rangkaian stesen pengawasan kualiti air sungai tersebut adalah khusus bagi memantau kualiti air sungai di hulu muka sauk yang terpilih seperti dalam **Jadual 4.5**. Persampelan kualiti air sungai dijalankan secara berjadual dan mengikut kekerapan yang telah ditetapkan iaitu enam (6) kali setahun. Parameter-parameter kualiti air yang diukur merangkumi parameter fizikal, kimia dan biologikal seperti **Jadual 4.6**.

55 stations from the network were specifically selected for the purpose of monitoring river water quality at upstreams of selected water intakes, for water supply facilities as listed in **Table 4.5**. River water samplings are carried out six (6) times a year and these are analysed and tested for a range of physical, chemical and biological parameters as shown in **Table 4.6**.

Jadual 4.5 : Senarai Stesen Pemantauan Muka Sauk Loji Rawatan Air  
Table 4.5 : 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	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
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 sauks Loji Rawatan Air Chin-chin
Pahang	Sg. Pahang	Sg. Bertam	4CBTM013	Loji Rawatan Air Habu
		Sg. Gapoi	4CPHG086	Muka sauks 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		

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

NEGERI / STATE	LEMBANGAN SUNGAI / RIVER BASIN	SUNGAI / RIVER	STATION ID / ID STATION	MUKA SAUK / WATER INTAKE
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. Rajang	Sg. Pakan	6QRJG020	Pakan Water Intake
		Sg. Pila Parit	6QRJG023	Igan Water Intake

Jadual 4.6 : Parameter-Parameter Pengukuran Kualiti Air Sungai  
Table 4.6 : 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 <sub>3</sub> -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 <sub>3</sub> )	mg/l
Klorida / Chloride (Cl)	mg/l
Fosfat / Phosphate (PO <sub>4</sub> )	mg/l
Arsenik / Arsenic (As)	mg/l
Merkuri / Mercury (Hg)	mg/l
Kadmium / Cadmium (Cd)	mg/l
Kromium / Chromium (Cr)	mg/l
Plumbum / Lead (Pb)	mg/l
Zink / Zinc (Zn)	mg/l
Kalsium / Calcium (Ca)	mg/l
Ferum / Ferum (Fe)	mg/l

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

PARAMETER	UNIT
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 2022, sejumlah 8,136 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 mengambilkira kepentingan enam (6) parameter penunjuk pencemaran utama iaitu Oksigen Terlarut (DO), Keperluan Oksigen Biokimia (BOD), Keperluan Oksigen Kimia (COD), Ammoniakal Nitrogen (NH<sub>3</sub>N), pH dan Pepejal Terampai (SS).

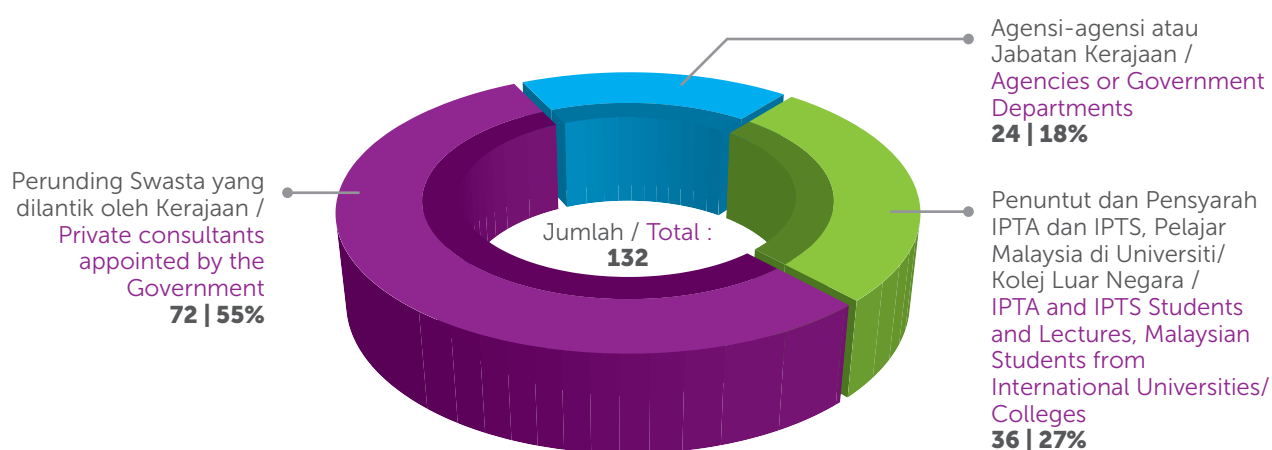
In 2022, a total 8,136 river water samples were tested covering all of the water quality parameters. River water quality is evaluated based on Water Quality Index (WQI) and National Water Quality Standard for Malaysia (NWQS). The WQI is calculated based on a formula which is derived for six (6) principal parameters namely Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Ammoniacal Nitrogen (NH<sub>3</sub>-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 Pendidikan Tinggi (IPT) yang menjalankan kajian berkaitan kualiti air sungai. Pada tahun 2022, sejumlah 132 permohonan data telah diterima oleh JAS melibatkan sejumlah 1,511,533 data kualiti air sungai. Sebanyak 27% daripada permohonan data kualiti air sungai adalah daripada golongan penyelidik di institusi pendidikan

#### DISSEMINATION OF RIVER WATER QUALITY DATA

River water quality data was utilised by two (2) categories of users : the government agencies, and researchers from higher learning institutions. In 2022, a total of 132 data requests were received by DOE covering 1,511,533 water quality data points. About 27% of the requests were from researchers from higher learning institutions, and 55% from consultants for government projects, and the rest were from government agencies. The number of



Rajah 4.1 : Bilangan Permohonan Mengikut Kategori Kelas Pemohon, bagi Tahun 2022  
Figure 4.1 : The Number of Applications by Applicant Class Category, for the Year 2022

tinggi, dan 55% daripada perunding bagi projek kerajaan, manakala selebihnya adalah dari agensi kerajaan. Bilangan permohonan data kualiti air sungai yang diterima oleh JAS pada tahun 2022 adalah seperti yang ditunjukkan oleh **Rajah 4.1**.

#### PROGRAM DAN AKTIVITI YANG DIJALANKAN BERKAITAN PENGAWASAN KUALITI AIR SUNGAI

Pada tahun 2022, beberapa program dan aktiviti pengawasan kualiti sungai telah dijalankan seperti yang disenaraikan di dalam **Jadual 4.7**.

water quality data requests received by DOE in 2022 is shown in **Figure 4.1**.

#### PROGRAMMES AND ACTIVITIES CARRIED OUT RELATED TO RIVER WATER QUALITY MONITORING

In 2022, there were several river quality monitoring activities and programmes carried out, as listed in **Table 4.7**

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

TARIKH/ DATE	AKTIVITI & PROGRAM/ACTIVITIES & PROGRAMMES	TEMPAT/ VENUE
27 Mac 2022 27 <sup>th</sup> March 2022	Mesyuarat dan Lawatan Kerja ke Loji Rawatan Air Semenyih 2 Meeting and working Visit to Semenyih 2 Water Treatment Plant	Dengkil, Selangor
1 Julai 2022 1 <sup>st</sup> July 2022	Semakan Lapangan Persempadanan Negeri Bagi Rasionalisasi Stesen Pengawasan Kualiti Air Sungai Review of State Demarcation Fields for the Rationalization of River Water Monitoring Stations	Sungai Kerayong, Kuala Lumpur
3 Ogos 2022 3 <sup>rd</sup> August 2022	Test Acceptance Criteria (TAC) Stesen Automatik Pengawasan Kualiti Air Sungai Test Acceptance Criteria (TAC) Automatic River Water Quality Monitoring Station	Sungai Selangor, Selangor



Mesyuarat dan Lawatan Kerja ke Loji Rawatan Air Semenyih 2  
Meeting and working Visit to Semenyih 2 Water Treatment Plant



Semakan Lapangan Persempadanan Negeri Bagi Rasionalisasi Stesen Pengawasan Kualiti Air Sungai  
Review of State Demarcation Fields for the Rationalization of River Water Monitoring Stations



Test Acceptance Criteria (TAC) Stesen Automatik Pengawasan Kualiti Air Sungai  
Test Acceptance Criteria (TAC) Automatic River Water Quality Monitoring Station

### **KURSUS PEMBANGUNAN INVENTORI PUNCA PENCEMARAN BAGI PENETAPAN TOTAL MAXIMUM DAILY LOAD (TMDL)**

Bahagian Air dan Marin, Jabatan Alam Sekitar (JAS) Ibu Pejabat telah menganjurkan Kursus Pembangunan Inventori Punca Pencemaran Bagi Penetapan Total Maximum Daily Load (TMDL) selama 4 hari pada 3 - 6 Oktober 2022 di Hotel Ixora, Perai, Pulau Pinang. Kursus ini adalah sebahagian daripada siri kursus yang dirancang dengan tujuan memberi ilmu pengetahuan berkaitan kualiti air dan pemodelan kualiti air sungai ke arah penetapan Jumlah Beban Harian Maksimum (*Total Maximum Daily Load, TMDL*).

### **COURSE ON DEVELOPMENT OF AN INVENTORY OF POLLUTION SOURCES TO DETERMINE THE TOTAL MAXIMUM DAILY LOAD (TMDL)**

The Division of Water and Marine, Department of Environment (DOE) Headquarters organized a 4-day Course on Development an Inventory of Pollution Sources to Determine the Total Maximum Daily Load (TMDL), held from 3<sup>rd</sup> - 6<sup>th</sup> October 2022 at Hotel Ixora, Perai, Pulau Pinang. This course is part of a series of courses designed with the aim of providing knowledge related to water quality and river water quality modeling towards the determination of the Total Maximum Daily Load (TMDL).

Kursus tersebut yang telah dirasmikan oleh Yang Berusaha Encik Rosli bin Osman, Pengarah Bahagian Air dan Marin JAS Ibu Pejabat dan telah dikendalikan oleh kumpulan Perunding Wiranda (M) Sdn. Bhd. yang terdiri daripada pakar-pakar dalam bidang kualiti air.

Objektif kursus ini adalah untuk memantapkan modal insan pegawai Jabatan dan Agensi berkepentingan melalui meningkatkan dan menambah ilmu pengetahuan berkaitan proses pelaksanaan kerja-kerja inventori bagi punca-punca tetap dan tidak tetap yang berpotensi memberi kesan kepada carrying capacity sesuatu sungai, seterusnya akan mengakibatkan penurunan kualiti air sungai.

Seramai 47 orang peserta telah menyertai kursus ini yang terdiri daripada pegawai-pegawai JAS Ibu Pejabat dan JAS Negeri, Badan-Badan Kawal Selia Air (BKSA) Negeri, dan pihak pemegang taruh di Negeri Pulau Pinang dan Kedah.

The course which was officiated by Mr. Rosli bin Osman, Director of The Division of Water and Marine, DOE Headquarters and organized by Wiranda (M) Sdn. Bhd. a consulting group which consisted of experts in the field of water quality.

The objective of this course was to strengthen the human capital of stakeholders through upgrading and adding knowledge related to the process of carrying out inventory work for point sources and non-point sources which potentially affect the carrying capacity of a river, resulting in the decrease in river water quality.

There was a total of 47 participants in this course consisting of DOE Headquarters and State DOE officials, State Water Regulatory Bodies and stakeholders in the States of Penang and Kedah.



Peserta-Peserta Kursus Pembangunan Inventori Punca Pencemaran Bagi Penetapan Total Maximum Daily Load (TMDL) pada 3 - 6 Oktober 2022 di Hotel Ixora, Perai, Pulau Pinang

The Participants of the Course on Development of an Inventory of Pollution Sources to determine the Total Maximum Daily Load (TMDL, held from 3<sup>rd</sup> - 6<sup>th</sup> October 2022 at Hotel Ixora, Perai, Pulau Pinang

## KURSUS WATER QUALITY AND WATER QUALITY MODELING LEVEL 2

Bahagian Air dan Marin, Jabatan Alam Sekitar (JAS) Ibu Pejabat telah menganjurkan Kursus Water Quality and Water Quality Modeling Level 2 selama 4 hari pada 3 - 6 Julai 2022 di Hotel Taiping Perdana, Taiping, Perak. Kursus ini adalah sebahagian daripada siri kursus yang dirancang dengan tujuan memberi ilmu pengetahuan berkaitan kualiti air dan pemodelan kualiti air sungai ke arah penetapan Jumlah Beban Harian Maksimum (*Total Maximum Daily Load, TMDL*).

Kursus tersebut yang telah dirasmikan oleh Yang Berusaha Encik Rosli bin Mustafa, Pengarah Bahagian Air dan Marin JAS Ibu Pejabat dan telah dikendalikan oleh Ir Dr. Zaki Zainudin yang merupakan pakar dalam bidang kualiti air

Objektif kursus ini adalah untuk meningkatkan ilmu pengetahuan berkaitan kualiti air dan pemodelan kualiti air sungai ke arah penetapan jumlah maksimum beban harian (*Total Maximum Daily Load, TMDL*).

## COURSE ON WATER QUALITY AND WATER QUALITY MODELING LEVEL 2

The Division of Water and Marine, Department of Environment (DOE) Headquarters organised a 4-day Course On Water Quality And Water Quality Modeling Level 2 from 3<sup>rd</sup> - 6<sup>th</sup> July 2022 at Hotel Taiping Perdana, Taiping, Perak. This course is part of a series of courses designed with the aim of providing knowledge related to water quality and river water quality modeling towards determining the Total Maximum Daily Load (TMDL).

The course was officiated by Mr. Rosli bin Mustafa, Director of The Division of Water and Marine, DOE Headquarters and was conducted by Ir Dr. Zaki bin Zainudin, a water quality expert.

The objective of this course was to enhance knowledge related to water quality and river water quality modeling towards setting the Total Maximum Daily Load, TMDL.



Penceramah, Ir. Dr. Zaki bin Zainudin  
The Speaker, Ir. Dr. Zaki bin Zainudin



Peserta-Peserta Kursus Fundamentals of Water Quality And Water Quality Modeling  
The Participants of the Course on Fundamentals of Water Quality and Water Quality Modeling

Seramai 30 orang peserta telah menyertai kursus ini yang terdiri daripada pegawai-pegawai Badan-Badan Kawal Selia Air (BKSA) Negeri, Jabatan/Agensi Kerajaan yang dijemput, JAS Ibu Pejabat dan JAS Negeri.

### **KURSUS WATER QUALITY MODELING - WATER QUALITY ANALYSIS SIMULATION PROGRAM (WASP)**

Bahagian Air dan Marin, Jabatan Alam Sekitar (JAS) Ibu Pejabat telah menganjurkan Kursus Water Quality Modeling - Water Quality Analysis Simulation Program (WASP) selama 4 hari pada 12 - 15 September 2022 di Hotel Casuarina@Meru, Ipoh, Perak. Kursus ini adalah sebahagian daripada siri kursus yang dirancang dengan tujuan memberi ilmu pengetahuan berkaitan kualiti air dan pemodelan kualiti air sungai ke arah penetapan Jumlah Beban Harian Maksimum (*Total Maximum Daily Load, TMDL*).

Kursus tersebut telah dirasmikan oleh Yang Berusaha Encik Jamal Affendy bin Shahar, Ketua Penolong Pengarah, Bahagian Air dan Marin JAS Ibu Pejabat dan telah dikendalikan oleh kumpulan Perunding Wiranda (M) Sdn. Bhd. yang terdiri daripada pakar-pakar dalam bidang kualiti air.

Objektif kursus ini adalah untuk meningkatkan ilmu pengetahuan berkaitan kualiti air dan pemodelan kualiti air sungai ke arah penetapan jumlah maksimum beban harian (*Total Maximum Daily Load*).

Seramai 38 orang peserta telah menyertai kursus ini yang terdiri daripada pegawai-pegawai Badan-Badan Kawal Selia Air (BKSA) Negeri, Jabatan/Agensi Kerajaan yang dijemput, JAS Ibu Pejabat dan JAS Negeri.

A total of 30 participants attended this course which consisted of officers of the State Water Regulatory Bodies, invited Government Departments/Agencies, DOE Headquarters and DOE State Offices.

### **COURSE ON WATER QUALITY MODELING - WATER QUALITY ANALYSIS SIMULATION PROGRAMME (WASP)**

The Division of Water and Marine, Department of Environment (DOE) Headquarters organised a 4-day Course on Water Quality Modeling - Water Quality Analysis Simulation Programme (WASP) from 12<sup>th</sup> - 15<sup>th</sup> September 2022 at Hotel Casuarina@Meru, Ipoh, Perak. This course is part of a series of courses designed with the aim of providing knowledge related to water quality and river water quality modeling towards determining the Total Maximum Daily Load (TMDL).

The course was officiated by Mr. Jamal Affendy bin Shahar, Principal Assistant Director of The Division of Water and Marine, DOE Headquarters and was managed by the consulting group, Wiranda (M) Sdn. Bhd. consisting of experts in the field of water quality.

The objective of this course was to improve knowledge related to water quality and alternative approaches to river water quality modeling towards determining the Total Maximum Daily Load.

A total of 38 participants attended this course which consisted of officers of the State Water Regulatory Bodies, invited Government Departments/Agencies, DOE Headquarters and DOE State Offices.



Peserta-Peserta Kursus Water Quality Modeling - Water Quality Analysis Simulation Program (WASP) pada 12 - 15 September 2022 di Hotel Casuarina@Meru, Ipoh, Perak

The Participants of the Course on Water Quality Modeling - Water Quality Analysis Simulation Program (WASP) held from 12<sup>th</sup> - 15<sup>th</sup> September 2022 at Hotel Casuarina@Meru, Ipoh, Perak

### Seminar Pendekatan TMDL : Solusi Pencemaran Air Jangka Panjang

Bahagian Air dan Marin, Jabatan Alam Sekitar (JAS) Ibu Pejabat telah menganjurkan Seminar Pendekatan TMDL: Solusi Pencemaran Air Jangka Panjang pada 3 Ogos 2022 di Hotel Pulse Grande, Putrajaya. Objektif seminar ini adalah untuk berkongsi pengalaman, strategi dan maklumat pelaksanaan TMDL oleh pakar kualiti air dan agensi pelaksana di samping memberi kesedaran dan pengetahuan untuk menyebarkan dan membudayakan pelaksanaan TMDL sebagai halatuju kaedah kawalan pencemaran air di seluruh negara.

### Seminar on TMDL Approach: Long Term Water Pollution Solutions

The Division of Water and Marine, Department of Environment (DOE) Headquarters organised an online Seminar on TMDL Approach: Long Term Water Pollution Solutions on 3<sup>rd</sup> August 2022 at Pulse Grande Hotel, Putrajaya. The objective of this seminar was to share experiences, strategies and information on the implementation of TMDL by water quality experts and the implementing agencies. In addition, this seminar was a platform to raise awareness and enhance knowledge in an effort to spread and cultivate the implementation of TMDL as a way forward to control water pollution throughout the country.



Para Penceramah Seminar  
The Speakers of the Seminar



Dirasmikan oleh Yang Berusaha Encik Rosli bin Mustafa, Pengarah Bahagian Air dan Marin JAS Ibu Pejabat

Officiated by Mr. Rosli bin Mustafa, Director of Water and Marine Division of DOE Headquarters



Para Peserta Seminar  
The Participants of the Seminar

Seminar ini telah dirasmikan oleh Yang Berusaha Encik Rosli bin Mustafa, Pengarah Bahagian Air dan Marin JAS Ibu Pejabat. Penceramah-penceramah dan tajuk-tajuk ceramah adalah :

1. Senario Kualiti Air di Malaysia & Implikasi Kepada Kita - Dr. Abdul Rani bin Abdullah, Pakar Scieno TW Sdn. Bhd.;
2. *TMDL in Malaysia: Applicability & Challenges* - Ir. Dr. Zaki bin Zainuddin, pakar kualiti air; dan
3. Pendekatan TMDL Dalam Pengurusan Air Di Negeri Selangor : Perkongsian Pengalaman LUAS - Encik Mohd Nazifi bin Nawawi, Lembaga Urus Air Selangor

Seramai 60 orang peserta telah menyertai seminar ini yang terdiri daripada pegawai-pegawai Jabatan dan Agensi Kerajaan Persekutuan dan Kerajaan Negeri, JAS Ibu Pejabat dan JAS Negeri.

This seminar was officiated by Mr. Rosli bin Mustafa, Director of Water and Marine Division of DOE Headquarters. The speakers and titles of the talks were as follows:

1. Water Quality Scenario in Malaysia & Implications to Us - Dr. Abdul Rani bin Abdullah, Pakar Scieno TW Sdn. Bhd.;
2. *TMDL in Malaysia: Applicability & Challenges* - Ir. Dr. Zaki bin Zainuddin, water quality expert; and
3. *TMDL Approach in Water Management in Selangor State : LUAS Sharing Experience* Mr. Encik Mohd Nazifi bin Nawawi, Lembaga Urus Air Selangor (LUAS)

A total of 60 participants attended this seminar consisting of officials from Federal and State Government Departments and Agencies, DOE Headquarters and State Offices.

## Program Pengawasan Kualiti Alam Sekitar (EQMP) Environmental Quality Monitoring Programme (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 2022, semua stesen pengawasan beroperasi membekalkan data kualiti alam sekitar kepada pihak Jabatan Alam Sekitar (JAS).

The Environmental Quality Monitoring Programme or EQMP involves data collection of air quality, 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 during the occurrence of environmental pollution such as haze, oil spills, industrial disasters 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 2022, all the monitoring stations were fully operational, thereby supplying environmental quality data to the Department of Environment (DOE).

Jadual 4.8 : Bilangan Stesen Pengawasan Kualiti Alam Sekitar di Malaysia  
Table 4.8 : The Number of Environmental Quality Monitoring Station in Malaysia

KOMPONEN/ COMPONENT	STESEN AUTOMATIK/ AUTOMATIC STATIONS	STESEN MANUAL/ MANUAL STATIONS	STESEN BERGERAK/ MOBILE STATIONS
Udara / Air	65	14	3
Air Sungai / River Water	30	1,353	7
Air Marin / Marine Water	10	388	4
<b>Jumlah Stesen / Total No. of Stations</b>	<b>105</b>	<b>1,755</b>	<b>14</b>

Berikut disertakan taburan stesen pengawasan kualiti alam sekitar automatik bagi stesen kualiti udara, kualiti air sungai dan kualiti air marin di Malaysia. (**Rajah 4.2**, **Rajah 4.3**, dan **Rajah 4.4**)

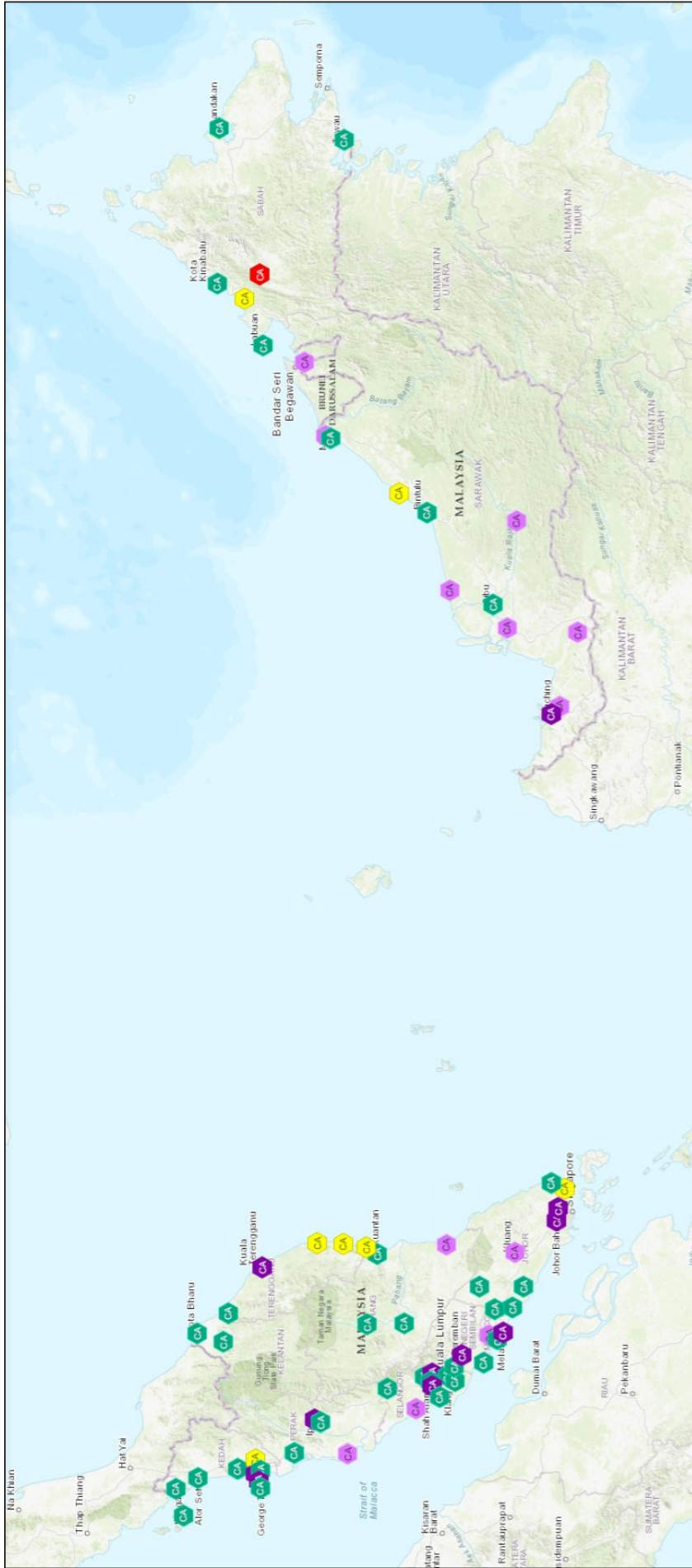
The following is the distribution of the automatic environmental quality stations for air quality, river water quality and marine water quality in Malaysia. (**Figure 4.2**, **Figure 4.3** and **Figure 4.4**)

Bagi stesen-stesen pengawasan kualiti alam sekitar manual, berikut adalah persampelan manual yang telah dijalankan bagi tahun 2022:

For manual environmental quality monitoring stations, the following are the number of manual samplings carried out in 2022:

Jadual 4.9 : Bilangan Persampelan Manual Tahun 2022  
Table 4.9 : The Number of Manual Samplings in 2022

KOMPONEN/ COMPONENT	STESEN MANUAL/ MANUAL STATIONS	FREKUENSI PERSAMPELAN/ SAMPLING FREQUENCY	BILANGAN PERSAMPELAN/ TOTAL NO. OF SAMPLINGS
Udara / Air	14	Setiap 6 hari / Every 6 days	2,160
Air Sungai / River Water	1,353	6 kali setahun / 6 times a year	8,118
Air Marin / Marine Water	388	6 kali setahun / 6 times a year	2,268



**PETUNJUK/LEGEND**

**CAQM Stations**



Background



Industry



Rural



Sub Urban

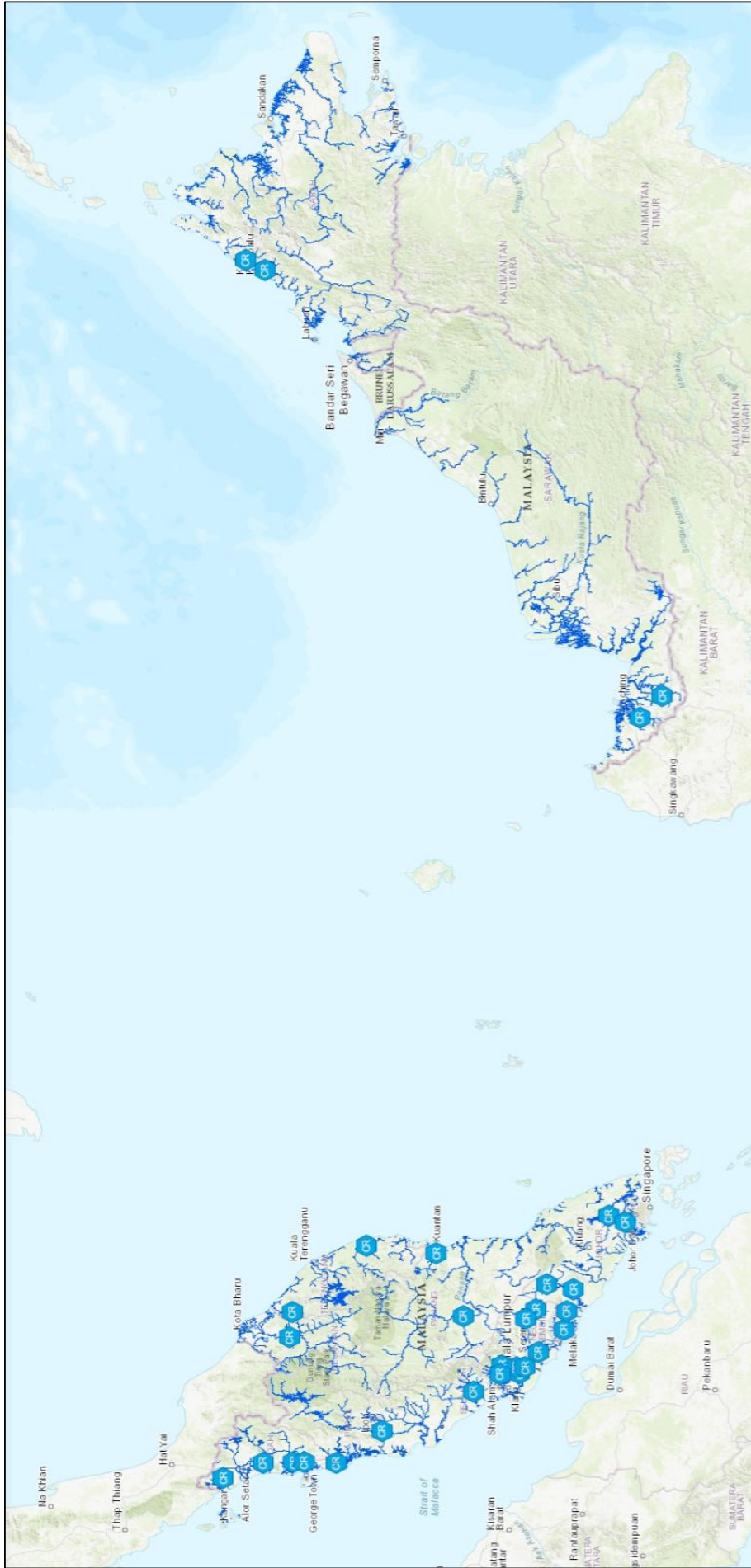


Urban



State Boundary

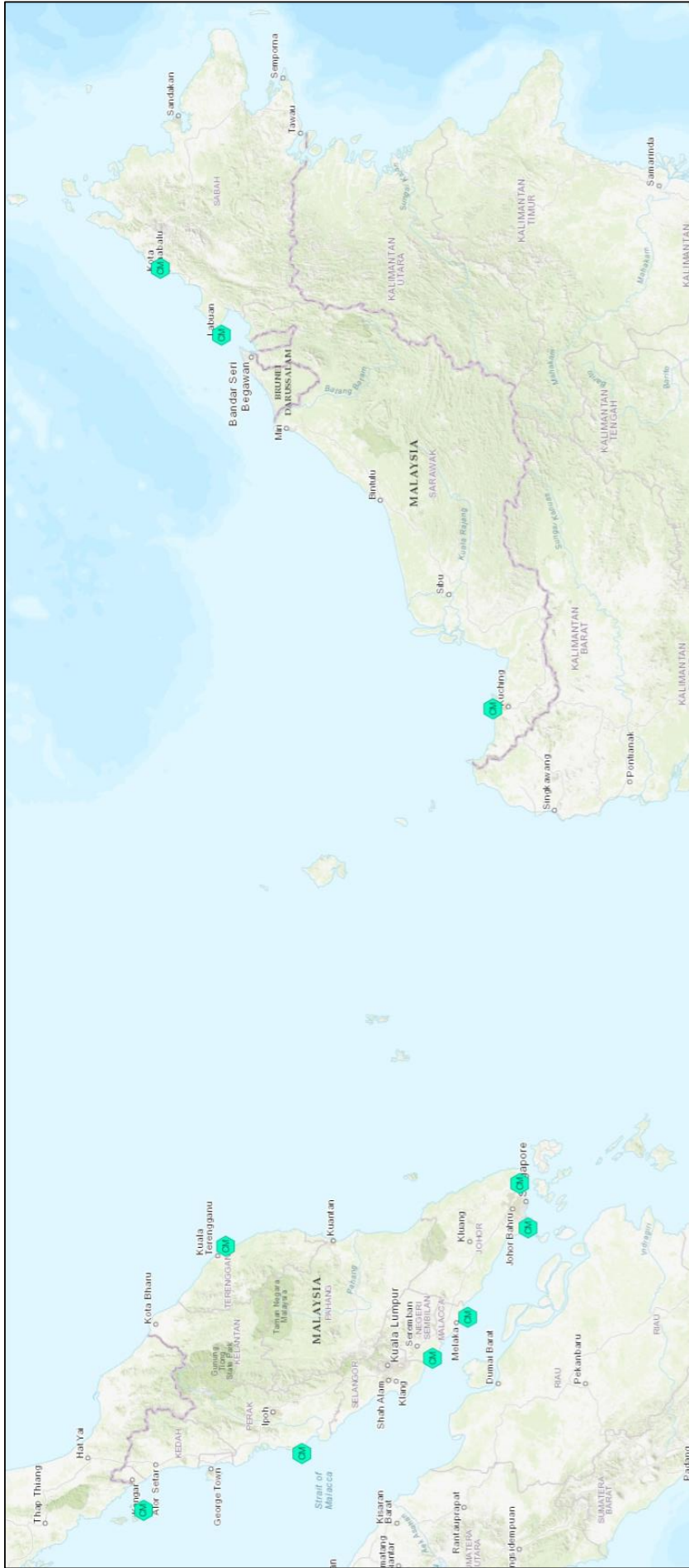
Rajah 4.2 : Taburan Lokasi Stesen Automatik bagi Pengawasan Kualiti Udara, 2022  
 Figure 4.2 : Distribution of Air Quality Monitoring Automatic Stations in 2022





**PETUNJUK/LEGEND**

-  CRWQM Stations
-  State Boundary
-  Water Body

Rajah 4.3 : Taburan Lokasi Stesen Automatik bagi Pengawasan Kualiti Air Sungai, 2022  
 Figure 4.3 : Distribution of River Water Quality Monitoring Automatic Stations in 2022



**PETUNJUK/LEGEND**

-  CMWQM Stations
-  State Boundary

Rajah 4.4 : Taburan Lokasi Stesen Automatik bagi Pengawasan Kualiti Air Marin, 2022  
 Figure 4.4 : Distribution of Marine Water Quality Monitoring Automatic Stations in 2022

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.

Specifically for the air quality component, apart from automatic and manual stations, the EQMP programme also provides mobile automatic air quality monitoring stations called *Mobile Continuous Air Quality Monitoring (MCAQM)* to fulfil the aspiration of placing air quality monitoring stations in all parts of the country. There are three (3) mobile environmental ambient air quality stations, each placed in Peninsular Malaysia, Sabah and Sarawak respectively.

Jadual 4.10 : Senarai Program / Aktiviti / Latihan yang Dilaksanakan Di Bawah Program EQMP Sepanjang Tahun 2022

Table 4.10 : List of Programmes / Activities / for Training Conducted Under the EQMP Programme Throughout 2022

BIL/ NO.	TARIKH/ DATE	PROGRAM/AKTIVITI/ LATIHAN/PROGRAMME/ ACTIVITY/TRAINING	LOKASI/ LOCATION
1	29 Mei 2022 - 2 Jun 2022 / 29 <sup>th</sup> May 2022 - 2 <sup>nd</sup> June 2022 (5 hari / 5 days)	Program Pengawasan Kualiti Alam Sekitar: Pengenalan, Analisis Statistik Dan Interpretasi Data EQMP (Zon Timur) / Environmental Quality Monitoring Program: Introduction, Statistical Analysis and EQMP Data Interpretation (Eastern Zone)	Kuala Terengganu
2	13 - 17 Jun 2022 / 13 <sup>th</sup> - 17 <sup>th</sup> June 2022 (5 hari / 5 days)	Program Pengawasan Kualiti Alam Sekitar: Pengenalan, Analisis Statistik Dan Interpretasi Data EQMP (Zon Sabah) / Environmental Quality Monitoring Program: Introduction, Statistical Analysis and EQMP Data Interpretation (Sabah Zone)	Kota Kinabalu
3	19 - 20 Julai 2022 / 19 <sup>th</sup> - 20 <sup>th</sup> July 2022 (Lelaki / Men)  21 - 22 Julai 2022 / 21 <sup>st</sup> - 22 <sup>nd</sup> July 2022 (Perempuan / Women) (4 hari / 4 days)	Keselamatan Dalam Air <ul style="list-style-type: none"> <li>River and Marine Safety and Health (Water Safety)</li> <li>Dua (2) Sesi pembelajaran asas renang dan water confident iaitu untuk pegawai lelaki dan pegawai perempuan.</li> </ul> Safety In Water <ul style="list-style-type: none"> <li>River and Marine Safety and Health (Water Safety)</li> <li>Two (2) basic swimming and water confidence learning sessions for male and female officers.</li> </ul>	Kuala Kubu Bharu, Selangor
4	18 - 22 Julai 2022 / 18 <sup>th</sup> - 22 <sup>nd</sup> July 2022 (5 hari / 5 days)	Program Pengawasan Kualiti Alam Sekitar: Pengenalan, Analisis Statistik Dan Interpretasi Data EQMP (Zon Selatan) / Environmental Quality Monitoring Program: Introduction, Statistical Analysis and EQMP Data Interpretation (South Zone)	Melaka
5	8 - 12 Ogos 2022 / 8 <sup>th</sup> - 12 <sup>th</sup> August 2022 (5 hari / 5 days)	Program Pengawasan Kualiti Alam Sekitar: Pengenalan, Analisis Statistik Dan Interpretasi Data EQMP (Zon Sarawak) / Environmental Quality Monitoring Program: Introduction, Statistical Analysis and EQMP Data Interpretation (Sarawak Zone)	Kuching, Sarawak
6	31 Oktober 2022 - 4 November 2022 / 31 <sup>st</sup> October 2022 - 4 <sup>th</sup> November 2022 (5 hari / 5 days)	Program Pengawasan Kualiti Alam Sekitar: Pengenalan, Analisis Statistik Dan Interpretasi Data EQMP (Zon Tengah) / Environmental Quality Monitoring Program: Introduction, Statistical Analysis and EQMP Data Interpretation (Central Zone)	Shah Alam, Selangor
7	14 - 18 November 2022 / 14 <sup>th</sup> - 18 <sup>th</sup> November 2022 (5 hari / 5 days)	Program Pengawasan Kualiti Alam Sekitar: Pengenalan, Analisis Statistik Dan Interpretasi Data EQMP (Zon Utara) / Environmental Quality Monitoring Program: Introduction, Statistical Analysis and EQMP Data Interpretation (North Zone)	Langkawi, Kedah
8	11 - 14 Oktober 2022 / 11 <sup>th</sup> - 14 <sup>th</sup> October 2022 (4 hari / 4 days)	SOP Pengawasan Kualiti Udara dan Rasionalisasi EQMP / Air Quality Monitoring SOP and EQMP Rationalization	Shah Alam, Selangor
9	17 - 19 Oktober 2022 / 17 <sup>th</sup> - 19 <sup>th</sup> October 2022 (3 hari / 3 days)	SOP, NPE dan Modelling Sungai / SOP, NPE and River Modeling	Shah Alam, Selangor
10	7 - 11 November 2022 / 7 <sup>th</sup> - 11 <sup>th</sup> November 2022 (5 hari / 5 days)	Latihan Pengawasan Kualiti Udara – Pengendalian Peralatan Cerapan Udara, Analisis dan Interpretasi Data / Air Quality Monitoring Training - Operation of Air Monitoring Equipment, Data Analysis and Interpretation	Port Dickson, Negeri Sembilan

Jadual 4.11 : Senarai Lawatan Rasmi daripada Pihak Luar ke Pusat Data Alam Sekitar (EDC) di Bawah Program EQMP sepanjang Tahun 2022

Table 4.11 : List of Official Visits from External Parties to the Environmental Data Center (EDC) under the EQMP Programme in 2022

BIL/ NO.	TARIKH/DATE	LAWATAN RASMI DARI AGENSI AWAM /SWASTA/ OFFICIAL VISITS FROM PUBLIC/SPECIAL AGENCIES
1	17 Februari 2022 / 17 <sup>th</sup> February 2022	Lawatan kerja peserta kursus dari Institut Alam Sekitar Malaysia (EiMAS)/ Work visit of course participants from the Environment Institute of Malaysia(EiMAS)
2	24 Februari 2022 / 24 <sup>th</sup> Februari 2022	Lawatan kerja peserta kursus dari Institut Alam Sekitar Malaysia (EiMAS)/ Work visit of course participants from the Environment Institute of Malaysia(EiMAS)
3	26 Julai 2022 / 26 <sup>th</sup> July 2022	Lawatan kerja mahasiswa dan pensyarah dari Universitas Diponegoro Semarang, Indonesia/ Work visit of students and lecturers from Diponegoro University Semarang, Indonesia
4	11 Ogos 2022 / 11 <sup>th</sup> August 2022	Lawatan kerja peserta kursus dari Institut Alam Sekitar Malaysia (EiMAS)/ Work visit of course participants from the Environment Institute of Malaysia(EiMAS)
5	16 Ogos 2022 / 16 <sup>th</sup> August 2022	Lawatan pegawai-pegawai dari Jabatan Perancangan Bandar dan Desa, PLANMalaysia/ Visit by officials from the Town and Country Planning Department, PLANMalaysia
6	30 Ogos 2022 / 30 <sup>th</sup> August 2022	Lawatan Timbalan Menteri Tenaga dan Kelestarian Alam Sekitar dan pegawai-pegawai dari Natural Resources And Environment Board Sarawak (NREB)/ Visit of the Deputy Minister of Energy and Environmental Sustainability and officers from the Natural Resources And Environment Board Sarawak (NREB)
7	25 Oktober 2022 / 25 <sup>th</sup> October 2022	Lawatan kerja peserta kursus dari Institut Alam Sekitar Malaysia (EiMAS)/ Work visit of course participants from the Environment Institute of Malaysia(EiMAS)
8	7 Disember 2022 / 7 <sup>th</sup> Desember 2022	Lawatan kerja mahasiswa dan pensyarah dari Universiti Teknologi MARA/ Work visit of students and lecturers from MARA University of Technology



Stesen Pengawasan Kualiti Udara Bergerak (MCAQM) yang Ditempatkan di Semenanjung Malaysia iaitu di Johan Setia, Klang, Selangor bagi Memantau Tahap Kualiti Udara Setempat di Kawasan tersebut  
Mobile Continuous Air Quality Monitoring Station (MCAQM) Placed at Peninsular Malaysia which is Located at Johan Setia, Klang, Selangor to Monitor the Level of Ambient Air Quality at that Specified Location

## BENCANA PENCEMARAN INDUSTRI

Sepanjang tahun 2022, 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 2022.

Komitmen yang diberikan dari segi kepakaran, kewangan, tenaga kerja dan masa yang digembelngkan oleh seluruh jabatan bagi memastikan episod pencemaran industri tersebut tidak bertambah mudharat 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.

## 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) yang akan mengesan gas TVOC dan memberikan amaran awal kepada pihak berkuasa dan orang awam. Daripada 25 stesen PID ini, terdapat lima (5) stesen meteorologi yang terletak bersebelahan antara satu sama lain untuk mendapatkan data meteorologi tempatan bagi tujuan pemodelan dan mengesan penyerakan pencemar udara.

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).

## INDUSTRIAL POLLUTION DISASTER

The Department of Environment, being the agency responsible for enforcing the laws pertaining to environmental pollution takes its role very seriously. Industrial pollution is one of the areas of concern and the DOE is totally committed in monitoring industrial pollution throughout Malaysia. Throughout 2022, the rigorous 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 commitments are seen in terms of expertise, finance, work force and time by the whole department to ensure that industrial disaster episodes do not recur and to stringently carry out enforcements to track and bring the offenders to court under the jurisdiction of the Environmental Quality Act (EQA) 1974.

## EMPOWERMENT OF AIR QUALITY AND TOXIC GASES MONITORING AT PASIR GUDANG, JOHOR

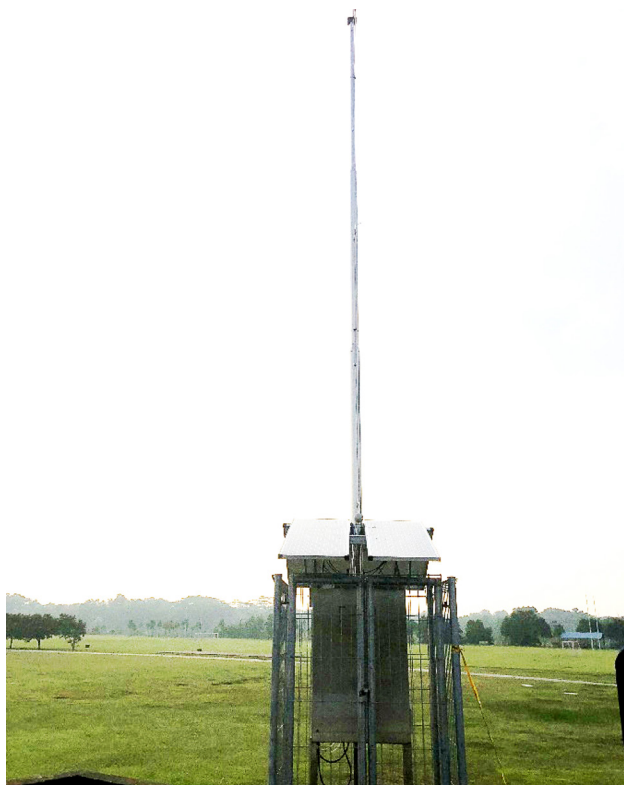
The DOE, through the Ministry, has carried out air quality and toxic gas monitoring in Pasir Gudang since 2019 and continues until now.

DOE has installed 25 *Total Volatile Organic Compounds* (TVOC) toxic gases monitoring stations using *Photo Ionization Detectors* (PIDs) which will trace TVOC gases and a system that will trigger warnings to the authorities as well as to the public. Among the 25 PID stations, there are five (5) meteorological stations situated next to each other in order to obtain local meteorological data for the purpose of modelling and detecting dispersion of the air pollution.

Besides this, the DOE has 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 4.12 : Lokasi Stesen Pengawasan Total Volatile Organic Compounds (TVOC)  
Table 4.12 : Location of Total Volatile Organic Compounds (TVOC) Monitoring Stations

BIL / NO.	LOKASI STESEN / LOCATION OF STATION
1	Sekolah Kebangsaan Tanjung Langsung
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  
A TVOC Station (left) and a 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)

## PROGRAM PENCEGAHAN KEBAKARAN TANAH GAMBUT

Program Mencegah Kebakaran Tanah Gambut untuk Mengatasi Jerebu telah dilaksanakan oleh Jabatan Alam Sekitar (JAS) di bawah Kementerian Sumber Asli dan Alam Sekitar (NRE) bermula pada tahun 2009 dalam Rancangan Malaysia Ke-9 (RMKe-9) dan diteruskan di bawah Kementerian Alam Sekitar dan Air (KASA) dalam Rancangan Malaysia Ke-12 (RMKe-12). Program ini diwujudkan sebagai tindakan pencegahan bagi mengawal kebakaran di kawasan tanah gambut yang dilihat lebih praktikal berbanding kerja-kerja pemadaman, memandangkan kebakaran yang berlaku di tanah gambut amat sukar dipadamkan serta mengambil masa yang lama.

Mulai tahun 2021 di bawah RMKe-12, program ini bukan sahaja memfokuskan kepada tujuh (7) Negeri yang mempunyai tanah gambut iaitu Selangor, Pahang, Johor, Kelantan, Terengganu, Sabah dan Sarawak, tetapi diperluaskan kepada semua Negeri yang mempunyai kawasan yang berisiko kebakaran. Melalui pengurusan pencegahan kebakaran yang holistik ini, ia dapat mencegah berlakunya aktiviti pembakaran terbuka yang mengakibatkan jerebu setempat.

Lima (5) jenis infrastruktur telah dibangunkan melalui program ini iaitu sekatan saluran, telaga tiub, menara tinjau, kolam takungan dan saluran paip air bagi mencegah dan mengawal risiko kebakaran di kawasan tanah gambut di tujuh buah negeri. Infrastruktur lain adalah piezometer yang bertujuan untuk mengukur paras air bawah tanah

## PEATLAND FIRE PREVENTION PROGRAMME

The Peatland Fire Prevention Programme to Overcome Haze was implemented by the Department of Environment (DOE) under the Ministry of Natural Resources and Environment (NRE) and commenced in 2009 under the 9<sup>th</sup> Malaysia Plan (RMKe-9) and has continued under the Ministry of Environment and Water (KASA) in the 12<sup>th</sup> Malaysia Plan (RMKe-12). This programme was created as a preventive measure to control fires in peatlands which is seen as more practical than extinguishing works, as fires in peatlands are extremely difficult to put out and is very time consuming .

From the year 2021, under the RMKe-12, this programme has not only focused on seven (7) states with peatlands, namely Selangor, Pahang, Johor, Kelantan, Terengganu, Sabah and Sarawak, but has extended to all states with fire risk areas. Through this holistic fire prevention management, the occurrence of open burning activities that result in local haze, can be carried out.

Five (5) types of infrastructure have been developed through this programme, which are check dams, tube wells, watch towers, reservoirs and water pipelines to prevent and control the risk of fires in peatlands in the seven states. Another infrastructure is a piezometer to measure groundwater levels in peat soils during hot and dry weather. In addition,

bagi mengetahui penurunan air dalam tanah gambut ketika cuaca panas dan kering. Selain itu, pemantauan di menara tinjau dan pemantauan melalui rondaan darat termasuk penggunaan dron dilaksanakan sebagai langkah pencegahan awal.

Program ini melibatkan kerjasama erat pelbagai agensi iaitu JAS, Jabatan Pengairan dan Saliran (JPS), Jabatan Mineral dan Geosains (JMG), Jabatan Perhutanan Negeri Selangor, Jabatan Perhutanan Negeri Sabah dan Majlis Bandaraya Miri (MBM). Projek ini telah dilaksanakan di tujuh (7) buah negeri iaitu Selangor, Pahang, Johor, Kelantan, Terengganu, Sabah dan Sarawak. Sehingga tahun 2022, infrastruktur yang telah dibina di negeri-negeri tersebut adalah seperti berikut:

monitoring at watch towers and monitoring through ground patrols including the use of drones were implemented as early preventive measures.

The programme involves various agencies, which are DOE, the Department of Irrigation and Drainage (DID), the Minerals and Geoscience Department (MGD), the Selangor Forestry Department, the Sabah Forestry Department and the Miri City Council (MCC). This programme has been implemented in seven (7) states namely Selangor, Pahang, Johor, Kelantan, Terengganu, Sabah dan Sarawak. As of 2022, the infrastructure that has been built in these states are as follows:

Jadual 4.13 : Bilangan Infrastruktur yang telah dibina sehingga tahun 2022  
Table 4.13 : Number of Infrastructure that has been Built by the Year 2022

NEGERI / STATE	JENIS INFRASTRUKTUR / TYPE OF INFRASTRUCTURE					
	SEKATAN SALIRAN / CHECK DAM	TELAGA TIUB / TUBE WELL	MENARA TINJAU / WATCH TOWER	KOLAM TAKUNGAN / RESERVOIR	SALURAN PAIP AIR / WATER PIPELINE	PIEZO METER
Selangor	24	23	2	9	1(3km)	49
Pahang	87	17	1	5	-	15
Johor	67	14	-	-	-	6
Kelantan	32	13	-	-	-	-
Terengganu	54	8	-	1	-	-
Sabah	10	13	2	-	-	4
Sarawak	31	13	1	-	1(0.3km)	8
<b>JUMLAH / TOTAL</b>	<b>305</b>	<b>101</b>	<b>6</b>	<b>15</b>	<b>2(3.3km)</b>	<b>82</b>



Sekatan Saliran (Check Dam) di Pahang



Sekatan Saliran (Check Dam) di Selangor

Infrastruktur yang Siap Dibina pada Tahun 2022  
The Infrastructure that was Built in 2022



Telaga Tiub (Tube Well) di Selangor



Telaga Tiub (Tube Well) di Terengganu

Infrastruktur yang Siap Dibina pada Tahun 2022  
The Infrastructure that was Built in 2022

## PENGUATKUASAAN TERHADAP AKTIVITI PEMBAKARAN TERBUKA

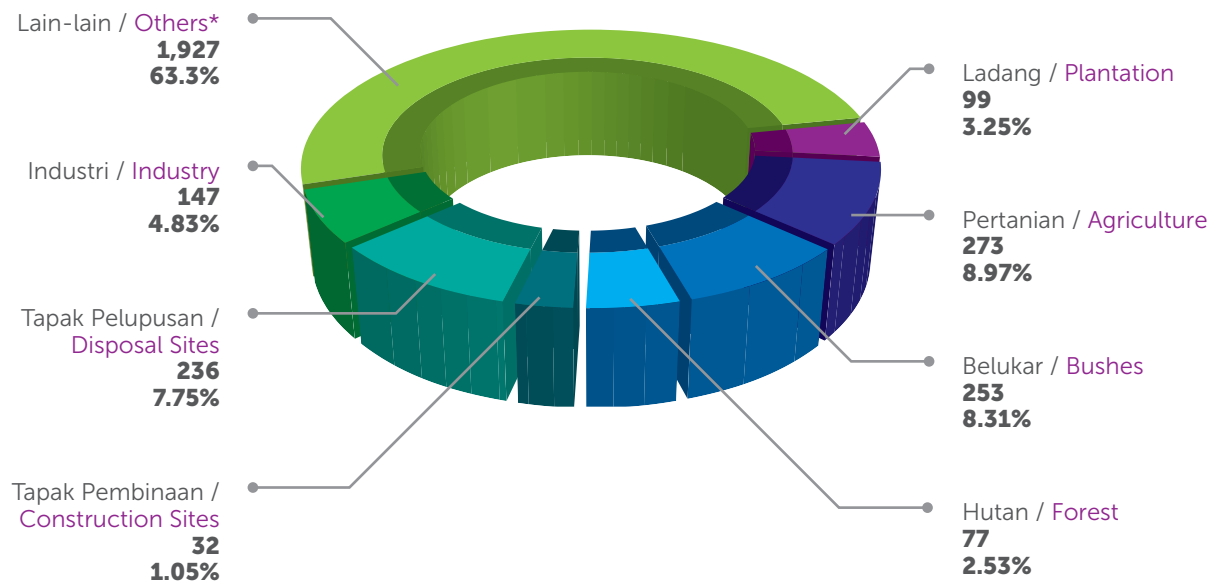
Kes pembakaran terbuka dikesan melalui operasi rondaan mencegah pembakaran terbuka yang dilaksanakan oleh JAS Negeri di kawasan-kawasan yang dikenalpasti sebagai kawasan yang berisiko berlaku kebakaran dan sering menerima aduan daripada orang awam. Di samping itu maklumat *hotspots* juga diperolehi melalui satelit yang dipantau dan dilaporkan oleh *ASEAN Specialised Meteorological Centre (ASMC)* yang berpusat di Singapura. Pada tahun 2022 sebanyak 472 *hotspots* pada tahap kepercayaan tinggi di seluruh negara telah dilaporkan melalui satelit (**Jadual 4.14**). Bermula tahun 2022, hanya *hotspots* yang mempunyai tahap kepercayaan tinggi akan disiasat oleh JAS Negeri.

Sebanyak 3,044 kes pembakaran terbuka secara keseluruhan telah dikesan pada tahun 2022 (**Jadual 4.15, Jadual 4.16 dan Rajah 4.5**) 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 (1,927 kes). Terdapat juga insiden kebakaran dari aktiviti pertanian (273 kes) dan belukar (253 kes) terutamanya semasa cuaca panas dan kering iaitu pada bulan Ogos (114 kes), Julai (72 kes) dan Januari (59 kes). Daripada 3,044 kes pembakaran terbuka tersebut, 443 kes telah dikompaun dengan jumlah kompaun yang dikutip ialah sebanyak RM 250,570.00.

## 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 receive frequent public complaints from the public. Besides this, there are also hotspots detected via satellites reported by the ASEAN Specialised Meteorological Centre (ASMC) based in Singapore. In 2021, a total of 472 high alert level hotspots were detected via satellites (**Table 4.14**). As of 2022, only the number of hotspots of high alert level will be investigated by the State DOE.

A total of 3,044 open burning cases were detected in 2022 (**Table 4.15, Table 4.16 and Figure 4.5**) 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, at roadside curbs and burning of any articles as part of religious rites or worshipping activities. These activities were categorised as "Others" and totalled 1,927 cases. There were also fire incidents in agricultural areas (273 cases) and bushes (253 cases) that especially occurred during the hot and dry period in the months of August (114 cases), July (72 cases) and January (59 cases). Out of the 3,044 open burning cases detected, 443 cases were issued with compounds amounting to RM 250,570.00.



Nota / Note :

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

\*Others - Burning garbage at residential areas, at roadside curbs and burning of Articles Part of religious activities / worship

Rajah 4.5 : Bilangan Kes Pembakaran Terbuka mengikut Kategori, 2022

Figure 4.5 : Number Of Open Burning Cases by Categories, 2022

Jadual 4.14 : Bilangan Kes Hotspots Dikesan melalui Satelit mengikut Negeri, 2022 ( Sumber: ASMC)

Table 4.14 : Number of Hotspots Detected through Satellite by States, 2022 ( Source: ASMC)

NEGERI / STATE	BULAN / MONTH												JUMLAH TOTAL
	JAN JAN	FEB FEB	MAC MARCH	APRIL APRIL	MEI MAY	JUN JUNE	JULAI JULY	OGOS AUG	SEP SEPT	OKT OCT	NOV NOV	DIS DEC	
Johor	6	0	2	2	3	2	10	3	3	0	2	1	<b>34</b>
Kedah	6	7	2	2	0	0	1	1	0	0	0	0	<b>19</b>
Kelantan	1	0	1	5	0	0	0	0	1	0	0	0	<b>8</b>
Melaka	2	0	0	0	1	0	0	0	3	0	1	0	<b>7</b>
Negeri Sembilan	0	0	0	0	0	0	0	0	1	0	0	0	<b>1</b>
Pahang	13	3	3	1	5	5	6	6	3	0	0	0	<b>45</b>
Perak	2	1	7	0	3	5	1	1	1	2	0	0	<b>23</b>
Perlis	9	0	0	0	0	0	0	0	0	0	0	0	<b>9</b>
Pulau Pinang	1	0	0	0	0	0	0	0	0	0	0	0	<b>1</b>
Sabah	2	1	1	10	6	22	7	13	7	8	0	2	<b>79</b>
Sarawak	3	2	13	15	14	4	55	91	4	11	7	2	<b>221</b>
Selangor	1	2	4	2	2	0	1	1	0	2	0	0	<b>15</b>
Terengganu	1	0	2	0	1	2	2	0	2	0	0	0	<b>10</b>
W.P. Kuala Lumpur / Putrajaya	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
W.P. Labuan	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
<b>Jumlah / Total</b>	<b>47</b>	<b>16</b>	<b>35</b>	<b>37</b>	<b>35</b>	<b>40</b>	<b>83</b>	<b>116</b>	<b>25</b>	<b>23</b>	<b>10</b>	<b>5</b>	<b>472</b>
<b>JUMLAH KESELURUHAN / TOTAL : 472</b>													

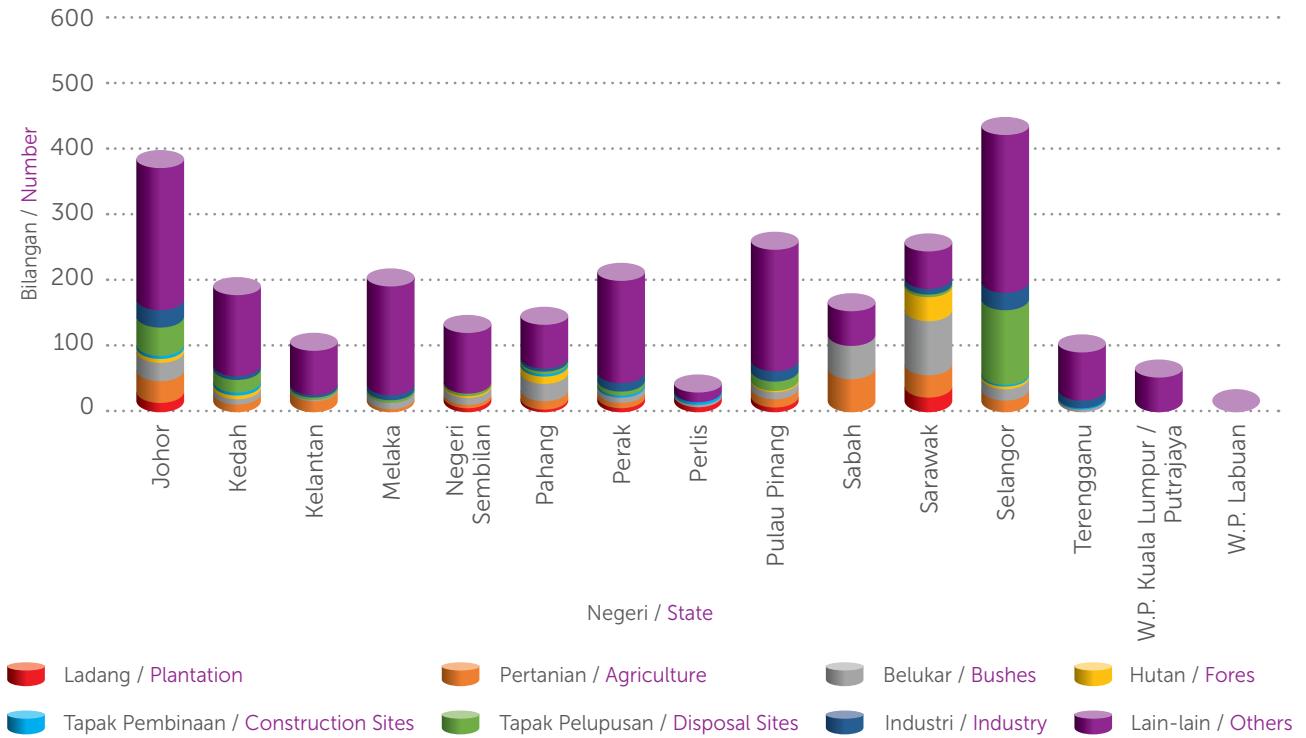
Jadual 4.15 : Bilangan Kes Pembakaran Terbuka mengikut Negeri, 2022  
Table 4.15 : Number of Open Burning Cases by States, 2022

NEGERI / STATE	KATEGORI / CATEGORIES										JUMLAH TOTAL
	LADANG PLANTATION	PERTANIAN AGRICULTURE	BELUKAR BUSHES	HUTAN FOREST	TAPAK PEMBINAAN CONSTRUCTION SITES	TAPAK PELUPUSAN DISPOSAL SITES	INDUSTRI INDUSTRY	LAIN-LAIN OTHERS*			
Johor	17	38	35	5	8	49	30	253			435
Kedah	3	13	8	7	5	21	9	141			207
Kelantan	3	18	4	0	0	1	4	77			107
Melaka	3	4	10	0	2	1	9	193			222
Negeri Sembilan	9	6	13	1	2	2	0	107			140
Pahang	5	17	30	13	3	5	4	79			156
Perak	8	11	7	1	4	6	15	180			232
Perlis	11	0	5	0	1	1	0	15			33
Pulau Pinang	8	16	13	2	1	15	18	215			288
Sabah	0	88	7	0	0	0	2	58			155
Sarawak	28	40	96	44	0	2	11	63			284
Selangor	3	19	20	4	4	132	32	278			492
Terengganu	1	2	4	0	2	0	13	82			104
W.P. Kuala Lumpur / Putrajaya	0	1	1	0	0	1	0	185			188
W.P. Labuan	0	0	0	0	0	0	0	1			1
<b>Jumlah / Total</b>	<b>99</b>	<b>273</b>	<b>253</b>	<b>77</b>	<b>32</b>	<b>236</b>	<b>147</b>	<b>1,927</b>			<b>3,044</b>
<b>JUMLAH KESELURUHAN / TOTAL : 3,044</b>											

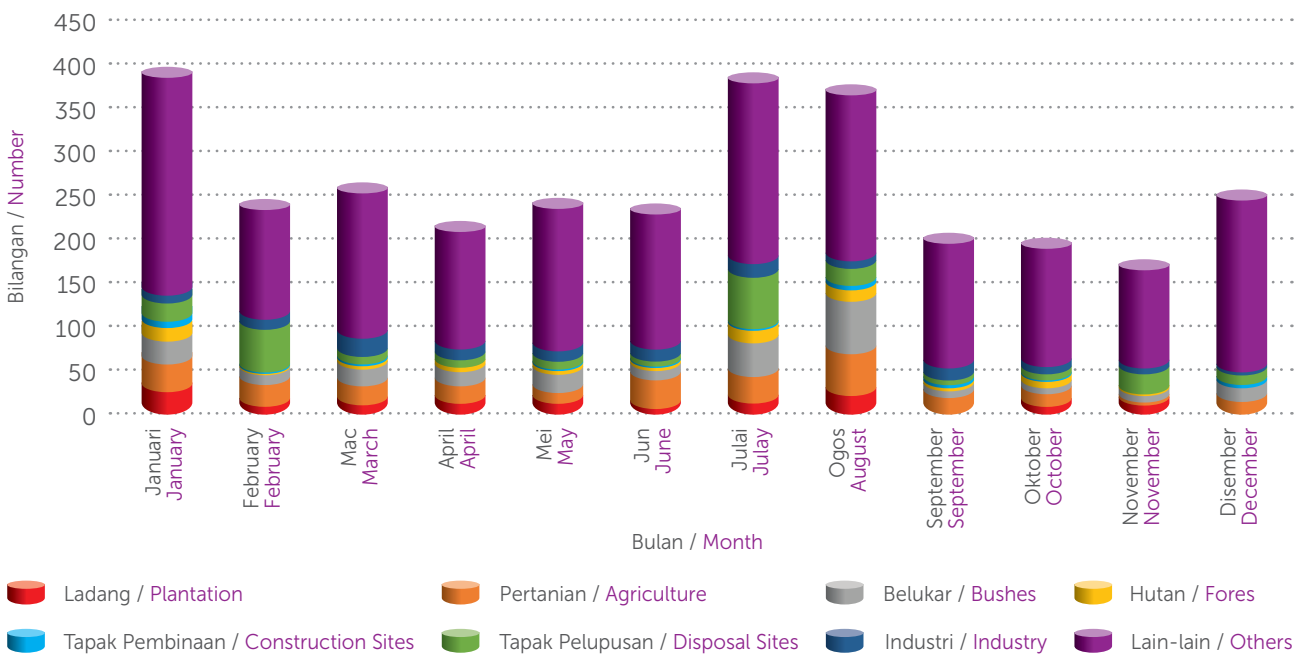
Nota / Note :

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

\*Others - Burning garbage at residential areas, at roadside curbs and burning of Articles Part of religious activities / worship



Rajah 4.6 : Bilangan Kes Pembakaran Terbuka Mengikut Negeri, 2022  
Figure 4.6 : Number Of Open Burning Cases By States, 2022



Rajah 4.7 : Bilangan Kes Pembakaran Terbuka Bulanan, 2022  
Figure 4.7 : Number of Open Burning Cases by Month, 2022

Jadual 4.16 : Bilangan Kes Pembakaran Terbuka Bulanan, 2022  
Table 4.16 : Number of Open Burning Cases by Month, 2022

BULAN / MONTH	KATEGORI / CATEGORIES								Jumlah / Total
	LADANG / PLANTATION	PERTANIAN / AGRICULTURE	BELUKAR / BUSHES	HUTAN / FOREST	TAPAK PEMBINAAN / CONSTRUCTION SITES	TAPAK PELUPUSAN / DISPOSAL SITES	INDUSTRI / INDUSTRY	LAIN-LAIN / OTHERS*	
Januari / January	25	31	28	16	7	23	9	250	389
Februari / February	6	26	10	2	3	50	12	120	229
Mac / March	7	22	21	3	2	9	23	163	250
April / April	9	21	16	6	0	9	14	129	204
Mei / May	10	12	22	5	1	9	14	159	232
Jun / June	2	35	11	3	2	7	14	150	224
Julai / July	9	31	41	16	2	61	16	205	381
Ogos / August	18	50	64	13	4	21	10	186	366
September / September	0	16	9	3	3	7	14	136	188
Oktober / October	6	14	7	8	3	7	8	130	183
November / November	7	4	8	1	1	23	8	106	158
December / December	0	11	16	1	4	10	5	193	240
<b>Jumlah / Total</b>	<b>99</b>	<b>273</b>	<b>253</b>	<b>77</b>	<b>32</b>	<b>236</b>	<b>147</b>	<b>1,927</b>	<b>3,044</b>
<b>JUMLAH KESELURUHAN / TOTAL : 3,044</b>									

Nota / Note :

\*Lain-lain - Pembakaran sampah sarap di kawasan perumahan, tepi jalan dan aktiviti keagamaan/penyembahan  
\*Others - Burning garbage at residential areas, at roadside curbs and burning of Articles Part of religious activities / worship

## 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 obligasi 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 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. JAS sedang melaksanakan HPMP Peringkat II yang bermula pada tahun 2017 dan dijangkakan selesai peringkat ini pada tahun 2023. Penghapusan penggunaan HCFC akan diteruskan dalam HPMP Peringkat III yang akan bermula pada tahun 2024. Pengimportan HCFC akan menjadi larangan mutlak pada tahun 2040.

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 ini, 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 protokol ini, Malaysia telah meratifikasi Pindaan Kigali (KA) pada 21 Oktober 2020.

## PEMATUHAN TERHADAP PROTOKOL MONTREAL

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 4.17** menunjukkan polisi dan strategi perundangan dalam pelaksanaan HPMP.

HPMP Peringkat II telah dilaksanakan sejak tahun 2017 dan dirancang selesai pada tahun 2022. Namun, disebabkan oleh ekonomi dan perdagangan negara tergendala akibat kesan pandemik COVID-19 pada tahun 2020 dan 2021, maka tempoh pelaksanaan

## 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<sup>th</sup> August 1989. As party to the Montreal Protocol, Malaysia has complied with the obligation to stop importing chlorofluorocarbon (CFC), halon and carbon tetrachloride (CTC) from 1<sup>st</sup> January 2010. There have been import controls on other ozone depleting substances such as methyl bromide, which will only be allowed for quarantine and pre-shipment activities from January 2015.

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 has been effectively phased out, resulting in a reduction of 111.85 Ozone Depleting Potential Tonne (ODPT). DOE is currently implementing HPMP Stage II, which began in 2017 and is expected to conclude in 2023. HCFC use elimination will continue in HPMP Stage III, starting in 2024. The import of HCFCs will be completely banned by 2040.

During the 28<sup>th</sup> Meeting of Parties to the Montreal Protocol in Kigali, Rwanda on 15<sup>th</sup> 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<sup>st</sup> 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<sup>st</sup> October 2020.

## COMPLIANCE WITH THE MONTREAL PROTOCOL

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 4.17** presents the policies and regulatory strategies of HPMP.

The implementation of HPMP Stage II commenced in 2017 and was initially scheduled for completion in 2022. However, due to the adverse impacts of the COVID-19 pandemic on the country's economy and trade in 2020 and 2021, the implementation

HPMP II telah dilanjutkan sehingga tahun 2023 setelah mendapat kelulusan daripada mesyuarat ExCOM ke-88.

Pada tahun 2022, jumlah penggunaan bahan HCFC di Malaysia adalah sebanyak 3,371.41 metrik tan atau bersamaan dengan 187.08 ODPT (Ozone Depleting Potential Tonne). Jumlah ini dibandingkan dengan garis dasar penggunaan HCFC yang ditetapkan pada tahun 2013 iaitu 515.76 ODPT, Malaysia telah mencapai pengurangan penggunaan HCFC sebanyak 63.73%. **Rajah 4.8** menunjukkan pencapaian Malaysia untuk penghapusan HCFC berbanding dengan Jadual Penghapusan HCFC yang ditetapkan di bawah Protokol.

period was extended until 2023 after approval from the 88th ExCOM meeting.

In 2022, Malaysia's consumption of HCFC materials amounted to 3,371.41 metric tons, equivalent to 187.08 ODPT (Ozone Depleting Potential Tonne). In comparison to the HCFC consumption baseline set in 2013, which is 515.76 ODPT, Malaysia has successfully achieved a significant reduction of 63.73% in HCFC consumption. **Figure 4.8** shows Malaysia's achievement of HCFC phase-out compared to the HCFC phase-out schedule as specified in the Protocol.

Jadual 4.17 : Polisi dan Strategi Perundangan bagi Pelan Pengurusan Penghapusan HCFC (HPMP) (2012-2040)

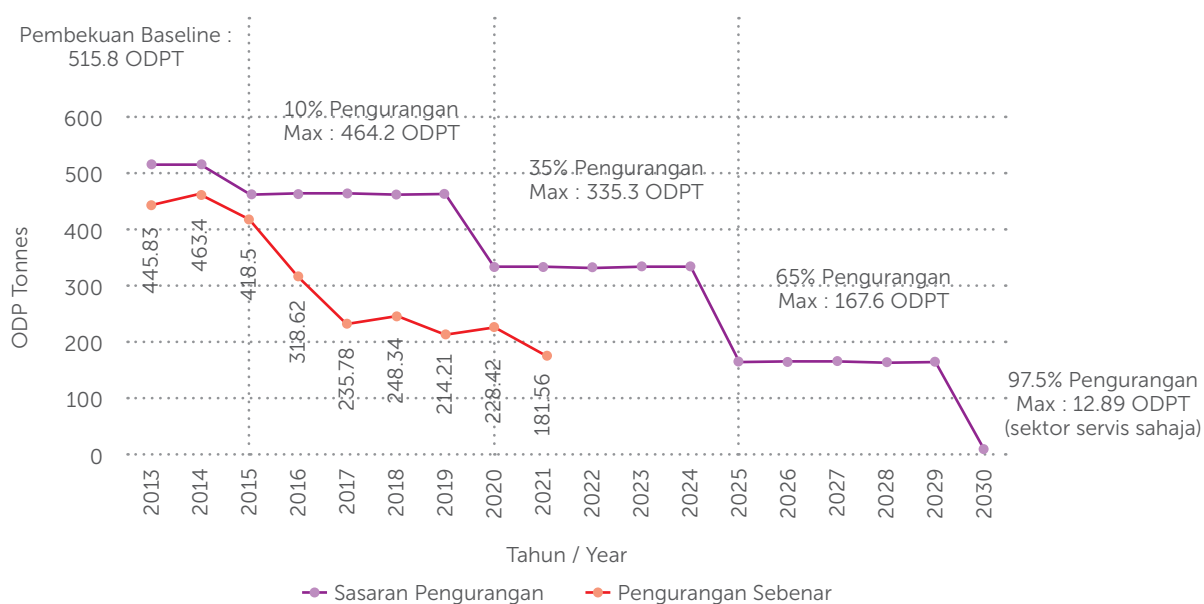
Table 4.17 : Policies and Regulatory Strategies for HCFC Phase Out Management Plan (HPMP) (2012-2040)

TAHUN YEAR	POLISI DAN RANGKA KERJA PERUNDANGAN POLICY AND REGULATORY FRAMEWORK
2012	<p>Mewujudkan sistem AP bagi pengagihan kuota import HCFC berdasarkan garis dasar atau purata import 2009/2010 Establishment of Approved Permit (AP) for HCFC import quota based on National average consumption for 2009/2010</p> <p>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.</p>
2013	<p>Mewujudkan sistem perlesenan untuk mengekspor semula gas HCFC Establish a Licensing system for re-export of HCFC chemicals</p> <p>Pelaksanaan sistem AP pada 1 Januari 2013 mengikut Jadual Pembekuan Protokol Montreal Implement Approved Permit (AP) system for HCFC import (by Jan 2013)</p> <p>Larangan menambah (expansion) atau membina fasiliti pembuatan baru menggunakan HCFC Prohibit expansion of new manufacturing facilities using HCFCs</p> <p>Promosi menggunakan bahan alternatif melalui pemberian insentif Promote the use of alternatives through incentives</p> <p>Latihan dan Pensijilan bagi pekerja yang mengendalikan HCFC Undertake certification of skilled workers trained to handle HCFCs</p>
2015	<p>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-con equipment of 2.5hp and below (for use in Malaysia)</p> <p>Mewartakan HCFC sebagai bahan terkawal Include HCFCs as a restricted gas</p> <p>Larangan ke atas pengimportan polyol yang mengandungi HCFC Prohibit import of pre-blended polyols with HCFCs</p>
2020	<p>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)</p> <p>Larangan menggunakan HCFC 141b sebagai agen pengembang Prohibit the use of HCFC 141b as a blowing agent</p> <p>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</p>
2025	<p>Larangan pemasangan baru semua barangan dan peralatan yang menggunakan HCFC No more new installation of products and equipment using HCFCs</p>

Jadual 4.17 : Polisi dan Strategi Perundangan bagi Pelan Pengurusan Penghapusan HCFC (HPMP) (2012 - 2040)

Table 4.17 : Policies and Regulatory Strategies for HCFC Phase Out Management Plan (HPMP) (2012 - 2040)

TAHUN YEAR	POLISI DAN RANGKA KERJA PERUNDANGAN POLICY AND REGULATORY FRAMEWORK
2030	Pemberian AP terhad kepada 2.5% daripada jumlah baseline dan hanya untuk sektor servis sahaja Provision of AP limited to 2.5% of baseline and for service sector only
2040	Larangan mutlak pengimportan HCFC mulai 1 Januari 2040 Total ban on the import and use of HCFCs.



Rajah 4.8: Pencapaian Penghapusan HCFC di Malaysia  
Figure 4.8: HCFC Phase-out Achievement in Malaysia

## STATUS PELAKSANAAN PELAN PENGURUSAN PENGHAPUSAN HCFC (HPMP) PERINGKAT II

Pada 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 2022, sebanyak 177 permohonan untuk mengimport HCFC telah diterima daripada 12 pengimport berdaftar dan tiada permohonan untuk mengeksport HCFC diterima.

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, setakat

## STATUS OF HCFC PHASE-OUT MANAGEMENT PLAN (HPMP) STAGE-2 IMPLEMENTATION

In 2013, the DOE implemented the Approved Permit (AP) system to control HCFC import 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 / exporters registered with the Department of Environment and Customs Information System (SMK), under the jurisdiction of the Royal Malaysian Customs Department (JKDM). In 2022, 177 import applications were received from 12 registered importers, while no export applications were submitted through e-Permit.

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

Disember 2022, sebanyak 23 pengusaha busa telah berjaya menyelesaikan penukaran tersebut dan semua pengusaha busa yang dikenal pasti telah menggunakan alternatif mesra ozon dengan bantuan kewangan MLF. 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.

Selaras dengan obligasi di bawah Protokol Montreal, Malaysia bersetuju untuk mengawal pengimportan, pengilangan atau pemasangan kelengkapan penyejukbekuan dan penyaman udara yang berasaskan HCFC. Maka bermula pada 1 Disember 2022, prosedur baharu kawalan pengeluaran dan pengimpotan peralatan yang menggunakan refrigeran HCFC telah dikuatkuasakan. Dalam prosedur 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 dinaiktaraf dan berintegritas dengan sistem e-Kelengkapan dari ST untuk memudahkan proses permohonan secara dalam talian oleh pengimport dan pengilang peralatan.

### 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 dasar penggunaan HFC adalah berdasarkan kepada purata penggunaan HFC bagi tahun 2020 hingga 2022 dan bertambah dengan 65% daripada garis dasar penggunaan HCFC. **Rajah 4.9** menunjukkan Jadual Pengurangan Penggunaan HFC yang ditetapkan di bawah Protokol Montreal.

Bengkel Pelancaran Persediaan Pelan Pelaksanaan Kigali (KIP) bagi pengurangan penggunaan bahan HFC telah diadakan di Hotel Zenith, Putrajaya pada 30 Mac 2022. Bengkel ini telah dianjurkan oleh JAS dengan kerjasama antara World Bank dan syarikat perunding tempatan yang dilantik oleh World Bank. Tujuan bengkel ini adalah untuk memulakan kajian soal-selidik bagi mengemaskini data penggunaan

pandemic. However, despite some setbacks, 23 foam enterprises managed to complete conversion as at December 2022, and all identified foam manufacturers, with the financial assistance of MLF, had adopted ozone-friendly alternatives. Starting 1<sup>st</sup> January 2023, HCFC-141b is prohibited for use in the foam sector. There will be no import quotas or permits for the import of HCFC-141b in the foam sector, except for 1 ODPT for the solvent sector .

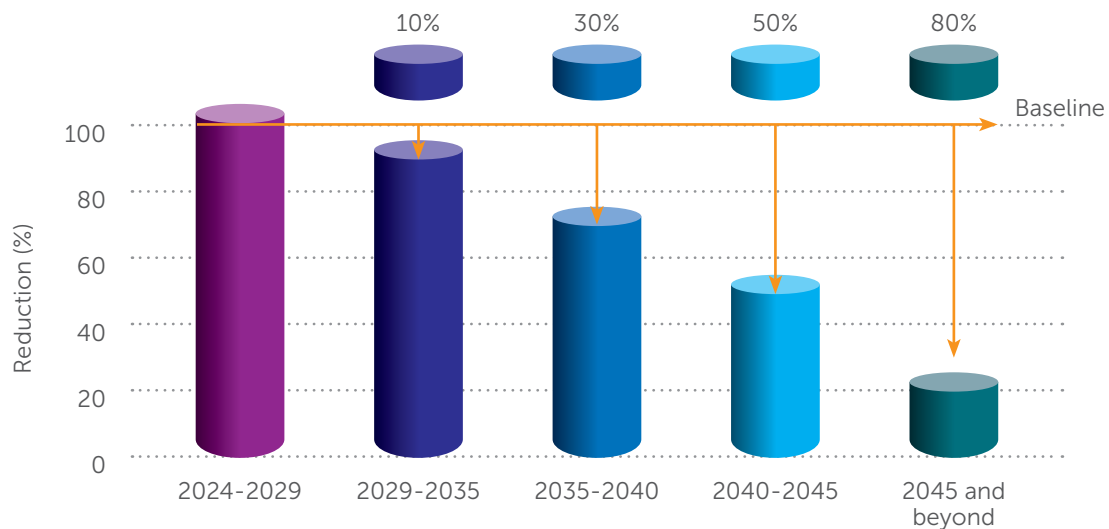
In compliance with its obligations under the Montreal Protocol, Malaysia has committed to controlling the import, manufacture, and installation of refrigeration and air conditioning equipment utilising HCFCs. Hence, commencing from 1<sup>st</sup> December 2022, a new procedure has been implemented to govern the production and import of equipment that use HCFC refrigerants. As part of this 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.

### PREPARATION OF KIGALI IMPLEMENTATION PLAN (KIP)

On 21<sup>st</sup> October 2020, Malaysia ratified the Kigali Amendment under the Montreal Protocol for phase-down of Hydrofluorocarbons (HFC) which was being used as an alternative to HCFC which is considered a substance to have a high Global Warming Potential (GWP) .

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, along with an additional 65% from the HCFC baseline. Effective 1<sup>st</sup> January 2024, Malaysia will maintain HFC consumption at the freeze baseline level. **Figure 4.9** shows the HFC Consumption Phase-down Schedule.

On 30<sup>th</sup> March 2022, a Workshop to launch the Kigali Implementation Plan (KIP) Preparation was held at Hotel Zenith in Putrajaya. DOE organised the workshop in collaboration with the World Bank and a local consulting company appointed by the World Bank. The main objective of the workshop was to initiate a survey study aiming to update HFC consumption data in Malaysia for the years 2019 to



Rajah 4.9 : Jadual Pengurangan Penggunaan HFC  
Figure 4.9 : HFC Consumption Phase-down Schedule

HFC di Malaysia bagi tahun 2019 hingga 2021 dan penyediaan KIP bagi menggariskan polisi, pelan dan strategi untuk pengurangan bahan HFC dalam negara. Persediaan KIP dijangka akan selesai pada suku tahun kedua tahun 2023.

2021. Its purpose was to prepare the KIP, outlining policies and strategies for HFC reduction in the country. The completion of KIP preparations is expected by the second quarter of 2023.

#### 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 untuk memberi maklumat baharu dan kesedaran

#### CAPACITY BUILDING FOR 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 providing new



Kursus Kawalan Bahan Pemusnah Ozon Siri 1/2022  
Ozone Depleting Substances Control Course Series 1/2022

kepada penguatkuasa JKDM dan JAS berkaitan pelaksanaan dan pematuhan terhadap Protokol Montreal, peruntukkan undangan-undangan untuk mengawal dan mengawasi pengimportan serta pengeksportan bahan pemusnah ozon.

Pada tahun 2022, JAS bersama JKDM dan Akademi Kastam Diraja Malaysia (AKMAL) telah menganjurkan 2 siri Kursus Kawalan Bahan Pemusnah Ozon. Siri Pertama telah diadakan pada 27 hingga 30 Jun 2022 di Holiday Villa Hotel & Suite, Kota Bharu, Kelantan dan seramai tiga puluh lima (35) peserta yang terdiri daripada pegawai penguatkuasa JKDM dan JAS telah menyertai kursus ini.

Siri Ke-2 telah diadakan di Horizon Hotel, Kota Kinabalu, Sabah pada 18 hingga 21 Oktober 2022 dan seramai tiga puluh sembilan (39) peserta telah menyertai kursus ini.

information and awareness to JKDM and DOE enforcement officers related to the implementation and compliance with the Montreal Protocol. The course specifically focuses on the regulations and related legislation to control and monitor the import and export of Ozone Depleting Substances (ODS).

In 2022, DOE in collaboration with the JKDM and the Royal Malaysian Customs Academy (AKMAL), successfully organised 2 series of Ozone Depleting Substances Control Courses. The 1<sup>st</sup> Series was held on 27<sup>th</sup> to 30<sup>th</sup> June 2022 at Holiday Hotel and Suite, Kota Bharu, Kelantan. A total of thirty-five (35) participants, comprising enforcement officers from JKDM and the DOE attended this course.

The 2<sup>nd</sup> Series of Ozone Depleting Substances Control Course was conducted at the Horizon Hotel in Kota Kinabalu, Sabah, from 18<sup>th</sup> to 21<sup>st</sup> October 2022. A total of thirty-nine (39) participants attended this series.



Kursus Kawalan Bahan Pemusnah Ozon Siri 2/2022  
Ozone Depleting Substances Control Course Series 2/2022

#### **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 terbaik dalam penyelenggaraan sistem penyejukbekuan dan penyaman udara.

#### **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 has been introduced and implemented. This programme is designed to offer training in best practices for the maintenance of refrigeration and air conditioning systems.

Pada tahun 2022, sebanyak 236 siri latihan pensijilan telah dianjurkan oleh Pusat Latihan Bertauliah (ATC) untuk melatih dan mentauliahkan seramai 3,332 juruteknik dalam sektor RAC. Bagi memastikan latihan dilaksanakan mengikut manual latihan dan Prosedur Operasi Standard (SOP) yang ditetapkan oleh JAS. Sepanjang tahun 2022, sebanyak 55 kali audit telah dilaksanakan oleh pegawai JAS.

Pada tahun 2022, JAS juga menganjurkan 2 siri bengkel bagi melatih dan mentauliahkan tenaga pengajar baru (New Master Trainer) dari ATC. Siri pertama telah diadakan pada 15 hingga 18 Mac 2022 di Tenera Hotel, Bangi dan Siri kedua pada 5 hingga 9 Disember 2022 di Grand Dorsett Hotel, Subang. Tujuan utama anjuran bengkel berkenaan adalah untuk memberi pentauliahkan kepada tenaga-tenaga pengajar yang menjalankan Program Persijilan Juruteknik Bertauliah (CSTP) sektor Penyejukbekuan dan Penyaman Udara (RACs). Sehingga tahun 2022, secara kumulatif, JAS telah mentauliahkan sebanyak 24,102 Juruteknik, 312 master trainer dan 61 ATC.

In 2022, a total of 236 series of trainings were organised by the ATCs to train and certify a total of 3,332 technicians in the RAC sector. DOE officers also conducted surveillance audits on selected ATCs to ensure that the training was implemented in accordance with the training manual and Standard Operating Procedures (SOP), as determined by DOE. Throughout 2022, a total of 55 audits was carried out by DOE officers.

In 2022, DOE organised 2 series of workshops for new instructors (Master Trainers) from ATC. The 1<sup>st</sup> series was held from 15<sup>th</sup> to 18<sup>th</sup> March 2022 at the Tenera Hotel, Bangi and the 2<sup>nd</sup> series was held from 5<sup>th</sup> to 9<sup>th</sup> December 2022 at Grand Dorsett Hotel, Subang. The objectives of the workshops were to give accreditation to the instructors who carried out the Certified Service Technician Programme (CSTP) of the Refrigeration and Air Conditioning sectors (RACs). As at 2022, cumulatively DOE has certified a total number of 24,102 technicians, 312 Master trainers, and 61 ATCs.



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



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

## PROGRAM DAN KEMPEN KESEDARAN

Tema sambutan Hari Ozon Sedunia pada tahun 2022 adalah 'Montreal Protocol@35: Global Cooperation Protecting Life on Earth'. Majlis sambutan Hari Ozon Sedunia 2022 telah diadakan pada 24 September 2022 dan disempurnakan oleh YB Dato' Sri Tuan Ibrahim bin Tuan Man, Menteri Alam Sekitar dan Air.

Sempena sambutan ini, pelbagai aktiviti yang berkonsepkan perlindungan lapisan ozon dan pengurangan gas rumah kaca serta pelaksanaan Protokol Montreal telah diadakan, seperti Fun Walk-Walk for Ozone, Treasure Hunt-Track Ozone, pertandingan mewarna, Snakes & Ladders Ozone Heroes, Galeri Seni Ozone2Climate serta pameran kenderaan hybrid. Agensi kerajaan, persatuan dan syarikat, seperti Kementerian Pendidikan Malaysia, Daikin, ASHRAE (The American Society of Heating, Refrigerating and Air-Conditioning Engineers) Malaysia Chapter dan Aurora turut menyertai dalam pameran dan aktiviti berkenaan. Penyampaian hadiah kepada para pemenang peraduan seni Ozone2Climate Art Contest di peringkat Kebangsaan dan Asia Pasifik turut diadakan dan disempurnakan oleh Menteri Alam Sekitar dan Air.

## AWARENESS PROGRAMS AND CAMPAIGNS

The theme of the World Ozone Day 2022 celebration was 'Montreal Protocol@35: Global Cooperation Protecting Life on Earth', which was celebrated nationally on 24<sup>th</sup> September 2022. The event was graced by YB Dato' Sri Tuan Ibrahim bin Tuan Man, Minister of Environment and Water.

As part of the celebration, various activities promoting ozone layer protection, greenhouse gas reduction, and the implementation of the Montreal Protocol were organised. These activities included a Fun Walk, Treasure Hunt, Colouring contest, Snakes & Ladders game, Ozone2Climate Art Gallery, and a hybrid vehicle exhibition. Government agencies, associations, and companies, such as the Ministry of Education, Daikin, ASHRAE (The American Society of Heating, Refrigerating and Air-Conditioning Engineers) Malaysia Chapter and Aurora, also participated in the exhibition and activities. At the event, the Minister of Environment and Water presented prizes to the winners of the Ozone2Climate Art Contest at both the National and Asia Pacific levels.

Hari Ozon Sedunia yang diraikan pada 16 September ini bukan hanya dilaksanakan di peringkat Ibu Pejabat, pejabat-pejabat JAS Negeri turut sama menjayakan pelbagai program kesedaran perlindungan lapisan ozon antaranya seperti Ozone Walk dan Ozone Race, sesi kuiz ozon serta pameran alam sekitar dilaksanakan bersama agensi-agensi berkaitan serta para pelajar dari peringkat sekolah.

The World Ozone Day held on September 16<sup>th</sup> was not only celebrated by the DOE Headquarters, but also by the DOE State offices, related agencies and students by conducting ozone layer protection awareness programmes including Ozone Walk and Ozone Race, Ozone quizzes and Environmental exhibitions.



Ucapan Perasmian Disampaikan oleh YB Dato' Sri Tuan Ibrahim bin Tuan Man, Menteri Alam Sekitar dan Air  
Opening remarks by the YB Dato' Sri Tuan Ibrahim bin Tuan Man, Minister Minister of Environment and Water



Sambutan Hari Ozon Sedunia 2022 Peringkat Kebangsaan di Gamuda Cove, Sepang  
National level Celebration of World Ozone Day 2022 at Gamuda Cove, Sepang



Fun Walk – Walk for Ozone  
Fun Walk – Walk for Ozone



Penyampaian Hadiah Kepada Para Pemenang Peraduan Seni Asia Pasifik Regional Ozone2Climate Art Contest

Award Ceremony for winners of the Asia Pacific Regional Ozone2Climate Art Contest

### MESYUARAT PARTI KEPADA PROTOKOL MONTREAL KE-34 (MOP34)

Mesyuarat MOP34 telah diadakan di Montreal, Kanada dari 31 Oktober hingga 4 November 2022. Ketua delegasi Malaysia yang menghadiri ke Mesyuarat MOP34 High Level Segment ialah Setiausaha Bahagian Pengurusan Alam Sekitar, Kementerian Alam Sekitar dan Air (KASA), Encik Jamalulail Abu Bakar. Delegasi Malaysia yang turut hadir mesyuarat tersebut ialah Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar, Puan Mazrini binti Mohmad dari Kementerian Alam Sekitar dan Air (KASA), Encik Ryan Ooi Chean Weai dan Puan Amy Charlene Wong dari Seksyen Perlindungan Ozon, Jabatan Alam Sekitar.

Mesyuarat Negara Parti Kepada Protokol Montreal bagi Bahan-Bahan Pemusnah Lapisan Ozon Ke-35 (MOP35) akan diadakan pada 23 - 27 Oktober 2023 di Nairobi, Kenya.

### THE 34<sup>TH</sup> MEETING OF THE PARTIES TO THE MONTREAL PROTOCOL (MOP34)

The MOP34 meeting was convened in Montreal, Canada, from 31<sup>st</sup> October to 4<sup>th</sup> November 2022. The Malaysian delegation during the MOP34 High Level Segment Meeting was led by Mr. Jamalulail Abu Bakar, Undersecretary of the Environmental Management Division, Ministry of Environment and Water (KASA). Joining the delegation were Mr. Wan Abdul Latiff bin Wan Jaffar, Director General of Department of Environment, Mrs. Mazrini binti Mohmad from the Ministry of Environment and Water (KASA), Mr. Ryan Ooi Chean Weai and Mrs. Amy Charlene Wong from the Ozone Protection Section, Department of Environment.

The 35<sup>th</sup> Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP35) will be held on 23<sup>rd</sup> - 27<sup>th</sup> October 2023 and the venue will be tentatively in Nairobi, Kenya.



Meeting of The Parties (MOP34) to The Montreal Protocol Ke-34  
31 October - 4 November 2022

The 34<sup>th</sup> Meeting of The Parties (MOP34) to The Montreal Protocol  
31<sup>st</sup> October - 4<sup>th</sup> November 2022

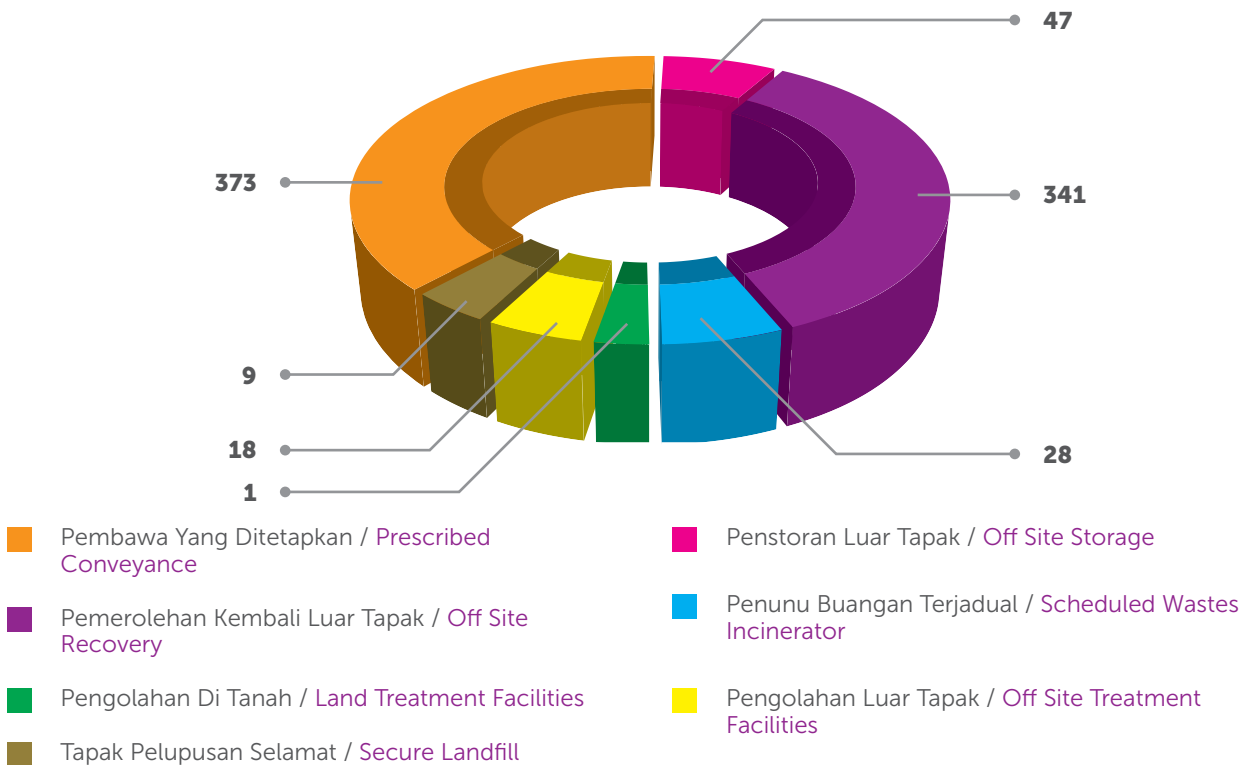
## Pengurusan Buangan Terjadual Scheduled Waste Management

### LESEN PREMIS YANG DITETAPKAN

Sejumlah 817 lesen telah dikeluarkan kepada kemudahan baru dan sedia ada pada tahun 2022 yang terdiri daripada 215 kemudahan pemerolehan kembali luar tapak bukan E-waste, 18 kemudahan pemerolehan kembali penuh luar tapak bagi E-waste, 108 kemudahan pemerolehan kembali separa luar tapak bagi E-waste, 28 kemudahan penunu buangan terjadual, 18 kemudahan pengolohan luar tapak, 9 kemudahan tapak pelupusan selamat, 47 kemudahan penstoran luar tapak dan sejumlah 373 lesen telah dikeluarkan kepada pembawa yang ditetapkan (**Rajah 4.10** dan **Jadual 4.18**).

### LICENCES FOR PRESCRIBED PREMISES

A total number of 817 licences were issued for both existing and new facilities in the year 2022 which consisted of 215 licences for off-site recovery (non E-waste), 18 licences for off-site full recovery plants (E-waste), 108 licences for off-site partial recovery plants (E-waste), 28 licences for scheduled wastes incinerators, 18 licences for off-site treatment facility, 9 licences for secure landfills, 47 licences for off-site storage facilities and a total of 373 licences were issued for prescribed conveyance (**Figure 4.10** and **Table 4.18**).



Rajah 4.10 : Jumlah Lesen Dikeluarkan  
Figure 4.10 : Number Of Licences Issued

Jadual 4.18 : Lesen-Lesen yang Dikeluarkan bagi Kemudahan Pemerolehan Kembali, Pengolahan & Pelupusan Buangan Terjadual yang Diluluskan oleh Jabatan Alam Sekitar, 2022

Table 4.18 : Licences Issued for Scheduled Wastes Recovery, Treatment and Disposal Facilities Approved by the Department of Environment

BIL./ NO.	KEMUDAHAN / FACILITIES	JUMLAH LESEN DIKELUARKAN MENGIKUT NEGERI / NUMBER OF LICENCES ISSUED BY STATE													JUALAH / TOTAL		
		JOHOR	KEDAH	KELANTAN	MELAKA	N. SEMBILAN	PAHANG	PERAK	PERLIS	P. PINANG	SABAH	SARAWAK	SELANGOR	TERENGGANU		W.P. KUALA LUMPUR	W.P. LABUAN
1.	Pembawa Yang Ditetapkan / Prescribed Conveyance	71	22	4	24	27	8	52	34	1	70	10	9	30	6	5	<b>373</b>
	Penstoran Luar Tapak / Off Site Storage	2	0	1	5	1	2	1	1	0	1	0	6	23	0	4	<b>47</b>
2	Pemerolehan Kembali Luar Tapak / Off Site Recovery																
	a. Pemerolehan Kembali Luar Tapak (bukan E-waste) / Off Site Recovery (none E-waste)	36	13	1	12	20	8	23	29	1	53	7	3	7	0	2	<b>215</b>
	b. Pemerolehan Kembali Luar Tapak (penuh E-waste) / Off Site Recovery (full E-waste)	2	0	0	0	1	0	9	0	0	6	0	0	0	0	0	<b>18</b>
	c. Pemerolehan Kembali Luar Tapak (separa E-waste) / Off Site Recovery (partial E-waste)	25	9	3	8	8	0	20	4	0	18	2	1	5	5	0	<b>108</b>
3.	Penunu Buangan Terjadual / Scheduled Wastes Incinerator	7	0	0	0	2	3	1	4	0	2	1	0	7	0	1	<b>28</b>
4.	Pengolahan Di Tanah / Land Treatment Facilities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	<b>1</b>
5.	Pengolahan Luar Tapak / Off Site Treatment Facilities	1	1	0	1	7	0	0	2	0	3	0	1	1	0	1	<b>18</b>
6.	Tapak Pelupusan Selamat / Secure Landfill	1	1	0	0	2	1	0	0	0	1	1	0	2	0	0	<b>9</b>
7.	Bil. Lesen / No. of Licence	145	46	9	50	68	22	106	74	2	154	21	20	75	11	14	<b>817</b>
8.	Bil. Premis / No. of Premises	58	22	4	21	25	12	50	29	1	56	9	11	34	5	7	<b>344</b>

**PROJEK RMKe-12: KAJIAN PENGIRAAN KADAR KUTIPAN SES DAN PENGURUSAN SES DALAM PENGURUSAN BUANGAN TERJADUAL**

Pada tahun 2022, satu projek RMKe-12: Kajian Pengiraan Kadar Kutipan Ses dan Pengurusan Ses Dalam Pengurusan Buangan Terjadual telah siap dilaksanakan. Objektif kajian adalah merangkumi perkara-perkara seperti berikut :

- i. Melaksanakan analisis bagi cadangan kadar ses yang perlu dikenakan kepada industri yang menghasilkan buangan terjadual;
- ii. Membangunkan rangka kerja atau platform bagi pelaksanaan kutipan ses yang merangkumi pengiraan ses dan tuntutan balik bayaran ses;
- iii. Membangunkan Garis Panduan berkenaan jenis buangan yang perlu dikenakan ses berserta kadar ses mengikut jenis buangan tersebut, termasuk panduan terhadap definisi dan pemakaian konsep 4R terhadap pengurusan buangan terjadual bagi membolehkan tuntutan balik bayaran ses dilaksanakan; dan
- iv. Mengkaji keperluan perjawatan bagi pengurusan pelaksanaan kutipan ses di JAS yang merangkumi implikasi kos kepada Kerajaan.

Beberapa sesi libat urus bersama pihak berkepentingan telah dilakukan sepanjang tempoh pelaksanaan kajian tersebut melalui mesyuarat, Perbincangan Kumpulan Berfokus (FGD) dan Seminar secara fizikal dan dalam talian.

**RMKe-12 PROJECT: A STUDY TO CALCULATE THE CESS COLLECTION RATES AND CESS MANAGEMENT IN SCHEDULED WASTE MANAGEMENT**

In 2022, a RMKe-12 Project: A Study to Calculate the Cess Collection Rates And Cess Management In Scheduled Waste Management was carried out. The objectives of the study included :

- i. Carry out analysis for proposed cess rates to be imposed on industries that produce scheduled wastes;
- ii. Develop a framework or platform for the implementation of cess collection that includes cess calculation and cess refund;
- iii. Develop guidelines which comprises types of scheduled wastes e subject to cess collection, rate of cess according to the type of scheduled wastes, guidance on the application of the 4R concept to the management of scheduled wastes for refund purposes; and
- iv. Reviewing the staffing requirements in DOE for the management of the implementation of cess collection which also includes cost implications for the Government.

Several stakeholders' engagements were conducted during the study through meetings, Focus Group Discussions (FGD) and seminars, either face-to-face or online.



Rajah 4.11 : Senarai Pihak Berkepentingan yang Terlibat  
Figure 4.11 : List of Stakeholders



Bengkel Stakeholders yang telah Diadakan pada 26 Julai 2022  
Stakeholders Workshop Conducted on 26<sup>th</sup> July 2022

Jadual 4.19 : Sesi Libat Urus Bersama Pihak Berkepentingan  
Table 4.19 : Stakeholders Engagement

BIL. NO.	SESI LIBAT URUS ENGAGEMENT	TARIKH DATE
1.	Mesyuarat Jawatankuasa Teknikal dan Pemandu Bil.1-3/ 2022 Steering and Technical Committee Meeting No. 1-3/2022	21 April, 20 Jun, 9 Ogos 2022 21 <sup>st</sup> April, 20 June, 9 <sup>th</sup> August 2022
2.	Kaji Selidik/ Survei Berkenaan Kutipan Ses Buangan Terjadual kepada Pegawai JAS dan Industri Survey on Cess Collection from Scheduled Wastes Generation to DOE officers and industries.	4 - 11 Februari 2022 4 <sup>th</sup> - 11 <sup>th</sup> February 2022
3.	Sesi <i>Focus Group Discussion</i> (FGD) Bagi Sektor Industri Kecil dan Sederhana, Sektor Loji Janakuasa, Sektor Pengilangan Logam, Sektor Kilang Elektrik & Elektronik, Sektor Industri Kimia, Sektor Loji Rawatan Air, Sektor Kemudahan Premis Yang Ditetapkan (PYDT) oleh JAS Focus Group Discussion (FGD) for Small and Medium Enterprises (SME), Power Generation Sector, Foundry Industries Sector, Electric & Electronic Industries Sector, Chemical Industries Sector, Water Treatment Industries Sector, Prescribed Premises by DOE.	14 - 17 Februari 2022 14 <sup>th</sup> - 17 <sup>th</sup> February 2022
4.	Bengkel Stakeholders Bagi Projek Kajian Pengiraan Kadar Kutipan Ses Dan Pengurusan Ses Dalam Pengurusan Buangan Terjadual Stakeholders Workshop on Cess Collection Rates And Cess Management In Scheduled Wastes Management	26 Julai 2022 26 <sup>th</sup> July 2022

Antara output kajian tersebut adalah merangkumi perkara-perkara berikut:

- i. Kajian 'literature' perbandingan nilai cukai atau ses yang dikenakan ke atas bahan buangan terjadual yang dihasilkan oleh industri di Malaysia dan negara-negara lain;
- ii. Analisa 'survey' yang dijalankan secara rawak merangkumi golongan awam, pegawai JAS serta industri bagi pelaksanaan kutipan ses beserta kadar ses yang bersesuaian ke atas industri;
- iii. Rangka kerja/ platform bagi pelaksanaan kutipan ses di Malaysia;

The output of the study covers the following:

- i. Literature review on comparison of tax or cess rate on scheduled wastes generated by industries in Malaysia and other countries;
- ii. Analysis on survey about cess collection rate for the industries conducted to public, DOE officers and industries;
- iii. Framework/ Platform for cess collection scheduled wastes generated in Malaysia;

- iv. Garis Panduan berkenaan jenis buangan yang perlu dikenakan ses berserta nilai ses mengikut jenis buangan tersebut termasuk panduan terhadap definisi dan pemakaian konsep 4R terhadap pengurusan BT bagi membolehkan tuntutan balik bayaran ses dilaksanakan; dan
- v. Keperluan perjawatan bagi pengurusan ses di JAS dan kos yang terlibat ke atas Kerajaan supaya pelaksanaan kutipan ses adalah "self-sustained".

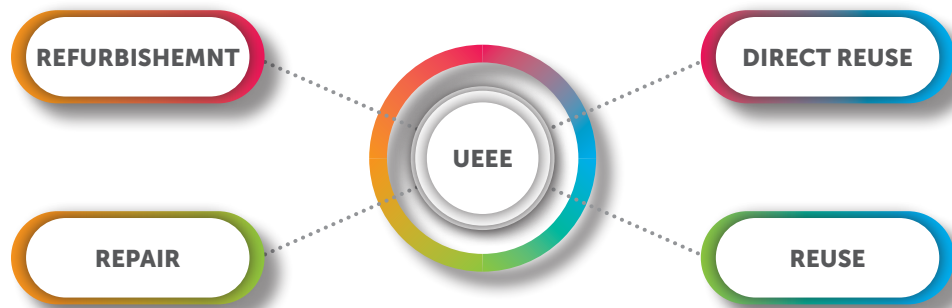
#### **POLISI PERGERAKAN MERENTASI SEMPADAN PERALATAN ELEKTRIK DAN ELEKTRONIK TERPAKAI (UEEE) ATAU KOMPONENNYA DI MALAYSIA**

- UEEE tidak memenuhi definisi SW110 atau tidak tercemar dengan mana-mana buangan terjadual di bawah Peraturan- Peraturan- Peraturan Kualiti Alam Sekeliling (Buangan Terjadual), 2005;
- Jangka hayat peralatan dan komponennya mestilah lima (5) tahun atau kurang dari tarikh pembuatan;
- UEEE mestilah dilindungi dengan sewajarnya daripada kerosakan semasa pengerakan pengangkutan, pemuatan dan pemunggahan, pembungkusan dengan teliti dan tersusun dengan baik semasa proses muatan.
- Peralatan penyejuk tidak boleh mengandungi sebarang CFC atau HCFC (agen penyejuk terlarang);
- Fasiliti yang menerima mestilah mematuhi Akta Kualiti Alam Sekeliling 1974 dan Peraturan yang berkaitan; dan
- Pengimportan bagi tujuan pemerolehan kembali dan pelupusan adalah tidak dibenarkan.

- iv. Guidelines containing matters on type of scheduled wastes subjected to cess collection, cess rates depending on the type of scheduled wastes and application of 4R concept as refund mechanism; and
- v. Staffing requirements in DOE for the implementation of cess collection and the cost implications "self-sustained" to the Government.

#### **POLICY ON TRANSBOUNDARY MOVEMENT OF USED ELECTRICAL AND ELECTRONIC EQUIPMENT (UEEE) OR ITS COMPONENTS IN MALAYSIA**

- UEEE does not meet the definition of SW110 or uncontaminated with any scheduled waste under the provision of Environmental Quality (Scheduled Wastes) Regulations, 2005;
- Age of equipment and its components must be five (5) years or less from the date of manufacture;
- The UEEE must be protected appropriately against damage during transport, loading and unloading, with a focus on suitable packaging and stacking on the load;
- Cooling equipment should not contain any CFCs or HCFCs (banned cooling agent);
- Receiving facility must comply with the Environmental Quality Act, 1974 and relevant regulations; and
- Importing for the purpose of material recovery and disposal is not allowed.



Rajah 4.12 : Kriteria yang Dibenarkan untuk Pergerakan Melintas Peralatan Elektrik dan Elektronik Terpakai (UEEE) atau Komponennya di Malaysia

Figure 4.12 : Permitted Criteria for Transboundary Movement of Used Electrical and Electronic Equipment (UEEE) or Its Components in Malaysia

Jadual 4.20 : Bilangan Permohonan (UEEE) yang diterima daripada 1 Januari 2022 sehingga 31 Disember 2022

Table 4.20 : Number of Application (UEEE) Received from 1<sup>st</sup> January 2022 to 31<sup>st</sup> December 2022

PERKARA ITEM	BILANGAN PERMOHONAN YANG DITERIMA NUMBER OF APPLICATIONS RECEIVED
Pengimportan Peralatan Elektrik dan Elektronik Terpakai atau Komponennya (UEEE) Importation of Used Electrical and Electronic Equipment or its components in Malaysia	236
Pengeksportan Peralatan Elektrik dan Elektronik Terpakai atau Komponennya (UEEE) Exportation of Used Electrical and Electronic Equipment or its components in Malaysia	2

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

Buangan elektrik dan elektronik (E-waste) merupakan buangan berbahaya atau dikenali sebagai buangan terjadual di Malaysia disebabkan oleh kandungan bahan berbahaya yang boleh memberi kesan bahaya kepada kesihatan manusia dan alam sekitar.

Pengurusan E-waste juga telah menjadi perhatian dan agenda utama di seluruh dunia berikutan peningkatan kuantiti penjanaannya, perkembangan teknologi dan kebergantungan pengguna terhadap peralatan elektrik dan elektronik serta peningkatan populasi, taraf hidup masyarakat 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 yang dibangunkan ini menerapkan aplikasi ekonomi kitaran dan mengetengahkan konsep tanggungjawab pengeluar diperluaskan (*Extended Producer Responsibility, EPR*) di mana pihak pengeluar bertanggungjawab untuk memastikan pengurusan peralatan elektrik dan elektronik yang mesra alam selepas ianya mencapai jangka hayatnya. Mekanisme ini juga menerapkan konsep perkongsian tanggungjawab di kalangan pihak berkepentingan.

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

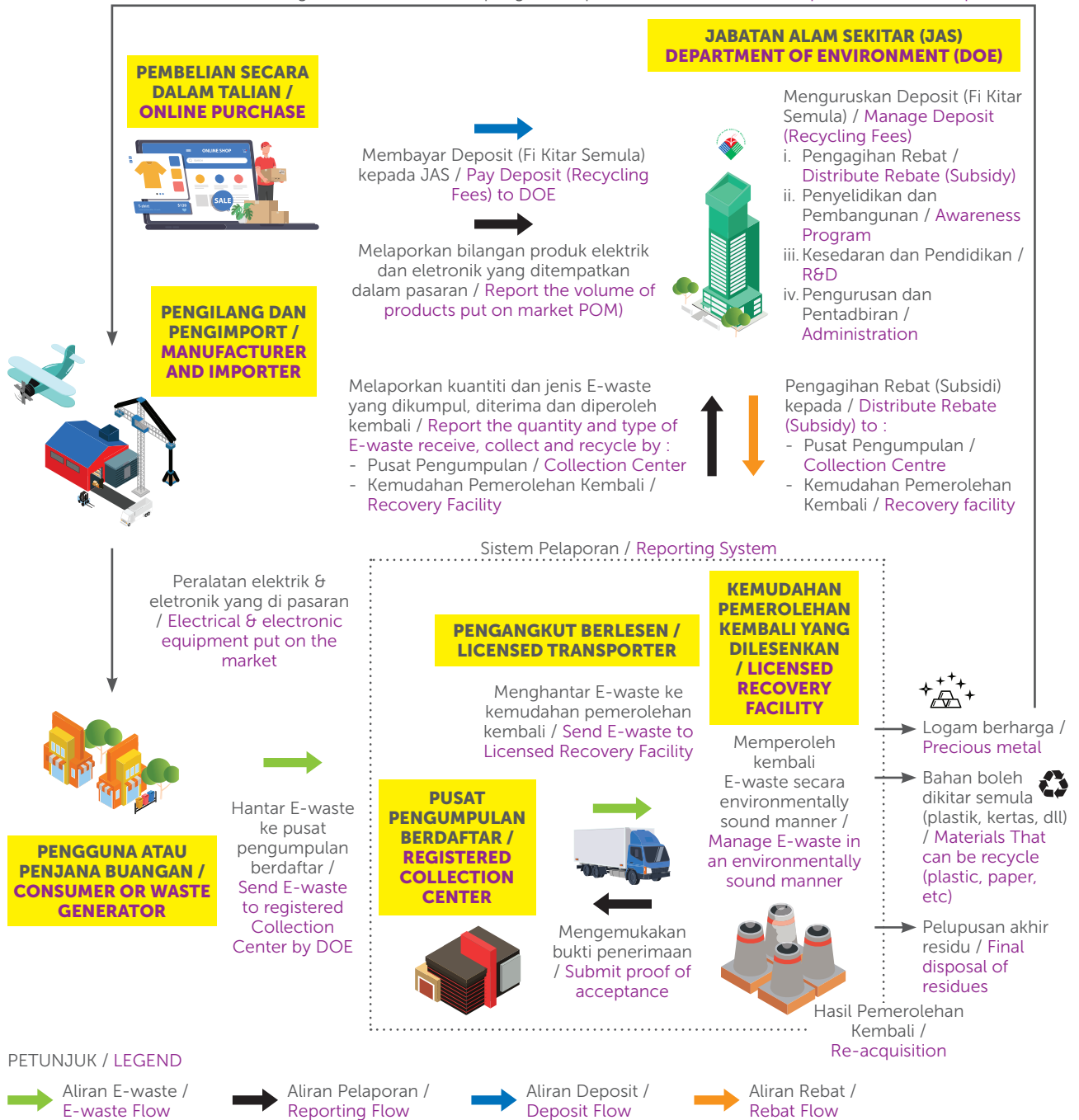
Electrical and electronic waste (E-waste) is categorised as hazardous waste or known as scheduled waste in Malaysia due to the content of hazardous substances that may pose a harmful effect on human health and the environment.

E-waste management has become a major concern globally 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 the increase in population, standard of living of the community and urbanisation.

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

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

Digunakan semula untuk penghasilan produk baharu / Reused for production of new products



Rajah 4.13 : Kerangka Mekanisme Pengurusan E-waste di Malaysia  
Figure 4.13 : E-waste Management Mechanism Framework in Malaysia

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

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, a legislation will be enacted to regulate the management, operation and disposal of electrical and electronic equipment from the production stage until its disposal stage as E-waste.

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

Sebagai persediaan ke arah pelaksanaan mekanisme pengurusan E-waste di Malaysia, JAS telah meneruskan projek kerjasama teknikal untuk fasa ketiga (TC3) dengan pihak JICA. Projek TC3 ini dilaksanakan untuk tempoh tiga (3) tahun iaitu bermula Julai 2021 hingga Jun 2024. Objektif projek TC3 ini adalah untuk menyediakan sokongan bagi pembangunan sistem pangkalan data dan pembangunan kapasiti dalam melaksanakan mekanisme pengurusan E-waste.

Satu jawatankuasa telah dibentuk di antara JAS, JICA dan agensi kerajaan yang berkaitan iaitu Joint Coordination Committee (JCC). Jawatankuasa ini bertujuan untuk meluluskan rancangan projek tahunan, memantau pelaksanaan, menyemak dan menilai kemajuan projek. Di bawah jawatankuasa ini sebanyak empat (4) pasukan petugas (*taskforce*) ditubuhkan bagi membincangkan perkara-perkara berkaitan teknikal.

Sepanjang tahun 2022, sebanyak dua (2) mesyuarat JCC telah diadakan iaitu pada 11 Mac 2022 dan 3 Oktober 2022. Manakala bagi taskforce pula, sebanyak lima (5) mesyuarat telah diadakan iaitu pada:

- i. *Taskforce* 1: 24 November 2022;
- ii. *Taskforce* 2: 28 Jun 2022 dan 22 November 2022;
- iii. *Taskforce* 3: 13 Disember 2022; dan
- iv. *Taskforce* 4: 13 December 2022.



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

In preparation towards the implementation of the E-waste management mechanism in Malaysia, DOE has continued the technical cooperation project for the third phase (TC3) with JICA. This TC3 project is implemented for a duration of three (3) years starting from July 2021 to June 2024. The objective of this TC3 project is to provide support for the development of database systems and capacity building in implementing the E-waste management mechanisms.

A Joint Coordination Committee (JCC) has been formed between DOE, JICA and related government agencies. This committee aims to approve the annual project planning, monitor the implementation, review, and evaluate the progress of the project. Four (4) task forces have been established under this committee to discuss technical matters.

Throughout the year 2022, a total of two (2) JCC meetings were held, on 11<sup>th</sup> March 2022 and on 3<sup>rd</sup> October 2022. Meanwhile, for the taskforces, a total of five (5) meetings were held as below:

- i. *Taskforce* 1: 24<sup>th</sup> November 2022;
- ii. *Taskforce* 2: 28<sup>th</sup> June 2022 and 22<sup>nd</sup> November 2022;
- iii. *Taskforce* 3: 13<sup>th</sup> December 2022; and
- iv. *Taskforce* 4: 13<sup>th</sup> December 2022.



Mesyuarat Joint Coordinating Committee (JCC)  
Joint Coordination Committee (JCC) Meeting



Mesyuarat Taskforce 1 (Pengurusan Pengumpulan E-waste)  
Taskforce 1 (Management of E-waste Collection) Meeting



Mesyuarat Taskforce 2 (Pengurusan Kitar Semula E-waste)  
Taskforce 2 (Management of E-waste Recycling) Meeting



Mesyuarat Taskforce 3 (Pengurusan Pengilang dan Pengimport)  
Taskforce 3 (Management of Manufacturers and Importers) Meeting



Mesyuarat Taskforce 4 (Pengurusan Kewangan E-waste)  
Taskforce 4 (Management of E-waste Financial) Meeting

### 3. Sesi Libat Urus Dengan Pihak Berkepentingan

Bagi memastikan mekanisme yang dibangunkan dapat dilaksanakan dengan lancar dan berkesan, beberapa sesi libat urus telah diadakan bersama operator kemudahan pemerolehan kembali luar tapak E-waste, operator pusat pengumpulan yang berdaftar, persatuan pengeluar, pengimport, *chambers* dan juga peruncit. Tujuan sesi libat urus ini diadakan adalah untuk memaklumkan dan bertukar pandangan berkaitan mekanisme pengurusan E-waste serta mendapatkan input berkaitan isu dan cabaran yang akan dihadapi apabila mekanisme ini dilaksanakan pada masa hadapan.

### 3. Stakeholder Engagement Session

In order to ensure smooth and effective implementation of the established mechanism, several engagement sessions have been conducted with the E-waste off-site recovery facilities operators, registered collection centers operators, manufacturer's associations, importers, chambers and retailers. The engagement session was conducted to update and exchange views with regards to the E-waste management mechanism, as well as to gain input on potential issues and challenges faced upon the implementation of the mechanism in the future.

Selain daripada itu, sesi perkongsian bersama negara Singapura dan Taiwan berhubung pelaksanaan konsep EPR juga telah diadakan. Sesi perkongsian ini diadakan bagi mendapatkan input dan pengalaman dari negara yang telah melaksanakan konsep EPR dalam pengurusan E-waste.

Apart from that, a sharing session about the implementation of EPR concept has also been conducted with Singapore and Taiwan. The sharing session was held to gain views and experience from other countries that have implemented the EPR concept in E-waste management.



Sesi Libat Urus Bersama American Malaysian Chamber of Commerce (AMCHAM)  
Engagement Session with the American Malaysian Chamber of Commerce (AMCHAM)



Webinar Mekanisme Pengurusan E-waste (Pelaporan Data)  
Webinar on E-waste Management Mechanism (Data Reporting)



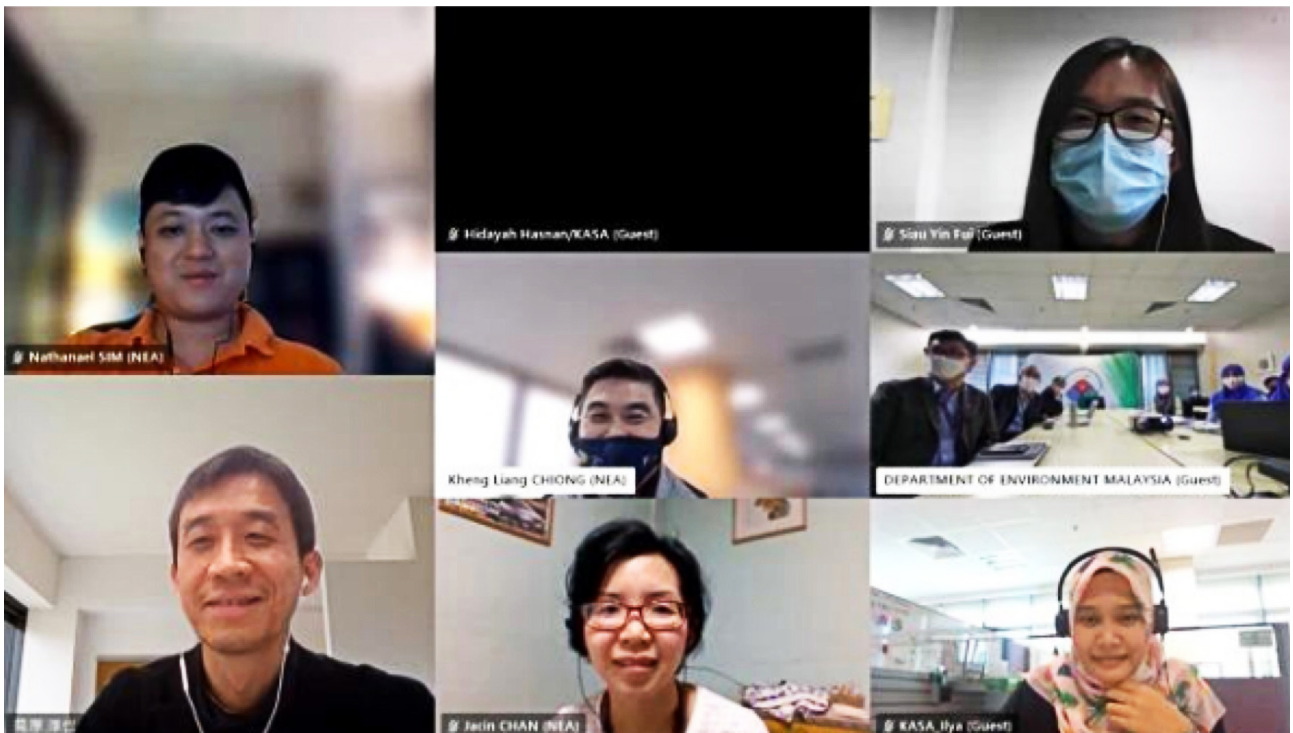
Sesi Libat Urus bersama Pengilang dan Pengimport Peralatan Elektrik dan Elektronik di Environment Institute of Malaysia (EiMAS)  
Engagement Session with Manufacturers and Importers of the Electrical and Electronics Equipment at the Environment Institute of Malaysia (EiMAS)



Sesi Libat Urus bersama Malaysian Air-Conditioning & Refrigeration Association (MACRA)  
Engagement Session with Malaysian Air-Conditioning & Refrigeration Association (MACRA)



Sesi Libat Urus bersama the Electrical and Electronics Association of Malaysia (TEEAM)  
Engagement Session with the Electrical and Electronics Association of Malaysia (TEEAM)



Sesi Perkongsian bersama Singapura berkaitan Pelaksanaan EPR  
Sharing Session with Singapore related to EPR Implementation



Sesi Perkongsian bersama Taiwan berkaitan Pelaksanaan EPR  
Sharing Session with Taiwan related to EPR Implementation

#### 4. Bengkel Pembangunan User Requirement System (URS) Bagi Sistem Pangkalan Data Atas Talian.

Bagi memenuhi keperluan perundangan dan pematuhan di bawah mekanisme pengurusan E-waste serta pelaksanaan mekanisme yang holistik dan lestari, satu alat atau kaedah pemantauan dan pelaporan yang berkesan perlu diwujudkan. Bagi tujuan itu, satu (1) bengkel telah diadakan bagi membincangkan dan merangka ciri-ciri, fungsi, konsep dan arkitektur bagi pembangunan sistem inventori E-waste. Pembangunan sistem ini adalah penting dalam memenuhi semua keperluan yang telah digariskan dibawah mekanisme pengurusan E-waste. Disamping itu, pembangunan sistem pangkalan data ini juga adalah penting dalam memastikan pematuhan pihak-pihak berkepentingan terhadap tiga (3) aliran utama (E-waste, kewangan dan pelaporan) serta pelaksanaan mekanisme pengurusan E-waste secara keseluruhannya.

#### 5. Program Kesedaran Berkaitan E-waste

##### i. Webinar/ Ceramah

JAS telah menyertai dan menyampaikan Webinar Perkongsian Maklumat Mengenai Pengurusan E-waste yang dianjurkan oleh Tenaga Nasional Berhad (TNB) dan TNB Grid pada 22 September 2022, 13 Oktober 2022 dan 27 Oktober 2022. Webinar tersebut telah disampaikan oleh Puan Mazriah Ayu binti Abu Bakar, Ketua Penolong Pengarah, Bahagian Bahan Berbahaya, JAS Ibu Pejabat.

#### 4. Workshop for the Development of a User Requirement System (URS) for the Online Database System.

In order to fulfill the regulatory and compliance requirements under the E-waste management mechanism, as well as towards having a holistic and sustainable implementation of the mechanism, an effective monitoring and reporting tool needs to be established. In pursuant to that, a workshop was conducted to discuss and design the features, functions, concepts and architecture for the development of E-waste inventory system. The development of this system is important in order to fulfill all requirements under the E-waste management mechanism. In addition to that, the development of this database system is also crucial in ensuring the compliance of stakeholders with the three (3) main flow (E-waste, finance and reporting) and the implementation of the E-waste management mechanism as a whole.

#### 5. E-waste Awareness Program

##### i. Webinars/ Talks

DOE participated and delivered a Webinar Sharing Information on E-waste Management which was organised by Tenaga Nasional Berhad (TNB) and TNB Grid on the 22<sup>nd</sup> September 2022, 13<sup>th</sup> October 2022 and 27<sup>th</sup> October 2022. The webinar was delivered by Ms. Mazriah Ayu binti Abu Bakar, Principal Assistant Director, Hazardous Substances Division, DOE Headquarters.



Bengkel Pembangunan Sistem Inventori E-waste (User Requirement System)  
E-waste Inventory System Development Workshop (User Requirement System)

Selain daripada itu, JAS juga telah menyertai dan menyampaikan ceramah di Universiti Tunku Abdul Rahman (UTAR) Kampus Sungai Long sempena Kempen 'Erase E-waste'. Kempen ini dilaksanakan bagi menyokong agenda *SDG12: Responsible Consumption and Production* dibawah *Sustainable Development Goals (SDG)*. Ceramah telah disampaikan oleh Puan Nur Aliaa binti Shafie, Penolong Pengarah, Bahagian Bahan Berbahaya, JAS Ibu Pejabat.

Apart from that, DOE participated and delivered a talk in Tunku Abdul Rahman University (UTAR) Sungai Long Campus in their 'Erase E-waste' Campaign. This campaign was conducted to support the *SDG12* agenda: *Responsible Consumption and Production* under the Sustainable Development Goals (SDG). The talk was delivered by Ms. Nur Aliaa binti Shafie, Assistant Director, Hazardous Substances Division, DOE Headquarters.

## ii. Sekolahku Warrior E-Waste

Program Sekolahku *Warrior E-waste* telah dijalankan pada bulan Ogos hingga Oktober 2022 sebagai salah satu program dibawah pelan *Communication, Education and Public Awareness (CEPA)*. Program ini melibatkan penyertaan daripada 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. Program ini turut berkongsi maklumat mengenai keperluan undang-undang berkaitan E-waste yang perlu dipatuhi dan sedang dikuatkuasakan oleh Jabatan Alam Sekitar (JAS). 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 aktiviti pengumpulan E-waste, pengucapan awam berkenaan E-waste oleh pelajar, games E-waste, kuiz dan doodle E-waste. Sebanyak 17 buah sekolah yang terdiri daripada sekolah di negeri Kelantan, Kedah, Selangor, Negeri Sembilan dan Melaka yang telah menyertai dan menjayakan aktiviti minggu cakna ini.

## ii. My School Warrior E-Waste

My School Warrior E-waste programme was conducted from August to October 2022 as one of the programmes under the *Communication, Education and Public Awareness (CEPA)* plan. This 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). This programme also highlighted the information on legal requirements related to E-waste that need to be complied with and being enforced by the DOE. There were two (2) activities that were carried out under this programme and they were :

### (a) The Cakna E-Waste Week

The Cakna E-waste Week was a week of information sharing about E-waste to school members. In conjunction with this, there were activities carried out such as E-waste collection activities, public speaking about E-waste by students, E-waste games, quizzes and E-waste doodles. A total of 17 schools in the states of Kelantan, Kedah, Selangor, Negeri Sembilan and Melaka participated in this Cakna E-waste week.



Minggu Cakna E-waste oleh SMK Teloi Kanan, Kedah  
Cakna E-waste Week by SMK Teloi Kanan, Kedah



Pertandingan Bicara Berirama (Kategori Sekolah Rendah)  
Choral Speaking Competition (Primary School Category)

#### (b) Pertandingan Bicara Berirama

Pertandingan ini terbahagi kepada dua (2) kategori iaitu kategori Sekolah Rendah dan Sekolah Menengah. Sebanyak 40 penyertaan yang telah diterima daripada Sekolah Rendah dan 30 penyertaan daripada Sekolah Menengah. Penyertaan adalah terdiri daripada sekolah di Negeri Kelantan, Pahang, Kuala Lumpur, Kedah, Selangor, Negeri Sembilan, Pulau Pinang, Perak, Perlis dan Melaka.

#### (b) Choral Speaking Competition

This competition was divided into two (2) categories which were Primary School and Secondary School categories. A total of 40 participations were received from Primary Schools and 30 from Secondary schools. The participations were from schools in the states of Kelantan, Pahang, Kuala Lumpur, Kedah, Selangor, Negeri Sembilan, Penang, Perak, Perlis and Malacca.

#### iii. Karnival Jom E-Waste 2022

Bagi meningkatkan kesedaran dan kefahaman serta memupuk tanggungjawab orang awam mengenai pengurusan E-waste di Malaysia, Karnival Jom E-waste telah diadakan pada 15 dan 16 Oktober 2022 bertempat di KL East Mall, Kuala Lumpur. Program ini telah disempurnakan oleh YBrs. Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Pembangunan), Jabatan Alam Sekitar (JAS). Penghargaan telah diberikan kepada Kerajaan Negeri Sabah atas komitmen dan sokongan yang diberikan dengan mendaftarkan sebanyak tujuh (7) Pihak Berkuasa Tempatan (PBT) sebagai pusat pengumpulan E-waste yang berdaftar.

#### iii. Jom E-Waste Carnival 2022

In an effort to enhance awareness, understanding and foster the responsibility of the public on E-waste management in Malaysia, Jom E-waste Carnival was conducted on the 15<sup>th</sup> and 16<sup>th</sup> October 2022 at KL East Mall, Kuala Lumpur. This programme was officiated by YBrs. Dr. Norhazni binti Mat Sari, Deputy Director General (Development), DOE. A token of recognition was given to the Sabah State Government for its commitment and support given by registering seven (7) Local Authorities (PBT) as registered E-waste collection centers.



Program dan aktiviti sepanjang Karnival Jom E-waste 2022 di KL East Mall, Kuala Lumpur  
Programmes and activities throughout Jom E-waste Carnival 2022 at KL East Mall, Kuala Lumpur

Program ini turut disokong oleh rakan-rakan strategik seperti Tenaga Nasional Berhad, Ambank Group, Petroliaam Nasional Berhad (PETRONAS), Malakoff Corporation Berhad, KL East Mall, Micron Technology, Huawei Technologies Corporation, Prasarana Malaysia Berhad, Durioo Plus, Persatuan Pengusaha Restoran Muslim Malaysia (PRESMA) dan Alam Flora Environment Solution (AFES) di atas 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, antaranya adalah Slot Sembang E-waste dengan penampilan khas oleh Bell Ngasri bersama dua (2) orang panel iaitu Ts. Azlan Bin Ahmad, Pengarah Bahagian Bahan Berbahaya (JAS) dan Dr Thahirahtul Asma' Binti Zakaria, Ketua Penolong Pengarah Kanan, Kementerian Kesihatan Malaysia (KKM); pameran reruai oleh rakan strategik, *pocket talk* oleh rakan strategik, program pengumpulan E-waste; penampilan khas maskot Mina Mila dan maskot E-waste iaitu E-cha; persembahan pemenang bicara berirama, aktiviti mewarna kanak-kanak, kuiz interaktif kahoot dan kaunter *online poll* mengenai pelaksanaan mekanisme pengurusan E-waste dan konsep *Extended Producer Responsibility* (EPR).

#### iv. Program Pengumpulan E-Waste Mengikut Negeri

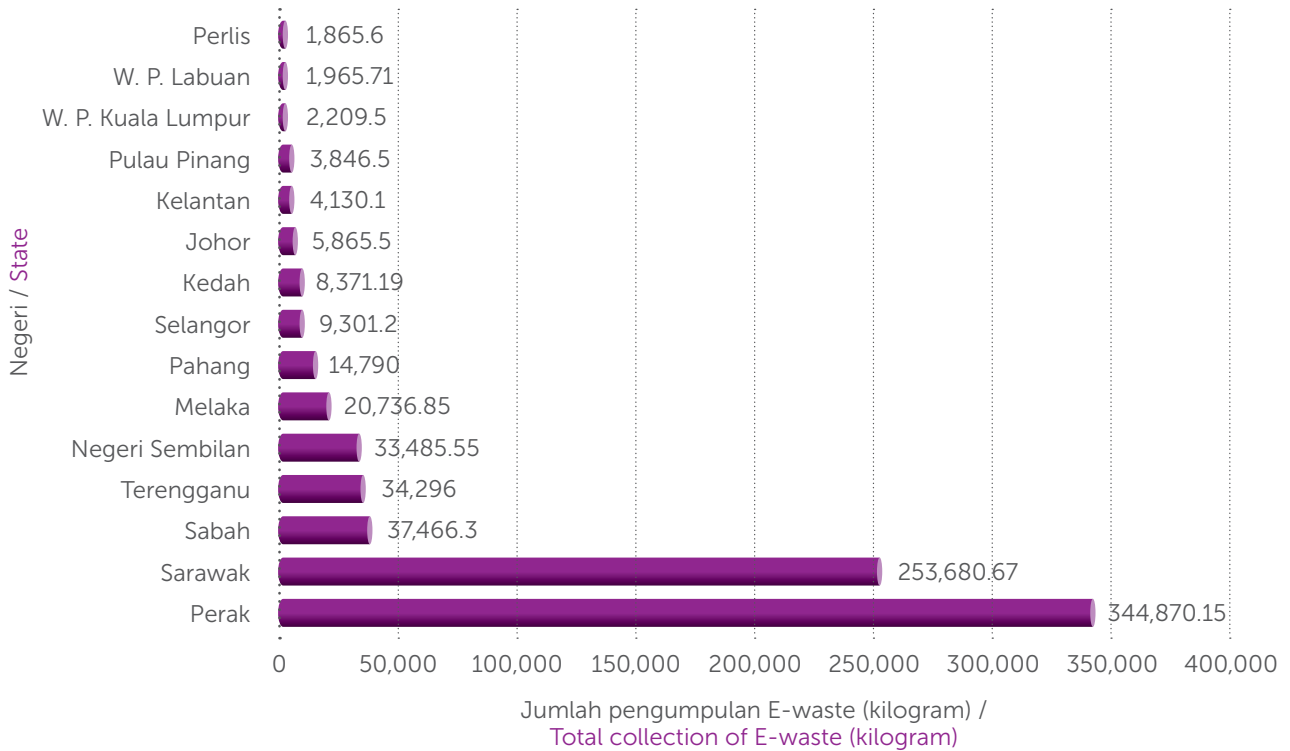
Selaras dengan inisiatif untuk mengangkat hari sabtu terakhir setiap bulan sebagai Hari Pengumpulan E-waste dan penetapan sasaran pengumpulan E-waste sebanyak 1,000 tan metrik bagi tahun 2022, sebanyak 393 aktiviti pengumpulan E-waste telah dijalankan oleh semua JAS Negeri pada tahun 2022. Penglibatan orang awam amatlah memberangsangkan dengan jumlah keseluruhan pengumpulan E-waste sebanyak 776,880 kg (776.88 tan metrik). Analisis jumlah pengumpulan E-waste setiap negeri adalah seperti di **Rajah 4.14**. Terdapat peningkatan sebanyak 47% jumlah kutipan E-waste berbanding tahun 2021. Ini menunjukkan bahawa tahap kesedaran orang awam berkaitan pengurusan E-waste telah meningkat. Berdasarkan rekod jumlah pengumpulan E-waste bagi tahun 2021, JAS Negeri Perak telah mencatatkan jumlah pengumpulan E-waste tertinggi sebanyak 344,900kg (344.9 tan metrik) dan jumlah kempen pengumpulan E-waste tertinggi sebanyak 96 program (**Rajah 4.15**).

This programme was also supported by strategic partners such as Tenaga Nasional Berhad, Ambank Group, Petroliaam Nasional Berhad, Malakoff Corporation Berhad, KL East Mall, Micron Technology, Huawei Technologies Corporation, Prasarana Malaysia Berhad, Durioo Plus, Malaysian Muslim Restaurant Entrepreneurs Association (PRESMA) and Alam Flora Environment Solution (AFES) as a testament to their commitment in implementing the Sustainable Development Goals (SDG) and Environmental, Social and Governance (ESG) agenda towards creating a sustainable environment.

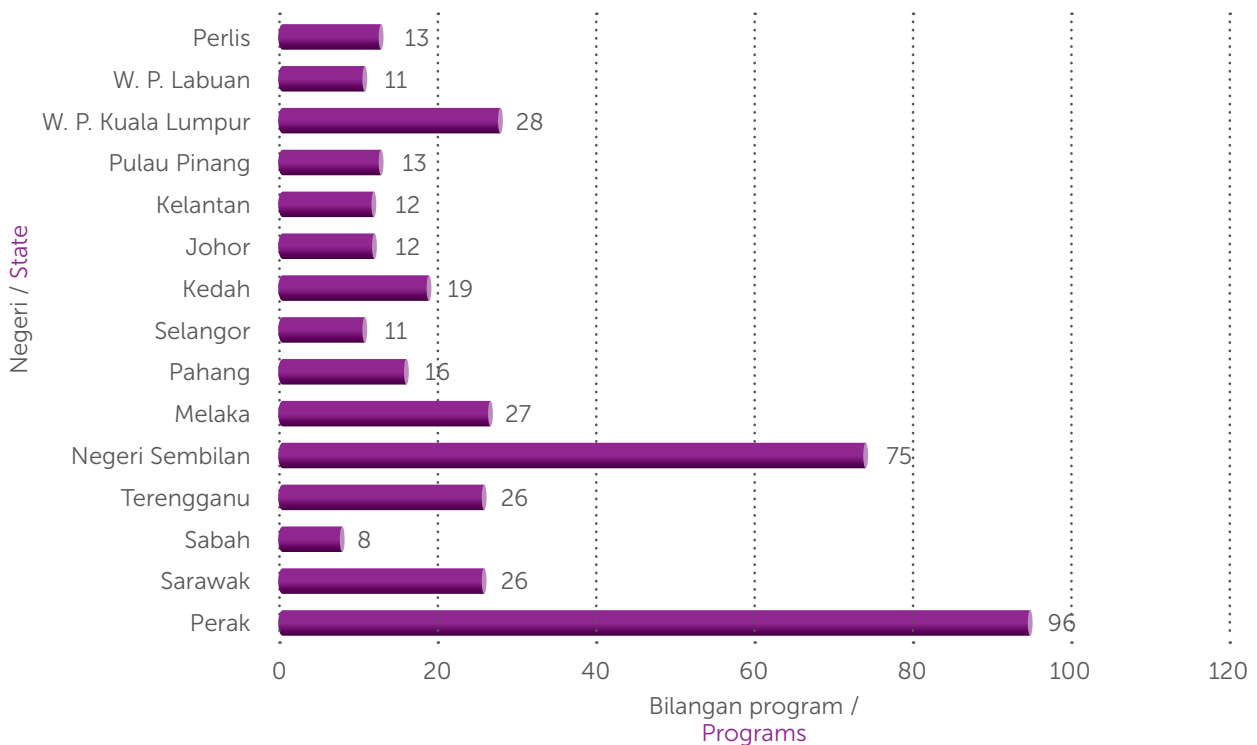
Among the activities that were carried out during the event were those such as Sembang E-waste with a special appearance by Bell Ngasri together with two (2) panelists namely Ts. Azlan bin Ahmad, Director of the Hazardous Substances Division, DOE and Dr Thahirahtul Asma' binti Zakaria, Senior Principal Assistant Director, Ministry of Health Malaysia (KKM); booth exhibitions by strategic partners, pocket talks by strategic partners, E-waste collection programme; a special appearance of Mina Mila mascot and E-waste mascot E-cha; performances by the Choral Speaking Winners, children's colouring activities, kahoot interactive quizzes and online poll counter on the implementation of the E-waste management mechanism and the Extended Producer Responsibility (EPR) concept.

#### iv. E-Waste Collection Programme By State

A total of 393 E-waste collection activities were carried out by State DOEs in 2022 in conjunction with the DOE's initiative to designate the last Saturday of the month as E-waste Collection Day and to target collecting 1,000 metric tons of E-waste for the year 2022. Public response was overwhelming and a total of 776,880 kg (776.88 metric tons) of E-waste was successfully collected. The analysis on the amount of E-waste collection according to states is as in **Figure 4.14**. There was an increase of 47% in the amount of E-waste collected compared to 2021. This shows that the level of public awareness on E-waste management has increased. Based on the recorded amount of E-waste collection for the year 2022, the Perak State DOE recorded the highest amount of E-waste collected with a total of 344,900kg (344.9 metric tons) and the highest number of E-waste collection campaigns with 96 programmes (**Figure 4.15**).



Rajah 4.14 : Data Pengumpulan E-waste Mengikut Negeri.  
Figure 4.14 : E-waste Collection Data by State in 2022



Rajah 4.15 : Bilangan Program Pengumpulan E-waste yang dijalankan oleh JAS Negeri  
Figure 4.15 : E-waste Collection Programmes conducted by the State DOEs in 2022

### **BENKEL ATAS TALIAN KONVENSYEN ROTTERDAM 1/2022: THE IMPLEMENTATION OF THE ROTTERDAM CONVENTION IN MALAYSIA**

Program bantuan teknikal Konvensyen Rotterdam merangkumi pelbagai aktiviti untuk membantu negara-negara ahli yang memerlukan bantuan dalam pelaksanaan keperluan konvensyen. Salah satu aktiviti yang diperkenalkan ialah pelaksanaan bengkel peringkat kebangsaan.

Bengkel ini menyediakan peluang dan ruang untuk menyemak status pelaksanaan konvensyen dikalangan negara ahli bagi setiap keperluan konvensyen. Bengkel ini juga membincangkan sistem dan polisi sediaada negara-negara ahli dalam pengurusan bahan kimia oleh pihak berkepentingan yang berkaitan dengan bahan kimia industri dan racun makhluk perosak.

Bengkel ini telah diadakan pada 20 - 21 Januari 2022 dan dihadiri oleh 10 orang peserta yang terdiri daripada *Designated National Authority* (DNA) bahan kimia industri; Jabatan Alam Sekitar (JAS), *Designated National Authority* (DNA) racun makhluk perosak; Jabatan Pertanian Malaysia (DOA), *Official*

### **ROTTERDAM CONVENTION ONLINE WORKSHOP 1/2022: THE IMPLEMENTATION OF THE ROTTERDAM CONVENTION IN MALAYSIA**

The technical assistance programme of the Rotterdam Convention covers a range of activities that among others address the needs of individual countries or regions to assist them to fully implement the Convention. One of the activities to support the parties is organising training workshops at the national level.

The national workshop provides an opportunity to review in detail the status of implementation of the Convention within a country and for each of the obligations under the Convention. It also includes a review of the policy and existing system of member countries in managing chemical materials by national stakeholders involved in the general management of pesticides and industrial chemicals.

The workshop was held from 20<sup>th</sup> - 21<sup>st</sup> January 2022 and was attended by 10 participants comprising the Designated National Authority (DNA) Chemical Industry; Department of Environment (DOE), Designated National Authority (DNA) Pesticide; Department of Agricultural (DOA), *Official*

**The implementation of the Rotterdam Convention in Malaysia**

National Online Workshop  
19-21 JANUARY 2022  
2.30 PM-4.30 PM (KL)

Poster Hebahan yang Dipaparkan di Laman Web Konvensyen Rotterdam  
Promotion Poster Displayed on the Rotterdam Convention Website

*Contact Point* (OCP); Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim (NRECC) dan Sekretariat Rotterdam.

Objektif bengkel adalah untuk meningkatkan kapasiti di peringkat kebangsaan untuk memudahcara pelan kebangsaan dalam pelaksanaan Konvensyen Rotterdam, dan juga untuk :

- Menyokong kapasiti dan keupayaan kedua-dua DNA dalam pelaksanaan konvensyen di peringkat kebangsaan;
- Meningkatkan pengetahuan kedua-dua DNA dalam pematuhan asas berkaitan notifikasi *Final Regulatory Action* (FRA), maklumbalas import dan notifikasi eksport; dan
- Memudahcara kerjasama kedua-dua DNA dan pihak berkepentingan yang berkaitan dalam memastikan keberkesanan pelaksanaan konvensyen di peringkat kebangsaan;

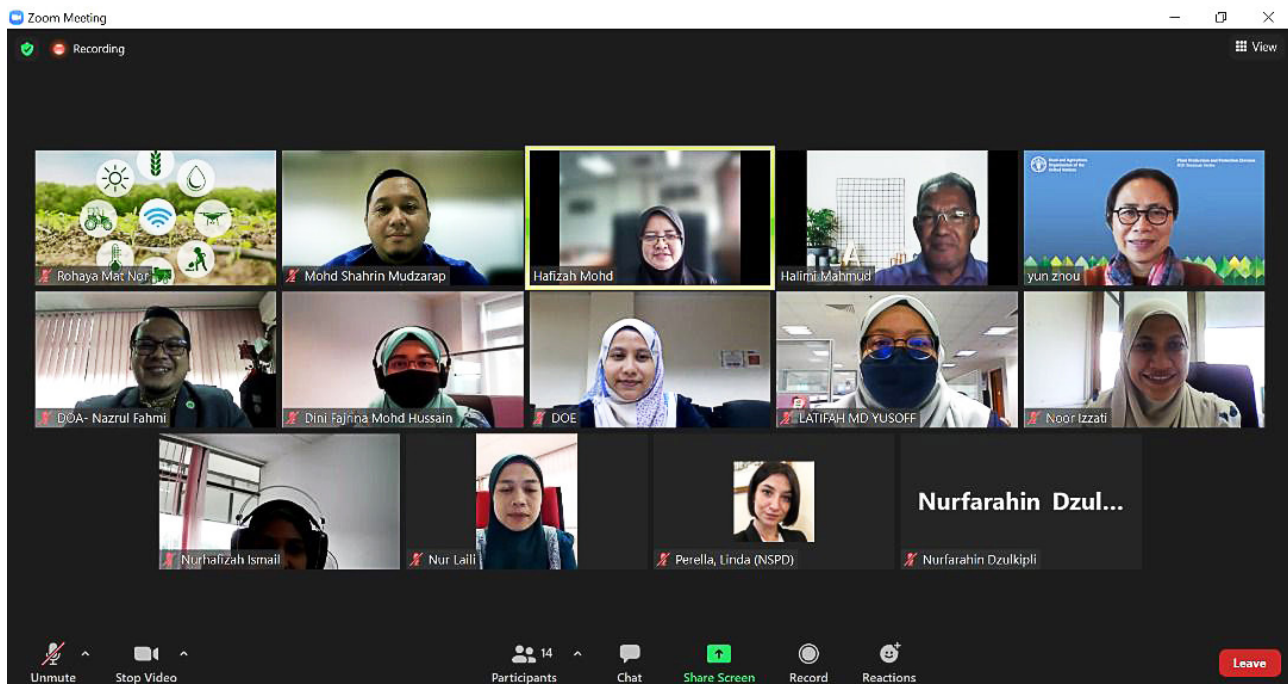
Pada akhir bengkel, kedua-dua DNA dan OCP telah dilatih dan diberi penerangan mengenai pematuhan asas dan prosedur di bawah Konvensyen Rotterdam. Status pelaksanaan teks konvensyen serta jurang masalah yang dihadapi juga telah dikenalpasti.

*Point* (OCP); Ministry of Natural Resources, Environment and Climate Change (NRECC) and Rotterdam Secretariat.

The objectives of the workshop were to build capacity at the national level to facilitate and assist national planning for the implementation of the Rotterdam Convention as well as :

- To continue to support the capacity and capability of DNAs and the supporting staff to effectively implement the Rotterdam Convention at national level;
- To raise knowledge among the DNAs and their supporting staff of their basic obligations related to the notification of Final Regulatory Action (FRA), import responses, and export notifications; and
- To facilitate cooperation among DNAs and later to collaborate with relevant stakeholders in ensuring effective implementation of the Convention at national level.

At the end of the workshop, both DNAs and OCPs were trained in the key obligations and procedures under the Rotterdam Convention. The implementation status of the Convention at national level was highlighted and the gaps were identified.



Barisan Peserta dari Kedua-dua DNA dan OCP yang Menyertai Bengkel  
Participants from Both DNAs and the OCP in the Online Workshop

Zoom Meeting

Recording

0:02:15 3:02 PM

### DOE's Experience in Export Notification

**Case Study 1**

Exporter in India intends to export Ethylene Oxide (EO) to Malaysia. Even the use category of EO is pesticide (under DNA-PI), DNA India send an export notification to DOE because the use of EO to be export is for sterilization of medical devices.

```

graph LR
    A[DOE received export notification from DNA India] --> B[DOE acknowledged receipt to DNA India within 30 days]
    B --> C[DOE contact Malaysia's importer for detail information regarding the exportation]
    C --> D[DOE received information from Malaysia's importer and review it]
    D --> E[DOE reply no objection to DNA India and inform Malaysia's exporter]
  
```

**\*Note:**

- Malaysia's Import Response for EO is no consent to import.
- Legislative or administrative measures - Import and manufacture of all pesticides are controlled under the Pesticides Act 1974 through a registration scheme, and the Act is implemented by the Pesticides Board of Malaysia. No ethylene oxide is permitted for import, manufacture, sale or use in the country except for purposes of research or education, where certain conditions apply.

Next slide

No Notes.

Slide 2 of 3

Sesi Perkongsian dari JAS selaku DNA Kimia Industri berkaitan Prosedur Notifikasi Eksport di bawah teks Konvensyen

Sharing Session from DOE as DNA – Chemical Industry on Export Notification Procedure under the Convention

## BENKEL DALAM TALIAN KONVENSYEN ROTTERDAM 2/2022: THE IMPLEMENTATION OF THE ROTTERDAM CONVENTION IN MALAYSIA

Bengkel ini merupakan kesinambungan dari bengkel 1/2022. Ia diadakan pada 27 - 28 Julai 2022 secara atas talian. Seramai 40 orang peserta telah menghadiri bengkel ini yang terdiri daripada *Designated National Authority* (DNA) bahan kimia industri; Jabatan Alam Sekitar (JAS), *Designated National Authority* (DNA) racun perosak; Jabatan Pertanian Malaysia (DOA), *Official Contact Point* (OCP); Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim (NRECC), Kementerian Kesihatan Malaysia (KKM), Jabatan Keselamatan dan Kesihatan Pekerjaan (DOSH), Pihak Berkuasa Kebangsaan Konvensyen Senjata Kimia, Kementerian Luar Negeri (PBKKSK), Jabatan Perkhidmatan Kuarantin dan Pemeriksaan Malaysia (MAQIS), LESTARI Universiti Kebangsaan Malaysia (UKM), Universiti Sains Malaysia (USM), Tenaganita Sdn Bhd, The Malaysian CropLife and Public Health Association (MCPA), Pesticide Action Network Asia and the Pacific (PANAP), Chemical Industries Council of Malaysia (CICM) dan Sekretariat Rotterdam.

Ucapan pembukaan adalah dari Timbalan Pengarah Jabatan Pertanian Malaysia (DOA), Mr Mohammad Nazrul Fahmi bin Abdul Rahim manakala ucapan penutup adalah dari Sekretariat Konvensyen,

## ROTTERDAM CONVENTION ONLINE WORKSHOP 2/2022: THE IMPLEMENTATION OF THE ROTTERDAM CONVENTION IN MALAYSIA

This online workshop, which was held from 27<sup>th</sup> - 28<sup>th</sup> July 2022, is the continuation of the first workshop. A total of 40 participants attended the workshop comprising Designated National Authority (DNA) chemical industry; Department of Environment (DOE), Designated National Authority (DNA) pesticide; Department of Agricultural (DOA), *Official Contact Point* (OCP); Ministry of Natural Resources, Environment and Climate Change (NRECC), Ministry of Health Malaysia (MOH), Department of Occupational Safety and Health (DOSH), National Authorities of the Chemical Weapons Convention (NACWC), Department of Quarantine and Inspection Services Malaysia (MAQIS), LESTARI Universiti Kebangsaan Malaysia (UKM), Universiti Sains Malaysia (USM), Tenaganita Sdn Bhd, The Malaysian CropLife and Public Health Association (MCPA), Pesticide Action Network Asia and the Pacific (PANAP), Chemical Industries Council of Malaysia (CICM) and the Rotterdam Secretariat.

The opening speech was delivered by Mr. Mohammad Nazrul Fahmi bin Abdul Rahim, the Deputy Director of the Department of Agriculture (DOA) while the closing address was by

Dato Halimi Mahmud dan TS Azlan bin Ahmad, Pengarah Bahagian Bahan Berbahaya, Jabatan Alam Sekitar (JAS).

Dato Halimi Mahmud on behalf of the Rotterdam Convention Secretariat, and TS Azlan bin Ahmad, Director of Hazardous Materials Division, Department of Environment

Objektif bengkel ini adalah seperti berikut:

The objectives of the workshop were:

- a) Memberi kesedaran kepada para peserta mengenai tanggungjawab pematuhan pelaksanaan konvensyen di peringkat kebangsaan seperti *final regulatory action* (FRA), maklumbalas import dan notifikasi eksport;
- b) Memudahkan kerjasama diantara kedua-dua DNA, agensi berkepentingan dalam pelaksanaan konvensyen di peringkat kebangsaan; dan
- c) Menyokong pengurusan bahan kimia secara mampan

- a) To raise knowledge of the participants of their obligations related to the implementation of the Convention at national level namely on Final Regulatory Action (FRA), import response and export notifications;
- b) To facilitate cooperation between DNAs and relevant stakeholders for the implementation of the Convention at national level; and
- c) To support the sustainable management of industrial chemicals.



**Food and Agriculture Organization of the United Nations**

**ROTTERDAM CONVENTION**

**DEPARTMENT OF ENVIRONMENT**

**Rotterdam Convention Secretariat**

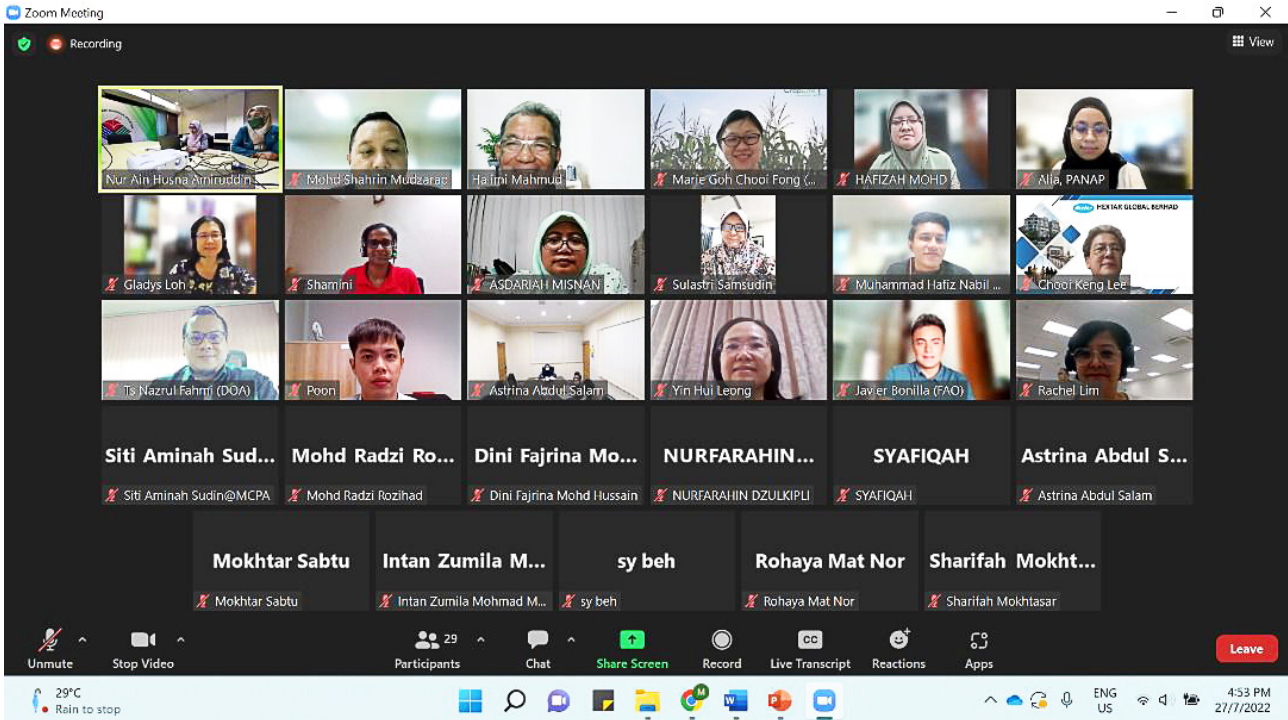
**Second national online workshop on the implementation of the Rotterdam Convention in Malaysia**

***Involving national stakeholders***

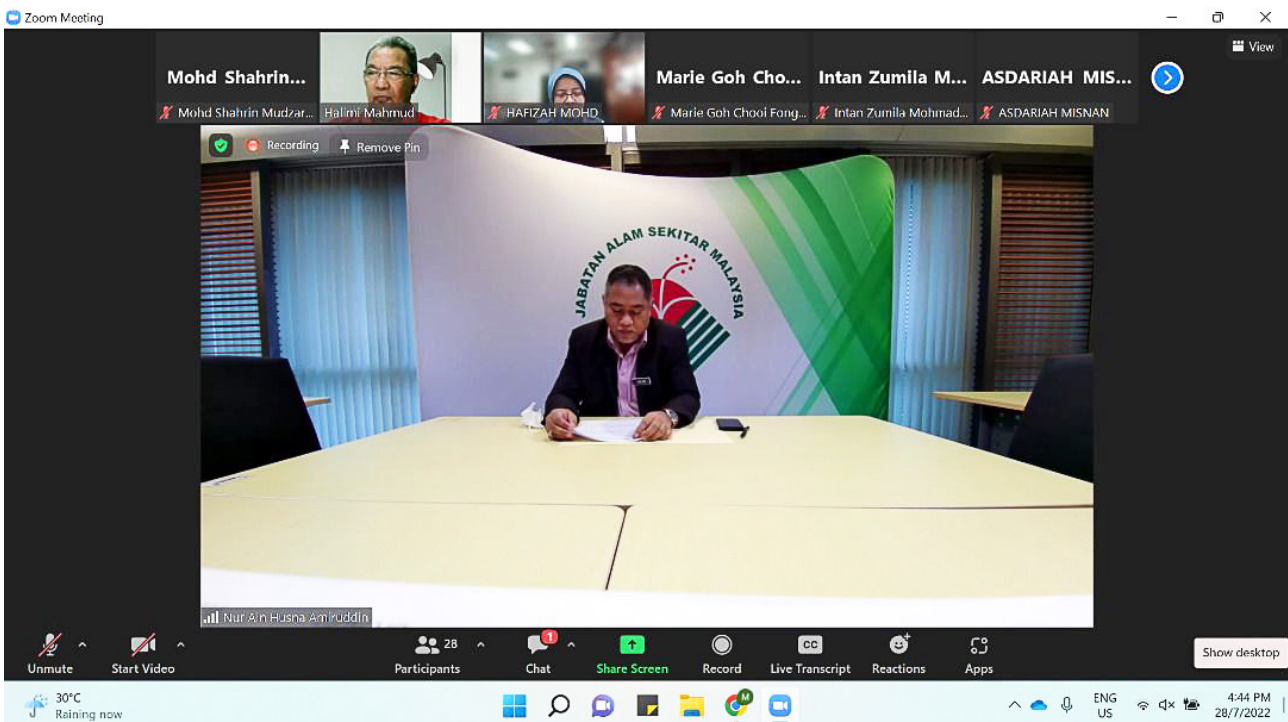
Poster Hebahan yang Dipaparkan di Laman Web Konvensyen Rotterdam  
Promotion Poster Displayed on the Rotterdam Convention Website

Sebanyak 10 pembentangan yang merangkumi pelbagai elemen, prosedur dan keperluan konvensyen telah dikongsi melalui 5 sesi sepanjang bengkel tersebut.

A total of 10 presentations covering key elements of obligations and procedures under the Rotterdam Convention were delivered over 5 sessions throughout the workshop.



Barisan Peserta yang Menyertai Bengkel  
Participants in the Online Workshop



Ucapan Penutup dari Ts. Azlan bin Ahmad, Pengarah Bahagian Bahan Berbahaya JAS  
Closing Remarks from Ts. Azlan bin Ahmad, Director of the DOE's Hazardous Materials Division

Bengkel ini telah berjaya meningkatkan ilmu dikalangan peserta dalam memahami keperluan konvensyen, sekaligus mengeratkan kerjasama diantara kedua-dua DNAs dan agensi berkepentingan yang berkaitan.

### MESYUARAT PERSEDIAAN PERSIDANGAN KESEPULUH KEPADA KONVENSYEN ROTTERDAM 2022 (RC COP 10)

Mesyuarat ini adalah khusus untuk negara-negara yang terletak dalam Asia Pasifik pada 27 - 29 Mac 2022 di Bali, Indonesia, iaitu selepas Persidangan Konvensyen Minamata Mengenai Merkuri berjalan pada tempat yang sama. Mesyuarat ini dihadiri oleh 87 peserta, termasuk 67 wakil dari 29 negara ahli Asia Pasifik dan 20 wakil dari organisasi pemerhati.

Malaysia mengambil maklum berhubung dengan maklumat-maklumat yang dikemukakan oleh semua negara parti terhadap status pelaksanaan Konvensyen Rotterdam serta meminta pihak Sekretariat BRS untuk melaporkan status pelaksanaan keputusan yang telah dicapai pada COP9 Konvensyen Rotterdam.

This workshop successfully raised the knowledge among the participants about the obligations related to the implementation of the Convention. It also strengthened and facilitated cooperation between DNAs and relevant stakeholders for the implementation of the Convention at the national level.

### PREPARATORY MEETING FOR THE TENTH CONFERENCE OF THE ROTTERDAM CONVENTION (RC COP 10)

This is the regional preparatory meeting for countries within the Asia-Pacific region which took place from 27<sup>th</sup> - 29<sup>th</sup> March 2022 in Bali, Indonesia, back-to-back with the fourth meeting of the Conference of the Minamata Convention on Mercury. The meeting was attended by a total of 87 participants, including 67 representatives from 29 Asia-Pacific member countries and 20 representatives from observer organisations.

Malaysia was cognizant of the fact that information provided by all countries party to the Rotterdam Convention on the status of implementation as well as the request put to the Secretariat to report on the implementation of decisions reached at the Rotterdam Convention COP9.



Mesyuarat Persediaan Persidangan Kesepuluh kepada Konvensyen Rotterdam 2022 (RC COP 10) yang Berlangsung di Bali, Indonesia

Preparatory Meeting for the Tenth Conference of the Rotterdam Convention (RC COP 10) at Bali, Indonesia

Keputusan terhadap senarai bahan kimia yang telah dicadangkan untuk dimasukkan ke dalam Annex III adalah seperti berikut:

- Chrysotile Asbestos*: Malaysia menyokong untuk menyenaraikan bahan ini ke dalam Annex III;
- Decabromodiphenyl Ether*: Malaysia menyokong untuk menyenaraikan bahan ini ke dalam Annex III; dan
- Perfluorooctanoic Acid (PFOA), Its Salts and PFOA-Related Compounds*: Malaysia masih belum memberi keputusan kerana bahan kimia ini masih diperingkat perbincangan di antara agensi-agensi pelaksana di Malaysia.

Malaysia's positions for chemical listing of Chemicals in Annex III to the Convention are as follows;

- Chrysotile Asbestos*: Malaysia has no objection to the inclusion of chrysotile asbestos in Annex III, Rotterdam Convention;
- Decabromodiphenyl Ether*: Malaysia has no objection to the inclusion of Decabromodiphenyl Ether in Annex III, Rotterdam Convention; and
- Perfluorooctanoic Acid (PFOA), Its Salts and PFOA-Related Compounds*: Malaysia has yet to decide as its still under discussion among the implementing agencies in Malaysia.



Wakil Malaysia di Mesyuarat  
Malaysian Delegates at the Meeting



Sebahagian Negara Parti Asia Pacific yang Menghadiri Mesyuarat  
Official Delegates from Parties within the Asia-Pacific Region at the Meeting

## PERSIDANGAN KESEPULUH KEPADA KONVENSYEN ROTTERDAM 2022 (RC COP 10)

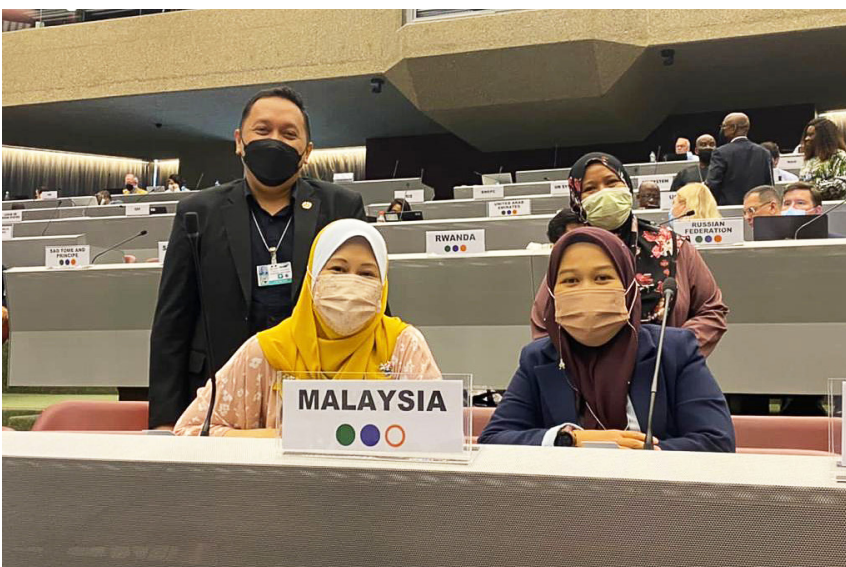
Persidangan kepada Konvensyen Rotterdam merupakan persidangan dwi tahunan bagi menggalakkan tanggungjawab bersama dan kerjasama dikalangan negara ahli di dalam perdagangan antarabangsa bahan kimia berbahaya demi menjaga kesihatan manusia dan alam sekitar. Ia dilaksanakan melalui pertukaran maklumat mengenai sesuatu bahan kimia berbahaya dikalangan negara ahli, melalui prosedur *Prior Informed Consent* (PIC). Malaysia telah meratifikasi konvensyen ini pada 4 September 2002.

Wakil negara telah menghadiri Konvensyen ini dari 6 hingga 17 Jun 2022 di Geneva, Switzerland. Ia diadakan serentak dengan mesyuarat *Conferences of the Parties to the Basel, Rotterdam dan Stockholm Conventions* (COPs BRS). Mesyuarat ini merupakan mesyuarat segmen kedua, di mana ia merupakan kesinambungan kepada mesyuarat segmen

## TENTH CONFERENCE OF THE ROTTERDAM CONVENTION (RC COP 10)

The Conference of the Rotterdam Convention is usually held every two years to promote shared responsibility and cooperation among member countries in the international trade of certain hazardous chemicals for the protection of human health and the environment. This is done by facilitating information exchange about the hazardous chemicals among member countries through the Prior Informed Consent (PIC) procedure. Malaysia ratified this convention on 4<sup>th</sup> September 2002.

National delegates attended this conference which took place from 6<sup>th</sup> to 17<sup>th</sup> June 2022 at Geneva, Switzerland. It was held back-to-back with Conference of the Parties to the Basel, Rotterdam and Stockholm Conventions (COPs BRS). This conference is the second segment, the first being an online segment that took place from



Wakil Malaysia di Persidangan  
Malaysian Delegates at the Convention

pertama yang telah berjalan pada 26 hingga 30 Julai 2021 secara atas talian. Tema mesyuarat kali ini adalah '*Global Agreements for a Healthy Planet: Sound management of chemicals and waste*'.

Hasil perbincangan Persidangan Kesepuluh Kepada Konvensyen Rotterdam 2022 (RC COP 10) adalah seperti berikut;

- a. Mesyuarat bersetuju bahawa bahan kimia industri iaitu decabromodiphenyl ether dan perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds akan disenaraikan di bawah Annex III;
- b. Mesyuarat bersetuju untuk membincangkan 5 lagi bahan kimia iaitu acetochlor, carbosulfan, paraquat, fenthion dan chrysotile asbestos pada COP tahun 2023; dan
- c. Mesyuarat memuktamadkan program kerja bagi Jawatankuasa Pematuhan yang baru bagi 2022 - 2023

#### **PROGRAM LATIHAN: MERCURY MASS FLOW DEVELOPMENT UNDER THE "PROJECT FOR PROMOTING MINAMATA CONVENTION ON MERCURY BY MAKING THE MOST OF JAPAN'S KNOWLEDGE AND EXPERIENCES"**

Konvensyen Minamata Berkenaan Merkuri merupakan perjanjian antarabangsa untuk melindungi kesihatan manusia dan alam sekitar akibat kesan buruk penggunaan dan pelepasan merkuri serta sebatian yang mengandungi merkuri.

Negara ahli adalah diwajibkan untuk memaklumkan pihak sekretariat konvensyen mengenai situasi dan status pelaksanaan merkuri dalam mengenalpasti data-data penting mengenai penggunaan, penghasilan dan pembuangan merkuri di negara masing-masing secara berkala.

Sehubungan itu, pihak United Nation Environment Programme (UNEP) mengadakan program latihan ini untuk membantu dan memberi sokongan kepada negara ahli dalam menyediakan keperluan konvensyen ini. Program latihan ini dibuka kepada mana-mana negara yang bercadang untuk menandatangani Konvensyen Minamata dalam masa terdekat. Program latihan ini diadakan pada 14 - 16 November 2022 di Jakarta, Indonesia.

Program latihan ini adalah usaha sama diantara *UNEP Regional Office for Asia and the Pacific* (UNEP ROAP), *Basel Conventions Regional Centre, Southeast Asia (BCRC-SEA)* dan *Stockholm*

26<sup>th</sup> to 30<sup>th</sup> July 2021. The theme of this conference was "*Global Agreements for a Healthy Planet: Sound management of chemicals and waste*".

The outcomes of the Tenth Conference of the Rotterdam Convention were as follows;

- a. The Conference agreed that two industrial chemicals: decabromodiphenyl ether, and perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds will be listed in Annex III;
- b. The Conference agreed to discuss 5 other industrial chemicals, namely acetochlor, carbosulfan, paraquat, fenthion and chrysotile asbestos in COP 2023; and
- c. The Conference agreed on the work programme for the newly established Compliance Committee for 2022 - 2023.

#### **TRAINING PROGRAMME: MERCURY MASS FLOW DEVELOPMENT UNDER THE "PROJECT FOR PROMOTING MINAMATA CONVENTION ON MERCURY BY MAKING THE MOST OF JAPAN'S KNOWLEDGE AND EXPERIENCES"**

The Minamata Convention on Mercury (the Convention) is one of the newest multilateral environmental agreements aimed at protecting human health and environment from anthropogenic emissions and release of mercury and mercury compounds.

The Parties to the Convention are obliged to inform the Convention about the national situation and implementation status in identifying data concerning the status of use, emission/release, and disposal of mercury at national periodically.

In this regard, United Nations Environment Programme (UNEP) is implementing this training programme to support its member states for the implementation of this Convention. This training programme is open to all countries that plan to ratify Minamata Convention in the near future. It was held from 14<sup>th</sup> - 16<sup>th</sup> November 2022 at Jakarta, Indonesia.

This training programme is implemented by the *UNEP Regional Office for Asia and the Pacific* of the *United Nations Environment Programme (UNEP ROAP)*, *Basel Conventions Regional Centre,*

Convention Regional Centre (SCRC), Indonesia dengan bantuan kewangan daripada the Japan-ASEAN Integration Fund (JAIF).

Objektif program latihan ini adalah untuk memberi pendedahan kepada pakej latihan *Mercury Flow Analysis* yang telah dibangunkan oleh UNEP ROAP. Pakej latihan ini menyediakan pelbagai bahan seperti templat *ready-to-use*, manual pengguna dan maklumat teknikal untuk memudahkan pengguna merancang dan mengadakan program latihan di negara masing-masing, yang akan memastikan penambahbaikan berterusan kepada *Mercury Mass Flow* dan memberi input yang berkesan dalam proses membuat dan melaksanakan polisi negara ahli.

Peserta program latihan yang terlibat terdiri daripada kementerian atau agensi yang bertanggungjawab dalam pengurusan penghasilan merkuri, pihak akademik atau jururunding yang terlibat di dalam pembangunan inventori merkuri negara dan *National Focal Point* bagi Konvensyen Minamata.

Program latihan ini terdiri daripada 5 sesi, iaitu 3 jam setengah bagi setiap sesi selama 3 hari. Selain memberi pendedahan kepada pakej latihan, program latihan ini membincangkan isu-isu lain seperti; i) *Mercury issues and how mercury flow analysis can contribute*; ii) *National context, challenges and how to improve national mercury data*; iii) *Mass balance principle*; iv) *Mercury Mass flow development*; dan v) *Mercury mass flow in the context of the Minamata Convention*.

South East Asia (BCRC-SEA) and the Stockholm Convention Regional Centre (SCRC), Indonesia, and funded by Japan-ASEAN Integration Fund (JAIF).

The purpose of the training programme is to familiarise the training package of Mercury Flow Analysis developed by UNEP ROAP. It introduces ready-to-use templates and examples for preparing a training programme, and supplemental technical information to deepen the understanding of the topic. This is a part of continual improvement of national mercury mass flow and inventory for better science-based policy making and implementation.

The participants comprise ministry or agencies responsible for the management of mercury emissions, academia or consulting companies engaged in the development of an inventory for mercury and the National Focal Points of the Minamata Convention.

This training programme is composed of 5 sessions; 3 and a half hours each over 3 days. Apart from training, this programme discusses other issues namely; i) Mercury issues and how mercury flow analysis can contribute; ii) National context, challenges and how to improve national mercury data; iii) Mass balance principle; iv) Mercury Mass flow development; and v) Mercury mass flow in the context of the Minamata Convention.



Barisan Peserta yang Menyertai Program Latihan  
Participants of the Training Programme

## Penguatkuasaan Ke Atas Premis Enforcement On The Premises

### 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 merangkumi kilang getah asli mentah, kilang minyak kelapa sawit mentah dan kemudahan kilang 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 2022, sejumlah 45 buah kilang getah asli mentah telah dilesenkan di bawah 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 17 buah kilang lagi dibenarkan untuk mengitar semula efluen. **Rajah 4.16** menunjukkan bilangan kilang getah asli mentah mengikut negeri.

Pada tahun 2022 JAS telah menjalankan sejumlah 171 pemeriksaan ke atas 45 buah kilang getah asli mentah yang telah dilesenkan.

Sejumlah 27 Notis Arahan telah dikeluarkan pada tahun 2022 untuk tindakan penambahbaikan bagi mematuhi keperluan perundangan dan sejumlah lapan (8) kompaun turut dikeluarkan kepada kilang-kilang yang berkaitan yang gagal mematuhi AKAS 1974 dan Peraturan-Peraturan di bawahnya. Sebanyak satu (1) premis juga telah dikenakan tindakan mahkamah atas kegagalan mematuhi syarat-syarat lesen yang dikeluarkan. Tindakan susulan penguatkuasaan yang diambil adalah seperti yang ditunjukkan dalam **Rajah 4.16**.

### CONTROL OF PRESCRIBED PREMISES

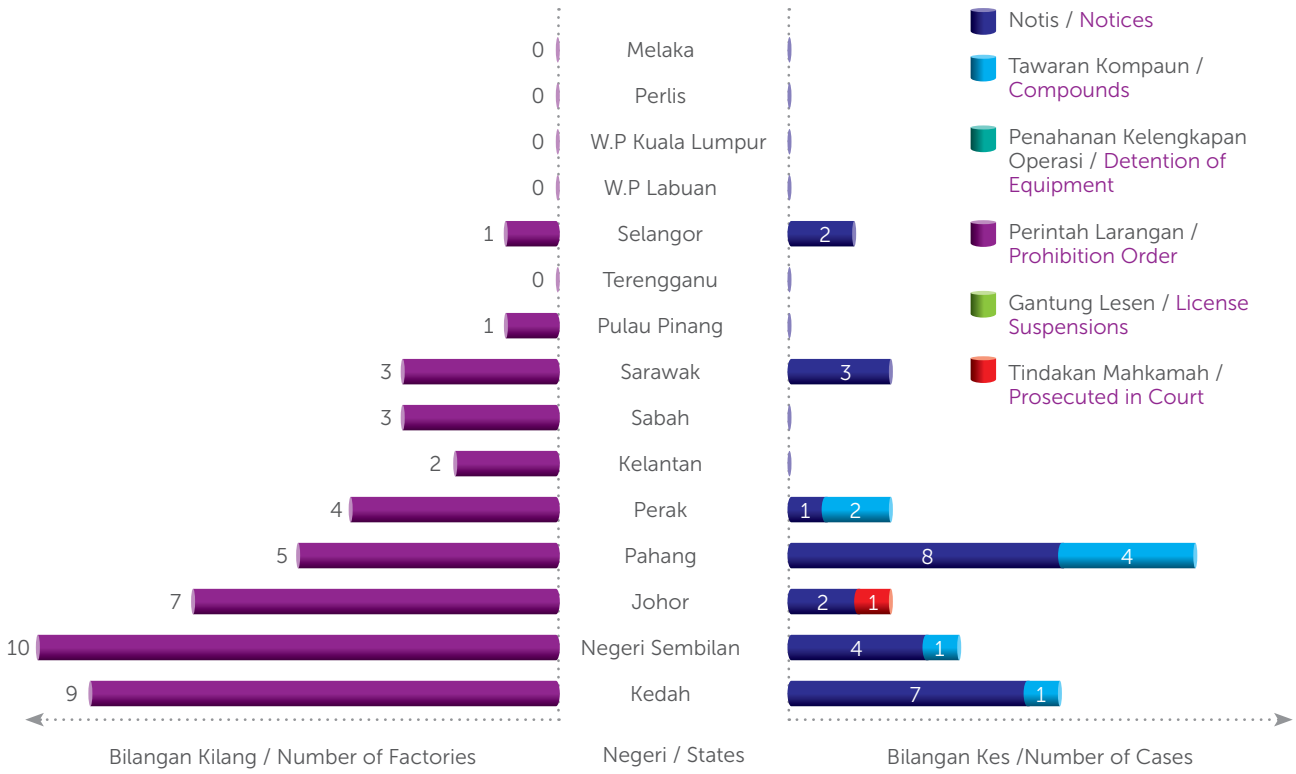
Under the Environmental Quality Act (EQA) 1974, prescribed premise is defined as licensed premises as prescribed by the Minister under Section 18, EQA 1974. Such prescribed premises include crude natural rubber factory, crude palm oil mills and factories or facilities for the treatment or disposal of scheduled waste 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 2022, 45 raw natural rubber factories were licensed under the 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 17 factories were allowed to recycle their effluent. **Figure 4.16** displays the number of raw natural rubber factories by state.

In 2022, DOE conducted a total of 171 inspections on 45 licensed natural rubber factories.

A total of 27 Directive Notices were issued in 2022 for remedial action in order to comply with legal requirements and a total of eight (8) compounds were also issued to factories that failed to comply with the EQA 1974 and its regulations thereunder. Apart from that, one (1) premise was prosecuted in court for failure to comply with the conditions of the license issued. The enforcement follow-up actions taken are as shown in **Figure 4.16**.



Rajah 4.16 : Bilangan Kilang Getah Asli Mentah dan Tindakan Undang-Undang Terhadap Kilang Getah Asli Mentah, 2022

Figure 4.16 : Number of Raw Natural Rubber Factories and Legal Actions Taken Against Raw Natural Rubber Factories, 2022



Pemeriksaan di Kilang Minyak Kelapa Sawit Mentah  
Inspection at Crude Palm Oil Mills

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

Pada tahun 2022, pencapaian pematuhan keseluruhan kilang getah asli mentah yang tertakluk di bawah 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 2022, pencapaian pematuhan keseluruhan oleh kilang getah asli mentah kepada peraturan tersebut adalah 96%.

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

Pada tahun 2022, pencapaian pematuhan keseluruhan oleh kilang getah asli mentah bagi Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 adalah 98%.

### Kilang Minyak Kelapa Sawit Mentah

Sejumlah 459 buah kilang minyak kelapa sawit mentah telah dilesenkan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Minyak Kelapa Sawit Mentah) 1977 pada tahun 2022. Daripada 459 buah kilang yang dilesenkan, 380 buah kilang telah dilesenkan bagi melepaskan efluen yang diolah ke dalam alur air, 72 buah kilang melupuskan efluen ke atas tanah, dan tujuh (7) buah kilang melupuskan efluen dengan menggunakan gabungan kaedah alur air dan atas tanah. **Rajah 4.17** menunjukkan taburan bilangan kilang minyak kelapa sawit mentah di Malaysia mengikut negeri.

Pada tahun 2022 JAS telah menjalankan sejumlah 1,586 pemeriksaan di lapangan dan pemeriksaan dalam talian ke atas 459 buah kilang minyak kelapa sawit mentah yang telah dilesenkan.

Sejumlah 181 notis arahan telah dikeluarkan pada tahun 2022 untuk tindakan penambahbaikan bagi mematuhi keperluan perundangan dan sejumlah 176 kompaun turut dikeluarkan kepada kilang-kilang yang berkaitan yang gagal mematuhi AKAS 1974 dan Peraturan-Peraturan di bawahnya. Selain daripada itu, 10 premis telah dikenakan Penahanan

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

For 2022, the overall compliance of the raw natural rubber factories under the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations 1978 was 98%.

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

Raw natural rubber factories are subject to the Environmental Quality (Clean Air) Regulations 2014. In 2022, the overall compliance achieved by raw natural rubber factories to the regulations was 96%.

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

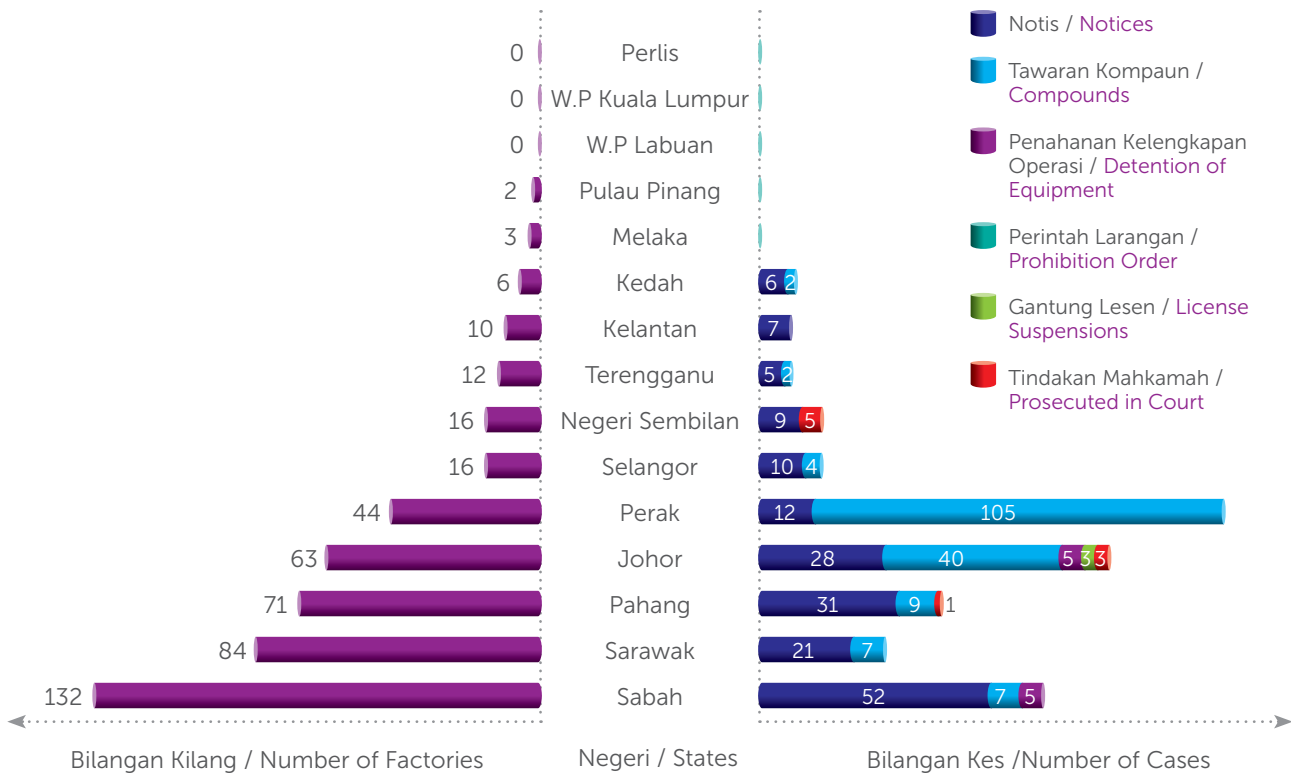
In 2022, the overall compliance achievement for the Environmental Quality (Scheduled Wastes) Regulations 2005 was 98%.

### Crude Palm Oil Mills

There are 459 palm oil mills licensed under the Environmental Quality (Prescribed Premises) (Crude Palm Oil Mill) Regulations 1977 for 2022. From this number, a total of 380 were given approval to discharge treated effluent into inland watercourse, 72 to practice land disposal, seven (7) to discharge effluent by a combination of inland watercourse and land. **Figure 4.17** shows the distribution of crude palm oil mills in Malaysia according to states.

In 2022, DOE conducted a total of 1,586 field inspections and desktop inspections on 459 licensed oil palm mills.

A total of 181 directive notices were issued in 2022 for remedial action to comply with legal requirements and a total of 176 compounds were also issued to factories that failed to comply with the EQA 1974 and the Regulations thereunder. In addition, 10 premises were issued the Detention of Equipment and the license of three (3) premises



Rajah 4.17 : Bilangan Kilang Minyak Kelapa Sawit Mentah dan Tindakan Undang-Undang Terhadap Kilang Minyak Kelapa Sawit Mentah, 2022

Figure 4.17 : Number of Crude Palm Oil Mills and Legal Actions Taken Against Crude Palm Oil Mills, 2022

Operasi Kelengkapan. Sebanyak tiga (3) premis juga telah dikenakan tindakan Gantung Lesen. Sebanyak Sembilan (9) premis juga telah dikenakan tindakan mahkamah atas kegagalan mematuhi syarat-syarat lesen yang dikeluarkan. Tindakan susulan penguatkuasaan yang diambil adalah seperti yang ditunjukkan dalam **Rajah 4.17**.

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

Pada tahun 2022, pencapaian pematuhan keseluruhan kilang minyak kelapa sawit mentah kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Minyak Kelapa Sawit Mentah) 1977 adalah 96%.

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

Kilang minyak kelapa sawit mentah juga tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014. Pada tahun 2022, pencapaian pematuhan keseluruhan oleh kilang minyak kelapa sawit mentah adalah 98%.

were suspended. Apart from that, nine (9) premises were prosecuted for failing to comply with the conditions of the license issued. The enforcement follow-up actions taken are as shown in **Figure 4.17**.

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

In 2022, the overall compliance achieved by the crude palm oil mills to the Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulations, 1977 was 96%.

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

Crude palm oil mills are also subject to the Environmental Quality (Clean Air) Regulations 2014. In 2022, the overall compliance achieved for crude palm oil mills was 98%.

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

Pada tahun 2022, pencapaian pematuhan keseluruhan kilang minyak kelapa sawit mentah di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 adalah 97%.

**Kemudahan Pengolahan Dan Pelupusan Buangan Terjadual**

Sejumlah 431 buah kilang telah dilesenkan oleh JAS di bawah Seksyen 18(1), AKAS 1974 untuk menguruskan buangan terjadual pada tahun 2022. **Rajah 4.18** menunjukkan bilangan kilang yang dilesenkan mengikut negeri.

Pada tahun 2022, JAS telah menjalankan sejumlah 1,279 pemeriksaan di lapangan dan pemeriksaan dalam talian ke atas 431 buah kilang ini. Tindakan susulan pemeriksaan penguatkuasaan yang diambil adalah seperti yang ditunjukkan dalam **Rajah 4.18**.

Sejumlah 114 notis arahan telah dikeluarkan pada tahun 2022 untuk tindakan penambahbaikan bagi mematuhi keperluan perundangan dan sejumlah 384 kompaun turut dikeluarkan kepada kilang-

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

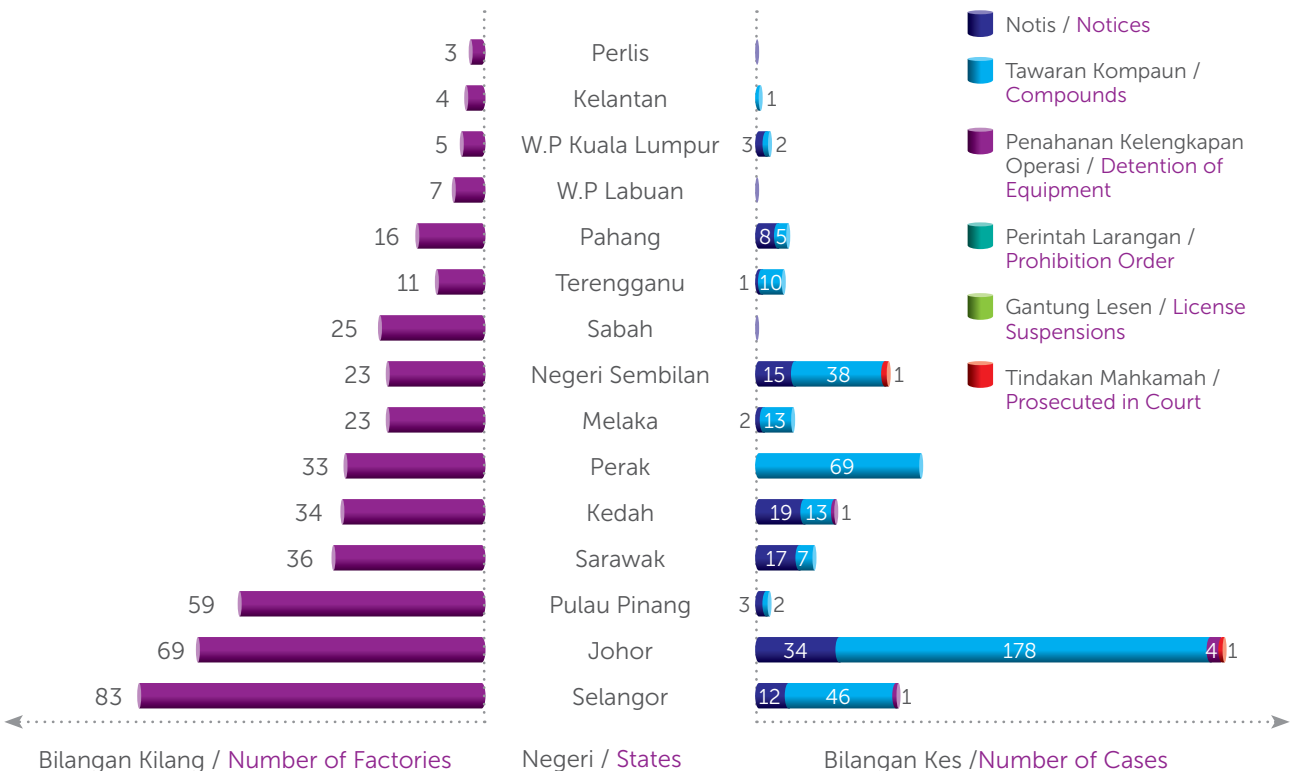
In 2022, the overall compliance achieved by the crude palm oil mills for Environmental Quality (Scheduled Wastes) Regulations 2005 was 97%.

**Scheduled Wastes Treatment And Disposal Facilities**

A total of 431 factories were licensed by DOE under Section 18 (1), of the EQA 1974 to manage scheduled wastes in 2022. **Figure 4.18** shows the number of factories that have been licensed by state.

In 2022, DOE conducted a total of 1,279 field inspections and desktop inspections on these 431 factories. The follow-up action of the enforcement taken is as shown in **Figure 4.18**.

A total of 114 directive notices were issued in 2022 for remedial action to comply with legal requirements and a total of 384 compounds were also issued to related factories that failed to comply



Rajah 4.18 : Bilangan Kemudahan Pengolahan dan Pelupusan Buangan Terjadual dan Tindakan Undang-Undang Terhadap Kemudahan Pengolahan dan Pelupusan Buangan Terjadual, 2022

Figure 4.18 : Number and Legal Actions Taken Againsts Facilities for the Treatment and Disposal Facilities of Scheduled Wastes, 2022

kilang yang berkaitan yang didapati gagal mematuhi AKAS 1974 dan Peraturan-Peraturan di bawahnya. Selain daripada itu, enam (6) premis telah dikenakan Penahanan Operasi Kelengkapan dan dua (2) premis juga telah dikenakan tindakan mahkamah atas kegagalan mematuhi syarat-syarat lesen yang dikeluarkan.

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

Pada tahun 2022, pencapaian pematuhan keseluruhan bagi Kemudahan Pengolahan dan Pelupusan Buangan Terjadual yang dilesenkan adalah 90%.

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

Pada tahun 2022, pencapaian pematuhan keseluruhan oleh Kemudahan Pengolahan dan Pelupusan Buangan Terjadual bagi Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009 adalah 91%.

- **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 2022, pencapaian pematuhan keseluruhan oleh kilang-kilang tersebut adalah 96%.

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

Pada tahun 2022, pencapaian pematuhan keseluruhan Kemudahan Pengolahan dan Pelupusan Buangan Terjadual di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 adalah 89%.

## **KAWALAN KE ATAS PREMIS YANG BUKAN DITETAPKAN**

Premis yang bukan ditetapkan adalah merujuk kepada premis selain dari yang dilesenkan di bawah Seksyen 18, AKAS 1974 iaitu selain daripada kilang getah asli mentah, kilang minyak kelapa sawit mentah dan kilang yang menjalankan kemudahan

with the EQA 1974 and the Regulations thereunder. In addition, six (6) premises were subject to the Detention of Equipment and two (2) premises have been prosecuted for failure to comply with the conditions of the license issued.

- **Status of Compliance with the Environmental Quality (Scheduled Wastes) (Scheduled Wastes Treatment and Disposal Facilities) Regulations 1989**

In 2022, the overall compliance of the licensed Facilities for the Treatment and Disposal of Scheduled Wastes was 90%.

- **Status of Compliance with the Environmental Quality (Industrial Effluent) Regulations 2009**

In 2022, the overall compliance by these Scheduled Wastes Treatment and Disposal Facilities to the Environmental Quality (Industrial Effluent) Regulations 2009 was 91%.

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

Scheduled Wastes Treatment and Disposal Facilities are also subject to the Environmental Quality (Clean Air) Regulations 2014. In 2022, the overall compliance of these factories was 96%.

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

In 2022, the overall compliance of Scheduled Wastes Treatment and Disposal Facilities to the Environmental Quality (Scheduled Wastes) Regulations 2005 was 89%.

## **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 facilities for the treatment and disposal of scheduled waste. These include factories from various manufacturing

pengolahan dan pelupusan buangan terjadual Premis-premis ini merangkumi kilang-kilang dari pelbagai industri pembuatan dan pengilangan, sistem pengolahan kumbahan, tapak pelupusan sisa pepejal dan sebagainya.

JAS terus komited menjalankan pemeriksaan secara berkala kepada premis-premis yang berisiko menyebabkan pencemaran alam sekitar melalui pendekatan pemeriksaan di lapangan dan pemeriksaan dalam talian sepanjang tahun 2022. Selain itu, JAS turut memperkasakan program penguatkuasaan pada tahun 2022 melalui rondaan dan pemantauan melalui dron di kawasan tumpuan pencemaran termasuk di luar waktu pejabat.

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

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

Pada tahun 2022, sejumlah 3,642 pemeriksaan lapangan dan pemeriksaan atas talian dilaksanakan ke atas 42 kategori industri pembuatan dan lain-lain premis yang bukan ditetapkan yang tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009.

Pencapaian pematuhan keseluruhan oleh premis yang bukan ditetapkan kepada peraturan di atas adalah 99%. Terdapat 22 kategori industri yang merekodkan pematuhan 100% pada tahun 2022 (**Rajah 4.19**).

industries, sewage treatment system, solid waste landfills and etc.

DOE is committed to conducting periodic inspections throughout the year on premises that have the potential to cause environmental pollution through field as well as desktop inspections. In addition, DOE has also strengthened the enforcement programmes in 2022 through patrols and drone surveillance at pollution hotspots, including after office hours.

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

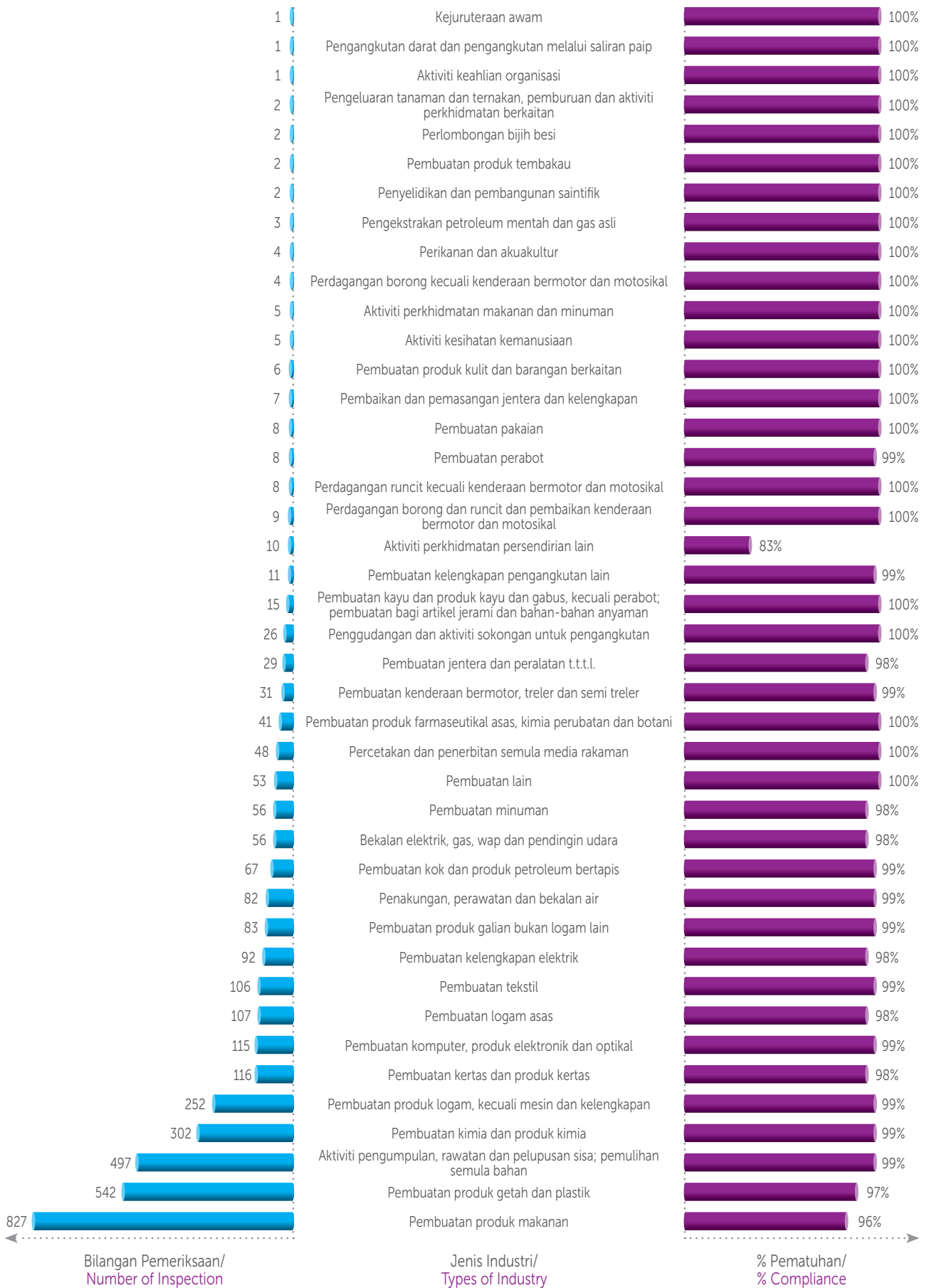
The non-prescribed premises that generate and discharge industrial effluents are subject to the Environmental Quality (Industrial Effluents) Regulations, 2009.

In 2022, DOE conducted a total of 3,642 field inspections and desktop inspection on 42 categories of manufacturing industries and other non-prescribed premises that were subject to the Environmental Quality (Industrial Effluents) Regulations, 2009.

The overall compliance achieved by the non-prescribed premises to the above regulation was 99%. There were 22 categories of industries that recorded 100% compliance in 2022 (**Figure 4.19**).



Aktiviti Penguatkuasaan Semasa Pemeriksaan Premis  
Enforcement Activities During Premise Inspection



Rajah 4.19 : Status Pematuhan Industri Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Perindustrian Efluen) 2009, 2022

Figure 4.19 : Compliance Status to the Environmental Quality (Industrial Effluent) Regulations 2009, 2022

### 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 9,003 pemeriksaan telah dijalankan ke atas 53 kategori industri pembuatan dan lain-lain premis yang bukan ditetapkan yang tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014 pada tahun 2022. Pencapaian pematuhan keseluruhan adalah 99%. Terdapat 30 kategori industri berjaya mencapai pematuhan 100% pada tahun 2022 (**Rajah 4.20**).

### 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 13,509 pemeriksaan ke atas 54 kategori industri pembuatan dan lain-lain premis yang bukan ditetapkan yang tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 pada tahun 2022.

Pencapaian pematuhan keseluruhan oleh premis yang bukan ditetapkan adalah 96%. Antara kegagalan pematuhan yang direkodkan adalah kegagalan premis untuk mengemukakan pemberitahuan mengenai pengeluaran buangan terjadual kepada JAS, buangan terjadual tidak distor dan tidak dilabel dengan sempurna serta gagal menyimpan rekod inventori buangan terjadual dengan tepat dan terkini sebagaimana kehendak di dalam Peraturan 3, 8, 9, 10 dan 11.

Pada tahun 2022, terdapat 20 kategori industri berjaya mencapai pematuhan 100% terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005 (**Rajah 4.21**).

### TINDAKAN PENGUATKUASAAN KE ATAS PREMIS

Sejumlah 415 kes pertuduhan di bawah AKAS 1974 yang melibatkan premis telah didenda di mahkamah untuk tahun 2022 dengan jumlah denda sebanyak RM 5,536,800.00 dan tiga (3) hari penjara. Tindakan-tindakan penguatkuasaan lain yang telah diambil ke atas premis yang didapati melakukan kesalahan di bawah AKAS 1974 adalah 1,936 notis arahan telah

### Status of Compliance with 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 9,003 inspections were conducted on 53 categories of manufacturing industries and other non-prescribed premises that were subject to the Environmental Quality (Clean Air) Regulations 2014 and the overall compliance was 99%. A total of 30 categories of industries have managed to achieve 100% compliance in 2022 (**Figure 4.20**).

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

The non-prescribed premises that generate scheduled wastes are subject to the Environmental Quality (Scheduled Wastes) Regulations 2005.

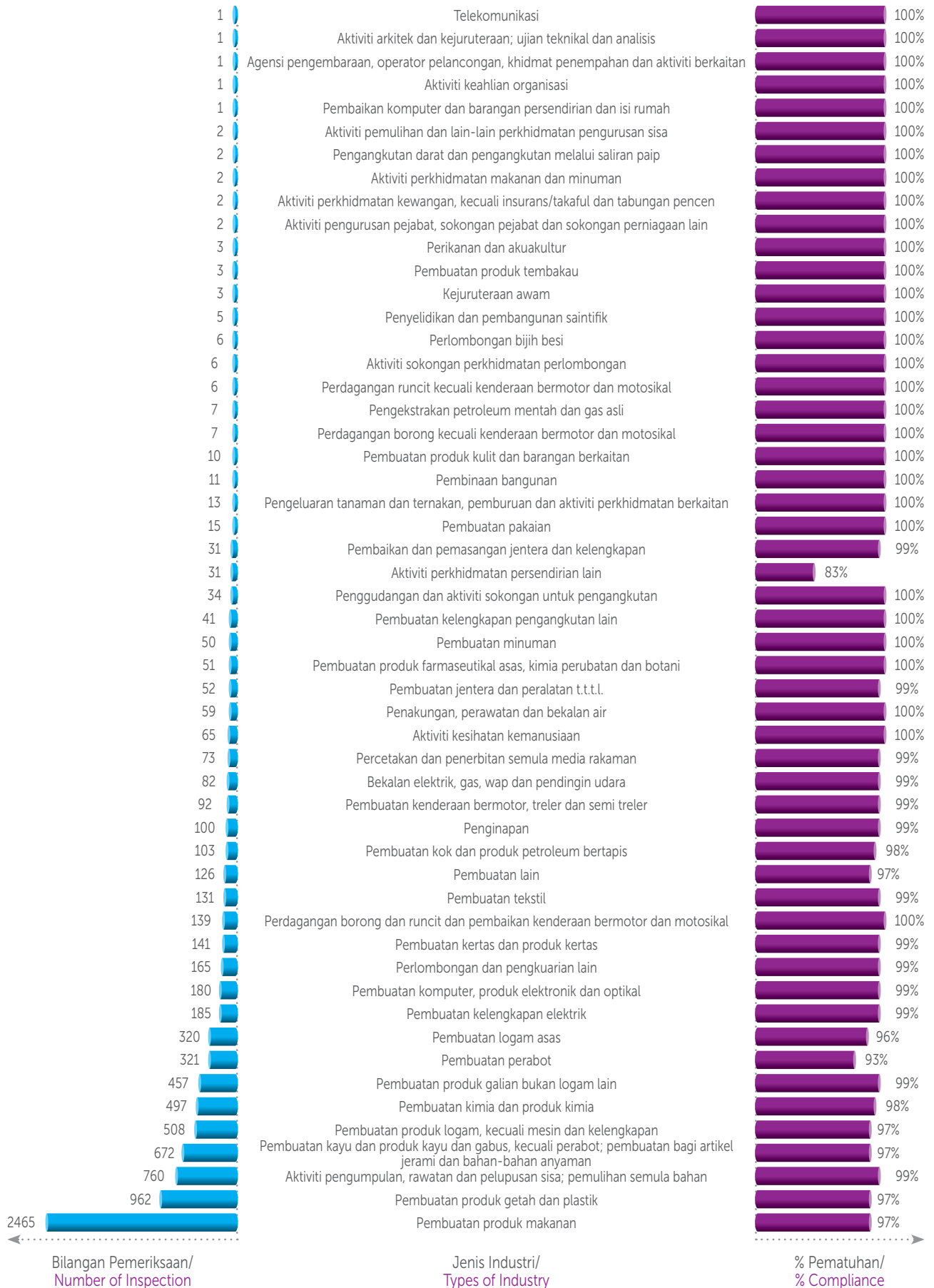
DOE has conducted 13,509 inspections on 54 categories of manufacturing industry and other non-prescribed premises that were subject to the Environmental Quality (Scheduled Wastes) Regulations 2005 in the year 2022.

The achievement of overall compliance by non-prescribed premises was 96%. Among the non-compliances were failing to submit notification on the production of scheduled waste to DOE, scheduled waste not kept and properly labeled as well as failing to keep accurate and up-to-date waste inventory records as required in Regulation 3, 8, 9, 10 and 11.

In 2022, 20 categories of industries which were subject to the Environmental Quality (Scheduled Wastes) Regulations 2005 have managed to achieve 100% compliance (**Figure 4.21**).

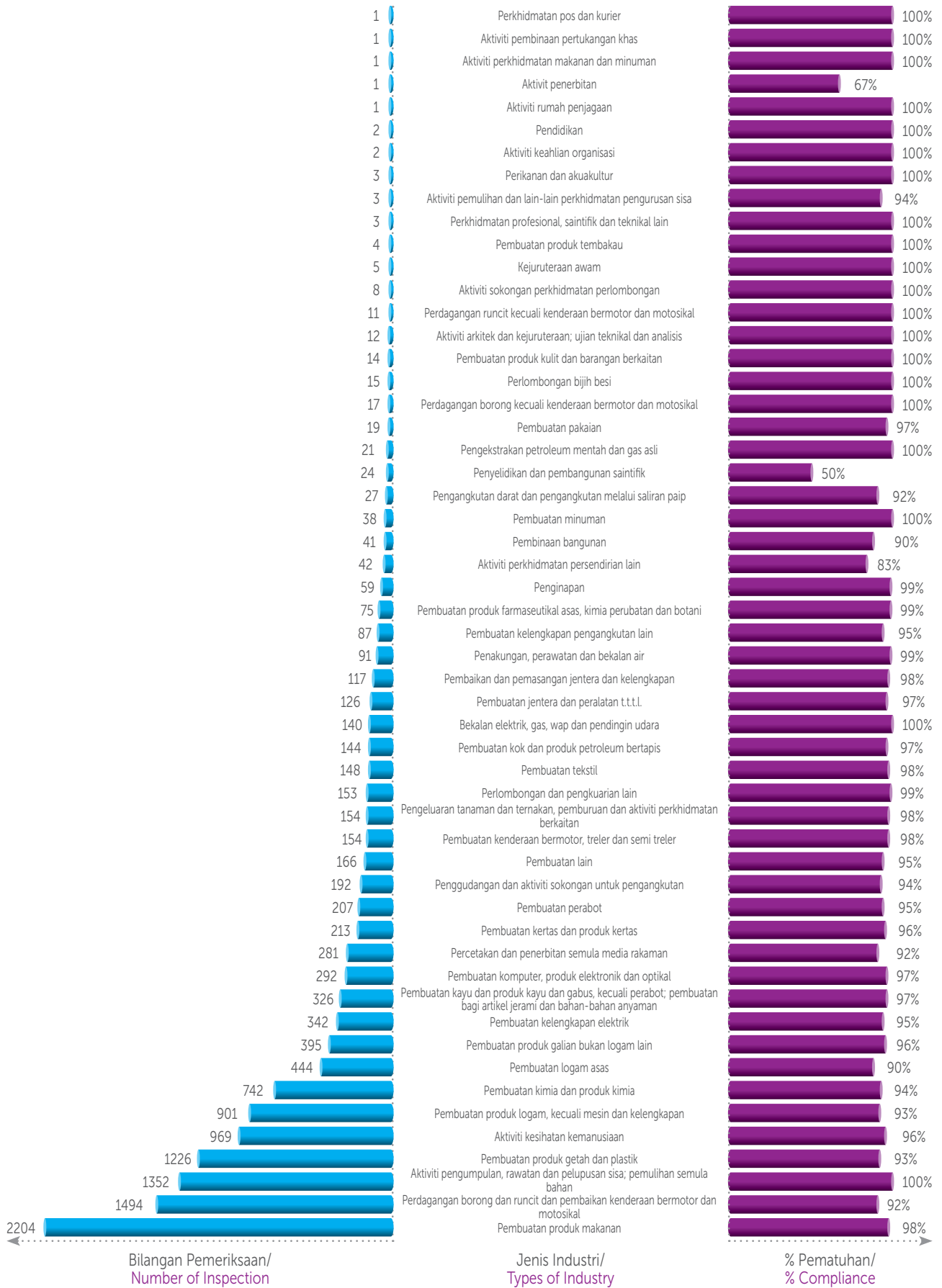
### ENFORCEMENT ACTION ON PREMISES

A total of 415 cases were prosecuted in criminal court in 2022 with an accumulated fine of RM 5,536,800.00 and three (3) days of imprisonment. Other enforcement actions that have been taken on premises which were found to have committed offences under EQA 1974 were the issuance of 1,936 directive notices to instruct the premises to



Rajah 4.20 : Status Pematuhan Industri Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014, 2022

Figure 4.20 : Compliance Status to the Environmental Quality (Clean Air) Regulations 2014, 2022



Rajah 4.21 : Status Pematuhan Industri Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005, 2022

Figure 4.21 : Compliance Status to the Environmental Quality (Scheduled Wastes) Regulations 2005, 2022

dikeluarkan supaya premis mengambil tindakan yang sewajarnya bagi perundangan yang berkaitan. Selain itu 6,399 kompaun telah ditawarkan kepada premis atas kegagalan mematuhi peruntukan perundangan sebagaimana dinyatakan di atas. Sejumlah 58 premis juga telah dikenakan Penahanan Operasi Kelengkapan dan satu (1) premis dikenakan Perintah Larangan untuk beroperasi, manakala sebanyak tiga (3) premis telah dikenakan tindakan Gantung Lesen.

Pihak industri hendaklah menggunakan teknologi kawalan pencemaran yang berkesan, pembudayaan amalan pengeluaran bersih serta pematuhan sendiri bagi memastikan operasi premis tidak menyebabkan pencemaran alam sekitar sekaligus memastikan pematuhan sepenuhnya kepada AKAS 1974. Pihak industri juga digalakkan untuk mewujudkan sistem pengurusan alam sekitar yang baik dan digalakkan untuk mendapatkan pensijilan MS ISO yang berkaitan dengan alam sekitar.

### **PELAKSANAAN OPERASI GEMPUR (OPS GEMPUR)**

JAS sejak tahun 2020 telah mengaktifkan pelaksanaan Ops Gempur, satu inisiatif berimpak tinggi yang melibatkan operasi penguatkuasaan bersasar ke atas premis yang tertakluk kepada AKAS 1974 secara besar-besaran ke arah menangani isu-isu pencemaran alam sekitar. Operasi ini dilaksanakan di seluruh Negara secara berkala. 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. Ini akan membolehkan tindakan penguatkuasaan yang lebih tegas dapat diambil terhadap kesalahan yang dilakukan mengikut bidang kuasa agensi masing-masing.

Melalui Ops Gempur ini, penguatkuasaan mengutamakan premis atau punca-punca pencemaran 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.

Bagi tempoh 1 Januari 2022 sehingga 31 Disember 2022, JAS telah menjalankan 165 Ops Gempur di seluruh Negara yang melibatkan pemeriksaan ke atas 4,364 premis yang terdiri dari pelbagai kategori

take appropriate action in complying with related legislation. In addition, 6,399 compounds were offered to premises for failure to comply with legal provisions as stated above. Other than that, a total of 58 premises were issued Detention of Equipment and one (1) premise was issued a Prohibition Order to operate, while three (3) premises have had their license suspended .

The industries are obliged to implement efficient pollution control technology, inculcate cleaner production practices and self-regulation to ensure that the operation of the premises does not cause environmental pollution while ensuring full compliance with the EQA 1974. Industries are also encouraged to establish a good environmental management system and encouraged to obtain environment related MS ISO certification.

### **IMPLEMENTATION OF OPERASI GEMPUR (OPS GEMPUR)**

The DOE, since 2020, has intensify the implementation of Ops Gempur, a high-impact initiative and large-scale enforcement programme targetting premises subject to EQA 1974 towards addressing environmental pollution issues. These operations are conducted nationwide on a periodic basis. 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. This has allowed more strict enforcement action to be taken by the authorities of respective agencies against offences committed.

The enforcement of Ops Gempur focused on premises or pollution sources located 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.

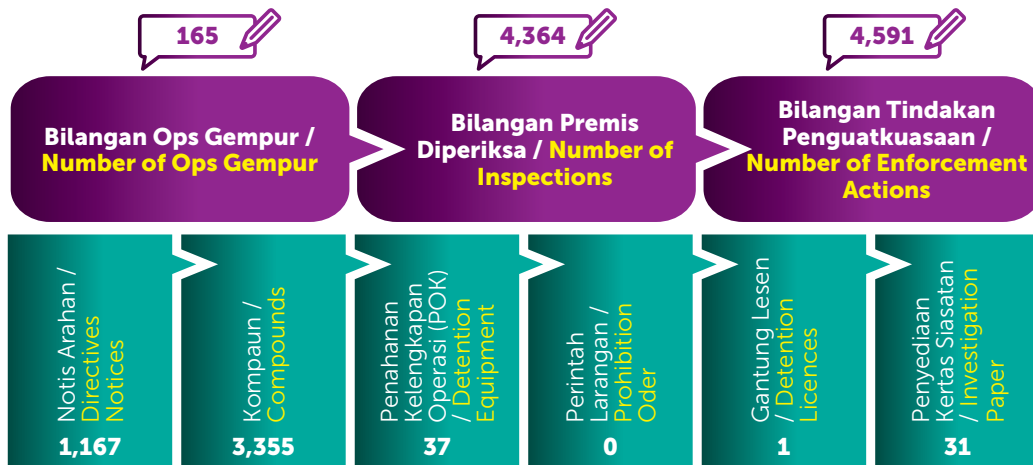
From 1<sup>st</sup> January 2022 to 31<sup>st</sup> December 2022, DOE has conducted 165 Ops Gempur nationwide involving inspections of 4,364 premises from various categories of industries. A total of 4,591

industri. Sebanyak 4,591 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 2022 adalah seperti **Rajah 4.22**.

Semua pihak yang tertakluk kepada perundangan alam sekitar perlu mengambil langkah proaktif yang sewajarnya dalam membudayakan pematuhan sendiri agar operasi premis tidak akan menyumbang kepada pencemaran alam sekitar dan menjejaskan kesejahteraan masyarakat. Setiap tindakan dan keputusan yang diambil juga hendaklah mengambil kira elemen kelestarian alam sekitar. Komitmen dari semua pihak adalah amat penting bagi memastikan kualiti alam sekitar tidak terjejas walaupun aktiviti perindustrian dan pembangunan pesat dijalankan. Tanggungjawab menjaga alam sekitar adalah tanggungjawab bersama bagi memastikan kelangsungan alam sekitar yang mampan untuk dinikmati semua.

enforcement actions under the EQA 1974 were taken against premises found to be not in compliance with the legislation. A summary of enforcement actions taken during 2022 is as shown in **Figure 4.22** below.

DOE would like to emphasise that all parties subject to environmental legislation must take appropriate proactive measures so that the operation of the premises will not contribute to environmental pollution and affect the well-being of the community. The element of environmental sustainability should be considered in every action and decision taken. Commitment from all stakeholders is very important to ensure that the quality of the environment is not affected despite the rapid industrial and development activities carried out. The responsibility to care for the environment is a shared responsibility to ensure the sustainability of a conducive environment for all to enjoy.



Rajah 4.22 : Ringkasan Tindakan Penguatkuasaan bagi Ops Gempur untuk Tahun 2022  
 Figure 4.22 : Summary of Enforcement Actions through Ops Gempur 2022

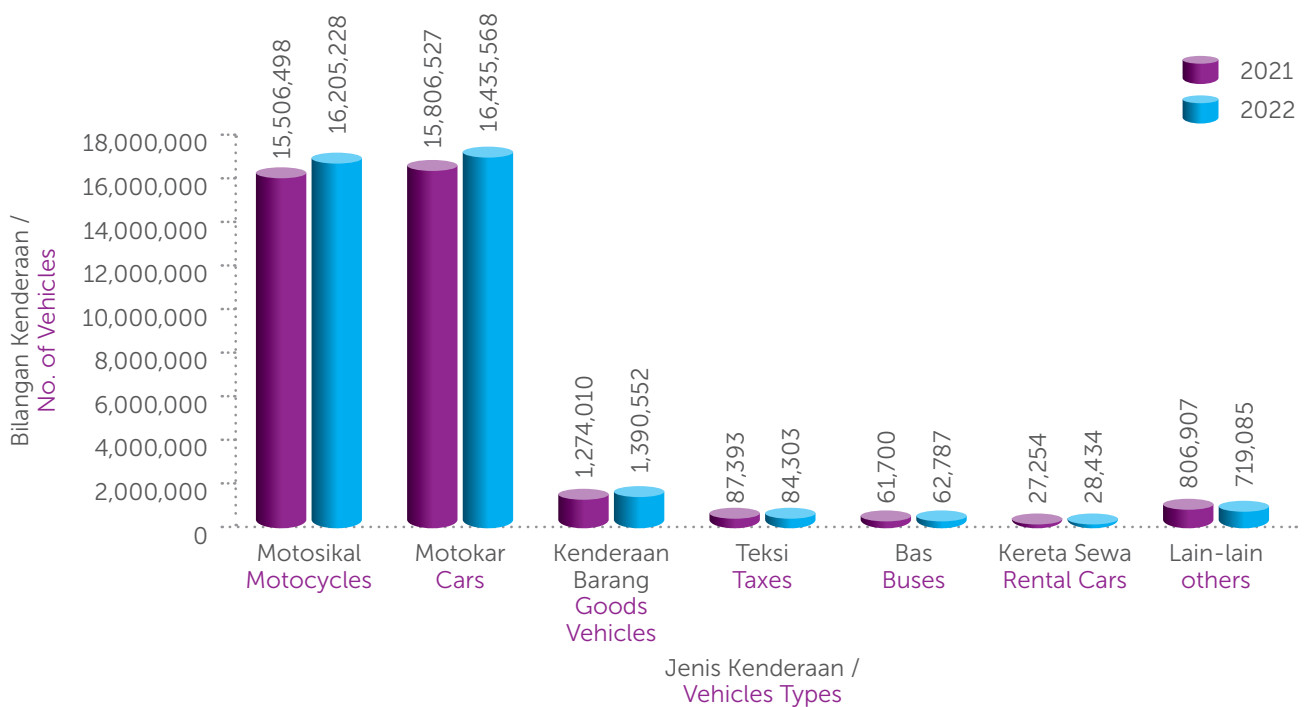


Ops Gempur yang Dilaksanakan di Premis  
 Ops Gempur Conducted at the Premise

## Pemeriksaan Pelepasan Daripada Kenderaan Bermotor Enforcement On Motor Vehicles Emission

Sepanjang tahun 2022, Sebanyak 1,520,761 buah kenderaan baharu telah didaftarkan di Malaysia. Pecahan keseluruhan kenderaan bermotor yang berdaftar mengikut jenis kenderaan adalah seperti di **Rajah 4.23**. Secara kumulatif sehingga tahun 2022, sebanyak 34,925,957 buah kenderaan bermotor telah didaftarkan di Malaysia.

Throughout the year 2022, 1,520,761 new vehicles were registered in Malaysia. The breakdown of registered vehicles according to vehicle type is shown in **Figure 4.23**. Cumulatively, as at 2022, 34,925,957 motor vehicles have been registered in Malaysia.



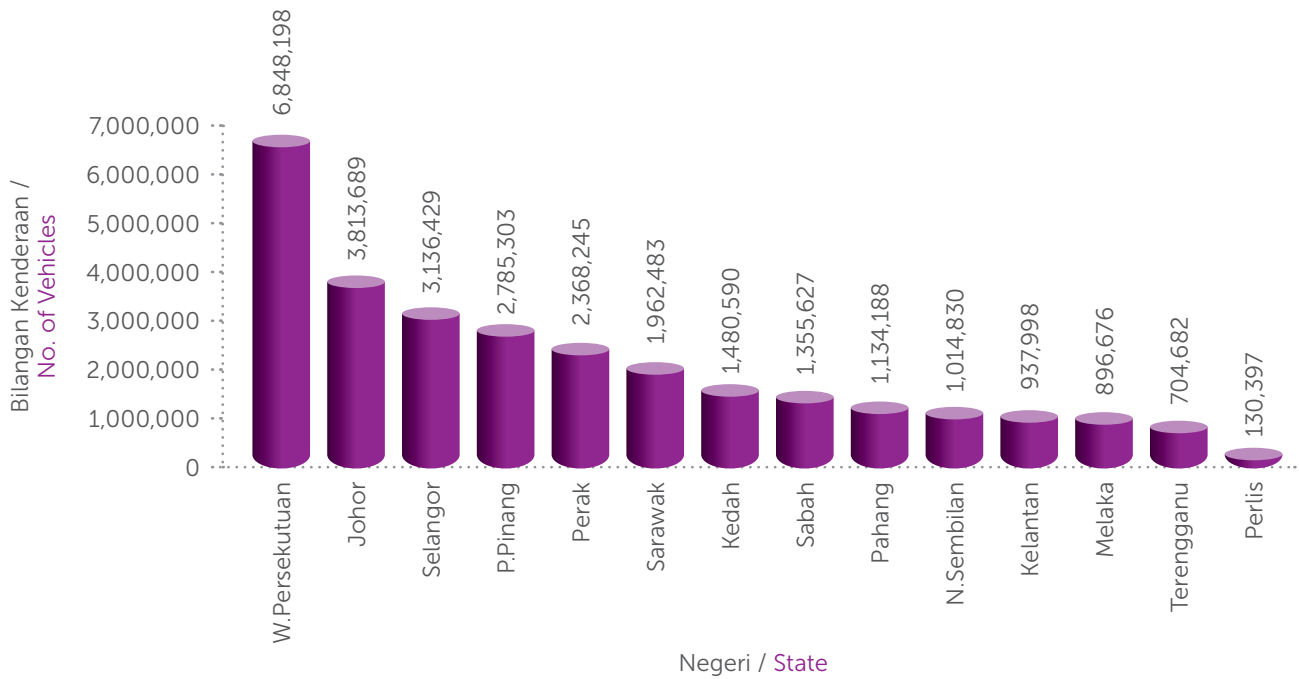
Rajah 4.23 : Pecahan Keseluruhan Kenderaan Bermotor yang Berdaftar Mengikut Jenis Kenderaan  
Figure 4.23 : Registered Vehicles According to Vehicle Type

Daripada 1,520,761 buah kenderaan baharu yang didaftarkan dalam tahun 2022, kategori kereta merupakan yang tertinggi iaitu 737,372 unit (48.48%) diikuti motosikal sebanyak 718,444 unit (47.24%), dan sebanyak 64,945 unit (4.27%) adalah dari lain-lain jenis kenderaan termasuk lori, bas, van dan sebagainya.

Out of 1,520,761 new vehicles registered in 2022, cars made up the highest number with 737,372 units (48.48%), followed by motorcycles with 718,444 units (47.24%), and 64,945 units (4.27%) were other vehicle types which include lorries, buses, vans, and others.

Taburan bilangan kenderaan bermotor di Malaysia mengikut negeri adalah seperti di **Rajah 4.24**. Wilayah Persekutuan (termasuk Kuala Lumpur, Putrajaya dan Labuan) mendahului negeri-negeri lain dengan mempunyai bilangan kenderaan yang tertinggi iaitu sebanyak 6,848,198 unit (16.91%) 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 4.24**. The Federal Territories (including Kuala Lumpur, Putrajaya, and Labuan) recorded the highest number of registered vehicles with 6,848,198 units (16.91%) followed by Johor, Selangor, Penang, and Perak.



Rajah 4.24 : Taburan Bilangan Kenderaan Bermotor di Malaysia Mengikut Negeri  
Figure 4.24 : The Distribution of Registered Vehicles According to States

### KAWALAN PELEPASAN ASAP DAN GAS DARI KENDERAAN BERMOTOR

Pelepasan asap serta gas-gas pencemar seperti karbon monoksida (CO), hidrokarbon (HC), oksida-oksida nitrogen (NOx) serta habuk halus (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.



Tanjung Lumpur, Kuantan, Pahang, Malaysia

## 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.

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

Pada tahun 2022, sebanyak 5,856 pemeriksaan penguatkuasaan telah dilaksanakan di seluruh negara. Sejumlah 429,965 buah kenderaan diesel telah diperiksa dan sebanyak 631 buah kenderaan telah dikompaun kerana gagal mematuhi had pelepasan asap hitam sebanyak 50% kelegapan. Manakala 47 kenderaan telah dikenakan perintah larangan beroperasi sehingga lulus ujian asap semula oleh JAS.

Pada keseluruhannya, peratus pematuan oleh kenderaan diesel adalah 98.21%. Ini mencatatkan sedikit penurunan sebanyak 0.4% berbanding dengan tahun 2021.

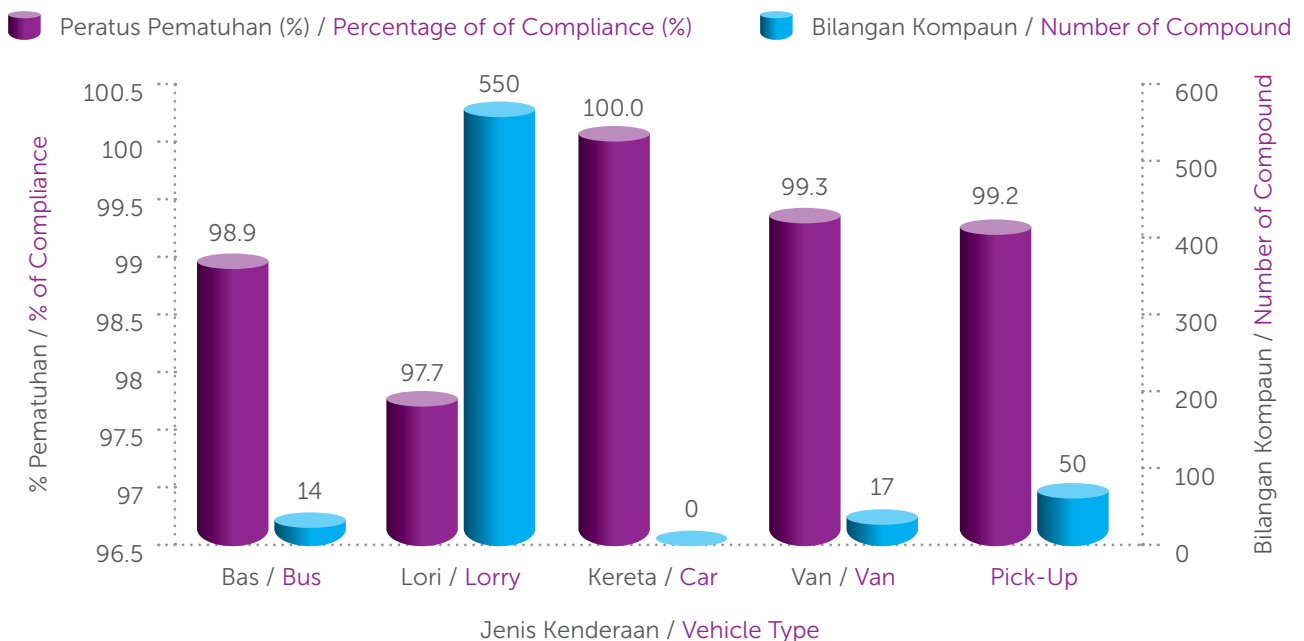
## CONTROL OF BLACK SMOKE EMISSION FROM DIESEL VEHICLES

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.

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.

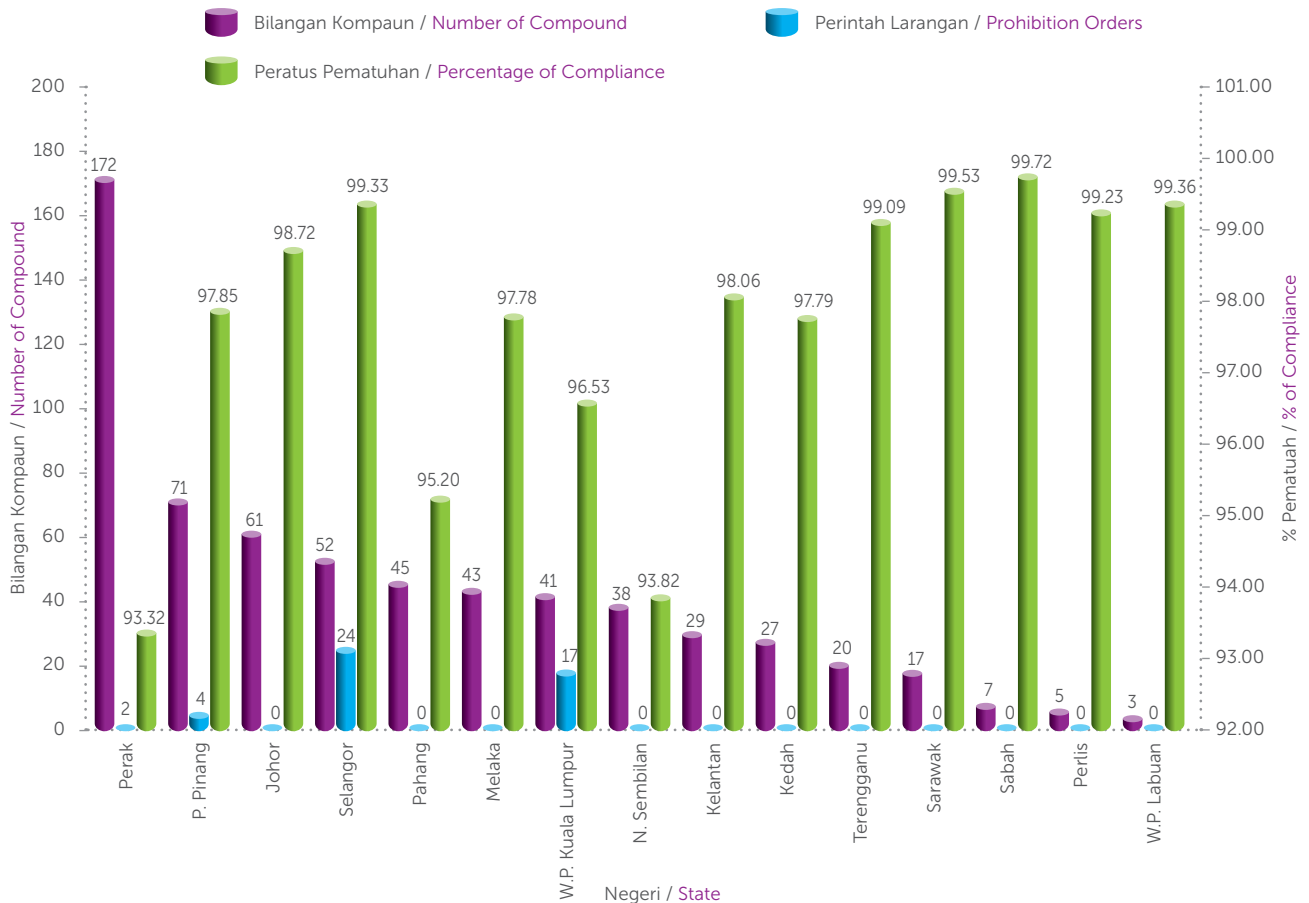
In 2022, 5,856 enforcement inspections were conducted throughout the country. A total of 429,965 diesel vehicles were visually inspected. Out of these, 631 were compounded for failing to comply with the 50% opacity smoke limit, while 47 vehicles were issued with a prohibition order. These vehicles will 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 98.21%. This is a decrease of 0.4% as compared to 2021.



Rajah 4.25 : Bilangan Kenderaan Diesel yang Dikompaun dan Peratus Pematuan Mengikut Jenis Kenderaan, 2022

Figure 4.25 : The Number of Compounds Issued to Diesel Vehicles and Percentage of Compliance According to Vehicle Type, 2022



Rajah 4.26 : Bilangan Kenderaan Diesel Dikompau, Perintah Larangan Yang Dikeluarkan & Peratus Pematuhan Mengikut Negeri, 2022

Figure 4.26 : Number of Diesel Vehicles Compounded, Number of Prohibition Orders Issued & Percentage of Compliance by States, 2022

Bilangan kenderaan diesel yang dikompau dan peratus pematuhan mengikut jenis kenderaan adalah seperti di **Rajah 4.25**. **Rajah 4.26** pula menunjukkan bilangan kenderaan dikompau, pengeluaran perintah larangan serta peratus pematuhan mengikut negeri. Tindakan mahkamah telah juga diambil ke atas dua (2) pemandu serta pemilik kenderaan kerana gagal menjelaskan kompaun yang telah dikenakan. Sejumlah 1,019 kenderaan diesel juga telah diarahkan untuk menjalankan ujian semula di PUSPAKOM.

#### KAWALAN PELEPASAN GAS CO DAN HC DARI KENDERAAN PETROL

Sepanjang tahun 2022 sejumlah 1,675 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 43 buah kenderaan telah dikompau kerana gagal mematuhi had pelepasan yang ditetapkan. Peratus pematuhan

The number of compounds issued to diesel vehicles and their percentage of compliance according to vehicle type are shown in **Figure 4.25**. **Figure 4.26** shows the number of vehicles compounded, number of prohibition orders issued and the percentage of compliance according to states. Court action was also taken against two (2) drivers and vehicle owners for failing to pay the compound issued. A total of 1,019 diesel vehicles were also instructed to undergo smoke retest at PUSPAKOM.

#### CONTROL OF CO AND HC GAS EMISSIONS FROM PETROL VEHICLES

For the year 2022, 1,675 petrol engine vehicles were inspected at the roadside for CO and HC emissions using the CO-HC Analyzer gas meter idling test method. 43 vehicles were compounded for failing to comply with the CO and HC standards stipulated under the regulations. The overall percentage of compliance was 97.43%, which is an increase of

keseluruhannya adalah 97.43% iaitu peningkatan sebanyak 3.53% berbanding dengan tahun 2021. Surat amaran juga telah dikeluarkan kepada pemandu-pemandu kenderaan yang gagal mematuhi had-had pelepasan CO dan HC supaya segera menyelenggara kenderaan bagi memastikan kenderaan sentiasa mematuhi had pelepasan yang ditetapkan oleh undang - undang.

### **UJIAN KELULUSAN JENIS (KENDERAAN PETROL)**

Malaysia telah memperkenalkan standard pelepasan pencemar untuk model 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 2022, JAS telah mengeluarkan 49 Sijil Ujian Kelulusan Jenis bagi model baharu kenderaan petrol yang akan dipasarkan di 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 2022, JAS telah mengeluarkan 24 Sijil Ujian Kelulusan Jenis bagi model baharu kenderaan diesel yang akan dipasarkan di 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 dan

3.53% as compared to 2021. Warning letters were issued to drivers instructing them to send their vehicles for service immediately so that they will not continue to emit gaseous above the standards stipulated by the law.

### **TYPE APPROVAL TEST (PETROL VEHICLE)**

Malaysia has 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<sup>st</sup> 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 2022, the Department of Environment issued 49 Type Approval Test Certificates for new petrol vehicles to be marketed in 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<sup>st</sup> 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 2022, DOE issued 24 Type Approval Test Certificates for new diesel vehicles to be marketed in Malaysia.

### **APPROVED TESTING FACILITIES (KYDL)**

DOE has given accreditation to workshops which have fulfilled the criteria of "Approved Testing Facilities" to assist the public in sending their vehicles for emission testing. These facilities also provide testing and repair services for the non-complying vehicles, to ensure they are always in

kenderaan yang tidak patuh diperbaiki di pusat-pusat yang dilesenkan ini supaya dapat memastikan kenderaan sentiasa mematuhi had pelepasan asap.

Sehingga akhir tahun 2022, sejumlah 79 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 2022, sebanyak 112 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 dari motorsikal telah dilaksanakan oleh Pejabat-pejabat JAS negeri dengan Kerjasama Trafik Polis, PDRM. Pada 2022, sejumlah 7,468 buah motosikal telah ditahan bagi menjalani ujian pelepasan bunyi bising. Daripada jumlah ini, 809 penunggang motosikal telah dikompaun kerana melanggar had bunyi bising yang dibenarkan. Peratus pematuhan secara keseluruhannya ialah 46% (**Rajah 4.27**). Ini adalah penurunan sebanyak 10% berbanding pada 2021.

### PELAKSANAAN OPERASI GERAK (OPS GERAK)

Pada tahun 2022, Jabatan telah melaksanakan Ops Gerak di seluruh negara bagi meningkatkan lagi pemeriksaan ke atas pelepasan dari kenderaan bermotor. Sebanyak 378 operasi telah dilakukan ke atas 27,469 kenderaan. Susulan penguatkuasaan Ops Gerak tersebut 1,403 tindakan tawaran kompaun dan 33 tindakan perintah larangan telah dikeluarkan.

compliance with the emission limits stipulated in the regulations.

By the end of 2022, a total of 79 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<sup>st</sup> January 2020, all new motorcycle models are required to comply with Euro IV standards for gas emissions pollutants based on *Worldwide Harmonised Motorcycle Test Cycle (WMTC) commission for Europe (EU) 168/2013/EU 15<sup>th</sup> January 2012*. Compliance with Euro IV standards for existing motorcycle models will start on 1<sup>st</sup> January 2023.

In 2022, 112 Type Approval Certificates were issued to manufacturers, motorcycle assemblers, and importers for the local market.

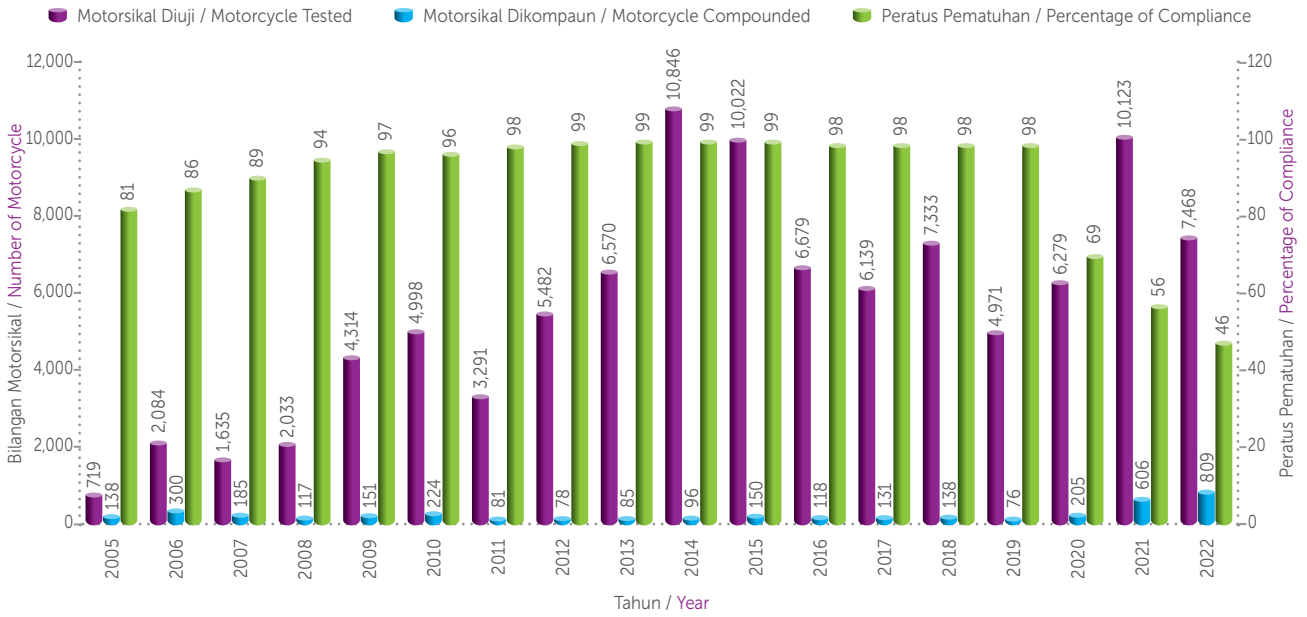
### NOISE FROM MOTOR VEHICLES

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 with cooperation from Traffic Branch, PDRM. In 2022, a total of 7,468 motorcycles were inspected for noise emission level. Out of this, 809 motorcyclists were compounded for emitting noise above the stipulated standards. The overall percentage of compliance is 46% (**Figure 4.27**) a decrease of 10% compared to 2021.

### ENFORCEMENT THROUGH 'OPERASI GERAK' (OPS GERAK)

In the year 2022, DOE carried out *Ops Gerak* to enhance its enforcement strategies and actions against non-compliance emissions from motor vehicles. A total of 378 operations were conducted involving 27,469 motor vehicles. Following the enforcement of *Ops Gerak*, 1,403 compounds and 33 prohibition orders were issued.



Rajah 4.27 : Peratus Pemuatan Bilangan Motorsikal Dikuji Tahap Bunyi Bising dan Bilangan Kompaun Bagi Tempoh 2002 sehingga 2022

Figure 4.27 : Percentage of Compliance of the Number of Motorcycles Tested for Noise Emission and Compounds Issued from 2002 to 2022



Ops Gerak yang telah Dijalankan Di Seluruh Negara pada Tahun 2022  
'Ops Gerak' Conducted Throughout the Nation in 2022

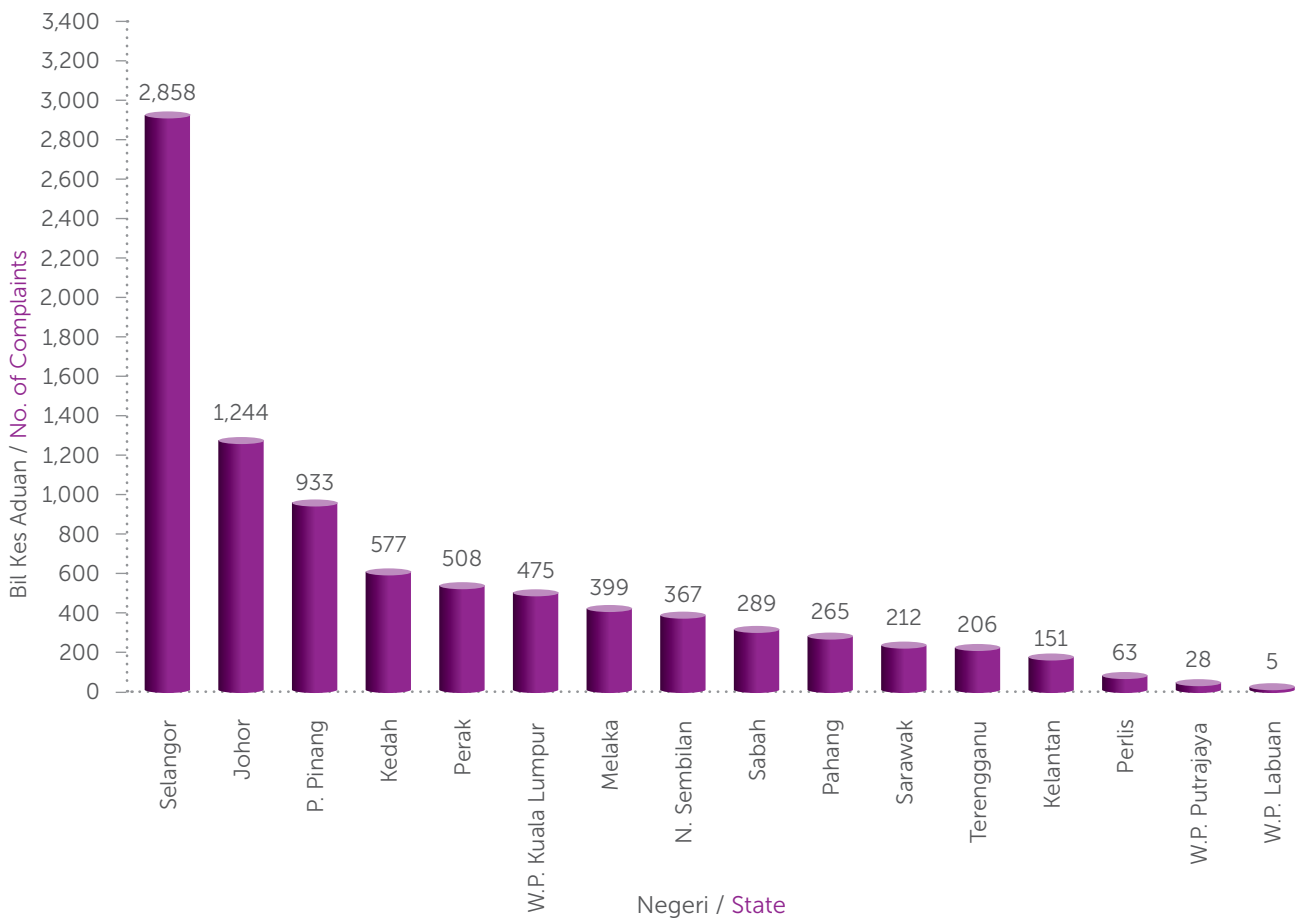
## Maklumbalas Terhadap Pengaduan Awam Response To Public Complaints

Pada tahun 2022, sejumlah 8,580 aduan pencemaran alam sekitar telah diterima oleh Jabatan Alam Sekitar. Daripada jumlah itu, sebanyak 6,599 kes aduan telah diambil tindakan di bawah peruntukan Akta Kualiti Alam Sekeliling (AKAS) 1974 dan peraturan-peraturan di bawahnya oleh pejabat JAS Negeri, manakala 1,981 kes aduan adalah di luar bidangkuasa JAS dan telah dirujuk kepada agensi lain yang berkaitan untuk diambil tindakan. **(Rajah 4.21)**

Pada tahun 2022, Selangor menerima aduan yang tertinggi iaitu sebanyak 2,858 kes (33.3%), diikuti oleh Johor sebanyak 1,244 kes (14.5%) dan Pulau Pinang sebanyak 933 kes (10.9%). Wilayah Persekutuan Labuan menerima aduan yang paling sedikit iaitu sebanyak 5 kes (0.1%) dan diikuti dengan Wilayah Persekutuan Putrajaya iaitu sebanyak 28 kes (0.3%).

The Department of Environment received 8,580 environmental pollution complaints in the year 2022. Out of these, 6,599 were under the Environmental Quality Act, 1974 and investigated by the State DOE Offices, while the remaining 1,981 cases were outside the jurisdiction of DOE and was referred to other relevant agencies. **(Figure 4.21)**

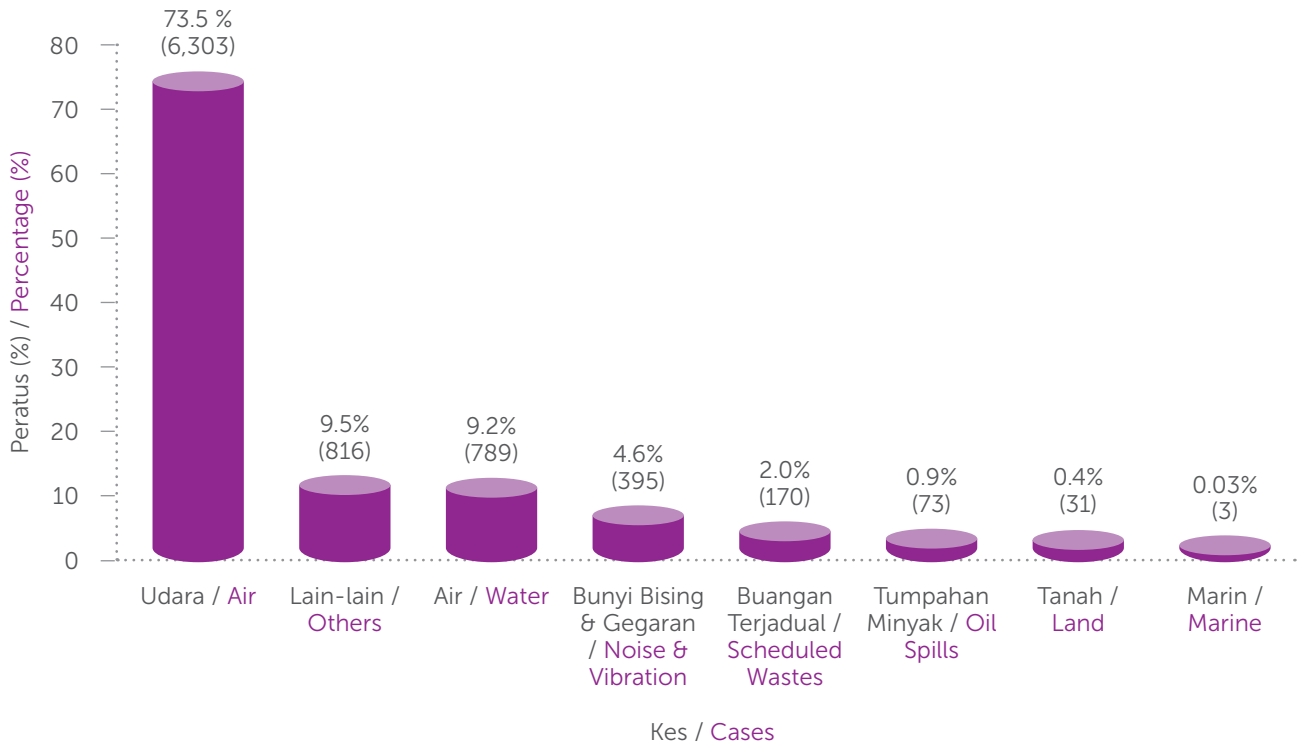
In the year 2022, Selangor recorded 2,858 (33.3%) complaints, the highest number received, followed by Johor 1,244 (14.5%) and Pulau Pinang 933 (10.9%). Federal Territory of Labuan recorded the least number of complaints received with 5 (0.1%) complaints, followed by Federal Territory of Putrajaya with 28 (0.3%).



Rajah 4.28 : Bilangan Aduan Mengikut Negeri, 2022  
Figure 4.28 : Number of Complaints by State, 2022

Seperti tahun-tahun yang sebelumnya, bilangan aduan pencemaran yang tertinggi adalah berkaitan dengan pencemaran udara iaitu 6,303 kes (73.46%), 789 kes (9.20%) berkaitan pencemaran air, 395 kes (4.6%) berkaitan pencemaran bunyi & gegaran, 170 kes (1.98%) berkaitan buangan terjadual, 73 kes (0.85%) berkaitan tumpahan minyak, 3 kes (0.03%) berkaitan marin, 31 kes (0.36%) berkaitan pencemaran tanah dan 816 kes (9.51%) lain-lain aduan (**Rajah 4.29**).

As in the previous years, most of the complaints received were related to air pollution 6,303 (73.46%), followed by 789 (9.20%) water pollution, 395 (4.6%) noise pollution & vibration, 170 (1.98%) on illegal dumping of scheduled or toxic wastes, 73 (0.85%) for oil spill, 3 (0.03%) related to marine, 31 (0.36%) to land pollution and 816 (9.51%) were other complaints (**Figure 4.29**).



Rajah 4.29 : Bilangan Kes Aduan Mengikut Jenis, 2022  
Figure 4.29 : Number of Complaint Cases by Types, 2022



Lawatan Penguatkuasaan ke Kilang Memproses Makanan Ternakan  
di Kawasan Perindustrian Kerteh, Terengganu  
Enforcement Visits to Animal Feed Processing Plants in Kerteh Industrial Zone, Terengganu



Siasatan Pelupusan Buangan Toksik di Tapak Pelupusan Haram Kampung Semarang, Dengkil, Sepang Selangor  
Investigation of Toxic Waste Disposal at the Illegal Landfill, Kampung Semarang, Dengkil, Sepang, Selangor



Lawatan Penguatkuasaan Kes Aduan Berulang ke Kilang Kayu di Batu Pahat, Johor  
Repeated Complaint Cases Enforcement Visit to a Sawmill in Batu Pahat, Johor



Lawatan Penguatkuasaan Kes Aduan Berulang ke Premis Buangan Terjadual di Pasir Gudang, Johor  
Repeated Complaint Case Enforcement Visit to Scheduled Waste Premises in Pasir Gudang, Johor

## Lembaga Rayuan Kualiti Alam Sekeliling Bagi Tahun 2022 Environmental Quality Appeal Board For The Year 2022

Lembaga Rayuan Kualiti Alam Sekeliling di bawah Seksyen 36, Akta Kualiti Alam Sekeliling 1974 (AKAS 1974) telah ditubuhkan sejak tahun 1974 semasa pembentukan Akta Kualiti Alam Sekeliling 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 4.20**.

Pada tahun 2022, Lembaga Rayuan Kualiti Alam Sekeliling telah bersidang sebanyak dua (2) kali bagi mendengar Notis Rayuan berhubung dengan Rayuan Terhadap Keputusan Ketua Pengarah Kualiti Alam Sekeliling Yang Meluluskan Dengan Syarat EIA 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".

The Environmental Quality Appeal Board under Section 36, Environmental Quality Act 1974 (AKAS 1974) has been established since 1974 during the formation of the Environmental Quality Act 1974. The Appeal Board was established to hear and decide on appeal cases against decisions made by the Director General of Environmental Quality as prescribed under Section 35, AKAS 1974.

The appointment of the Chairman, Deputy Chairman and Panel Members is for three (3) years starting from 28<sup>th</sup> October 2020 until 28<sup>th</sup> October 2023. The list of Chairman, Deputy Chairman and Panel Members is as shown in **Table 4.20**.

In 2022, the Environmental Quality Appeal Board met twice 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 subject to conditions detailed in the Environmental 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".



Tahun 2022 juga JAS telah menganjurkan satu Mesyuarat Semakan Peraturan-Peraturan Kualiti Alam Sekeliling (Lembaga Rayuan) 2003 Dan Kajian Pembentukan Terma Rujukan Lembaga Rayuan Kualiti Alam Sekeliling pada 29 Jun 2022 hingga 2 Julai 2022. Mesyuarat ini turut dihadiri oleh Pengerusi, Timbalan Pengerusi dan empat (4) ahli panel Lembaga Rayuan.

In 2022, DOE also organised a Meeting to Review the Environmental Quality Regulations (Appeal Board) 2003 and the Study of the Formation of the Terms of Reference of the Environmental Quality Appeal Board on 29<sup>th</sup> June 2022 to 2<sup>nd</sup> July 2022. This meeting was also attended by the Chairman, Deputy Chairman and four (4) members of the Appeals Board panel.

Jadual 4.20 : Senarai Pengerusi, Timbalan Pengerusi dan Ahli Panel Lembaga Rayuan  
Table 4.20 : List of Chairman, Deputy Chairman and Panel Members of the Board of Appeal

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. A. Bakar bin Jaafar
4	Ahli Panel / Panel Member	Prof. Dato' 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



**Yang Arif Puan Rozina binti Ayob**  
(Pengerusi / Chairman)



**Yang Arif Tuan Zulqarnain bin Hassan**  
(Timb. Pengerusi / Deputy Chairman)



**Prof. Dato' Ir. Dr. A. Bakar bin Jaafar**  
(Ahli Panel / Panel Member)



**Prof. Dato' Dr. Mazlin bin Mokhtar**  
(Ahli Panel / Panel Member)



**Prof. Madya Dr. Ramdzani bin Abdullah**  
(Ahli Panel / Panel Member)



**Puan Lakshmi Lavanya Rama Iyer**  
(Ahli Panel / Panel Member)

Carta Organisasi Pengerusi, Timbalan Pengerusi dan Ahli Panel Lembaga Rayuan  
Organisational Chart of the Chairman, Deputy Chairman and Board Panel Members Appeal



Lembaga Rayuan Bersama Ketua Pengarah Alam Sekitar, Timbalan Ketua Pengarah Pembangunan dan Pengarah Bahagian Penguatkuasa

The Appeal Board with the Director General of Environment, Deputy Director General of Development and Director of the Enforcement Division



Mesyuarat Semakan Peraturan-Peraturan Kualiti Alam Sekeliling (Lembaga Rayuan) 2003 Dan Kajian Pembentukan Terma Rujukan Lembaga Rayuan Kualiti Alam Sekeliling pada 29 Jun 2022 hingga 2 Julai 2022.

Meeting to Review the Environmental Quality Regulations (Appeal Board) 2003 and the Study of the Formation of the Terms of Reference of the Environmental Quality Appeal Board on 29<sup>th</sup> June 2022 to 2<sup>nd</sup> July 2022

## Tindakan Undang-Undang Legal Action

### PENDAKWAAN

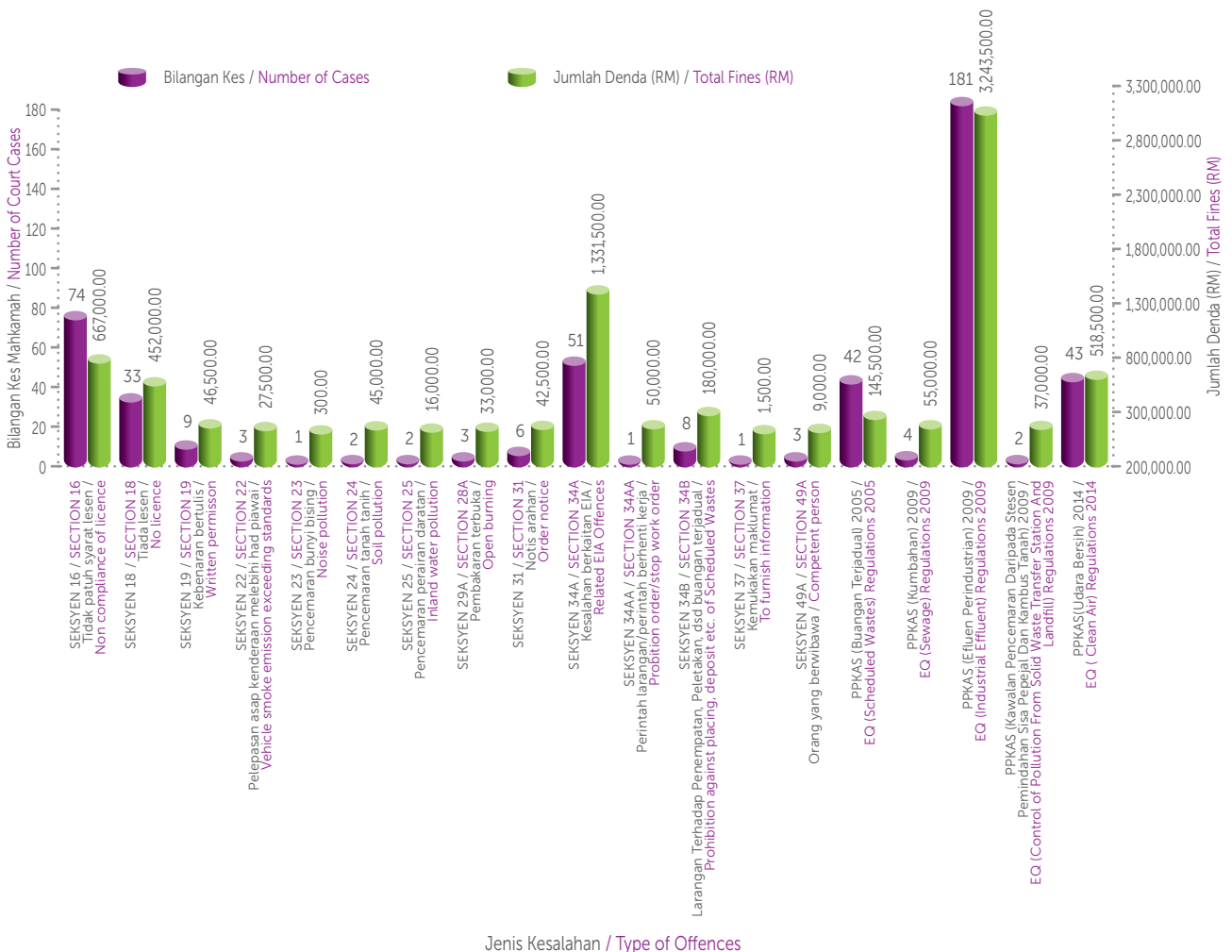
Pada tahun 2022, sejumlah 469 kesalahan di bawah Akta Kualiti Alam Sekeliling 1974 (AKAS 1974) telah didakwa di mahkamah dan telah disabitkan kesalahan dengan denda yang dikenakan berjumlah RM 6,901,300.00 dan tempoh penjara selama tiga (3) hari (**Rajah 4.30**).

Daripada jumlah keseluruhan kes tersebut, sebanyak 181 (38.5%) kes mahkamah adalah melibatkan kesalahan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Efluen Perindustrian) 2009 dengan jumlah denda sebanyak RM3,243,500.00. Sebanyak 74 (15.7%) kes mahkamah melibatkan kesalahan di bawah Seksyen 16, Akta Kualiti Alam Sekeliling 1974 (AKAS 1974) dengan jumlah denda sebanyak RM667,000.00 sementara 214 (45.6%) kes yang selebihnya melibatkan kesalahan-kesalahan lain di bawah AKAS 1974.

### PROSECUTION

In 2022, a total of 469 offences under the Environmental Quality Act 1974 (EQA 1974) were prosecuted in court and were convicted with total fines of RM 6,901,300.00 and imprisonment for three (3) days (**Figure 4.30**).

Out of this total, 181 (38.5 %) court cases involved offences under Environmental Quality (Industrial Effluent) Regulations 2009 with a total fine of RM3,243,500.00. There were 74 (15.7 %) court cases involved offences under Section 16, Environmental Quality Act 1974 (EQA 1974) with a total fine of RM667,000.00 while the remaining 214 (45.6%) cases were prosecuted for various other offences under the EQA 1974.



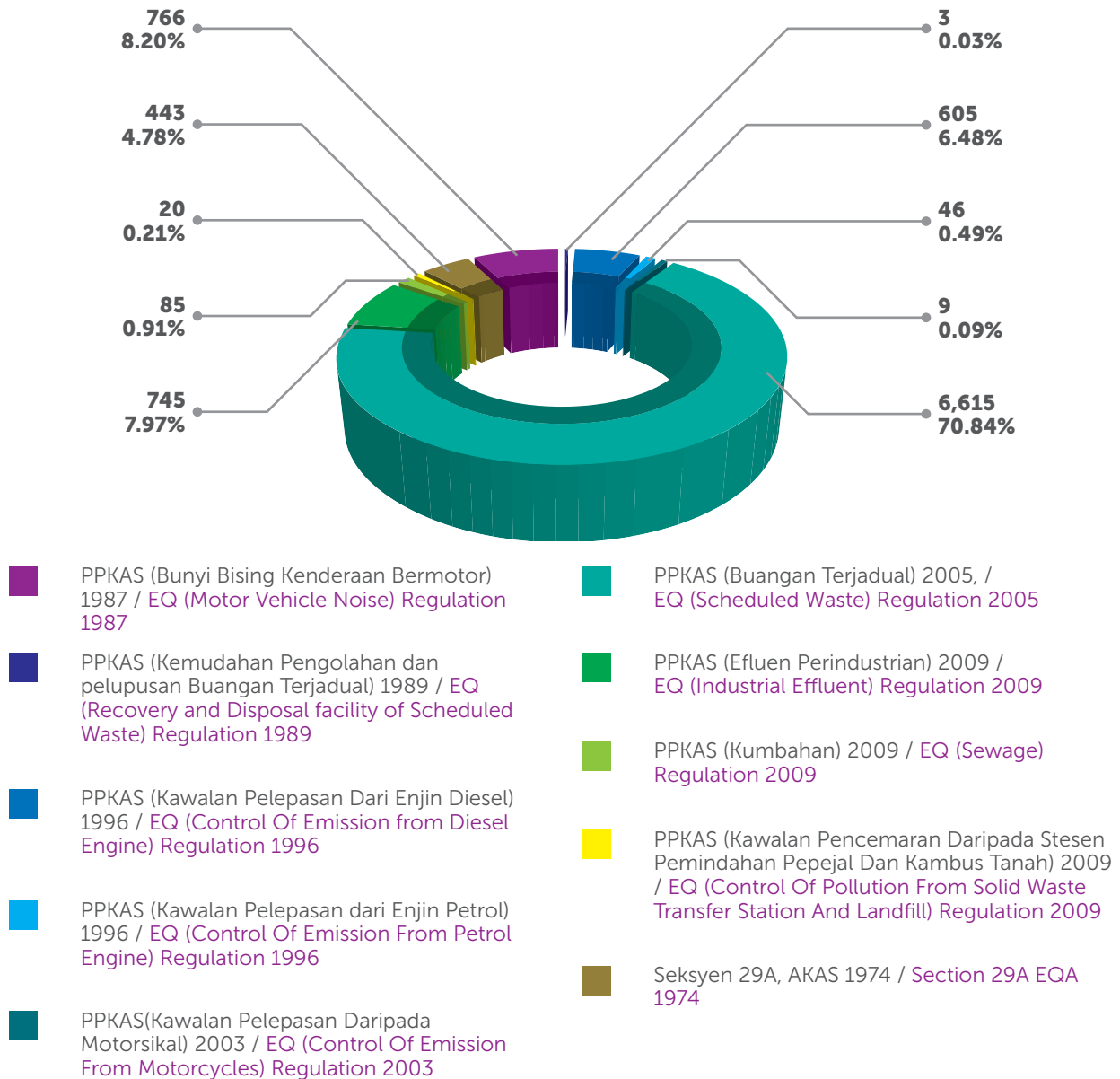
Rajah 4.30 : Bilangan Kes Mahkamah dan Denda, 2022  
Figure 4.30 : Number of Court Cases and Fines, 2022

## KOMPAUN

Sejumlah 9,337 kompaun telah dikeluarkan sepanjang tahun 2022 kepada premis dan individu untuk pelbagai kesalahan di bawah Akta Kualiti Alam Sekeliling 1974 (AKAS 1974). Pecahan mengikut kesalahan adalah seperti di **Rajah 4.31**.

## COMPOUNDS

A total of 9,337 compounds were issued in 2022 against premises and individuals for various offences under the Environmental Quality Act 1974 (EQA 1974). The breakdown by offences is shown in **Figure 4.31**.



Nota / Note :

PPKAS : Peraturan-Peraturan Kualiti Alam Sekeliling / EQ : Environment Quality

Rajah 4.31 : Bilangan Kes Kompaun Mengikut Kesalahan, 2022  
Figure 4.31 : Number of Compound Cases According to Offence, 2022

CHAPTER 5

# BAB 5

## MENGARUSPERDANA AMALAN INDUSTRI HIJAU MAINSTREAMING GREEN INDUSTRY PRACTICES



## PEMANTAPAN AMALAN INDUSTRI HIJAU DALAM KALANGAN INDUSTRI MELALUI KONSEP PENCEGAHAN PENCEMARAN MAINSTREAMING GREEN INDUSTRY PRACTICES AMONG SMALL AND MEDIUM ENTERPRISES (SME) THROUGH POLLUTION PREVENTION CONCEPT

Jabatan Alam Sekitar (JAS) komited dalam memastikan kelestarian alam sekitar di Malaysia dan terus menyokong usaha negara mencapai Matlamat Pembangunan Lestari (SDG) dan juga usaha penyepaduan Alam Sekitar, Sosial dan Tadbir Urus (ESG). Justeru, di bawah Rancangan Malaysia Kedua Belas (RMKe-12), Seksyen Industri Hijau (SIH), Bahagian Penguatkuasa telah merancang pelbagai program dan projek untuk menyokong hasrat kerajaan mencapai kelestarian dan kestabilan alam sekitar.

Bagi menyokong hasrat tersebut, JAS telah merangka beberapa program yang relevan dengan hasrat kerajaan. Menggunakan tema Pemantapan Amalan Industri Hijau Dalam Kalangan Industri Melalui Konsep Pencegahan Pencemaran, JAS telah menetapkan matlamat 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).

Diantara objektif program yang telah mendapat mandat dan kelulusan Unit Perancang Ekonomi (EPU) untuk dilaksanakan adalah untuk:

1. Memperkukuhkan Institusi Industri Hijau dalam JAS;
2. Meningkatkan pematuhan industri terhadap perundangan alam sekitar;
3. Meningkatkan kualiti persekitaran dengan pelaksanaan pencegahan pencemaran dan kesedaran awal terhadap keperluan meminimalkan kesan kepada alam sekeliling;
4. Menyokong komitmen kerajaan terhadap Sustainable Development Goals (SDGs);
5. Meningkatkan penggunaan sumber secara lestari dan menyumbang kepada pengurangan pelepasan gas rumah hijau (GHG); dan
6. Mewujudkan jaringan kerjasama bersama pihak yang berkepentingan

Department of Environment (DOE) is committed to ensuring a sustainable environment and to supporting the country's efforts in achieving the Sustainable Development Goals (SDG), as well as in integrating Environmental, Social and Governance (ESG) into the organisation. Toward this end, under the Twelfth Malaysia Plan (RMKe-12) Green Industry Section (SIH), DOE has planned to implement various projects and programmes to enhance the government's efforts to achieve a sustainable and steady environment.

In line with the theme of Mainstreaming Green Industry Practices Among Small and Medium Enterprises (SME) Through Pollution Prevention Concept, DOE aims to strengthen Green Industry practices among Small and Medium Industries towards sustainable production and to reduce Greenhouse Gas (GHG) emission.

Among the objectives of the programmes that have received the mandate and approval of the Economic Planning Unit (EPU) were to:

1. Strengthen Green Industry Institution in the department;
2. Upswing the compliance of environment regulations;
3. Improve the quality of the surroundings through pollution prevention and awareness, to minimise the impact on the environment;
4. Support the national commitment to Sustainable Development Goals (SDGs);
5. Increase sustainable resources consumption and to reduce greenhouse gas (GHG) emissions; and
6. Establish networking among stakeholders.

Berikut adalah program dan aktiviti yang telah dilaksanakan pada tahun 2022:

### 1. 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**

Pelaksanaan program bantuan khidmat nasihat ini adalah salah satu inisiatif JAS dalam membimbing dan memberi latihan serta pendedahan berkaitan konsep Pengeluaran Bersih (CP) kepada industri. Pada tahun 2022, program ini telah dijalankan secara bersemuka dan *hands on* kepada premis yang telah terpilih.

Program khidmat nasihat pada tahun 2022, memfokuskan kepada dua (2) daripada 8 sektor yang menjadi keutamaan kepada JAS dalam menjalankan penguatkuasaan. Dua (2) sektor tersebut adalah sektor industri pembuatan kertas dan juga sektor fabrikasi logam. Program ini telah dibahagikan kepada dua (2) zon iaitu zon utara memfokuskan kepada sektor pembuatan kertas, manakala premis di zon selatan bagi sektor industri fabrikasi logam.

Program ini telah dilaksanakan bersama-sama pihak perunding yang telah dipilih. Lima (5) premis bagi sektor pembuatan kertas yang telah diberi latihan dan bantuan khidmat nasihat melalui konsep Pengeluaran Bersih (Cleaner Production – CP) ialah Nibong Tebal Paper Mill Sdn. Bhd, Muda Paper Mills Sdn. Bhd, Trio Paper Mill Sdn. Bhd, XSD International Paper Sdn. Bhd dan CNC Paper International Sdn. Bhd.

Bagi sektor fabrikasi logam yang dilaksanakan di zon selatan pula, lima (5) premis yang dipilih ialah Nippon Kinzoku (Malaysia) Sdn. Bhd, Temasik Coating Sdn. Bhd, Hong Lee Steel Engineering, Sri Kimpalan Services Sdn Bhd dan juga Shen Yong Engineering Works Sdn. Bhd.

Bantuan khidmat nasihat merangkumi sesi latihan dan penggunaan Sistem Pengurusan dan Pemantauan Industri Hijau (SPPIH) yang telah dibangunkan semenjak 2018. Premis yang terpilih dalam program ini perlu melengkapkan SPPIH dengan aktiviti CP yang dilaksanakan di premis masing-masing.

Hasil daripada program ini dua (2) garis panduan yang dikenali sebagai Garis Panduan Pelaksanaan Amalan Industri Hijau Sektor Pembuatan Kertas

The following are the projects and activities undertaken in 2022:

### 1. CLEANER PRODUCTION (CP) AUDIT ASSISTANCE PROGRAM FOR SMALL AND MEDIUM INDUSTRY (SME)

- **Green Industry Advisory Services Programme for Small and Medium Industry (SMEs) and other industries in Malaysia.**

The implementation of this advisory service is one of the initiatives by DOE to guide, train the industries as well as to give them exposure to the CP concept. For the year 2022, this programme was carried out face-to-face as well as on a hands-on training at the selected premises.

In 2022, this programme focussed on two (2) of the eight (8) main sectors that were ranked as priority by DOE to enforce. The two (2) sectors were paper mills and metal fabrication. This programme was divided into two (2) zones; the northern zone for paper mills sector, and the southern zone focused on the metal fabrication sector.

This programme was carried out together with an appointed consultant selected by DOE. Five premises of the paper mills sector were trained and given advisory assistance, and they were Nibong Tebal Paper Mill Sdn. Bhd, Muda Paper Mills Sdn. Bhd, Trio paper Mill Sdn. Bhd, XSD International Paper Sdn. Bhd dan CNC Paper International Sdn. Bhd.

For the metal fabrication sector, the five (5) premises selected were Nippon Kinzoku (Malaysia) Sdn. Bhd, Temasik Coating Sdn. Bhd, Hong Lee Steel Engineering, Sri Kimpalan Services Sdn Bhd dan juga Syen Yong Engineering Works Sdn. Bhd.

The advisory services also included the training and application session of the Green Industries Administration and Monitoring System (SPPIH) which had been developed since the year 2018. Each factory in the programme was required to complete the SPPIH with Cleaner Production activities being implemented in their premises.

As an output of the programme, two (2) Guidelines named as The Green Industry Practices for Paper Mills Sector and Guidelines on Green Industry

dan Garis Panduan Pelaksanaan Amalan Industri Hijau Sektor Fabrikasi Logam telah dibangunkan. Garis panduan ini akan menjadi rujukan dalam mengaplikasikan amalan CP ke arah mencapai Industri Hijau.

## 2. MEMPERKUKUHKAN MEKANISMA INSTITUSI INDUSTRI HIJAU

Beberapa siri bengkel telah dilaksanakan oleh SIH dalam memperkukuhkan mekanisma institusi industri hijau khususnya di JAS. Bengkel bagi membincangkan pembangunan draf berkaitan Peraturan Industri Hijau telah diadakan pada 24 hingga 26 Julai 2022 bertempat di Hotel Concorde, Shah Alam. Bengkel ini adalah susulan daripada Kajian Keperluan dan Kebolehlaksanaan Peraturan Industri Hijau di Malaysia. Bengkel ini telah dihadiri oleh pegawai-pegawai kanan JAS, agensi-agensi yang berkaitan dan juga pihak perunding.

Practices in Metal Fabrication Sector were produced. These guidelines will act as a reference for similar sectors to apply CP to achieve Green Industry.

## 2. STRENGTHENING GREEN INDUSTRY INSTITUTIONAL MECHANISMS

A series of workshops was conducted by SIH in strengthening the green industry institutional mechanism. The workshop on discussing green industry regulations was from 24<sup>th</sup> - 26<sup>th</sup> July 2022, and was held at Concorde Hotel, Shah Alam. This workshop was a follow-up from the Feasibility Study on Green Industry Regulation in Malaysia that was done in 2021. This workshop was attended by DOE senior officers, other relevant agencies and also by the consultant.

**Jadual 5.1 :** Senarai Premis Bagi Program Latihan Bantuan dan Khidmat Nasihat Pengeluaran Bersih kepada PKS dan Industri lain di Malaysia

**Table 5.1 :** List of Premises Involved in CP Training Program for SMEs

BIL. / NO	PREMIS / PREMISES	TARIKH / DATE	BIL. OPSYEN CP DIJANA / NUMBER OF CP OPTIONS GENERATED
1	Nippon Kinzoku (Malaysia) Sdn. Bhd. No. 18, Jalan I-Park 1/2, Kawasan Perindustrian I-Park, Bandar Indahpura, Kulai, Johor.	14 Jun 2022 14 <sup>th</sup> June 2022	8
2	Temasek Coating Sdn. Bhd. PLO 177 Jalan Nibong 1/1, Kawasan Perindustrian Tanjung Langsung, Pasir Gudang, Johor.	15 Jun 2022 15 <sup>th</sup> June 2022	11
3	Hong Lee Steel Engineering Jalan Idaman 1/17, Taman Desa Idaman, Senai, Johor.	16 Jun 2022 16 <sup>th</sup> June 2022	8
4	Sri Kimpalan Services Sdn. Bhd. Lot 1636, Mukim Sungai Udang, Bertam Ulu, Melaka	19 Julai 2022 19 <sup>th</sup> July 2022	11
5	Shen Yong Engineering Works Sdn. Bhd. No. 14, (Lot 3906), Jalan TP4, Taman Perindustrian Bukit Rambai	20 Julai 2022 20 <sup>th</sup> July 2022	8
6	Nibong Tebal Paper Mill Sdn. Bhd. (NTPM). No. 886, Jalan Bandar Baru, Sungai Kecil, 14300 Nibong Tebal, Pulau Pinang	28 Jun 2022 28 <sup>th</sup> June 2022	5
7	Muda Paper Mills Sdn. Bhd. No. 391, Jalan Tasek, Kampung Jawi Sempit, 14120 Simpang Ampat, Pulau Pinang	29 Jun 2022 29 <sup>th</sup> June 2022	8
8	Trio Paper Mill Sdn. Bhd. No. 395, Jalan Tasek, Kampung Jawi Sempit, 14120 Simpang Ampat, Pulau Pinang	30 Jun 2022 30 <sup>th</sup> June 2022	7
9	XSD International Paper Sdn. Bhd. Pt 441, Mukim Padang Meha 09400 Kulim, Kedah	27 Julai 2022 27 <sup>th</sup> July 2022	12
10	CNC Paper International Sdn. Bhd. Lot 1385, Kaw. Perindustrian Tikam Batu 08600 Sungai Petani, Kedah	28 Julai 2022 28 <sup>th</sup> July 2022	15



Sri Kimpalan Services Sdn Bhd.



Syen Yong Engineering Works Sdn. Bhd.



Temasek Coating Sdn. Bhd.



Nippon Kinzoku (Malaysia) Sdn. Bhd.



Hong Lee Steel Engineering



Muda Paper Mills Sdn. Bhd.



XSD International Paper Sdn Bhd.



Nibong Tebal Paper Mill Sdn Bhd.

Program Latihan Pengeluaran Bersih dan Bantuan Khidmat Nasihat kepada Perusahaan Kecil & Sederhana (PKS) di Malaysia  
Cleaner Production Training and Advisory Services for Small & Medium Enterprise (SMEs) in Malaysia



Bengkel Draft Peraturan Industri Hijau  
Workshop on Green Industry Regulation



Bengkel Pembangunan Garis Panduan Pelaksanaan Amalan Industri Hijau bagi Sektor Pembuatan Kertas dan Sektor Fabrikasi Logam  
 Workshop on the Developing Guidelines for the Implementation of Green Industry Practices for the Paper Mills and Metal Fabrication Sector

Selain daripada itu, bengkel pembangunan garis Panduan Pelaksanaan Amalan Industri Hijau bagi sektor pembuatan kertas dan juga fabrikasi logam telah diadakan pada 31 Oktober 2022 dan 1 November 2022 di JAS, Ibu Pejabat, Putrajaya. Bengkel ini diadakan susulan penemuan audit dan program bantuan khidmat nasihat yang telah dilaksanakan di dua (2) sektor tersebut. Penemuan-penemuan audit dan langkah penambahbaikan amalan CP telah diharmonikan dan seterusnya diterjemahkan dalam bentuk garis panduan.

SIH juga komited dalam usaha mempromosikan CP di kalangan pegawai JAS, industri dan juga orang awam. Antara sesi perkongsian maklumat adalah sesi seminar atas talian berkaitan Prosedur tetap Operasi (PTO) CP kepada JAS Kedah, sesi seminar bersama JAS Negeri Sabah, JAS Negeri Selangor dan juga JAS Negeri Sembilan.

Besides that, workshops on the development of guidelines for the paper mills sector and metal fabrication sector were held from 31<sup>st</sup> October 2022 - 1<sup>st</sup> November 2022 at the DOE Headquarters, Putrajaya. This workshop was as a follow-up to Cleaner Production Audit findings and the Advisory assistance in the aforementioned two (2) sectors. All audit findings and steps to the improvement of CP practices were incorporated and subsequently translated as the guidelines.

SIH is committed to promoting CP among DOE staff, industries as well as the general public. Among the sharing sessions conducted were the seminar sessions via online in regards to Standard Operating Procedures (SOPs) CP with DOE Kedah and workshop with DOE Sabah, DOE Negeri Selangor and DOE Negeri Sembilan.



CHAPTER 6

# B A B 6

## 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

#### 11<sup>th</sup> INDO-PACIFIC ENVIRONMENTAL SECURITY FORUM (IPESF) 2022

11<sup>th</sup> Indo-pacific Environmental Security Forum (IPESF 2022) telah diadakan pada 1 - 4 Ogos 2022 di Kurumba, Maldives. Pada tahun ini, seramai 132 delegasi dari 22 negara telah menghadiri forum tersebut. Delegasi Malaysia ke forum ini ialah Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Pembangunan) Jabatan Alam Sekitar (JAS) dan juga delegasi daripada Kementerian Pertahanan Malaysia.

IPESF adalah acara tahunan untuk meneroka penyelesaian kepada isu keselamatan alam sekitar di seluruh rantau Indo-Pasifik. IPESF mewujudkan peluang untuk membincangkan cabaran keselamatan alam sekitar dan bekerjasama dengan negara lain untuk mencapai matlamat keselamatan alam sekitar negara.

#### THE 11<sup>th</sup> INDO-PACIFIC ENVIRONMENTAL SECURITY FORUM (IPESF) 2022

The 11<sup>th</sup> Indo-Pacific Environmental Security Forum (IPESF) was held from 1<sup>st</sup> - 4<sup>th</sup> August 2022 in Kurumba, Maldives. This year's forum was attended by 132 delegations from 22 countries. Delegations from Malaysia were Dr. Norhazni binti Mat Sari, Deputy Director General (Development) Department of Environment (DOE) Malaysia and also a representative from the Ministry of Defence Malaysia.

IPESF is an annual event to explore solutions to environmental security issues throughout the Indo-Pacific region. IPESF creates opportunities to discuss mutual environmental security challenges and to collaborate with other nations in achieving environmental security goals.



Dr. Norhazni binti Mat Sari Wakil daripada Malaysia yang Menghadiri Indo-Pacific Environmental Security Forum di Kurumba, Maldives  
Dr. Norhazni binti Mat Sari, Delegate from Malaysia who Attended the Indo-Pacific Environmental Security Forum at Kurumba, Maldives



Delegasi dari 22 Negara yang telah Menghadiri Indo-Pacific Environmental Security Forum  
Delegations from 22 countries that attended the Indo-Pacific Environmental Security Forum

Pembentangan, sesi panel dan bengkel menekankan lima (5) tema iaitu :

- i. Cabaran keselamatan iklim dan peranan angkatan pertahanan;
- ii. Lautan dan keselamatan air;
- iii. Keprihatinan dan keselamatan negara pulau kecil;
- iv. Wanita, keamanan dan keselamatan; dan
- v. Conference of the Parties 26 (COP 26) dalam Konteks.

#### **ASEAN WORKING GROUP ON ENVIRONMENTAL EDUCATION (AWGEE)**

ASEAN Working Group on Environmental Education (AWGEE) ini merupakan satu kumpulan kerja di bawah naungan ASEAN Senior Officials on the Environment (ASOEN).

Objektif kerjasama ini adalah untuk menyelaraskan semua program dalam kalangan ASEAN Member States (AMS) dan rakan dialog ASEAN (ASEAN dialog Partners) untuk mempromosikan pendidikan alam sekitar serta program kesedaran bagi meningkatkan kapasiti dan keupayaan menangani isu-isu semasa

The presentations, panel sessions and workshops emphasised the five (5) following themes:

- i. Climate security challenges and the role of defence forces;
- ii. Oceans and water security;
- iii. Small island nation concerns and security,
- iv. Women, peace, and security; and
- v. Conference of the Parties 26 (COP 26) in Context.

#### **ASEAN WORKING GROUP ON ENVIRONMENTAL EDUCATION (AWGEE)**

The ASEAN Working Group on Environmental Education (AWGEE) is a regional cooperation under the ASEAN Senior Officials on the Environment (ASOEN).

The objective of this collaboration is to coordinate the programme among ASEAN Member States (AMS) and ASEAN dialog partners to promote environmental protection through effective environmental education and awareness programmes that enhance capacity and capability

berkaitan alam sekitar ke arah komuniti ASEAN yang mampan dan berdaya tahan serta proaktif di mana akan menyumbang kepada pencapaian Matlamat Pembangunan Mampan.

AWGEE adalah satu kerjasama serantau yang dianggotai oleh sepuluh (10) buah negara ASEAN iaitu Brunei Darussalam, Kemboja, Indonesia, Lao PDR, Malaysia, Myanmar, Filipina, Singapura, Thailand dan Vietnam. AWGEE adalah satu platform kerjasama antara AMS berkaitan perlindungan dan pemuliharaan alam sekitar melalui program pendidikan dan kesedaran alam sekitar.

Mesyuarat tahunan AWGEE yang ke-14 telah dijalankan secara maya pada 31 Mac 2022, dipengerusikan oleh Brunei dan dihadiri oleh sepuluh (10) AMS. Delegasi Malaysia telah diketuai oleh Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Pembangunan) Jabatan Alam Sekitar.



Delegasi Malaysia telah Diketuai oleh Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Pembangunan) Jabatan Alam Sekitar  
The Malaysia Delegation was Led by Dr. Norhazni binti Mat Sari, Deputy Director General (Development) Department of Environment

to adapt and respond to current and emerging environmental scenarios, with a dynamic, sustainable, resilient ASEAN Community that will proactively contribute to the achievement of global Sustainable Development Goals.

AWGEE is a regional cooperation which involves ten (10) ASEAN countries including Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. AWGEE is a platform for corporation between the AMS on effective environmental protection through environmental education.

The 14<sup>th</sup> annual meeting of the AWGEE was conducted virtually on 31<sup>st</sup> March 2022, chaired by Brunei and attended by ten (10) AMS. The Malaysia delegation was led by Dr. Norhazni binti Mat Sari, Deputy Director General (Development) Department of Environment.



Negara Ahli ASEAN (AMS) yang Menghadiri Mesyuarat AWGEE ke-14  
ASEAN Member States (AMS) that Attended the 14<sup>th</sup> AWGEE Meeting

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

### **KUMPULAN KERJA JAWATANKUASA BERSAMA MALAYSIA-SINGAPURA MENGENAI ALAM SEKITAR (MSJCE WG)**

Mesyuarat MSJCE WG ke-18 telah diadakan pada 26 - 27 Julai 2022 di Kuala Lumpur. Mesyuarat dipengerusikan secara bersama oleh Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar, Malaysia dan Encik Luke Goh, Ketua Pegawai Eksekutif, National Environment Agency (NEA), Singapura.

### **MALAYSIA-SINGAPORE JOINT COMMITTEE ON THE ENVIRONMENT WORKING GROUP (MSJCE WG)**

The 18<sup>th</sup> MSJCE WG was held from 26<sup>th</sup> - 27<sup>th</sup> July in Kuala Lumpur. The meeting was co-chaired by Mr. Wan Abdul Latiff bin Wan Jaffar, the Director General of Department of Environment (DOE), Malaysia, and Mr. Luke Goh, Chief Executive Officer, National Environment Agency (NEA), Singapore.

Mesyuarat ini diadakan bagi menyelaraskan pendirian kedua-dua buah negara berhubung isu-isu alam sekitar yang melibatkan Selat Johor (SOJ), tindakan kawalan pencemaran dan kualiti alam sekitar seperti kenderaan bermotor, kualiti air di perairan SOJ, 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.

The meeting was held to coordinate the stance of the two countries regarding environmental issues involving the Straits of Johor (SOJ), pollution control measures and environmental quality such as motor vehicles, water quality in the SOJ, management of chemical substances and hazardous waste, and matters related to safety and cooperation in emergency management and pollution control of oil and chemical spills.



Delegasi Malaysia dan Singapura Semasa Mesyuarat MSJCE WG ke-18  
The Malaysia and Singapore Delegation during the 18<sup>th</sup> MSJCE WG Meeting



Delegasi Malaysia dan Singapura semasa  
Mesyuarat MSJCE WG ke-18  
The Malaysia and Singapore Delegation during the 18<sup>th</sup> MSJCE WG Meeting



Pengerusi bersama Mesyuarat MSJCE WG ke-18 Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar, Malaysia dan Encik Luke Goh, Ketua Pegawai Eksekutif, NEA, Singapura  
The 18<sup>th</sup> MSJCE Meeting Co-chairs Mr. Wan Abdul Latiff bin Wan Jaffar, the Director General of DOE, Malaysia, and Mr. Luke Goh, Chief Executive Officer, NEA, Singapore



Mesyuarat MSJCE WG ke-18 di Kuala Lumpur  
The 18<sup>th</sup> MSJCE Meeting in Kuala Lumpur



Mesuarat MSJCE WG ke-18 di Kuala Lumpur  
The 18<sup>th</sup> MSJCE Meeting in Kuala Lumpur

Mesuarat ini melibatkan kehadiran delegasi-delegasi Jabatan Alam Sekitar (JAS), Kementerian Alam Sekitar dan Air (KASA) dan dua belas (12) wakil agensi lain dalam negara termasuklah, Jabatan Peguam Negara, Kementerian Luar Negara, Majlis Keselamatan Negara, Jabatan Laut Malaysia, Lembaga Pelabuhan Johor, Jabatan Ukur dan Pemetaan Malaysia, Jabatan Pengairan dan Saliran, Pusat Hidrografi Nasional, Agensi Angkasa Malaysia, Jabatan Perikanan, Bahagian Perancang Ekonomi Negeri Johor dan Universiti Kebangsaan Malaysia.

Mesuarat ini juga melibatkan kehadiran sepuluh (10) wakil agensi daripada Singapura yang terdiri daripada NEA, Singapore Environment Institute, National's Water Agency, Ministry of Sustainability and Environment, Maritime and Port Authority of Singapore, Ministry of Foreign Affairs, Ministry of National Development, Housing and Development Board, National Parks Board dan Jurong Town Council.

This meeting involved the presence of delegations from the DOE, the Ministry of the Environment and Water (KASA) and twelve (12) representatives of other agencies in the country including the Attorney General's Chambers, Ministry of Foreign Affairs, National Security Council, Marine Department Malaysia, Johor Port Authority, Department of Survey and Mapping Malaysia, Department of Irrigation and Drainage, National Hydrographic Centre, Malaysian Space Agency, Department of Fisheries, Johor State Economic Planning Division and the National University of Malaysia.

This meeting also involved the presence of ten (10) representative agencies from Singapore consisting of NEA, Singapore Environment Institute, National Water Agency, Ministry of Sustainability and Environment, Maritime and Port Authority of Singapore, Ministry of Foreign Affairs, Ministry of National Development, Housing and Development Board, National Parks Board and Jurong Town Council.

## JAWATANKUASA BERSAMA MALAYSIA – SINGAPURA MENGENAI ALAM SEKITAR (MSJCE)

MSJCE telah ditubuhkan pada tahun 1991. MSJCE dipengerusikan secara bersama oleh Ketua Setiausaha/ Permanent Secretary di peringkat Kementerian kedua-dua negara yang bertanggungjawab mengenai alam sekitar. Mesyuarat MSJCE adalah mesyuarat tahunan yang dianjurkan secara bergilir di antara Malaysia dan Singapura.

Mesyuarat MSJCE ke-34 telah diadakan pada 22 November 2022 di Kuala Lumpur. Mesyuarat dipengerusikan secara bersama oleh Dato' Seri Ir. Dr. Zaini bin Ujang, Ketua Setiausaha Kementerian Alam Sekitar dan Air (KASA), Malaysia dan Encik Stanley Loh, Permanent Secretary, Ministry of Sustainability and the Environment (MSE), Singapura.

Bagi melancarkan urusan perhubungan dua hala dan keberkesanan pelaksanaan tindakan serta pelaporan di peringkat Menteri dan Kementerian kedua-dua negara, Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar, Malaysia selaku pengerusi bersama dan bagi pihak MSJCE WG telah membentangkan pelaporan MSJCE WG ke-18 berkaitan pendirian kedua-dua buah negara berhubung isu-isu alam sekitar yang melibatkan Selat Johor (SOJ), tindakan kawalan pencemaran dan kualiti alam sekitar seperti kenderaan bermotor, kualiti air di perairan SOJ, pengurusan bahan kimia dan buangan berbahaya, serta hal-hal berkaitan keselamatan dan kerjasama di dalam pengurusan kecemasan dan kawalan pencemaran tumpahan minyak dan bahan kimia.

## MALAYSIA-SINGAPORE JOINT COMMITTEE ON THE ENVIRONMENT (MSJCE)

MSJCE was established in 1991. MSJCE is co-chaired by the Secretary General/ Permanent Secretary at the Ministry level of both countries, responsible for environment related matters. The MSJCE meeting is an annual meeting organized alternately between Malaysia and Singapore.

The 34<sup>th</sup> MSJCE was held on 22<sup>nd</sup> November 2022 in Kuala Lumpur. The Meeting was co-chaired by Dato' Seri Ir. Dr. Zaini bin Ujang, Secretary General of the Ministry of Environment and Water (KASA), Malaysia and Mr. Stanley Loh, Permanent Secretary to the Ministry of Sustainability and the Environment (MSE), Singapore.

To enable smooth bilateral relations and the effectiveness of the implementation of actions and reporting at the level of Ministers and Ministries of both countries, Mr. Wan Abdul Latiff bin Wan Jaffar, Director General of the DOE, Malaysia as the co-chair and on behalf of the MSJCE WG presented the report of the 18<sup>th</sup> MSJCE WG Meeting pertaining to environmental issues involving the Straits of Johor (SOJ), pollution control measures and environmental quality such as motor vehicles, water quality in the SOJ, management of chemical substances and hazardous waste, and matters related to safety and cooperation in emergency management and pollution control of oil and chemical spills.



Pengerusi bersama Mesyuarat MSJCE ke-34 Dato' Seri Ir. Dr. Zaini bin Ujang, Ketua Setiausaha KASA, Malaysia dan Encik Stanley Loh, Permanent Secretary, MSE, Singapura  
The 34<sup>th</sup> MSJCE Meeting Co-chairs, Dato' Seri Ir. Dr. Zaini bin Ujang, Secretary General of the KASA, Malaysia and Mr. Stanley Loh, Permanent Secretary of the MSE, Singapore

Mesyuarat ini melibatkan kehadiran delegasi-delegasi KASA, JAS dan 11 wakil agensi lain dalam negara termasuklah, Jabatan Peguam Negara, Kementerian Luar Negeri, Jabatan Laut Malaysia Lembaga Pelabuhan Johor, Jabatan Ukur dan Pemetaan Malaysia, Jabatan Pengairan dan Saliran, Pusat Hidrografi Nasional, Agensi Angkasa Malaysia, Jabatan Perikanan dan Bahagian Perancang Ekonomi Negeri Johor.

Mesyuarat ini juga melibatkan kehadiran enam (6) wakil agensi daripada Singapura yang terdiri daripada, MSE, NEA, Ministry of Foreign Affairs, Ministry of National Development, Public Utilities Board dan Attorneys Agency Chamber, Singapore.

This meeting involved the presence of delegations from the KASA, DOE and eleven (11) representatives of other agencies in the country including the Attorney General's Chambers, Ministry of Foreign Affairs, National Security Council, Marine Department Malaysia, Johor Port Authority, Department of Survey and Mapping Malaysia, Department of Irrigation and Drainage, National Hydrographic Centre, Malaysian Space Agency, Department of Fisheries and the Johor State Economic Planning.

This meeting also involved the presence of six (6) representative agencies from MSE, NEA, Ministry of Foreign Affairs, Ministry of National Development, Public Utilities Board dan Attorneys Agency Chamber, Singapore.



Mesyuarat MSJCE ke-34 di Kuala Lumpur  
The 34<sup>th</sup> MSJCE Meeting in Kuala Lumpur



Pertukaran Cenderahati dari pihak Malaysia kepada pihak Singapura  
Exchange of Souvenirs from Malaysia to Singapore



Pertukaran Cenderahati dari pihak Singapura kepada pihak Malaysia  
Exchange of Souvenirs from Singapore to Malaysia



Sesi Gambar Berkumpulan antara Pengerusi bersama Malaysia dan Singapura untuk Mesyuarat MSJCE ke-34 dan Mesyuarat MSJCE WG ke-18  
Group Photo Session between the Co-chairs of Malaysia and Singapore for the 34<sup>th</sup> MSJCE Meeting and the 18<sup>th</sup> MSJCE WG Meeting



Pengerusi bersama Mesyuarat MSJCE ke-34  
Co-chairs of the 34<sup>th</sup> MSJCE Meeting



Pengerusi bersama Mesyuarat MSJCE ke-18  
Co-chairs of the 18<sup>th</sup> MSJCE Meeting



Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar, Malaysia selaku Pengerusi bersama dan bagi pihak MSJCE WG telah Membentangkan Pelaporan MSJCE WG ke-18

Mr. Wan Abdul Latiff bin Wan Jaffar, Director General of the DOE, Malaysia as the Co-chair and on behalf of the MSJCE WG Presented the Report of the 18<sup>th</sup> MSJCE WG Meeting



Delegasi JAS, Malaysia, Puan Mashitah binti Darus, Pengarah Bahagian Udara, JAS Malaysia

Delegation of DOE, Malaysia, Ms. Mashitah binti Darus, Director of Air Division DOE, Malaysia



Delegasi JAS, Malaysia  
Delegation of DOE, Malaysia



Sesi Bergambar Berkumpulan antara Malaysia dan Singapura peringkat Pengurusan Tertinggi semasa Mesyuarat MSJCE ke-34

Group Photo Session of the Malaysia and Singapore Top Management during the 34<sup>th</sup> MSJCE Meeting



Delegasi Malaysia bersama Pengurusan Tertinggi Malaysia dan Singapura semasa Mesyuarat MSJCE ke-34  
The Malaysia Delegation with the Top Management of Malaysia and Singapore during the 34<sup>th</sup> MSJCE Meeting



Delegasi Singapura bersama Pengurusan Tertinggi Malaysia dan Singapura semasa Mesyuarat MSJCE ke-34  
The Singapore Delegation with the Top Management of Malaysia and Singapore during the 34<sup>th</sup> MSJCE Meeting

CHAPTER 7

# BAB 7

## **PROGRAM-PROGRAM PROMOSI DAN KESEDARAN** **PROMOTIONAL AND AWARENESS PROGRAMMES**



## PROGRAM-PROGRAM PROMOSI DAN KESEDARAN PROMOTIONAL AND AWARENESS PROGRAMMES

### PROGRAM PENDIDIKAN ALAM SEKITAR PERINGKAT SEKOLAH

Program Sekolah Lestari Anugerah Alam Sekitar (SLAAS) bukanlah satu program yang baharu diperkenalkan, malahan ia telah bermula seawal tahun 2005 dengan kerjasama Jabatan Alam Sekitar, Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim dengan Kementerian Pendidikan Malaysia (KPM). Sehingga kini program ini telah memasuki lapan (8) kitaran dengan penglibatan 1,467 buah sekolah menengah dan kebangsaan di seluruh Malaysia.

Jabatan Alam Sekitar turut melaksanakan hebahkan Program SLAAS di dalam negara dan di luar negara melalui Sixth ASEAN State of Environment Report (SOER6). Malaysia jua akan menjadi tuan rumah bagi persidangan Asean Working Group On Environmental Education (AWGEE) pada tahun 2023 yang akan datang. Persidangan AWGEE pada tahun 2023 akan menyebarkan pelaksanaan SLAAS kepada seluruh negara asia yang menyertainya dan seterusnya menjadi rujukan bagi penambaan Eco-School di negara masing-masing.

### ENVIRONMENTAL EDUCATION PROGRAMMES AT SCHOOL LEVEL

The Sustainable Environment Award for Schools (Sekolah Lestari Anugerah Alam Sekitar-SLAAS) is not a new programme, as it started in 2005 in collaboration with the Department of Environment, Ministry of Natural Resources, Environment and Climate Change (NRECC) with the Ministry of Education Malaysia (MOE). This programme is in its eighth cycle (8th) with the involvement of 1,467 secondary and primary schools throughout Malaysia.

SLAAS is not only promoted in the country, but Malaysia also provides input on SLAAS in the Sixth ASEAN State of Environment Report (SOER6) and will host the Asean Working Group On Environmental Education (AWGEE) conference in 2023. The AWGEE conference in 2023 will promote the implementation of SLAAS in all Asian countries that participate and then become a reference for the improvement of Eco-Schools in the respective countries.



Penyertaan Malaysia dalam AWGEE Meeting pada 31 Mac 2022  
Malaysia's Participation in the AWGEE Meeting on 31<sup>st</sup> March 2022



### Taklimat SLAAS kepada Jawatankuasa Sekolah Mampan Local Agenda 21 Kuala Lumpur

Jabatan Alam Sekitar telah terlibat dalam memberikan penerangan berkaitan Program SLAAS kepada Jawatankuasa Sekolah Mampan Kuala Lumpur pada 3 hingga 5 Mac 2022 di Espira

### SLAAS Briefing to the Kuala Lumpur Local Agenda 21 Sustainable School Committee

The Department of Environment has been involved in providing information related to the SLAAS Programme to the Kuala Lumpur Sustainable School Committee from March 3<sup>rd</sup> to 5<sup>th</sup>, 2022 at



Sesi Taklimat SLAAS kepada Jawatankuasa Sekolah Mampan Kuala Lumpur pada 3 hingga 5 Mac 2022  
 SLAAS Briefing Session to the Kuala Lumpur Sustainable School Committee on 3<sup>rd</sup> to 5<sup>th</sup> March 2022

Kinrara Puchong. Sesi perkongsian SLAAS telah disampaikan oleh Puan Zuraini binti Siam, Ketua Penolong Pengarah di Seksyen Pendidikan Alam Sekitar, Bahagian Komunikasi Strategik, Jabatan Alam Sekitar. Program ini menjadi satu platform untuk menyebarkan konsep SLAAS bagi melahirkan generasi yang cakna berkenaan alam sekitar termasuk usaha-usaha pemeliharaan alam sekitar selaras dengan moto Jabatan Alam Sekitar iaitu 'Alam Sekitar Tanggungjawab Bersama'.

### **Program Rakan Alam Sekitar (RAS) Kluster Sekolah**

Program Rakan Alam Sekitar (RAS) telah dilancarkan pada 4 Jun 2009 oleh YAB Tan Sri Muhyiddin bin Mohd Yassin, Timbalan Perdana Menteri Malaysia pada masa itu. Ia merupakan inisiatif kementerian dalam membangunkan kesedaran dan menggerakkan anggota masyarakat dalam aktiviti pemuliharaan dan pemeliharaan alam sekitar.

Pada tahun 2022, Program Rakan Alam Sekitar Kluster Sekolah julung kalinya diadakan dan telah disempurnakan oleh YB Menteri Alam Sekitar dan Air pada waktu itu. Ia merupakan promosi Jabatan dalam memperkenalkan Modul Kelab Alam Sekitar Sekolah dalam menggalakkan penubuhan kelab alam sekitar di sekolah-sekolah.

Espira Kinrara Puchong. The SLAAS sharing session was delivered by Puan Zuraini binti Siam, Principal Assistant Director at the Environmental Education Section, Strategic Communication Division, Department of Environment. This programme serves as a platform to spread the concept of SLAAS and produce a generation that is aware of the environment including efforts to preserve the environment in line with the motto of the Department of Environment which is 'Environment, Our Shared Responsibility'.

### **Friends of the Environment Programme (Rakan Alam Sekitar-RAS) School Cluster**

Friend of the Environment Programme (RAS) was launched on 4<sup>th</sup> June 2009 by YAB Tan Sri Muhyiddin bin Mohd Yassin, the Deputy Prime Minister of Malaysia at the time. It is an initiative of the ministry in developing awareness and mobilising community members in environmental conservation and preservation activities.

The year 2022 witnessed the School Cluster Environmental Partner Programme held for the first time and was completed by the environment minister at that time. It is a promotion of the Department in introducing the School Environment Club Module in encouraging the establishment of an environment club.



Majlis Penyerahan Dana bagi Program Rakan Alam Sekitar Kluster Sekolah  
Fund Handing Ceremony for School Cluster Friend of the Environment Program

Sebanyak 13 buah sekolah di sekitar bandar Jerantut telah di pilih dalam pemberian dana sebagai langkah awal pelaksanaan aktiviti-aktiviti yang terkandung di dalam modul kelab alam sekitar tersebut. Promosi ini merupakan titik awal Jabatan dalam mengembangkan dan menyebarkan gaya hidup lestari di kalangan komuniti sekolah seterusnya menyertai Program Sekolah Lestari Anugerah Alam Sekitar. Majlis ini yang turut dilaksanakan bersempena Sambutan Hari Air Sedunia dan pra pelancaran Hari Alam Sekitar Negara tahun 2022. Program turut dihadiri oleh komuniti setempat, murid dan guru-guru dari sekolah-sekolah berhampiran.

#### Majlis Penganugerahan SLAAS bersempena sambutan Hari Alam Sekitar Negara 2022

Situasi pandemik COVID-19 yang telah melanda seluruh negara bermula awal tahun 2020 telah menyaksikan perubahan terhadap gaya hidup dan pelaksanaan dan pengenalan kepada norma baharu. SLAAS juga telah melalui beberapa siri pindaan dan perubahan bagi mengaplikasikan norma baharu di dalam pelaksanaannya.

A total of 13 schools around the town of Jerantut were selected for funding as an initial step in the implementation of the activities contained in the module. This promotion is the Department's starting point in developing and spreading sustainable lifestyles among the school community and subsequently participating in the Sustainable Environment Award for Schools Programme. This ceremony, which was also held in conjunction with the pre-launch of the National Environment Day in 2022, was also attended by the local community, students and teachers from nearby schools.

#### SLAAS Award Ceremony in conjunction with National Environment Day 2022

The situation of the COVID-19 pandemic that hit the whole country since the beginning of 2020 has seen a change in lifestyle and the implementation and introduction of new norms. SLAAS has also gone through a series of amendments and changes to apply new norms in its implementation.



Majlis Penganugerahan SLAAS Bersempena Sambutan Hari Alam Sekitar Negara 2022  
SLAAS Award Ceremony in conjunction with National Environment Day Celebration 2022

Satu Majlis Penganugerahan SLAAS telah berjaya dilaksanakan bersempena sambutan Hari Alam Sekitar Negara pada 22 Oktober 2022 di Kuantan, Pahang. Pada Majlis tersebut, Sekolah Menengah Kebangsaan Seri Keramat, Selangor dan Sekolah Kebangsaan Air Merah, Kedah telah di Anugerahkan Anugerah Sekolah Lestari bagi sesi 2020/2022 masing-masing bagi kategori Sekolah Menengah dan Sekolah Rendah. Majlis penyerahan anugerah telah disampaikan oleh Yang Amat Berhormat Dato' Sri Haji Wan Rosdy bin Wan Ismail, Menteri Besar Pahang disaksikan oleh Yang Berhormat Dato' Sri Tuan Ibrahim bin Tuan Man, Menteri Alam Sekitar dan Air.

On 22<sup>nd</sup> October, 2022, an SLAAS award ceremony was successfully held in Kuantan, Pahang as part of the National Environment Day celebration. At the ceremony, Sekolah Menengah Kebangsaan Seri Keramat, Selangor, and Sekolah Kebangsaan Air Merah, Kedah, were awarded the Sustainable Schools Award for the year 2020/2022 in the categories of secondary school and elementary school respectively. The award was presented by the Honorable Dato' Sri Haji Wan Rosdy bin Wan Ismail, Menteri Besar of Pahang, in the presence of the Honorable Dato' Sri Tuan Ibrahim bin Tuan Man, Minister of Environment and Water.

### Roadshow Kelab Alam Sekitar Sekolah (KASS)

Penyerahan Modul Kelab Alam Sekitar Sekolah (KASS) secara rasmi kepada Kementerian Pendidikan Malaysia (KPM) sempena sambutan Hari Alam Sekitar Negara pada tahun 2021 telah menjadi titik tolak kepada program promosi modul oleh Jabatan Alam Sekitar. Usaha giat mempromosikan modul ini telah dilaksanakan mengikut zon yang mensasarkan guru kelab, Pegawai Pendidikan Daerah dan Jabatan Pendidikan Negeri. Program promosi telah dipecahkan kepada zon tengah, zon utara, zon timur dan zon borneo.

Penerangan ringkas berkenaan aktiviti-aktiviti terkandung di dalam modul ini telah diberikan termasuk kebolehlaksanaannya di sekolah. Kandungan yang modul sarat dengan maklumat penting berkenaan pengenalan kepada aktiviti, objektif, kaedah pelaksanaan, dan hasil dapatan daripada aktiviti telah diringkaskan melalui infografik yang menarik dan mudah difahami.



Roadshow Kelab Alam Sekitar Sekolah (KASS) 2022  
School Environment Club Roadshow (KASS) 2022

### School Environment Club Roadshow (KASS)

The official submission of the School Environment Club Module (KASS) to the Malaysian Ministry of Education (KPM) in conjunction with the celebration of National Environment Day in 2021 was the starting point for the module promotion programme by the Department of Environment. Efforts to promote this module have been carried out zone by zone targeting teachers of the environment clubs, District Education Officers and the State Department of Education. The promotion programme was conducted according to zones; specifically the central zone, the northern zone, the eastern zone and the Borneo zone.

A brief description of the activities contained in this module was given including its feasibility in school. The content of the module filled with important information regarding the introduction to the activities, objectives, implementation methods, and the results obtained from the activities were summarised through an interesting and easy-to-understand infographic.



### Program DidikTV (Badan Beruniform dan Persatuan): Kelab Alam Sekitar Sekolah

Bagi slot tahun 2022, Modul KASS telah dipilih oleh KPM untuk sesi pengajaran di dalam slot DidikTV. Empat (4) aktiviti utama kandungan Modul Kelab Alam Sekitar Sekolah telah ke udara iaitu rekacipta poster dan infografik (sisa buangan elektrik dan elektronik (E-waste) serta bahan kitar semula, inovasi sisa minyak terpakai (pembuatan sabun), pembuatan baja kompos dan program penghijauan sekolah (tanaman sayuran).

Slot ini disiarkan melalui saluran youtube dan rangkaian televisyen pendidikan Malaysia yang dimiliki, dihasilkan dan dikendalikan oleh usaha sama

### DidikTV Program (Uniformed Bodies and Associations): School Environment Club

For the 2022 slot, the KASS Module was selected by the MoE for teaching sessions in the DidikTV programme. The four (4) main content activities of the School Environment Club Module were aired, namely the creation of posters and infographics that related to electrical and electronic waste (E-waste), as well as recycled materials, innovation of used oil for soap making, composting and "Green the School" programme on planting trees.

This slot was broadcasted through a YouTube channel and a Malaysian educational television network owned, produced and operated by a joint



Rakaman DidikTV untuk Sesi Pengajaran Modul KASS  
DidikTV Recording for KASS Module Teaching Session

antara Bahagian Teknologi Pendidikan Kementerian Pendidikan Malaysia dan Media Prima Berhad. Program ini akan memberi impak kepada guru dan murid dalam memberi idea berkenaan pelaksanaan amalan lestari yang boleh dipraktikkan di sekolah dan juga di rumah. Malahan rekod terkini KPM, 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 dapat menerapkan nilai-nilai murni penjagaan alam sekitar.

### **PERTANDINGAN DEBAT ALAM SEKITAR ANTARA INSTITUSI PENDIDIKAN TINGGI KALI KE-28 TAHUN 2022**

Pertandingan Debat Alam Sekitar antara Institusi Pendidikan Tinggi (IPT) kali ke-28 telah diadakan secara hibrid iaitu peringkat awal secara maya manakala peringkat suku akhir, separuh akhir dan akhir secara fizikal di IPT tuan rumah, sebagai satu pendekatan norma baharu di kala negara kita baru

venture between the Education Technology Division of the Ministry of Education Malaysia and Media Prima Berhad. This programme aimed at inculcating among the school citizens and communities with the ideas on how to implement and practice activities at school and at home. According to the latest KPM records, there are 103,486 students from primary and secondary schools have joined the School Environmental Club. 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 produce a generation of national leaders who can apply the noble values of environmental care.

### **THE 28<sup>th</sup> ANNUAL ENVIRONMENTAL DEBATE COMPETITION AMONG HIGHER EDUCATIONAL INSTITUTIONS, 2022**

The 28<sup>th</sup> Environmental Debate Competition among Higher Educational Institutions (HEIs) was held in a hybrid format. The preliminary rounds took place virtually, while the quarterfinals, semifinals, and finals were held physically at the host HEI. This approach marked a new norm as

beralih ke fasa endemik COVID-19. Pertandingan telah bermula dari 20 hingga 27 Ogos 2022 bersempena Sambutan Hari Alam Sekitar Negara 2022.

Debat Alam Sekitar antara IPT merupakan program tahunan sejak tahun 1991 yang dianjurkan oleh JAS dengan kerjasama Kementerian Pengajian Tinggi, Majlis Debat Universiti Malaysia (MADUM), Dewan Bahasa dan Pustaka. Pertandingan debat ini dikendalikan secara debat Ala-Parlimen dan juga debatterbuka (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 adalah seperti di **Jadual 7.1**.

our country transitioned to the endemic phase of COVID-19. The competition took place from 20<sup>th</sup> to 27<sup>th</sup> August 2022, in conjunction with the National Environmental Day celebration.

The Environmental Debate Competition among HEIs is an annual program that has been held since 1991, organised by JAS (Student Leaders Council) in collaboration with the Ministry of Higher Education, the Malaysian University Debating Council (MADUM), and the National Institute of Language and Literature. 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' standings 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 quarterfinals, while the four (4) winning teams advanced to the semifinals. Subsequently, the two (2) best teams competed in the finals. The list of participating HEI teams can be found in **Table 7.1**.

Jadual 7.1 : Senarai Pasukan Institusi Pendidikan Tinggi yang Menyertai Pertandingan  
Table 7.1 : List of Higher Educational Institutions Teams that Participated in the Competition

BIL. / NO.	PASUKAN INSTITUSI PENDIDIKAN TINGGI / HIGHER EDUCATIONAL INSTITUTIONS TEAM
1	Universiti Sultan Zainal Abidin (UniSZA)
2	Universiti Kebangsaan Malaysia (UKM)
3	Universiti Teknologi MARA (UiTM)
4	Universiti Teknologi Malaysia (UTM)
5	Universiti Sains Islam Malaysia (USIM)
6	Universiti Pertahanan Nasional Malaysia (UPNM)
7	Universiti Putra Malaysia (UPM)
8	Universiti Kuala Lumpur (UniKL)
9	Kolej University Poly-Tech Mara (KUPTM)
10	Universiti Malaysia Terengganu (UMT)
11	Universiti Teknologi Petronas (UTP)
12	IPG Kampus Kent Tuaran
13	Universiti Pendidikan Sultan Idris (UPSI)
14	Universiti Malaya (UM)
15	Universiti Islam Antarabangsa Malaysia (UIAM)
16	IPG Kampus Temenggong Ibrahim
17	IPG Kampus Pendidikan Teknik
18	Universiti Tenaga Nasional (UNITEN)
19	IPG Kampus Gaya, Sabah
20	Universiti Malaysia Kelantan (UMK)
21	Universiti Sains Malaysia (USM)
22	Universiti Malaysia Perlis (UniMAP)
23	Universiti Utara Malaysia (UUM)
24	Institut Pendidikan Guru Malaysia (IPGM)
25	Universiti Malaysia Sabah (UMS)
26	Universiti Multimedia (MMU)

Pertandingan Debat Alam Sekitar antara IPT kali ke-28 ini telah diadakan di Universiti Malaysia Sabah (UMS) bermula dari 25 hingga 27 Ogos 2022 bersempena sambutan Hari Alam Sekitar Negara (HASN) 2022. Pelbagai 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 kaki Gunung Kinabalu di Kundasang.

Pertandingan peringkat akhir yang diadakan pada 27 Ogos 2022 telah pun berlangsung di Dewan Resital, UMS di antara pasukan Universiti Islam Antarabangsa Malaysia (UIAM) dan pasukan tuan rumah iaitu Universiti Malaysia Sabah (UMS). Majlis perasmian dan penyampaian hadiah telah disempurnakan oleh Timbalan Ketua Setiausaha (Alam Sekitar), Kementerian Alam Sekitar dan Air (KASA), Yang Berusaha Puan Noor Afifah binti Abdul Razak yang membacakan teks ucapan perasmian YB Menteri Alam Sekitar dan Air, sambil diiringi oleh Yang Berusaha Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar dan disaksikan oleh Yang Berbahagia Prof. Madya Dr. Raman Noordin, Timbalan Naib Canselor (Hal Ehwal Pelajar & Alumni) UMS dan Yang Berbahagia Prof. Dr. Shamsul bin Sahibuddin, Timbalan Naib Canselor (Hal Ehwal Pelajar dan Akademik), Universiti Teknologi Malaysia (UTM) Merangkap Pengerusi Majlis Debat Universiti Malaysia (MADUM).

The 28<sup>th</sup> Annual Environmental Debate Competition among Higher Educational Institutions (HEIs) was held at Universiti Malaysia Sabah (UMS) from 25<sup>th</sup> to 27<sup>th</sup> August 2022, in conjunction with the celebration of National Environmental Day (HASN) 2022. Various environmental awareness programs were organized alongside the debates to encourage students and the public to foster a deeper love for the environment. These included sustainable exhibitions and the Friends of the Environment Programme (RAS), held at the foot of Mount Kinabalu in Kundasang.

The final round of the competition took place on 27<sup>th</sup> August 2022, at the Recital Hall of UMS, where the teams from the International Islamic University Malaysia (IIUM) and the host team, Universiti Malaysia Sabah (UMS), faced off. The opening ceremony and prize presentation were graced by the Deputy Secretary General (Environment), Ministry of Environment and Water (KASA), Yang Berusaha Puan Noor Afifah binti Abdul Razak, who read the opening speech text by the Honorable Minister of Environment and Water, accompanied by Yang Berusaha Encik Wan Abdul Latiff bin Wan Jaffar, the Director General of Environmental Affairs, and witnessed by Yang Berbahagia Prof. Madya Dr. Raman Noordin, Deputy Vice-Chancellor (Student & Alumni Affairs) of UMS, and Yang Berbahagia Prof. Dr. Shamsul bin Sahibuddin, Deputy Vice-Chancellor (Student and Academic Affairs) of Universiti Teknologi Malaysia (UTM), who also serves as the Chairman of the Malaysian University Debating Council (MADUM).

Jadual 7.2 : Senarai Pemenang Pertandingan Debat Alam Sekitar Antara IPT Tahun 2022  
Table 7.2 : The List of Winners for the Environmental Debate Competition among Higher Educational Institutions (HEIs) 2022

KATEGORI / CATOGORY	NAMA PESERTA / PARTICIPANT NAME	PASUKAN / TEAM
Johan / Winner	a) Muhammad Ilham Hafiz bin Azmi b) Muhammad Wafi Anwar bin Roslan c) Anis Afilna binti Hassan Sanusi d) Muhammad Aniq Qawiem bin Mohd Sazaly	UIAM
Naib Johan / Runner Up	a) Nur Fatehah binti Nordi@Nordie b) Mohamad Fazli bin Losimin c) Nelson Anak Robert d) Muhammad Idris bin Mohd Hairie	UMS
Separuh Akhir / Semifinal	a) Nurzannah binti Ahmad b) Muhammad Amirul Izwan bin Ismail c) Muhammad Nadjwan bin Mohd Mayan d) Sufiatul Farzana binti Rashidi	UM
Separuh Akhir / Semifinal	a) Muhammad Isyraq Husaini bin Muliadi b) Salman Hariz bin Mohamad Kusnin c) Muhammad Najmie bin Abdullah d) Najmi Adli bin Mustaffa	USIM
Pendebat Terbaik Akhir / Final Best Debater	Muhammad Wafi Anwar bin Roslan	UIAM
Pendebat Terbaik Liga / League Best Debater	Abdullah bin Nudin	USM

Johan bagi Pertandingan Debat Alam Sekitar antara IPT akan membawa pulang wang tunai berjumlah RM8,000.00 berserta sijil penyertaan, piala iringan dan Piala Pusingan Menteri MESTECC. Manakala bagi naib johan pula menerima wang tunai berjumlah RM5,000.00 berserta piala iringan dan sijil penyertaan dan bagi dua pasukan pencapaian separuh akhir menerima wang tunai RM1,500.00, plak dan sijil penyertaan. Bagi pendebat terbaik peringkat akhir akan menerima wang tunai RM1,500, plak dan sijil penyertaan. Manakala bagi pendebat terbaik liga akan menerima wang tunai RM1,000.00, plak dan sijil penyertaan. Senarai nama pemenang-pemenang adalah seperti **Jadual 7.2**.

The champion of the Environmental Debate Competition among HEIs will take home a cash prize of RM8,000.00 along with participation certificates, an accompanying trophy, and the Minister of MESTECC Round Trophy. The runner-up will receive a cash prize of RM5,000.00, an accompanying trophy, and participation certificates. Two semi-finalist teams will be awarded RM1,500.00 in cash, plaques, and participation certificates. The Best Debater of the final round will receive a cash prize of RM1,500, a plaque, and a participation certificate. Additionally, the Best Debater of the league will be awarded RM1,000.00 in cash, a plaque, and a participation certificate. The list of winners' names can be found in **Table 7.2**.



Perarakan Masuk Piala Pusingan Pertandingan Debat Alam Sekitar antara Institusi Pendidikan Tinggi (IPT) Kali ke-28

The Entrance Procession of the Round Trophy for the 28<sup>th</sup> Annual Environmental Debate Competition among Higher Educational Institutions (HEIs)



Pertandingan Akhir Debat Alam Sekitar antara IPT di antara Pasukan Universiti Islam Antarabangsa Malaysia (UIAM) dan Universiti Malaysia Sabah (UMS)

The Finals of the Environmental Debate Competition among Higher Educational Institutions (HEIs) between International Islamic University Malaysia (IIUM) and the University of Technology, Mara (UiTM)



Johan Pertandingan Debat Alam Sekitar antara Institusi Pendidikan Tinggi (IPT) kali ke-28

The Champion of the 28<sup>th</sup> Annual Environmental Debate Competition among Higher Educational Institutions (HEIs)



Naib Johan Pertandingan Debat Alam Sekitar antara Institusi Pendidikan Tinggi (IPT) kali ke-28

The Runner-Up of the 28<sup>th</sup> Annual Environmental Debate Competition among Higher Educational Institutions (HEIs)



Finalis Pertandingan Debat Alam Sekitar antara Institusi Pendidikan Tinggi (IPT) kali ke-28  
The Finalists of the 28<sup>th</sup> Annual Environmental Debate Competition among Higher Educational Institutions (HEIs)

## KAJIAN PEMBANGUNAN GARIS PANDUAN DAN MODUL PEMBENTUKAN KAMPUS LESTARI - ANUGERAH ALAM SEKITAR DI MALAYSIA, JABATAN ALAM SEKITAR (JAS)

### Latar Belakang Pembentukan Kampus Lestari

Kampus Lestari – Anugerah Alam Sekitar adalah usaha Jabatan Alam Sekitar Malaysia dalam membudayakan amalan kelestarian dalam persekitaran Institusi Pendidikan Tinggi (IPT) melalui pemerksaan peranan warga kampus dalam mempertingkatkan impak pembangunan mampan yang konsisten.

Kampus Lestari - Anugerah Alam Sekitar adalah inisiatif Jabatan Alam Sekitar Malaysia, setelah satu kertas kerja berkaitan penilaian *Green Campus* bagi IPT telah dibentangkan dalam Mesyuarat Kumpulan Kerja ASEAN dalam Pendidikan Alam Sekitar (AWGEE) pada bulan Jun 2019 di Brunei Darussalam oleh Bahagian Alam Sekitar dan Perubahan Iklim, Kementerian Tenaga, Sains, Teknologi, Alam Sekitar.

## STUDY IN THE DEVELOPMENT OF GUIDELINES AND FORMATION MODULE OF THE SUSTAINABLE CAMPUS - ENVIRONMENTAL AWARD IN MALAYSIA, DEPARTMENT OF ENVIRONMENT (DOE)

### Background of Sustainable Campus Formation

The Sustainable Campus - Environmental Award is an initiative by the Malaysian Department of Environment (DOE) to cultivate sustainability practices within the environment of Higher Educational Institutions (HEIs). This is achieved through empowering campus community members to enhance the consistent impact of sustainable development.

The Sustainable Campus - Environmental Award is a follow-up effort to a paper on the assessment of *Green Campus(es)* in HEIs, presented at the ASEAN Working Group on Environmental Education (AWGEE) Meeting in June 2019 in Brunei Darussalam. The presentation was made by the Department of Environment and Climate Change, Ministry of Energy, Science, Technology, Environment, and Climate Change.

Justeru itu, kesinambungan daripada AWGEE dan program Sekolah Lestari - Anugerah Alam Sekitar yang sedia telah membawa kepada pengenalan program kampus lestari di peringkat IPT. Ini kerana mahasiswa dan mahasiswi memainkan peranan yang besar dalam usaha memastikan pengurusan dan pembudayaan alam sekitar yang lestari khususnya di peringkat kampus.

Malah, strategi hijau pertama dalam Dasar Alam Sekitar Negara memfokuskan aspek pendidikan dan kesedaran yang memberi kefahaman tentang konsep kesejahteraan alam sekitar dan pembangunan lestari yang selaras dengan prinsip-prinsip Pembangunan Lestari dan seterusnya bagi mendokong Matlamat Pembangunan Lestari (SDGs) 2030.

Selain itu, Teras ke-4, RMKe-12 memfokuskan kepada pertumbuhan hijau bagi meningkatkan kemampuan dan daya saing di mana kerajaan telah meluluskan peruntukan bagi RP1 2021 menerusi Projek Pemerkaasaan & Pembudayaan Komunikasi, Pendidikan dan Kesedaran Alam Sekitar. Secara ringkasnya, Kampus Lestari – Anugerah Alam Sekitar merupakan langkah baharu yang menyokong dan mendukung pembudayaan lestari di peringkat IPT di Malaysia.

### Matlamat Program Kampus Lestari

Kampus Lestari - Anugerah Alam Sekitar adalah satu usaha dalam memberi pengiktirafan kepada IPT untuk membudayakan kesejahteraan komuniti, kesihatan ekosistem dan keseimbangan antara alam bina dan alam semulajadi yang ideal untuk persekitaran pembelajaran, bekerja dan kediaman yang dihargai oleh warga kampus.

### Objektif Kampus Lestari

- Mengukuhkan pengurusan persekitaran kampus melalui keseimbangan pengurusan sumber alam semulajadi dan pembangunan alam bina;
- Menggalakkan keterlibatan warga kampus melalui gaya hidup dalam aktiviti alam sekitar dan kelestarian bersama masyarakat setempat dan antarabangsa bagi mengukuhkan hubungan warga kampus bersama masyarakat;
- Membentuk masyarakat lestari di kampus ke arah pembangunan lestari; dan
- Mempertingkatkan amalan tadbir urus dan pengurusan kelestarian dalam sistem pembelajaran, penyelidikan dan perkhidmatan di dalam kampus.

### Pelaksanaan dan Status Kajian

UPM Consultancy & Services Sdn. Bhd. telah dilantikan oleh Jabatan Alam Sekitar bagi melaksanakan Kajian Pembangunan Garis Panduan

As a result, the continuation of AWGEE and the existing Sustainable School - Environmental Award programme led to the introduction of the sustainable campus programme at the HEI level. This is because students play a significant role in ensuring sustainable environmental management and culture, particularly within the campus setting.

Furthermore, the first green strategy in the National Environmental Policy focuses on education and awareness aspects that provide an understanding of environmental well-being and sustainable development concepts aligned with Sustainable Development Principles and, subsequently, in support of the 2030 Sustainable Development Goals (SDGs).

Additionally, Core Strategy 4 of the RMKe-12 focuses on green growth to enhance sustainability and competitiveness. The government has allocated funds for the Empowerment and Promotion of Environmental Communication, Education, and Awareness Project through the 1st Rolling Plan (RP1) 2021. In summary, the Sustainable Campus - Environmental Award is a new step that supports and fosters sustainability at the HEI level in Malaysia.

### Objectives of the Sustainable Campus Programme

The Sustainable Campus - Environmental Award aims to recognise HEIs for cultivating community well-being, ecosystem health, and the balance between built and natural environments ideal for valued campus learning, working, and residential environments.

### Objectives of the Sustainable Campus Programme

- Strengthen campus environmental management through a balance between natural resource management and built environment development;
- Encourage campus community involvement in environmental activities and conservation alongside local and international communities to strengthen the relationship between campus communities and society;
- Form a sustainable campus community towards sustainable development; and
- Enhance sustainable governance and management practices in learning, research, and services within the campus.

### Implementation and Study Status

UPM Consultancy & Services Sdn. Bhd. was appointed by the Department of Environment to conduct the Study in the Development of Guidelines

dan Pembentukan Kampus Lestari – Anugerah Alam Sekitar yang telah pun bermula pada tahun 2021.

Kajian ini selesai dilaksanakan pada September 2022. Melalui kajian ini, beberapa *output* dan *outcome* telah dihasilkan antaranya seperti berikut:

- i. Laporan Akhir Kajian;
- ii. Garis Panduan Kampus Lestari - Anugerah Alam Sekitar;
- iii. Manual Penilaian Kampus Lestari- Anugerah Alam Sekitar; dan
- iv. Laporan Kebolehlaksanaan dan Kebolehgunaan Kampus Lestari - Anugerah Alam Sekitar.

JAS masih dalam peringkat mengatur perbincangan dan penyelarasan Kampus Lestari bersama pemegang taruh yang berkaitan dalam menghasilkan sesuatu input yang positif bagi membantu JAS membuat keputusan mengenai kebolehlaksanaan Kampus Lestari ini bagi memastikan Program Kampus Lestari - Anugerah Alam Sekitar dapat direalisasikan dengan jayanya di negara ini.

and Formation Module of the Sustainable Campus - Environmental Award, which commenced in 2021.

The study was completed in September 2022. Several outputs and outcomes have been produced through this study, including:

- i. The Final Study Report;
- ii. The Sustainable Campus - Environmental Award Guidelines;
- iii. The Assessment Manual for Sustainable Campus - Environmental Award; and
- iv. The Feasibility and Usability Report for the Sustainable Campus - Environmental Award.

DOE is currently in the process of organising discussions and aligning the Sustainable Campus with relevant stakeholders to generate positive input that will aid in decision-making regarding the feasibility of this initiative, ensuring the successful realisation of the Sustainable Campus - Environmental Award programme in the country.



Dokumen-dokumen *Output* dan *Outcome* telah Dihasilkan Melalui Kajian ini  
The Output and Outcome Documents that have been Generated Through this Study



Mesyuarat Jawatankuasa Pemandu Kajian yang Dipengerusikan oleh Timbalan Ketua Pengarah (Pembangunan) JAS

The Meeting of the Steering Committee for the Study Chaired by the Deputy Director General (Development) of the DOE



Ahli Pasukan Kajian daripada UPM Consultancy & Services Sdn Bhd  
Members of the Study Team from UPM Consultancy & Services Sdn Bhd



Pelaksanaan Kajian di Lapangan Melalui Kaedah Lawatan Tapak dan Pengumpulan Maklumat  
The Field Study was Conducted Through Site Visits and Data Collection Methods



### SPEECH & PERSUASION TRAINING UNTUK PEGAWAI JABATAN ALAM SEKITAR (JAS)

Institut Alam Sekitar Malaysia (EiMAS) telah mengadakan Latihan Pengucapan dan Pujukan pada 14 hingga 15 September 2022 untuk pegawai JAS. Latihan ini adalah anjuran Bahagian Komunikasi Strategik, JAS dengan pematuhan kepada SOP MKN yang telah ditetapkan. Latihan disasarkan kepada pegawai-pegawai JAS yang terlibat dalam penugasan rasmi berkaitan mesyuarat dan perundingan samada di dalam mahupun keperluan menghadiri mesyuarat di luar negara.

### SPEECH & PERSUASION TRAINING FOR OFFICERS OF THE DEPARTMENT OF ENVIRONMENT (DOE)

The Environment Institute of Malaysia (EiMAS) has conducted a training on Speech & Persuasion Training for DOE Officers on the 14<sup>th</sup> and 15<sup>th</sup> February 2022. This training was organised by the Strategic Communication Division of the Department of Environment (DOE) in compliance with the established National Security Council's Standard Operating Procedures (SOP). The training was aimed at DOE officers involved in official assignments related to meetings and negotiations, whether domestically or for the purpose of attending international meetings.

Antara objektif latihan adalah untuk memberi pengetahuan praktikal mengenai pengucapan dan pujukan (persuasion) yang bermanfaat dalam melaksanakan tugas sebagai Pegawai JAS, terutamanya dalam konteks pengucapan awam dan penglibatan profesional. Peserta jua diberikan pengetahuan berkaitan petua (Tips) dan cara (tricks) dalam pengucapan awam. Penyedia Latihan adalah Malaysian Institute for Debate and Public Speaking (MIDP). MIDP adalah Rakan Strategik JAS dalam pelaksanaan Program Pertandingan Debat Alam Sekitar Antara Institusi Pendidikan Tinggi (IPT) Kali Ke-27 Tahun 2021.

The objective of this training was to provide practical knowledge on speech and persuasion techniques that would be beneficial in carrying out duties as DOE Officers, particularly within the contexts of public speaking and professional engagement. Participants were also provided with tips and tricks related to public speaking. The training was conducted by the Malaysian Institute for Debate and Public Speaking (MIDP), which is a Strategic Partner of DOE in the implementation of the 27<sup>th</sup> Annual Environmental Debate Competition among Higher Educational Institutions (HEIs) in 2021.



Latihan yang Dijalankan di Institut Alam Sekitar Malaysia (EiMAS)  
the Training Conducted at the Environment Institute of Malaysia (EiMAS)



Pemenang Pertandingan Pengucapan  
Awam di dalam Latihan yang  
Dijalankan  
The Winner of the Public Speaking  
Competition during the Training



Urus Setia dan Peserta Latihan yang Terlibat  
Secretariat and Participants Involved in the Training

## 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 memperoleh 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 2022, pencalonan bagi ALKAS sesi 2022/2023 telah dibuka pada 1 Februari 2022 sehingga 30 November 2022. Calon-calon yang berkecualan akan dinilai pada tahun 2023 dan majlis penganugerahan ALKAS akan diadakan sempena Hari Alam Sekitar Negara 2023. Pada masa yang sama, promosi ALKAS kerap dijalankan sepanjang tahun 2022 melalui laman media sosial JAS.

## 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. ALAKS was started in 1991 and the recipients were awarded a certificate of recognition from His Majesty Yang Di-Pertuan Agong, a plaque of appreciation from the Honorable Minister and RM10,000 in cash.

In 2022, nominations for the ALKAS session 2022/2023 was opened from 1<sup>st</sup> February 2022 until 30<sup>th</sup> November 2022. Qualified candidates will be evaluated in 2023 and the awarding ceremony of ALKAS will be held in conjunction with National Environment Day 2023. At the same time, the promotion of ALKAS was regularly conducted throughout the year 2022 through DOE social media pages.



Sijil Penerima ALKAS  
ALKAS Recipient Certificate

Sebuah buku berkaitan ALKAS diterbitkan oleh JAS pada tahun 2022 bertajuk “Memoir Anugerah Langkawi – Kelestarian Alam Sekitar” yang menghimpunkan seramai 24 penerima ALKAS (20 penerima individu dan 4 penerima organisasi) di dalam buku tersebut. Buku tersebut menceritakan sumbangan individu dan organisasi di dalam usaha melestarikan alam sekitar dan bagaimana penerima tersebut mencapai tahap yang tertinggi di dalam penganugerahan berprestij ini.

### 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 platform ketiga-tiga hari ini untuk mempromosi dan menganjurkan pelbagai program kesedaran dalam usaha melestarikan alam sekitar kepada orang awam. **Jadual 7.3** merupakan tarikh dan tema sambutan hari bertemakan alam sekitar pada tahun 2022.

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 iaitu program dijalankan secara dalam talian dan fizikal. Pelaksanaan secara hibrid ini membantu penyebaran secara meluas aktiviti yang dijalankan dengan penggunaan platform 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 elektrik dan elektronik dan lain-lain lagi. Jangkauan menyeluruh kepada ketiga-tiga program tersebut mencecah 1 juta berikutan aktiviti yang dijalankan adalah meliputi seluruh negara.

A book related to ALKAS was published by DOE in 2022 entitled “Memoir Anugerah Langkawi - Environmental Sustainability” which brought together a total of 24 ALKAS recipients (20 individual recipients and 4 organisation recipients) in the book. The book tells the contribution of individuals and organisations in the effort to preserve the environment and how the recipient reached the highest level in this prestigious award.

### 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 programs to promote environmental preservation to the public. **Table 7.3** is the date and theme for the environment-themed day celebration in 2022.

These celebrations aim 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 has been done, i.e. the program is conducted online and physically. This hybrid implementation helps the widespread dissemination of activities carried out with the use of DOE social media platforms.

Among the programs carried out throughout the environment-themed celebration are webinar sessions related to the environment, green cycling, tree planting, giving reusable plastic bags, collecting electrical and electronic waste and others. The overall reach of the three programs reached 1 million following the activities carried out covering the entire country.

Jadual 7.3 : Tarikh dan Tema Sambutan Bertemakan Alam Sekitar 2023  
Table 7.3 : Dates and Themes of the 2023 Environment-themed Celebration

SAMBUTAN / CELEBRATION	TARIKH / DATES	TEMA / THEMES
Hari Bumi / <a href="#">Earth Day</a>	22 April 2022 <a href="#">22<sup>nd</sup> April 2022</a>	Melabur di Planet Kita / <a href="#">Invest in Our Planet</a>
Hari Alam Sekitar Sedunia / <a href="#">World Environment Day</a>	5 Jun 2022 <a href="#">5<sup>th</sup> June 2022</a>	Hanya Satu Bumi / <a href="#">Only One Earth</a>
Hari Alam Sekitar Negara / <a href="#">National Environment Day</a>	21 Oktober 2023 <a href="#">21<sup>st</sup> October 2023</a>	Alam Sekitar Tanggungjawab Bersama / <a href="#">Environment, Our Shared Responsibility</a>

## PROGRAM RAKAN ALAM SEKITAR (RAS)

Program Rakan Alam Sekitar (RAS) telah berevolusi sejak dilancarkan pada 4 Jun 2009. Terkini, program ini telah dikembangkan kepada RAS 2.0 mengikut kluster seperti berikut:

- Kluster RAS Kampus/IPT;
- Kluster RAS Sekolah;
- Kluster RAS Komuniti;
- Kluster RAS Industri; dan
- Kluster RAS Agensi.

Keahlian RAS telah mencecah seramai 169, 162 ahli. Sepanjang tahun pelbagai aktiviti pembudayaan gaya hidup lestari telah dilaksanakan dengan kerjasama setiap Jabatan Alam Sekitar negeri bagi meningkatkan kesedaran dan komitmen setiap ahli RAS dalam memastikan kelestarian alam sekitar di Malaysia menjadi keutamaan dalam pelaksanaan aktiviti harian.

## PAMERAN ALAM SEKITAR

Pameran merupakan salah satu platform yang digunakan dalam menyampaikan informasi kepada masyarakat awam. Sepanjang tahun 2022, Ibu Pejabat JAS telah menyertai sebanyak sebelas (11) pameran bertemakan alam sekitar yang dianjurkan oleh JAS dan jemputan yang diterima daripada rakan strategik dan agensi lain.

## FRIENDS OF THE ENVIRONMENT (RAS) PROGRAMME

The RAS programme has evolved since it was launched on 4<sup>th</sup> June 2009. Recently, the programme has developed into RAS 2.0 according to the following clusters:

- RAS Campus/IPT Cluster;
- RAS School Cluster;
- RAS Community Cluster;
- RAS Industrial Cluster; and
- RAS Agency Cluster.

RAS membership has reached a total of 169, 162. Throughout the year, various cultural sustainable lifestyle activities were implemented in collaboration with each state Department of Environment to increase the awareness and commitment of each RAS member in ensuring that environmental sustainability in Malaysia becomes a priority in the implementation of daily activities.

## ENVIRONMENTAL EXHIBITIONS

Exhibitions are one of the platforms used to convey information to the public. In 2022, the DOE Headquarters participated in eleven (11) Environmental Exhibitions organised by DOE and invitations received from other strategic partners and agencies.



Aktiviti Enviro Hiking di Bukit Melati, Nilai, Negeri Sembilan  
Enviro Hiking Activities at Bukit Melati, Nilai, Negeri Sembilan



Aktiviti KUDAH (Kutip Sampah Sambil Riadah) bersama YTL Cement di Sungai Congkak Park and Resort, Hulu Langat, Selangor

KUDAH Activity (Picking Up Trash At Leisure) with YTL Cement at Sungai Congkak Park and Resort, Hulu Langat, Selangor



Kempen Hindari Plastik Sekali Guna di Presint 3, Putrajaya

Avoid Single Use Plastic Campaign in Precinct 3, Putrajaya



Aktiviti Beach Clean Up di Persisiran Pantai Port Dickson

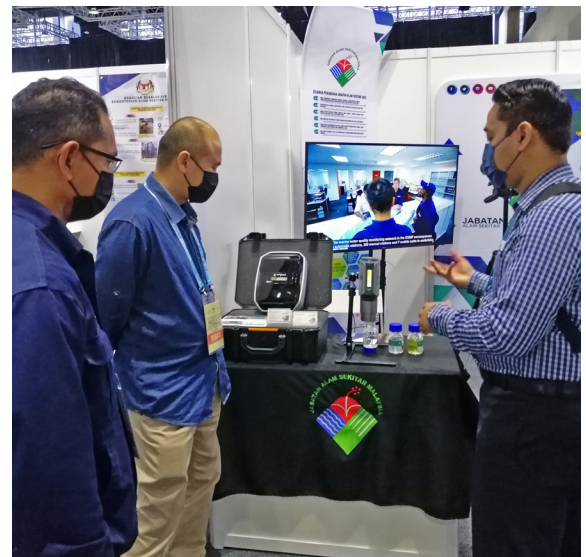
Beach Clean Up Activities at Port Dickson Beach



Program CSR Rakan Alam Sekitar bersama Rakan Strategik, Petronas Berhad di Zoo Negara Malaysia  
Environmental Partner CSR Program with Strategic Partner, Petronas Berhad at Zoo Negara Malaysia



Program Jom Kayuh, Enviro- Cycling bersama Rakan Alam Sekitar di Sekitar Tasik Putrajaya  
Jom Kayuh, Enviro-Cycling Program with Friends of Environment around Lake Putrajaya



Pameran sempena Persidangan dan Pameran Inovasi Air Kebangsaan (NWICE) 2022  
Exhibition in Conjunction with the National Water Innovation Conference and Exhibition (NWICE) 2022



Pameran Sempena Program Malam Puisi Alam Sekitar di Presint 3, Putrajaya  
Exhibition in Conjunction with the Environmental Poetry Night Program at Precinct 3, Putrajaya

### **BENKEL PEMURNIAN KANDUNGAN BUKU “TOGETHER, PROTECTING THE ENVIRONMENT: SYNERGIZING STEWARDSHIP AND COMMITMENT”**

Bengkel Pemurnian Kandungan Buku “Together, Protecting the Environment: Synergizing Stewardship and Commitment” telah dianjurkan oleh Bahagian Komunikasi Strategik, Jabatan Alam Sekitar dengan kerjasama Syarikat PSTW Sdn. Bhd. dari 10 hingga 12 Jun 2022 di Hotel Corus Paradise, Port Dickson. Penerbitan buku ini adalah selaras dengan Hasrat JAS dalam mengarusperdanakan agenda alam sekitar melalui penerbitan buku ilmiah berkaitan alam sekitar selaras dengan Matlamat Pembangunan Lestari menjelang 2030.

Bengkel ini telah dirasmikan oleh YBrs. Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Pembangunan) JAS dan telah dihadiri oleh penulis-penulis luar Jabatan yang merupakan pakar bidang serta penulis-penulis JAS yang telah dilantik sebagai penulis (*author*) dan penulis bersama (*co-author*).

Objektif utama bengkel ini dianjurkan adalah bagi menambahbaik kandungan draf penulisan yang telah dikemukakan oleh penulis kepada urusetia Jabatan di mana semua penulis membentangkan ringkasan bab masing-masing dan diulas oleh penulis-penulis bab lain dan juga editor. Ini adalah penting untuk memastikan maklumat-maklumat yang disampaikan adalah tepat dan terkini serta selari dengan matlamat dan aspirasi JAS.

Buku “Together, Protecting the Environment: Synergizing Stewardship and Commitment” ini diterbitkan bagi menyampaikan usaha-usaha JAS berkaitan Pengurusan Alam Sekitar secara holistik yang meliputi udara, air sungai, marin dan air tanah.

### **WORKSHOP ON HARMONISING THE CONTENTS OF THE BOOK “TOGETHER, PROTECTING THE ENVIRONMENT: SYNERGIZING STEWARDSHIP AND COMMITMENT” .**

The Workshop on Harmonizing the Contents of “Together, Protecting the Environment: Synergizing Stewardship and Commitment” Book was organized by the Strategic Communications Division, Department of Environment in collaboration with Syarikat Pakar Scieno TW Sdn. Bhd from 10<sup>th</sup> to 12<sup>th</sup> June 2022 at Corus Paradise Hotel, Port Dickson. The publication of this book is part of the Department’s efforts in mainstreaming the environmental agenda in line with the Sustainable Development Goals 2030.

This workshop was officiated by Dr. Norhazni binti Mat Sari, Deputy Director General (Development) and was participated by internal and external writers who were appointed as authors and co-authors who are experts in their field.

The main objective of this workshop was to improve and harmonise the contents of the writing manuscripts which had been submitted by the authors. The writers presented a brief summary of their respective chapters for editors to comment and to propose improvements and recommendations. It aims to ensure that the information presented is accurate and up-to-date and in line with the goals and aspirations of DOE.

This book was published with the aim of conveying DOE’s efforts related to environmental management in a holistic manner that covers air, river water, marine and groundwater.



Bengkel yang Diadakan pada 10 hingga 12 Jun 2022 di Hotel Corus Paradise, Port Dickson  
 Workshop Held from 10<sup>th</sup> to 12<sup>th</sup> June 2022 at Corus Paradise Hotel, Port Dickson

JAS telah mengorak langkah bagi meningkatkan lagi penerbitan berbentuk ilmiah pada tahun ini dengan tujuan untuk:

- i. menyampaikan kejayaan JAS dalam menangani isu alam sekitar;
- ii. menggalakkan budaya menulis di kalangan pegawai JAS;
- iii. menyediakan platform bagi pegawai-pegawai JAS yang berpengalaman berkongsi pengetahuan melalui penulisan;
- iv. menambahkan penerbitan buku-buku dalam bidang alam sekitar; dan
- v. menambahkan bilangan pemetikan oleh orang awam terutamanya para penyelidik dan ahli akademik terhadap penerbitan-penerbitan JAS.

DOE has taken steps to increase its scientific publications with the aim to:

- i. Communicate DOE's success in dealing with environmental issues;
- ii. Promote a culture of scientific writing among DOE officers;
- iii. Provide a platform for experienced DOE officers to share knowledge through writing;
- iv. Increase the publication of books in the environmental management field; and
- v. Increase the number of citations of DOE publications by the public, especially researchers and academia

### **BENKEL MEMBINA PENULIS JABATAN ALAM SEKITAR (JAS) BAGI KERJASAMA PENERBITAN ILMIAH JAS DAN DEWAN BAHASA DAN PUSTAKA (DBP)**

Jabatan Alam Sekitar (JAS) adalah dalam usaha meningkatkan penerbitan buku ilmiah Jabatan terutamanya dalam bidang alam sekitar bertujuan untuk menyampaikan usaha dan tindakan JAS dalam menangani isu alam sekitar, menggalakkan budaya menulis di kalangan pegawai JAS selain menyediakan platform bagi pegawai-pegawai JAS yang berpengalaman berkongsi pengetahuan melalui penulisan.

Susulan itu, satu Bengkel Membina Penulis JAS bagi kerjasama penerbitan ilmiah JAS dan Dewan Bahasa dan Pustaka (DBP) telah dianjurkan oleh Bahagian Komunikasi Strategik, JAS dari 13 hingga 15 September 2022 di Hotel Swiss Garden, Bukit Bintang, Kuala Lumpur.

Bengkel ini bertujuan untuk membimbing pegawai-pegawai JAS dalam menghasilkan manuskrip yang terancang, bermutu serta memenuhi skop penerbitan DBP. Selain itu, jalinan kerjasama penerbitan buku ini diharapkan dapat mengenengahkan buku-buku terbitan JAS yang dapat dimanfaatkan oleh masyarakat umum amnya.

Bengkel yang dihadiri oleh pegawai-pegawai JAS dari Bahagian Ibu Pejabat, JAS Negeri dan EiMAS ini telah dirasmikan oleh YBrs. Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Pembangunan) JAS. Turut hadir pada bengkel tersebut adalah Encik M. Azhari bin Edin, Ketua Editor Bahagian Buku Umum dan pegawai-pegawai DBP yang hadir yang terdiri daripada Encik Armin Azhari bin Saleh, Puan Norhanifah binti Mohamed, Puan Suzana binti Ibrahim, Puan Siti Mariam binti Othman, Puan Norfaranieza binti Ariffin, Puan Huzna Sait dan Puan Munirah binti Ghazali. Ahli bengkel telah mendapat bimbingan daripada pegawai-pegawai DBP yang jua bertindak sebagai fasilitator.

Bengkel yang julung-julung kali diadakan ini telah mencapai objektif yang disasarkan di mana pegawai-pegawai yang hadir telah memberikan komitmen yang tinggi dalam menyediakan kerangka penulisan bagi buku pengurusan alam sekitar yang akan diterbitkan pada tahun 2023 yang akan datang.

### **WORKSHOP ON DEVELOPMENT OF DEPARTMENT OF ENVIRONMENT (DOE) WRITERS FOR SCIENTIFIC PUBLICATION IN COLLABORATION WITH DEWAN BAHASA DAN PUSTAKA (DBP)**

The Department of the Environment (DOE) has planned to increase its scientific publication, especially in the environmental management field. The aim is to convey the efforts and actions taken by DOE in dealing with environmental issues, encouraging the writing culture among DOE officers as well as providing a platform for experienced DOE officers to share knowledge through writing.

For these reasons, a Workshop on Development of Department of Environment Writers for Scientific Publication in Collaboration with Dewan Bahasa dan Pustaka (DBP) was organised by the Strategic Communication Division, DOE from 13<sup>th</sup> to 15<sup>th</sup> September 2022 at the Swiss Garden Hotel, Bukit Bintang, Kuala Lumpur.

The objective of this workshop was to guide DOE officers in producing a well-planned, high-quality manuscript that met the scope of DBP Publications. In addition, this book-publishing collaboration was expected to promote the books published by DOE which would benefit the general public.

The workshop was attended by DOE officers from Headquarters, State Offices and EiMAS. It was officiated by Dr. Norhazni binti Mat Sari, Deputy Director General (Development). Mr. M. Azhari bin Edin, The Chief Editor of the DBP General Books Division also attended the workshop. The DOE officers who participated were guided by the DBP speakers and facilitators, consisting of En. Armin Azhari bin Saleh Pn. Norhanifah binti Mohamed, Pn. Suzana binti Ibrahim, Pn. Siti Mariam binti Othman, Pn. Norfaranieza binti Ariffin, Pn. Huzna Sait and Pn. Munirah binti Ghazali.

The participants gave their highest commitment in preparing the writing framework for the environmental management book which will be published in 2023.



Bengkel yang telah Dijalankan di Hotel Swis Garden, Bukit Bintang pada 13 - 15 September 2022  
 Workshop Held at Swis Garden Hotel, Bukit Bintang on 13<sup>th</sup> - 15<sup>th</sup> September 2022

## BENKEL PEMURNIAN KANDUNGAN LAPORAN KUALITI ALAM SEKELILING (EQR) 2021 DAN LAPORAN TAHUNAN JAS 2021

Bengkel Pemurnian Kandungan Laporan Kualiti Alam Sekeliling (EQR) 2021 dan Laporan Tahunan JAS 2021 telah dianjurkan oleh Bahagian Komunikasi Strategik, Jabatan Alam Sekitar (JAS) pada 21 hingga 23 Jun 2022 di Thistle Port Dickson Resort, Port Dickson.

Penerbitan Laporan EQR ini adalah bagi memenuhi keperluan Seksyen 3(1)(i) Akta Kualiti Alam Sekeliling 1974. Manakala 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.

## WORKSHOP ON HARMONISING THE CONTENT OF ENVIRONMENTAL QUALITY REPORT (EQR) 2021 AND DOE ANNUAL REPORT 2021

The Workshop on Harmonizing the Content of Environmental Quality Report (EQR) 2021 and DOE Annual Report 2021 was organised by the Strategic Communications Division, Department of Environment from 21<sup>st</sup> to 23<sup>rd</sup> June 2022 at Thistle Port Dickson Resort, Port Dickson.

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 to show its commitment in providing the best service to the nation.



Peserta-Peserta Bengkel Pemurnian Kandungan Laporan Kualiti Alam Sekeliling (EQR) 2021 dan Laporan Tahunan JAS 2021

Workshop Participant on Harmonising the Content of Environmental Quality Report (EQR) 2021 and DOE Annual Report 2021

Bengkel telah dihadiri oleh pegawai-pegawai kanan JAS dari semua Bahagian Ibu Pejabat JAS dan telah dirasmikan oleh YBrs. Dr. Norhazni binti Mat Sari, Timbalan Ketua Pengarah (Pembangunan) JAS. Objektif utama bengkel ini dianjurkan adalah bagi menyemak dan memastikan draf laporan yang dikemukakan oleh semua Bahagian Ibu Pejabat telah menepati kehendak pengurusan tertinggi Jabatan dan sempurna bagi tujuan percetakan oleh syarikat percetakan yang dilantik.

The workshop was attended by senior DOE officers from various divisions in the Headquarters. It was officiated by Dr. Norhazni binti Mat Sari, Deputy Director General (Development). The main objective of this workshop was to verify and proofread the drafts of reports submitted by all divisions under Operation and Development Sectors in order to eliminate any error and mistakes in reporting prior to printing.



Aktiviti-aktiviti yang Dijalankan Semasa Bengkel  
Activities Carried During the Workshop

Output daripada bengkel ini adalah satu set lengkap Laporan Kualiti Alam Sekeliling (EQR) 2021 dan Laporan Tahunan JAS 2021 yang akan melalui proses seterusnya penerbitan dan cetakan.

Bengkel yang julung-julung kali 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 melalui bengkel ini penerbitan Laporan Kualiti Alam Sekeliling (EQR) dan Laporan Tahunan JAS bagi tahun 2021 adalah lebih baik terutamanya dari segi kualiti.

### MEDIA DAN KOMUNIKASI KORPORAT

Perkongsian maklumat tanpa sempadan melalui platform media sosial dilihat sebagai satu perkara positif dalam proses penyampaian maklumat secara tuntas oleh Jabatan. Sehubungan itu Jabatan Alam Sekitar dalam tahun 2022 mengambil langkah proaktif dalam memperkasakan penggunaan platform ini berikutan fasa peralihan daripada pandemik COVID-19 yang menyebabkan masyarakat lebih cenderung kepada pencarian maklumat di media sosial.

JAS bagi tahun 2022 telah menaiktaraf video korporat Jabatan dalam usaha memastikan perkongsian maklumat terkini Jabatan dapat disampaikan kepada umum terutamanya melalui perkongsian yang lebih interaktif dalam penyampaian.

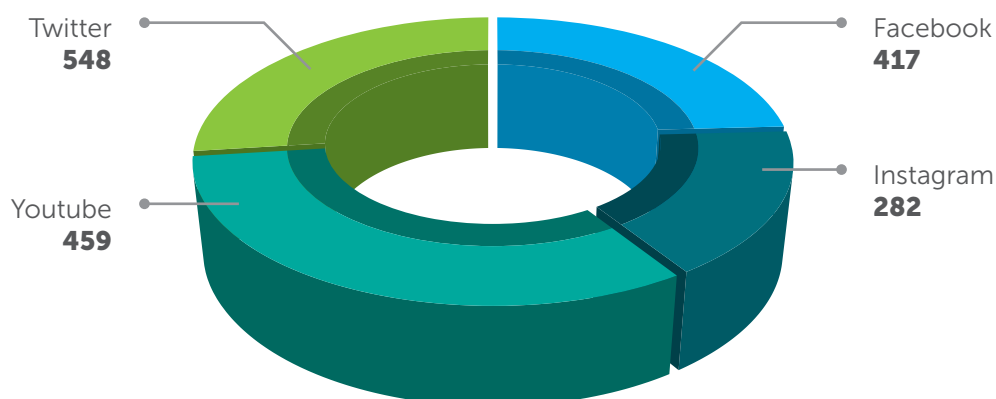
The output from this workshop is a complete set of the Environmental Quality Report (EQR) 2021 and the DOE Annual Report 2021 which have been vetted thoroughly .

This workshop which was held for the first time achieved the targeted objective in that the officers present gave their highest commitment and focus in carrying out the entrusted responsibilities and it is hoped that the quality of the Environmental Quality Report (EQR) and the DOE Annual Report for the year 2021 will be significantly improved.

### MEDIA AND CORPORATE COMMUNICATIONS

The sharing of information without borders through social media platforms is seen as a positive thing in the process of thorough information delivery by the Department. Accordingly, the Department of Environment in 2022 took proactive steps in empowering the use of this platform following the transition phase from the COVID-19 epidemic which caused the public to be more inclined to search for information on social media.

DOE for the year 2022 upgraded the Department's corporate video in an effort to ensure that the Department's latest information could be shared with the public, especially through more interactive sharing in its presentation.



Rajah 7.1 : Maklumat Berhubung JAS di Medium Facebook, Instagram, Twitter dan Youtube Jabatan  
 Figure 7.1 : Information About DOE in the Department's Facebook, Instagram, Twitter and Youtube

Seiring dengan penggunaan media sosial yang merupakan platform yang mempunyai ruang lingkup yang lebih luas dalam penyebaran maklumatnya JAS bagi tahun 2022 telah memuat naik secara aktif pelbagai maklumat berhubung JAS di medium Facebook, Instagram, Twitter dan Youtube Jabatan (**Rajah 7.1**).

Selain daripada itu JAS juga telah mengambil inisiatif dalam menarik perhatian umum melalui perkongsian yang lebih santai dan menarik dengan pelbagai perkongsian melalui infografik berhubung maklumat JAS. Dalam tempoh sepanjang tahun 2022 sebanyak 281 infografik telah dikongsikan kepada umum berhubung pelbagai perkara yang melibatkan fungsi dan peranan JAS yang merujuk kepada bidang kuasa di bawah Akta Kualiti Alam Sekeliling (AKAS) 1974. Dengan tagline “Alam Sekitar Tanggungjawab Bersama” pemerksaan maklumat berhubung perkara ini merupakan satu aspek yang amat penting dan menjadi tanggungjawab semua untuk disebarluaskan. JAS sebagaimana yang digariskan dibawah pelbagai pelan tindakan diantaranya seperti Rangka Tindakan (Blueprint) Ekonomi Digital Malaysia sentiasa memastikan perkongsian maklumat kerajaan yang dapat memberi nilai tambah kepada kelestarian pembangunan negara.

Penyediaan maklumat yang lebih interaktif merupakan satu indikator yang perlu dipenuhi dalam usaha memastikan setiap maklumat sampai kepada kumpulan sasar. Sehubungan itu JAS sentiasa mempertingkatkan penyampaian maklumat dengan cara pengemaskinian maklumat terkini Jabatan secara berkala di semua laman media sosial JAS. Peningkatan jumlah capaian (reach) bagi tahun 2022 adalah amat positif dengan keseluruhan pertambahan capaian mencatatkan peningkatan sebanyak 40% daripada tahun sebelumnya.

JAS juga mempelbagaikan penggunaan medium penyampaian maklumatnya melalui pelbagai platform sama ada secara digital atau tidak, JAS sentiasa menyalurkan maklumat berhubung isu yang melibatkan alam sekitar. Sebanyak 29 kenyataan media dan 52 hebahan di semua platform media massa telah dikeluarkan bagi tahun 2022 dalam usaha memastikan setiap isu dan perkara di bawah AKAS 1974 dapat dikongsi kepada umum.

Along with the use of social media which was the platform that had a wider scope in disseminating its information, DOE for the year 2022 actively uploaded various types of information related to DOE on the Department's Facebook, Instagram, Twitter and YouTube mediums (**Figure 7.1**).

Apart from that, DOE has also taken the initiative in attracting public attention through a more relaxed and interesting sharing through infographics regarding DOE information. During the entire year 2022, a total of 281 infographics were shared with the public regarding various matters involving the functions and roles of DOE that refer to jurisdiction under the Environmental Quality Act (EQA) 1974. With the tagline “Environment, Our Shared Responsibility” empowering information regarding this matter is a very important aspect and it is everyone's responsibility to disseminate it. DOE, as outlined under various action plans such as the Malaysian Digital Economy Blueprint, always ensures the sharing of government information that can add value to the sustainability of the country's development.

The provision of more interactive information is an indicator that needs to be fulfilled in an effort to ensure that every piece of information reaches the target group. Accordingly, DOE always improves the delivery of information by regularly updating the Department's latest information on all DOE social media sites. The increase in reach for the year 2022 is very positive with the overall increase recording of 40% from the previous year.

DOE is also diversifying its use of information delivery mediums through various platforms whether digitally or otherwise in an attempt to consistently channeling information regarding issues involving the environment. A total of 29 media statements and 52 announcements on all mass media platforms have been issued for the year 2022 in an effort to ensure that every issue and matter under AKAS 1974 can be shared with the public.



**Jabatan Alam Sekitar**  
13 Jun 2021

Keratan Akhbar bertarikh 13 Jun 2021  
<https://enviro2.doe.gov.my/ekmc>

**Lombong di Tasik Chini bukan dalam hutan simpan**

Kawasan pertambangan di sekitar Tasik Chini berada dalam zon hutan simpan adalah tidak benar. "Malah, ia akan diklasifikasi ke kawasan terhad sebagai kawasan hutan simpan pada 2025 dan zon hutan simpan akan ditubuhkan. Dan pada 11 kawasan pertambangan itu, hanya empat sahaja yang beroperasi. "Kita akan akan buat pada tahun hadapan ini, memastikan zona itu akan sesuai dengan zon hutan simpan," katanya.

Dari pernyataan Kementerian Alam Sekitar dan Perikanan (KAS) pada 11 Jun 2021, Menteri Alam Sekitar dan Perikanan, Datuk Seri Yeo Bee Bee, berkata kawasan pertambangan di Tasik Chini akan diklasifikasi sebagai kawasan hutan simpan pada 2025. Beliau berkata, kawasan pertambangan di Tasik Chini akan diklasifikasi sebagai kawasan hutan simpan pada 2025. Beliau berkata, kawasan pertambangan di Tasik Chini akan diklasifikasi sebagai kawasan hutan simpan pada 2025.

**Jabatan Alam Sekitar**  
22 Apr 2022

Keratan Akhbar Online 22 April 2022  
<https://harakahdaily.net/index.php/20...> See more

harakahdaily.net  
Tanggal 22 April ialah Hari Bumi sedunia

**Jabatan Alam Sekitar**  
22 Apr 2022

Keratan Akhbar Online 22 April 2022  
<https://www.utusan.com.my/nasional...> See more

utusan.com.my  
Pembangunan ekonomi tidak harus jejakkan alam sekitar - ...

**Jabatan Alam Sekitar**  
22 Apr 2022

Keratan Akhbar Online 22 April 2022  
<https://m.malaysiakini.com/news/618...> See more

malaysiakini.com  
Hari bumi: Segera pulihkan kerosakan alam - Tengku Hassanal

**Jabatan Alam Sekitar**  
26 Oct 2022

Keratan Akhbar Online 26 Oktober 2022

utusan.com.my  
54 projek di Pulau Pinang dikesan tidak patuh EIA

Ulangsiar Keratan Berkaitan Alam Sekitar di Laman Facebook JAS  
Repost Newspaper Clipping Relate to the Environment on JAS's Facebook Page

CHAPTER 8

# BAB 8

## PENGURUSAN TEKNOLOGI MAKLUMAT INFORMATION TECHNOLOGY MANAGEMENT



## PENGURUSAN TEKNOLOGI MAKLUMAT INFORMATION TECHNOLOGY MANAGEMENT

Bahagian Teknologi Maklumat telah diberi tanggungjawab untuk menyediakan infrastruktur dan perkhidmatan Teknologi Maklumat kepada Jabatan Alam Sekitar (JAS). Ia termasuklah melaksana perolehan perkakasan, perisian dan perkhidmatan ICT; merancang, membangun, melaksana dan menyelenggara sistem maklumat pengurusan dan geospasial Jabatan, memantau dan menyelenggara perkhidmatan rangkaian ICT dan mengawal selia Keselamatan ICT, menyediakan latihan ICT, serta khidmat nasihat dan sokongan teknikal ICT kepada para pengguna di Jabatan.

### Sistem eKAS 4.0

Sistem eKAS telah dibangunkan semula pada tahun 2019-2021 yang bertujuan untuk menyimpan rekod data berkaitan maklumat premis, projek *Environmental Impact Assessment* (EIA), proses kerja, penguatkuasaan JAS dan pemantauan pencemaran serta menjana pelaporan. Pembangunan semula adalah selaras dengan pindaan terhadap perundangan dan prosedur sedia ada seperti:

- Peraturan-peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014;
- Perintah Kualiti Alam Sekeliling (Aktiviti yang ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) 2015;
- Arahan Tetap Operasi 2015;
- EIA *Guideline in Malaysia* 2016;
- *Standard Operating Procedure* (SOP) Penguatkuasaan EIA 2017;
- *Standard Operating Procedure* (SOP) Perintah Larangan di bawah Seksyen 34AA 2017; dan
- Arahan Pejabat 5/2017 & 6/2017 berkaitan pelaksanaan Penguatkuasaan *Guided Self Regulation* (GSR).

Sistem yang digunakan oleh pegawai JAS Ibu Pejabat/ Negeri dan Cawangan ini bertujuan untuk menyelaraskan pengurusan maklumat punca pencemar menjadi lebih sistematik dan memudahkan capaian dan perkongsian maklumat.

Sistem yang telah dilancarkan pada 21 Februari 2022 ini membolehkan pemantauan dan penguatkuasaan bagi keseluruhan proses kerja JAS dilaksanakan dengan lebih mudah dan cepat selaras dengan teknologi terkini.

The Information Technology Division is responsible for providing Information Technology Infrastructure and Services to the Department of Environment (DOE). This includes the procurement of ICT hardware, software and ICT services; planning, developing, implementing and maintaining the management information systems and geospatial systems; monitoring and maintaining the network services and regulating the ICT Security Policy, providing ICT training, as well as providing ICT technical advices and support to the users in the Department

### System eKAS 4.0

The eKAS system was redeveloped in 2019-2021 with the aim of keeping records of data related to premise information, Environmental Impact Assessment (EIA) projects, work processes, DOE enforcement and pollution monitoring as well as generating reports. Redevelopment is in line with amendments to existing legislation and procedures such as:

- Environmental Quality (Clean Air) Regulations 2014;
- Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015;
- Standing Orders of Enforcement Operating 2015;
- EIA *Guideline in Malaysia* 2016;
- *Standard Operating Procedure* (SOP) EIA Enforcement 2017;
- *Standard Operating Procedure* (SOP) Prohibition Order under Section 34AA 2017; and
- Office Instructions 5/2017 & 6/2017 regarding implementation of Enforcement through Guided Self Regulation (GSR).

The system used by DOE officers Headquarters / States and Branches aims to coordinate the management of pollutant source information to be more systematic and to facilitate access to and sharing of information.

The system, which was launched on 21<sup>st</sup> February 2022, allows monitoring and enforcement of the entire DOE work processes in an effort to have efficient and easy implementation in line with the latest technology.

Bengkel Hands-On penggunaan sistem eKAS baharu Jabatan Alam Sekitar Siri 1 telah diadakan di Hotel Bangi Resort pada 18 – 20 Julai 2022. Bengkel ini dihadiri oleh Pegawai JAS Ibu Pejabat, JAS Johor, JAS Melaka, JAS Negeri Sembilan, JAS KL, JAS Selangor dan JAS Perak.

The Hands-On Workshop on the use of the Department of Environment's new eKAS System Series 1 was held at Hotel Bangi Resort on 18<sup>th</sup> – 20<sup>th</sup> July 2022. The workshop was attended by DOE Headquarters Officer, DOE Johor, DOE Melaka, DOE Negeri Sembilan, DOE KL, DOE Selangor and DOE Perak.



Bengkel Hands-On Penggunaan Sistem eKAS Baharu Jabatan Alam Sekitar Siri 1 telah diadakan di Hotel Bangi Resort pada 18 - 20 Julai 2022

The Hands-On Workshop on the Use of the Department of Environment's New eKAS System Series 1 was held at Hotel Bangi Resort on 18<sup>th</sup> - 20<sup>th</sup> July 2022

### Dashboard Alam Sekitar

Dashboard Alam Sekitar merupakan projek penambahbaikan daripada sistem Pusat Kawalan Alam Sekitar Nasional (NECC). Dashboard ini digunakan oleh Pegawai JAS Ibu Pejabat/ Negeri dan Cawangan untuk penyediaan palaporan yang dinamik dengan penggunaan *Business Intelligent Tools*.

Projek yang masih di dalam pembangunan ini melibatkan integrasi beberapa sistem seperti berikut:

1. OER
2. EMAINS
3. MyCEP
4. eAduan
5. EQMP
6. VTA
7. eSWIS
8. HRMIS
9. SLB
10. SPEIA
11. NRCEP
12. eKAS
13. eCSTP
14. SPPIH
15. MyRAS

### Environmental Dashboard

The Environmental Dashboard is a project to improve the National Environmental Control Centre (NECC) system. This dashboard is used by DOE Headquarters / State and Branch Offices for the preparation of dynamic reporting with the use of Business Intelligent Tools.

This project, which is still under development, involves the integration of several systems listed below:

1. OER
2. EMAINS
3. MyCEP
4. eAduan
5. EQMP
6. VTA
7. eSWIS
8. HRMIS
9. SLB
10. SPEIA
11. NRCEP
12. eKAS
13. eCSTP
14. SPPIH
15. MyRAS

Pembangunan dashboard memudahkan pemantauan penguatkuasaan dengan lebih kreatif dan efektif serta menggalakkan pembuatan keputusan yang lebih cepat dengan penyediaan pelaporan yang dinamik.

Beberapa siri latihan telah diadakan kepada pengguna sistem masing-masing pada tahun 2022 seperti berikut:

The development of a dashboard facilitates more creative and effective monitoring of enforcement and promotes faster decision-making with the provision of dynamic reporting.

A series of trainings for the various systems were held in 2022 and the schedule is as follows:

Jadual 8.1 : Siri Latihan kepada Pengguna Sistem pada Tahun 2022  
Table 8.1 : Series of Trainings for Various Systems Held in 2022

SISTEM / SYSTEM	TARIKH / DATE
Latihan OER, eMAINS, eAduan, VTA, SPPIH OER, eMAINS, eAduan, VTA, SPPIH Training	1 Ogos 2022 1 <sup>st</sup> August 2022
Latihan HRMIS, SLB, MyRAS, eCSTP, eSWIS, NRCEP HRMIS, SLB, MyRAS, eCSTP, eSWIS, NRCEP Training	4 Ogos 2022 4 <sup>th</sup> August 2022
Latihan MyCEP, SPEIA, eQMP MyCEP, SPEIA, eQMP Training	5 Ogos 2022 5 <sup>th</sup> August 2022
Latihan pentadbir Tableau & Talend Admin Tableau & Talend Training	23 Ogos 2022 23 <sup>rd</sup> August 2022



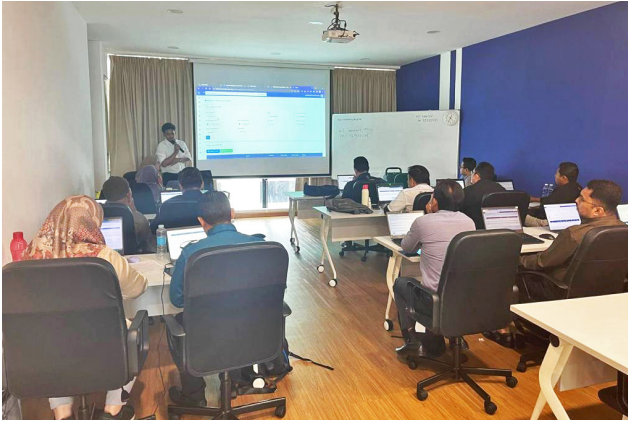
Siri Latihan telah Diadakan kepada Pengguna Sistem  
Series of Trainings for the Various Systems User

### Sistem myPREMIS

Sistem myPREMIS yang digunakan oleh industri membolehkan pihak industri mengemaskini maklumat operasi premis serta mengemukakan permohonan lesen PYDT dan lesen pelanggaran bagi pelepasan efluen atau kumbahan kepada JAS.

### The myPREMIS System

The myPREMIS system enables the industry to update the operating information of the premises as well as to submit the application for PYDT license and infringement license for the discharge of effluents or sewage to DOE.



Sesi latihan Penggunaan Sistem myPREMIS  
myPREMIS systems Usage training Session

Sebagai permulaan, dua (2) modul telah tersedia untuk tujuan tersebut iaitu SIMPAS dan Pelesenan (permohonan dan pembaharuan lesen). Sistem telah dilancarkan secara berperingkat mengikut modul seperti berikut:

1. 12 Disember 2022: SIMPAS & PYDT Getah;
2. 9 Januari 2023: PYDT BT;
3. 7 Februari 2023: PYDT KKS.

#### **BENKEL PEREKAYASAAN DAN SESI TRAINING OF TRAINER BAGI SISTEM APLIKASI ELECTRONIC SCHEDULED WASTE INFORMATION SYSTEM (eSWIS)**

*Electronic Scheduled Waste Information System (eSWIS)* merupakan sistem yang digunakan oleh jabatan dalam mengurus dan memantau operasi buangan terjadual (BT) di Malaysia.

Sepanjang tahun ini, Bahagian Teknologi Maklumat bersama Bahagian Bahan Berbahaya telah melaksanakan beberapa siri bengkel berkaitan Sistem eSWIS seperti berikut:

For a start, two (2) modules are available for this purpose, namely SIMPAS and Licensing (application and renewal of license). The system was launched in stages according to the following modules:

1. 12<sup>th</sup> December 2022: SIMPAS & PYDT Getah;
2. 9<sup>th</sup> January 2023: PYDT BT;
3. 7<sup>th</sup> February 2023: PYDT KKS.

#### **ELECTRONIC SCHEDULED WASTE INFORMATION SYSTEM (eSWIS) RE-ENGINEERED WORKSHOP AND TRAINING OF THE TRAINER SESSION**

This department uses a system application named *Electronic Scheduled Waste Information System (eSWIS)* to manage and monitor the operation of scheduled waste in Malaysia.

The Information Technology Department and Hazardous Substances Department have conducted several workshops related to the use of the eSWIS System and the schedule is as follows :

Jadual 8.2 : Siri Bengkel Berkaitan Sistem eSWIS  
Table 8.2 : Series of Workshop Related to the eSWIS System

TARIKH / DATE	NAMA BENKEL / WORKSHOP NAME	LOKASI / LOCATION
25 - 26 Julai 2022 / 25 <sup>th</sup> - 26 <sup>th</sup> July 2022	Bengkel Perakayasaan Sistem eSWIS / eSWIS System Re-engineered Workshop	Shah Alam
27 - 30 September 2022 / 27 <sup>th</sup> - 30 <sup>th</sup> September 2022	Bengkel <i>Transfer Of Technology</i> (TOT) Dan <i>Hands On</i> Penggunaan Sistem eSWIS / <i>Transfer Of Technology</i> (TOT) and eSWIS System <i>Hands-on</i> Workshop	Putrajaya
27 - 28 Oktober 2022 / 27 <sup>th</sup> - 28 <sup>th</sup> October 2022	Bengkel Simulasi Penggunaan Modul Import Dan Eksport Dan Latihan Pemindahan Teknologi Sistem eSWIS / <i>Import Export Module Hands-on Simulation</i> and eSWIS <i>Transfer Of Technology</i> Workshop	Putrajaya

Tujuan bengkel ini diadakan adalah untuk :

- Membincangkan isu-isu yang dihadapi oleh pengguna Sistem eSWIS;
- Membincangkan hala tuju dan cadangan penambah baikkan Sistem eSWIS; dan
- Meningkatkan kecekapan penggunaan Sistem eSWIS di kalangan pegawai JAS.

## APLIKASI MUDAH ALIH MYDOE

### Pengenalan

Aplikasi Mudah Alih MyDOE merupakan platform setempat yang mudah dan ringkas bagi rujukan terhadap akta, kaedah, peraturan, perintah dan perundangan berkaitan JAS. Aplikasi ini juga memuatkan maklumat IPU, hebahan terkini dan tips alam sekitar. Ia boleh dimuat turun di Google PlayStore (Android) dan AppStore (iOS) dan pengguna sasaran aplikasi MyDOE adalah orang ramai dan warga JAS.

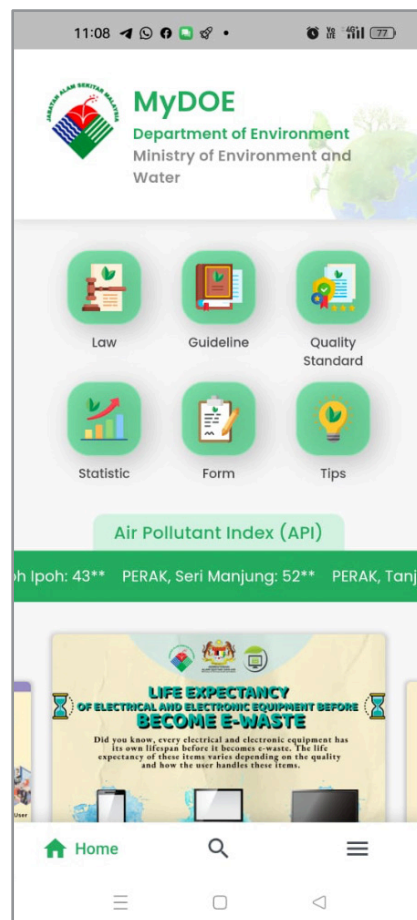
The objectives of these workshops were :

- To review issues related to the use of the eSWIS System;
- To discuss the direction and suggestions for improving the eSWIS System; and
- To improve the skills and efficiency of DOE officers using the eSWIS System.

## MYDOE MOBILE APPLICATION

### Introduction

The MyDOE Mobile Application is a simple and easy centralised platform of reference for DOE-related acts, rules, regulations, orders and legislations. This application also contains IPU information, latest announcements and environmental tips. It can be downloaded on Google PlayStore (Android) and AppStore (iOS) and the target users of the MyDOE application are the public and DOE officers.



Halaman Utama Aplikasi Mudah Alih MyDOE  
Main Page of MyDOE Mobile Application

 <p>Umum / General</p> <ul style="list-style-type: none"> <li>• Hebahan / <b>Announcement</b></li> <li>• Bacaan IPU terkini / <b>Latest IPU</b></li> <li>• Carian / <b>Search</b></li> <li>• Menu Utama / <b>Main Menu</b></li> </ul>	 <p>Statistik / Statistics</p> <ul style="list-style-type: none"> <li>• Laporan Kualiti Alam Sekeliling Terkini / <b>Latest Environmental Quality Report</b></li> <li>• Laporan Tahunan Terkini / <b>Latest Annual Report</b></li> <li>• Status Pematuhan Industri Terkini / <b>Latest Industry Compliance Status</b></li> </ul>
 <p>Perundangan / Legislation</p> <ul style="list-style-type: none"> <li>• Akta / <b>Acts</b></li> <li>• Perintah / <b>Orders</b></li> <li>• Kaedah / <b>Rules</b></li> </ul>	 <p>Borang / Forms</p> <ul style="list-style-type: none"> <li>• EIA dan Input Pembangunan / <b>EIA &amp; Development Input</b></li> <li>• Kompetensi &amp; Latihan / <b>Competency &amp; Training</b></li> <li>• Permohonan Lesen / <b>Application for Licence</b></li> <li>• Borang Laporan / <b>Report Form</b></li> <li>• Permohonan Industri / <b>Industry Application</b></li> <li>• Borang Permohonan bagi Data Sungai, Air Tanah dan Marin / <b>Data Application for River, Marine and Groundwater</b></li> </ul>
 <p>Garis Panduan / Guideline</p> <ul style="list-style-type: none"> <li>• Penilaian Kesan Kepada Alam Sekeliling (EIA) / <b>Environmental Impact Assessment (EIA)</b></li> <li>• Amalan Industri Hijau / <b>Green Industry Practices</b></li> <li>• Bahan Berbahaya / <b>Hazardous Substances</b></li> <li>• Air &amp; Marin / <b>Water &amp; Marine</b></li> <li>• Udara / <b>Air</b></li> </ul>	 <p>Tips Alam Sekitar / Environmental Tips</p>
 <p>Standard Kualiti / Quality Standard</p> <ul style="list-style-type: none"> <li>• Air / <b>Water</b></li> <li>• Udara / <b>Air</b></li> <li>• Kalkulator / <b>Calculator</b></li> </ul>	

Senarai Maklumat yang diperolehi di MyDOE  
List of information provided in MyDOE

## SISTEM PEMANTAUAN EIA (SPEIA)

### Pengenalan

SPEIA merupakan platform setempat bagi pelaporan pengawasan alam sekitar bagi projek-projek EIA yang akan dilaksanakan oleh Penggerak Projek EIA. Penggerak Projek akan melaporkan pematuhan terhadap syarat kelulusan EIA dan tindakan pembetulan kepada kesalahan yang dilakukan.

Pelaksanaan SPEIA merupakan salah satu pendekatan kepada pelaksanaan *Environmental Mainstreaming Tools* melalui *Guided Self Regulation* (GSR) bagi memastikan pematuhan sendiri sepenuhnya oleh Penggerak Projek EIA melalui kaedah *Self Regulation* serta bagi memenuhi kehendak dan pematuhan kepada Akta Kualiti Alam Sekeliling, 1974. Sistem ini membantu JAS memudahkan kerja-kerja pemantauan (desktop enforcement) kepada projek-projek EIA.

## EIA MONITORING SYSTEM (SPEIA)

### Introduction

SPEIA is a centralised platform for the reporting of the environmental monitoring of EIA projects reported by the EIA Project Proponents. The Project Proponent will report compliance with the conditions of EIA approval and corrective actions for nonconformity committed.

The implementation of SPEIA is one of the approaches of *Environmental Mainstreaming Tools* through *Guided Self-Regulation* (GSR). This is to ensure full self-compliance by the EIA Project Proponents through the *Self-Regulation* method, as well as to meet the requirements and compliance with the *Environmental Quality Act, 1974*. This system facilitates DOE officers in monitoring of projects (desktop enforcement) for EIA projects.

Data pengawasan yang dilaporkan oleh Penggerak Projek EIA boleh dijadikan rujukan sekunder Jabatan bagi mengetahui status semasa alam sekitar yang melibatkan sembilan jenis pengawasan iaitu:

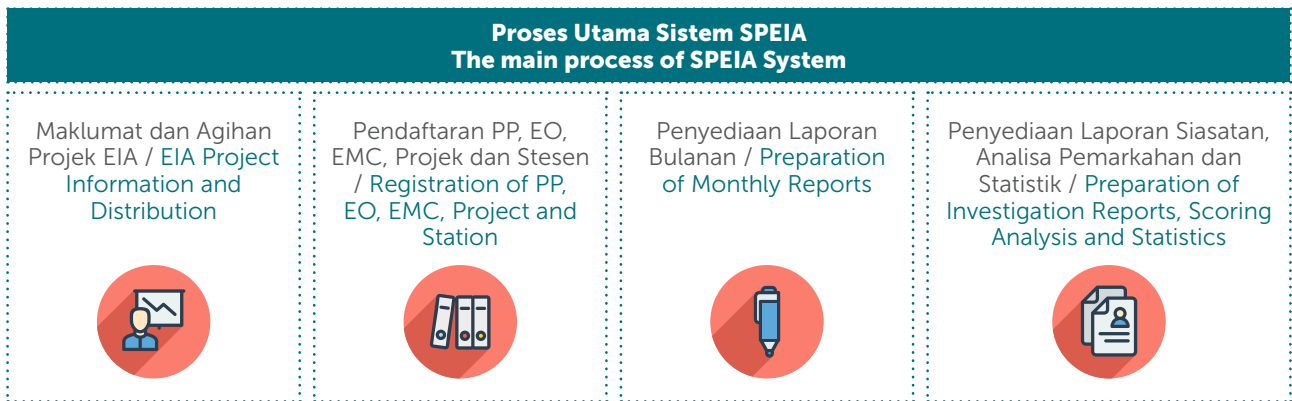
1. Sungai
2. Marin
3. Air Tanah
4. Perlepasan Dari Kolam Perangkap Mendap
5. Tasik
6. Udara
7. Bunyi Bising
8. Getaran
9. Dron

SPEIA melibatkan aliran kerja di antara Pengguna Dalaman dan Pengguna Luaran. Semua maklumat yang dimasukkan oleh Pengguna Luaran akan disemak dan disahkan oleh Pegawai JAS. Secara amnya, SPEIA melibatkan empat proses utama yang melibatkan beberapa modul di sistem:

The monitoring data reported by the EIA Project Proponents can be used as a secondary reference by the Department to identify the status of the environment. This system includes nine types of monitoring which are:

1. River
2. Marine
3. Groundwater
4. Discharge From Sediment Pond
5. Lake
6. Air
7. Vibration
8. Noise
9. Drone

SPEIA involves workflow between Internal Users and External Users. All information entered by External Users will be reviewed and verified by DOE Officers. In general, SPEIA involves four main processes in the system:



Rajah 8.2 : Proses Utama Sistem SPEIA  
Figure 8.2 : The Main Process of SPEIA System



Muka Depan Sistem SPEIA  
SPEIA System Landing Page

## NAIKTARAF RANGKAIAN LOCAL AREA NETWORK (LAN)

Pada tahun 2022 BTM telah melaksanakan naiktaraf rangkaian *Local Area Network (LAN)* di Ibu Pejabat JAS Putrajaya. Program naiktaraf ini dilaksanakan bagi pemantapan akses sistem aplikasi sama ada sistem dalaman JAS sendiri mahupun sistem rasmi kerajaan lainnya.

Kerja-kerja naiktaraf yang terlibat termasuk penambahan port dan kabel di ruang kerja pejabat serta pusat data Pusat Data Alam Sekitar (EDC) dan Pusat Kawalan Alam Sekitar Nasional (NECC).

## LOCAL AREA NETWORK (LAN) UPGRADE

In 2022, BTM upgraded the *Local Area Network (LAN)* at the DOE headquarters in Putrajaya. This upgrade was carried out to improve access to application systems, whether it be the internal system of DOE or other official government systems.

The upgrade work included the additional port of connections and cables in the office work areas and in the Environment Data Centre (EDC) and National Environmental Control Centre (NECC) data centres.



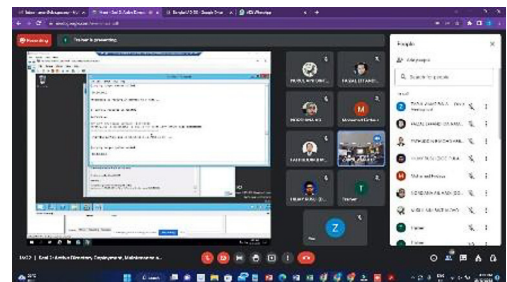
Kerja-kerja Naik Taraf *Local Area Network (LAN)*  
Local Area Network (LAN) Upgrading Work

## LATIHAN TEKNIKAL ACTIVE DIRECTORY DOMAIN SERVICE (ADDS)

Latihan teknikal ADDS telah dilaksanakan sebanyak 2 siri sepanjang tahun 2022. Siri 1 telah dilaksanakan pada 6 September 2022 di Bilik Dahlia dengan kehadiran 19 orang peserta. Manakala siri 2 telah dilaksanakan pada 20 dan 21 Disember 2022 di Bilik ICT JAS dengan kehadiran 13 orang peserta.

## ACTIVE DIRECTORY DOMAIN SERVICE (ADDS) TECHNICAL TRAINING

ADDS technical training was conducted in 2 series in 2022. Series 1 was held on 6<sup>th</sup> September 2022 in the Dahlia Room with 19 participants. Series 2 was conducted on 20<sup>th</sup> and 21<sup>st</sup> December 2022 in the ICT Room with 13 participants.



Latihan Teknikal ADDS  
ADDS Technical Training

Kedua-dua siri latihan ini dilaksanakan secara hibrid bagi memberi kefahaman teknikal berkenaan ADDS dan praktikal secara *hands-on*.

### POLISI KESELAMATAN SIBER VERSI 1.0

Polisi Keselamatan Siber (PKS) JAS Versi 1.0 telah dibangunkan pada 2022 dan telah diterima pakai dengan kelulusan Mesyuarat JPICT JAS Bilangan 4 Tahun 2022 pada 19 Disember 2022. Pelaksanaan ini adalah selaras dengan Rangka Kerja Keselamatan Siber Sektor Awam (RAKSSA) dalam usaha melindungi keselamatan maklumat Kerajaan.

Warga JAS, pembekal dan pihak yang mempunyai urusan dengan perkhidmatan JAS diwajibkan memahami serta mematuhi PKS dengan menandatangani Surat Akuan Pematuhan PKS seperti yang terkandung dalam polisi tersebut.

Both training series were conducted in a hybrid platform to provide a technical understanding of ADDS and hands-on application.

### DOE CYBER SECURITY POLICY VERSION 1.0

DOE Cyber Security Policy Version 1.0 was developed in 2022 and put into effect with the approval of DOE's JPICT Meeting on 19<sup>th</sup> December 2022. This implementation is consistent with the Public Sector Cybersecurity Framework (RAKSSA) to protect the security of government information.

DOE Citizens, vendors, and parties involved in DOE services are required to understand and comply with the policy by signing the Compliance Declaration Letter included in the policy.



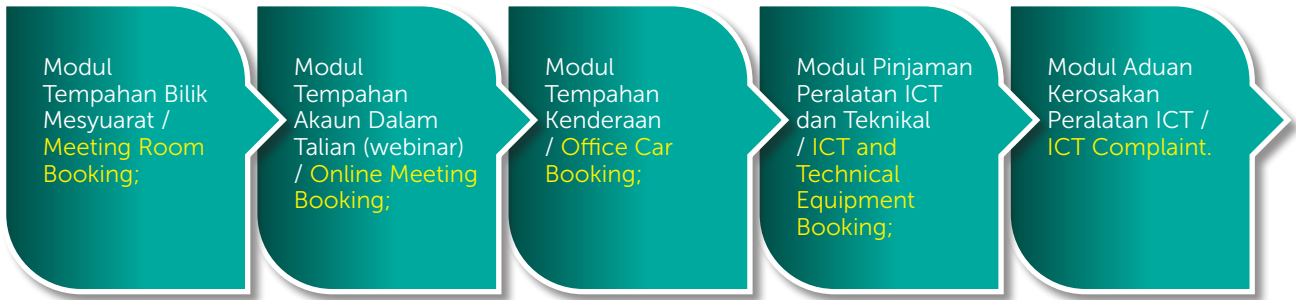
Rajah 8.3 : Polisi Keselamatan Siber Versi 1.0  
Figure 8.3 : DOE Cyber Security Policy Version 1.0

### SISTEM e-PEJABAT

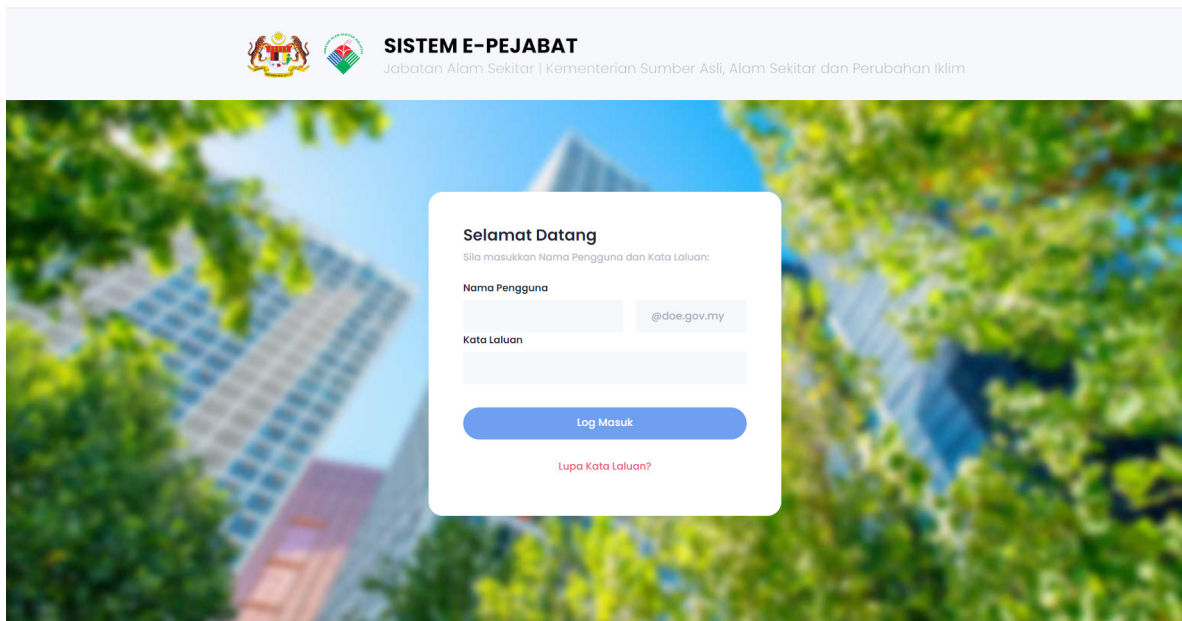
Sistem e-Pejabat merupakan sistem aplikasi yang diperkenalkan untuk mendigitalkan dan memudahkan cara proses-proses kerja pentadbiran jabatan yang masih dilaksanakan secara manual di jabatan. Pada tahun 2022, sistem ini telah mula digunakan oleh warga jabatan Ibu Pejabat dan akan diperluaskan penggunaan secara berperingkat kepada semua JAS Negeri dan cawangan bermula tahun 2023.

### e-PEJABAT SYSTEM

In 2022, the department introduced the e-Pejabat System to facilitate digitalised office administration work that was being carried out manually. The pilot implementation of the system started in the DOE Headquarters before it will be rolled out to all DOE states and branches starting in 2023.



Rajah 8.4 : Modul-modul yang Terdapat dalam Sistem e-Pejabat  
Figure 8.4 : The Modules Included in the System

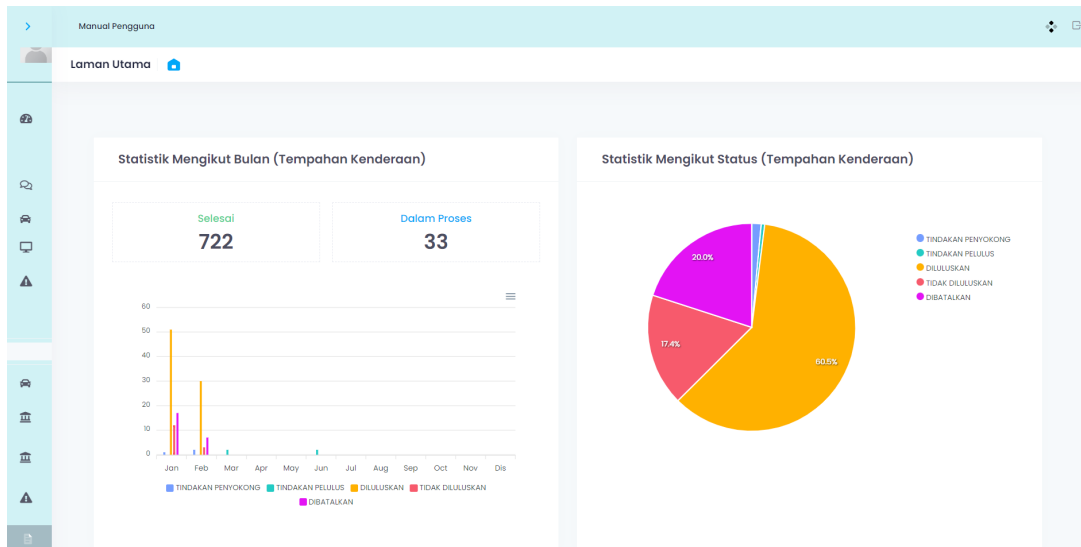


Muka Depan Sistem e-Pejabat  
e-Pejabat System Landing Page

The screenshot shows the 'Senarai Aduan (Semua)' page. It features a table with the following columns: Bil. No., No. Laporan, Nama Pelapor, Bahagian, Jenis Kerosakan, Komponen, Tarikh Aduan, Tarikh Selesai, Status, Durasi Aduan (Jam), Durasi Diselesaikan (Jam), and Tindakan. The table contains six rows of data representing different ICT complaints.

Bil. No.	No. Laporan	Nama Pelapor	Bahagian	Jenis Kerosakan	Komponen	Tarikh Aduan	Tarikh Selesai	Status	Durasi Aduan (Jam)	Durasi Diselesaikan (Jam)	Tindakan
1	AKP-2023-00001	Hadijah Ali	Bahagian Air & Marin	Lain-lain Kerosakan keyboard rosak	TIADA	03 Jan, 2023 08:17 am	04 Jan, 2023 11:24 am	DISAHKAN SELESAI	1 hari 3 jam 6 minit	1	
2	AKP-2023-00002	Noor Aina binti Naim	Bahagian Air & Marin	Pencetak E-Mail	TIADA	03 Jan, 2023 08:28 am	03 Jan, 2023 10:24 am	DISAHKAN SELESAI	0 hari 1 jam 56 minit	1	
3	AKP-2023-00003	Athiqah Zawani/Aznan	Bahagian Pentadbiran & Kewangan	Internet	TIADA	03 Jan, 2023 09:09 am	03 Jan, 2023 10:05 am	DISAHKAN SELESAI	0 hari 0 jam 56 minit	0	
4	AKP-2023-00004	Noor Aina binti Naim	Bahagian Air & Marin	Perisian	TIADA	03 Jan, 2023 09:14 am	03 Jan, 2023 10:25 am	DISAHKAN SELESAI	0 hari 1 jam 10 minit	0	
5	AKP-2023-00005	Mohd Firdaus bin Hashim	Bahagian Penguatkuasa	Rangkaian Komputer Dekstop Pencetak Internet	TIADA	05 Jan, 2023 02:19 pm	09 Jan, 2023 10:42 am	DISAHKAN SELESAI	1 hari 20 jam 22 minit	1	
6	AKP-2023-00006	Nurul Amalina binti Rosji	Bahagian Pentadbiran & Kewangan	Pencetak	TIADA	06 Jan, 2023 11:52 am	09 Jan, 2023 11:55 am	DISAHKAN SELESAI	1 hari 0 jam 2 minit	1	

Senarai Aduan Kerosakan ICT  
List of ICT Complaints Received



Dashboard Sistem e-Pejabat  
Dashboards e-Pejabat System

## KOMPENDIUM SISTEM APLIKASI JAS

Kompendium Aplikasi JAS merupakan himpunan maklumat dalam bentuk infografik dan penerangan berdasarkan 14 sistem aplikasi yang telah ditetapkan iaitu :

- Sistem Aplikasi *Environmental Quality Monitoring* (EQMP);
- Sistem Elektronik Kawalan Alam Sekitar (eKAS);
- Sistem *Electronic Scheduled Waste Management System* (eSWIS);
- Sistem *Online Environmental Reporting* (OER)
- Sistem Pemantauan EIA (SPEIA);
- Sistem *Environmental Mainstreaming Tools* (eMAINS);
- Sistem *Vehicle Type Approval* (VTA);
- Sistem *Hydrocarbon Fingerprinting* (HyFiS);
- Sistem e-Aduan;
- Sistem *Malaysian Certified Environmental Practitioner* (myCEP);
- Sistem *Environmental Spatial Data Repository* (ESDR);
- Sistem Geospatial Alam Sekitar (GeoSpAS);
- Sistem Rakan Alam Sekitar (MyRAS);
- Sistem e-PEJABAT.

Kompendium ini boleh digunakan oleh warga JAS atau pemegang taruh sebagai rujukan asas mengenai latar belakang, tujuan, skop, arkitektur dan kandungan modul sistem aplikasi berkaitan. Ia juga menjadi sumber dokumentasi sistem aplikasi yang boleh dirujuk pada bila-bila masa. Sumber maklumat dan data sokongan diperolehi daripada pasukan projek dan juga rujukan kepada bahagian atau kumpulan pakar subjek berkaitan.

## KOMPENDIUM OF DOE APPLICATION SYSTEMS

The DOE Application System Compendium is a collection of information in the form of infographics and explanations based on 14 application systems that have been set. These application systems are as follows :

- Environmental Quality Monitoring (EQMP);
- eKAS;
- Electronic Scheduled Waste Management System (eSWIS);
- Online Environmental Reporting (OER) ;
- EIA Monitoring (SPEIA) ;
- Environmental Mainstreaming Tools System (eMAINS);
- Vehicle Type Approvals (VTA) ;
- Hydrocarbon Fingerprinting (HyFiS);
- e-Aduan (e-Complaints);
- Malaysian Certified Environmental Practitioner (myCEP);
- Environmental Spatial Data Repository (ESDR);
- Geospatial Alam Sekitar (GeoSpAS);
- Rakan Alam Sekitar (MyRAS) (Friends of the Environment);
- e-PEJABAT.

This compendium can be used by DOE agencies or stakeholders as a basic reference on the background, purpose, scope, architecture and content of related application system modules. It is also a source of application system documentation that can be referred to at any time. Sources of information and supporting data are obtained from the project team as well as referrals to relevant subject specialist divisions or groups.

Bagi menghasilkan kompendium ini, beberapa bengkel telah diadakan untuk mengumpul input daripada *Subject Matter Expert (SME)* dari setiap bahagian.

Pada masa akan datang, kompendium ini akan dikembangkan kepada Kompendium Aplikasi JAS Volume II yang akan meliputi sistem lain seperti iRemote, aplikasi mobil, portal dan lain-lain.

### PENGURUSAN DRON JABATAN

Sehingga 31 Disember 2022, Skuad Dron Jabatan Alam Sekitar telah dianggotai oleh 173 juruterbang dron berdaftar dengan jumlah pemilikan aset dron sebanyak 86 unit. Skuad dron ini telah melakukan 722 jam penerbangan bagi tujuan penguatkuasaan, pengawasan, pemetaan udara dan lain-lain tugas yang berkaitan Jabatan.

In order to produce this compendium, several workshops were held to gather input that was attended by Subject Matter Experts (SME) from each section.

In the future, this compendium will be developed into the DOE Application Compendium Volume II which will cover other systems such as iRemote, mobile applications, portals and others.

### DOE's DRONE MANAGEMENT

As at 31<sup>st</sup> December 2022, the the Department of Environment's Drone Squad has 173 registered drone pilots with a total ownership of 86 drone assets. This drone squad has done 722 hours of flight for the purpose of enforcement, surveillance, aerial mapping and other duties related to the Department.



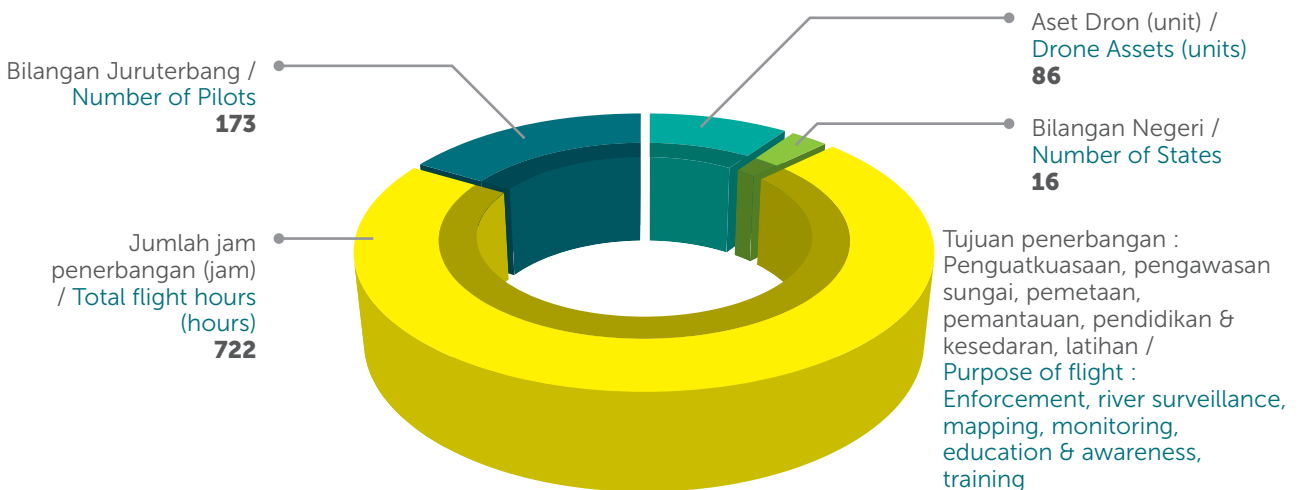
Pemantauan di Kawasan Industri Menggunakan Dron bagi Membantu Aktiviti Penguatkuasaan  
Monitoring of Industrial Areas Using Drones to Assist Enforcement Activities



Pemantauan Projek EIA Menggunakan Dron  
EIA Project Monitoring Using Drones



Imej yang Dicerap Menggunakan Dron akan Diproses Menggunakan Perisian bagi Menghasilkan Imej Raster  
 Images Observed Using Drones will be Processed Using Software to Produce Raster Images



Rajah 8.5 : Penggunaan Dron di JAS  
 Figure 8.5 : Drone Application in DOE

## Lencana Skuad Dron

Pada tahun 2022 juga buat pertama kalinya telah diadakan majlis pemakaian lencana dron kepada Juruterbang Dron Jabatan yang berdaftar. Lencana dron ini merupakan identiti Skuad Dron Jabatan Alam Sekitar.

Majlis pemakaian lencana ini telah diadakan pada 4 Julai 2022 di Pulau Pangkor, Perak bagi Zon Semenanjung Malaysia. Manakala bagi Zon Borneo pula majlis pemakaian lencana dron telah diadakan pada 1 Mac 2022 di Kuching, Sarawak.



## Drone Squad Badge

In 2022, for the first time, a ceremony presenting drone badges was held for registered Department Drone Pilots, with these badges being the identity of the Department of Environment's Drone Squad.

This ceremony was held on 4<sup>th</sup> July 2022 in Pangkor Island, Perak for the Peninsular Malaysia Zone, while that for the Borneo Zone, was held earlier on 1<sup>st</sup> March 2022 in Kuching, Sarawak.



Pemakaian Lencana Dron bagi Zon Semenanjung Malaysia Disempurnakan oleh Pengarah JAS Perak, Tuan Haji Rosli bin Zul  
The Presenting of Drone Badges for the Peninsular Malaysia Zone was Officiated by the Director of DOE Perak, Tuan Haji Rosli bin Zul



Juruterbang Dron Zon Semenanjung Malaysia Bergambar Kenangan Selepas Majlis Pemakaian Lencana Drone Pilots of the Peninsular Malaysia Zone Pose for a Commemorative Photo After the Ceremony



Pemakaian Lencana Dron bagi Zon Borneo Disempurnakan oleh Timbalan Pengarah JAS Sarawak, Encik Zaihan bin Lek  
The Presenting of Drone Badges for the Borneo Zone was Officiated by the Deputy Director of DOE Sarawak, Mr. Zaihan bin Lek



Juruterbang Dron Zon Borneo Bergambar Kenangan Selepas Majlis Pemakaian Lencana Borneo Zone Drone Pilots Pose for a Commemorative Photo After the Ceremony



Juruterbang Dron yang Menghadiri Kursus Kompetensi *Remote Pilot Certificate of Competency-Basic* (RCoC-B) di SG Akademi (M) Sdn. Bhd., Iskandar Puteri, Johor  
 Drone Pilots Who Attended the Remote Pilot Certificate of Competency-Basic (RCoC-B) Competency Course at SG Akademi (M) Sdn. Bhd., Iskandar Puteri, Johor



Juruterbang Dron yang Menghadiri Kursus Kompetensi *Remote Pilot Certificate of Competency-Basic* (RCoC-B) di Drone Academy Asia, Cyberjaya, Selangor  
 Drone Pilots Who Attended the Remote Pilot Certificate of Competency-Basic (RCoC-B) Competency Course at Drone Academy Asia, Cyberjaya, Selangor

Bagi mengukuhkan teknik pengendalian dron dikalangan juruterbang, sebanyak sembilan (9) bengkel, seminar dan kursus telah dilaksanakan sepanjang tahun 2022. Bengkel dan kursus ini merangkumi pelbagai peringkat dari tahap asas sehinggalah kursus dron lanjutan. Untuk rekod, Jabatan telah mempunyai seramai lapan (8) juruterbang dron yang telah mendapat sijil kompetensi *Remote Pilot Certificate of Competency-Basic* (RCoC-B).

Kesimpulannya, penubuhan Skwad Dron Jabatan Alam Sekitar telah memberi satu dimensi baru dalam mengukuhkan strategi penguatkuasaan dan pengurusan alam sekitar seiring dengan perkembangan pesat aspek teknologi.

### SISTEM GEOSPATIAL ALAM SEKITAR (GeoSpAS)

Sistem aplikasi GeoSpAS yang dikendalikan oleh Seksyen Geospasial, Bahagian Teknologi Maklumat telah dinaiktaraf 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.

Aplikasi GeoSpAS terbaru ini telah dirasmikan oleh YBrs. Encik Wan Abdul Latiff bin Wan Jaffar, Ketua Pengarah Alam Sekitar Malaysia semasa Program Pendigitalan JAS pada 6 Oktober 2022.

In order to strengthen drone handling techniques among pilots, a total of nine (9) workshops, seminars and courses were held throughout 2022. These workshops and courses covered various levels, from basic to advanced drone courses. The Department has, on record, a total of eight (8) drone pilots who have obtained the Remote Pilot Certificate of Competency-Basic (RCoC-B).

In conclusion, the establishment of the Department of Environment's Drone Squad has given a new dimension in strengthening environmental enforcement and management strategies in line with the rapid development of technology that are beneficial.

### ENVIRONMENTAL GEOSPATIAL SYSTEM (GeoSpAS)

The GeoSpAS application system managed by the Geospasial 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.

This latest GeoSpAS application was inaugurated by YBrs. Mr Wan Abdul Latiff bin Wan Jaffar, Director General of Environment Malaysia during the DOE Digitization Programme on 6<sup>th</sup> October 2022.



Sistem Aplikasi Geospasial Jabatan Alam Sekitar

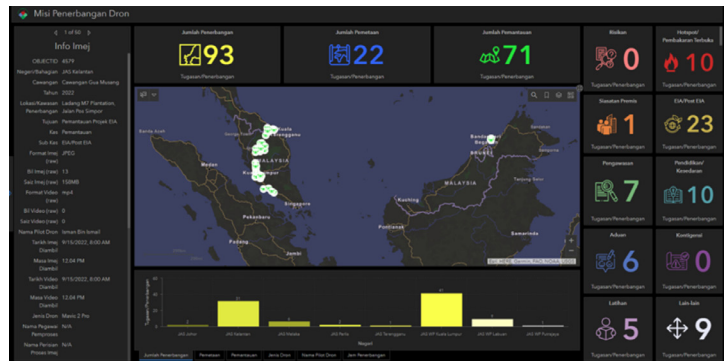

[Laman Utama](#)
[Mengenai Kami](#)
[Produk & Perkhidmatan](#)
[Story Map](#)
[Imej Raster](#)
[Galeri](#)


Halaman Utama Sistem Aplikasi GeoSpAS  
GeoSpAS Application System Front Page



Ketua Pengarah Alam Sekitar Mendengar  
Taklimat Ringkas Mengenai Aplikasi  
GeoSpAS dan Seterusnya Merasmikan  
Aplikasi GeoSpAS Baru

DOE's General Director Being Briefed on  
the GeoSpAS Application and Subsequently  
Inaugurated the New GeoSpAS Application



Contoh Paparan Aplikasi Dashboard Misi Penerbangan  
Dron dalam Sistem GeoSpAS

An Example of a Drone Flight Mission Dashboard  
Application Display in the GeoSpAS System

Sistem GeoSpAS ini digunakan bagi memaparkan maklumat spatial melalui web (Web Mapping). Aplikasi dalam sistem ini akan memaparkan keseluruhan data-data GIS dalam bentuk spatial yang telah dikumpulkan JAS melalui tugas di lapangan termasuklah cerapan imej menggunakan dron.

Bagi melancarkan kadar penggunaan GeoSpAS di kalangan pegawai, sebanyak sembilan (9) siri kursus yang melibatkan 90 orang pegawai JAS termasuk penyelar GIS Negeri dan Bahagian telah dilaksanakan sepanjang tahun 2022. Kursus-kursus ini dijalankan oleh pihak penyedia perkhidmatan yang dilantik dan dibantu oleh pegawai-pegawai Seksyen Geospasial yang telah dilatih secara intensif bagi menguasai GeoSpAS dan aplikasi-aplikasi lainnya.

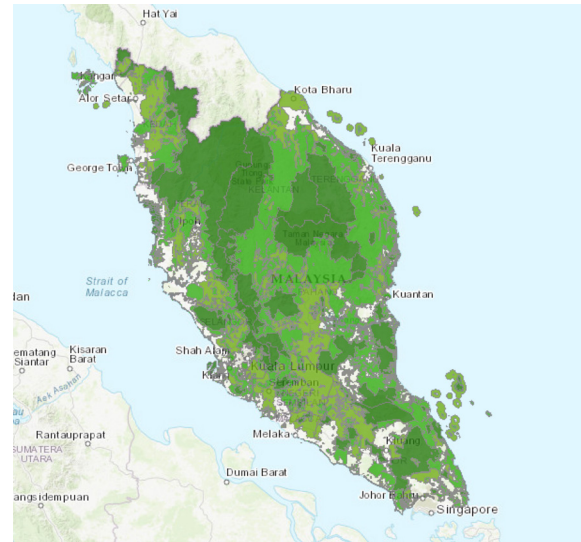
The GeoSpAS system is used to display spatial information through the web (Web Mapping). Applications in this system will display all GIS data in spatial form which has been collected by the DOE through onfield tasks, including image observation using drones.

In order to promote the rate of use of GeoSpAS among DOE officers, a total of nine (9) series of courses involving 90 DOE officers including State and Division GIS coordinators were held throughout 2022. These courses were conducted by appointed service providers and assisted by officers of the Geospatial Section who have been intensively trained to master GeoSpAS and other applications.



Aplikasi *Story Map* dalam GeoSpAS Membolehkan Pegawai Memaparkan Laporan Siasatan Kes dalam Bentuk Web yang Digabungkan dengan Maklumat Spatial

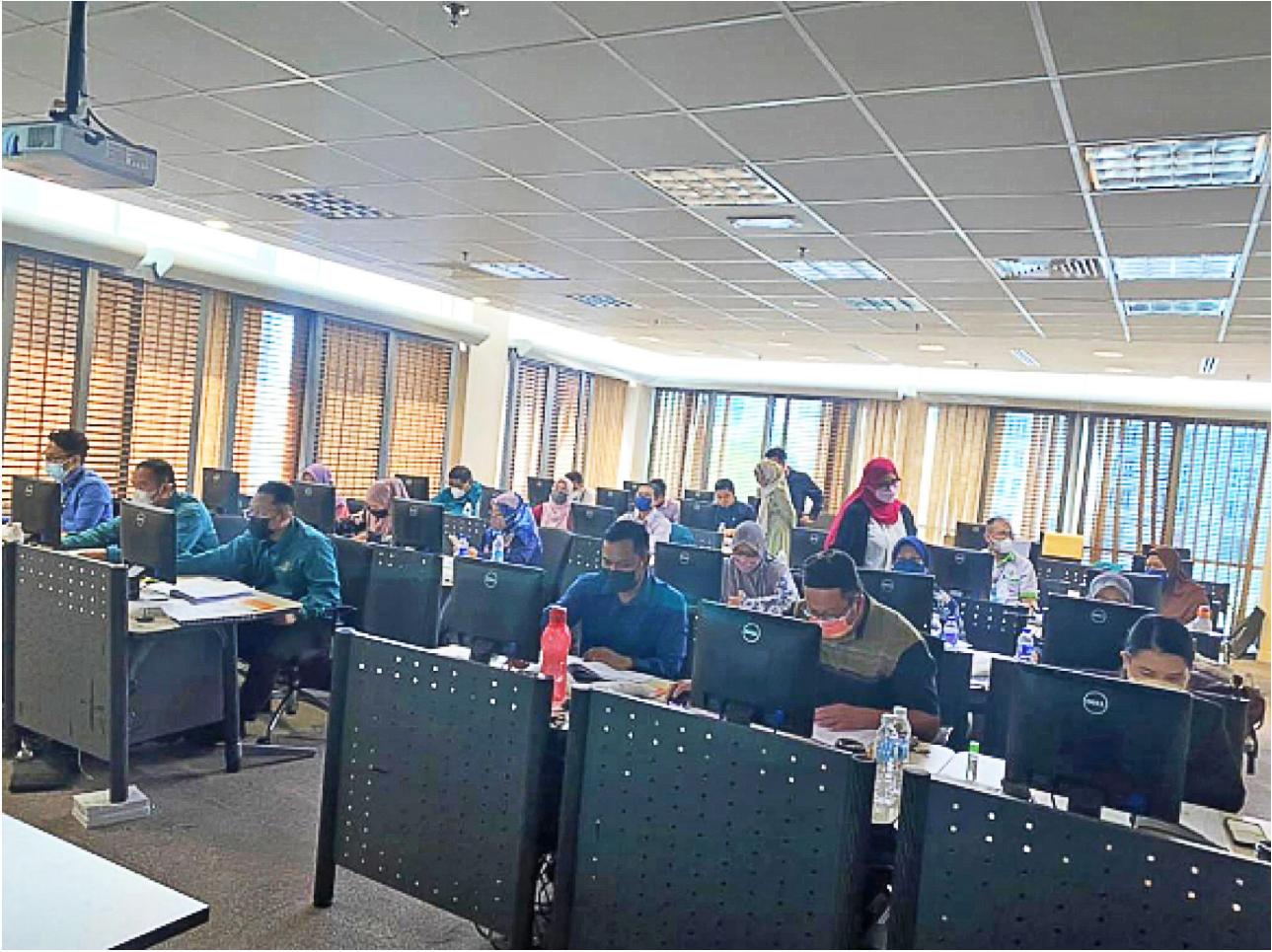
The Story Map Application in GeoSpAS Enables Officers to Display Case Investigation Reports in Web Form Combined with Spatial Information



Pegawai JAS dapat Membuat Analisa Pembangunan Suatu Projek Berdasarkan Layer Kawasan Sensitif Alam Sekitar yang Boleh Didapati di dalam GeoSpAS  
DOE Officers can Analyse the Development of a Project Based on the Environmentally Sensitive Area Layers that can be Found in GeoSpAS

Jadual 8.3 : Senarai Kursus yang Dilaksanakan bagi Melatih Pegawai Menggunakan Sistem GeoSpAS  
Table 8.3 : List of Courses Conducted to Train Officers on the Use of the GeoSpAS System

SIRI / SERIES	TARIKH / DATE	LOKASI KURSUS / COURSE LOCATION	NAMA KURSUS / COURSE NAME	BIL PESERTA / NO OF PARTICIPANTS
1A	14 - 17/03/22	Hotel Concorde Shah Alam	<i>Introduction to GIS Using ArcGIS</i>	30
1C	21 - 22/03/22	Bilik ICT, JAS Putrajaya	<i>Introduction to GIS Using ArcGIS</i>	30
1B	23 - 24/03/22	Bilik ICT, JAS Putrajaya	<i>Introduction to GIS Using ArcGIS</i>	30
2A	23 - 26/05/22	EiMAS, Bangi	<i>Putting AgroGIS &amp; Use Across Your Organization</i>	30
2B	13 - 16/06/22	EiMAS, Bangi	<i>Putting AgroGIS &amp; Use Across Your Organization</i>	30
2C	20 - 23/06/22	EiMAS, Bangi	<i>Putting AgroGIS &amp; Use Across Your Organization</i>	30
3A	08 - 10/08/22	Hotel Cititel, Pulau Pinang	<i>Getting Started to GeoSpas App</i>	30
3B	22/08/22	Bilik ICT, JAS Putrajaya	<i>Getting Started to GeoSpas App</i>	30
3C	23/08/22	Bilik ICT, JAS Putrajaya	<i>Getting Started to GeoSpas App</i>	30



Kursus yang Dilaksanakan kepada Penyelaras GIS Negeri  
Courses Conducted for State GIS Coordinators



Kursus Dilaksanakan Secara *Hands-on* kepada Pegawai Terlibat  
The Course Conducted on a Hands-on Basis for the Officers Involved



Pegawai Seksyen Geospasial yang Bertindak Sebagai Pentadbir Sistem Menjalani Latihan Intensif dengan Penyedia Perkhidmatan  
Geospatial Section Officers Who Act as System Administrators Undergo Intensive Training with Service Providers

## Sistem Aplikasi *Environmental Spatial Data Repository* (ESDR)

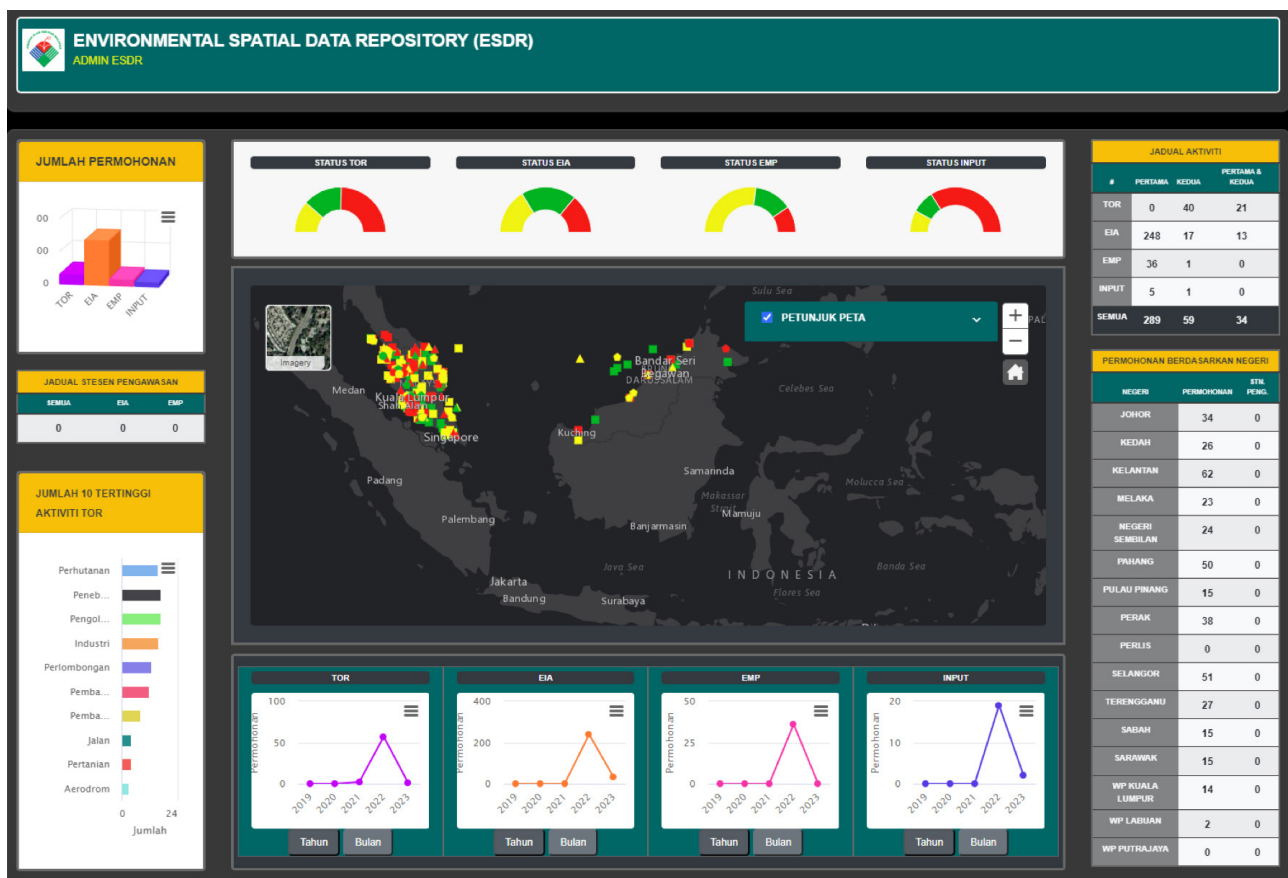
Aplikasi *Environmental Spatial Data Repository* (ESDR) telah dibangunkan oleh Jabatan Alam Sekitar pada awal tahun 2020 dan dilancarkan pada tahun 2022. Kekangan perintah kawalan pergerakan semasa 2020 menyebabkan projek ini dilanjutkan tempoh siap asal iaitu Mac 2022 kepada Julai 2022. Sistem ini dibangunkan bertujuan mengumpul maklumat projek EIA dan juga data spatial lain yang terdapat di dalam laporan permohonan TOR, EIA, EMP dan Input Pembangunan yang dikemukakan oleh pemohon (jururunding/agensi/individu) berdasarkan format yang telah ditetapkan. Seterusnya maklumat projek-projek EIA dapat disusun supaya menjadi lebih sistematik bagi pelaksanaan data raya Jabatan.

Sepanjang tahun 2022, sebanyak dua (2) siri bengkel *Training For Trainers* telah dilaksanakan kepada pegawai JAS Negeri oleh Bahagian Penilaian dan dibantu oleh Seksyen Geospasial dan penyedia perkhidmatan. Bengkel ini dijalankan bagi melatih pegawai di JAS Negeri menggunakan aplikasi ini dalam tugas seharian.

## *Environmental Spatial Data Repository* (ESDR) Application System

The *Environmental Spatial Data Repository* (ESDR) application was developed by the Department of Environment in early 2020 and launched in 2022. The constraints of the movement control order during 2020 caused this project to be extended from the original completion period of March 2022 to July 2022. This system was developed to collect information on EIA projects and also other spatial data contained in the TOR, EIA, EMP and Development Input application reports submitted by applicants (consultants/agencies/individuals) based on the prescribed format. Subsequently, information on EIA projects can be organised so that it becomes more systematic for the Department's big data implementation.

Throughout the year 2022, a total of two (2) series of *Training For Trainers* workshops have been conducted for State DOE officers by the Evaluation Division and assisted by the Geospasial Section and service providers. These workshops are conducted to train officers at the State DOE to use this application in their daily tasks.



Papan Pemuka Sistem ESDR  
ESDR System Dashboard

Pelan Reformasi JAS Inisiatif 21 & 22 - Pemantauan EIA Berkesan & Pemantapan Pengurusan Maklumat dan Data Spatial /  
DOE Reform Plan Initiative 21 & 22 - Effective EIA Monitoring & Strengthening Spatial Information and Data Management

Platform untuk kemasukan, perkongsian Spatial data sharing dengan sistem-sistem Jabatan dan agensi kerajaan (tertakluk pada polisi Rahsia Rasmi) /  
Platform for entry, and sharing of Spatial data with Departments and government agency systems (subject to the Official Secret policy)

Menyelesaikan masalah pengurusan maklumat konvensional kepada sistem digital bagi laporan dan data EIA secara sistematik. Penyelesaian isu ruang penyimpanan dokumen dan perkongsian antara negeri dan kemudahan capaian data /  
Solving the problem of systematic management of information conversion to a digital system for EIA reports and data. To resolve issues of document storage space and interstate sharing and data access facilities.

Menyediakan kemudahan bahan siasatan dan pengajaran/latihan secara digital yang lebih holistik dengan mengambil kira tahap kemahiran semasa dan pelan latihan yang diperlukan oleh Jabatan /  
Provide a more holistic digital research and teaching/training material facility taking into account the current skill level and the training required by the Department

Menyediakan historical data bagi tujuan analisis dan pelaporan data alam sekitar /  
Provide historical data for the purpose of environmental data analysis and reporting.

Rajah 8.6 : Rasionalisasi Pembangunan Sistem ESDR  
Figure 8.6 : Rationalisation of ESDR System Development

Semasa Pelancaran Program Pendigitalan JAS pada 6 Oktober 2022 bertempat di Bangi Resort Hotel, Bandar Baru Bangi, pegawai pentadbir sistem ESDR turut mengambil bahagian bertugas di Klinik Aplikasi ESDR. Klinik aplikasi ini telah memberi ruang secara langsung kepada orang ramai khususnya perunding dan penggerak projek EIA untuk menyuarakan permasalahan masing-masing berkaitan sistem.

During the Launch of the DOE Digitization Programme on 6<sup>th</sup> October 2022 at Bangi Resort Hotel, Bandar Baru Bangi, the ESDR system administrator also participated in the ESDR Application Clinic. This application clinic has given the public, especially consultants and promoters of EIA projects, access to voice their respective problems related to the system.



Peserta Bengkel TOT Bergambar Kenangan dengan Pengarah Bahagian Teknologi Maklumat selepas Tamat Bengkel  
TOT Workshop Participants with the Director of the Information Technology Division After the Workshop



Pegawai JAS Sedang Memberi Penerangan kepada Jururunding EIA Semasa Klinik Aplikasi ESDR  
DOE Officers Briefing the EIA Consultants during the ESDR Application Clinic

## PELAN STRATEGIK PENDIGITALAN JABATAN ALAM SEKITAR TAHUN 2021-2030

Pada 6 Oktober 2022, Bahagian Teknologi Maklumat, Jabatan Alam Sekitar telah melancarkan Pelan Strategik Pendigitalan Jabatan Alam Sekitar (PSP JAS) Tahun 2021 hingga 2030. PSP ini yang dahulunya dikenali sebagai Pelan Strategik ICT Jabatan Alam Sekitar (PSICT JAS) telah menggariskan hala tuju strategik pendigitalan jabatan selaras dengan visi dan misi strategik JAS bagi tempoh 10 tahun akan datang.



### MISI / MISSION

Pendigitalan pengurusan alam sekitar ke arah pembangunan lestari  
Digitization of environmental management towards sustainable development



### VISI / VISION

Memperkasakan pendigitalan untuk penyampaian perkhidmatan alam sekitar yang komprehensif  
Empowering digitization for comprehensive environmental service delivery

PSP JAS merupakan panduan kepada jabatan bagi memastikan kesinambungan transformasi digital yang menjadi pemangkin ke arah kelestarian alam sekitar pada masa kini dan akan datang. Transformasi digital dalam pengurusan alam sekitar yang lebih lestari amat diperlukan kini terutama ketika berhadapan dengan kesan pencemaran dan ianya perlu ditangani dengan cekap dan berkesan melalui lonjakan pendigitalan perkhidmatan JAS.

PSP ini menekankan pengukuhan kecekapan dan keberkesanan perkhidmatan bagi menambahbaik sistem penyampaian kerajaan untuk hasil yang lebih baik merangkumi perkhidmatan berteraskan:

- i. *Government-to-Government (G2G)*
- ii. *Government-to-Citizen (G2C)*
- iii. *Government-to-Business (G2B)*
- iv. *Government-to-Employee (G2E)*

Sebanyak empat (4) teras strategi yang telah dirangka bagi menyokong pelaksanaan 16 strategi, 50 program dan 114 aktiviti seperti gambarajah di **Rajah 8.7**.

Kesemua teras dan strategi yang telah dirangka ini disokong dengan petunjuk prestasi, sasaran dan pihak pelaksana bagi memastikan pelaksanaannya tersusun dan terancang untuk mencapai visi PSP JAS 2021-2030 iaitu "Pendigitalan pengurusan alam sekitar ke arah pembangunan lestari".

## DEPARTMENT OF ENVIRONMENT DIGITALISATION STRATEGIC PLAN 2021- 2030

On 6<sup>th</sup> October 2022, the Information Technology Division, Department of Environment launched the Department of Environment Digitalisation Strategic Plan (PSP) for the years 2021 to 2030. This PSP, formerly known as the Department of Environment ICT Strategic Plan (PSICT JAS) outlines the strategic direction digitisation of the department in line with the DOE's strategic vision and mission for the next 10 years.

PSP JAS is a guide for the department to ensure the continuity of digital transformation which is a catalyst towards environmental sustainability in the present and in the future. Digital transformation in managing the environment more sustainably is very necessary now, especially when dealing with the effects of pollution, which needs to be dealt with efficiently and effectively through a surge in the digitisation of DOE services.

This PSP emphasises strengthening the efficiency and effectiveness of services to improve the government's delivery system for better results including services based on:

- a. *Government-to-Government (G2G)*
- b. *Government-to-Citizen (G2C)*
- c. *Government-to-Business (G2B)*
- d. *Government-to-Employee (G2E)*

Four (4) core strategies have been designed to support the implementation of 16 strategies, 50 programmes and 113 activities as shown in the **Figure 8.7**.

All these cores and strategies that have been formulated are supported by performance indicators, targets and implementing parties to ensure that their implementation is organised and planned to achieve the DOE PSP 2021-2030 vision which is "Digitalisation of environmental management towards sustainable development".



Rajah 8.7 : Teras Strategik Pendigitalan JAS 2021-2030  
Figure 8.7 : Core of Digitalization Strategic Plan 2021-2030



Majlis Pelancaran Pelan Strategik Pendigitalan JAS 2021 - 2030  
 Launching Ceremony of the DOE Digitalization Strategic Plan 2021 - 2030

### PELAN ANALITIK DATA RAYA JABATAN ALAM SEKITAR TAHUN 2021 - 2030

Pada masa kini, Analitik Data Raya telah digunakan oleh Kerajaan Malaysia bagi meningkatkan kualiti penyampaian perkhidmatan kerajaan digital. Oleh yang demikian, Jabatan Alam Sekitar (JAS) telah mengambil langkah proaktif untuk membangunkan

### DEPARTMENT OF ENVIRONMENT DATA ANALYTICS PLAN 2021-2030

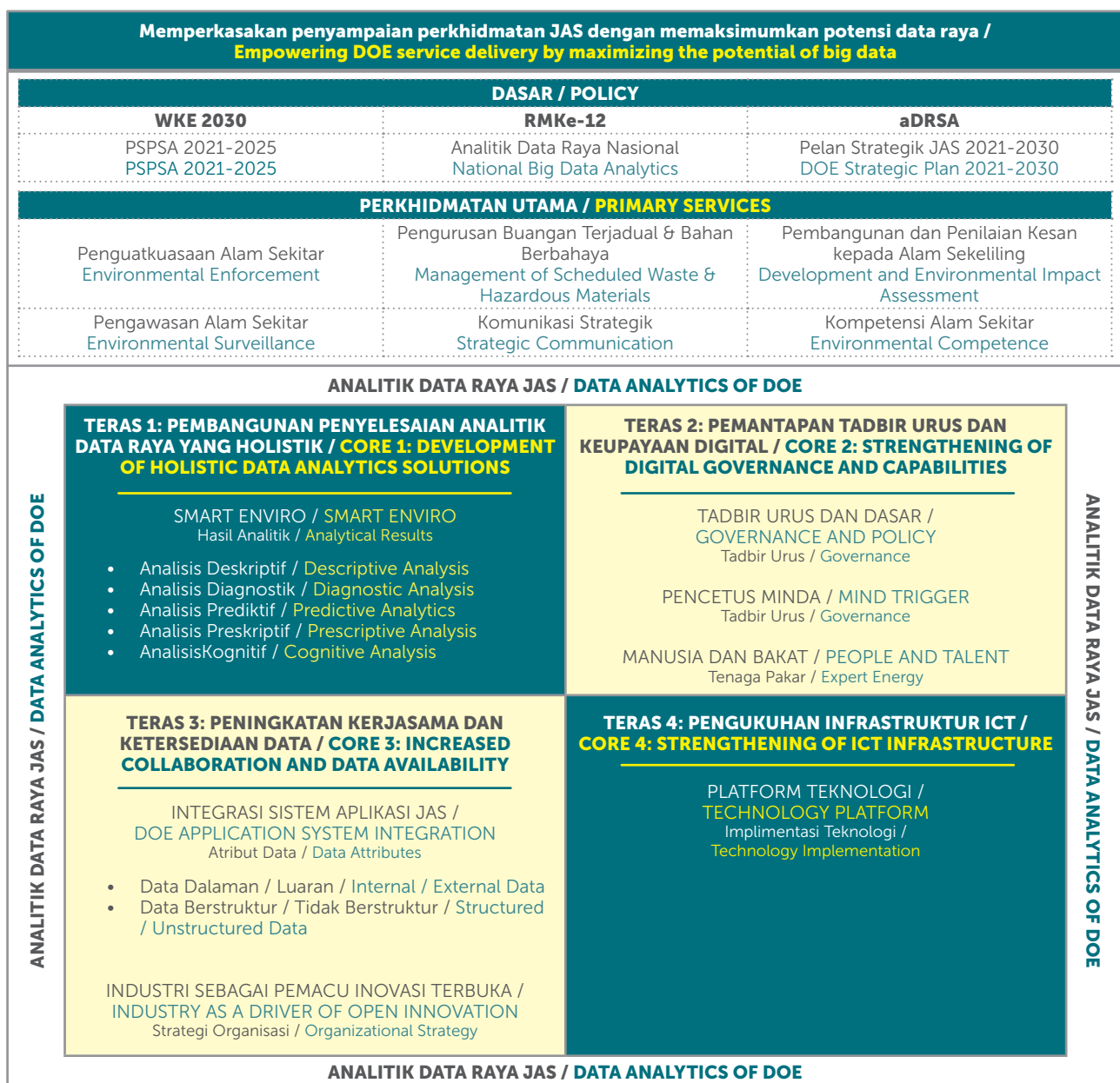
Currently, Big Data Analytics is being used by the Malaysian Government to improve the quality of digital government service delivery. Therefore, the Department of Environment (DOE) has taken proactive steps to develop the DOE's Big Data

Pelan Analitik Data Raya JAS tahun 2021 hingga 2030 sebagai panduan untuk mewujudkan dan melaksanakan Analitik Data Raya bagi menyokong proses membuat keputusan dalam persekitaran jabatan serta menyahut hasrat kerajaan dalam mewujudkan Kerajaan Digital Mampan yang menekankan pengurusan secara digital.

Pelan Analitik Data Raya JAS ini menggambarkan perancangan strategik pelaksanaan Analitik Data Raya JAS bagi memastikan pelaksanaannya adalah sejajar dengan misi Analitik Data Raya JAS, dasar-dasar kerajaan, Perkhidmatan Utama di JAS, Faktor Pemangkin Analitik Data Raya Nasional dan Kunci Utama Analitik Data Raya seperti **Rajah 8.8**.

Analytics Plan from 2021 to 2030 to be used as a guide to create and implement Big Data Analytics to support the decision-making process in the department's environment as well as to be in line with the government's target of creating a Sustainable Digital government that emphasizes digital management.

This Big Data Analytics Plan describes the strategic planning for the implementation of big data in line with DOE's Big Data Analytics mission, government policies, DOE's main functions, and with being the catalysing factor for the national big data analytics and the key to big data analytics as shown in the **Figure 8.8**.



Rajah 8.8 : Pelan Analitik Data Raya JAS 2021 - 2030  
Figure 8.8 : DOE Big Data Analytics Plan 2021 - 2030

Melalui pelan ini juga, 10 kes bisnes jangka panjang telah dirangka bagi pelaksanaan analitik data raya JAS seperti berikut:

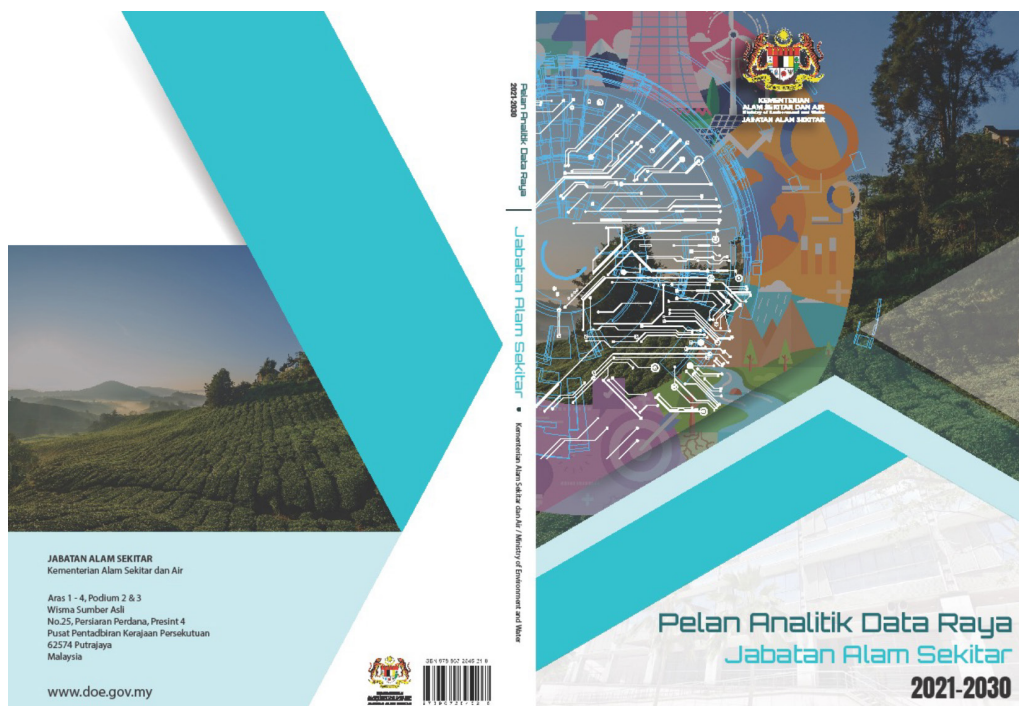
- Kes Bisnes 1: Penganalisan Data Kualiti Air (Pengawasan Pematuhan Pelepasan Efluen Perindustrian, Kumbahan dan larut Resap);
- Kes Bisnes 2: Pengurusan Kualiti Udara Berdasarkan Faktor Pencemaran;
- Kes Bisnes 3: Pengurusan Buangan Terjadual bagi Mengawal Pelupusan Haram;
- Kes Bisnes 4: Penganalisan Data Kualiti Air Marin;
- Kes Bisnes 5: Penganalisan Punca dan Beban Pencemar bagi Membantu Penguatkuasaan;
- Kes Bisnes 6: Keberkesanan Penguatkuasaan Alam Sekitar;
- Kes Bisnes 7: Portfolio dan Pemerksaan Sumber Manusia yang Kompeten;
- Kes Bisnes 8: Penganalisan Sentimen dan Perspektif Terhadap Alam Sekitar;
- Kes Bisnes 9: Keberkesanan Pelaksanaan Pembangunan Berdasarkan Laporan EIA; dan
- Kes Bisnes 10: Keberkesanan Program Kesedaran Alam Sekitar.

Pelan ini turut merangkumi Pelan Strategik Analitik Data Raya yang mengandungi empat (4) teras yang perlu dilaksanakan bagi mencapai misi data raya JAS iaitu "Memperkasakan penyampaian perkhidmatan JAS dengan memaksimumkan potensi data raya". Ringkasan bagi Pelan Strategik Analitik Data Raya JAS ini adalah seperti **Rajah 8.9**.

Through this plan, 10 long-term business cases have been drawn up for the implementation of DOE big data analytics as shown in the following:

- Business Case 1: Analysis of Water Quality Data (Industrial Effluent Discharge Compliance Monitoring, Sewage and Leachate);
- Business Case 2: Air Quality Management Based on Pollution Factors;
- Business Case 3: Scheduled Waste Management to Control Illegal Disposal;
- Business Case 4: Marine Water Quality Data Analysis;
- Business Case 5: Pollutant Cause and Burden Analysis to Assist Enforcement;
- Business Case 6: Effectiveness of Environmental Enforcement;
- Business Case 7: Portfolio and Empowerment of Competent Human Resources;
- Business Case 8: Sentiment Analysis and Perspectives Towards the Environment;
- Business Case 9: Effectiveness of Development Implementation Based on EIA Report; and
- Business Case 10: Effectiveness of Environmental Awareness Programs.

This plan also includes the Big Data Analytical Strategic Plan which contains four (4) cores that need to be implemented to achieve the DOE big data mission which is "Empowering the delivery of DOE services by maximizing the potential of big data". A summary of the DOE's Big Data Analytics Strategic Plan is shown in the **Figure 8.9**.



Muka Hadapan Dokumen Pelan Analitik Data Raya JAS 2021-2030  
Front Page of the DOE Big Data Analytical Plan Document 2021-2030

<b>VISI / VISION</b> <b>Memperkasa penyampaian perkhidmatan JAS dengan memaksimumkan potensi data raya / Strengthen the delivery of DOE services by maximizing the potential of big data</b>			
TERAS / CORE			
1	2	3	4
Pembangunan Penyelesaian Analitik Data Raya yang Holistik / <i>Development of Holistic Big Data Analytics Solutions</i>	Pemantapan Tadbir Urus dan Keupayaan Digital / <i>Governance Considerations and Digital Capabilities</i>	Peningkatan Kerjasama dan Ketersediaan Data / <i>Improved Collaboration and Data Availability</i>	Pengukuhan Infrastruktur ICT / <i>ICT Infrastructure Strengthening</i>
15 STRATEGI / 15 STRATEGY			
<b>S1</b> Pengurusan Komponen Kualiti Air, Udara dan Bahan Berbahaya / <i>Management of Water, Air and Hazardous Materials Quality Components</i>	<b>S1</b> Pengukuhan Pengurusan Sumber Data / <i>Strengthening Data Resource Management</i>	<b>S1</b> Pengukuhan Nilai Data / <i>Data Value Reinforcement</i>	<b>S1</b> Pengurusan Storan Data Raya / <i>Big Data Storage Management</i>
<b>S2</b> Pemeriksaan Pelaksanaan <i>Environmental Impact Assessment</i> (EIA) / <i>Empowering the Implementation of Environmental Impact Assessment (EIA)</i>	<b>S2</b> Pemeriksaan dan Perkembangan Modal Insan / <i>Empowerment and Development of Human Capital</i>	<b>S2</b> Penyelarasan Mekanisme Penyediaan Data / <i>Coordination of Data Provision Mechanism</i>	<b>S2</b> Pengurusan Rangkaian dan Komunikasi Data / <i>Network Management and Data Communications</i>
<b>S3</b> Penganalisaan Sentiment dan Kesedaran Awam Alam Sekitar / <i>Sentiment Analysis and Environmental Public Awareness</i>	<b>S3</b> Peluasan dan Pembudayaan Inovasi / <i>Expansion and Cultivation of Innovation</i>	<b>S3</b> Pemerolehan Data Luaran / <i>External Data Acquisition</i>	<b>S3</b> Pemanfaatan Platform Intergrasi Data / <i>Utilization of Data Integration Platforms</i>
<b>S4</b> Pemprofilan Sumber Manusia / <i>Human Resource Profiling</i>			<b>S4</b> Pengukuhan Persekitaran Keselamatan Data / <i>Strengthening of Data Security</i>
			<b>S5</b> Pembangunan Platform Keputusan (Decision Platform) / <i>Decision Platform Development (Decision Platform)</i>
<b>12</b> INISIATIF / <i>INITIATIVE</i>	<b>13</b> INISIATIF / <i>INITIATIVE</i>	<b>6</b> INISIATIF / <i>INITIATIVE</i>	<b>16</b> INISIATIF / <i>INITIATIVE</i>
<b>45</b> PELAN TINDAKAN / <i>ACTION PLAN</i>	<b>60</b> PELAN TINDAKAN / <i>ACTION PLAN</i>	<b>23</b> PELAN TINDAKAN / <i>ACTION PLAN</i>	<b>53</b> PELAN TINDAKAN / <i>ACTION PLAN</i>

Rajah 8.9 : Pelan Strategik Analitik Data Raya Jabatan Alam Sekitar  
 Figure 8.9 : Big Data Analytics Strategic Plan of the Department of Environment

Berlandaskan kemajuan dan evolusi Analitik Data Raya, pelan ini dapat memandu JAS untuk menjadi peneraju utama dalam pemeliharaan kelestarian alam sekitar di Malaysia melalui pemanfaatan data raya bagi menjamin pembangunan sosioekonomi yang mampan dan holistik.

Based on the progress and evolution of Big Data Analytics, this plan can guide DOE to become the main leader in the preservation of environmental sustainability in Malaysia through the utilisation of big data to ensure sustainable and holistic socioeconomic development.



📍 Kuala Lumpur, Malaysia

CHAPTER 9

# BAB 9

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



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

Sebagai sebuah Pusat Kecemerlangan dalam Pengurusan Alam Sekitar di Malaysia, EiMAS bukan sahaja berperanan dalam meningkatkan kompetensi warga 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.

Jumlah perjawatan EiMAS sehingga 31 Disember 2022 adalah 50 perjawatan dengan pengisian sebanyak 45 perjawatan.

### PROGRAM LATIHAN EiMAS KEPADA PEGAWAI DAN KAKITANGAN JAS 2022

EiMAS telah membangunkan program latihan dalam bidang pengurusan alam sekitar dan kawalan pencemaran, serta perhatian telah diberikan kepada pembangunan modal insan yang dapat melindungi dan menguruskan alam sekitar secara menyeluruh seperti dalam **Jadual 9.1**. Sebanyak 56 latihan/kursus telah dilaksanakan dengan jumlah kehadiran seramai 1,727 peserta.

EiMAS is poised to be a Center of Excellence in Environmental Management in Malaysia to conduct staff training for the department and other government agencies, organisations, local industry and also international environmental agencies. The continuous learning process is based on practical knowledge and competency related to the environment.

The total staff is 50, although as at 31<sup>st</sup> December 2022 only 45 posts were filled.

### EiMAS TRAINING PROGRAMME FOR DOE OFFICERS AND STAFF 2022

EiMAS has developed training modules on environmental management and pollution control, as well as the development of human capital capable of comprehensively safeguarding the environment. This can be seen in **Table 9.1**. A total of 56 trainings/courses were implemented with an attendance of 1,727 participants.

Jadual 9.1: Senarai Program Latihan EiMAS, 2022  
Table 9.1: EiMAS Training Programmes List, 2022

BIL.	PENGURUSAN KUALITI AIR WATER QUALITY MANAGEMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Taklimat Penyediaan Laporan Latihan Lapangan bagi Kursus Profesional Alam Sekitar Bertauliah dalam Kawalan Pencemaran Air Siri 1/2022 <i>Briefing session on the preparation of Field Training Reports (FTR) for Certified Environmental Professionals in the Water Pollution Control Series 1/2022</i>	27 Januari 27 <sup>th</sup> January	14
2.	Bengkel Penyediaan Laporan Latihan Lapangan bagi Kursus Profesional Alam Sekitar Bertauliah dalam Kawalan Pencemaran Air Siri 1/2022 <i>Workshop on the preparation of Field Training Report (FTR) for Certified Environmental Professionals in Water Pollution Control Series 1/2022</i>	21 - 25 Mac 21 <sup>st</sup> - 25 <sup>th</sup> March	10
3.	Kursus Sistem Pengolahan Efluen Perindustrian (Proses Fizikal dan Kimia & Proses Biologi) – Unit Proses dan Pemantauan Prestasi <i>Course on Industrial Effluent Treatment Systems (Physical and Chemical Processes &amp; Biological Processes) – Unit Process and Performance Monitoring</i>	16 Jun 16 <sup>th</sup> June	95

Jadual 9.1: Senarai Program Latihan EiMAS, 2022  
Table 9.1: EiMAS Training Programmes List, 2022

BIL.	PENGURUSAN KUALITI AIR WATER QUALITY MANAGEMENT	TARIKH DATE	PESERTA PARTICIPANTS
4.	Bengkel Penyediaan Modul Pembelajaran bagi Kursus Notifikasi Sistem Pengolahan Efluen Perindustrian – Rekabentuk dan Operasi <i>Workshop on the preparation of Training Modules for the Industrial Effluent Treatment System Notification – Design and Operation</i>	22 - 24 Jun 22 <sup>nd</sup> - 24 <sup>th</sup> June	15
5.	Kursus Sistem Pengolahan Efluen Kilang Kelapa Sawit – Semakan terhadap sistem kolam tipikal <i>Course on Palm Oil Mill Effluent Treatment Systems – Review of Typical Ponding System</i>	15 September 15 <sup>th</sup> September	69
6.	Kursus Profesional Alam Sekitar Bertauliah dalam Pemeriksaan Sistem Pengolahan Efluen Perindustrian – Bahagian 1 & 2 <i>Course on Certified Environmental Professional in Industrial Effluent Treatment Systems (CePIETS) – Part 1 &amp; 2</i>	26 - 30 September (Bahagian 1) 3 - 7 Oktober (Bahagian 2) 26 <sup>th</sup> - 30 <sup>th</sup> September (Part 1) 3 <sup>rd</sup> - 7 <sup>th</sup> October (Part 2)	15
<b>JUMLAH / TOTAL</b>			<b>218</b>
BIL.	PENGURUSAN KUALITI UDARA AIR QUALITY MANAGEMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Latihan Hands on Peralatan LPA Smoke Meter <i>Hands On Training of LPA Smoke Meter Equipment</i>	27 Januari 2022 27 <sup>th</sup> January 2022	22
2.	Kursus Profesional Alam Sekitar Bertauliah Dalam Pemeriksaan Penggahar (CePSI) <i>Course for Certified Environmental Professionals in Scrubber Inspection (CePSI)</i>	7 - 11 Februari 2022 7 <sup>th</sup> - 11 <sup>th</sup> February 2022	15
3.	Kursus Persijilan Penguji Ujian Pelepasan Asap Kenderaan (Diesel & Petrol) <i>Certification Course for Vehicle Emission Tester (Diesel &amp; Petrol)</i>	1 - 3 Mac 2022 1 <sup>st</sup> - 3 <sup>rd</sup> March 2022	32
4.	Kursus Profesional Alam Sekitar Bertauliah Dalam Pemeriksaan Beg Penapis (CEPBF1) <i>Course for Certified Environmental Professionals in Bag Filter Inspection (CEPBF1)</i>	9 - 13 Mei 2022 9 <sup>th</sup> - 13 <sup>th</sup> May 2022	29
5.	Kursus Persijilan Penguji Ujian Pelepasan Asap Kenderaan (Diesel & Petrol) - Fleet Operator (FO) / Kemudahan Yang Dilesenkan (KYDL) <i>Certification Course for Vehicle Emission Testers (Diesel &amp; Petrol) - Fleet Operator (FO) / Licensed Facility (KYDL)</i>	21 - 23 Jun 2022 21 <sup>st</sup> - 23 <sup>th</sup> June 2022	32
6.	Latihan Secara Maya / Hibrid: Kursus Pengenalan Kepada Pemendak Elektrostatik (Electrostatic Precipitator) <i>Online / Hybrid Training: Introduction Course to Electrostatic Precipitator (Electrostatic Precipitator)</i>	23 - 24 Ogos 2022 23 <sup>th</sup> - 24 <sup>th</sup> August 2022	47
7.	Program Pembangunan Kepakaran Alat Kawalan Pencemaran Udara Electrostatic Precipitator (ESP) <i>Programme in Developing Expertise in Air Pollution Control Electrostatic Precipitators (ESP)</i>	26 - 30 September 2022 26 <sup>th</sup> - 30 <sup>th</sup> September 2022	16
<b>JUMLAH / TOTAL</b>			<b>193</b>
BIL.	PENGURUSAN BUANGAN TERJADUAL SCHEDULED WASTE MANAGEMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Bengkel Penambahbaikan Modul Kursus Kompetensi Protokol Persampelan Buangan Terjadual <i>Workshop on Improvement of Scheduled Waste Sampling Protocol Competency Course Module</i>	8 - 10 Februari 2022 8 <sup>th</sup> - 10 <sup>th</sup> February 2022	10
2.	Kursus Kompetensi Protokol Persampelan Buangan Terjadual Siri 1 <i>Scheduled Waste Sampling Protocol Competency Course Series 1</i>	14 - 17 Mac 2022 14 <sup>th</sup> - 17 <sup>th</sup> March 2022	21

Jadual 9.1: Senarai Program Latihan EIMAS, 2022  
Table 9.1: EIMAS Training Programmes List, 2022

BIL.	PENGURUSAN BUANGAN TERJADUAL SCHEDULED WASTE MANAGEMENT	TARIKH DATE	PESERTA PARTICIPANTS
3.	Kursus Amalan Pengurusan Terbaik bagi Buangan Terjadual Best Management Practices Course for Scheduled Waste	28 Mac - 1 April 2022 28 <sup>th</sup> March - 1 <sup>st</sup> April 2022	16
4.	Bengkel Pengemaskinian Prosedur Tetap Operasi Penyiasatan Pelupusan Haram Buangan Terjadual Workshop on Standard Operating Procedures (SOPs) on Investigation operations of Illegal Disposal of Scheduled Waste	28 - 30 Jun 2022 28 <sup>th</sup> - 30 <sup>th</sup> June 2022	15
5.	Kursus Kompetensi Protokol Persampelan Buangan Terjadual Siri 2 Scheduled Waste Sampling Protocol Competency Course Series 2	1 - 4 Ogos 2022 1 <sup>st</sup> - 4 <sup>th</sup> August 2022	33
6.	Kursus Certified Environmental Professional in Scheduled Wastes Inspection (CePSWI) Course for Certified Environmental Professionals in Scheduled Wastes Inspection (CePSWI)	22 - 26 Ogos 2022 22 <sup>nd</sup> - 26 <sup>th</sup> August 2022	29
7.	Kursus Penyamaran, Intipan dan Risikan Kes Pengimportan Haram Buangan Terjadual Course on Impersonation, Spying and Intelligence on Scheduled Waste Illegal Importation Cases	17 - 20 Oktober 2022 17 <sup>th</sup> - 20 <sup>th</sup> October 2022	23
8.	Kursus Keselamatan dan Kesihatan Pekerjaan Untuk Pegawai JAS Occupational Safety and Health Course for DOE Officers	2 November 2022 2 <sup>nd</sup> November 2022	34
<b>JUMLAH / TOTAL</b>			<b>181</b>

BIL.	PERUNDANGAN DAN PENGUATKUASAAN ENVIRONMENTAL LEGISLATION AND ENFORCEMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Kursus Penyediaan Kertas Siasatan Course on Preparation of Investigation Papers	22 -23 Februari 2022 22 <sup>nd</sup> - 23 <sup>rd</sup> February 2022	75
2.	Kursus Pemantapan Pegawai Pendakwa Consolidation Course for Prosecuting Officers	7 - 11 Mac 7 <sup>th</sup> - 11 <sup>th</sup> March 2022	24
3.	Pematuhan Terhadap AKAS 1974 Compliance with AKAS 1974	12-14 April 2022 12 <sup>th</sup> - 14 <sup>th</sup> April 2022	42
4.	Kursus Penyiasatan & Penguatkuasaan Pembakaran Terbuka Course on Open Burning Investigation and Enforcement	13 - 15 Jun 13 <sup>th</sup> - 15 <sup>th</sup> June 2022	25
5.	Kursus Penguatkuasaan Praktikal Course on Practical Enforcement	21 Julai 2022 21 <sup>st</sup> July 2022	101
6.	Kursus Pemahaman Dan Kemahiran Tangkapan Course on Understanding and Skill for Arrest	15 - 18 Ogos 2022 15 <sup>th</sup> - 18 <sup>th</sup> August 2022	26
7.	Bengkel Draf Penggubalan Peraturan OYB Workshop on Drafting the Competent Person Regulation	23 - 24 Ogos 2022 23 <sup>rd</sup> - 24 <sup>th</sup> August 2022	21
8.	Penyiasatan Aduan Pencemaran Alam Sekitar Investigation on Environmental Pollution Complaints:	27 Oktober 2022 27 <sup>th</sup> October 2022	26
<b>JUMLAH / TOTAL</b>			<b>340</b>

BIL.	PENGURUSAN ALAM SEKITAR DAN KESAN KEPADA ALAM SEKITAR ENVIRONMENTAL MANAGEMENT AND IMPACT ASSESSMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Penguatkuasaan Kawalan Hakisan Tanah & Kelodakan Bagi Projek EIA Enforcement of Soil Erosion and Sedimentation Control in EIA Projects	22 Mac 2022 22 <sup>nd</sup> March 2022	43
2.	Prosedur Penilaian Laporan Kesan Kepada Alam Sekeliling (EIA) Environmental Impact Assessment (EIA) Report Assessment Procedure	6 - 7 April 2022 6 <sup>th</sup> - 7 <sup>th</sup> June 2022	70
3.	Asas Pemodelan Air Sungai Basics of River Water Modelling	21 April 2022 21 <sup>st</sup> April 2022	59

Jadual 9.1: Senarai Program Latihan EiMAS, 2022  
Table 9.1: EiMAS Training Programmes List, 2022

BIL.	PENGURUSAN ALAM SEKITAR DAN KESAN KEPADA ALAM SEKITAR ENVIRONMENTAL MANAGEMENT AND IMPACT ASSESSMENT	TARIKH DATE	PESERTA PARTICIPANTS
4.	Kursus Juruaudit Alam Sekitar Environmental Audit Course	23 - 27 Mei 2022 23 <sup>rd</sup> - 27 <sup>th</sup> May 2022	27
		18 - 22 Julai 2022 18 <sup>th</sup> - 22 <sup>nd</sup> July 2022	18
5.	Certified Professional Environmental Officer in EIA Project (CePEOEIA) Certified Professional Environmental Officer in EIA Project (CePEOEIA)	13 - 17 Jun 2022 13 <sup>rd</sup> - 17 <sup>th</sup> June 2022	20
		25 - 29 Julai 2022 25 <sup>th</sup> - 29 <sup>th</sup> July 2022	18
		15 - 19 Ogos 2022 15 <sup>th</sup> - 19 <sup>th</sup> August 2022	43
6.	Kursus Jururunding EIA EIA Consultant Course	3 - 7 September 2022 3 <sup>rd</sup> - 7 <sup>th</sup> September 2022	31
		19 - 23 September 2022 19 <sup>th</sup> - 23 <sup>rd</sup> September 2022	28
<b>JUMLAH / TOTAL</b>			<b>357</b>
BIL.	PENGURUSAN KUALITI QUALITY MANAGEMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Kursus Asas Lanjutan Pegawai Baharu JAS 2022 (Kumpulan 1) Advanced Basic Course for Newly Appointed DOE Officers 2022 (Group 1)	14 - 18 Februari 2022 14 <sup>th</sup> - 18 <sup>th</sup> February 2022	33
2.	Kursus Asas Lanjutan Pegawai Baharu JAS 2022 (Kumpulan 2) Advanced Basic Course for Newly Appointed DOE Officers 2022 (Group 2)	21 - 25 Februari 2022 21 <sup>st</sup> - 25 <sup>th</sup> February 2022	28
3.	Bengkel Pemantapan EiMAS Norma Baharu Workshop on Consolidation for EiMAS New Norms	31 Mei 2022 31 <sup>st</sup> May 2022	18
4.	Bengkel Kawalan & Pengurusan Pencemaran Industri Antara EiMAS & Singapore Environment Institute (SEI) The Joint Workshop on Industrial Pollution Control & Management Between EiMAS & Singapore Environment Institute (SEI)	5 - 6 Julai 2022 5 <sup>th</sup> - 6 <sup>th</sup> July 2022	57
5.	Kursus Pembentukan Insan Cemerlang & Kerja Berpasukan Course on Formation of Outstanding People & Teamwork	3 Oktober 2022 3 <sup>rd</sup> October 2022	33
6.	Kursus Asas Pegawai Baharu JAS 2022 Basic Course for Newly Appointed DOE Officers 2022	3 - 28 Oktober 2022 3 <sup>rd</sup> - 28 <sup>th</sup> October 2022	33
<b>JUMLAH / TOTAL</b>			<b>202</b>
BIL.	KOMPETENSI DAN PENSIJILAN INDUSTRI COMPETENCY AND INDUSTRY CERTIFICATION	TARIKH DATE	PESERTA PARTICIPANTS
1.	Pra-Persediaan Bengkel Pemantapan Modul Kursus-Kursus Pensijilan Industri Pre-Preparation Workshop on Enhancement of Modules for Industry Certification Courses	7 - 8 Februari 2022 7 <sup>th</sup> - 8 <sup>th</sup> February 2022	15
		14 - 15 Februari 2022 14 <sup>th</sup> - 15 <sup>th</sup> February 2022	
2.	Bengkel Pemantapan Modul Kursus-Kursus Pensijilan Industri Workshop on Enhancement of Industrial Certification Courses	7 - 10 Mac 2022 7 <sup>th</sup> - 10 <sup>th</sup> March 2022	23
3.	Bengkel Pengubalan Soalan Peperiksaan Kursus-Kursus Pensijilan Industri Jabatan Alam Sekitar Workshop on Drafting Questions for Industrial Certification Courses	7 - 10 Jun 2022 7 <sup>th</sup> - 10 <sup>th</sup> June 2022	30

Jadual 9.1: Senarai Program Latihan E*i*MAS, 2022  
Table 9.1: E*i*MAS Training Programmes List, 2022

BIL.	KOMPETENSI DAN PENSIJILAN INDUSTRI COMPETENCY AND INDUSTRY CERTIFICATION	TARIKH DATE	PESERTA PARTICIPANTS
4.	Kursus Operator Bertauliah dalam Pengurusan Buangan Terjadual Course for Certified Operator in Scheduled Waste Management	9 - 10 Ogos 2022 9 <sup>th</sup> - 10 <sup>th</sup> August 2022	30
<b>JUMLAH / TOTAL</b>			<b>98</b>
BIL.	TEKNOLOGI MAKLUMAT & KOMUNIKASI INFORMATION & COMMUNICATION TECHNOLOGY	TARIKH DATE	PESERTA PARTICIPANTS
1.	Kursus Network - Attached Storage (NAS) Network Attached Storage (NAS) Course	31 Mac 2022 31 <sup>st</sup> March 2022	16
2.	Kursus Penggunaan Sistem Latihan Bersepadu (SLB) Kepada E <i>i</i> MAS Siri 1 Sistem Latihan Bersepadu (SLB) Hands On Training for E <i>i</i> MAS' Course Administrator Series 1	17 - 18 Ogos 2022 17 <sup>th</sup> - 18 <sup>th</sup> August 2022	15
3.	Kursus Penggunaan Sistem Latihan Bersepadu (SLB) Kepada E <i>i</i> MAS Siri 2 Sistem Latihan Bersepadu (SLB) Hands On Training for E <i>i</i> MAS' Course Administrator Series 2	24 - 25 Ogos 2022 24 <sup>th</sup> - 25 <sup>th</sup> August 2022	8
4.	Kursus Pemantapan Teknologi Maklumat: Sistem Latihan E <i>i</i> MAS Bagi Pentadbir Sistem Latihan Information Technology Update Course : E <i>i</i> MAS Training System for System Administrator	29 - 30 Ogos 2022 29 <sup>th</sup> - 30 <sup>th</sup> August 2022	17
5.	Bengkel Kajian Keperluan Pembangunan Portal E <i>i</i> MAS E <i>i</i> MAS's Portal Development Requirements Study Workshop	5 - 7 Oktober 2022 5 <sup>th</sup> - 7 <sup>th</sup> October 2022	30
<b>JUMLAH / TOTAL</b>			<b>86</b>
BIL.	PERPUSTAKAAN DAN PENGURUSAN MAKLUMAT LIBRARY AND KNOWLEDGE MANAGEMENT	TARIKH DATE	PESERTA PARTICIPANTS
1.	Bengkel Mudahnya Reka Bentuk E-Poster Menggunakan Aplikasi Workshop on Simple E-Poster Design Using Application	20 - 21 Julai 20 <sup>th</sup> - 21 <sup>st</sup> July	22
<b>JUMLAH / TOTAL</b>			<b>22</b>
BIL.	PENTADBIRAN DAN KEWANGAN ADMINISTRATION AND FINANCE	TARIKH DATE	PESERTA PARTICIPANTS
1.	Bengkel Pengurusan Rekod Workshop on Records Management	19 - 21 Januari 2022 19 <sup>th</sup> - 21 <sup>st</sup> January 2022	30
<b>JUMLAH / TOTAL</b>			<b>30</b>

**Rajah 9.1** menunjukkan Program Latihan yang telah dilaksanakan oleh E*i*MAS mengikut kategori kursus kepada kakitangan JAS dan pihak swasta. Sebanyak 56 latihan/kursus telah dilaksanakan dengan jumlah kehadiran seramai 1,727 peserta.

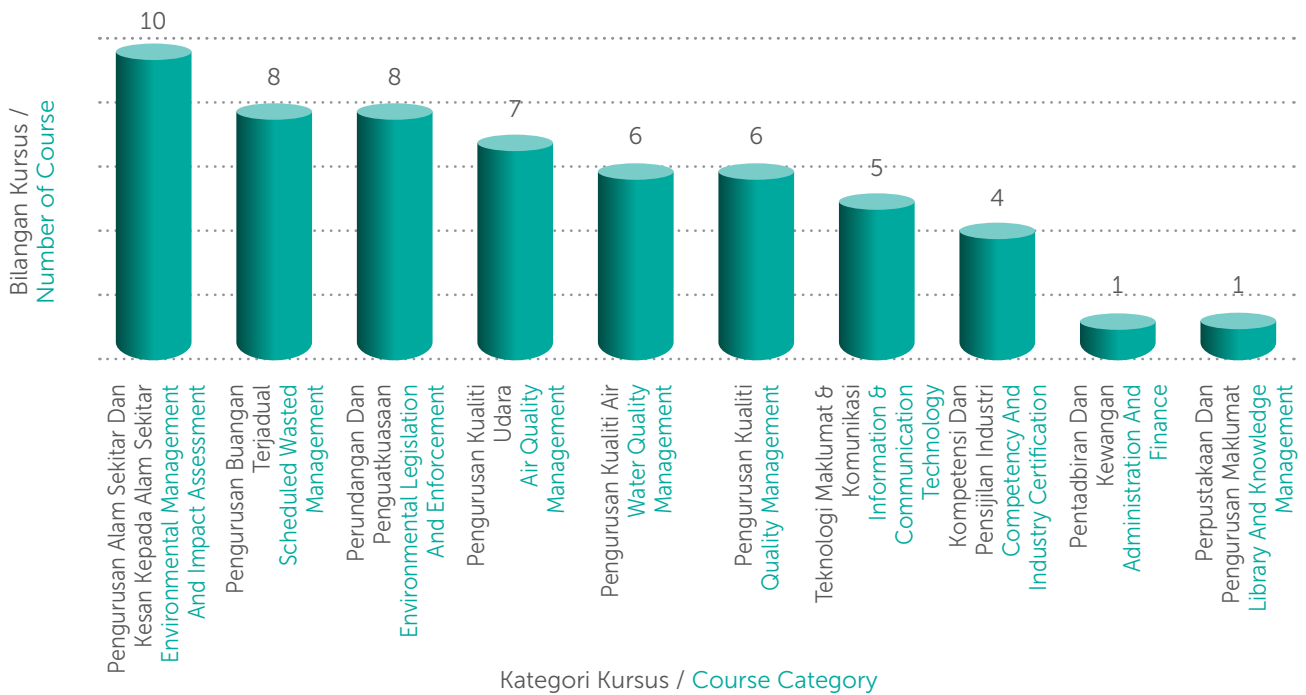
**Rajah 9.2** menunjukkan bilangan peserta mengikut kategori kursus bagi program latihan E*i*MAS bagi tahun 2022.

Seramai 1,727 orang peserta yang terdiri daripada pegawai JAS telah menyertai program Latihan tersebut.

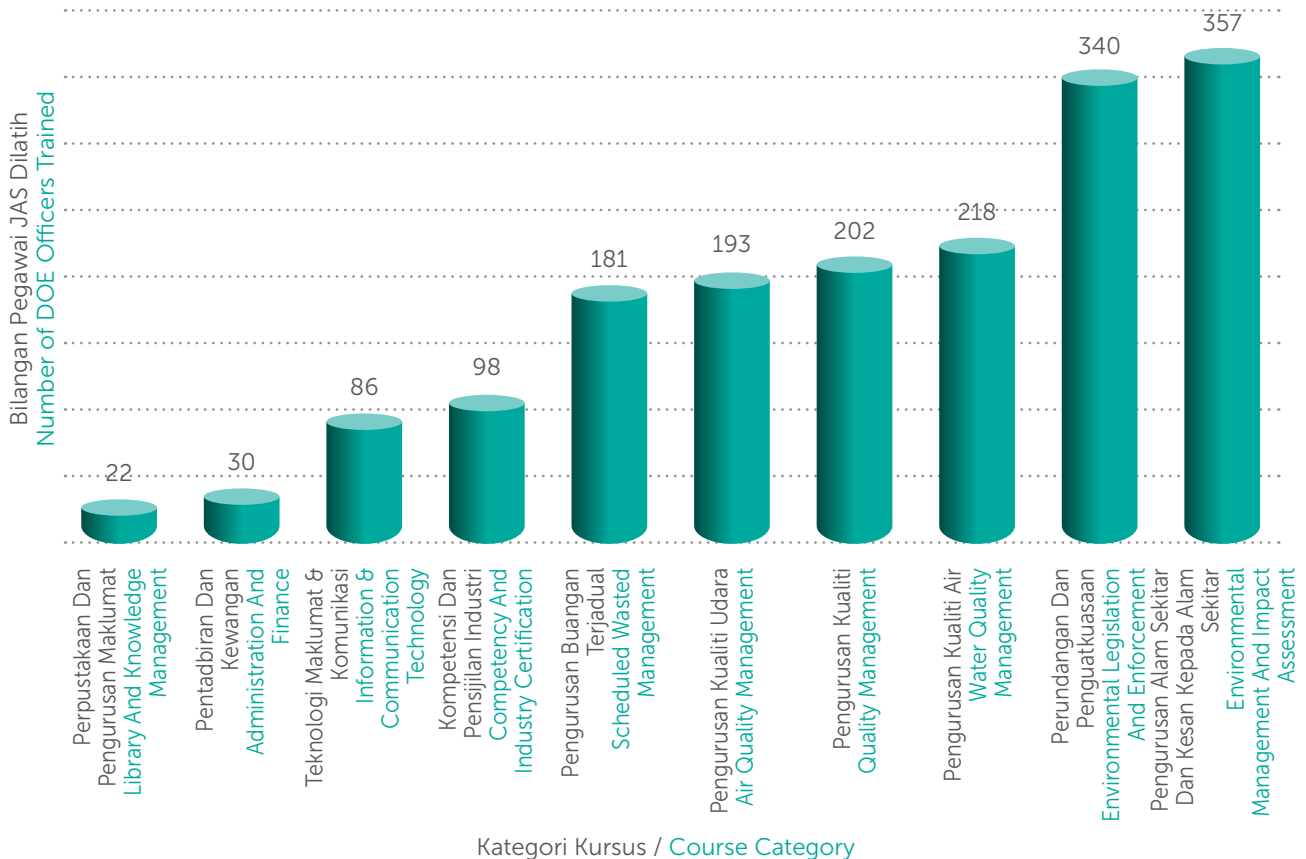
**Figure 9.1** shows Training Programmes that have been conducted by E*i*MAS according to course category, to DOE and private staff. A total of 56 trainings/courses were conducted with an attendance of 1,727 participants.

**Figure 9.2** shows the number of participants by course category for E*i*MAS Training Programmes conducted in 2022.

A total of 1,727 DOE officers participated in the training programme.



Rajah 9.1 : Program Latihan EIMAS untuk Pegawai dan Kakitangan JAS 2022  
Figure 9.1: EIMAS Training Programmes for DOE Staff 2022



Rajah 9.2: Bilangan Pegawai JAS Dilatih Mengikut Kategori Kursus  
Figure 9.2: Number of DOE Officers Trained by Course Category



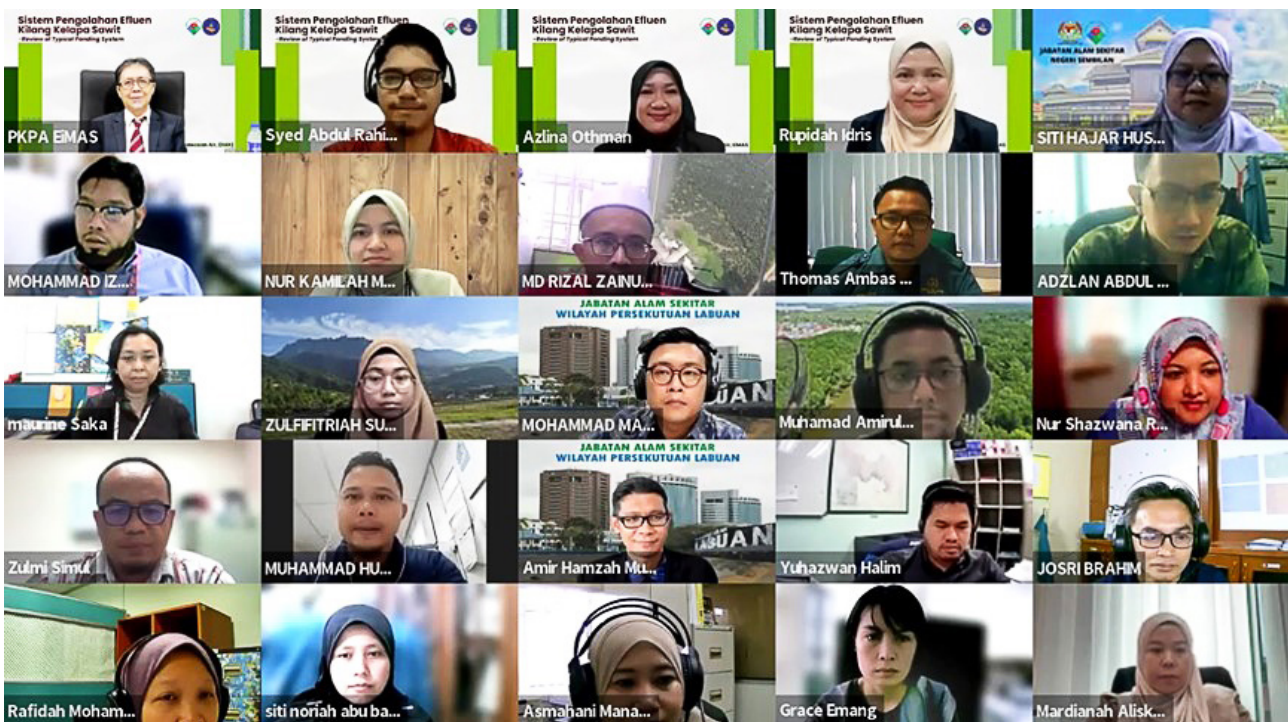
Peserta Bengkel Penyediaan Modul Pembelajaran bagi Kursus Notifikasi Sistem Pengolahan Efluen Perindustrian - Rekabentuk dan Operasi  
Participants at the Workshop on Preparing of Learning Modules for the Course on Systems Notification for Industrial Effluent Treatment - Design and Operation

### **BENGKEL PENYEDIAAN MODUL PEMBELAJARAN BAGI KURSUS NOTIFIKASI SISTEM PENGOLAHAN EFLUEN PERINDUSTRIAN – REKABENTUK DAN OPERASI**

Bengkel ini telah diadakan pada 22 - 24 Jun 2022, objektif bengkel adalah untuk membangunkan modul pembelajaran yang akan digunakan bagi melatih pegawai-pegawai JAS dalam membuat semakan ke atas notifikasi sistem pengolahan efluen perindustrian yang dikemukakan oleh industri.

### **WORKSHOP ON THE PREPARATION OF TRAINING MODULES FOR THE COURSE ON INDUSTRIAL EFFLUENT TREATMENT SYSTEM NOTIFICATION – DESIGN AND OPERATION**

The workshop was held from 22<sup>nd</sup> - 24<sup>th</sup> June 2022, the objective of this workshop was to develop a learning module that will be used to train DOE officers in reviewing industrial effluent notification submitted by industries.



Kursus Secara atas Talian Sistem Pengolahan Efluen Kilang Kelapa Sawit – Semakan Terhadap Sistem Kolam Tipikal

Online Course on Palm Oil Mill Effluent Treatment Systems – Review of Typical Ponding System

### KURSUS SISTEM PENGOLAHAN EFLUEN KILANG KELAPA SAWIT – SEMAKAN TERHADAP SISTEM KOLAM TIPIKAL

Pada 15 September 2022, seramai 69 orang peserta layak menerima e-sijil bagi kursus secara online ini.

Peserta turut didedahkan dengan kaedah merekabentuk kolam pengolahan efluen sawit berdasarkan parameter-parameter yang berkaitan.

### COURSE ON PALM OIL MILL EFFLUENT TREATMENT SYSTEMS – REVIEW OF TYPICAL PONDING SYSTEM

On 15<sup>th</sup> September 2022, 69 participants qualified to receive an e-certification for this online course.

Participants were also exposed to the method of designing palm oil effluent treatment ponds based on related parameters.



Sesi Praktikal Kursus Pensijilan Profesional dalam Pemeriksaan Sistem Pengolahan Efluen Perindustrian  
**Course for Certified Environment Professional in Industrial Effluent Treatment Systems Inspection - Practical Session**

### **KURSUS PERSIJILAN PROFESIONAL DALAM PEMERIKSAAN SISTEM PENGOLAHAN EFLUEN PERINDUSTRIAN**

Kursus ini telah dilaksanakan pada 26 September hingga 7 Oktober 2022.

Kursus selama 10 hari ini diisi dengan sesi teori, sesi praktikal di Makmal Pembelajaran E*i*MAS, sesi penyediaan laporan di lapangan dan sesi temuduga sehingga 15 orang calon telah layak dipersijilkan dalam kursus kompetensi ini.

### **PROGRAM PUSAT BAHAN BERBAHAYA**

Pusat Bahan Berbahaya, Institut Alam Sekitar Malaysia telah melaksanakan sebanyak 8 kursus pada tahun 2022. Antara kursus baru yang diperkenalkan oleh Pusat Bahan Berbahaya ialah Kursus Amalan Pengurusan Terbaik bagi Buangan Terjadual. Objekif kursus ini diadakan adalah untuk memberi pendedahan kepada pegawai Jabatan Alam Sekitar mengenai pelupusan buangan terjadual melalui kaedah Co-Processing dengan mengamalkan prinsip *cradle to cradle*. Kursus ini adalah kerjasama antara E*i*MAS, Bahagian Bahan Berbahaya, JAS Ibu Pejabat dan YTL Pahang Cement Sdn. Bhd. Pihak YTL Pahang Cement dipilih untuk bekerjasama dengan E*i*MAS dalam pelaksanaan kursus ini kerana premis ini telah melaksanakan kaedah *Co-Processing* dan prinsip *cradle to cradle* dalam proses menghasilkan produk simen dipremis mereka.

### **COURSE FOR CERTIFIED ENVIRONMENTAL PROFESSIONALS IN INDUSTRIAL EFFLUENT TREATMENT SYSTEMS INSPECTION (CEPIETSI)**

This course was held from 26<sup>th</sup> September to 7<sup>th</sup> October 2022.

This 10 - day course was equipped with theory sessions as well as hands - on sessions in E*i*MAS laboratory, preparing Field Training Report (FTR) and interview sessions. A total of 15 candidates were successfully certified in this competency course.

### **PROGRAMMES CONDUCTED BY THE HAZARDOUS SUBSTANCES CENTRE**

The Hazardous Substances Centre, Environment Institute of Malaysia has conducted a total of eight (8) courses in 2022. One of the new courses introduced by the Hazardous Substances Centre, is the Best Management Practices Course for Scheduled Waste. The objective of this course is to give exposure to Department of Environment officers on scheduled waste disposal through the co-processing method by practicing the cradle-to-cradle principle. This course is a collaboration between E*i*MAS, Hazardous Substances Division, DOE Headquarters and YTL Pahang Cement Sdn. Bhd. YTL Pahang Cement was chosen to collaborate with E*i*MAS in the implementation of this course because this organisation has implemented the co-processing method and the cradle-to-cradle principle in the process of producing cement products at their premises.



Ms Clarisse Loh dari YTL Cement menerima sijil penghargaan dari En Salahudin Sidik, Pengarah EIMAS  
Ms Clarisse Loh from YTL Cement receiving a certificate of appreciation from Mr Salahudin Sidik, Director of EIMAS



Aktiviti yang dijalankan Semasa Kursus yang dianjurkan oleh Pusat Bahan Berbahaya  
Activities during the Course Organised by the Centre for Hazardous Substances Management

Pendedahan pegawai JAS dengan *Best Management Practices for Scheduled Wastes* akan memberi idea kepada pegawai JAS untuk mempromosi amalan ini di sektor pengilangan. Kursus ini dapat memperkukuhkan bidang tugas pegawai JAS dan memberi impak positif dalam menguatkuasakan Akta Kualiti Alam Sekeliling, 1974.

## PENILAIAN KESAN KEPADA ALAM SEKITAR

Pada tahun 2022, sebanyak tiga (3) kursus kepada pegawai Jabatan Alam Sekitar dan tujuh (7) 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 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 membuat penilaian laporan EIA dan juga menjalankan kerja-kerja penguatkuasaan pematuhan syarat-syarat kelulusan laporan EIA.

Exposure of DOE officials to *Best Management Practices for Scheduled Wastes* will give these officers ideas to promote these practices in the manufacturing sector. This course can strengthen the duties of DOE officers and have a positive impact in enforcing the Environmental Quality Act, 1974.

## ENVIRONMENTAL IMPACT ASSESSMENT

In 2022, a total of three (3) courses for Department of Environment officers and seven (7) courses for industry and environmental practitioners have been conducted. Courses for industry and environmental practitioners is a requirement under the legislation of the Environmental Quality Act 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 requirement of Competent Persons under Section 49A EQA 1974.

The purpose of these courses for the Department of Environment officers was to enhance the knowledge of these officers in carrying out the task of making an evaluation of the EIA report and also in carrying out enforcement works in compliance with the conditions of approval of the EIA report.



Aktiviti yang dijalankan Semasa Kursus Berkaitan Penilaian Kesan kepada Alam Sekitar  
Activity during the Environmental Impact Assessment Course Related

## KURSUS ASAS PEGAWAI BAHARU JAS 2022

Kursus ini telah dijalankan selama empat (4) minggu iaitu pada 3 hingga 28 Oktober 2022 di Institut Alam Sekitar Malaysia (EiMAS). Ia telah disertai oleh enam (6) orang pegawai kawalan alam sekitar dan 26 orang penolong jurutera. 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 untuk 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.

Kursus ini telah dirasmikan oleh YBr. Dr. Norhazni binti Mat Sari selaku Timbalan Ketua Pengarah (Pembangunan) JAS pada 5 Oktober 2022. 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 atau ilmu pertolongan cemas.

Selain ceramah ilmiah di dalam kelas, lawatan teknikal seperti lawatan ke stesen pengawasan sungai dan udara, lawatan ke kilang kelapa sawit dan lawatan ke premis yang bukan ditetapkan (PYBDT) juga diselitkan di dalam silibus kursus.

Pada hari terakhir kursus, peserta yang telah dibahagikan kepada lima (5) kumpulan untuk membuat pembentangan mengikut tugas yang telah diberikan di awal kursus.

## BENKEL KAWALAN DAN PENGURUSAN PENCEMARAN INDUSTRI ANJURAN BERSAMA ANTARA INSTITUT ALAM SEKITAR MALAYSIA (EiMAS) DAN SINGAPORE ENVIRONMENT INSTITUTE (SEI)

Bengkel yang melibatkan kerjasama di antara EiMAS dan SEI ini telah dijalankan secara hibrid pada 5 hingga 6 Julai 2022 di EiMAS dan SEI. Ia telah disertai oleh 33 orang pegawai dari JAS dan 24 orang pegawai dari SEI. Bengkel anjuran bersama dua negara ini adalah untuk mencapai objektif meningkatkan pengurusan amalan industri dan mengurangkan risiko serta kesan pencemaran industri melalui perkongsian ilmu berkaitan amalan dan teknologi yang digunakan dalam kawalan pencemaran alam sekitar.

Di antara perkongsian ilmu dari SEI adalah bertajuk "Siting of Industries in Singapore: Siting Considerations and Evaluation Framework" dan manakala pembentangan dari JAS bertajuk

## BASIC COURSE FOR NEW DOE OFFICERS 2022

This course was conducted for four (4) weeks from 3<sup>rd</sup> to 28<sup>th</sup> October 2022 at the Environmental Institute of Malaysia (EiMAS). It was attended by six (6) environmental control officers and 26 assistant engineers. The objective of this course was to provide knowledge and exposure to participants about the responsibilities and duties of officers in the Department of Environment (DOE). The focus of this course was also for every officer in DOE to be proficient in the understanding the use of the Environmental Quality Act (AKAS) 1974, Standard Operating Procedures and departmental policies.

This course was officiated by YBr. Dr. Norhazni binti Mat Sari as Deputy Director General (Development) DOE on 5<sup>th</sup> October 2022. The course started as early as 6.30 am with exercise activities and marching under the supervision of officers from the Civil Defense Force (APM) and ended at 7.00 pm after an evening exercise session.

In addition to lectures in class, technical visits such as visits to river and air monitoring stations, visits to palm oil mills and visits to non-prescribed premises were also included in the course syllabus.

On the last day of the course, the participants who were divided into five (5) groups to make a presentation according to the assignments that had been given at the beginning of the course.

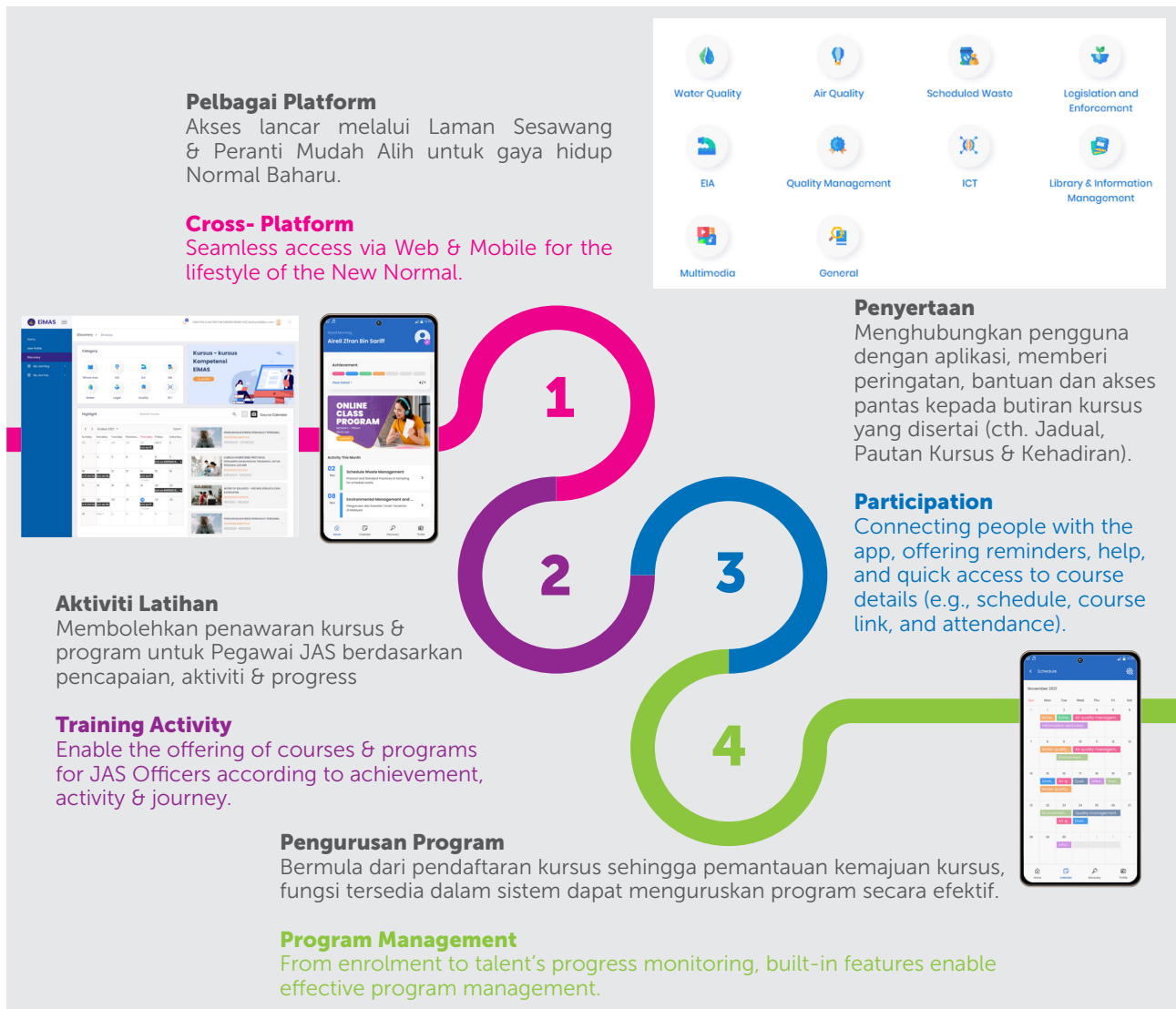
## THE JOINT WORKSHOP ON MONITORING AND MANAGEMENT OF INDUSTRIAL POLLUTION CONTROL BETWEEN ENVIRONMENT INSTITUTE OF MALAYSIA (EiMAS) AND SINGAPORE ENVIRONMENT INSTITUTE (SEI)

The collaborative workshop between EiMAS and SEI was conducted in a hybrid manner on 5<sup>th</sup> and 6<sup>th</sup> July 2022 at EiMAS and SEI. It was joined by 33 officers from DOE and 24 officers from SEI. The objective of this workshop, which was organised by the two countries, is to help improve the management of industrial practices and to reduce the risks and effects of industrial pollution through the sharing of knowledge related to practices and technologies used in environmental pollution control.

Among the knowledge sharing from SEI was a presentation on "Siting of Industries in Singapore: Siting Considerations and Evaluation Framework" while the presentation from DOE was on "Approach

“Approach To Self-Regulation Of Industries In Malaysia: Competent Person”. Kedua-dua negara juga membentangkan tajuk “Industrial Air Pollution Control Requirements: Legislation & Inspection” bagi negara masing-masing. Pelbagai soalan dikemukakan oleh kedua-dua pihak dalam memahami perundangan yang diamalkan di kedua-dua negara.

to Self-Regulation of Industries in Malaysia: Competent Persons”. Both countries also presented on “Industrial Air Pollution Control Requirements: Legislation & Inspection” for their respective countries. Various questions were raised by both parties in understanding the legislation practiced in their respective countries.



Rajah 9.3 : Fungsi Sistem Latihan Bersepadu (SLB)  
Figure 9.3 : Function of Integrated Training System (SLB)

## SISTEM LATIHAN BERSEPADU (SLB)

Pembelajaran dan membangunkan kepakaran sentiasa menjadi bahagian penting dalam sesebuah organisasi. Sistem SLB merupakan satu platform yang memberi landskap baharu dalam bidang pengurusan latihan alam sekitar yang menguruskan pentadbiran, pemantauan dan pelaporan program latihan yang ditawarkan di E*i*MAS. Kaedah

## INTEGRATED TRAINING SYSTEM (SLB)

Learning and developing expertise have always been integral parts of an organisation. SLB is a platform that provides a new landscape in the field of environmental training management by managing the administration, monitoring, and reporting of E*i*MAS-offered courses and training programmes. With the flexibility of hosting online or face-to-face

pembelajaran yang lebih fleksibel sama ada secara dalam talian atau pembelajaran bersemuka, SLB membolehkan pembelajaran secara berterusan bagi melahirkan tenaga kerja yang mahir dan bermotivasi.

Bermula daripada pendaftaran kursus sehingga pemantauan kemajuan kursus, fungsi sedia ada dalam sistem membolehkan pemantauan kehadiran peserta, pemarkahan serta tugas yang terlibat dapat dilaksanakan secara efektif. Paling utama, sistem SLB mengoptimumkan pengurusan kursus dan maklumat yang terkini, memberi manfaat kepada tenaga kerja E*i*MAS dan JAS melalui transformasi digital.

### **PENJENAMAAN SEMULA DAN NAIK TARAF PERPUSTAKAAN ENVIRO DIGITAL@E*i*MAS**

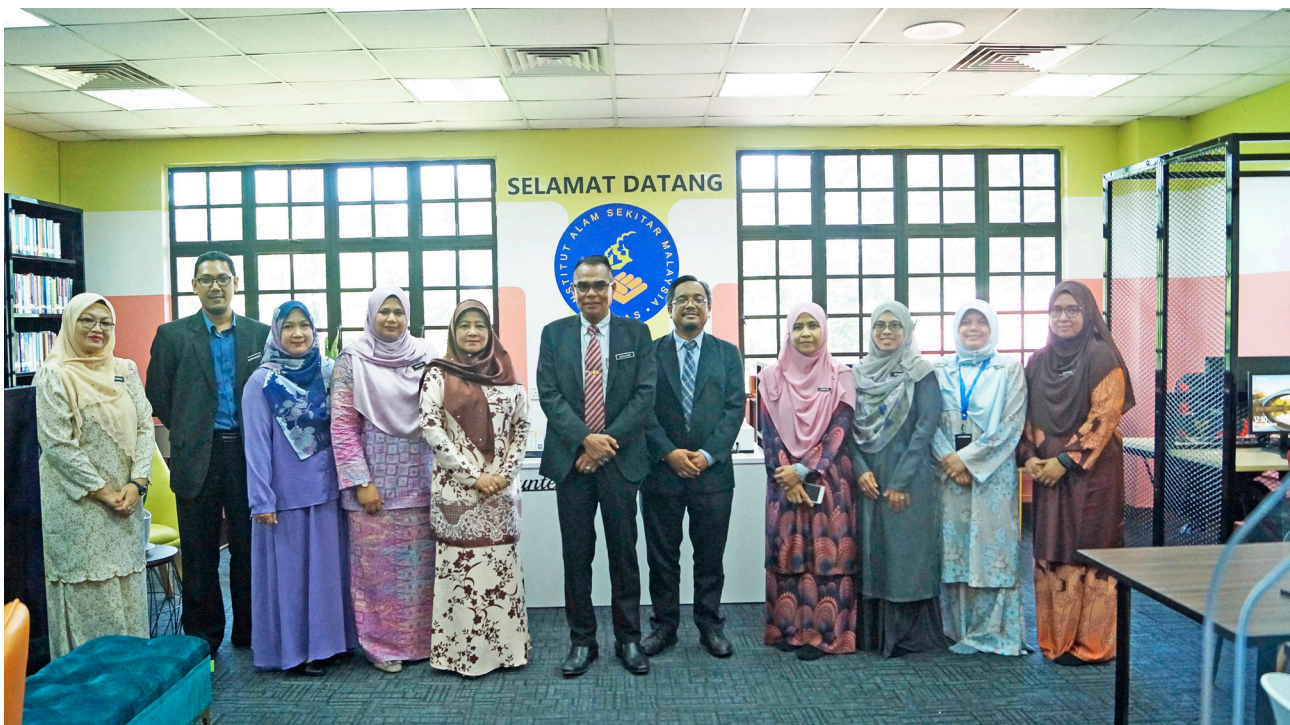
Penjenamaan semula serta projek naik taraf perpustakaan E*i*MAS dan perpustakaan Jabatan Alam Sekitar negeri telah memberikan imej baru yang lebih segar, kondusif, moden dan digital. Ianya dilihat selaras dengan aspirasi utama E*i*MAS sebagai sebuah Pusat Kecemerlangan bagi Pengurusan Alam Sekitar di Malaysia yang mementingkan persekitaran pembelajaran yang terbaik dan eksklusif.

classrooms, SLB embraces constant learning while keeping the workforce motivated and engaged.

From the point of enrolment to the monitoring of participants' progress, SLB's built-in features enable effective performance tracking of attendance, grades, submissions, and engagement. Most importantly, SLB optimises the course administration with self-service information updates and coordination, all of which benefit both the E*i*MAS and JAS workforce through digital transformation.

### **REBRANDING AND UPGRADING OF ENVIRO DIGITAL LIBRARY@E*i*MAS**

The rebranding and upgrading of E*i*MAS Library and all State Libraries under the Department of Environment (DOE) has provided a new, fresher, more conducive, modern and digital image to the libraries. It is in line with E*i*MAS' key aspiration as a Centre of Excellence for Environmental Management in Malaysia that values the best and exclusive learning environment.



Perpustakaan Enviro Digital@E*i*MAS menerima kunjungan daripada YBhg. Encik Wan Abdul Latiff bin Wan Jaffar (Ketua Pengarah Alam Sekitar) dan YBrs. Dr. Norhazni binti Mat Sari (Timbalan Ketua Pengarah Pembangunan) diiringi oleh Encik Salahudin bin Sidik (Pengarah E*i*MAS) serta pegawai-pegawai JAS  
 Enviro Digital Library@E*i*MAS welcomed a visit from YBhg. Encik Wan Abdul Latiff bin Wan Jaffar (Director General of Environment) and YBrs. Dr. Norhazni binti Mat Sari (Deputy Director General of Development) accompanied by Encik Salahudin bin Sidik (Director of E*i*MAS) as well as senior officers of DOE



YBhg. Encik Wan Abdul Latiff bin Wan Jaffar (Ketua Pengarah Alam Sekitar) dan YBrs. Dr. Norhazni binti Mat Sari (Timbalan Ketua Pengarah Pembangunan) menandatangani buku pelawat perpustakaan sebagai tanda kenangan

YBhg. Encik Wan Abdul Latiff bin Wan Jaffar (Director General of Environment) and YBrs. Dr. Norhazni binti Mat Sari (Deputy Director General of Development) sign the library visitor book as a sign of memories

Penyaluran peruntukan (waran) di bawah projek RMKe-12 RP2 melalui Bahagian Komunikasi Strategik ini telah banyak membantu Perpustakaan Enviro Digital@EiMAS meningkatkan lagi perkhidmatan, penyediaan dan sebaran maklumat kepada pengguna perpustakaan yang terdiri daripada warga Jabatan Alam sekitar, pelajar-pelajar universiti, organisasi kerajaan dan swasta.

#### PROGRAM LATIHAN KOMPETENSI EiMAS KEPADA PEGAWAI INDUSTRI 2022

Pada tahun 2022, petunjuk Prestasi Utama yang telah ditetapkan untuk bilangan pegawai industri yang dilatih adalah seramai 1,500 orang. Kursus-kursus yang terlibat adalah seperti di **Jadual 9.2**.

Sepanjang tahun 2022 EiMAS telah berjaya melatih seramai 5,665. Sepanjang tahun 2022, sebanyak sepuluh (10) jenis kursus pensijilan industri telah dilaksanakan dengan jumlah 221 siri kursus.

**Rajah 9.4** menunjukkan sehingga 31 Disember 2022, EiMAS telah berjaya mengiktiraf seramai 9,474 orang pegawai industri di Malaysia sebagai Orang Yang Berwibawa selaras dengan kehendak Seksyen 49A, Akta Kualiti Alam Sekeliling 1974.

Distribution of allocations under the RMKe-12 RP2 project through the Strategic Communications Division has helped Enviro Digital Library@EiMAS further enhance the services, including the provision and dissemination of information to library users, who primarily comprise the staff of the DOE, university students, government and private organisations.

#### EiMAS COMPETENCY TRAINING PROGRAMMES FOR INDUSTRY OFFICERS 2022

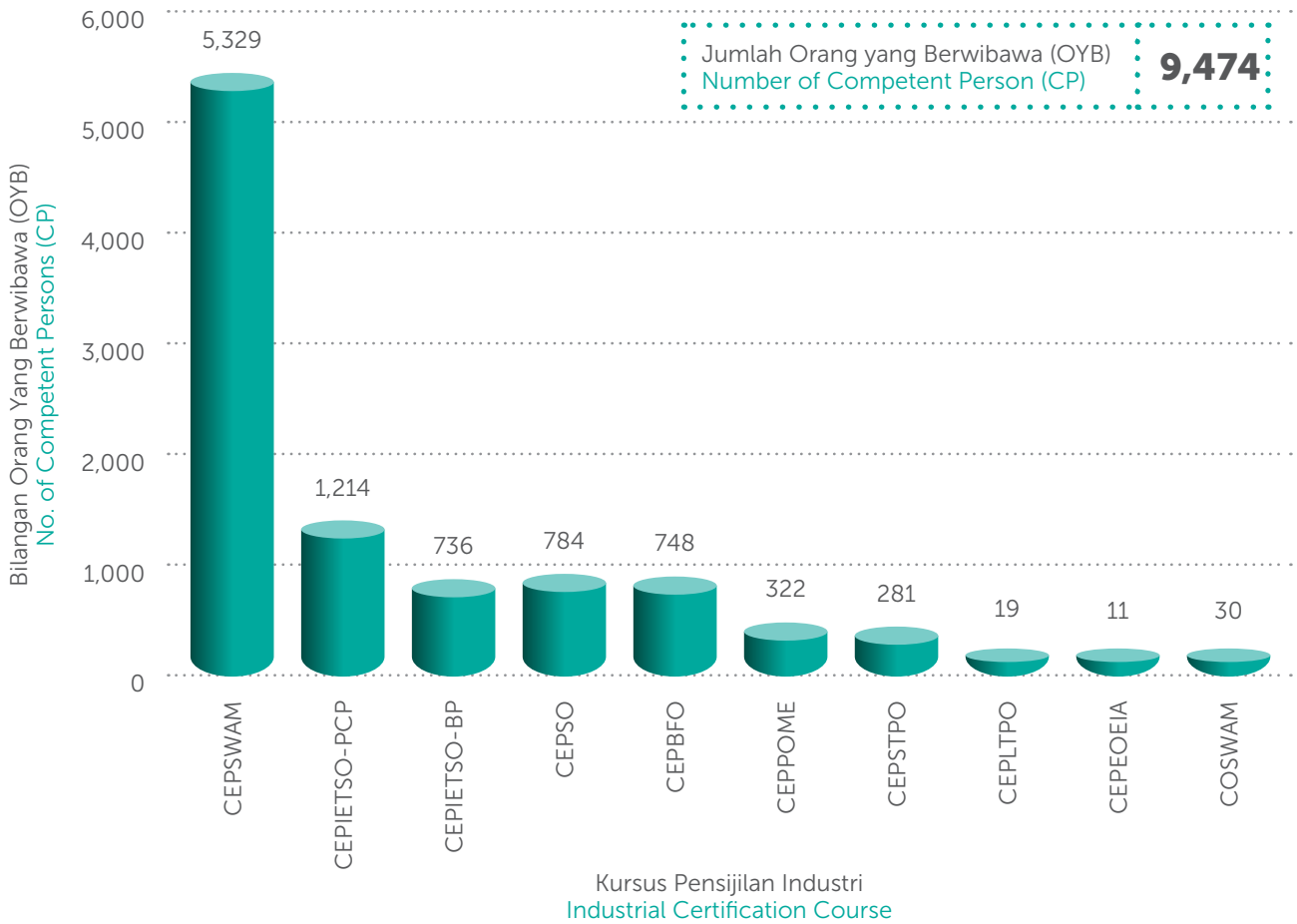
For the year 2022, the Key Performance Indicator (KPI) set for the number of trained industry personnel was 1,500. The competency courses conducted are as in **Table 9.2**.

Throughout the year 2022, EiMAS successfully trained 5,665 industry personnel. During 2022, a total of ten (10) types of industrial certification courses were conducted with a total of 221 series of courses.

**Figure 9.4** shows that as at 31<sup>st</sup> December 2022, EiMAS has successfully certified a total of 9,474 industry personnel in Malaysia as Competent Persons in accordance with the requirements of Section 49A of the Environmental Quality Act, 1974.

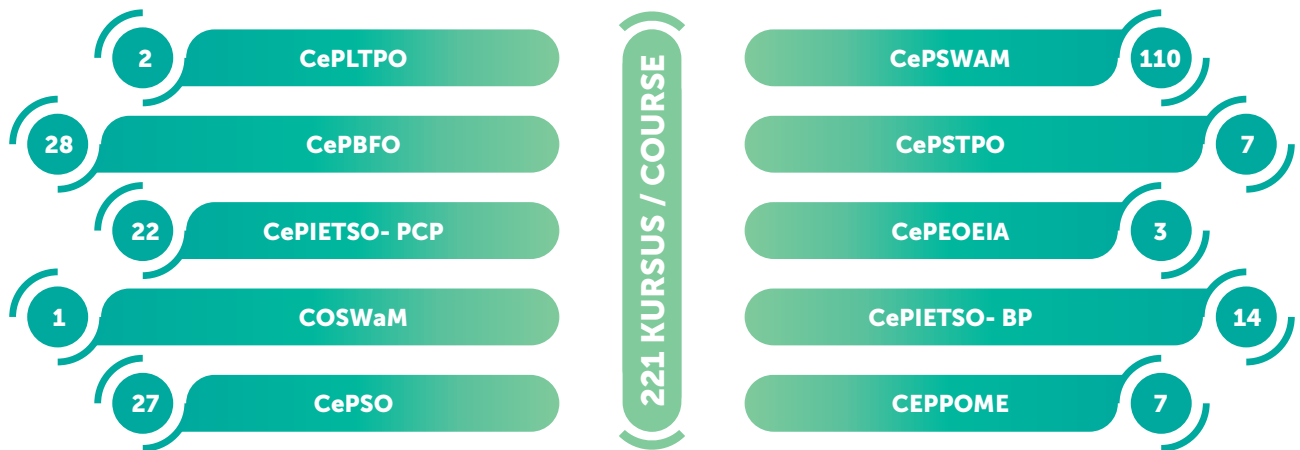
Jadual 9.2: Senarai Program Latihan Kompetensi E<sub>i</sub>MAS kepada Pegawai Industri  
Table 9.2: E<sub>i</sub>MAS Competency Training Programmes for Industries Officers

BIL.	KURSUS PENSIJILAN INDUSTRI / INDUSTRIAL CERTIFICATION COURSE	BILANGAN KURSUS / NUMBER OF COURSES	PESERTA/ PARTICIPANTS
1.	<b>(CePBFO)</b> Kursus Pensijilan Alam Sekitar Dalam Pengoperasian Penapis Beg Course For Certified Environmental Professional in Bag Filter Operation	28	520
2.	<b>(CePSO)</b> Kursus Pensijilan Alam Sekitar Dalam Pengoperasian Pengahar Course For Certified Environmental Professional in Scrubbers' Operation	27	507
3.	<b>(CePIETSO BP)</b> Kursus Pensijilan Alam Sekitar Bagi Pengoperasian Sistem Efluen Perindustrian (Proses Biologikal) Course For Environmental Professional in The Operation of Industrial Effluent Treatment Systems (Biological Treatment Process)	14	278
4.	<b>(CePLTPO)</b> Kursus Profesional Alam Sekitar Bertauliah Dalam Pengoperasian Loji Rawatan Larut Resap Course For Certified Environmental Professional in Leachate Treatment Plant Operation	2	31
5.	<b>(CePIETSO – PCP)</b> 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)	22	513
6.	<b>(CePSWaM)</b> Kursus Profesional Alam Sekitar Bertauliah Dalam Pengurusan Buangan Terjadual Course For Certified Environmental Professional in Scheduled Waste Management	110	3,367
7.	<b>(CePSTPO)</b> Kursus Profesional Alam Sekitar Bertauliah Dalam Pengoperasian Sistem Rawatan Kumbahan Course For Certified Environmental Professional in Sewage Treatment Plant Operation	7	173
8.	<b>(CePPOME)</b> 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	7	165
9.	<b>(CePEOEIA)</b> Kursus Profesional Pegawai Alam Sekitar bagi Projek EIA Certified Professional Environmental Officer in EIA Project	3	81
10.	<b>(COSWaM)</b> Kursus Operator Bertauliah dalam Pengurusan Buangan Terjadual Course for Certified Operator in Scheduled Waste Management	1	30
<b>JUMLAH / TOTAL</b>			<b>5,665</b>



Rajah 9.4 : Bilangan Orang Yang Berwibawa (OYB) Pegawai Industri di Malaysia Mengikut Jenis Pensijilan pada 31 Disember 2022

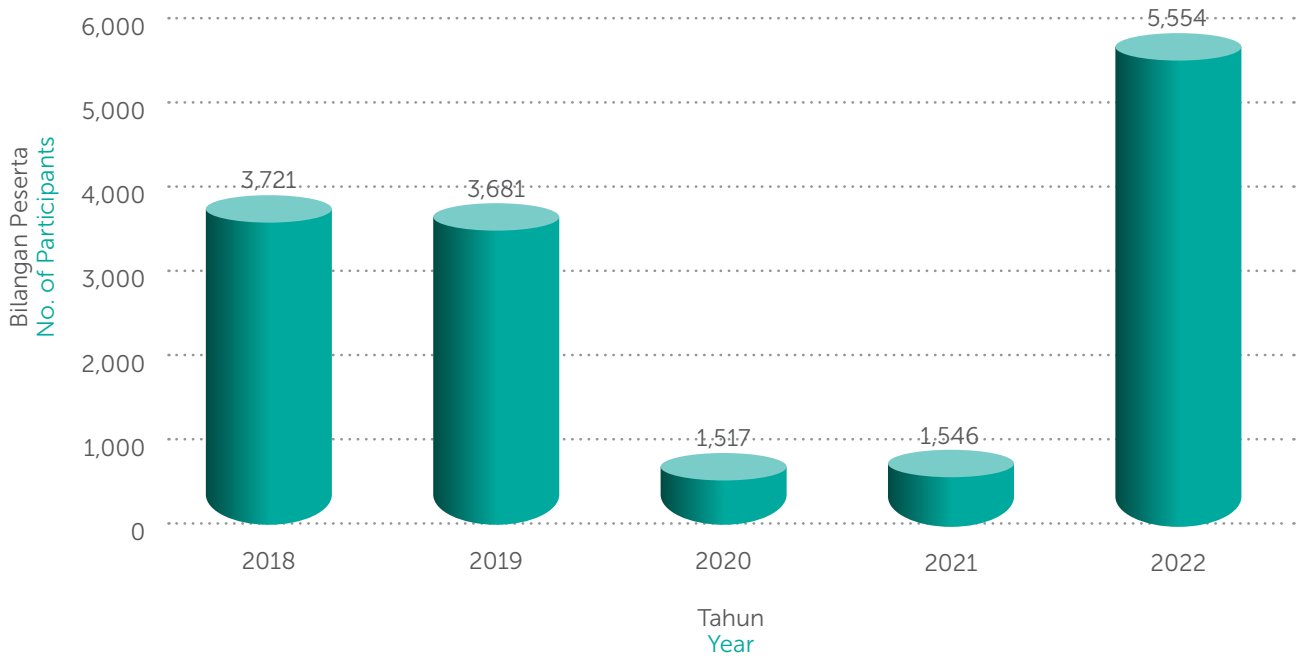
Figure 9.4 : Number of Competent Persons of Industry Personnel in Malaysia According to the Type of Certification as at 31<sup>st</sup> December 2022



Rajah 9.5 : Bilangan Kursus Pensijilan Industri Yang Dianjurkan, 2022  
Figure 9.5 : Number of Industry Certification Courses Conducted, 2022

Sepanjang tahun 2022, sebanyak 10 jenis kursus pensijilan industri telah dilaksanakan dengan jumlah 221 siri kursus, seperti yang ditunjukkan dalam **Rajah 9.5.**

In 2022, a total of 10 types of industrial certification courses were conducted with a total of 221 series of courses, as shown in **Figure 9.5.**



Rajah 9.6 : Bilangan Kehadiran Peserta Kursus Pegawai Industri Bagi 5 Tahun Terkini (2018 - 2022)  
 Figure 9.6 : Attendance of Industry Personnel as Course Participants for the Last 5 Years (2018 - 2022)

Bilangan kehadiran pegawai industri sebagai peserta bagi kursus pensijilan untuk 5 tahun terkini dari 2018 hingga 2022 sepertimana di dalam **Rajah 9.6**. Walau bagaimanapun pada tahun 2022, terdapat peningkatan yang mendadak daripada penyertaan oleh industri setelah pengoperasian industri di seluruh Malaysia telah beroperasi sepenuhnya setelah hampir setahun setengah berhadapan dengan Perintah Kawalan Pergerakan (PKP).

The attendance of industry personnel as participants for industry certification courses in the last 5 years from 2018 to 2022 is as shown in **Figure 9.6**. However, in 2022, the participation of the industry personnel increased after the industry throughout Malaysia became fully operational after almost a year and a half of having to be under Movement Control Order (MCO).



Kursus-Kursus Pensijilan Industri Yang Telah Dilaksanakan Sepanjang Tahun 2022  
 Industry Certification Courses Conducted in 2022



Kursus-Kursus Pensijilan Industri Yang Telah Dilaksanakan Sepanjang Tahun 2022  
Industry Certification Courses Conducted in 2022

CHAPTER 10

# B A B 10

## PERKHIDMATAN PERPUSTAKAAN LIBRARY SERVICES



## PERPUSTAKAAN JABATAN ALAM SEKITAR DEPARTMENT OF ENVIRONMENT LIBRARY

### PERANAN PERPUSTAKAAN

- Perpustakaan Jabatan Alam Sekitar merupakan pusat kecemerlangan literasi maklumat dan pusat penyimpanan maklumat berkaitan Jabatan Alam Sekitar.
- Berperanan untuk membekalkan, memelihara dan menyalurkan maklumat dalam pelbagai bentuk dan medium kepada warga JAS.
- Menyediakan persekitaran pembacaan yang kondusif kepada warga JAS

### PERKHIDMATAN PERPUSTAKAAN

Antara perkhidmatan yang disediakan:

1. Perkhidmatan Peminjaman Bahan Bacaan;
2. Perkhidmatan Rujukan dan Perujukan;
3. Perkhidmatan Pangkalan Data Dalam Talian;
4. Peminjaman Antara Perpustakaan;
5. Permohonan ISBN/ISSN.

### LAIN-LAIN AKTIVITI PERPUSTAKAAN

- Khidmat Nasihat Perpustakaan;
- Bekerjasama dalam pelaksanaan program, latihan dan pengurusan perpustakaan;
- Mempelbagaikan bahan digital yang berkualiti;
- Menyelaraskan maklumat di Enviro Knowledge Management Centre (EKMC), Enviro Museum (EMUSEUM), ELIBRARY dan Media Sosial;
- Lawatan kerja luar (Perpustakaan);
- Menyediakan Pelaporan Statistik Enviro Knowledge Management Centre (EKMC), Enviro Museum (EMUSEUM), setiap bulan kepada semua Bahagian dan JAS Negeri.

### LIBRARY ROLE

- As a centre of excellence for information literacy and information storage related to the Department of Environment.
- As a platform for providing, nurturing and channelling information in various forms and mediums to DOE officers.
- As an area providing a conducive reading environment for DOE officers.

### LIBRARY SERVICES

Library services include :

1. Book Loan Services;
2. References Services;
3. Online Database Service;
4. Interlibrary Loan;
5. Application of ISBN/ISSN.

### OTHER LIBRARY ACTIVITY

- Advisory Service;
- Cooperate in training and programs held for DOE;
- Diversify quality digital content;
- Coordinate in gathering information for Enviro Knowledge Management Centre (EKMC), Enviro Museum (EMUSEUM), ELIBRARY and social media;
- Conduct library visits;
- Prepared Statistical Report for Enviro Knowledge Management Centre (EKMC), Enviro Museum (EMUSEUM), once a month to DOE divisions and states.

## PENGUNJUNG PERPUSTAKAAN

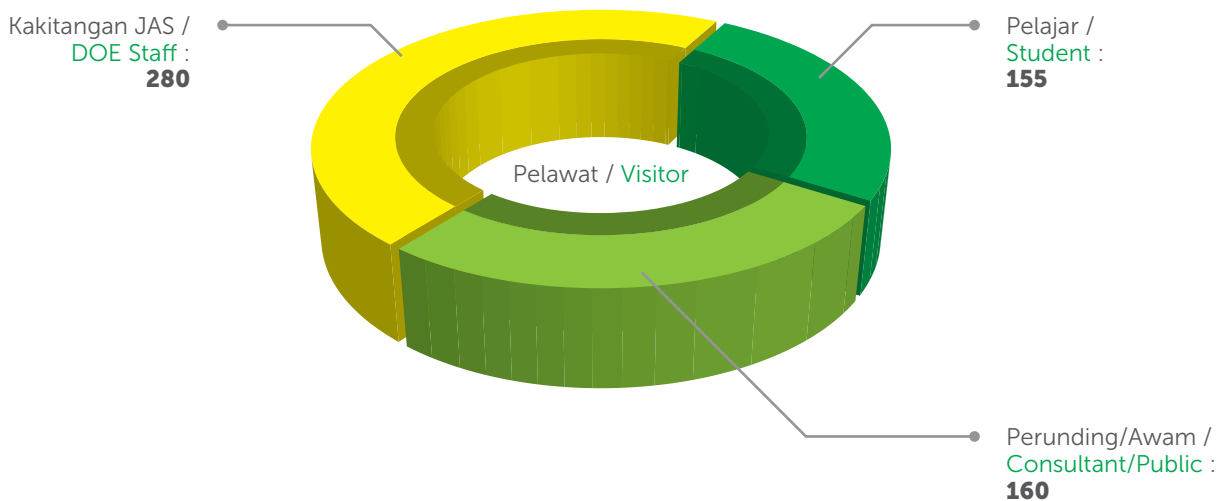
Sepanjang tahun 2022, Perpustakaan JAS telah merekodkan peningkatan kunjungan pengguna berbanding pada tahun sebelumnya. Peningkatan sebanyak 8% dengan jumlah pengunjung seramai 595 orang. Peningkatan kunjungan pengguna pada tahun ini memperlihatkan kesan pembukaan semula servis perkhidmatan awam kepada pengguna selepas penutupan berkala semasa Perintah Kawalan Pergerakan (PKP) dijalankan sepanjang pandemik melanda negara pada dua (2) tahun lalu. Pecahan bilangan pengunjung adalah seperti berikut:

1. 155 Pelajar
2. 160 Konsultan/orang awam
3. 280 Kakitangan JAS

## LIBRARY VISITORS

Throughout 2022, the library recorded an increase of 8% in visits compared to the previous year totalling 595 visitors. The increase for the year shows the effect of the re-opening of public services after the Movement Control Order (MCO), which was there for the past two (2) years during the pandemic, had been lifted. The breakdown of the number of visitors is as follows:

1. 155 Students
2. 160 Consultants/public
3. 280 DOE officers



Rajah 10.1 : Bilangan Pengunjung Perpustakaan  
Figure 10.1 : Number of Library Visitor

## PEMBANGUNAN KOLEKSI

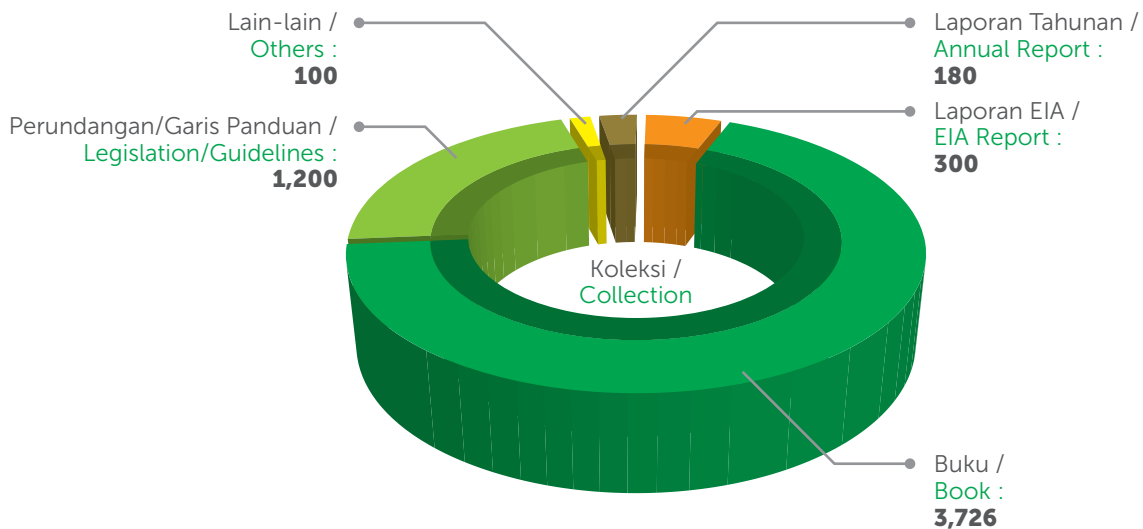
Perpustakaan JAS telah mengambil inisiatif menambah koleksi bahan perpustakaan pada tahun 2022 menggantikan koleksi bahan tidak relevan kepada pengguna. Sebanyak 148 judul buku merangkumi pelbagai subjek telah dipamerkan kepada warga JAS untuk transaksi pinjaman dan rujukan. Pertambahan bilangan koleksi ini telah menjadikan koleksi semasa di perpustakaan ibupejabat sebanyak 5,506 koleksi dengan pecahan seperti berikut :

1. Laporan Tahunan - 180
2. Laporan EIA - 300
3. Buku - 3,726
4. Perundangan / Garispanduan - 1,200
5. Lain-Lain - 100

## DEVELOPMENT OF LIBRARY MATERIAL

The DOE library has taken the initiative to increase the collection of library materials to replace the collection of outdated and irrelevant material. A total of 148 new collections in various subjects have been provided for users. Currently, the library holds a collection of 5,506 reading material with the breakdown as follows:

1. Annual Reports - 180
2. EIA Reports - 300
3. Books - 3,726
4. Legislation / Guidelines - 1,200
6. Others - 100



Rajah 10.2 : Bilangan Koleksi Bacaan  
Figure 10.2 : Number of Reading Collection

### PINJAMAN BAHAN PERPUSTAKAAN

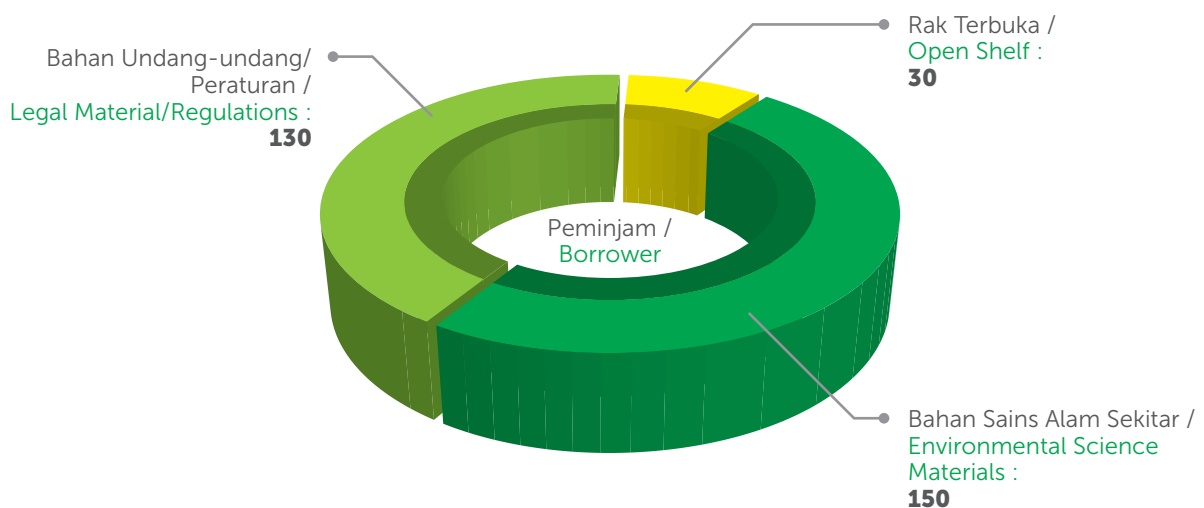
Penyediaan bahan koleksi terbaru perpustakaan turut meningkatkan penggunaan perpustakaan terutamanya transaksi pinjaman bahan perpustakaan. Sepanjang tahun 2022, rekod pinjaman bahan telah mencapai sebanyak 310 bahan dengan peratus peningkatan 3%. Purata transaksi pinjaman yang dilakukan adalah merangkumi :

1. Bahan Bacaan Terbuka - 30
2. Buku Ilmiah Alam Sekitar - 150
3. Bahan Perundangan / Peraturan – 130

### LIBRARY MATERIALS LOAN

Having relevant and up-to-date reading material also increases the use of the library, especially the especially loan of library materials transaction. Throughout the year 2022, the reading material lent increased by 3%, reaching a maximum number of 310. The breakdown of material lent is as follows:

1. Open Reading Material - 30
2. Environmental Science Books - 150
3. Legal Material / Regulations – 130



Rajah 10.3 : Bilangan Pijaman Bahan Bacaan  
Figure 10.3 : Number of Reading Material Borrowed

## 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 2022, transaksi pinjaman masih kekal seperti tahun sebelumnya sebanyak satu (1) kali melibatkan Perpustakaan Kementerian Tenaga dan Sumber Asli dengan pinjaman buku sebanyak dua (2) naskah.

## PERMOHONAN INTERNATIONAL STANDARD BOOK NUMBER (ISBN)

Perkhidmatan ini telah diperkenalkan di JAS bagi membantu penerbitan bahan bacaan Jabatan Alam Sekitar. Bagi tahun 2022, sebanyak 13 permohonan ISBN telah dikemukakan ke Perpustakaan Negara Malaysia bagi 13 penerbitan baru JAS.

## PERKHIDMATAN RUJUKAN

Berdasarkan rekod pada Tahun 2022, sebanyak 595 pengguna Perpustakaan JAS telah membuat rujukan 250 bahan. Perpustakaan JAS telah menerima sebanyak 495 pertanyaan rujukan melalui email, telefon dan perkhidmatan kaunter yang melibatkan bahan bacaan tertentu seperti Laporan EIA, Akta, buku panduan dan juga perkhidmatan dalam talian.

1. Perkhidmatan Kaunter-186
2. Telefon- 134
3. Emel- 125
4. Lain-Lain – 50

## INTERLIBRARY LOAN

This service has been introduced at DOE to provide DOE officers 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 2022, the interlibrary loan occurred once involving the Library at the Ministry of Energy and Natural Resources with a loan of two (2) books.

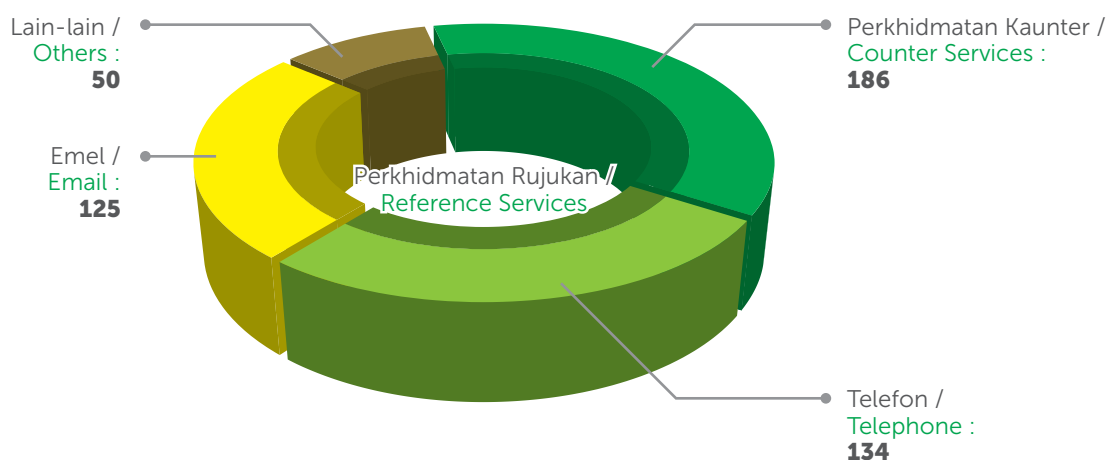
## APPLICATIONS FOR INTERNATIONAL STANDARD BOOK NUMBER (ISBN)

This service has been introduced in DOE to help the publication of reading material for the Department of Environment. For the year 2022, a total of 13 ISBN applications have been submitted to the National Library of Malaysia for 13 new publications.

## REFERENCES SERVICE

Based on records in the year 2022, a total of 595 users of the DOE Library have made references to 250 materials. The DOE library has received a total of 495 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 ;

1. Counter -186
2. Telephone- 134
3. Email - 125
5. Others – 50



Rajah 10.4 : Kaedah Pertanyaan Rujukan  
Figure 10.4 : Method of Enquiry

## PERKHIDMATAN DALAM TALIAN

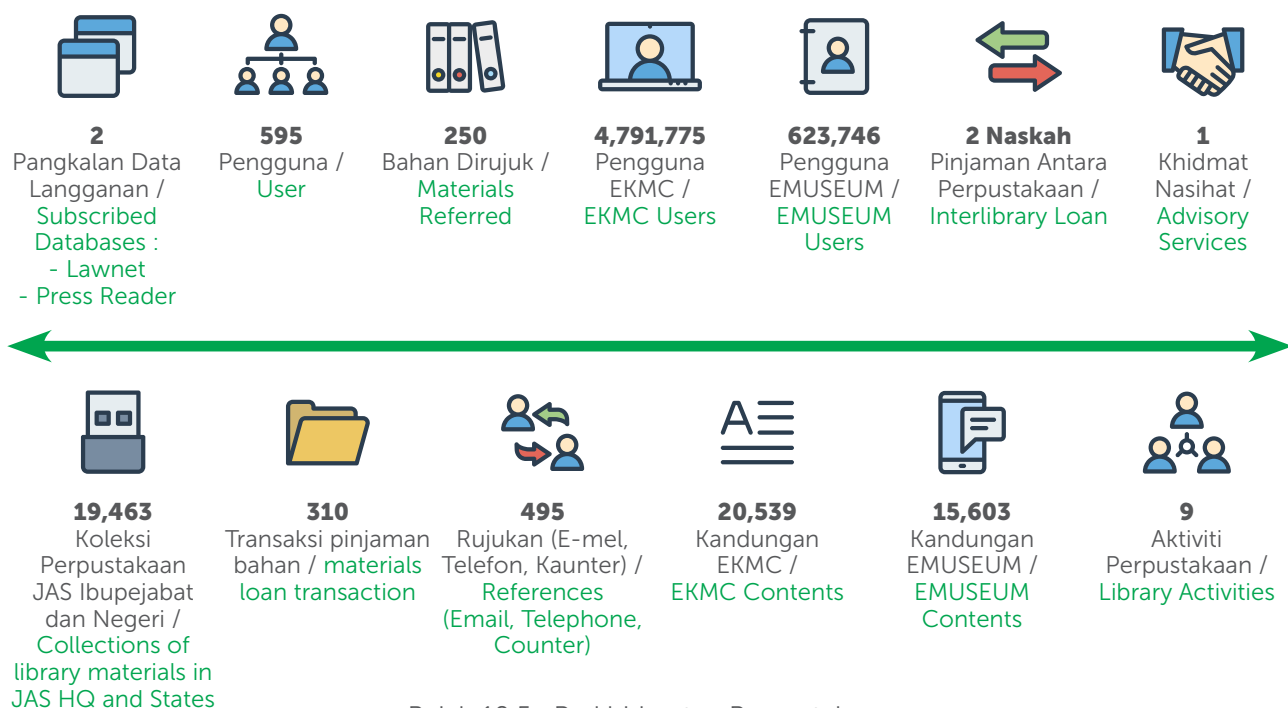
Perpustakaan JAS juga menyediakan Perkhidmatan Dalam Talian yang terdiri daripada dua (2) platform repositori yang dibangunkan oleh JAS dan dua (2) pangkalan data langganan dan akses percuma kepada pangkalan data U-Pustaka. Sehingga tahun 2022, Perkhidmatan Dalam Talian menjadi sumber paling aktif digunakan secara meluas oleh pengguna perpustakaan. Statistik tahun 2022 mendapati, peningkatan pengguna sistem EKMC dan EMUSEUM kekal meningkat dengan pencapaian sebanyak 549,937 (30%) untuk EKMC, manakala pencapaian EMUSEUM juga menunjukkan peningkatan ketara dengan jumlah penggunaan 138,359 dengan peratusan sebanyak 31%.

## ONLINE SERVICES

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 2022, Online Services was the most active resource widely used by library users. The statistics of 2022 found that users of the EKMC and EMUSEUM systems continued to increase with user numbers reaching 549,937 (30%) for EKMC, while that of EMUSEUM also shows a significant increase, with a total of 138,359 users with a percentage of 31%.

Jadual 10.1 : Penggunaan Platform Repositori Perpustakaan  
Table 10.1 : Usage of Library Repository Platform

PENGGALAN DATA / DATABASE	PENGGUNA / USER	HITS / HITS	PENGGUNA / USER (2016-2022)
Enviro Knowledge Management Centre (EKMC) Enviro Knowledge Management Centre (EKMC)	549,937	159,060	4,791,775
Enviro Museum (EMUSEUM) Enviro Museum (EMUSEUM)	138,359	330,630	623,746



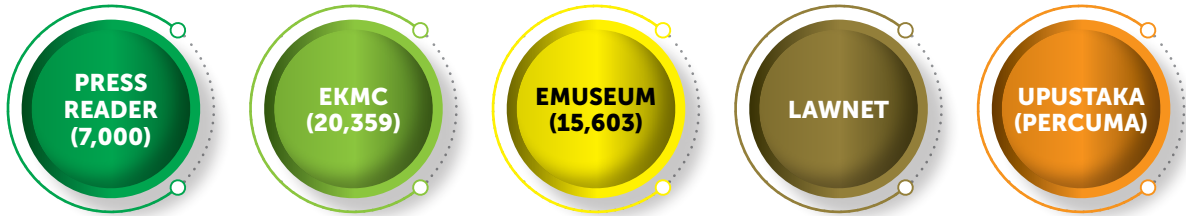
Rajah 10.5 : Perkhidmatan Perpustakaan  
Figure 10.5 : Library Services

## KANDUNGAN MAKLUMAT DIGITAL YANG TERSEDIA

Sehingga 31 Disember 2022, jumlah kandungan maklumat digital Perpustakaan JAS adalah seperti berikut :

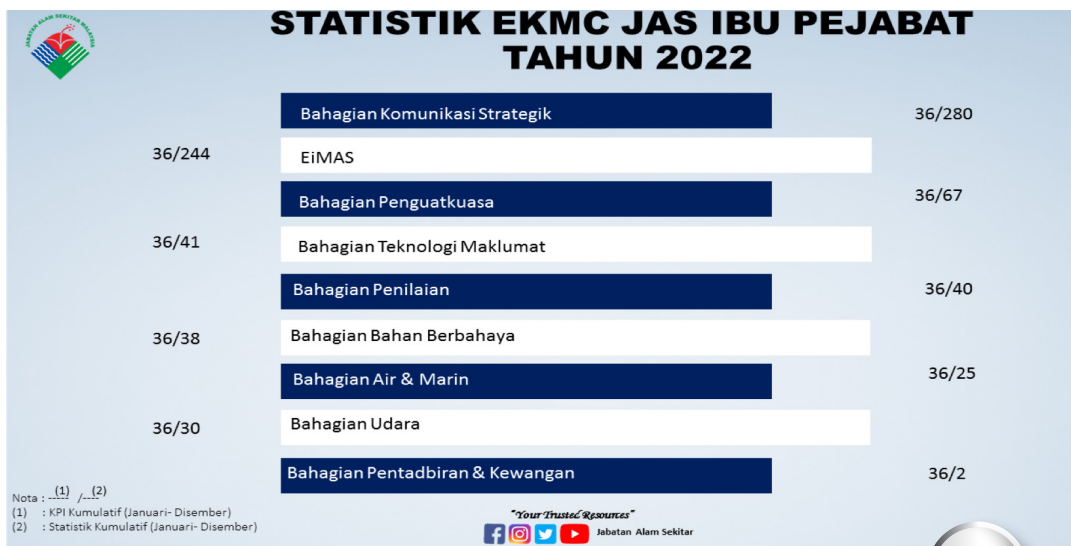
## DIGITAL INFORMATION CONTENT AVAILABLE

As at 31<sup>st</sup> December 2022, the the total of information content at the DOE Library is as follows:

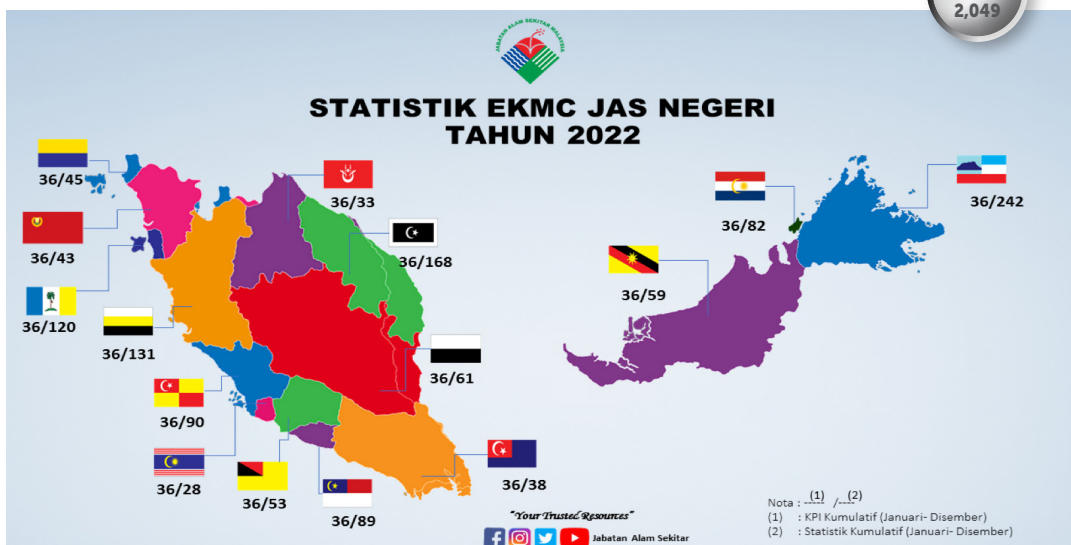


Jadual 10.6 : Maklumat Digital Perpustakaan JAS yang Tersedia  
Table 10.6 : Available Digital Information Content of DOE Library

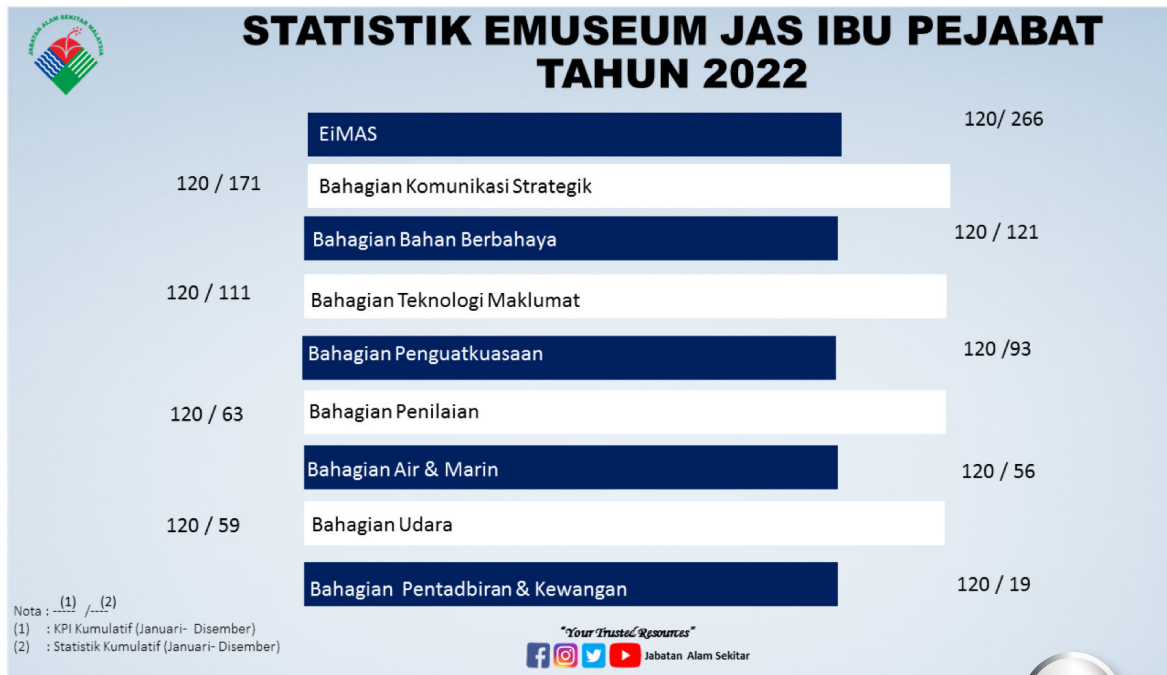
## PERKHIDMATAN PERPUSTAKAAN LIBRARY SERVICES



Jumlah /  
Total :  
2,049



Rajah 10.7 : Jumlah Keseluruhan Kemasukan Data/Bahan Tahun 2022 (EKMC)  
Figure 10.7 : Overall Data Entry in 2022 (EKMC)



Jumlah /  
Total :  
4,236



Rajah 10.8 : Jumlah Keseluruhan Kemasukan Data/Bahan Tahun 2022 (EMUSEUM)  
 Figure 10.8 : Overall Data Entry in 2022 (EMUSEUM)

Sehingga hari ini EKMC telah mencapai tahap akses paling tinggi sejak 2014 iaitu 3.9 juta pengguna berbanding dengan EMUSEUM dan ELIBRARY. Usaha berterusan telah dibuat bagi menambah lagi koleksi bahan rujukan digital di EKMC bagi membantu pengguna memenuhi keperluan maklumat mereka.

EKMC has reached the highest level of access since 2014 with 3.9 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.

## AKTIVITI GALAKAN MEMBACA 2022

Pada tahun 2022, sebanyak sembilan (9) aktiviti telah dilaksanakan oleh Perpustakaan JAS yang melibatkan warga JAS iaitu:

1. Perasmian Perpustakaan;
2. Lawatan ke Perpustakaan Negeri Sembilan;
3. Bengkel Pressreader & Lawnet;
4. Bengkel EKMC & Emuseum;
5. Program Cuti Sekolah: Sesi Mewarna;
6. Program Cuti Sekolah: Kelas Intensif Sains & Fizik;
7. Hebahan Artikel / Ejurnal Buku/ebooks;
8. Hebahan Pugar Bahasa;
9. Pameran Kemerdekaan Secara Maya;
10. RMKe-12: Projek Menaiktaraf Perpustakaan JAS Negeri dan EIMAS.

## LIBRARY PROGRAMS AND ACTIVITIES 2022

In 2022, a total of nine (9) activities were implemented DOE Library participated by DOE staff as follows:

1. Opening of the DOE Library;
2. Visit to Negeri Sembilan Library;
3. Pressreader & Lawnet Workshop;
4. EKMC & Emuseum Workshop;
5. School Holiday Program: Coloring Contest;
6. School Holiday Program: Science & Physics Intensive Class;
7. Publication of Articles / Journals Books/ebooks;
8. Language Recovery Promotion;
9. Virtual Independence Exhibition;
10. RMKe-12: Upgrading of DOE State Library and EIMAS.



Perasmian Perpustakaan Jabatan Alam Sekitar  
The Official Opening Department of Environment Library



Lawatan Ke Perbadanan Perpustakaan Awam Negeri Sembilan  
Visit to Negeri Sembilan Public Library

**SANGGAR BAHASA**  
SIRI 5 /2022

**"Jeraywara"**

Maksudnya : Persembahan, pameran ,ceramah dan sebagainya yang diadakan oleh seseorang atau sekumpulan orang (penyanyi), ahli politik dan sebagainya) yang berketupat dari satu tempat ke tempat lain dengan tujuan memberi hiburan, menjelaskan sesuatu isu kepada orang ramai, mempromosikan sesuatu dan sebagainya.

Kamus Dewan Edisi Keempat

Perpustakaan E-sivo Digital @JAS

**SANGGAR BAHASA**  
SIRI 6 /2022

**"Representasi"**

Maksudnya : 1. Sesuatu yang melambangkan, menggambarkan, atau menyatakan sesuatu yang lain, perlambangan, gambaran, pernyataan; 2. perihal (perbuatan dan sebagainya) mewakili, perwakilan.

Kamus Dewan Edisi Keempat

Perpustakaan E-sivo Digital @JAS

**SANGGAR BAHASA**  
SIRI 11 /2022

**Peribahasa**  
"Bak pinang dianduh, putus tali dia berdirisi!"

Maksudnya : Melakukan sesuatu pekerjaan kerana dipaksa.

Kamus Intimawa Peribahasa Melayu DBP, 2016

Perpustakaan E-sivo Digital @JAS

**SANGGAR BAHASA**  
SIRI 17 /2022

**Peribahasa**  
"Bagai gajah dibawa ke semak"

Maksudnya : Perkara yang semakin kusut dan susah menyelesaikannya.

Perpustakaan E-sivo Digital @JAS

**SANGGAR BAHASA**  
SIRI 18 /2022

**Peribahasa**  
"Kuat lilin kerana simpungnya"

Maksudnya : Kekuatan kumpulan terletak pada ahlinya yang bersatu padu.

Perpustakaan E-sivo Digital @JAS

Sanggar Bahasa 18 Siri  
18 Series of Sanggar Bahasa



Pameran Kemerdekaan Secara Maya  
Independence Virtual Exhibition

**BENGKEL PRESSREADER & LAWNET**

SEMUA DIJEMPUT HADIR

18 JULAI 2022 (ISNIN) 9.30 PAGI - 1.00 TENGAHARI

SEBARANG PERTANYAAN BOLEH HUBUNGI 03-88712092

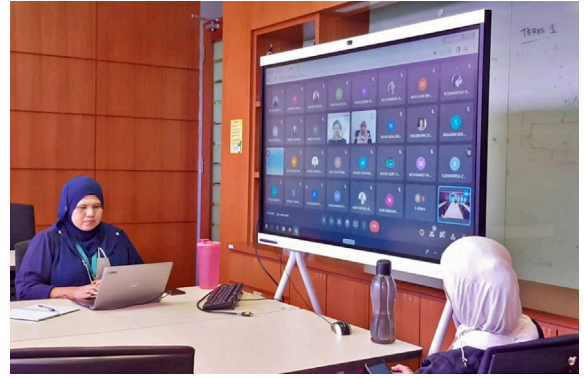
www.lawnet.com.my  
MALAYSIAN LAWS AT YOUR FINGERTIPS

LAWNET ANNOUNCEMENT

- As of 2020, Lawnet has discontinued to publish any Gazettes relating to Trademark.
- The Lawnet Team would like to humbly apologize to our Customers for the inconvenience.
- We however do still contain Gazettes relating to Trademark from 2001 to 2019.

Click on the Login to go to the Login page.

Bengkel Press Reader dan Lawnet  
Press Reader and Lawnet Workshop



Bengkel EKMC dan EMUSEUM  
EKMC and EMUSEUM Workshop



Program Cuti Sekolah : Pertandingan Mewarna 6 September 2022  
School Holiday Programme : Colouring Contest 6<sup>th</sup> September 2022

**Kelas Intensif Fizik & Matematik Tambahan Sempena Cuti Sekolah**

Pendekatan 3 dalam 1:  
1. Peta minda Fizik  
2. Peta minda Matematik  
3. Smart Study Islamic

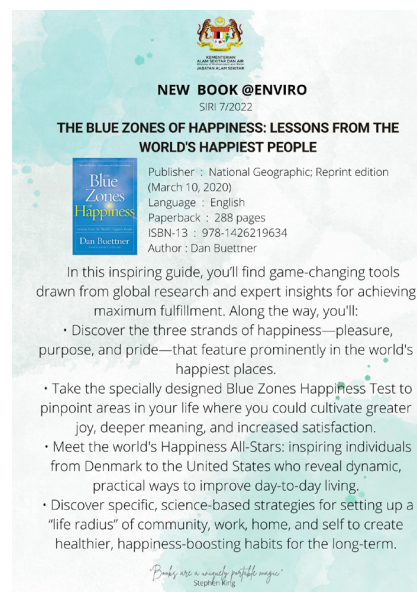
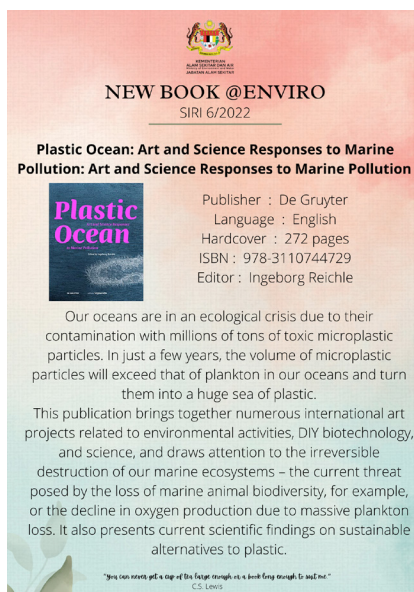
**TERBUKA KEPADA PELAJAR TINGKATAN 4 & 5 ANAK-ANAK WARGA JAS**

Tarikh : 7 September 2022  
Masa : 10.00 pagi - 12.00 tengahari (Fizik)  
2.00 - 4.00 petang (Matematik Tambahan)  
Tempat : Perpustakaan Enviro Digital @JAS  
Pendaftaran : <https://forms.gle/NxsjV18k93FQUUYC8>

Pendaftaran adalah percuma  
Anjuran : Perpustakaan Enviro Digital@JAS



Program Cuti Sekolah : Kelas Intensif Sains dan Fizik 7 September 2022  
School Holiday Programme : Science and Physics Intensive Class 7<sup>th</sup> September 2022



### Hebahan Emel New Book Announcement of New Book via Email

## PROJEK DI BAWAH RANCANGAN MALAYSIA KE-12

Pada tahun 2022, Bahagian Komunikasi Strategik, Jabatan Alam Sekitar telah berjaya mendapatkan peruntukan bagi menjalankan projek di bawah Skop Pemerkasaan & Pembudayaan Komunikasi, Pendidikan dan Kesedaran Alam Sekitar. Perpustakaan JAS telah diberikan sebahagian peruntukan bagi menjalankan Projek Menaiktaraf Perpustakaan Digital Jabatan Alam Sekitar Negeri dan Eimas. Sehingga tahun 2022, perpustakaan telah berjaya melaksanakan beberapa projek berikut:

1. Menaiktaraf perpustakaan JAS Ibu pejabat, Negeri dan EIMAS;
2. Mewujudkan Sudut Membaca JAS di aras 1,2 dan 3;
3. Perolehan bekalan Buku bagi Perpustakaan Ibu pejabat dan negeri;
4. Pembangunan e-Games;
5. Langganan Press Reader dan Lawnet;
6. Penerbitan Buku Sejarah JAS dan Koleksi Lukisan Kartun Mengenai Alam Sekitar.

## 12<sup>TH</sup> MALAYSIA PLAN PROJECT

In 2022, the Strategic Communication Division, Department of Environment successfully obtained allocations to carry out projects under the Scope of Communication Empowerment & Cultivation, Education and Environmental Awareness. The DOE library was given a partial allocation to carry out the Digital Library Upgrade Project of the State Environment Departments and Eimas. As at 2022, the library has successfully implemented several of the following projects:

1. Upgrade DOE Head office, State and EIMAS libraries;
2. Created a DOE Reading Corner at levels 1, 2 and 3;
3. Acquired book supplies for the Headquarters and State Libraries;
4. Developed e-Games;
5. Subscribed Press Reader and Lawnet;
6. Published a book on the History of DOE and Cartoon Book on Environment.



Naik Taraf Perpustakaan EiMAS  
Upgrading of EiMAS Library



Naik Taraf Perpustakaan JAS Johor  
Upgrading of DOE Johor Library



Naik Taraf Perpustakaan JAS Melaka  
Upgrading of DOE Malacca Library



Naik Taraf Perpustakaan JAS Negeri Sembilan  
Upgrading of DOE Negeri Sembilan Library



Naik Taraf Perpustakaan JAS Pahang  
Upgrading of DOE Pahang Library



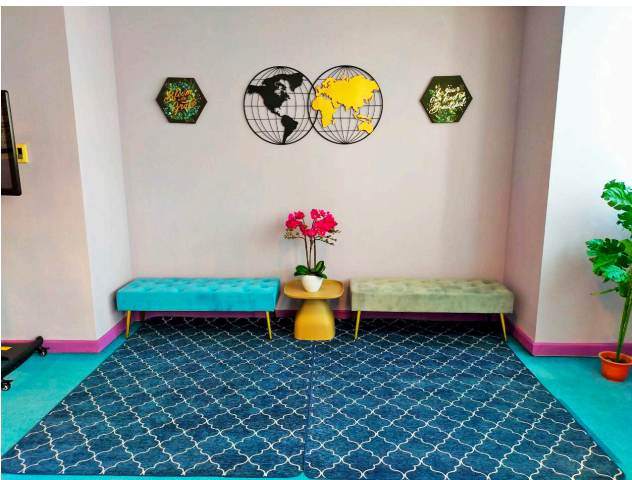
Naik Taraf Perpustakaan JAS Perlis  
Upgrading of DOE Perlis Library



Naik Taraf Perpustakaan JAS Pulau Pinang  
Upgrading of DOE Penang Library



Naik Taraf Perpustakaan JAS Sabah  
Upgrading of DOE Sabah Library



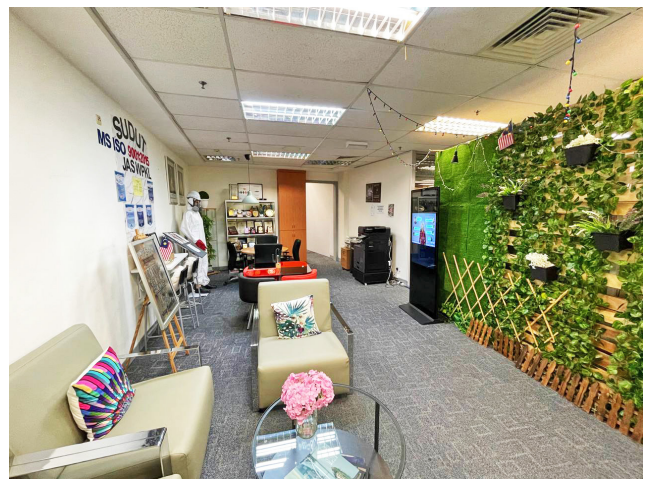
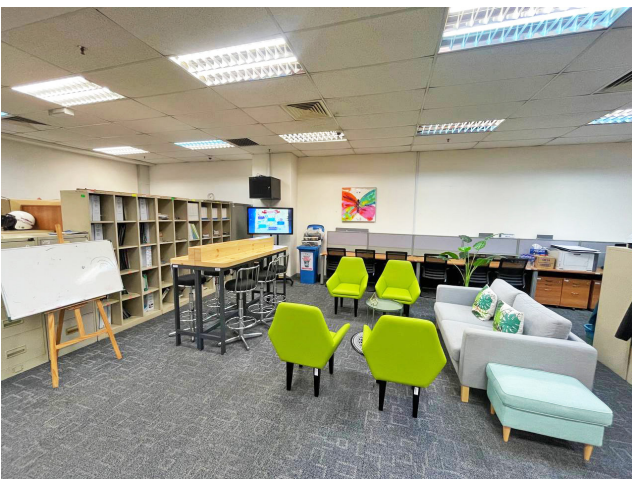
Naik Taraf Perpustakaan JAS Sarawak  
Upgrading of DOE Sarawak Library



Naik Taraf Perpustakaan JAS Selangor  
Upgrading of DOE Selangor Library



Naik Taraf Perpustakaan JAS Terengganu  
Upgrading of DOE Terengganu Library



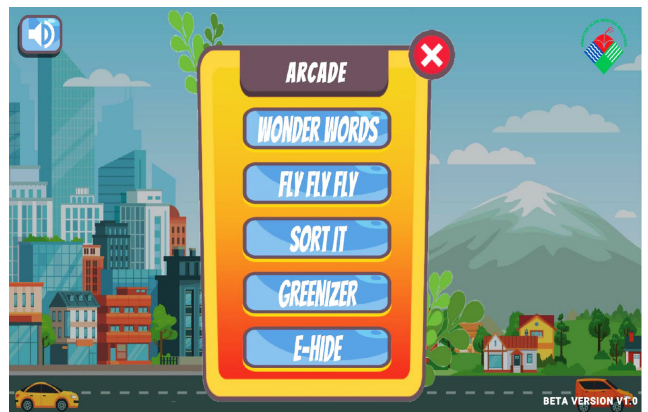
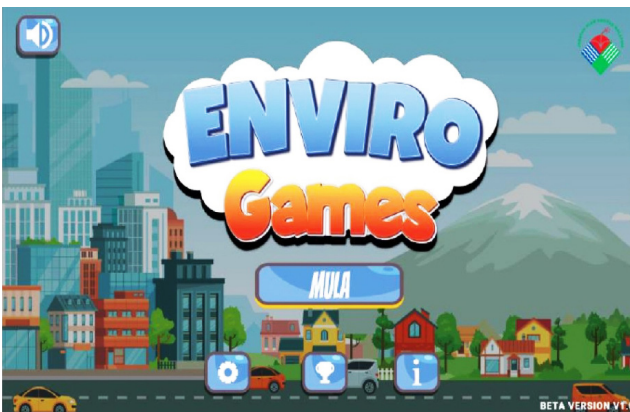
Naik Taraf Perpustakaan JAS Kuala Lumpur  
Upgrading of DOE Kuala Lumpur Library



Naik Taraf Perpustakaan JAS Kelantan  
Upgrading of DOE Kelantan Library



Naik Taraf Sudut Bacaan Aras 2 dan 4 JAS Ibupejabat  
Reading Corner Upgrade at Level 2 and 4 DOE Headquarters



EGAMES  
EGAMES



Penerbitan Kolekdi Lukisan Kartun Mengenai Alam Sekitar  
Publication of Cartoon Book on Environment



### Sejarah Penubuhan

Peningkatan tahap kesedaran dan keprihatinan terhadap isu pemuliharaan alam sekitar pada awal dekad tujuh puluhan dan juga kesan global daripada Persidangan Penubuhan Bangsa-Bangsa Bersatu Mengenai Manusia dan Alam Sekitar di Stockholm pada tahun 1972 merupakan inisiatif penting bermulanya penubuhan sebuah agensi yang bertanggungjawab menguruskan hal ehwal alam sekitar di Malaysia. Sehubungan itu juga, Kerajaan telah meluluskan Akta Alam Sekitar Sekeliling sebagai satu undang-undang pada 14 Mac 1974 dan mula dikuatkuasakan pada 15 April 1975.

Peringkat awal pelaksanaan dan pentadbiran Akta tersebut telah dijalankan oleh Bahagian Perancang Am, Jabatan Perdana Menteri. Walaubagaimanapun, disebabkan pelbagai kuasa yang luas di bawah Akta berkenaan, maka Bahagian Alam Sekitar telah ditubuhkan pada 15 September 1975 di bawah Kementerian Kerajaan Tempatan dan Alam Sekitar untuk melaksanakan Akta Tersebut selain menguruskan hal ehwal alam sekitar. Bahagian Alam Sekitar telah dipindahkan ke Kementerian Sains, Teknologi dan Alam Sekitar pada Mac 1976 sebelum dinaikkan taraf kepada Jabatan Alam Sekitar pada 1 September 1983. Pada Mei 2001 Jabatan Alam Sekitar telah berpindah ke Pusat Pentadbiran Kerajaan Persekutuan, Putrajaya dan kini, pada April 2006 Pejabat Jabatan Alam Sekitar telah dipindahkan di bawah Kementerian Sumber Asli & Alam Sekitar, Presint 4, Putrajaya.

#### JABATAN ALAM SEKITAR

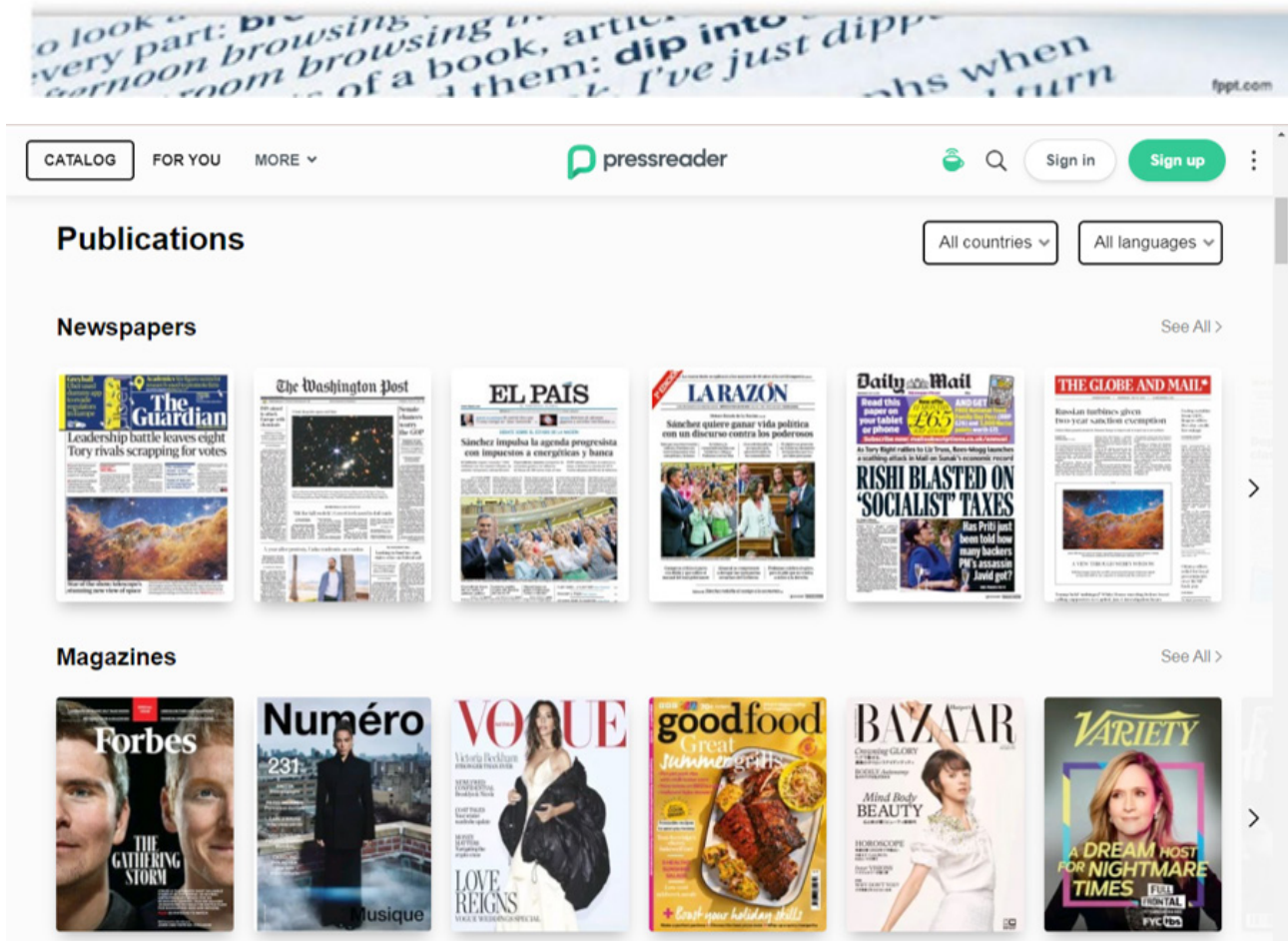
Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim

Aras 1 - 4, Podium 2 & 3, Wisma Sumber Asli  
No.25, Persiaran Perdana, Presint 4,  
Pusat Pentadbiran Kerajaan Persekutuan 62574  
Putrajaya, Malaysia.

Penerbitan Buku Sejarah Jabatan Alam Sekitar  
Publication of Books on the History of the Department of Environment



Click on the Login to go to the Login page.



Langganan Press Reader dan Lawnet  
Press Reader and Lawnet Subscription



**JABATAN ALAM SEKITAR  
Kementerian Sumber Asli,  
Alam Sekitar dan Perubahan Iklim**

Aras 1 – 4, Podium 2 & 3, Wisma Sumber Asli  
No.25, Persiaran Perdana, Presint 4  
Pusat Pentadbiran Kerajaan Persekutuan  
62574 Putrajaya, Malaysia.

Talian Aduan: **03-8889 1972**  
Hotline: **1-800-88-2727**  
Telefon: **03-8871 2000 / 2200**  
Faks: **03-8889 1973/75**  
**[www.doe.gov.my](http://www.doe.gov.my)**