



KEMENTERIAN EKONOMI
JABATAN PERANGKAAN MALAYSIA

KOMPENDIUM PERANGKAAN ALAM SEKITAR

*COMPENDIUM OF
ENVIRONMENT
STATISTICS*

2023

JABATAN PERANGKAAN MALAYSIA
DEPARTMENT OF STATISTICS MALAYSIA



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KOMPENDIUM PERANGKAAN ALAM SEKITAR *COMPENDIUM OF ENVIRONMENT STATISTICS* **MALAYSIA** **2023**

Pemakluman

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DOSM akan menjalankan Banci Pertanian pada tahun 2024. Mohon layari <https://www.myagricensus.gov.my/> untuk maklumat lanjut. Tema adalah "Banci Pertanian, Kunci Kemajuan Pertanian".

Kerajaan Malaysia telah mengisytiharkan Hari Statistik Negara (MyStats Day) pada 20 Oktober setiap tahun. Tema sambutan MyStats Day adalah "Statistik Nadi Kehidupan".

Announcement

The Department of Statistics Malaysia (DOSM) has launched OpenDOSM NextGen as a medium that provides a catalogue of data and visualisation to facilitate users in analysing various data. OpenDOSM NextGen is an open source data sharing platform and accessible through <https://open.dosm.gov.my> portal.

DOSM will conduct the Agricultural Census in 2024. Please visit <https://www.myagricensus.gov.my/> for more information. The theme is "Agriculture Census, Key to Agriculture Development."

The Government of Malaysia has declared National Statistics Day (MyStats Day) on October 20th each year. MyStats Day theme is "Statistics is the Essence of Life".

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Kompendium Perangkaan Alam Sekitar, Malaysia 2023 memaparkan statistik alam sekitar yang meliputi enam komponen iaitu Keadaan dan Kualiti Alam Sekitar; Sumber Alam Sekitar dan Kegunaannya; Sisa; Kejadian Ekstrem dan Bencana; Penempatan Penduduk dan Kesihatan Persekitaran; dan Penglibatan, Pengurusan dan Perlindungan Alam Sekitar. Penyusunan statistik ini meliputi maklumat dan keadaan alam sekitar, impak aktiviti manusia ke atas alam sekitar dan langkah yang diambil bagi mengurangkan impak tersebut.

Penerbitan ini menyediakan statistik alam sekitar yang boleh digunakan oleh agensi kerajaan, sektor swasta, ahli akademik serta individu sebagai rujukan dalam menjalankan penyelidikan dan penganalisan. Rangka kerja yang digunakan dalam penerbitan ini adalah berdasarkan *Framework for the Development of Environment Statistics (FDES), United Nations, 2013*.

Penerbitan ini mengandungi enam bahagian. Bahagian pertama membentangkan infografik statistik alam sekitar, diikuti dengan ringkasan penemuan mengikut komponen di bahagian kedua. Bahagian ketiga pula memuatkan jadual terperinci mengenai statistik alam sekitar. Penerbitan ini memaparkan lima statistik baharu iaitu satu di komponen Sisa, tiga di komponen Kejadian Ekstrem dan Bencana dan satu di Penglibatan, Pengurusan dan Perlindungan Alam Sekitar. Perbandingan indikator terpilih antara negara tersedia di bahagian keempat. Manakala lampiran dan glosari disertakan di bahagian kelima dan keenam bagi membantu pengguna memahami statistik dan terma alam sekitar yang digunakan.

Jabatan merakamkan setinggi-tinggi penghargaan atas kerjasama dan sumbangan yang diberikan oleh semua pihak dalam menjayakan penerbitan ini. Setiap maklum balas dan cadangan untuk penambahbaikan penerbitan ini pada masa akan datang amatlah dihargai.

DATO' SRI DR. MOHD UZIR MAHIDIN

Ketua Perangkawan Malaysia

November 2023

The Compendium of Environment Statistics, Malaysia 2023 presents statistics on six environmental components namely Environmental Conditions and Quality; Environmental Resources and Their Use; Residuals; Extreme Events and Disasters; Human Settlements and Environmental Health; and Environmental Protection, Management and Engagement. The compilation of these statistics includes environmental information and conditions, impacts of human activities on the environment and actions taken to minimise the impact.

This publication provides environment statistics that can be used by government agencies, private sectors, academicians and individuals as a reference to conduct research and analysis. The framework used in this publication is based on the Framework for the Development of Environment Statistics (FDES) United Nations, 2013.

This publication consists of six parts. The first part focused on the infographics of environment statistics, followed by summary of findings by component in the second part. The third part contains detailed tables on environment statistics. This publication includes five new statistics of which one in the Residuals component, three in the Extreme Events and Disasters component and one in the Environmental Protection, Management and Engagement component. A comparison of selected indicators between countries are available in the fourth part. Meanwhile, appendices and glossary are covered in the fifth and sixth parts are to facilitate users in understanding the statistics and environment terms used.

The Department gratefully acknowledges the co-operation and contribution rendered by all parties in making this publication a success. Every feedback and suggestion towards improving future publications is highly appreciated.

DATO' SRI DR. MOHD UZIR MAHIDIN

Chief Statistician, Malaysia

November 2023

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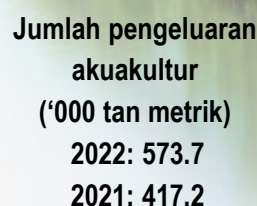
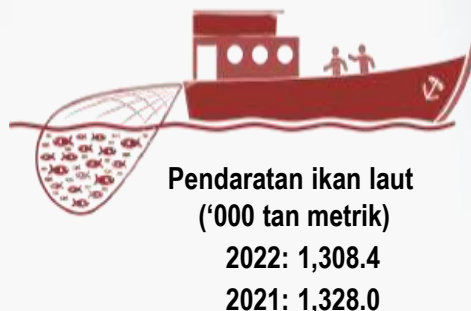
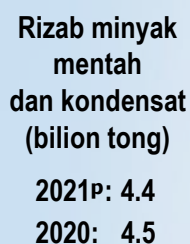
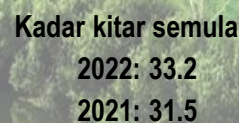
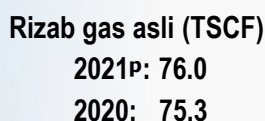
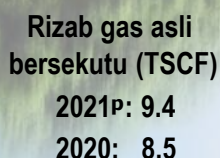
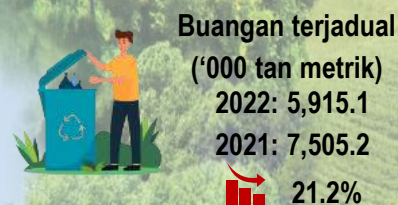
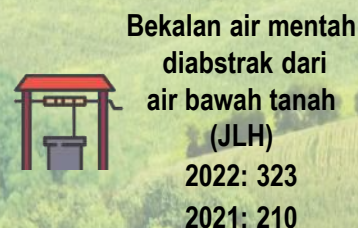
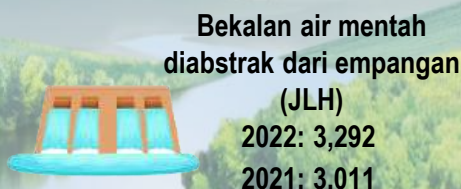
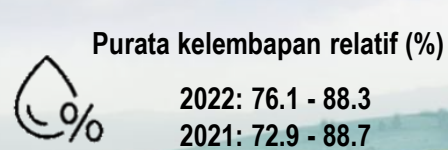
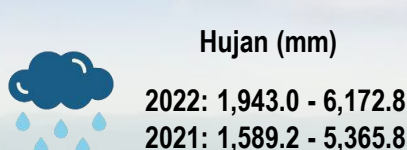
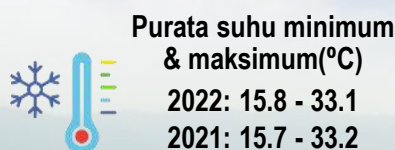
INFOGRAFIK

INFOGRAPHICS

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KOMPENDIUM PERANGKAAAN ALAM SEKITAR, MALAYSIA, 2023



Nota:
JLH: Juta liter sehari
p: awalan
TSCF: Trilion kubik kaki standard

Kadar pertumbuhan (%)

Sumber: Kompendium Perangkaan Alam Sekitar, 2023
Jabatan Perangkaan Malaysia (DOSM)



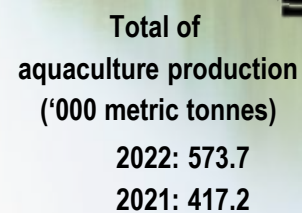
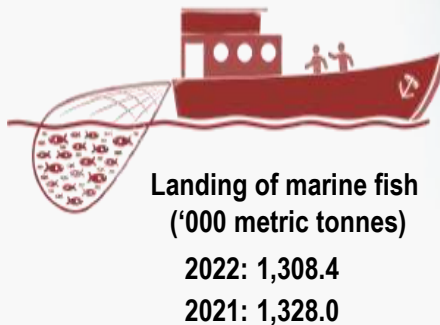
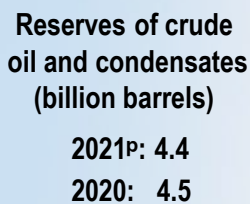
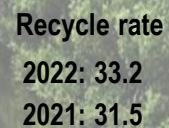
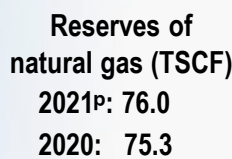
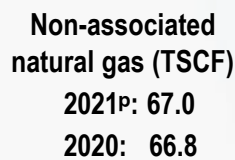
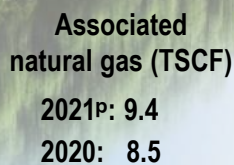
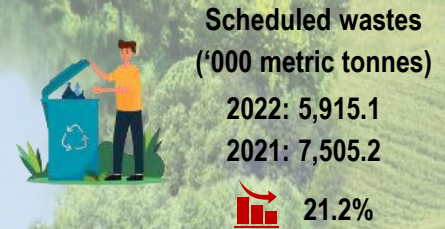
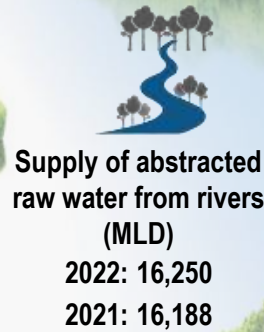
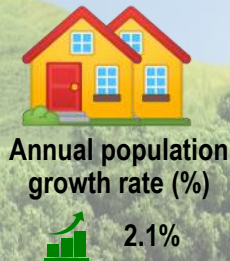
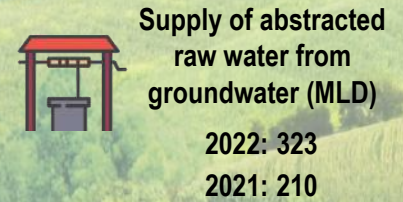
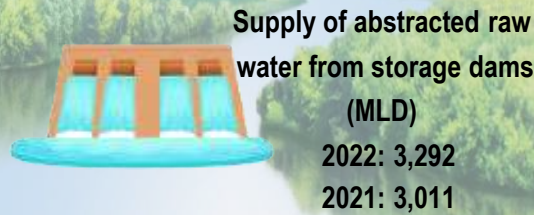
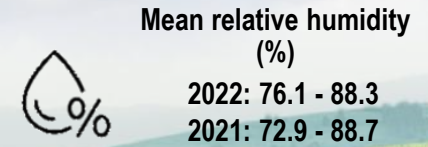
MINISTRY OF ECONOMY
DEPARTMENT OF STATISTICS MALAYSIA



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COMPENDIUM OF ENVIRONMENT STATISTICS, MALAYSIA, 2023



Note:
MLD: Million litres per day
p: preliminary
TSCF: Trillion standard cubic feet

Source: Compendium of Environment Statistics, 2023
Department of Statistics Malaysia (DOSM)



RINGKASAN PENEMUAN

SUMMARY OF FINDINGS

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KOMPONEN 1

KEADAAN DAN KUALITI ALAM SEKITAR

Pengenalan

- ❖ Pencemaran di Rantau Asia Pasifik
- ❖ Alam Sekitar dalam Konsep MADANI

Kualiti Alam Sekitar

- ❖ Habuk Halus (PM_{10} & $PM_{2.5}$)
- ❖ Ozon Permukaan Bumi (O_3)
- ❖ Karbon Monoksida (CO)
- ❖ Sulfur Dioksida (SO_2)
- ❖ Nitrogen Dioksida (NO_2)

Status Kualiti Udara

- ❖ Indeks Pencemaran Udara (IPU)

Kualiti Air Sungai

Keadaan Fizikal

- ❖ Purata suhu, hujan, purata kelembapan relatif & kilat

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PENGENALAN

Kompendium Perangkaan Alam Sekitar (KPAS), Malaysia 2023 memaparkan statistik alam sekitar mengikut komponen iaitu Keadaan dan Kualiti Alam Sekitar; Sumber Alam Sekitar dan Kegunaannya; Sisa; Kejadian Ekstrem dan Bencana; Penempatan Penduduk dan Kesihatan Persekitaran; dan Penglibatan, Pengurusan dan Perlindungan Alam Sekitar.

Rangka kerja yang digunakan dalam penerbitan ini adalah berdasarkan *Framework for the Development of Environment Statistics* (FDES), *United Nations, 2013*. **[Paparan 1.1]**

Penerbitan ini mengandungi 180 jadual yang dibahagikan kepada enam komponen.

Paparan 1.1: Komponen FDES 2013



Pencemaran di Rantau Asia Pasifik

Pencemaran udara ialah satu keadaan yang melibatkan pembebasan sebarang bahan, bahan kimia atau biologi ke udara yang boleh menyebabkan kemudaratan atau ketidakselesaan kepada manusia atau organisma hidup lain dan merosakkan alam sekitar. Pertubuhan Kesihatan Sedunia (WHO) mentakrifkan pencemaran udara sebagai pencemaran persekitaran dalaman atau luaran oleh mana-mana agen kimia, fizikal atau biologi yang mengubah suai ciri semula jadi atmosfera. WHO turut menyatakan hampir 90.0 peratus penduduk bandar di rantau Asia-Pasifik menghirup udara yang dianggap tidak selamat. Pencemaran udara boleh diukur sama ada membangunkan Indeks Kualiti Udara (AQI) dengan skala dari sifar hingga 500 (bacaan 50 dan ke bawah adalah selamat) atau dengan menggunakan pengukuran habuk halus (PM). PM mengukur zarah pepejal atau titisan cecair di udara atau pelepasan dari 0.01-100 $\mu\text{g}/\text{m}^3$ yang boleh dibahagikan kepada PM₁₀ dan PM_{2.5}. Pencemaran udara berpunca daripada pelepasan asap kotor oleh industri terus ke udara melalui asap kilang, kenderaan bermotor, asap rokok dan pembakaran terbuka. Negara di rantau Asia-Pasifik seperti China dan India sangat bergantung kepada arang batu, lebih

daripada 50.0 peratus penggunaan tenaga mereka datang daripada sumber ini¹. Kajian yang dilaksanakan oleh *United Nations Environment Programme Climate & Clean Air Coalition* mendapati pelepasan tahunan PM_{2.5} meningkat sebanyak 19.0 peratus dari 1990 hingga 2015. Sementara itu, kajian oleh *United Nations Economic and Social Commission for Asia and the Pacific* (ESCAP) menunjukkan purata pelepasan PM_{2.5} untuk rantau Asia-Pasifik pada 2019 ialah 50.7 $\mu\text{g}/\text{m}^3$, di mana melebihi garis panduan yang disyorkan oleh WHO untuk pelepasan tahunan PM_{2.5} yang hanya 5 $\mu\text{g}/\text{m}^3$ ².

Selain pencemaran udara, sisa pepejal dan pencemaran plastik turut menjejaskan alam sekitar dengan menjejaskan ekosistem marin. Dianggarkan 43.0 peratus daripada pengeluaran plastik global, dengan 38.0 peratus daripadanya berasal dari rantau Asia-Pasifik, sering dilupuskan tanpa kitar semula yang betul³. Kebanyakan bandar di Asia menggunakan tapak pelupusan sampah terbuka untuk pelupusan sisa pepejal dan hanya 10.0 peratus daripada sisa pepejal yang dihasilkan berakhir di tapak pelupusan yang diurus dengan baik⁴. Tambahan pula, air sisa yang tidak dirawat juga mempunyai kesan buruk terhadap kesihatan manusia dan alam sekitar.

¹ BP, "Statistical Review of World Energy: 70th Edition", 2021.

² United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP), "Protecting Our Planet Through Regional Cooperation and Solidarity in Asia and The Pacific", 2022

³ C. Schmidt, T. Krauth and S. Wagner, "Export of Plastic Debris by Rivers into the Sea", *Environmental Science &*

Technology, vol. 51, No. 21 (October 2017) pp. 12,246 – 12,253

⁴ United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP), "Key Environment Issues, Trends and Challenges in the Asia-Pacific Region", Note by the secretariat, Committee on Environment and Development, Fifth session, 21-23 November 2018, Bangkok.

Kira-kira 70.0 peratus air sisa bandar dibuang ke dalam ekosistem dan 80.0 hingga 90.0 peratus daripada semua air sisa di rantau ini masih tidak dirawat. Asia Tengah dan Selatan mempunyai kadar terendah aliran air sisa dirawat dengan betul iaitu hanya 25.0 peratus pada 2020 berbanding 65.0 peratus di Asia Timur dan Tenggara⁵. Negara-negara yang mengalami pertumbuhan ekonomi yang pesat tetapi menghadapi cabaran berkaitan air, sangat terdedah kepada kekurangan air yang boleh menangguhkan usaha untuk meningkatkan pengeluaran makanan dan keseluruhan agenda pembangunan mampan.

Isu alam sekitar memerlukan kerjasama pelbagai hala daripada semua pihak. Tindakan perlu diambil di peringkat serantau dan setiap negara mesti mengambil langkah yang sewajarnya dengan memberi perhatian khusus terhadap pemeliharaan alam sekitar dalam masa yang sama menggalakkan pembangunan ekonomi. Perubahan dalam aliran sumber, termasuk sumber kewangan, pengetahuan, modal insan, serta hubungan antara pihak berkepentingan adalah penting dalam menyokong perubahan sistemik yang diperlukan untuk menangani isu alam sekitar.

Alam Sekitar dalam Konsep MADANI

Pengurusan alam sekitar yang baik telah menjadi keutamaan kerajaan. Pelbagai pelan pengurusan alam sekitar telah dibangunkan di bawah seliaan kementerian berkaitan. Dokumen Ekonomi MADANI turut mengetengahkan alam sekitar sebagai elemen kritikal yang memerlukan perhatian semua pihak. Tiga (3) daripada enam (6) tonggak utama dasar MADANI Malaysia, iaitu kemampanan, kesejahteraan dan kebajikan berkait rapat dengan alam sekitar. Aspirasi kerajaan adalah untuk mewujudkan ekologi dan persekitaran yang mampan untuk Malaysia. Oleh itu, pemuliharaan alam sekitar adalah prinsip asas dalam rangka kerja MADANI. Tanggungjawab untuk memelihara sumber asli dan biodiversiti dalam flora dan fauna harus dikongsi bersama oleh semua anggota masyarakat. Menerusi konsep kelestarian, sebarang pembangunan fizikal yang akan dilaksanakan hendaklah mematuhi prinsip pembangunan mampan yang digariskan oleh pihak berkuasa, memastikan alam sekitar dan ekosistem tidak diabaikan, pada masa yang sama menjaga kesejahteraan rakyat Malaysia.

Bagi kesejahteraan, istilah ini merujuk kepada keseimbangan holistik dalam kehidupan yang merangkumi semua aspek. Khususnya dalam konteks alam sekitar, penekanan terhadap pemeliharaan dan kesejahteraannya adalah penting kerana

⁵ UN-Water, "Progress on Wastewater Treatment (SDG target 6.3)".

kemusnahannya boleh membawa kesan buruk dan berterusan kepada bumi dalam bentuk bencana yang berterusan. Ia juga sangat menjejaskan kelangsungan hidup generasi akan datang. Tambahan pula, konsep kebajikan dalam alam sekitar merujuk kepada tanggungjawab manusia untuk menjaga dan memupuk alam sekitar, memastikan ia tidak dieksploitasi secara melulu.

Dalam Kajian Separuh Penggal Rancangan Malaysia Ke-12 (RMKe-12), di bawah tema ketiga (3), terdapat tumpuan untuk mempercepatkan pertumbuhan hijau, meningkatkan kemampanan tenaga, dan mentransformasikan sektor air di seluruh negara. Untuk mencapai matlamat ini, beberapa strategi telah disediakan untuk menggalakkan pembangunan rendah karbon, bersih dan pembangunan mampan, seperti memperkukuh tindakan ke arah aktiviti rendah karbon, mempercepatkan peralihan kepada ekonomi kitaran, dan menggalakkan tanggungjawab bersama dalam mencegah pencemaran. Usaha bersepadu telah dibuat untuk mengukuhkan sektor tenaga dan elektrik serta memastikan kemampanan dan kemajuan subsektor minyak dan gas. Pelan Tindakan Industri Perkhidmatan dan Peralatan Minyak & Gas Negara (OGSE) 2021-2030 telah dilancarkan pada 2021 dan Dasar Tenaga Negara 2022-2040 diperkenalkan pada 2022 untuk mencapai matlamat ini. Bagaimanapun, terdapat cabaran yang perlu ditangani, termasuk tekanan perubahan iklim global,

kekurangan rancangan dan strategi bersepadu untuk mempercepatkan peralihan tenaga, isu dalam industri minyak dan gas dan kekurangan penggunaan tenaga boleh diperbaharui. Transformasi sektor air juga menjadi keutamaan. Melalui kajian separuh penggal ini, tumpuan diberikan kepada memperkasakan rakyat, memastikan pembiayaan yang mampan, dan memajukan infrastruktur yang menjimatkan kos dengan teknologi baharu untuk memastikan bekalan air yang berterusan. Tambahan pula, Bajet 2024 yang diumumkan baru-baru ini terus menekankan perlindungan alam sekitar seperti mengurangkan pelepasan karbon untuk masa hadapan yang mampan.

1.1: Kualiti Alam Sekitar

Bahan pencemar udara merupakan bahan kimia di udara yang boleh membahayakan manusia dan alam sekitar. Bahan pencemar boleh berbentuk partikel pepejal, titisan cecair atau gas. Terdapat enam bahan pencemar udara utama iaitu Ozon Permukaan Bumi (O_3), Karbon Monoksida (CO), Sulfur Dioksida (SO_2), Nitrogen Dioksida (NO_2) dan Habuk Halus (PM_{10} & $PM_{2.5}$). Pencemaran udara berlaku apabila bahan pencemar ini hadir di atmosfera. Punca dan kesan bahan pencemar udara ditunjukkan seperti di **Lampiran 2**.

Habuk Halus (PM_{10} & $PM_{2.5}$)

Habuk Halus (PM_{10} & $PM_{2.5}$) adalah istilah yang digunakan bagi partikel terampai berukuran kurang daripada diameter 10 dan 2.5 mikron. Partikel boleh berbentuk pepejal atau cecair dan ia termasuk aerosol, debu, asap dan debunga. Pembebasan habuk halus daripada kenderaan bermotor, penjanaan kuasa dan haba, proses perindustrian dan aktiviti pembakaran terbuka yang akan membawa kepada pencemaran udara serta mengancam kesihatan manusia dan tumbuhan.

Trend purata bulanan kepekatan PM_{10} di udara pada 2022 menunjukkan enam daripada 12 bulan meningkat, iaitu pada Januari (11.9%), Mei (4.3%), Julai (3.5%), Ogos (13.7%), September (4.4%) dan November (3.3%) berbanding 2021. Sebaliknya, terdapat penurunan ketara pada

Februari (-29.7%), Mac (-12.3%) dan Oktober (-15.5%). **[Carta 1.1]**

Manakala trend purata bulanan kepekatan $PM_{2.5}$ di udara pada 2022 menunjukkan penurunan pada tujuh daripada 12 bulan, iaitu Februari (-31.8%), Mac (-14.7%), April (-5.8%), Jun (-12.6%), Julai (-2.7%), Oktober (-20.2%) dan Disember (-5.9%) berbanding 2021. Manakala, kenaikan dua digit direkodkan pada Januari (19.7%) dan Ogos (13.9%). **[Carta 1.2]**

Ozon permukaan bumi (O_3)

O_3 adalah bahan pencemar yang terjadi akibat daripada reaksi kimia dalam udara di antara sebatian organik meruap (VOC_s) dan nitrogen oksida (NO_x). VOC_s dan NO_x ini dihasilkan oleh kenderaan bermotor dan industri.

Trend purata bulanan kepekatan O_3 di udara pada 2022 menunjukkan penurunan pada bulan Februari (-39.1%), Mac (-6.3%), April (-5.9%), Jun (-12.5%), Julai (-6.3%) dan Oktober (-13.3%) berbanding 2021. Sebaliknya, Ogos dan November masing-masing mencatatkan kenaikan sebanyak 15.4 peratus dan 7.7 peratus. Sementara itu, bacaan bagi Januari, Mei, September dan Disember kekal tidak berubah. **[Carta 1.3]**

Karbon Monoksida (CO)

CO merupakan gas yang tidak berwarna, tidak berbau dan beracun yang dihasilkan dari punca pembakaran bahan bakar fosil

seperti asap kenderaan, proses perindustrian dan aktiviti pembakaran terbuka.

Trend purata bulanan kepekatan CO di udara mencatatkan penurunan pada enam daripada 12 bulan, terutamanya dalam Februari (-3.4%), Mac (-0.6%), September (-1.5%), Oktober (-11.2%), November (-4.5%) dan Disember (-10.5%) berbanding 2021. Manakala terdapat kenaikan pada Januari (4.2%), April dan Mei meningkat 2.1 peratus, Jun (5.1%) Julai (3.1%) dan Ogos (2.8%). **[Carta 1.4]**

Sulfur Dioksida (SO₂)

SO₂ adalah sejenis gas reaktif yang mudah larut dalam air, tidak berwarna dan mempunyai bau yang tidak menyenangkan. Pendedahan yang berlebihan terhadap kepekatan tinggi SO₂ di udara menyebabkan kerosakan sistem pernafasan dan masalah komplikasi kardiovaskular.

Trend purata bulanan kepekatan SO₂ di udara mencatatkan kenaikan pada 2022 kecuali bagi Februari (-8.3%) berbanding 2021. Bacaan bagi November kekal tidak berubah. **[Carta 1.5]**

Nitrogen Dioksida (NO₂)

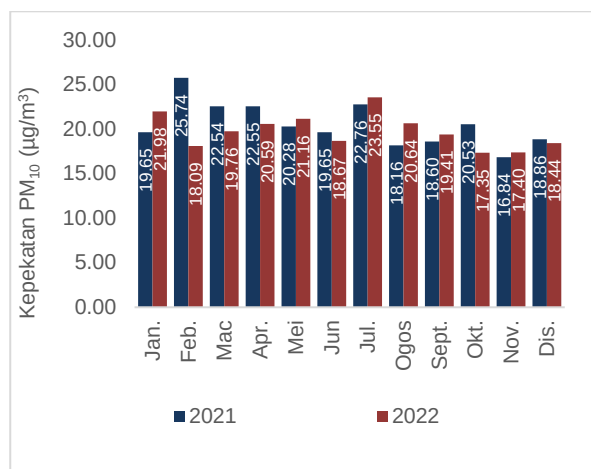
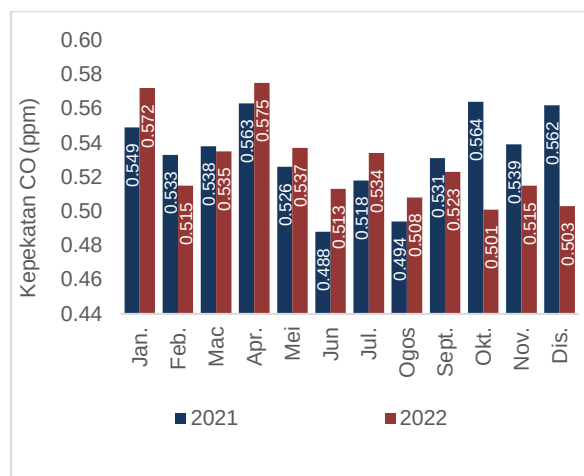
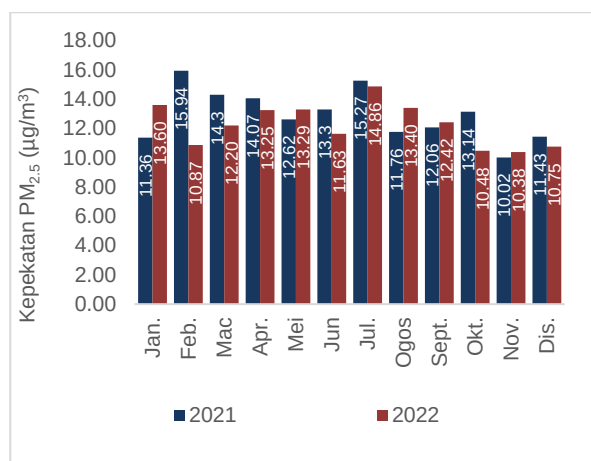
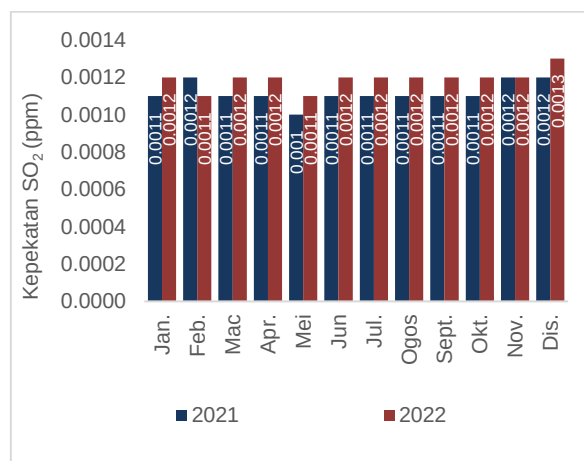
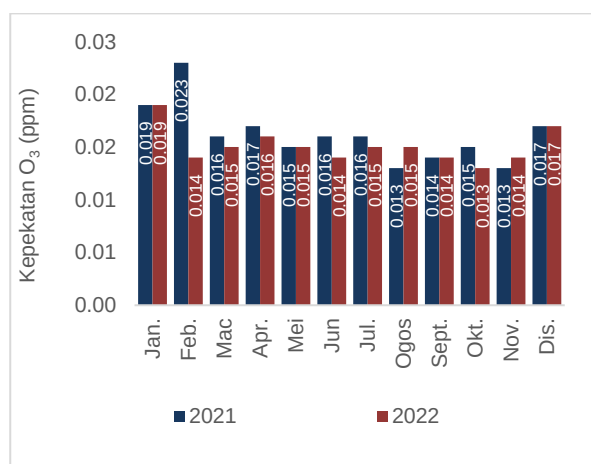
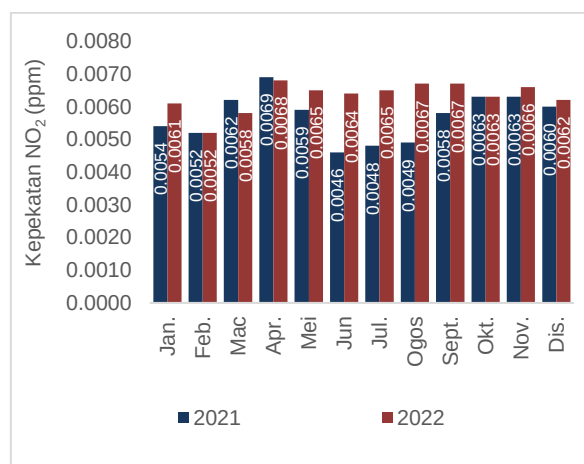
NO₂ terbentuk di persekitaran udara melalui pengoksidaan Nitrogen Monoksida (NO). Gas bertoksik berwarna merah keperangan ini mempunyai bau yang kuat dan tajam.

Trend purata bulanan kepekatan NO₂ menunjukkan peningkatan dalam lapan bulan iaitu, Januari (13.0%), Mei (10.2%),

Jun (39.1%), Julai (35.4%), Ogos (36.7%), September (15.5%), November (4.8%) dan Disember (3.3%). Sementara itu, Mac dan April masing-masing menurun sebanyak 6.5 peratus dan 1.4 peratus. Bacaan untuk Februari dan Oktober kekal tidak berubah pada 2022 berbanding tahun sebelumnya.

[Carta 1.6]



Carta 1.1: Purata bulanan kepekatan PM₁₀ di udara, Malaysia, 2021 dan 2022**Carta 1.4: Purata bulanan kepekatan CO di udara, Malaysia, 2021 dan 2022****Carta 1.2: Purata bulanan kepekatan PM_{2.5} di udara, Malaysia, 2021 dan 2022****Carta 1.5: Purata bulanan kepekatan SO₂ di udara, Malaysia, 2021 dan 2022****Carta 1.3: Purata bulanan kepekatan O₃ di udara, Malaysia, 2021 dan 2022****Carta 1.6: Purata bulanan kepekatan NO₂ di udara, Malaysia, 2021 dan 2022**

Sumber: Jabatan Alam Sekitar

1.2: Status Kualiti Udara

Indeks Pencemaran Udara (IPU)

Jabatan Alam Sekitar (JAS) mengawal kualiti udara negara melalui 65 stesen pengawasan yang ditempatkan di seluruh negara bagi mengawasi dan mengesan sebarang perubahan kualiti udara yang boleh memberi kesan negatif kepada kesihatan manusia dan alam sekitar.

Status kualiti udara di Malaysia dilaporkan dalam Indeks Pencemaran Udara (IPU). Bahan pencemar udara yang digunakan untuk mengira IPU adalah Ozon (O_3), Karbon Monoksida (CO), Nitrogen Dioksida (NO_2), Sulfur Dioksida (SO_2) dan Habuk Halus bersaiz kurang dari 10 mikron (PM_{10}) dan bersaiz kurang dari 2.5 mikron ($PM_{2.5}$).

Paparan 1.2: Status Indeks Pencemaran Udara (IPU)

IPU	Status IPU
0-50	Baik
51-100	Sederhana
101-200	Tidak Sihat
201-300	Sangat Tidak Sihat
>300	Berbahaya

Berdasarkan garis panduan yang telah dikeluarkan oleh JAS, terdapat lima peringkat IPU dalam menggambarkan kualiti udara di Malaysia iaitu baik, sederhana, tidak sihat, sangat tidak sihat dan berbahaya.

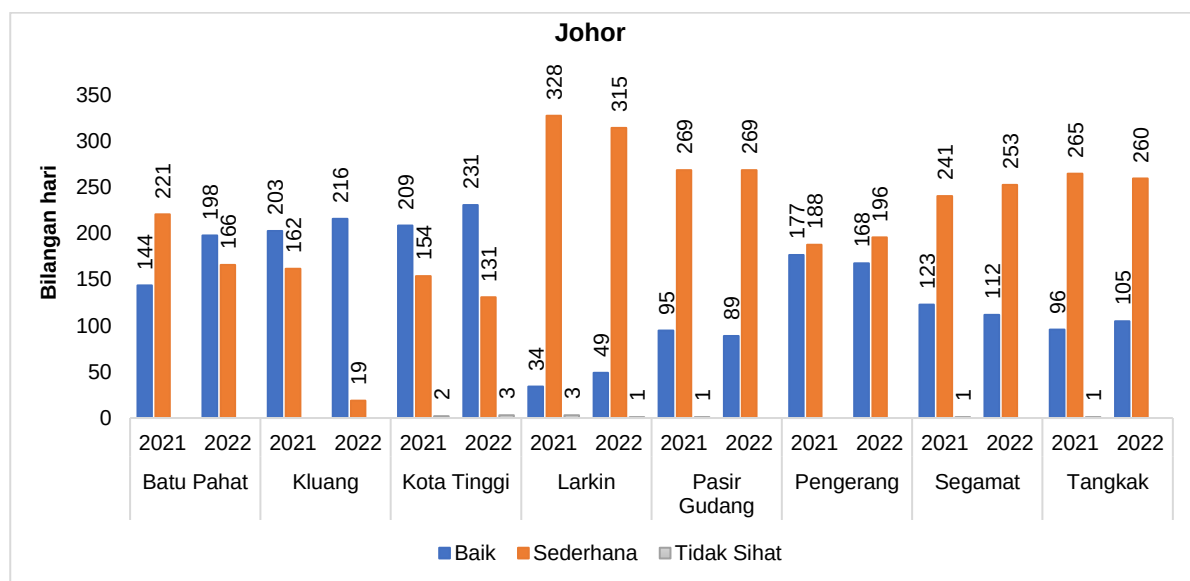
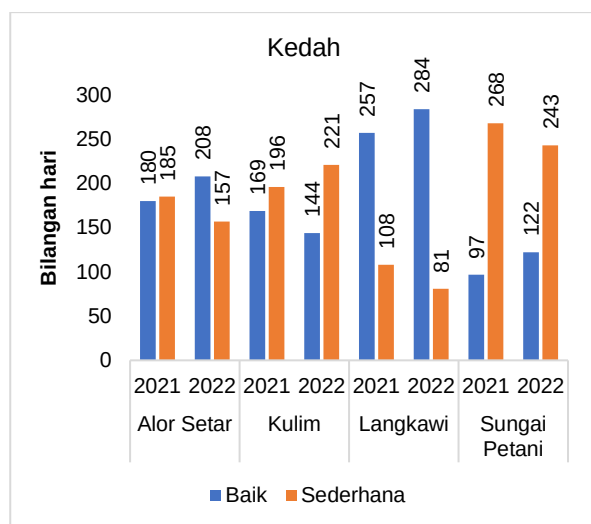
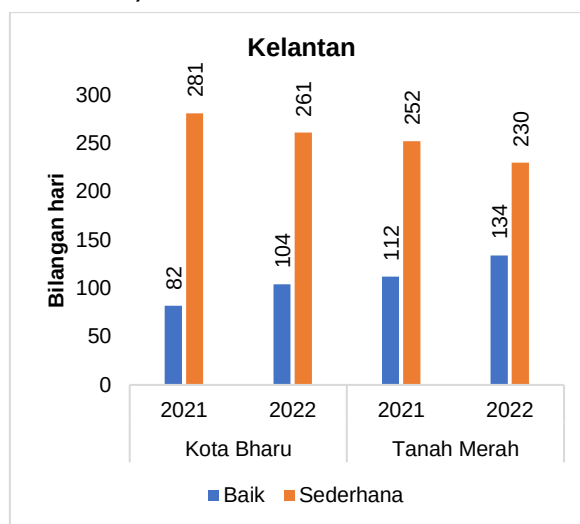
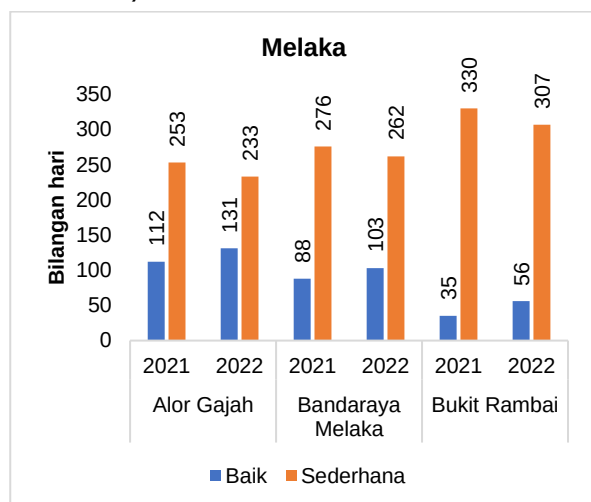
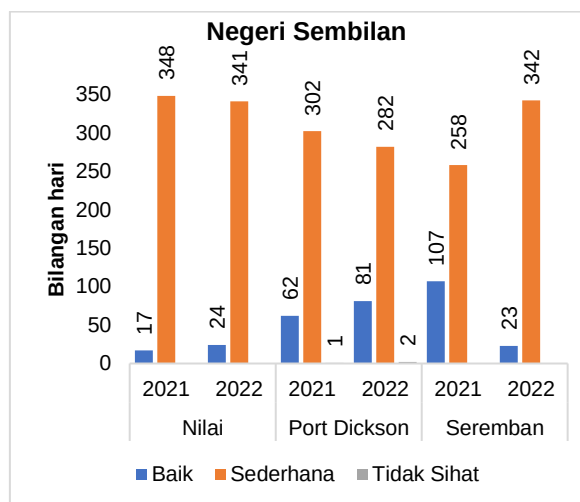
Lampiran 3 menerangkan perbandingan nilai IPU dengan tahap pencemaran dan kawalan kesihatan.

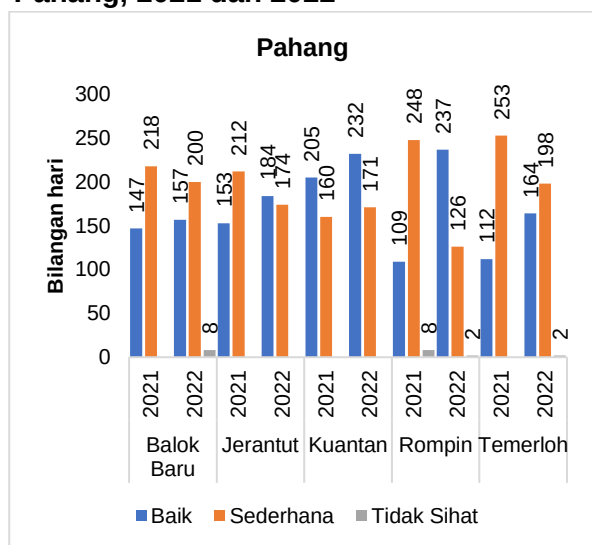
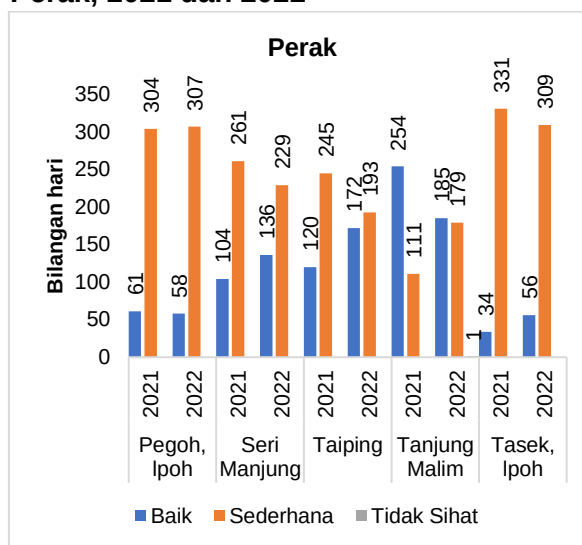
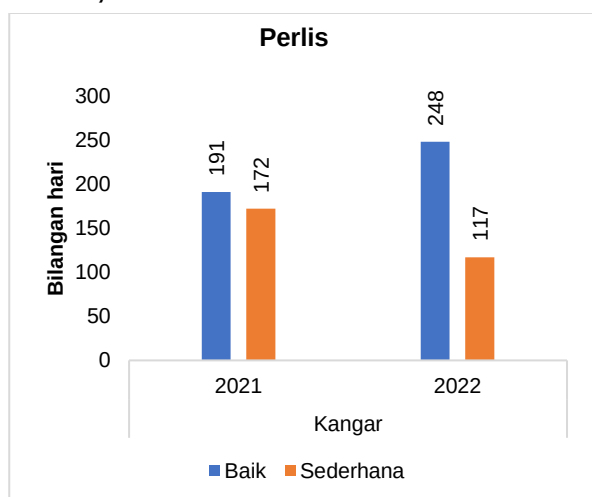
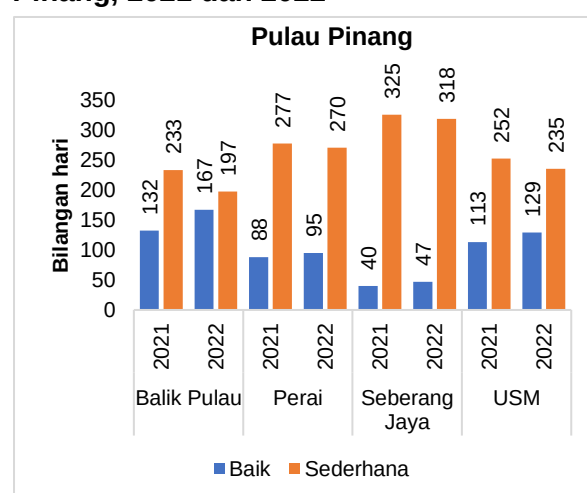
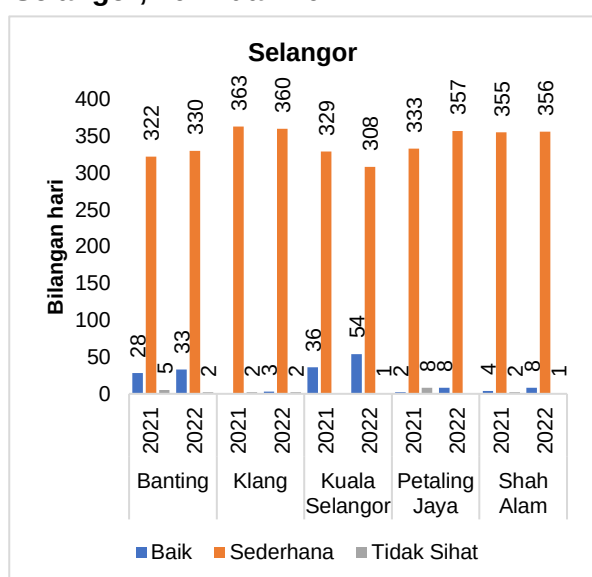
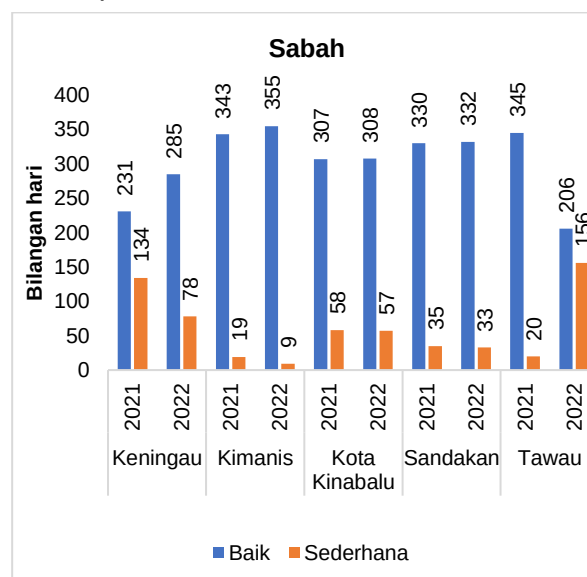
Malaysia secara keseluruhannya merekodkan kualiti udara berstatus “baik” dan “sederhana” bagi 2022. Stesen Kimanis mencatatkan bilangan hari tertinggi (355 hari) kualiti udara berstatus “baik” pada 2022 berbanding 345 hari tahun sebelumnya.

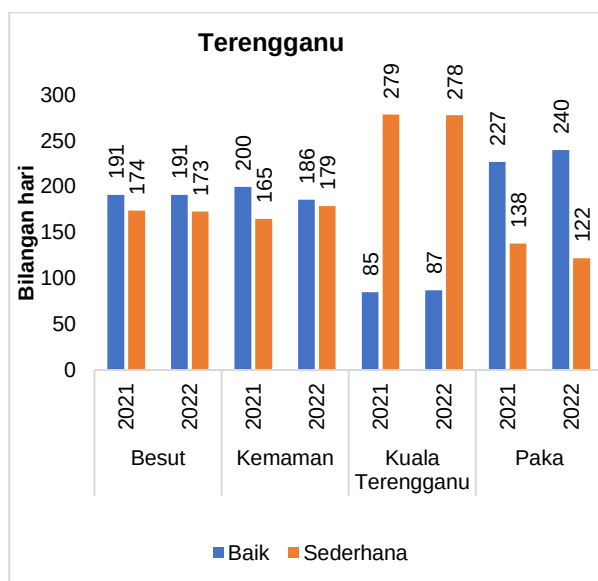
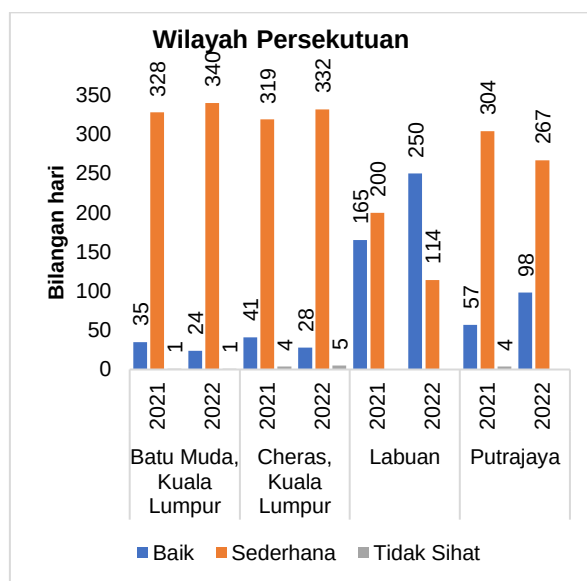
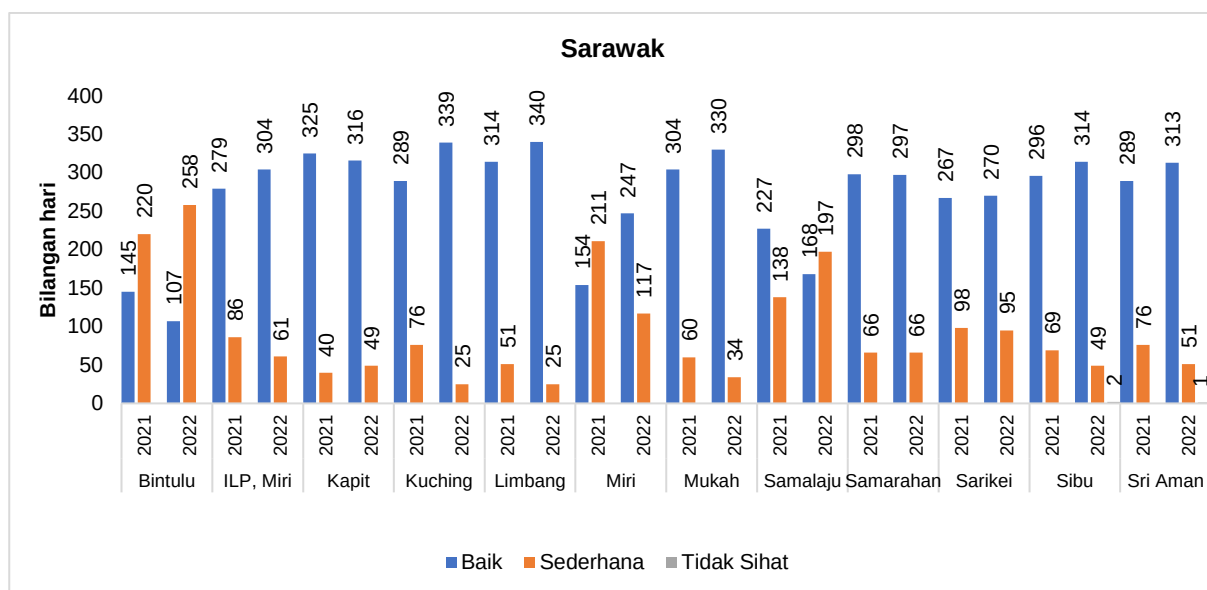
Bacaan IPU menunjukkan peningkatan dalam bilangan hari dengan kualiti udara yang “baik” terutamanya di bandar-bandar utama di seluruh negara disebabkan pelepasan bahan pencemar ke udara yang lebih rendah seperti asap kenderaan bermotor, pelepasan asap cerobong industri dan aktiviti pembakaran terbuka.

[Carta 1.7 – Carta 1.20]



Carta 1.7: Status kualiti udara¹, Johor, 2021 dan 2022**Carta 1.8: Status kualiti udara¹, Kedah, 2021 dan 2022****Carta 1.9: Status kualiti udara¹, Kelantan, 2021 dan 2022****Carta 1.10: Status kualiti udara¹, Melaka, 2021 dan 2022****Carta 1.11: Status kualiti udara¹, Negeri Sembilan, 2021 dan 2022**¹Bacaan status kualiti udara berdasarkan bacaan maksimum harian

Carta 1.12: Status kualiti udara¹, Pahang, 2021 dan 2022**Carta 1.13: Status kualiti udara¹, Perak, 2021 dan 2022****Carta 1.14: Status kualiti udara¹, Perlis, 2021 dan 2022****Carta 1.15: Status kualiti udara¹, Pulau Pinang, 2021 dan 2022****Carta 1.16: Status kualiti udara¹, Selangor, 2021 dan 2022****Carta 1.17: Status kualiti udara¹, Sabah, 2021 dan 2022**¹Bacaan status kualiti udara berdasarkan bacaan maksimum harian

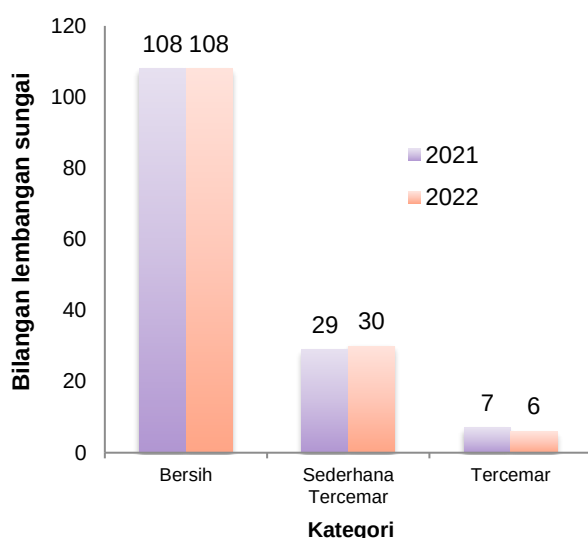
Carta 1.18: Status kualiti udara¹, Terengganu, 2021 dan 2022Carta 1.19: Status kualiti udara¹, Wilayah Persekutuan, 2021 dan 2022Carta 1.20: Status kualiti udara¹, Sarawak, 2021 dan 2022¹Bacaan status kualiti udara berdasarkan bacaan maksimum harian

Sumber: Jabatan Alam Sekitar

1.3 Kualiti Air Sungai

Hasil pemantauan Jabatan Alam Sekitar (JAS) terhadap 144 lembangan sungai pada 2022, menunjukkan 108 (75.0%) lembangan sungai berada dalam kategori “bersih” diikuti 30 lembangan sungai (20.8%) kategori “sederhana tercemar” dan 6 lembangan sungai (4.2%) kategori “tercemar” berbanding 2021. [Carta 1.21]

Carta 1.21: Status kualiti sungai mengikut kategori, Malaysia, 2021 dan 2022



Sumber: Jabatan Alam Sekitar

Status kualiti air sungai di Malaysia diukur berdasarkan tiga bahan pencemar utama iaitu *Ammoniacal Nitrogen* ($\text{NH}_3\text{-N}$), *Biochemical Oxygen Demand* (BOD_5) dan *Suspended Solids* (SS). Daripada 144 lembangan sungai, bilangan lembangan sungai yang berkategori “bersih” berdasarkan $\text{NH}_3\text{-N}$, BOD_5 dan SS masing-masing menurun dari 58 kepada 52; 124 kepada 120 dan 127 kepada 118 lembangan sungai berbanding tahun sebelumnya. Manakala, jumlah lembangan sungai yang dikategorikan sebagai “tercemar” bagi $\text{NH}_3\text{-N}$ menurun kepada 41 (2021: 49). Manakala, kedua-dua BOD_5 dan SS meningkat kepada 14 berbanding 9 dan 10 pada 2021. [Jadual 1.1]

Jadual 1.1: Status kualiti sungai berdasarkan pencemar utama Malaysia, 2021 dan 2022

Tahun	Jumlah lembangan sungai yang diawasi	$\text{NH}_3\text{-N}$			BOD_5			SS		
		B	ST	T	B	ST	T	B	ST	T
2022	144	52	51	41	120	10	14	118	12	14
2021	144	58	37	49	124	11	9	127	7	10

B-Bersih ST-Sederhana Tercemar T-Tercemar

Sumber: Jabatan Alam Sekitar

1.4: Keadaan Fizikal

Malaysia terletak di zon khatulistiwa dan mengalami iklim panas dan lembap. Pada amnya, ia mempunyai suhu seragam, kelembapan tinggi dan hujan yang banyak. Tiupan angin di Malaysia pada amnya lemah dan terdapat perubahan bertempoh dalam corak tiupan angin. Berdasarkan kepada perubahan ini, empat musim boleh dibezakan iaitu monsun timur laut (November-Mac), monsun barat daya (Mei-September) dan dua musim peralihan monsun (Mac-Mei & Oktober-November) yang lebih pendek⁶.

1.4.1 Purata suhu, hujan, purata kelembapan relatif dan kilat

Purata suhu

Sepanjang 2022, purata suhu tahunan di Malaysia adalah di antara 15.8°C hingga 33.1°C. Purata suhu tertinggi pada 2022 direkodkan di stesen Ipoh (33.1°C), menurun 0.1°C berbanding 33.2°C yang dilaporkan di stesen Temerloh pada 2021. Manakala, stesen Cameron Highlands merekodkan purata suhu terendah iaitu 15.8°C berbanding 15.7°C pada 2021.

Hujan

Stesen Mulu merekodkan hujan tahunan tertinggi pada 2022 iaitu 6,172.8 mm berbanding tahun sebelumnya (2021: 5,365.8 mm). Namun begitu, stesen Sitiawan pula mencatatkan hujan tahunan

terendah iaitu 1,943.0 mm berbanding tahun sebelumnya 1,589.2 mm (stesen Keningau).

Stesen Mulu juga mencatatkan bilangan hari hujan tertinggi pada 2022 dengan 289 hari berbanding 264 hari yang dicatatkan pada 2021. Sementara itu, stesen Muadzam Shah pula mencatatkan jumlah hari hujan terendah iaitu 169 hari pada 2022 berbanding 163 hari (stesen Kuala Pilah) pada 2021.

Kilat

Stesen KLIA, Sepang mencatatkan bilangan hari kilat tertinggi dengan 340 hari berbanding 335 hari pada 2021. Manakala, stesen Ranau pula mencatatkan bilangan hari kilat terendah iaitu 89 hari pada 2022 berbanding 57 hari (stesen Kudat) pada tahun sebelumnya.

Purata kelembapan relatif

Purata kelembapan relatif di Malaysia pada 2022 adalah di antara 76.1 peratus (stesen Bayan Lepas) dan 88.3 peratus (stesen Mulu) berbanding 2021 iaitu di antara 72.9 peratus (stesen Petaling Jaya) dan 88.7 peratus (stesen Cameron Highlands).

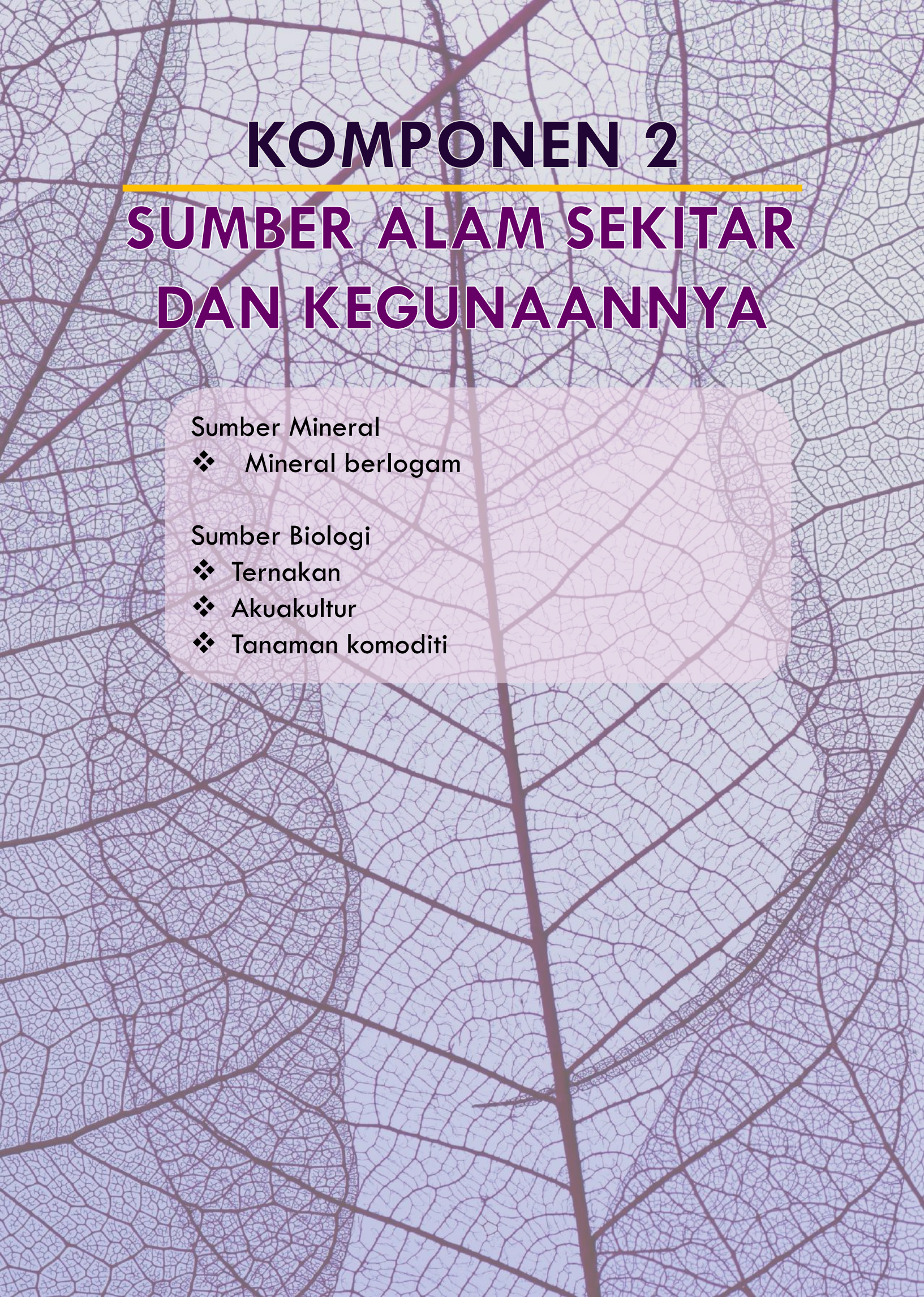
[Paparan 1.3]

⁶ Portal Jabatan Meteorologi Malaysia, www.met.gov.my

Paparan 1.3: Ringkasan statistik iklim di stesen meteorologi, Malaysia, 2021 dan 2022

		2021		2022	
		TERTINGGI	TERENDAH	TERTINGGI	TERENDAH
	Purata suhu minimum dan maksimum (°C)	33.2	15.7	33.1	15.8
	Stesen meteorologi	Temerloh, Pahang	Cameron Highlands, Pahang	Ipoh, Perak	Cameron Highlands, Pahang
	Hujan (mm)	5,365.8	1,589.2	6,172.8	1,943.0
	Stesen meteorologi	Mulu, Sarawak	Keningau, Sabah	Mulu, Sarawak	Sitiawan, Perak
	Bilangan hari hujan	264	163	289	169
	Stesen meteorologi	Mulu, Sarawak	Kuala Pilah, Negeri Sembilan	Mulu, Sarawak	Muadzam Shah, Pahang
	Bilangan hari kilat	335	57	340	89
	Stesen meteorologi	KLIA, Sepang	Kudat, Sabah	KLIA, Sepang	Ranau, Sabah
	Purata kelembapan relatif (%)	88.7	72.9	88.3	76.1
	Stesen meteorologi	Cameron Highlands, Pahang	Petaling Jaya, Selangor	Mulu, Sarawak	Bayan Lepas, Pulau Pinang

Sumber: Jabatan Meteorologi Malaysia



KOMPONEN 2

SUMBER ALAM SEKITAR DAN KEGUNAANNYA

Sumber Mineral

- ❖ Mineral berlogam

Sumber Biologi

- ❖ Ternakan
- ❖ Akuakultur
- ❖ Tanaman komoditi

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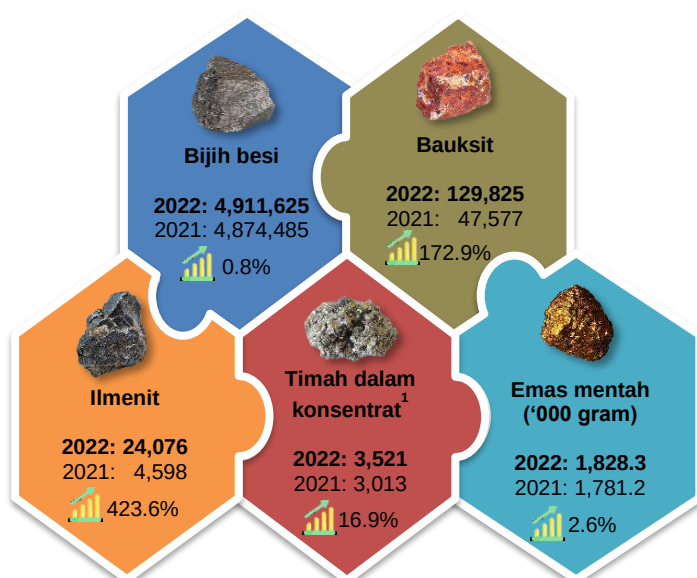
2.1: Sumber Mineral

Mineral berlogam adalah bahan yang terdapat secara semula jadi dengan kandungan tinggi logam tertentu. Mineral ini lazimnya terdapat di kerak bumi dan merupakan sumber berharga kerana boleh diekstrak dan diproses untuk mendapatkan logam. Mineral logam digunakan dalam pelbagai industri, seperti pembinaan, pengeluaran, elektronik dan pengangkutan. Beberapa mineral logam yang biasa dijumpai ialah besi, tembaga, aluminium, emas, perak, dan plumbum.

Pengeluaran mineral berlogam pada 2022 masing-masing menunjukkan peningkatan di antara 0.8 peratus dan 423.6 peratus berbanding pada 2021. [Paparan 2.1]

Paparan 2.1: Pengeluaran mineral berlogam terpilih, Malaysia, 2021 dan 2022

(Tan metrik)



Sumber: Jabatan Mineral dan Geosains

Nota: ¹ Timah dalam konsentrat adalah merujuk kepada kandungan timah dalam konsentrat bijih timah

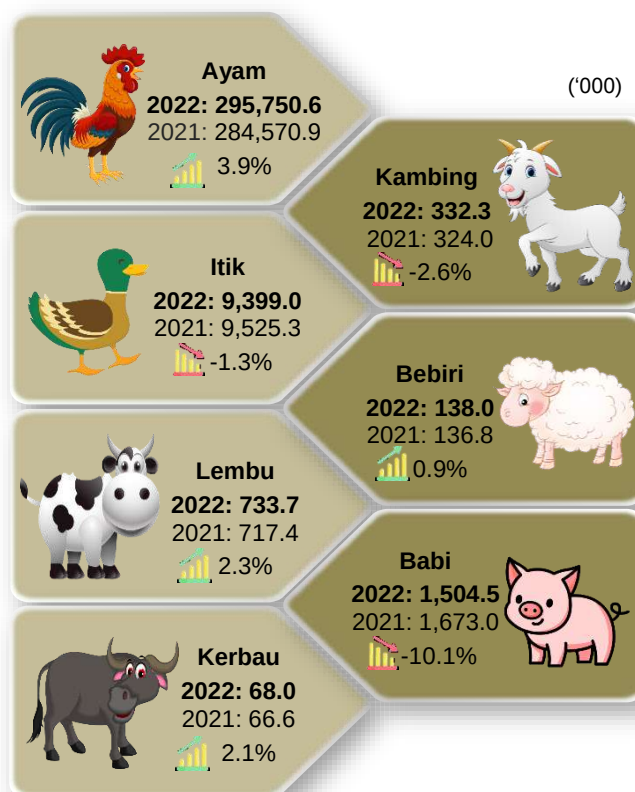
Kadar pertumbuhan (%)

2.2: Sumber Biologi

Salah satu sumber biologi utama di Malaysia adalah ternakan. Ternakan merujuk kepada haiwan yang telah dijinakkan dan dibesarkan untuk pelbagai tujuan, terutamanya untuk pengeluaran makanan dan kegunaan pertanian lain. Ternakan merangkumi haiwan seperti lembu, kambing, babi, unggas dan lain-lain yang dibela di dalam kebun atau ladang ternakan.

Bilangan ternakan ayam mencatatkan peningkatan 3.9 peratus, lembu (2.3%), kerbau (2.1%) dan bebiri (0.9%) pada 2022. Manakala, ternakan kambing menurun 2.6 peratus diikuti oleh itik (-1.3%) dan babi (-10.1%). [Paparan 2.2]

Paparan 2.2: Bilangan ternakan, Malaysia, 2021 dan 2022



Sumber: Jabatan Perkhidmatan Veterinar

Akuakultur merupakan amalan menternak organisma akuatik seperti ikan, kerang, dan tumbuhan akuatik di dalam persekitaran terkawal seperti kolam, tangki, dan kepungan laut. Berdasarkan Akta Perikanan 1985, akuakultur adalah pembiakan benih ikan atau pemeliharaan biak ikan melalui perusahaan ternak keseluruhan atau sebahagian daripada peredaran hidupnya.

Pengeluaran industri akuakultur berjumlah 573.7 ribu tan metrik pada 2022, meningkat 37.5 peratus berbanding 2021. Pengeluaran akuakultur air tawar meningkat sebanyak 9.4 peratus kepada 115.9 ribu tan metrik dipacu oleh pengeluaran keli (39.8 ribu tan metrik) diikuti tilapia merah (27.9 ribu tan metrik) dan patin (20.9 ribu tan metrik). Manakala, pengeluaran air payau/ masin menyumbang 79.8 peratus daripada keseluruhan pengeluaran akuakultur. Tiga penyumbang utama kepada pengeluaran akuakultur air payau/ masin ialah rumpai laut (308.0 ribu tan metrik), siakap (43.7 ribu tan metrik) dan udang putih (39.6 ribu tan metrik).

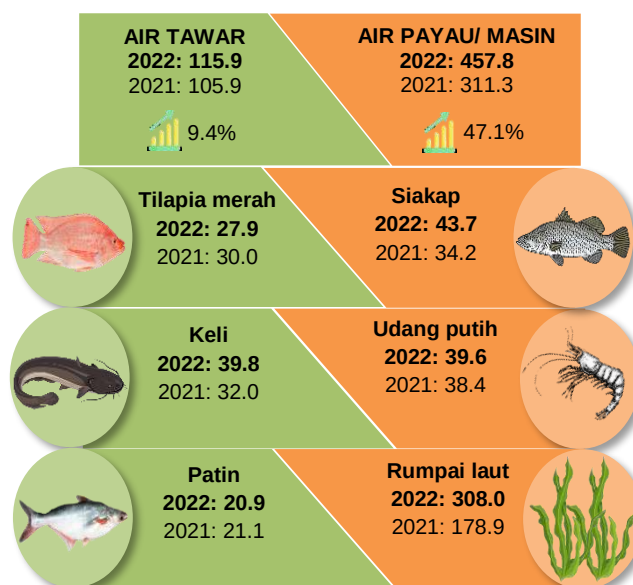
[Paparan 2.3]

Paparan 2.3: Pengeluaran akuakultur, Malaysia, 2021 dan 2022

('000 tan metrik)

JUMLAH PENGELUARAN AKUAKULTUR

2022: 573.7
2021: 417.2  37.5%



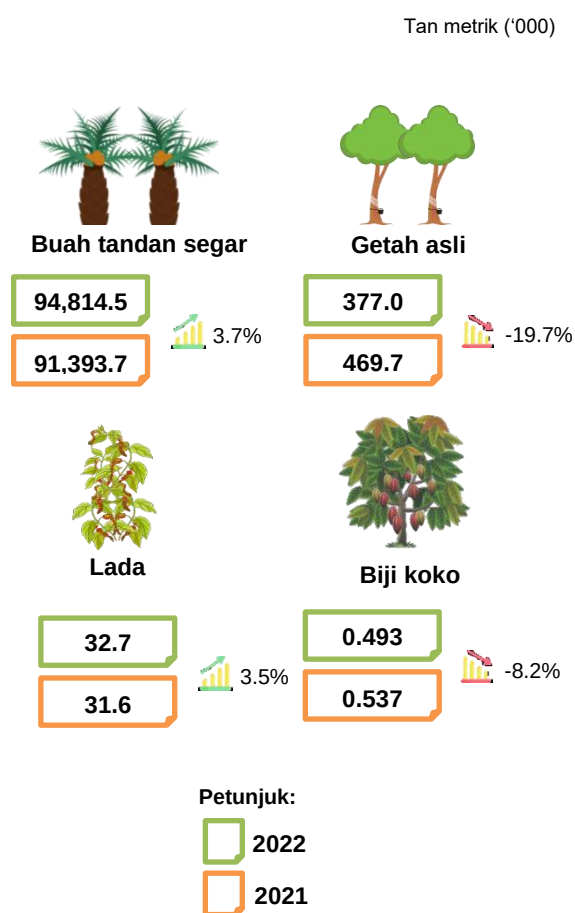
 Kadar pertumbuhan (%)

Sumber: Jabatan Perikanan Malaysia

Tanaman komoditi ditanam dalam kuantiti besar terutamanya untuk tujuan penjualan dan perdagangan sebagai bahan mentah dan bukan untuk penggunaan terus oleh manusia. Tanaman ini biasanya digunakan sebagai input dalam pelbagai industri, seperti pengeluaran makanan, makanan haiwan, biofuel, dan pembuatan industri. Tanaman komoditi adalah sebahagian asas dalam ekonomi pertanian global.

Pengeluaran buah tandan segar dan lada meningkat masing-masing 3.7 peratus dan 3.5 peratus pada 2022 berbanding 2021. Biji koko dan getah asli pula mencatatkan penurunan masing-masing sebanyak 8.2 peratus dan 19.7 peratus. [Paparan 2.4]

Paparan 2.4: Pengeluaran tanaman komoditi terpilih, Malaysia, 2021 dan 2022



Sumber: Jabatan Pertanian Malaysia, Lembaga Minyak Sawit Malaysia, Lembaga Koko Malaysia, Lembaga Lada Malaysia, Lembaga Getah Malaysia dan Pihak Berkuasa Kemajuan Pekebun Kecil Perusahaan Getah

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KOMPONEN 3

SISA

Penghasilan dan Pengurusan Air Sisa

- ❖ Kemudahan pembentungan

Penghasilan dan Pengurusan Sisa

- ❖ Buangan terjadual
- ❖ Sisa klinikal

Pelepasan Bahan Kimia

- ❖ Pengeluaran dan import baja

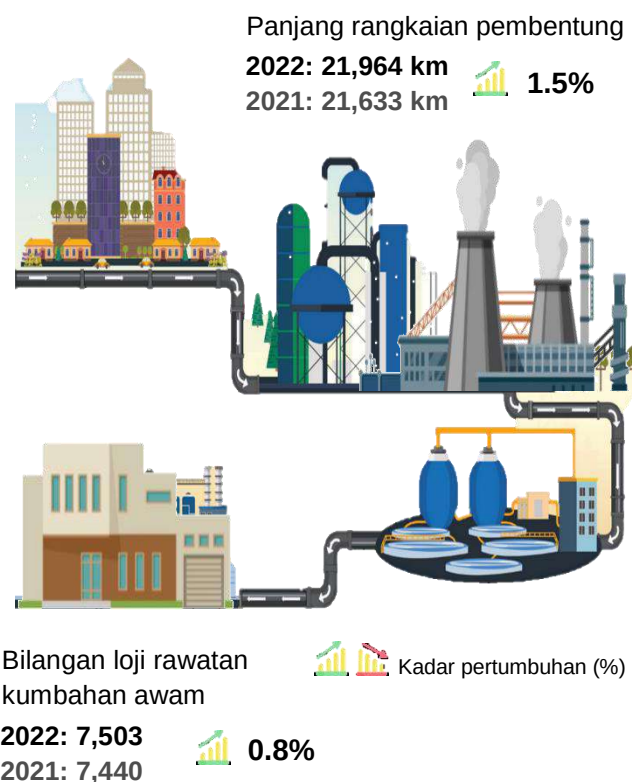
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3.1: Penghasilan dan Pengurusan Air Sisa

Pengurusan kumbahan yang sistematik dan efisien adalah amat penting dalam memastikan kualiti alam sekitar terjaga serta mengelakkan daripada penularan wabak penyakit berjangkit bawaan air. Menurut Indah Water Konsortium (IWK), proses rawatan kumbahan terdiri daripada dua jenis iaitu aerobik (menggunakan oksigen untuk memecahkan bahan organik) dan anaerobik (tidak menggunakan oksigen).

Panjang rangkaian pembetung yang direkodkan pada 2022 ialah 21,964 km (2021: 21,633 km) dengan bilangan loji rawatan kumbahan awam sebanyak 7,503 (2021: 7,440) selaras dengan pertumbuhan penduduk dan pembangunan kawasan perumahan dan perindustrian baharu. [Paparan 3.1]

Paparan 3.1: Kemudahan pembetungan, Malaysia, 2020 dan 2021



Sumber: Suruhanjaya Perkhidmatan Air Negara

3.2: Penghasilan dan Pengurusan Sisa

3.2.1 Buangan terjadual

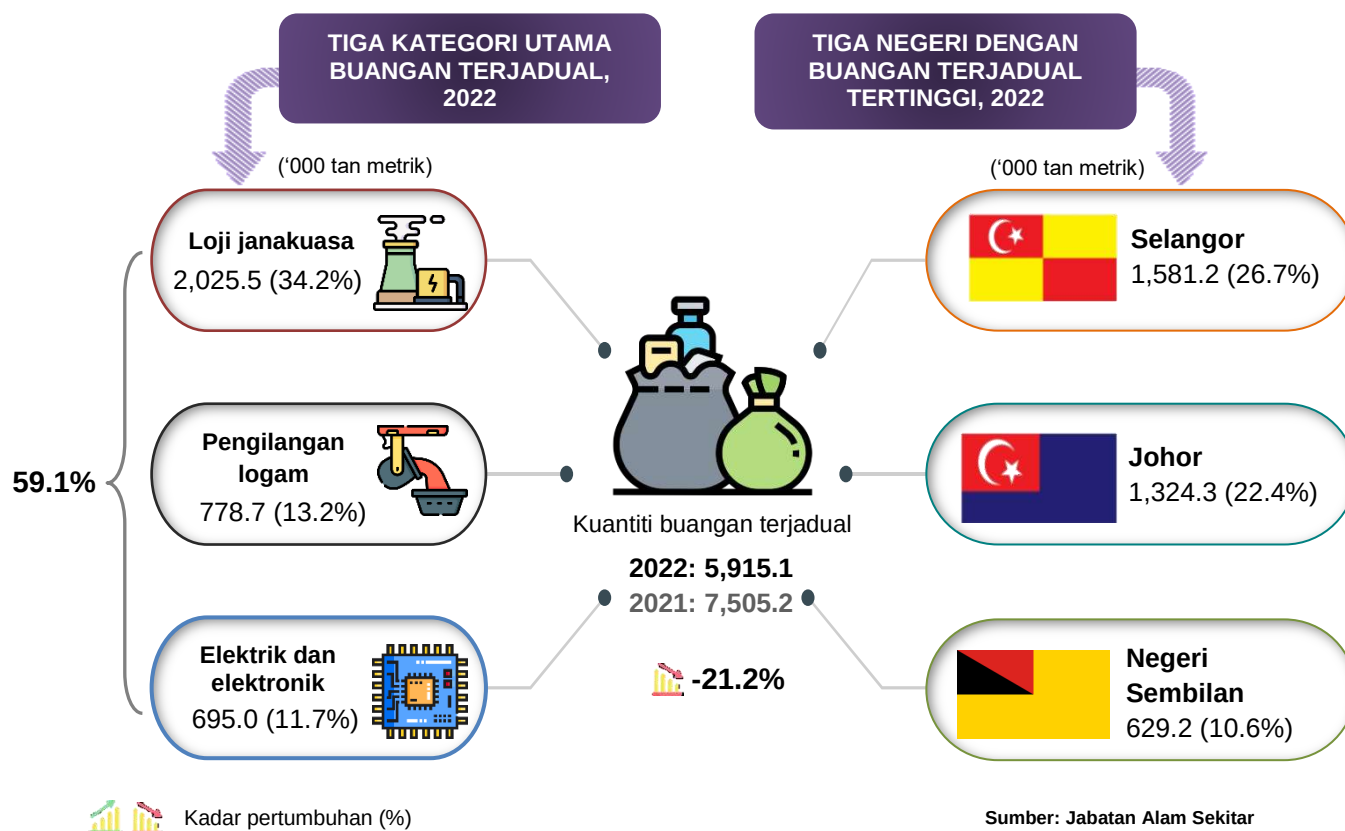
Buangan terjadual merujuk kepada kategori sisa tersenarai dalam Jadual Pertama Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005. Ia juga ditakrifkan sebagai buangan toksik dan berbahaya yang dihasilkan oleh industri, pertanian, bengkel, kontraktor buangan terjadual, aktiviti domestik dan buangan klinikal dari hospital.

Sejumlah 5,915.1 ribu tan metrik buangan terjadual telah dihasilkan pada 2022, berkurang 21.2 peratus berbanding

7,505.2 ribu tan metrik yang dilaporkan pada 2021. Selangor menyumbang jumlah buangan terjadual tertinggi iaitu 26.7 peratus diikuti Johor (22.4%) dan Negeri Sembilan (10.6%).

Tiga industri utama yang menyumbang 59.1 peratus daripada jumlah keseluruhan buangan terjadual ialah loji janakuasa (34.2%), pengilangan logam (13.2%) dan elektrik dan elektronik (11.7%) pada 2022. [Paparan 3.2]

Paparan 3.2: Kuantiti buangan terjadual mengikut tiga kategori utama dan negeri, Malaysia, 2022



3.2.2 Sisa klinikal

Buangan klinikal merujuk kepada buangan yang terdiri daripada keseluruhan atau sebahagian tisu manusia, darah atau bendalir badan, bahan kumuh, ubat-ubatan, produk farmaseutikal dan lain-lain. Ia diklasifikasikan sebagai buangan terjadual di bawah Jadual Pertama Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005.

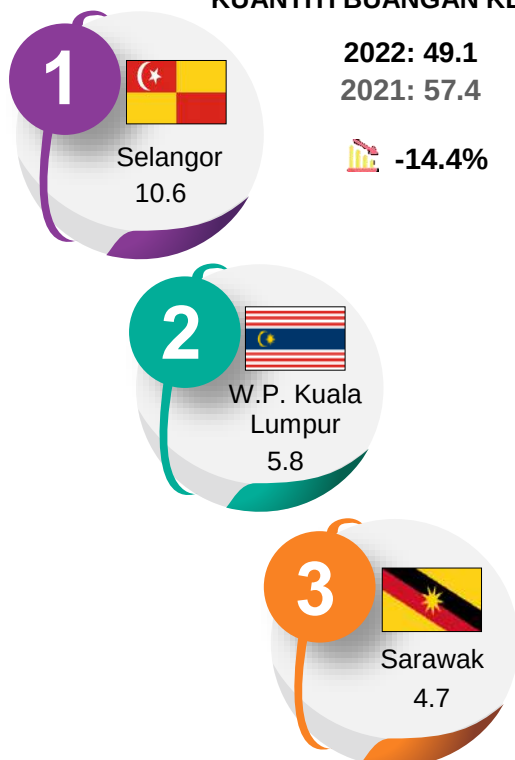
Kuantiti buangan klinikal pada 2022 sebanyak 49.1 ribu tan metrik dengan penurunan 14.4 peratus berbanding 57.4 ribu tan metrik pada 2021 berikutan kes COVID-19 menurun 14.4 peratus (2021: 2,645,076 kes; 2022: 2,268,591 kes).

Tiga negeri mencatatkan jumlah buangan klinikal tertinggi iaitu Selangor (10.6 ribu tan metrik), W.P. Kuala Lumpur (5.8 ribu tan metrik) dan Sarawak (4.7 ribu tan metrik). **[Paparan 3.3]**

Paparan 3.3: Tiga negeri dengan buangan klinikal tertinggi, Malaysia, 2022

('000 tan metrik)

KUANTITI BUANGAN KLINIKAL



Tiga negeri dengan buangan klinikal tertinggi, 2022

 Kadar pertumbuhan (%)

Sumber: Jabatan Alam Sekitar

3.3: Pelepasan Bahan Kimia

Baja ialah bahan atau campuran yang ditambahkan kepada tanah atau tumbuhan untuk membekalkan nutrien penting bagi menggalakkan tumbesaran tumbuh-tumbuhan dan meningkatkan hasil tanaman. Ia digunakan dalam pertanian dan perkebunan untuk mengatasi kekurangan nutrien dalam tanah bagi memastikan tumbuhan mempunyai bekalan elemen penting yang diperlukan untuk tumbesaran.

Pengeluaran baja pada 2022 ialah 7.6 juta tan metrik berbanding 5.8 juta tan metrik pada 2021, meningkat 29.9 peratus. Manakala, jumlah import baja menurun 15.2 peratus daripada 4.1 juta tan metrik pada 2021 kepada 3.5 juta tan metrik pada 2022. [Paparan 3.4]

Paparan 3.4: Pengeluaran dan import baja, Malaysia, 2021 dan 2022

(juta tan metrik)

PENGELUARAN



2022: 7.6
2021: 5.8

 29.9%

IMPORT



2022: 3.5
2021: 4.1

 -15.2%

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KOMPONEN 4

KEJADIAN EKSTREM DAN BENCANA

Kejadian Ekstrem dan Bencana Semula Jadi

- ❖ Banjir
- ❖ Gempa bumi

Bencana Teknologi

- ❖ Insiden tumpahan minyak
- ❖ Kemalangan jalan raya
- ❖ Kebakaran

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4.1: Kejadian Ekstrem dan Bencana Semula Jadi

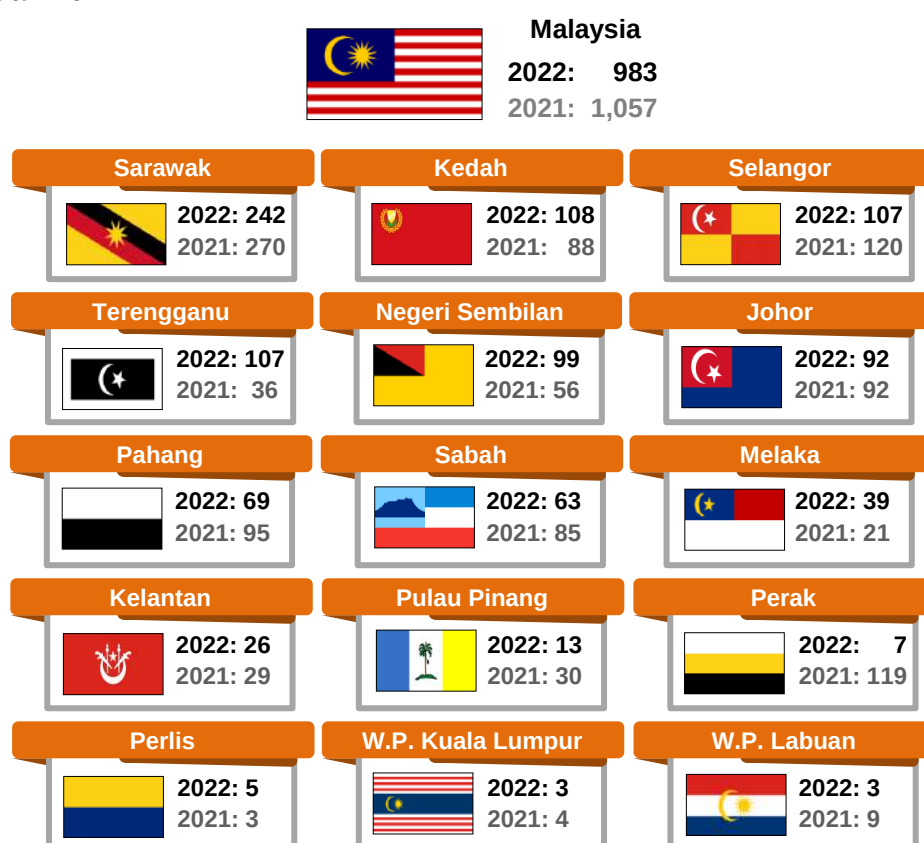
Banjir ialah limpahan air yang menenggelamkan tanah yang biasanya kering. Ini boleh berlaku disebabkan oleh pelbagai perkara, termasuk hujan lebat, pencairan salji, kegagalan empangan atau tambak, atau pencairan ais atau glasier yang cepat. Banjir boleh membawa kesan buruk kepada komuniti, infrastruktur dan alam sekitar.

Bilangan kejadian banjir yang dilaporkan pada 2022 ialah 983 di mana Sarawak mencatatkan kejadian banjir tertinggi iaitu 242, diikuti Kedah (108), Selangor dan Terengganu kedua-duanya mencatatkan 107 kejadian. [Paparan 4.1]

Malaysia terletak berhampiran dengan dua sempadan pertembungan kepingan yang aktif keseismikannya iaitu sempadan pertembungan di antara Kepingan Indo-Australian dan Kepingan Eurasian di sebelah barat dan sempadan pertembungan di antara Kepingan Eurasian dan Kepingan Laut Filipina di sebelah timur di mana gegaran gempa bumi tersebut dapat dirasai di Malaysia⁷.

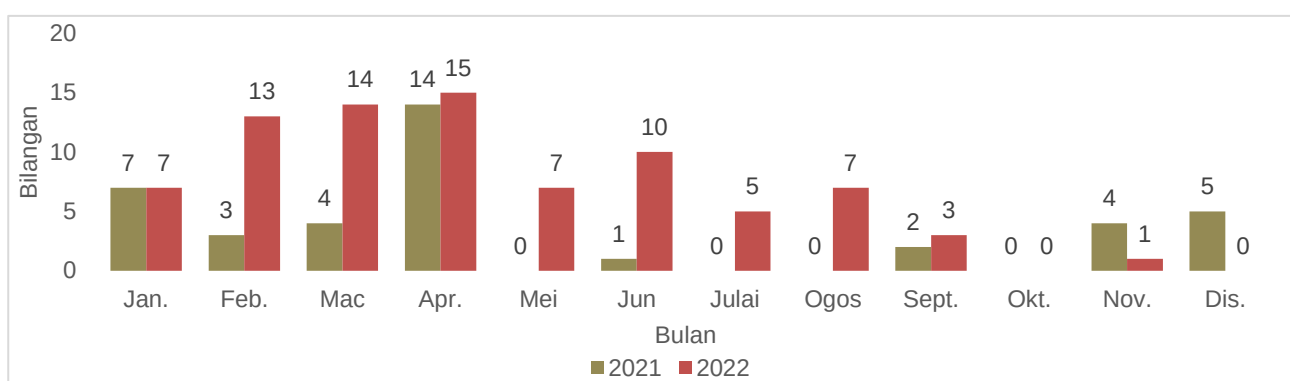
Sebanyak 82 kejadian gempa bumi dicatatkan pada 2022 dengan magnitud di antara 0.9 hingga 3.5, berbanding 40 kejadian pada 2021. [Carta 4.1]

Paparan 4.1: Bilangan kejadian banjir yang dilaporkan mengikut negeri, Malaysia, 2021 dan 2022



Sumber: Jabatan Pengairan dan Saliran

⁷ Portal laman web rasmi, www.met.gov.my

Carta 4.1: Bilangan kejadian gempa bumi, Malaysia, 2021 dan 2022

Sumber: Jabatan Meteorologi Malaysia

4.2: Bencana Teknologi

Bencana teknologi adalah kejadian yang disebabkan oleh kerosakan struktur teknologi dan/ atau beberapa kesilapan manusia dalam mengawal atau mengendalikan teknologi. Bencana teknologi boleh dianggap sebagai bencana buatan manusia. Antara bencana teknologi termasuk tumpahan minyak, kebakaran industri, kemalangan nuklear dan bahan berbahaya yang boleh memberi kesan buruk kepada kesihatan dan sistem ekologi.

Terdapat tiga insiden tumpahan minyak di perairan Malaysia sepanjang 2022 iaitu di Laut Cina Selatan. Manakala Selat Melaka, Laut Sulu dan Sulawesi serta Selat Johor tidak mencatatkan insiden tumpahan minyak pada tahun 2022. [Paparan 4.2]

Paparan 4.2: Insiden tumpahan minyak di laut, Malaysia, 2021 dan 2022

Sumber: Jabatan Alam Sekitar

Kemalangan jalan raya berlaku apabila kenderaan berlanggar antara satu sama lain atau dengan pejalan kaki, haiwan atau objek pegun di atas jalan raya. Kemalangan ini boleh menyebabkan pelbagai kesan, termasuk kerosakan harta benda, kecederaan dan kematian. Pada tahun 2022, Malaysia mencatatkan peningkatan kadar kes kemalangan jalan raya iaitu 47.3 peratus, bertambah sebanyak 175,299 kes berbanding 2021. Selain itu, 6,080 kes kematian direkodkan pada 2022 akibat kemalangan jalan raya, berbanding 4,539 kematian pada tahun sebelumnya.

[Jadual 4.1]

Selangor mencatatkan jumlah tertinggi kemalangan jalan raya pada 2022 iaitu 156,815 kes, meningkat 44.4 peratus berbanding 108,564 kes pada 2021. Ini diikuti oleh Johor (76,028 kes) dan W.P. Kuala Lumpur (62,428 kes). Tiga negeri yang mencatatkan bilangan kes kemalangan jalan raya terendah ialah Perlis (2,276 kes), W.P. Putrajaya (1,909 kes) dan W.P. Labuan (564 kes).



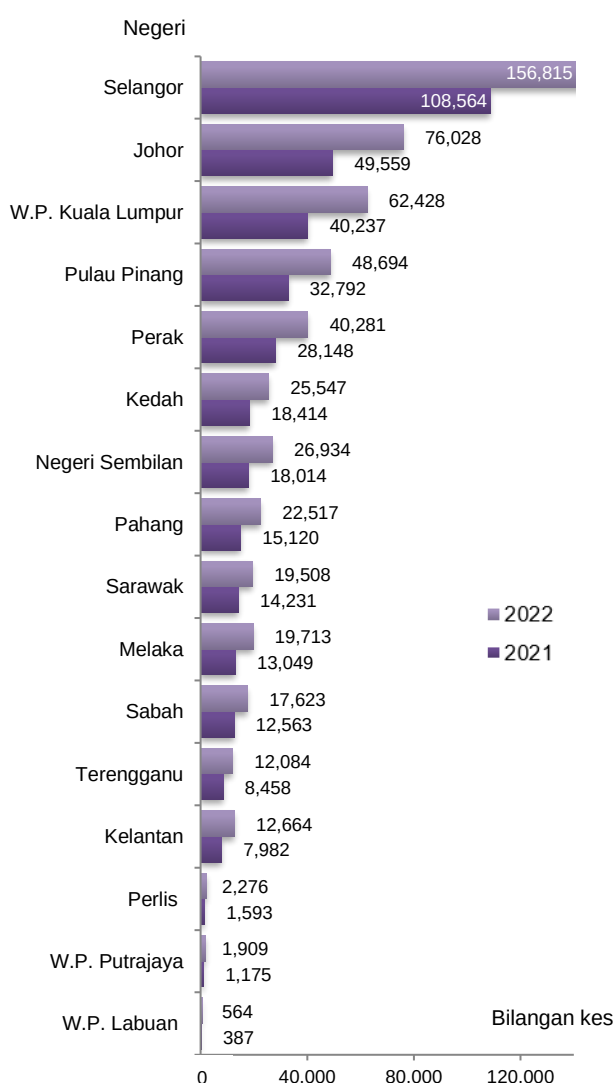
Jadual 4.1: Bilangan kemalangan jalan raya dan kecederaan yang dilaporkan, Malaysia, 2021 dan 2022

Tahun	Kemalangan jalan raya	Jumlah kecederaan		
		Kecederaan ¹	Kematian	Jumlah
2022	545,585	33,852	6,080	39,932
2021	370,286	18,530	4,539	23,069

Sumber:
Jabatan Siasatan dan Penguatkuasaan Trafik
Polis Diraja Malaysia

Nota:¹Kecederaan merujuk kepada kecederaan ringan dan parah

Carta 4.2: Bilangan kemalangan jalan raya yang dilaporkan mengikut negeri, Malaysia, 2021 dan 2022



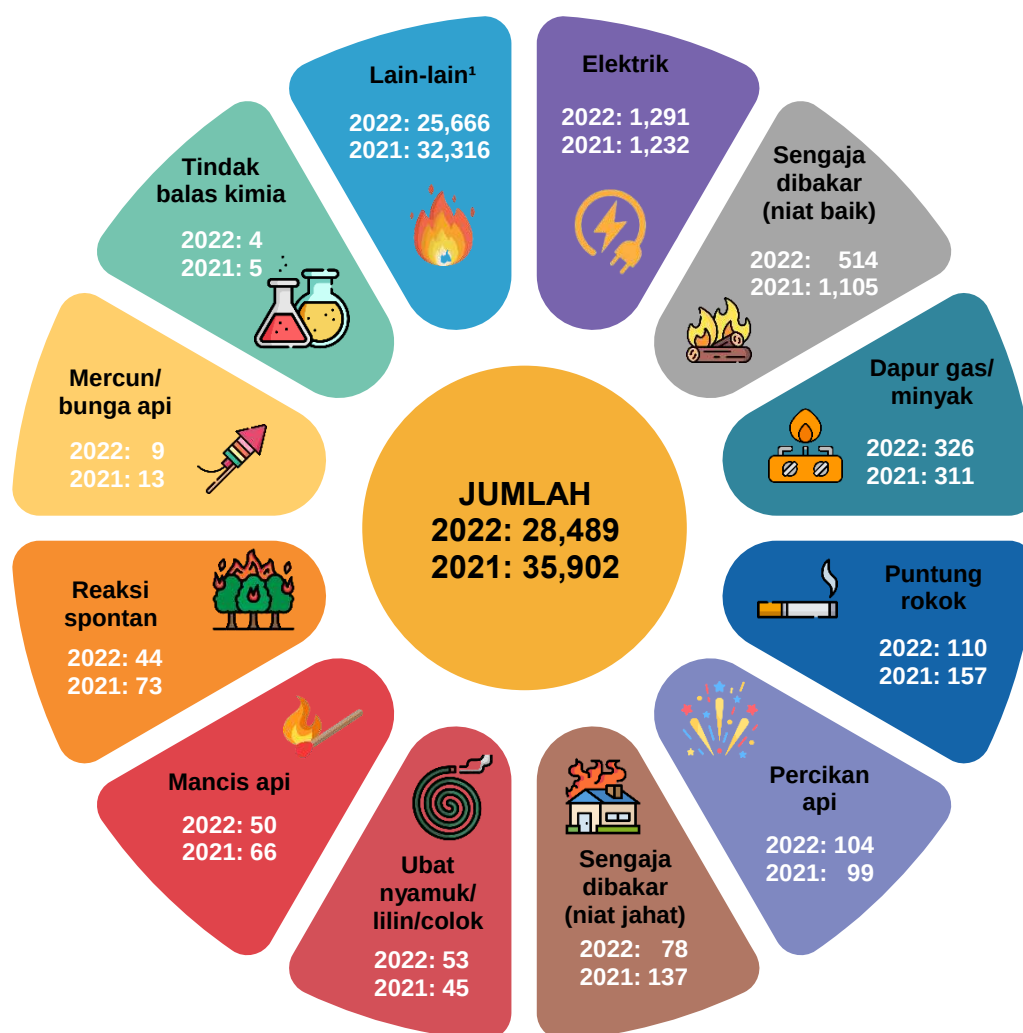
Sumber:
Jabatan Siasatan dan Penguatkuasaan Trafik
Polis Diraja Malaysia

Dalam istilah saintifik, kejadian kebakaran berlaku disebabkan oleh proses yang dipanggil pembakaran. Pembakaran ialah tindak balas kimia yang berlaku antara sumber bahan api, oksigen (biasanya dari udara) dan sumber haba. Tindak balas ini mengakibatkan pembebasan haba, cahaya, dan pembentukan sebatian kimia baru, biasanya dalam bentuk nyalaan.

Terdapat 28,489 kejadian kebakaran yang direkodkan pada 2022, menurun 20.6 peratus berbanding 2021. Elektrik, sengaja dibakar (niat baik) dan dapur gas/ minyak adalah antara punca utama yang menyumbang kepada kejadian kebakaran di Malaysia. Manakala, tindak balas kimia, mercun/ bunga api dan reaksi spontan mencatatkan bilangan kes terendah pada tahun 2022.

[Paparan 4.3]

Paparan 4.3: Kejadian kebakaran mengikut punca, Malaysia, 2021 dan 2022



Nota: ¹Termasuk punca tidak diketahui

Sumber: Kementerian Pembangunan Kerajaan Tempatan

KOMPONEN 5

PENEMPATAN PENDUDUK DAN KESIHATAN PERSEKITARAN

Penempatan Penduduk

- ❖ Penduduk dan kepadatan
- ❖ Isi rumah dengan kemudahan bekalan elektrik
- ❖ Pendaftaran baru kenderaan bermotor

Kesihatan Persekitaran

- ❖ Penyakit bawaan makanan dan air
- ❖ Keracunan makanan

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5.1: Penempatan Penduduk

Jumlah penduduk Malaysia pada 2023 dianggarkan seramai 33.4 juta. Tiga negeri yang mencatatkan komposisi penduduk paling ramai pada 2023 adalah Selangor (7.2 juta: 21.6%), Johor (4.1 juta: 12.3%) dan Sabah (3.6 juta: 10.8%). Dari segi jantina, penduduk lelaki (17.5 juta: 52.3%) adalah lebih ramai berbanding penduduk perempuan (15.9 juta: 47.7%).

Kepadatan penduduk Malaysia ialah 101 orang per kilometer persegi pada 2023. W.P. Kuala Lumpur mempunyai kepadatan penduduk tertinggi (8,235 orang per km²), diikuti W.P. Putrajaya (2,419 orang per km²) dan Pulau Pinang (1,718 orang per km²) manakala Sarawak adalah yang terendah (20 orang per km²). **[Paparan 5.1]**



Paparan 5.1: Penduduk¹ dan kepadatan, Malaysia, 2023



Nota: ¹Anggaran Penduduk Pertengahan Tahun 2023

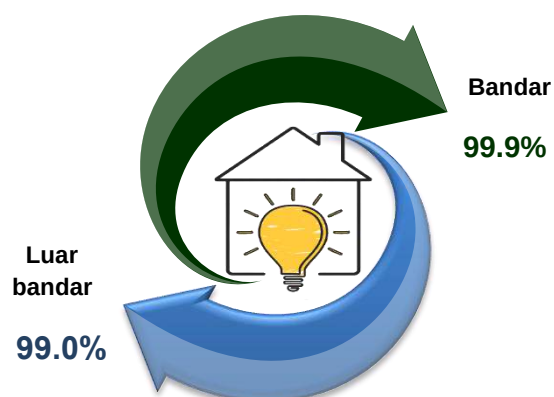
Isi rumah di kawasan bandar mempunyai akses hampir sepenuhnya (99.9%) kepada bekalan elektrik manakala di kawasan luar bandar (99.0%) pada 2022. Ini merupakan indikator SDG 7.1.1: Perkadaran penduduk dengan akses kepada bekalan elektrik.

[Paparan 5.2]

Dari segi pendaftaran baru kenderaan bermotor, terdapat 1,552.8 ribu kenderaan bermotor baru berdaftar pada 2022, meningkat sebanyak 27.7 peratus daripada 1,192.4 ribu pada 2021. Pendaftaran baru bagi jenis motosikal dan kenderaan awam masing-masing menunjukkan kenaikan 16.9 peratus dan 58.3 peratus pada 2022 berbanding tahun sebelumnya.

[Paparan 5.3]

Paparan 5.2: Peratus isi rumah dengan kemudahan bekalan elektrik, Malaysia, 2022

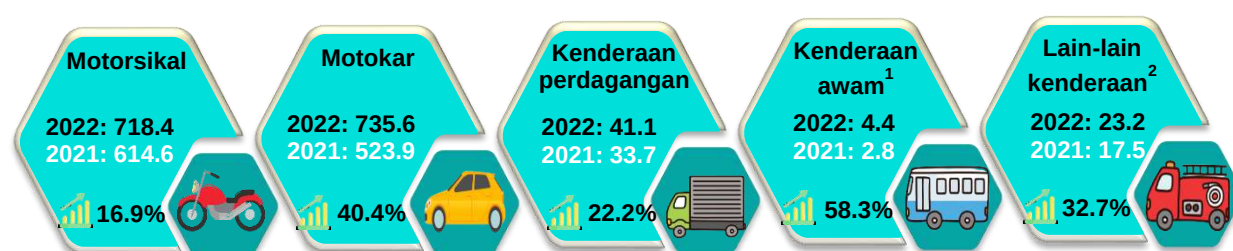


Sumber: Laporan Survei Kemudahan Asas 2022

Paparan 5.3: Bilangan pendaftaran baru kenderaan bermotor di Malaysia, 2021 dan 2022

Bilangan pendaftaran baru kenderaan bermotor ('000)

2022: 1,552.8
2021: 1,192.4 27.7%



Kadar pertumbuhan (%)

Sumber: Jabatan Pengangkutan Jalan

Nota:

¹ Meliputi bas, teksi dan kereta sewa

² Merangkumi kenderaan seperti karavan, kenderaan bomba kerajaan & swasta, kenderaan sekolah memandu, kenderaan mayat, kenderaan orang cacat, kenderaan kerajaan, kenderaan pihak berkuasa tempatan, ambulan dan kenderaan kedutaan

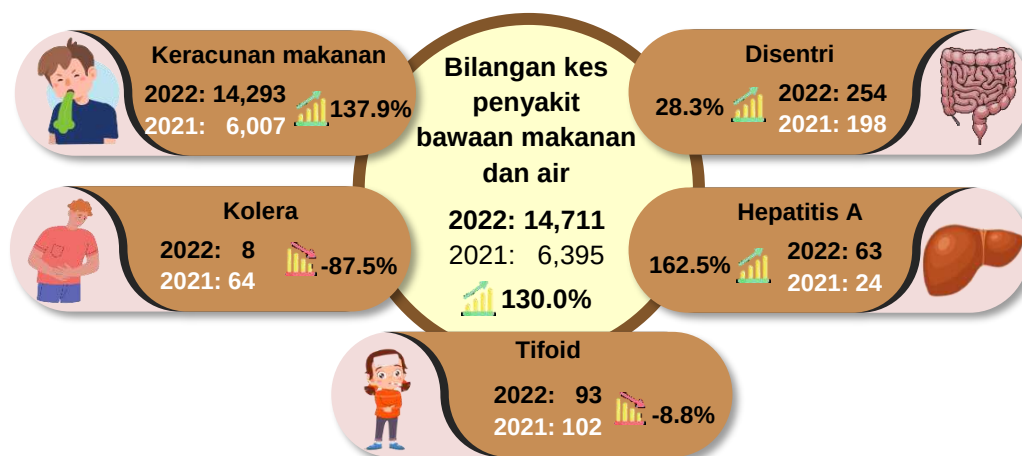
5.2: Kesihatan Persekitaran

Kolera, Tifoid, Disentri, Hepatitis A dan keracunan makanan merupakan Penyakit bawaan makanan dan air. Bilangan kes penyakit bawaan makanan dan air menunjukkan peningkatan sebanyak 130.0 peratus, kepada 14,711 pada 2022 daripada 6,395 pada 2021. Keracunan makanan mencatatkan bilangan kes tertinggi

yang menyumbang 97.2 peratus (14,293 kes). [Paparan 5.4]

W.P. Labuan mencatatkan kadar insiden keracunan makanan tertinggi bagi setiap 100,000 penduduk iaitu 105.4 pada 2022. Ini diikuti Terengganu (84.9) dan Melaka (79.5). [Carta 5.1]

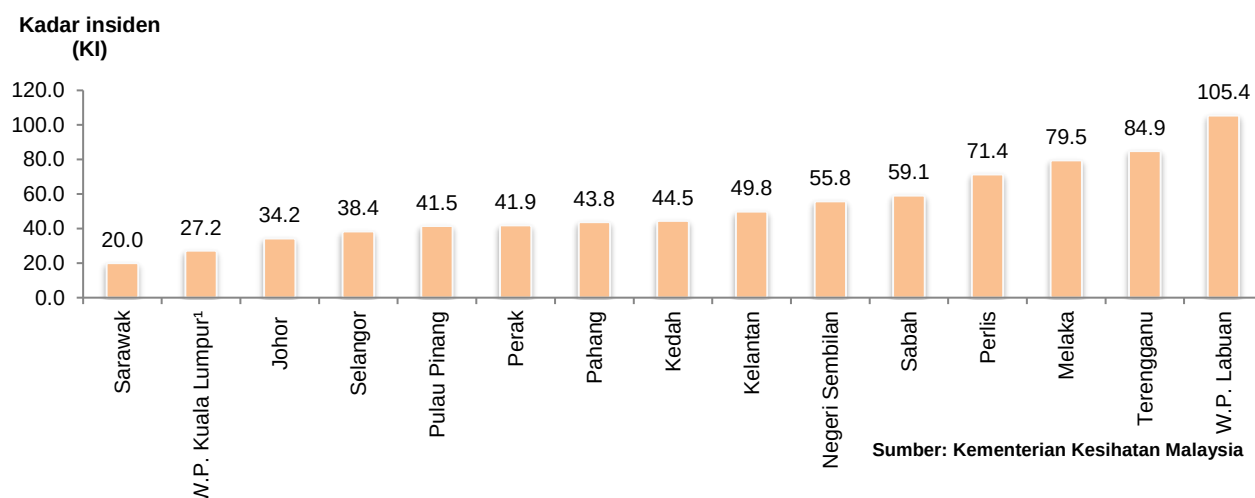
Paparan 5.4: Bilangan kes penyakit bawaan makanan dan air, Malaysia, 2021 dan 2022



 Kadar pertumbuhan (%)

Sumber: Kementerian Kesihatan Malaysia

Carta 5.1: Kadar insiden keracunan makanan mengikut negeri, Malaysia, 2022



Sumber: Kementerian Kesihatan Malaysia

Nota:

Merujuk kepada kadar insiden bagi setiap 100,000 penduduk.

¹ Termasuk W.P. Putrajaya.

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KOMPONEN 6

PENGLIBATAN, PENGURUSAN DAN PERLINDUNGAN ALAM SEKITAR

Perbelanjaan Perlindungan Alam Sekitar dan
Pengurusan Sumber

- ❖ Perbelanjaan perlindungan alam sekitar
- ❖ Saman yang dikeluarkan bagi pelepasan asap hitam

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6.1: Perbelanjaan Perlindungan Alam Sekitar dan Pengurusan Sumber

Perbelanjaan perlindungan alam sekitar merujuk kepada sumber kewangan yang diperuntukkan oleh kerajaan, organisasi atau individu untuk mencegah, mengurangkan atau menangani masalah alam sekitar serta untuk melindungi ekosistem semula jadi. Perbelanjaan ini bertujuan untuk mengurangkan kesan negatif aktiviti manusia terhadap alam sekitar dan menggalakkan kelestarian.

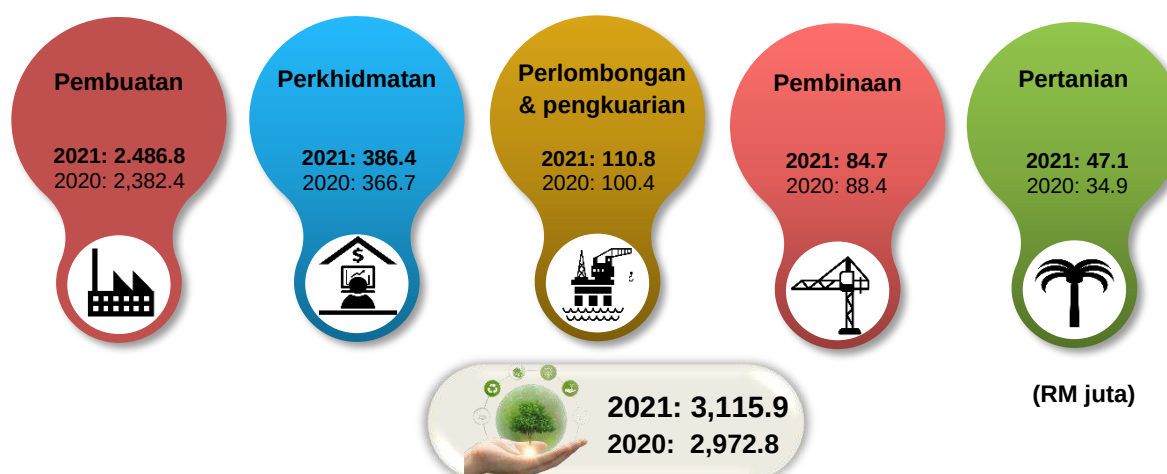
Prestasi perbelanjaan perlindungan alam sekitar bagi tahun 2021 mencatatkan peningkatan 4.8 peratus kepada RM3.1 bilion berbanding RM3.0 bilion pada 2020.

Sektor pembuatan membelanjakan RM2,486.8 juta atau 79.8 peratus kepada keseluruhan perbelanjaan perlindungan alam sekitar pada 2021, diikuti sector perkhidmatan RM386.4 juta (12.4%) dan sektor perlombongan & pengkuarian RM110.8 juta (3.6%). Semua sektor menunjukkan peningkatan dalam perbelanjaan perlindungan alam sekitar kecuali sektor pembinaan.

[Paparan 6.1]



Paparan 6.1: Perbelanjaan perlindungan alam sekitar mengikut sektor, Malaysia, 2020 dan 2021

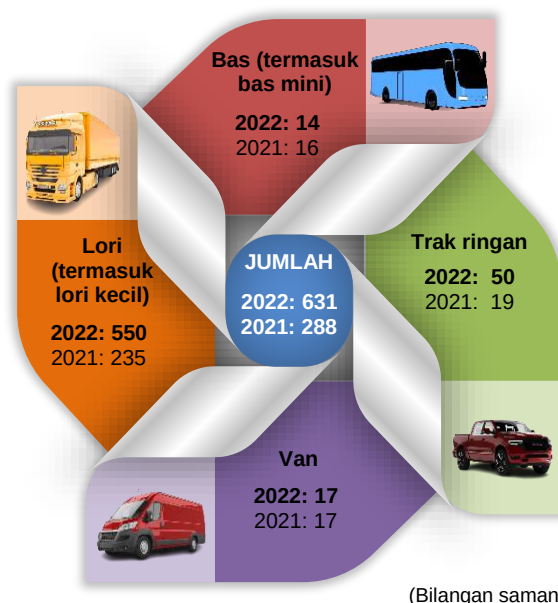


Sumber: Survei Ekonomi Tahunan 2022- Perbelanjaan Perlindungan Alam Sekitar

Pelepasan pencemaran daripada kenderaan merupakan salah satu penyumbang utama kepada pencemaran udara di kawasan bandar. Pembakaran bahan api fosil oleh kenderaan seperti kereta, trak, dan pengangkutan lain melepaskan bahan pencemar seperti karbon monoksida (CO), nitrogen oksida (NO_x) dan sebatian organik yang mudah meruap (VOCs) ke atmosfera. Usaha untuk mengurangkan kesan pelepasan pencemaran daripada kenderaan termasuk pembangunan dan penggunaan teknologi kenderaan yang lebih bersih seperti kenderaan elektrik dan hibrid, penggunaan bahan api yang lebih bersih, kempen menaiki pengangkutan awam dan berkongsi kenderaan, serta pelaksanaan peraturan dan piawaian kawalan pelepasan.

Sebanyak 631 saman bagi pelepasan asap hitam oleh kenderaan telah dikeluarkan oleh Jabatan Alam Sekitar pada 2022 berbanding 288 saman yang dicatatkan pada 2021. Kenderaan lori mencatatkan bilangan saman tertinggi iaitu 550 (87.1%) berbanding kenderaan bermotor yang lain. Tiada saman dikeluarkan bagi pelepasan asap hitam oleh kereta pada 2022. **[Paparan 6.2]**

Paparan 6.2: Bilangan saman yang dikeluarkan bagi pelepasan asap hitam mengikut jenis kenderaan, Malaysia, 2021 dan 2022



Sumber: Jabatan Alam Sekitar

COMPONENT 1

ENVIRONMENTAL CONDITIONS AND QUALITY

Introduction

- ❖ *Pollution in the Asia Pacific Region*
- ❖ *Environment in the MADANI Concept*

Environmental Quality

- ❖ *Particulate matter (PM_{10} & $PM_{2.5}$)*
- ❖ *Ground level ozone (O_3)*
- ❖ *Carbon monoxide (CO)*
- ❖ *Sulphur dioxide (SO_2)*
- ❖ *Nitrogen dioxide (NO_2)*

Air Quality Status

- ❖ *Air Pollution Index (API)*

River Water Quality

Physical Conditions

- ❖ *Mean temperature, rainfall, mean relative humidity & lightning*

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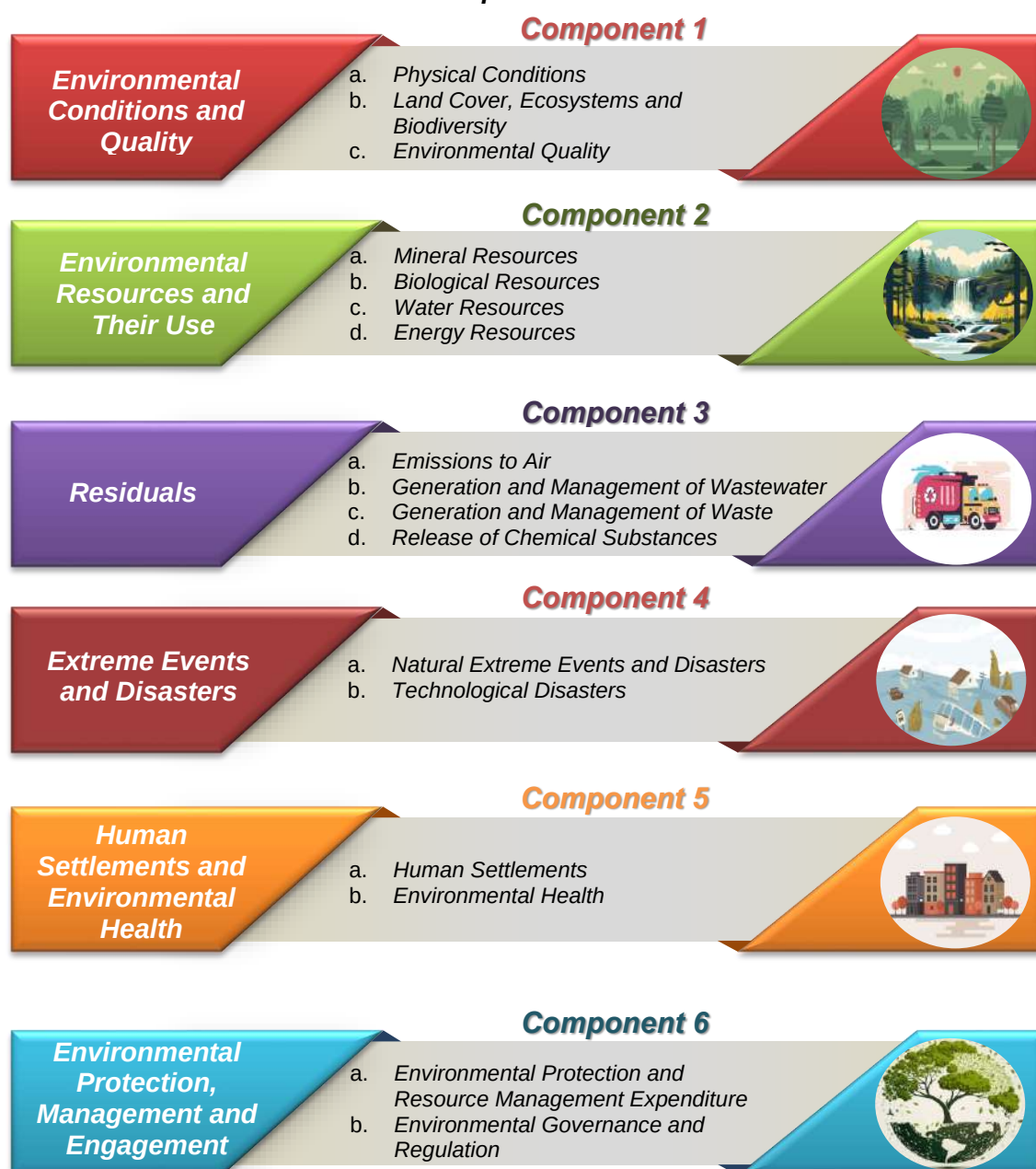
INTRODUCTION

The Compendium of Environment Statistics (CES), Malaysia 2023 presents statistics on the environment by component, namely Environmental Conditions and Quality; Environmental Resources and Their Use; Residuals; Extreme Events and Disasters; Human Settlements and Environmental Health; and Environmental Protection, Management and Engagement.

The framework used in this publication is based on the Framework for the Development of Environment Statistics (FDES), United Nations, 2013. **[Exhibit 1.1]**

The publication contains 180 tables that are divided into six components.

Exhibit 1.1: Component of FDES 2013



Pollution in the Asia Pacific Region

Air pollution is a condition that involves the release of any substances, chemicals or biological materials into the air that can cause harm or discomfort to humans or other living organisms and damage the environment. World Health Organization (WHO) defines the air pollution as contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere. WHO also stated nearly 90.0 per cent of the urban population in the Asia-Pacific region breathes air considered unsafe. Air pollution can be measured by either developing Air Quality Index (AQI) with a scale from zero to 500 (50 and below reading is safe) or by using particulate matters (PM) measurement. PM measured solid particles or liquid droplets in the air or emission from 0.01-100 $\mu\text{g}/\text{m}^3$ which can be divided into PM_{10} and $\text{PM}_{2.5}$. Air pollution is caused by the emission of dirty smoke by industry directly into the air through factory smoke, motor vehicles, cigarette smoke and open burning. Countries in the Asia-Pacific region, such as China and India, heavily rely on coal, with more than 50.0 per cent of their energy consumption coming from this source¹. The study conducted by United Nations Environment Programme Climate & Clean Air Coalition

found that the annual $\text{PM}_{2.5}$ emissions increased by 19.0 per cent from 1990 to 2015. Meanwhile, study by United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP) showed that the average $\text{PM}_{2.5}$ emissions for the Asia-Pacific region in 2019 was 50.7 $\mu\text{g}/\text{m}^3$, which exceeds the guidelines recommended by WHO for annual $\text{PM}_{2.5}$ emissions of only 5 $\mu\text{g}/\text{m}^3$ ².

Besides air pollution, solid waste and plastic pollution also affects the environment by affecting the marine ecosystem. It is estimated that 43.0 per cent of global plastic production, with 38.0 per cent of it originating in the Asia-Pacific region, is often disposed of without proper recycling³. Many cities in Asia use open dumpsites for solid waste disposal and only 10.0 per cent of the generated solid waste ends up in well-managed landfill sites⁴. Furthermore, untreated wastewater also has adverse effects on both human health and the environment. Approximately 70.0 per cent of urban wastewater is discharged into ecosystems and 80.0 to 90.0 per cent of all the wastewater in this region remains untreated. Central and South Asia have the lowest proportion of properly treated wastewater flows, accounting for only 25.0 per cent in 2020 compared to 65.0 per cent in Eastern and South-eastern

¹ BP, "Statistical Review of World Energy: 70th Edition", 2021.

² United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP), "Protecting Our Planet Through Regional Cooperation and Solidarity In Asia And The Pacific", 2022

³ C. Schmidt, T. Krauth and S. Wagner, "Export of Plastic Debris by Rivers into the Sea", Environmental Science &

Technology, vol. 51, No. 21 (October 2017) pp. 12,246–12,253

⁴ United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP), "Key Environment Issues, Trends and Challenges in the Asia-Pacific Region", Note by the secretariat, Committee on Environment and Development, Fifth session, 21-23 November 2018, Bangkok.

Asia⁵. Countries experiencing rapid economic growth but facing water-related challenges, are highly exposed to water shortages which can delay efforts to improve food production and overall sustainable development agendas.

Environmental issues require multilateral cooperation from all parties. Actions need to be taken at the regional level and each country must take appropriate measures with special attention to environmental preservation while promoting economic development. Changes in resource flows, including financial resources, knowledge, human capital, as well as relationships between stakeholders are crucial in supporting the systemic changes necessary to address environmental issues.

Environment in the MADANI Concept

Good environmental management has become a top priority for the government. Various environmental management plans have been developed under the supervision of relevant ministries. The MADANI Economic Documents also highlights the environment as a critical element that requires the attention of all parties. Three (3) out of the six (6) key pillars of Malaysia's MADANI policy, namely sustainability, well-being and benevolence, are closely associated with the environment. The government's aspiration is to establish a sustainable ecology and environment for Malaysia. Consequently, environmental

conservation is a fundamental principle within the MADANI framework. The responsibility for preserving natural resources and biodiversity in flora and fauna should be shared by all members of society. Through the concept of sustainability, any physical development to be undertaken must adhere to the principles of sustainable development outlined by the authorities, ensuring that the environment and ecosystems are not neglected, while simultaneously safeguarding the well-being of Malaysians.

As for well-being, this term refers to a holistic balance in life encompassing all aspects. Particularly in the context of the environment, the emphasis on its preservation and well-being is crucial because its destruction can have adverse and continuous consequences for the earth in the form of ongoing disasters. This also greatly affects the survival of future generations. Furthermore, the concept of benevolence in the environment refers to humanity's responsibility to care for and nurture the environment, ensuring that it is not exploited recklessly.

In the Mid-Term Review of the 12th Malaysia Plan (RMKe-12), under the third (3) theme, there is a focus on accelerating green growth, enhancing energy sustainability and transforming the water sector nationwide. To achieve these goals, several strategies have been put in place to promote low-carbon, clean, and sustainable

⁵ UN-Water, "Progress on Wastewater Treatment (SDG target 6.3)".

development, such as strengthening actions towards low-carbon activities, accelerating the transition to a circular economy and encouraging shared responsibility in preventing pollution. Integrated efforts have been made to strengthen the energy and electricity sectors and ensure the sustainability and progress of the oil and gas subsector. The National Oil & Gas Services and Equipment (OGSE) Industry Blueprint 2021-2030 was launched in 2021 and the National Energy Policy 2022-2040 was introduced in 2022 to achieve this goal. However, there are challenges to be addressed, including the pressure of global climate change, the lack of integrated plans and strategies to accelerate the energy transition, issues within the oil and gas industry and the low utilisation of renewable energy. The transformation of the water sector is also a priority. Through this mid-term review, the focus is on empowering the people, ensuring sustainable financing, and advancing cost-effective infrastructure with new technologies to ensure continuous water supply. Furthermore, the recently announced 2024 Budget continues to emphasise protecting the environment such as reducing carbon emissions for sustainable futures.

1.1: Environmental Quality

Air pollutant is a substance in the air that can be harmful to human beings and the environment. Pollutants can be in the form of solid particles, liquid droplets or gases. There are six main pollutants namely Ground Level Ozone (O_3), Carbon Monoxide (CO), Sulphur Dioxide (SO_2), Nitrogen Dioxide (NO_2) and Particulate Matter (PM_{10} & $PM_{2.5}$). Air pollution occurs when these pollutants are present in the atmosphere. The sources and effects of air pollutants are shown in **Appendix 2**.

Particulate Matter (PM_{10} & $PM_{2.5}$)

Particulate Matter (PM_{10} & $PM_{2.5}$) is the term used to describe respirable particles of less than 10 and 2.5 micron in diameter. Particles may be solid or liquid and it includes aerosols, dust, smoke and pollen. Emission of particulate matter from motor vehicle exhausts, heat and power generation, industrial processes and open burning activities will lead to air pollution and endanger human health and plants.

The monthly average trend concentration of PM_{10} in the air in 2022 showed six out of 12 months increase, namely in January (11.9%), May (4.3%), July (3.5%), August (13.7%), September (4.4%) and November (3.3%) as compared to 2021. On the other hand, there was a sharp decline in February (-29.7%), March (-12.3%) and October (-15.5%). **[Chart 1.1]**

Meanwhile, the monthly average trend concentration of $PM_{2.5}$ in the air in 2022

showed a decline in seven out of 12 months, mainly in February (-31.8%), March (-14.7%), April (-5.8%), June (-12.6%), July (-2.7%), October (-20.2%) and December (-5.9%) as compared to 2021. On the contrary, a double-digit increase recorded in January (19.7%) and August (13.9%). **[Chart 1.2]**

Ground level ozone (O_3)

O_3 is a pollutant which is formed by the chemical reaction in the air between volatile organic compounds (VOC_s) and nitrogen oxide (NO_x). These VOC_s and NO_x are produced by motor vehicles and industries.

The monthly average trend of O_3 concentration in the air in 2022 showed a decline in February (-39.1%), March (-6.3%), April (-5.9%), June (-12.5%), July (-6.3%) and October (-13.3%) as compared to 2021. Conversely, August and November posted an increment of 15.4 per cent and 7.7 per cent, respectively. Meanwhile, readings for January, May, September and December remained unchanged. **[Chart 1.3]**

Carbon Monoxide (CO)

CO is a colourless, odourless and toxic gas produced from fossil fuel combustion sources such as vehicle exhaust, industrial processes and open burning activities.

The monthly average trend concentration of CO in the air recorded a decline in six out of 12 months, mainly in February (-3.4%), March (-0.6%), September (-1.5%), October (-11.2%), November (-4.5%) and December (-10.5%) as compared to 2021.

While there is an increment in January (4.2%), April and May increased 2.1 per cent, June (5.1%) July (3.1%) and August (2.8%).

[Chart 1.4]

Sulphur Dioxide (SO₂)

SO₂ is colourless, water-soluble reactive gas with an irritating odour. Excessive exposure to a high concentration of SO₂ in the atmosphere causes respiratory illnesses and complication to existing cardiovascular problems.

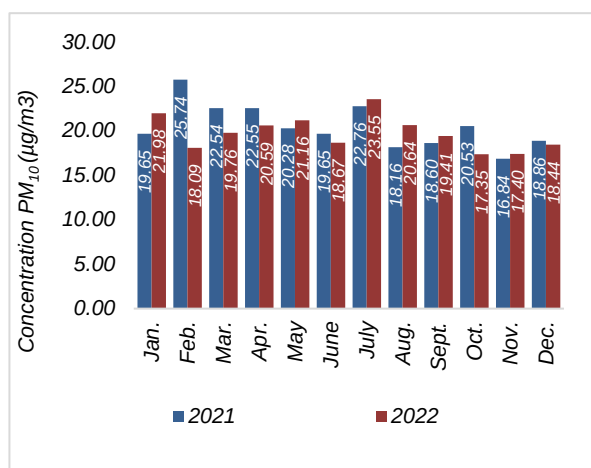
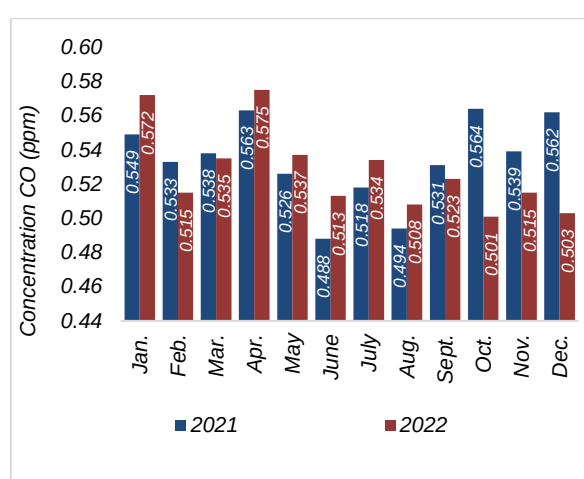
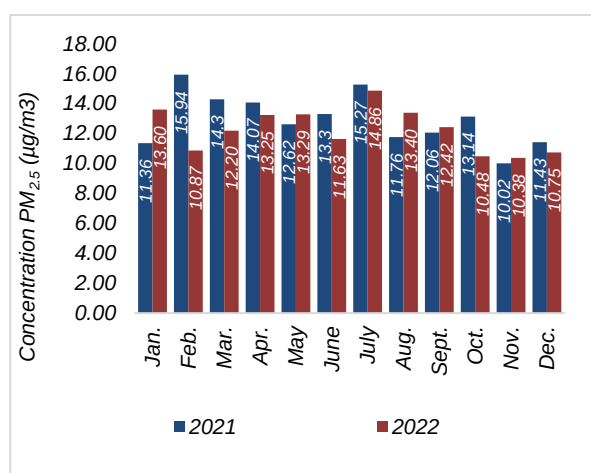
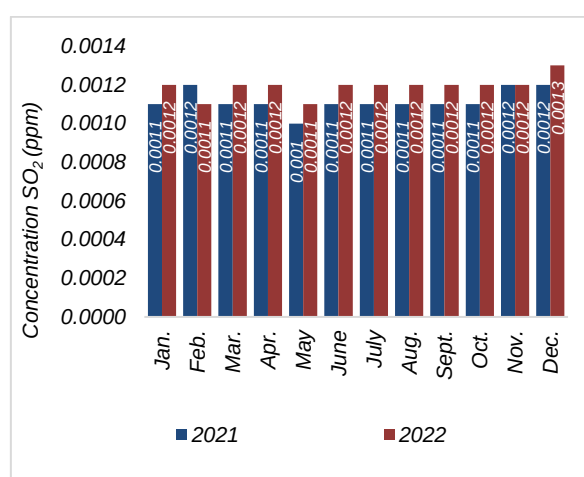
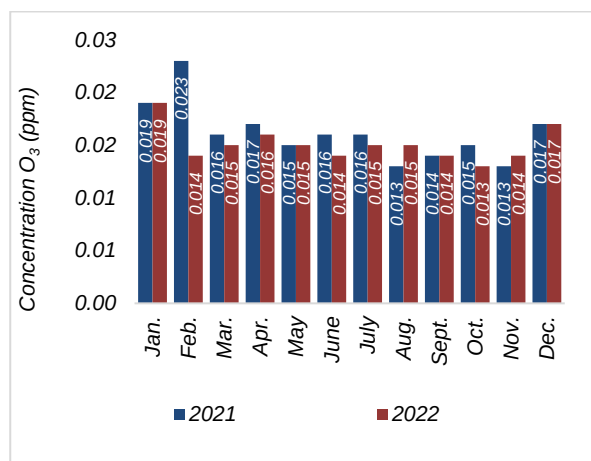
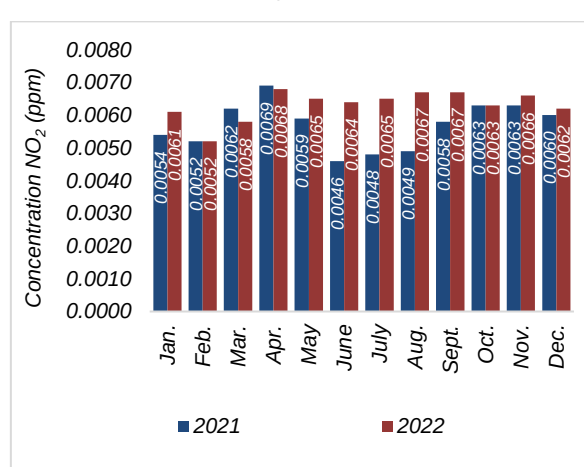
The monthly average trend concentration of SO₂ in the air recorded an increase in 2022 except for February (-8.3%) as compared to 2021. Readings for November remained unchanged. **[Chart 1.5]**

Nitrogen Dioxide (NO₂)

NO₂ is formed in the ambient air through the oxidation of Nitrogen Monoxide (NO). This reddish brown toxic gas has a sharp and pungent odour.

The monthly average trend of NO₂ concentration shows an increase for eight months namely, January (13.0%), May (10.2%), June (39.1%), July (35.4%), August (36.7%), September (15.5%), November (4.8%) and December (3.3%). On the other hand, March and April declined 6.5 per cent 1.4 per cent, respectively. Readings for February and October in 2022 remain unchanged as compared to the previous year. **[Chart 1.6]**



Chart 1.1: Monthly average concentration of PM₁₀ in the air, Malaysia, 2021 and 2022**Chart 1.4: Monthly average concentration of CO in the air, Malaysia, 2021 and 2022****Chart 1.2: Monthly average concentration of PM_{2.5} in the air, Malaysia, 2021 and 2022****Chart 1.5: Monthly average concentration of SO₂ in the air, Malaysia, 2021 and 2022****Chart 1.3: Monthly average concentration of O₃ in the air, Malaysia, 2021 and 2022****Chart 1.6: Monthly average concentration of NO₂ in the air, Malaysia, 2021 and 2022**

Source: Department of Environment

1.2: Air Quality Status

Air Pollution Index (API)

The Department of Environment (DOE) monitors the country's ambient air quality through 65 monitoring stations that are located throughout the country to monitor and to detect any significant change in the air quality that can contribute to the negative impact on human health and the environment.

The status of air quality in Malaysia is reported as the Air Pollutant Index (API). The air pollutants used in computing the API are Ozone (O₃), Carbon Monoxide (CO), Nitrogen Dioxide (NO₂), Sulphur Dioxide (SO₂), Particulate Matter of less than 10 microns in size (PM₁₀) and Particulate Matter of less than 2.5 microns in size (PM_{2.5}).

Malaysia in overall recorded a “good” and “moderate” air quality status for 2022. Kimanis station recorded the highest number of days (355 days) with “good” air quality in 2022 as compared to 345 days the previous year.

API reading shows an increase in the number of days with “good” air quality especially in major cities across the country due to lower air pollutant emissions such as motor vehicles smoke, industrial chimney emissions and open burning activities.

[Chart 1.7 – Chart 1.20]

Exhibit 1.2: Status of Air Pollution Index (API)

API	API Status
0-50	Good
51-100	Moderate
101-200	Unhealthy
201-300	Very Unhealthy
>300	Hazardous

Based on the guidelines issued by DOE, there are five levels of API in describing air quality in Malaysia, namely good, moderate, unhealthy, very unhealthy and hazardous.

Appendix 3 describes the comparison of API values with the level of pollution and health measures.



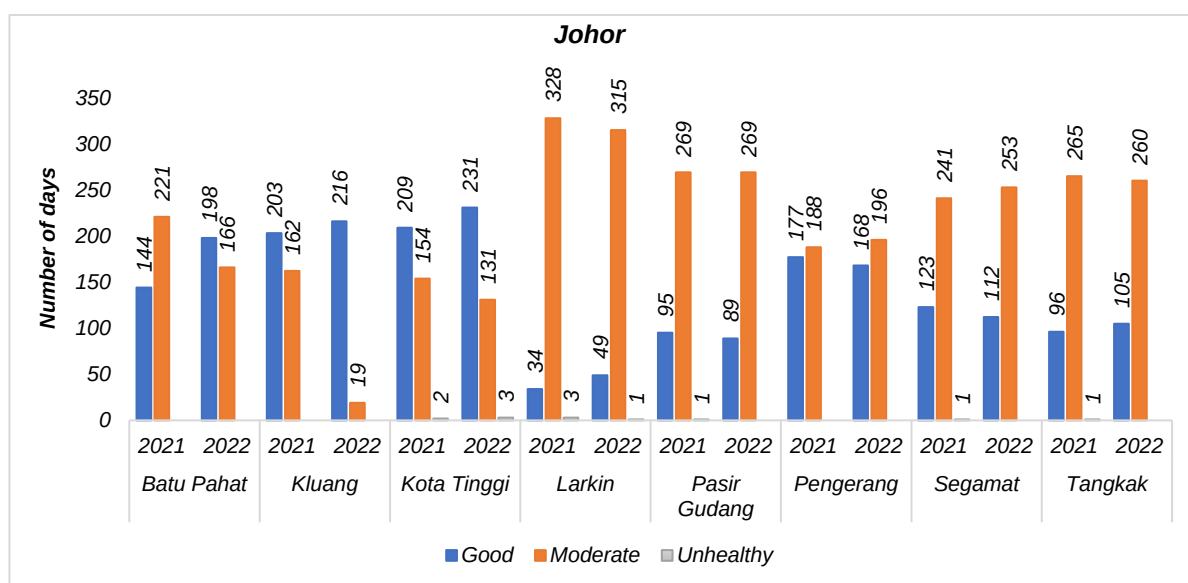
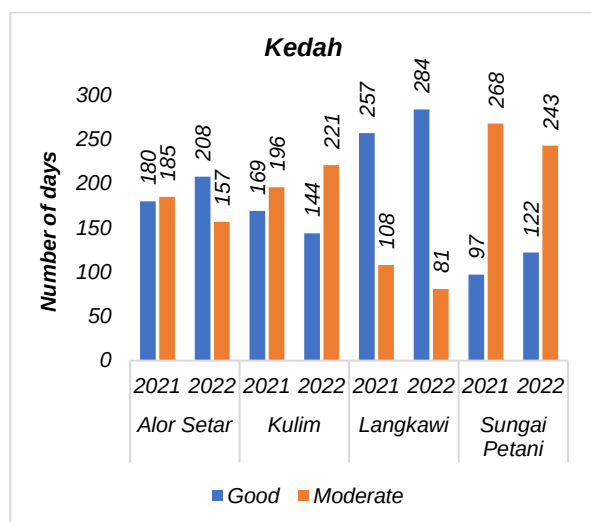
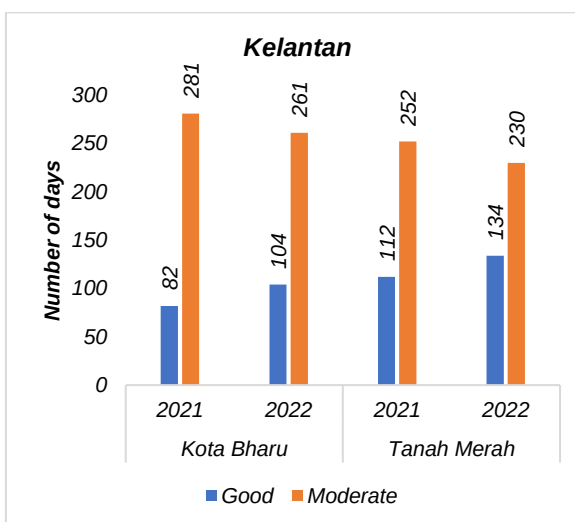
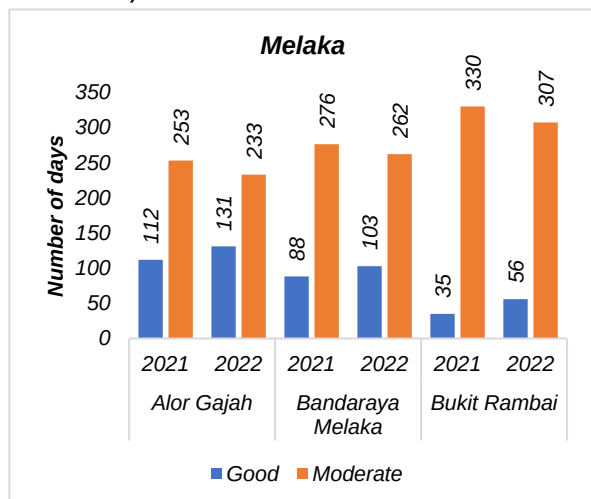
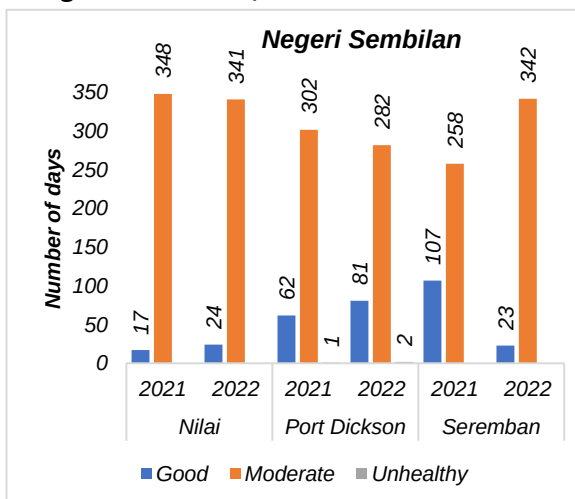
Chart 1.7: Status of air quality¹, Johor, 2021 and 2022**Chart 1.8: Status of air quality¹, Kedah, 2021 and 2022****Chart 1.9: Status of air quality¹, Kelantan, 2021 and 2022****Chart 1.10: Status of air quality¹, Melaka, 2021 and 2022****Chart 1.11: Status of air quality¹, Negeri Sembilan, 2021 and 2022**¹Air quality status readings are based on daily maximum readings

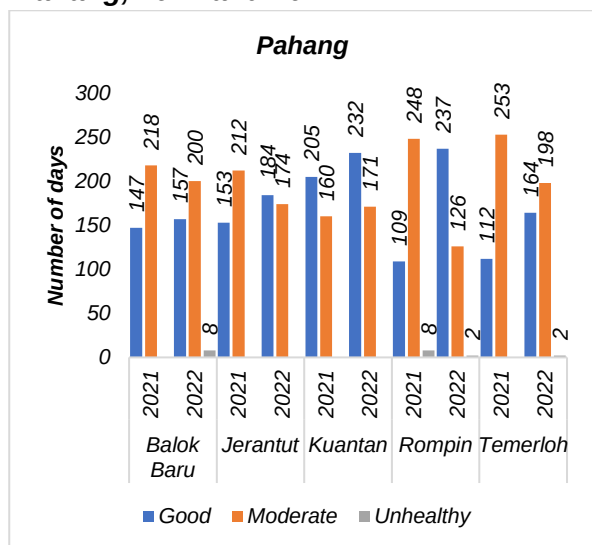
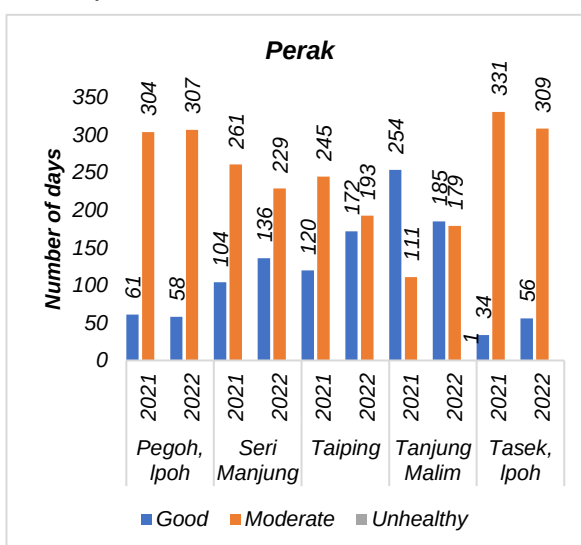
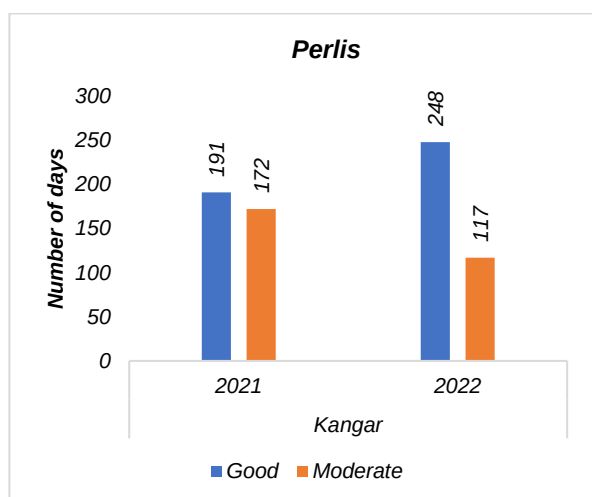
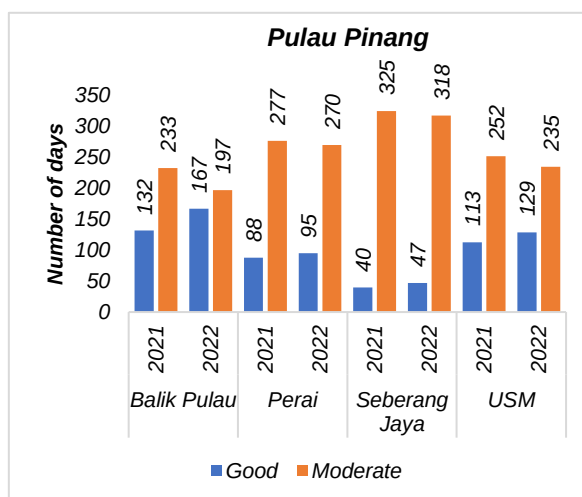
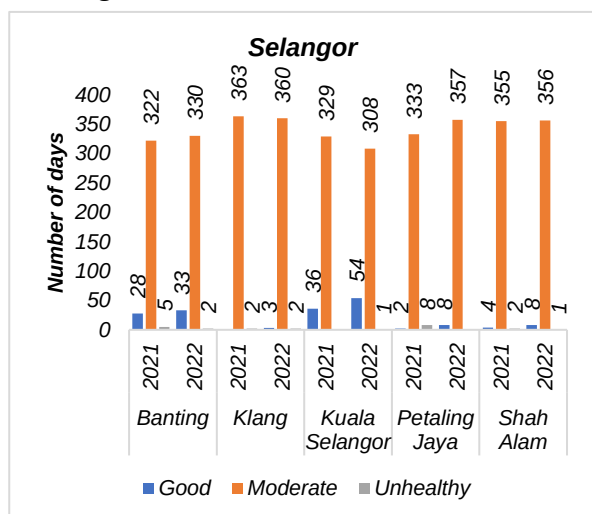
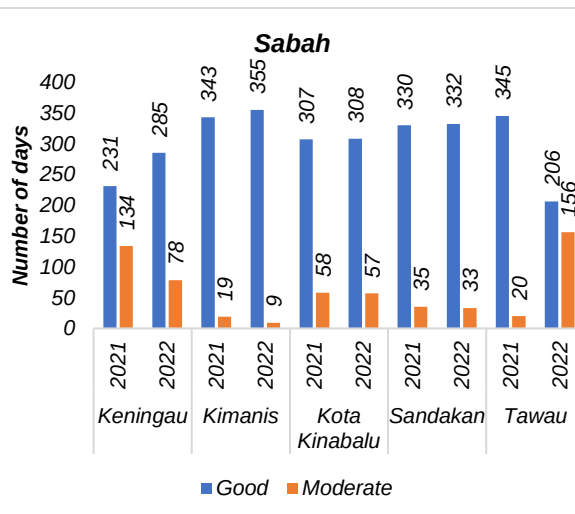
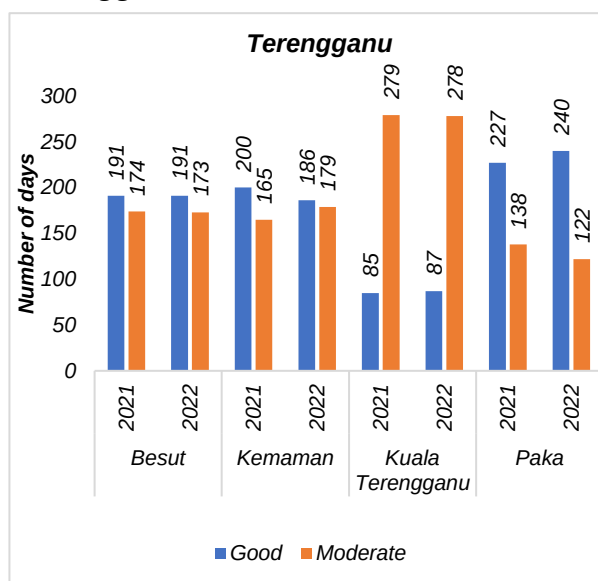
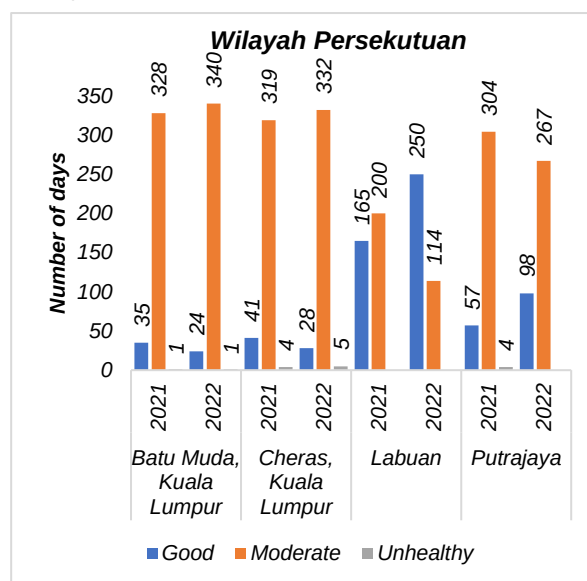
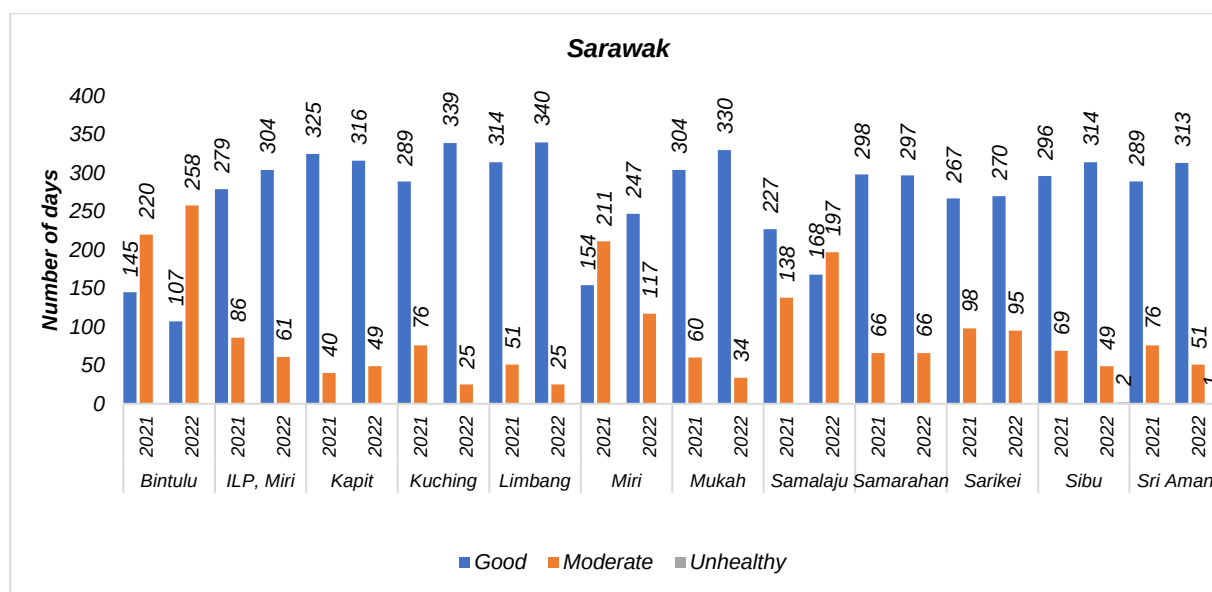
Chart 1.12: Status of air quality¹, Pahang, 2021 and 2022**Chart 1.13: Status of air quality¹, Perak, 2021 and 2022****Chart 1.14: Status of air quality¹, Perlis, 2021 and 2022****Chart 1.15: Status of air quality¹, Pulau Pinang, 2021 and 2022****Chart 1.16: Status of air quality¹, Selangor, 2021 and 2022****Chart 1.17: Status of air quality¹, Sabah, 2021 and 2022**¹Air quality status readings are based on daily maximum readings

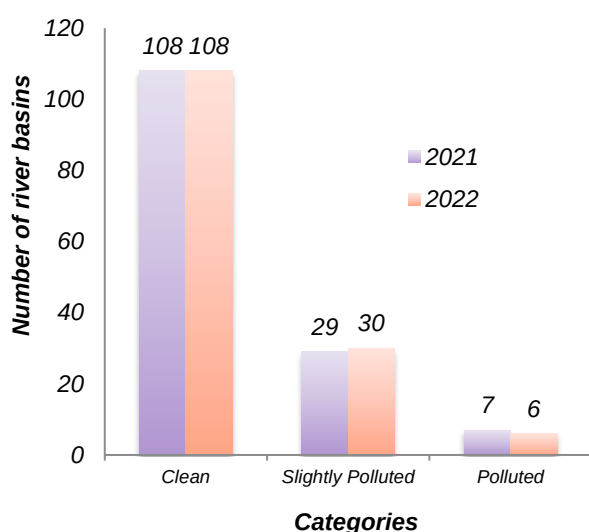
Chart 1.18: Status of air quality¹, Terengganu, 2021 and 2022**Chart 1.19: Status of air quality¹, Wilayah Persekutuan, 2021 and 2022****Chart 1.20: Status of air quality¹, Sarawak, 2021 and 2022**¹Air quality status readings are based on daily maximum readings

Source: Department of Environment

1.3 River Water Quality

Results from the Department of Environment (DOE) monitoring of 144 river basins, showed that 108 (75.0%) river basins were in the “clean” category followed by 30 river basins (20.8%) “slightly polluted” category and 6 river basins (4.2%) “polluted” categories as compared to 2021. **[Chart 1.21]**

Chart 1.21: Status of river water quality by category, Malaysia, 2021 and 2022



Source: Department of Environment

The status of river water quality in Malaysia is measured based on three main pollutants namely Ammoniacal Nitrogen ($\text{NH}_3\text{-N}$), Biochemical Oxygen Demand (BOD_5) and Suspended Solids (SS). Out of 144 river basins, the number of river basins categorised as “clean” based on $\text{NH}_3\text{-N}$, BOD_5 and SS decreased from 58 to 52; 124 to 120 and 127 to 118 of river basin respectively as compared to the previous year. In addition, the number of river basins categorised as “polluted” for $\text{NH}_3\text{-N}$ declined to 41 (2021: 49). Meanwhile, both BOD_5 and SS increase to 14 as compared to 9 and 10 respectively in 2021. **[Table 1.1]**

Table 1.1: Status of river water quality based on main pollutants, Malaysia, 2021 and 2022

Year	Number of river basins monitored	$\text{NH}_3\text{-N}$			BOD_5			SS		
		C	SP	P	C	SP	P	C	SP	P
2022	144	52	51	41	120	10	14	118	12	14
2021	144	58	37	49	124	11	9	127	7	10

C-Clean SP-Slightly Polluted P-Polluted

Source: Department of Environment

1.4: Physical Conditions

Malaysia is located in the equatorial zone and experiences a warm and humid climate. In general, it has a uniform temperature, high humidity and abundant rainfall. The wind in Malaysia is generally weak and there are periodic changes in wind patterns. Based on these changes, four seasons can be distinguished namely the northeast monsoon (November-March), southwest monsoon (May-September) and two shorter monsoons transition seasons (March-May & October-November)⁶.

1.4.1 Mean temperature, rainfall and mean relative humidity and lightning

Mean temperature

Throughout 2022, the average annual temperature in Malaysia is between 15.8°C to 33.1°C. The highest mean temperature in 2022 was recorded at Ipoh station (33.1°C), decreased 0.1°C as compared to 33.2°C registered at Temerloh station in 2021. Meanwhile, Cameron Highland station recorded the lowest mean temperature of 15.8°C as compared to 15.7°C in 2021.

Rainfall

Mulu station recorded the highest annual rainfall in 2022 at 6,172.8 mm as compared to the previous year (2021: 5,365.8 mm). However, Sitiawan station recorded the lowest annual rainfall of 1,943.0 mm as

compared to the previous year 1,589.2 mm (Keningau station).

Mulu station also recorded the highest number of rainy days in 2022 with 289 days as compared to 264 days recorded in 2021. Meanwhile, Muadzam Shah station recorded the lowest number of rainy days at 169 days in 2022 as compared to 163 days (Kuala Pilah station) in 2021.

Lightning

KLIA station, Sepang recorded the highest number of lightning days with 340 days as compared to 335 days in 2021. Meanwhile, Ranau station recorded the lowest number of lightning days at 89 days in 2022 as compared to 57 days (Kudat station) in the previous year.

Mean relative humidity

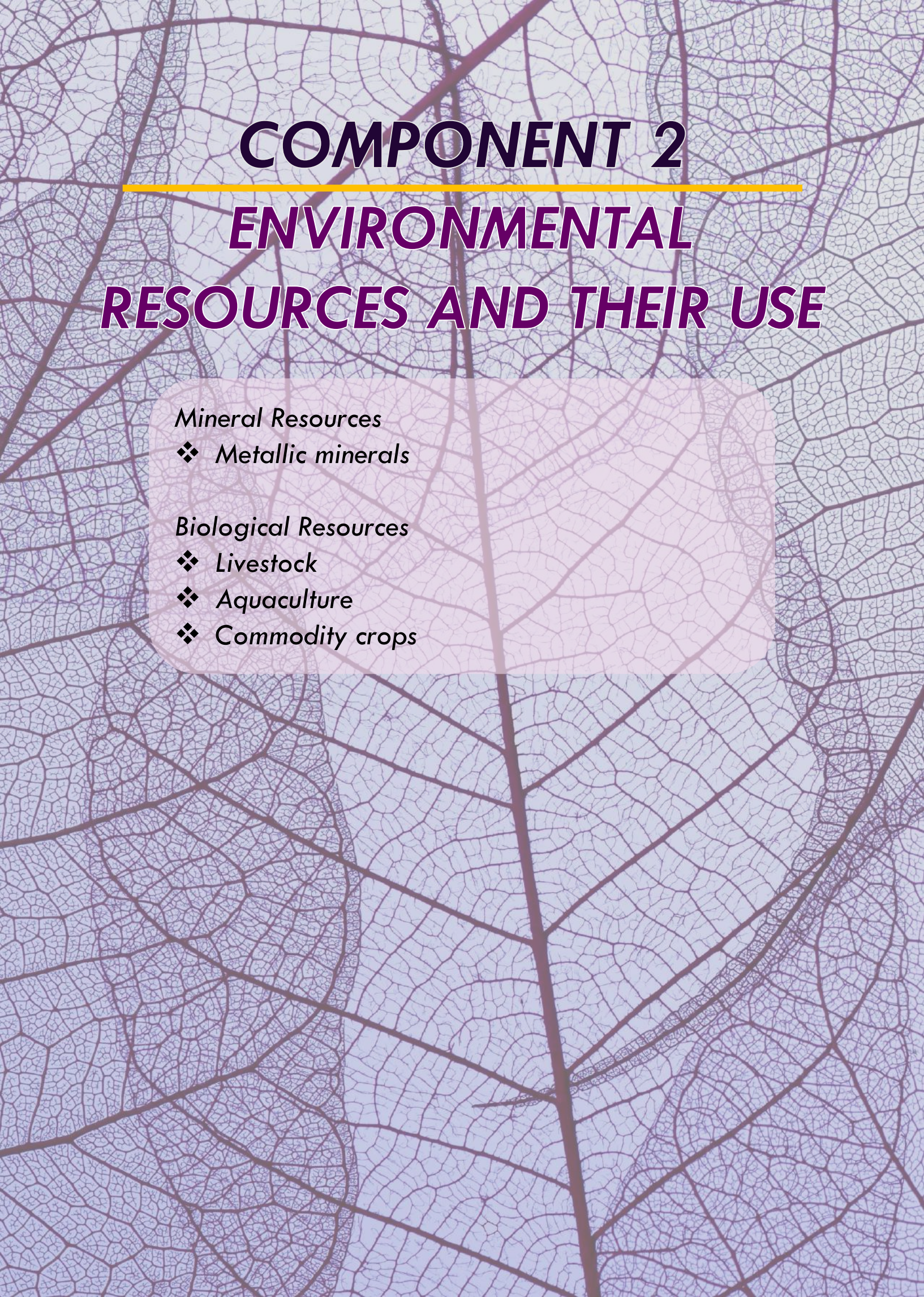
The mean relative humidity in 2022 was between 76.1 per cent (Bayan Lepas station) and 88.3 per cent (Mulu station) as compared to 2021 ranging from 72.9 per cent (Petaling Jaya station) and 88.7 per cent (Cameron Highlands station). **[Exhibit 1.3]**

⁶ Malaysian Meteorological Department Portal, www.met.gov.my

Exhibit 1.3: Summary of climate statistics at meteorological stations, Malaysia, 2021 and 2022

		2021		2022	
		HIGHEST	LOWEST	HIGHEST	LOWEST
	Minimum and maximum mean temperature (°C)	33.2	15.7	33.1	15.8
	Meteorological station	Temerloh, Pahang	Cameron Highlands, Pahang	Ipoh, Perak	Cameron Highlands, Pahang
	Rainfall (mm)	5,365.8	1,589.2	6,172.8	1,943.0
	Meteorological station	Mulu, Sarawak	Keningau, Sabah	Mulu, Sarawak	Sitiawan, Perak
	Numbers of raining days	264	163	289	169
	Meteorological station	Mulu, Sarawak	Kuala Pilah, Negeri Sembilan	Mulu, Sarawak	Muadzam Shah, Pahang
	Numbers of days with lightning	335	57	340	89
	Meteorological station	KLIA, Sepang	Kudat, Sabah	KLIA, Sepang	Ranau, Sabah
	Mean relative humidity (%)	88.7	72.9	88.3	76.1
	Meteorological station	Cameron Highlands, Pahang	Petaling Jaya, Selangor	Mulu, Sarawak	Bayan Lepas, Pulau Pinang

Source: Malaysian Meteorological Department



COMPONENT 2

ENVIRONMENTAL RESOURCES AND THEIR USE

Mineral Resources

- ❖ *Metallic minerals*

Biological Resources

- ❖ *Livestock*
- ❖ *Aquaculture*
- ❖ *Commodity crops*

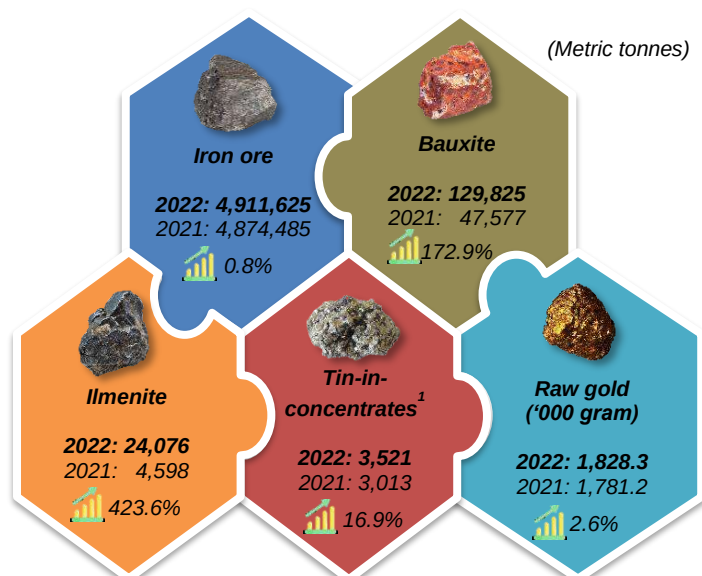
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2.1: Mineral Resources

Metallic minerals are natural substances that have a high concentration of a specific metals. These minerals are typically found in the earth's crust and are valuable resources because they can be extracted and processed to obtain the metal. Metallic minerals are used in various industries, such as construction, manufacturing, electronics and transportation. Some commonly found metallic minerals were iron, copper, aluminium, gold, silver, and lead.

Production of metallic minerals in 2022 showed an increase between 0.8 per cent and 423.6 per cent respectively as compared to 2021. [Exhibit 2.1]

Exhibit 2.1: The production of selected metallic minerals, Malaysia, 2021 and 2022



Source: Department of Mineral and Geoscience

Note: ¹ Tin-in-concentrates refer to tin content of in tin ore concentrates

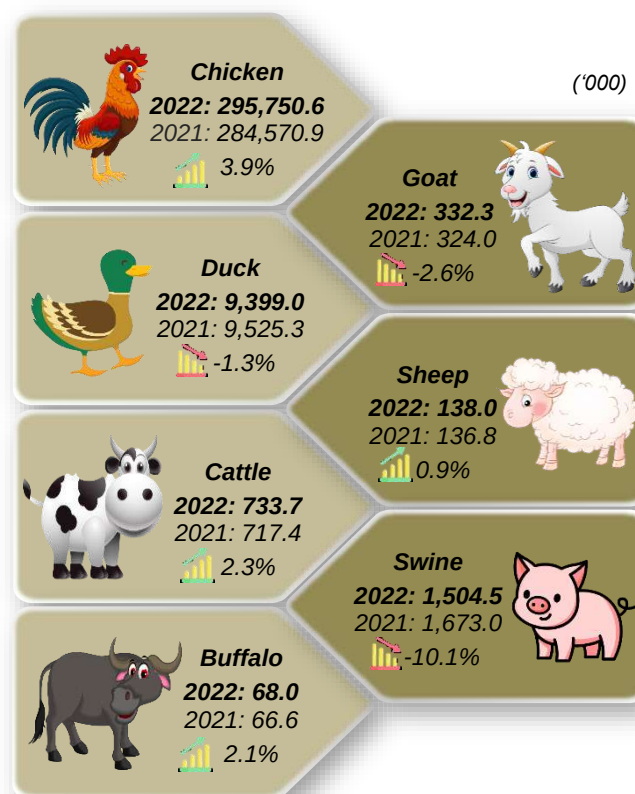
Growth rate (%)

2.2: Biological Resources

One of the main biological resources in Malaysia is livestock. Livestock refers to domesticated animals that are raised for various purposes, primarily for food production and other agricultural uses. Livestock can include animals such as cattle, sheep, goats, swine, poultry and various other animals that are kept on farms or ranches.

The number of chickens recorded an increase 3.9 per cent while cattle (2.3%), buffaloes (2.1%) and sheep (0.9%) in 2022. Meanwhile, the number of goats declined by 2.6 per cent followed by ducks (-1.3%) and swine (-10.1%). [Exhibit 2.2]

Exhibit 2.2: Number of livestock, Malaysia, 2021 and 2022



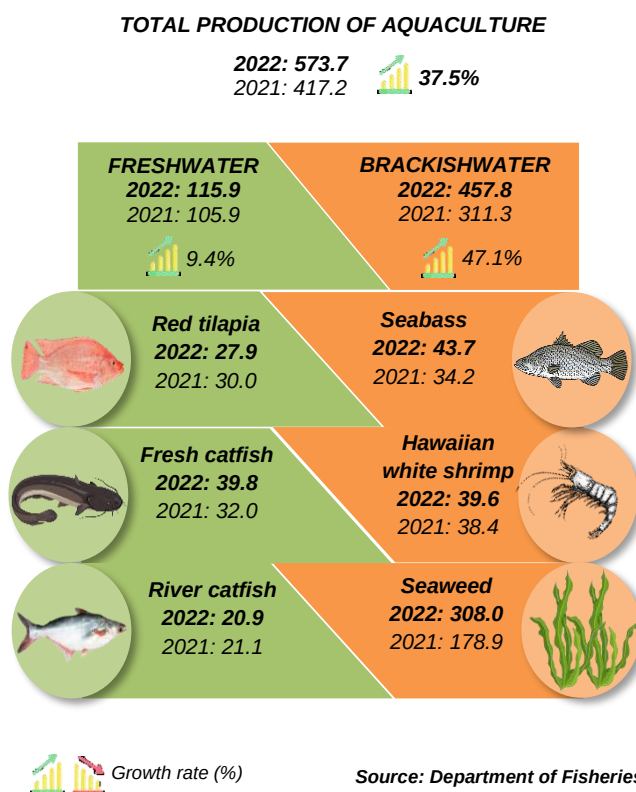
Source: Department of Veterinary Services

Aquaculture is the practice of farming aquatic organisms such as fish, shellfish and aquatic plants, in controlled environments like ponds, tanks, and ocean enclosures. Under the Fisheries Act 1985, aquaculture is the breeding of fish fry or the rearing of fish breeding through a livestock enterprise for the whole or part of its life cycle.

Production of the aquaculture industry amounted to 573.7 thousand metric tonnes in 2022, increased by 37.5 per cent as compared to 2021. The production of freshwater rose by 9.4 per cent to 115.9 thousand metric tonnes led by fresh catfish production (39.8 thousand metric tonnes) followed by red tilapia (27.9 thousand metric tonnes) and river catfish (20.9 thousand metric tonnes). Meanwhile, the production of brackishwater aquaculture contributed 79.8 per cent of the total aquaculture production. Three main contributors to the brackishwater aquaculture production were seaweed (308.0 thousand metric tonnes), seabass (43.7 thousand metric tonnes) and Hawaiian white shrimp (39.6 thousand metric tonnes). **[Exhibit 2.3]**

Exhibit 2.3: Aquaculture production, Malaysia, 2021 and 2022

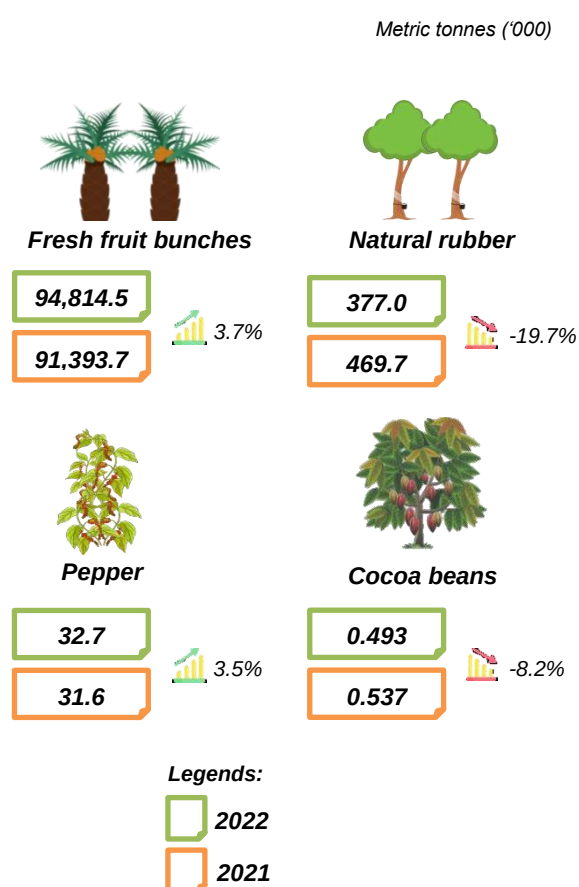
('000 metric tonnes)



Commodity crops are grown in large quantities primarily for the purpose of selling and trading as raw materials, rather than for direct consumption by humans. These crops are typically used as inputs in various industries, such as food production, animal feed, biofuels, and industrial manufacturing. Commodity crops are a fundamental part of the global agricultural economy.

Production for fresh fruit bunches and pepper increased by 3.7 per cent and 3.5 per cent respectively in 2022 as compared to 2021. Meanwhile, cocoa beans and natural rubber recorded a decrease of 8.2 per cent and 19.7 per cent respectively. [Exhibit 2.4]

Exhibit 2.4: Production of selected commodity crops, Malaysia, 2021 and 2022



Sources: Department of Agriculture, Malaysia, Malaysian Palm Oil Board, Malaysian Cocoa Board, Malaysia Pepper Board, Malaysian Rubber Board and Rubber Industry Smallholders Development Authority

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COMPONENT 3

RESIDUALS

Generation and Management of Wastewater

- ❖ *Sewerage facilities*

Generation and Management of Waste

- ❖ *Scheduled wastes*
- ❖ *Clinical wastes*

Release of Chemical Substances

- ❖ *Production and imports of fertilisers*

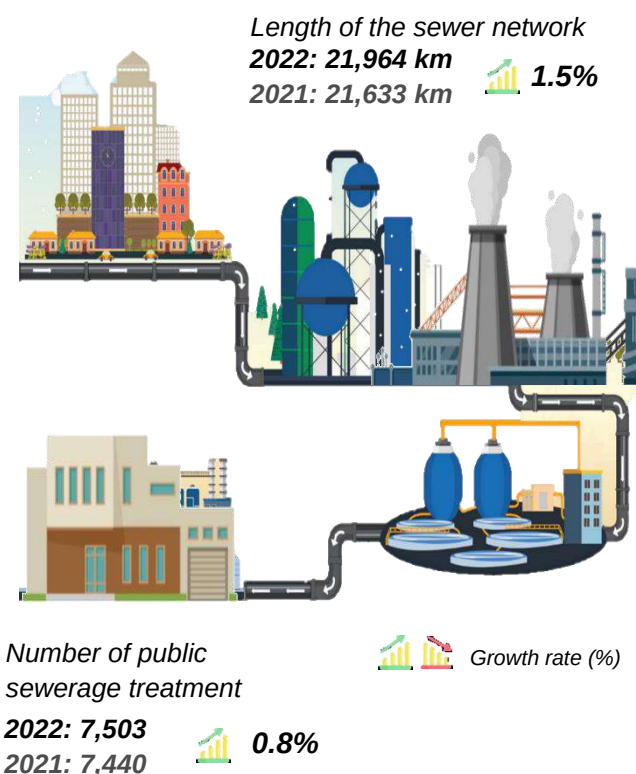
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3.1: Generation and Management of Wastewater

Systematic and efficient sewage management is very important in ensuring the quality of the environment is maintained and in preventing the spread of waterborne infectious diseases. Based on Indah Water Konsortium (IWK), sewage treatment processes consist of two types of treatment which are aerobic (with oxygen utilisation to breakdown organic matter) and anaerobic (without oxygen utilisation).

The length of the sewer network recorded in 2022 was 21,964 km (2021: 21,633 km) with the number of public sewage treatment plants of 7,503 (2021: 7,440) in line with the population growth and development of new housing and industrial areas . **[Exhibit 3.1]**

Exhibit 3.1: Sewerage facilities, Malaysia, 2021 and 2022



Source: National Water Service Commission

3.2: Generation and Management of Waste

3.2.1 Scheduled wastes

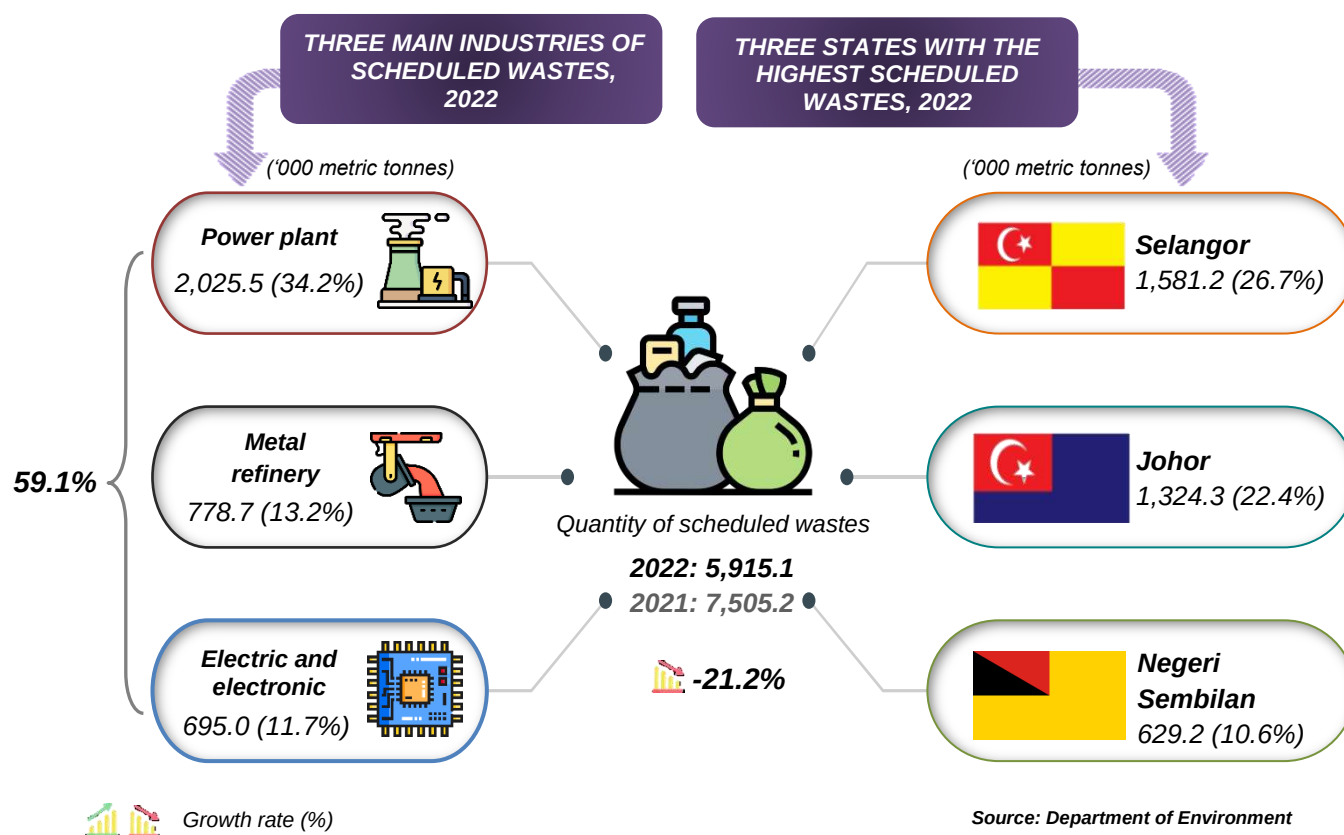
Scheduled wastes refers to the waste category listed in the First Schedule Environmental Quality Regulation (Scheduled Wastes) Regulations 2005. It is also defined as toxic and hazardous wastes generated by industries, agriculture, workshop, scheduled wastes contractors, domestic activities and clinical wastes from hospitals.

A total of 5,915.1 thousand metric tonnes of scheduled wastes was produced in 2022, a decrease of 21.2 per cent as compared to 7,505.2 thousand metric tonnes reported in 2021. Selangor contributed the highest amount

of scheduled wastes at 26.7 per cent followed by Johor (22.4%) and Negeri Sembilan (10.6%).

Three main industries contributed 59.1 per cent of the total scheduled wastes were power plants (34.2%), metal refinery (13.2%) and electric and electronic (11.7%) in 2022. **[Exhibit 3.2]**

Exhibit 3.2: Quantity of scheduled wastes by top three main industries and states, Malaysia, 2022



3.2.2 Clinical wastes

Clinical wastes refers to any waste which consists wholly or partly of human tissues, blood or body fluids, excretions, drugs or pharmaceutical products and others. It is classified as scheduled wastes under the First Schedule Environmental Quality (Scheduled Wastes) Regulations 2005.

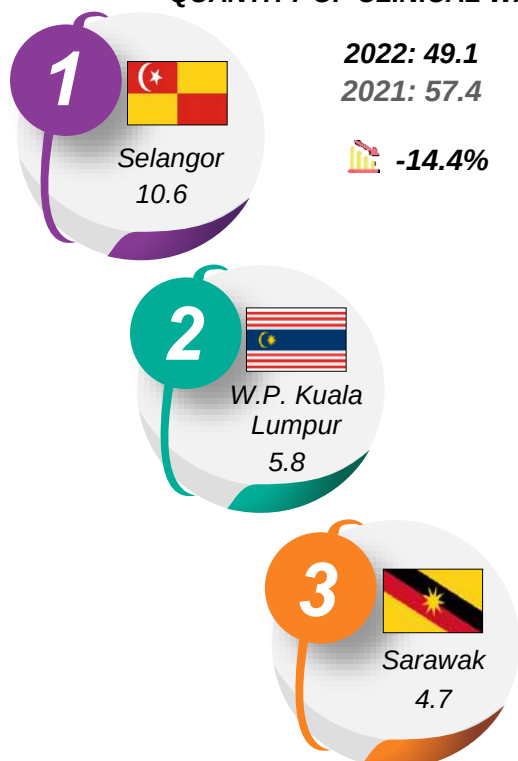
The quantity of clinical wastes in 2022 was 49.1 thousand metric tonnes with a decrease of 14.4 per cent as compared to 57.4 thousand metric tonnes in 2021 as the COVID-19 cases decreased 14.4 per cent (2021: 2,645,076 cases; 2022: 2,268,591 cases).

Three states recorded the largest amount of clinical wastes namely Selangor (10.6 thousand metric tonnes), W.P. Kuala Lumpur (5.8 thousand metric tonnes) and Sarawak (4.7 thousand metric tonnes). **[Exhibit 3.3]**

Exhibit 3.3: Three states with the highest quantity of clinical wastes, Malaysia, 2022

(‘000 metric tonnes)

QUANTITY OF CLINICAL WASTES



Three states with the highest clinical wastes, 2022



Growth rate (%)

Source: Department of Environment

3.3: Release of Chemical Substances

Fertilisers are substances or mixtures that are added to soil or plants to provide essential nutrients that promote plant growth and increase crop yield. They are used in agriculture and gardening to address nutrient deficiencies in the soil to ensure that plants have an adequate supply of essential elements required for their development.

Fertiliser production in 2022 was 7.6 million metric tonnes as compared to 5.8 million metric tonnes in 2021, an increase of 29.9 per cent. Meanwhile, total imports of fertiliser decreased 15.2 per cent from 4.1 million metric tonnes in 2021 to 3.5 million metric tonnes in 2022. [Exhibit 3.4]

Exhibit 3.4: Production and imports of fertilisers, Malaysia, 2021 and 2022

(million metric tonnes)

PRODUCTION



2022: 7.6
2021: 5.8

29.9%

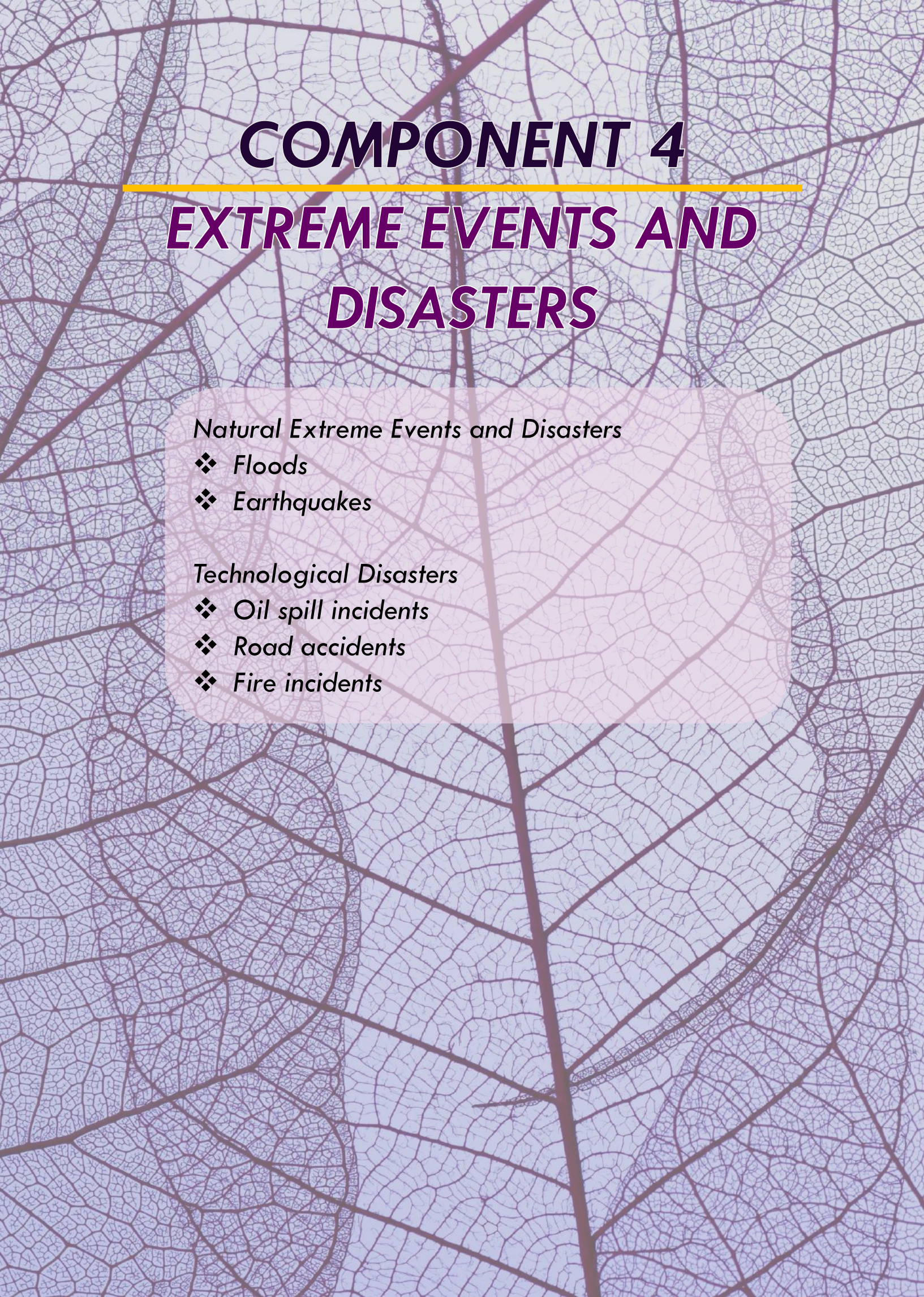
IMPORT



2022: 3.5
2021: 4.1

-15.2%

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COMPONENT 4

EXTREME EVENTS AND DISASTERS

Natural Extreme Events and Disasters

- ❖ Floods
- ❖ Earthquakes

Technological Disasters

- ❖ Oil spill incidents
- ❖ Road accidents
- ❖ Fire incidents

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4.1: Natural Extreme Events and Disasters

A flood is an overflow of water that submerges usually dry land. This can occur for various reasons, including heavy rainfall, snowmelt, dam or levee failures, or the rapid melting of ice or glaciers. Flooding can have devastating effects on communities, infrastructure, and the environment.

The number of flood incidents reported in 2022 was 983 in which Sarawak recorded the highest number of flood incidents at 242, followed by Kedah (108), Selangor and Terengganu both recorded 107 incidents.

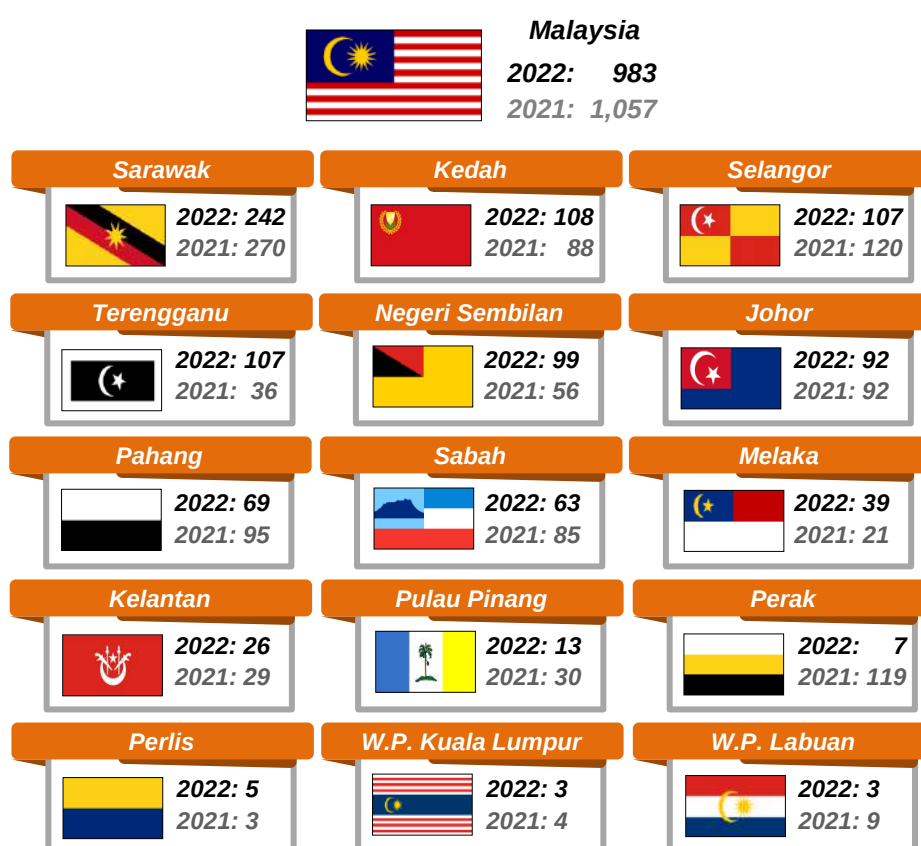
[Exhibit 4.1]

Malaysia is close to the two most seismically active plate boundaries, the inter-plate boundary between the Indo-Australian and Eurasian Plates on the west and the inter-plate boundary between the Eurasian and Philippines Sea Plates on the east whereas earthquakes have been felt in Malaysia⁷.

A total of 82 earthquakes were recorded in 2022 with magnitudes ranging from 0.9 to 3.5, as compared to 40 incidents in 2021.

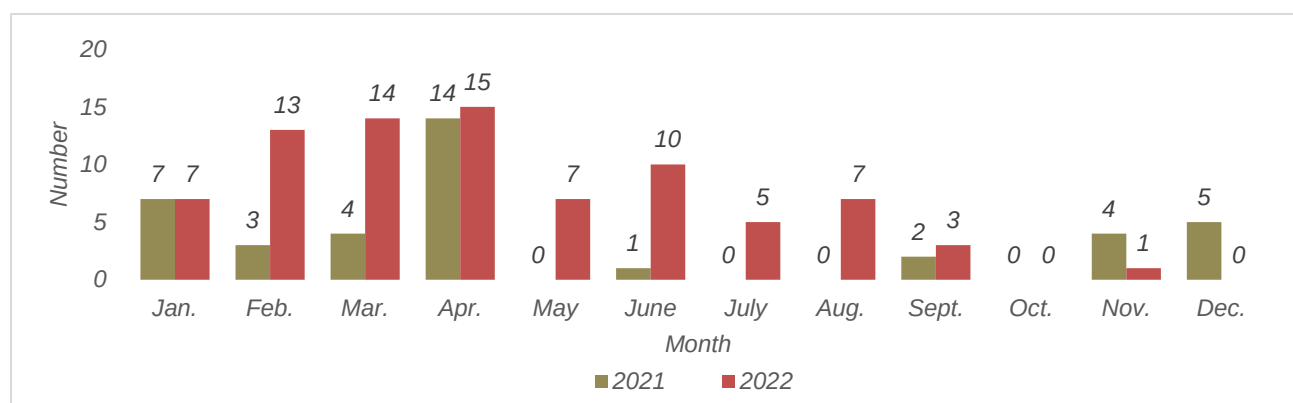
[Chart 4.1]

Exhibit 4.1: Number of flood incidents reported by state, Malaysia, 2021 and 2022



Source: Department of Irrigation and Drainage

⁷ Official website portal, www.met.gov.my

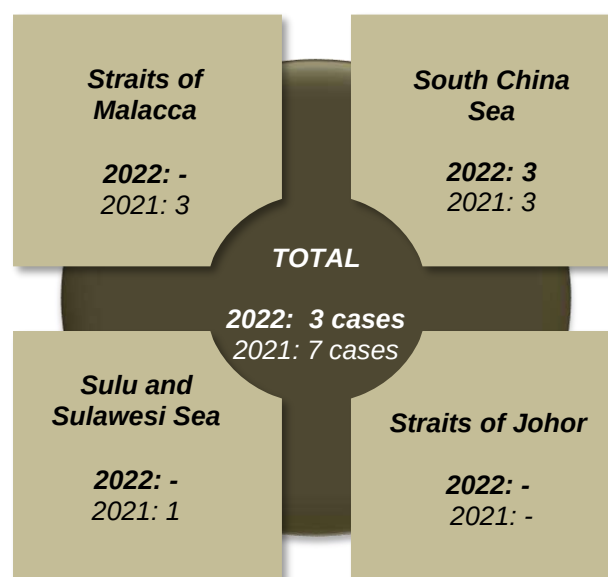
Chart 4.1: Number of earthquakes, Malaysia, 2021 and 2022

Source: Malaysia Meteorological Department

4.2: Technological Disasters

A technological disaster is an event caused by a malfunction of a technological structure and/ or some human error in controlling or handling technology. Technological disasters could be considered a human induced disaster. Technological disasters including oil spills, industrial fires, nuclear and hazardous material accidents can adversely affect health and ecological systems.

There have been three incidents of oil spills in Malaysian waters throughout 2022 of which were recorded in the South China Sea. Meanwhile, the Straits of Malacca, Sulu and Sulawesi Sea and the Straits of Johor did not record any incidents in 2022. **[Exhibit 4.2]**

Exhibit 4.2: Oil spill incidents at sea, Malaysia, 2021 and 2022

Source: Department of Environment

Road accidents occur when vehicles collide with each other or with pedestrians, animals, or stationary objects on the road. These accidents can result in a wide range of consequences, including property damage, injuries, and fatalities. In 2022, Malaysia recorded an increase in the road accident cases rate by 47.3 per cent, an increase of 175,299 cases as compared to 2021. In addition, 6,080 deaths were recorded in 2022 due to road accidents, as compared to 4,539 deaths in the previous year. [Table 4.1]

Selangor recorded the highest number of road accidents in 2022 with 156,815 cases, increased by 44.4 per cent as compared to 108,564 cases in 2021. This was followed by Johor (76,028 cases) and W.P. Kuala Lumpur (62,428 cases). The three states that recorded the lowest number of road accident cases were Perlis (2,276 cases), W.P. Putrajaya (1,909 cases) and W.P. Labuan (564 cases). [Chart 4.2]



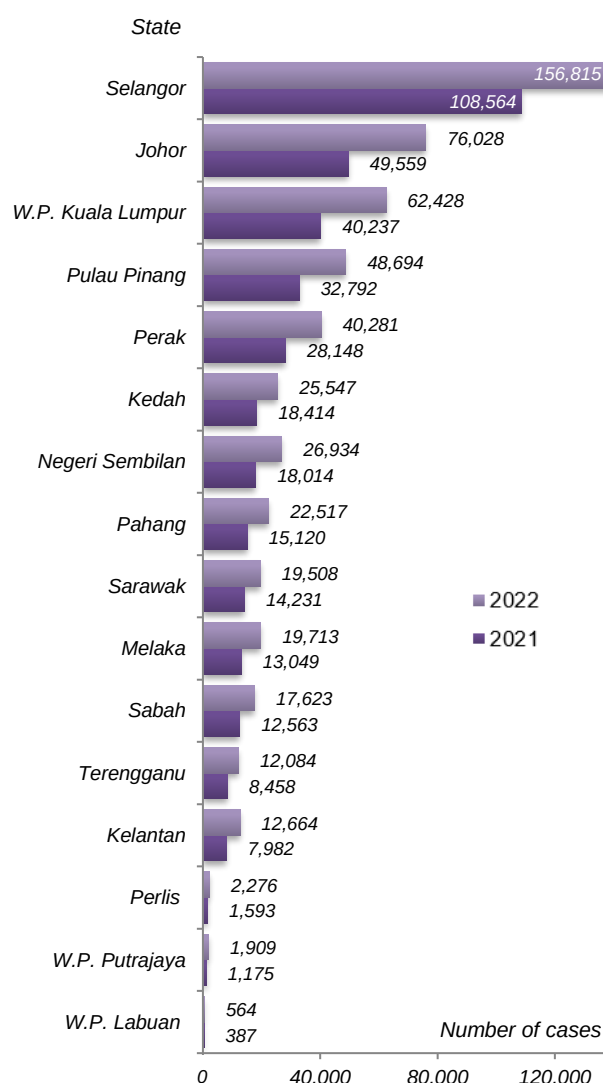
Table 4.1: Number of road accidents and casualties reported by state, Malaysia, 2021 and 2022

Year	Road accidents	Total casualties		
		Injury ¹	Death	Total
2022	545,585	33,852	6,080	39,932
2021	370,286	18,530	4,539	23,069

Source:
Investigation and Enforcement of the Traffic Department
Royal Malaysia Police

Note: ¹Injury refers to minor and serious injuries

Chart 4.2: Number of road accidents reported by state, Malaysia, 2021 and 2022

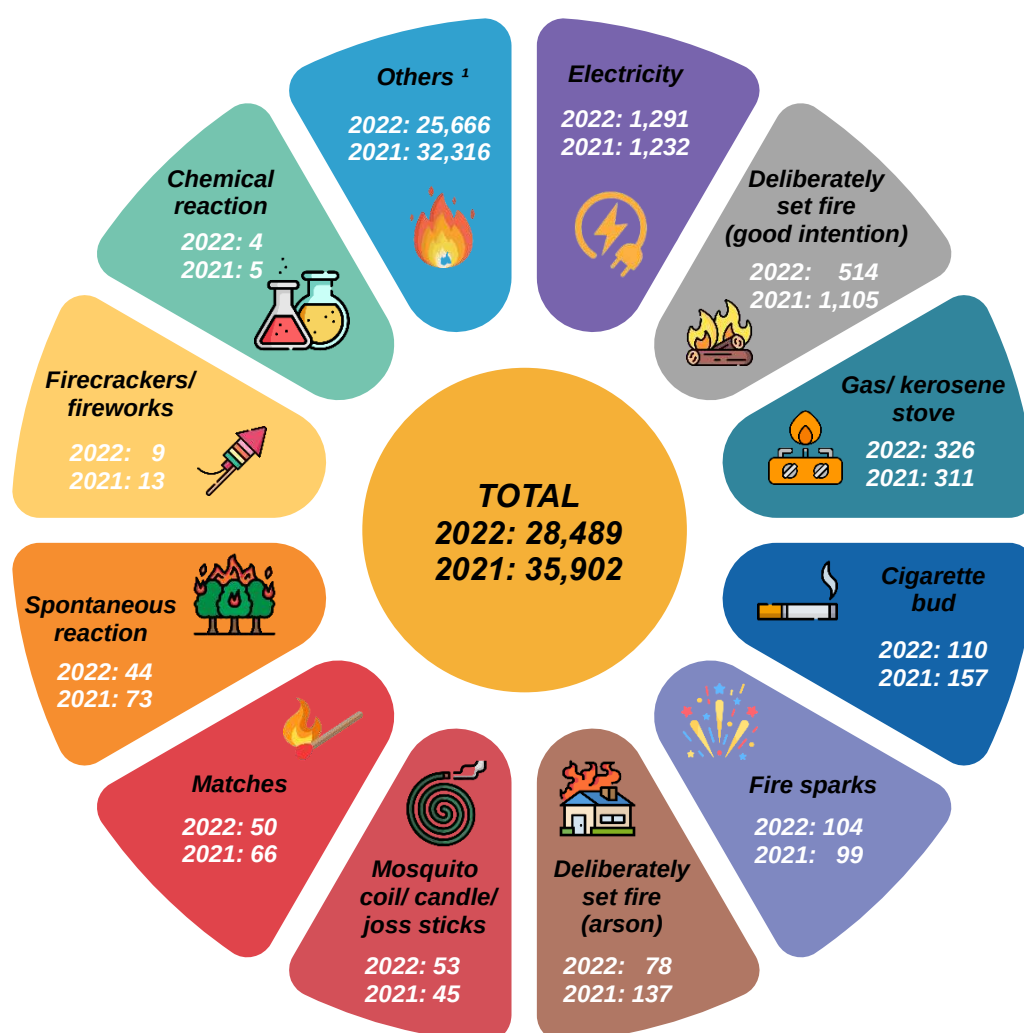


Source:
Investigation and Enforcement of the Traffic Department
Royal Malaysia Police

In scientific terms, fire incidents occur due to a process called combustion. Combustion is a chemical reaction that occurs between a fuel source, oxygen (usually from the air) and a heat source. This reaction results in the release of heat, light and the formation of new chemical compounds, typically in the form of flames.

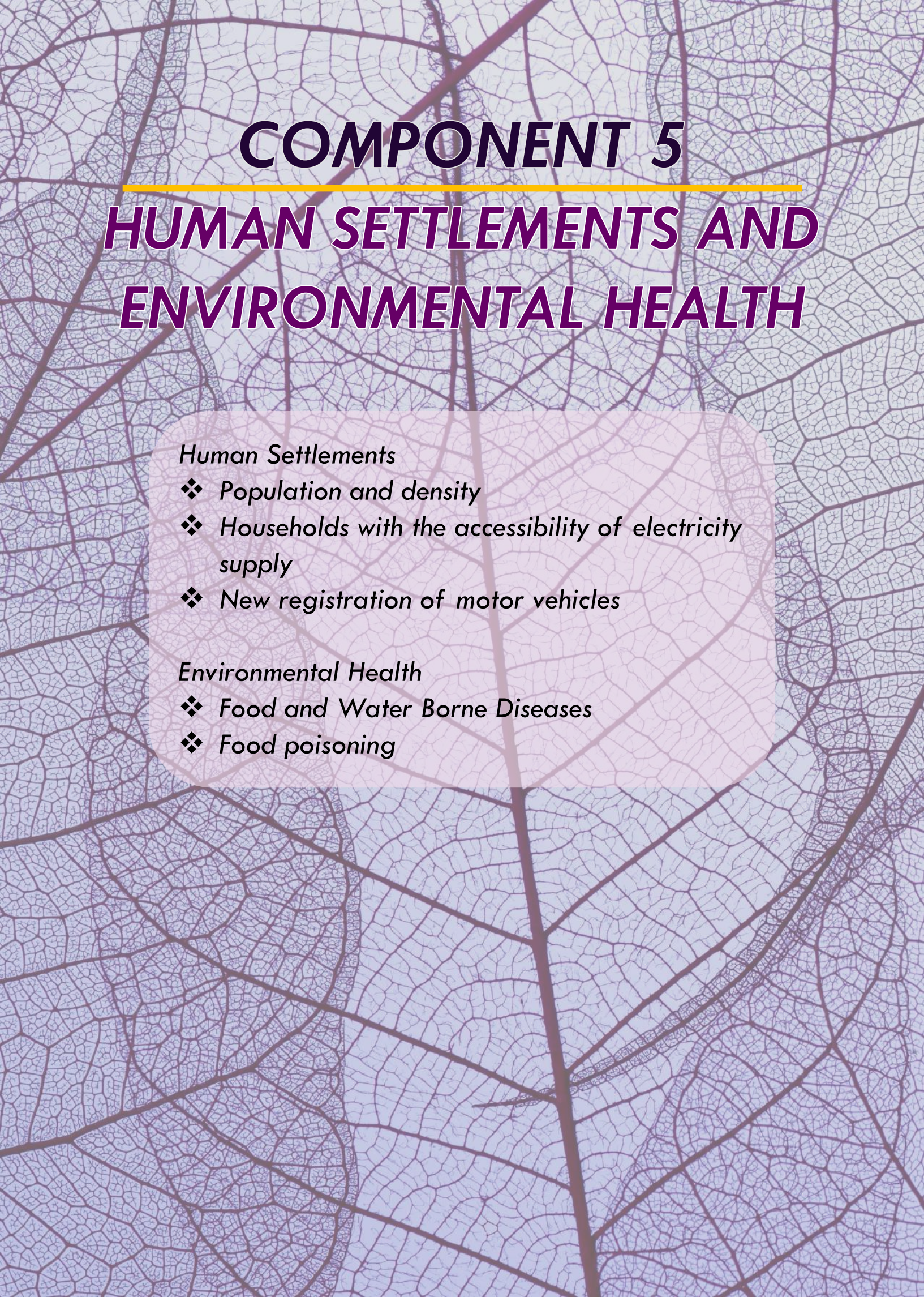
There were 28,489 fire incidents recorded in 2022, a decrease of 20.6 per cent as compared to 2021. Electricity, deliberately set fire (good intentions) and gas/ kerosene stove were the main causes that contribute to fire incidents in Malaysia. Meanwhile, chemical reactions, firecrackers/ fireworks and spontaneous reaction recorded the lowest number of cases in 2022. [Exhibit 4.3]

Exhibit 4.3: Fire incidents by type of source, Malaysia, 2021 and 2022



Note: ¹Includes unknown cases

Source: Ministry of Local Government Development



COMPONENT 5

HUMAN SETTLEMENTS AND ENVIRONMENTAL HEALTH

Human Settlements

- ❖ *Population and density*
- ❖ *Households with the accessibility of electricity supply*
- ❖ *New registration of motor vehicles*

Environmental Health

- ❖ *Food and Water Borne Diseases*
- ❖ *Food poisoning*

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5.1: Human Settlements

Malaysia's total population in 2023 is estimated at 33.4 million. Three states recorded the largest population composition in 2023, namely Selangor (7.2 million: 21.6%), Johor (4.1 million: 12.3%) and Sabah (3.6 million: 10.8%). In terms of sex, there are more males (17.5 million: 52.3%) than females (15.9 million: 47.7%).

The population density of Malaysia is 101 persons per square kilometer in 2023. W.P. Kuala Lumpur has the highest population density (8,235 persons per km²), followed by W.P. Putrajaya (2,419 persons per km²) and Pulau Pinang (1,718 persons per km²) while Sarawak is the lowest (20 persons per km²). [Exhibit 5.1]



Exhibit 5.1: Population¹ and density, Malaysia, 2023



POPULATION
33.4 million

Selangor
7.2 million



Johor
4.1 million



Sabah
3.6 million



DENSITY
101 persons per km²

W.P. Kuala Lumpur
8,235 persons per km²



W.P. Putrajaya
2,419 persons per km²



Pulau Pinang
1,718 persons per km²

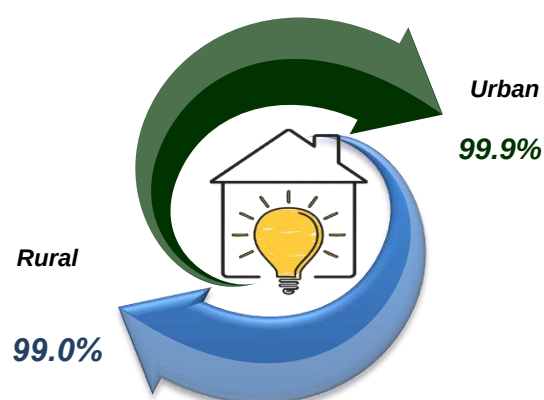


Note: ¹Mid-Year Population Estimates 2023

Household in urban areas have almost full access (99.9%) to the electricity supply while rural area (99.0%) in 2022. This is also a SDG indicator 7.1.1: Proportion of population with access to electricity. **[Exhibit 5.2]**

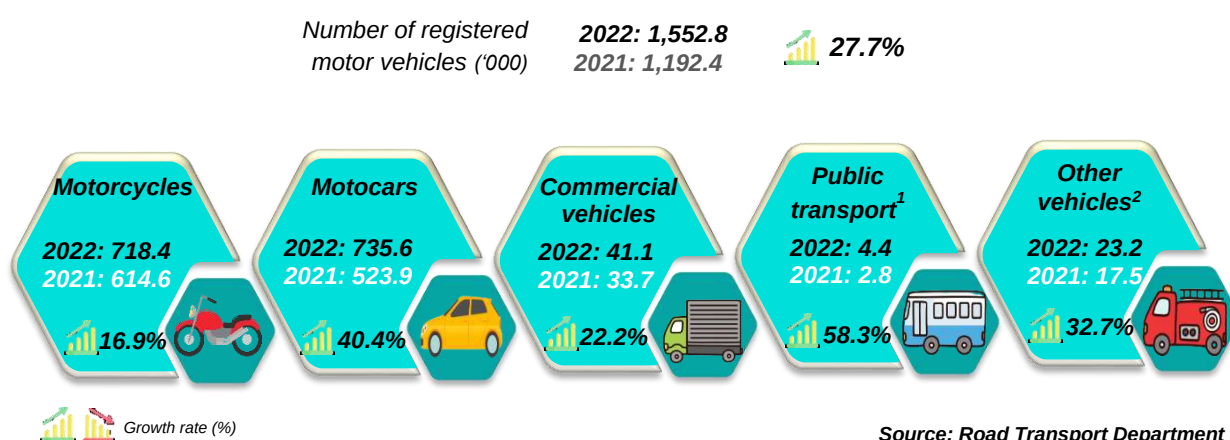
In terms of new registrations of motor vehicles, there were 1,552.8 thousand new motor vehicles registered in 2022, an increase of 27.7 per cent from 1,192.4 thousand in 2021. New registrations for types of motorcycle and public transport increased 16.9 per cent and 58.3 per cent, respectively in 2022 as compared to the previous year. **[Exhibit 5.3]**

Exhibit 5.2: Percentage of households with the accessibility of electricity supply by strata, Malaysia, 2022



Source: Basic Amenities Survey Report 2022

Exhibit 5.3: Number of new registrations of motor vehicles in Malaysia, 2021 and 2022



Notes:

¹ Includes buses, taxis and hired cars

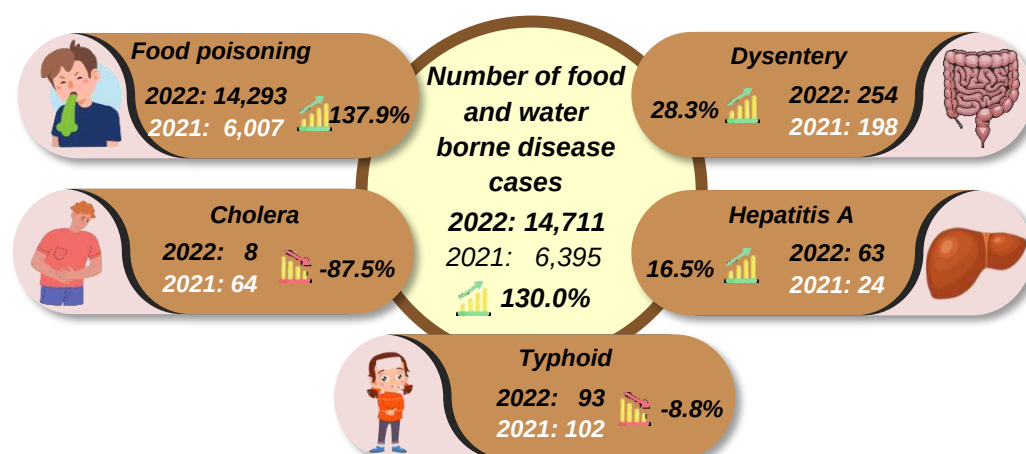
² Includes vehicles such as caravans, government & private fire vehicles, driving school vehicles, hearse, vehicle for disabled, government vehicles, local authority vehicles, ambulance and embassy vehicles.

5.2: Environmental Health

Cholera, Typhoid, Dysentery, Hepatitis A and food poisoning are types of food and water borne diseases. The number of food and water borne diseases cases showed an increase of 130.0 per cent to 14,711 cases in 2022 from 6,395 cases in 2021. Food poisoning recorded the highest number of cases with contribution of 97.2 per cent (14,293 cases). [Exhibit 5.4]

W.P. Labuan recorded the highest incidence rate of food poisoning per 100,000 populations at 105.4 in 2022. This was followed by Terengganu (84.9) and Melaka (79.5). [Chart 5.1]

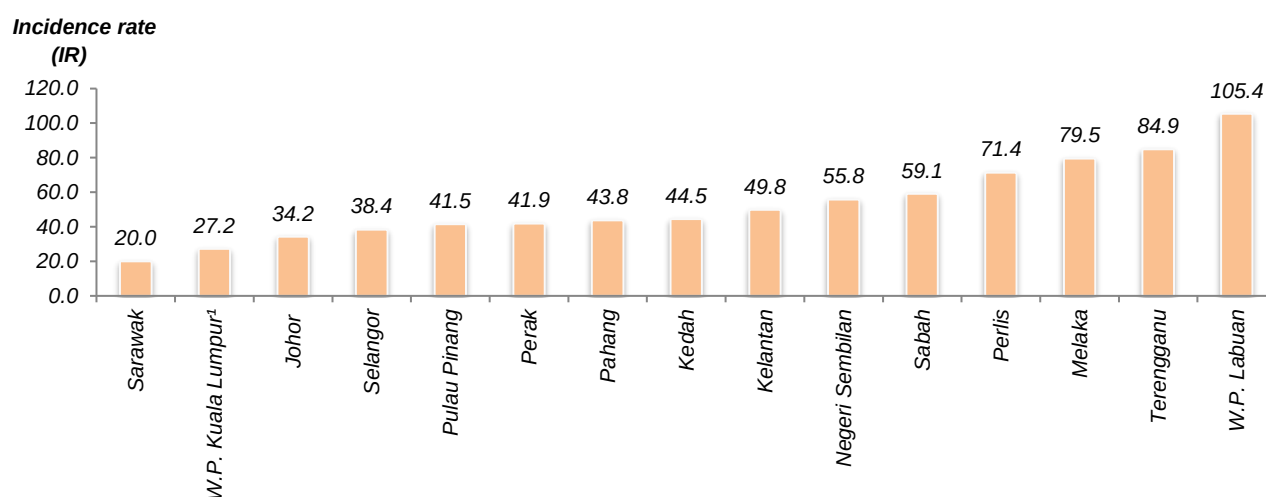
Exhibit 5.4: Number of cases Food and Water Borne Diseases, Malaysia, 2021 and 2022



Growth rate (%)

Source: Ministry of Health Malaysia

Chart 5.1: Incidence rate for food poisoning by state, Malaysia, 2022



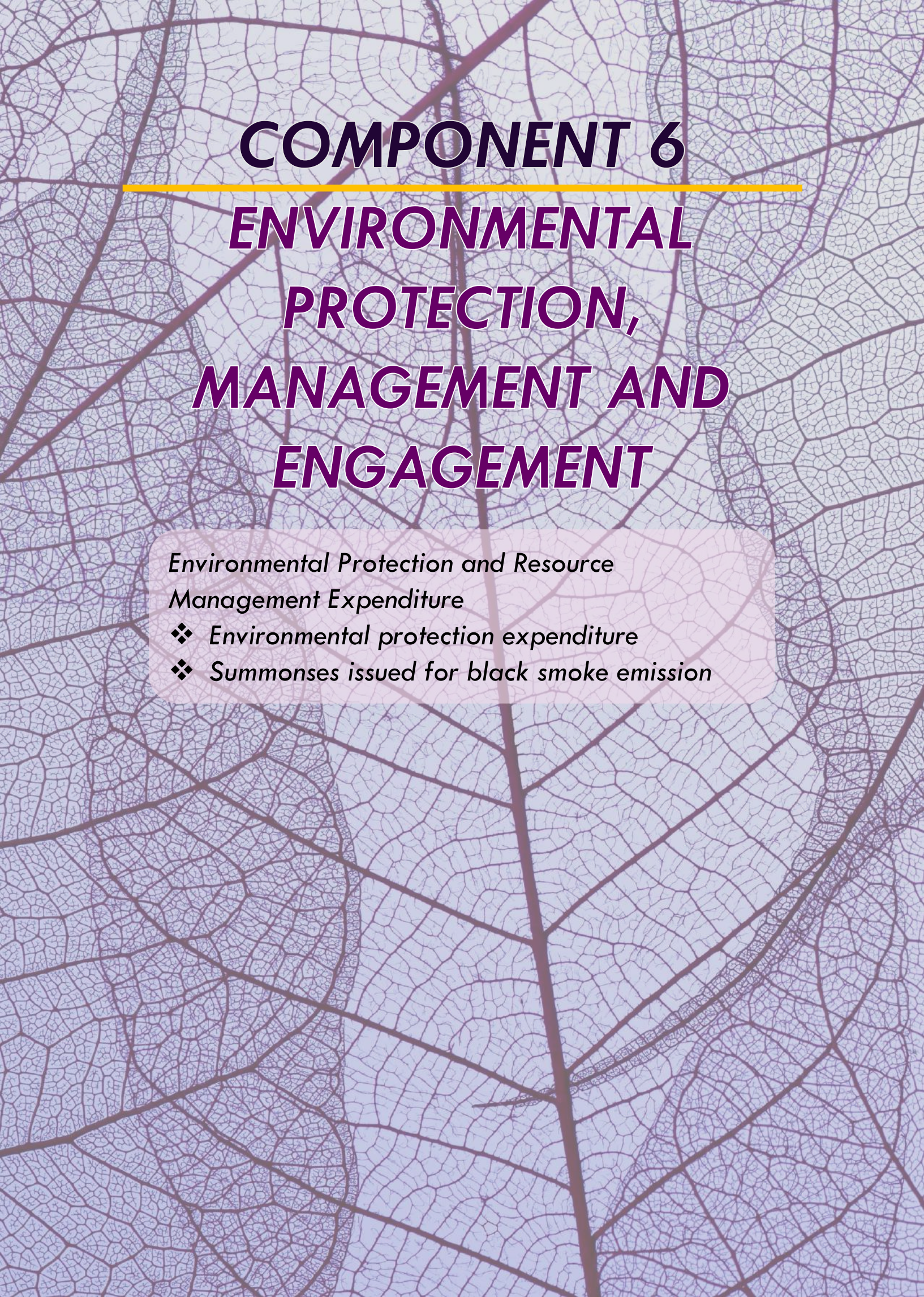
Notes:

Refers to incidence rate per 100,000 population

¹ Includes W.P. Putrajaya.

Source: Ministry of Health Malaysia

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COMPONENT 6

ENVIRONMENTAL PROTECTION, MANAGEMENT AND ENGAGEMENT

*Environmental Protection and Resource
Management Expenditure*

- ❖ *Environmental protection expenditure*
- ❖ *Summonses issued for black smoke emission*

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6.1: Environmental Protection and Resource Management Expenditure

Environmental protection expenditure refers to the financial resources allocated by governments, organizations, or individuals to prevent, mitigate, or address environmental problems as well as to protect natural ecosystems. These expenditures are aimed at reducing the negative impact of human activities on the environment and promoting sustainability.

Environmental protection expenditure performance for the year 2021 recorded an increase of 4.8 per cent to RM3.1 billion as compared to RM3.0 billion in 2020.

The manufacturing sector spent RM2,486.8 million or 79.8 per cent to the overall environmental protection expenditure in 2021, followed by services sector RM386.4 million (12.4%) and mining and quarrying sector RM110.8 million (3.6%). All sectors showed an increase in environmental protection expenditure except for construction sector. **[Exhibit 6.1]**

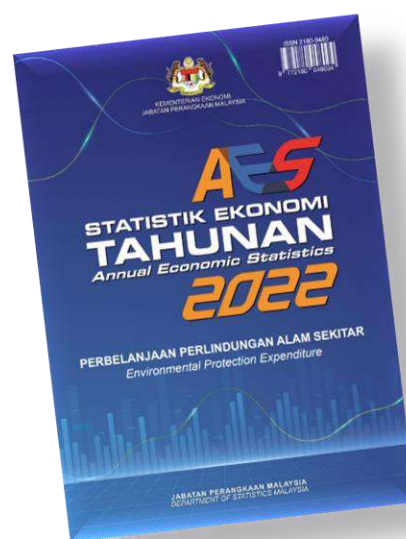
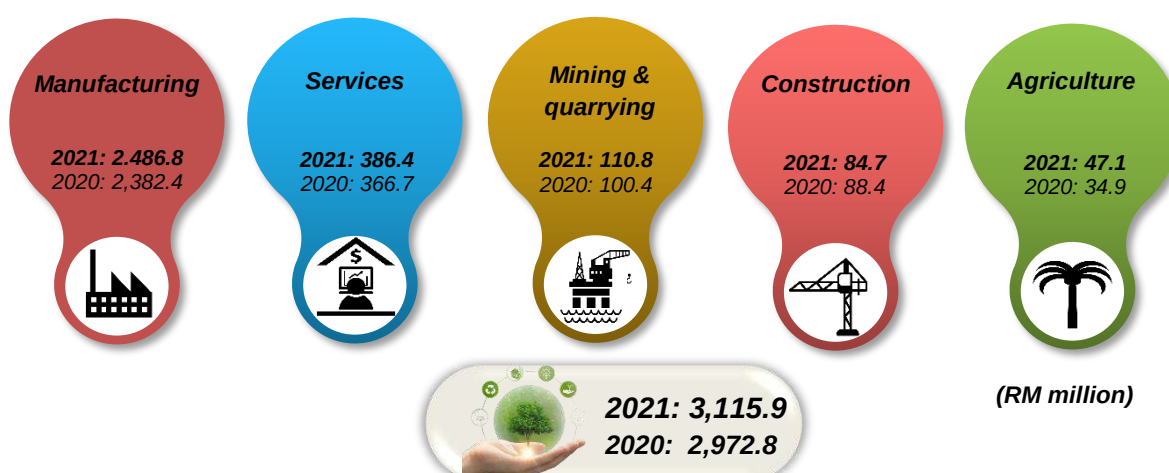


Exhibit 6.1: Environmental protection expenditure by sector, Malaysia, 2020 and 2021

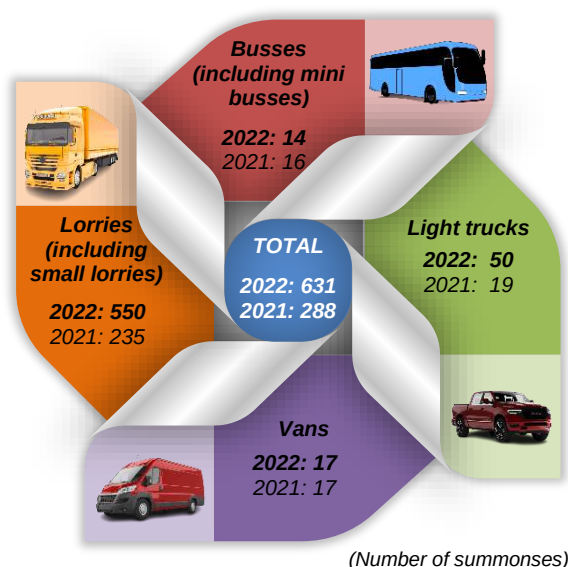


Source: Annual Economic Survey 2022 – Environmental Protection Expenditure

Emissions of pollution from vehicles are one of the major contributors to air pollution in urban areas. The combustion of fossil fuels in cars, trucks, and other forms of transportation releases pollutants such as carbon monoxide (CO), nitrogen oxides (NO_x), and volatile organic compounds (VOC_s) into the atmosphere. Efforts to reduce the impact of vehicle emissions on air pollution include the development and adoption of cleaner vehicle technologies such as electric vehicles and hybrids, the use of cleaner fuels, public transport ride and carpooling campaign and the implementation of emission control standards and regulations.

A total of 631 summonses for black smoke emissions by vehicles were issued by the Department of Environment in 2022 as compared to 288 summonses in 2021. Lorries recorded the highest number of summonses at 550 (87.1%) as compared to other motor vehicles. There was no summons issued for black smoke emission by cars in 2022. **[Exhibit 6.2]**

Exhibit 6.2: Number of summonses issued for black smoke emission by type of vehicles, Malaysia, 2021 and 2022



Source: Department of Environment

ARTIKEL

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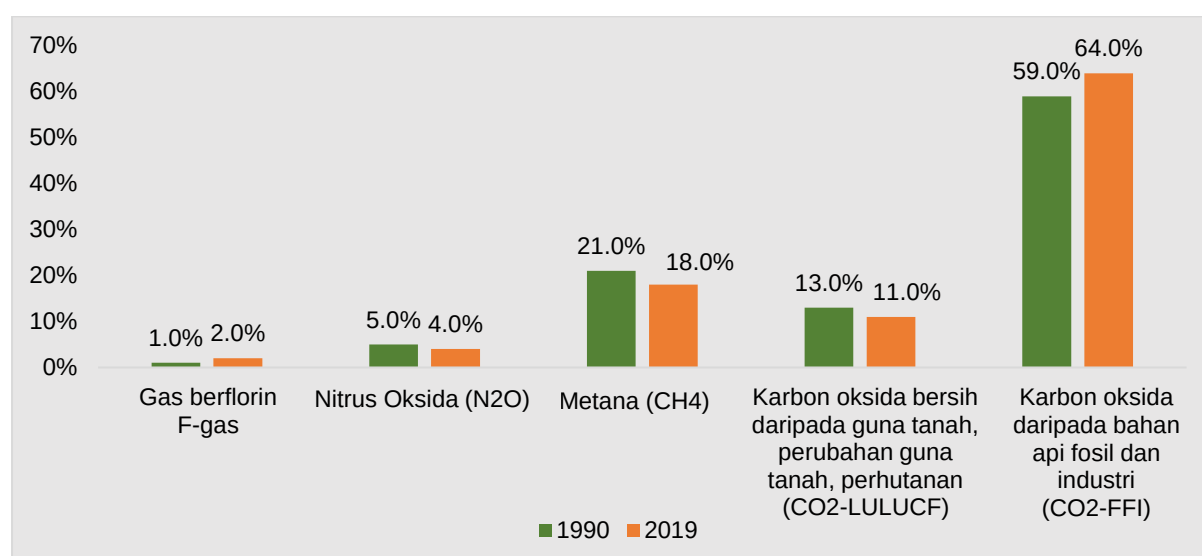
Pelepasan Karbon Sifar Bersih

Syed Ibrahim Mohd Jamaluddin, Fuziah Md. Amin, Latifah Mohamed Shah,
Ade Mas Erina Masri, Siti Nur Syafiqah Mohd Zulkiflee

Ketika dunia sedang berhadapan dengan pelbagai isu alam sekitar yang berkaitan dengan perubahan iklim, istilah sifar bersih telah menjadi salah satu konsep yang paling penting dalam perbincangan global. Sifar bersih merujuk kepada mencapai keseimbangan antara jumlah gas rumah hijau yang dipancarkan ke atmosfera dan jumlah yang dikeluarkan dari atmosfera. Dalam erti kata lain, pelepasan yang dihasilkan diimbangi oleh pelepasan setara yang dikeluarkan, ditangkap atau diimbangi di tempat lain, dengan berkesan untuk mengurangkan kesan keseluruhan aktiviti manusia dan juga sistem iklim.

Kerajaan dan sektor perindustrian di semua negara digesa mengurangkan pelepasan gas rumah hijau (GHG) mereka untuk mencapai sifar bersih menjelang 2050 sebagai tindak balas kepada Persidangan Pertubuhan Bangsa-Bangsa Bersatu mengenai Perubahan Iklim (COP26) ke-26. Berdasarkan Laporan Penilaian Keenam IPCC (AR6), karbon dioksida (CO_2) adalah gas paling utama yang menyumbang 76.0 peratus daripada pelepasan global sebahagian besarnya disumbangkan oleh aktiviti manusia seperti pembakaran bahan api fosil, perubahan guna tanah dan penebangan hutan pada 2019. **[Paparan 1]**

Paparan 1: Pelepasan GHG antropogenik bersih global 1990 dan 2019



Sumber: IPCC 2023, IPCC Sixth Assessment Report Working Group III: Mitigation of Climate Change diterbitkan pada 4 April 2022

Secara amnya, untuk mencapai pelepasan karbon sifar bersih, ia memerlukan penggantian bahan api fosil, mengurangkan jumlah penggunaan tenaga serta meningkatkan kecekapan tenaga. Untuk mencapai sasaran menjelang 2050, ianya boleh dilakukan dengan pengurangan karbon dan penyingkiran karbon. Untuk melaksanakan strategi ini, beberapa langkah boleh diambil, seperti pelarasan dalam aktiviti perindustrian, aktiviti pertanian dan proses lain melalui penggunaan tenaga baharu seperti tenaga solar serta meningkatkan prestasi tenaga. Di samping itu, penyingkiran karbon boleh dilakukan secara semulajadi, di mana hutan yang dikenali sebagai sinki karbon boleh menyerap sebanyak 7.6 bilion tan metrik CO₂ setahun¹.

Bagi Malaysia, seperti negara-negara lain komitmen ditunjukkan dalam pelbagai cara, termasuk menawarkan skim dan insentif untuk menggalakkan penggunaan tenaga boleh diperbaharui. Hampir 80.0 peratus daripada pelepasan GHG adalah daripada sektor tenaga². Sektor ini mempunyai peranan penting dalam menyokong agenda nasional untuk meningkatkan kelestarian alam sekitar. Melalui Dasar Tenaga Negara (DTN) beberapa sasaran telah ditetapkan untuk mencapai pelepasan karbon sifar. Sasaran ini diterjemahkan melalui Aspirasi Negara Rendah Karbon 2040. Aspirasi ini dirangka berdasarkan pelan sedia ada bagi sektor tenaga.

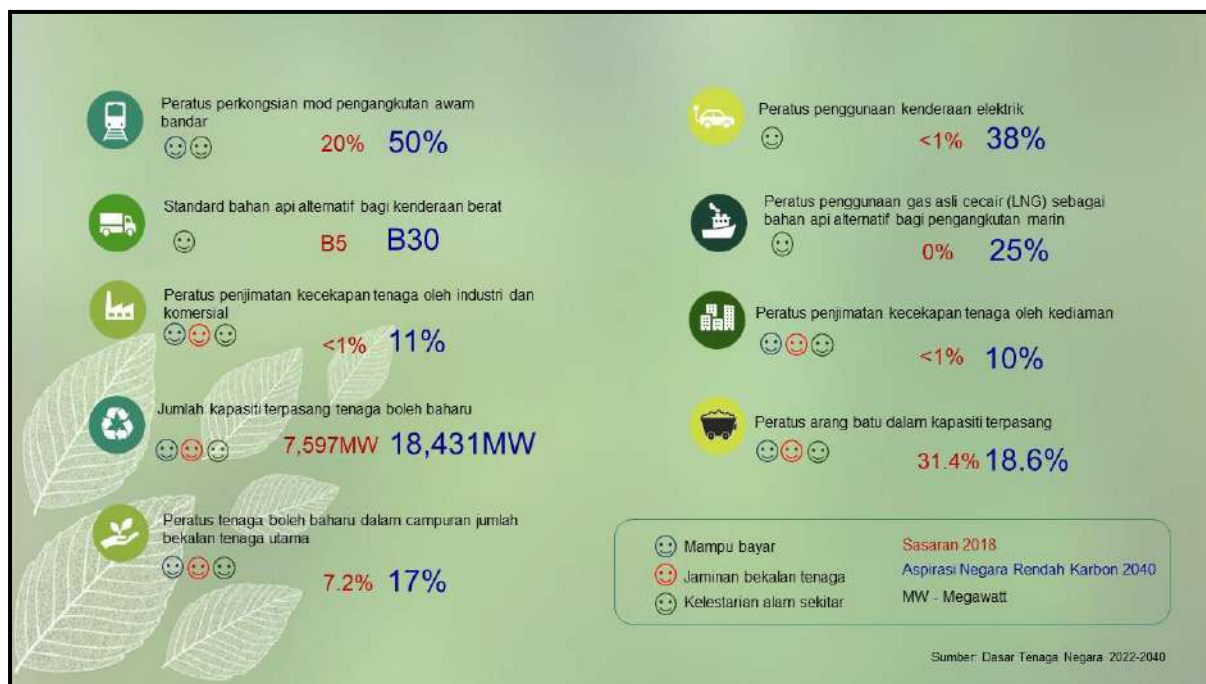
Aspirasi Negara Rendah Karbon 2040 menekankan dasar dan pelaburan rendah karbon bagi meningkatkan penggunaan dalam sektor rendah karbon terpilih seperti:

- i. Menjurus kepada tiada lagi stesen janakuasa arang batu baharu dan meningkatkan sumbangan Tenaga Boleh Baharu (TBB);
- ii. Pembiayaan dan pemberian insentif bagi mendorong amalan cekap tenaga untuk mencapai sasaran yang lebih tinggi; dan
- iii. Memberi insentif penerimgunaan kenderaan elektrik serta meningkatkan perkongsian mod pengangkutan awam bandar dan standard bahan api ekonomi.

¹ <https://www.wri.org/insights/forests-absorb-twice-much-carbon-they-emit-each-year>

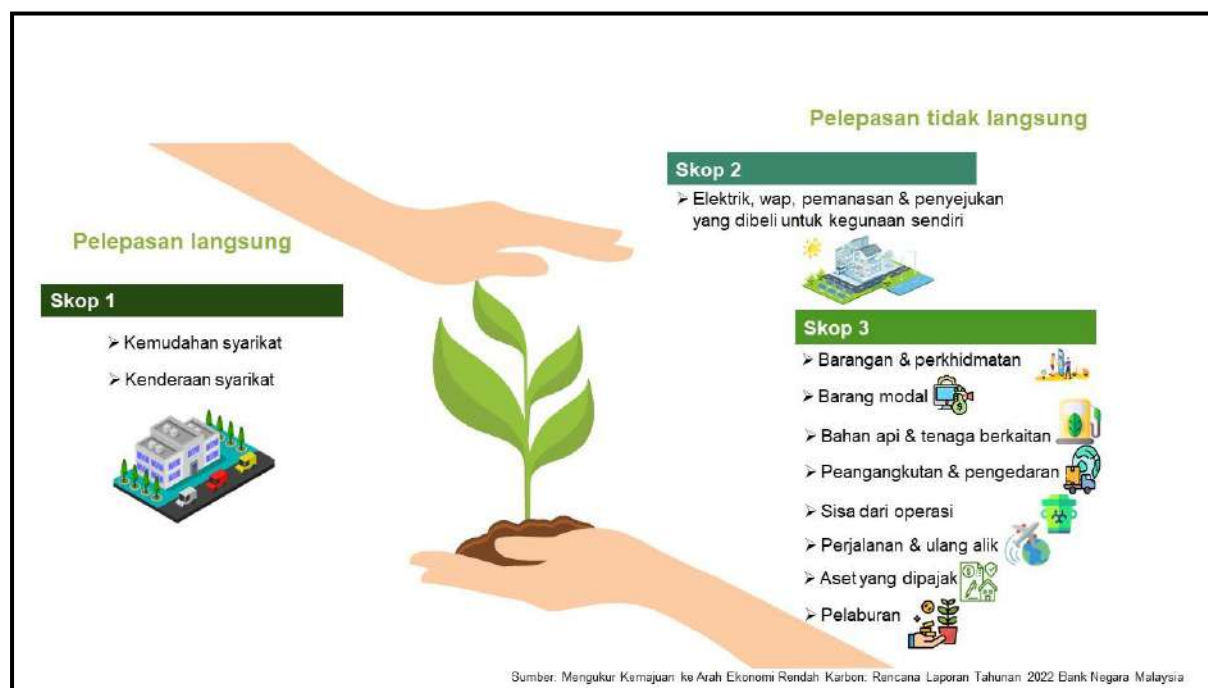
² Dasar Tenaga Negara 2022 - 2040

Paparan 2: Sasaran Terpilih Aspirasi Nasional Rendah Karbon 2040 Berbanding 2018



Aspirasi Negara Rendah Karbon menjelang tahun 2040 bertujuan untuk mendapatkan faedah ekonomi yang lebih besar daripada peralihan tenaga, selaras dengan objektif DEB. Ini juga selari dengan sasaran Strategi Pembangunan Pelepasan Rendah Jangka Panjang (LT-LEDS) untuk mencapai GHG sifar bersih seawal tahun 2050. Dalam memuktamadkan LT-LEDS, kerajaan telah mengatur strategi untuk mewujudkan infrastruktur bagi membantu peralihan kepada ekonomi rendah karbon. Salah satu infrastruktur tersebut ialah perakaunan karbon, yang menyediakan rangka kerja untuk mengukur kesan iklim pelepasan GHG. Melalui langkah ini, sasaran untuk menghadkan dan mengurangkan pelepasan karbon boleh ditetapkan. Secara konseptual, perakaunan karbon adalah sama dengan perakaunan kewangan, yang membolehkan perbandingan prestasi yang konsisten dan telus antara entiti, industri dan tempoh masa. Pengiraan gas, seperti karbon dioksida yang dipancarkan oleh industri atau perniagaan dari kedua-dua pelepasan langsung (skop 1) dan pelepasan tidak langsung (skop 2 dan 3) seperti yang ditunjukkan dalam Paparan 3, membolehkan pemantauan, pelaporan dan pengesahan pelepasan GHG. Sebagai alternatif, pelepasan karbon boleh dinilai berdasarkan sasaran pelepasan. Buat masa ini, pengukuran pelepasan karbon di Malaysia adalah berdasarkan data yang diperolehi daripada pelbagai agensi.

Paparan 3: Kategori Perakaunan Karbon



Untuk mempercepatkan usaha peralihan tenaga ini, kerajaan juga telah melancarkan Pelan Hala Tuju Peralihan Tenaga Negara (NETR). NETR juga menyediakan *Responsible Transition (RT) Pathway 2050* di mana ia akan menjadi panduan dalam peralihan daripada ekonomi berasaskan bahan api fosil tradisional kepada ekonomi hijau bernilai tinggi. Berdasarkan kepada model Jumlah Sumber Tenaga Utama (TPES), permintaan tenaga akan meningkat secara marginal pada 0.2 peratus setiap tahun daripada 95 Mtoe³ pada 2023 kepada 102 Mtoe pada 2050. *RT Pathway 2050* juga menerangkan penyahkarbonan melalui pemansuhan penggunaan arang batu dan pengurangan pergantungan bahan api fosil daripada 96.0 peratus pada 2023 kepada 77.0 peratus pada 2050. Selain itu, gas asli bukan sahaja digunakan untuk bahan api peralihan, tetapi juga penyumbang utama TPES iaitu sebanyak 57 Mtoe (56.0%) diikuti oleh tenaga boleh diperbaharui termasuk solar, hidro dan biotenaga, yang secara kolektif menyumbang 23.0 peratus daripada TPES pada 2050 berbanding hanya 4.0 peratus pada 2023.

NETR telah menggariskan 50 inisiatif di bawah enam tiang peralihan tenaga dan lima pembolehubah, selain daripada 10 projek dan inisiatif utama yang diumumkan pada Julai 2023. Pembiayaan peralihan tenaga akan dilaksanakan melalui kombinasi

³ Million tonnes of oil equivalent

geran, pinjaman, rebat, insentif dan pelaburan lain untuk menyokong pendekatan secara menyeluruh di seluruh negara. NETR bertujuan untuk memperkasa masa depan dengan membuka potensi dalam bidang pertumbuhan baharu dan menyampaikan kemajuan dan kemakmuran kepada isi rumah dan perniagaan di Malaysia. Keberkesanan pelaksanaan NETR dijangka dapat meningkatkan nilai KDNK dari RM25 bilion pada tahun 2023 kepada RM220 bilion dan menjana 310,000 pekerjaan menjelang tahun 2050.

Untuk mencapai pelepasan sifar, kerjasama dari semua pihak diperlukan. Bagi tujuan ini, Pihak Berkuasa Tempatan telah mengeluarkan pelan tindakan untuk tujuan ini. Sebagai contoh, Majlis Bandaraya Petaling Jaya (MBPJ) menerbitkan Pelan Tindakan Bandar Rendah Karbon MBPJ 2015-2030, menggariskan langkah-langkah untuk mencapai pengurangan pelepasan sebanyak 30.0 peratus menjelang 2030. Sasaran ini bukan sahaja dalam jangka pendek, tetapi juga mewakili matlamat bercita-cita tinggi untuk 15 tahun akan datang. Tambahan pula, di samping MBPJ, Dewan Bandaraya Kuala Lumpur (DBKL) telah mengeluarkan Pelan Perubahan Iklim Kuala Lumpur 2050. Dokumen ini berfungsi sebagai panduan untuk majlis dan pihak berkepentingan, yang bertujuan untuk memastikan Kuala Lumpur mencapai neutral karbon dan daya tahan iklim menjelang 2050.

Kerajaan terus komited dalam menerajui inisiatif pembebasan karbon sifar. Bajet 2024 yang diumumkan oleh kerajaan baru-baru ini telah menyediakan peruntukan yang besar di bawah Ihktiar 7: Agenda Mampan & Peralihan Tenaga. Bagi tumpuan Ke Arah Pelepasan Karbon Sifar Bersih, Bajet 2024 telah merangka pelbagai inisiatif bagi mencapai sasaran tersebut. Selain itu, institusi kewangan akan menyediakan pembiayaan untuk menggalakkan industri terlibat dalam ekonomi rendah karbon berjumlah RM200 bilion. Sementara itu, Dana Mudah Cara Peralihan Tenaga Negara telah memperuntukan RM2 bilion dan peruntukan sebanyak RM600 juta bagi perolehan 150 bas elektrik dan pembinaan tiga (3) depoh bas oleh Prasarana Malaysia Berhad bagi memenuhi keperluan lima (5) stesen LRT3.

Selain itu, melalui Bajet 2024, kerajaan mengambil langkah ke arah menghijau aset dan operasi Kerajaan melalui mempergiatkan pemasangan solar di W.P. Putrajaya terutamanya di premis-premis Kerajaan serta memperkenalkan penggunaan kenderaan elektrik bagi kenderaan-kenderaan rasmi Kerajaan berdasarkan

ketersediaan segmen yang sesuai. Bagi mempergiatkan pemasangan solar, kerajaan telah melanjutkan tempoh tawaran program Skim Pemeteran Tenaga Bersih (NEM) hingga 31 Disember 2024. Melalui skim ini kuota sebanyak 500MW telah diperkenalkan bermula November 2016 sehingga tahun 2020 bertujuan untuk menggalakkan penggunaan TBB di Malaysia. NEM merupakan satu konsep di mana tenaga yang dihasilkan dari pemasangan sistem fotovolta suria akan digunakan terlebih dahulu dan lebihannya akan dieksport ke grid TNB berdasarkan kos pembekalan semasa. Kerajaan juga akan membangun program pembelian balik solar di bumbung bangunan dengan implikasi kos kepada sistem yang minimum.

Bajet 2024 ini juga menjelaskan bahawa Jawatankuasa Semakan Semula Akta Petroleum (Cukai Pendapatan) 1967 (PITA 4WRD) akan memuktamadkan kajian berkenaan insentif cukai *Carbon Capture Utilisation & Storage* serta medan gas hidrogen sulfida menjelang akhir tahun ini. Selain itu sebanyak RM5 juta telah diperuntukkan Dana Pembangunan Projek Karbon Hutan.

Pelepasan karbon adalah isu global yang memerlukan tindakan segera dan berterusan. Untuk mencapai pelepasan karbon sifar bersih, mengehadkan pelepasan karbon adalah perlu untuk mengelakkan kesan buruk perubahan iklim dan melindungi bumi untuk generasi akan datang. Melalui pelaksanaan strategi seperti tenaga boleh diperbaharui, kecekapan tenaga, pemuliharaan hutan dan dasar yang tepat, ia boleh menyumbang kepada usaha menangani krisis iklim dan seterusnya menyokong peralihan kepada ekonomi rendah karbon.

Penafian:

Pandangan yang dinyatakan adalah pandangan penulis dan tidak mewakili pandangan DOSM

Sumber:

- i. <https://www.wri.org/insights/forests-absorb-twice-much-carbon-they-emit-each-year>
- ii. <https://www.mytnb.com.my/renewable-energy/net-energy-metering>
- iii. Dasar Tenaga Negara 2022 – 2040
- iv. Pelan Tindakan Bandar Rendah Karbon MBPJ 2015-2030
- v. Pelan Perubahan Iklim Kuala Lumpur 2050
- vi. Ringkasan Belanjawan 2024, Kementerian Kewangan Malaysia
- vii. Mengukur Kemajuan ke Arah Ekonomi Rendah Karbon: Rencana Laporan Tahunan 2022 Bank Negara Malaysia
- viii. Pelan Hala Tuju Peralihan Tenaga Negara

Net Zero Carbon Emission

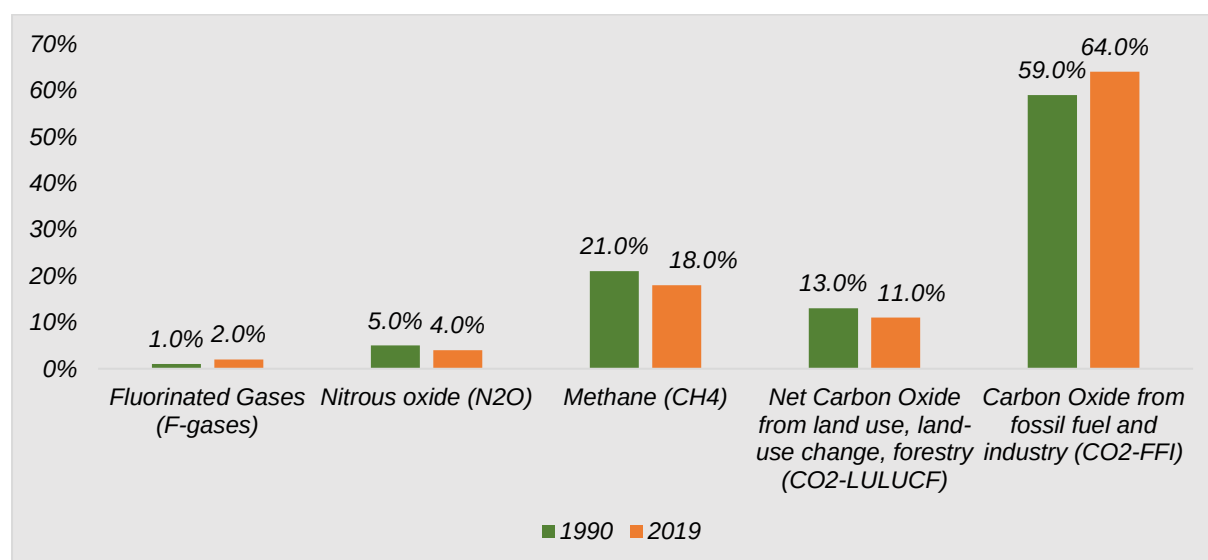
Syed Ibrahim Mohd Jamaluddin, Fuziah Md. Amin, Latifah Mohamed Shah,
Ade Mas Erina Masri, Siti Nur Syafiqah Mohd Zulkiflee

As the world is being confronted with various environmental issues associated with climate change, the term net zero has become one of the most important concepts in global discussions. Net zero refers to achieving a balance between the amount of greenhouse gases emitted into the atmosphere and the amount removed from the atmosphere. In other words, the emissions produced are offset by equivalent emissions removed, captured or offset elsewhere, effectively to reduce the overall impact of human activity and also the climate system.

The government and industrial sectors in all countries are being urged to reduce their greenhouse gas (GHGs) emissions to achieve net zero by 2050 in response to the 26th United Nations Conference on Climate Change (COP26). Based on IPCC Sixth Assessment Report (AR6), carbon dioxide (CO₂) is the most predominant gas which accounted for 76.0 per cent of global emissions majorly contributed by human activities such as burning fossil fuels, land use change and deforestation in 2019.

[Exhibit 1]

Exhibit 1: Global net anthropogenic GHG emissions 1990 and 2019



Source: IPCC 2023, IPCC Sixth Assessment Report Working Group III: Mitigation of Climate Change was released on 4 April 2022

Generally, to achieve net zero carbon emissions, it's required to replace fossil fuels, reducing total energy consumption as well as increasing energy efficiency. In order to achieve the target by 2050, it can be done with carbon reduction and carbon removal. To implement this strategy, several steps can be taken, such as adjustments in industrial activities, agricultural activities and other processes through the use of new energy such as solar energy, as well as improving energy performance. In addition, carbon removal can be carried out either naturally, where forests known as carbon sinks can absorb as much as 7.6 billion metric tonnes of CO₂ per year¹.

For Malaysia, as with many other countries the commitment is shown in many ways, including offering schemes and incentives to encourage renewable energy adoption. Almost 80.0 per cent of GHG emissions are from energy sector². This sector has an important role in supporting the national agenda for improving environmental sustainability. Through the National Energy Policy (NEP), several targets have been sets to achieve zero carbon emissions. This target is translated through the Low Carbon Country Aspiration 2040. The aspiration is formulated based on the existing plan for the energy sector.

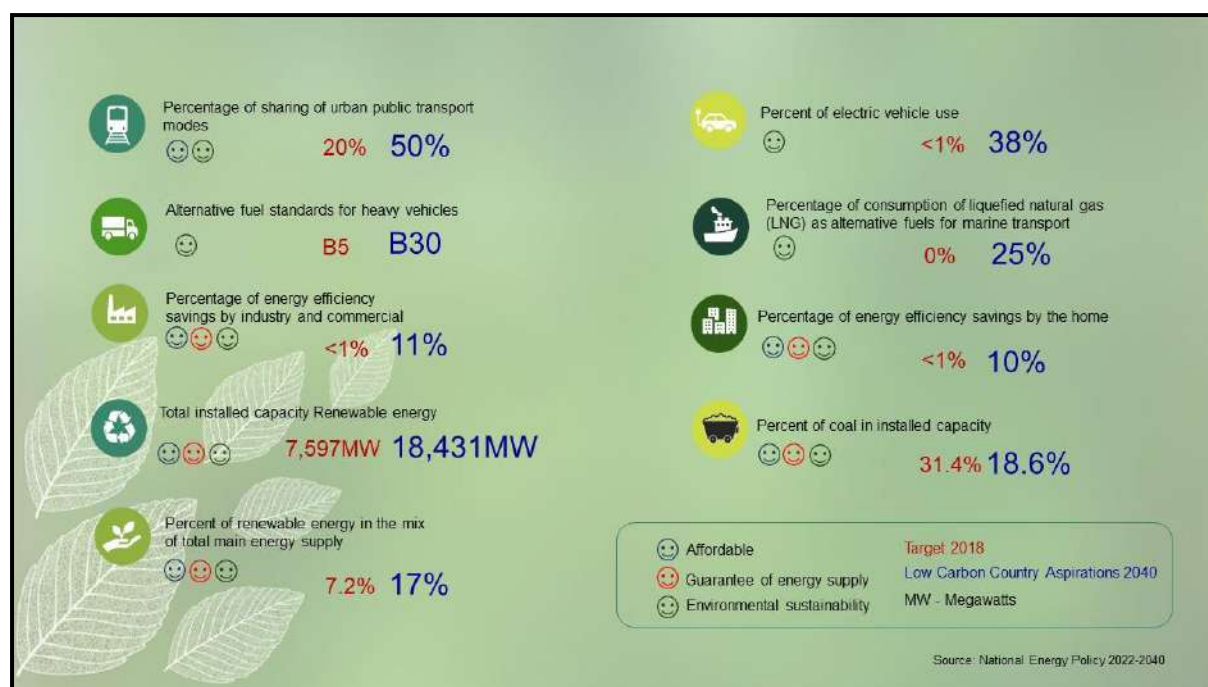
Low Carbon Country Aspirations 2040 emphasises low carbon policies and investments to increase adoption in selected low carbon sectors as follows:

- i. Aim for no more new coal-fired power stations and increase the contribution of Renewable Energy (RE);
- ii. Funding and incentives to encourage energy efficient practices to achieve higher targets; and
- iii. Incentivise the adoption of electric vehicles as well as increase the sharing of urban public transport modes and fuel economy standards.

¹ <https://www.wri.org/insights/forests-absorb-twice-much-carbon-they-emit-each-year>

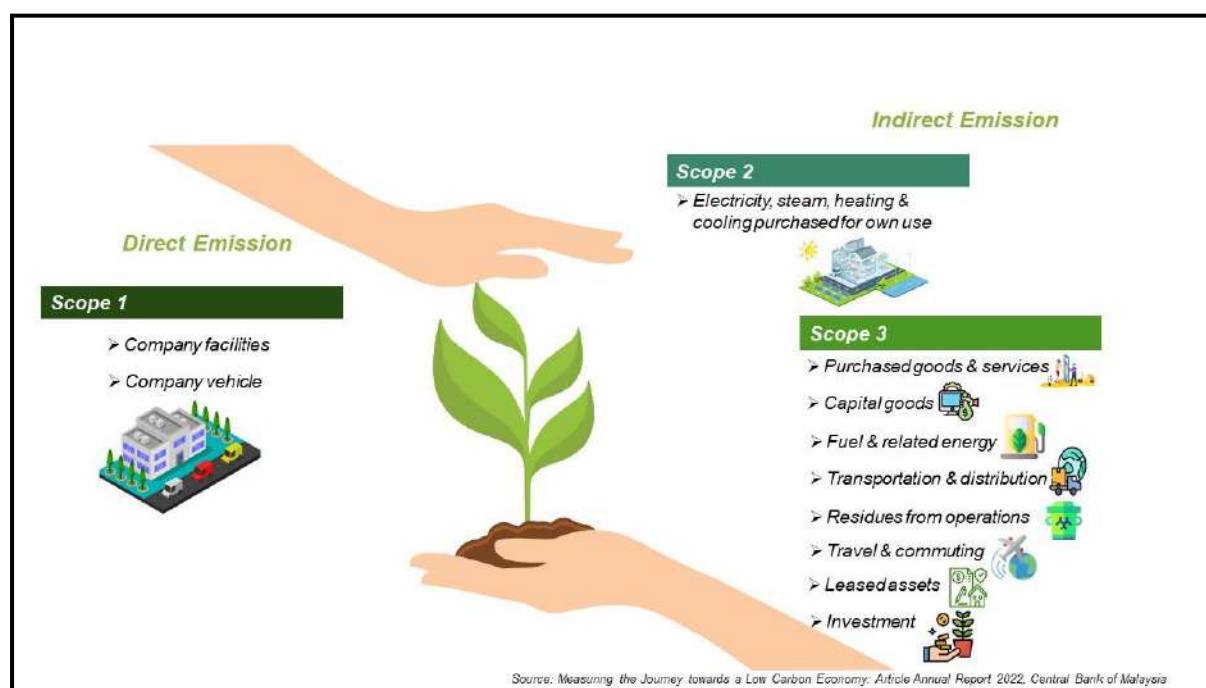
² The National Energy Policy 2022 – 2040

Exhibit 2: Selected Targets of Low Carbon National Aspiration 2040 as Compared to 2018



The Low Carbon Country Aspiration by 2040 aims to obtain greater economic benefits from the energy transition, in line with the NEP's objectives. This is also in line with the target Long-Term Low Emission Development Strategy (LT-LEDS) to achieve net zero GHG as early as 2050. In finalising LT-LEDS, the government strategised to create infrastructure to help transition to a low carbon economy. One such infrastructure is carbon accounting, which provides a framework for measuring the climate impact of GHG emissions. Through this step, targets to limit and reduce carbon emissions can be set. Conceptually, carbon accounting is similar to financial accounting, allowing for consistent and transparent performance comparisons between entities, industries and time periods. The calculation of gases, such as carbon dioxide emitted by industry or businesses from both direct emissions (scope 1) and indirect emissions (scope 2 and 3) as shown in Exhibit 3, enables the monitoring, reporting and verification of GHG emissions. Alternatively, carbon emissions can be assessed based on emission targets. For the time being, measurements of carbon emissions in Malaysia are based on data obtained from various agencies.

Exhibit 3: Carbon Accounting Category



To expedite the efforts of this energy transition, the government has launched the National Energy Transition Roadmap (NETR). NETR also provides the Responsible Transition (RT) Pathway 2050, which serves as a guide in transitioning from a traditional fossil fuel-based economy to a high-value green economy. According to the Total Primary Energy Supply (TPES) model, energy demand is projected to increase marginally at 0.2 percent per year from 95 Mtoe³ in 2023 to 102 Mtoe in 2050. The RT Pathway 2050 also outlines decarbonization by phasing out the use of coal and reducing dependence on fossil fuels from 96.0 per cent in 2023 to 77.0 per cent in 2050. Furthermore, natural gas is not only used as a transition fuel, but is also the main contributor to TPES at 57 Mtoe (56.0%) followed by renewable energy including solar, hydro and bioenergy, which collectively contribute 23.0 per cent of TPES in 2050 compared to only 4.0 per cent in 2023.

NETR has outlined 50 initiatives under six energy transition pillars and five variables, in addition to the 10 key projects and initiatives announced in July 2023. The financing for the energy transition will be carried out through a combination of grants, loans, rebates, incentives, and other investments to support a comprehensive approach nationwide. NETR aims to empower the future by

³ Million tonnes of oil equivalent

unlocking potential in new growth areas and delivering progress and prosperity to households and businesses in Malaysia. The successful implementation of NETR is expected to increase the GDP from RM25 billion in 2023 to RM220 billion and generate 310,000 jobs by the year 2050.

To achieve zero emissions, the cooperation from all parties are required. To this end, the Local Authority has issued an action plan for this purpose. For instance, the Petaling Jaya City Council (PJCC) published the MBPJ Low Carbon City Action Plan 2015-2030, outlining the steps to achieve a 30.0 per cent reduction in emissions by 2030. This target is not only in the short-term, but also represents an ambitious goal for the next 15 years. Furthermore, alongside MBPJ, the Kuala Lumpur City Hall (KLCH) has released the Kuala Lumpur Climate Change 2050 Plan. This document serves as a guide for councils and stakeholders, aiming to ensure that Kuala Lumpur achieves carbon neutrality and climate resilience by 2050.

The government remains committed to leading the zero-carbon emissions initiative. The 2024 budget announced by the government recently has allocated a significant amount under Initiative 7: Sustainable Agenda & Energy Transition. To focus on achieving the Clean Zero Carbon Emissions, the 2024 budget has crafted various initiatives to meet this goal. Furthermore, financial institutions will provide financing to encourage the industry to engage in a low-carbon economy amounting to RM200 billion. Meanwhile the National Energy Transition Easy Fund has allocated RM2 billion and an allocation of RM600 million for the acquisition of 150 electric buses and the construction of three (3) bus depots by Prasarana Malaysia Berhad to serve five (5) LRT3 stations.

Furthermore, through the 2024 budget, the government is taking steps towards green government assets and operations by intensifying the installation of solar panels in W.P. Putrajaya, especially in government premises and introducing the use of electric vehicles for official government vehicles based on the availability of suitable segments. To boost solar panel installation, the government has extended the Clean Energy Metering Scheme (NEM) offer period until December 31st, 2024. Through this scheme, a quota of 500MW was introduced from November 2016 to 2020 with the aim of promoting the use of RE in Malaysia. NEM is a concept where energy generated from solar photovoltaic systems is used on-site first, and any excess is exported to the TNB

grid based on the prevailing supply cost. The government will also develop a rooftop solar buyback program with minimal system cost implications.

The 2024 budget also indicates that the Review Committee of the Petroleum Income Tax Act 1967 (PITA 4WRD) will finalise the study on tax incentives for Carbon Capture Utilization & Storage as well as the hydrogen sulphide gas field by the end of this year. Additionally, a sum of RM5 million has been allocated to the Carbon Forest Project Development Fund.

Carbon emissions are a global issue that requires immediate and sustained action. In order to achieve net zero carbon emissions, limiting carbon emissions is necessary to avoid the adverse effects of climate change and protect the earth for future generations. Through the implementation of strategies such as renewable energy, energy efficiency, forest conservation and accurate policies, it can contribute to efforts to deal with the climate crisis and further support the transition to a low carbon economy.

Disclaimer:

The views expressed in this article are those of the authors and do not represent the views of DOSM

Sources:

- i. <https://www.wri.org/insights/forests-absorb-twice-much-carbon-they-emit-each-year>
- ii. <https://www.mytnb.com.my/renewable-energy/net-energy-metering>
- iii. National Energy Policy 2022 – 2040
- iv. MBPJ Low Carbon City Action Plan 2015-2030
- v. Kuala Lumpur Climate Change 2050 Plan
- vi. Belanjawan 2024 Touchpoints, Ministry of Finance
- vii. Measuring the Journey towards a Low Carbon Economy: Article Annual Report 2022, Central Bank of Malaysia
- viii. National Energy Transition Roadmap



JADUAL STATISTIK

STATISTICAL TABLES

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KOMPONEN **1** COMPONENT

KEADAAN DAN KUALITI
ALAM SEKITAR

ENVIRONMENTAL
CONDITIONS AND QUALITY

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Jadual 1.1: Purata suhu, jumlah hujan dan purata kelembapan relatif, Malaysia, 2018-2022

Table 1.1: Mean temperature, total rainfall and mean relative humidity, Malaysia, 2018-2022

Negeri/ Stesen meteorologi terpilih (ketinggian dari purata paras laut dalam meter) <i>State/ Selected meteorological station (height above mean sea level in metres)</i>	Tahun <i>Year</i>	Purata suhu (°C) <i>Mean temperature</i>		Hujan <i>Rainfall</i>		Purata kelembapan relatif <i>Mean relative humidity (%)</i>
		Min.	Maks. <i>Max.</i>	Jumlah <i>Total</i> (mm)	Bil. hari <i>No. of days</i>	
Johor						
Batu Pahat (6.3 m)	2018	24.0	31.9	2,253.2	186	84.0
	2019	24.1	32.5	1,980.1	144	80.2
	2020	24.4	32.4	2,089.6	197	82.3
	2021	24.2	32.1	2,668.4	193	82.5
	2022	24.2	32.0	2,864.2	227	83.1
Kluang (88.1 m)	2018	23.9	31.9	2,090.5	178	82.1
	2019	23.9	32.3	2,130.2	167	79.9
	2020	24.1	31.9	2,574.8	196	82.8
	2021	23.8	31.7	2,682.1	185	82.6
	2022	23.8	31.7	2,663.7	197	83.4
Mersing (43.6 m)	2018	23.7	31.6	2,688.2	176	84.4
	2019	24.1	32.5	2,254.8	160	Def.
	2020	24.2	31.6	2,392.8	177	78.3
	2021	23.9	31.4	2,317.7	172	84.2
	2022	24.1	31.5	2,817.8	200	83.9
Senai (37.8 m)	2018	23.7	32.1	2,034.2	192	86.8
	2019	24.0	32.7	2,333.0	161	84.9
	2020	24.2	32.4	2,778.0	208	84.0
	2021	23.9	32.1	2,872.6	202	83.7
	2022	23.9	32.2	2,489.4	205	83.6
Kedah						
Alor Setar (3.9 m)	2018	24.4	32.9	2,080.8	176	83.4
	2019	24.5	33.3	2,181.6	160	82.4
	2020	24.3	33.0	2,408.4	195	83.6
	2021	24.0	32.5	2,272.0	168	82.2
	2022	24.1	32.2	2,193.6	202	83.0
Pulau Langkawi (6.4 m)	2018	25.3	32.0	2,323.6	168	77.4
	2019	25.8	32.5	2,412.3	155	78.7
	2020	25.7	32.5	2,731.6	189	80.9
	2021	25.4	32.0	2,819.6	178	85.4
	2022	25.5	31.8	2,940.0	213	78.4
Kelantan						
Gong Kedak (6.0 m)	2018	-	-	-	-	-
	2019	24.2	32.0	1,157.4	164	80.4
	2020	24.2	31.5	3,808.0	175	82.4
	2021	23.9	31.3	3,065.8	203	82.3
	2022	23.9	31.3	4,508.6	213	84.6

Jadual 1.1: Purata suhu, jumlah hujan dan purata kelembapan relatif, Malaysia, 2018-2022 (samb.)

Table 1.1: Mean temperature, total rainfall and mean relative humidity, Malaysia, 2018-2022 (cont'd)

Negeri/ Stesen meteorologi terpilih (ketinggian dari purata paras laut dalam meter) <i>State/ Selected meteorological station (height above mean sea level in metres)</i>	Tahun <i>Year</i>	Purata suhu (°C) <i>Mean temperature</i>		Hujan <i>Rainfall</i>		Purata kelembapan relatif <i>Mean relative humidity (%)</i>
		Min.	Maks. <i>Max.</i>	Jumlah <i>Total</i> (mm)	Bil. hari <i>No. of days</i>	
Kelantan						
Kota Bharu (4.4 m)	2018	24.4	31.2	2,887.0	157	82.1
	2019	24.5	31.9	1,803.2	149	79.7
	2020	24.6	31.6	2,984.8	165	81.1
	2021	24.3	31.2	2,527.6	168	81.7
	2022	24.1	31.0	4,045.7	202	83.5
Kuala Krai (34.9 m)	2018	23.4	33.0	2,297.2	171	85.7
	2019	23.2	33.0	2,313.6	180	Def.
	2020	23.5	32.9	2,776.4	190	83.4
	2021	23.1	32.4	Def.	Def.	85.4
	2022	23.4	32.3	3,220.0	203	86.2
Melaka						
Melaka (8.5 m)	2018	24.2	31.8	2,249.4	186	80.7
	2019	24.5	32.5	1,616.8	129	76.6
	2020	24.0	32.3	1,712.2	160	79.3
	2021	24.1	31.7	2,506.0	175	80.5
	2022	24.2	31.6	2,643.8	206	80.8
Negeri Sembilan						
Kuala Pilah (144.0 m)	2018	-	-	-	-	-
	2019	23.1	32.2	607.0	137	80.9
	2020	23.9	31.9	1,871.0	177	81.3
	2021	23.2	32.0	1,819.2	163	83.4
	2022	23.2	31.9	2,227.4	203	84.7
Pahang						
Batu Embun, Jerantut (59.5 m)	2018	23.3	33.0	2,546.3	190	83.6
	2019	23.4	33.5	1,401.0	163	84.7
	2020	23.6	33.0	1,997.0	188	84.6
	2021	23.6	32.6	2,669.4	173	83.7
	2022	23.7	32.7	2,143.5	189	84.4
Cameron Highlands ¹ (1,545.0 m)	2018	15.9	22.6	2,613.5	255	89.3
	2019	15.7	22.6	2,032.7	224	87.4
	2020	15.9	22.7	2,875.0	257	89.4
	2021	15.7	22.3	3,263.6	243	88.7
	2022	15.8	22.4	3,151.8	263	88.1
Kuantan (15.2 m)	2018	23.8	32.1	2,743.9	173	85.7
	2019	23.8	32.5	1,970.4	155	82.4
	2020	24.1	32.3	2,409.2	180	75.5
	2021	23.9	31.9	Def.	Def.	81.9
	2022	23.8	31.9	4,134.0	218	82.8

Nota: ¹Stesen tanah tinggi

Notes: Highland station

Def. Nilai defektif
Defective value

Jadual 1.1: Purata suhu, jumlah hujan dan purata kelembapan relatif, Malaysia, 2018-2022 (samb.)

Table 1.1: Mean temperature, total rainfall and mean relative humidity, Malaysia, 2018-2022 (cont'd)

Negeri/ Stesen meteorologi terpilih (ketinggian dari purata paras laut dalam meter) <i>State/ Selected meteorological station (height above mean sea level in metres)</i>	Tahun <i>Year</i>	Purata suhu (°C) <i>Mean temperature</i>		Hujan <i>Rainfall</i>		Purata kelembapan relatif <i>Mean relative humidity (%)</i>
		Min.	Maks. <i>Max.</i>	Jumlah <i>Total</i> (mm)	Bil. hari <i>No. of days</i>	
Pahang						
Muadzam Shah (33.3 m)	2018	23.5	32.6	2,327.5	152	83.9
	2019	23.5	33.0	1,843.8	156	80.7
	2020	23.7	32.4	1,995.0	171	80.5
	2021	23.4	32.2	2,466.6	175	80.2
	2022	23.6	32.2	2,778.2	169	82.1
Temerloh (39.1 m)	2018	23.6	33.4	1,801.6	171	82.3
	2019	23.8	33.9	1,440.2	139	81.8
	2020	24.0	33.4	2,034.4	172	82.6
	2021	23.7	33.2	2,167.9	170	83.2
	2022	23.7	32.9	1,960.6	194	83.2
Perak						
Ipoh (40.1 m)	2018	23.8	32.7	3,132.5	225	80.3
	2019	24.3	33.4	2,806.4	197	78.3
	2020	24.3	33.0	3,269.4	210	79.9
	2021	23.9	32.8	2,965.4	213	79.2
	2022	24.1	33.1	3,345.5	220	77.3
Lubok Merbau, Kuala Kangsar (77.5 m)	2018	23.6	33.1	2,176.0	204	82.7
	2019	23.9	33.6	1,525.1	177	80.7
	2020	24.0	33.3	2,053.1	213	82.1
	2021	23.3	32.8	1,988.2	174	81.8
	2022	23.4	32.5	1,945.6	207	82.5
Sitiawan (6.8 m)	2018	24.3	32.4	1,937.5	180	82.4
	2019	24.4	33.1	1,920.0	161	81.6
	2020	24.5	32.6	2,115.0	186	83.9
	2021	24.1	32.7	2,057.0	167	81.6
	2022	24.2	32.7	1,943.0	181	81.1
Perlis						
Chuping (21.7 m)	2018	24.5	33.4	1,839.6	171	79.2
	2019	24.2	33.4	1,553.8	151	81.4
	2020	24.3	33.2	2,195.0	172	82.8
	2021	24.1	32.8	2,081.0	168	83.6
	2022	24.3	32.7	2,148.0	189	84.0
Pulau Pinang						
Bayan Lepas (2.5 m)	2018	25.1	32.2	2,478.0	189	77.6
	2019	25.5	32.7	1,740.2	153	76.2
	2020	25.4	32.2	1,831.2	167	77.8
	2021	25.1	32.0	2,232.8	168	77.7
	2022	25.5	32.2	2,140.8	208	76.1

Jadual 1.1: Purata suhu, jumlah hujan dan purata kelembapan relatif, Malaysia, 2018-2022 (samb.)

Table 1.1: Mean temperature, total rainfall and mean relative humidity, Malaysia, 2018-2022 (cont'd)

Negeri/ Stesen meteorologi terpilih (ketinggian dari purata paras laut dalam meter) <i>State/ Selected meteorological station (height above mean sea level in metres)</i>	Tahun <i>Year</i>	Purata suhu (°C) <i>Mean temperature</i>		Hujan <i>Rainfall</i>		Purata kelembapan relatif <i>Mean relative humidity (%)</i>
		Min.	Maks. <i>Max.</i>	Jumlah <i>Total (mm)</i>	Bil. hari <i>No. of days</i>	
Pulau Pinang						
Butterworth (3.3 m)	2018	24.6	31.9	2,271.4	190	79.7
	2019	24.7	32.4	2,158.9	158	78.6
	2020	24.8	32.1	2,160.8	187	79.2
	2021	24.5	31.8	1,982.2	177	78.2
	2022	24.4	31.5	2,034.8	199	82.9
Sabah						
Keningau (319.0 m)	2018	-	-	-	-	-
	2019	22.2	32.6	612.0	167	80.2
	2020	22.6	32.0	1,691.8	189	81.7
	2021	22.1	31.6	1,589.2	192	82.3
	2022	22.3	31.3	2,433.1	234	83.3
Kota Kinabalu (2.1 m)	2018	24.4	32.9	2,326.8	189	78.8
	2019	24.5	32.8	2,535.2	152	78.7
	2020	24.3	32.2	3,456.6	208	82.4
	2021	24.1	31.8	3,584.8	201	82.7
	2022	23.9	31.8	3,566.6	208	83.0
Kudat (3.5 m)	2018	24.6	31.2	2,328.3	170	82.7
	2019	24.4	31.2	1,977.5	141	81.2
	2020	24.6	31.0	2,238.4	165	82.9
	2021	24.3	30.7	2,802.8	201	84.5
	2022	24.4	30.6	2,383.4	185	84.7
Ranau (501.0 m)	2018	-	-	-	-	-
	2019	20.6	30.3	870.6	203	80.3
	2020	20.9	30.1	2,521.4	227	82.3
	2021	20.7	30.0	2,926.0	242	82.7
	2022	21.0	30.0	3,116.0	239	83.1
Sandakan (12.1 m)	2018	24.7	31.8	3,114.4	203	82.8
	2019	24.5	31.7	2,912.7	163	80.9
	2020	24.9	31.4	2,380.3	168	82.3
	2021	24.6	31.2	3,394.0	212	83.7
	2022	24.5	31.2	3,419.6	217	84.0
Tawau (17.5 m)	2018	23.7	31.8	2,279.4	189	84.4
	2019	23.7	32.1	1,590.4	148	82.0
	2020	23.8	31.8	1,947.8	185	85.0
	2021	23.6	31.5	1,974.4	192	86.0
	2022	23.6	31.4	2,303.0	189	84.9

Jadual 1.1: Purata suhu, jumlah hujan dan purata kelembapan relatif, Malaysia, 2018-2022 (samb.)

Table 1.1: Mean temperature, total rainfall and mean relative humidity, Malaysia, 2018-2022 (cont'd)

Negeri/ Stesen meteorologi terpilih (ketinggian dari purata paras laut dalam meter) <i>State/ Selected meteorological station (height above mean sea level in metres)</i>	Tahun <i>Year</i>	Purata suhu (°C) <i>Mean temperature</i>		Hujan <i>Rainfall</i>		Purata kelembapan relatif <i>Mean relative humidity (%)</i>
		Min.	Maks. <i>Max.</i>	Jumlah <i>Total</i> (mm)	Bil. hari <i>No. of days</i>	
Sarawak						
Bintulu (24.3 m)	2018	23.8	31.7	4,581.8	235	88.1
	2019	24.0	32.0	3,316.6	197	86.0
	2020	24.2	31.8	4,248.0	242	87.4
	2021	23.8	31.9	4,021.2	227	85.6
	2022	23.7	31.7	4,323.4	219	Def.
Kapit (35.0 m)	2018	-	-	-	-	-
	2019	24.2	33.4	1,104.0	220	86.1
	2020	24.3	32.9	4,751.6	292	86.6
	2021	23.9	32.8	4,346.2	252	86.0
	2022	23.7	32.5	3,923.1	270	85.8
Kuching (20.9 m)	2018	23.8	32.3	3,864.6	249	83.8
	2019	24.1	32.5	3,307.5	235	84.0
	2020	24.0	32.0	4,079.6	258	86.8
	2021	23.6	32.0	4,436.6	236	85.2
	2022	23.6	31.8	3,958.4	250	86.3
Limbang (3.6 m)	2018	-	-	-	-	-
	2019	23.7	33.3	1,121.0	188	84.0
	2020	23.8	32.9	3,328.0	226	84.0
	2021	23.6	32.5	4,118.6	230	85.3
	2022	23.7	32.4	4,015.9	243	84.1
Miri (17.0 m)	2018	23.9	31.4	3,382.6	194	83.9
	2019	24.0	31.7	2,288.6	160	84.4
	2020	24.3	31.6	3,344.2	209	86.1
	2021	24.0	31.3	2,877.6	211	85.4
	2022	23.8	31.1	3,327.4	220	85.4
Sibu (30.9 m)	2018	23.5	32.4	3,648.8	229	84.5
	2019	23.7	32.6	3,012.8	213	85.2
	2020	23.8	32.3	3,275.4	258	85.5
	2021	23.6	32.4	3,251.4	235	84.5
	2022	23.3	31.8	4,202.4	249	85.5
Mulu (26.2 m)	2018	-	-	-	-	-
	2019	23.3	33.5	1,556.2	241	85.1
	2020	23.5	32.9	5,320.8	263	87.7
	2021	23.1	32.9	5,365.8	264	86.0
	2022	23.0	32.4	6,172.8	289	88.3
Sri Aman (9.6 m)	2018	23.2	32.7	4,114.8	219	86.0
	2019	23.4	33.2	2,812.2	195	85.2
	2020	23.6	32.4	3,343.2	242	87.7
	2021	23.2	32.3	3,518.0	222	86.8
	2022	23.3	32.5	3,604.7	232	86.6

Jadual 1.1: Purata suhu, jumlah hujan dan purata kelembapan relatif, Malaysia, 2018-2022 (samb.)

Table 1.1: Mean temperature, total rainfall and mean relative humidity, Malaysia, 2018-2022 (cont'd)

Negeri/ Stesen meteorologi terpilih (ketinggian dari purata paras laut dalam meter) <i>State/ Selected meteorological station (height above mean sea level in metres)</i>	Tahun <i>Year</i>	Purata suhu (°C) <i>Mean temperature</i>		Hujan <i>Rainfall</i>		Purata kelembapan relatif <i>Mean relative humidity (%)</i>
		Min.	Maks. <i>Max.</i>	Jumlah <i>Total</i> (mm)	Bil. hari <i>No. of days</i>	
Selangor						
KLIA Sepang (16.1 m)	2018	24.6	32.4	2,564.6	199	78.6
	2019	24.8	32.9	1,875.7	154	77.2
	2020	24.8	32.5	2,364.6	179	79.2
	2021	24.2	32.3	2,059.4	165	78.2
	2022	24.3	32.2	2,427.0	194	80.7
Petaling Jaya (58.6 m)	2018	25.2	33.0	3,851.5	223	72.7
	2019	25.5	33.5	3,673.2	214	71.8
	2020	25.5	33.3	3,817.0	212	72.5
	2021	25.3	33.1	Def.	Def.	72.9
	2022	Def.	Def.	Def.	Def.	Def.
Subang (16.6 m)	2018	24.5	32.8	3,535.4	221	77.4
	2019	24.9	33.6	3,138.6	200	79.1
	2020	25.1	33.5	3,236.0	206	78.5
	2021	24.6	33.1	3,564.8	188	75.2
	2022	24.7	32.9	2,810.3	223	77.2
Terengganu						
Kerteh (3.7 m)	2018	-	-	-	-	-
	2019	23.9	31.4	1,148.0	75	85.5
	2020	24.1	31.3	3,531.0	184	85.8
	2021	23.8	31.0	2,751.6	197	85.3
	2022	23.9	31.1	4,501.0	215	85.4
Kuala Terengganu (5.2 m)	2018	24.6	31.5	2,646.0	171	82.0
	2019	24.8	31.9	2,059.0	148	81.1
	2020	24.9	31.5	2,946.6	171	82.4
	2021	24.5	31.3	2,285.2	172	82.2
	2022	24.6	31.1	Def.	195	84.8
W.P. Labuan						
Labuan (27.9 m)	2018	24.7	31.1	3,033.2	207	84.8
	2019	25.2	31.7	3,433.6	180	79.7
	2020	25.0	31.4	4,301.3	203	83.1
	2021	24.4	30.9	4,127.5	225	83.3
	2022	24.6	31.0	4,107.4	220	84.0

Nota:

Notes

Def. **Nilai defektif**
Defective value

Sumber: Jabatan Meteorologi Malaysia

Source: Malaysia Meteorological Department

Jadual 1.2: Purata tekanan aras laut, kelajuan angin permukaan, sinaran global, penyejatan dan bilangan hari kilat, Malaysia, 2019-2022

Table 1.2: Mean sea level pressure, surface wind speed, global radiation, evaporation and number of days with lightning, Malaysia, 2019-2022

Negeri/ Stesen meteorologi terpilih (ketinggian dari purata paras laut dalam meter) State/ Selected meteorological station (height above mean sea level in metres)	Tahun Year	Purata tekanan aras laut Mean sea level pressure (hPa)	Purata kelajuan angin permukaan Mean surface wind speed (m/s)	Purata sinaran global Mean global radiation (MJ/m ²)	Purata penyejatan Mean evaporation (mm)	Bil. hari kilat No. of days with lightning
Johor						
Batu Pahat (6.3 m)	2019	1,010.3	1.1	n.a.	4.11	n.a.
	2020	1,009.8	1.0	n.a.	3.80	n.a.
	2021	1,009.8	0.9	n.a.	3.80	n.a.
	2022	1,009.3	0.7	n.a.	3.60	134*
Kluang (88.1 m)	2019	1,010.7	2.0	n.a.	3.81	n.a.
	2020	1,010.3	1.8	n.a.	3.70	n.a.
	2021	1,010.2	1.7	16.90	3.40	n.a.
	2022	1,009.7	1.3	16.27	3.04	166*
Mersing (43.6 m)	2019	1,010.5	2.9	n.a.	2.97	n.a.
	2020	1,009.8	2.9	n.a.	3.70	n.a.
	2021	1,009.7	2.9	n.a.	3.40	n.a.
	2022	1,009.2	2.6	n.a.	3.13	25*
Senai (37.8 m)	2019	1,010.0	1.7	16.83	3.52	173
	2020	1,009.5	1.6	16.33	3.30	186
	2021	1,009.4	1.5	16.00	3.50	187
	2022	1,008.9	1.4	16.11	3.85	149
Kedah						
Alor Setar (3.9 m)	2019	1,010.1	1.8	19.13	4.25	196
	2020	1,009.6	1.7	18.96	3.90	198
	2021	1,009.6	1.7	18.30	3.70	153
	2022	1,009.1	1.6	18.07	3.38	208
Pulau Langkawi (6.4 m)	2019	1,010.2	1.9	18.52	4.25	238
	2020	1,009.7	1.9	18.69	4.70	255
	2021	1,009.8	1.8	17.10	4.30	240
	2022	1,009.3	1.7	18.15	3.99	206
Kelantan						
Gong Kedak (6.0 m)	2019	1,010.1	1.3	n.a.	n.a.	195
	2020	1,009.6	1.5	n.a.	n.a.	190
	2021	1,009.6	1.4	n.a.	n.a.	217
	2022	1,009.0	1.4	n.a.	n.a.	243
Kota Bharu (4.4 m)	2019	1,010.4	2.4	19.71	4.23	200
	2020	1,010.0	2.4	18.76	4.20	201
	2021	1,010.0	2.2	18.90	4.00	201
	2022	1,009.4	2.0	18.41	4.35	249
Kuala Krai (34.9 m)	2019	1,010.3	1.0	17.48	4.25	n.a.
	2020	1,009.9	0.9	17.06	4.20	n.a.
	2021	1,009.9	0.9	17.20	3.70	114
	2022	1,009.3	0.8	16.70	3.42	137

Nota: *April - Disember 2022, tiada bacaan direkodkan sepanjang Januari - Mac 2022

Notes: April - December 2022, no readings were recorded between January - March 2022

Jadual 1.2: Purata tekanan aras laut, kelajuan angin permukaan, sinaran global, penyejatan dan bilangan hari kilat, Malaysia, 2019-2022 (samb.)

Table 1.2: Mean sea level pressure, surface wind speed, global radiation, evaporation and number of days with lightning, Malaysia, 2019-2022 (cont'd)

Negeri/ Stesen meteorologi terpilih (ketinggian dari purata paras laut dalam meter) State/ Selected meteorological station (height above mean sea level in metres)	Tahun Year	Purata tekanan aras laut Sea level pressure (hPa)	Purata kelajuan angin permukaan Mean surface wind speed (m/s)	Purata sinaran global Mean global radiation (MJ/m ²)	Purata penyejatan Mean evaporation (mm)	Bil. hari kilat No. of days with lightning
Melaka						
Melaka (8.5 m)	2019	1,010.7	1.9	18.32	4.87	232
	2020	1,007.6	1.7	18.12	4.90	246
	2021	1,010.3	1.6	18.00	4.00	231
	2022	1,009.8	1.7	17.14	4.11	273
Negeri Sembilan						
Kuala Pilah (144.0 m)	2019	1,005.7	1.5	17.60	3.75	74
	2020	1,007.7	1.5	17.93	3.60	168
	2021	1,005.0	1.4	18.20	Def.	183
	2022	1,004.5	1.2	17.52	3.43	195
Pahang						
Batu Embun, Jerantut (59.5 m)	2019	1,010.4	0.7	n.a.	3.53	n.a.
	2020	1,009.8	0.7	n.a.	3.30	n.a.
	2021	1,009.7	0.7	n.a.	3.10	n.a.
	2022	1,009.2	0.7	n.a.	2.95	111*
Cameron Highlands ¹ (1,545.0 m)	2019	n.a.	2.1	15.59	2.04	n.a.
	2020	n.a.	1.9	16.81	2.40	n.a.
	2021	n.a.	1.9	16.60	1.70	187
	2022	n.a.	1.8	15.02	1.45	207
Kuantan (15.2 m)	2019	1,010.4	1.5	17.55	3.97	218
	2020	1,009.8	1.5	17.57	3.80	215
	2021	1,009.8	1.4	17.20	Def.	241
	2022	1,009.2	1.2	16.64	3.77	244
Muadzam Shah (33.3 m)	2019	1,010.3	0.9	17.21	3.50	n.a.
	2020	1,009.8	0.9	16.93	3.20	n.a.
	2021	1,009.8	0.8	17.10	3.40	n.a.
	2022	1,009.3	0.8	16.59	3.00	127*
Temerloh (39.1 m)	2019	1,010.3	0.9	18.24	3.99	n.a.
	2020	1,009.7	0.9	17.97	3.50	n.a.
	2021	1,009.7	0.8	17.70	3.50	n.a.
	2022	1,009.2	0.8	17.35	3.21	122*
Perak						
Ipoh (40.1 m)	2019	1,010.2	1.8	18.40	4.53	204
	2020	1,009.6	1.7	18.45	4.20	151
	2021	1,009.6	1.7	18.20	4.20	145
	2022	1,009.1	1.7	17.90	4.86	155

Nota: ¹Stesen tanah tinggi

Notes: Highland station

Def. **Nilai defektif**
Defective value

***April - Disember 2022, tiada bacaan direkodkan sepanjang Januari - Mac 2022**

April - December 2022, no readings were recorded between January - March 2022

Jadual 1.2: Purata tekanan aras laut, kelajuan angin permukaan, sinaran global, penyejatan dan bilangan hari kilat, Malaysia, 2019-2022 (samb.)

Table 1.2: Mean sea level pressure, surface wind speed, global radiation, evaporation and number of days with lightning, Malaysia, 2019-2022 (cont'd)

Negeri/ Stesen meteorologi terpilih (ketinggian dari purata paras laut dalam meter) State/ Selected meteorological station (height above mean sea level in metres)	Tahun Year	Purata tekanan aras laut Sea level pressure (hPa)	Purata kelajuan angin permukaan Mean surface wind speed (m/s)	Purata sinaran global Mean global radiation (MJ/m ²)	Purata penyejatan Mean evaporation (mm)	Bil. hari kilat No. of days with lightning
Perak						
Lubok Merbau, Kuala Kangsar (77.5 m)	2019	1,010.2	1.3	18.75	4.19	n.a.
	2020	1,009.6	1.3	17.63	4.20	n.a.
	2021	1,009.7	1.2	18.80	3.70	150
	2022	1,009.2	1.1	18.19	3.79	189
Sitiawan (6.8 m)	2019	1,010.0	1.3	17.40	4.40	205
	2020	1,009.5	1.2	17.52	3.80	207
	2021	1,009.5	1.2	17.00	3.60	209
	2022	1,009.0	1.2	16.95	3.53	214
Perlis						
Chuping (21.7 m)	2019	1,010.2	1.1	18.44	4.96	143
	2020	1,009.8	1.2	18.17	4.90	149
	2021	1,009.8	1.2	18.10	4.60	126
	2022	1,009.3	1.0	16.99	3.97	150
Pulau Pinang						
Bayan Lepas (2.5 m)	2019	1,010.0	2.1	19.16	4.14	241
	2020	1,009.5	2.1	18.81	3.50	234
	2021	1,009.5	2.0	18.50	3.10	233
	2022	1,009.1	1.7	17.79	3.20	267
Butterworth (3.3 m)	2019	1,009.9	2.3	n.a.	n.a.	220
	2020	1,009.4	2.2	n.a.	n.a.	211
	2021	1,009.4	2.1	n.a.	n.a.	171
	2022	1,008.9	2.1	n.a.	n.a.	213
Sabah						
Keningau (319.0 m)	2019	1,011.5	1.1	20.35	n.a.	n.a.
	2020	1,010.7	1.0	19.63	n.a.	n.a.
	2021	1,010.6	0.9	19.70	n.a.	n.a.
	2022	1,010.2	0.9	19.14	n.a.	n.a.
Kota Kinabalu (2.1 m)	2019	1,009.8	2.4	20.33	5.05	181
	2020	1,009.5	2.2	20.06	4.80	189
	2021	1,009.4	2.1	19.10	4.50	184
	2022	1,009.2	2.0	18.89	4.26	212
Kudat (3.5 m)	2019	1,010.2	2.4	n.a.	4.84	56
	2020	1,009.8	2.4	n.a.	4.70	66
	2021	1,009.5	2.3	n.a.	4.30	57
	2022	1,009.1	2.0	n.a.	4.17	90
Ranau (501.0 m)	2019	1,012.2	1.2	19.12	n.a.	n.a.
	2020	1,011.1	1.2	17.82	n.a.	n.a.
	2021	1,011.0	1.2	18.80	n.a.	92
	2022	1,010.6	1.1	18.99	n.a.	89

Jadual 1.2: Purata tekanan aras laut, kelajuan angin permukaan, sinaran global, penyejatan dan bilangan hari kilat, Malaysia, 2019-2022 (samb.)

Table 1.2: Mean sea level pressure, surface wind speed, global radiation, evaporation and number of days with lightning, Malaysia, 2019-2022 (cont'd)

Negeri/ Stesen meteorologi terpilih (ketinggian dari purata paras laut dalam meter) State/ Selected meteorological station (height above mean sea level in metres)	Tahun Year	Purata tekanan aras laut Sea level pressure (hPa)	Purata kelajuan angin permukaan Mean surface wind speed (m/s)	Purata sinaran global Mean global radiation (MJ/m ²)	Purata penyejatan Mean evaporation (mm)	Bil. hari kilat No. of days with lightning
Sabah						
Sandakan (12.1 m)	2019	1,010.1	2.3	20.15	5.25	170
	2020	1,009.7	2.1	19.63	4.90	149
	2021	1,009.3	2.1	18.60	4.80	163
	2022	1,008.9	2.0	18.63	4.38	176
Tawau (17.5 m)	2019	1,010.0	1.9	18.89	4.56	137
	2020	1,009.6	1.6	17.91	4.10	120
	2021	1,009.3	1.4	17.30	4.00	184
	2022	1,009.1	1.3	17.09	3.72	178
Sarawak						
Bintulu (24.3 m)	2019	1,010.0	1.8	n.a.	3.85	213
	2020	1,009.6	1.8	n.a.	3.80	206
	2021	1,009.5	1.7	n.a.	3.80	187
	2022	1,009.2	1.7	n.a.	3.79	201
Kapit (35.0 m)	2019	1,010.3	0.8	18.43	n.a.	n.a.
	2020	1,010.0	0.8	19.21	n.a.	n.a.
	2021	1,009.9	0.8	19.00	n.a.	n.a.
	2022	1,009.5	0.8	18.51	n.a.	n.a.
Kuching (20.9 m)	2019	1,010.3	1.7	15.31	3.50	262
	2020	1,009.8	1.7	14.92	2.80	252
	2021	1,009.8	1.6	15.70	3.20	197
	2022	Def.	1.6	14.99	3.20	193
Limbang (3.6 m)	2019	1,009.8	1.4	n.a.	n.a.	160
	2020	1,009.4	1.3	n.a.	n.a.	154
	2021	1,009.4	1.3	n.a.	n.a.	162
	2022	1,009.0	1.3	n.a.	n.a.	159
Miri (17.0 m)	2019	1,010.1	2.1	18.13	3.98	134
	2020	1,009.3	2.2	17.79	4.00	149
	2021	1,009.3	2.1	19.30	3.80	115
	2022	1,009.0	2.1	Def.	3.93	149
Sibu (30.9 m)	2019	1,010.1	1.4	16.99	3.61	136
	2020	1,009.7	1.5	16.99	3.70	157
	2021	1,009.5	1.5	17.90	3.90	126
	2022	1,009.0	1.5	17.43	3.79	148
Mulu (26.2 m)	2019	1,010.2	0.9	n.a.	n.a.	n.a.
	2020	1,009.7	0.9	n.a.	n.a.	n.a.
	2021	1,009.7	0.8	n.a.	n.a.	n.a.
	2022	1,009.3	Def.	n.a.	n.a.	n.a.

Nota: Def. Nilai defektif
Notes: Defective value

Jadual 1.2: Purata tekanan aras laut, kelajuan angin permukaan, sinaran global, penyejatan dan bilangan hari kilat, Malaysia, 2019-2022 (samb.)

Table 1.2: Mean sea level pressure, surface wind speed, global radiation, evaporation and number of days with lightning, Malaysia, 2019-2022 (cont'd)

Negeri/ Stesen meteorologi terpilih (ketinggian dari purata paras laut dalam meter) State/ Selected meteorological station (height above mean sea level in metres)	Tahun Year	Purata tekanan aras laut Sea level pressure (hPa)	Purata kelajuan angin permukaan Mean surface wind speed (m/s)	Purata sinaran global Mean global radiation (MJ/m ³)	Purata penyejatan Mean evaporation (mm)	Bil. hari kilat No. of days with lightning
Sawarak						
Sri Aman (9.6 m)	2019	1,010.2	0.9	n.a.	3.14	n.a.
	2020	1,009.6	0.8	n.a.	3.10	n.a.
	2021	1,009.6	0.8	n.a.	3.20	n.a.
	2022	1,009.0	0.7	n.a.	3.12	n.a.
Selangor						
KLIA Sepang (16.1 m)	2019	1,010.1	2.0	18.43	5.07	318
	2020	1,009.5	1.7	18.32	4.50	341
	2021	1,009.5	1.6	18.50	4.50	335
	2022	1,009.0	1.4	17.31	4.20	340
Petaling Jaya (58.6 m)	2019	1,008.6	1.2	n.a.	n.a.	n.a.
	2020	1,008.0	1.1	n.a.	n.a.	n.a.
	2021	1,008.2	1.1	n.a.	n.a.	n.a.
	2022	Def.	Def.	n.a.	n.a.	n.a.
Subang (16.6 m)	2019	1,010.4	1.6	16.32	4.68	n.a.
	2020	1,009.9	1.6	17.06	4.50	288
	2021	1,009.9	1.6	17.10	4.20	302
	2022	1,009.5	1.6	16.66	4.23	307
Terengganu						
Kerteh (3.7 m)	2019	1,010.2	1.8	n.a.	n.a.	n.a.
	2020	1,009.7	1.7	n.a.	n.a.	n.a.
	2021	1,009.6	1.5	n.a.	n.a.	n.a.
	2022	1,009.1	1.2	n.a.	n.a.	n.a.
Kuala Terengganu (5.2 m)	2019	1,010.4	2.1	19.10	4.88	172
	2020	1,009.9	2.0	18.59	4.30	141
	2021	1,009.8	2.1	18.60	4.10	184
	2022	1,008.9	1.9	17.82	3.66	222
W.P. Labuan						
Labuan (27.9 m)	2019	1,010.1	1.6	19.56	4.64	193
	2020	1,009.4	1.6	19.65	4.70	199
	2021	1,009.5	1.4	19.20	4.70	239
	2022	1,009.2	1.4	19.04	4.40	227

Nota: Def. Nilai defektif
Notes: Defective value

Sumber: Jabatan Meteorologi Malaysia
Source: Malaysia Meteorological Department

Jadual 1.3: Purata bulanan tekanan aras laut, Malaysia, 2022

Table 1.3: Monthly mean sea level pressure, Malaysia, 2022

	hPa											
Negeri/ Stesen State/ Station	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Johor												
Batu Pahat	1,010.7	1,009.5	1,008.8	1,008.9	1,008.5	1,009.1	1,008.4	1,009.1	1,010.1	1,009.8	1,009.4	1,009.2
Kluang	1,001.1	1,010.0	1,009.3	1,009.4	1,008.9	1,009.5	1,008.7	1,009.5	1,010.5	1,010.3	1,009.8	1,009.7
Mersing	1,010.9	1,009.6	1,008.9	1,009.0	1,008.4	1,008.8	1,008.1	1,008.9	1,009.8	1,009.7	1,009.3	1,009.3
Senai	1,010.3	1,009.1	1,008.5	1,008.6	1,008.1	1,008.7	1,007.9	1,008.7	1,009.7	1,009.4	1,009.0	1,008.9
Kedah												
Alor Setar	1,010.6	1,009.3	1,008.7	1,008.8	1,008.2	1,008.9	1,007.8	1,008.6	1,009.8	1,009.8	1,009.3	1,009.4
Langkawi	1,010.7	1,009.5	1,008.8	1,008.9	1,008.3	1,009.0	1,008.0	1,008.8	1,010.0	1,010.0	1,009.5	1,009.6
Kelantan												
Gong Kedak	1,011.5	1,010.0	1,008.9	1,008.6	1,007.8	1,008.2	1,007.4	1,008.2	1,009.2	1,009.4	1,009.2	1,009.8
Kota Bharu	1,011.9	1,010.4	1,009.3	1,009.1	1,008.2	1,008.6	1,007.8	1,008.6	1,009.5	1,009.8	1,009.6	1,010.2
Kuala Krai	1,011.6	1,010.2	1,009.1	1,009.0	1,008.1	1,008.6	1,007.7	1,008.5	1,009.5	1,009.8	1,009.5	1,010.1
Melaka												
Melaka	1,011.2	1,010.0	1,009.3	1,009.5	1,009.0	1,009.6	1,008.8	1,009.6	1,010.6	1,010.4	1,009.9	1,009.8
Negeri Sembilan												
Kuala Pilah	1,006.2	1,004.9	1,004.1	1,004.3	1,003.7	1,004.2	1,003.4	1,004.2	1,005.1	1,005.0	1,004.6	1,004.7
Pahang												
Batu Embun	1,011.1	1,009.9	1,008.8	1,008.8	1,008.2	1,008.7	1,007.8	1,008.8	1,009.7	1,009.7	1,009.4	1,009.6
Kuantan	1,011.2	1,009.9	1,009.0	1,009.0	1,008.3	1,008.6	1,007.9	1,008.7	1,009.6	1,009.7	1,009.3	1,009.6
Muadzam Shah	1,011.1	1,009.8	1,008.9	1,008.9	1,008.3	1,008.8	1,008.0	1,008.8	1,009.8	1,009.7	1,009.4	1,009.5
Temerloh	1,010.9	1,009.8	1,008.7	1,008.8	1,008.2	1,008.7	1,007.8	1,008.8	1,009.7	1,009.7	1,009.3	1,009.5
Perak												
Ipoh	1,010.4	1,009.3	1,008.7	1,008.9	1,008.2	1,009.0	1,008.0	1,008.8	1,009.9	1,009.8	1,009.4	1,009.1
Lubok Merbau	1,010.4	1,009.4	1,008.7	1,009.0	1,008.3	1,009.0	1,008.0	1,008.8	1,010.0	1,009.9	1,009.4	1,009.2
Sitiawan	1,010.3	1,009.1	1,008.6	1,008.7	1,008.1	1,008.8	1,007.8	1,008.6	1,009.8	1,009.6	1,009.3	1,008.9
Perlis												
Chuping	1,011.0	1,009.6	1,008.9	1,009.0	1,008.3	1,008.9	1,007.9	1,008.7	1,009.9	1,010.0	1,009.5	1,009.8
Pulau Pinang												
Bayan Lepas	1,010.2	1,009.1	1,008.6	1,008.7	1,008.2	1,008.9	1,007.8	1,008.7	1,009.9	1,009.8	1,009.8	1,009.0
Butterworth	1,010.2	1,009.0	1,008.4	1,008.6	1,008.0	1,008.7	1,007.7	1,008.5	1,009.7	1,009.7	1,009.1	1,009.0
Sabah												
Kota Kinabalu	1,010.2	1,009.5	1,009.2	1,009.1	1,008.9	1,009.1	1,008.8	1,008.8	1,009.8	1,009.1	1,009.1	1,008.6
Kudat	1,010.6	1,010.1	1,009.1	1,008.9	1,008.9	1,008.6	1,008.4	1,008.7	1,009.6	1,008.8	1,009.4	1,008.6
Sandakan	1,010.3	1,009.8	1,008.8	1,008.5	1,008.8	1,008.7	1,008.3	1,008.7	1,009.4	1,008.6	1,009.1	1,008.1
Tawau	1,009.9	1,009.4	1,008.7	1,008.5	1,008.9	1,009.1	1,008.9	1,009.3	1,009.9	1,009.0	1,009.2	1,007.9
Keningau	1,011.2	1,010.7	1,010.0	1,010.0	1,010.0	1,010.0	1,009.9	1,010.0	1,011.0	1,010.1	1,010.4	1,009.6
Ranau	1,012.0	1,011.6	1,010.4	1,010.1	1,010.4	1,010.3	1,009.9	1,010.4	1,011.2	1,010.1	1,010.9	1,009.9

Jadual 1.3: Purata bulanan tekanan aras laut, Malaysia, 2022 (samb.)

Table 1.3: Monthly mean sea level pressure, Malaysia, 2022 (cont'd)

	hPa											
Negeri/ Stesen State/ Station	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Sarawak												
Bintulu	1,010.2	1,009.5	1,009.1	1,009.0	1,008.7	1,008.9	1,008.5	1,008.8	1,009.9	1,009.5	1,009.5	1,009.0
Kuching	1,010.5	1,009.4	Def.	1,009.2	1,008.7	1,009.0	1,008.4	1,008.9	1,009.9	1,009.6	1,009.6	1,009.2
Miri	1,009.9	1,009.1	1,008.8	1,008.8	1,008.5	1,008.7	1,008.3	1,008.5	1,009.7	1,009.4	1,009.4	1,008.6
Sibu	1,010.0	1,009.1	1,008.7	1,008.9	1,008.6	1,008.9	1,008.3	1,008.8	1,009.8	1,009.4	1,009.3	1,008.8
Limbang	1,009.9	1,009.2	1,008.9	1,008.9	1,008.6	1,008.7	1,008.5	1,008.6	1,009.8	1,009.1	1,009.2	1,008.7
Kapit	1,010.7	1,009.9	1,009.5	1,009.2	1,009.0	1,009.2	1,008.8	1,009.1	1,010.2	1,009.8	1,009.7	1,009.2
Mulu	1,010.0	1,009.2	1,009.0	1,009.0	1,008.9	1,009.0	1,009.0	1,008.9	1,010.1	1,009.6	1,009.3	1,009.0
Sri Aman	1,010.0	1,009.0	1,008.5	1,008.5	1,008.2	1,008.8	1,008.2	1,008.8	1,010.0	1,009.5	1,009.4	1,008.9
Selangor												
KLIA Sepang	1,010.3	1,009.1	1,008.5	1,008.6	1,008.2	1,008.8	1,007.9	1,008.8	1,009.8	1,009.6	1,009.2	1,008.9
Petaling Jaya	1,009.1	1,008.0	1,007.4	1,007.6	1,007.1	1,007.7	1,006.8	1,007.7	1,008.7	1,008.4	1,007.9	Def.
Subang	1,010.8	1,009.6	1,009.0	1,009.2	1,008.7	1,009.3	1,008.4	1,009.3	1,010.2	1,010.0	1,009.6	1,009.4
Terengganu												
Kerteh	1,011.4	1,009.9	1,009.0	1,008.9	1,008.0	1,008.4	1,007.6	1,008.4	1,009.3	1,009.5	1,009.1	1,009.6
Kuala Terengganu	1,011.8	1,010.2	1,009.2	1,008.9	1,008.1	1,008.5	1,007.7	1,008.4	1,009.4	1,009.6	1,004.4	1,009.9
Wilayah Persekutuan Labuan												
Labuan	1,010.1	1,009.3	1,009.0	1,009.0	1,008.8	1,008.9	1,008.7	1,008.8	1,010.0	1,009.2	1,009.3	1,008.7

Sumber: Jabatan Meteorologi Malaysia

Source: Malaysia Meteorological Department

Jadual 1.4: Purata bulanan kelajuan angin permukaan, Malaysia, 2022

Table 1.4: Monthly mean surface wind speed, Malaysia, 2022

	m/s											
Negeri/ Stesen State/ Station	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Johor												
Batu Pahat	0.9	0.9	0.8	0.6	0.6	0.6	0.7	0.8	0.8	0.8	0.7	0.7
Kluang	2.9	2.0	1.7	1.0	0.9	0.9	1.0	0.9	0.9	1.0	1.0	1.8
Mersing	4.1	3.4	2.8	2.2	2.3	2.2	2.4	2.4	2.2	2.1	2.1	3.1
Senai	1.9	1.8	1.4	1.1	1.0	1.0	1.2	1.3	1.3	1.3	1.3	1.6
Kedah												
Alor Setar	2.0	1.8	1.7	1.6	1.6	1.6	1.4	1.6	1.5	1.4	1.4	1.7
Langkawi	2.5	2.3	1.7	1.4	1.7	1.4	1.4	1.4	1.3	1.3	1.4	2.2
Kelantan												
Gong Kedak	1.6	1.8	1.4	1.3	1.1	1.3	1.3	1.4	1.4	1.3	1.3	1.3
Kota Bharu	2.7	3.3	2.1	2.0	1.7	1.7	1.7	1.9	1.9	1.8	1.7	2.0
Kuala Krai	1.1	1.0	0.8	0.8	0.7	0.7	0.8	0.9	0.8	0.8	0.7	0.7
Melaka												
Melaka	2.3	2.4	1.9	1.4	1.4	1.3	1.3	1.6	1.5	1.5	1.4	2.3
Negeri Sembilan												
Kuala Pilah	1.7	1.4	1.3	1.1	1.2	1.3	1.2	1.2	1.2	0.9	0.8	1.3
Pahang												
Batu Embun	0.6	0.6	0.7	0.6	0.6	0.7	0.8	0.8	0.7	0.6	0.6	0.5
Cameron Highlands	2.4	2.1	1.5	1.4	2.2	1.3	1.9	1.5	1.9	1.9	1.9	2.0
Kuantan	2.1	1.6	1.5	1.1	0.7	0.8	0.7	0.8	0.9	1.0	1.1	1.7
Muadzam Shah	1.4	0.9	0.8	0.6	0.6	0.7	0.8	0.8	0.8	0.6	0.5	0.8
Temerloh	0.9	0.8	0.9	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	0.7
Perak												
Ipoh	1.6	1.6	1.5	1.5	1.8	1.6	1.7	1.7	1.9	1.8	1.6	1.8
Lubok Merbau	1.3	1.2	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	0.9	1.0
Sitiawan	1.2	1.2	1.3	1.4	1.4	1.3	1.3	1.3	1.2	1.4	1.0	0.9
Perlis												
Chuping	1.7	1.4	1.2	0.9	1.0	0.8	0.8	0.7	0.7	0.8	0.9	1.3
Pulau Pinang												
Bayan Lepas	2.6	2.2	2.0	1.5	1.4	1.4	1.6	1.8	1.2	1.3	1.4	2.3
Butterworth	2.4	2.1	2.2	2.3	2.2	2.2	2.1	2.1	2.0	2.0	1.9	2.1
Sabah												
Kota Kinabalu	1.9	1.8	1.7	2.2	2.0	2.0	2.2	2.1	2.2	2.3	2.0	2.0
Kudat	2.4	2.0	1.5	2.0	1.6	1.5	1.9	1.9	2.5	2.8	1.4	2.0
Sandakan	2.5	2.7	2.1	2.1	1.9	1.8	1.8	1.7	1.9	1.8	1.8	2.0
Tawau	1.3	1.4	1.4	1.3	1.2	1.4	1.4	1.5	1.4	1.4	1.1	1.2
Keningau	0.9	1.0	0.9	1.0	0.9	0.9	1.0	1.0	1.0	1.0	0.8	0.9
Ranau	1.1	1.2	0.9	1.3	1.0	1.0	1.1	1.0	1.1	1.4	0.9	1.1

Jadual 1.4: Purata bulanan kelajuan angin permukaan, Malaysia, 2022 (samb.)

Table 1.4: Monthly mean surface wind speed, Malaysia, 2022 (cont'd)

Negeri/ Stesen State/ Station	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Sarawak												
Bintulu	1.6	1.7	1.7	1.8	1.6	1.6	1.7	1.8	1.8	1.8	1.6	1.7
Kuching	1.5	1.7	1.5	1.5	1.5	1.5	1.6	1.7	1.6	1.5	1.5	1.7
Miri	2.1	2.1	2.0	2.1	2.1	2.0	2.2	2.2	2.2	2.4	2.0	2.1
Sibu	1.4	1.6	1.5	1.5	1.5	1.4	1.6	1.6	1.5	1.5	1.5	1.5
Limbang	1.4	1.5	1.3	1.3	1.2	1.3	1.2	1.3	1.4	1.4	1.2	1.3
Kapit	0.7	0.8	0.8	0.9	0.9	0.8	0.9	0.9	0.8	0.8	0.8	0.7
Mulu	0.8	0.9	1.0	0.9	Def.	1.0	0.8	0.8	0.8	1.0	Def.	Def.
Sri Aman	0.5	0.7	0.9	0.7	0.8	0.7	0.7	0.7	0.7	0.8	0.8	0.7
Selangor												
KLIA Sepang	1.6	1.6	1.6	1.4	1.5	1.3	1.3	1.3	1.3	1.4	1.2	1.3
Petaling Jaya	1.0	1.1	1.2	1.1	1.3	1.1	1.2	1.2	1.1	1.1	1.0	Def.
Subang	1.4	1.5	1.7	1.7	1.9	1.7	1.7	1.7	1.6	1.8	1.5	1.3
Terengganu												
Kerteh	2.3	2.0	1.5	1.1	1.1	0.9	1.1	1.0	0.8	0.8	0.9	1.5
Kuala Terengganu	2.4	2.6	1.8	1.7	1.8	1.8	1.7	1.8	1.7	2.0	1.7	2.3
Wilayah Persekutuan Labuan												
Labuan	1.9	2.1	1.2	1.3	1.1	1.1	1.2	1.2	1.3	1.5	1.1	1.3

Sumber: Jabatan Meteorologi Malaysia
Source: Malaysia Meteorological Department

Jadual 1.5: Purata bulanan sinaran global, Malaysia, 2022

Table 1.5: Monthly mean global radiation, Malaysia, 2022

	MJ/m ²											
Negeri/ Stesen State/ Station	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Johor												
Kluang	19.21	16.22	18.35	16.71	16.97	16.37	15.98	15.46	15.81	15.41	14.08	14.68
Senai	19.98	17.01	18.64	16.98	17.07	14.69	14.94	14.71	14.87	14.81	15.06	14.54
Kedah												
Alor Setar	20.71	18.29	21.15	20.73	19.86	20.02	16.79	18.01	15.23	15.12	16.70	14.25
Langkawi	21.42	19.25	22.23	19.92	18.26	18.38	17.32	17.96	15.67	15.40	16.97	14.99
Kelantan												
Kota Bharu	19.91	16.15	21.70	22.44	19.40	20.30	18.63	19.60	18.66	16.59	16.43	11.13
Kuala Krai	17.50	13.50	19.12	19.4	18.4	18.6	17.90	18.08	17.97	14.90	14.79	10.30
Melaka												
Melaka	19.37	17.21	19.87	17.58	17.49	17.13	16.09	17.15	17.83	16.60	15.16	14.18
Negeri Sembilan												
Kuala Pilah	19.14	17.45	20.40	18.37	18.36	18.40	17.11	17.08	17.36	15.66	16.04	14.84
Pahang												
Cameron Highlands	17.72	15.48	15.97	15.09	16.21	14.50	15.79	15.34	16.65	13.34	11.95	12.24
Kuantan	18.40	13.05	19.22	17.61	17.07	18.72	16.95	19.44	18.15	15.11	14.22	11.69
Muadzam Shah	18.10	15.15	18.78	17.24	18.08	17.84	16.09	18.48	18.56	15.31	13.66	11.85
Temerloh	18.91	14.76	20.18	18.94	18.51	18.43	17.12	17.90	18.14	16.00	15.65	13.60
Perak												
Ipoh	19.09	17.30	18.91	18.86	19.27	17.72	18.43	18.66	18.51	16.73	16.13	15.19
Lubok Merbau	19.69	17.13	20.93	19.58	19.46	19.44	18.43	18.20	17.73	16.39	15.97	15.37
Sitiawan	17.22	17.03	19.33	17.87	17.13	17.54	16.94	18.28	16.91	15.95	14.85	14.34
Perlis												
Chuping	19.58	16.89	20.12	18.55	17.79	18.75	15.79	17.69	15.25	14.48	15.61	13.38
Pulau Pinang												
Bayan Lepas	19.90	19.28	21.36	18.17	17.57	18.64	17.58	17.84	16.68	15.51	15.63	15.29
Sabah												
Kota Kinabalu	18.32	19.81	19.14	20.54	20.29	19.47	19.47	20.22	18.46	17.42	17.70	15.82
Sandakan	14.27	17.95	19.52	20.38	21.29	21.65	19.83	20.19	20.17	17.04	16.89	14.37
Tawau	14.65	17.71	19.48	17.18	15.30	18.71	16.97	19.49	18.75	16.40	15.34	15.11
Keningau	16.83	18.92	20.27	20.70	19.98	20.67	19.41	20.93	19.46	18.38	18.09	16.08
Ranau	16.83	17.95	19.35	21.31	20.13	21.37	20.27	19.77	18.90	18.26	17.86	15.85
Sarawak												
Kuching	12.15	15.95	15.73	16.70	16.47	14.37	15.10	15.03	15.30	14.18	14.96	14.01
Miri	15.36	19.98	20.29	19.57	20.53	18.97	19.03	20.13	19.95	18.58	Def.	11.18
Sibu	14.83	18.21	17.73	18.33	19.20	17.16	18.11	17.32	17.50	17.91	17.18	15.65
Kapit	15.66	18.79	18.24	20.44	20.25	19.20	19.38	19.54	18.52	18.02	17.80	16.22

Jadual 1.5: Purata bulanan sinaran global, Malaysia, 2022 (samb.)

Table 1.5: Monthly mean global radiation, Malaysia, 2022 (cont'd)

	MJ/m ²											
Negeri/ Stesen State/ Station	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Selangor												
KLIA Sepang	18.77	18.09	20.67	17.67	18.46	17.17	17.29	18.36	17.41	15.19	14.42	14.20
Subang	17.32	16.85	19.00	17.52	17.27	17.55	16.56	16.70	16.09	16.41	14.86	13.83
Terengganu												
Kuala Terengganu	19.83	15.79	22.17	20.80	18.99	20.32	18.18	18.01	18.39	15.03	16.11	10.28
Wilayah Persekutuan Labuan												
Labuan	18.06	21.50	19.88	20.11	20.44	19.69	18.81	20.14	17.66	18.41	17.91	15.85

Sumber: Jabatan Meteorologi Malaysia

Source: Malaysia Meteorological Department

Jadual 1.6: Purata bulanan penyejatan, 2022

Table 1.6: Monthly mean evaporation, Malaysia, 2022

	mm											
Negeri/ Stesen State/ Station	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Johor												
Batu Pahat	4.0	3.6	4.2	3.9	4.0	3.3	3.6	4.0	3.2	3.1	3.5	2.8
Kluang	4.1	3.1	3.5	2.7	3.1	3.3	2.8	2.5	2.6	2.5	3.1	3.0
Mersing	3.3	3.5	3.5	3.3	3.0	3.0	3.8	3.0	2.6	2.9	2.8	2.9
Senai	4.4	3.9	4.6	3.8	4.4	3.5	3.9	3.2	3.9	3.6	3.8	3.3
Kedah												
Alor Setar	4.7	4.1	4.4	3.9	3.2	3.1	2.8	3.1	2.7	2.7	2.6	3.1
Langkawi	5.7	4.9	4.6	4.3	3.9	3.7	3.5	3.7	2.9	3.2	3.6	3.8
Kelantan												
Kota Bharu	4.2	4.2	4.5	5.5	5.3	5.0	4.4	4.6	4.3	3.7	3.9	2.7
Kuala Krai	3.2	3.6	3.8	4.2	3.8	3.4	3.5	3.7	3.4	3.3	3.1	2.0
Melaka												
Melaka	5.2	4.6	4.5	4.3	3.9	3.6	3.9	3.9	3.8	3.6	3.9	4.0
Negeri Sembilan												
Kuala Pilah	4.2	3.5	4.1	3.5	3.3	3.0	3.2	3.2	3.2	3.6	3.6	2.7
Pahang												
Batu Embun	2.9	1.9	2.9	3.4	3.3	3.0	3.3	3.0	3.3	2.8	2.9	2.6
Cameron Highlands	1.4	1.3	1.7	1.3	1.9	1.2	1.9	1.4	2.0	1.4	1.0	0.9
Kuantan	3.8	3.0	4.0	3.5	3.8	4.2	3.9	4.5	4.0	3.9	3.3	3.5
Muadzam Shah	3.3	2.6	3.4	3.1	3.3	3.0	3.4	2.9	3.2	2.9	2.5	2.3
Temerloh	3.7	2.7	3.9	3.6	3.5	3.7	3.1	3.1	2.8	3.0	3.0	2.5
Perak												
Ipoh	4.6	4.4	4.5	4.9	5.7	4.9	5.7	5.3	5.0	4.5	4.6	4.1
Lubok Merbau	4.6	3.7	4.1	3.8	4.2	3.9	4.1	3.9	3.7	3.1	3.0	3.3
Sitiawan	3.3	3.7	3.8	3.6	3.8	3.3	3.8	3.9	3.5	3.1	3.6	3.0
Perlis												
Chuping	5.0	4.3	4.3	4.7	4.6	4.4	3.7	3.7	3.4	3.0	3.3	3.4
Pulau Pinang												
Bayan Lepas	4.2	4.2	3.6	3.0	3.1	3.0	3.2	2.9	2.8	2.6	2.6	3.2
Sabah												
Kota Kinabalu	4.4	4.1	3.9	5.2	5.0	4.3	4.9	4.4	4.1	3.6	3.4	3.8
Kudat	3.7	4.6	3.8	4.0	4.7	4.7	4.9	4.9	4.4	4.2	3.2	3.1
Sandakan	3.5	4.7	4.1	4.5	4.8	5.2	4.9	4.6	4.8	4.3	3.8	3.3
Tawau	3.0	3.5	4.2	4.6	3.9	3.7	3.5	4.2	4.3	3.8	3.0	2.9
Sarawak												
Bintulu	3.2	3.7	4.1	3.8	4.0	4.0	4.0	4.0	3.8	4.2	3.5	2.9
Kuching	3.1	2.8	3.5	4.0	3.4	3.0	3.6	3.1	3.4	2.8	3.1	2.7
Miri	3.3	3.8	4.0	4.5	4.4	3.7	4.1	4.2	4.0	4.0	3.7	3.4
Sibu	3.4	3.9	3.9	4.0	4.0	3.8	4.1	3.9	3.8	3.6	3.8	3.2
Sri Aman	3.0	3.4	3.5	3.1	3.4	3.0	3.2	3.4	2.6	3.3	2.9	2.6

Jadual 1.6: Purata bulanan penyejatan, 2022 (samb.)

Table 1.6: Monthly average evaporation, Malaysia, 2022 (cont'd)

	mm											
Negeri/ Stesen State/ Station	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Selangor												
KLIA Sepang	4.7	4.6	5.2	4.2	4.6	3.8	3.9	4.2	4.1	4.0	3.7	3.4
Subang	3.7	4.1	5.6	4.6	4.0	4.5	4.8	4.0	4.0	4.0	3.8	3.7
Terengganu												
Kuala Terengganu	4.0	3.7	4.0	4.1	3.9	4.3	3.7	3.8	3.8	3.0	3.1	2.6
Wilayah Persekutuan Labuan												
Labuan	3.9	4.5	3.9	4.6	5.0	4.6	4.5	4.6	4.0	4.6	4.6	4.1

Sumber: Jabatan Meteorologi Malaysia

Source: Malaysia Meteorological Department

Jadual 1.7a: Bacaan maksimum harian Indeks Ultra Ungu (UV), Bayan Lepas, 2022

Table 1.7a: Daily maximum reading of the Ultra Violet (UV) Index, Bayan Lepas, 2022

Stesen/ Station	Bayan Lepas											
Bulan/ Monthly Hari/ Days	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
1	11+	10	11+	10	11+	11+	11+	11+	11+	11+	8	10
2	9	11+	11+	8	10	11+	10	9	7	11+	7	9
3	8	11+	11+	8	10	11+	10	5	11+	5	6	8
4	9	11+	11+	10	10	11+	9	7	11+	9	9	8
5	10	11+	10	5	11+	7	6	10	6	11+	7	8
6	7	11+	9	11+	2	10	11+	11+	11+	10	11+	9
7	10	11+	11+	11+	0	10	10	8	6	11+	11+	9
8	10	11+	11+	11+	10	9	9	10	5	7	10	9
9	10	11+	11+	11+	6	7	10	10	11+	10	8	4
10	8	7	11+	11+	11+	10	4	10	10	11+	11+	0
11	7	4	11+	10	11+	11+	10	7	9	11+	10	7
12	9	11+	11+	9	10	10	3	7	11+	11+	9	7
13	9	11+	11+	11+	11+	10	10	11+	11+	5	10	7
14	10	11+	11+	11+	9	11+	10	10	11+	9	9	6
15	10	11+	11+	11+	11+	10	10	10	6	8	8	8
16	10	11+	11+	11+	7	10	8	8	11+	7	7	9
17	10	7	3	11+	10	11+	9	10	11+	9	10	10
18	10	11+	11+	10	7	11+	9	11+	11+	11+	6	3
19	10	11+	11+	11+	11+	11+	7	11+	11+	10	8	3
20	10	11+	11+	11+	11+	11+	11+	11+	11+	9	10	7
21	9	11+	11+	11+	10	9	9	9	11+	10	9	7
22	10	11+	11+	9	7	9	6	9	9	6	2	9
23	8	11+	11+	11+	0	10	9	5	6	6	5	9
24	10	11+	11+	11+	9	9	9	11+	11+	11+	8	9
25	6	8	11+	11+	5	11+	9	10	11+	8	4	7
26	10	10	11+	11+	10	9	10	11+	11+	9	9	7
27	11+	10	11+	11+	11+	10	11+	11+	8	9	6	8
28	9	11+	11+	11+	11+	10	11+	10	11+	8	9	0
29	10		11+	11+	10	7	11+	11+	11+	8	10	7
30	11+		11+	10	9	10	10	11+	11+	11+	10	9
31	10		11+		10		11+	11+		11+		6

Nota:
Notes

Sumber: Jabatan Meteorologi Malaysia
Source: Malaysia Meteorological Department

Def. **Nilai Defective**
Defective value

n.a. **Tiada pencerapan data disebabkan masalah instrumentasi**
No data observation due to instrumentation problems

Status Indeks Ultra Ungu (UV)
Ultra Violet Index (UV) status

0 to 2	Rendah / Low
3 to 5	Sederhana / Moderate
6 to 7	Tinggi / High
8 to 10	Sangat Tinggi / Very High
11+	Melampau / Extreme

Jadual 1.7b: Bacaan maksimum harian Indeks Ultra Ungu (UV), Kota Bharu, 2022

Table 1.7b: Daily maximum reading of the Ultra Violet (UV) Index, Kota Bharu, 2022

Stesen/ Station	Kota Bharu											
Bulan/ Monthly Hari/ Days	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
1	4	n.a.	n.a.	11+	10	6	7	11+	11+	11+	11+	10
2	7	n.a.	n.a.	11+	11+	11+	10	8	11+	11+	11+	3
3	8	3	n.a.	6	11+	11+	10	6	11+	11+	9	2
4	11+	n.a.	n.a.	11+	6	8	9	11+	6	6	4	4
5	11+	n.a.	n.a.	11+	11+	11+	9	10	3	10	5	2
6	10	n.a.	n.a.	9	11+	11+	11+	9	8	11+	11+	9
7	11+	10	n.a.	11+	11+	11+	11+	9	11+	11+	10	9
8	9	11+	n.a.	11+	11+	11+	9	9	11+	11+	10	6
9	10	11+	n.a.	11+	8	11+	10	11+	11+	10	11+	3
10	9	11+	n.a.	11+	11+	10	9	11+	5	11+	9	2
11	11+	n.a.	n.a.	11+	9	10	0	11+	9	11+	10	1
12	0	n.a.	n.a.	11+	11+	7	7	7	9	11+	6	8
13	0	n.a.	n.a.	11+	9	11+	10	11+	11+	8	11+	9
14	10	n.a.	n.a.	11+	11+	11+	28	11+	11+	11+	10	9
15	11+	n.a.	n.a.	11+	11+	11+	11+	11+	11+	11+	8	6
16	1	n.a.	n.a.	11+	9	11+	7	11+	1	9	8	9
17	9	n.a.	n.a.	11+	11+	11+	4	11+	8	11+	10	8
18	11+	n.a.	n.a.	11+	11+	10	9	11+	4	10	10	9
19	11+	n.a.	n.a.	11+	11+	11+	7	11+	9	11+	8	6
20	11+	n.a.	n.a.	11+	11+	10	11+	11+	11+	8	9	7
21	11+	n.a.	n.a.	11+	11+	11+	7	11+	11+	11+	10	9
22	11+	n.a.	n.a.	11+	11+	10	9	11+	11+	9	8	7
23	11+	n.a.	11+	11+	9	10	11+	11+	9	10	8	9
24	11+	n.a.	10	11+	10	7	11+	11+	11+	4	9	9
25	11+	n.a.	11+	11+	11+	10	11+	10	11+	6	10	9
26	11+	n.a.	11+	11+	10	10	11+	10	2	10	10	5
27	10	n.a.	11+	11+	6	10	7	11+	2	3	9	6
28	10	n.a.	11+	11+	11+	11+	11+	11+	11+	7	9	9
29	11+		11+	11+	4	10	11+	11+	10	10	10	8
30	11+		11+	11+	11+	10	10	11+	10	11+	11+	9
31	9		11+		11+		10	11+		11+		9

Nota:
Notes

Sumber: Jabatan Meteorologi Malaysia
Source: Malaysia Meteorological Department

Def. **Nilai Defective**
Defective value

n.a. **Tiada pencerapan data disebabkan masalah instrumentasi**
No data observation due to instrumentation problems

Status Indeks Ultra Ungu (UV)
Ultra Violet Index (UV) status

0 to 2	Rendah / Low
3 to 5	Sederhana / Moderate
6 to 7	Tinggi / High
8 to 10	Sangat Tinggi / Very High
11+	Melampau / Extreme

Jadual 1.7c: Bacaan maksimum harian Indeks Ultra Ungu (UV), Kota Kinabalu, 2022

Table 1.7c: Daily maximum reading of the Ultra Violet (UV) Index, Kota Kinabalu, 2022

Stesen/ Station	Kota Kinabalu											
Bulan/ Monthly Hari/ Days	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
1	6	11+	11+	11+	11+	11+	10	11+	11+	11+	3	10
2	9	9	11+	11+	11+	5	11+	11+	11+	11+	8	9
3	11+	11+	11+	11+	11+	11+	11+	11+	11+	10	10	10
4	10	11+	11+	11+	11+	11+	11+	11+	9	11+	3	10
5	10	11+	11+	10	11+	11+	10	11+	9	11+	11+	10
6	2	11+	11+	11+	11+	11+	11+	10	9	11+	11+	9
7	11+	11+	11+	11+	11+	11+	11+	11+	11+	11+	11+	10
8	10	11+	11+	11+	11+	11+	10	0	11+	11+	11+	10
9	10	10	7	11+	7	11+	7	4	11+	11+	8	8
10	10	3	11+	11+	11+	11+	11+	11+	11+	11+	11+	7
11	10	11+	11+	9	11+	11+	8	11+	9	10	9	4
12	8	11+	11+	11+	11+	11+	11+	11+	11+	8	11+	10
13	10	11+	11+	9	10	11+	9	11+	11+	9	11+	8
14	10	11+	11+	11+	11+	11+	10	0	11+	8	7	8
15	10	11+	11+	11+	11+	11+	10	11+	8	11+	11+	8
16	11+	11+	11+	11+	11+	10	11+	11+	11+	10	10	8
17	9	11+	11+	11+	11+	11+	11+	11+	11+	2	9	10
18	10	11+	10	11+	11+	11+	9	11+	11+	10	11+	10
19	11+	11+	11+	11+	11+	11+	11+	10	11+	10	6	9
20	8	8	11+	11+	11+	11+	11+	11+	11+	11+	10	9
21	10	7	11+	11+	11+	7	11+	11+	11+	7	10	9
22	11+	11+	11+	11+	11+	11+	11+	11+	11+	11+	7	10
23	11+	11+	11+	11+	8	11+	11+	11+	11+	2	10	6
24	11+	11+	11+	11+	9	11+	11+	11+	11+	0	10	5
25	11+	11+	11+	11+	11+	11+	11+	11+	5	0	9	6
26	6	11+	11+	11+	11+	11+	11+	11+	6	11+	10	0
27	11+	11+	11+	11+	11+	11+	11+	11+	11+	8	11+	8
28	8	10	11+	11+	11+	10	11+	11+	7	9	10	8
29	11+		11+	11+	11+	10	0	11+	11+	11+	10	9
30	11+		11+	11+	11+	11+	11+	11+	10	11+	10	9
31	11+		11+		11+		10	11+		7		9

Nota:
Notes

Sumber: Jabatan Meteorologi Malaysia
Source: Malaysia Meteorological Department

Def. **Nilai Defective**
Defective value

n.a. **Tiada pencerapan data disebabkan masalah instrumentasi**
No data observation due to instrumentation problems

Status Indeks Ultra Ungu (UV)
Ultra Violet Index (UV) status

0 to 2	Rendah / Low
3 to 5	Sederhana / Moderate
6 to 7	Tinggi / High
8 to 10	Sangat Tinggi / Very High
11+	Melampau / Extreme

Jadual 1.7d: Bacaan maksimum harian Indeks Ultra Ungu (UV), Petaling Jaya, 2022

Table 1.7d: Daily maximum reading of the Ultra Violet (UV) Index, Petaling Jaya, 2022

Stesen/ Station	Petaling Jaya											
Bulan/ Monthly Hari/ Days	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
1	8	9	11+	9	9	9	9	8	10	11+	10	10
2	7	10	10	9	9	9	9	10	11+	8	8	9
3	8	11+	11+	9	9	9	9	10	9	7	9	9
4	9	10	8	8	7	8	9	11+	9	10	7	7
5	10	10	8	9	11	9	6	6	5	11+	6	7
6	10	8	10	8	11+	8	4	10	5	11+	7	6
7	9	9	11+	6	10	6	9	11+	10	9	8	9
8	9	5	11+	10	11+	10	8	10	8	5	10	6
9	9	11+	11+	10	9	10	10	10	7	11+	9	7
10	8	3	11+	9	11+	9	8	9	7	11+	10	5
11	7	7	9	6	6	6	5	9	10	11+	4	6
12	9	11+	10	9	11+	9	5	9	11+	10	6	9
13	10	11+	n.a.	9	10	9	10	10	10	10	8	5
14	10	11+	10	10	8	10	8	9	9	8	7	6
15	9	11+	10	10	7	10	5	10	7	11+	8	6
16	10	10	11+	10	8	9	7	6	7	10	9	9
17	8	11+	11+	7	9	8	7	8	4	9	8	6
18	7	11+	11+	9	8	10	8	8	6	8	9	9
19	8	11+	11+	10	5	8	8	10	9	8	9	6
20	8	11+	11+	7	10	7	4	9	11+	7	11+	7
21	9	10	10	7	10	9	10	5	9	9	6	9
22	6	11+	11+	11+	10	9	6	10	11+	11+	11+	7
23	9	11+	11+	11+	6	9	9	11+	8	7	6	7
24	8	5	11+	11+	n.a.	6	10	11+	9	10	n.a.	9
25	8	11+	10	11+	2	10	10	6	6	10	8	7
26	8	11+	11+	8	7	9	9	11+	11+	8	8	5
27	9	10	11+	9	10	9	8	9	10	11+	7	4
28	9	11+	11+	8	8	9	8	11+	11+	9	9	5
29	9		7	11+	9	9	7	9	11+	10	8	6
30	9		11+	10	10	8	10	11+	6	11+	7	9
31	9		11+		10		10	8		10		5

Nota:

Notes

Sumber: Jabatan Meteorologi Malaysia

Source: Malaysia Meteorological Department

Def. **Nilai Defective**

Defective value

n.a. **Tiada pencerapan data disebabkan masalah instrumentasi**

No data observation due to instrumentation problems

Status Indeks Ultra Ungu (UV)

Ultra Violet Index (UV) status

0 to 2	Rendah / Low
3 to 5	Sederhana / Moderate
6 to 7	Tinggi / High
8 to 10	Sangat Tinggi / Very High
11+	Melampau / Extreme

Jadual 1.7e: Bacaan maksimum harian Indeks Ultra Ungu (UV), Senai, 2022

Table 1.7e: Daily maximum reading of the Ultra Violet (UV) Index, Senai, 2022

Stesen/ Station	Senai											
Bulan/ Monthly Hari/ Days	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
1	11+	1	11+	11+	6	4	11+	10	10	10	11+	11+
2	9	n.a.	11+	10	10	11+	9	9	6	11+	11+	9
3	9	n.a.	11+	9	10	7	10	10	0	6	11+	10
4	10	n.a.	11+	11+	9	11+	9	4	2	8	11+	7
5	11+	n.a.	11+	9	9	10	11+	6	4	7	11+	7
6	11+	n.a.	9	11+	10	10	8	10	1	11+	11+	9
7	10	n.a.	11+	8	9	9	7	11+	11+	4	11+	10
8	10	n.a.	11+	11+	9	10	10	10	7	10	11+	8
9	11+	n.a.	11+	7	11+	8	10	9	3	10	11+	7
10	11+	n.a.	11+	10	11+	10	0	10	11+	11+	7	5
11	10	n.a.	11+	11+	11+	9	0	9	6	11+	9	6
12	11+	n.a.	11+	11+	11+	6	0	10	11+	8	11+	9
13	11+	n.a.	11+	8	11+	10	7	10	11+	8	11+	6
14	11+	n.a.	8	11+	10	10	10	10	11+	10	11+	6
15	11+	n.a.	11+	10	11+	10	3	11+	11+	11+	11+	7
16	10	n.a.	11+	11+	11+	5	9	11+	7	9	11+	9
17	10	n.a.	10	11+	10	9	10	11+	6	7	11+	11+
18	11+	n.a.	11+	11+	10	10	6	8	5	9	11+	10
19	11+	n.a.	14	11+	7	11+	9	10	9	7	11+	6
20	10	n.a.	11+	11+	10	9	5	9	8	11+	11+	11+
21	11+	n.a.	10	2	0	7	4	9	11+	8	11+	11+
22	11+	11+	14	11+	9	8	10	11+	10	11+	11+	7
23	11+	11+	11+	11+	9	11+	11+	5	11+	6	11+	9
24	11+	9	11+	11+	11+	7	11+	11+	11+	8	11+	10
25	11+	11+	11+	11+	2	7	11+	5	10	8	6	11+
26	11+	7	11+	10	11+	8	5	4	5	5	10	10
27	11+	9	11+	11+	11+	10	11+	10	11+	10	5	9
28	11+	11+	11+	11+	9	6	7	11+	11+	11+	11+	6
29	11+		11+	11+	11+	11+	8	10	11+	11+	11+	7
30	0		11+	11+	9	11+	11+	8	7	9	11+	10
31	0		11+		5		9	11+		9		11+

Nota:
Notes

Sumber: Jabatan Meteorologi Malaysia
Source: Malaysia Meteorological Department

Def. **Nilai Defective**
Defective value

n.a. **Tiada pencerapan data disebabkan masalah instrumentasi**
No data observation due to instrumentation problems

Status Indeks Ultra Ungu (UV)
Ultra Violet Index (UV) status

0 to 2	Rendah / Low
3 to 5	Sederhana / Moderate
6 to 7	Tinggi / High
8 to 10	Sangat Tinggi / Very High
11+	Melampau / Extreme

Jadual 1.7f: Bacaan maksimum harian Indeks Ultra Ungu (UV), Sibü, 2022

Table 1.7f: Daily maximum reading of the Ultra Violet (UV) Index, Sibü, 2022

Stesen/ Station	Sibü											
Bulan/ Monthly Hari/ Days	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
1	n.a.	n.a.	n.a.	n.a.	11+	10	8	10	10	11+	8	10
2	n.a.	n.a.	n.a.	10	11+	4	10	11+	11+	7	11+	11+
3	n.a.	n.a.	n.a.	11+	11+	3	9	11+	7	8	9	10
4	n.a.	n.a.	n.a.	11+	10	10	9	8	8	11+	6	9
5	n.a.	n.a.	n.a.	11+	10	11+	8	8	9	8	10	9
6	n.a.	n.a.	n.a.	11+	11+	3	10	7	8	11+	11+	9
7	n.a.	n.a.	n.a.	11+	11+	10	10	11+	11+	10	10	10
8	n.a.	n.a.	n.a.	11+	9	11+	4	10	10	11+	11+	5
9	n.a.	n.a.	n.a.	11+	7	7	10	6	8	7	11+	10
10	n.a.	n.a.	n.a.	11+	11+	7	9	11+	10	11+	9	10
11	n.a.	n.a.	n.a.	11+	11+	9	10	10	11+	11+	7	9
12	n.a.	n.a.	n.a.	11+	11+	11+	10	10	11+	10	7	9
13	n.a.	n.a.	n.a.	11+	10	4	8	9	10	11+	11+	10
14	n.a.	n.a.	n.a.	11+	11+	10	10	7	4	10	9	9
15	n.a.	n.a.	n.a.	11+	11+	8	9	11+	11+	10	11+	10
16	n.a.	n.a.	n.a.	11+	7	11+	9	9	11+	11+	9	8
17	n.a.	n.a.	n.a.	11+	11+	8	10	10	11+	11+	11+	9
18	n.a.	n.a.	n.a.	11+	11+	8	10	11+	11+	6	6	10
19	n.a.	n.a.	n.a.	6	11+	8	10	10	8	10	9	10
20	n.a.	n.a.	n.a.	10	11+	3	10	3	11+	11+	10	10
21	n.a.	n.a.	n.a.	11+	7	10	10	11+	11+	6	10	10
22	n.a.	n.a.	n.a.	11+	10	10	9	10	11+	9	10	9
23	n.a.	n.a.	n.a.	11+	10	10	10	10	7	11+	10	4
24	n.a.	n.a.	n.a.	11+	10	8	11+	11+	10	9	8	5
25	n.a.	n.a.	n.a.	9	10	10	10	9	11+	11+	11+	7
26	n.a.	n.a.	n.a.	11+	9	10	10	9	9	11+	8	4
27	n.a.	n.a.	n.a.	10	9	9	9	11+	11+	11+	11+	7
28	n.a.	n.a.	n.a.	11+	10	10	10	8	11+	10	10	7
29	n.a.		n.a.	11+	10	8	10	11+	11+	11+	10	7
30	n.a.		n.a.	5	9	10	3	10	10	11+	10	9
31	n.a.		n.a.		10		11+	7		10		9

Nota:

Notes

Sumber: Jabatan Meteorologi Malaysia

Source: Malaysia Meteorological Department

Def. **Nilai Defective**
Defective value

n.a. **Tiada pencerapan data disebabkan masalah instrumentasi**
No data observation due to instrumentation problems

Status Indeks Ultra Ungu (UV)
Ultra Violet Index (UV) status

0 to 2	Rendah / Low
3 to 5	Sederhana / Moderate
6 to 7	Tinggi / High
8 to 10	Sangat Tinggi / Very High
11+	Melampau / Extreme

Jadual 1.8: Lembangan sungai di Malaysia

Table 1.8: River basins in Malaysia

Kawasan Area	Jumlah lembangan sungai Total river basins	Jumlah lembangan sungai utama Total of major river basins ($>80\text{km}^2$)
Keseluruhan Overall	2,986	189
Semenanjung Malaysia Peninsular Malaysia	1,235	74
Sabah	1,468	75
Sarawak	283	40

Sumber: Jabatan Pengairan dan Saliran
Source: Department of Irrigation and Drainage

Jadual 1.9: Senarai lembangan sungai utama di Malaysia

Table 1.9: List of major river basins in Malaysia

Bil. No.	Nama Lembangan sungai River basins name	Luas (km^2) Area	Kategori Category	Negeri/ Negara State/ Country
1.	Sg. Perlis	724.40	2	Perlis/Kedah
2.	Sg. Juru	80.76	1	Pulau Pinang
3.	Sg. Perai	447.82	2	Pulau Pinang/ Kedah
4.	Sg. Jawi	231.03	2	Pulau Pinang/ Kedah
5.	Sg. Kerian	1,420.23	2	Pulau Pinang/ Kedah/ Perak
6.	Sg. Kedah	2,971.82	1	Kedah
7.	Sg. Merbok	439.41	1	Kedah
8.	Sg. Yan Kechil	83.70	1	Kedah
9.	Sg. Muda	4,150.40	2	Kedah/ Pulau Pinang
10.	Sg. Perak	14,907.64	1	Perak
11.	Sg. Kurau	740.13	1	Perak
12.	Sg. Manjung	595.11	1	Perak
13.	Sg. Larut/Sg. Jaha	340.68	1	Perak
14.	Sg. Beruas	310.92	1	Perak
15.	Sg. Sangga Besar/Sg. Sepetang	248.32	1	Perak
16.	Sg. Temerloh	244.95	1	Perak
17.	Sg. Jarum Mas	213.96	1	Perak
18.	Sg. Tiram	91.33	1	Perak
19.	Sg. Bernam	2,836.33	2	Perak/ Selangor
20.	Sg. Selangor	1,936.87	1	Selangor
21.	Sg. Tenggi	527.72	1	Selangor
22.	Sg. Klang	1,297.38	2	Selangor/ W.P. Kuala Lumpur/ W.P. Putrajaya

Jadual 1.9: Senarai lembangan sungai utama di Malaysia (samb.)*Table 1.9: List of major river basins in Malaysia (cont'd)*

Bil. No.	Nama lembangan sungai <i>River basins name</i>	Luas (km ²) <i>Area</i>	Kategori <i>Category</i>	Negeri/ Negara <i>State/ Country</i>
23.	Sg. Buloh	451.93	2	Selangor/ W.P. Kuala Lumpur
24.	Sg. Langat	2,347.88	2	Selangor/ W.P. Kuala Lumpur/ W.P. Putrajaya/ Negeri Sembilan
25.	Sg. Sepang	101.93	2	Selangor/ Negeri Sembilan
26.	Sg. Lukut Besar	173.38	1	Negeri Sembilan
27.	Sg. Linggi	1,297.67	2	Negeri Sembilan/ Melaka
28.	Sg. Melaka	614.58	2	Negeri Sembilan/ Melaka
29.	Sg. Duyong	131.03	1	Melaka
30.	Sg. Baru	86.55	1	Melaka
31.	Sg. Kesang	658.26	2	Melaka/ Johor/ Negeri Sembilan
32.	Sg. Johor	2,285.64	1	Johor
33.	Sg. Batu Pahat	2,048.79	1	Johor
34.	Sg. Sedeli Besar	1,424.61	1	Johor
35.	Sg. Benut	614.56	1	Johor
36.	Sg. Lebam	365.46	1	Johor
37.	Sg. Pontian Besar	362.05	1	Johor
38.	Sg. Pulai	345.51	1	Johor
39.	Sg. Skudai	293.33	1	Johor
40.	Sg. Sarang Buaya	291.83	1	Johor
41.	Sg. Sedeli Kechil	1,424.61	1	Johor
42.	Sg. Mersing	273.46	1	Johor
43.	Sg. Tebrau	256.97	1	Johor
44.	Pt. Botak	150.21	1	Johor
45.	Sg. Jemaluang	140.56	1	Johor
46.	Sg. Sanglang	119.69	1	Johor
47.	Sg. Santi	117.36	1	Johor
48.	Sg. Ayer Baloi	81.66	1	Johor
49.	Sg. Muar	6,137.80	2	Johor/ Pahang/ Melaka/ Negeri Sembilan
50.	Sg. Endau	4,739.06	2	Johor/ Pahang
51.	Sg. Pahang	28,682.25	2	Pahang/ Negeri Sembilan
52.	Sg. Rompin	3,939.23	1	Pahang
53.	Sg. Kuantan	1,684.35	1	Pahang
54.	Sg. Bebar	1,117.40	1	Pahang

Jadual 1.9: Senarai lembangan sungai utama di Malaysia (samb.)

Table 1.9: List of major river basins in Malaysia (cont'd)

Bil. No.	Nama lembangan sungai <i>River basins name</i>	Luas (km ²) <i>Area</i>	Kategori <i>Category</i>	Negeri/ Negara <i>State/ Country</i>
55.	Sg. Mercung	628.26	1	Pahang
56.	Sg. Pontian	319.72	1	Pahang
57.	Sg. Penur	146.43	1	Pahang
58.	Sg. Baluk (Sg. Air Putih)	97.82	1	Pahang
59.	Sg. Cerating	88.54	1	Pahang
60.	Sg. Terengganu	4,596.00	1	Terengganu
61.	Sg. Kemaman	2,190.89	1	Terengganu
62.	Sg. Dungun	1,828.11	1	Terengganu
63.	Sg. Besut	953.22	1	Terengganu
64.	Sg. Setiu	876.19	1	Terengganu
65.	Sg. Paka	832.23	1	Terengganu
66.	Sg. Marang	411.89	1	Terengganu
67.	Sg. Keluang Besar	287.72	1	Terengganu
68.	Sg. Mercang	259.45	1	Terengganu
69.	Sg. Kertih	248.90	1	Terengganu
70.	Sg. Ibai	124.27	1	Terengganu
71.	Sg. Kelantan	12,981.19	1	Kelantan
72.	Sg. Kemasin	347.66	1	Kelantan
73.	Sg. Semerak	500.50	2	Kelantan/ Terengganu
74.	Sg. Golok	1,011.13	3	Kelantan/ Thailand
75.	Trusan Kinabatangan	16,072.95	1	Sabah
76.	Sg. Padas	8,822.16	1	Sabah
77.	Sg. Labuk	5,667.59	1	Sabah
78.	Sg. Segama	4,402.69	1	Sabah
79.	Sg. Sugut	3,066.72	1	Sabah
80.	Sg. Kalabakan	1,337.44	1	Sabah
81.	Sg. Kalumpang	1,112.01	1	Sabah
82.	Sg. Tuaran	988.42	1	Sabah
83.	Sg. Abai	861.88	1	Sabah
84.	Sg. Kretam Besar	844.74	1	Sabah
85.	Sg. Maruap	839.31	1	Sabah
86.	Sg. Tuingkayu	789.78	1	Sabah
87.	Sg. Papar	788.03	1	Sabah

Jadual 1.9: Senarai lembangan sungai utama di Malaysia (samb.)

Table 1.9: List of major river basins in Malaysia (cont'd)

Bil. No.	Nama lembangan sungai River basins name	Luas (km ²) Area	Kategori Category	Negeri/ Negara State/ Country
88.	Sg. Tandek	703.92	1	Sabah
89.	Sg. Serudong	698.93	1	Sabah
90.	Sg. Paitan	670.48	1	Sabah
91.	Sg. Brantian	599.06	1	Sabah
92.	Sg. Mengalong	587.85	1	Sabah
93.	Sg. Silabukan	525.72	1	Sabah
94.	Sg. Bongon	499.50	1	Sabah
95.	Sg. Klias	479.79	1	Sabah
96.	Sg. Bongaya	444.79	1	Sabah
97.	Sg. Umas Umas	415.37	1	Sabah
98.	Sg. Kaindangan	375.11	1	Sabah
99.	Sg. Tiram	352.46	1	Sabah
100.	Sg. Bukau	349.72	1	Sabah
101.	Sg. Sinsilog	305.16	1	Sabah
102.	Sg. Membakut	292.24	1	Sabah
103.	Sg. Sengarong	278.13	1	Sabah
104.	Sg. Burong	275.99	1	Sabah
105.	Sg. Monyog	274.26	1	Sabah
106.	Sg. Samawang	260.47	1	Sabah
107.	Sg. Bandau	253.21	1	Sabah
108.	Sg. Ulu Tungku	250.39	1	Sabah
109.	Sg. Segaliud	248.94	1	Sabah
110.	Sg. Kanibongan	227.78	1	Sabah
111.	Sg. Keguraan	226.12	1	Sabah
112.	Sg. Sahabat	225.12	1	Sabah
113.	Sg. K.Klagan	208.46	1	Sabah
114.	Sg. Bongawan	206.81	1	Sabah
115.	Sg. Lakutan	204.39	1	Sabah
116.	Sg. Langkon	202.94	1	Sabah
117.	Sg. Mumiang	198.31	1	Sabah
118.	Sg. Kimanis	190.43	1	Sabah
119.	Sg. Gum-Gum Besar	163.74	1	Sabah
120.	Sg. Binsuluk	160.88	1	Sabah

Jadual 1.9: Senarai lembangan sungai utama di Malaysia (samb.)

Table 1.9: List of major river basins in Malaysia (cont'd)

Bil. No.	Nama lembangan sungai <i>River basins name</i>	Luas (km ²) <i>Area</i>	Kategori <i>Category</i>	Negeri/ Negara <i>State/ Country</i>
121.	Sg. Telaga	155.78	1	Sabah
122.	Sg. Mamahat	152.16	1	Sabah
123.	Sg. Sapagaya	127.99	1	Sabah
124.	Sg. Merotai	149.60	1	Sabah
125.	Sg. Jeragan Bistari	148.09	1	Sabah
126.	Sg. Tawau	142.19	1	Sabah
127.	Sg. Pegagau	141.54	1	Sabah
128.	Sg. Sepagaya	127.99	1	Sabah
129.	Sg. Sulaman	127.60	1	Sabah
130.	Sg. Kolapis	121.26	1	Sabah
131.	Sg. Sabahan	120.95	1	Sabah
132.	Sg. Tanjung Labian	116.80	1	Sabah
133.	Sg. Apas	116.04	1	Sabah
134.	Sg. Mengkabong	114.66	1	Sabah
135.	Sg. Milau	114.38	1	Sabah
136.	Sg. Tempasuk	110.15	1	Sabah
137.	Sg. Sekong Besar	108.15	1	Sabah
138.	Sg. Betotan	107.99	1	Sabah
139.	Sg. Suanlamba Besar	100.86	1	Sabah
140.	Sg. Inanam	95.90	1	Sabah
141.	Sg. Simandalan	93.50	1	Sabah
142.	Sg. Tatulit	90.64	1	Sabah
143.	Sg. Bode Besar	89.86	1	Sabah
144.	Sg. Pimpin	85.73	1	Sabah
145.	Sg. Sibunga Besar	81.89	1	Sabah
146.	Sg. Manalunan	81.37	1	Sabah
147.	Sg. Tegupi	81.35	1	Sabah
148.	Sg. Sibuku	799.45	3	Sabah/ Indonesia
149.	Sg. Sembakung	5,467.77	3	Sabah/ Indonesia
150.	Batang Balingian	2,227.47	1	Sarawak
151.	Batang Baram	22,109.00	1	Sarawak
152.	Batang Kayan	1,063.38	1	Sarawak
153.	Batang Kemena	5,765.56	1	Sarawak

Jadual 1.9: Senarai lembangan sungai utama di Malaysia (samb.)

Table 1.9: List of major river basins in Malaysia (cont'd)

Bil. No.	Nama lembangan sungai River basins name	Luas (km ²) Area	Kategori Category	Negeri/ Negara State/ Country
154.	Batang Kerian	1,479.11	1	Sarawak
155.	Batang Lawas	996.75	1	Sarawak
156.	Batang Lupar	5,942.87	1	Sarawak
157.	Batang Matu	355.56	1	Sarawak
158.	Batang Mukah	2,030.60	1	Sarawak
159.	Batang Oya	2,078.89	1	Sarawak
160.	Batang Rajang	50,531.60	1	Sarawak
161.	Batang Rambungan	132.41	1	Sarawak
162.	Batang Sadong	3,526.61	1	Sarawak
163.	Batang Salak	97.80	1	Sarawak
164.	Batang Samarahan	903.09	1	Sarawak
165.	Batang Saribas	1,905.66	1	Sarawak
166.	Batang Suai	1,443.19	1	Sarawak
167.	Batang Tatau	4,848.21	1	Sarawak
168.	Batang Terusan	2,443.09	1	Sarawak
169.	Sg. Bayan	91.17	1	Sarawak
170.	Sg. Bedengan	111.60	1	Sarawak
171.	Sg. Maludam	164.01	1	Sarawak
172.	Sg. Samunsam	176.09	1	Sarawak
173.	Sg. Santubong	114.51	1	Sarawak
174.	Sg. Sematan	216.64	1	Sarawak
175.	Sg. Siang-Siang	95.04	1	Sarawak
176.	Sg. Sibu Laut	128.70	1	Sarawak
177.	Sg. Sparan	93.26	3	Sarawak/ Indonesia
178.	Sg. Likau	106.46	1	Sarawak
179.	Sg. Limbang	3,682.40	1	Sarawak
180.	Sg. Miri	680.91	1	Sarawak
181.	Sg. Niah	1,316.20	1	Sarawak
182.	Sg. Nyalau	267.27	1	Sarawak
183.	Sg. Sarawak	1,726.84	1	Sarawak
184.	Sg. Sarupai Sadupai	217.41	1	Sarawak
185.	Sg. Sebuyau	520.53	1	Sarawak
186.	Sg. Sibuti	892.66	1	Sarawak

Jadual 1.9: Senarai lembangan sungai utama di Malaysia (samb.)

Table 1.9: List of major river basins in Malaysia (cont'd)

Bil. No.	Nama lembangan sungai River basins name	Luas (km ²) Area	Kategori Category	Negeri/ Negara State/ Country
187.	Sg. Similajau	532.02	1	Sarawak
188.	Sg. Telong	97.75	1	Sarawak
189.	Sg. Pandaruan	222.38	3	Sarawak/ Brunei

Nota:

Notes:

Sumber: Jabatan Pengairan dan Saliran

Source: Department of Irrigation and Drainage

Kajian Persempadanan Lembangan Sungai Malaysia Fasa I oleh Bahagian Pengurusan Lembangan Sungai (2009)

Malaysia River Basin Boundary Study Phase I by the River Basin Management Division (2009)

Kategori 1: Lembangan sungai dalam 1 negeri

Category 1: River basin within the state

Kategori 2: Lembangan sungai melibatkan lebih dari 1 negeri

Category 2: River basin shared with more than 1 state

Kategori 3: Lembangan sungai melibatkan negara lain

Category 3: River basin shared with other country

Lembangan sungai utama: Lembangan yang berkeluasan melebihi 80 km²Main river basins: An area of over 80 km²**Jadual 1.10: Lembangan sungai yang diawasi mengikut kategori, Malaysia, 2018-2022**

Table 1.10: River basins monitored by category, Malaysia, 2018-2022

Kategori Category	2018		2019		2020		2021		2022	
	Bil. No.	%	Bil. No.	%	Bil. No.	%	Bil. No.	%	Bil. No.	%
Jumlah stesen pengawasan Total monitoring stations	1,353		1,353		1,353		1,351		1,353	
Jumlah lembangan sungai yang diawasi Total river basins monitored	143	100.0	144	100.0	144	100.0	144	100.0	144	100
Bersih Clean	79	55.0	85	59.0	104	72.2	108	75.0	108	75.0
Sederhana Tercemar Slightly Polluted	54	38.0	49	34.0	33	22.9	29	20.1	30	20.8
Tercemar Polluted	10	7.0	10	7.0	7	4.9	7	4.9	6	4.2

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

Jadual 1.11: Panjang pantai mengikut negeri, Malaysia

Table 1.11: Coastal length by state, Malaysia

Negeri State	Panjang pantai (km) Coastal length	Peratus Per cent
Malaysia	8,840.0	100.0
Johor	813.6	9.2
Kedah	639.8	7.2
Kelantan	179.5	2.0
Melaka	120.5	1.4
Negeri Sembilan	65.0	0.7
Pahang	378.4	4.3
Perak	397.5	4.5
Perlis	26.4	0.3
Pulau Pinang	215.6	2.4
Sabah	3,752.9	42.5
Sarawak	1,234.1	14.0
Selangor	492.1	5.6
Terengganu	443.1	5.0
W.P. Labuan	81.5	0.9

Nota: National Coastal Erosion Study for Malaysia (2015)

Notes:

Sumber: Jabatan Pengairan dan Saliran

Source: Department of Irrigation and Drainage

Jadual 1.12: Empangan dan kolam takungan di Malaysia

Table 1.12: Dams and reservoirs in Malaysia

Bil. No.	Nama empangan (Tahun siap dibina) Name of dam (Year of completion)	Lokasi (Negeri) Location (State)	Empangan Dams				Kapasiti Capacity (Mm ³)	Kolam takungan Reservoirs		
			Tinggi Height (m)	Panjang puncak Peak length (m)	Aras puncak Top peak (m)	Kawasan tadahan Catchment area (km ²)		Luahan alur limpah maksimum Maximum flood flow (cumecs)	Luas permukaan Surface area (km ²)	Aras biasa Ordinary level (m)
1.	Timah Tasoh (1992)	Perlis	17.30	3,455.00	32.00	191.00	40.00	143.00	13.90	31.00
2.	Padang Saga (1964)	Kedah	8.30	61.00	23.01	12.00	0.20	195.00	0.05	21.18
3.	Bukit Kwong (1979)	Kelantan	7.62	1,524.00	18.29	11.00	14.30	42.50	4.04	16.76
4.	Bukit Merah (1906)	Perak	9.10	579.09	11.28	480.00	74.98	424.80	41.00	8.69
5.	Gopeng (1961)	Perak	8.54	85.34	70.71	10.60	0.00	129.82	n.a.	n.a.
6.	Repas Lama (1925)	Pahang	13.40	210.00	143.29	10.00	0.00	60.00	n.a.	n.a.
7.	Repas Baru (1963)	Pahang	20.00	40.00	128.96	11.00	0.40	85.00	0.05	126.22
8.	Batu (1987)	Selangor	44.00	550.00	109.00	50.00	36.60	228.00	2.50	102.70
9.	Pontian (1985)	Pahang	15.50	350.00	7.50	170.00	40.00	1,775.00	20.00	5.00
10.	Anak Endau (1985)	Pahang	18.00	700.00	23.00	36.00	38.00	380.00	7.20	19.00
11.	Labong (1949)	Johor	10.67	259.00	10.67	16.00	12.80	85.00	6.05	8.03
12.	Bekok (1990)	Johor	20.30	3,460.00	23.00	326.00	32.00	5,341.00	12.00	13.30
13.	Sembrong (1984)	Johor	11.00	1,770.00	15.00	130.00	18.00	640.00	8.50	8.50
14.	Macap (1982)	Johor	11.50	550.00	19.81	77.00	30.60	306.00	9.09	15.85
15.	Perting (2003)	Pahang	21.50	138.60	118.00	125.00	n.a.	28.30	1.05	n.a.
16.	Beris (2004)	Kedah	40.00	155.00	88.00	116.00	122.40	260.00	16.10	84.00
17.	Kenyir (1992)	Terengganu	155.00	800.00	155.00	2,500.00	13,500.00	7,000.00	369.00	145.00
18.	Pergau (1996)	Kelantan	75.00	750.00	642.00	154.00	62.50	2,470.00	4.30	636.00
19.	Sultan Abu Bakar SAB (1963)	Pahang	40.00	152.00	1,071.00	159.00	6.70	963.00	0.50	1,070.00
20.	Jor (1968)	Perak	45.00	209.00	497.00	275.00	308.00	1,104.00	0.30	493.00
21.	Mahang (1968)	Perak	20.00	229.00	73.00	359.00	0.40	50.00	0.10	72.00
22.	Temenggor (1977)	Perak	127.00	537.00	257.00	3,506.00	6,050.00	2,830.00	174.00	248.00
23.	Bersia (1983)	Perak	35.50	252.00	143.30	3,550.00	57.70	5,280.00	5.70	141.50

Jadual 1.12: Empangan dan kolam takungan di Malaysia (samb.)

Table 1.12: Dams and reservoirs in Malaysia (cont'd)

Bil. No.	Nama empangan (Tahun siap dibina) Name of dam (Year of completion)	Lokasi (Negeri) Location (State)	Empangan Dams				Kapasiti Capacity (Mm ³)	Kolam Takungan Reservoirs		
			Tinggi Height (m)	Panjang puncak Peak length (m)	Aras puncak Top peak (m)	Kawasan tadahan Catchment area (km ²)		Luahan alur limpah maksimum Maximum flood flow (cumecs)	Luas permukaan Surface area (km ²)	Aras biasa Ordinary level (m)
24.	Kenering (1984)	Perak	45.50	540.00	113.70	5,713.00	352.00	96.00	40.50	111.30
25.	Chederoh (1930)	Perak	20.10	390.00	60.50	6,688.00	95.00	14,700.00	20.50	60.40
26.	Durian Tunggal (1974)	Melaka	25.00	285.00	31.00	41.40	32.60	362.00	5.80	28.41
27.	Asahan (1932)	Melaka	10.00	350.00	71.25	n.a.	0.70	-	0.17	70.95
28.	Ayer Keroh (1980)	Melaka	7.00	120.00	22.20	1.69	0.30	-	0.09	20.73
29.	Bunded Storage (1991)	Melaka	10.00	2,200.00	5.50	0.40	0.85	-	0.40	3.00
30.	Jus (2003)	Melaka	30.00	1,300.00	75.50	23.00	45.00	122.00	5.35	73.00
31.	Batang Ai Hydroelectric Station (1985)	Sarawak	85.00	649.00	115.00	1,200.00	2,650.00	2,613.00	90.00	112.00
32.	Tenom (1984)	Sabah	-	-	-	7,815.00	4.70	690.00	-	173.90
33.	Klang Gates (1956)	Selangor	35.89	138.70	97.87	77.16	32.02	400.00	270.00	95.22
34.	Langat (1976)	Selangor	61.00	366.00	223.71	41.44	38.42	550.00	2,500.00	220.95
35.	Tasik Subang (1950)	Selangor	9.10	123.00	38.71	10.16	3.50	22.00	0.75	37.87
36.	Semenyih (1982)	Selangor	49.00	800.00	115.00	56.70	61.40	20,000.00	3.50	111.00
37.	Sungai Tinggi (1995)	Selangor	57.50	280.00	53.00	40.00	122.50	1,800.00	8.00	59.50
38.	Sungai Selangor (2001)	Selangor	110.00	800.00	227.00	19.70	235.00	3,000.00	6.00	220.00
39.	Kelinchi (1998)	Negeri Sembilan	70.00	270.00	220.00	38.30	50.00	576.00	1.90	215.00
40.	Sungai Beringin (1990)	Negeri Sembilan	14.00	111.00	139.00	5.65	0.53	215.00	0.50	135.00
41.	Sungai Terip (1987)	Negeri Sembilan	43.00	500.00	105.50	25.90	48.00	340.00	2.43	103.00
42.	Hulu Muar (1992)	Negeri Sembilan	52.00	300.00	162.00	144.00	53.00	2,150.00	4.00	154.00
43.	Gemenceh (1999)	Negeri Sembilan	39.00	270.00	116.50	36.90	30.80	230.00	2.80	111.00
44.	Babagon (1997)	Sabah	73.00	375.00	133.10	30.00	16.60	2,136.00	0.75	122.00
45.	Pinangsoo (1969)	Sabah	12.00	65.00	18.30	3.37	0.49	84.00	0.50	16.24

Jadual 1.12: Empangan dan kolam takungan di Malaysia (samb.)

Table 1.12: Dams and reservoirs in Malaysia (cont'd)

Bil. No.	Nama empangan (Tahun siap dibina) Name of dam (Year of completion)	Lokasi (Negeri) Location (State)	Empangan Dams				Kapasiti Capacity (Mm ³)	Kolam Takungan Reservoirs		
			Tinggi Height (m)	Panjang puncak Peak length (m)	Aras puncak Top peak (m)	Kawasan tadahan Catchment area (km ²)		Luahan alur limpah maksimum Maximum flood flow (cumecs)	Luas permukaan Surface area (km ²)	Aras biasa Ordinary level (m)
46.	Sepagaya (1984)	Sabah	22.86	73.15	82.30	25.90	2.05	70.00	0.28	80.00
47.	Timbangan (1984)	Sabah	15.24	156.00	57.60	21.70	0.81	162.00	0.22	55.5
48.	Sg Cheneh (2002)	Pahang	48.00	400.00	80.50	152.00	260.00	1,223.00	16.20	74.00
49.	Malut (1967)	Kedah	40.00	265.00	79.00	3.40	7.16	150.00	0.58	75.00
50.	Bukit Kuda (1985)	W.P. Labuan	16.76	304.80	16.76	2.00	4.02	16.99	1.05	15.24
51.	Kerupang (1985)	W.P. Labuan	11.60	91.40	16.76	0.49	0.22	14.16	0.05	12.20
52.	Sg. Pagar (1985)	W.P. Labuan	18.29	103.60	20.42	0.77	0.34	24.07	0.09	15.24
53.	Air Hitam (1962)	Pulau Pinang	51.80	243.90	236.54	5.75	2.61	113.00	0.20	234.70
54.	Mengkuang (1985)	Pulau Pinang	46.34	1,005.00	45.34	3.90	23.60	430.00	1.74	43.30
55.	Teluk Bahang (1999)	Pulau Pinang	53.50	685.00	53.50	9.84	19.24	760.00	0.95	48.00
56.	Cherok To'Kun (1834)	Pulau Pinang	11.00	2.00	11.00	1.29	0.08	n.a.	0.10	10.00
57.	Berapit (1896)	Pulau Pinang	12.50	2.00	12.50	1.15	0.15	n.a.	2.10	12.00
58.	Bukit Panchor (1931)	Pulau Pinang	7.30	10.00	7.30	6.00	0.27	n.a.	0.50	5.80
59.	Congok (1960)	Johor	7.00	660.00	7.50	15.50	1.00	n.a.	4.52	5.30
60.	Juaseh (1992)	Johor	30.00	86.50	86.50	29.47	30.00	382.00	2.71	82.50
61.	Lebam (1979)	Johor	9.00	400.00	16.00	19.39	13.60	212.20	3.95	14.00
62.	Gunung Ledang (1959)	Johor	10.50	79.40	n.a.	n.a.	0.30	n.a.	n.a.	n.a.
63.	Layang (Lower) (1985)	Johor	8.00	700.00	9.00	25.00	15.00	9.00	3.40	3.0 - 5.0
64.	Layang (Upper) (1985)	Johor	20.00	600.00	29.20	30.5	45.00	191.00	6.50	22.0-25.0
65.	Air Kuning (1991)	Perak	18.00	520.00	44.00	16.13	1.80	7.70	0.02	42.50
66.	Sultan Azlan Shah/ Sg. Kinta (2006)	Perak	90.00	797.00	250.00	145.00	29.55	2,250.00	1.01	245.00
67.	Sika (1963)	Sarawak	27.00	270.00	25.00	30.00	3.28	n.a.	0.35	20.00

Jadual 1.12: Empangan dan kolam takungan di Malaysia (samb.)

Table 1.12: Dams and reservoirs in Malaysia (cont'd)

Bil. No.	Nama empangan (Tahun siap dibina) Name of dam (Year of completion)	Lokasi (Negeri) Location (State)	Empangan Dams				Kolam Takungan Reservoirs			
			Tinggi Height (m)	Panjang puncak Peak length (m)	Aras puncak Top peak (m)	Kawasan tadahan Catchment area (km ²)	Kapasiti Capacity (Mm ³)	Luahan alur limpah maksimum Maximum flood flow (cumecs)	Luas permukaan Surface area (km ²)	Aras biasa Ordinary level (m)
68.	Assyakirin (2004)	Sarawak	n.a.	1,000.00	35.00	27.90	n.a.	n.a.	n.a.	30.00
69.	Air Kuning (1934)	Selangor	10.00	50.00	35.50	27.90	0.06	n.a	0.04	31.00
70.	Sg. Baru (1934)	Selangor	10.30	67.00	38.30	0.90	0.15	690.00	0.05	37.80
71.	Muda (1966)	Kedah	37.00	250.00	105.15	984.00	154.00	2,000.00	15.50	83.69 - 103.29
72.	Pedu (1966)	Kedah	61.00	220.00	100.13	171.00	1,080.00	280.00	52.00	75.60 - 98.60
73.	Ahning (1985)	Kedah	74.00	27.00	115.50	120.00	275.00	840.00	11.00	89.57- 114.00

Sumber: Jabatan Pengairan dan Saliran
Source: Department of Irrigation and Drainage

Jadual 1.13: Keluasan tanah mengikut negeri dan daerah, Malaysia, 2023

Table 1.13: Land area by state and district, Malaysia, 2023

Bil. No.	Negeri/ Daerah State/	Keluasan (km ²) Area
MALAYSIA		330,876.5
Johor		19,165.86
1.	Batu Pahat	1,966.31
2.	Johor Bahru	1,065.84
3.	Kluang	2,864.53
4.	Kota Tinggi	3,488.55
5.	Mersing	2,856.58
6.	Muar	1,392.59
7.	Pontian	932.63
8.	Segamat	2,866.56
9.	Kulai	755.52
10.	Tangkak	976.76
Kedah		9,492.00
1.	Baling	1,529.00
2.	Bandar Baharu	271.00
3.	Kota Setar	420.00
4.	Kuala Muda	913.00
5.	Kubang Pasu	946.00
6.	Kulim	774.00
7.	Langkawi	526.00
8.	Padang Terap	1,359.00
9.	Sik	1,635.00
10.	Yan	246.00
11.	Pendang	629.00
12.	Pokok Sena	244.00
Kelantan		15,033.12
1.	Bachok	278.57
2.	Kota Bahru	402.78
3.	Machang	526.38
4.	Pasir Mas	569.51
5.	Pasir Puteh	423.28
6.	Tanah Merah	879.80
7.	Tumpat	180.32
8.	Gua Musang	6,354.42
9.	Kuala Krai	2,274.77
10.	Lojing	1,817.00
11.	Jeli	1,326.29
Melaka		1,746.70
1.	Alor Gajah	695.60
2.	Jasin	689.10
3.	Melaka Tengah	362.00

Jadual 1.13: Keluasan tanah mengikut negeri dan daerah, Malaysia, 2023 (samb.)

Table 1.13: Land area by state and district, Malaysia, 2023 (cont'd)

Bil. No.	Negeri/ Daerah State/ Area	Keluasan (km ²) Area
Negeri Sembilan		6,727.44
1.	Jelevu	1,353.99
2.	Kuala Pilah	1,031.23
3.	Port Dickson	629.33
4.	Rembau	407.81
5.	Seremban	957.84
6.	Tampin	855.09
7.	Jempol	1,491.14
Pahang		36,037.14
1.	Bentong	1,784.40
2.	Cameron Highlands	685.30
3.	Jerantut	7,304.55
4.	Kuantan	2,874.65
5.	Lipis	2,105.65
6.	Pekan	3,605.60
7.	Raub	2,339.00
8.	Temerloh	2,272.10
9.	Rompin	2,149.41
10.	Maran	1,879.12
11.	Bera	2,213.69
Perak		21,146.33
1.	Batang Padang	1,794.33
2.	Muallim	949.18
3.	Manjung	1,126.44
4.	Kinta	1,304.98
5.	Kerian	938.08
6.	Kuala Kangsar	2,561.51
7.	Larut dan Matang	1,340.70
8.	Hilir Perak	821.41
9.	Hulu Perak	6,612.90
10.	Selama	774.03
11.	Perak Tengah	1,281.67
12.	Kampar	666.61
13.	Bagan Datuk	974.50
Perlis		819.00
Pulau Pinang		1,074.08
1.	Seberang Perai Tengah (Bukit Mertajam)	237.92
2.	Seberang Perai Utara (Butterworth)	271.90
3.	Seberang Perai Selatan (Nibong Tebal)	242.34
4.	Timur Laut	133.07
5.	Barat Daya	188.86

Jadual 1.13: Keluasan tanah mengikut negeri dan daerah, Malaysia, 2023 (samb.)

Table 1.13: Land area by state and district, Malaysia, 2023 (cont'd)

Bil. No.	Negeri/ Daerah State/	Keluasan (km ²) Area
Sabah		74,100.43
1.	Tawau	2,249.54
2.	Lahad Datu	7,480.29
3.	Semporna	1,116.63
4.	Sandakan	2,267.75
5.	Kinabatangan	6,580.14
6.	Labuk dan Sugut	6,073.23
7.	Kota Kinabalu	368.35
8.	Ranau	3,658.89
9.	Kota Belud	1,388.47
10.	Tuaran	1,148.01
11.	Penampang	442.01
12.	Papar	1,095.98
13.	Kudat	1,299.31
14.	Kota Marudu	1,767.97
15.	Pitas	1,507.44
16.	Beaufort	1,510.14
17.	Kuala Penyu	445.85
18.	Sipitang	2,738.63
19.	Tenom	2,406.89
20.	Pensiangan/ Nabawan	5,951.29
21.	Keningau	3,276.15
22.	Tambunan	1,341.59
23.	Kunak	1,113.81
24.	Tongod	10,356.26
25.	Putatan	29.87
26.	Telupid	2,210.25
027.	Kalabakan	3,874.81
28.	Membakut	400.88
Sarawak		124,173.90
1.	Kuching	1,498.4
2.	Bau	775.0
3.	Lundu	1,835.4
4.	Samarahan	421.1
5.	Asajaya	289.7
6.	Simunjan	395.6
7.	Gedong	611.6
8.	Sebuyau	707.2
9.	Serian	1,774.0
10.	Tebedu	691.8
11.	Siburan	356.7
12.	Sri Aman	1,174.0
13.	Pantu	760.6
14.	Lingga	519.9

Jadual 1.13: Keluasan tanah mengikut negeri dan daerah, Malaysia, 2023 (samb.)

Table 1.13: Land area by state and district, Malaysia, 2023 (cont'd)

Bil. No.	Negeri/ Daerah State/ Area	Keluasan (km ²) Area
15.	Lubok Antu	3,173.9
16.	Betong	1,561.1
17.	Saratok	867.2
18.	Pusa	939.5
19.	Kabong	832.0
20.	Sarikei	958.0
21.	Pakan	908.8
22.	Maradong	740.1
23.	Daro	1,118.5
24.	Matu	1,600.8
25.	Tanjung Manis	832.9
26.	Julau	1,729.9
27.	Sibu	2,192.2
28.	Dalat	948.1
29.	Mukah	2,468.8
30.	Kanowit	2,241.8
31.	Bintulu	1,973.4
32.	Sebauh	5,126.1
33.	Tatau	5,112.9
34.	Kapit	3,973.4
35.	Song	3,664.9
36.	Belaga	16,125.8
37.	Bukit Mabong	14,924.7
38.	Miri	5,159.8
39.	Marudi	3,078.6
40.	Limbang	3,974.6
41.	Lawas	3,680.2
42.	Selangau	3,912.4
43.	Telang Usan	9,816.1
44.	Beluru	4,905.1
45.	Subis	3,821.3
Selangor		8,019.04
1.	Gombak	625.36
2.	Klang	643.13
3.	Kuala Langat	859.63
4.	Kuala Selangor	1,190.07
5.	Petaling	520.53
6.	Sabak Bernam	1,008.60
7.	Sepang	583.14
8.	Hulu Langat	835.57
9.	Hulu Selangor	1,753.01
Terengganu		12,957.57
1.	Besut	1,233.67
2.	Dungun	2,735.04

Jadual 1.13: Keluasan tanah mengikut negeri dan daerah, Malaysia, 2023 (samb.)

Table 1.13: Land area by state and district, Malaysia, 2023 (cont'd)

Bil. No.	Negeri/ Daerah State/	Keluasan (km ²) Area
3.	Kemaman	2,535.60
4.	Kuala Terengganu	210.21
5.	Kuala Nerus	397.52
6.	Marang	666.54
7.	Hulu Terengganu	3,874.63
8.	Setiu	1,304.36
W.P. Kuala Lumpur		243.00
W.P. Putrajaya		49.30
W.P. Labuan		91.64

**Sumber: Jabatan Ukur dan Pemetaan Malaysia, Jabatan Tanah & Ukur Sabah
Jabatan Tanah & Survei, Sarawak**

**Source: Department of Survey and Mapping Malaysia, Sabah Lands & Surveys Department
Land & Survey Department, Sarawak**

Jadual 1.14: Bilangan spesis fauna mengikut kategori, Semenanjung Malaysia, 2018-2022

Table 1.14: Number of fauna species by category, Peninsular Malaysia, 2018-2022

Tahun Year	Endemik Endemic	Terancam Threatened	Pupus Extinct	Spesis asing invasif Invasive alien species
2018	84	198	2	22
2019	84	198	2	22
2020	84	198	2	22
2021	84	198	2	22
2022	84	198	2	22

Sumber: Jabatan Perlindungan Hidupan Liar dan Taman Negara

Source: Department of Wildlife and National Parks

Jadual 1.15: Spesis fauna endemik mengikut kelas, Semenanjung Malaysia, 2018-2022Table 1.15: *Endemic fauna species by class, Peninsular Malaysia, 2018-2022*

Tahun Year	Mamalia Mammals		Burung Birds		Reptilia Reptiles		Amfibia Amphibian	
	Bil.	%	Bil.	%	Bil.	%	Bil.	%
2018	9	31.5	4	19.7	40	1.3	31	4.3
2019	9	31.5	4	19.7	40	1.3	31	4.3
2020	9	31.5	4	19.7	40	1.3	31	4.3
2021	9	31.5	4	19.7	40	1.3	31	4.3
2022	9	31.5	4	19.7	40	1.3	31	4.3

Sumber: Jabatan Perlindungan Hidupan Liar dan Taman Negara
Source: Department of Wildlife and National Parks

Jadual 1.16a: Kawasan perlindungan yang digazet, Semenanjung Malaysia

Table 1.16a: *Gazetted protected area, Peninsular Malaysia*

Negeri State	Kawasan perlindungan Protected area	Keluasan (Hektar) Area (Hectares)	Bilangan spesis Number of species			
			Fauna			
			Mamalia Mammals	Burung Birds	Reptilia Reptiles	Amfibia Amphibians
Johor	Taman Negara (Johor) Endau Rompin	48,905.0	65	257	26	46
	Taman Negara Gunung Ledang	8,611.9	38	169	9	9
	Taman Negara Johor Pulau Kukup	647.5	7	81	7	1
	Taman Negara Johor Tanjung Piai	325.0	7	43	7	1
	Tapak Ramsar Sungai Pulai	9,126.0	7	81	7	1
	Rezab Hidupan Liar Endau Kluang	52,493.0	3	-	23	-
	Rezab Hidupan Liar Endau Kota Tinggi	45,581.0	-	-	-	-
	Rezab Hidupan Liar Four Islands	1.0	-	-	-	-
	Rezab Hidupan Liar Segamat	12,216.0	-	-	-	-
Kedah	Pusat Pemuliharaan Hidupan Liar Tuntung B kt. Pinang	1.0	-	-	-	-
Kelantan	Taman Negara Negeri Kelantan	80,250.0	178	353	101	81
	Taman Negeri Gunung Stong	21,950.0	106	57	30	18
Melaka	Rezab Hidupan Liar Sembilan Pulau (Nine Islands)	1.0	-	-	-	-
	Rezab Hidupan Liar Tanjung Tuan	75.0	12	62	8	3
Negeri Sembilan	Rizab Hidupan Liar Pulau Port Dickson	0.5	-	-	-	-
Pahang	Rezab Hidupan Liar Bukit Fraser Pahang	2,000.0	-	-	-	-
	Rezab Hidupan Liar Krau	62,395.0	146	315	62	62
	Rezab Hidupan Liar Pahang Tua	1,335.0	-	-	-	-
	Rezab Hidupan Liar Pulau Tioman	9,455.0	67	33	101	75
	Taman Negara Pahang	248,121.0	179	512	101	77
	Tapak Ramsar Tasek Bera	31,255.0	33	115	14	29
Perak	Pusat Pemuliharaan Hidupan Liar Tuntung Bota Kanan	6.0	-	-	-	-
	Rezab Hidupan Liar Chior	689.0	-	-	-	-
	Rezab Hidupan Liar Sungkai	2,468.0	15	92	-	17
	Rizab Hidupan Liar Batu Gajah (Perak)	4.5	-	-	-	-
	Taman Negeri Royal Belum	117,500.0	144	247	23	24
	Pulau Sembilan State Park	182.0	-	-	-	-

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Jadual 1.16a: Kawasan perlindungan yang digazet, Semenanjung Malaysia (samb.)

Table 1.16a: *Gazetted protected area, Peninsular Malaysia, (cont'd)*

Negeri State	Kawasan perlindungan Protected area	Keluasan (Hektar) Area (Hectares)	Bilangan spesies Number of species			
			Fauna			
			Mamalia Mammals	Burung Birds	Reptilia Reptiles	Amfibia Amphibians
Perlis	Rezab Hidupan Liar Wang Pinang	68.0	-	-	-	-
	Taman Negeri Perlis	4,379.8	99	132	38	-
Pulau Pinang	Taman Negara Pulau Pinang ²	2,563.0	52	174	14	15
	Taman Botani Pulau Pinang	241.2	-	-	-	-
Selangor	Paya Indah Wetlands	450.0	14	234	12	2
	Rezab Hidupan Liar Bukit Fraser Selangor	2,979.0	13	49	2	2
	Rezab Hidupan Liar Bukit Kutu	1,943.0	-	-	-	-
	Rezab Hidupan Liar Bukit Sungai Puteh Selangor	36.0	-	-	-	-
	Rezab Hidupan Liar Kuala Selangor	44.0	-	-	-	-
	Rezab Hidupan Liar Sg. Dusun	4,330.0	25	276	16	15
	Rezab Hidupan Liar Taman Templers	966.0	-	-	-	-
	Klang Gates Wild Animals and Birds Protection Reserve	130.0	-	-	-	-
	Taman Warisan Selangor	93,001.8	114	355	-	202
	Templer's Park Forest Sanctuary for Wild Life	853.3	-	-	-	-
	Taman Alam Kuala Selangor Nature Park	323.8	20	169	15	16
Terengganu	Rizab Tuntung Bukit Palong	1.0	-	-	-	-
	Taman Negara Terengganu	103,082.0	178	161	101	79
	Pusat Santuari Penyu Ma'Daerah	23.7	-	-	1	-
	Pusat Santuari Penyu Rantau Abang	1,400.0	-	-	-	-
W.P. Kuala Lumpur	Rezab Hidupan Liar Bukit Nanas	16.0	-	-	-	-
	Rezab Hidupan Liar Bukit Sungai Puteh Kuala Lumpur	4.0	-	-	-	-
	Rezab Hidupan Liar Kelab Golf Di Raja	403.0	-	-	-	-
	Selangor					

Nota/Notes:

¹Lain-lain invertebrat seperti Serangga, Arthropods dan Echinoderms

Other invertebrates like Insects, Arthropods and Echinoderms

²Termasuk Taman Negara Pantai Aceh dan Pusat Konservasi Penyu Pantai Keranchut

Includes Taman Negara Pantai Aceh and Pusat Konservasi Penyu Pantai Keranchut

Meliputi maklumat daripada Jabatan Perlindungan Hidupan Liar dan Taman Negara, Jabatan Perhutanan Semenanjung Malaysia, Jabatan Perikanan, Perbadanan Negeri Perak, Perbadanan Taman Negeri Johor, Kerajaan Negeri Pulau Pinang dan Majlis Daerah Kuala Selangor.

Includes information from Department of Wildlife and National Parks, Department of Forestry Peninsular Malaysia, Department of Fisheries, Perak State Parks Corporation, Johor National Parks Corporation, Penang State Government and Kuala Selangor District Council.

- : Tidak diliputi oleh agensi semasa tahun rujukan Banci Kawasan Perlindungan dan Kepelbagaian Biologi 2014
Not covered by the agency during Biodiversity and Protected Areas Census 2014 reference year

Bilangan spesies Number of species							
Fauna				Flora			
Moluska Molluscs	Ikan Fish	Cnidarians	Spesis invertebrat yang lain ¹ Other invertebrate species	Rumpai laut Seaweeds	Rumput laut Sea grass	Tumbuhan Plants	
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	651
-	-	-	51	-	-	-	-
-	-	-	-	-	-	-	-
-	2	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	34	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	104	-	1,814	-	-	-	3,223
-	-	-	-	-	-	-	-
4	5	2	24	-	-	-	22
-	-	-	-	-	-	-	-
-	-	-	1	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Jadual 1.16b: Kawasan perlindungan yang digazet, SabahTable 1.16b: *Gazetted protected area, Sabah*

Bil. No.	Kawasan perlindungan Protected area	Keluasan (Hektar) Area (Hectares)	Bilangan spesies Number of species			
			Fauna			
			Mamalia Mammals	Burung Birds	Reptilia Reptiles	Amfibia Amphibians
a. Taman Parks						
1.	Taman Marin Tun Sakaran	35,000.0	4	-	18	1
2.	Taman Banjaran Crocker	139,919.0	63	254	110	128
3.	Taman Bukit Tawau	27,972.0	78	133	155	68
4.	Taman Kinabalu	75,370.0	146	355	178	137
5.	Taman Pulau Penyu	1,740.0	5	20	7	-
6.	Taman Pulau Tiga	15,864.0	10	44	26	3
7.	Taman Pulau Sipadan	16,860.0	-	50	7	-
8.	Taman Tunku Abdul Rahman	4,929.0	10	32	37	6
b. Rizab Hidupan Liar Wildlife Reserve						
1.	Rizab Hidupan Liar Kulamba Kinabatangan	20,854.0	8	-	-	-
2.	Hutan Simpan Tabin (Rezab Hidupan Liar Tabin)	120,521.0	71	252	-	-
3.	Sugud Islands Marine Conservation Area (SIMCA)	46,317.0	6	9	3	-
4.	Hutan Simpan Gua Gomantong	3,297.0	2	2	-	-
c. Santuari Hidupan Liar Wildlife Sanctuaries						
1.	Santuari Hidupan Liar Hilir Kinabatangan	26,103.3	11	5	-	-
2.	Santuari Burung Mantanani	61.0	1	4	2	-
3.	Santuari Burung Kota Belud	495.0	-	5	-	-
4.	Santuari Burung Bandaraya Kota Kinabalu	24.0	-	25	97	6
5.	Santuari Hidupan Liar Padang Teratak Beaufort	2,270.0	22	112	4	15
6.	Hutan Simpan Madai Baturong (Kelas VI)	111,971.0	71	252	-	-
7.	Pusat Pemuliharaan Orang Utan Sepilok	4,294.0	299	321	35	22

Nota:

Notes:

¹Lain-lain invertebrat seperti Serangga, Arthropods dan Echinoderms*Other invertebrates like Insects, Arthropods and Echinoderms***Meliputi maklumat daripada Jabatan Hidupan Liar Sabah, Jabatan Perhutanan Sabah, Sabah Wetland Conservation Society dan Taman-Taman Sabah***Includes data from Sabah Wildlife Department, Sabah Forestry Department, Sabah Wetland Conservation Society and Sabah Parks*

- : Tidak diliputi oleh agensi semasa tahun rujukan Banci Kawasan Perlindungan dan Kepelbagaian Biologi 2014

Not covered by the agency during Biodiversity and Protected Areas Census 2014 reference year

Bilangan spesies Number of species						
Fauna				Flora		
Moluska <i>Molluscs</i>	Ikan <i>Fish</i>	Cnidarians	Spesis invertebrat yang lain ¹ <i>Other invertebrate species</i>	Rumpai laut <i>Seaweeds</i>	Rumput laut <i>Sea grass</i>	Tumbuhan <i>Plants</i>
-	-	-	299	-	-	220
28	60	-	623	-	-	1,334
21	38	-	506	-	-	708
69	71	-	1,798	-	-	4,104
92	125	-	199	22	3	29
11	2	-	231	-	-	125
3	-	-	191	-	-	20
1	2	-	179	-	-	145
-	-	-	-	-	-	-
-	-	-	26	-	-	779
103	510	400	99	7	4	3
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
13	-	-	44	-	-	13
-	-	-	-	-	-	9
-	-	-	26	-	-	779
-	202	-	1,001	-	-	10,410

Jadual 1.16c: Kawasan perlindungan sepenuhnya, Sarawak

Table 1.16c: Totally protected area, Sarawak

Bil. No.	Kawasan perlindungan Protected area	Keluasan (Hektar) Area (Hectares)	Bilangan spesies Number of species			
			Fauna			
			Mamalia Mammals	Burung Birds	Reptilia Reptiles	Amfibia Amphibians
a. Taman Negara National Parks						
1.	Taman Negara Bako	2,727.0	49	257	-	48
2.	Taman Negara Batang Ai	24,040.0	37	121	-	9
3.	Taman Negara Bukit Lambir	6,949.0	65	247	85	-
4.	Taman Negara Bukit Tiban	8,000.0	-	-	-	-
5.	Taman Negara Gunung Buda - Ext I	11,307.0	-	300	60	-
6.	Taman Negara Gunung Gading	4,196.0	30	55	6	9
7.	Taman Negara Gunung Mulu - Ext. I dan Ext. II	85,671.0	96	307	-	240
8.	Taman Negara Kubah	2,230.0	23	126	7	66
9.	Taman Negara Kuching Wetlands	6,610.0	-	-	-	-
10.	Taman Negara Loagan Bunut	10,736.0	60	187	34	23
11.	Taman Negara Maludam	43,147.0	6	24	2	-
12.	Taman Negara Terumbu Karang Miri-Sibuti	186,930.0	-	-	-	-
13.	Taman Negara Niah	3,138.0	7	59	-	104
14.	Taman Negara Pulong Tau - Ext. 1	69,817.0	-	-	-	-
15.	Taman Negara Rajang Mangrove	9,373.0	-	-	-	-
16.	Taman Negara Santubong	1,410.0	-	-	-	-
17.	Taman Negara Similajau – Ext I	8,996.0	60	258	-	-
18.	Taman Negara Sedilu	6,311.0	-	-	-	-
19.	Taman Negara Talang Satang	19,414.0 ²	-	6	9	-
20.	Taman Negara Tanjung Datu	1,349.0	35	46	-	11
21.	Taman Negara Banjaran Bungo	8,096.0	-	-	-	-
22.	Taman Negara Ulu Sebuyau	18,287.0	-	-	-	-
23.	Taman Negara Usun Apau	49,355.0	-	-	-	-
24.	Taman Negara Batang Lassa	22,000.0	-	-	-	-
25.	Taman Negara Bruit-Patok	14,526.0	-	-	-	-

Bilangan spesies Number of species							
Fauna				Flora			
Moluska Molluscs	Ikan Fish	Cnidarians	Spesis invertebrat yang lain ¹ Other invertebrate species	Rumpai laut Seaweeds	Rumput laut Sea grass	Tumbuhan Plants	
40	-	-	213	-	-	600	
-	17	-	-	-	-	1,200	
-	-	-	33	-	-	823	
-	-	-	-	-	-	-	
-	-	-	-	-	-	2,500	
-	-	-	14	-	-	58	
20,000	-	-	8,100	-	-	4,300	
94	-	-	88	-	-	298	
-	-	-	-	-	-	-	
-	70	-	231	-	-	637	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	97	-	-	334	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	42	-	-	-	-	131	
-	-	-	-	-	-	-	
-	-	-	-	-	1	-	
-	-	-	40	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	

Jadual 1.16c: Kawasan perlindungan sepenuhnya, Sarawak (samb.)

Table 1.16c: Totally protected area, Sarawak (cont'd)

Bil. No.	Kawasan perlindungan Protected area	Keluasan (Hektar) Area (Hectares)	Bilangan spesies Number of species			
			Fauna			
			Mamalia Mammals	Burung Birds	Reptilia Reptiles	Amfibia Amphibians
26.	Taman Negara Pulau Sampadi	1,240.0	-	-	-	-
27.	Taman Negara Pelagus	2,041.0	-	-	-	-
28.	Taman Negara Gunung Lesong	595.0	-	-	-	-
b. Santuari Hidupan Liar <i>Wildlife Sanctuaries</i>						
1.	Santuari Hidupan Liar Samunsam - Ext I	22,798.0	-	-	-	-
2.	Santuari Hidupan Liar Pulau Tukong Ara-Banun	1.4	-	-	-	-
3.	Santuari Hidupan Liar Lanjak Entimau - Ext I	168,758.0	27	31	5	19
4.	Santuari Hidupan Liar Sibuti	678.0	9	122	-	3
c. Rizab Semulajadi <i>Nature Reserve</i>						
1.	Rezab Semulajadi Fairy Cave	56.0	2	1	1	1
2.	Sama Jaya Nature Reserve	37.9	9	20	4	11
3.	Semangoh Nature Reserves	653.0	38	45	-	-
4.	Bukit Hitam Nature Reserve	147.0	-	-	-	-
5.	Bukit Sembiling Nature Reserve	101.0	-	-	-	-
6.	Rezab Semulajadi Bukit Lima	219.2	2	-	-	-
7.	Pulau Tun Ahmad Zaidi Nature Reserve	547.0	-	-	-	-

Nota:

Notes:

¹Lain-lain invertebrat seperti Serangga, Arthropods dan Echinoderms

Other invertebrates like Insects, Arthropods and Echinoderms

Meliputi maklumat daripada Sarawak Forestry Corporation

Includes information from Sarawak Forestry Corporation

- : Tidak diliputi oleh agensi semasa tahun rujukan Banci Kawasan Perlindungan dan Kepelbagaian Biologi 2014

Not covered by the agency during Biodiversity and Protected Areas Census 2014 reference year

Bilangan spesies Number of species							
Fauna				Flora			
Moluska Molluscs	Ikan Fish	Cnidarians	Spesis invertebrat yang lain ¹ Other invertebrate species	Rumpai laut Seaweeds	Rumput laut Sea grass	Tumbuhan Plants	
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	13	-	1	-	-	-	10
-	-	-	-	-	-	-	-
1	1	-	3	-	-	-	4
-	4	-	30	-	-	-	188
-	-	-	-	-	-	-	1,175
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-

Jadual 1.16d: Kawasan perlindungan yang digazet di bawah taman laut, Semenanjung MalaysiaTable 1.16d: *Gazetted protected area of marine park, Peninsular Malaysia*

Negeri State	Kawasan perlindungan Protected area	Keluasan (Hektar) Area (Hectares)	Bilangan spesies Number of species			
			Fauna		Flora	
			Cnidarians ¹	Ikan Fish	Rumpai laut Seaweeds	Rumput laut Sea grass
Johor	Pulau Aur	9,745.0	51	-	-	-
	Pulau Besar	8,414.0	43	-	-	7
	Pulau Gaol	4,570.0	-	-	-	-
	Pulau Harimau	4,900.0	-	-	-	-
	Pulau Hujung	5,235.0	-	-	-	-
	Pulau Mensirip	4,660.0	-	-	-	-
	Pulau Mentinggi	4,399.0	-	-	-	-
	Pulau Pemanggil	8,790.0	47	121	-	-
	Pulau Rawa	5,080.0	-	-	-	-
	Pulau Sibul	4,260.0	45	-	-	4
	Pulau Sibul Hujung	1,183.0	-	-	-	-
	Pulau Tengah	5,149.0	-	-	-	4
	Pulau Tinggi	10,180.0	155	218	-	6
Kedah	Pulau Kacha	4,290.0	15	7	-	-
	Pulau Lembu	4,613.0	-	9	-	-
	Pulau Payar	5,491.0	32	48	-	-
	Pulau Segantang	4,419.0	12	20	-	-
Pahang	Pulau Chebeh	4,492.0	13	37	-	-
	Pulau Gut (Pulau Jahat)	4,520.0	152	152	-	-
	Pulau Labas	4,478.0	-	-	-	-
	Pulau Sembilang	6,060.0	-	-	-	-
	Pulau Sepoi	4,457.0	-	-	-	-
	Pulau Seri Buat	7,720.0	68	111	-	-
	Pulau Tioman	25,115.0	183	120	-	-
	Pulau Tokong Bahara	4,513.0	70	131	-	-
	Pulau Tulai	6,306.0	39	129	-	-

Jadual 1.16d: Kawasan perlindungan yang digazet di bawah taman laut, Semenanjung Malaysia (samb.)

Table 1.16d: *Gazetted protected area of marine park, Peninsular Malaysia (cont'd)*

Negeri State	Kawasan perlindungan Protected area	Keluasan (Hektar) Area (Hectares)	Bilangan spesies Number of species			
			Fauna		Flora	
			Cnidarians ¹	Ikan Fish	Rumpai laut Seaweeds	Rumput laut Sea grass
Terengganu	Pulau Perhentian Besar	9,121.0	-	58	-	3
	Pulau Perhentian Kecil	8,107.0	-	58	-	2
	Pulau Ekor Tebu	4,060.0	-	-	-	-
	Pulau Kapas	2,133.0	-	112	-	-
	Pulau Lang Tengah	6,150.0	86	73	-	-
	Pulau Lima	4,390.0	96	131	-	-
	Pulau Nyireh/ Pulau Tenggol	10,170.0	-	121	-	-
	Pulau Pinang	4,890.0	-	-	-	-
	Pulau Redang	12,750.0	149	138	-	3
	Pulau Susu Dara	1,428.0	-	-	-	-
	Pulau Yu Besar	3,280.0	-	66	-	-
	Pulau Yu Kecil	3,280.0	-	66	-	-
W.P. Labuan	Pulau Kuraman	6,695.0	54	-	15	-
	Pulau Rusukan Besar	4,470.0	54	-	14	-
	Pulau Rusukan Kecil	4,650.0	53	-	14	-

Nota:

Notes:

¹Termasuk batu karang, anemone, obor-obor, sea fans, sea whips dan zooplankton

Includes corals, anemones, jellyfish, sea fans, sea whips and zooplankton

Meliputi maklumat daripada Jabatan Taman Laut

Includes information from Department of Marine Park

- : Tidak diliputi oleh agensi semasa tahun rujukan Banci Kawasan Perlindungan dan Kepelbagaian Biologi 2014
Not covered by the agency during Biodiversity and Protected Areas Census 2014 reference year

Jadual 1.17: Kawasan berhutan dan tidak berhutan, Malaysia, 2016-2020

Table 1.17: Forested and non-forested areas, Malaysia, 2016-2020

Negeri State	Tahun Year	Berhutan Forested		Tidak Berhutan Non-Forested	
		Hektar Hectares	(%)	Hektar Hectares	(%)
Malaysia	2016	18,241,716	55.37	14,702,224	44.63
	2017	18,332,583	55.61	14,635,793	44.39
	2018	18,273,487	55.35	14,742,578	44.65
	2019	18,135,292	54.85	14,930,189	45.15
	2020	18,045,600	54.58	15,019,881	45.42
Semenanjung Malaysia Peninsular Malaysia	2016	5,773,363	43.79	7,411,266	56.21
	2017	5,766,068	43.65	7,442,997	56.35
	2018	5,758,261	43.59	7,450,804	56.41
	2019	5,734,083	43.41	7,476,361	56.59
	2020	5,694,784	43.06	7,530,049	56.94
Johor	2016	449,212	23.62	1,452,388	76.38
	2017	447,753	23.36	1,468,847	76.64
	2018	447,753	23.36	1,468,847	76.64
	2019	442,884	23.11	1,473,704	76.89
	2020	442,884	23.11	1,473,702	76.89
Kedah	2016	342,431	36.33	600,069	63.67
	2017	342,431	36.33	600,069	63.67
	2018	342,431	36.33	600,069	63.67
	2019	344,945	36.60	597,555	63.40
	2020	344,945	36.34	604,255	63.66
Kelantan	2016	812,196	53.77	698,304	46.23
	2017	810,415	53.65	700,047	46.35
	2018	810,415	53.65	700,047	46.35
	2019	767,203	50.79	743,259	49.21
	2020	767,203	51.01	736,797	48.99
Melaka	2016	5,385	3.26	159,815	96.74
	2017	5,386	3.14	165,914	96.86
	2018	5,448	3.18	165,852	96.82
	2019	5,448	3.18	165,852	96.82
	2020	5,448	3.18	165,752	96.82
Negeri Sembilan	2016	158,089	23.75	507,620	76.25
	2017	158,089	23.75	507,620	76.25
	2018	157,964	23.73	507,745	76.27
	2019	157,907	23.72	507,802	76.28
	2020	157,907	23.72	507,923	76.28
Pahang	2016	2,056,678	57.19	1,539,822	42.81
	2017	2,056,696	57.19	1,539,804	42.81
	2018	2,056,695	57.19	1,539,805	42.81
	2019	2,052,682	57.07	1,543,818	42.93
	2020	2,015,936	56.05	1,580,564	43.95

Jadual 1.17: Kawasan berhutan dan tidak berhutan, Malaysia, 2016-2020 (samb.)

Table 1.17: Forested and non-forested areas, Malaysia, 2016-2020 (cont'd)

Negeri State	Tahun Year	Berhutan Forested		Tidak Berhutan Non-Forested	
		Hektar Hectares	(%)	Hektar Hectares	(%)
Perak	2016	1,021,780	48.61	1,080,420	51.39
	2017	1,020,178	48.49	1,083,622	51.51
	2018	1,013,479	48.17	1,090,321	51.83
	2019	1,013,156	48.13	1,092,035	51.87
	2020	1,010,570	47.79	1,104,062	52.21
Perlis	2016	11,532	14.51	67,968	85.49
	2017	11,532	14.51	67,968	85.49
	2018	11,538	14.51	67,962	85.49
	2019	11,545	14.52	67,955	85.48
	2020	11,546	14.10	70,354	85.90
Pulau Pinang	2016	7,761	7.53	95,339	92.47
	2017	7,761	7.53	95,343	92.47
	2018	7,752	7.52	95,352	92.48
	2019	7,752	7.52	95,352	92.48
	2020	7,752	7.39	97,155	92.61
Selangor	2016	250,860	31.63	542,160	68.37
	2017	250,860	31.63	542,160	68.37
	2018	251,489	31.71	541,531	68.29
	2019	251,689	31.74	541,331	68.26
	2020	251,721	31.66	543,370	68.34
Terengganu	2016	655,390	50.59	640,210	49.41
	2017	652,918	50.33	644,482	49.67
	2018	651,248	50.20	646,152	49.80
	2019	676,823	52.17	620,547	47.83
	2020	676,823	52.23	618,934	47.77
W.P. Kuala Lumpur	2016	2,049	7.02	27,151	92.98
	2017	2,049	7.02	27,121	92.98
	2018	2,049	7.02	27,121	92.98
	2019	2,049	7.02	27,151	92.98
	2020	2,049	7.01	27,181	92.99
Sabah	2016	4,558,368	61.92	2,803,632	38.08
	2017	4,767,449	64.76	2,594,551	35.24
	2018	4,767,449	64.76	2,594,551	35.24
	2019	4,679,594	63.56	2,682,406	36.44
	2020	4,679,594	63.56	2,682,406	36.44
Sarawak	2016	7,909,985	63.80	4,487,326	36.20
	2017	7,799,066	62.90	4,598,245	37.10
	2018	7,747,777	62.30	4,697,223	37.70
	2019	7,721,615	62.00	4,723,385	37.95
	2020	7,671,222	61.64	4,773,778	38.36

Sumber: Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim, Jabatan Perhutanan Semenanjung Malaysia, Jabatan Perhutanan Sabah dan Jabatan Hutan Sarawak

Source: Ministry of Natural Resources, Environment and Climate Change, Forestry Department Peninsular Malaysia, Sabah Forestry Department and Forest Department Sarawak

Jadual 1.18: Keluasan hutan simpanan kekal, Malaysia, 2016-2020

Table 1.18: Area of permanent reserved forest, Malaysia, 2016-2020

Negeri State	2016	2017 ²	2018	2019	Hektar Hectares 2020
Malaysia	12,782,366	12,626,800	12,553,152	12,318,472	12,345,682
Semenanjung Malaysia ¹ Peninsular Malaysia	4,924,153	4,811,226	4,803,350	4,812,326	4,806,334
Johor	414,628	332,749	332,749	334,292	334,292
Kedah	341,976	341,976	341,976	341,976	341,976
Kelantan	635,437	613,275	613,275	629,775	629,881
Melaka	5,137	5,138	5,199	5,199	5,199
Negeri Sembilan	155,650	155,650	155,549	155,492	155,143
Pahang	1,559,913	1,558,898	1,559,385	1,550,687	1,545,610
Perak	999,473	995,216	988,914	988,591	987,632
Perlis	10,799	10,615	10,615	10,628	10,629
Pulau Pinang	6,060	5,101	5,101	5,101	5,387
Selangor	250,129	250,129	250,210	250,208	250,208
Terengganu	544,883	542,411	540,309	540,309	540,309
W.P. Kuala Lumpur	68	68	68	68	68
Sabah ³	3,540,274	3,540,749	3,540,749	3,541,266	3,574,468
Sarawak ⁴	4,317,939	4,274,825	4,209,053	3,964,880	3,964,880

Sumber: Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim, Jabatan Perhutanan Semenanjung Malaysia, Jabatan Perhutanan Sabah dan Jabatan Hutan Sarawak

Source: Ministry of Natural Resources, Environment and Climate Change, Forestry Department Peninsular Malaysia, Sabah Forestry Department and Forest Department Sarawak

Nota:

Notes:

¹Hutan Simpanan Kekal di Semenanjung Malaysia terdiri daripada hutan darat, paya gambut, paya laut dan ladang hutan
Permanent reserved forest in Peninsular Malaysia consists of inland forest, peat swamp forest, mangrove forest and forest plantation

²Mulai 2017 pelaporan keluasan Hutan Simpanan Kekal (HSK) di Semenanjung Malaysia adalah berdasarkan keluasan HSK yang diwartakan sahaja (tidak termasuk cadangan HSK).
Since 2017, Permanent Reserve Forest (PRF) data in Peninsular Malaysia were reported based on gazetted PRF only (proposed PRF not included)

³Hutan Simpanan Kekal di Sabah adalah merupakan Hutan Simpan yang diwartakan di bawah Akta Enakmen Hutan 1968 dan Peraturan Hutan 1969 yang terdiri daripada hutan darat, paya gambut, paya laut dan ladang hutan
Permanent Reserved Forest in Sabah reported based on gazetted FR under Forest Enactment 1968 and Forest Rules 1969 consists of inland forest, peat swamp forest, mangrove forest and forest plantation.

⁴Hutan Simpanan Kekal di Sarawak terdiri daripada paya gambut, paya laut dan bukit
Permanent Reserved Forest in Sarawak consists of peat swamp forest, mangrove forest and hill

Jadual 1.19: Keluasan hutan paya gambut mengikut negeri, Malaysia, 2016-2020

Table 1.19: Area of peat swamp forest by state, Malaysia, 2016-2020

Negeri State					
	2016	2017	2018	2019	Hektar Hectares
Malaysia	663,868	631,939	633,664	632,642	627,469
Semenanjung Malaysia ¹ Peninsular Malaysia	253,447	253,447	253,447	253,447	253,447
Johor	3,796	3,796	3,796	3,796	3,796
Pahang	140,830	140,830	140,830	140,830	140,830
Selangor	82,890	82,890	82,890	82,890	82,890
Terengganu	25,931	25,931	25,931	25,931	25,931
Sabah ²	77,705	53,446	53,446	53,108	53,108
Sarawak ³	332,716	325,046	326,771	326,087	320,914

Sumber: Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim, Jabatan Perhutanan Semenanjung Malaysia, Jabatan Perhutanan Sabah dan Jabatan Hutan Sarawak

Source: Ministry of Natural Resources, Environment and Climate Change, Forestry Department Peninsular Malaysia, Sabah Forestry Department and Forest Department Sarawak

Nota:

Notes:

¹Bagi Semenanjung Malaysia merujuk kepada hutan paya gambut di dalam Hutan Simpanan Kekal (HSK)

For Peninsular Malaysia refer to peat swamp forests in the Permanent Reserved Forest (PRF)

²Bagi Sabah, laporan merujuk kepada luas kawasan litupan hutan paya gambut di dalam Hutan Simpan dan Tanah Kerajaan

For Sabah, the report refers to the area of peat swamp forests within the Forest Reserves and State Land

³Bagi Sarawak merujuk kepada hutan paya gambut di dalam Permanent Reserved Forest (PRF), Totally Protected Area (TPA) [National Park, Nature Reserve dan Wild Life Sanctuaries] dan hutan tanah kerajaan

For Sarawak refer to peat swamp forests in the Permanent Reserved Forest (PRF), the Totally Protected Area (TPA) [National Park, Nature Reserve and Wild Life Sanctuaries] and government land forests

Jadual 1.20: Keluasan hutan paya laut mengikut negeri, Malaysia, 2016-2020

Table 1.20: Area of mangrove forest by state, Malaysia, 2016-2020

Negeri State					
	2016	2017	2018	2019	2020
					Hektar Hectares
Malaysia	564,026	570,226	571,959	552,810	552,799
Semenanjung Malaysia ¹ Peninsular Malaysia	105,726	89,684	89,684	89,697	89,694
Johor	31,915	18,198	18,198	18,198	18,198
Kedah	6,201	6,201	6,201	6,201	6,201
Melaka	135	136	136	136	136
Negeri Sembilan	101	101	101	101	101
Pahang	2,416	2,416	2,416	2,416	2,412
Perak	43,878	42,216	42,216	42,216	42,216
Perlis	-	-	-	13	14
Pulau Pinang	1,045	381	381	381	381
Selangor	18,998	18,998	18,998	18,998	18,998
Terengganu	1,037	1,037	1,037	1,037	1,037
Sabah ²	385,755	409,456	409,456	390,526	390,526
Sarawak ³	72,545	71,086	72,819	72,587	72,579

Sumber: Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim, Jabatan Perhutanan Semenanjung Malaysia, Jabatan Perhutanan Sabah dan Jabatan Hutan Sarawak

Source: Ministry of Natural Resources, Environment and Climate Change, Forestry Department Peninsular Malaysia, Sabah Forestry Department and Forest Department Sarawak

Nota:

Notes:

¹Bagi Semenanjung Malaysia merujuk kepada hutan paya laut di dalam Hutan Simpanan Kekal (HSK)
For Peninsular Malaysia refer to mangrove forests in the Permanent Reserved Forest (PRF)

²Bagi Sabah, laporan merujuk kepada luas kawasan litupan hutan paya laut di dalam Hutan Simpan dan Tanah Kerajaan
For Sabah, the report refers to the area of mangrove forests within the Forest Reserves and State Land

³Bagi Sarawak merujuk kepada hutan paya laut di dalam Permanent Reserved Forest (PRF), Totally Protected Area (TPA) [National Park, Nature Reserve dan Wild Life Sanctuaries] dan hutan tanah kerajaan
For Sarawak refer to mangrove forests in the Permanent Reserved Forest (PRF), the Totally Protected Area (TPA) [National Park, Nature Reserve and Wild Life Sanctuaries] and government land forests

Jadual 1.21: Status kualiti udara mengikut stesen, 2018-2022

Table 1.21: Air quality status by station, 2018-2022

Bilangan hari
Number of days

Negeri/ Stesen State/ Station	Tahun Years	Baik Good (0-50)	Sederhana Moderate (51-100)	Tidak Sihat Unhealthy (101-200)	Sangat Tidak Sihat Very Unhealthy (201-300)	Berbahaya Hazardous (>300)
Johor						
Batu Pahat	2018	78	286	-	-	-
	2019	62	293	10	-	-
	2020	191	175	-	-	-
	2021	144	221	-	-	-
	2022	198	166	-	-	-
Kluang	2018	95	269	-	-	-
	2019	84	272	9	-	-
	2020	277	89	-	-	-
	2021	203	162	-	-	-
	2022	216	19	-	-	-
Kota Tinggi	2018	155	210	-	-	-
	2019	145	216	4	-	-
	2020	293	73	-	-	-
	2021	209	154	2	-	-
	2022	231	131	3	-	-
Larkin	2018	9	354	-	-	-
	2019	16	338	11	-	-
	2020	47	319	-	-	-
	2021	34	328	3	-	-
	2022	49	315	1	-	-
Pasir Gudang	2018	32	332	1	-	-
	2019	62	297	6	-	-
	2020	122	244	-	-	-
	2021	95	269	1	-	-
	2022	89	269	-	-	-
Pengerang	2018	95	262	-	-	-
	2019	111	250	4	-	-
	2020	274	92	-	-	-
	2021	177	188	-	-	-
	2022	168	196	-	-	-
Segamat	2018	94	267	4	-	-
	2019	70	276	19	-	-
	2020	127	239	-	-	-
	2021	123	241	1	-	-
	2022	112	253	-	-	-
Tangkak	2018	-	-	-	-	-
	2019	42	308	12	3	-
	2020	137	229	-	-	-
	2021	96	265	1	-	-
	2022	105	260	-	-	-

Jadual 1.21: Status kualiti udara mengikut stesen, 2018-2022 (samb.)

Table 1.21: Air quality status by station, 2018-2022 (cont'd)

Bilangan hari
Number of days

Negeri/ Stesen State/ Station	Tahun Years	Baik Good (0-50)	Sederhana Moderate (51-100)	Tidak Sihat Unhealthy (101-200)	Sangat Tidak Sihat Very Unhealthy (201-300)	Berbahaya Hazardous (>300)
Kedah						
Alor Setar	2018	127	235	3	-	-
	2019	128	236	1	-	-
	2020	156	210	-	-	-
	2021	180	185	-	-	-
	2022	208	157	-	-	-
Kulim	2018	88	276	1	-	-
	2019	88	272	5	-	-
	2020	128	238	-	-	-
	2021	169	196	-	-	-
	2022	144	221	-	-	-
Langkawi	2018	157	206	-	-	-
	2019	145	218	2	-	-
	2020	228	138	-	-	-
	2021	257	108	-	-	-
	2022	284	81	-	-	-
Sungai Petani	2018	58	306	1	-	-
	2019	55	306	4	-	-
	2020	128	238	-	-	-
	2021	97	268	-	-	-
	2022	122	243	-	-	-
Kelantan						
Kota Bharu	2018	86	278	1	-	-
	2019	46	317	2	-	-
	2020	92	274	-	-	-
	2021	82	281	-	-	-
	2022	104	261	-	-	-
Tanah Merah	2018	71	292	-	-	-
	2019	63	300	2	-	-
	2020	79	287	-	-	-
	2021	112	252	-	-	-
	2022	134	230	-	-	-
Melaka						
Alor Gajah	2018	59	304	-	-	-
	2019	49	302	14	-	-
	2020	131	234	-	-	-
	2021	112	253	-	-	-
	2022	131	233	-	-	-
Bandaraya Melaka	2018	42	300	6	-	-
	2019	56	293	15	1	-
	2020	104	261	1	-	-
	2021	88	276	-	-	-
	2022	103	262	-	-	-

Jadual 1.21: Status kualiti udara mengikut stesen, 2018-2022 (samb.)

Table 1.21: Air quality status by station, 2018-2022 (cont'd)

Bilangan hari
Number of days

Negeri/ Stesen State/ Station	Tahun Years	Baik Good (0-50)	Sederhana Moderate (51-100)	Tidak Sihat Unhealthy (101-200)	Sangat Tidak Sihat Very Unhealthy (201-300)	Berbahaya Hazardous (>300)
Melaka						
Bukit Rambai	2018	30	332	-	-	-
	2019	34	315	16	-	-
	2020	81	285	-	-	-
	2021	35	330	-	-	-
	2022	56	307	-	-	-
Negeri Sembilan						
Nilai	2018	9	355	-	-	-
	2019	11	337	15	2	-
	2020	25	341	-	-	-
	2021	17	348	-	-	-
	2022	24	341	-	-	-
Port Dickson	2018	31	334	-	-	-
	2019	48	299	17	1	-
	2020	110	256	-	-	-
	2021	62	302	1	-	-
	2022	81	282	2	-	-
Seremban	2018	70	293	-	-	-
	2019	56	293	16	-	-
	2020	105	259	2	-	-
	2021	107	258	-	-	-
	2022	23	342	-	-	-
Pahang						
Balok Baru	2018	44	321	-	-	-
	2019	39	309	17	-	-
	2020	162	194	9	1	-
	2021	147	218	-	-	-
	2022	157	200	8	-	-
Jerantut	2018	179	186	-	-	-
	2019	115	238	12	-	-
	2020	147	219	-	-	-
	2021	153	212	-	-	-
	2022	184	174	-	-	-
Kuantan	2018	133	231	-	-	-
	2019	113	240	12	-	-
	2020	229	137	-	-	-
	2021	205	160	-	-	-
	2022	232	171	-	-	-
Rompin	2018	121	238	2	-	-
	2019	77	259	22	7	-
	2020	225	137	4	-	-
	2021	109	248	8	-	-
	2022	237	126	2	-	-

Jadual 1.21: Status kualiti udara mengikut stesen, 2018-2022 (samb.)

Table 1.21: Air quality status by station, 2018-2022 (cont'd)

Bilangan hari
Number of days

Negeri/ Stesen State/ Station	Tahun Years	Baik Good (0-50)	Sederhana Moderate (51-100)	Tidak Sihat Unhealthy (101-200)	Sangat Tidak Sihat Very Unhealthy (201-300)	Berbahaya Hazardous (>300)
Pahang						
Temerloh	2018	74	291	-	-	-
	2019	34	320	11	-	-
	2020	102	262	2	-	-
	2021	112	253	-	-	-
	2022	164	198	2	-	-
Perak						
Pegoh, Ipoh	2018	8	355	1	-	-
	2019	8	347	10	-	-
	2020	48	318	-	-	-
	2021	61	304	-	-	-
	2022	58	307	-	-	-
Seri Manjung	2018	52	312	1	-	-
	2019	45	309	9	2	-
	2020	69	297	-	-	-
	2021	104	261	-	-	-
	2022	136	229	-	-	-
Taiping	2018	49	305	2	-	-
	2019	57	301	6	1	-
	2020	89	277	-	-	-
	2021	120	245	-	-	-
	2022	172	193	-	-	-
Tanjung Malim	2018	242	119	4	-	-
	2019	189	152	24	-	-
	2020	308	57	-	-	-
	2021	254	111	-	-	-
	2022	185	179	1	-	-
Tasek, Ipoh	2018	24	338	1	-	-
	2019	22	332	11	-	-
	2020	59	307	1	-	-
	2021	34	331	-	-	-
	2022	56	309	-	-	-
Perlis						
Kangar	2018	163	197	2	-	-
	2019	130	235	-	-	-
	2020	175	191	-	-	-
	2021	191	172	-	-	-
	2022	248	117	-	-	-
Pulau Pinang						
Balik Pulau	2018	122	241	2	-	-
	2019	57	298	8	2	-
	2020	83	281	2	-	-
	2021	132	233	-	-	-
	2022	167	197	-	-	-

Jadual 1.21: Status kualiti udara mengikut stesen, 2018-2022 (samb.)

Table 1.21: Air quality status by station, 2018-2022 (cont'd)

Bilangan hari
Number of days

Negeri/ Stesen State/ Station	Tahun Years	Baik Good (0-50)	Sederhana Moderate (51-100)	Tidak Sihat Unhealthy (101-200)	Sangat Tidak Sihat Very Unhealthy (201-300)	Berbahaya Hazardous (>300)
Pulau Pinang						
Perai	2018	39	322	2	-	-
	2019	44	317	4	-	-
	2020	77	289	-	-	-
	2021	88	277	-	-	-
	2022	95	270	-	-	-
Seberang Jaya	2018	11	352	2	-	-
	2019	30	330	5	-	-
	2020	36	330	-	-	-
	2021	40	325	-	-	-
	2022	47	318	-	-	-
USM	2018	50	285	2	-	-
	2019	50	305	8	2	-
	2020	114	252	-	-	-
	2021	113	252	-	-	-
	2022	129	235	-	-	-
Sabah						
Keningau	2018	178	183	-	-	-
	2019	161	204	-	-	-
	2020	229	137	-	-	-
	2021	231	134	-	-	-
	2022	285	78	-	-	-
Kimanis	2018	290	74	-	-	-
	2019	227	137	1	-	-
	2020	296	70	-	-	-
	2021	343	19	-	-	-
	2022	355	9	-	-	-
Kota Kinabalu	2018	178	185	-	-	-
	2019	159	203	-	2	-
	2020	270	96	-	-	-
	2021	307	58	-	-	-
	2022	308	57	-	-	-
Sandakan	2018	215	148	-	-	-
	2019	236	126	3	-	-
	2020	292	74	-	-	-
	2021	330	35	-	-	-
	2022	332	33	-	-	-
Tawau	2018	336	28	-	-	-
	2019	316	46	3	-	-
	2020	358	7	-	-	-
	2021	345	20	-	-	-
	2022	206	156	-	-	-

Jadual 1.21: Status kualiti udara mengikut stesen, 2018-2022 (samb.)

Table 1.21: Air quality status by station, 2018-2022 (cont'd)

Bilangan hari
Number of days

Negeri/ Stesen State/ Station	Tahun Years	Baik Good (0-50)	Sederhana Moderate (51-100)	Tidak Sihat Unhealthy (101-200)	Sangat Tidak Sihat Very Unhealthy (201-300)	Berbahaya Hazardous (>300)
Sarawak						
Bintulu	2018	74	286	1	-	-
	2019	65	291	9	-	-
	2020	162	204	-	-	-
	2021	145	220	-	-	-
	2022	107	258	-	-	-
ILP, Miri	2018	233	129	1	2	-
	2019	119	214	21	6	5
	2020	208	156	2	-	-
	2021	279	86	-	-	-
	2022	304	61	-	-	-
Kapit	2018	243	112	-	-	-
	2019	263	102	-	-	-
	2020	359	7	-	-	-
	2021	325	40	-	-	-
	2022	316	49	-	-	-
Kuching	2018	143	215	2	-	-
	2019	141	205	7	12	-
	2020	278	88	-	-	-
	2021	289	76	-	-	-
	2022	339	25	-	-	-
Limbang	2018	259	106	-	-	-
	2019	215	150	-	-	-
	2020	332	34	-	-	-
	2021	314	51	-	-	-
	2022	340	25	-	-	-
Miri	2018	125	240	-	-	-
	2019	84	259	22	-	-
	2020	143	223	-	-	-
	2021	154	211	-	-	-
	2022	247	117	-	-	-
Mukah	2018	218	142	5	-	-
	2019	227	126	11	1	-
	2020	344	22	-	-	-
	2021	304	60	-	-	-
	2022	330	34	-	-	-
Samalaju	2018	184	179	-	-	-
	2019	121	236	8	-	-
	2020	251	115	-	-	-
	2021	227	138	-	-	-
	2022	168	197	-	-	-
Samarahan	2018	219	144	-	-	-
	2019	246	100	10	9	-
	2020	334	31	-	-	-
	2021	298	66	-	-	-
	2022	297	66	-	-	-

Jadual 1.21: Status kualiti udara mengikut stesen, 2018-2022 (samb.)

Table 1.21: Air quality status by station, 2018-2022 (cont'd)

Bilangan hari
Number of days

Negeri/ Stesen State/ Station	Tahun Years	Baik Good (0-50)	Sederhana Moderate (51-100)	Tidak Sihat Unhealthy (101-200)	Sangat Tidak Sihat Very Unhealthy (201-300)	Berbahaya Hazardous (>300)
Sarawak						
Sarikei	2018	212	153	-	-	-
	2019	195	155	10	5	-
	2020	328	38	-	-	-
	2021	267	98	-	-	-
	2022	270	95	-	-	0
Sibu	2018	105	256	2	-	-
	2019	96	253	13	3	-
	2020	291	75	-	-	-
	2021	296	69	-	-	-
	2022	314	49	2	-	-
Sri Aman	2018	245	119	-	-	-
	2019	196	140	13	11	4
	2020	320	46	-	-	-
	2021	289	76	-	-	-
	2022	313	51	1	-	-
Selangor						
Banting	2018	328	32	-	-	-
	2019	7	339	19	-	-
	2020	38	328	-	-	-
	2021	28	322	5	-	-
	2022	33	330	2	-	-
Klang	2018	271	91	2	-	-
	2019	3	346	15	1	-
	2020	1	365	-	-	-
	2021	0	363	2	-	-
	2022	3	360	2	-	-
Kuala Selangor	2018	352	13	-	-	-
	2019	39	313	13	-	-
	2020	68	298	-	-	-
	2021	36	329	-	-	-
	2022	54	308	1	-	-
Petaling Jaya	2018	330	31	-	-	-
	2019	2	347	15	1	-
	2020	12	352	2	-	-
	2021	2	333	8	-	-
	2022	8	357	-	-	-
Shah Alam	2018	331	33	-	-	-
	2019	2	317	44	1	-
	2020	16	347	1	-	-
	2021	4	355	2	-	-
	2022	8	356	1	-	-

Jadual 1.21: Status kualiti udara mengikut stesen, 2018-2022 (samb.)

Table 1.21: Air quality status by station, 2018-2022 (cont'd)

Bilangan hari
Number of days

Negeri/ Stesen State/ Station	Tahun Years	Baik Good (0-50)	Sederhana Moderate (51-100)	Tidak Sihat Unhealthy (101-200)	Sangat Tidak Sihat Very Unhealthy (201-300)	Berbahaya Hazardous (>300)
Terengganu						
Besut	2018	115	250	-	-	-
	2019	121	243	1	-	-
	2020	191	175	-	-	-
	2021	191	174	-	-	-
	2022	191	173	-	-	-
Kemaman	2018	87	277	1	-	-
	2019	57	297	11	-	-
	2020	155	211	-	-	-
	2021	200	165	-	-	-
	2022	186	179	-	-	-
Kuala Terengganu	2018	64	299	-	-	-
	2019	62	297	6	-	-
	2020	79	287	-	-	-
	2021	85	279	-	-	-
	2022	87	278	-	-	-
Paka	2018	151	214	-	-	-
	2019	152	206	7	-	-
	2020	281	85	-	-	-
	2021	227	138	-	-	-
	2022	240	122	-	-	-
Wilayah Persekutuan						
Batu Muda, Kuala Lumpur	2018	11	349	-	-	-
	2019	8	339	16	1	-
	2020	25	341	-	-	-
	2021	35	328	1	-	-
	2022	24	340	1	-	-
Cheras, Kuala Lumpur	2018	1	352	10	-	-
	2019	5	328	32	-	-
	2020	38	325	3	-	-
	2021	41	319	4	-	-
	2022	28	332	5	-	-
Labuan	2018	149	168	-	-	-
	2019	153	212	-	-	-
	2020	179	186	-	-	-
	2021	165	200	-	-	-
	2022	250	114	-	-	-
Putrajaya	2018	6	359	-	-	-
	2019	5	335	23	2	-
	2020	32	330	4	-	-
	2021	57	304	4	-	-
	2022	98	267	-	-	-

Nota:

Note:

Stesen yang tidak mencukupi 365 hari adalah disebabkan masalah teknikal

Stations with inadequate 365 days is due to technical problem

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

Jadual 1.22: Bacaan minimum dan maksimum bulanan Indeks Pencemaran Udara¹ (IPU), Malaysia, 2022

Table 1.22: Monthly minimum and maximum Air Pollutant Index (API) reading, Malaysia, 2022

Negeri/ Stesen State/ Station	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
Johor	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Batu Pahat	11	58	17	55	20	61	25	59	18	77	17	61
Kluang	6	54	14	52	16	60	22	58	23	69	24	60
Kota Tinggi	10	49	11	42	14	53	16	77	13	100	20	60
Larkin	18	71	28	82	28	70	40	94	38	78	42	108
Pasir Gudang	17	57	18	58	21	65	39	85	29	85	38	76
Pengerang	17	66	14	77	19	69	37	69	40	76	18	64
Tangkak	16	69	24	56	26	71	28	62	21	69	39	79
Segamat	10	57	14	55	22	70	29	69	24	68	33	78
Johor	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
Johor	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Batu Pahat	27	76	24	90	19	69	18	60	19	59	18	57
Kluang	19	67	24	65	18	67	17	64	13	59	25	61
Kota Tinggi	22	63	19	93	22	137	16	119	18	59	13	54
Larkin	46	82	46	90	39	75	28	75	33	68	26	92
Pasir Gudang	39	70	35	71	41	73	25	75	27	58	20	57
Pengerang	22	61	24	66	30	75	22	71	14	74	11	48
Tangkak	33	75	33	71	26	71	22	64	25	67	31	63
Segamat	27	81	33	75	46	83	40	77	30	63	15	54
Kedah	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
Kedah	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Alor Setar	31	68	14	61	21	77	23	59	20	56	14	56
Kulim	32	75	31	66	30	72	27	63	23	64	25	58
Langkawi	34	65	19	58	22	77	17	59	15	56	12	54
Sungai Petani	33	95	15	75	24	80	32	65	21	72	20	64
Kedah	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
Kedah	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Alor Setar	17	75	21	77	16	74	11	49	15	57	15	65
Kulim	29	78	25	75	30	64	20	59	25	55	24	62
Langkawi	17	60	13	60	12	46	10	36	14	52	14	57
Sungai Petani	22	83	20	92	20	71	14	59	16	58	13	58
Kelantan	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
Kelantan	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Kota Bharu	35	81	20	72	25	89	17	73	31	87	26	73
Tanah Merah	36	88	19	80	31	81	23	67	31	77	22	69
Kelantan	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
Kelantan	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Kota Bharu	23	88	21	93	21	63	18	61	16	58	15	88
Tanah Merah	22	71	21	89	20	64	18	65	18	61	12	80

Jadual 1.22: Bacaan minimum dan maksimum bulanan Indeks Pencemaran Udara¹ (IPU), Malaysia, 2022 (samb.)

Table 1.22: Monthly minimum and maximum Air Pollutant Index (API) reading, Malaysia, 2022 (cont'd)

Negeri/ Stesen State/ Station	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
Melaka	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Alor Gajah	12	58	22	58	17	70	27	68	23	72	27	68
Bandaraya Melaka	15	63	23	59	24	75	23	70	26	83	39	83
Bukit Rambai	13	63	30	64	21	80	38	70	32	81	33	78
Melaka	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
Melaka	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Alor Gajah	31	82	30	82	33	70	23	74	21	57	19	59
Bandaraya Melaka	28	82	27	71	20	70	23	69	22	63	28	66
Bukit Rambai	37	86	34	89	29	75	28	72	24	72	26	67
Negeri Sembilan	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
Negeri Sembilan	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Nilai	27	68	36	67	32	75	52	82	51	89	47	88
Port Dickson	24	87	29	84	32	109	33	104	30	97	20	76
Seremban	14	67	31	70	47	99	42	97	44	87	49	87
Negeri Sembilan	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
Negeri Sembilan	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Nilai	47	90	40	71	40	72	31	69	20	64	16	69
Port Dickson	21	84	21	77	23	64	26	63	31	63	32	100
Seremban	54	84	40	76	43	72	43	75	51	71	35	76
Pahang	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
Pahang	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Balok Baru	24	65	11	99	24	107	20	84	17	68	28	60
Jerantut	15	61	15	59	22	70	24	57	23	68	29	74
Kuantan	17	62	12	55	17	62	18	58	21	68	31	59
Rompin	20	164	17	57	20	61	14	55	19	65	25	55
Temerloh	13	61	15	70	18	65	17	59	23	67	27	61
Pahang	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
Pahang	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Balok Baru	18	70	15	60	29	65	19	134	21	59	22	174
Jerantut	34	79	20	71	18	63	10	53	11	52	12	55
Kuantan	27	69	16	60	21	77	15	57	14	57	13	59
Rompin	21	70	22	61	20	74	21	55	15	51	15	55
Temerloh	33	155	27	69	29	64	18	56	15	59	13	61
Perak	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
Perak	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Pegoh, Ipoh	30	76	26	75	28	70	42	62	27	64	23	61
Seri Manjung	19	88	22	75	21	73	26	60	18	87	18	57
Taiping	31	73	20	63	18	68	28	74	18	68	10	55
Tanjung Malim	26	60	22	63	25	65	24	58	15	60	18	56
Tasek, Ipoh	34	77	28	71	34	72	41	64	45	69	25	63

Jadual 1.22: Bacaan minimum dan maksimum bulanan Indeks Pencemaran Udara¹ (IPU), Malaysia, 2022 (samb.)
Table 1.22: Monthly minimum and maximum Air Pollutant Index (API) reading, Malaysia, 2022 (cont'd)

Negeri/ Stesen State/ Station	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
Perak	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Pegoh, Ipoh	28	67	23	72	21	60	24	63	42	69	29	63
Seri Manjung	21	79	18	85	25	65	20	67	22	55	19	62
Taiping	20	79	16	79	13	58	13	63	16	58	12	77
Tanjung Malim	32	77	19	80	23	64	24	111	14	54	14	61
Tasek, Ipoh	33	72	27	75	33	63	22	58	28	61	22	64
Perlis	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Kangar	30	69	17	60	24	76	15	64	16	69	12	55
Perlis	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Kangar	16	67	22	70	15	51	13	49	24	57	16	62
Pulau Pinang	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Balik Pulau	25	73	17	68	24	82	23	60	23	69	17	65
Perai	30	77	18	89	23	77	33	63	25	66	22	62
Seberang Jaya	45	91	28	85	33	84	34	71	33	72	27	67
USM	36	75	16	77	24	79	30	67	32	64	24	62
Pulau Pinang	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Balik Pulau	27	76	23	82	22	66	18	56	22	56	17	69
Perai	26	77	28	96	28	67	17	66	29	63	19	65
Seberang Jaya	31	86	36	86	27	70	22	67	24	66	36	70
USM	23	76	26	80	21	69	20	59	24	59	18	60
Sabah	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Keningau	15	67	16	57	12	72	12	62	18	53	16	55
Kimanis	9	59	9	40	11	53	9	59	9	38	8	35
Kota Kinabalu	19	59	23	54	15	57	17	59	12	53	14	52
Sandakan	15	60	14	54	15	61	20	57	15	52	19	52
Tawau	25	65	20	56	26	62	27	56	24	74	28	60
Sabah	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Keningau	18	58	22	61	22	56	15	53	17	57	17	57
Kimanis	9	44	7	43	8	34	7	30	6	33	7	35
Kota Kinabalu	11	56	11	54	11	55	14	58	13	52	13	53
Sandakan	20	53	16	54	19	46	17	55	19	42	18	56
Tawau	21	62	27	56	24	55	23	54	24	54	26	59

Jadual 1.22: Bacaan minimum dan maksimum bulanan Indeks Pencemaran Udara¹ (IPU), Malaysia, 2022 (samb.)

Table 1.22: Monthly minimum and maximum Air Pollutant Index (API) reading, Malaysia, 2022 (cont'd)

Negeri/ Stesen State/ Station	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
Sarawak	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Bintulu	20	63	19	70	31	66	23	71	21	72	24	69
ILP, Miri	11	72	15	45	12	47	9	57	18	52	18	53
Kapit	20	53	15	53	22	53	18	62	18	76	14	85
Kuching	15	42	18	135	16	44	17	45	17	57	11	29
Limbang	15	60	13	48	10	57	13	60	10	45	14	49
Miri	27	74	22	77	18	56	19	59	22	72	19	74
Mukah	17	54	15	52	16	52	12	52	12	56	16	56
Samalaju	21	71	22	68	18	59	20	64	22	59	22	57
Samarahan	13	54	14	54	18	55	14	56	21	54	12	51
Sarikei	56	66	23	63	14	52	15	58	17	58	11	52
Sibu	17	53	16	152	17	56	19	59	18	55	13	55
Sri Aman	14	57	17	72	16	58	16	61	12	70	13	59
Sarawak	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
Sarawak	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Bintulu	17	65	17	66	20	67	13	60	16	71	20	65
ILP, Miri	19	58	15	66	18	63	11	53	16	52	15	53
Kapit	15	55	14	45	13	52	24	60	14	54	15	45
Kuching	13	39	14	75	19	53	15	50	15	56	21	77
Limbang	13	57	15	55	13	42	12	50	13	39	13	39
Miri	21	58	19	61	17	56	15	53	20	53	19	55
Mukah	18	72	17	57	13	44	11	42	15	56	14	47
Samalaju	27	66	18	71	22	60	21	76	19	68	24	76
Samarahan	19	55	17	78	19	55	17	53	16	57	18	68
Sarikei	16	57	11	55	13	34	10	39	9	58	11	84
Sibu	14	60	15	59	14	52	13	54	11	72	16	58
Sri Aman	15	56	13	154	12	53	11	50	10	32	8	52
Selangor	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
Selangor	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Banting	27	147	39	83	35	84	48	87	27	88	31	71
Klang	36	90	39	138	38	82	44	83	39	97	37	72
Kuala Selangor	17	77	30	66	33	74	34	77	41	81	33	72
Petaling Jaya	41	83	48	95	44	86	40	84	25	80	43	75
Shah Alam	48	101	39	87	29	82	37	74	42	86	53	76
Selangor	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
Selangor	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Banting	37	84	30	69	31	68	27	84	26	65	24	73
Klang	39	80	36	93	48	79	40	77	38	93	52	87
Kuala Selangor	34	111	47	90	27	68	27	68	19	64	16	90
Petaling Jaya	49	79	27	76	55	82	53	83	51	85	33	85
Shah Alam	53	87	46	75	54	75	52	75	49	81	23	85

Jadual 1.22: Bacaan minimum dan maksimum bulanan Indeks Pencemaran Udara¹ (IPU), Malaysia, 2022 (samb.)

Table 1.22: Monthly minimum and maximum Air Pollutant Index (API) reading, Malaysia, 2022 (cont'd)

Negeri/ Stesen State/ Station	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
Terengganu	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Besut	30	71	12	67	29	76	23	65	21	65	21	70
Kemaman	16	60	14	57	19	61	17	67	21	68	30	64
Kuala Terengganu	26	71	21	68	32	70	35	76	39	83	33	68
Paka	15	55	15	52	14	58	11	58	14	69	21	57
Terengganu	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
Terengganu	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Besut	19	69	20	78	16	54	13	54	13	53	11	73
Kemaman	32	74	25	65	24	63	14	62	20	59	13	60
Kuala Terengganu	37	85	29	82	36	65	22	61	19	61	16	81
Paka	25	72	13	64	22	59	15	56	12	51	10	57
Wilayah Persekutuan	Jan.		Feb.		Mac Mar.		Apr.		Mei May		Jun June	
Wilayah Persekutuan	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Batu Muda, Kuala Lumpur	40	76	33	132	31	79	36	69	32	83	22	65
Cheras, Kuala Lumpur	29	104	39	109	25	74	33	122	29	90	33	67
Labuan	18	88	19	52	19	71	19	74	23	78	17	68
Putrajaya	28	84	26	68	25	68	31	66	25	70	26	64
Wilayah Persekutuan	Julai July		Ogos Aug.		Sept.		Okt. Oct.		Nov.		Dis. Dec.	
Wilayah Persekutuan	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.	Min.	Maks. Max.
Batu Muda, Kuala Lumpur	38	77	30	73	46	68	34	68	31	62	27	94
Cheras, Kuala Lumpur	35	97	45	70	57	106	61	75	42	78	25	71
Labuan	13	65	17	80	20	95	12	97	15	59	19	63
Putrajaya	32	78	28	77	34	66	22	68	23	61	24	68

Nota:

Notes:

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

¹ Bacaan status kualiti udara berdasarkan bacaan maksimum harian

Air quality status readings are based on daily maximum readings

Status Indeks Pencemaran Udara (IPU)

Air Pollutant Index (API) status

IPU / API	Status IPU / API status
0-50	Baik / Good
51-100	Sederhana / Moderate
101-200	Tidak Sihat / Unhealthy
201-300	Sangat Tidak Sihat / Very Unhealthy
>300	Berbahaya / Hazardous

Jadual 1.23: Purata tahunan kepekatan berdasarkan jenis bahan pencemar di udara, Malaysia, 2018-2022Table 1.23: *Annually average concentration based on the type of pollutants in the air, Malaysia, 2018-2022*

Tahun Year	Habuk Halus (PM _{2.5}) Particulate Matter (µg/m ³)	Habuk Halus (PM ₁₀) Particulate Matter (µg/m ³)	Ozon Permukaan Bumi (O ₃) Ground Level Ozone (ppm)	Karbon Monoksida (CO) Carbon Monoxide (ppm)	Sulfur Dioksida (SO ₂) Sulphur Dioxide (ppm)	Nitrogen Dioksida (NO ₂) Nitrogen Dioxide (ppm)
2018	16.25	24.92	0.0178	0.6517	0.0010	0.0077
2019	18.37	29.16	0.0183	0.6509	0.0010	0.0074
2020	16.34	19.73	0.0175	0.5975	0.0010	0.0065
2021	15.24	20.51	0.0162	0.5393	0.0011	0.0058
2022	12.27	19.78	0.0150	0.5282	0.0012	0.0063

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Jadual 1.24: Purata bulanan kepekatan berdasarkan jenis bahan pencemar udara, Malaysia, 2018-2022

Table 1.24: Monthly average concentration based on the type of air pollutants, Malaysia, 2018-2022

Bahan pencemar udara Air pollutant	Tahun Year	Jan.	Feb.	Mac Mar.	April	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Habuk Halus (PM _{2.5}) Particulate Matter (µg/m ³)	2018	11.43	16.75	15.61	16.34	14.54	17.28	20.63	25.84	18.21	14.50	12.33	11.54
	2019	12.96	15.23	23.17	18.69	15.52	14.57	20.79	31.74	52.86	15.46	13.92	10.95
	2020	12.62	12.93	15.01	11.81	11.14	12.21	11.74	15.15	11.52	12.36	10.10	10.92
	2021	11.36	15.94	14.30	14.07	12.62	13.30	15.27	11.76	12.06	13.14	10.02	11.43
	2022	13.60	10.87	12.20	13.25	13.29	11.63	14.86	13.40	12.42	10.48	10.38	10.75
Habuk Halus (PM ₁₀) Particulate Matter (µg/m ³)	2018	19.14	26.06	24.84	25.64	22.60	25.88	30.29	36.47	26.97	22.22	20.03	18.89
	2019	22.26	23.59	31.92	26.95	23.74	22.16	29.98	42.20	64.11	22.39	21.52	19.09
	2020	21.37	23.18	22.96	17.70	17.58	19.48	18.55	22.81	18.23	19.19	17.11	18.55
	2021	19.65	25.74	22.54	22.55	20.28	19.65	22.76	18.16	18.60	20.53	16.84	18.86
	2022	21.98	18.09	19.76	20.59	21.16	18.67	23.55	20.64	19.41	17.35	17.40	18.44
Ozon Permukaan Bumi (O ₃) Ground Level Ozone (ppm)	2018	0.015	0.024	0.019	0.019	0.017	0.017	0.018	0.020	0.017	0.016	0.016	0.015
	2019	0.020	0.020	0.023	0.019	0.017	0.016	0.019	0.020	0.022	0.016	0.016	0.018
	2020	0.019	0.020	0.019	0.018	0.017	0.015	0.014	0.016	0.013	0.014	0.013	0.016
	2021	0.019	0.023	0.016	0.017	0.015	0.016	0.016	0.013	0.014	0.015	0.013	0.017
	2022	0.019	0.014	0.015	0.016	0.015	0.014	0.015	0.015	0.014	0.013	0.014	0.017
Karbon Monoksida (CO) Carbon Monoxide (ppm)	2018	0.671	0.677	0.654	0.682	0.671	0.648	0.653	0.655	0.615	0.632	0.636	0.626
	2019	0.636	0.588	0.669	0.644	0.627	0.585	0.629	0.708	0.888	0.629	0.633	0.565
	2020	0.553	0.544	0.542	0.473	0.496	0.529	0.545	0.585	0.555	0.548	0.549	0.620
	2021	0.549	0.533	0.538	0.563	0.526	0.488	0.518	0.494	0.531	0.564	0.539	0.562
	2022	0.572	0.515	0.535	0.575	0.537	0.513	0.534	0.508	0.523	0.501	0.515	0.503
Sulfur Dioksida (SO ₂) Sulphur Dioxide (ppm)	2018	0.0010	0.0011	0.0010	0.0010	0.0010	0.0011	0.0011	0.0011	0.0010	0.0010	0.0010	0.0009
	2019	0.0010	0.0011	0.0011	0.0010	0.0010	0.0010	0.0011	0.0013	0.0011	0.0010	0.0010	0.0010
	2020	0.0010	0.0010	0.0009	0.0009	0.0009	0.0010	0.0010	0.0011	0.0011	0.0011	0.0011	0.0012
	2021	0.0011	0.0012	0.0011	0.0011	0.0010	0.0011	0.0011	0.0011	0.0011	0.0011	0.0012	0.0012
	2022	0.0012	0.0011	0.0012	0.0012	0.0011	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0013
Nitrogen Dioksida (NO ₂) Nitrogen Dioxide (ppm)	2018	0.0078	0.0069	0.0074	0.0075	0.0076	0.0074	0.0096	0.0077	0.0079	0.0076	0.0074	0.0070
	2019	0.0066	0.0063	0.0074	0.0077	0.0074	0.0069	0.0075	0.0076	0.0081	0.0074	0.0073	0.0061
	2020	0.0059	0.0057	0.0051	0.0032	0.0047	0.0061	0.0065	0.0064	0.0064	0.0066	0.0061	0.0065
	2021	0.0054	0.0052	0.0062	0.0069	0.0059	0.0046	0.0048	0.0049	0.0058	0.0063	0.0063	0.0060
	2022	0.0061	0.0052	0.0058	0.0068	0.0065	0.0064	0.0065	0.0067	0.0067	0.0063	0.0066	0.0062

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

Jadual 1.25: Purata tahunan kepekatan berdasarkan jenis bahan pencemar di udara mengikut stesen, Malaysia, 2018-2022

Table 1.25: *Annually average concentration based on the type of pollutants in the air by station, Malaysia, 2018-2022*

Negeri/ Stesen State/ Station	Tahun Year	Habuk Halus (PM _{2.5}) Particulate Matter (µg/m ³)	Habuk Halus (PM ₁₀) Particulate Matter (µg/m ³)	Ozon Permukaan Bumi (O ₃) Ground Level Ozone (ppm)	Karbon Monoksida (CO) Carbon Monoxide (ppm)	Sulfur Dioksida (SO ₂) Sulphur Dioxide (ppm)	Nitrogen Dioksida (NO ₂) Nitrogen Dioxide (ppm)
Johor							
Batu Pahat	2018	16.62	24.42	0.017	0.656	0.0014	0.005
	2019	22.12	30.28	0.019	0.597	0.0015	0.0058
	2020	10.66	16.94	0.016	0.522	0.0018	0.0045
	2021	12.69	18.73	0.018	0.521	0.0016	0.0045
	2022	10.76	16.09	0.017	0.64	0.0016	0.0044
Kluang	2018	15.37	22.88	-	-	-	-
	2019	19.30	28.50	-	-	-	-
	2020	8.66	14.05	-	-	-	-
	2021	10.61	16.67	-	-	-	-
	2022	10.08	15.37	-	-	-	-
Kota Tinggi	2018	12.06	19.37	0.019	0.571	0.0012	0.0047
	2019	14.82	22.53	0.021	0.544	0.0011	0.0041
	2020	8.28	15.16	0.018	0.459	0.0011	0.0030
	2021	10.14	15.66	0.021	0.386	0.0012	0.0033
	2022	9.39	13.59	0.019	0.352	0.0013	0.0041
Larkin	2018	20.50	29.32	0.015	0.775	0.0013	0.0129
	2019	24.67	35.60	0.017	0.734	0.0018	0.0135
	2020	14.79	22.98	0.014	0.363	0.0018	0.0089
	2021	16.58	24.22	0.016	0.429	0.0019	0.0097
	2022	16.99	25.22	0.013	0.648	0.0020	0.0113
Pasir Gudang	2018	18.61	29.50	0.015	0.734	0.0016	0.013
	2019	21.07	31.47	0.017	0.691	0.0015	0.0115
	2020	12.71	20.63	0.013	0.579	0.0011	0.0094
	2021	13.72	21.11	0.013	0.571	0.0014	0.0104
	2022	14.59	22.70	0.011	0.527	0.0012	0.0122
Pengerang	2018	14.57	25.50	-	-	0.0013	0.0059
	2019	16.93	24.09	-	-	0.0016	0.0042
	2020	9.18	14.43	-	-	0.0013	0.0038
	2021	11.49	17.49	-	-	0.0014	0.0035
	2022	11.69	15.96	-	-	0.0012	0.0045
Segamat	2018	15.64	23.28	0.024	0.726	0.0009	0.0057
	2019	23.74	31.83	0.023	0.700	0.0017	0.0060
	2020	12.97	19.14	0.015	0.562	0.0017	0.0047
	2021	13.32	18.83	0.016	0.605	0.0021	0.0049
	2022	14.40	19.45	0.014	0.567	0.0020	0.0053
Tangkak	2018	17.21	28.69	0.018	0.478	0.0008	0.0041
	2019	25.15	36.50	0.021	0.571	0.0013	0.0042
	2020	12.38	20.72	0.014	0.481	0.0011	0.0039
	2021	13.89	23.31	0.016	0.600	0.0014	0.0045
	2022	13.41	20.14	0.015	0.539	0.0015	0.0055

Jadual 1.25: Purata tahunan kepekatan berdasarkan jenis bahan pencemar di udara mengikut stesen, Malaysia, 2018-2022 (samb.)

Table 1.25: *Annually average concentration based on the type of pollutants in the air by station, Malaysia, 2018-2022 (cont'd)*

Negeri/ Stesen State/ Station	Tahun Year	Habuk Halus (PM _{2.5}) Particulate Matter (µg/m ³)	Habuk Halus (PM ₁₀) Particulate Matter (µg/m ³)	Ozon Permukaan Bumi (O ₃) Ground Level Ozone (ppm)	Karbon Monoksida (CO) Carbon Monoxide (ppm)	Sulfur Dioksida (SO ₂) Sulphur Dioxide (ppm)	Nitrogen Dioksida (NO ₂) Nitrogen Dioxide (ppm)
Kedah							
Alor Setar	2018	14.64	21.48	0.022	0.605	0.0008	0.0055
	2019	16.10	22.28	0.023	0.511	0.0007	0.0052
	2020	12.26	17.89	0.021	0.439	0.0008	0.0042
	2021	12.04	18.73	0.020	0.420	0.0009	0.0043
	2022	10.86	17.99	0.019	0.445	0.0010	0.0048
Kulim	2018	16.14	24.15	-	-	0.0010	0.0062
	2019	18.74	25.50	-	-	0.0009	0.0069
	2020	13.16	17.28	-	-	0.0010	0.0063
	2021	11.78	15.10	-	-	0.0010	0.0058
	2022	12.93	20.67	-	-	0.0010	0.0080
Langkawi	2018	12.48	22.46	0.017	0.636	0.0008	0.0042
	2019	14.32	23.31	0.020	0.497	0.0008	0.0043
	2020	9.90	17.32	0.018	0.374	0.0010	0.0032
	2021	9.19	17.40	0.018	0.400	0.0010	0.0027
	2022	8.20	16.44	0.016	0.452	0.0010	0.0032
Sungai Petani	2018	17.77	24.29	0.020	0.775	0.0010	0.0081
	2019	20.11	27.32	0.019	0.733	0.0012	0.0080
	2020	13.76	20.66	0.019	0.516	0.0011	0.0065
	2021	14.65	21.75	0.018	0.595	0.0011	0.0066
	2022	13.42	20.71	0.016	0.605	0.0011	0.0079
Kelantan							
Kota Bharu	2018	17.32	27.07	0.014	0.514	0.0006	0.0040
	2019	20.07	29.24	0.015	0.526	0.0007	0.0040
	2020	14.53	21.97	0.012	0.458	0.0008	0.0032
	2021	15.54	27.13	0.014	0.367	0.0008	0.0028
	2022	14.82	22.36	0.014	0.586	0.0010	0.0037
Tanah Merah	2018	17.77	27.49	0.012	0.581	0.0008	0.0047
	2019	19.40	29.68	0.013	0.681	0.0008	0.0052
	2020	15.31	28.35	0.010	0.600	0.0008	0.0046
	2021	14.71	25.19	0.011	0.650	0.0009	0.0051
	2022	13.39	24.17	0.010	0.667	0.0010	0.0056
Melaka							
Alor Gajah	2018	18.46	24.16	-	-	-	-
	2019	25.10	32.58	-	-	-	-
	2020	12.52	17.35	-	-	-	-
	2021	14.25	20.62	-	-	-	-
	2022	13.09	17.84	-	-	-	-
Bandaraya Melaka	2018	18.37	24.95	0.027	0.513	0.0019	0.0079
	2019	23.53	30.67	0.025	0.522	0.0019	0.0068
	2020	13.22	19.24	0.024	0.530	0.0016	0.0058
	2021	14.17	20.74	0.022	0.546	0.0019	0.0055
	2022	13.85	19.76	0.019	0.634	0.0022	0.0065

Jadual 1.25: Purata tahunan kepekatan berdasarkan jenis bahan pencemar di udara mengikut stesen, Malaysia, 2018-2022 (samb.)

Table 1.25: *Annually average concentration based on the type of pollutants in the air by station, Malaysia, 2018-2022 (cont'd)*

Negeri/ Stesen State/ Station	Tahun Year	Habuk Halus (PM _{2.5}) <i>Particulate Matter</i> (µg/m ³)	Habuk Halus (PM ₁₀) <i>Particulate Matter</i> (µg/m ³)	Ozon Permukaan Bumi (O ₃) <i>Ground Level Ozone</i> (ppm)	Karbon Monoksida (CO) <i>Carbon Monoxide</i> (ppm)	Sulfur Dioksida (SO ₂) <i>Sulphur Dioxide</i> (ppm)	Nitrogen Dioksida (NO ₂) <i>Nitrogen Dioxide</i> (ppm)
Melaka							
Bukit Rambai	2018	20.20	29.70	0.022	0.573	0.0015	0.0080
	2019	25.96	33.96	0.024	0.656	0.0013	0.0069
	2020	14.40	20.66	0.020	0.718	0.0013	0.0059
	2021	18.49	24.27	0.020	0.645	0.0015	0.0061
	2022	16.06	22.71	0.018	0.632	0.0015	0.0062
Negeri Sembilan							
Nilai	2018	26.83	36.51	0.012	0.624	0.0010	0.0150
	2019	30.18	42.92	0.008	0.673	0.0015	0.0122
	2020	18.94	27.50	0.008	0.527	0.0010	0.0107
	2021	18.97	29.25	0.007	0.502	0.0011	0.0105
	2022	18.16	27.64	0.010	0.602	0.0015	0.0105
Port Dickson	2018	17.49	24.06	0.026	0.581	0.0012	0.0049
	2019	24.19	31.31	0.030	0.567	0.0017	0.0054
	2020	13.10	18.58	0.019	0.454	0.0015	0.0049
	2021	14.92	20.44	0.025	0.470	0.0013	0.0055
	2022	14.28	20.51	0.027	0.530	0.0012	0.0058
Seremban	2018	16.70	23.52	0.020	0.718	0.0012	0.0073
	2019	22.57	29.41	0.022	0.680	0.0014	0.0071
	2020	12.69	18.40	0.019	0.561	0.0019	0.0055
	2021	13.03	18.67	0.021	0.603	0.0020	0.0067
	2022	19.99	26.78	0.020	0.611	0.0020	0.0067
Pahang							
Balok Baru	2018	17.82	28.53	-	-	0.0009	0.0050
	2019	23.14	33.76	-	-	0.0010	0.0053
	2020	11.00	21.46	-	-	0.0020	0.0047
	2021	12.04	26.07	-	-	0.0014	0.0047
	2022	11.42	24.87	-	-	0.0022	0.0050
Jerantut	2018	12.71	20.15	0.016	0.446	0.0010	0.0024
	2019	18.01	25.58	0.019	0.418	0.0009	0.0030
	2020	12.33	19.22	0.015	0.341	0.0008	0.0024
	2021	12.64	18.94	0.016	0.348	0.0008	0.0022
	2022	10.72	17.45	0.015	0.368	0.0011	0.0026
Kuantan	2018	14.53	21.67	0.019	0.557	0.001	0.0052
	2019	18.22	25.88	0.021	0.516	0.001	0.0053
	2020	10.01	16.83	0.019	0.420	0.001	0.0046
	2021	10.35	16.42	0.021	0.400	0.001	0.0044
	2022	9.49	15.46	0.019	0.456	0.001	0.0055
Rompin	2018	14.77	24.35	-	-	-	-
	2019	25.49	35.80	-	-	-	-
	2020	11.94	22.31	-	-	-	-
	2021	19.24	26.64	-	-	-	-
	2022	9.70	17.28	-	-	-	-

Jadual 1.25: Purata tahunan kepekatan berdasarkan jenis bahan pencemar di udara mengikut stesen, Malaysia, 2018-2022 (samb.)

Table 1.25: *Annually average concentration based on the type of pollutants in the air by station, Malaysia, 2018-2022 (cont'd)*

Negeri/ Stesen State/ Station	Tahun Year	Habuk Halus (PM _{2.5}) Particulate Matter (µg/m ³)	Habuk Halus (PM ₁₀) Particulate Matter (µg/m ³)	Ozon Permukaan Bumi (O ₃) Ground Level Ozone (ppm)	Karbon Monoksida (CO) Carbon Monoxide (ppm)	Sulfur Dioksida (SO ₂) Sulphur Dioxide (ppm)	Nitrogen Dioksida (NO ₂) Nitrogen Dioxide (ppm)
Pahang							
Temerloh	2018	17.30	27.38	0.014	0.514	0.0010	0.0044
	2019	22.88	33.00	0.017	0.514	0.0009	0.0049
	2020	13.92	22.04	0.015	0.403	0.0007	0.0039
	2021	13.80	21.92	0.014	0.411	0.0009	0.0038
	2022	11.68	17.59	0.012	0.494	0.0011	0.0045
Perak							
Pegoh, Ipoh	2018	20.19	33.87	0.019	0.601	0.0009	0.0096
	2019	22.33	32.61	0.022	0.606	0.0010	0.0097
	2020	15.01	21.53	0.020	0.454	0.0007	0.0073
	2021	15.11	23.99	0.015	0.524	0.0008	0.0074
	2022	14.36	23.87	0.011	0.493	0.0010	0.0072
Seri Manjung	2018	17.84	26.72	-	-	-	-
	2019	22.34	28.50	-	-	-	-
	2020	15.48	23.66	-	-	-	-
	2021	14.04	22.32	-	-	-	-
	2022	12.69	19.86	-	-	-	-
Taiping	2018	19.57	33.93	0.017	0.703	0.0008	0.0075
	2019	20.58	34.51	0.018	0.593	0.0011	0.0079
	2020	14.77	24.39	0.017	0.271	0.0009	0.0069
	2021	13.80	22.81	0.016	0.302	0.0010	0.0075
	2022	11.93	20.54	0.013	0.280	0.0009	0.0078
Tanjung Malim	2018	9.44	14.72	0.019	0.586	0.0009	0.0065
	2019	13.33	18.59	0.021	0.585	0.0009	0.0063
	2020	7.53	11.21	0.018	0.495	0.0008	0.0049
	2021	9.30	14.37	0.017	0.498	0.0009	0.0044
	2022	10.86	16.46	0.017	0.503	0.0011	0.0057
Tasek, Ipoh	2018	18.72	28.69	0.018	0.641	0.0014	0.0108
	2019	22.85	31.14	0.021	0.674	0.0013	0.0106
	2020	15.62	23.56	0.020	0.552	0.0010	0.0079
	2021	16.46	26.19	0.018	0.542	0.0010	0.0070
	2022	15.03	24.26	0.016	0.542	0.0012	0.0080
Perlis							
Kangar	2018	13.22	21.48	0.022	0.483	0.0006	0.0036
	2019	15.20	22.90	0.024	0.519	0.0009	0.0033
	2020	11.42	18.40	0.022	0.454	0.0010	0.0027
	2021	10.95	18.18	0.021	0.400	0.0012	0.0025
	2022	9.88	16.53	0.020	0.414	0.0011	0.0031
Pulau Pinang							
Balik Pulau	2018	14.43	20.89	0.025	0.504	0.0011	0.0041
	2019	22.20	30.89	0.026	0.515	0.0011	0.0039
	2020	15.77	23.06	0.024	0.499	0.0009	0.0034
	2021	13.44	20.81	0.023	0.470	0.0009	0.0032
	2022	11.88	18.31	0.012	0.445	0.0010	0.0036

Jadual 1.25: Purata tahunan kepekatan berdasarkan jenis bahan pencemar di udara mengikut stesen, Malaysia, 2018-2022 (samb.)

Table 1.25: *Annually average concentration based on the type of pollutants in the air by station, Malaysia, 2018-2022 (cont'd)*

Negeri/ Stesen State/ Station	Tahun Year	Habuk Halus (PM _{2.5}) Particulate Matter (µg/m ³)	Habuk Halus (PM ₁₀) Particulate Matter (µg/m ³)	Ozon Permukaan Bumi (O ₃) Ground Level Ozone (ppm)	Karbon Monoksida (CO) Carbon Monoxide (ppm)	Sulfur Dioksida (SO ₂) Sulphur Dioxide (ppm)	Nitrogen Dioksida (NO ₂) Nitrogen Dioxide (ppm)
Pulau Pinang							
Perai	2018	18.77	27.62	0.021	0.767	0.0011	0.0099
	2019	20.04	27.83	0.019	0.738	0.0009	0.0094
	2020	15.45	23.29	0.013	0.670	0.0006	0.0072
	2021	14.58	21.87	0.008	0.640	0.0007	0.0066
	2022	14.29	22.02	0.013	0.587	0.0010	0.0076
Seberang Jaya	2018	20.67	28.37	0.018	0.900	0.0011	0.0152
	2019	21.89	28.45	0.018	0.985	0.0011	0.0152
	2020	17.46	25.26	0.017	0.692	0.0010	0.0116
	2021	17.32	24.21	0.015	0.658	0.0009	0.0122
	2022	16.42	23.33	0.010	0.776	0.0011	0.0136
USM	2018	17.60	24.52	0.025	0.691	0.0013	0.0094
	2019	20.85	27.89	0.026	0.629	0.0012	0.0086
	2020	14.09	20.09	0.025	0.558	0.0011	0.0061
	2021	13.97	19.83	0.024	0.520	0.0010	0.0058
	2022	13.06	18.99	0.018	0.472	0.0009	0.0074
Sabah							
Keningau	2018	12.24	21.13	0.010	0.619	0.0009	0.0028
	2019	13.54	21.65	0.011	0.647	0.0010	0.0032
	2020	9.71	16.61	0.009	0.625	0.0012	0.0025
	2021	10.13	18.85	0.009	0.595	0.0014	0.0025
	2022	8.37	16.72	0.009	0.519	0.0014	0.0023
Kimanis	2018	8.28	16.34	-	-	0.0006	0.0016
	2019	12.58	21.85	-	-	0.0007	0.0020
	2020	7.42	15.57	-	-	0.0007	0.0015
	2021	5.40	11.91	-	-	0.0007	0.0014
	2022	4.48	11.56	-	-	0.0007	0.0018
Kota Kinabalu	2018	12.03	23.26	0.013	0.524	0.0012	0.0049
	2019	14.29	24.86	0.013	0.397	0.0013	0.0033
	2020	7.95	16.88	0.013	0.401	0.0010	0.0024
	2021	7.67	19.54	0.012	0.344	0.0011	0.0027
	2022	7.77	15.88	0.010	0.274	0.0009	0.0029
Sandakan	2018	10.32	18.03	0.014	0.510	0.0008	0.0046
	2019	11.32	18.45	0.016	0.519	0.0007	0.0044
	2020	9.27	15.38	0.014	0.531	0.0007	0.0035
	2021	7.78	14.19	0.014	0.501	0.0008	0.0037
	2022	7.81	12.24	0.013	0.590	0.0008	0.0044
Tawau	2018	7.74	15.09	0.010	0.655	0.0008	0.0053
	2019	9.22	16.03	0.012	0.662	0.0007	0.0048
	2020	6.56	16.14	0.011	0.627	0.0006	0.0043
	2021	7.08	14.67	0.010	0.524	0.0008	0.0047
	2022	10.63	21.72	0.009	0.519	0.0011	0.0052

Jadual 1.25: Purata tahunan kepekatan berdasarkan jenis bahan pencemar di udara mengikut stesen, Malaysia, 2018-2022 (samb.)

Table 1.25: *Annually average concentration based on the type of pollutants in the air by station, Malaysia, 2018-2022 (cont'd)*

Negeri / Stesen State / Station	Tahun Year	Habuk Halus (PM _{2.5}) <i>Particulate Matter</i> (µg/m ³)	Habuk Halus (PM ₁₀) <i>Particulate Matter</i> (µg/m ³)	Ozon Permukaan Bumi (O ₃) <i>Ground Level Ozone</i> (ppm)	Karbon Monoksida (CO) <i>Carbon Monoxide</i> (ppm)	Sulfur Dioksida (SO ₂) <i>Sulphur Dioxide</i> (ppm)	Nitrogen Dioksida (NO ₂) <i>Nitrogen Dioxide</i> (ppm)
Sarawak							
Bintulu	2018	16.03	26.31	0.013	0.515	0.0003	0.0058
	2019	19.71	28.65	0.015	0.518	0.0004	0.0054
	2020	11.19	19.82	0.013	0.407	0.0004	0.0040
	2021	12.43	21.19	0.013	0.404	0.0004	0.0044
	2022	12.68	20.46	0.012	0.426	0.0005	0.0043
ILP Miri	2018	12.21	20.40	-	-	-	-
	2019	26.28	35.80	-	-	-	-
	2020	11.65	18.56	-	-	-	-
	2021	8.90	15.52	-	-	-	-
	2022	8.02	14.37	-	-	-	-
Kapit	2018	9.69	17.42	-	-	-	-
	2019	11.03	19.99	-	-	-	-
	2020	6.31	13.15	-	-	-	-
	2021	7.04	13.77	-	-	-	-
	2022	8.10	15.29	-	-	-	-
Kuching	2018	15.73	23.28	0.012	0.569	0.0007	0.0052
	2019	20.57	29.23	0.014	0.800	0.0007	0.0053
	2020	8.99	15.81	0.011	0.615	0.0006	0.0041
	2021	8.44	14.72	0.012	0.456	0.0012	0.0041
	2022	7.24	15.35	0.012	0.344	0.0010	0.0060
Limbang	2018	9.55	17.13	-	-	-	-
	2019	11.37	19.11	-	-	-	-
	2020	6.54	13.80	-	-	-	-
	2021	7.54	15.46	-	-	-	-
	2022	6.70	14.14	-	-	-	-
Miri	2018	14.49	22.24	0.015	0.551	0.0007	0.0039
	2019	21.41	29.44	0.017	0.605	0.0006	0.0043
	2020	12.52	19.70	0.016	0.559	0.0006	0.0029
	2021	12.07	18.59	0.015	0.480	0.0011	0.0032
	2022	9.71	15.89	0.014	0.496	0.0008	0.0033
Mukah	2018	12.89	22.97	-	-	-	-
	2019	13.71	28.42	-	-	-	-
	2020	6.52	16.15	-	-	-	-
	2021	7.40	17.80	-	-	-	-
	2022	7.31	17.73	-	-	-	-
Samalaju	2018	12.50	23.47	-	-	0.0007	0.0027
	2019	15.90	27.39	-	-	0.0009	0.0032
	2020	9.49	19.10	-	-	0.0006	0.0019
	2021	9.87	20.16	-	-	0.0006	0.0026
	2022	11.27	20.93	-	-	0.0008	0.0024

Jadual 1.25: Purata tahunan kepekatan berdasarkan jenis bahan pencemar di udara mengikut stesen, Malaysia, 2018-2022 (samb.)

Table 1.25: *Annually average concentration based on the type of pollutants in the air by station, Malaysia, 2018-2022 (cont'd)*

Negeri/ Stesen State/ Station	Tahun Year	Habuk Halus (PM _{2.5}) <i>Particulate Matter</i> (µg/m ³)	Habuk Halus (PM ₁₀) <i>Particulate Matter</i> (µg/m ³)	Ozon Permukaan Bumi (O ₃) <i>Ground Level Ozone</i> (ppm)	Karbon Monoksida (CO) <i>Carbon Monoxide</i> (ppm)	Sulfur Dioksida (SO ₂) <i>Sulphur Dioxide</i> (ppm)	Nitrogen Dioksida (NO ₂) <i>Nitrogen Dioxide</i> (ppm)
Sarawak							
Samarahan	2018	12.34	20.16	-	-	-	-
	2019	16.12	23.66	-	-	-	-
	2020	7.02	14.06	-	-	-	-
	2021	8.18	14.94	-	-	-	-
	2022	8.42	15.58	-	-	-	-
Sarikei	2018	12.18	20.10	-	-	-	-
	2019	16.52	24.91	-	-	-	-
	2020	7.11	14.20	-	-	-	-
	2021	8.90	15.27	-	-	-	-
	2022	8.60	15.16	-	-	-	-
Sibu	2018	15.89	24.07	0.010	0.606	0.0005	0.0045
	2019	18.99	27.82	0.011	0.641	0.0004	0.0047
	2020	8.27	14.44	0.010	0.435	0.0011	0.0039
	2021	8.00	14.50	0.010	0.408	0.0007	0.0036
	2022	7.71	14.15	0.010	0.430	0.0006	0.0041
Sri Aman	2018	10.76	18.64	-	-	-	-
	2019	22.56	31.89	-	-	-	-
	2020	7.45	14.70	-	-	-	-
	2021	7.81	15.09	-	-	-	-
	2022	7.42	14.74	-	-	-	-
Selangor							
Banting	2018	22.93	32.95	0.020	0.669	0.0015	0.0107
	2019	29.31	39.31	0.020	0.703	0.0012	0.0108
	2020	17.07	24.64	0.018	0.614	0.0014	0.0085
	2021	19.30	28.55	0.018	0.561	0.0014	0.0079
	2022	17.71	26.90	0.020	0.441	0.0012	0.0096
Klang	2018	28.15	41.27	0.018	1.015	0.0020	0.0203
	2019	33.05	41.49	0.014	1.048	0.0013	0.0179
	2020	23.24	33.78	0.016	0.787	0.0014	0.0150
	2021	26.29	34.24	0.016	0.777	0.0015	0.0148
	2022	20.86	28.79	0.015	0.707	0.0015	0.0156
Kuala Selangor	2018	18.94	25.93	-	-	-	-
	2019	24.08	31.92	-	-	-	-
	2020	15.25	20.74	-	-	-	-
	2021	16.86	24.30	-	-	-	-
	2022	16.74	23.76	-	-	-	-
Petaling Jaya	2018	25.78	35.90	0.015	1.184	0.0023	0.0240
	2019	30.07	40.22	0.014	1.207	0.0011	0.0234
	2020	19.95	27.60	0.009	1.025	0.0009	0.0194
	2021	24.08	32.78	0.005	0.827	0.0012	0.0181
	2022	20.68	29.86	0.014	0.644	0.0015	0.0141

Jadual 1.25: Purata tahunan kepekatan berdasarkan jenis bahan pencemar di udara mengikut stesen, Malaysia, 2018-2022 (samb.)

Table 1.25: *Annually average concentration based on the type of pollutants in the air by station, Malaysia, 2018-2022 (cont'd)*

Negeri/ Stesen State/ Station	Tahun Year	Habuk Halus (PM _{2.5}) Particulate Matter (µg/m ³)	Habuk Halus (PM ₁₀) Particulate Matter (µg/m ³)	Ozon Permukaan Bumi (O ₃) Ground Level Ozone (ppm)	Karbon Monoksida (CO) Carbon Monoxide (ppm)	Sulfur Dioksida (SO ₂) Sulphur Dioxide (ppm)	Nitrogen Dioksida (NO ₂) Nitrogen Dioxide (ppm)
Selangor							
Shah Alam	2018	25.15	34.45	0.020	0.974	0.0013	0.0184
	2019	32.12	41.97	0.024	0.907	0.0012	0.0175
	2020	18.09	25.81	0.020	0.735	0.0012	0.0135
	2021	20.63	28.44	0.020	0.673	0.0010	0.0133
	2022	20.68	32.44	0.017	0.546	0.0012	0.0141
Terengganu							
Besut	2018	14.27	22.11	0.017	0.454	0.0007	0.0022
	2019	15.65	23.43	0.020	0.503	0.0008	0.0023
	2020	10.81	18.36	0.015	0.438	0.0008	0.0018
	2021	11.13	18.85	0.014	0.471	0.0007	0.0016
	2022	11.07	17.83	0.015	0.394	0.0010	0.0021
Kemaman	2018	16.36	24.76	-	-	0.0009	0.0028
	2019	19.56	28.09	-	-	0.0010	0.0028
	2020	11.65	19.23	-	-	0.0009	0.0028
	2021	10.84	18.14	-	-	0.0008	0.0026
	2022	10.82	20.28	-	-	0.0011	0.0031
Kuala Terengganu	2018	17.26	25.20	0.017	0.632	0.0006	0.0056
	2019	19.74	28.86	0.016	0.568	0.0008	0.0053
	2020	14.42	23.30	0.014	0.507	0.0011	0.0043
	2021	15.60	24.37	0.014	0.536	0.0010	0.0041
	2022	15.13	22.38	0.013	0.610	0.0013	0.0046
Paka	2018	12.49	21.68	-	-	0.0009	0.0019
	2019	15.37	24.34	-	-	0.0012	0.0022
	2020	8.70	16.56	-	-	0.0009	0.0019
	2021	9.76	18.62	-	-	0.0010	0.0023
	2022	9.19	18.41	-	-	0.0007	0.0036
Wilayah Persekutuan							
Batu Muda, Kuala Lumpur	2018	21.20	28.61	0.017	0.970	0.0012	0.0183
	2019	28.34	35.68	0.016	0.978	0.0008	0.0165
	2020	17.51	28.30	0.016	0.938	0.0008	0.0131
	2021	15.96	21.86	0.017	0.752	0.0009	0.0116
	2022	16.89	28.95	0.012	0.709	0.0013	0.0105
Cheras, Kuala Lumpur	2018	22.98	33.07	0.021	0.844	0.0011	0.0186
	2019	28.20	36.40	0.023	0.834	0.0008	0.0168
	2020	15.80	22.42	0.019	0.724	0.0008	0.0121
	2021	16.80	23.96	0.020	0.849	0.0010	0.0111
	2022	18.18	23.49	0.019	0.892	0.0012	0.0133

Jadual 1.25: Purata tahunan kepekatan berdasarkan jenis bahan pencemar di udara mengikut stesen, Malaysia, 2018-2022 (samb.)

Table 1.25: *Annually average concentration based on the type of pollutants in the air by station, Malaysia, 2018-2022 (cont'd)*

Negeri/ Stesen State/ Station	Tahun Year	Habuk Halus (PM _{2.5}) Particulate Matter (µg/m ³)	Habuk Halus (PM ₁₀) Particulate Matter (µg/m ³)	Ozon Permukaan Bumi (O ₃) Ground Level Ozone (ppm)	Karbon Monoksida (CO) Carbon Monoxide (ppm)	Sulfur Dioksida (SO ₂) Sulphur Dioxide (ppm)	Nitrogen Dioksida (NO ₂) Nitrogen Dioxide (ppm)
Wilayah Persekutuan							
Labuan	2018	13.13	19.64	0.017	0.641	0.0008	0.0025
	2019	13.63	19.45	0.018	0.558	0.0009	0.0021
	2020	10.92	17.94	0.016	0.592	0.0007	0.0018
	2021	11.50	19.38	0.015	0.621	0.0014	0.0017
	2022	9.75	16.44	0.016	0.477	0.0010	0.0020
Putrajaya	2018	22.39	30.72	0.023	0.623	0.0013	0.0100
	2019	29.81	38.81	0.025	0.648	0.0011	0.0088
	2020	16.64	24.21	0.021	0.539	0.0012	0.0069
	2021	15.74	22.99	0.020	0.773	0.0011	0.0063
	2022	13.96	21.19	0.019	0.586	0.0018	0.0082

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Jadual 1.26: Purata bulanan kepekatan Habuk Halus (PM_{2.5}) di udara, Malaysia, 2018-2022

Table 1.26: Monthly average concentration of Particulate Matter (PM_{2.5}) in the air, Malaysia, 2018-2022

µg/m³

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Johor													
Batu Pahat	2018	10.37	16.81	14.94	15.03	15.38	18.51	21.55	25.11	22.02	17.44	10.21	11.37
	2019	12.99	13.24	27.17	17.82	19.77	14.28	24.18	36.96	54.97	20.00	16.08	7.50
	2020	9.49	9.12	12.80	10.19	10.34	10.55	9.80	14.00	9.88	12.03	9.26	10.30
	2021	8.57	16.67	15.66	14.98	12.02	15.21	16.57	10.16	10.79	13.39	9.78	8.86
	2022	9.15	8.40	10.30	11.24	13.04	9.76	14.38	12.62	12.68	8.96	9.23	9.22
Kluang	2018	8.33	13.32	13.49	13.29	14.21	17.94	20.86	22.53	19.75	14.88	13.37	12.23
	2019	11.13	11.60	22.01	16.44	18.12	15.70	20.72	30.66	49.85	14.87	14.14	6.11
	2020	6.74	6.93	10.42	7.60	8.57	9.36	9.59	11.02	7.71	10.43	6.72	8.67
	2021	6.83	11.83	10.76	12.62	10.83	13.56	13.52	9.17	9.19	12.93	8.26	8.01
	2022	7.77	6.81	9.09	10.08	12.98	10.351	12.63	11.82	10.20	9.17	9.35	10.32
Kota Tinggi	2018	6.80	12.16	9.76	12.68	11.01	11.49	14.43	16.14	15.53	15.41	10.83	8.29
	2019	8.34	8.56	16.82	12.76	14.91	10.18	13.39	17.17	35.48	16.43	17.70	5.93
	2020	6.95	7.15	7.85	7.76	9.39	8.53	7.32	9.58	7.86	12.07	7.51	7.32
	2021	7.75	11.08	9.29	13.15	9.01	13.35	11.75	9.15	9.84	11.77	9.11	6.79
	2022	6.22	4.92	6.74	11.06	11.36	10.77	9.95	10.38	13.02	11.78	8.52	7.61
Larkin	2018	13.55	18.29	17.97	21.39	21.13	19.58	20.88	25.08	28.41	24.95	17.90	16.56
	2019	14.15	15.17	23.63	23.36	26.45	19.86	22.09	28.95	56.86	26.90	25.87	12.59
	2020	12.80	13.38	14.98	13.03	15.03	15.31	14.27	17.19	16.30	16.79	14.95	13.40
	2021	11.45	16.12	16.05	20.77	18.49	19.52	18.01	14.45	14.97	19.85	15.48	13.88
	2022	12.51	13.14	14.53	18.69	18.66	21.09	20.33	21.43	20.64	15.09	14.23	13.39
Pasar Gudang	2018	10.44	14.45	14.52	17.36	21.14	21.23	21.92	23.40	24.83	22.53	17.57	13.74
	2019	11.73	11.67	21.72	20.08	21.61	16.08	19.46	25.22	47.29	24.54	24.38	8.87
	2020	8.54	8.78	11.52	11.23	13.72	14.63	13.97	16.54	14.20	16.18	12.70	10.30
	2021	7.88	13.59	12.53	16.54	15.19	16.37	15.29	12.57	14.15	15.78	14.29	10.65
	2022	10.48	9.71	13.19	18.86	18.28	17.76	16.07	16.46	18.44	14.84	11.36	10.10
Pengerang	2018	9.63	15.02	13.12	16.31	15.15	15.24	17.93	18.59	16.17	16.62	10.70	10.39
	2019	9.45	12.83	24.82	18.75	13.81	8.33	13.88	24.21	37.17	14.75	18.37	6.89
	2020	9.26	7.60	12.67	10.59	9.17	6.99	7.19	10.38	8.26	10.89	7.80	9.09
	2021	9.26	17.99	13.66	12.06	9.23	11.52	11.10	9.45	12.09	12.97	10.54	8.65
	2022	9.87	9.06	9.04	15.04	16.74	13.52	12.85	11.21	13.19	13.77	9.80	6.23
Segamat	2018	8.92	14.29	14.31	16.47	16.34	16.36	19.90	22.85	19.77	15.48	11.56	11.18
	2019	11.21	10.53	30.26	20.55	20.63	16.30	27.47	35.90	68.80	17.87	17.19	7.98
	2020	9.92	10.15	15.95	16.35	13.50	14.05	11.13	14.68	12.30	16.60	10.02	10.94
	2021	8.53	13.72	16.27	16.15	13.50	16.03	16.45	12.52	12.20	15.01	10.19	9.40
	2022	8.55	7.59	12.37	14.423	15.06	15.71	19.71	16.59	22.99	20.52	11.84	7.65
Tangkak	2018	-	-	16.22	16.96	14.81	13.97	18.87	22.81	23.39	16.68	13.32	13.96
	2019	14.18	18.38	33.35	18.35	18.92	14.34	20.87	34.11	69.11	30.91	18.29	10.81
	2020	11.86	11.12	15.72	11.31	10.75	12.43	10.87	13.74	12.12	13.78	11.22	13.43
	2021	8.57	16.67	15.66	14.98	12.02	15.21	16.57	10.16	10.79	13.39	9.78	8.86
	2022	11.16	8.36	13.65	13.36	14.30	16.00	16.70	14.08	14.13	13.01	12.49	13.42

Jadual 1.26: Purata bulanan kepekatan Habuk Halus (PM_{2.5}) di udara, Malaysia, 2018-2022 (samb.)

Table 1.26: Monthly average concentration of Particulate Matter (PM_{2.5}) in the air, Malaysia, 2018-2022 (cont'd)

µg/m³

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Kedah													
Alor Setar	2018	12.96	19.91	15.32	14.67	9.96	16.90	19.09	24.07	12.76	9.43	10.64	10.06
	2019	12.42	12.90	20.64	14.00	9.52	15.38	19.53	21.54	36.55	10.64	9.26	10.96
	2020	11.50	12.30	19.73	10.57	9.46	13.11	12.54	18.55	11.87	7.55	8.89	10.88
	2021	14.50	19.01	14.40	10.35	9.24	11.01	13.69	9.12	15.19	10.85	6.29	11.25
	2022	13.84	10.58	11.16	11.36	9.42	7.90	14.07	13.86	11.82	6.99	8.66	10.60
Kulim	2018	12.71	20.15	15.35	16.35	14.21	17.67	23.28	24.49	13.51	11.40	13.02	11.33
	2019	15.68	16.96	22.40	16.33	13.37	18.70	26.87	23.98	39.80	10.83	8.50	11.56
	2020	14.73	14.14	19.55	10.25	9.62	14.45	13.06	19.81	12.26	9.34	10.26	10.39
	2021	13.25	18.39	14.97	10.43	10.54	11.21	13.36	8.56	9.23	8.21	9.341	14.22
	2022	18.75	12.68	13.42	12.66	10.83	9.68	15.54	15.90	12.65	10.31	10.24	12.19
Langkawi	2018	12.34	18.47	13.97	14.89	10.56	15.61	14.75	15.40	8.18	8.79	9.17	8.72
	2019	12.93	11.19	18.43	13.47	9.54	11.40	15.40	16.82	30.93	9.60	9.98	12.10
	2020	12.61	12.22	13.09	10.01	8.41	9.87	9.75	11.33	7.33	6.67	8.16	9.39
	2021	13.27	14.56	11.59	8.82	7.17	8.56	10.05	6.66	6.14	7.09	5.74	10.96
	2022	13.52	9.17	10.18	9.55	7.26	5.72	8.89	7.22	5.65	5.00	7.13	9.15
Sungai Petani	2018	12.59	20.14	21.51	20.11	12.21	20.34	23.52	25.43	14.25	13.18	15.37	14.63
	2019	14.81	16.72	22.18	16.22	13.18	21.91	26.73	27.63	42.54	12.69	12.73	14.07
	2020	17.96	14.26	20.56	12.03	10.57	16.12	14.98	21.06	11.47	8.92	8.17	8.89
	2021	14.49	18.68	16.13	12.44	14.81	14.76	18.61	14.04	17.71	12.91	9.28	12.13
	2022	18.44	13.44	13.99	14.59	13.45	11.64	18.27	17.59	11.79	8.57	9.46	9.71
Kelantan													
Kota Bharu	2018	13.88	22.30	23.31	17.11	18.03	19.84	20.73	25.21	11.36	12.35	10.95	11.28
	2019	12.85	12.78	24.38	20.53	14.60	14.73	25.63	28.01	31.91	16.37	18.41	20.12
	2020	14.90	15.07	18.34	15.42	14.13	13.25	15.11	18.79	14.67	12.13	10.88	11.71
	2021	15.06	20.45	13.33	16.24	14.72	15.68	20.67	13.69	16.82	17.64	8.86	13.57
	2022	19.13	11.33	16.07	15.66	17.49	18.50	18.64	16.94	11.00	8.75	10.34	13.54
Tanah Merah	2018	13.67	26.52	20.80	20.79	15.99	18.31	21.11	27.06	12.61	12.44	12.88	12.19
	2019	16.13	19.21	28.86	27.81	14.57	13.82	20.43	23.41	29.48	11.90	10.52	16.82
	2020	19.62	17.85	24.29	18.05	12.75	12.43	14.10	16.84	12.72	11.32	11.08	12.42
	2021	16.34	27.32	16.32	14.28	11.57	11.35	15.59	12.08	13.68	15.05	9.542	14.33
	2022	21.28	13.13	15.96	14.31	14.12	12.71	15.55	12.26	9.44	9.45	9.59	12.71
Melaka													
Alor Gajah	2018	10.25	13.34	14.88	15.56	15.60	22.53	29.25	27.84	26.36	19.30	13.11	13.36
	2019	14.05	13.82	31.66	23.11	22.42	16.93	24.89	39.72	64.49	25.11	16.14	8.44
	2020	9.79	9.13	11.93	10.84	15.96	13.68	12.76	14.89	12.44	17.74	9.72	11.03
	2021	8.67	13.98	13.99	16.98	16.30	18.56	19.66	13.75	13.10	15.39	11.03	9.69
	2022	9.92	8.88	12.85	14.05	15.78	12.43	18.92	16.53	17.35	11.51	9.82	8.98
Bandaraya Melaka	2018	15.22	19.19	16.97	17.88	17.47	20.30	22.40	27.41	22.49	16.86	12.72	11.99
	2019	11.69	12.41	27.68	21.37	19.18	15.76	23.20	37.49	62.05	23.59	17.12	10.06
	2020	11.41	11.20	14.71	12.10	14.56	14.36	13.13	17.25	12.77	13.32	11.20	12.45
	2021	10.08	15.18	14.56	17.86	15.04	17.80	17.73	13.11	12.56	14.05	11.62	10.48
	2022	11.11	10.18	13.56	13.89	16.50	15.70	19.38	15.00	14.91	11.65	12.35	11.78

Jadual 1.26: Purata bulanan kepekatan Habuk Halus (PM_{2.5}) di udara, Malaysia, 2018-2022 (samb.)

Table 1.26: Monthly average concentration of Particulate Matter (PM_{2.5}) in the air, Malaysia, 2018-2022 (cont'd)

µg/m³

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Melaka													
Bukit Rambai	2018	13.61	17.64	19.24	20.88	18.85	23.75	25.66	31.82	25.42	18.72	13.77	13.19
	2019	13.42	15.11	31.67	23.23	22.36	18.90	25.70	40.22	64.82	25.26	19.50	10.95
	2020	13.56	12.71	15.01	12.41	16.51	15.56	15.91	17.79	13.35	15.92	11.42	12.34
	2021	11.42	17.80	21.24	24.74	19.55	19.76	24.01	20.65	16.02	19.04	14.40	13.23
	2022	12.98	12.00	15.54	17.27	18.95	16.92	22.07	19.01	18.62	14.03	12.71	12.16
Negeri Sembilan													
Nilai	2018	19.81	19.57	25.64	27.26	26.80	24.04	27.03	37.09	39.13	28.89	24.57	20.70
	2019	15.19	18.56	30.88	24.40	20.58	21.29	32.34	45.07	82.46	31.68	25.61	13.68
	2020	16.75	15.21	19.06	15.80	19.94	21.30	20.24	21.23	18.42	20.30	16.36	22.32
	2021	17.93	22.57	21.47	23.40	20.19	18.25	18.97	15.62	17.56	18.87	17.35	15.85
	2022	15.96	14.47	17.38	23.45	25.90	19.62	24.69	16.76	17.38	14.75	14.36	13.09
Port Dickson	2018	14.18	17.57	16.59	17.11	16.31	18.19	18.69	24.08	22.35	17.59	12.51	14.44
	2019	13.70	11.81	31.67	20.87	17.79	14.55	22.38	36.89	67.66	23.71	16.42	11.87
	2020	14.04	12.53	15.69	12.55	13.71	13.62	12.96	16.36	11.26	11.63	10.71	11.95
	2021	11.59	17.73	17.16	17.02	15.77	15.94	18.11	13.25	13.17	13.53	12.66	13.29
	2022	15.01	13.15	16.46	16.38	16.63	11.98	16.99	14.32	13.71	11.30	12.43	12.97
Seremban	2018	11.61	16.73	19.25	16.62	16.41	17.86	20.69	23.06	18.57	14.64	11.34	13.44
	2019	13.03	13.92	28.24	20.12	14.88	13.34	22.63	33.11	66.32	19.53	15.36	10.27
	2020	13.05	10.65	13.50	11.21	13.47	13.69	12.71	15.60	12.61	13.37	10.19	12.03
	2021	10.82	16.64	16.07	13.94	13.53	13.89	15.05	11.01	10.92	13.59	10.29	10.79
	2022	11.62	14.47	23.79	29.44	23.58	21.93	24.16	18.33	18.45	18.64	19.89	15.36
Pahang													
Balok Baru	2018	13.89	19.22	18.94	18.06	15.79	16.95	27.16	27.06	20.26	15.07	12.01	9.87
	2019	12.60	16.54	32.90	38.93	20.10	18.70	20.77	32.63	44.99	16.60	13.08	10.04
	2020	10.80	13.06	11.40	9.06	9.50	11.46	10.39	12.64	12.75	13.46	8.74	8.82
	2021	10.28	13.42	12.25	13.01	10.82	12.90	15.10	11.89	11.39	12.41	9.95	11.13
	2022	11.54	11.93	9.75	11.78	12.62	11.72	13.93	10.03	12.19	10.30	11.20	10.31
Jerantut	2018	5.61	13.42	10.70	13.67	10.51	17.02	21.16	22.73	14.77	10.24	6.55	6.00
	2019	8.47	10.82	18.69	16.77	13.43	14.80	22.68	33.28	48.33	11.71	8.72	8.08
	2020	10.34	10.59	14.54	10.99	11.60	13.64	12.80	18.17	14.19	14.82	7.49	8.53
	2021	8.93	14.99	12.60	12.56	12.94	13.59	16.87	13.89	13.10	15.18	8.43	8.70
	2022	11.02	8.10	10.93	10.57	14.30	13.71	17.68	12.48	10.93	6.81	5.80	6.91
Kuantan	2018	8.93	16.09	13.12	14.01	13.67	16.78	24.24	24.78	17.03	11.09	7.57	7.02
	2019	10.56	10.90	16.44	16.32	14.50	14.45	21.71	38.63	46.57	11.46	8.65	8.21
	2020	8.94	10.19	9.96	8.26	9.05	11.25	9.53	12.72	11.50	13.47	6.78	8.47
	2021	8.77	12.80	8.60	10.52	9.40	12.18	14.40	10.77	9.83	11.46	6.91	8.74
	2022	9.88	6.37	8.94	8.81	11.85	12.02	12.90	9.58	11.89	7.53	7.18	7.04
Rompin	2018	6.35	14.43	13.11	15.15	15.91	15.71	27.74	23.23	18.69	15.02	7.37	7.60
	2019	10.62	10.13	44.09	21.65	23.51	15.30	21.37	51.79	62.05	22.68	12.44	9.13
	2020	9.76	10.00	13.61	23.70	8.90	9.91	8.30	10.19	8.73	10.78	6.64	22.83
	2021	24.18	31.76	30.64	24.90	14.40	19.74	26.92	19.50	10.37	12.85	7.53	8.99
	2022	12.54	7.84	8.29	8.10	11.21	10.28	13.23	10.76	12.69	8.04	6.13	7.01

Jadual 1.26: Purata bulanan kepekatan Habuk Halus (PM_{2.5}) di udara, Malaysia, 2018-2022 (samb.)

Table 1.26: Monthly average concentration of Particulate Matter (PM_{2.5}) in the air, Malaysia, 2018-2022 (cont'd)

µg/m³

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Pahang													
Temerloh	2018	8.65	17.94	18.57	17.83	15.55	20.19	24.16	25.51	19.93	16.16	12.48	10.52
	2019	13.56	14.42	24.31	19.51	18.02	18.13	27.22	38.73	56.00	18.29	14.51	11.63
	2020	14.77	12.75	15.37	12.10	12.68	15.78	14.53	18.19	14.55	16.77	8.87	10.49
	2021	11.30	17.42	12.79	14.52	13.94	15.67	18.49	14.64	13.24	15.06	9.32	9.50
	2022	11.83	8.38	10.55	10.48	13.88	12.00	19.13	14.17	14.02	8.30	8.17	9.11
Perak													
Pegoh, Ipoh	2018	15.22	22.87	20.32	21.81	18.87	20.80	24.13	32.40	18.93	16.03	16.93	14.15
	2019	18.78	21.87	26.01	20.79	15.73	17.34	23.97	28.89	49.84	16.73	14.05	14.21
	2020	17.86	15.64	19.31	15.07	11.16	15.28	13.73	15.95	14.86	15.31	12.35	13.57
	2021	16.07	20.38	20.68	15.47	15.17	13.83	18.12	12.58	14.65	12.68	10.23	11.77
	2022	19.35	14.51	15.47	14.62	13.88	12.06	15.39	13.39	11.41	11.91	15.78	14.45
Seri Manjung	2018	14.11	23.86	18.99	18.37	16.24	18.02	23.52	26.56	16.17	13.57	13.71	11.25
	2019	16.66	20.13	24.12	19.13	14.35	15.01	24.69	35.34	59.80	14.27	12.07	12.89
	2020	17.66	17.33	19.44	15.23	11.80	16.31	15.26	23.31	12.96	13.88	10.31	12.25
	2021	14.35	21.89	17.15	14.01	14.79	13.22	16.22	11.51	12.36	11.70	9.145	12.59
	2022	19.07	12.69	13.97	12.12	12.85	9.86	16.00	15.02	11.50	10.13	8.87	9.85
Taiping	2018	13.33	27.12	20.36	20.25	18.30	22.93	25.54	33.18	15.02	13.14	11.84	13.38
	2019	17.23	18.54	22.08	16.17	11.99	22.54	25.87	26.98	47.03	11.87	11.21	15.66
	2020	18.96	16.69	22.47	11.88	9.91	16.60	14.24	21.73	13.22	12.13	8.65	10.51
	2021	12.26	20.71	17.03	12.03	13.41	12.83	18.68	12.70	14.69	11.30	8.08	12.34
	2022	18.21	10.97	12.58	12.07	11.10	8.80	15.55	15.95	9.09	8.78	8.77	10.95
Tanjung Malim	2018	7.02	11.44	9.91	10.63	8.64	10.03	12.14	14.44	9.44	7.50	6.26	5.76
	2019	7.94	10.23	15.75	11.41	7.76	12.92	14.89	19.64	36.91	10.33	6.97	5.69
	2020	7.40	6.78	10.11	6.99	5.95	8.29	7.60	10.58	7.97	7.51	5.17	5.91
	2021	6.23	9.78	8.52	7.80	8.40	8.39	11.75	9.84	10.58	12.23	7.55	10.50
	2022	12.58	9.18	12.51	11.82	9.06	9.97	14.64	12.68	11.90	10.57	7.20	7.97
Tasek, Ipoh	2018	13.85	20.68	19.71	20.23	17.48	21.41	23.48	26.17	17.96	14.59	14.68	14.44
	2019	18.10	19.54	23.98	18.33	14.55	18.19	25.35	33.80	57.95	16.97	13.53	14.03
	2020	17.92	14.61	20.30	12.75	11.18	17.08	17.41	21.89	15.49	14.53	12.01	11.96
	2021	15.97	21.40	21.28	16.68	16.73	15.11	18.64	15.16	15.63	15.16	12.32	13.68
	2022	18.70	15.09	16.87	16.75	16.58	13.86	17.27	16.24	13.50	10.84	11.90	12.77
Perlis													
Kangar	2018	11.36	16.80	12.91	13.83	9.89	16.92	16.55	21.48	9.48	9.44	11.21	10.02
	2019	13.51	13.07	19.41	14.27	9.03	13.37	18.55	20.55	32.89	7.72	9.13	10.99
	2020	11.22	10.79	13.55	10.30	8.89	11.99	11.23	14.24	10.94	10.62	11.80	11.43
	2021	13.86	17.46	11.77	9.75	8.20	12.08	12.95	8.08	10.41	9.35	6.79	11.06
	2022	13.39	9.62	10.51	11.08	9.77	7.09	10.84	11.87	6.82	5.85	10.09	11.47
Pulau Pinang													
Balik Pulau	2018	10.28	20.76	14.20	14.28	11.23	15.66	20.05	23.78	12.13	9.12	11.54	10.18
	2019	13.94	20.00	25.55	17.45	12.67	19.23	28.06	31.61	54.19	14.11	12.04	17.78
	2020	19.62	16.45	22.59	13.99	11.96	15.16	15.75	24.39	12.47	11.74	11.04	13.76
	2021	17.35	21.54	17.20	11.48	11.54	14.37	18.02	10.19	10.10	11.26	7.18	11.32
	2022	15.97	11.81	12.89	11.96	11.75	9.20	15.01	14.443	8.73	8.36	10.28	11.90

Jadual 1.26: Purata bulanan kepekatan Habuk Halus (PM_{2.5}) di udara, Malaysia, 2018-2022 (samb.)

Table 1.26: Monthly average concentration of Particulate Matter (PM_{2.5}) in the air, Malaysia, 2018-2022 (cont'd)

µg/m³

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Pulau Pinang													
Perai	2018	13.82	21.51	15.82	15.63	13.99	24.25	28.44	29.55	18.05	14.94	15.50	13.73
	2019	17.77	19.08	23.37	17.59	13.49	17.82	25.29	26.90	39.08	12.29	12.48	15.47
	2020	18.96	16.25	21.52	12.02	11.75	17.34	15.89	22.15	13.34	12.25	11.82	11.88
	2021	15.43	18.18	18.25	13.67	13.44	14.21	18.56	11.82	14.65	13.72	10.07	13.18
	2022	18.93	14.59	13.21	13.65	12.52	11.35	18.34	19.58	13.311	9.8	12.58	13.34
Seberang Jaya	2018	15.95	23.33	17.50	18.13	14.85	21.71	25.35	33.04	20.59	18.88	20.62	18.18
	2019	19.67	21.40	25.71	19.39	14.68	18.79	26.20	28.85	44.01	13.15	13.66	17.33
	2020	19.19	18.15	24.22	13.50	12.48	17.09	18.46	26.15	16.68	15.26	14.13	14.11
	2021	19.22	21.52	20.97	14.34	14.96	15.65	19.94	15.81	18.30	16.91	13.30	17.07
	2022	22.85	17.34	17.17	18.43	15.82	12.54	19.30	19.20	13.38	11.19	12.54	17.06
USM	2018	14.44	18.26	19.35	19.07	15.27	19.78	23.01	26.27	15.60	13.75	14.70	13.00
	2019	16.06	18.58	23.86	19.31	14.10	17.13	26.09	28.44	49.52	12.90	10.66	14.17
	2020	16.68	15.21	20.78	10.95	10.94	15.42	13.92	19.44	12.60	10.92	10.74	11.28
	2021	15.82	19.25	17.92	12.64	12.89	13.36	16.24	11.68	12.96	13.20	9.71	12.37
	2022	18.47	13.95	14.50	14.00	12.45	10.66	15.83	15.41	10.70	9.61	10.84	10.24
Sabah													
Keningau	2018	8.80	10.99	10.17	12.93	9.54	14.72	15.94	20.00	13.62	11.24	8.43	9.75
	2019	10.52	12.98	17.94	12.89	11.70	9.39	12.27	19.33	28.72	7.20	11.11	8.72
	2020	10.50	10.62	11.62	12.07	8.34	7.22	6.80	11.10	8.75	11.43	9.49	8.70
	2021	8.20	10.36	10.56	13.17	9.29	11.90	13.30	9.85	7.12	10.93	7.41	9.41
	2022	8.55	7.66	8.32	9.07	7.76	8.61	9.27	9.25	9.01	7.35	6.57	8.90
Kimanis	2018	5.16	8.11	7.94	10.82	6.07	8.06	9.80	16.21	8.92	6.57	5.70	5.36
	2019	7.84	18.92	28.10	16.18	8.22	5.96	7.95	13.94	27.27	5.75	7.41	4.39
	2020	7.73	16.27	14.99	11.75	6.96	3.81	3.93	5.44	4.06	5.11	4.88	4.63
	2021	3.97	6.66	6.91	10.80	4.42	4.14	5.34	4.45	4.29	6.38	3.78	3.78
	2022	6.10	4.60	4.69	6.05	4.80	3.85	4.85	4.78	3.56	3.24	3.10	4.13
Kota Kinabalu	2018	6.43	9.11	9.37	11.39	8.51	13.27	15.57	22.23	14.53	14.68	9.22	9.30
	2019	12.92	21.71	26.23	15.62	11.46	7.99	9.98	15.96	27.78	7.73	8.81	5.78
	2020	10.30	13.97	12.77	9.96	6.91	5.46	4.85	7.93	5.73	6.01	6.05	5.63
	2021	5.43	7.58	9.33	9.36	7.02	7.50	8.12	6.90	6.29	8.12	6.89	9.49
	2022	9.51	9.21	7.30	8.85	8.44	6.02	7.96	7.23	6.73	7.72	6.40	7.74
Sandakan	2018	8.78	9.55	10.13	11.64	10.80	11.07	11.13	11.86	12.54	10.11	8.28	7.72
	2019	8.16	9.29	10.53	9.46	9.97	8.98	9.99	14.90	26.17	10.89	10.09	7.62
	2020	8.56	9.69	10.14	9.88	8.54	8.88	9.33	9.11	9.67	10.01	9.47	8.03
	2021	5.88	7.01	7.86	10.04	6.79	7.55	9.04	7.74	6.55	9.33	7.86	7.60
	2022	8.68	7.61	7.50	8.55	6.81	7.77	8.08	8.83	7.74	7.85	6.80	7.36
Tawau	2018	7.38	7.98	8.29	7.73	6.46	7.37	8.70	9.19	9.50	7.88	6.24	6.26
	2019	7.19	8.05	8.88	8.14	6.96	6.34	8.39	9.93	23.74	8.28	8.63	6.38
	2020	7.18	6.85	6.91	7.33	6.10	6.88	7.19	6.46	5.41	4.95	6.78	6.64
	2021	6.21	7.30	7.63	7.47	6.32	7.17	6.31	6.13	6.24	7.22	6.41	10.52
	2022	12.30	11.21	10.77	10.76	10.89	11.76	10.00	10.18	9.65	9.52	10.07	10.52

Jadual 1.26: Purata bulanan kepekatan Habuk Halus (PM_{2.5}) di udara, Malaysia, 2018-2022 (samb.)

Table 1.26: Monthly average concentration of Particulate Matter (PM_{2.5}) in the air, Malaysia, 2018-2022 (cont'd)

µg/m³

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Sarawak													
Bintulu	2018	10.02	12.62	13.93	15.73	13.21	17.54	21.11	29.19	17.08	14.47	13.96	12.25
	2019	11.21	13.45	17.52	20.30	18.81	13.61	24.28	30.47	50.35	12.31	15.45	8.89
	2020	10.84	14.32	13.43	12.81	11.72	8.90	9.05	12.36	10.12	12.57	8.90	9.39
	2021	7.20	11.64	10.71	15.88	12.98	14.13	16.59	12.21	12.25	13.67	10.39	11.51
	2022	10.99	12.42	14.33	14.88	13.44	13.28	14.37	11.54	12.21	9.87	12.04	12.90
ILP Miri	2018	5.57	6.84	7.65	9.15	10.93	12.21	13.84	36.04	16.54	8.88	8.12	8.97
	2019	9.26	14.27	12.93	21.14	15.28	12.99	18.62	122.59	54.51	7.77	17.54	7.29
	2020	7.52	22.72	18.27	13.69	7.22	9.32	7.38	11.77	8.68	15.47	11.13	7.35
	2021	5.60	7.16	9.73	13.71	7.82	9.47	10.98	9.03	8.41	10.83	7.65	6.33
	2022	7.99	6.37	6.21	7.66	8.37	7.12	10.23	11.50	10.63	6.68	6.56	6.68
Kapit	2018	5.98	8.01	8.09	9.79	6.40	9.19	11.14	16.95	12.49	11.69	7.48	6.38
	2019	8.43	8.14	11.23	8.92	8.04	7.57	10.14	17.57	32.20	6.47	8.74	4.99
	2020	5.97	7.98	6.81	6.56	5.86	5.13	5.98	7.65	5.78	6.51	5.26	6.23
	2021	6.36	8.43	8.64	9.33	6.90	6.97	7.21	6.03	6.29	6.62	6.03	5.80
	2022	8.03	7.90	9.27	9.26	8.92	7.99	7.97	6.36	8.40	9.84	6.70	6.59
Kuching	2018	9.19	12.71	12.19	15.41	9.80	11.73	18.79	42.26	23.33	12.10	11.04	9.53
	2019	9.94	12.69	14.15	11.86	12.78	10.58	15.64	33.43	95.70	9.95	12.81	7.93
	2020	9.35	11.04	9.00	8.63	7.91	7.92	8.20	13.07	9.18	9.25	7.44	6.96
	2021	5.90	9.44	8.22	12.22	8.67	8.33	10.10	10.63	9.39	6.78	6.06	5.74
	2022	6.03	8.88	7.21	7.11	6.69	4.53	5.52	8.50	8.14	7.69	7.36	9.29
Limbang	2018	6.63	8.77	9.06	10.14	7.30	10.24	11.69	16.92	10.77	8.22	7.39	6.95
	2019	9.92	15.13	12.41	12.28	8.79	6.91	8.11	14.92	30.00	5.50	8.19	4.98
	2020	7.52	9.35	9.47	7.64	6.52	5.22	4.83	7.28	4.93	5.81	5.00	5.03
	2021	4.81	8.08	7.57	9.13	6.53	8.12	8.30	7.07	7.41	10.02	7.03	6.47
	2022	7.45	6.45	6.50	7.80	6.61	6.15	8.01	7.03	6.12	6.59	5.76	5.91
Miri	2018	6.95	10.11	9.53	11.45	9.77	17.25	19.98	26.43	15.88	15.00	16.28	13.83
	2019	12.75	16.64	20.21	39.60	15.46	10.12	15.19	33.89	57.84	10.06	14.19	11.84
	2020	12.75	21.05	13.50	10.42	8.95	13.10	10.84	12.79	10.34	11.38	14.26	11.33
	2021	8.77	18.37	15.01	13.47	10.66	14.69	13.08	11.01	9.75	11.48	8.78	10.37
	2022	11.96	10.04	7.75	9.26	12.08	10.35	10.94	10.23	9.05	8.12	8.20	8.48
Mukah	2018	5.72	9.45	8.49	11.60	8.99	11.60	14.20	36.69	18.04	9.56	9.34	9.85
	2019	8.18	8.53	11.41	11.10	9.83	7.98	12.38	22.92	53.44	5.67	8.86	4.60
	2020	5.89	7.21	7.09	6.78	5.77	4.89	5.58	9.06	7.07	8.33	5.17	5.38
	2021	5.18	6.66	6.70	9.55	7.17	6.91	9.46	8.05	8.19	8.93	5.81	6.14
	2022	7.32	7.02	7.56	7.30	7.84	7.17	9.55	7.78	6.58	5.69	7.29	6.63
Samalaju	2018	7.27	10.95	10.48	11.29	8.52	11.72	18.63	26.78	14.60	10.56	9.84	8.48
	2019	8.76	12.47	14.97	17.67	14.24	9.86	14.73	23.51	43.95	9.43	12.38	9.25
	2020	9.97	14.89	11.73	10.24	8.02	7.48	7.71	9.80	8.75	9.78	8.34	7.46
	2021	7.77	9.82	9.84	11.42	9.33	10.01	13.12	10.19	9.81	10.64	7.34	9.08
	2022	11.31	9.63	10.25	10.56	10.41	10.33	12.16	11.45	11.48	11.80	12.82	12.87

Jadual 1.26: Purata bulanan kepekatan Habuk Halus (PM_{2.5}) di udara, Malaysia, 2018-2022 (samb.)

Table 1.26: Monthly average concentration of Particulate Matter (PM_{2.5}) in the air, Malaysia, 2018-2022 (cont'd)

µg/m³

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Sarawak													
Samarahan	2018	6.75	11.01	9.33	10.83	8.58	9.44	16.34	32.94	16.27	10.56	7.86	7.41
	2019	6.54	6.52	11.33	7.91	9.12	7.46	12.48	30.53	81.77	7.15	8.81	4.68
	2020	6.63	7.03	7.24	7.80	6.23	6.08	6.42	10.42	7.64	7.56	5.66	5.48
	2021	5.65	8.40	7.83	10.21	8.36	8.68	9.02	8.63	8.76	9.36	5.86	7.43
	2022	7.03	7.23	8.62	9.16	9.43	6.50	9.63	10.53	9.08	7.35	7.11	9.01
Sarikei	2018	5.47	11.29	8.21	11.21	10.03	13.02	16.76	28.27	15.05	9.51	10.14	6.61
	2019	7.43	8.26	11.24	9.34	12.49	7.35	14.67	27.51	70.20	11.64	11.70	6.61
	2020	9.10	9.31	7.77	6.78	6.25	5.31	5.39	9.77	6.72	7.91	5.47	5.54
	2021	4.88	7.58	7.01	9.85	6.22	6.47	10.84	6.72	6.16	6.85	14.75	19.39
	2022	20.10	16.75	6.96	7.54	8.79	4.78	7.69	6.79	5.26	4.99	5.95	7.99
Sibu	2018	8.68	15.07	12.56	12.99	10.16	17.75	24.78	35.45	17.99	12.41	11.88	10.25
	2019	10.64	13.92	15.24	13.52	15.48	10.89	17.65	30.52	66.82	13.81	12.09	7.71
	2020	10.16	10.59	10.48	9.14	8.79	6.72	6.60	9.74	7.04	8.16	5.82	6.05
	2021	6.07	10.19	8.29	11.07	7.48	7.78	10.25	7.69	7.44	7.95	5.96	6.09
	2022	8.39	9.85	8.95	8.39	8.40	6.57	8.35	8.18	6.92	5.87	6.23	6.62
Sri Aman	2018	4.49	8.16	6.79	8.59	6.05	9.25	14.91	28.95	16.62	9.16	8.20	6.39
	2019	7.48	8.41	14.28	9.11	10.85	8.49	16.20	55.89	112.90	9.52	11.34	5.80
	2020	7.29	10.24	7.55	7.76	6.73	5.80	5.65	10.64	7.20	9.23	5.06	6.32
	2021	4.67	8.29	7.98	9.03	8.67	7.44	10.07	7.79	9.23	8.10	6.15	6.37
	2022	7.82	8.01	8.24	9.88	10.12	6.48	7.82	9.26	6.23	5.36	4.44	5.36
Selangor													
Banting	2018	16.97	24.24	26.11	24.73	21.52	26.08	25.88	31.05	27.06	20.34	14.88	15.67
	2019	16.87	22.71	36.42	27.58	25.95	21.78	30.16	40.92	72.64	24.31	17.92	14.51
	2020	16.83	15.07	18.32	14.83	15.32	14.52	16.62	22.02	17.00	20.15	16.61	17.24
	2021	18.17	25.83	20.20	17.07	22.74	21.58	23.29	14.85	14.31	20.09	15.81	17.33
	2022	23.90	17.10	19.28	21.35	19.89	14.82	21.89	15.95	15.42	14.53	14.15	14.15
Klang	2018	25.10	27.97	26.94	28.67	32.65	27.44	28.56	40.97	33.94	23.42	19.97	22.27
	2019	24.91	30.90	35.46	26.84	22.33	18.89	32.87	42.83	74.12	31.01	29.81	26.70
	2020	26.87	25.04	24.65	19.95	22.46	23.24	22.67	25.57	21.11	22.87	22.15	22.24
	2021	22.70	27.76	26.47	23.50	28.65	22.46	27.18	23.53	23.31	29.50	26.68	33.62
	2022	26.55	21.76	19.18	21.88	20.38	15.14	19.59	20.21	10.00	18.50	20.52	25.59
Kuala Selangor	2018	12.18	21.82	19.69	18.56	17.34	19.43	23.87	31.62	21.11	15.51	15.06	11.97
	2019	15.28	21.15	29.87	21.74	15.63	17.39	25.35	36.39	65.08	18.24	11.65	11.67
	2020	13.54	13.45	17.89	13.41	12.64	16.73	18.30	21.96	15.46	15.55	11.67	12.16
	2021	15.71	22.03	17.83	16.17	18.69	19.36	17.98	13.59	16.22	16.44	12.86	15.86
	2022	17.32	13.43	16.20	18.90	19.81	15.28	24.01	23.15	14.45	12.98	10.55	13.58
Petaling Jaya	2018	24.27	27.46	32.13	29.25	25.14	22.82	27.11	29.47	27.59	22.29	21.71	20.48
	2019	21.22	24.77	31.74	26.83	21.58	20.61	27.57	40.31	77.08	28.30	22.03	19.09
	2020	18.86	20.24	21.63	15.29	16.58	17.92	19.70	19.25	16.13	17.88	24.90	31.02
	2021	27.46	26.64	29.73	26.71	25.45	20.40	23.41	20.78	22.70	23.52	18.08	19.62
	2022	23.80	20.09	21.65	22.12	18.06	16.39	21.33	17.55	23.42	22.79	22.50	18.36

Jadual 1.26: Purata bulanan kepekatan Habuk Halus (PM_{2.5}) di udara, Malaysia, 2018-2022 (samb.)

Table 1.26: Monthly average concentration of Particulate Matter (PM_{2.5}) in the air, Malaysia, 2018-2022 (cont'd)

µg/m³

Negeri/Stesen State/Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Selangor													
Shah Alam	2018	20.71	26.29	28.06	27.35	26.21	25.37	26.44	27.74	27.50	23.19	21.81	22.54
	2019	28.00	30.55	40.06	28.03	22.85	22.33	27.58	40.77	76.42	28.43	21.88	18.81
	2020	20.67	19.44	19.98	15.78	16.41	18.12	18.00	19.43	15.95	17.26	17.46	18.36
	2021	18.01	23.57	23.75	20.46	21.50	16.67	18.97	17.10	20.54	24.05	20.18	23.07
	2022	26.80	16.52	18.33	22.24	21.84	20.65	24.66	20.28	21.86	19.51	18.98	15.99
Terengganu													
Besut	2018	9.95	17.40	13.94	13.85	13.60	18.40	17.59	21.70	12.28	13.08	10.73	8.80
	2019	11.07	11.96	22.04	17.92	16.56	10.82	18.28	23.68	30.06	7.99	7.31	9.82
	2020	10.38	10.81	13.08	10.56	10.94	9.09	8.48	14.52	12.40	10.90	10.18	8.35
	2021	10.87	16.42	10.39	11.15	10.48	10.22	13.10	10.29	10.45	12.09	7.63	10.85
	2022	14.81	8.78	13.37	13.52	12.57	12.18	13.67	11.73	7.83	6.34	7.134	10.92
Kemaman	2018	10.41	21.08	21.38	16.60	14.31	17.13	22.74	22.75	16.71	12.68	10.54	10.06
	2019	12.46	14.48	19.91	21.61	16.33	16.54	20.79	31.96	46.32	12.54	10.90	10.92
	2020	11.70	13.65	14.54	11.39	10.90	12.11	11.89	12.28	12.46	12.42	7.73	8.77
	2021	8.76	12.48	8.74	10.01	9.04	11.74	16.57	12.33	12.25	12.26	7.14	8.88
	2022	9.97	6.87	9.39	10.30	12.25	12.70	16.36	12.21	13.25	9.26	8.86	8.05
Kuala Terengganu	2018	16.57	24.83	16.48	17.52	17.95	17.53	21.59	26.03	14.25	12.89	11.15	10.97
	2019	11.68	15.26	23.84	19.20	16.67	17.79	22.79	33.68	41.42	13.50	9.08	11.93
	2020	14.43	13.27	17.91	13.16	14.61	14.86	15.43	17.81	16.90	14.37	8.67	11.44
	2021	16.39	22.69	15.81	15.91	14.72	17.48	18.28	17.07	14.00	16.28	8.75	10.12
	2022	15.88	9.56	15.38	18.53	20.28	16.04	20.75	17.67	14.32	10.36	10.92	11.43
Paka	2018	7.79	14.42	12.14	11.98	11.26	13.05	19.37	19.98	14.48	10.40	7.41	7.50
	2019	9.35	8.64	14.66	12.56	12.52	12.98	17.77	30.00	40.17	8.52	7.96	9.15
	2020	10.14	10.10	9.29	8.22	7.43	8.55	8.05	10.42	10.29	10.12	5.62	6.24
	2021	8.48	11.16	7.54	9.31	8.40	12.20	14.14	11.38	10.00	10.63	5.85	8.16
	2022	9.04	6.92	7.98	8.96	9.98	10.85	13.98	11.11	11.02	6.66	6.93	7.07
Wilayah Persekutuan													
Batu Muda, Kuala Lumpur	2018	14.79	17.35	18.86	20.65	21.37	21.24	25.08	27.55	25.86	27.49	17.98	14.94
	2019	14.55	20.29	29.75	25.88	19.16	23.07	30.78	41.07	76.57	24.56	19.79	14.71
	2020	18.56	16.95	20.53	16.13	20.25	22.13	16.86	19.18	14.39	16.16	14.02	14.83
	2021	13.85	17.31	18.55	17.43	17.64	14.26	16.23	13.86	15.84	15.85	13.88	16.57
	2022	19.01	14.49	16.67	18.22	16.94	13.79	18.14	16.97	16.85	14.81	13.52	22.69
Cheras, Kuala Lumpur	2018	20.98	22.63	22.46	23.22	22.83	21.92	25.55	29.68	30.37	21.15	17.91	17.05
	2019	17.93	21.58	31.85	25.17	19.55	19.34	27.80	38.87	74.89	24.38	20.69	16.37
	2020	18.46	15.79	18.55	13.96	16.30	16.60	15.50	17.40	14.32	14.43	13.73	14.37
	2021	13.97	19.47	21.01	18.84	20.30	17.93	17.69	13.96	14.00	15.32	13.58	15.66
	2022	18.37	17.65	14.04	16.19	15.021	13.37	17.05	19.38	23.34	24.59	25.79	13.16
Labuan	2018	10.00	9.07	11.37	13.68	10.42	17.84	15.71	25.62	13.20	10.13	7.24	7.69
	2019	7.56	11.84	12.79	12.14	12.07	8.36	12.25	20.66	31.31	10.25	12.74	11.71
	2020	12.08	11.30	14.12	13.56	10.18	8.31	8.61	11.11	8.10	13.62	11.31	8.81
	2021	7.25	10.56	9.38	12.09	10.97	13.91	12.60	13.03	14.50	12.85	12.01	9.03
	2022	11.95	7.83	9.47	10.29	12.83	9.12	9.95	10.33	11.77	6.93	8.42	8.04

Jadual 1.26: Purata bulanan kepekatan Habuk Halus (PM_{2.5}) di udara, Malaysia, 2018-2022 (samb.)Table 1.26: Monthly average concentration of Particulate Matter (PM_{2.5}) in the air, Malaysia, 2018-2022 (cont'd)µg/m³

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Wilayah Persekutuan													
Putrajaya	2018	17.75	22.39	22.27	23.47	21.54	23.52	28.92	29.17	24.63	21.03	16.96	16.86
	2019	19.67	23.81	34.42	28.02	24.04	19.10	27.90	40.91	78.64	25.18	19.84	16.03
	2020	14.83	16.53	19.74	15.84	15.96	17.19	16.71	21.31	14.88	17.53	14.27	14.71
	2021	14.55	20.61	19.20	17.36	17.36	15.16	18.20	13.37	13.28	15.66	11.55	12.91
	2022	15.57	11.00	14.21	15.30	14.19	11.68	17.49	16.07	15.58	12.07	11.76	11.96

Nota:

Notes:

Garis Panduan Kualiti Udara Malaysia: PM_{2.5} tidak melebihi 50 µg/m³Malaysian Ambient Air Quality Guidelines: PM_{2.5} not exceeding 50 µg/m³**Sumber: Jabatan Alam Sekitar**

Source: Department of Environment

Jadual 1.27: Purata bulanan kepekatan Habuk Halus (PM₁₀) di udara, Malaysia, 2018-2022

Table 1.27: Monthly average concentration of Particulate Matter (PM₁₀) in the air, Malaysia, 2018-2022

Monthly average concentration of Particulate Matter (PM ₁₀) in the air, Malaysia, 2018-2022													µg/m ³
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Johor													
Batu Pahat	2018	17.22	24.53	22.66	23.79	23.23	26.28	29.54	33.63	30.56	24.84	17.52	18.64
	2019	21.61	20.18	33.83	25.07	26.83	21.94	32.63	47.26	67.48	27.68	23.08	15.27
	2020	16.90	16.84	19.49	16.27	17.35	17.92	16.36	20.30	14.07	14.14	16.51	17.03
	2021	16.04	24.22	22.35	21.51	17.50	20.69	22.90	15.71	15.86	18.70	15.10	14.62
	2022	15.36	13.14	15.86	16.39	18.88	14.66	19.80	16.90	17.19	12.89	15.78	15.92
Kluang	2018	16.04	22.81	22.84	22.73	23.26	26.45	28.08	29.14	25.25	19.44	18.42	20.37
	2019	20.84	19.43	30.18	24.95	27.16	24.21	30.97	43.20	64.76	23.60	20.41	12.03
	2020	13.62	13.79	16.20	12.00	14.44	16.61	15.15	14.78	10.15	14.48	11.10	15.72
	2021	14.64	21.35	17.55	20.01	17.07	19.33	19.78	14.28	14.18	18.47	13.42	10.48
	2022	13.65	11.68	14.82	15.91	19.12	15.53	18.20	15.39	12.66	15.25	14.78	16.88
Kota Tinggi	2018	12.69	22.00	16.46	19.46	16.74	18.98	22.57	25.41	23.82	22.96	17.20	14.10
	2019	18.30	15.86	23.39	18.96	23.66	16.28	22.06	26.90	45.73	21.68	23.19	13.97
	2020	15.84	16.64	16.20	14.18	18.46	15.14	12.32	15.51	13.47	17.70	12.97	13.38
	2021	15.78	20.30	14.09	18.27	13.84	18.34	16.69	13.44	14.00	16.80	13.84	13.09
	2022	7.91	6.75	11.61	16.32	16.77	16.04	14.84	14.78	16.89	13.70	12.84	13.92
Larkin	2018	20.68	26.22	24.38	28.88	30.24	26.84	29.83	36.24	40.21	35.82	26.66	25.24
	2019	26.69	25.45	32.44	33.16	36.73	29.42	33.38	42.99	72.51	37.43	34.79	22.18
	2020	22.95	24.36	22.57	18.21	21.71	23.21	22.33	26.23	24.68	24.70	23.12	21.72
	2021	21.30	29.17	25.16	30.59	27.92	27.54	22.31	17.59	17.96	27.43	22.50	21.60
	2022	20.27	20.58	22.46	24.58	23.11	28.11	30.33	32.22	30.81	23.54	23.38	22.98
Pasir Gudang	2018	16.86	24.67	22.66	26.10	31.51	34.31	37.91	39.23	38.95	33.35	26.98	20.84
	2019	21.87	19.12	29.37	27.99	32.29	27.36	35.68	42.47	63.24	30.43	31.84	15.51
	2020	16.86	18.44	18.16	15.93	19.29	23.31	22.87	27.13	23.05	25.82	19.74	16.77
	2021	16.09	24.57	19.96	24.75	22.12	13.69	23.32	18.77	20.45	21.25	20.07	18.53
	2022	18.94	15.56	20.41	26.35	26.42	26.77	27.25	27.18	28.55	21.58	17.31	16.44
Pengerang	2018	18.48	26.40	21.23	28.93	24.46	26.00	32.39	34.91	30.40	26.42	17.73	17.00
	2019	17.94	18.28	31.52	25.12	18.33	11.62	19.62	35.58	49.58	21.29	25.62	14.57
	2020	17.23	15.06	18.09	14.19	13.37	11.35	11.46	15.70	12.28	14.52	13.86	15.83
	2021	17.95	28.98	19.49	18.17	13.75	16.86	17.25	13.62	15.97	18.08	15.63	15.07
	2022	15.75	12.98	13.38	18.20	20.37	16.03	15.85	13.95	16.53	17.88	16.47	14.19
Segamat	2018	16.03	24.75	23.00	25.09	23.48	24.29	28.64	32.29	26.93	21.82	16.69	16.03
	2019	17.39	15.21	39.12	28.07	29.17	24.30	37.22	47.02	80.13	24.29	23.49	16.08
	2020	18.75	19.41	21.83	20.16	19.04	20.13	17.07	20.81	15.93	23.34	16.02	17.10
	2021	15.44	22.08	21.94	22.54	18.61	21.50	22.21	16.74	15.81	19.84	14.82	14.72
	2022	14.28	11.60	17.11	17.35	18.01	21.33	26.13	22.14	28.04	25.61	17.37	14.52
Tangkak	2018	-	-	31.22	29.27	25.97	24.27	29.67	33.48	34.72	27.94	24.86	25.76
	2019	26.79	28.76	43.91	30.66	40.41	24.86	31.05	45.49	80.63	38.55	27.24	19.55
	2020	21.27	20.14	26.40	20.09	18.85	21.96	17.82	19.87	17.42	18.40	21.98	24.32
	2021	21.11	33.43	28.71	30.92	21.62	21.66	21.41	17.04	18.77	23.31	23.58	19.85
	2022	17.79	11.65	18.48	17.63	16.77	24.84	25.74	22.13	22.33	21.28	20.78	21.64

Jadual 1.27: Purata bulanan kepekatan Habuk Halus (PM₁₀) di udara, Malaysia, 2018-2022 (samb.)

Table 1.27: Monthly average concentration of Particulate Matter (PM₁₀) in the air, Malaysia, 2018-2022 (cont'd)

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Kedah													
Alor Setar	2018	21.02	28.46	24.09	21.50	14.83	24.57	26.49	31.58	19.38	14.63	16.38	15.36
	2019	22.08	21.38	29.44	19.95	14.84	21.39	26.79	29.14	43.38	12.95	11.83	14.40
	2020	13.12	20.63	28.48	15.78	14.24	18.04	18.04	25.17	17.58	12.92	13.82	16.88
	2021	23.10	29.08	23.04	17.17	14.47	15.81	20.13	15.07	21.61	17.43	10.49	18.03
	2022	23.37	17.94	19.00	18.00	15.97	12.53	23.95	23.07	20.27	11.82	13.39	16.47
Kulim	2018	19.74	28.39	24.28	24.41	22.27	23.49	28.58	34.63	21.79	18.87	23.22	20.55
	2019	24.41	25.26	30.95	25.97	20.99	26.66	35.80	28.68	43.80	15.03	13.33	15.34
	2020	17.47	17.97	22.29	12.79	12.62	17.93	17.65	27.45	18.07	12.75	16.34	14.01
	2021	16.48	22.02	18.09	13.90	14.05	14.36	15.14	9.50	9.68	8.61	15.97	20.86
	2022	25.48	17.64	21.05	17.99	18.30	17.54	27.02	25.50	21.61	17.43	17.99	19.90
Langkawi	2018	22.60	30.79	23.58	25.00	21.86	26.55	27.45	27.24	18.22	16.62	16.61	15.39
	2019	22.03	18.57	26.21	20.35	20.00	20.47	26.23	27.89	41.00	16.48	18.98	21.25
	2020	21.42	21.90	19.79	15.95	15.59	17.46	17.47	18.53	14.67	14.85	14.32	15.99
	2021	21.75	22.54	19.27	20.08	15.62	18.17	19.31	14.76	12.85	14.76	12.25	17.68
	2022	21.49	16.05	18.30	19.17	17.29	14.49	19.03	15.84	14.03	11.75	13.48	16.23
Sungai Petani	2018	18.92	28.45	28.95	26.93	17.11	26.51	29.66	32.51	19.21	19.37	22.49	21.90
	2019	23.19	24.63	31.37	23.33	20.59	30.06	36.23	35.90	47.57	14.38	18.74	21.77
	2020	27.54	23.34	28.93	17.44	16.62	23.67	22.19	29.61	18.24	15.22	13.34	11.70
	2021	20.93	27.69	24.88	19.96	21.75	20.71	26.30	20.28	24.21	20.15	15.43	19.03
	2022	27.32	20.20	20.97	21.65	22.02	17.87	27.86	24.72	18.49	14.38	15.38	17.44
Kelantan													
Kota Bharu	2018	23.95	35.53	33.92	27.98	25.19	29.35	30.76	36.89	21.25	20.49	18.40	19.85
	2019	26.62	22.59	34.10	27.73	21.04	22.31	33.95	36.62	41.83	25.82	25.86	31.81
	2020	25.97	27.62	26.24	21.19	19.93	19.88	20.90	26.03	22.18	19.30	16.27	18.31
	2021	34.80	42.59	29.06	29.77	27.15	25.70	34.00	19.43	22.63	24.55	13.89	22.28
	2022	20.08	25.24	22.10	25.41	25.09	26.10	22.73	17.18	14.55	16.81	22.48	20.08
Tanah Merah	2018	39.91	33.42	33.08	25.35	26.95	30.22	36.85	19.42	20.05	21.94	20.42	39.91
	2019	31.35	42.52	38.66	23.07	22.34	29.36	32.53	39.24	19.98	18.57	30.06	31.35
	2020	34.38	35.82	25.45	20.70	21.23	23.68	30.97	28.91	22.23	32.71	29.13	34.38
	2021	47.24	30.14	25.94	20.74	17.05	22.51	20.16	22.03	24.32	18.77	26.08	47.24
	2022	23.62	28.64	24.67	24.31	21.72	27.78	21.12	17.26	19.62	18.52	23.43	23.62
Melaka													
Alor Gajah	2018	15.45	19.15	20.66	21.42	21.95	28.54	38.13	35.44	32.14	23.05	16.78	17.05
	2019	19.61	21.09	39.11	29.58	29.74	23.77	33.89	50.18	76.19	30.86	21.91	14.57
	2020	16.15	15.93	16.82	14.26	20.49	17.77	15.98	17.76	13.72	25.28	16.09	17.73
	2021	15.61	22.92	20.78	24.89	23.42	25.41	27.57	19.16	17.99	20.54	15.39	14.03
	2022	14.40	12.40	16.89	17.35	19.20	15.58	24.10	22.46	22.99	17.11	15.66	15.54

Jadual 1.27: Purata bulanan kepekatan Habuk Halus (PM₁₀) di udara, Malaysia, 2018-2022 (samb.)

Table 1.27: Monthly average concentration of Particulate Matter (PM₁₀) in the air, Malaysia, 2018-2022 (cont'd)

Monthly average concentration of Particulate Matter (PM ₁₀) in the air, Malaysia, 2018-2022 (cont'd)													µg/m ³
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Melaka													
Bandaraya Melaka	2018	22.54	27.53	25.30	25.50	23.55	27.23	33.02	32.21	27.73	21.16	17.74	16.37
	2019	16.28	16.60	32.89	25.83	26.12	21.85	32.80	49.06	75.16	29.33	23.02	18.12
	2020	19.65	20.37	21.35	16.64	19.23	20.05	18.59	23.81	17.92	18.33	16.34	18.44
	2021	17.32	26.18	20.84	23.61	21.67	21.03	28.70	19.65	17.43	19.49	16.57	16.92
	2022	18.35	15.94	19.73	19.42	23.14	20.92	26.20	20.62	20.39	16.74	17.21	18.21
Bukit Rambai	2018	22.08	26.97	28.62	30.44	26.75	33.13	36.35	42.03	36.49	28.32	23.58	21.79
	2019	22.84	22.22	38.83	29.91	30.06	26.29	34.83	49.88	75.46	31.78	26.59	18.34
	2020	20.86	20.97	21.17	16.92	21.87	21.66	21.64	24.54	18.96	22.84	17.43	18.84
	2021	17.14	25.32	27.35	31.32	24.92	24.87	30.51	24.97	20.60	25.04	20.14	19.33
	2022	20.49	17.84	22.48	24.01	26.25	23.26	29.10	25.29	25.14	20.12	19.08	18.90
Negeri Sembilan													
Nilai	2018	28.04	26.88	31.91	37.66	35.02	30.65	31.20	52.47	52.76	41.07	35.67	32.89
	2019	27.46	28.86	43.64	35.67	29.52	31.03	47.01	61.86	102.97	44.10	37.84	24.45
	2020	26.79	27.97	28.51	22.50	28.41	32.84	30.95	25.65	21.64	23.97	21.50	38.87
	2021	31.13	35.96	34.01	36.86	31.32	26.49	28.29	24.55	25.79	31.17	25.06	20.92
	2022	21.15	17.61	22.07	32.14	39.00	30.49	36.50	19.86	23.24	31.79	30.68	26.50
Port Dickson	2018	20.05	24.99	23.80	23.81	21.69	24.43	26.24	31.74	29.57	23.32	18.09	20.79
	2019	20.77	18.41	38.13	26.05	24.02	20.17	30.67	46.89	79.04	29.86	22.03	18.70
	2020	20.56	20.14	20.84	16.44	18.58	19.71	18.60	23.17	16.76	15.74	15.70	16.60
	2021	16.22	24.96	23.12	22.95	21.51	21.34	24.07	18.23	18.07	18.52	17.36	19.17
	2022	20.80	18.11	21.98	21.70	23.25	16.88	23.44	18.94	16.83	16.81	22.13	24.98
Seremban	2018	17.52	21.88	25.45	21.30	23.51	25.00	28.28	31.30	26.53	21.06	19.43	20.40
	2019	19.84	19.60	34.92	25.74	21.46	19.62	30.50	41.80	75.90	25.68	21.41	16.25
	2020	19.34	17.86	19.45	16.18	19.25	19.38	17.76	20.15	17.22	18.71	16.50	18.84
	2021	17.17	24.69	21.82	19.97	18.55	18.11	21.72	16.33	15.81	17.93	16.47	15.88
	2022	17.64	20.46	30.90	37.18	31.24	29.19	32.22	24.61	24.99	25.21	26.25	21.54
Pahang													
Balok Baru	2018	24.25	36.42	33.39	31.19	23.37	24.92	37.22	38.34	29.47	23.63	22.65	18.67
	2019	27.21	29.31	45.84	48.16	27.36	25.57	28.19	43.97	57.49	25.03	24.01	23.44
	2020	24.97	30.53	22.51	15.66	15.79	19.63	17.99	20.51	20.31	23.97	21.91	24.04
	2021	32.40	38.57	28.05	28.88	24.52	22.07	25.65	20.27	19.86	23.29	22.02	28.06
	2022	34.21	31.02	22.94	25.08	25.42	22.43	26.54	18.73	22.21	22.72	23.80	23.36
Jerantut	2018	10.52	21.07	17.31	21.02	18.13	24.90	30.43	32.10	22.42	17.20	13.43	13.04
	2019	16.71	17.18	25.76	23.07	20.80	21.85	30.59	42.13	58.45	17.97	15.74	16.26
	2020	17.87	18.48	21.08	16.61	18.01	21.22	19.58	26.57	21.09	21.91	13.41	14.49
	2021	15.30	22.61	18.44	20.17	19.28	19.05	23.60	19.60	19.09	21.51	14.18	14.70
	2022	17.65	14.18	17.40	16.72	22.05	21.75	24.99	18.03	17.66	12.40	12.07	15.16

Jadual 1.27: Purata bulanan kepekatan Habuk Halus (PM₁₀) di udara, Malaysia, 2018-2022 (samb.)Table 1.27: Monthly average concentration of Particulate Matter (PM₁₀) in the air, Malaysia, 2018-2022 (cont'd)

Monthly average concentration of Particulate Matter (PM ₁₀) in the air, Malaysia, 2018-2022 (cont'd)													µg/m ³
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Pahang													
Kuantan	2018	12.90	26.15	22.32	22.42	19.16	23.26	32.67	33.84	24.35	16.26	14.04	12.84
	2019	20.09	18.58	23.67	21.29	20.26	20.36	30.12	49.42	57.15	16.62	15.24	17.42
	2020	19.17	21.97	16.86	13.21	14.29	17.93	15.37	19.17	17.26	19.42	12.84	14.56
	2021	17.58	23.40	15.27	17.79	15.29	17.56	17.99	14.49	14.40	16.83	11.83	15.16
	2022	17.90	11.87	15.98	14.83	18.71	17.60	19.50	15.08	17.26	12.61	10.93	13.17
Rompin	2018	13.43	27.91	25.26	26.65	22.79	23.39	38.45	33.44	28.40	24.70	16.21	15.55
	2019	22.13	18.25	53.71	29.40	31.09	24.25	30.31	65.80	80.86	31.65	22.73	18.27
	2020	23.40	29.62	32.67	32.50	16.92	18.92	15.66	18.03	16.32	18.86	15.67	29.65
	2021	32.04	41.13	37.18	32.23	21.35	27.06	33.63	25.77	17.15	20.06	15.18	18.09
	2022	21.74	15.20	16.27	15.65	19.25	16.17	21.41	18.28	19.61	14.99	12.92	15.42
Temerloh	2018	17.32	27.13	27.90	28.48	25.29	31.67	36.01	36.36	31.01	26.10	22.11	19.03
	2019	24.05	23.04	33.61	27.90	27.90	28.67	39.59	49.75	68.04	27.25	24.63	21.13
	2020	22.90	22.87	23.33	17.86	21.05	25.33	22.17	25.89	22.62	25.10	16.61	18.68
	2021	19.37	27.10	20.44	23.92	22.07	22.25	27.16	22.31	20.80	23.08	17.60	17.28
	2022	19.61	14.91	17.31	16.87	19.45	17.90	26.17	20.17	18.31	10.94	11.49	17.53
Perak													
Pegoh, Ipoh	2018	27.00	34.65	33.60	36.05	34.20	35.98	38.81	50.22	32.20	27.42	30.55	25.23
	2019	31.87	34.25	39.07	33.85	23.77	23.02	31.41	37.65	58.42	27.61	26.30	24.22
	2020	28.36	26.02	28.21	20.24	17.63	24.80	20.60	22.26	18.07	19.35	15.75	16.76
	2021	26.47	32.17	33.02	27.53	26.32	21.52	29.18	21.84	22.80	18.65	14.21	14.63
	2022	30.36	26.22	26.77	25.00	24.86	21.01	25.70	19.02	14.15	22.30	25.75	25.31
Seri Manjung	2018	22.33	33.24	27.97	27.16	24.80	27.38	34.32	38.73	25.13	21.02	21.03	17.92
	2019	23.21	26.52	30.79	23.93	18.06	20.28	30.55	40.36	68.86	19.28	19.82	20.79
	2020	26.43	26.95	28.85	22.58	18.87	25.22	23.01	31.81	20.68	21.89	17.18	20.46
	2021	22.83	32.00	25.20	22.31	23.32	20.22	25.92	18.32	19.87	20.25	16.83	21.38
	2022	28.36	20.50	23.11	20.10	21.35	16.50	26.19	22.14	18.42	14.85	10.31	15.79
Taiping	2018	27.12	44.02	35.98	36.90	31.27	39.82	41.05	50.66	25.67	24.12	22.84	27.15
	2019	32.71	32.13	38.27	30.33	24.12	36.14	40.15	41.97	65.72	22.31	22.83	27.70
	2020	32.96	30.27	34.67	22.22	18.48	27.07	22.51	31.37	21.59	20.24	14.86	16.34
	2021	19.58	30.21	27.17	21.71	22.66	20.64	30.96	19.76	22.56	20.08	16.75	22.12
	2022	29.80	18.46	21.15	21.22	20.35	16.82	27.64	25.45	13.86	15.74	15.61	19.70
Tanjung Malim	2018	12.28	16.35	15.51	16.93	14.08	14.00	17.51	20.55	15.53	12.84	10.80	10.38
	2019	12.29	14.90	21.04	17.13	13.22	18.44	21.08	26.13	43.76	15.10	10.74	9.75
	2020	11.14	10.75	13.99	10.35	8.18	10.67	10.26	12.96	12.70	12.62	9.95	10.92
	2021	10.58	14.35	13.58	13.80	13.08	12.35	15.95	17.12	17.00	17.91	12.95	13.70
	2022	15.57	12.94	20.19	19.45	16.21	14.09	17.59	17.97	19.16	17.53	13.63	12.77

Jadual 1.27: Purata bulanan kepekatan Habuk Halus (PM₁₀) di udara, Malaysia, 2018-2022 (samb.)

Table 1.27: *Monthly average concentration of Particulate Matter (PM₁₀) in the air, Malaysia, 2018-2022 (cont'd)*

		µg/m ³											
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Perak													
Tasek, Ipoh	2018	24.13	30.03	30.76	33.66	30.60	36.80	36.75	38.74	22.17	17.90	21.50	21.20
	2019	28.92	26.67	34.18	28.33	22.29	20.46	29.10	42.87	70.34	24.74	22.22	23.70
	2020	25.54	23.02	27.51	16.80	14.75	24.43	28.03	32.76	24.71	22.21	20.07	22.35
	2021	26.54	33.56	32.83	28.84	23.96	20.13	27.93	25.16	25.64	27.47	20.91	21.71
	2022	28.86	25.25	27.76	27.77	24.19	19.27	28.31	25.65	22.59	19.15	20.84	21.57
Perlis													
Kangar	2018	21.38	25.50	24.23	23.74	16.44	26.05	24.74	31.90	16.73	15.13	17.70	15.91
	2019	23.44	19.89	28.78	21.25	14.28	19.40	26.80	29.58	41.18	12.78	16.29	21.02
	2020	21.53	23.51	21.57	15.61	13.96	17.44	16.80	21.33	17.28	15.62	17.47	18.75
	2021	24.30	28.47	21.61	17.20	13.39	16.84	19.94	14.40	16.91	15.32	11.34	19.02
	2022	22.49	16.65	17.14	16.79	15.76	11.92	20.22	19.10	13.01	10.91	14.85	19.16
Pulau Pinang													
Balik Pulau	2018	16.20	27.96	20.60	20.82	16.39	22.08	27.31	31.62	18.30	14.62	17.92	16.80
	2019	21.19	29.01	35.57	25.92	21.37	27.95	38.58	42.33	65.27	20.27	18.18	25.19
	2020	29.04	24.95	30.41	19.52	18.79	22.07	22.80	32.03	19.70	19.45	17.46	20.20
	2021	24.46	31.83	25.40	19.45	17.59	21.26	26.60	17.85	15.94	18.45	13.19	17.87
	2022	24.01	18.51	19.15	18.66	19.34	15.23	23.65	20.22	14.58	13.42	15.65	17.28
Perai	2018	22.58	31.32	21.46	19.18	18.33	34.95	40.19	43.20	27.90	23.38	24.94	22.68
	2019	29.17	28.80	34.27	26.57	21.87	25.75	32.55	31.62	43.02	16.13	20.88	23.41
	2020	28.14	26.76	30.94	18.33	19.26	26.23	24.55	32.05	20.78	19.19	16.62	16.57
	2021	19.00	22.28	23.83	22.00	20.98	20.59	27.57	19.11	23.37	23.72	17.82	22.18
	2022	29.75	23.29	21.91	21.30	20.86	18.80	30.13	27.12	19.98	14.84	18.34	17.70
Seberang Jaya	2018	22.94	32.41	23.72	22.22	18.14	26.88	34.71	45.82	29.77	27.20	29.62	26.95
	2019	30.29	31.21	36.35	28.03	22.20	25.66	31.74	32.10	46.45	14.80	17.88	25.15
	2020	28.38	27.10	32.81	19.19	19.45	25.30	26.14	35.10	24.30	22.76	21.07	21.48
	2021	27.26	28.99	27.69	20.63	20.78	20.16	26.42	22.77	25.11	24.61	20.47	25.78
	2022	34.64	25.96	23.45	24.69	23.33	19.67	28.80	26.29	19.57	15.94	17.35	20.11
USM	2018	20.41	25.15	27.41	25.76	20.36	27.31	30.85	35.38	22.00	19.62	22.86	19.25
	2019	24.09	26.10	31.98	25.65	20.76	23.34	34.36	36.46	58.20	17.80	15.94	20.69
	2020	24.41	23.03	27.94	15.29	16.29	21.29	19.89	25.99	18.39	16.43	15.45	16.55
	2021	21.99	26.80	24.57	18.78	18.45	17.97	22.94	16.33	17.97	19.39	14.73	18.50
	2022	26.27	19.81	20.37	19.83	19.11	15.83	23.37	21.26	15.78	14.19	16.30	15.54
Sabah													
Keningau	2018	17.86	19.64	19.65	23.77	21.21	23.54	26.67	29.27	22.74	18.11	15.51	15.82
	2019	16.42	18.89	25.85	22.35	21.47	19.07	20.78	26.78	36.52	15.16	19.71	16.93
	2020	17.87	18.21	18.63	18.86	16.34	14.30	12.91	14.68	14.59	17.64	16.83	18.52
	2021	16.74	18.83	20.20	22.93	20.23	20.58	21.27	16.92	15.61	19.06	16.71	17.02
	2022	16.74	15.13	16.26	16.22	16.32	17.48	19.61	19.37	19.39	15.10	13.33	15.59

Jadual 1.27: Purata bulanan kepekatan Habuk Halus (PM₁₀) di udara, Malaysia, 2018-2022 (samb.)

Table 1.27: Monthly average concentration of Particulate Matter (PM₁₀) in the air, Malaysia, 2018-2022 (cont'd)

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Sabah													
Kimanis	2018	12.18	15.76	16.20	19.73	16.24	15.54	18.47	24.61	17.00	13.85	13.11	13.04
	2019	16.26	30.07	39.61	27.78	17.04	14.22	17.79	22.84	37.71	13.63	13.95	11.95
	2020	17.87	32.92	25.18	20.76	13.55	10.86	10.45	12.07	10.93	10.17	10.82	12.11
	2021	11.03	15.70	16.18	19.93	11.28	6.69	6.21	10.09	10.74	13.81	8.55	11.92
	2022	15.27	13.42	11.28	14.41	12.21	11.79	12.12	13.12	9.22	7.80	5.74	11.94
Kota Kinabalu	2018	15.95	19.74	21.54	24.30	21.05	22.90	27.26	33.02	24.99	25.89	20.93	20.47
	2019	25.22	34.46	37.94	28.36	21.01	17.10	19.83	26.88	39.63	15.84	14.97	17.66
	2020	23.69	29.44	25.17	19.93	16.46	13.22	9.87	14.03	10.57	7.44	14.22	18.12
	2021	17.25	21.38	23.65	23.13	23.57	16.40	18.24	18.30	18.20	21.34	16.93	16.21
	2022	13.19	15.82	12.69	20.36	20.20	11.46	9.55	10.81	16.48	18.21	20.19	20.27
Sandakan	2018	15.42	16.93	19.36	19.51	16.52	18.08	18.90	21.23	20.33	17.31	16.33	15.56
	2019	18.80	18.29	17.77	16.65	15.66	15.06	16.51	22.09	33.95	15.92	16.45	14.54
	2020	16.84	20.31	17.65	14.90	13.10	13.91	13.77	14.34	15.42	15.48	14.92	14.10
	2021	12.03	15.53	14.95	17.01	12.66	12.10	14.98	12.66	12.54	15.92	14.79	15.27
	2022	17.78	16.16	14.12	15.27	11.28	9.86	10.53	11.22	10.19	10.48	9.56	10.48
Tawau	2018	15.84	15.64	15.65	15.86	13.55	14.37	17.49	17.64	17.62	14.65	12.85	10.20
	2019	14.66	15.65	15.55	14.05	12.29	12.52	14.63	17.09	32.75	14.64	15.25	13.64
	2020	13.83	13.60	12.35	13.19	12.85	20.23	14.27	23.00	11.86	18.27	25.73	14.30
	2021	13.08	15.63	16.26	14.88	12.95	12.92	12.71	12.11	13.14	14.50	14.80	23.09
	2022	25.55	22.99	22.29	22.27	22.37	23.05	20.07	19.45	19.41	20.29	21.48	21.38
Sarawak													
Bintulu	2018	18.79	22.09	24.84	27.78	22.60	27.97	36.09	42.25	26.14	23.18	22.66	20.20
	2019	19.97	22.13	26.57	30.49	29.60	21.65	35.66	41.47	59.06	16.41	24.85	16.28
	2020	19.27	24.61	21.49	20.02	20.21	16.66	16.83	21.67	18.81	22.58	16.98	18.76
	2021	13.46	20.51	19.54	26.65	21.83	22.91	26.90	20.63	21.12	21.28	19.02	20.50
	2022	18.25	20.90	21.84	22.87	21.58	23.13	24.95	19.35	18.12	14.93	18.75	20.94
ILP Miri	2018	11.88	15.69	15.30	17.64	18.41	20.31	23.42	47.62	24.59	16.80	15.43	15.80
	2019	15.20	23.09	20.04	28.62	24.86	20.95	26.69	150.04	67.17	14.49	23.36	13.67
	2020	14.87	33.22	25.76	20.89	13.86	15.09	13.22	18.01	15.52	22.01	17.42	13.77
	2021	10.87	13.98	16.97	20.09	14.43	16.46	18.01	15.61	13.81	17.55	14.63	13.84
	2022	14.83	11.72	10.82	12.07	17.69	14.08	17.21	17.53	16.89	12.79	12.61	13.85
Kapit	2018	12.54	15.15	17.11	18.97	14.88	16.92	17.49	25.30	20.33	19.67	15.89	13.07
	2019	17.71	16.13	20.30	17.55	15.68	15.04	19.87	28.11	44.10	15.88	17.84	11.64
	2020	13.25	16.94	14.53	13.67	12.85	11.58	12.26	15.07	11.66	12.62	10.91	12.46
	2021	11.99	15.21	15.05	17.55	15.51	14.60	12.88	9.55	13.45	14.15	13.08	12.35
	2022	14.94	13.90	16.60	16.46	17.35	15.82	15.56	14.11	15.47	16.00	13.65	13.56
Kuching	2018	11.51	15.72	20.61	23.47	17.08	18.79	28.89	53.36	31.41	20.99	17.95	16.16
	2019	18.80	20.58	22.97	20.35	21.30	17.56	24.54	44.49	108.85	17.51	20.14	14.15
	2020	17.18	19.73	15.64	13.53	13.39	14.40	15.31	20.33	15.99	16.67	13.89	13.70
	2021	11.55	16.90	14.35	18.47	15.73	14.06	16.71	13.37	12.52	15.20	13.77	13.68
	2022	14.54	18.41	16.54	15.93	15.16	11.55	14.45	16.28	15.07	14.73	14.02	17.82

Jadual 1.27: Purata bulanan kepekatan Habuk Halus (PM₁₀) di udara, Malaysia, 2018-2022 (samb.)

Table 1.27: Monthly average concentration of Particulate Matter (PM₁₀) in the air, Malaysia, 2018-2022 (cont'd)

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Sarawak													
Limbang	2018	13.19	15.90	17.48	18.07	14.68	16.16	18.61	27.15	18.41	16.78	14.04	14.02
	2019	17.44	24.81	20.18	20.36	16.77	13.73	16.24	22.94	37.67	13.35	14.75	11.88
	2020	15.33	19.01	17.33	15.91	14.30	11.20	10.26	13.66	12.06	12.91	11.48	12.35
	2021	11.10	16.52	16.64	17.22	14.52	15.58	16.60	14.40	15.46	19.09	14.41	14.06
	2022	15.57	14.25	14.30	15.35	13.90	13.80	16.70	13.95	12.58	14.17	12.32	12.81
Miri	2018	12.91	19.14	18.02	19.99	16.80	25.08	28.97	36.19	23.69	21.58	22.98	20.13
	2019	22.51	28.11	28.85	50.87	23.03	16.78	21.89	37.24	70.40	15.94	20.83	18.10
	2020	20.73	33.17	22.37	17.34	14.80	19.50	16.24	18.87	17.37	18.43	20.39	18.01
	2021	15.56	26.35	22.18	20.00	16.43	18.99	20.20	16.87	15.94	18.30	15.21	17.66
	2022	19.49	16.79	13.59	15.38	18.61	16.24	17.98	16.41	15.37	14.01	13.61	13.14
Mukah	2018	12.72	17.60	16.62	21.89	18.74	22.54	28.35	54.59	30.51	19.24	16.43	15.08
	2019	18.61	16.94	23.99	27.90	24.57	21.36	29.70	44.49	81.02	19.45	21.49	11.63
	2020	13.87	18.22	15.53	14.58	15.36	14.95	15.27	20.43	16.39	19.12	15.08	15.05
	2021	13.12	15.69	16.44	19.22	17.59	16.87	21.19	19.51	19.41	21.00	17.10	16.28
	2022	16.35	15.84	17.93	17.32	19.02	17.51	22.27	18.99	17.95	14.62	17.64	17.21
Samalaju	2018	17.96	24.37	21.83	23.17	17.98	22.65	31.54	40.34	25.27	19.80	18.86	17.21
	2019	20.21	28.19	25.28	29.98	25.84	20.36	26.22	36.58	57.58	18.12	22.51	18.65
	2020	21.87	29.29	21.97	18.84	16.19	14.94	15.96	18.26	17.76	19.52	17.48	17.51
	2021	17.06	20.59	19.28	23.75	27.30	18.28	23.63	19.30	18.08	20.42	15.47	18.66
	2022	20.61	23.60	19.79	18.93	18.92	19.33	24.22	19.98	21.72	21.07	20.74	22.44
Samarahan	2018	13.98	19.69	16.71	20.19	16.50	16.55	23.91	42.58	24.31	17.97	14.52	13.41
	2019	14.87	14.09	18.42	15.27	16.63	15.28	19.49	40.60	91.77	13.92	15.16	10.61
	2020	14.24	15.74	14.62	14.33	13.26	13.50	13.35	17.02	14.68	14.24	11.86	12.01
	2021	11.82	15.49	14.51	16.99	15.52	15.14	15.67	16.04	15.32	16.11	12.52	14.20
	2022	13.72	14.19	16.46	16.44	17.11	12.79	16.84	17.36	15.58	15.81	13.47	16.77
Sarikei	2018	12.84	20.45	16.79	19.61	17.36	20.62	25.55	38.18	23.93	16.36	16.17	12.75
	2019	15.61	15.88	19.89	17.86	20.69	15.84	23.98	37.45	80.94	19.12	18.84	13.07
	2020	16.78	18.89	15.66	12.93	11.21	11.65	11.28	17.33	14.53	15.26	12.19	12.82
	2021	11.19	14.97	14.04	17.46	13.34	11.17	16.42	13.95	14.01	13.07	19.49	24.20
	2022	25.20	21.82	14.40	14.05	15.39	11.45	14.92	13.70	11.79	11.55	12.70	15.18
Sibu	2018	15.45	24.56	20.82	21.33	18.04	25.27	34.00	44.75	26.77	20.82	19.56	16.98
	2019	19.95	21.51	24.11	23.35	24.63	18.43	26.66	39.79	78.82	22.71	19.62	14.59
	2020	18.41	20.48	16.65	12.61	13.07	10.55	13.20	17.23	13.25	14.73	11.21	11.83
	2021	11.34	17.82	15.08	18.44	14.48	14.29	17.46	14.39	13.97	13.88	11.49	11.70
	2022	15.06	16.10	17.29	15.81	15.65	13.47	15.88	15.36	13.55	8.99	9.84	12.96
Sri Aman	2018	11.89	17.63	14.24	16.65	13.85	16.80	21.96	36.97	25.80	17.92	15.43	13.48
	2019	16.04	16.62	21.49	16.60	19.04	17.20	25.52	68.23	130.89	19.00	19.07	12.51
	2020	15.49	18.74	15.85	14.98	13.41	12.91	10.38	18.28	14.83	16.65	11.53	13.42
	2021	10.58	15.69	14.96	17.35	16.98	13.96	17.36	16.02	16.41	15.24	13.15	13.38
	2022	15.76	14.83	15.42	17.82	18.26	14.75	15.40	16.54	13.21	11.42	10.63	12.81

Jadual 1.27: Purata bulanan kepekatan Habuk Halus (PM₁₀) di udara, Malaysia, 2018-2022 (samb.)

Table 1.27: Monthly average concentration of Particulate Matter (PM₁₀) in the air, Malaysia, 2018-2022 (cont'd)

Monthly Average Concentration of Particulate Matter (PM ₁₀) in the Air, Malaysia, 2018-2022 (µg/m ³)													µg/m ³
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Selangor													
Banting	2018	21.39	27.30	38.36	36.50	32.62	38.30	37.88	44.25	37.88	29.10	24.22	25.86
	2019	28.12	32.17	45.75	35.62	36.70	30.75	40.99	51.56	85.02	32.64	28.05	24.40
	2020	26.45	26.12	26.64	20.12	20.04	18.15	23.45	32.41	25.03	28.99	23.55	24.32
	2021	25.68	35.17	31.07	28.03	32.90	29.17	31.67	22.35	23.03	31.38	25.09	26.88
	2022	34.43	28.07	28.83	30.13	30.81	23.39	30.88	23.26	23.46	23.04	23.36	23.15
Klang	2018	41.51	46.15	52.09	47.79	44.58	38.46	40.03	56.68	44.16	30.93	25.61	28.17
	2019	27.18	34.91	39.85	32.03	27.57	21.14	46.06	56.84	91.54	40.31	41.05	38.59
	2020	38.76	40.15	35.83	26.85	31.43	33.79	32.21	37.66	31.10	34.17	31.66	31.73
	2021	32.02	39.38	35.06	30.26	34.84	27.28	34.46	29.76	29.41	39.74	33.82	44.81
	2022	38.98	31.95	28.37	29.60	26.63	19.29	22.36	26.57	30.98	26.51	29.04	35.06
Kuala Selangor	2018	19.19	30.37	27.27	26.57	23.56	24.60	27.12	41.96	29.04	21.84	21.65	18.74
	2019	22.35	28.22	38.59	29.41	23.61	25.97	35.82	48.05	76.93	22.84	15.81	15.97
	2020	17.61	18.09	21.87	15.86	15.01	19.62	26.64	30.76	22.87	23.13	17.96	19.12
	2021	23.73	31.90	25.48	24.51	27.69	27.76	26.91	20.03	22.11	23.18	17.96	20.76
	2022	21.30	16.60	21.22	25.05	28.95	24.22	33.51	30.27	19.82	20.65	18.88	23.19
Petaling Jaya	2018	33.09	38.29	43.41	40.19	34.47	32.27	39.47	41.35	37.72	31.25	30.43	29.26
	2019	31.74	34.14	42.49	35.91	31.33	28.79	38.51	52.54	88.19	37.31	32.67	29.24
	2020	29.55	35.66	33.31	20.42	23.33	25.76	26.58	24.99	19.05	18.16	33.39	40.50
	2021	36.67	37.30	39.40	36.27	34.30	29.01	32.70	27.60	30.50	32.87	24.88	26.09
	2022	31.99	26.66	29.02	29.15	26.10	23.63	34.28	30.20	34.40	32.82	33.73	25.94
Shah Alam	2018	28.61	35.47	38.44	37.35	35.39	32.81	36.96	38.78	37.23	31.86	29.56	30.60
	2019	37.61	39.79	51.45	37.33	32.39	30.20	38.61	52.89	89.36	36.07	30.73	27.41
	2020	29.57	29.45	27.75	21.31	22.31	25.93	25.69	28.17	23.07	25.20	24.57	26.43
	2021	25.71	33.06	32.02	28.70	29.04	22.53	25.83	22.18	26.80	33.22	31.36	31.41
	2022	36.95	27.75	29.96	33.91	36.42	36.19	44.34	35.59	32.75	27.93	25.10	20.22
Terengganu													
Besut	2018	18.25	26.46	22.87	22.77	20.28	27.82	26.64	30.75	18.86	19.31	16.63	15.02
	2019	20.84	19.44	28.93	24.86	24.36	18.00	25.32	31.39	38.78	14.47	14.92	19.54
	2020	21.01	22.21	20.20	17.43	18.80	16.00	14.38	21.18	19.01	18.38	16.78	15.06
	2021	20.72	25.07	18.19	20.48	17.77	16.41	20.48	16.74	16.93	19.51	14.76	19.48
	2022	25.40	16.60	21.88	21.25	22.02	16.60	20.07	16.44	12.17	11.62	12.41	17.39
Kemaman	2018	18.51	32.74	32.13	24.87	19.96	24.09	32.17	33.19	25.23	20.12	17.94	16.60
	2019	23.74	23.55	28.12	28.03	23.09	22.99	29.21	43.02	56.89	18.33	18.43	21.73
	2020	23.40	26.84	22.13	17.35	16.17	18.78	17.84	19.00	18.14	19.83	15.05	16.49
	2021	21.15	22.44	14.91	16.39	13.50	16.24	23.64	18.09	19.15	20.24	13.63	18.56
	2022	22.52	16.35	20.44	17.93	20.96	19.98	26.70	21.31	20.47	17.21	17.96	21.03
Kuala Terengganu	2018	25.55	36.88	24.91	24.61	22.92	23.74	29.46	36.09	21.71	20.58	18.16	17.96
	2019	23.02	23.68	31.53	25.80	24.17	25.58	32.29	44.70	51.86	19.90	17.73	25.88
	2020	27.94	27.68	26.83	19.01	21.49	22.75	23.32	27.02	25.18	22.82	15.25	20.32
	2021	29.75	36.48	25.87	25.29	21.81	23.66	26.16	24.40	220.79	23.68	14.99	20.33
	2022	27.57	18.18	24.13	26.47	29.44	23.37	29.85	23.62	18.92	14.24	14.88	17.40

Jadual 1.27: Purata bulanan kepekatan Habuk Halus (PM₁₀) di udara, Malaysia, 2018-2022 (samb.)

Table 1.27: Monthly average concentration of Particulate Matter (PM₁₀) in the air, Malaysia, 2018-2022 (cont'd)

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Terengganu													
Paka	2018	17.62	26.37	22.35	21.19	17.89	21.46	30.02	31.45	23.60	18.18	15.58	14.74
	2019	21.69	16.75	21.64	18.56	19.60	20.03	27.65	41.39	51.33	14.31	16.56	21.99
	2020	22.07	24.26	16.91	14.35	13.75	16.22	14.50	18.66	16.30	17.42	10.16	14.35
	2021	21.22	23.13	16.04	18.52	15.60	18.84	23.73	19.88	18.63	18.21	13.79	16.16
	2022	19.79	16.40	17.99	20.48	20.15	19.64	25.43	20.71	18.50	14.06	14.17	14.07
Wilayah Persekutuan													
Batu Muda, Kuala Lumpur	2018	17.60	19.31	20.58	29.88	30.87	31.99	36.22	37.86	35.28	35.53	25.06	21.23
	2019	20.80	24.90	36.45	35.19	27.59	31.55	41.13	51.55	85.09	28.56	26.97	18.31
	2020	23.08	23.01	26.97	21.16	32.85	39.73	31.17	36.08	28.00	26.08	22.21	28.77
	2021	23.24	26.52	27.19	26.08	25.12	19.82	20.27	15.85	17.66	18.54	17.37	23.96
	2022	27.49	21.44	24.90	27.57	27.26	24.72	37.20	29.82	32.02	30.05	28.90	34.95
Cheras, Kuala Lumpur	2018	31.90	33.44	33.49	34.83	33.78	32.44	38.21	40.90	39.36	28.85	24.87	24.54
	2019	25.46	29.36	40.24	32.88	27.71	26.10	36.68	48.93	85.78	31.49	28.46	23.68
	2020	25.72	24.08	25.99	18.73	22.00	23.96	22.47	25.00	21.32	18.35	18.60	22.72
	2021	21.61	27.56	28.42	27.00	27.57	25.12	26.25	20.00	20.50	22.89	21.29	19.47
	2022	22.32	22.89	16.22	18.93	18.81	16.75	22.07	27.00	31.77	34.00	34.23	15.89
Labuan	2018	14.36	15.77	18.28	20.30	16.81	25.39	22.91	32.82	19.90	16.49	13.15	12.74
	2019	14.90	20.15	18.68	18.01	17.46	14.06	17.92	26.96	37.39	14.74	17.03	16.45
	2020	18.50	20.94	21.34	20.83	17.54	14.75	14.48	17.12	14.61	21.42	n.a.	14.72
	2021	13.62	19.12	17.24	18.49	18.50	21.30	20.78	20.74	23.58	21.70	21.35	16.38
	2022	19.24	13.59	16.10	16.19	19.60	16.48	18.16	16.44	19.33	12.52	15.02	14.56
Putrajaya	2018	24.98	30.89	31.02	32.08	29.02	31.35	37.94	39.08	32.99	27.83	25.69	25.56
	2019	28.42	32.18	43.87	35.93	32.01	26.33	37.03	52.66	91.66	33.08	28.54	23.80
	2020	22.95	26.03	28.19	21.10	21.98	24.43	23.74	29.63	22.41	25.58	21.17	23.10
	2021	23.98	30.36	27.97	26.15	24.79	21.10	24.83	18.94	19.81	22.20	16.57	19.60
	2022	23.52	16.86	21.45	22.72	22.12	17.90	25.81	23.22	23.43	19.33	18.23	19.10

Nota:

Note:

Garis Panduan Kualiti Udara Malaysia: PM₁₀ tidak melebihi 120 µg/m³

Malaysian Ambient Air Quality Guidelines: PM₁₀ not exceeding 120 µg/m³ within

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

Jadual 1.28: Purata bulanan kepekatan Ozon Permukaan Bumi (O₃) di udara, Malaysia, 2018-2022

Table 1.28: Monthly average concentration of Ground Level Ozone (O₃) in the air, Malaysia, 2018-2022

													ppm
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Johor													
Batu Pahat	2018	0.015	0.022	0.017	0.019	0.020	0.014	0.014	0.015	0.015	0.016	0.016	0.016
	2019	0.018	0.018	0.025	0.023	0.019	0.013	0.017	0.020	0.021	0.019	0.015	0.016
	2020	0.017	0.019	0.021	0.016	0.017	0.013	0.015	0.014	0.015	0.016	0.016	0.018
	2021	0.020	0.025	0.018	0.022	0.017	0.018	0.015	0.014	0.017	0.018	0.016	0.019
	2022	0.019	0.015	0.018	0.019	0.020	0.017	0.014	0.015	0.015	0.015	0.016	0.018
Kota Tinggi	2018	0.017	0.033	0.020	0.023	0.015	0.014	0.019	0.021	0.016	0.018	0.016	0.018
	2019	0.029	0.024	0.024	0.019	0.017	0.012	0.017	0.023	0.025	0.017	0.022	0.025
	2020	0.025	0.027	0.023	0.022	0.021	0.011	0.011	0.014	0.012	0.016	0.014	0.025
	2021	0.031	0.033	0.022	0.020	0.016	0.019	0.017	0.014	0.017	0.019	0.017	0.027
	2022	0.025	0.019	0.020	0.020	0.021	0.017	0.016	0.015	0.016	0.018	0.017	0.024
Larkin	2018	0.014	0.023	0.016	0.017	0.013	0.011	0.014	0.017	0.015	0.015	0.014	0.014
	2019	0.020	0.016	0.021	0.017	0.014	0.009	0.013	0.019	0.024	0.014	0.016	0.015
	2020	0.017	0.019	0.018	0.018	0.016	0.010	0.009	0.012	0.010	0.013	0.011	0.017
	2021	0.019	0.026	0.015	0.018	0.013	0.014	0.014	0.010	0.014	0.015	0.013	0.018
	2022	0.018	0.012	0.013	0.015	0.017	0.012	0.012	0.011	0.012	0.013	0.013	0.015
Pasir Gudang	2018	0.013	0.024	0.016	0.016	0.012	0.010	0.015	0.017	0.014	0.014	0.014	0.014
	2019	0.020	0.017	0.020	0.016	0.013	0.009	0.014	0.020	0.025	0.013	0.016	0.016
	2020	0.018	0.020	0.018	0.018	0.015	0.008	0.008	0.011	0.009	0.011	0.010	0.016
	2021	0.018	0.023	0.014	0.014	0.011	0.012	0.012	0.008	0.011	0.013	0.010	0.014
	2022	0.014	0.010	0.013	0.014	0.014	0.008	0.009	0.009	0.009	0.011	0.011	0.015
Segamat	2018	0.020	0.034	0.022	0.024	0.023	0.021	0.023	0.025	0.029	0.026	0.022	0.021
	2019	0.028	0.025	0.033	0.028	0.029	0.017	0.020	0.022	0.025	0.017	0.017	0.018
	2020	0.018	0.019	0.016	0.015	0.015	0.013	0.013	0.013	0.012	0.015	0.012	0.016
	2021	0.020	0.024	0.015	0.018	0.014	0.016	0.016	0.014	0.015	0.016	0.013	0.017
	2022	0.016	0.012	0.014	0.015	0.016	0.014	0.014	0.015	0.015	0.013	0.012	0.016
Tangkak	2018	-	-	0.016	0.018	0.019	0.017	0.019	0.020	0.021	0.017	0.014	0.013
	2019	0.022	0.018	0.025	0.021	0.020	0.015	0.021	0.024	0.026	0.019	0.017	0.020
	2020	0.020	0.021	0.017	0.011	0.013	0.012	0.012	0.014	0.013	0.013	0.010	0.014
	2021	0.019	0.022	0.012	0.012	0.012	0.013	0.014	0.011	0.019	0.021	0.019	0.023
	2022	0.023	0.015	0.016	0.014	0.018	0.018	0.018	0.015	0.014	0.011	0.011	0.013
Kedah													
Alor Setar	2018	0.018	0.028	0.023	0.024	0.024	0.024	0.024	0.021	0.015	0.020	0.022	0.016
	2019	0.024	0.022	0.028	0.022	0.019	0.025	0.027	0.024	0.023	0.017	0.021	0.028
	2020	0.024	0.025	0.023	0.021	0.022	0.023	0.020	0.022	0.019	0.014	0.019	0.024
	2021	0.028	0.028	0.020	0.019	0.020	0.021	0.021	0.014	0.014	0.016	0.016	0.027
	2022	0.027	0.018	0.018	0.019	0.016	0.019	0.017	0.020	0.013	0.016	0.018	0.026
Langkawi	2018	0.019	0.029	0.021	0.020	0.015	0.016	0.013	0.015	0.009	0.015	0.018	0.016
	2019	0.029	0.025	0.027	0.018	0.012	0.017	0.017	0.015	0.018	0.014	0.018	0.031
	2020	0.027	0.029	0.022	0.020	0.016	0.016	0.013	0.015	0.012	0.009	0.017	0.025
	2021	0.032	0.030	0.021	0.014	0.013	0.013	0.013	0.011	0.010	0.011	0.012	0.029
	2022	0.030	0.020	0.016	0.013	0.010	0.012	0.012	0.013	0.009	0.011	0.015	0.027

Jadual 1.28: Purata bulanan kepekatan Ozon Permukaan Bumi (O₃) di udara, Malaysia, 2018-2022 (samb.)

Table 1.28: Monthly average concentration of Ground Level Ozone (O₃) in the air, Malaysia, 2018-2022 (cont'd)

													ppm
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Kedah													
Sungai Petani	2018	0.018	0.030	0.024	0.023	0.022	0.021	0.022	0.021	0.015	0.016	0.017	0.013
	2019	0.020	0.021	0.026	0.020	0.015	0.021	0.022	0.018	0.019	0.016	0.016	0.020
	2020	0.020	0.021	0.023	0.019	0.018	0.021	0.020	0.020	0.017	0.012	0.014	0.018
	2021	0.020	0.023	0.016	0.016	0.018	0.019	0.020	0.015	0.015	0.015	0.012	0.020
	2022	0.022	0.014	0.016	0.015	0.012	0.015	0.018	0.020	0.013	0.013	0.014	0.019
Kelantan													
Kota Bharu	2018	0.014	0.021	0.014	0.014	0.013	0.014	0.014	0.016	0.011	0.012	0.012	0.012
	2019	0.018	0.014	0.016	0.015	0.016	0.014	0.017	0.015	0.016	0.009	0.013	0.021
	2020	0.015	0.017	0.012	0.012	0.012	0.012	0.011	0.013	0.010	0.009	0.011	0.014
	2021	0.021	0.019	0.011	0.013	0.013	0.014	0.014	0.011	0.010	0.011	0.009	0.018
	2022	0.018	0.014	0.012	0.014	0.013	0.014	0.013	0.015	0.011	0.010	0.011	0.017
Tanah Merah	2018	0.012	0.017	0.012	0.013	0.012	0.012	0.013	0.014	0.012	0.011	0.011	0.010
	2019	0.011	0.011	0.015	0.013	0.014	0.012	0.015	0.014	0.015	0.008	0.011	0.014
	2020	0.011	0.012	0.012	0.011	0.010	0.009	0.010	0.011	0.009	0.008	0.008	0.011
	2021	0.015	0.016	0.009	0.011	0.010	0.011	0.011	0.009	0.008	0.009	0.008	0.013
	2022	0.011	0.009	0.010	0.012	0.010	0.011	0.010	0.012	0.010	0.008	0.009	0.012
Melaka													
Bandaraya Melaka	2018	0.020	0.030	0.024	0.025	0.028	0.024	0.026	0.031	0.032	0.031	0.030	0.027
	2019	0.026	0.024	0.031	0.027	0.022	0.017	0.022	0.025	0.029	0.027	0.023	0.022
	2020	0.022	0.024	0.029	0.026	0.026	0.022	0.020	0.021	0.021	0.024	0.023	0.025
	2021	0.028	0.033	0.025	0.028	0.024	0.024	0.019	0.016	0.017	0.019	0.018	0.020
	2022	0.022	0.016	0.021	0.022	0.020	0.018	0.017	0.018	0.018	0.015	0.018	0.020
Bukit Rambai	2018	0.019	0.032	0.025	0.025	0.022	0.018	0.017	0.020	0.022	0.023	0.021	0.020
	2019	0.025	0.027	0.035	0.030	0.023	0.015	0.019	0.022	0.026	0.025	0.021	0.022
	2020	0.024	0.026	0.027	0.022	0.020	0.015	0.015	0.016	0.016	0.018	0.017	0.020
	2021	0.024	0.030	0.021	0.024	0.019	0.020	0.018	0.015	0.016	0.019	0.019	0.021
	2022	0.023	0.016	0.020	0.020	0.018	0.016	0.015	0.016	0.017	0.015	0.018	0.021
Negeri Sembilan													
Nilai	2018	0.013	0.024	0.017	0.015	0.011	0.010	0.008	0.011	0.010	0.009	0.008	0.008
	2019	0.011	0.007	0.008	0.005	0.009	0.007	0.009	0.008	0.011	0.009	0.008	0.009
	2020	0.011	0.011	0.012	0.010	0.009	0.006	0.006	0.006	0.006	0.007	0.007	0.008
	2021	0.010	0.014	0.006	0.005	0.006	0.007	0.007	0.006	0.006	0.007	0.007	0.007
	2022	0.009	0.007	0.008	0.008	0.008	0.004	0.004	0.013	0.016	0.012	0.014	0.015
Port Dickson	2018	0.023	0.034	0.028	0.028	0.026	0.023	0.023	0.027	0.027	0.026	0.024	0.027
	2019	0.032	0.032	0.038	0.032	0.025	0.021	0.025	0.029	0.035	0.031	0.027	0.028
	2020	0.029	0.023	0.022	0.019	0.018	0.017	0.016	0.017	0.016	0.017	0.016	0.019
	2021	0.021	0.032	0.027	0.029	0.025	0.025	0.025	0.022	0.023	0.024	0.024	0.026
	2022	0.031	0.025	0.030	0.029	0.027	0.025	0.025	0.025	0.024	0.022	0.029	0.028

Jadual 1.28: Purata bulanan kepekatan Ozon Permukaan Bumi (O₃) di udara, Malaysia, 2018-2022 (samb.)

Table 1.28: Monthly average concentration of Ground Level Ozone (O₃) in the air, Malaysia, 2018-2022 (cont'd)

													ppm
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Negeri Sembilan													
Seremban	2018	0.017	0.027	0.022	0.021	0.020	0.020	0.018	0.021	0.023	0.021	0.018	0.017
	2019	0.021	0.023	0.029	0.024	0.021	0.016	0.022	0.021	0.026	0.023	0.019	0.020
	2020	0.021	0.022	0.024	0.020	0.023	0.018	0.018	0.018	0.017	0.018	0.016	0.018
	2021	0.021	0.028	0.021	0.023	0.021	0.020	0.019	0.018	0.020	0.021	0.022	0.020
	2022	0.024	0.019	0.024	0.025	0.023	0.019	0.019	0.019	0.018	0.017	0.018	0.018
Pahang													
Jerantut	2018	0.010	0.017	0.016	0.017	0.016	0.018	0.019	0.023	0.020	0.015	0.013	0.011
	2019	0.014	0.015	0.025	0.020	0.020	0.019	0.025	0.025	0.024	0.015	0.014	0.013
	2020	0.013	0.014	0.017	0.014	0.016	0.017	0.016	0.020	0.017	0.016	0.011	0.013
	2021	0.015	0.019	0.014	0.017	0.016	0.017	0.018	0.017	0.015	0.016	0.011	0.014
	2022	0.016	0.010	0.013	0.015	0.016	0.017	0.019	0.017	0.016	0.012	0.012	0.013
Kuantan	2018	0.014	0.024	0.018	0.018	0.018	0.020	0.024	0.026	0.021	0.017	0.016	0.013
	2019	0.018	0.017	0.022	0.020	0.024	0.020	0.025	0.027	0.027	0.018	0.018	0.020
	2020	0.019	0.022	0.019	0.017	0.020	0.017	0.017	0.022	0.019	0.022	0.015	0.019
	2021	0.024	0.026	0.016	0.021	0.019	0.022	0.024	0.020	0.019	0.021	0.015	0.022
	2022	0.022	0.014	0.016	0.018	0.021	0.022	0.024	0.021	0.021	0.015	0.016	0.020
Temerloh	2018	0.008	0.016	0.014	0.015	0.014	0.014	0.014	0.019	0.018	0.015	0.012	0.009
	2019	0.013	0.014	0.022	0.019	0.019	0.015	0.019	0.021	0.020	0.015	0.013	0.011
	2020	0.013	0.014	0.017	0.014	0.015	0.016	0.016	0.017	0.016	0.016	0.010	0.012
	2021	0.014	0.018	0.013	0.016	0.014	0.015	0.015	0.015	0.015	0.016	0.010	0.012
	2022	0.012	0.008	0.012	0.013	0.013	0.014	0.015	0.015	0.013	0.010	0.011	0.011
Perak													
Pegoh, Ipoh	2018	0.015	0.027	0.025	0.023	0.018	0.018	0.017	0.022	0.017	0.016	0.016	0.013
	2019	0.020	0.022	0.026	0.021	0.016	0.020	0.027	0.026	0.029	0.019	0.017	0.020
	2020	0.027	0.025	0.024	0.021	0.019	0.021	0.020	0.022	0.016	0.014	0.013	0.014
	2021	0.016	0.023	0.017	0.015	0.014	0.015	0.018	0.015	0.014	0.014	0.011	0.014
	2022	0.017	0.012	0.014	0.014	0.014	0.012	0.012	0.008	0.009	0.004	0.007	0.007
Taiping	2018	0.014	0.021	0.019	0.018	0.019	0.017	0.018	0.019	0.015	0.015	0.016	0.014
	2019	0.018	0.018	0.022	0.018	0.014	0.017	0.021	0.019	0.021	0.016	0.015	0.015
	2020	0.017	0.019	0.020	0.018	0.017	0.018	0.017	0.021	0.014	0.013	0.014	0.015
	2021	0.015	0.020	0.018	0.016	0.017	0.016	0.019	0.015	0.016	0.015	0.013	0.015
	2022	0.017	0.015	0.016	0.016	0.014	0.014	0.015	0.015	0.010	0.008	0.009	0.009
Tanjung Malim	2018	0.013	0.021	0.019	0.019	0.018	0.023	0.023	0.025	0.019	0.016	0.016	0.014
	2019	0.017	0.019	0.025	0.019	0.017	0.023	0.028	0.027	0.030	0.019	0.016	0.015
	2020	0.019	0.020	0.019	0.014	0.018	0.021	0.018	0.023	0.017	0.016	0.014	0.014
	2021	0.015	0.021	0.017	0.017	0.017	0.018	0.021	0.018	0.017	0.018	0.014	0.015
	2022	0.017	0.014	0.016	0.017	0.018	0.017	0.021	0.018	0.016	0.015	0.016	0.015

Jadual 1.28: Purata bulanan kepekatan Ozon Permukaan Bumi (O₃) di udara, Malaysia, 2018-2022 (samb.)

Table 1.28: Monthly average concentration of Ground Level Ozone (O₃) in the air, Malaysia, 2018-2022 (cont'd)

													ppm
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Perak													
Tasek, Ipoh	2018	0.014	0.022	0.021	0.019	0.017	0.017	0.018	0.022	0.019	0.017	0.017	0.014
	2019	0.020	0.021	0.025	0.020	0.015	0.018	0.026	0.024	0.028	0.018	0.015	0.018
	2020	0.023	0.023	0.024	0.020	0.021	0.021	0.019	0.023	0.017	0.015	0.016	0.016
	2021	0.018	0.025	0.021	0.018	0.020	0.019	0.021	0.016	0.017	0.017	0.013	0.015
	2022	0.019	0.014	0.016	0.016	0.017	0.016	0.019	0.018	0.015	0.013	0.015	0.014
Perlis													
Kangar	2018	0.020	0.031	0.024	0.023	0.022	0.022	0.021	0.020	0.015	0.021	0.024	0.020
	2019	0.028	0.025	0.030	0.024	0.021	0.025	0.025	0.022	0.024	0.018	0.022	0.030
	2020	0.026	0.027	0.024	0.022	0.022	0.022	0.019	0.020	0.018	0.015	0.020	0.025
	2021	0.031	0.031	0.021	0.020	0.020	0.021	0.019	0.015	0.014	0.018	0.018	0.030
	2022	0.030	0.020	0.020	0.022	0.018	0.018	0.017	0.020	0.015	0.017	0.020	0.028
Pulau Pinang													
Balik Pulau	2018	0.023	0.033	0.028	0.027	0.026	0.026	0.027	0.026	0.018	0.020	0.023	0.019
	2019	0.030	0.029	0.030	0.023	0.019	0.026	0.030	0.027	0.028	0.021	0.021	0.030
	2020	0.028	0.029	0.026	0.023	0.022	0.025	0.025	0.026	0.020	0.016	0.019	0.025
	2021	0.030	0.033	0.026	0.020	0.022	0.021	0.023	0.019	0.018	0.019	0.017	0.026
	2022	0.029	0.021	0.021	0.019	0.018	0.018	0.020	0.020	0.013	0.014	0.016	0.023
Perai	2018	0.020	0.031	0.027	0.025	0.024	0.023	0.023	0.022	0.016	0.015	0.016	0.013
	2019	0.021	0.021	0.023	0.017	0.012	0.019	0.023	0.020	0.020	0.014	0.014	0.022
	2020	0.021	0.021	0.020	0.015	0.013	0.014	0.013	0.013	0.008	0.006	0.006	0.009
	2021	0.010	0.012	0.009	0.007	0.011	0.009	0.009	0.006	0.005	0.005	0.004	0.006
	2022	0.009	0.006	0.007	0.006	0.005	0.014	0.020	0.021	0.014	0.015	0.015	0.019
Seberang Jaya	2018	0.014	0.024	0.021	0.021	0.019	0.019	0.022	0.020	0.014	0.013	0.014	0.011
	2019	0.019	0.020	0.021	0.014	0.011	0.019	0.023	0.021	0.020	0.012	0.013	0.017
	2020	0.019	0.021	0.022	0.019	0.016	0.020	0.019	0.020	0.014	0.010	0.012	0.015
	2021	0.017	0.024	0.018	0.013	0.015	0.015	0.018	0.012	0.012	0.012	0.009	0.014
	2022	0.019	0.013	0.013	0.011	0.009	0.011	0.011	0.011	0.005	0.005	0.005	0.006
USM	2018	-	-	0.027	0.027	0.028	0.027	0.031	0.030	0.020	0.020	0.023	0.019
	2019	0.029	0.030	0.034	0.026	0.020	0.026	0.030	0.027	0.026	0.019	0.020	0.027
	2020	0.029	0.030	0.031	0.026	0.024	0.027	0.025	0.029	0.020	0.016	0.019	0.025
	2021	0.029	0.034	0.028	0.023	0.023	0.024	0.027	0.021	0.020	0.020	0.017	0.024
	2022	0.026	0.017	0.017	0.015	0.014	0.014	0.020	0.021	0.016	0.016	0.018	0.024
Sabah													
Keningau	2018	0.008	0.012	0.011	0.011	0.008	0.010	0.009	0.012	0.010	0.009	0.010	0.010
	2019	0.013	0.015	0.016	0.012	0.011	0.008	0.008	0.012	0.013	0.007	0.010	0.010
	2020	0.010	0.013	0.011	0.013	0.008	0.006	0.005	0.008	0.006	0.008	0.008	0.008
	2021	0.009	0.011	0.009	0.012	0.008	0.007	0.009	0.008	0.007	0.009	0.007	0.009
	2022	0.009	0.009	0.007	0.010	0.008	0.007	0.010	0.010	0.011	0.010	0.009	0.012

Jadual 1.28: Purata bulanan kepekatan Ozon Permukaan Bumi (O₃) di udara, Malaysia, 2018-2022 (samb.)

Table 1.28: Monthly average concentration of Ground Level Ozone (O₃) in the air, Malaysia, 2018-2022 (cont'd)

													ppm
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Sabah													
Kota Kinabalu	2018	0.011	0.016	0.014	0.014	0.011	0.012	0.014	0.016	0.012	0.011	0.012	0.012
	2019	0.012	0.014	0.015	0.014	0.014	0.012	0.011	0.014	0.015	0.008	0.015	0.014
	2020	0.013	0.015	0.014	0.016	0.012	0.011	0.009	0.013	0.010	0.013	0.013	0.013
	2021	0.012	0.015	0.013	0.016	0.011	0.012	0.014	0.012	0.011	0.012	0.009	0.011
	2022	0.011	0.010	0.009	0.012	0.011	0.009	0.010	0.009	0.010	0.010	0.008	0.012
Sandakan	2018	0.013	0.019	0.019	0.015	0.011	0.012	0.014	0.015	0.014	0.013	0.013	0.015
	2019	0.022	0.024	0.019	0.017	0.015	0.010	0.013	0.017	0.018	0.010	0.014	0.017
	2020	0.020	0.024	0.019	0.020	0.013	0.010	0.009	0.012	0.009	0.012	0.014	0.013
	2021	0.015	0.020	0.015	0.018	0.014	0.013	0.014	0.011	0.011	0.012	0.011	0.018
	2022	0.018	0.016	0.011	0.014	0.012	0.010	0.011	0.011	0.012	0.011	0.012	0.015
Tawau	2018	-	-	0.012	0.011	0.008	0.010	0.011	0.013	0.011	0.009	0.009	0.010
	2019	0.013	0.017	0.015	0.012	0.011	0.008	0.011	0.014	0.015	0.008	0.013	0.011
	2020	0.012	0.016	0.013	0.015	0.010	0.008	0.007	0.009	0.008	0.010	0.009	0.010
	2021	0.009	0.012	0.011	0.013	0.010	0.009	0.010	0.008	0.009	0.009	0.008	0.010
	2022	0.011	0.010	0.009	0.010	0.008	0.008	0.010	0.009	0.009	0.009	0.009	0.010
Sarawak													
Bintulu	2018	0.009	0.018	0.015	0.015	0.013	0.014	0.012	0.015	0.013	0.012	0.012	0.012
	2019	0.016	0.017	0.017	0.016	0.013	0.013	0.012	0.014	0.018	0.013	0.016	0.016
	2020	0.016	0.019	0.015	0.016	0.012	0.010	0.011	0.012	0.009	0.010	0.011	0.010
	2021	0.015	0.017	0.014	0.018	0.014	0.013	0.012	0.010	0.010	0.009	0.009	0.011
	2022	0.012	0.011	0.011	0.011	0.011	0.012	0.014	0.013	0.012	0.011	0.012	0.014
Kuching	2018	0.008	0.015	0.012	0.011	0.009	0.009	0.010	0.016	0.012	0.011	0.012	0.013
	2019	0.014	0.013	0.014	0.010	0.012	0.009	0.011	0.017	0.021	0.011	0.015	0.016
	2020	0.012	0.015	0.011	0.012	0.010	0.008	0.009	0.011	0.009	0.009	0.010	0.013
	2021	0.015	0.015	0.011	0.013	0.011	0.010	0.011	0.009	0.010	0.012	0.012	0.016
	2022	0.014	0.013	0.013	0.014	0.012	0.011	0.012	0.012	0.011	0.010	0.011	0.014
Miri	2018	0.013	0.017	0.016	0.015	0.013	0.014	0.015	0.018	0.014	0.015	0.014	0.014
	2019	0.017	0.019	0.018	0.015	0.016	0.014	0.014	0.018	0.020	0.014	0.017	0.017
	2020	0.017	0.022	0.017	0.019	0.016	0.013	0.012	0.015	0.012	0.014	0.016	0.016
	2021	0.014	0.018	0.015	0.017	0.016	0.014	0.015	0.013	0.014	0.016	0.013	0.015
	2022	0.015	0.014	0.013	0.014	0.013	0.013	0.014	0.014	0.014	0.014	0.013	0.015
Sibu	2018	0.009	0.013	0.011	0.011	0.009	0.009	0.008	0.013	0.011	0.009	0.010	0.010
	2019	0.010	0.011	0.015	0.011	0.011	0.009	0.009	0.012	0.015	0.008	0.011	0.010
	2020	0.011	0.015	0.011	0.011	0.010	0.008	0.008	0.010	0.008	0.010	0.009	0.009
	2021	0.012	0.014	0.010	0.012	0.011	0.010	0.010	0.008	0.009	0.009	0.010	0.011
	2022	0.011	0.010	0.010	0.010	0.012	0.008	0.010	0.009	0.008	0.009	0.011	0.012
Selangor													
Banting	2018	0.019	0.029	0.025	0.021	0.020	0.018	0.015	0.018	0.017	0.019	0.019	0.017
	2019	0.022	0.023	0.024	0.023	0.016	0.013	0.014	0.017	0.023	0.022	0.019	0.020
	2020	0.023	0.023	0.021	0.020	0.016	0.012	0.015	0.015	0.016	0.016	0.018	0.018
	2021	0.022	0.029	0.022	0.021	0.017	0.017	0.015	0.016	0.016	0.015	0.015	0.017
	2022	0.025	0.019	0.022	0.025	0.022	0.020	0.017	0.019	0.018	0.016	0.020	0.021

Jadual 1.28: Purata bulanan kepekatan Ozon Permukaan Bumi (O₃) di udara, Malaysia, 2018-2022 (samb.)

Table 1.28: Monthly average concentration of Ground Level Ozone (O₃) in the air, Malaysia, 2018-2022 (cont'd)

													ppm
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Selangor													
Klang	2018	0.013	0.022	0.019	0.020	0.019	0.018	0.017	0.019	0.019	0.017	0.016	0.014
	2019	0.022	0.015	0.018	0.014	0.010	0.010	0.012	0.013	0.018	0.014	0.010	0.011
	2020	0.014	0.018	0.022	0.024	0.018	0.011	0.012	0.015	0.015	0.015	0.014	0.015
	2021	0.019	0.024	0.018	0.015	0.015	0.015	0.014	0.013	0.017	0.015	0.014	0.016
	2022	0.021	0.016	0.017	0.016	0.015	0.014	0.016	0.016	0.014	0.013	0.013	0.014
Petaling Jaya	2018	0.011	0.021	0.019	0.017	0.016	0.017	0.015	0.018	0.015	0.013	0.012	0.010
	2019	0.014	0.019	0.021	0.017	0.013	0.013	0.016	0.015	0.017	0.010	0.008	0.008
	2020	0.010	0.011	0.014	0.016	0.013	0.008	0.008	0.010	0.007	0.007	0.004	0.005
	2021	0.006	0.010	0.005	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.008	0.014
	2022	0.014	0.010	0.014	0.016	0.014	0.013	0.014	0.017	0.016	0.013	0.012	0.014
Shah Alam	2018	0.017	0.029	0.026	0.025	0.021	0.018	0.015	0.017	0.020	0.018	0.019	0.018
	2019	0.024	0.027	0.038	0.032	0.024	0.017	0.019	0.018	0.026	0.021	0.018	0.018
	2020	0.023	0.024	0.025	0.029	0.023	0.016	0.017	0.018	0.017	0.017	0.017	0.018
	2021	0.021	0.029	0.024	0.022	0.020	0.019	0.017	0.017	0.018	0.018	0.015	0.020
	2022	0.022	0.015	0.020	0.021	0.019	0.017	0.017	0.017	0.017	0.014	0.015	0.015
Terengganu													
Besut	2018	0.018	0.023	0.016	0.016	0.015	0.015	0.019	0.021	0.015	0.014	0.015	0.015
	2019	0.022	0.018	0.021	0.019	0.019	0.020	0.023	0.022	0.022	0.012	0.019	0.026
	2020	0.021	0.023	0.017	0.014	0.014	0.015	0.015	0.016	0.012	0.011	0.012	0.015
	2021	0.020	0.018	0.012	0.014	0.014	0.014	0.015	0.010	0.011	0.011	0.011	0.020
	2022	0.020	0.014	0.012	0.015	0.013	0.015	0.015	0.016	0.013	0.011	0.013	0.019
Kuala Terengganu	2018	0.017	0.023	0.016	0.015	0.014	0.019	0.021	0.023	0.018	0.015	0.014	0.015
	2019	0.020	0.015	0.015	0.013	0.015	0.014	0.017	0.018	0.019	0.009	0.013	0.020
	2020	0.015	0.018	0.012	0.015	0.017	0.013	0.012	0.015	0.013	0.012	0.011	0.016
	2021	0.021	0.017	0.011	0.012	0.012	0.014	0.014	0.012	0.012	0.011	0.009	0.019
	2022	0.016	0.012	0.011	0.012	0.013	0.014	0.014	0.014	0.014	0.010	0.011	0.017
Wilayah Persekutuan													
Batu Muda, Kuala Lumpur	2018	0.014	0.023	0.022	0.019	0.017	0.017	0.017	0.019	0.018	0.015	0.013	0.010
	2019	0.013	0.017	0.018	0.015	0.012	0.013	0.016	0.018	0.023	0.019	0.015	0.015
	2020	0.017	0.018	0.021	0.016	0.014	0.014	0.015	0.018	0.015	0.016	0.012	0.013
	2021	0.016	0.024	0.019	0.016	0.018	0.019	0.018	0.016	0.016	0.015	0.012	0.013
	2022	0.013	0.012	0.016	0.016	0.014	0.012	0.014	0.010	0.004	0.009	0.010	0.010
Cheras, Kuala Lumpur	2018	0.018	0.028	0.025	0.023	0.021	0.021	0.019	0.021	0.021	0.019	0.022	0.018
	2019	0.022	0.028	0.034	0.028	0.021	0.019	0.023	0.023	0.029	0.021	0.017	0.017
	2020	0.022	0.022	0.025	0.022	0.022	0.017	0.017	0.019	0.016	0.018	0.015	0.016
	2021	0.019	0.028	0.021	0.019	0.019	0.021	0.021	0.019	0.019	0.018	0.017	0.018
	2022	0.021	0.015	0.021	0.021	0.020	0.018	0.021	0.021	0.018	0.016	0.016	0.017

Jadual 1.28: Purata bulanan kepekatan Ozon Permukaan Bumi (O₃) di udara, Malaysia, 2018-2022 (samb.)Table 1.28: Monthly average concentration of Ground Level Ozone (O₃) in the air, Malaysia, 2018-2022 (cont'd)

													ppm
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Wilayah Persekutuan													
Labuan	2018	-	-	0.018	0.018	0.014	0.015	0.017	0.022	0.018	0.016	0.016	0.016
	2019	0.019	0.021	0.019	0.018	0.017	0.016	0.015	0.020	0.020	0.014	0.019	0.018
	2020	0.019	0.023	0.018	0.018	0.013	0.012	0.012	0.015	0.013	0.015	0.015	0.016
	2021	0.016	0.018	0.014	0.015	0.014	0.014	0.016	0.014	0.013	0.015	0.014	0.017
	2022	0.018	0.016	0.013	0.015	0.015	0.014	0.014	0.013	0.016	0.017	0.016	0.020
Putrajaya	2018	0.018	0.030	0.027	0.027	0.023	0.022	0.019	0.021	0.021	0.022	0.022	0.021
	2019	0.025	0.030	0.035	0.028	0.022	0.019	0.022	0.023	0.030	0.026	0.021	0.023
	2020	0.026	0.027	0.029	0.026	0.025	0.019	0.017	0.018	0.017	0.018	0.018	0.019
	2021	0.023	0.031	0.023	0.021	0.019	0.019	0.018	0.018	0.018	0.018	0.018	0.019
	2022	0.023	0.016	0.021	0.021	0.020	0.018	0.017	0.021	0.019	0.015	0.018	0.018

Nota: Garis Panduan Kualiti Udara Malaysia: O₃ tidak melebihi 0.1 ppmNote Malaysian Ambient Air Quality Guidelines: O₃ not exceeding 0.1 ppm**Sumber: Jabatan Alam Sekitar**

Source: Department of Environment

Jadual 1.29: Purata bulanan kepekatan Karbon Monoksida (CO) di udara, Malaysia, 2018-2022

Table 1.29: Monthly average concentration of Carbon Monoxide (CO) in the air, Malaysia, 2018-2022

													ppm
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Johor													
Batu Pahat	2018	0.530	0.577	0.621	0.755	0.706	0.822	0.720	0.710	0.578	0.605	0.639	0.620
	2019	0.601	0.558	0.682	0.548	0.615	0.467	0.630	0.728	0.845	0.577	0.452	0.454
	2020	0.550	0.516	0.541	0.515	0.498	0.450	0.498	0.483	0.410	0.646	0.566	0.573
	2021	0.481	0.554	0.553	0.604	0.502	0.508	0.544	0.590	0.571	0.551	0.356	0.429
	2022	0.500	0.442	0.416	0.481	0.503	0.450	0.477	0.452	0.476	0.412	0.453	0.499
Kota Tinggi	2018	0.575	0.547	0.558	0.580	0.569	0.601	0.566	0.591	0.529	0.588	0.557	0.591
	2019	0.548	0.539	0.473	0.505	0.378	0.614	0.612	0.545	0.761	0.581	0.554	0.422
	2020	0.429	0.372	0.438	0.455	0.539	0.418	0.510	0.516	0.489	0.520	0.398	0.412
	2021	0.427	0.397	0.351	0.492	0.466	0.368	0.326	0.313	0.432	0.400	0.398	0.263
	2022	0.311	0.269	0.301	0.413	0.316	0.303	0.294	0.289	0.431	0.439	0.418	0.440
Larkin	2018	0.619	0.739	0.746	0.801	0.849	0.963	0.772	0.754	0.857	0.811	0.835	0.572
	2019	0.644	0.671	0.704	0.830	0.946	0.783	0.789	0.498	0.801	0.825	0.811	0.491
	2020	0.355	0.375	0.372	0.328	0.356	0.509	0.350	0.371	0.353	0.400	0.317	0.267
	2021	0.217	0.189	0.280	0.381	0.412	0.571	0.503	0.506	0.450	0.396	0.680	0.558
	2022	0.579	0.532	0.625	0.706	0.640	0.766	0.645	0.700	0.723	0.656	0.610	0.586
Pasir Gudang	2018	0.610	0.566	0.626	0.712	0.904	0.821	0.722	0.673	0.820	0.841	0.771	0.737
	2019	0.610	0.612	0.701	0.845	0.829	0.740	0.649	0.512	0.742	0.731	0.733	0.590
	2020	0.410	0.511	0.503	0.449	0.584	0.688	0.588	0.594	0.629	0.638	0.700	0.650
	2021	0.513	0.566	0.610	0.764	0.679	0.578	0.460	0.549	0.505	0.491	0.587	0.554
	2022	0.446	0.327	0.365	0.486	0.589	0.576	0.503	0.524	0.592	0.588	0.704	0.604
Segamat	2018	0.699	0.786	0.765	0.862	0.739	0.682	0.675	0.737	0.752	0.694	0.713	0.605
	2019	0.743	0.605	0.838	0.549	0.684	0.588	0.646	0.754	1.014	0.632	0.696	0.642
	2020	0.637	0.643	0.540	0.520	0.487	0.550	0.517	0.585	0.499	0.448	0.685	0.635
	2021	0.660	0.562	0.625	0.615	0.627	0.578	0.670	0.527	0.612	0.584	0.544	0.652
	2022	0.482	0.538	0.581	0.588	0.550	0.645	0.608	0.575	0.573	0.608	0.529	0.531
Tangkak	2018	-	-	-	-	-	-	-	-	-	-	-	-
	2019	0.255	0.483	0.707	0.419	0.567	0.448	0.577	0.679	0.923	0.685	0.637	0.464
	2020	0.644	0.585	0.685	0.520	0.539	0.480	0.361	0.479	0.304	0.293	0.371	0.517
	2021	0.633	0.681	0.620	0.644	0.581	0.699	0.417	0.543	0.562	0.682	0.606	0.547
	2022	0.539	0.536	0.639	0.623	0.511	0.335	0.543	0.493	0.601	0.522	0.509	0.624
Kedah													
Alor Setar	2018	0.621	0.709	0.552	0.646	0.657	0.611	0.616	0.582	0.590	0.638	0.472	0.574
	2019	0.654	0.438	0.522	0.498	0.401	0.519	0.516	0.635	0.720	0.442	0.403	0.379
	2020	0.330	0.356	0.510	0.443	0.401	0.403	0.482	0.463	0.435	0.460	0.447	0.530
	2021	0.463	0.428	0.404	0.476	0.386	0.378	0.427	0.351	0.398	0.459	0.483	0.394
	2022	0.407	0.294	0.395	0.504	0.444	0.441	0.582	0.444	0.462	0.463	0.463	0.433

Jadual 1.29: Purata bulanan kepekatan Karbon Monoksida (CO) di udara, Malaysia, 2018-2022 (samb.)

Table 1.29: Monthly average concentration of Carbon Monoxide (CO) in the air, Malaysia, 2018-2022 (cont'd)

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
ppm													
Kedah													
Langkawi	2018	0.679	0.645	0.637	0.624	0.637	0.785	0.836	0.727	0.618	0.393	0.518	0.532
	2019	0.535	0.448	0.581	0.575	0.593	0.518	0.428	0.421	0.581	0.455	0.468	0.360
	2020	0.310	0.302	0.365	0.304	0.260	0.361	0.375	0.498	0.442	0.508	0.415	0.350
	2021	0.330	0.403	0.384	0.482	0.383	0.376	0.395	0.344	0.370	0.416	0.469	0.452
	2022	0.497	0.397	0.501	0.454	0.386	0.415	0.506	0.474	0.416	0.466	0.487	0.412
Sungai Petani	2018	0.825	0.815	0.725	0.769	0.720	0.806	0.825	0.916	0.545	0.811	0.822	0.711
	2019	0.754	0.721	0.786	0.713	0.742	0.709	0.741	0.797	0.900	0.734	0.676	0.518
	2020	0.493	0.599	0.381	0.341	0.359	0.549	0.568	0.621	0.476	0.593	0.606	0.613
	2021	0.544	0.570	0.635	0.628	0.622	0.544	0.525	0.560	0.578	0.636	0.612	0.679
	2022	0.623	0.512	0.482	0.657	0.596	0.563	0.694	0.670	0.592	0.657	0.671	0.539
Kelantan													
Kota Bharu	2018	0.627	0.748	0.675	0.687	0.751	0.590	0.602	0.512	0.660	0.651	0.653	0.692
	2019	0.524	0.405	0.564	0.467	0.482	0.439	0.615	0.729	0.695	0.431	0.476	0.474
	2020	0.420	0.420	0.414	0.351	0.378	0.397	0.506	0.557	0.464	0.396	0.463	0.708
	2021	0.450	0.449	0.586	0.261	0.295	0.213	0.328	0.355	0.330	0.345	0.313	0.456
	2022	0.487	0.302	0.335	0.426	0.553	0.563	0.545	0.670	0.773	0.813	0.804	0.739
Tanah Merah	2018	0.525	0.535	0.552	0.512	0.607	0.571	0.566	0.595	0.383	0.370	0.517	0.442
	2019	0.767	0.720	0.824	0.788	0.642	0.622	0.645	0.628	0.681	0.547	0.607	0.700
	2020	0.708	0.620	0.628	0.602	0.449	0.514	0.527	0.546	0.607	0.500	0.643	0.840
	2021	0.728	0.757	0.809	0.719	0.568	0.492	0.466	0.411	0.681	0.680	0.687	0.814
	2022	0.919	0.601	0.756	0.641	0.684	0.594	0.718	0.560	0.467	0.696	0.593	0.749
Melaka													
Bandaraya Melaka	2018	0.537	0.567	0.597	0.608	0.399	0.565	0.537	0.466	0.382	0.538	0.489	0.477
	2019	0.528	0.432	0.408	0.463	0.515	0.379	0.387	0.377	0.759	0.726	0.756	0.517
	2020	0.484	0.410	0.525	0.469	0.549	0.632	0.619	0.472	0.580	0.447	0.425	0.740
	2021	0.564	0.498	0.453	0.628	0.422	0.459	0.575	0.677	0.647	0.636	0.605	0.396
	2022	0.522	0.609	0.744	0.676	0.585	0.450	0.628	0.640	0.692	0.767	0.645	0.641
Bukit Rambai	2018	0.633	0.637	0.711	0.663	0.698	0.491	0.480	0.536	0.383	0.506	0.531	0.572
	2019	0.611	0.600	0.763	0.648	0.673	0.585	0.676	0.813	1.020	0.543	0.479	0.452
	2020	0.424	0.500	0.483	0.428	0.566	0.654	0.586	1.021	1.041	1.029	0.925	0.981
	2021	0.689	0.701	0.597	0.570	0.482	0.555	0.614	0.670	0.796	0.689	0.628	0.757
	2022	0.572	0.568	0.710	0.816	0.787	0.793	0.585	0.740	0.643	0.467	0.367	0.524
Negeri Sembilan													
Nilai	2018	0.623	0.497	0.603	0.575	0.602	0.659	0.696	0.649	0.650	0.639	0.675	0.613
	2019	0.563	0.517	0.685	0.686	0.613	0.566	0.682	0.879	1.184	0.667	0.545	0.477
	2020	0.654	0.468	0.458	0.372	0.486	0.616	0.559	0.511	0.434	0.533	0.566	0.670
	2021	0.505	0.500	0.532	0.607	0.522	0.471	0.466	0.435	0.492	0.582	0.486	0.427
	2022	0.646	0.467	0.492	0.581	0.605	0.728	0.752	0.684	0.619	0.536	0.623	0.481

Jadual 1.29: Purata bulanan kepekatan Karbon Monoksida (CO) di udara, Malaysia, 2018-2022 (samb.)

Table 1.29: Monthly average concentration of Carbon Monoxide (CO) in the air, Malaysia, 2018-2022 (cont'd)

													ppm
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Negeri Sembilan													
Port Dickson	2018	0.590	0.638	0.633	0.639	0.467	0.518	0.624	0.588	0.608	0.603	0.558	0.513
	2019	0.587	0.556	0.719	0.575	0.484	0.466	0.566	0.679	0.765	0.501	0.483	0.428
	2020	0.485	0.492	0.558	0.495	0.537	0.476	0.519	0.448	0.436	0.362	0.305	0.336
	2021	0.329	0.333	0.462	0.505	0.526	0.459	0.487	0.478	0.484	0.475	0.542	0.556
	2022	0.480	0.507	0.549	0.500	0.589	0.556	0.574	0.522	0.561	0.495	0.443	0.583
Seremban	2018	0.851	0.669	0.686	0.776	0.820	0.675	0.700	0.712	0.680	0.679	0.657	0.710
	2019	0.696	0.628	0.696	0.647	0.699	0.651	0.703	0.785	0.948	0.594	0.612	0.511
	2020	0.542	0.548	0.547	0.503	0.527	0.570	0.588	0.588	0.585	0.532	0.525	0.679
	2021	0.601	0.612	0.532	0.584	0.529	0.608	0.617	0.527	0.651	0.671	0.671	0.638
	2022	0.622	0.560	0.617	0.611	0.612	0.614	0.661	0.621	0.612	0.600	0.589	0.603
Pahang													
Jerantut	2018	0.560	0.509	0.550	0.507	0.460	0.603	0.629	0.581	0.588	0.552	0.569	0.536
	2019	0.417	0.367	0.434	0.467	0.391	0.375	0.472	0.424	0.550	0.379	0.378	0.363
	2020	0.310	0.352	0.336	0.362	0.364	0.311	0.311	0.391	0.395	0.319	0.311	0.332
	2021	0.375	0.349	0.326	0.340	0.348	0.377	0.354	0.350	0.348	0.408	0.300	0.297
	2022	0.254	0.304	0.353	0.398	0.433	0.297	0.407	0.440	0.518	0.347	0.323	0.336
Kuantan	2018	-	-	-	-	-	-	-	-	-	-	-	-
	2019	0.510	0.442	0.472	0.520	0.512	0.572	0.508	0.682	0.693	0.548	0.433	0.302
	2020	0.397	0.424	0.394	0.398	0.368	0.425	0.429	0.476	0.464	0.423	0.363	0.479
	2021	0.434	0.468	0.391	0.447	0.417	0.406	0.381	0.369	0.399	0.396	0.288	0.406
	2022	0.434	0.440	0.408	0.489	0.508	0.440	0.499	0.405	0.496	0.500	0.465	0.383
Temerloh	2018	0.449	0.538	0.502	0.507	0.495	0.479	0.510	0.448	0.398	0.355	0.345	0.312
	2019	0.490	0.522	0.499	0.460	0.357	0.437	0.424	0.645	0.782	0.522	0.500	0.527
	2020	0.537	0.604	0.451	0.366	0.381	0.398	0.383	0.435	0.345	0.388	0.365	0.518
	2021	0.533	0.491	0.409	0.417	0.393	0.368	0.371	0.376	0.353	0.408	0.383	0.429
	2022	0.456	0.485	0.468	0.477	0.535	0.450	0.525	0.491	0.415	0.579	0.555	0.482
Perak													
Pegoh, Ipoh	2018	0.596	0.674	0.518	0.593	0.657	0.568	0.558	0.670	0.613	0.588	0.573	0.611
	2019	0.670	0.550	0.620	0.594	0.519	0.514	0.563	0.682	0.850	0.577	0.611	0.519
	2020	0.487	0.549	0.372	0.372	0.316	0.467	0.492	0.575	0.454	0.433	0.393	0.538
	2021	0.623	0.521	0.649	0.590	0.527	0.433	0.443	0.427	0.512	0.488	0.539	0.540
	2022	0.557	0.457	0.500	0.609	0.496	0.534	0.528	0.534	0.422	0.451	0.418	0.410
Taiping	2018	0.658	0.817	0.782	0.696	0.649	0.758	0.593	0.759	0.678	0.644	0.701	0.706
	2019	0.733	0.687	0.729	0.647	0.762	0.661	0.676	0.634	0.572	0.292	0.384	0.332
	2020	0.360	0.344	0.262	0.210	0.151	0.287	0.249	0.265	0.284	0.300	0.226	0.308
	2021	0.362	0.367	0.297	0.219	0.210	0.212	0.307	0.236	0.346	0.346	0.371	0.358
	2022	0.306	0.208	0.260	0.206	0.304	0.244	0.319	0.331	0.330	0.288	0.271	0.277

Jadual 1.29: Purata bulanan kepekatan Karbon Monoksida (CO) di udara, Malaysia, 2018-2022 (samb.)

Table 1.29: Monthly average concentration of Carbon Monoxide (CO) in the air, Malaysia, 2018-2022 (cont'd)

													ppm
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Perak													
Tanjung Malim	2018	0.657	0.556	0.557	0.608	0.580	0.550	0.560	0.589	0.558	0.600	0.604	0.607
	2019	0.543	0.544	0.599	0.572	0.595	0.573	0.514	0.668	0.797	0.508	0.561	0.556
	2020	0.485	0.518	0.513	0.413	0.472	0.505	0.459	0.577	0.510	0.456	0.478	0.555
	2021	0.520	0.466	0.382	0.426	0.533	0.482	0.509	0.558	0.485	0.527	0.479	0.600
	2022	0.575	0.491	0.553	0.593	0.557	0.553	0.498	0.541	0.509	0.411	0.392	0.365
Tasek, Ipoh	2018	0.736	0.760	0.612	0.715	0.664	0.577	0.663	0.743	0.559	0.554	0.536	0.578
	2019	0.710	0.495	0.616	0.622	0.611	0.658	0.649	0.782	0.968	0.627	0.694	0.650
	2020	0.715	0.556	0.556	0.469	0.495	0.568	0.548	0.501	0.470	0.576	0.516	0.652
	2021	0.555	0.554	0.657	0.584	0.498	0.512	0.494	0.460	0.544	0.501	0.531	0.610
	2022	0.611	0.593	0.530	0.638	0.482	0.387	0.630	0.576	0.519	0.444	0.539	0.561
Perlis													
Kangar	2018	0.494	0.506	0.467	0.514	0.522	0.499	0.537	0.573	0.451	0.467	0.426	0.343
	2019	0.487	0.428	0.516	0.512	0.506	0.505	0.532	0.617	0.729	0.493	0.465	0.435
	2020	0.450	0.437	0.437	0.433	0.460	0.493	0.523	0.500	0.476	0.362	0.428	0.452
	2021	0.456	0.410	0.371	0.376	0.363	0.336	0.385	0.358	0.378	0.451	0.400	0.519
	2022	0.445	0.409	0.369	0.424	0.407	0.442	0.437	0.379	0.379	0.395	0.435	0.450
Pulau Pinang													
Balik Pulau	2018	0.550	0.597	0.514	0.506	0.464	0.490	0.508	0.488	0.475	0.495	0.477	0.492
	2019	0.515	0.533	0.518	0.476	0.418	0.447	0.517	0.566	0.768	0.495	0.495	0.441
	2020	0.524	0.468	0.527	0.398	0.473	0.560	0.517	0.500	0.505	0.467	0.491	0.552
	2021	0.557	0.604	0.469	0.473	0.403	0.425	0.433	0.354	0.399	0.503	0.504	0.525
	2022	0.589	0.556	0.373	0.430	0.421	0.278	0.417	0.346	0.396	0.480	0.596	0.478
Perai	2018	0.867	0.876	0.829	0.866	0.683	0.679	0.712	0.724	0.687	0.708	0.805	0.774
	2019	0.730	0.692	0.730	0.720	0.704	0.646	0.739	0.840	1.021	0.711	0.738	0.584
	2020	0.644	0.592	0.638	0.473	0.576	0.582	0.732	0.819	0.746	0.808	0.705	0.715
	2021	0.711	0.640	0.604	0.681	0.716	0.593	0.555	0.586	0.617	0.706	0.609	0.655
	2022	0.650	0.633	0.629	0.773	0.623	0.685	0.678	0.608	0.489	0.397	0.454	0.420
Seberang Jaya	2018	0.941	0.928	0.887	0.796	0.818	0.814	0.873	0.985	0.877	0.909	0.939	1.027
	2019	0.960	0.849	0.943	0.920	0.982	0.811	0.975	1.071	1.316	1.012	1.025	0.948
	2020	0.894	0.771	0.722	0.547	0.573	0.620	0.663	0.755	0.764	0.820	0.626	0.556
	2021	0.482	0.364	0.772	0.749	0.617	0.594	0.727	0.535	0.736	0.745	0.630	0.911
	2022	0.931	0.714	0.649	0.826	0.788	0.747	0.855	0.805	0.845	0.789	0.662	0.683
USM	2018	-	-	0.733	0.758	0.658	0.697	0.583	0.672	0.585	0.607	0.728	0.722
	2019	0.748	0.537	0.613	0.656	0.658	0.574	0.600	0.602	0.833	0.647	0.543	0.535
	2020	0.588	0.573	0.566	0.456	0.525	0.453	0.582	0.527	0.597	0.546	0.564	0.717
	2021	0.639	0.689	0.466	0.375	0.554	0.475	0.393	0.384	0.569	0.530	0.477	0.696
	2022	0.566	0.483	0.453	0.434	0.435	0.424	0.453	0.495	0.447	0.411	0.572	0.486

Jadual 1.29: Purata bulanan kepekatan Karbon Monoksida (CO) di udara, Malaysia, 2018-2022 (samb.)

Table 1.29: Monthly average concentration of Carbon Monoxide (CO) in the air, Malaysia, 2018-2022 (cont'd)

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Sabah													
Keningau	2018	0.486	0.477	0.663	0.673	0.632	0.565	0.651	0.651	0.691	0.680	0.626	0.633
	2019	0.584	0.581	0.665	0.612	0.687	0.577	0.703	0.688	0.823	0.614	0.536	0.684
	2020	0.665	0.630	0.690	0.635	0.649	0.665	0.610	0.557	0.599	0.618	0.596	0.594
	2021	0.592	0.608	0.596	0.649	0.619	0.635	0.623	0.385	0.618	0.606	0.618	0.584
	2022	0.568	0.611	0.617	0.648	0.431	0.439	0.311	0.321	0.600	0.518	0.574	0.580
Kimanis	2018	0.598	0.477	0.533	0.589	0.602	0.590	0.630	0.685	0.651	0.720	0.695	0.650
	2019	-	-	-	-	-	-	-	-	-	-	-	-
	2020	-	-	-	-	-	-	-	-	-	-	-	-
	2021	-	-	-	-	-	-	-	-	-	-	-	-
	2022	-	-	-	-	-	-	-	-	-	-	-	-
Kota Kinabalu	2018	-	-	-	-	-	-	-	-	-	-	-	-
	2019	0.352	0.412	0.448	0.391	0.267	0.237	0.262	0.541	0.735	0.337	0.349	0.389
	2020	0.359	0.497	0.531	0.558	0.564	0.332	0.411	0.494	0.326	0.264	0.228	0.241
	2021	0.337	0.445	0.347	0.478	0.231	0.214	0.331	0.390	0.390	0.355	0.303	0.315
	2022	0.198	0.371	0.373	0.484	0.412	0.278	0.250	0.217	0.146	0.210	0.166	0.182
Sandakan	2018	0.773	0.875	0.861	0.730	0.737	0.383	0.468	0.483	0.261	0.223	0.231	0.233
	2019	0.527	0.470	0.514	0.522	0.573	0.496	0.491	0.519	0.670	0.500	0.459	0.483
	2020	0.478	0.488	0.568	0.435	0.567	0.558	0.554	0.537	0.524	0.519	0.542	0.600
	2021	0.493	0.443	0.397	0.453	0.528	0.478	0.512	0.451	0.470	0.625	0.570	0.584
	2022	0.656	0.608	0.626	0.612	0.556	0.580	0.567	0.544	0.570	0.584	0.568	0.616
Tawau	2018	0.476	0.573	0.502	0.538	0.445	0.463	0.540	0.510	0.508	0.535	0.496	0.535
	2019	0.650	0.615	0.621	0.670	0.697	0.649	0.599	0.673	0.778	0.640	0.696	0.661
	2020	0.593	0.585	0.540	0.636	0.536	0.553	0.664	0.732	0.678	0.630	0.682	0.679
	2021	0.656	0.601	0.681	0.698	0.533	0.456	0.555	0.389	0.386	0.523	0.385	0.421
	2022	0.487	0.462	0.406	0.428	0.501	0.531	0.513	0.583	0.525	0.538	0.601	0.652
Sarawak													
Bintulu	2018	-	-	-	-	-	-	-	-	-	-	-	-
	2019	0.544	0.531	0.482	0.522	0.550	0.475	0.493	0.578	0.677	0.434	0.517	0.412
	2020	0.441	0.352	0.432	0.436	0.448	0.420	0.344	0.450	0.421	0.387	0.376	0.373
	2021	0.364	0.351	0.353	0.38	0.398	0.394	0.459	0.372	0.356	0.461	0.506	0.447
	2022	0.420	0.428	0.423	0.523	0.430	0.393	0.438	0.577	0.364	0.420	0.312	0.386
Kuching	2018	0.629	0.607	0.396	0.571	0.481	0.575	0.482	0.480	0.532	0.374	0.538	0.311
	2019	0.413	0.547	0.731	0.654	0.648	0.582	0.735	0.972	1.706	0.920	0.884	0.789
	2020	0.543	0.557	0.548	0.515	0.664	0.600	0.586	0.694	0.606	0.656	0.677	0.732
	2021	0.710	0.640	0.468	0.645	0.526	0.350	0.502	0.297	0.381	0.299	0.400	0.260
	2022	0.367	0.303	0.344	0.416	0.332	0.316	0.341	0.239	0.322	0.407	0.407	0.340
Miri	2018	-	-	-	-	-	-	-	-	-	-	-	-
	2019	0.601	0.623	0.528	0.785	0.520	0.477	0.577	0.616	0.887	0.559	0.584	0.502
	2020	0.549	0.596	0.522	0.533	0.573	0.641	0.466	0.506	0.598	0.690	0.494	0.537
	2021	0.543	0.474	0.474	0.484	0.485	0.429	0.573	0.477	0.431	0.403	0.494	0.482
	2022	0.521	0.462	0.441	0.485	0.435	0.392	0.505	0.495	0.585	0.493	0.604	0.530

Jadual 1.29: Purata bulanan kepekatan Karbon Monoksida (CO) di udara, Malaysia, 2018-2022 (samb.)

Table 1.29: Monthly average concentration of Carbon Monoxide (CO) in the air, Malaysia, 2018-2022 (cont'd)

Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Sarawak													
	2018	-	-	-	-	-	-	-	-	-	-	-	-
	2019	0.557	0.554	0.624	0.720	0.678	0.538	0.709	0.719	1.068	0.362	0.587	0.570
Sibu	2020	0.448	0.286	0.240	0.253	0.316	0.351	0.572	0.556	0.598	0.458	0.582	0.502
	2021	0.233	0.291	0.333	0.384	0.450	0.430	0.471	0.358	0.443	0.441	0.531	0.490
	2022	0.525	0.432	0.520	0.392	0.443	0.364	0.404	0.372	0.422	0.461	0.434	0.387
Selangor													
	2018	0.600	0.658	0.522	0.642	0.701	0.663	0.751	0.748	0.683	0.791	0.570	0.698
	2019	0.691	0.574	0.901	0.583	0.612	0.644	0.622	0.879	0.961	0.636	0.707	0.617
Banting	2020	0.704	0.572	0.634	0.490	0.465	0.455	0.618	0.811	0.565	0.666	0.678	0.723
	2021	0.601	0.667	0.671	0.750	0.642	0.459	0.541	0.532	0.389	0.551	0.456	0.443
	2022	0.424	0.393	0.455	0.488	0.487	0.484	0.531	0.459	0.412	0.450	0.439	0.273
	2018	0.888	1.084	1.090	1.024	0.984	0.919	0.944	1.017	1.033	1.063	0.972	1.158
	2019	1.066	1.050	1.218	1.115	1.090	0.838	0.744	1.073	1.287	1.041	1.078	0.975
Klang	2020	0.942	0.922	0.806	0.586	0.678	0.779	0.794	0.843	0.782	0.711	0.707	0.892
	2021	0.788	0.801	0.809	0.805	0.813	0.641	0.792	0.751	0.714	0.934	0.751	0.717
	2022	0.887	0.807	0.671	0.822	0.720	0.826	0.862	0.619	0.630	0.541	0.561	0.505
	2018	1.370	1.159	1.232	1.374	1.383	1.022	1.115	0.811	1.174	1.115	1.132	1.310
	2019	1.288	1.061	1.127	1.250	1.116	1.089	1.044	1.209	1.396	1.284	1.312	1.308
Petaling Jaya	2020	1.262	1.206	0.889	0.636	0.778	0.927	1.013	0.992	0.964	1.090	1.147	1.400
	2021	0.872	0.623	0.591	0.632	0.540	0.905	0.893	0.933	1.039	1.126	0.753	0.905
	2022	1.006	0.890	0.821	0.740	0.643	0.635	0.556	0.471	0.488	0.410	0.409	0.652
	2018	0.986	0.959	1.064	1.041	1.004	0.862	1.051	0.916	0.938	0.949	0.977	0.945
	2019	0.896	0.780	0.921	0.855	0.724	0.750	0.924	0.989	1.268	0.956	0.917	0.895
Shah Alam	2020	0.835	0.735	0.777	0.603	0.608	0.749	0.852	0.760	0.770	0.669	0.655	0.804
	2021	0.750	0.650	0.657	0.645	0.778	0.533	0.594	0.672	0.662	0.684	0.658	0.788
	2022	0.699	0.518	0.475	0.433	0.397	0.402	0.464	0.436	0.446	0.547	0.791	0.887
Terengganu													
	2018	0.559	0.699	0.652	0.607	0.630	0.513	0.522	0.570	0.419	0.563	0.602	0.642
	2019	0.509	0.493	0.427	0.475	0.509	0.360	0.469	0.486	0.590	0.683	0.576	0.458
Besut	2020	0.459	0.501	0.599	0.501	0.389	0.395	0.350	0.436	0.381	0.327	0.356	0.549
	2021	0.537	0.519	0.517	0.504	0.508	0.450	0.487	0.398	0.365	0.440	0.432	0.489
	2022	0.435	0.458	0.497	0.462	0.320	0.439	0.483	0.404	0.384	0.249	0.221	0.359
	2018	0.393	0.436	0.409	0.402	0.447	0.537	0.563	0.501	0.454	0.387	0.485	0.434
	2019	0.591	0.598	0.672	0.518	0.569	0.613	0.611	0.630	0.643	0.495	0.466	0.413
Kuala Terengganu	2020	0.475	0.460	0.522	0.477	0.494	0.457	0.451	0.475	0.519	0.556	0.587	0.605
	2021	0.507	0.580	0.577	0.636	0.613	0.372	0.523	0.564	0.505	0.536	0.546	0.475
	2022	0.600	0.603	0.611	0.612	0.584	0.602	0.722	0.563	0.549	0.480	0.692	0.698

Jadual 1.29: Purata bulanan kepekatan Karbon Monoksida (CO) di udara, Malaysia, 2018-2022 (samb.)

Table 1.29: Monthly average concentration of Carbon Monoxide (CO) in the air, Malaysia, 2018-2022 (cont'd)

													ppm
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Wilayah Persekutuan													
Batu Muda, Kuala Lumpur	2018	1.055	0.858	0.971	1.054	1.132	0.884	0.999	0.947	0.945	0.986	0.937	0.861
	2019	0.839	0.832	0.909	1.054	0.933	0.860	1.018	1.151	1.379	0.906	1.074	0.776
	2020	0.732	0.923	0.992	0.864	0.751	0.951	0.966	1.034	1.080	0.828	1.023	1.112
	2021	0.779	0.631	0.724	0.818	0.737	0.525	0.579	0.726	0.903	0.915	0.847	0.847
	2022	0.939	0.700	0.758	0.879	0.967	0.822	0.434	0.527	0.732	0.497	0.674	0.511
Cheras, Kuala Lumpur	2018	0.979	0.743	0.839	0.899	0.854	0.733	0.772	0.795	0.933	0.823	0.853	0.903
	2019	0.841	0.666	0.829	0.903	0.667	0.803	0.773	0.848	1.057	0.898	0.922	0.795
	2020	0.712	0.680	0.679	0.559	0.602	0.648	0.788	0.726	0.749	0.726	0.820	0.998
	2021	0.932	0.856	0.979	0.857	0.846	0.698	0.739	0.860	0.687	0.824	0.951	0.964
	2022	1.004	0.982	0.969	1.060	0.817	0.584	0.657	0.916	0.973	0.980	1.041	0.720
Labuan	2018	-	-	-	-	-	-	-	-	-	-	-	-
	2019	0.532	0.521	0.606	0.448	0.488	0.515	0.487	0.642	0.772	0.514	0.544	0.630
	2020	0.375	0.618	0.618	0.591	0.602	0.612	0.486	0.695	0.637	0.621	0.658	0.596
	2021	0.588	0.616	0.542	0.549	0.508	0.673	0.677	0.612	0.690	0.668	0.617	0.691
	2022	0.677	0.639	0.638	0.558	0.597	0.595	0.601	0.366	0.278	0.230	0.291	0.269
Putrajaya	2018	0.689	0.646	0.534	0.617	0.640	0.590	0.633	0.663	0.604	0.611	0.598	0.650
	2019	0.641	0.542	0.595	0.645	0.613	0.548	0.628	0.692	0.938	0.652	0.699	0.580
	2020	0.582	0.528	0.623	0.470	0.474	0.317	0.510	0.550	0.520	0.569	0.608	0.688
	2021	0.574	0.610	0.819	0.871	0.882	0.728	0.794	0.747	0.754	0.854	0.789	0.846
	2022	0.874	0.791	0.912	0.940	0.683	0.647	0.384	0.246	0.616	0.364	0.311	0.263

Nota: Garis Panduan Kualiti Udara Malaysia: CO tidak melebihi 9 ppm

Notes: Malaysian Ambient Air Quality Guidelines: CO not exceeding 9 ppm

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

Jadual 1.30: Purata bulanan kepekatan Sulfur Dioksida (SO₂) di udara, Malaysia, 2018-2022Table 1.30: Monthly average concentration of Sulphur Dioxide (SO₂) in the air, Malaysia, 2018-2022

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Johor													
Batu Pahat	2018	0.0011	0.0021	0.0013	0.0014	0.0010	0.0012	0.0016	0.0017	0.0016	0.0015	0.0010	0.0009
	2019	0.0015	0.0019	0.0014	0.0013	0.0015	0.0012	0.0019	0.0021	0.0014	0.0016	0.0015	0.0013
	2020	0.0015	0.0017	0.0019	0.0019	0.0019	0.0015	0.0018	0.0019	0.0018	0.0015	0.0016	0.0019
	2021	0.0018	0.002	0.0018	0.0019	0.0019	0.0014	0.0015	0.0017	0.002	0.001	0.0012	0.0013
	2022	0.0014	0.0016	0.0017	0.0016	0.0018	0.0017	0.0013	0.0016	0.0013	0.0017	0.0013	0.0016
Kota Tinggi	2018	0.0014	0.0013	0.0012	0.0011	0.0013	0.0015	0.0012	0.0010	0.0009	0.0011	0.0011	0.0009
	2019	0.0014	0.0013	0.0014	0.0012	0.0014	0.0011	0.0006	0.0008	0.0008	0.0009	0.0009	0.0012
	2020	0.0013	0.0012	0.0009	0.0011	0.0013	0.0013	0.0009	0.0010	0.0012	0.0015	0.0008	0.0010
	2021	0.0009	0.0012	0.0008	0.0010	0.0010	0.0015	0.0012	0.0012	0.0009	0.0012	0.0016	0.0015
	2022	0.0013	0.0012	0.0012	0.0010	0.0009	0.0015	0.0011	0.0014	0.0017	0.0014	0.0015	0.0010
Larkin	2018	0.0008	0.0007	0.0009	0.0008	0.0018	0.0012	0.0015	0.0020	0.0021	0.0010	0.0012	0.0011
	2019	0.0014	0.0012	0.0015	0.0015	0.0021	0.0024	0.0019	0.0022	0.0023	0.0018	0.0015	0.0012
	2020	0.0015	0.0016	0.0018	0.0019	0.0020	0.0014	0.0012	0.0017	0.0020	0.0021	0.0019	0.0020
	2021	0.0021	0.0021	0.0018	0.0019	0.0018	0.0019	0.0024	0.0019	0.0019	0.0018	0.0017	0.0017
	2022	0.0018	0.0021	0.0023	0.0023	0.0024	0.0021	0.0005	0.0012	0.0022	0.0022	0.0023	0.0024
Pasir Gudang	2018	0.0008	0.0008	0.0007	0.0009	0.0019	0.0027	0.0024	0.0022	0.0024	0.0016	0.0015	0.0009
	2019	0.0008	0.0008	0.0014	0.0015	0.0019	0.0020	0.0018	0.0019	0.0018	0.0017	0.0015	0.0009
	2020	0.0009	0.0010	0.0010	0.0011	0.0011	0.0010	0.0010	0.0011	0.0012	0.0013	0.0012	0.0012
	2021	0.0013	0.0014	0.0015	0.0015	0.0013	0.0013	0.0015	0.0011	0.0013	0.0021	0.0012	0.0011
	2022	0.0011	0.0011	0.0012	0.0012	0.0013	0.0015	0.0012	0.0010	0.0009	0.0009	0.0015	0.0018
Pengerang	2018	0.0014	0.0017	0.0016	0.0007	0.0011	0.0010	0.0011	0.0014	0.0013	0.0019	0.0012	0.0007
	2019	0.0012	0.0012	0.0013	0.0012	0.0012	0.0010	0.0022	0.0040	0.0016	0.0012	0.0015	0.0011
	2020	0.0010	0.0010	0.0014	0.0015	0.0015	0.0015	0.0015	0.0011	0.0010	0.0012	0.0014	0.0017
	2021	0.0010	0.0025	0.0015	0.0012	0.0010	0.0012	0.0014	0.0015	0.0016	0.0012	0.0015	0.0011
	2022	0.0013	0.0013	0.0011	0.0014	0.0013	0.0010	0.0010	0.0013	0.0013	0.0010	0.0013	0.0008
Segamat	2018	0.0007	0.0007	0.0003	0.0013	0.0007	0.0010	0.0010	0.0013	0.0011	0.0010	0.0007	0.0009
	2019	0.0011	0.0008	0.0015	0.0020	0.0019	0.0024	0.0022	0.0027	0.0021	0.0014	0.0013	0.0015
	2020	0.0009	0.0014	0.0012	0.0014	0.0012	0.0017	0.0020	0.0023	0.0025	0.0019	0.0012	0.0026
	2021	0.0023	0.0023	0.0023	0.0031	0.0031	0.0032	0.0011	0.0009	0.0013	0.0014	0.0023	0.0023
	2022	0.0019	0.0018	0.0020	0.0021	0.0018	0.0020	0.0015	0.0020	0.0022	0.0024	0.0025	0.0018
Tangkak	2018	-	-	-	-	-	-	-	-	-	-	-	-
	2019	0.0009	0.0010	0.0011	0.0015	0.0017	0.0011	0.0020	0.0012	0.0013	0.0011	0.0011	0.0009
	2020	0.0013	0.0012	0.0009	0.0009	0.0010	0.0010	0.0009	0.0012	0.0015	0.0012	0.0009	0.0011
	2021	0.0012	0.0015	0.0015	0.0013	0.0009	0.0014	0.0013	0.0011	0.0016	0.0018	0.0017	0.0009
	2022	0.0010	0.0014	0.0016	0.0011	0.0015	0.0016	0.0015	0.0020	0.0015	0.0012	0.0018	0.0018

Jadual 1.30: Purata bulanan kepekatan Sulfur Dioksida (SO₂) di udara, Malaysia, 2018-2022 (samb.)

Table 1.30: Monthly average concentration of Sulphur Dioxide (SO₂) in the air, Malaysia, 2018-2022 (cont'd)

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Kedah													
Alor Setar	2018	0.0007	0.0005	0.0008	0.0009	0.0011	0.0011	0.0008	0.0008	0.0006	0.0006	0.0008	0.0005
	2019	0.0004	0.0004	0.0009	0.0006	0.0006	0.0005	0.0006	0.0007	0.0009	0.0010	0.0010	0.0010
	2020	0.0011	0.0008	0.0006	0.0005	0.0004	0.0007	0.0008	0.0010	0.0010	0.0006	0.0009	0.0011
	2021	0.0010	0.0011	0.0007	0.0005	0.0010	0.0011	0.0010	0.0008	0.0009	0.0009	0.0011	0.0011
	2022	0.0012	0.0011	0.0010	0.0008	0.0008	0.0010	0.0010	0.0006	0.0006	0.0010	0.0012	0.0011
Kulim	2018	0.0015	0.0012	0.0011	0.0008	0.0007	0.0007	0.0010	0.0013	0.0008	0.0008	0.0009	0.0008
	2019	0.0009	0.0011	0.0010	0.0008	0.0007	0.0008	0.0007	0.0006	0.0008	0.0010	0.0010	0.0011
	2020	0.0009	0.0009	0.0010	0.0010	0.0007	0.0008	0.0012	0.0011	0.0011	0.0011	0.0011	0.0006
	2021	0.0011	0.0013	0.0009	0.0010	0.0010	0.0008	0.0009	0.0008	0.0012	0.0014	0.0009	0.0007
	2022	0.0008	0.0004	0.0008	0.0007	0.0009	0.0011	0.0010	0.0012	0.0010	0.0011	0.0009	0.0018
Langkawi	2018	0.0008	0.0006	0.0008	0.0007	0.0006	0.0008	0.0011	0.0009	0.0010	0.0007	0.0008	0.0010
	2019	0.0009	0.0008	0.0006	0.0008	0.0009	0.0005	0.0006	0.0005	0.0006	0.0008	0.0011	0.0009
	2020	0.0008	0.0008	0.0009	0.0011	0.0013	0.0012	0.0011	0.0011	0.0010	0.0010	0.0008	0.0008
	2021	0.0012	0.0013	0.0011	0.0012	0.0008	0.0007	0.0009	0.0010	0.0011	0.0009	0.0010	0.0012
	2022	0.0011	0.0010	0.0010	0.0010	0.0009	0.0007	0.0009	0.0008	0.0008	0.0011	0.0011	0.0011
Sungai Petani	2018	0.0010	0.0008	0.0007	0.0007	0.0008	0.0008	0.0013	0.0013	0.0008	0.0009	0.0011	0.0013
	2019	0.0011	0.0010	0.0009	0.0008	0.0009	0.0012	0.0013	0.0013	0.0014	0.0015	0.0010	0.0013
	2020	0.0012	0.0007	0.0008	0.0007	0.0009	0.0013	0.0015	0.0015	0.0013	0.0014	0.0010	0.0011
	2021	0.0009	0.0011	0.0012	0.0011	0.0009	0.0011	0.0011	0.0010	0.0012	0.0013	0.0013	0.0011
	2022	0.0014	0.0010	0.0009	0.0009	0.0009	0.0011	0.0008	0.0010	0.0011	0.0011	0.0011	0.0012
Kelantan													
Kota Bharu	2018	0.0005	0.0006	0.0004	0.0004	0.0005	0.0006	0.0007	0.0004	0.0009	0.0007	0.0007	0.0004
	2019	0.0005	0.0008	0.0008	0.0010	0.0005	0.0009	0.0004	0.0006	0.0005	0.0008	0.0008	0.0008
	2020	0.0006	0.0011	0.0010	0.0009	0.0008	0.0010	0.0008	0.0006	0.0009	0.0005	0.0008	0.0012
	2021	0.0012	0.0013	0.0008	0.0008	0.0008	0.0007	0.0004	0.0007	0.0009	0.0006	0.0008	0.0010
	2022	0.0008	0.0006	0.0009	0.0009	0.0007	0.0009	0.0014	0.0010	0.0014	0.0013	0.0011	0.0008
Tanah Merah	2018	0.0009	0.0012	0.0020	0.0006	0.0007	0.0011	0.0005	0.0006	0.0007	0.0006	0.0005	0.0007
	2019	0.0006	0.0009	0.0008	0.0012	0.0005	0.0010	0.0010	0.0007	0.0008	0.0011	0.0007	0.0007
	2020	0.0009	0.0012	0.0009	0.0007	0.0007	0.0009	0.0008	0.0007	0.0006	0.0006	0.0007	0.0006
	2021	0.0007	0.0009	0.0009	0.0010	0.0008	0.0008	0.0007	0.0009	0.0009	0.0010	0.0013	0.0009
	2022	0.0011	0.0010	0.0011	0.0012	0.0009	0.0008	0.0007	0.0009	0.0012	0.0011	0.0011	0.0010
Melaka													
Bandaraya Melaka	2018	0.0021	0.0021	0.0018	0.0019	0.0013	0.0013	0.0015	0.0019	0.0021	0.0020	0.0021	0.0024
	2019	0.0016	0.0016	0.0019	0.0014	0.0013	0.0014	0.0022	0.0019	0.0022	0.0023	0.0025	0.0026
	2020	0.0011	0.0014	0.0009	0.0010	0.0015	0.0012	0.0021	0.0014	0.0015	0.0024	0.0026	0.0026
	2021	0.0028	0.0014	0.0011	0.0007	0.0011	0.0015	0.0011	0.0019	0.0023	0.0024	0.0032	0.0034
	2022	0.0020	0.0026	0.0026	0.0027	0.0020	0.0024	0.0019	0.0014	0.0015	0.0023	0.0026	0.0021

Jadual 1.30: Purata bulanan kepekatan Sulfur Dioksida (SO₂) di udara, Malaysia, 2018-2022 (samb.)

Table 1.30: Monthly average concentration of Sulphur Dioxide (SO₂) in the air, Malaysia, 2018-2022 (cont'd)

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Melaka													
Bukit Rambai	2018	0.0013	0.0011	0.0013	0.0013	0.0014	0.0015	0.0012	0.0014	0.0018	0.0022	0.0016	0.0019
	2019	0.0016	0.0021	0.0016	0.0014	0.0009	0.0007	0.0012	0.0011	0.0011	0.0017	0.0014	0.0014
	2020	0.0009	0.0016	0.0013	0.0012	0.0009	0.0007	0.0012	0.0011	0.0015	0.0018	0.0020	0.0019
	2021	0.0018	0.0020	0.0018	0.0012	0.0012	0.0018	0.0008	0.0010	0.0009	0.0018	0.0016	0.0020
	2022	0.0019	0.0014	0.0020	0.0016	0.0015	0.0011	0.0018	0.0010	0.0014	0.0015	0.0014	0.0014
Negeri Sembilan													
Nilai	2018	0.0009	0.0013	0.0010	0.0010	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0011	0.0012
	2019	0.0018	0.0013	0.0012	0.0017	0.0021	0.0010	0.0010	0.0038	0.0013	0.0010	0.0010	0.0010
	2020	0.0014	0.0008	0.0009	0.0009	0.0008	0.0012	0.0009	0.0013	0.0011	0.0009	0.0009	0.0010
	2021	0.0010	0.0012	0.0010	0.0013	0.0012	0.0012	0.0014	0.0008	0.0009	0.0010	0.0013	0.0014
	2022	0.0010	0.0009	0.0011	0.0013	0.0014	0.0014	0.0015	0.0019	0.0021	0.0019	0.0017	0.0016
Port Dickson	2018	0.0011	0.0011	0.0010	0.0012	0.0013	0.0014	0.0013	0.0011	0.0010	0.0013	0.0014	0.0015
	2019	0.0014	0.0018	0.0017	0.0015	0.0023	0.0011	0.0013	0.0021	0.0028	0.0016	0.0017	0.0011
	2020	0.0013	0.0025	0.0018	0.0009	0.0020	0.0013	0.0012	0.0014	0.0012	0.0017	0.0012	0.0011
	2021	0.0014	0.0014	0.0014	0.0012	0.0009	0.0012	0.0011	0.0011	0.0014	0.0016	0.0015	0.0012
	2022	0.0010	0.0013	0.0011	0.0012	0.0014	0.0013	0.0015	0.0013	0.0012	0.0011	0.0007	0.0010
Seremban	2018	0.0019	0.0010	0.0010	0.0010	0.0007	0.0010	0.0018	0.0010	0.0012	0.0011	0.0015	0.0010
	2019	0.0009	0.0014	0.0019	0.0014	0.0013	0.0010	0.0013	0.0011	0.0013	0.0014	0.0016	0.0020
	2020	0.0015	0.0014	0.0012	0.0010	0.0013	0.0019	0.0029	0.0027	0.0021	0.0023	0.0017	0.0023
	2021	0.0016	0.0015	0.0022	0.0019	0.0021	0.0017	0.0018	0.0030	0.0020	0.0025	0.0022	0.0016
	2022	0.0012	0.0018	0.0021	0.0025	0.0014	0.0018	0.0015	0.0018	0.0021	0.0025	0.0026	0.0025
Pahang													
Balok Baru	2018	0.0008	0.0011	0.0011	0.0010	0.0010	0.0006	0.0006	0.0009	0.0009	0.0012	0.0012	0.0008
	2019	0.0012	0.0015	0.0012	0.0009	0.0008	0.0009	0.0010	0.0010	0.0009	0.0009	0.0008	0.0009
	2020	0.0010	0.0009	0.0016	0.0006	0.0008	0.0009	0.0009	0.0011	0.0010	0.0012	0.0061	0.0082
	2021	0.0017	0.0019	0.0017	0.0011	0.0010	0.0009	0.0008	0.0007	0.0009	0.0016	0.0017	0.0028
	2022	0.0035	0.0032	0.0036	0.0026	0.0006	0.0010	0.0010	0.0007	0.0006	0.0018	0.0012	0.0058
Jerantut	2018	0.0011	0.0010	0.0010	0.0010	0.0011	0.0010	0.0009	0.0010	0.0008	0.0010	0.0009	0.0008
	2019	0.0011	0.0011	0.0009	0.0008	0.0008	0.0008	0.0011	0.0010	0.0010	0.0007	0.0008	0.0007
	2020	0.0008	0.0008	0.0008	0.0006	0.0005	0.0007	0.0009	0.0008	0.0010	0.0011	0.0009	0.0008
	2021	0.0008	0.0009	0.0009	0.0009	0.0008	0.0006	0.0007	0.0005	0.0008	0.0009	0.0011	0.0009
	2022	0.0011	0.0012	0.0010	0.0010	0.0012	0.0015	0.0011	0.0008	0.0011	0.0012	0.0009	0.0013
Kuantan	2018	0.0009	0.0010	0.0011	0.0013	0.0010	0.0009	0.0008	0.0009	0.0010	0.0010	0.0012	0.0010
	2019	0.0009	0.0015	0.0011	0.0012	0.0009	0.0008	0.0013	0.0010	0.0010	0.0009	0.0010	0.0010
	2020	0.0010	0.0010	0.0012	0.0006	0.0008	0.0011	0.0008	0.0011	0.0010	0.0011	0.0009	0.0012
	2021	0.0010	0.0012	0.0009	0.0010	0.0007	0.0007	0.0009	0.0008	0.0011	0.0011	0.0014	0.0017
	2022	0.0016	0.0010	0.0015	0.0015	0.0014	0.0014	0.0015	0.0015	0.0012	0.0012	0.0013	0.0011

Jadual 1.30: Purata bulanan kepekatan Sulfur Dioksida (SO₂) di udara, Malaysia, 2018-2022 (samb.)

Table 1.30: Monthly average concentration of Sulphur Dioxide (SO₂) in the air, Malaysia, 2018-2022 (cont'd)

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Pahang													
Temerloh	2018	0.0012	0.0013	0.0009	0.0012	0.0011	0.0010	0.0011	0.0009	0.0009	0.0008	0.0007	0.0006
	2019	0.0009	0.0011	0.0009	0.0008	0.0010	0.0010	0.0009	0.0009	0.0008	0.0009	0.0007	0.0008
	2020	0.0006	0.0007	0.0008	0.0006	0.0005	0.0007	0.0008	0.0007	0.0009	0.0009	0.0008	0.0010
	2021	0.0010	0.0008	0.0008	0.0007	0.0007	0.0009	0.0009	0.0007	0.0010	0.0012	0.0013	0.0013
	2022	0.0015	0.0010	0.0013	0.0007	0.0011	0.0015	0.0008	0.0011	0.0012	0.0007	0.0009	0.0013
Perak													
Pegoh, Ipoh	2018	0.0006	0.0008	0.0011	0.0014	0.0010	0.0008	0.0010	0.0011	0.0005	0.0006	0.0006	0.0006
	2019	0.0008	0.0009	0.0010	0.0007	0.0008	0.0009	0.0013	0.0011	0.0006	0.0010	0.0012	0.0012
	2020	0.0009	0.0011	0.0005	0.0009	0.0004	0.0007	0.0007	0.0007	0.0008	0.0009	0.0008	0.0005
	2021	0.0006	0.0009	0.0009	0.0009	0.0008	0.0010	0.0009	0.0007	0.0007	0.0005	0.0005	0.0008
	2022	0.0011	0.0012	0.0005	0.0006	0.0009	0.0011	0.0007	0.0010	0.0016	0.0010	0.0010	0.0012
Taiping	2018	0.0009	0.0007	0.0007	0.0009	0.0006	0.0009	0.0008	0.0007	0.0007	0.0004	0.0007	0.0010
	2019	0.0009	0.0006	0.0011	0.0015	0.0011	0.0011	0.0014	0.0010	0.0015	0.0013	0.0010	0.0007
	2020	0.0009	0.0010	0.0011	0.0010	0.0009	0.0008	0.0009	0.0010	0.0010	0.0006	0.0008	0.0010
	2021	0.0011	0.0013	0.0010	0.0006	0.0008	0.0009	0.0011	0.0008	0.0011	0.0011	0.0009	0.0007
	2022	0.0012	0.0008	0.0011	0.0009	0.0008	0.0007	0.0009	0.0010	0.0006	0.0010	0.0006	0.0009
Tanjung Malim	2018	0.0007	0.0009	0.0010	0.0015	0.0009	0.0010	0.0012	0.0011	0.0006	0.0008	0.0009	0.0006
	2019	0.0008	0.0009	0.0011	0.0011	0.0010	0.0010	0.0011	0.0009	0.0010	0.0009	0.0010	0.0006
	2020	0.0008	0.0008	0.0006	0.0007	0.0008	0.0007	0.0009	0.0009	0.0010	0.0010	0.0007	0.0006
	2021	0.0010	0.0012	0.0007	0.0005	0.0006	0.0007	0.0010	0.0013	0.0015	0.0010	0.0009	0.0010
	2022	0.0011	0.0010	0.0011	0.0009	0.0011	0.0014	0.0015	0.0012	0.0013	0.0008	0.0009	0.0011
Tasek, Ipoh	2018	0.0014	0.0017	0.0019	0.0013	0.0011	0.0017	0.0015	0.0011	0.0011	0.0012	0.0013	0.0008
	2019	0.0015	0.0015	0.0017	0.0016	0.0009	0.0011	0.0015	0.0013	0.0012	0.0012	0.0013	0.0010
	2020	0.0008	0.0010	0.0008	0.0008	0.0011	0.0013	0.0009	0.0009	0.0012	0.0012	0.0012	0.0011
	2021	0.0012	0.0012	0.0012	0.0008	0.0009	0.0012	0.0012	0.0009	0.0011	0.0008	0.0011	0.0009
	2022	0.0008	0.0010	0.0013	0.0014	0.0011	0.0011	0.0014	0.0016	0.0015	0.0009	0.0008	0.0010
Perlis													
Kangar	2018	0.0005	0.0007	0.0007	0.0006	0.0005	0.0006	0.0008	0.0007	0.0007	0.0006	0.0006	0.0007
	2019	0.0008	0.0011	0.0010	0.0009	0.0009	0.0009	0.0005	0.0008	0.0008	0.0008	0.0009	0.0013
	2020	0.0016	0.0008	0.0006	0.0007	0.0009	0.0011	0.0010	0.0012	0.0011	0.0011	0.0009	0.0011
	2021	0.0014	0.0012	0.0009	0.0009	0.0010	0.0011	0.0015	0.0013	0.0012	0.0012	0.0013	0.0012
	2022	0.0013	0.0009	0.0011	0.0013	0.0013	0.0012	0.0013	0.0009	0.0011	0.0012	0.0007	0.0009
Pulau Pinang													
Balik Pulau	2018	0.0014	0.0013	0.0010	0.0012	0.0010	0.0009	0.0011	0.0012	0.0007	0.0010	0.0014	0.0009
	2019	0.0010	0.0010	0.0010	0.0012	0.0009	0.0014	0.0009	0.0011	0.0013	0.0010	0.0009	0.0012
	2020	0.0013	0.0006	0.0006	0.0008	0.0010	0.0013	0.0010	0.0011	0.0008	0.0008	0.0009	0.0009
	2021	0.0011	0.0012	0.0009	0.0009	0.0010	0.0003	0.0005	0.0008	0.0010	0.0011	0.0009	0.0013
	2022	0.0011	0.0014	0.0013	0.0009	0.0011	0.0010	0.0010	0.0007	0.0006	0.0008	0.0015	0.0012

Jadual 1.30: Purata bulanan kepekatan Sulfur Dioksida (SO₂) di udara, Malaysia, 2018-2022 (samb.)

Table 1.30: Monthly average concentration of Sulphur Dioxide (SO₂) in the air, Malaysia, 2018-2022 (cont'd)

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Pulau Pinang													
Perai	2018	0.0012	0.0015	0.0011	0.0011	0.0012	0.0010	0.0013	0.0013	0.0012	0.0008	0.0007	0.0010
	2019	0.0007	0.0006	0.0010	0.0010	0.0010	0.0010	0.0007	0.0011	0.0011	0.0009	0.0007	0.0007
	2020	0.0007	0.0007	0.0006	0.0005	0.0006	0.0008	0.0008	0.0007	0.0007	0.0005	0.0005	0.0006
	2021	0.0007	0.0005	0.0006	0.0006	0.0005	0.0005	0.0009	0.0009	0.0006	0.0008	0.0010	0.0006
	2022	0.0010	0.0008	0.0008	0.0010	0.0010	0.0011	0.0010	0.0012	0.0010	0.0006	0.0012	0.0011
Seberang Jaya	2018	0.0012	0.0016	0.0013	0.0009	0.0011	0.0011	0.0014	0.0013	0.0011	0.0009	0.0012	0.0007
	2019	0.0011	0.0011	0.0011	0.0011	0.0013	0.0017	0.0010	0.0011	0.0013	0.0009	0.0010	0.0010
	2020	0.0009	0.0009	0.0010	0.0010	0.0011	0.0009	0.0010	0.0009	0.0010	0.0010	0.0008	0.0012
	2021	0.0008	0.0007	0.0008	0.0009	0.0011	0.0007	0.0012	0.0012	0.0010	0.0013	0.0008	0.0009
	2022	0.0009	0.0009	0.0010	0.0011	0.0010	0.0009	0.0015	0.0012	0.0018	0.0012	0.0011	0.0011
USM	2018	-	-	0.0012	0.0012	0.0017	0.0013	0.0015	0.0016	0.0014	0.0011	0.0012	0.0012
	2019	0.0011	0.0010	0.0010	0.0014	0.0012	0.0015	0.0013	0.0013	0.0013	0.0010	0.0012	0.0008
	2020	0.0011	0.0008	0.0010	0.0009	0.0009	0.0012	0.0012	0.0019	0.0011	0.0010	0.0007	0.0008
	2021	0.0010	0.0009	0.0008	0.0013	0.0009	0.0011	0.0008	0.0013	0.0011	0.0009	0.0011	0.0010
	2022	0.0010	0.0005	0.0008	0.0011	0.0012	0.0007	0.0011	0.0009	0.0010	0.0009	0.0011	0.0008
Sabah													
Keningau	2018	0.0006	0.0008	0.0010	0.0009	0.0010	0.0014	0.0010	0.0004	0.0007	0.0008	0.0008	0.0010
	2019	0.0012	0.0015	0.0009	0.0004	0.0004	0.0005	0.0007	0.0009	0.0010	0.0011	0.0014	0.0015
	2020	0.0017	0.0013	0.0007	0.0008	0.0009	0.0011	0.0012	0.0010	0.0012	0.0014	0.0015	0.0011
	2021	0.0013	0.0015	0.0016	0.0019	0.0016	0.0013	0.0016	0.0017	0.0008	0.0010	0.0011	0.0014
	2022	0.0016	0.0012	0.0011	0.0012	0.0014	0.0018	0.0011	0.0013	0.0016	0.0015	0.0014	0.0017
Kimanis	2018	0.0006	0.0006	0.0006	0.0004	0.0004	0.0006	0.0007	0.0006	0.0009	0.0009	0.0007	0.0006
	2019	0.0007	0.0009	0.0007	0.0004	0.0004	0.0005	0.0007	0.0008	0.0009	0.0009	0.0009	0.0006
	2020	0.0007	0.0008	0.0008	0.0008	0.0005	0.0005	0.0007	0.0006	0.0006	0.0008	0.0006	0.0005
	2021	0.0009	0.0008	0.0006	0.0008	0.0009	0.0008	0.0008	0.0009	0.0005	0.0005	0.0007	0.0009
	2022	0.0008	0.0008	0.0008	0.0009	0.0009	0.0006	0.0006	0.0005	0.0006	0.0007	0.0008	0.0007
Kota Kinabalu	2018	0.0008	0.0008	0.0007	0.0009	0.0008	0.0012	0.0016	0.0018	0.0014	0.0013	0.0015	0.0018
	2019	0.0016	0.0016	0.0011	0.0008	0.0010	0.0012	0.0013	0.0015	0.0017	0.0010	0.0011	0.0012
	2020	0.0011	0.0015	0.0014	0.0007	0.0007	0.0011	0.0011	0.0008	0.0005	0.0005	0.0010	0.0014
	2021	0.0008	0.0007	0.0007	0.0009	0.0008	0.0011	0.0014	0.0015	0.0018	0.0010	0.0011	0.0011
	2022	0.0011	0.0012	0.0012	0.0011	0.0008	0.0005	0.0006	0.0005	0.0008	0.0010	0.0011	0.0010
Sandakan	2018	0.0006	0.0008	0.0009	0.0011	0.0008	0.0007	0.0006	0.0009	0.0008	0.0009	0.0009	0.0010
	2019	0.0006	0.0006	0.0007	0.0007	0.0004	0.0003	0.0007	0.0007	0.0018	0.0009	0.0006	0.0007
	2020	0.0009	0.0008	0.0008	0.0008	0.0007	0.0007	0.0008	0.0004	0.0006	0.0007	0.0007	0.0006
	2021	0.0008	0.0009	0.0005	0.0007	0.0008	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
	2022	0.0009	0.0009	0.0010	0.0007	0.0006	0.0009	0.0009	0.0009	0.0008	0.0007	0.0008	0.0010

Jadual 1.30: Purata bulanan kepekatan Sulfur Dioksida (SO₂) di udara, Malaysia, 2018-2022 (samb.)

Table 1.30: Monthly average concentration of Sulphur Dioxide (SO₂) in the air, Malaysia, 2018-2022 (cont'd)

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Sabah													
Tawau	2018	0.0008	0.0009	0.0009	0.0010	0.0008	0.0009	0.0008	0.0006	0.0007	0.0007	0.0007	0.0007
	2019	0.0008	0.0008	0.0008	0.0006	0.0006	0.0007	0.0008	0.0006	0.0006	0.0007	0.0008	0.0006
	2020	0.0005	0.0006	0.0005	0.0004	0.0004	0.0005	0.0007	0.0008	0.0008	0.0008	0.0008	0.0006
	2021	0.0006	0.0008	0.0009	0.0009	0.0007	0.0009	0.0005	0.0007	0.0009	0.0009	0.0010	0.0010
	2022	0.0010	0.0010	0.0010	0.0009	0.0010	0.0013	0.0012	0.0011	0.0010	0.0012	0.0011	0.0011
Sarawak													
Bintulu	2018	0.0003	0.0005	0.0004	0.0004	0.0002	0.0005	0.0002	0.0002	0.0004	0.0003	0.0004	0.0003
	2019	0.0003	0.0004	0.0005	0.0004	0.0005	0.0003	0.0005	0.0004	0.0007	0.0004	0.0003	0.0004
	2020	0.0006	0.0005	0.0004	0.0003	0.0003	0.0002	0.0004	0.0004	0.0003	0.0004	0.0003	0.0003
	2021	0.0003	0.0003	0.0003	0.0004	0.0004	0.0003	0.0005	0.0004	0.0005	0.0005	0.0004	0.0003
	2022	0.0003	0.0005	0.0004	0.0004	0.0006	0.0007	0.0005	0.0005	0.0005	0.0003	0.0005	0.0004
Kuching	2018	0.0004	0.0007	0.0009	0.0008	0.0011	0.0011	0.0009	0.0011	0.0005	0.0002	0.0004	0.0005
	2019	0.0005	0.0009	0.0008	0.0006	0.0004	0.0005	0.0006	0.0010	0.0007	0.0011	0.0007	0.0007
	2020	0.0003	0.0003	0.0002	0.0003	0.0007	0.0004	0.0003	0.0003	0.0006	0.0013	0.0008	0.0010
	2021	0.0010	0.0013	0.0017	0.0014	0.0007	0.0010	0.0014	0.0010	0.0011	0.0012	0.0013	0.0008
	2022	0.0010	0.0008	0.0009	0.0009	0.0009	0.0014	0.0016	0.0008	0.0007	0.0009	0.0011	0.0012
Miri	2018	0.0004	0.0007	0.0007	0.0006	0.0008	0.0007	0.0009	0.0004	0.0007	0.0010	0.0006	0.0004
	2019	0.0004	0.0008	0.0005	0.0009	0.0005	0.0005	0.0006	0.0008	0.0008	0.0007	0.0005	0.0006
	2020	0.0005	0.0005	0.0005	0.0005	0.0004	0.0005	0.0005	0.0007	0.0007	0.0008	0.0008	0.0011
	2021	0.0012	0.0014	0.0015	0.0015	0.0008	0.0006	0.0007	0.0008	0.0009	0.0009	0.0011	0.0015
	2022	0.0007	0.0002	0.0003	0.0006	0.0007	0.0009	0.0012	0.0012	0.0009	0.0007	0.0010	0.0010
Samalaju	2018	0.0004	0.0022	0.0009	0.0008	0.0005	0.0004	0.0004	0.0004	0.0004	0.0006	0.0004	0.0005
	2019	0.0012	0.0024	0.0021	0.0010	0.0004	0.0005	0.0004	0.0005	0.0006	0.0003	0.0005	0.0005
	2020	0.0009	0.0011	0.0011	0.0007	0.0004	0.0004	0.0004	0.0005	0.0005	0.0007	0.0005	0.0004
	2021	0.0006	0.0010	0.0007	0.0005	0.0005	0.0004	0.0006	0.0006	0.0007	0.0004	0.0004	0.0005
	2022	0.0008	0.0010	0.0007	0.0006	0.0005	0.0006	0.0007	0.0007	0.0008	0.0007	0.0008	0.0011
Sibu	2018	0.0005	0.0005	0.0004	0.0004	0.0006	0.0009	0.0005	0.0004	0.0003	0.0003	0.0003	0.0005
	2019	0.0003	0.0006	0.0003	0.0005	0.0004	0.0004	0.0005	0.0004	0.0005	0.0004	0.0004	0.0005
	2020	0.0006	0.0007	0.0009	0.0009	0.0008	0.0008	0.0011	0.0012	0.0013	0.0013	0.0016	0.0014
	2021	0.0012	0.0010	0.0007	0.0006	0.0004	0.0006	0.0007	0.0007	0.0007	0.0005	0.0006	0.0006
	2022	0.0010	0.0007	0.0005	0.0005	0.0006	0.0005	0.0005	0.0008	0.0004	0.0004	0.0007	0.0006
Selangor													
Banting	2018	0.0010	0.0014	0.0012	0.0011	0.0015	0.0020	0.0018	0.0020	0.0015	0.0016	0.0016	0.0008
	2019	0.0009	0.0007	0.0010	0.0012	0.0012	0.0012	0.0015	0.0022	0.0015	0.0013	0.0011	0.0010
	2020	0.0013	0.0013	0.0012	0.0012	0.0011	0.0015	0.0014	0.0022	0.0013	0.0013	0.0016	0.0011
	2021	0.0013	0.0015	0.0015	0.0012	0.0011	0.0013	0.0013	0.0020	0.0014	0.0015	0.0017	0.0011
	2022	0.0013	0.0015	0.0011	0.0011	0.0014	0.0013	0.0014	0.0016	0.0011	0.0008	0.0010	0.0011

Jadual 1.30: Purata bulanan kepekatan Sulfur Dioksida (SO₂) di udara, Malaysia, 2018-2022 (samb.)

Table 1.30: Monthly average concentration of Sulphur Dioxide (SO₂) in the air, Malaysia, 2018-2022 (cont'd)

													ppm
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Selangor													
Klang	2018	0.0020	0.0023	0.0021	0.0020	0.0020	0.0022	0.0019	0.0018	0.0018	0.0017	0.0021	0.0019
	2019	0.0016	0.0009	0.0008	0.0009	0.0011	0.0011	0.0035	0.0027	0.0010	0.0007	0.0010	0.0007
	2020	0.0008	0.0012	0.0012	0.0008	0.0011	0.0012	0.0014	0.0018	0.0017	0.0019	0.0017	0.0016
	2021	0.0014	0.0020	0.0013	0.0017	0.0013	0.0014	0.0023	0.0008	0.0015	0.0011	0.0018	0.0018
	2022	0.0019	0.0017	0.0017	0.0017	0.0012	0.0012	0.0015	0.0012	0.0011	0.0018	0.0017	0.0016
Petaling Jaya	2018	0.0025	0.0029	0.0029	0.0042	0.0030	0.0029	0.0028	0.0021	0.0014	0.0010	0.0011	0.0010
	2019	0.0012	0.0011	0.0011	0.0009	0.0009	0.0012	0.0010	0.0012	0.0012	0.0010	0.0011	0.0010
	2020	0.0013	0.0009	0.0008	0.0007	0.0006	0.0009	0.0009	0.0009	0.0010	0.0011	0.0005	0.0008
	2021	0.0008	0.0009	0.0009	0.0006	0.0012	0.0011	0.0016	0.0011	0.0012	0.0016	0.0019	0.0016
	2022	0.0014	0.0018	0.0027	0.0013	0.0011	0.0007	0.0010	0.0012	0.0013	0.0014	0.0018	0.0017
Shah Alam	2018	0.0011	0.0013	0.0013	0.0015	0.0012	0.0013	0.0018	0.0018	0.0012	0.0011	0.0010	0.0011
	2019	0.0014	0.0013	0.0015	0.0011	0.0012	0.0016	0.0013	0.0014	0.0012	0.0009	0.0010	0.0011
	2020	0.0014	0.0011	0.0012	0.0009	0.0011	0.0013	0.0013	0.0013	0.0013	0.0013	0.0010	0.0012
	2021	0.0009	0.0012	0.0011	0.0013	0.0008	0.0006	0.0007	0.0009	0.0011	0.0011	0.0012	0.0013
	2022	0.0013	0.0010	0.0010	0.0014	0.0009	0.0011	0.0015	0.0013	0.0016	0.0018	0.0009	0.0009
Terengganu													
Besut	2018	0.0005	0.0008	0.0005	0.0005	0.0007	0.0007	0.0005	0.0007	0.0009	0.0007	0.0008	0.0008
	2019	0.0005	0.0005	0.0009	0.0010	0.0008	0.0007	0.0011	0.0013	0.0008	0.0007	0.0010	0.0008
	2020	0.0010	0.0013	0.0009	0.0007	0.0009	0.0008	0.0008	0.0009	0.0010	0.0007	0.0005	0.0007
	2021	0.0006	0.0006	0.0009	0.0005	0.0005	0.0009	0.0009	0.0008	0.0006	0.0007	0.0007	0.001
	2022	0.0012	0.0008	0.0010	0.0010	0.0008	0.0014	0.0012	0.0012	0.0009	0.0008	0.0009	0.0007
Kemaman	2018	0.0005	0.0008	0.0007	0.0009	0.0008	0.0008	0.0009	0.0013	0.0011	0.0010	0.0011	0.0013
	2019	0.0014	0.0011	0.0009	0.0007	0.0007	0.0009	0.0010	0.0013	0.0010	0.0009	0.0009	0.0008
	2020	0.0009	0.0008	0.0006	0.0008	0.0007	0.0008	0.0009	0.0011	0.0008	0.0007	0.0010	0.0014
	2021	0.0004	0.0005	0.0008	0.0009	0.0007	0.0006	0.0009	0.0008	0.0009	0.0008	0.0006	0.0014
	2022	0.0008	0.0010	0.0013	0.0007	0.0008	0.0011	0.0016	0.0016	0.0011	0.0009	0.0011	0.0013
Kuala Terengganu	2018	0.0005	0.0004	0.0005	0.0006	0.0006	0.0007	0.0005	0.0006	0.0004	0.0007	0.0008	0.0009
	2019	0.0006	0.0007	0.0008	0.0014	0.0008	0.0007	0.0008	0.0006	0.0005	0.0005	0.0008	0.0009
	2020	0.0015	0.0014	0.0010	0.0010	0.0009	0.0008	0.0009	0.0013	0.0013	0.0013	0.0011	0.0011
	2021	0.0009	0.0008	0.0006	0.0008	0.0009	0.0011	0.0009	0.0012	0.0010	0.0009	0.0016	0.0011
	2022	0.0016	0.0011	0.0007	0.0010	0.0015	0.0010	0.0014	0.0013	0.0014	0.0012	0.0016	0.0017
Paka	2018	0.0008	0.0009	0.0010	0.0008	0.0008	0.0009	0.0008	0.0009	0.0008	0.0011	0.0014	0.0011
	2019	0.0010	0.0007	0.0009	0.0009	0.0010	0.0015	0.0015	0.0021	0.0016	0.0009	0.0010	0.0010
	2020	0.0011	0.0008	0.0007	0.0007	0.0007	0.0012	0.0010	0.0011	0.0012	0.0011	0.0008	0.0009
	2021	0.0005	0.0010	0.0008	0.0008	0.0009	0.0013	0.0009	0.0007	0.0010	0.0010	0.0011	0.0014
	2022	0.0006	0.0007	0.0009	0.0006	0.0007	0.0010	0.0007	0.0007	0.0006	0.0004	0.0008	0.0006

Jadual 1.30: Purata bulanan kepekatan Sulfur Dioksida (SO₂) di udara, Malaysia, 2018-2022 (samb.)

Table 1.30: Monthly average concentration of Sulphur Dioxide (SO₂) in the air, Malaysia, 2018-2022 (cont'd)

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Wilayah Persekutuan													
Batu Muda, Kuala Lumpur	2018	0.0008	0.0015	0.0017	0.0011	0.0014	0.0010	0.0014	0.0016	0.0010	0.0006	0.0010	0.0015
	2019	0.0008	0.0008	0.0014	0.0007	0.0007	0.0008	0.0007	0.0006	0.0004	0.0007	0.0011	0.0005
	2020	0.0010	0.0009	0.0006	0.0005	0.0005	0.0008	0.0010	0.0010	0.0007	0.0009	0.0009	0.0008
	2021	0.0007	0.0012	0.0011	0.0005	0.0007	0.001	0.0007	0.0009	0.0019	0.0013	0.0004	0.0005
	2022	0.0012	0.0009	0.0008	0.0009	0.0011	0.0011	0.0014	0.0021	0.0021	0.0011	0.0011	0.0015
Cheras, Kuala Lumpur	2018	0.0008	0.0010	0.0010	0.0007	0.0008	0.0011	0.0019	0.0015	0.0019	0.0006	0.0009	0.0008
	2019	0.0009	0.0009	0.0012	0.0008	0.0006	0.0007	0.0009	0.0010	0.0006	0.0005	0.0007	0.0008
	2020	0.0008	0.0008	0.0005	0.0005	0.0006	0.0009	0.0011	0.0011	0.0012	0.0008	0.0007	0.0006
	2021	0.0005	0.0008	0.0011	0.0008	0.0007	0.0010	0.0016	0.0011	0.0016	0.0014	0.0015	0.0004
	2022	0.0005	0.0006	0.0007	0.0009	0.0010	0.0013	0.0016	0.0012	0.0015	0.0017	0.0016	0.0017
Labuan	2018	-	-	0.0006	0.0008	0.0005	0.0006	0.0005	0.0006	0.0009	0.0010	0.0011	0.0012
	2019	0.0016	0.0019	0.0011	0.0005	0.0008	0.0008	0.0008	0.0006	0.0009	0.0006	0.0008	0.0009
	2020	0.0011	0.0008	0.0008	0.0010	0.0008	0.0003	0.0005	0.0008	0.0009	0.0003	0.0003	0.0005
	2021	0.0008	0.0010	0.0014	0.0013	0.0015	0.0014	0.0015	0.0017	0.0016	0.0016	0.0016	0.0011
	2022	0.0007	0.0005	0.0009	0.0013	0.0016	0.0015	0.0010	0.0009	0.0007	0.0009	0.0010	0.0006
Putrajaya	2018	0.0010	0.0012	0.0008	0.0009	0.0014	0.0016	0.0016	0.0019	0.0016	0.0012	0.0013	0.0007
	2019	0.0008	0.0010	0.0014	0.0014	0.0014	0.0009	0.0011	0.0013	0.0012	0.0007	0.0007	0.0010
	2020	0.0010	0.0007	0.0011	0.0010	0.0014	0.0012	0.0014	0.0015	0.0011	0.0015	0.0012	0.0010
	2021	0.0009	0.0011	0.0013	0.0011	0.0014	0.0016	0.0014	0.0010	0.0007	0.0006	0.0008	0.0009
	2022	0.0010	0.0011	0.0015	0.0017	0.0021	0.0021	0.0014	0.0020	0.0019	0.0023	0.0023	0.0025

Nota: Garis Panduan Kualiti Udara Malaysia: SO₂ tidak melebihi 0.035 ppm
Notes: Malaysian Ambient Air Quality Guidelines: SO₂ not exceeding 0.035 ppm

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Jadual 1.31: Purata bulanan kepekatan Nitrogen Dioksida (NO₂) di udara, Malaysia, 2018-2022

Table 1.31: Monthly average concentration of Nitrogen Dioxide (NO₂) in the air, Malaysia, 2018-2022

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Johor													
Batu Pahat	2018	0.0041	0.0040	0.0045	0.0043	0.0052	0.0058	0.0064	0.0055	0.0056	0.0053	0.0044	0.0050
	2019	0.0042	0.0044	0.0067	0.0057	0.0061	0.0053	0.0070	0.0076	0.0086	0.0059	0.0046	0.0030
	2020	0.0031	0.0029	0.0040	0.0027	0.0043	0.0050	0.0057	0.0059	0.0057	0.0064	0.0043	0.0044
	2021	0.0029	0.0039	0.0043	0.0054	0.0051	0.0051	0.0055	0.0037	0.0049	0.0051	0.0044	0.0036
	2022	0.0032	0.0033	0.0046	0.0051	0.0065	0.0046	0.0043	0.0046	0.0041	0.0044	0.0044	0.0035
Kota Tinggi	2018	0.0032	0.0015	0.0028	0.0035	0.0070	0.0065	0.0049	0.0045	0.0055	0.0068	0.0065	0.0040
	2019	0.0019	0.0014	0.0036	0.0050	0.0073	0.0051	0.0041	0.0034	0.0045	0.0059	0.0056	0.0016
	2020	0.0010	0.0010	0.0015	0.0018	0.0036	0.0039	0.0040	0.0040	0.0046	0.0060	0.0033	0.0017
	2021	0.0013	0.0012	0.0025	0.0050	0.0041	0.0040	0.0028	0.0037	0.0040	0.0051	0.0043	0.0018
	2022	0.0013	0.0017	0.0025	0.0049	0.0048	0.0058	0.0038	0.0053	0.0063	0.0055	0.0044	0.0023
Larkin	2018	0.0102	0.0074	0.0104	0.0116	0.0160	0.0130	0.0156	0.0155	0.0169	0.0157	0.0130	0.0094
	2019	0.0078	0.0075	0.0114	0.0183	0.0169	0.0145	0.0151	0.0144	0.0155	0.0175	0.0138	0.0088
	2020	0.0070	0.0077	0.0068	0.0039	0.0090	0.0102	0.0106	0.0111	0.0111	0.0111	0.0105	0.0083
	2021	0.0065	0.0059	0.0091	0.0139	0.0118	0.0100	0.0095	0.0092	0.0107	0.0116	0.0106	0.0070
	2022	0.0062	0.0068	0.0103	0.0138	0.0123	0.0127	0.0141	0.0143	0.0136	0.0110	0.0105	0.0092
Pasir Gudang	2018	0.0094	0.0056	0.0083	0.0100	0.0162	0.0158	0.0147	0.0149	0.0168	0.0159	0.0154	0.0120
	2019	0.0065	0.0045	0.0088	0.0146	0.0170	0.0128	0.0131	0.0116	0.0126	0.0162	0.0134	0.0060
	2020	0.0038	0.0039	0.0048	0.0047	0.0110	0.0133	0.0121	0.0120	0.0130	0.0155	0.0112	0.0077
	2021	0.0046	0.0040	0.0082	0.0154	0.0134	0.0134	0.0110	0.0113	0.0129	0.0123	0.0114	0.0070
	2022	0.0054	0.0063	0.0091	0.0151	0.0136	0.0160	0.0142	0.0161	0.0156	0.0142	0.0116	0.0093
Pengerang	2018	0.0035	0.0026	0.0038	0.0041	0.0078	0.0085	0.0079	0.0069	0.0076	0.0077	0.0065	0.0039
	2019	0.0026	0.0025	0.0040	0.0057	0.0058	0.0048	0.0039	0.0036	0.0051	0.0055	0.0050	0.0017
	2020	0.0020	0.0022	0.0028	0.0030	0.0053	0.0048	0.0041	0.0039	0.0047	0.0068	0.0036	0.0023
	2021	0.0012	0.0014	0.0030	0.0045	0.0028	0.0044	0.0039	0.0049	0.0046	0.0047	0.0044	0.0021
	2022	0.0017	0.002	0.0026	0.0049	0.0049	0.0058	0.0040	0.0067	0.0066	0.0069	0.0053	0.0027
Segamat	2018	0.0051	0.0037	0.0044	0.0055	0.0063	0.0065	0.0062	0.0081	0.0073	0.0059	0.0045	0.0045
	2019	0.0042	0.0037	0.0059	0.0065	0.0079	0.0055	0.0070	0.0078	0.0080	0.0058	0.0060	0.0040
	2020	0.0035	0.0039	0.0027	0.0029	0.0038	0.0055	0.0055	0.0061	0.0056	0.0064	0.0046	0.0052
	2021	0.0040	0.0036	0.0042	0.0064	0.0058	0.0045	0.0048	0.0053	0.0050	0.0055	0.0052	0.0037
	2022	0.0043	0.0036	0.0044	0.0054	0.0062	0.0063	0.0061	0.0063	0.0062	0.0052	0.0050	0.0041
Tangkak	2018	-	-	0.0041	0.0045	0.0036	0.0038	0.0036	0.0043	0.0047	0.0046	0.0039	0.0039
	2019	0.0029	0.0035	0.0053	0.0045	0.0061	0.0040	0.0045	0.0038	0.0042	0.0043	0.0046	0.0030
	2020	0.0031	0.0029	0.0044	0.0028	0.0021	0.0043	0.0037	0.0037	0.0050	0.0065	0.0038	0.0046
	2021	0.0028	0.0038	0.0048	0.0052	0.0039	0.0037	0.0041	0.0039	0.0051	0.0062	0.0061	0.0043
	2022	0.0045	0.0038	0.0049	0.0053	0.0060	0.0069	0.0055	0.0052	0.0057	0.0057	0.0067	0.0053

Jadual 1.31: Purata bulanan kepekatan Nitrogen Dioksida (NO₂) di udara, Malaysia, 2018-2022 (samb.)

Table 1.31: Monthly average concentration of Nitrogen Dioxide (NO₂) in the air, Malaysia, 2018-2022 (cont'd)

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Kedah													
Alor Setar	2018	0.0055	0.0046	0.0046	0.0053	0.0045	0.0058	0.0061	0.0067	0.0063	0.0054	0.0054	0.0056
	2019	0.0041	0.0046	0.0064	0.0056	0.0048	0.0065	0.0060	0.0067	0.0064	0.0048	0.0040	0.0026
	2020	0.0025	0.0031	0.0046	0.0029	0.0032	0.0049	0.0054	0.0056	0.0048	0.0049	0.0041	0.0042
	2021	0.0036	0.0040	0.0051	0.0060	0.0040	0.0030	0.0039	0.0039	0.0052	0.0051	0.0045	0.0037
	2022	0.0037	0.0043	0.0041	0.0054	0.0054	0.0038	0.0055	0.0053	0.0064	0.0054	0.0050	0.0038
Kulim	2018	0.0057	0.0067	0.0062	0.0063	0.0063	0.0070	0.0068	0.0074	0.0053	0.0059	0.0064	0.0049
	2019	0.0064	0.0060	0.0080	0.0072	0.0065	0.0074	0.0083	0.0070	0.0076	0.0061	0.0054	0.0063
	2020	0.0074	0.0082	0.0069	0.0045	0.0058	0.0066	0.0068	0.0070	0.0060	0.0058	0.0056	0.0055
	2021	0.0055	0.0066	0.0068	0.0065	0.0055	0.0050	0.0057	0.0049	0.0054	0.0061	0.0056	0.0061
	2022	0.0083	0.0071	0.0077	0.0085	0.0074	0.0083	0.0085	0.0095	0.0080	0.0074	0.0076	0.0083
Langkawi	2018	0.0050	0.0055	0.0049	0.0050	0.0041	0.0035	0.0048	0.0039	0.0034	0.0033	0.0036	0.0035
	2019	0.0037	0.0038	0.0053	0.0045	0.0037	0.0043	0.0046	0.0048	0.0046	0.0037	0.0043	0.0040
	2020	0.0039	0.0044	0.0035	0.0018	0.0019	0.0031	0.0035	0.0035	0.0032	0.0030	0.0029	0.0036
	2021	0.0035	0.0037	0.0033	0.0029	0.0024	0.0016	0.0022	0.0018	0.0020	0.0029	0.0027	0.0036
	2022	0.0037	0.0027	0.0025	0.0029	0.0032	0.0034	0.0032	0.0033	0.0030	0.0033	0.0034	0.0041
Sungai Petani	2018	0.0078	0.0078	0.0076	0.0083	0.0069	0.0087	0.0098	0.0095	0.0079	0.0081	0.0080	0.0072
	2019	0.0073	0.0072	0.0079	0.0084	0.0076	0.0087	0.0096	0.0091	0.0097	0.0069	0.0070	0.0063
	2020	0.0065	0.0077	0.0066	0.0040	0.0049	0.0068	0.0073	0.0068	0.0063	0.0067	0.0073	0.0076
	2021	0.0075	0.0066	0.0076	0.0069	0.0062	0.0052	0.0056	0.0053	0.0065	0.0077	0.0073	0.0064
	2022	0.0080	0.0075	0.0067	0.0078	0.0078	0.0071	0.0088	0.0087	0.0079	0.0078	0.0087	0.0076
Kelantan													
Kota Bharu	2018	0.0041	0.0041	0.0029	0.0033	0.0036	0.0038	0.0041	0.0048	0.0043	0.0039	0.0044	0.0042
	2019	0.0033	0.0026	0.0045	0.0045	0.0048	0.0049	0.0047	0.0046	0.0040	0.0037	0.0035	0.0025
	2020	0.0026	0.0027	0.0029	0.0026	0.0027	0.0034	0.0042	0.0034	0.0035	0.0035	0.0037	0.0034
	2021	0.0020	0.0029	0.0029	0.0032	0.0026	0.0019	0.0031	0.0025	0.0024	0.0037	0.0039	0.0029
	2022	0.0032	0.0026	0.0029	0.0032	0.0040	0.0037	0.0048	0.0047	0.0041	0.0040	0.0034	0.0035
Tanah Merah	2018	0.0056	0.0068	0.0058	0.0047	0.0040	0.0037	0.0037	0.0045	0.0039	0.0039	0.0040	0.0053
	2019	0.0069	0.0060	0.0075	0.0061	0.0044	0.0037	0.0042	0.0044	0.0043	0.0039	0.0039	0.0070
	2020	0.0069	0.0067	0.0045	0.0029	0.0033	0.0036	0.0042	0.0044	0.0040	0.0040	0.0050	0.0062
	2021	0.0069	0.0071	0.0060	0.0049	0.0039	0.0025	0.0032	0.0035	0.0038	0.0048	0.0058	0.0083
	2022	0.0072	0.0050	0.0053	0.0053	0.0049	0.0046	0.0048	0.0046	0.0045	0.0052	0.0072	0.0085
Melaka													
Bandaraya Melaka	2018	0.0084	0.0046	0.0071	0.0081	0.0088	0.0091	0.0079	0.0071	0.0100	0.0080	0.0074	0.0076
	2019	0.0048	0.0044	0.0066	0.0068	0.0079	0.0075	0.0070	0.0070	0.0080	0.0083	0.0082	0.0049
	2020	0.0052	0.0040	0.0051	0.0029	0.0047	0.0055	0.0069	0.0072	0.0068	0.0074	0.0065	0.0070
	2021	0.0042	0.0038	0.0052	0.0075	0.0060	0.0048	0.0049	0.0057	0.0058	0.0067	0.0071	0.0050
	2022	0.0043	0.0054	0.0057	0.0075	0.0081	0.0064	0.0071	0.0067	0.0070	0.0070	0.0069	0.0054

Jadual 1.31: Purata bulanan kepekatan Nitrogen Dioksida (NO₂) di udara, Malaysia, 2018-2022 (samb.)

Table 1.31: Monthly average concentration of Nitrogen Dioxide (NO₂) in the air, Malaysia, 2018-2022 (cont'd)

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Melaka													
Bukit Rambai	2018	0.0081	0.0048	0.0085	0.0082	0.0090	0.0089	0.1060	0.0095	0.0095	0.0067	0.0064	0.0063
	2019	0.0048	0.0051	0.0066	0.0075	0.0075	0.0070	0.0085	0.0087	0.0089	0.0074	0.0064	0.0044
	2020	0.0046	0.0037	0.0047	0.0034	0.0057	0.0072	0.0072	0.0080	0.0067	0.0077	0.0054	0.0060
	2021	0.0039	0.0047	0.0064	0.0075	0.0069	0.0053	0.0057	0.0054	0.0066	0.0081	0.0073	0.0058
	2022	0.0042	0.0043	0.0054	0.0065	0.0073	0.0066	0.0080	0.0072	0.0070	0.0067	0.0062	0.0055
Negeri Sembilan													
Nilai	2018	0.0166	0.0104	0.0143	0.0139	0.0164	0.0152	0.0152	0.0157	0.0173	0.0163	0.0141	0.0142
	2019	0.0115	0.0080	0.0095	0.0090	0.0122	0.0123	0.0142	0.0153	0.0167	0.0153	0.0135	0.0083
	2020	0.0089	0.0097	0.0098	0.0062	0.0102	0.0112	0.0117	0.0112	0.0117	0.0125	0.0114	0.0133
	2021	0.0105	0.0108	0.0102	0.0113	0.0118	0.0083	0.0072	0.0096	0.0115	0.0126	0.0118	0.0110
	2022	0.0105	0.0087	0.0104	0.0118	0.0119	0.0080	0.0071	0.0110	0.0127	0.0115	0.0124	0.0102
Port Dickson	2018	0.0056	0.0040	0.0044	0.0044	0.0047	0.0046	0.0041	0.0039	0.0060	0.0052	0.0054	0.0062
	2019	0.0053	0.0046	0.0059	0.0058	0.0065	0.0042	0.0047	0.0048	0.0057	0.0055	0.0059	0.0053
	2020	0.0059	0.0049	0.0054	0.0037	0.0039	0.0036	0.0047	0.0042	0.0042	0.0057	0.0053	0.0065
	2021	0.0050	0.0052	0.0053	0.0066	0.0057	0.0049	0.0038	0.0044	0.0051	0.0065	0.0075	0.0058
	2022	0.0052	0.0053	0.0056	0.0078	0.0072	0.0059	0.0057	0.0053	0.0057	0.0057	0.0056	0.0050
Seremban	2018	0.0098	0.0056	0.0061	0.0059	0.0068	0.0072	0.0073	0.0072	0.0076	0.0083	0.0075	0.0076
	2019	0.0061	0.0054	0.0068	0.0068	0.0084	0.0067	0.0068	0.0082	0.0092	0.0072	0.0081	0.0059
	2020	0.0060	0.0044	0.0048	0.0026	0.0044	0.0060	0.0064	0.0054	0.0060	0.0072	0.0059	0.0075
	2021	0.0054	0.0054	0.0064	0.0074	0.0062	0.0046	0.0055	0.0063	0.0072	0.0092	0.0086	0.0081
	2022	0.0060	0.0052	0.0068	0.0077	0.0081	0.0081	0.0066	0.0062	0.0072	0.0063	0.0069	0.0055
Pahang													
Balok Baru	2018	0.0064	0.0041	0.0047	0.0058	0.0051	0.0045	0.0036	0.0033	0.0047	0.0055	0.0064	0.0055
	2019	0.0061	0.0051	0.0064	0.0053	0.0047	0.0044	0.0039	0.0036	0.0046	0.0058	0.0067	0.0071
	2020	0.0049	0.0052	0.0044	0.0030	0.0030	0.0041	0.0044	0.0042	0.0046	0.0061	0.0063	0.0064
	2021	0.0062	0.0051	0.0053	0.0053	0.0044	0.0031	0.0033	0.0033	0.0036	0.0051	0.0056	0.0058
	2022	0.0048	0.0048	0.0048	0.0056	0.0049	0.0050	0.0042	0.0042	0.0049	0.0057	0.0053	0.0060
Jerantut	2018	0.0015	0.0022	0.0021	0.0023	0.0020	0.0027	0.0032	0.0036	0.0029	0.0020	0.0020	0.0018
	2019	0.0020	0.0025	0.0032	0.0033	0.0033	0.0037	0.0041	0.0044	0.0034	0.0018	0.0020	0.0020
	2020	0.0023	0.0020	0.0021	0.0013	0.0021	0.0027	0.0025	0.0032	0.0033	0.0035	0.0022	0.0020
	2021	0.0021	0.0022	0.0025	0.0026	0.0022	0.0015	0.0021	0.0023	0.0026	0.0027	0.0018	0.0023
	2022	0.0023	0.0021	0.0023	0.0026	0.0030	0.0024	0.0035	0.0027	0.0031	0.0025	0.0021	0.0021
Kuantan	2018	0.0056	0.0046	0.0035	0.0048	0.0055	0.0055	0.0049	0.0051	0.0062	0.0053	0.0055	0.0056
	2019	0.0048	0.0046	0.0052	0.0057	0.0060	0.0048	0.0050	0.0054	0.0057	0.0058	0.0063	0.0044
	2020	0.0037	0.0038	0.0034	0.0020	0.0032	0.0051	0.0061	0.0052	0.0054	0.0063	0.0051	0.0054
	2021	0.0051	0.0039	0.0041	0.0055	0.0051	0.0034	0.0035	0.0041	0.0046	0.0047	0.0049	0.0042
	2022	0.0045	0.0041	0.0048	0.0058	0.0061	0.0057	0.0058	0.0057	0.0063	0.0057	0.0060	0.0051

Jadual 1.31: Purata bulanan kepekatan Nitrogen Dioksida (NO₂) di udara, Malaysia, 2012-2022 (samb.)

Table 1.31: Monthly average concentration of Nitrogen Dioxide (NO₂) in the air, Malaysia, 2018-2022 (cont'd)

													ppm
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Pahang													
Temerloh	2018	0.0041	0.0051	0.0046	0.0045	0.0041	0.0038	0.0041	0.0043	0.0049	0.0046	0.0046	0.0041
	2019	0.0050	0.0047	0.0052	0.0048	0.0049	0.0048	0.0050	0.0050	0.0055	0.0043	0.0050	0.0049
	2020	0.0046	0.0045	0.0033	0.0021	0.0027	0.0037	0.0037	0.0043	0.0045	0.0048	0.0043	0.0046
	2021	0.0042	0.0039	0.0042	0.0045	0.0037	0.0026	0.0028	0.0035	0.0037	0.0042	0.0039	0.0043
	2022	0.0046	0.0036	0.0040	0.0043	0.0046	0.0045	0.0045	0.0044	0.0049	0.0050	0.0047	0.0053
Perak													
Pegoh, Ipoh	2018	0.0102	0.0098	0.0104	0.0102	0.0089	0.0083	0.0089	0.0103	0.0101	0.0098	0.0094	0.0092
	2019	0.0093	0.0089	0.0104	0.0103	0.0114	0.0097	0.0103	0.0089	0.0103	0.0087	0.0095	0.0086
	2020	0.0079	0.0078	0.0052	0.0036	0.0059	0.0077	0.0092	0.0087	0.0088	0.0081	0.0068	0.0084
	2021	0.0076	0.0061	0.0085	0.0091	0.0076	0.0045	0.0061	0.0064	0.007	0.0082	0.0088	0.0088
	2022	0.0085	0.0072	0.0087	0.0095	0.0078	0.0073	0.0073	0.0056	0.0070	0.0054	0.0063	0.0057
Taiping	2018	0.0060	0.0082	0.0074	0.0066	0.0065	0.0080	0.0089	0.0092	0.0070	0.0070	0.0072	0.0076
	2019	0.0089	0.0074	0.0089	0.0078	0.0064	0.0080	0.0075	0.0087	0.0095	0.0069	0.0071	0.0082
	2020	0.0086	0.0086	0.0075	0.0039	0.0040	0.0066	0.0075	0.0078	0.0069	0.0072	0.0064	0.0075
	2021	0.0085	0.0092	0.0090	0.0079	0.0065	0.0044	0.0063	0.0059	0.0071	0.0079	0.0078	0.0090
	2022	0.0100	0.0073	0.0075	0.0075	0.0077	0.0069	0.0082	0.0092	0.0073	0.0068	0.0071	0.0076
Tanjung Malim	2018	0.0056	0.0056	0.0067	0.0067	0.0074	0.0066	0.0075	0.0067	0.0066	0.0062	0.0061	0.0058
	2019	0.0054	0.0057	0.0073	0.0068	0.0062	0.0057	0.0069	0.0063	0.0077	0.0063	0.0053	0.0054
	2020	0.0049	0.0051	0.0045	0.0026	0.0035	0.0048	0.0051	0.0060	0.0054	0.0057	0.0060	0.0050
	2021	0.0049	0.0045	0.0053	0.0054	0.0041	0.0035	0.0034	0.0033	0.0043	0.0047	0.0045	0.0044
	2022	0.0060	0.0050	0.0055	0.0056	0.0055	0.0057	0.0061	0.0057	0.0055	0.0053	0.0058	0.0061
Tasek, Ipoh	2018	0.0105	0.0117	0.0117	0.0115	0.0106	0.0102	0.0125	0.0124	0.0091	0.0101	0.0100	0.0089
	2019	0.0111	0.0124	0.0107	0.0121	0.0110	0.0109	0.0108	0.0105	0.0108	0.0081	0.0096	0.0100
	2020	0.0097	0.0083	0.0074	0.0032	0.0056	0.0090	0.0098	0.0089	0.0084	0.0083	0.0067	0.0098
	2021	0.0075	0.0068	0.0086	0.0083	0.0067	0.0043	0.0069	0.0058	0.0070	0.0069	0.0072	0.0077
	2022	0.0097	0.0069	0.0082	0.0086	0.0066	0.0076	0.0072	0.0087	0.0073	0.0077	0.0087	0.0080
Perlis													
Kangar	2018	0.0040	0.0030	0.0039	0.0042	0.0032	0.0042	0.0039	0.0038	0.0032	0.0033	0.0030	0.0032
	2019	0.0025	0.0023	0.0041	0.0038	0.0026	0.0036	0.0035	0.0036	0.0047	0.0033	0.0029	0.0023
	2020	0.0023	0.0024	0.0022	0.0014	0.0020	0.0030	0.0028	0.0030	0.0029	0.0027	0.0034	0.0037
	2021	0.0021	0.0026	0.0032	0.0032	0.0023	0.0017	0.0020	0.0021	0.0029	0.0030	0.0028	0.0024
	2022	0.0022	0.0021	0.0030	0.0035	0.0032	0.0028	0.0037	0.0038	0.0035	0.0036	0.0028	0.0030
Pulau Pinang													
Balik Pulau	2018	0.0041	0.0052	0.0042	0.0039	0.0036	0.0042	0.0043	0.0042	0.0037	0.0035	0.0040	0.0037
	2019	0.0038	0.0042	0.0040	0.0037	0.0034	0.0040	0.0042	0.0042	0.0039	0.0035	0.0039	0.0038
	2020	0.0039	0.0040	0.0038	0.0028	0.0028	0.0033	0.0033	0.0041	0.0033	0.0028	0.0032	0.0032
	2021	0.0035	0.0033	0.0042	0.0032	0.0032	0.0028	0.0028	0.0026	0.0031	0.0035	0.0034	0.0029
	2022	0.0043	0.0034	0.0036	0.0038	0.0039	0.0038	0.0036	0.0035	0.0034	0.0033	0.0035	0.0035

Jadual 1.31: Purata bulanan kepekatan Nitrogen Dioksida (NO₂) di udara, Malaysia, 2018-2022 (samb.)

Table 1.31: Monthly average concentration of Nitrogen Dioxide (NO₂) in the air, Malaysia, 2018-2022 (cont'd)

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Pulau Pinang													
Perai	2018	0.0100	0.0098	0.0094	0.0087	0.0087	0.0099	0.0112	0.0121	0.0087	0.0104	0.0105	0.0091
	2019	0.0091	0.0089	0.0094	0.0097	0.0094	0.0103	0.0098	0.0095	0.0107	0.0092	0.0086	0.0076
	2020	0.0086	0.0073	0.0064	0.0047	0.0052	0.0073	0.0083	0.0079	0.0082	0.0086	0.0077	0.0067
	2021	0.0072	0.0066	0.0066	0.0076	0.0075	0.0063	0.0065	0.0055	0.0064	0.0059	0.0067	0.0060
	2022	0.0061	0.0061	0.0067	0.0074	0.0061	0.0081	0.0094	0.0085	0.0085	0.0076	0.0087	0.0081
Seberang Jaya	2018	0.0159	0.0166	0.0142	0.0153	0.0126	0.0154	0.0143	0.0152	0.0135	0.0160	0.0174	0.0157
	2019	0.0173	0.0162	0.0159	0.0155	0.0150	0.0133	0.0138	0.0143	0.0155	0.0150	0.0149	0.0156
	2020	0.0156	0.0145	0.0102	0.0065	0.0094	0.0106	0.0119	0.0117	0.0118	0.0114	0.0113	0.0137
	2021	0.0139	0.0121	0.0133	0.0125	0.0121	0.0100	0.0111	0.0093	0.0121	0.0121	0.0132	0.0148
	2022	0.0153	0.0134	0.0125	0.0154	0.0126	0.0131	0.0139	0.0148	0.0125	0.0123	0.0128	0.0144
USM	2018	-	-	0.0091	0.0094	0.0079	0.0086	0.0088	0.0088	0.0092	0.0102	0.0104	0.0097
	2019	0.0085	0.0093	0.0078	0.0084	0.0084	0.0085	0.0073	0.0084	0.0107	0.0085	0.0090	0.0087
	2020	0.0078	0.0073	0.0064	0.0043	0.0045	0.0055	0.0062	0.0047	0.0068	0.0072	0.0065	0.0067
	2021	0.0064	0.0059	0.0072	0.0063	0.0060	0.0042	0.0045	0.0047	0.0053	0.0059	0.0072	0.0064
	2022	0.0075	0.0067	0.0071	0.0079	0.0069	0.0079	0.0072	0.0070	0.0073	0.0072	0.0090	0.0074
Sabah													
Keningau	2018	0.0026	0.0025	0.0023	0.0028	0.0020	0.0029	0.0034	0.0036	0.0035	0.0033	0.0026	0.0025
	2019	0.0022	0.0021	0.0032	0.0029	0.0030	0.0030	0.0038	0.0044	0.0042	0.0029	0.0038	0.0030
	2020	0.0032	0.0030	0.0030	0.0018	0.0021	0.0022	0.0020	0.0028	0.0024	0.0029	0.0023	0.0024
	2021	0.0019	0.0026	0.0023	0.0030	0.0023	0.0023	0.0030	0.0023	0.0025	0.0033	0.0024	0.0027
	2022	0.0022	0.0017	0.0021	0.0028	0.0026	0.0025	0.0026	0.0022	0.0021	0.0023	0.0020	0.0029
Kimanis	2018	0.0013	0.0016	0.0016	0.0017	0.0012	0.0014	0.0017	0.0019	0.0017	0.0016	0.0015	0.0014
	2019	0.0021	0.0028	0.0027	0.0019	0.0016	0.0015	0.0018	0.0022	0.0025	0.0017	0.0017	0.0016
	2020	0.0024	0.0029	0.0018	0.0012	0.0010	0.0014	0.0011	0.0016	0.0013	0.0010	0.0012	0.0012
	2021	0.0013	0.0016	0.0014	0.0016	0.0013	0.0012	0.0016	0.0014	0.0014	0.0012	0.0011	0.0013
	2022	0.0019	0.0018	0.0018	0.0020	0.0020	0.0017	0.0016	0.0017	0.0016	0.0016	0.0024	0.0022
Kota Kinabalu	2018	0.0083	0.0096	0.0096	0.0076	0.0026	0.0024	0.0034	0.0035	0.0029	0.0029	0.0030	0.0033
	2019	0.0049	0.0056	0.0049	0.0038	0.0028	0.0024	0.0026	0.0030	0.0031	0.0020	0.0024	0.0024
	2020	0.0033	0.0042	0.0026	0.0012	0.0014	0.0019	0.0018	0.0028	0.0025	0.0020	0.0022	0.0024
	2021	0.0027	0.0026	0.0028	0.0030	0.0027	0.0022	0.0029	0.0024	0.0023	0.0028	0.0029	0.0034
	2022	0.0025	0.0028	0.0025	0.0027	0.0026	0.0027	0.0034	0.0031	0.0029	0.0033	0.0032	0.0035
Sandakan	2018	0.0046	0.0037	0.0043	0.0047	0.0044	0.0046	0.0047	0.0048	0.0050	0.0052	0.0048	0.0048
	2019	0.0039	0.0037	0.0038	0.0037	0.0042	0.0044	0.0045	0.0045	0.0051	0.0050	0.0052	0.0046
	2020	0.0042	0.0033	0.0027	0.0016	0.0028	0.0041	0.0041	0.0041	0.0045	0.0034	0.0036	0.0041
	2021	0.0036	0.0027	0.0041	0.0041	0.0032	0.0025	0.0035	0.0030	0.0033	0.0043	0.0047	0.0046
	2022	0.0049	0.0035	0.0040	0.0042	0.0042	0.0036	0.0039	0.0044	0.0045	0.0048	0.0051	0.0053

Jadual 1.31: Purata bulanan kepekatan Nitrogen Dioksida (NO₂) di udara, Malaysia, 2018-2022 (samb.)

Table 1.31: Monthly average concentration of Nitrogen Dioxide (NO₂) in the air, Malaysia, 2018-2022 (cont'd)

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Sabah													
Tawau	2018	0.0049	0.0052	0.0060	0.0055	0.0046	0.0047	0.0048	0.0050	0.0062	0.0055	0.0053	0.0055
	2019	0.0057	0.0049	0.0050	0.0044	0.0048	0.0045	0.0045	0.0046	0.0048	0.0044	0.0052	0.0051
	2020	0.0055	0.0057	0.0037	0.0026	0.0036	0.0046	0.0046	0.0050	0.0041	0.0035	0.0043	0.0049
	2021	0.0047	0.0046	0.0055	0.0051	0.0047	0.0039	0.0042	0.0039	0.0042	0.0047	0.0048	0.0057
	2022	0.0059	0.0046	0.0045	0.0051	0.0054	0.0045	0.0050	0.0050	0.0054	0.0049	0.0060	0.0053
Sarawak													
Bintulu	2018	0.0052	0.0050	0.0057	0.0062	0.0059	0.0056	0.0060	0.0069	0.0059	0.0058	0.0057	0.0054
	2019	0.0048	0.0046	0.0052	0.0050	0.0058	0.0046	0.0063	0.0063	0.0063	0.0055	0.0055	0.0047
	2020	0.0044	0.0039	0.0035	0.0031	0.0039	0.0037	0.0032	0.0042	0.0039	0.0045	0.0040	0.0050
	2021	0.0041	0.0038	0.0040	0.0053	0.0041	0.0043	0.0049	0.0042	0.0047	0.0045	0.0046	0.0048
	2022	0.0042	0.0037	0.0039	0.0048	0.0044	0.0048	0.0042	0.0038	0.0047	0.0036	0.0047	0.0046
Kuching	2018	0.0048	0.0042	0.0051	0.0050	0.0053	0.0047	0.0045	0.0063	0.0059	0.0055	0.0052	0.0054
	2019	0.0056	0.0044	0.0052	0.0050	0.0054	0.0046	0.0053	0.0069	0.0063	0.0055	0.0048	0.0048
	2020	0.0048	0.0041	0.0035	0.0023	0.0032	0.0041	0.0043	0.0044	0.0049	0.0047	0.0046	0.0042
	2021	0.0033	0.0038	0.0042	0.0051	0.0042	0.0034	0.0033	0.0032	0.0040	0.0043	0.0050	0.0052
	2022	0.0072	0.0056	0.0057	0.0073	0.0059	0.0054	0.0054	0.0059	0.0054	0.0058	0.0064	0.0064
Miri	2018	0.0035	0.0041	0.0035	0.0040	0.0039	0.0037	0.0039	0.0044	0.0039	0.0037	0.0040	0.0041
	2019	0.0041	0.0039	0.0048	0.0047	0.0043	0.0033	0.0044	0.0047	0.0054	0.0042	0.0042	0.0041
	2020	0.0030	0.0029	0.0032	0.0017	0.0023	0.0028	0.0025	0.0034	0.0031	0.0034	0.0035	0.0032
	2021	0.0028	0.0032	0.0032	0.0040	0.0032	0.0031	0.0030	0.0026	0.0027	0.0032	0.0036	0.0038
	2022	0.0035	0.0030	0.0030	0.0037	0.0035	0.0036	0.0033	0.0033	0.0028	0.0025	0.0034	0.0035
Samalaju	2018	0.0022	0.0018	0.0021	0.0027	0.0029	0.0028	0.0034	0.0032	0.0029	0.0029	0.0030	0.0025
	2019	0.0016	0.0020	0.0030	0.0053	0.0038	0.0029	0.0036	0.0040	0.0038	0.0030	0.0030	0.0025
	2020	0.0017	0.0016	0.0019	0.0016	0.0017	0.0017	0.0017	0.0021	0.0019	0.0020	0.0023	0.0025
	2021	0.0023	0.0022	0.0022	0.0030	0.0029	0.0025	0.0031	0.0030	0.0026	0.0024	0.0024	0.0026
	2022	0.0025	0.0024	0.0025	0.0023	0.0023	0.0024	0.0027	0.0023	0.0027	0.0023	0.0025	0.0025
Sibu	2018	0.0057	0.0054	0.0046	0.0050	0.0043	0.0038	0.0045	0.0043	0.0044	0.0038	0.0040	0.0041
	2019	0.0046	0.0042	0.0047	0.0047	0.0043	0.0034	0.0047	0.0048	0.0050	0.0052	0.0051	0.0050
	2020	0.0045	0.0042	0.0032	0.0023	0.0030	0.0037	0.0044	0.0041	0.0041	0.0040	0.0040	0.0049
	2021	0.0035	0.0031	0.0035	0.0043	0.0029	0.0031	0.0038	0.0032	0.0035	0.0036	0.0038	0.0053
	2022	0.0048	0.0032	0.0034	0.0037	0.0038	0.0045	0.0037	0.0045	0.0040	0.0040	0.0047	0.0052
Selangor													
Banting	2018	0.0124	0.0100	0.0115	0.0112	0.0110	0.0084	0.0105	0.0118	0.0116	0.0106	0.0091	0.0103
	2019	0.0070	0.0070	0.0121	0.0107	0.0123	0.0118	0.0123	0.0129	0.0122	0.0119	0.0097	0.0092
	2020	0.0077	0.0078	0.0080	0.0053	0.0083	0.0098	0.0100	0.0097	0.0086	0.0081	0.0089	0.0105
	2021	0.0082	0.0069	0.0095	0.0096	0.0088	0.0064	0.0066	0.0058	0.0077	0.0080	0.0088	0.0082
	2022	0.0098	0.0081	0.0089	0.0106	0.0095	0.0093	0.0099	0.0098	0.0101	0.0099	0.0102	0.0096

Jadual 1.31: Purata bulanan kepekatan Nitrogen Dioksida (NO₂) di udara, Malaysia, 2018-2022 (samb.)Table 1.31: Monthly average concentration of Nitrogen Dioxide (NO₂) in the air, Malaysia, 2018-2022 (cont'd)

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Selangor													
Klang	2018	0.0226	0.0235	0.0256	0.0239	0.0219	0.0171	0.0168	0.0160	0.0208	0.0186	0.0186	0.0192
	2019	0.0194	0.0188	0.0187	0.0203	0.0169	0.0144	0.0160	0.0155	0.0170	0.0205	0.0194	0.0183
	2020	0.0177	0.0183	0.0140	0.0083	0.0110	0.0149	0.0167	0.0153	0.0150	0.0142	0.0169	0.0178
	2021	0.0170	0.0156	0.0187	0.0176	0.0163	0.0116	0.0096	0.0103	0.0141	0.0138	0.0155	0.0169
	2022	0.0204	0.0143	0.0144	0.0150	0.0145	0.0151	0.0144	0.0156	0.0160	0.0149	0.0174	0.0150
Petaling Jaya	2018	0.0275	0.0272	0.0300	0.0270	0.0258	0.0202	0.0216	0.0183	0.0237	0.0227	0.0235	0.0215
	2019	0.0227	0.0236	0.0247	0.0242	0.0205	0.0193	0.0201	0.0214	0.0250	0.0278	0.0276	0.0238
	2020	0.0227	0.0232	0.0185	0.0075	0.0133	0.0209	0.0218	0.0180	0.0188	0.0203	0.0229	0.0242
	2021	0.0225	0.0200	0.0240	0.0255	0.0170	0.0135	0.0098	0.0109	0.0197	0.0194	0.0186	0.0165
	2022	0.0151	0.0131	0.0122	0.0131	0.0110	0.0120	0.0145	0.0161	0.0154	0.0139	0.0155	0.0170
Shah Alam	2018	0.0182	0.0179	0.0215	0.0203	0.0203	0.0175	0.0207	0.0184	0.0179	0.0162	0.0172	0.0147
	2019	0.0183	0.0180	0.0179	0.0188	0.0137	0.0160	0.0191	0.0194	0.0210	0.0159	0.0157	0.0162
	2020	0.0141	0.0135	0.0119	0.0067	0.0101	0.0152	0.0170	0.0162	0.0147	0.0129	0.0147	0.0150
	2021	0.0139	0.0130	0.0163	0.0150	0.0150	0.0111	0.0106	0.0116	0.0135	0.0125	0.0129	0.0144
	2022	0.0147	0.0106	0.0103	0.0147	0.0151	0.0146	0.0169	0.0160	0.0142	0.0133	0.0137	0.0145
Terengganu													
Besut	2018	0.0019	0.0025	0.0017	0.0016	0.0022	0.0028	0.0026	0.0027	0.0017	0.0023	0.0024	0.0028
	2019	0.0024	0.0019	0.0027	0.0022	0.0033	0.0021	0.0025	0.0026	0.0024	0.0018	0.0021	0.0018
	2020	0.0017	0.0017	0.0017	0.0013	0.0020	0.0020	0.0018	0.0020	0.0018	0.0020	0.0020	0.0022
	2021	0.0013	0.0015	0.0016	0.0020	0.0015	0.0008	0.0013	0.0013	0.0013	0.0020	0.0022	0.0024
	2022	0.0021	0.0018	0.0018	0.0020	0.0023	0.0022	0.0022	0.0021	0.0018	0.0020	0.0019	0.0025
Kemaman	2018	0.0025	0.0026	0.0026	0.0025	0.0029	0.0030	0.0027	0.0026	0.0027	0.0027	0.0030	0.0036
	2019	0.0031	0.0027	0.0031	0.0033	0.0028	0.0027	0.0026	0.0029	0.0028	0.0026	0.0025	0.0020
	2020	0.0021	0.0021	0.0020	0.0018	0.0024	0.0033	0.0034	0.0028	0.0034	0.0039	0.0029	0.0031
	2021	0.0024	0.0023	0.0024	0.0025	0.0026	0.0021	0.0026	0.0027	0.0028	0.0030	0.0031	0.0029
	2022	0.0026	0.0024	0.0026	0.0029	0.0034	0.0035	0.0034	0.0029	0.0033	0.0032	0.0035	0.0037
Kuala Terengganu	2018	0.0048	0.0046	0.0043	0.0051	0.0061	0.0062	0.0070	0.0065	0.0054	0.0052	0.0055	0.0058
	2019	0.0051	0.0051	0.0059	0.0056	0.0057	0.0053	0.0055	0.0063	0.0056	0.0046	0.0050	0.0032
	2020	0.0038	0.0033	0.0033	0.0022	0.0038	0.0046	0.0052	0.0050	0.0052	0.0053	0.0047	0.0050
	2021	0.0034	0.0031	0.0038	0.0056	0.0040	0.0030	0.0038	0.0043	0.0043	0.0051	0.0044	0.0041
	2022	0.0043	0.0029	0.0040	0.0046	0.0056	0.0048	0.0050	0.0051	0.0048	0.0044	0.0047	0.0052
Paka	2018	0.0010	0.0012	0.0011	0.0016	0.0020	0.0028	0.0029	0.0028	0.0023	0.0019	0.0016	0.0016
	2019	0.0015	0.0012	0.0015	0.0022	0.0025	0.0025	0.0032	0.0040	0.0027	0.0023	0.0017	0.0010
	2020	0.0012	0.0009	0.0014	0.0010	0.0019	0.0026	0.0027	0.0029	0.0031	0.0020	0.0014	0.0017
	2021	0.0013	0.0013	0.0014	0.0019	0.0018	0.0021	0.0026	0.0025	0.0024	0.0027	0.0035	0.0038
	2022	0.0022	0.0022	0.0025	0.0035	0.0056	0.0043	0.0044	0.0036	0.0039	0.0034	0.0036	0.0033

Jadual 1.31: Purata bulanan kepekatan Nitrogen Dioksida (NO₂) di udara, Malaysia, 2018-2022 (samb.)Table 1.31: Monthly average concentration of Nitrogen Dioxide (NO₂) in the air, Malaysia, 2018-2022 (cont'd)

ppm													
Negeri/ Stesen State/ Station	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.
Wilayah Persekutuan													
Batu Muda, Kuala Lumpur	2018	0.0184	0.0146	0.0184	0.0175	0.0196	0.0186	0.0212	0.0195	0.0201	0.0174	0.0177	0.0169
	2019	0.0150	0.0163	0.0169	0.0183	0.0150	0.0173	0.0188	0.0176	0.0177	0.0173	0.0164	0.0116
	2020	0.0119	0.0105	0.0114	0.0049	0.0099	0.0153	0.0154	0.0167	0.0167	0.0143	0.0137	0.0145
	2021	0.0106	0.0095	0.0129	0.0149	0.0129	0.0092	0.0090	0.0093	0.0131	0.0127	0.0119	0.0125
	2022	0.0135	0.0117	0.0141	0.0157	0.0113	0.0114	0.0080	0.0089	0.0079	0.0073	0.0078	0.0078
Cheras, Kuala Lumpur	2018	0.0230	0.0147	0.0193	0.0179	0.0191	0.0162	0.0178	0.0168	0.0198	0.0199	0.0187	0.0196
	2019	0.0166	0.0133	0.0167	0.0188	0.0163	0.0143	0.0171	0.0167	0.0183	0.0168	0.0192	0.0160
	2020	0.0141	0.0114	0.0098	0.0048	0.0087	0.0130	0.0145	0.0128	0.0146	0.0135	0.0133	0.0147
	2021	0.0104	0.0076	0.0129	0.0139	0.0115	0.0066	0.0080	0.0102	0.0119	0.0128	0.0130	0.0140
	2022	0.0151	0.0113	0.0121	0.0136	0.0114	0.0130	0.0135	0.0132	0.0151	0.0128	0.0145	0.0142
Labuan	2018	-	-	0.0025	0.0031	0.0029	0.0034	0.0030	0.0024	0.0021	0.0023	0.0020	0.0018
	2019	0.0014	0.0015	0.0019	0.0022	0.0025	0.0019	0.0026	0.0026	0.0025	0.0021	0.0023	0.0020
	2020	0.0016	0.0014	0.0018	0.0015	0.0012	0.0016	0.0016	0.0019	0.0019	0.0022	0.0020	0.0022
	2021	0.0016	0.0016	0.0018	0.0016	0.0017	0.0012	0.0014	0.0017	0.0019	0.0021	0.0023	0.0019
	2022	0.0017	0.0013	0.0018	0.0020	0.0023	0.0025	0.0020	0.0015	0.0021	0.0020	0.0024	0.0023
Putrajaya	2018	0.0120	0.0072	0.0088	0.0093	0.0100	0.0081	0.0102	0.0100	0.0118	0.0110	0.0097	0.0111
	2019	0.0091	0.0067	0.0089	0.0096	0.0084	0.0077	0.0089	0.0084	0.0102	0.0102	0.0098	0.0072
	2020	0.0061	0.0061	0.0054	0.0036	0.0056	0.0064	0.0095	0.0083	0.0080	0.0076	0.0072	0.0088
	2021	0.0055	0.0049	0.0070	0.0079	0.0071	0.0046	0.0042	0.0053	0.0061	0.0075	0.0078	0.0075
	2022	0.0073	0.0071	0.0081	0.0094	0.0073	0.0062	0.0077	0.0084	0.0107	0.0101	0.0099	0.0066

Nota: Garis Panduan Kualiti Udara Malaysia: NO₂ tidak melebihi 0.16 ppm
 Notes: Malaysian Ambient Air Quality Guidelines: NO₂ not exceeding 0.16 ppm

Sumber: Jabatan Alam Sekitar
 Source: Department of Environment

Jadual 1.32: Purata tahunan kepekatan berdasarkan jenis bahan pencemar udara mengikut guna tanah, Malaysia, 2018-2022

Table 1.32: Average annual concentration based on the type of air pollutants by land use, Malaysia, 2018-2022

Bahan pencemar udara <i>Air pollutant</i>	Garis panduan Malaysia <i>Malaysia guidelines</i>	Tahun <i>Year</i>	Kawasan industri <i>Industrial ar- eas</i>	Bandar <i>Urban</i>	Subbandar <i>Sub-urban</i>	Luar bandar <i>Rural</i>	Background
Ozon Permukaan Bumi (O ₃) <i>Ground Level Ozone</i>	0.10 ppm	2018	n.a.	0.0188	0.0173	n.a.	0.0099
		2019	n.a.	0.0367	0.0330	n.a.	0.0212
		2020	n.a.	0.0325	0.0278	n.a.	0.0175
		2021	n.a.	0.0317	0.0271	n.a.	0.0178
		2022	n.a.	0.0292	0.0269	n.a.	0.0189
Karbon Monoksida (CO) <i>Carbon Monoxide</i>	9.00 ppm	2018	n.a.	0.7247	0.6329	n.a.	0.6170
		2019	n.a.	0.7126	0.6250	n.a.	0.6476
		2020	n.a.	0.5831	0.5304	n.a.	0.6265
		2021	n.a.	0.5800	0.5172	n.a.	0.5940
		2022	n.a.	0.6003	0.5052	n.a.	0.5190
Sulfur Dioksida (SO ₂) <i>Sulphur Dioxide</i>	0.04 ppm	2018	0.0009	0.0012	0.0010	n.a.	0.0009
		2019	0.0010	0.0012	0.0010	n.a.	0.0010
		2020	0.0011	0.0012	0.0010	n.a.	0.0012
		2021	0.0010	0.0013	0.0011	n.a.	0.0014
		2022	0.0011	0.0014	0.0012	n.a.	0.0014
Nitrogen Dioksida (NO ₂) <i>Nitrogen Dioxide</i>	0.16 ppm	2018	0.0037	0.0011	0.0073	n.a.	0.0028
		2019	0.0038	0.0105	0.0069	n.a.	0.0032
		2020	0.0033	0.0081	0.0056	n.a.	0.0025
		2021	0.0033	0.0082	0.0055	n.a.	0.0025
		2022	0.0024	0.0094	0.0059	n.a.	0.0023
Habuk Halus (PM ₁₀) <i>Particulate Matter</i>	45 µg/m ³	2018	23	28	26	22	21
		2019	26	32	29	28	22
		2020	18	22	21	17	17
		2021	18	23	21	18	19
		2022	19	23	20	17	17
Habuk Halus (PM _{2.5}) <i>Particulate Matter</i>	25 µg/m ³	2018	14	19	17	14	12
		2019	17	23	21	19	14
		2020	10	14	13	10	9
		2021	10	15	14	11	10
		2022	10	16	13	10	8

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Jadual 1.33: Status kualiti air sungai berdasarkan pencemar utama, Malaysia, 2018-2022

Table 1.33: Status of river water quality based on main pollutants, Malaysia, 2018-2022

Tahun Year	Jumlah lembangan sungai yang diawasi Total river basins monitored	Ammoniakal Nitrogen Ammoniacal Nitrogen (NH ₃ -N)			Keperluan Oksigen Biokimia Biochemical Oxygen Demand (BOD ₅)			Pepejal Terampai Suspended Solids (SS)		
		B C	ST SP	T P	B C	ST SP	T P	B C	ST SP	T P
2018	143	5	88	50	54	37	52	71	31	41
2019	144	12	74	58	53	39	52	78	36	30
2020	144	28	74	42	83	46	15	110	14	20
2021	144	58	37	49	124	11	9	127	7	10
2022	144	52	51	41	120	10	14	118	12	14

B-Bersih
C-Clean**ST-Sederhana Tercemar**
SP-Slightly Polluted**T-Tercemar**
P-Polluted**Sumber: Jabatan Alam Sekitar**
Source: Department of Environment**Jadual 1.34: Purata tahunan kepekatan logam berat di sungai, Malaysia, 2018-2022**

Table 1.34: Annual average concentration of heavy metals in river, Malaysia, 2018-2022

Logam berat Heavy metal	Nilai boleh diterima ¹ Acceptable value						mg/l
		2018	2019	2020	2021	2022	
Arsenik Arsenic	0.0500	0.0060	0.0070	0.0041	0.0040	0.0040	
Kadmium Cadmium	0.0050	0.0010	0.0010	0.0010	0.0010	0.0010	
Plumbum Lead	0.1000	0.0040	0.0010	0.0024	0.0024	0.0028	
Raksa Mercury	0.0010	0.0010	0.0010	0.0005	0.0003	0.0001	
Zink Zinc	1.5000	0.0300	0.0100	0.0264	0.0412	0.0212	

Nota:
Notes:**Sumber: Jabatan Alam Sekitar**
Source: Department of Environment¹Garis Panduan Kebangsaan untuk Kualiti Air Minuman oleh Kementerian Kesihatan
National Guideline for Drinking Water Quality by the Ministry of Health

Jadual 1.35: Bilangan stesen pemantauan kualiti air marin, Malaysia, 2018-2022

Table 1.35: Number of marine water quality monitoring stations, Malaysia, 2018-2022

Kawasan Area	2018	2019	2020	2021	2022
Jumlah Total	368	368	368	368	368
Kawasan pantai Coastal areas	188	188	188	188	188
Muara sungai Estuaries	85	85	85	85	85
Pulau Island	95	95	95	95	95

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Jadual 1.36: Status kualiti air marin di kawasan pantai berdasarkan Indeks Kualiti Air Marin, Malaysia, 2018-2022

Table 1.36: Status of marine water quality in coastal areas based on Marine Water Quality Index, Malaysia, 2018-2022

Bilangan stesen
Number of stations

Negeri State	Kategori Category															
	2018				2019				2020				2021			
	E	G	M	P	E	G	M	P	E	G	M	P	E	G	M	P
Jumlah Total	124	37	27	-	37	69	79	3	55	41	88	4	85	40	63	-
Johor	20	3	6	-	3	8	15	3	12	7	7	3	17	5	7	-
Kedah	8	1	-	-	5	2	2	-	6	2	1	-	6	3	-	-
Kelantan	6	-	-	-	1	5	-	-	1	4	1	-	6	-	-	-
Melaka	2	4	3	-	-	-	9	-	3	2	4	-	-	5	4	-
Negeri Sembilan	6	4	4	-	-	8	6	-	5	7	2	-	9	3	2	-
Pahang	16	4	2	-	4	9	9	-	9	5	8	-	18	1	3	-
Perak	8	-	-	-	-	2	6	-	5	3	-	-	7	-	1	-
Pulau Pinang	5	2	10	-	-	2	15	-	-	6	11	-	3	4	10	-
Sabah	24	-	-	-	7	11	6	-	-	-	24	-	-	3	21	-
Sarawak	7	15	1	-	10	12	1	-	-	3	19	1	4	12	7	-
Selangor	2	3	1	-	-	1	5	-	1	-	5	-	-	3	3	-
Terengganu	15	1	-	-	7	7	2	-	13	2	1	-	15	1	-	-
W.P. Labuan	5	-	-	-	-	2	3	-	-	-	5	-	-	-	5	-

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Nota:
Notes:

Tiada stesen kualiti air marin di kawasan pantai bagi Perlis, W.P. Kuala Lumpur dan W.P. Putrajaya
No marine water quality stations in the coastal areas of Perlis, W.P. Kuala Lumpur and W.P. Putrajaya

Klasifikasi Indeks Kualiti Air Marin:
Marine Water Quality Index Classification:

Kategori Category	Nilai indeks Index value
E	Terbaik/Excellent (90 -100)
G	Baik/Good (80 - <90)
M	Sederhana/Moderate (50 - <80)
P	Tercemar/Poor (0 - <50)

Jadual 1.37: Status kualiti air marin di kawasan muara sungai berdasarkan Indeks Kualiti Air Marin, Malaysia, 2018-2022

Table 1.37: Status of marine water quality in estuary areas based on Marine Water Quality Index, Malaysia, 2018-2022

Bilangan stesen
Number of stations

Negeri State	Kategori Category															
	2018				2019				2020				2021			
	E	G	M	P	E	G	M	P	E	G	M	P	E	G	M	P
Jumlah Total	18	21	41	5	3	13	58	11	3	6	63	13	7	10	63	5
Johor	1	1	3	1	-	-	4	2	-	1	3	2	1	-	5	-
Kedah	-	2	2	-	-	-	4	-	-	-	4	-	-	-	4	-
Kelantan	-	1	5	-	-	-	5	1	-	-	6	-	-	1	5	-
Melaka	-	3	5	-	-	-	7	1	-	1	7	-	-	-	8	-
Negeri Sembilan	-	-	2	-	-	-	2	-	-	-	2	-	-	-	2	-
Pahang	2	-	3	-	-	-	5	-	1	-	4	-	-	1	4	-
Perak	1	2	3	-	-	-	5	1	-	-	4	2	-	-	5	1
Perlis	-	-	2	-	-	-	2	-	-	-	2	-	-	-	2	-
Pulau Pinang	-	-	5	2	-	-	6	1	-	-	3	4	-	-	5	2
Sabah	2	-	-	-	-	1	1	-	-	-	2	-	-	-	2	-
Sarawak	2	8	4	-	1	9	4	-	-	1	13	-	2	4	8	-
Selangor	1	3	4	2	-	-	5	5	-	2	3	5	-	2	6	2
Terengganu	9	1	3	-	2	3	8	-	2	1	10	-	4	2	7	-

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Nota: Tiada stesen kualiti air marin di kawasan muara sungai bagi W.P. Kuala Lumpur, W.P. Labuan dan W.P. Putrajaya

Notes: No marine water quality stations in the estuaries areas of W.P. Kuala Lumpur, W.P. Labuan and W.P. Putrajaya

Klasifikasi Indeks Kualiti Air Marin:

Marine Water Quality Index Classification:

Kategori Category	Nilai indeks Index value
E	Terbaik/Excellent (90 -100)
G	Baik/Good (80 - <90)
M	Sederhana/Moderate (50 - <80)
P	Tercemar/Poor (0 - <50)

Jadual 1.38: Status kualiti air marin di kawasan pulau berdasarkan Indeks Kualiti Air Marin, Malaysia, 2018-2022

Table 1.38: Status of marine water quality in island areas based on Marine Water Quality Index, Malaysia, 2018-2022

Bilangan stesen
Number of stations

Negeri State	Kategori Category															
	2018				2019				2020				2021			
	E	G	M	P	E	G	M	P	E	G	M	P	E	G	M	P
Jumlah Total	82	8	5	-	34	33	27	1	46	9	39	1	53	10	32	-
Johor	7	1	-	-	3	2	3	-	5	1	2	-	5	1	2	-
Kedah	13	1	-	-	8	5	1	-	12	2	-	-	13	1	-	-
Kelantan	2	-	-	-	-	2	-	-	-	1	1	-	2	-	-	-
Melaka	4	2	-	-	1	2	3	-	4	2	-	-	4	1	1	-
Negeri Sembilan	1	-	-	-	-	1	-	-	1	-	-	-	1	-	-	-
Pahang	9	-	-	-	7	1	1	-	7	1	1	-	9	-	-	-
Perak	5	-	-	-	1	3	1	-	4	-	1	-	4	1	-	-
Pulau Pinang	2	3	4	-	-	1	8	-	2	2	5	-	2	2	5	-
Sabah	17	-	-	-	3	9	5	-	-	-	17	-	-	2	15	-
Sarawak	3	-	-	-	3	-	-	-	-	-	3	-	2	1	-	-
Selangor	1	1	1	-	-	-	2	1	-	-	2	1	-	1	2	-
Terengganu	11	-	-	-	6	4	1	-	11	-	-	-	11	-	-	-
W.P. Labuan	7	-	-	-	2	3	2	-	-	-	7	-	-	-	7	-

Nota:

Notes:

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

Tiada stesen kualiti air marin di kawasan pulau bagi Perlis, W.P. Kuala Lumpur dan W.P. Putrajaya

No marine water quality stations in the island areas of Perlis, W.P. Kuala Lumpur and W.P. Putrajaya

Klasifikasi Indeks Kualiti Air Marin:

Marine Water Quality Index Classification:

Kategori Category	Nilai indeks Index value
E	Terbaik/Excellent (90 - 100)
G	Baik/Good (80 - <90)
M	Sederhana/Moderate (50 - <80)
P	Tercemar/Poor (0 - <50)



KOMPONEN COMPONENT 2

**SUMBER ALAM SEKITAR
DAN KEGUNAANNYA**

**ENVIRONMENTAL
RESOURCES AND THEIR USE**

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Jadual 2.1: Rizab mineral, Malaysia, 2018-2022

Table 2.1: Mineral reserves, Malaysia, 2018-2022

	Tan metrik ('000) Metric tonnes				
Galian Minerals	2018	2019	2020	2021	2022
Jumlah Total	53,867,085.1	53,968,050.1	53,968,050.1	54,164,050.1	54,164,050.1
Mineral berlogam Metallic minerals					
Timah Tin	2,100.0	2,100.0	2,100.0	2,100.0	2,100.0
Bijih besi Iron ore	502,600.0	502,600.0	502,600	502,600.0	502,600.0
Bauksit Bauxite	169,800.0	181,500.0	181,500.0	181,500.0	181,500.0
Tembaga Copper	585.0	5,900.0	5,900.0	5,900.0	5,900.0
Bijih nikel Nickel ore	75,000.0	75,000.0	75,000.0	271,000.0	271,000.0
Emas Gold	0.1	0.1	0.1	0.1	0.1
Mangan Manganese	5,700.0	3,200.0	3,200.0	3,200.0	3,200.0
Mineral perindustrian Industrial minerals					
Batuan kuarza Quartz rock	859,400.0	860,700.0	860,700.0	860,700.0	860,700.0
Lempung bebola Ball clay	4,278,100.0	4,262,500.0	4,262,500.0	4,262,500.0	4,262,500.0
Lempung marin Marine clay	176,100.0	176,100.0	176,100.0	176,100.0	176,100.0
Lempung api Fire clay	150.0	150.0	150.0	150.0	150.0
Feldspar	8,012,700.0	8,012,700.0	8,012,700.0	8,012,700.0	8,012,700.0
Kaolin	80,200.0	79,600.0	79,600.0	79,600.0	79,600.0
Batu kapur Limestone	27,639,700.0	27,639,700.0	27,639,700	27,639,700	27,639,700
Mika Mica	4,100.0	4,100.0	4,100.0	4,100.0	4,100.0
Batu kapur bermagnesium Dolomite	200,000.0	200,000.0	200,000.0	200,000.0	200,000.0
Pasir silika Silica sand	284,200.0	368,200.0	368,200.0	368,200.0	368,200.0
Batu dimensi Dimension stone	5,772,000.0	5,772,000.0	5,772,000	5,772,000.0	5,772,000.0
Agregat batuan Rock aggregates	3,831,900.0	3,849,300.0	3,849,300	3,849,300.0	3,849,300.0
Mineral tenaga Energy mineral					
Arang batu Coal	1,972,750.0	1,972,700.0	1,972,700.0	1,972,700.0	1,972,700.0

Sumber: Jabatan Mineral dan Geosains

Source: Department of Mineral and Geoscience

Jadual 2.2: Rizab minyak mentah dan kondensat, Malaysia, 2017-2021

Table 2.2: Reserves of crude oil and condensates, Malaysia, 2017-2021

	Bilion tong Billion barrels				
Tahun Year	2017	2018	2019	2020 ^P	2021 ^P
Jumlah Total	4.727	4.553	4.675	4.527	4.430
Semenanjung Malaysia Peninsular Malaysia	1.669	1.612	1.476	1.306	1.292
Sabah	1.767	1.637	1.497	1.451	1.342
Sarawak	1.290	1.304	1.702	1.770	1.796

Nota: ^P Permulaan

Notes: Preliminary

Sumber: Suruhanjaya Tenaga

Source: Energy Commission

Jadual 2.3: Rizab gas asli, Malaysia, 2017-2021

Table 2.3: Reserves of natural gas, Malaysia, 2017-2021

				Trillion Kubik Kaki Standard (TSCF) Trillion Standard Cubic Feet		
Jenis Type		2017	2018	2019	2020	2021 ^P
Jumlah keseluruhan Grand total		82.898	79.531	79.168	75.262	76.032
Sem. Malaysia Pen. Malaysia	Jumlah Total	25.659	23.688	21.648	20.313	20.246
	Bersekutu Associated	6.333	6.422	6.428	5.701	5.885
	Tidak bersekutu Non-associated	19.327	17.266	15.219	14.612	14.362
Sabah	Jumlah Total	12.547	12.582	11.665	10.550	9.675
	Bersekutu Associated	1.487	2.078	2.054	1.605	1.518
	Tidak bersekutu Non-associated	11.060	10.504	9.611	8.945	8.517
Sarawak	Jumlah Total	44.692	43.261	45.855	44.399	46.110
	Bersekutu Associated	1.508	1.507	1.419	1.151	1.971
	Tidak bersekutu Non-associated	43.184	41.754	44.436	43.248	44.139

Nota: ^P Permulaan

Notes: Preliminary

Sumber: Suruhanjaya Tenaga

Source: Energy Commission

Jadual 2.4: Pengeluaran mineral mengikut jenis, Malaysia, 2018-2022

Table 2.4: Production of minerals by type, Malaysia, 2018-2022

	Tan metrik Metric tonnes				
Galian Minerals	2018	2019	2020	2021	2022 ^P
Mineral berlogam <i>Metallic minerals</i>					
Timah dalam konsentrat ¹ <i>Tin-in-concentrates</i>	3,868	3,611	3,091	3,013 ^r	3,521
Bijih besi <i>Iron ore</i>	3,353,634	4,160,462	5,371,411	4,874,485	4,911,625
Bauksit <i>Bauxite</i>	589,684	900,561	594,714	47,577	129,825
Ilmenit <i>Ilmenite</i>	14,158	2,334	2,548	4,598	24,076
Emas mentah ('000 gram) <i>Raw gold ('000 grams)</i>	2,978.1	3,150.9	1,716.0	1,781.2	1,828.3
Mineral bukan logam <i>Non-metallic minerals</i>					
Barit <i>Barytes</i>	-	-	-	-	-
Tanah liat & bahan tanah <i>Clay & earth materials</i>	33,090,097	33,090,097	25,365,453	26,549,734	29,963,919
Feldspar	414,441	241,189	144,487	168,570	216,394
Kaolin	496,219	407,222	336,565	228,605	236,840
Batu kapur (untuk simen) <i>Limestone (for cement)</i>	25,342,038	24,161,255	22,377,940	19,978,936	22,760,764
Mika <i>Mica</i>	5,165	4,358	4,083	3,406	3,779
Pasir dan kerikil <i>Sand and gravel</i>	44,919,128	69,424,689	35,681,476	35,556,498	33,566,866
Pasir silika <i>Silica sand</i>	4,063,970	4,704,505	5,172,409	6,913,354	5,364,128
Agregat <i>Aggregates</i>	131,584,506	128,622,004	108,084,837	109,519,817	138,637,413
Mineral tenaga <i>Energy mineral</i>					
Arang batu <i>Coal</i>	2,652,813	3,459,122	2,978,248	3,110,605	3,405,847

Nota:

Notes:

Sumber: Jabatan Mineral dan Geosains

Source: Department of Mineral and Geoscience

¹Timah dalam konsentrat adalah merujuk kepada kandungan timah dalam konsentrat bijih timah

Tin-in-concentrates refers to tin content of in tin ore concentrates

^P Permulaan/ Preliminary

Jadual 2.5: Import mineral terpilih, Malaysia, 2018-2022

Table 2.5: Imports of selected minerals, Malaysia, 2018-2022

RM '000

Galian Minerals	2018	2019	2020	2021	2022 ^P
Mineral berlogam <i>Metallic minerals</i>					
Timah <i>Tin</i>	1,676,030	1,550,800	1,384,472	1,235,352	1,868,689
Bijih besi <i>Iron ore</i>	4,254,030	5,380,184	4,889,458	6,624,016	7,481,572
Aluminium <i>Aluminium</i>	15,010	13,926	13,538	16,358	19,682
Emas <i>Gold</i>	-	-	-	-	-
Mangan <i>Manganese</i>	1,525,283	1,143,792	753,875	812,719	1,376,464
Mineral perindustrian <i>Industrial minerals</i>					
Kaolin	101,934	92,251	74,730	106,670	259,894
Batu kapur <i>Limestone</i>	429	57,768	67,885	50,765	35,085
Mika <i>Mica</i>	3,702	4,464	4,058	5,207	5,400
Pasir silika <i>Silica sand</i>	16,990	19,370	26,504	36,590	10,458
Agregat <i>Aggregates</i>	21,567	30,356	18,535	18,970 ⁱ	18,431
Mineral tenaga <i>Energy mineral</i>					
Arang batu <i>Coal</i>					
Arang batu antrasit <i>Anthracite coal</i>	547,498	169,690	101,039	100,824	239,404
Arang batu lain-lain <i>Other coal</i>	11,848,940	10,183,340	7,956,951	14,664,714	26,317,030
Kok & semi kok arang batu <i>Coke & semi coke of coal</i>	1,746,740	1,665,310	1,176,866	1,525,344 ⁱ	1,813,278

Nota: ^P Permulaan

Notes: Preliminary

Sumber: Jabatan Mineral dan Geosains

Source: Department of Mineral and Geoscience

Jadual 2.6: Eksport mineral terpilih, Malaysia, 2018-2022

Table 2.6: Exports of selected minerals, Malaysia, 2018-2022

RM '000

Galian Minerals	2018	2019	2020	2021	2022 ^P
Mineral berlogam <i>Metallic minerals</i>					
Timah <i>Tin</i>	77	3,301	4,445	54,242	188,585
Bijih besi <i>Iron ore</i>	3,446,720	4,181,029	3,818,976	5,217,801	5,301,581
Aluminium <i>Aluminium</i>	70,205	108,381	46,617	42,436	56,042
Emas <i>Gold</i>	-	-	-	-	-
Mangan <i>Manganese</i>	93,120	282,245	223,227	151,780	155,961
Mineral perindustrian <i>Industrial minerals</i>					
Kaolin	48,862	46,399	35,954	47,233	40,645
Batu kapur <i>Limestone</i>	213,721	213,696	158,414	193,148	193,480
Mika <i>Mica</i>	11,551	11,335	8,072	7,769	3,932
Pasir silika <i>Silica sand</i>	34,562	132,719	265,167	138,661	61,159
Agregat <i>Aggregates</i>	230,434	350,277	184,237	218,793	120,907
Mineral tenaga <i>Energy mineral</i>					
Arang batu <i>Coal</i>					
Arang batu antrasit <i>Anthracite coal</i>	7,920	6,043	3,571	4,117	2,997
Arang batu lain-lain <i>Other coal</i>	100,920	14,642	4,010	37,359	48,860
Kok & semi kok arang batu <i>Coke & semi coke of coal</i>	5,982	1,684	533	637	1,516

Nota: ^P Permulaan

Notes: Preliminary

Sumber: Jabatan Mineral dan Geosains

Source: Department of Mineral and Geoscience

Jadual 2.7: Import dan eksport produk petroleum, Malaysia, 2017-2021

Table 2.7: Imports and exports of petroleum products, Malaysia, 2017-2021

ktoe

Tahun Year	2017	2018	2019	2020 ^P	2021 ^P
Import <i>Import</i>	13,252	19,764	17,662	12,586	18,329
Eksport <i>Export</i>	11,063	16,029	11,779	10,590	19,260

Nota: ^P Permulaan

Notes: Preliminary

Sumber: Suruhanjaya Tenaga

Source: Energy Commission

Jadual 2.8: Import dan eksport gas asli talian paip dan LNG, Malaysia, 2017-2021

Table 2.8: Imports and exports of piped natural gas and LNG, Malaysia, 2017-2021

ktoe

Tahun Year	2017	2018	2019	2020	2021 ^P
Gas asli talian paip <i>Piped natural gas</i>					
Import <i>Import</i>	5,183	5,573	5,325	5,519	6,049
Eksport <i>Export</i>	1,452	1,407	1,114	1,179	1,569
LNG					
Import <i>Import</i>	1,815	1,383	2,663	2,939	1,996
Eksport <i>Export</i>	29,428	25,920	29,044	26,155	26,798

Nota: ^P Permulaan
Notes: Preliminary

Sumber: Suruhanjaya Tenaga
Source: Energy Commission

Jadual 2.9: Tenaga primer yang dibekalkan mengikut jenis bahan api, Malaysia, 2017-2021

Table 2.9: Supplied primary energy by fuel type, Malaysia, 2017-2021

ktoe

Tahun Year	2017	2018	2019	2020	2021 ^P
Jumlah <i>Total</i>	94,344	95,908	98,681	94,192	94,399
Minyak mentah <i>Crude oil</i>	27,471	25,735	25,523	23,101	23,913
Produk petroleum dan lain-lain <i>Petroleum products and others</i>	1,909	3,694	7,290	2,672	1,338
Gas asli <i>Natural gas</i>	41,200	40,939	41,461	39,939	42,296
Arang batu dan kok <i>Coal and coke</i>	20,771	22,280	21,057	24,788	22,917
Kuasa hidro dan boleh baharu <i>Hydropower and renewables</i>	2,994	3,261	3,349	3,691	3,936

Nota: ^P Permulaan
Notes: Preliminary

Sumber: Suruhanjaya Tenaga
Source: Energy Commission

Jadual 2.10: Pengeluaran produk petroleum dari loji penapisan, Malaysia, 2017-2021

Table 2.10: Production of petroleum products from refineries, Malaysia, 2017-2021

	ktoe				
Tahun Year	2017	2018	2019	2020	2021 ^P
Jumlah <i>Total</i>	27,226	24,669	23,082	20,745	21,483
Petrol	8,253	5,524	5,317	5,089	6,760
Diesel	9,877	9,665	8,484	9,199	6,157
Minyak bahan api <i>Fuel oil</i>	1,725	2,432	1,388	1,204	1,497
LPG	832	900	560	672	1,755
Minyak tanah <i>Kerosene</i>	10	18	8	12	10
ATF dan AVGAS <i>ATF and AVGAS</i>	3,255	3,451	3,470	2,459	2,386
Bukan tenaga <i>Non-energy</i>	3,100	2,550	3,708	1,954	2,762
Gas penapisan <i>Refinery gas</i>	174	130	147	156	155

Nota: ^P Permulaan
Notes: Preliminary

Sumber: Suruhanjaya Tenaga
Source: Energy Commission

Jadual 2.11: Penggunaan akhir tenaga mengikut jenis bahan api, Malaysia, 2017-2021

Table 2.11: Final energy consumption by fuel type, Malaysia, 2017-2021

	ktoe				
Tahun Year	2017	2018	2019	2020	2021 ^P
Jumlah <i>Total</i>	62,489	64,658	66,483	57,169	57,390
Produk petroleum dan lain-lain <i>Petroleum products and others</i>	31,240	30,846	32,483	26,100	24,731
Elektrik <i>Electricity</i>	12,607	13,153	13,647	13,100	13,451
Gas asli <i>Natural gas</i>	16,838	18,851	18,647	16,631	17,815
Arang batu dan kok <i>Coal and coke</i>	1,804	1,808	1,706	1,338	1,392

Nota: ^P Permulaan
Notes: Preliminary

Sumber: Suruhanjaya Tenaga
Source: Energy Commission

Jadual 2.12: Penggunaan akhir tenaga produk petroleum, Malaysia, 2017-2021

Table 2.12: Final energy consumption for petroleum products, Malaysia, 2017-2021

	ktoe				
Tahun Year	2017	2018	2019	2020	2021 ^P
Jumlah Total	30,862	30,409	31,835	25,309	23,905
Diesel	9,388	9,756	10,583	8,516	8,800
Petrol	13,437	13,041	13,811	11,188	10,529
Minyak bahan api Fuel oil	579	387	446	338	342
LPG	3,514	3,309	3,017	3,423	2,637
Minyak tanah Kerosene	5	6	12	32	59
ATF dan AVGAS ATF and AVGAS	3,220	3,121	3,261	1,199	985
Bukan tenaga & lain-lain Non-energy & others	719	789	705	613	552

Nota: ^P Permulaan
Notes: Preliminary

Sumber: Suruhanjaya Tenaga
Source: Energy Commission

Jadual 2.13: Penggunaan akhir tenaga mengikut sektor, Malaysia, 2017-2021

Table 2.13: Final energy consumption by sector, Malaysia, 2017-2021

	ktoe				
Tahun Year	2017	2018	2019	2020 ^P	2021 ^P
Jumlah Total	62,489	64,658	66,483	57,169	57,390
Industri Industry	17,463	19,046	18,921	17,714	19,297
Pengangkutan Transport	24,039	23,555	25,004	18,660	18,095
Kediaman dan komersial Residential and commercial	7,796	7,773	8,000	8,123	8,084
Penggunaan bukan tenaga Non-energy use	12,517	13,262	13,631	11,805	10,869
Pertanian Agriculture	674	1,021	927	867	1,045

Nota: ^P Permulaan
Notes: Preliminary

Sumber: Suruhanjaya Tenaga
Source: Energy Commission

Jadual 2.14: Peratusan tenaga boleh baharu, Malaysia, 2017-2021

Table 2.14: Renewable energy percentage, Malaysia, 2017-2021

Tahun Year	Jumlah tenaga primer yang dibekalkan Primary energy supplied	Campuran penjanaan Generation mix	Biotenaga Bioenergy	Peratus Per cent
2017	3.2	16.9	3.0	
2018	3.4	16.6	4.8	
2019	3.4	16.1	3.8	
2020	3.9	17.6	4.0	
2021 ^P	4.2	19.3	3.6	

Nota: ^P Permulaan
Notes: Preliminary

Sumber: Suruhanjaya Tenaga
Source: Energy Commission

Jadual 2.15: Intensiti tenaga dan penggunaan tenaga, Malaysia, 2017-2021

Table 2.15: Energy intensity and energy consumption, Malaysia, 2017-2021

Tahun Year	Intensiti tenaga Energy intensity		Penggunaan tenaga per kapita Energy consumption per capita			Intensiti tenaga mengikut sektor Energy intensity by sector	
	toe/KDNK pada harga malar 2015 (RM juta) toe/GDP at constant price 2015 (RM million)		(toe)			toe/KDNK pada harga malar 2015 (RM juta) toe/GDP at constant price 2015 (RM million)	
	Tenaga primer Primary energy	Tenaga akhir End-use energy	Semenanjung Malaysia Peninsular Malaysia	Sabah	Sarawak	Industri Industry	Komersial Commercial
2017	72.53	48.04	1.839	2.406	2.335	54.8	5.6
2018	70.33	47.41	1.854	1.651	3.802	58.1	5.7
2019	69.30	46.69	1.870	1.639	4.219	57.0	5.7
2020	70.02	42.50	1.560	1.609	4.157	54.9	5.2
2021 ^P	67.88	41.27	1.560	1.590	4.181	53.8	4.9

Nota: ^P Permulaan
Notes: Preliminary

Sumber: Suruhanjaya Tenaga
Source: Energy Commission

Jadual 2.16: Keluasan hutan yang dilesenkan untuk pengusahaan mengikut negeri, Malaysia, 2016-2020

Table 2.16: Forest area licensed for harvesting by state, Malaysia, 2016-2020

Negeri State	2016	2017	2018	2019	2020
					Hektar Hectares
Malaysia	307,903	369,615	283,530	177,639	154,614
Semenanjung Malaysia Peninsular Malaysia	94,931	79,359	106,601	73,183	70,917
Johor	2,631	1,852	3,701	1,528	2,240
Kedah	7,415	4,599	3,688	1,812	5,085
Kelantan	16,611	12,879	21,720	20,196	15,815
Melaka	40	62	33	326	174
Negeri Sembilan	2,469	2,804	2,643	1,619	1,196
Pahang	42,823	37,623	32,545	30,243	30,930
Perak	12,850	9,460	33,513	8,838	10,052
Perlis	11	59	196	151	207
Pulau Pinang	-	9	-	-	10
Selangor	107	32	263	671	88
Terengganu	9,974	9,980	8,299	7,799	5,120
Sabah	80,368	171,828	60,875	21,998	32,209
Sarawak	132,604	118,428	116,054	82,458	51,488

Sumber: Jabatan Perhutanan Semenanjung Malaysia
Jabatan Perhutanan Sabah
Jabatan Hutan Sarawak

Source: Forest Department Peninsular Malaysia
Sabah Forestry Department
Forests Department Sarawak

Jadual 2.17: Keluasan bertanam¹ bagi tanaman terpilih, Malaysia, 2018-2022

Table 2.17: *Planted area of selected crops, Malaysia, 2018-2022*

	Hektar ('000) Hectares				
Tanaman Crops	2018	2019	2020	2021	2022
Kelapa sawit Oil palm	5,849.3	5,900.2	5,865.3	5,737.7	5,674.7
Getah ² Rubber	1,085.0	1,131.9	1,139.1	1,137.1	1,136.1
Padi Paddy	700.0	672.1	644.9	647.9	637.9 ^p
Lada Pepper	7.2	7.3	8.0	7.8	8.0
Koko Cocoa	15.6	5.9	5.9	6.0	6.0

Nota:

Notes:

¹Kelapa sawit, getah dan koko meliputi keluasan estet dan kebun kecil

Oil palm, rubber and cocoa covers area of estates and smallholdings

²Keluasan bertanam getah bagi kebun kecil adalah merujuk kepada Banci Pekebun Kecil RISDA 2013 meliputi kawasan di bawah RISDA, FELDA, FELCRA, KESEDAR, Lembaga Industri Getah Sabah (LIGS) dan Jabatan Pertanian Sarawak (JPS)

The rubber planted area for other smallholding refers to the 2013 RISDA Smallholders Census which covers area under RISDA, FELDA, FELCRA, KESEDAR, LIGS and JPS

^p Permulaan

Preliminary

Sumber: Jabatan Pertanian Malaysia, Lembaga Minyak Sawit Malaysia, Lembaga Koko Malaysia, Lembaga Lada Malaysia, Lembaga Getah Malaysia dan Pihak Berkuasa Kemajuan Pekebun Kecil Perusahaan Getah

Source: Department of Agriculture, Malaysia, Malaysian Palm Oil Board (MPOB), Malaysian Cocoa Board, Malaysian Pepper Board, Malaysian Rubber Board and Rubber Industry Smallholder Development Authority (RISDA)

Jadual 2.18: Pengeluaran produk kayu-kayan utama mengikut negeri, Malaysia, 2017-2021

Table 2.18: Production of major timber products by state, Malaysia, 2017-2021

Meter padu
Cubic metres

Negeri/Kawasan State/Region	Tahun Year	Kayu balak ¹ Logs	Kayu gergaji Sawn timber	Papan lapis Plywood	Venir Veneer	Kayu kumai Moulding
Malaysia	2017	10,674,264	3,262,298	2,631,820	574,713	133,583
	2018	10,351,331	3,440,307	2,502,552	573,656	126,796
	2019	9,062,482	3,371,450	2,149,845	472,619	231,412
	2020	5,320,403	2,274,047	1,668,319	310,366	187,848
	2021	5,576,079	1,935,202	1,568,086	259,044	190,657
Semenanjung Malaysia Peninsular Malaysia	2017	3,809,185	2,446,411	439,698	142,692	86,264
	2018	4,191,245	2,714,200	441,355	135,115	84,443
	2019	3,913,306	2,666,296	365,298	93,876	191,612
	2020	2,222,503	1,776,543	285,661	80,484	163,962
	2021	2,113,053	1,440,205	247,623	82,197	153,958
Johor	2017	34,739	229,732	1,412	1,135	691
	2018	49,114	367,894	16,914	362	1,804
	2019	35,007	450,215	13,290	12,028	4,122
	2020	21,307	324,876	12,096	9,930	7,470
	2021	4,202	129,592	14,278	4,302	5,932
Kedah	2017	449,255	36,849	130,432	29,852	427
	2018	252,968	38,353	99,590	37,686	815
	2019	162,218	42,212	117,891	16,272	978
	2020	85,102	34,814	70,110	18,193	611
	2021	127,877	32,500	72,108	12,978	691
Kelantan	2017	670,409	446,096	18,277	65,106	-
	2018	916,081	515,178	14,703	64,806	-
	2019	1,181,211	470,002	13,437	36,402	-
	2020	584,701	287,457	20,783	38,543	-
	2021	641,337	254,655	8,474	36,777	-
Melaka	2017	99	36,857	-	-	-
	2018	85	69,168	-	-	-
	2019	28	48,809	-	-	-
	2020	-	32,170	-	-	-
	2021	-	28,767	-	-	-
Negeri Sembilan	2017	53,808	206,419	17,193	1,140	625
	2018	40,989	205,614	16,581	522	655
	2019	42,575	196,168	13,083	-	5,928
	2020	30,702	153,511	7,896	-	553
	2021	44,430	119,864	2,784	-	248
Pahang	2017	1,812,223	736,614	138,108	33,918	12,391
	2018	1,787,612	793,598	163,421	25,072	10,319
	2019	1,677,034	747,654	122,477	3,739	108,903
	2020	945,482	514,684	71,818	3,846	94,003
	2021	771,684	466,577	39,617	8,582	90,423

Jadual 2.18: Pengeluaran produk kayu-kayan utama mengikut negeri, Malaysia, 2017-2021 (samb.)

Table 2.18: Production of major timber products by state, Malaysia, 2017-2021 (cont'd)

Meter padu
Cubic metres

Negeri/Kawasan State/Region	Tahun Year	Kayu balak ¹ Logs	Kayu gergaji Sawn timber	Papan lapis Plywood	Venir Veneer	Kayu kumai Moulding
Perak	2017	404,512	291,074	92,619	5,591	8,881
	2018	437,487	281,205	101,561	4,815	8,613
	2019	417,932	266,267	67,301	22,698	10,301
	2020	329,233	180,909	79,821	6,142	8,935
	2021	260,240	157,994	71,861	16,284	12,226
Perlis	2017	19	-	-	-	-
	2018	87	-	-	-	-
	2019	211	-	-	-	-
	2020	35,741	-	-	-	-
	2021	51,283	-	-	-	-
Pulau Pinang	2017	-	58,923	41,246	3,159	13,179
	2018	-	49,271	27,615	1,597	8,251
	2019	-	48,700	16,210	2,187	7,923
	2020	41	43,965	22,397	1,276	6,028
	2021	27	27,563	38,168	263	6,536
Selangor ²	2017	3,577	108,736	411	1,031	22,677
	2018	28,978	93,741	970	145	20,539
	2019	853	75,927	1,005	-	20,277
	2020	233	53,613	740	67	18,795
	2021	134	44,453	333	148	15,355
Terengganu	2017	380,544	295,111	-	1,760	27,393
	2018	677,844	300,178	-	110	33,447
	2019	396,237	320,342	604	550	33,180
	2020	189,917	150,544	-	2,487	27,567
	2021	211,839	178,240	-	2,863	22,547
Sabah	2017	1,375,455	192,023	493,210	92,335	43,176
	2018	1,463,365	219,353	471,283	103,480	33,391
	2019	1,074,922	238,671	423,981	59,082	27,706
	2020	680,800	156,183	269,399	31,366	16,521
	2021	1,128,116	191,373	375,558	50,879	28,437
Sarawak	2017	5,489,624	623,864	1,698,912	339,686	4,143
	2018	4,696,721	506,754	1,589,959	335,061	8,962
	2019	4,074,254	466,483	1,360,566	319,661	12,094
	2020	2,417,100	341,321	1,113,259	198,516	7,365
	2021	2,334,910	303,624	944,905	125,968	8,262

Sumber: Jabatan Perhutanan Semenanjung Malaysia, Jabatan Perhutanan Sabah dan Jabatan Hutan Sarawak
Source: Forest Department Peninsular Malaysia, Sabah Forestry Department and Forests Department Sarawak

Nota:

Notes:

¹ Tidak termasuk pengeluaran kayu getah, kayu jaras, batang kelapa dan batang kelapa sawit
Exclude production of hevea logs, poles, coconut trunks and oil palm trunks

² Termasuk W.P. Kuala Lumpur
Includes W.P. Kuala Lumpur

* Data merujuk kepada syarikat yang berdaftar dengan Jabatan Perhutanan Semenanjung Malaysia, Jabatan Perhutanan Sabah, Jabatan Hutan Sarawak dan Perbadanan Kemajuan Perusahaan Kayu Sarawak sahaja
Data refers to establishment registered with Forest Department Peninsular Malaysia, Sabah Forestry Department, Forests Department Sarawak and Sarawak Timber Industry Development Corporation only

Jadual 2.19: Pengeluaran akuakultur, Malaysia, 2018-2022

Table 2.19: Aquaculture production, Malaysia, 2018-2022

Tahun Year	Air tawar Freshwater	Air payau/masin Brackishwater	Jumlah Total	Tan metrik Metric tonnes
2018	105,711.1	290,920.6	396,631.7	
2019	104,601.6	307,180.6	411,782.2	
2020	97,210.3	302,807.3	400,017.6	
2021	105,904.0	311,283.7	417,187.7	
2022	115,868.1	457,814.2	573,682.3	

Sumber: Jabatan Perikanan Malaysia
Source: Department of Fisheries Malaysia

Jadual 2.20: Bilangan, keluasan dan pengeluaran akuakultur air tawar, Malaysia, 2018-2022

Table 2.20: Number, area and production of freshwater aquaculture, Malaysia, 2018-2022

Sistem ternakan Culture system	Perkara Items	2018	2019	2020	2021	2022
Jumlah pengeluaran (tan metrik) <i>Total productions (tonnes)</i>		102,596.8	101,269.9	104,601.6	97,210.3	115,868.1
Bekas lombong <i>Ex-mining pool</i>	Bilangan <i>Number</i>	495	568	657	713	707
	Luas (hektar) <i>Area (hectare)</i>	2,072.51	2,194.5	3,033.0	3,243.6	3,353.2
	Pengeluaran (tan metrik) <i>Production (tonnes)</i>	23,158.9	27,791.5	18,845.1	19,936.5	21,271.9
Kandang <i>Pen culture</i>	Bilangan <i>Number</i>	236	155	317	841	198
	Luas (hektar) <i>Area (hectare)</i>	7.6	7.2	8.0	9.2	7.9
	Pengeluaran (tan metrik) <i>Production (tonnes)</i>	387.0	566.7	678.1	571.0	657.0
Kolam <i>Ponds</i>	Bilangan <i>Number</i>	31,813	34,625	34,674	36,224	35,509
	Luas (hektar) <i>Area (hectare)</i>	3,983.5	3,845.9	3,725.3	3,754.6	3,873.4
	Pengeluaran (tan metrik) <i>Production (tonnes)</i>	58,480.3	55,705.9	56,197.5	61,018.0	63,298.1
Sangkar <i>Cages</i>	Bilangan <i>Number</i>	29,590	29,238	30,416	34,841	36,589
	Luas (m ²) <i>Area</i>	505,943.9	480,591.2	550,037.0	617,112.0	2,715,869
	Pengeluaran (tan metrik) <i>Production (tonnes)</i>	13,993.9	13,836.2	15,736.4	19,492.47	24,626.5
Tangki kanvas <i>Canvas tank</i>	Bilangan <i>Number</i>	632	471	964	752	753
	Luas (m ²) <i>Area</i>	22,187.7	16,792.0	21,248.0	36,515.1	42,636.9
	Pengeluaran (tan metrik) <i>Production (tonnes)</i>	183.3	220.8	209.2	309.3	369.8
Tangki simen/ fiber <i>Cement/ fibre tank</i>	Bilangan <i>Number</i>	5,527	6,321	5,656	6,467	6,645
	Luas (m ²) <i>Area</i>	488,119.3	375,410.0	396,746.0	492,661.4	627,852
	Pengeluaran (tan metrik) <i>Production (tonnes)</i>	5,031.1	6,454.9	5,515.5	4,574.4	5,595.0
Estet <i>Estate</i>	Bilangan <i>Number</i>	-	3	7	8	8
	Luas (hektar) <i>Area (hectare)</i>	-	26.0	123.0	163.0	169.3
	Pengeluaran (tan metrik) <i>Production (tonnes)</i>	-	25.5	28.6	2.4	49.8

Nota: Tidak termasuk sistem ternakan akuakultur air tawar yang tidak beroperasi
Note: Excludes freshwater aquaculture system which do not operate

Sumber: Jabatan Perikanan Malaysia
Source: Department of Fisheries Malaysia

Jadual 2.21: Bilangan, keluasan dan pengeluaran daripada akuakultur air payau/masin, Malaysia, 2018-2022
Table 2.21: Number, area and production from brackishwater aquaculture, Malaysia, 2018-2022

Sistem ternakan Culture system	Perkara Item	2018	2019	2020	2021	2022
Jumlah pengeluaran (tan metrik) Total production (tonnes)		290,195.3	307,180.6	302,807.3	311,283.7	457,814.2
Kandang air payau Brackishwater pen culture	Bilangan Number	1,340	1,301	1,278	1,054	1,894
	Luas (hektar) Area (hectare)	41.9	40.5	39.2	3.7	85.5
	Pengeluaran (tan metrik) Production (tonnes)	342.0	384.3	224.4	160.2	341.9
Kolam Ponds	Bilangan Number	11,486	11,506	10,698	11,859	11,917
	Luas (hektar) Area (hectare)	8,283.7	7,494.3	7,511.0	7,728.9	7,857.9
	Pengeluaran (tan metrik) Production (tonnes)	59,937.8	64,895.4	66,929.5	85,594.54	100,463.0
Rumpai laut Seaweeds	Luas (hektar) Area (hectare)	9,836.0	9,836.0	9,828	2,827	4,464
	Pengeluaran (tan metrik) Production (tonnes)	174,083.2	188,111.1	182,061.0	178,888.1	307,964.9
Sangkar Cages	Bilangan Number	102,687	99,328	99,904	96,086	95,326
	Luas (m ²) Area	2,414,205.7	3,180,507.8	2,304,473.0	2,264,034	2,636,780
	Pengeluaran (tan metrik) Production (tonnes)	37,444.0	37,001.3	32,943.2	27,582.4	26,733.6
Tangki air payau Brackishwater tanks	Bilangan Number	766	929	1,056	2,045	3,972
	Luas (m ²) Area	30,183.2	197,899.1	239,000.0	462,671	237,044
	Pengeluaran (tan metrik) Production (tonnes)	76.4	105.3	132.8	442.6	1,165.7
Kerang-kerangan Molluscs	Bilangan Number	1,289	1,148	1,369	2,955	3,875
	Luas (hektar) Area (hectares)	9,644.0	10,013.0	9,714.0	5,484	5,783
	Pengeluaran (tan metrik) Production (tonnes)	18,311.8	16,683.2	20,516.4	18,615.8	21,145.0

Nota: Tidak termasuk sistem ternakan akuakultur air payau/masin yang tidak beroperasi
Note: Excludes brackishwater aquaculture culture systems which do not operate

Sumber: Jabatan Perikanan Malaysia
Source: Department of Fisheries Malaysia

Jadual 2.22: Anggaran kuantiti pengeluaran akuakultur air tawar mengikut spesis, Malaysia, 2018-2022

Table 2.22: Estimated quantities of freshwater aquaculture production by species, Malaysia, 2018-2022

Tan metrik
Metric tonnes

Spesis Species	2018	2019	2020	2021	2022
Jumlah Total	101,269.9	104,601.6	97,210.6	105,904.0	115,868.1
Lampam jawa Javanese carp	1,230.5	989.8	1,147.1	710.7	974.0
Lee koh Common carp	1,157.0	1,562.3	1,110.9	958.5	1,611.9
Kap rumput Grass carp	374.1	467.2	414.8	495.9	897.0
Kap kepala besar Big head carp	2,061.4	2,447.8	2,228.9	2,254.2	3,970.0
Udang galah Giant freshwater prawn	213.4	205.6	192.7	207.0	183.3
Tilapia hitam Black tilapia	5,790.3	3,714.6	3,453.4	4,671.2	3,863.3
Tilapia merah Red tilapia	25,199.9	31,844.8	28,009.2	30,022.5	27,926.9
Jelawat River carp	1,771.3	2,100.4	2,680.0	3,232.7	3,076.5
Keli Freshwater catfish	33,419.6	28,464.1	29,012.8	31,957.8	39,815.3
Ketutu Goby	4.6	8.9	7.9	18.6	30.2
Udang Kara Crayfish	82.5	56.3	64.4	80.5	80.2
Patin River catfish	18,454.4	17,649.5	18,227.3	21,144.2	20,861.9
Toman Giant snakehead	509.8	375.4	136.6	258.5	350.2
Baung Channel catfish	1,526.8	1,419.0	1,391.7	1,337.7	1,447.8
Lain-lain Others	9,474.3	13,295.9	9,132.6	8,554.0	10,779.7

Sumber: Jabatan Perikanan Malaysia
Source: Department of Fisheries Malaysia

Jadual 2.23: Anggaran kuantiti pengeluaran akuakultur air payau/ masin mengikut spesis, Malaysia, 2018-2022

Table 2.23: Estimated quantities of brackishwater aquaculture production by species, Malaysia, 2018-2022

Tan metrik
Metric tonnes

Spesis Species	2018	2019	2020	2021	2022
Jumlah Total	290,195.3	307,180.6	302,807.3	311,283.7	457,814.2
Siakap Seabass	21,241.52	17,263.6	23,033.8	34,186.7	43,734.5
Siakap merah Mangrove red snapper	1.9	0.6	10.0	47.0	76.9
Kerapu ¹ Grouper ¹	8,040.2	2,738.9	3,752.8	2,625.2	3,956.0
Jenahak Mangrove snapper	6,602.0	7,208.2	6,859.0	5,792.6	4,616.9
Udang putih Hawaiian white shrimp	36,007.3	38,767.1	35,148.7	38,376.8	39,557.8
Udang harimau Tiger prawn	9,905.6	14,632.9	13,524.8	18,119.6	15,329.9
Ketam nipah Mud crab	15.2	233.7	210.3	205.8	334.2
Tilapia merah Red tilapia	775.5	599.1	514.0	934.5	1,705.0
Merah Red snapper	8,804.5	7,362.2	7,256.5	5,370.7	5,244.0
Kerang dewasa Cockles	16,642.7	13,771.7	18,674.4	16,988.6	19,026.5
Siput sudu Mussels	996.9	1,220.6	1,363.1	1,472.5	1,908.3
Tiram Oysters	455.2	1,568.3	135.5	118.9	154.4
Rumpai laut Seaweeds	174,083.2	188,111.1	182,061.0	178,896.7	307,972.5
Lain-lain Others	6,623.6	9,072	10,263.4	8,148.1	14,197.4

Nota: ¹Termasuk kerapu bara, kerapu harimau, kerapu hybrid, kerapu kertang, kerapu sunoh dan kerapu tikus/ mameng

Note: Includes blacktip grouper, brown marbled grouper, hybrid grouper, Atlantic goliath grouper, spotted coral grouper and mouse grouper

Sumber: Jabatan Perikanan Malaysia
Source: Department of Fisheries Malaysia

Jadual 2.24: Pendaratan ikan laut mengikut negeri, Malaysia, 2018-2022

Table 2.24: Landings of marine fish by state, Malaysia, 2018-2022

Negeri State	Tan metrik ('000) Metric tonnes									
	2018		2019		2020		2021		2022	
	Kuantiti Quantity	%	Kuantiti Quantity	%	Kuantiti Quantity	%	Kuantiti Quantity	%	Kuantiti Quantity	%
Jumlah Total	1,452.9	100.0	1,455.4	100.0	1,383.3	100.0	1,328.0	100.0	1,308.4	100.0
Johor	69.7	4.7	65.1	4.5	70.2	5.1	51.4	3.9	57.7	4.4
Kedah	149.3	10.1	149.3	10.3	134.4	9.7	122.8	9.2	140.9	10.8
Kelantan	99.4	6.7	90.2	6.2	73.6	5.3	58.3	4.4	55.1	4.2
Melaka	1.9	0.1	1.9	0.1	1.8	0.1	2.1	0.2	2.0	0.2
Negeri Sembilan	0.7	0.0	0.7	0.0	0.6	0.0	0.6	0.0	0.6	0.0
Pahang	121.2	8.2	99.7	6.9	101.3	7.3	94.8	7.1	108.0	8.3
Pulau Pinang	54.9	3.7	51.7	3.6	56.8	4.1	35.4	2.7	47.6	3.6
Perak	313.9	21.3	315.0	21.6	328.3	23.7	358.4	27.0	301.4	23.0
Perlis	97.0	6.6	113.5	7.8	69.4	5.0	33.1	2.5	38.0	2.9
Selangor	141.3	11.1	156.4	10.7	161.0	11.6	167.6	12.6	171.1	13.1
Terengganu	41.7	2.8	40.5	2.8	37.2	2.7	30.6	2.3	33.7	2.6
Sabah	163.1	11.0	179.7	12.3	206.7	14.9	216.3	16.3	230.2	17.6
Sarawak	180.6	12.2	171.5	11.8	124.5	9.0	138.9	10.5	103.8	7.9
W.P. Labuan	19.3	1.3	20.3	1.4	17.5	1.3	17.7	1.3	18.4	1.4

Sumber: Jabatan Perikanan Malaysia
Source: Department of Fisheries Malaysia

Jadual 2.25: Pendaratan tahunan ikan laut mengikut kumpulan peralatan menangkap ikan, Malaysia, 2018-2022

Table 2.25: Annual landings of marine fish by fishing gear group, Malaysia, 2018-2022

	Tan metrik Metric tonnes				
Kumpulan peralatan menangkap ikan Fishing gear group	2018	2019	2020	2021	2022
Jumlah Total	1,452,862	1,455,446	1,383,299	1,328,041	1,308,402
Belat Stationary traps	2,366	1,612	1,504	1,635	2,212
Bubu Portable traps	15,988	18,076	22,094	22,809	19,339
Memungut siput Shellfish collection	7,057	5,034	4,350	5,595	6,600
Pancing Hooks & lines	40,766	44,013	39,743	49,500	46,174
Pukat bakul Bag nets	17,960	18,044	12,838	18,636	12,437
Pukat hanyut Drift/ gill nets	275,064	256,824	268,177	301,991	300,132
Pukat jerut bilis Anchovy purse seines	11,595	13,412	12,910	5,299	6,030
Pukat jerut ikan Fish purse seines	325,282	341,585	335,329	268,084	253,974
Pukat rentang Barrier nets	7,717	3,565	2,295	8,274	1,733
Pukat surung Push/ scoop nets	7,677	5,511	5,725	7,283	5,851
Pukat tangguk Lift nets	17,762	24,341	18,486	16,324	15,331
Pukat tunda Trawl nets	680,456	673,505	619,188	574,836	592,145
Pukat tarik lain Other seines	28,613	27,158	27,481	20,796	17,213
Rampaian Miscellaneous	14,561	22,767	13,180	26,980	29,233

Sumber: Jabatan Perikanan Malaysia
Source : Department of Fisheries Malaysia

Jadual 2.26: Pengeluaran perikanan terpilih, Malaysia, 2018-2022

Table 2.26: Production of selected fisheries, Malaysia, 2018-2022

Jenis Type	2018	2019	2020	2021	Tan metrik Metric tonnes 2022
Cencaru <i>Torpedo scad</i>	33,182.6	32,420.2	26,471.4	28,701.0	25,922.5
Keli <i>Freshwater catfish</i>	33,419.0	28,464.1	29,012.8	31,957.8	39,815.3
Kerisi <i>Threadfin bream</i>	46,021.1	42,696.3	41,072.3	36,974.6	44,983.2
Ketam <i>Crab</i>	15,421.9	15,460.4	14,326.6	15,939.6	15,885.0
Mackerel	158,690.6	161,255.6	168,227.5	161,146.5	155,528.5
Pari <i>Stingray</i>	11,992.7	11,590.3	9,823.0	10,124.5	10,980.2
Patin <i>River catfish</i>	18,454.4	17,649.5	18,227.3	21,144.2	20,861.9
Selayang <i>Sardine</i>	84,327.9	69,746.0	79,067.7	60,325.4	59,810.0
Siakap <i>Seabass</i>	23,875.0	19,516.2	26,365.8	38,063.8	48,146.8
Sotong <i>Cuttlefish</i>	69,690.7	70,603.0	62,582.9	57,157.3	59,472.0
Tilapia	31,915.6	37,778.0	33,917.6	38,543.9	35,292.4
Tuna	71,991.2	91,675.5	84,481.0	66,510.1	69,355.7
Udang <i>Shrimp</i>	162,532.8	160,874.9	156,209.8	173,593.1	152,789.5

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

Jadual 2.27: Import perikanan terpilih, Malaysia, 2018-2022

Table 2.27: Imports of selected fisheries, Malaysia, 2018-2022

Jenis Type	2018	2019	2020	2021	Tan metrik Metric tonnes 2022
Cencaru <i>Torpedo scad</i>	2,222.3	1,670.7	1,091.7	2,547.3	2,818.7
Keli <i>Freshwater catfish</i>	916.3	790.1	1,578.0	359.5	832.0
Kerisi <i>Threadfin bream</i>	59.8	218.1	78.4	338.8	801.0
Ketam <i>Crab</i>	5,845.5	5,161.8	4,993.4	5,611.6	3,820.0
Mackerel	31,719.6	31,633.0	28,444.2	29,912.3	55,518.9
Pari <i>Stingray</i>	4,092.7	2,544.3	2,672.9	2,695.6	3,080.2
Patin <i>River catfish</i>	0.4	-	-	-	5.7
Selayang <i>Sardine</i>	14,506.2	13,592.2	19,328.3	20,530.7	23,867.3
Siakap <i>Seabass</i>	3,665.2	1,810.0	1,868.1	1,831.9	996.5
Sotong <i>Cuttlefish</i>	16,501.8	24,559.4	33,775.4	46,707.2	56,869.8
Tilapia	603.5	827.3	468.2	959.8	1,555.3
Tuna	1,922.6	2,969.2	1,827.4	3,911.0	2,601.8
Udang <i>Shrimp</i>	25,190.0	30,281.7	26,853.2	33,451.5	38,425.1

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

Jadual 2.28: Eksport perikanan terpilih, Malaysia, 2018-2022

Table 2.28: Exports of selected fisheries, Malaysia, 2018-2022

Jenis Type	2018	2019	2020	2021	2022
Cencaru <i>Torpedo scad</i>	1,096.4	991.1	185.7	656.9	455.3
Keli <i>Freshwater catfish</i>	1,812.7	1,076.7	1,252.1	2,819.9	1,674.5
Kerisi <i>Threadfin bream</i>	288.5	53.8	98.9	244.5	490.9
Ketam <i>Crab</i>	3,530.4	4,176.4	4,121.8	6,278.1	3,454.8
Mackerel	7,003.3	2,148.4	5,836.8	31,040.5	12,104.9
Pari <i>Stingray</i>	348.1	484.3	308.4	430.3	289.1
Patin <i>River catfish</i>	60.1	369.6	60.3	4.0	-
Selayang <i>Sardine</i>	1,172.6	1,390.6	397.5	340.3	775.2
Siakap <i>Seabass</i>	2,698.5	2,727.8	3,995.6	6,532.7	7,811.4
Sotong <i>Cuttlefish</i>	19,430.9	30,578.8	31,602.3	32,386.6	35,790.6
Tilapia	395.1	416.3	439.0	575.5	560.0
Tuna	3,429.2	4,184.4	8,134.9	3,102.0	3,200.4
Udang <i>Shrimp</i>	25,951.5	34,748.0	29,408.3	34,159.6	32,903.0

Tan metrik
Metric tonnes**Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022**

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

Jadual 2.29: Pengeluaran tanaman terpilih, Malaysia, 2018-2022

Table 2.29: Production of selected crops, Malaysia, 2018-2022

Pengeluaran Production	2018	2019	2020	2021	2022
Buah tandan segar <i>Fresh fruit bunches</i>	98,419.4	99,065.4	96,969.3	91,393.7	94,814.5
Getah asli <i>Natural rubber</i>	603.3	639.8	514.7	469.7	377.0
Padi <i>Paddy</i>	2,639.2	2,352.9	2,356.4	2,441.6	2,281.7^P
Lada <i>Pepper</i>	32.3	33.9	30.8	31.6	32.7
Biji koko <i>Cocoa beans</i>	0.826	1.017	0.706	0.537	0.493

Tan metrik ('000)
Metric tonnes

Sumber: Jabatan Pertanian Malaysia, Lembaga Minyak Sawit Malaysia, Lembaga Koko Malaysia, Lembaga Lada Malaysia, Lembaga Getah Malaysia dan Pihak Berkuasa Kemajuan Pekebun Kecil Perusahaan Getah

Source: Department of Agriculture, Malaysia, Malaysian Palm Oil Board (MPOB), Malaysian Cocoa Board, Malaysian Rubber Board and Rubber Industry Smallholders Development Authority (RISDA)

Jadual 2.30: Pengeluaran buah-buahan terpilih, Malaysia, 2018-2022

Table 2.30: Production of selected fruits, Malaysia, 2018-2022

Tan metrik
Metric tonnes

Jenis Type	2018	2019	2020	2021	2022
Belimbing Starfruit	6,926.4	8,053.6	9,243.0	7,837.3	6,572.3
Betik Papaya	52,917.2	53,681.2	61,775.7	60,979.6	54,753.1
Cempedak/nangka Jackfruit	61,216.4	59,174.4	60,093.5	66,532.8	60,223.2
Durian	342,169.6	377,251.0	390,635.4	448,271.5	455,457.7
Jagung manis Sweet corn	68,906.6	60,497.9	68,207.4	74,735.0	63,154.7
Jambu batu Guava	34,494.7	35,961.8	37,881.2	36,899.6	33,292.4
Kelapa Coconut	491,465.4	536,605.7	560,984.3	557,353.7	604,428.4
Langsat	19,633.5	18,932.6	17,469.7	15,207.1	10,904.9
Mangga Mango	15,329.5	16,508.5	12,834.4	12,208.3	9,219.3
Manggis Mangosteen	26,169.9	28,763.6	23,296.6	26,831.4	23,508.4
Nanas Pineapple	322,551.0	314,627.1	323,420.5	375,423.2	537,231.4
Pisang Banana	331,254.6	325,446.9	313,811.3	330,253.2	330,601.1
Rambutan	52,991.0	55,890.6	49,957.6	55,627.8	52,096.9
Tembikai Watermelon	150,260.6	144,146.9	134,225.4	127,894.7	135,682.5

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

Jadual 2.31: Import buah-buahan terpilih, Malaysia, 2018-2022

Table 2.31: Imports of selected fruits, Malaysia, 2018-2022

Tan metrik
Metric tonnes

Jenis Type	2018	2019	2020	2021	2022
Belimbing Starfruit	-	9.6	0.7	0.4	0.2
Betik Papaya	446.9	406.5	307.4	311.5	502.1
Cempedak/nangka Jackfruit	110.0	548.2	227.4	768.5	73.0
Durian	7,847.3	6,351.6	4,901.9	6,727.7	6,802.0
Epal Apple	99,868.5	105,324.1	105,736.5	105,635.0	103,899.4
Jagung manis Sweet corn	4,139.2	3,307.0	3,287.9	3,782.7	2,722.1
Jambu batu Guava	5,166.4	3,172.0	4,146.1	3,197.0	4,460.8
Kelapa Coconut	250,126.0	253,622.2	286,031.2	254,455.2	252,091.4
Langsat	348.5	1,732.1	1,161.9	1,042.8	533.3
Mangga Mango	53,827.3	37,776.4	54,878.1	69,646.3	22,941.6
Manggis Mangosteen	2,126.2	3,453.2	4,029.8	3,970.7	4,664.2
Nanas Pineapple	2,607.6	2,785.7	1,587.1	1,119.9	1,186.9
Pisang Banana	16,863.9	28,122.2	27,898.0	23,701.3	19,535.4
Rambutan	1,277.9	945.7	1,714.3	2,126.4	2,798.0
Tembikai Watermelon	3,432.7	5,827.8	7,394.1	6,868.6	7,905.4

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

Jadual 2.32: Eksport buah-buahan terpilih, Malaysia, 2018-2022

Table 2.32: Exports of selected fruits, Malaysia, 2018-2022

Jenis Type	2018	2019	2020	2021	2022
Belimbing Starfruit	2,185.5	1,990.8	1,373.2	1,131.1	1,105.1
Betik Papaya	18,015.4	19,020.3	22,487.2	19,786.8	16,766.9
Cempedak/nangka Jackfruit	6,001.2	6,193.0	5,649.8	7,260.3	7,576.6
Durian	23,367.3	24,981.2	24,098.9	42,765.7	43,864.5
Jagung manis Sweet corn	6,755.0	6,919.2	6,882.6	8,187.6	7,730.8
Jambu batu Guava	2,967.0	3,182.0	2,916.2	3,463.1	3,798.2
Kelapa Coconut	3,401.5	3,327.5	4,659.2	11,025.4	12,580.7
Langsat	1,184.8	3,887.0	540.8	2,363.4	657.5
Mangga Mango	3,545.8	2,881.0	4,076.0	6,656.0	3,377.4
Manggis Mangosteen	7,339.6	5,021.5	2,309.9	2,205.5	2,186.0
Nanas Pineapple	19,521.0	17,850.3	15,960.6	16,427.8	14,455.6
Pisang Banana	24,205.7	23,950.1	28,059.3	32,084.9	17,107.3
Rambutan	2,156.2	1,624.1	767.7	1,798.9	945.1
Tembikai Watermelon	64,225.9	60,610.7	45,324.3	43,067.9	40,721.1

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

Jadual 2.33: Pengeluaran sayur-sayuran terpilih, Malaysia, 2018-2022

Table 2.33: Production of selected vegetables, Malaysia, 2018-2022

Jenis Type	2018	2019	2020	2021	2022
Bayam Spinach	72,307.8	77,760.7	74,250.8	80,404.4	79,751.6
Bendi Lady's finger	52,318.4	58,203.8	57,860.6	63,062.4	63,074.3
Cili Chilli	24,428.3	27,631.1	28,264.4	28,740.4	31,255.6
Kacang panjang Long bean	57,103.5	62,342.4	52,638.3	60,158.1	60,137.1
Kobis bulat Round cabbage	80,641.1	79,471.5	80,641.2	91,389.1	120,161.0
Salad Lettuce	46,113.6	48,737.8	54,583.7	75,546.0	102,015.0
Sawi Mustard	128,742.4	145,427.2	143,286.3	153,270.8	143,992.4
Terung Brinjal	39,311.5	39,103.3	39,785.7	42,731.6	46,128.8
Timun Cucumber	85,134.1	103,362.9	101,482.0	96,353.1	102,368.7
Tomato	199,422.3	176,544.1	192,129.5	186,662.6	194,305.2

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

Jadual 2.34: Import sayur-sayuran terpilih, Malaysia, 2018-2022

Table 2.34: Imports of selected vegetables, Malaysia, 2018-2022

Jenis Type	2018	2019	2020	2021	Tan metrik Metric tonnes 2022
Bayam Spinach	640.1	771.4	891.3	1,274.0	1,205.4
Bendi Lady's finger	442.4	413.7	411.0	630.7	846.0
Cili Chilli	55,914.9	66,106.7	66,294.9	73,725.9	77,857.6
Kacang panjang Long bean	1,063.8	1,255.2	900.1	1,129.5	1,472.4
Kobis bulat Round cabbage	129,547.4	119,503.4	136,747.9	139,035.7	146,331.9
Salad Lettuce	9,425.6	8,988.0	7,425.9	7,644.4	7,018.3
Sawi Mustard	10,295.1	8,873.8	10,209.3	11,051.6	12,019.1
Terung Brinjal	4,212.0	2,879.1	2,524.9	3,945.8	4,288.7
Timun Cucumber	15,040.6	12,266.7	8,752.8	12,523.2	12,085.9
Tomato	4,645.6	1,806.1	1,590.0	6,845.2	5,742.1

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

Jadual 2.35: Eksport sayur-sayuran terpilih, Malaysia, 2018-2022

Table 2.35: Exports of selected vegetables, Malaysia, 2018-2022

Jenis Type	2018	2019	2020	2021	Tan metrik Metric tonnes 2022
Bayam Spinach	9,222.8	9,488.0	8,826.8	9,904.7	8,189.2
Bendi Lady's finger	3,315.6	2,842.7	1,647.7	3,255.5	2,942.3
Cili Chilli	3,824.6	3,918.6	3,052.5	4,243.5	3,890.2
Kacang panjang Long bean	4,900.8	5,319.5	4,417.1	6,239.1	5,208.6
Kobis bulat Round cabbage	1,895.8	2,878.3	2,293.6	3,547.0	2,778.2
Salad Lettuce	15,257.4	14,387.5	14,129.4	12,919.9	13,947.4
Sawi Mustard	7,085.3	7,322.3	6,613.1	6,345.2	5,847.1
Terung Brinjal	9,459.4	9,199.0	6,875.2	7,690.5	7,134.9
Timun Cucumber	24,621.1	22,348.3	19,709.7	22,644.7	21,893.7
Tomato	46,444.8	43,804.0	38,391.0	36,457.5	35,425.6

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

Jadual 2.36: Pengeluaran tanaman lain terpilih, Malaysia, 2018-2022

Table 2.36: Production of other selected crops, Malaysia, 2018-2022

Jenis Type	Tan metrik Metric tonnes				
	2018	2019	2020	2021	2022
Bawang besar Onion	-	-	-	-	-
Bawang kecil Shallot	-	-	-	-	-
Bawang putih Garlic	-	-	-	-	-
Halia Ginger	13,485.3	11,412.8	11,751.2	8,718.6	10,623.3
Limau nipis/ kasturi Lime	18,931.9	19,258.9	17,734.7	22,962.3	23,959.4
Tebu Sugarcane	23,475.0	20,761.1	23,519.4	25,591.1	25,032.4
Ubi kayu Cassava	34,996.6	42,285.3	37,513.7	39,386.9	42,527.9
Ubi keledek Sweet potato	52,224.6	56,343.5	54,750.4	53,613.8	44,686.7

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

Jadual 2.37: Import tanaman lain terpilih, Malaysia, 2018-2022

Table 2.37: Imports of other selected crops, Malaysia, 2018-2022

Jenis Type	Tan metrik Metric tonnes				
	2018	2019	2020	2021	2022
Bawang besar Onion	484,124.4	476,170.0	435,972.2	445,069.2	485,127.1
Bawang kecil Shallot	57,350.7	24,437.5	40,601.7	39,543.8	38,567.6
Bawang putih Garlic	150,211.3	107,737.5	112,687.5	137,573.2	161,730.0
Halia Ginger	45,260.4	59,544.8	50,586.8	51,737.3	57,136.6
Limau nipis/ kasturi Lime	1,711.4	2,678.3	3,279.2	6,193.9	9,453.1
Tebu Sugarcane	65.7	112.8	153.4	81.5	117.1
Ubi kayu Cassava	3,288.2	524.2	1,110.1	811.5	847.4
Ubi keledek Sweet potato	11,487.0	13,785.9	19,017.9	17,291.1	19,236.8

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

Jadual 2.38: Eksport tanaman lain terpilih, Malaysia, 2018-2022

Table 2.38: Exports of other selected crops, Malaysia, 2018-2022

Jenis Type					
	2018	2019	2020	2021	2022
Bawang besar Onion	-	-	-	-	-
Bawang kecil Shallot	-	-	-	-	-
Bawang putih Garlic	-	-	-	-	-
Halia Ginger	274.0	303.4	305.9	656.8	1,028.4
Limau nipis/ kasturi Lime	2,059.9	2,023.7	1,537.7	2,288.9	1,866.1
Tebu Sugarcane	10,647.7	10,856.1	8,760.1	8,543.5	7,835.9
Ubi kayu Cassava	632.3	556.1	517.8	880.9	1,039.8
Ubi keledek Sweet potato	862.7	1,141.6	1,391.4	2,273.7	3,126.5

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

Jadual 2.39: Bilangan ternakan mengikut jenis, Malaysia, 2018-2022

Table 2.39: Number of livestock by type, Malaysia, 2018-2022

Tahun Year	Jenis ternakan Type of livestock						Bilangan Number
	Kerbau Buffalo	Lembu Cattle	Kambing Goat	Bebiri Sheep	Babi Swine	Ayam Chicken	
2018	106,988	676,686	359,200	128,298	1,967,538	260,826,321	9,780,573
2019	101,695	657,407	312,571	121,677	1,888,460	285,063,636	9,376,456
2020	64,250	699,424	324,355	124,674	1,869,772	293,495,861	9,511,085
2021	66,571	717,431	323,994	136,769	1,672,995	284,570,907	9,525,321
2022	67,959	733,655	332,306	137,963	1,504,505	295,750,613	9,399,044

Sumber: Jabatan Perkhidmatan Veterinar

Source: Department of Veterinary Services

Jadual 2.40: Bilangan ternakan mengikut negeri, Malaysia, 2020-2022

Table 2.40: Number of livestock by state, Malaysia, 2020-2022

Bilangan
Number

Negeri State	Tahun Year	Jenis ternakan Type of livestock						
		Kerbau Buffalo	Lembu Cattle	Kambing Goat	Bebiri Sheep	Babi Swine	Ayam Chicken	Itik Duck
Malaysia	2020	64,250	699,424	324,355	124,674	1,869,772	293,495,861	9,511,085
	2021	66,571	717,431	323,994	136,769	1,672,995	284,570,907	9,525,321
	2022	67,959	733,655	332,306	137,963	1,504,505	295,750,613	9,399,044
Johor	2020	3,544	95,581	33,195	17,576	283,800	62,132,805	1,010,173
	2021	3,936	103,936	35,731	18,135	240,752	51,862,940	1,015,063
	2022	4,503	107,799	38,458	20,251	207,912	54,170,061	1,015,063
Kedah	2020	4,622	52,948	50,085	12,257	2,188	19,686,670	572,000
	2021	4,500	53,011	50,849	13,878	1,484	21,838,000	572,000
	2022	4,251	50,576	55,203	10,878	2,188	23,883,212	529,500
Kelantan	2020	4,292	81,307	35,012	24,977	-	5,048,785	47,367
	2021	4,077	77,254	33,261	23,728	-	5,122,850	52,712
	2022	3,995	75,720	32,596	23,253	-	5,042,000	52,712
Melaka	2020	2,990	19,137	18,668	6,846	42,662	32,086,967	66,000
	2021	2,559	26,095	10,461	7,871	40,571	30,861,607	66,000
	2022	2,563	25,466	9,619	10,988	-	30,356,503	66,900
Negeri Sembilan	2020	1,878	36,972	13,109	12,538	521	22,325,652	72,500
	2021	2,535	44,486	16,316	16,506	848	24,011,281	74,095
	2022	2,676	46,002	16,412	17,232	930	26,357,334	73,160
Pahang	2020	11,586	154,147	35,366	17,405	3,472	14,405,801	28,270
	2021	14,018	150,454	40,649	20,996	3,472	14,016,721	13,145
	2022	14,115	149,062	39,696	18,319	-	13,751,294	9,319
Perak	2020	6,764	56,492	15,119	2,314	562,288	40,844,500	6,972,200
	2021	7,379	55,708	18,569	3,204	555,705	42,031,500	7,063,200
	2022	7,324	64,945	18,392	3,346	508,786	41,894,500	7,063,200
Perlis	2020	42	3,812	4,366	4,316	-	541,945	4,649
	2021	42	3,904	4,407	4,555	-	844,573	10,319
	2022	54	5,973	7,889	6,406	-	867,301	10,319
Pulau Pinang	2020	1,050	11,308	9,000	4,200	341,895	14,195,730	376,850
	2021	1,036	12,172	10,190	4,434	309,022	13,197,995	379,285
	2022	867	11,948	10,953	4,322	267,348	15,574,537	369,345
Selangor	2020	3,276	35,142	27,837	11,878	213,446	21,786,436	17,841
	2021	2,799	38,895	30,253	12,088	227,840	24,355,658	8,878
	2022	2,798	34,895	31,228	10,207	265,739	22,687,114	9,435
Terengganu	2020	5,139	85,416	33,427	6,754	-	3,962,423	25,196
	2021	6,378	85,163	33,874	7,579	-	3,412,398	20,480
	2022	7,075	95,149	37,531	9,293	-	3,556,825	15,881

Jadual 2.40: Bilangan ternakan mengikut negeri, Malaysia, 2020-2022 (samb.)

Table 2.40: Number of livestock by state, Malaysia, 2020-2022 (cont'd)

Negeri State	Tahun Year	Jenis ternakan Type of livestock							Bilangan Number
		Kerbau Buffalo	Lembu Cattle	Kambing Goat	Bebiri Sheep	Babi Swine	Ayam Chicken	Itik Duck	
Sabah	2020	12,000	50,137	35,000	1,334	92,500	6,600,000	50,500	
	2021	10,160	52,928	27,721	1,334	89,178	5,858,765	42,928	
	2022	10,440	52,928	25,421	1,374	88,068	6,321,155	60,964	
Sarawak	2020	7,067	17,018	14,171	2,279	327,000	49,878,147	267,539	
	2021	7,152	13,421	11,632	2,454	204,123	47,156,619	207,216	
	2022	7,298	12,923	8,858	2,094	163,534	51,288,777	123,206	
Wilayah Persekutuan	2020	-	7	-	-	-	-	-	
	2021	-	4	81	7	-	-	-	
	2022	-	-	50	-	-	-	-	

Sumber: Jabatan Perkhidmatan Veterinar
Source: Department of Veterinary Services

Jadual 2.41: Sembelihan ternakan yang direkod, Malaysia, 2018-2022

Table 2.41: Recorded slaughter of livestock, Malaysia, 2018-2022

Jenis ternakan Type of livestock		2018	2019	2020	2021	2022
Kerbau Buffalo	Jumlah Total	8,655	6,233	7,087	7,813	6,894
	Sem. Malaysia Pen. Malaysia	7,804	5,200	6,844	7,484	6,544
	Sabah	330	503	96	189	169
	Sarawak	521	530	145	140	181
Lembu Cattle	Jumlah Total	105,706	87,179	117,601	117,852	118,419
	Sem. Malaysia Pen. Malaysia	103,728	82,867	114,674	115,583	115,539
	Sabah	958	1,232	3,700	1,039	1,093
	Sarawak	1,020	3,080	1,852	1,230	1,787
Kambing Goat	Jumlah Total	79,735	53,433	19,912	17,430	24,605
	Sem. Malaysia Pen. Malaysia	79,066	51,453	18,868	17,113	24,397
	Sabah	-	1,280	744	75	92
	Sarawak	669	700	300	242	116
Bebiri Sheep	Jumlah Total	24,119	16,317	8,856	10,647	8,206
	Sem. Malaysia Pen. Malaysia	24,022	16,217	8,823	10,627	8,206
	Sabah	-	-	-	-	-
	Sarawak	97	100	33	20	-
Babi Swine	Jumlah Total	1,695,819	2,012,398	1,904,152	1,958,938	1,796,741
	Sem. Malaysia Pen. Malaysia	1,325,563	1,573,468	1,546,442	1,527,251	1,474,100
	Sabah	112,026	122,631	114,003	110,687	97,641
	Sarawak	258,230	316,299	243,707	321,000	225,000

Sumber: Jabatan Perkhidmatan Veterinar
Source: Department of Veterinary Services

Jadual 2.42: Pengeluaran ternakan terpilih, Malaysia, 2018-2022

Table 2.42: Production of selected livestock, Malaysia, 2018-2022

Jenis Type	2018	2019	2020	2021	Tan metrik Metric tonnes 2022
Daging ayam Chicken meat	1,587,539.2	1,589,080.8	1,628,609.3	1,583,219.5	1,543,425.3
Daging babi* Pork	223,862.0	222,791.1	220,586.4	197,371.6	181,853.2
Daging itik Duck meat	66,147.5	66,211.7	74,160.9	69,762.2	68,015.8
Daging kambing/ berbiri Mutton	4,433.7	4,200.6	3,916.8	3,502.5	4,095.6
Daging lembu/ kerbau Beef	46,923.6	44,024.4	41,378.8	36,800.6	35,934.1
Susu segar Fresh milk	38,489.0	40,580.0	41,778.0	38,729.0	38,951.0
Telur ayam/ itik ¹ Chicken/ duck egg	824,172.9	676,958.8	795,461.4	839,699.8	869,392.1

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

¹Kadar tukaran telur ayam/ itik - 1 unit = 60 gram

Conversion rate of chicken/ duck egg - 1 piece = 60 grams

***Data 2018 hingga 2019 adalah berdasarkan 40 peratus penduduk bukan Islam yang diperoleh daripada Banci Penduduk dan Perumahan Malaysia 2010, manakala data 2020 hingga 2022 adalah berdasarkan 36.5 peratus penduduk bukan Islam yang diperoleh daripada Banci Penduduk dan Perumahan Malaysia 2020**

Data for 2018 to 2019 are based on 40 per cent of non-Muslims population that obtained from Population and Housing Census of Malaysia 2010, while data for 2020 to 2022 are based on 36.5 per cent of non-Muslims population that obtained from Population and Housing Census of Malaysia 2020

Jadual 2.43: Import ternakan terpilih, Malaysia, 2018-2022

Table 2.43: Imports of selected livestock, Malaysia, 2018-2022

Jenis Type	2018	2019	2020	2021	Tan metrik Metric tonnes 2022
Daging ayam Chicken meat	71,428.2	72,489.8	68,243.9	96,183.5	176,213.9
Daging babi* Pork	20,488.7	17,763.9	13,439.3	14,939.4	33,516.8
Daging itik Duck meat	162.9	1.9	0.1	10.1	109.2
Daging kambing/ berbiri Mutton	36,081.0	31,346.0	37,785.9	29,277.3	43,206.0
Daging lembu/ kerbau Beef	152,155.3	146,415.0	153,290.6	159,188.9	208,867.5
Susu segar Fresh milk	26,290.9	30,050.9	35,607.5	42,995.0	43,194.8
Telur ayam/ itik ¹ Chicken/ duck egg	25.4	40.6	25.9	-	102.2

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

¹Kadar tukaran telur ayam/ itik - 1 unit = 60 gram

Conversion rate of chicken/ duck egg - 1 piece = 60 grams

***Data 2018 hingga 2019 adalah berdasarkan 40 peratus penduduk bukan Islam yang diperoleh daripada Banci Penduduk dan Perumahan Malaysia 2010, manakala data 2020 hingga 2022 adalah berdasarkan 36.5 peratus penduduk bukan Islam yang diperoleh daripada Banci Penduduk dan Perumahan Malaysia 2020**

Data for 2018 to 2019 are based on 40 per cent of non-Muslims population that obtained from Population and Housing Census of Malaysia 2010, while data for 2020 to 2022 are based on 36.5 per cent of non-Muslims population that obtained from Population and Housing Census of Malaysia 2020

Jadual 2.44: Eksport ternakan terpilih, Malaysia, 2018-2022

Table 2.44: Exports of selected livestock, Malaysia, 2018-2022

Jenis Type	2018	2019	2020	2021	Tan metrik Metric tonnes 2022
Daging ayam Chicken meat	95,607.8	94,878.8	95,107.3	94,583.4	64,751.9
Daging babi* Pork	1,424.7	1,307.7	1,589.5	1,054.4	470.3
Daging itik Duck meat	15,867.6	15,307.3	14,929.6	16,360.5	15,886.5
Daging kambing/ berbiri Mutton	14.6	9.3	9.4	28.1	67.3
Daging lembu/ kerbau Beef	697.7	645.2	512.7	1,015.1	926.2
Susu segar Fresh milk	1,966.2	2,211.6	12,296.8	13,372.8	14,200.8
Telur ayam/ itik ¹ Chicken/ duck egg	116,210.0	102,408.9	98,020.3	105,382.3	71,192.7

Nota: Berdasarkan penerbitan Akaun Pembekalan dan Penggunaan Komoditi Pertanian Terpilih, Malaysia, 2018-2022

Note: Based on Supply and Utilization Accounts Selected Agricultural Commodities, Malaysia, 2018-2022 publication

¹Kadar tukaran telur ayam/ itik - 1 unit = 60 gram

Conversion rate of chicken/ duck egg - 1 piece = 60 grams

***Data 2018 hingga 2019 adalah berdasarkan 40 peratus penduduk bukan Islam yang diperoleh daripada Banci Penduduk dan Perumahan Malaysia 2010, manakala data 2020 hingga 2022 adalah berdasarkan 36.5 peratus penduduk bukan Islam yang diperoleh daripada Banci Penduduk dan Perumahan Malaysia 2020**

Data for 2018 to 2019 are based on 40 per cent of non-Muslims population that obtained from Population and Housing Census of Malaysia 2010, while data for 2020 to 2022 are based on 36.5 per cent of non-Muslims population that obtained from Population and Housing Census of Malaysia 2020

Jadual 2.45: Rekabentuk kapasiti loji rawatan air mengikut negeri, Malaysia, 2018-2022

Table 2.45: Water treatment plants design capacity by state, Malaysia, 2018-2022

Negeri State	Juta liter sehari (JLH) Million litres per day (MLD)				
	2018	2019	2020	2021	2022
Malaysia	20,049	20,165	21,493	21,787	22,347
Johor	2,049	2,049	2,105	2,105	2,156
Kedah	1,494	1,494	1,494	1,457	1,459
Kelantan	500	500	439	488	537
Melaka	639	639	651	651	681
Negeri Sembilan	1,000	994	994	994	1,048
Pahang	1,480	1,480	1,480	1,612	1,615
Perak	1,850	1,886	1,886	1,891	1,951
Perlis	261	257	261	261	279
Pulau Pinang	1,599	1,599	1,599	1,599	1,599
Sabah	1,481	1,499	1,487	1,505	1,511
Sarawak ¹	1,998	2,070	2,064	2,189	2,275
Selangor ²	4,706	4,706	6,036	6,036	6,035
Terengganu	891	891	896	896	1,095
W.P. Labuan	101	101	101	101	104

Nota:
Notes:

¹Termasuk LAKU Management Sdn. Bhd. (Bintulu, Miri & Limbang), Lembaga Air Sibu, Lembaga Air Kuching dan Jabatan Bekalan Air Luar Bandar (JBALB) Sarawak
Includes LAKU Management Sdn. Bhd. (Bintulu, Miri & Limbang), Sibu Water Board, Kuching Water Board and Sarawak Rural Water Supply Department (JBALB)

²Termasuk W.P. Kuala Lumpur dan W.P. Putrajaya
Includes W.P. Kuala Lumpur and W.P. Putrajaya

***Peningkatan rekabentuk kapasiti loji rawatan air adalah kerana terdapat penambahan loji baru dan pembesaran rekabentuk loji yang sedia ada. Pengurangan rekabentuk kapasiti loji rawatan air pula disebabkan oleh penutupan loji secara terus dan penutupan sementara loji rawatan air (akan dibuka semula apabila diperlukan)**
The increase of water treatment plants design capacity is due to the addition of new plant and expansion of present plant design. The decrease of water treatment plants design capacity is due to the closing of plants and temporary closure of water treatment plant (will be reopened when needed)

**** Mulai 2016, rekabentuk kapasiti untuk Johor, Perlis dan Terengganu adalah termasuk pengendali swasta di mana kapasiti yang ditetapkan berdasarkan kepada perjanjian kedua-dua belah pihak**
Beginning of 2016, design capacity for Johor, Perlis and Terengganu include private operator where the designated capacity based on agreement both parties

Sumber: Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim
Suruhanjaya Perkhidmatan Air Negara
Source: Ministry of Natural Resources, Environment and Climate Change
National Water Services Commission

Jadual 2.46: Pengeluaran air yang dibekalkan mengikut negeri, Malaysia, 2018-2022

Table 2.46: Production of supplied water by state, Malaysia, 2018-2022

Negeri State	Juta liter sehari (JLH) Million litres per day (MLD)				
	2018	2019	2020	2021	2022
Malaysia	17,287^r	17,743^r	17,928^r	18,190	18,828
Johor	1,757	1,888	1,831	1,848	1,837
Kedah	1,446	1,474	1,487	1,538	1,597
Kelantan	491	503	507	504	517
Melaka	528	538	578	603	649
Negeri Sembilan	780	784	795	811	848
Pahang	1,158	1,194	1,269	1,281	1,337
Perak	1,333	1,357	1,392	1,386	1,418
Perlis	234	252	243	236	243
Pulau Pinang	1,073	1,093	1,108	1,126	1,178
Sabah	1,304	1,374	1,319 ^r	1,365	1,404
Sarawak ¹	1,625 ^r	1,646 ^r	1,693 ^r	1,767	1,881
Selangor ²	4,856	4,932	4,967	4,985	5,116
Terengganu	627	632	657	656	720
W.P. Labuan	74	76	82	84	83

Nota:

Notes:

¹Termasuk LAKU Management Sdn. Bhd. (Bintulu, Miri & Limbang), Lembaga Air Sibu, Lembaga Air Kuching dan Jabatan Bekalan Air Luar Bandar (JBALB) Sarawak
Includes LAKU Management Sdn. Bhd. (Bintulu, Miri & Limbang), Sibu Water Board, Kuching Water Board and Sarawak Rural Water Supply Department (JBALB)

²Termasuk W.P. Kuala Lumpur dan W.P. Putrajaya
Includes W.P. Kuala Lumpur and W.P. Putrajaya

*Mulai 2016, pengeluaran air untuk Johor, Perlis dan Terengganu adalah termasuk pengendali swasta
Beginning of 2016, production of water for Johor, Perlis and Terengganu include private operator

Sumber: Kementerian Sumber Asli,
Alam Sekitar dan Perubahan Iklim
Suruhanjaya Perkhidmatan Air Negara

Source: Ministry of Natural Resources,
Environment and Climate Change
National Water Services Commission

Jadual 2.47a: Bekalan air mentah diabstrak dari sungai mengikut negeri, Malaysia, 2018-2022

Table 2.47a: Supply of abstracted raw water from rivers by state, Malaysia, 2018-2022

Negeri State	Juta liter sehari (JLH) Million litres per day (MLD)				
	2018	2019	2020	2021	2021
Malaysia	14,807^r	15,137^r	15,871^r	16,188	16,250
Johor	1,085	1,128	1,162	1,142	1,145
Kedah	1,543	1,574	1,551	1,643	1,708
Kelantan	289	221	323	227	322
Melaka	331	342	368	354	378
Negeri Sembilan	402	416	400	412	406
Pahang	1,271	1,260	1,357	1,322	1,437
Perak	985	1,131	1,033	1,144	1,186
Perlis	185	189	188	174	192
Pulau Pinang	1,010	1,037	1,297	1,280	1,138
Sabah	961	948	968 ^r	1,335	1,124
Sarawak ¹	1,559 ^r	1,691 ^r	1,852 ^r	1,927	1,980
Selangor ²	4,666	4,665	4,787	4,687	4,681
Terengganu	451	461	507	461	475
W.P. Labuan	69	74	80	80	78

Nota:

Notes:

¹Termasuk LAKU Management Sdn. Bhd. (Bintulu, Miri & Limbang), Lembaga Air Sibul, Lembaga Air Kuching dan Jabatan Bekalan Air Luar Bandar (JBALB) Sarawak
Includes LAKU Management Sdn. Bhd. (Bintulu, Miri & Limbang), Sibul Water Board, Kuching Water Board and Sarawak Rural Water Supply Department (JBALB)

²Termasuk W.P. Kuala Lumpur dan W.P. Putrajaya
Includes W.P. Kuala Lumpur and W.P. Putrajaya

**Sumber: Kementerian Sumber Asli,
Alam Sekitar dan Perubahan Iklim
Suruhanjaya Perkhidmatan Air Negara**

Source: Ministry of Natural Resources,
Environment and Climate Change
National Water Services Commission

Jadual 2.47b: Bekalan air mentah diabstrak dari empangan mengikut negeri, Malaysia, 2018-2022

Table 2.47b: Supply of abstracted raw water from storage dams by state, Malaysia, 2018-2022

Negeri State	Juta liter sehari (JLH) Million litres per day (MLD)				
	2018	2019	2020	2021	2022
Malaysia	3,404	3,271	3,433¹	3,011	3,292
Johor	758	773	749	729	751
Kedah	20	26	33	6	20
Melaka	322	318	361	325	258
Negeri Sembilan	431	385	433	439	490
Pahang	44	44	45	37	47
Perak	412	248	333	274	278
Perlis	70	73	72	63	75
Pulau Pinang	95	84	87	107	131
Sabah	391	396	387 ¹	130	297
Sarawak ¹	196	205	220	225	231
Selangor ²	454	506	468	442	461
Terengganu	202	203	236	233	245
W.P. Labuan	9	10	9	8	8

Nota:

Notes:

¹Termasuk LAKU Management Sdn. Bhd. (Bintulu, Miri & Limbang), Lembaga Air Sibu, Lembaga Air Kuching dan Jabatan Bekalan Air Luar Bandar (JBALB) Sarawak
Includes LAKU Management Sdn. Bhd. (Bintulu, Miri & Limbang), Sibu Water Board, Kuching Water Board and Sarawak Rural Water Supply Department (JBALB)

²Termasuk W.P. Kuala Lumpur dan W.P. Putrajaya
Includes W.P. Kuala Lumpur and W.P. Putrajaya

*Tiada bekalan air mentah yang diambil terus dari empangan bagi Kelantan
No direct extraction of raw water from storage dams in Kelantan

**Sumber: Kementerian Sumber Asli,
Alam Sekitar dan Perubahan Iklim
Suruhanjaya Perkhidmatan Air Negara**

Source: Ministry of Natural Resources,
Environment and Climate Change
National Water Services Commission

Jadual 2.47c: Bekalan air mentah diabstrak dari air bawah tanah mengikut negeri¹, Malaysia, 2018-2022

Table 2.47c: Supply of abstracted raw water from groundwater by state, Malaysia, 2018-2022

Negeri State	Juta liter sehari (JLH) Million litres per day (MLD)				
	2018	2019	2020	2021	2022
Malaysia	236	243	224¹	210¹	323
Kelantan	212	201	193	198	221
Melaka	-	-	-	0.2	82
Pahang	2	1	5	2	2
Perlis	3	-	3	3 ¹	2
Sabah	18	40	23 ¹	7	15
Sarawak ²	0.5	0.4	0.4	0.4	0.4
W.P. Labuan	0.0	0.0	0.0	0.0	0.0

Sumber: Kementerian Sumber Asli,
Alam Sekitar dan Perubahan Iklim
Suruhanjaya Perkhidmatan Air Negara
Source: Ministry of Natural Resources,
Environment and Climate Change
National Water Services Commission

Nota:

Notes:

¹Sumber bekalan air bawah tanah masih belum diterokai di Johor, Kedah, Melaka, Perak, Pulau Pinang dan Selangor. Isipadu air bawah tanah hanya sebagai panduan memandangkan tidak semua loji rawatan dilengkapi dengan meter bagi mengukur kuantiti pengambilan sebenar

Groundwater resources have yet to be explored in Johor, Kedah, Melaka, Perak, Pulau Pinang and Selangor. Volume of groundwater is only for guidance since not all treatment plants is equipped with metre to quantify the actual intake volume

²Sumber air bawah tanah tidak diterokai di kawasan yang air dibekalkan oleh Jabatan Bekalan Air Luar Bandar (JBALB), Sarawak, Lembaga Air Kuching dan Lembaga Air Sibuan. Kos mengepam air bawah tanah adalah tinggi. Air bawah tanah kini disimpan untuk musim kemarau

Groundwater resources not explored in areas water supplied by Sarawak Rural Water Supply Department (JBALB), Kuching Water Board and Sibuan Water Board Pumping groundwater is costly. The groundwater resource is presently stored as a reserve for the drought season

Jadual 2.48: Penggunaan air bermeter mengikut sektor dan negeri, Malaysia, 2018-2022

Table 2.48: Metered water consumption by sector and state, Malaysia, 2018-2022

Juta liter sehari (JLH)
Million litres per day (MLD)

Negeri State	Sektor Sector									
	Domestik Domestic					Bukan domestik Non-domestic				
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Malaysia	6,605^f	6,811	7,179^f	7,540	7,353	4,476^f	4,688	4,298^f	4,173	4,433
Johor	809	835	867	879	867	576	599	526	505	536
Kedah	544	551	574	590	560	201	208	193	179	217
Kelantan	164	163	170	171	162	85	85	75	68	77
Melaka	209	210	215	230	228	207	214	189	184	190
Negeri Sembilan	293	294	318	327	307	238	244	222	222	231
Pahang	333	339	367	391	385	256	288	264	251	283
Perak	665	679	706	703	699	268	278	266	266	289
Perlis	80	80	78	80	80	10	12	12	11	18
Pulau Pinang	491	499	533	547	534	349	343	314	313	334
Sabah	341	366	313 ^f	425	394	275	278	224 ^f	225	238
Sarawak ¹	487	499	548	579	602	409	468	448 ^f	440	463
Selangor ²	1,916 ^f	2,012	2,186	2,294	2,230	1,400 ^f	1,459	1,362	1,315	1,350
Terengganu	255	266	286	302	286	169	176	165	161	173
W.P. Labuan	18	18	17	20	19	33	36	40	32	33

Nota:

Notes:

¹Termasuk LAKU Management Sdn. Bhd. (Bintulu, Miri & Limbang), Lembaga Air Sibu, Lembaga Air Kuching dan Jabatan Bekalan Air Luar Bandar (JBALB) Sarawak
Includes LAKU Management Sdn. Bhd. (Bintulu, Miri & Limbang), Sibu Water Board, Kuching Water Board and Sarawak Rural Water Supply Department (JBALB)

²Termasuk W.P. Kuala Lumpur dan W.P. Putrajaya
Includes W.P. Kuala Lumpur and W.P. Putrajaya

Sumber: Kementerian Sumber Asli,
Alam Sekitar dan Perubahan Iklim
Suruhanjaya Perkhidmatan Air Negara
Source: Ministry of Natural Resources,
Environment and Climate Change
National Water Services Commission

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KOMPONEN **3** COMPONENT

SISA

RESIDUALS

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Jadual 3.1: Pelepasan gas rumah kaca, Malaysia, 2014-2019

Table 3.1: Greenhouse gas emission, Malaysia, 2014-2019

Sektor Sector	Emissions / Removals (Gg CO ₂ equivalent)					
	2014	2015	2016	2017	2018	2019
Jumlah Pelepasan Net (Termasuk Guna Tanah, Pertukaran Guna Tanah dan Perhutanan)	64,835.93	74,492.91	98,804.40	73,193.32	79,602.70	115,643.68
<i>Nett Total Emissions (with LULUCF)</i>						
Jumlah Pelepasan (Tidak termasuk Guna Tanah, Pertukaran Guna Tanah dan Perhutanan)	314,788.47	318,525.03	314,179.45	316,563.05	320,866.78	330,358.21
<i>Total Emissions (without LULUCF)</i>						
Tenaga Energy	255,079.75	256,850.16	253,850.16	252,710.49	255,231.55	259,326.11
Industri Pemprosesan dan Guna Produk <i>Industrial processes and product use</i>	20,235.40	22,243.93	23,746.04	24,203.62	26,697.07	32,853.80
Pertanian <i>Agriculture</i>	11,095.67	10,647.03	10,711.36	11,063.54	10,690.29	9,921.71
<i>LULUCF</i>	-249,952.54	-244,032.12	-215,375.05	-243,369.73	-241,264.08	-214,714.54
Sisa Waste	28,377.66	28,783.91	26,565.41	28,585.40	28,247.87	28,256.59

Nota/ Notes:
 Malaysia's Fourth Biennial Update Report to the UNFCCC

**Sumber: Kementerian Sumber Asli,
 Alam Sekitar dan Perubahan Iklim**
 Source: Ministry of Natural Resources,
 Environment and Climate Change

Jadual 3.2: Pelepasan bahan pencemar ke udara mengikut jenis dan punca, Malaysia, 2018-2022

Table 3.2: Emission of pollutants to the atmosphere by type and source, Malaysia, 2018-2022

Tan metrik
Metric tonnes

Bahan pencemar <i>Pollutants</i>	Tahun <i>Year</i>	Sumber <i>Source</i>					Jumlah <i>Total</i>
		Punca tetap <i>Stationary sources</i>			Kenderaan bermotor <i>Motor vehicles</i>	Lain-lain ¹ <i>Others</i>	
		Industri <i>Industry</i>	Stesen janakuasa <i>Power plant</i>	Jumlah <i>Total</i>			
Jumlah <i>Total</i>	2018	96,594	821,619	918,213	2,359,040	107,517	3,384,770
	2019	113,865	832,917	946,782	2,379,982	131,196	3,457,960
	2020	119,473	855,497	974,970	2,454,361	135,773	3,565,104
	2021	94,622	769,878	864,500	1,792,145	68,433	2,725,078
	2022	94,622	769,878	864,500	2,226,043	68,433	3,158,978
Habuk Halus ² (PM) <i>Particulate Matter</i>	2018	8,301	8,960	17,261	3,906	5,622	26,789
	2019	8,667	9,211	17,878	3,725	5,575	27,178
	2020	8,441	11,415	19,856	3,645	5,764	29,265
	2021	7,788	8,581	16,369	2,702	3,578	22,649
	2022	7,788	8,581	16,369	3,768	3,578	23,715
Karbon Monoksida (CO) <i>Carbon Monoxide</i>	2018	9,151	80,940	90,091	2,113,937	6,606	2,210,634
	2019	11,021	78,619	89,640	2,138,951	6,551	2,235,142
	2020	12,176	76,243	88,419	2,210,695	8,326	2,307,440
	2021	8,547	61,153	69,700	1,613,956	4,204	1,687,860
	2022	8,547	61,153	69,700	1,997,005	4,204	2,070,909
Nitrogen Dioksida (NO ₂) <i>Nitrogen Dioxide</i>	2018	59,115	589,503	648,618	226,515	14,757	889,890
	2019	72,679	592,295	664,974	222,826	37,570	925,370
	2020	80,480	584,889	665,369	225,369	45,010	935,748
	2021	58,429	567,611	626,040	164,744	9,393	800,177
	2022	58,429	567,611	626,040	211,431	9,393	846,864
Sulfur Dioksida (SO ₂) <i>Sulphur Dioxide</i>	2018	20,027	142,216	162,243	14,682	80,532	257,457
	2019	21,498	152,792	174,290	14,480	81,500	270,270
	2020	18,376	182,950	201,326	14,652	76,673	292,651
	2021	19,858	132,533	152,391	10,743	51,258	214,392
	2022	19,858	132,533	152,391	13,841	51,258	217,490

Nota:

Notes:

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

¹Termasuk hotel, pusat komersial, institusi, pasar malam
dan aktiviti pembakaran terbuka

Include hotels, commercial centres, institutions, night markets and open burning activities

²Habuk Halus (PM) termasuk semua jenis habuk halus

Particulate Matter (PM) includes all types of particulate matters

Jadual 3.3: Kemudahan pembetulan, Malaysia, 2019-2022

Table 3.3: Sewerage facilities, Malaysia, 2019-2022

Kemudahan pembetulan Sewerage facilities	2019		2020		2021		2022 ^p	
	Kuantiti Quantity	Population equivalent	Kuantiti Quantity	Population equivalent	Kuantiti Quantity	Population equivalent	Kuantiti Quantity	Population equivalent
Loji rawatan kumbahan awam Public sewage treatment plant (a+b)	7,114	27,062,756	7,203	27,525,662	7,440	29,577,067	7,503	31,417,704
a. Loji multipoint Multipoint plant	7,012	18,045,882	7,101	18,321,827	7,336	19,881,838	7,395	20,186,013
b. Loji serantau Regional plant	102	9,016,874	102	9,203,835	104	9,695,229	108	11,231,691
Loji rawatan kumbahan swasta Private sewage treatment plant	4,119	4,302,350	4,215	4,512,796	4,464	4,882,300	4,641	4,957,337
Communal septic tank	4,231	515,034	4,230	514,819	4,155	515,514	4,230	514,344
Tangki septik individu Individual septic tank	1,360,395	7,060,201	1,362,426	7,088,163	1,363,886	7,096,562	1,366,516	7,151,742
Sistem tradisional Traditional system	1,175,248	5,876,240	1,155,258	5,776,290	1,156,314	5,781,570	1,156,314	5,781,570
Stesen pemasangan rangkaian Network pumping station	1,272	n.a.	1,312	n.a.	1,375	n.a.	1,454	n.a
Panjang rangkaian pembetung Length of sewer network (km)	20,780	n.a.	21,216	n.a.	21,633	n.a.	21,964	n.a

Sumber: Suruhanjaya Perkhidmatan Air Negara
Source: National Water Services Commission

Jadual 3.4: Loji rawatan pembetungan awam, Malaysia, 2020-2022

Table 3.4: Public sewerage treatment plant, Malaysia, 2020-2022

Population equivalent (PE)

Negeri State	LRP multipoint Multipoint STP ¹			Loji serantau Regional plant ²			Jumlah Total		
	2020	2021	2022 ^P	2020	2021	2022 ^P	2020	2021	2022 ^P
Jumlah Total	18,321,827	19,881,838	20,186,013	9,203,835	9,695,229	11,231,691	27,525,662	29,577,067	31,417,704
Johor	2,701,511	3,836,620	4,055,962	813,006	921,816	1,074,398	3,514,517	4,758,436	5,130,360
Kedah	1,054,175	1,080,114	1,100,288	75,865	77,564	80,093	1,130,040	1,157,678	1,180,381
Kelantan	73,090	82,004	86,879	-	-	-	73,090	82,004	86,879
Melaka	1,016,202	1,043,920	973,299	82,651	90,512	198,927	1,098,853	1,134,432	1,172,226
Negeri Sembilan	1,051,407	1,073,022	1,093,373	491,508	530,406	532,491	1,542,915	1,603,428	1,625,864
Pahang	569,276	601,886	619,294	77,469	77,451	78,071	646,745	679,337	697,365
Perak	1,999,977	2,059,604	2,097,573	70,537	70,687	77,169	2,070,514	2,130,291	2,174,742
Perlis	51,594	51,152	55,722	19,349	19,349	19,589	70,943	70,501	75,311
Pulau Pinang	1,193,737	1,265,550	1,298,047	1,750,553	1,774,964	1,798,435	2,944,290	3,040,514	3,096,482
Selangor	7,444,081	7,566,591	7,583,959	2,740,823	2,782,358	3,859,044	10,184,904	10,348,949	11,443,003
Terengganu	206,511	211,309	217,437	-	-	-	206,511	211,309	217,437
W.P. Kuala Lumpur	928,242	977,030	969,042	2,704,024	2,966,252	3,122,317	3,632,266	3,943,282	4,091,359
W.P. Labuan	32,024	33,036	35,138	28,054	28,054	28,163	60,078	61,090	63,301
W.P. Putrajaya	-	-	-	349,996	355,816	362,994	349,996	355,816	362,994

Nota:

Notes:

¹LRP multipoint: STP untuk memenuhi pembangunan yang sporadis dan bertaburan oleh pemaju yang berbeza*Multipoint STP: STPs to cater for sporadic and scattered development by different developers***²Loji serantau: STP yang dikenal pasti dalam Kajian Pengawasan Pembetungan untuk menampung kawasan tadahan pembetungan***Regional plant: STPs identified in the Sewerage Catchment Study to cater for a sewerage catchment area***^P Permulaan/ Preliminary****Sumber: Suruhanjaya Perkhidmatan Air Negara***Source: National Water Services Commission*

Jadual 3.5: Kumbahan yang dihasilkan oleh isi rumah, Malaysia, 2018-2022

Table 3.5: Sewage generated by household, Malaysia, 2018-2022

Indikator Indicators	Tahun Year	2018	2019	2020	2021	2022
Kumbahan yang dihasilkan ¹ Sewage generated (%)		65.9	66.7	64.6	65.1	72.1

Nota:

Notes:

Sumber: Suruhanjaya Perkhidmatan Air Negara

Source: National Water Services Commission

¹ Perkadaran kumbahan yang dihasilkan oleh isi rumah yang dirawat oleh loji rawatan kumbahan awam, Semenanjung Malaysia dan W.P. Labuan

Proportion of sewage generated by household being treated by public sewage treatment plant, Peninsular Malaysia and W.P. Labuan

Jadual 3.6: Sisa pepejal yang dimasukkan ke fasiliti pengurusan sisa pepejal, Malaysia¹, 2022Table 3.6: Solid waste entered solid waste management facility, Malaysia¹, 2022Tan metrik ('000)
Metric tonnes

Jenis Sisa pepejal Type of solid waste	Sisa Domestik (Isi Rumah) Domestic Waste (Household)	Sisa Institusi, Komersial & Industri (ICI) Institution, Commercial & Industrial Waste (ICI)	Sisa Pukal Bulk Waste	Sisa Pembersihan Awam Public Cleansing Waste	Sisa Binaan & Perobohan Construction & Demolition Waste	Lain-lain Others	Jumlah Total
Jumlah Total	1,945,845	651,474	291,882	197,015	22,498	6,043	3,114,758
Januari January	159,200	59,566	29,888	15,196	1,421	1,764	267,035
Februari February	146,556	48,055	24,606	13,870	1,457	166	234,709
Mac March	164,857	55,628	25,930	16,649	1,915	176	265,155
April	163,547	54,535	23,792	16,099	1,799	285	260,056
Mei May	167,561	50,323	22,489	15,497	1,581	284	257,736
Jun June	171,109	52,387	23,371	18,375	1,750	345	267,338
Julai July	164,413	53,420	21,441	16,523	1,848	392	258,036
Ogos August	163,066	53,764	22,775	17,280	2,151	496	259,530
September	154,104	51,326	22,552	16,037	1,989	463	246,471
Oktober October	163,813	51,504	23,942	17,122	1,984	456	258,821
November	161,339	57,487	24,367	16,666	1,977	647	262,483
Disember December	166,278	63,481	26,728	17,702	2,627	570	277,387

Nota:

Notes:

Sumber: Kementerian Pembangunan Kerajaan Tempatan

Source: Ministry Local Government Development

Sebarang perbezaan pada data yang dilaporkan adalah disebabkan oleh pembundaran.

Any differences in the aggregated data are due to rounding.

¹ Merujuk kepada Negeri yang menggunakan peraturan di bawah Akta Pengurusan Sisa Pepejal dan Pembersihan Awam 2007

(Akta 672) yang berkuatkuasa di Johor, Kedah, Melaka, Negeri Sembilan, Pahang, Perlis, W.P. Kuala Lumpur dan W.P. Putrajaya

Refer to the States adopting regulations under Solid Waste and Public Cleansing Management Act 2007 (Act 672) enforced in Johor, Kedah, Melaka, Negeri Sembilan, Pahang, Perlis, W.P. Kuala Lumpur and W.P. Putrajaya

Jadual 3.7: Komposisi sisa pepejal, Malaysia¹, 2018-2022

Table 3.7: Solid waste composition, Malaysia, 2018-2022

Jenis sisa Type of waste	2018	2019	2020	2021	Peratus Per cent 2022
Jumlah Total	100.0	100.0	100.0	100.0	100.0
Sisa makanan Food waste	27.8	30.3	34.6	36.0	30.6
Plastik Plastic	23.9	24.8	22.7	23.9	21.9
Kertas Paper	11.2	10.5	8.1	8.8	15.3
Besi Metal	2.0	2.3	3.2	2.4	2.4
Sisa berbahaya isirumah Household hazardous waste (HHW)	1.2	1.1	0.7	0.7	4.2
Tetrapak	0.7	0.8	0.9	1.3	1.7
Kaca Gelas	2.6	1.5	1.7	2.0	2.7
Kain Textiles	4.8	4.8	3.6	3.5	2.3
Getah/ kulit Rubber/ leather	1.2	1.6	1.1	1.3	1.1
Kayu Wood	0.6	2.7	1.0	1.2	1.0
Sisa kebun/ taman Garden waste	7.6	4.1	4.5	3.6	2.9
Lampin/ napkin Diapers/ napkin	10.1	11.1	12.8	11.3	8.2
Sisa campuran Comingle	2.9	4.1	3.9	0.4	0.7
Pelutup muka Face mask	-	-	-	1.0	1.4
Lain-lain Others	3.5	0.5	1.3	2.6	3.6

Nota:
Notes:Sumber: Kementerian Pembangunan Kerajaan Tempatan
Source: Ministry of Local Government Development

Sebarang perbezaan pada data yang dilaporkan adalah disebabkan oleh pembundaran.

Any differences in the aggregated data are due to rounding.

¹ Merujuk kepada Negeri yang menggunakan peraturan di bawah Akta Pengurusan Sisa Pepejal dan Pembersihan Awam 2007 (Akta 672) yang berkuatkuasa di Johor, Kedah, Melaka, Negeri Sembilan, Pahang, Perlis, W.P. Kuala Lumpur dan W.P. Putrajaya

Refer to the States adopting regulations under Solid Waste and Public Cleansing Management Act 2007 (Act 672) enforced in Johor, Kedah, Melaka, Negeri Sembilan, Pahang, Perlis, W.P. Kuala Lumpur and W.P. Putrajaya

Data kajian adalah daripada kajian yang menggunakan 200kg sampel di tapak pelupusan dengan kaedah pensampelan secara pelupusan

This data is from a study that used 200kg of samples at a landfill site with a disposal sampling method

Jadual 3.8: Kadar kitar semula, Malaysia, 2018-2022

Table 3.8: Recycling rates, Malaysia, 2018-2022

Indikator Indicators	Tahun Year	2018	2019	2020	2021	2022
Kadar kitar semula ¹ Recycling rate (%)		24.60	28.06	30.67	31.52	33.17

Nota:

Notes:

Sumber: Jabatan Pengurusan Sisa Pepejal Negara

Source: National Solid Waste Management Department

¹ Merujuk kepada Survey on Solid Waste Composition, Characteristics and Existing Practice of Solid Waste Recycling in Malaysia, 2013
Refer to Survey on Solid Waste Composition, Characteristics and Existing Practice of Solid Waste Recycling in Malaysia, 2013

Jadual 3.9: Senarai dan kapasiti kemudahan rawatan dan pelupusan sisa perbandaran mengikut negeri, Malaysia, 2022

Table 3.9: List and capacity of municipal waste treatment and disposal facilities by state, Malaysia, 2022

Negeri State	Tapak pelupusan Disposal site			Loji rawatan termal Thermal treatment plant		
	Nama tapak Site name	Kapasiti muatan sisa sehari (tan/ hari) Residual load capacity daily (tonnes/day)	Luas Area (Ha)	Nama loji Plant name	Kapasiti muatan sisa sehari (tan/ hari) Residual load capacity daily (tonnes/day)	Luas Area (Ha)
Johor	TPS Seelong	1,230.0	108.0	-	-	-
	TP Buluh Kasap	505.0	31.6	-	-	-
	TP Maokil, Labis	314.0	12.0	-	-	-
	TP Jemaluang	45.0	4.0	-	-	-
	TP Batu 4	334.0	2.4	-	-	-
	TP Pekan Nenas	287.0	5.3	-	-	-
	TP Tanjung Langsung	350.0	10.5	-	-	-
	TP Bandar Penawar	285.0	11.5	-	-	-
Kedah	TP Jabi	630.0	26.3	LRT Pulau Langkawi	-	2.5
	TP Semeling ¹	n/a	36.6	-	-	-
	TPS Padang Cina	820.0	56.7	-	-	-
	TPS Belanga Pechah	120.0	12.7	-	-	-
Negeri Sembilan	TPS Ladang Tanah Merah	598.8	120.0	-	-	-
	TP Sg. Muntoh	31.6	5.0	-	-	-
	TP Ulu Maasop	162.6	8.1	-	-	-
Perlis	TPS Rimba Mas	168.0	30.0	-	-	-
Melaka	TPS Sg. Udang	952.0	25.9	-	-	-
Pulau Pinang	TPS Pulau Burung	2,000.0	62.4	-	-	-
	TPI Jeti Jelutong	n/a	28.3	-	-	-

Jadual 3.9: Senarai dan kapasiti kemudahan rawatan dan pelupusan sisa perbandaran mengikut negeri, Malaysia, 2022 (samb.)

Table 3.9: List and capacity of municipal waste treatment and disposal facilities by state, Malaysia, 2022 (cont'd)

Negeri State	Tapak Pelupusan Disposal site			Loji rawatan termal Thermal treatment plant		
	Nama tapak Site name	Kapasiti muatan sisa sehari (tan/ hari) Residual load capacity daily (tonnes/day)	Luas Area (Ha)	Nama loji Plant name	Kapasiti muatan sisa sehari (tan/ hari) Residual load capacity daily (tonnes/day)	Luas Area (Ha)
Pahang	TPS Belunggu	382.0	40.0	LRT Cameron Highland	30.0	2.5
	TPS Pdg. Sertik	218.0	40.5	LRT Pulau Tioman	7.0	2.5
	TPS Blue Valley	12.0	5.6	-	-	-
	TPS Jalan Lipis	36.4	10.2	-	-	-
	TP Jabor - Jerangau	500.0	60.0	-	-	-
	TP Jengka 10	73.0	16.2	-	-	-
	TP Keledang	43.9	23.6	-	-	-
	TP. Kg. Chuat	37.8	26.0	-	-	-
	TP Muadzam Shah	25.0	4.9	-	-	-
	TP Kg. Feri	22.0	6.1	-	-	-
	TPi Sungai Karang*	n/a	n/a	-	-	-
Selangor & W.P. Kuala Lumpur	TPS Bukit Tagar	3,000.0	700.0	-	-	-
	TPS Jeram	3,000.0	64.7	-	-	-
	TPS Tanjung Dua Belas	2,500.0	64.7	-	-	-
	TP Panchang Bedena	20.0	8.0	-	-	-
	TP Sg. Sabai, Kalumpang	200.0	8.1	-	-	-
	TPi Sg. Kertas	672.0	5.7	-	-	-
	TPi Kuang	273.0	11.0	-	-	-
	Tpi Dengkil	374.0	59.0	-	-	-
Terengganu	TPS Kg. Tertak Batu	100.0	25.2	-	-	-
	TP Paya Rawa	80.0	13.3	-	-	-
	TP Kg. Air Sejuk	36.0	3.7	-	-	-
	TP Sg. Ikan	250.0	37.8	-	-	-
	TP Jln. Kuala Berang	30.0	3.9	-	-	-
	TP Bkt. Takal Mak Cili Paya	120.0	15.0	-	-	-
	TP Bukit Lat	70.0	28.3	-	-	-
	TP Bukit Ayak	30.0	9.0	-	-	-
	TP Gelugor	80.0	8.0	-	-	-

Jadual 3.9: Senarai dan kapasiti kemudahan rawatan dan pelupusan sisa perbandaran mengikut negeri, Malaysia, 2022 (samb.)Table 3.9: *List and capacity of municipal waste treatment and disposal facilities by state, Malaysia, 2022 (cont'd)*

Negeri State	Tapak Pelupusan Disposal site			Loji rawatan termal Thermal treatment plant		
	Nama tapak Site name	Kapasiti muatan sisa sehari (tan/ hari) <i>Residual load capacity daily (tonnes/day)</i>	Luas Area (Ha)	Nama loji Plant name	Kapasiti muatan sisa sehari (tan/ hari) <i>Residual load capacity daily (tonnes/day)</i>	Luas Area (Ha)
Kelantan	TP Kg. Kok Bedollah	130.0	20.2	-	-	-
	TP Pusu 40	120.0	4.5	-	-	-
	TP Beris Lalang	306.0	30.5	-	-	-
	TP Air Belaga	120.0	10.0	-	-	-
	TP Bkt. Che Ros	70.0	5.0	-	-	-
	TP Kg. Sg. Mekong	15.0	0.8	-	-	-
	TP Bkt. Akil	27.0	4.0	-	-	-
	TP Jalan Dabong - Sungai Sam	10.0	3.7	-	-	-
	TP Bukit Tembeling	19.0	4.5	-	-	-
	TP Gua Musang	72.0	32.0	-	-	-
Perak	TPS Lahat	650.0	226.7	Insenerator Pulau Pangkor	15.0	2.0
	TP Jalan Gerik	28.0	8.1	-	-	-
	TP Jln. Air Ganda Gerik	15.0	18.0	-	-	-
	TP Ayer Kala	25.0	1.5	-	-	-
	TP Jln. Tmn Merdeka	90.0	4.0	-	-	-
	TP Bagan Serai	120.0	2.4	-	-	-
	TP Jebong	250.0	9.3	-	-	-
	TP Jln. Kuala Kangsar	180.0	13.4	-	-	-
	TP Parit	80.0	1.5	-	-	-
	TP Teluk Mengkudu	330.0	47.0	-	-	-
	TP Sg. Siput Selatan	80.0	26.7	-	-	-
	TP Batu Gajah	60.0	24.3	-	-	-
	TP Bidor, Pekan Pasir	100.0	56.7	-	-	-
	TP Changkat Jong	200.0	9.0	-	-	-
	TP Penderas	70.0	8.0	-	-	-
	TP Teluk Cempedak	15.0	3.4	-	-	-

Jadual 3.9: Senarai dan kapasiti kemudahan rawatan dan pelupusan sisa perbandaran mengikut negeri, Malaysia, 2022 (samb.)

Table 3.9: List and capacity of municipal waste treatment and disposal facilities by state, Malaysia, 2022 (cont'd)

Negeri State	Tapak Pelupusan Disposal site			Loji rawatan termal Thermal treatment plant		
	Nama tapak Site name	Kapasiti muatan sisa sehari (tan/ hari) Residual load capacity daily (tonnes/day)	Luas Area (Ha)	Nama loji Plant name	Kapasiti muatan sisa sehari (tan/ hari) Residual load capacity daily (tonnes/day)	Luas Area (Ha)
Sarawak	TP Bau	60.0	3.6	-	-	-
	TP Lidong	30.0	1.0	-	-	-
	TP Pusa	6.0	0.3	-	-	-
	TP Spaoh	6.0	0.3	-	-	-
	TP Debak	6.0	0.4	-	-	-
	TP Meludam	48.0	n/a	-	-	-
	TP Dalat	35.0	0.6	-	-	-
	TP Balingian	25.0	1.0	-	-	-
	TP Perawan	11.0	1.4	-	-	-
	TP Kapit	50.0	2.5	-	-	-
	TP Song	20.0	1.5	-	-	-
	TP Belaga	15.0	1.5	-	-	-
	TP Sg. Asap	15.0	2.5	-	-	-
	TPS Mambong	450.0	112.0	-	-	-
	TP Lawas	20.0	6.1	-	-	-
	TP Kidurong	150.0	4.1	-	-	-
	TP Ulu Segan	335.0	8.0	-	-	-
	TP Limbang	50.0	4.5	-	-	-
	TP Selangau	6.0	2.0	-	-	-
	TP Stapang	4.0	3.7	-	-	-
	TP Lubok Antu	5.0	0.8	-	-	-
	TP Engkilili	5.0	1.2	-	-	-
	TP Lundu	16.0	3.7	-	-	-
	TP Julau	8.0	2.0	-	-	-
	TP Pakan	8.0	2.0	-	-	-
	TP Meradong	16.0	1.0	-	-	-
	TP Gemuan	n/a	n/a	-	-	-

Jadual 3.9: Senarai dan kapasiti kemudahan rawatan dan pelupusan sisa perbandaran mengikut negeri, Malaysia, 2022 (samb.)

Table 3.9: List and capacity of municipal waste treatment and disposal facilities by state, Malaysia, 2022 (cont'd)

Negeri State	Tapak Pelupusan Disposal site			Loji rawatan termal Thermal treatment plant		
	Nama tapak Site name	Kapasiti muatan sisa sehari (tan/ hari) Residual load capacity daily (tonnes/day)	Luas Area (Ha)	Nama loji Plant name	Kapasiti muatan sisa sehari (tan/ hari) Residual load capacity daily (tonnes/day)	Luas Area (Ha)
Sarawak	TP Marudi	25.0	1.5	-	-	-
	TP Long Lama	5.0	2.7	-	-	-
	TP Daro	6.0	1.0	-	-	-
	TP Kuala Matu	5.0	0.8	-	-	-
	TP Belawai	5.0	4.0	-	-	-
	TPS Sibuti	136.0	4.6	-	-	-
	TP Kuala Baram	40.0	7.5	-	-	-
	TP Samarahan	120.0	2.3	-	-	-
	TPS Seratok	12.0	0.3	-	-	-
	TP Roban	5.0	0.8	-	-	-
	TP Selalang	56.0	4.5	-	-	-
	TP Batu 8	9.6	0.8	-	-	-
	TP Tebedu	2.4	0.1	-	-	-
	TPS Kemunyang	121.0	5.5	-	-	-
	TPS Jln. Seng Ling	100.0	25.0	-	-	-
	TP Simunjan	30.0	2.1	-	-	-
	TP Pantu	4.0	0.6	-	-	-
	TP Entulang	75.0	1.2	-	-	-
	TP Lingga	4.0	1.4	-	-	-
Sabah	TP Lumat	35.0	4.1	-	-	-
	TP Kg. Kolapis	10.0	6.1	-	-	-
	TP Telupid	15.0	6.0	-	-	-
	TP Jln. Sedukut	40.0	30.0	-	-	-
	TP Jln. Sinar Jaya	10.0	6.1	-	-	-
	TPS Kayu Madang	400.0	46.5	-	-	-
	TP Kota Marudu	1.6	n/a	-	-	-
	TP Menumpang	10.0	10.0	-	-	-
	TP Menumbok	6.0	1.0	-	-	-

Jadual 3.9: Senarai dan kapasiti kemudahan rawatan dan pelupusan sisa perbandaran mengikut negeri, Malaysia, 2022 (samb.)

Table 3.9: List and capacity of municipal waste treatment and disposal facilities by state, Malaysia, 2022 (cont'd)

Negeri State	Tapak Pelupusan Disposal site			Loji rawatan termal Thermal treatment plant		
	Nama tapak Site name	Kapasiti muatan sisa sehari (tan/ hari) <i>Residual load capacity daily (tonnes/day)</i>	Luas Area (Ha)	Nama loji Plant name	Kapasiti muatan sisa sehari (tan/ hari) <i>Residual load capacity daily (tonnes/day)</i>	Luas Area (Ha)
Sabah	TP Kunak	6.0	5.0	-	-	-
	TP Lahad Datu	213.0	20.2	-	-	-
	TP LBK	110.0	2.0	-	-	-
	TP Kg. Langkawit	20.0	4.1	-	-	-
	TP Ranau	40.0	6.1	-	-	-
	TP Labuk	220.0	101.1	-	-	-
	TP Kg. Simunul	20.0	0.8	-	-	-
	TP Sipitang	20.0	0.8	-	-	-
	TP Jln. Mosogit	8.0	4.1	-	-	-
	TP Mengkadait	25.0	4.1	-	-	-
	TP Bukit Gemok	177.0	3.3	-	-	-
	TP Kg. Amboi	25.0	4.1	-	-	-
	TP Tamu	n/a	n/a	-	-	-
W.P. Labuan	TPS Bukit Kalam	90.0	30.0	-	-	-

Nota:

Notes:

Sumber: Kementerian Pembangunan Kerajaan Tempatan

Source: Ministry of Local Government Development

TP: Tapak pelupusan bukan sanitari/ Non-sanitary landfill

TPS: Tapak pelupusan sanitari/ Sanitary landfill

TPi: Tapak pelupusan lengai/ Inert landfill

LRT: Loji Rawatan Termal/ Thermal treatment plant (Incinerator)

¹ Operasi TP Semeling, Kedah dihentikan sementara disebabkan kebakaran. Sisa pepejal yang diterima daripada Majlis Daerah Yan dihantar ke TPS Jabi manakala sisa pepejal daripada Majlis Perbandaran Sungai Petani, Majlis Daerah Baling dan Majlis Daerah Sik dihantar ke TPS Padang Cina.

The operation of TP Semeling, Kedah was suspended due to fire. Solid waste received from Yan District Council is sent to TPS Jabi while solid waste from Sungai Petani Municipal Council, Baling District Council and Sik District Council is sent to TPS Padang Cina.

*Tapak pelupusan baharu

New disposal site

Jadual 3.10: Sisa perbandaran yang dihantar ke kemudahan pengurusan sisa pepejal mengikut negeri¹, Malaysia, 2022Table 3.10: *Municipal waste sent to solid waste management facilities by state¹, Malaysia, 2022*

Negeri State	Nama Kemudahan/ Tapak Pelupusan Facility Name/ Disposal Site	Purata sisa yang diterima (tan/ hari) Average residue received (tonnes/ day)
Johor	TP Buluh Kasap	404.1
	TP Maokil, Labis	349.8
	TP Jemaluang	47.6
	TP Batu 4	351.2
	TP Pekan Nenas	284.9
	SP Taruka	338.1
Kedah	TP Jabi	632.0
	TPS Padang Cina	892.1
	TPS Belanga Pechah	85.2
	LRT Langkawi	12.4
Melaka	TPS Sg. Udang	1,019.4
Negeri Sembilan	TPS Ladang Tanah Merah	704.1
	TP Sg. Muntoh	45.3
	TP Ulu Maasop	198.9
Pahang	TPS Belenggu	230.7
	TPS Pdg. Sertik	209.4
	TPS Blue Valley	20.2
	TPS Jalan Lipis	32.2
	TP Jengka 10	95.2
	TP Keledang	52.4
	TP. Kg. Chuat	47.4
	TP Bukit Ibam Muadzam Shah	35.6
	TP Kg. Feri	23.3
	LRT Cameron Highland	44.1
	LRT Pulau Tioman	3.5
Perlis	TPS Rimba Mas	180.8
W.P. Kuala Lumpur	SP Taman Beringin	2,187.0
Perak ²	LRT Pulau Pangkor	6.9

Nota/ Notes:

Sumber: Kementerian Pembangunan Kerajaan Tempatan

Source: Ministry of Local Government Development

Sebarang perbezaan pada data yang dilaporkan adalah disebabkan oleh pembundaran.

Any differences in the aggregated data are due to rounding.

¹ Merujuk kepada negeri yang menggunakan pakai peraturan di bawah Akta Pengurusan Sisa Pepejal dan Pembersihan Awam 2007 (Akta 672) yang berkuatkuasa di Johor, Kedah, Melaka, Negeri Sembilan, Pahang, Perlis, W.P. Kuala Lumpur dan W.P. Putrajaya

Refer to the States adopting regulations under Solid Waste and Public Cleansing Management Act 2007 (Act 672) enforced in Johor, Kedah, Melaka, Negeri Sembilan, Pahang, Perlis, W.P. Kuala Lumpur and W.P. Putrajaya

² Perak tidak menggunakan pakai peraturan di bawah Akta Pengurusan Sisa Pepejal dan Pembersihan Awam 2007 (Akta 672), walau bagaimanapun LRT Pulau Pangkor dibawah seliaan Perbadanan Pengurusan Sisa Pepejal dan Pembersihan Awam (SWCorp)

Perak does not adopting the Solid Waste Management and Public Cleansing Act 2007 (Act 672), however the LRT Pulau Pangkor is under the supervision of the Solid Waste Management and Public Cleansing Corporation (SWCorp).

TP: Tapak pelupusan bukan sanitari/ Non-sanitary landfill

TPS: Tapak pelupusan sanitari/ Sanitary landfill

LRT: Loji Rawatan Termal/ Thermal treatment plant (Incinerator)

SP: Stesen Pemindahan/ Transfer Station

Sisa Perbandaran di W.P. Kuala Lumpur dihantar ke Stesen Pemindahan Taman Beringin untuk dilupuskan di TPS Bukit Tagar, Selangor manakala sisa di W.P. Putrajaya dilupuskan di TPS Tanjung 12, Selangor.

Municipal waste in W.P. Kuala Lumpur was sent to Taman Beringin Transfer Station for disposed at TPS Bukit Tagar, Selangor while waste at W.P. Putrajaya was disposed at TPS Tanjung 12, Selangor.

Jadual 3.11: Bilangan kemudahan rawatan dan pelupusan sisa perbandaran mengikut negeri¹, Malaysia, 2022
Table 3.11: Number of municipal waste treatment and disposal facilities by state, Malaysia, 2022

Negeri State	Tapak pelupusan di bawah seliaan SWCorp <i>Disposal site under SWCorp</i>	Loji rawatan termal <i>Thermal treatment plant</i>	Tapak pelupusan bukan di bawah seliaan SWCorp <i>Disposal site not under SWCorp</i>
Jumlah Total	22	4	120
Johor	5	-	3
Kedah	3	1	1
Kelantan	-	-	10
Melaka	1	-	-
Negeri Sembilan	3	-	-
Pahang	9	2	2
Perak	-	1	16
Perlis	1	-	-
Pulau Pinang	-	-	2
Sabah	-	-	22
Sarawak	-	-	46
Selangor	-	-	8
Terengganu	-	-	9
W.P. Kuala Lumpur	-	-	-
W.P. Labuan	-	-	1
W.P. Putrajaya	-	-	-

Nota:
Notes:

¹ Merujuk kepada peraturan di bawah Akta Pengurusan Sisa Pepejal dan Pembersihan Awam 2007 (Akta 672) yang berkuatkuasa di Johor, Kedah, Melaka, Negeri Sembilan, Pahang, Perlis, W.P. Kuala Lumpur dan W.P. Putrajaya
Refer to regulations under Solid Waste and Public Cleansing Management Act 2007 (Act 672) enforced in Johor, Kedah, Melaka, Negeri Sembilan, Pahang, Perlis, W.P. Kuala Lumpur and W.P. Putrajaya

Sumber: Kementerian Pembangunan Kerajaan Tempatan
Source: Ministry of Local Government Development

Jadual 3.12: Kuantiti buangan terjadual yang dihasilkan mengikut industri, Malaysia, 2018-2022

Table 3.12: Quantity of scheduled wastes generated by industry, Malaysia, 2018-2022

Tan metrik
Metric tonnes

Industri Industry	2018	2019	2020	2021	2022
Jumlah Total	2,355,085.2	4,013,189.0	7,185,227.8	7,505,195.8	5,915,073.8
Bengkel Workshop	105,626.0	306,363.2	107,379.5	150,999.4	116,659.0
Berasaskan getah Rubber base	11,056.6	199,066.3	205,709.1	225,648.9	229,888.3
Berasaskan kayu Wood base	8,009.4	9,752.6	3,382.8	3,431.2	3,910.3
Elektrik dan elektronik Electric and electronic	99,661.4	403,438.0	548,348.4	427,122.0	694,967.9
Fabrikasi logam Metal fabrication	48,903.1	44,644.9	38,978.8	43,250.0	22,509.1
Galian bukan logam Non metal mines	41,467.0	13,656.2	15,932.1	16,268.1	36,007.9
Gudang Warehouses	1,842.0	69,310.2	137,354.8	8,962.6	52,876.2
Hotel Hotel	-	-	18.9	8.7	12.2
Industri kimia Chemical industries	327,965.8	428,069.0	739,280.9	595,492.4	559,784.0
Jentera Machinery	10,127.5	85,139.8	72,656.4	76,726.8	77,756.9
Kenderaan Vehicle	31,965.0	166,356.6	166,743.1	138,891.3	201,561.9
Kertas Paper	18,033.3	64,598.4	37,256.6	41,414.7	39,031.2
Kilang getah (PYDT) Rubber factory	732.8	1,661.2	1,474.2	1,392.5	1,834.0
Kilang kelapa sawit (PYDT) Palm oil mills	6,803.8	7,560.1	7,428.0	5,198.8	7,083.8
Kilang padi Rice mills	-	-	4.2	4.5	7.0
Kuari Quarry	1,451.7	6,311.2	4,436.4	28,980.7	4,676.4
Kulit Leather	99.3	316.7	265.9	198.6	381.5
Loji pengolahan kumbahan (IWK, Majari, PBT) Sewage treatment plant (IWK, Majari, PBT)	-	-	94.6	88.7	138.0
Loji janakuasa Power plant	701,868.5	969,435.6	2,491,477.7	3,141,511.8	2,025,501.5
Loji pengolahan kumbahan persendirian Waste water treatment plant	60.3	126.4	70.2	67.2	81.1
Loji rawatan air Water treatment plants	109,193.5	12,948.8	1,149,834.3	1,167,603.1	182,986.9
Makanan & minuman Food & beverage	4,505.0	11,863.1	10,177.5	10,258.4	10,139.5
Makanan ternakan Livestock food	-	-	428.4	35.7	42.7
Pembuatan payung dan lain-lain industri pembuatan Others manufacturing	-	-	3,647.1	3,376.7	3,073.1
Penapisan minyak makan Edible oil refineries	5,000.1	9,098.8	14,802.7	35,269.5	18,682.7

Jadual 3.12 Kuantiti buangan terjadual yang dihasilkan mengikut industri, Malaysia, 2018-2022 (samb.)

Table 3.12: Quantity of scheduled wastes generated by industry, Malaysia, 2018-2022 (cont'd)

Industri Industry					
	2018	2019	2020	2021	Tan metrik Metric tonnes 2022
Penapisan petroleum Petroleum refineries	59,707.5	130,592.4	86,048.7	95,176.6	104,339.0
Pengilangan logam Metal refinery	79,208.0	490,349.0	571,217.6	642,947.9	778,653.2
Penternakan Animal husbandary	-	-	0.1	0.1	0.1
Penyudahan logam dan sadur elektrik Metal finishing and electroplating	35,678.2	49,507.6	144,852.9	51,696.8	69,058.2
Peralatan pejabat dan alat tulis Office supplies and stationery	359.7	540.1	270.9	281.7	214.4
Peralatan sukan dan permainan Sports equipment and games	398.2	542.8	920.4	974.6	1,077.0
Percetakan Printing	5,080.4	32,694.2	37,198.3	31,987.8	30,681.9
Perhutanan Forestry	-	-	7.8	2.2	4.4
Perikanan Fishery	-	-	2.0	2.2	0.8
Perkhidmatan Services	236.1	32,293.4	497.7	447.1	1,634.5
Perlombongan Mining	4,785.7	16,756.5	3,588.3	5,605.0	11,650.9
Pertanian Agriculture	4,877.5	5,819.4	3,438.4	3,133.8	4,904.4
Perubatan Health care services	30,727.0	33,757.0	34,267.6	67,206.4	72,867.8
Plastik Plastic	5,660.6	11,590.0	26,098.5	25,569.3	24,086.5
Premis buangan terjadual (PYDT) Scheduled waste treatment and disposal facilities	538,152.0	225,866.9	313,670.5	328,677.2	394,926.4
Restoran Restaurant	-	-	0.2	0.2	0.2
Rokok dan tembakau Cigarettes and tobacco	70.6	134.9	146.2	61.2	46.1
Simen Cement	1,475.2	2,488.6	2,747.9	2,060.8	2,560.0
Tapak pelupusan sampah Sanitary landfill	-	-	40.2	334.6	175.9
Tekstil Textiles	1,923.6	3,855.2	7,249.4	4,121.79	9,033.6
Lain-lain Others	52,372.8	166,683.9	195,781.7	122,705.93	119,565.8

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Jadual 3.13: Buangan terjadual mengikut negeri, Malaysia, 2018-2022

Table 3.13: Scheduled wastes by state, Malaysia, 2018-2021

Negeri State	Tan metrik Metric tonnes				
	2018	2019	2020	2021	2022
Malaysia	2,355,085	4,013,189	7,185,228	7,505,196	5,915,073
Johor	421,847	917,343	1,209,294	1,031,128	1,324,255
Kedah	40,436	216,861	159,938	177,690	248,366
Kelantan	2,453	9,810	12,650	6,949	6,528
Melaka	57,588	185,063	117,285	92,634	107,121
Negeri Sembilan	140,981	434,975	1,162,393	637,269	629,207
Pahang	258,825	316,179	251,161	307,469	285,812
Perak	486,909	112,983	438,911	1,957,521	579,736
Perlis	2,536	7,816	4,692	5,156	8,571
Pulau Pinang	98,884	326,884	405,501	331,492	309,294
Sabah	17,267	89,463	460,171	74,834	40,534
Sarawak	126,534	79,707	499,489	540,595	548,561
Selangor	302,998	1,019,932	2,048,558	2,086,127	1,581,215
Terengganu	382,270	176,518	264,374	171,640	158,037
W.P. Kuala Lumpur	11,840	33,914	94,676	30,843	25,567
W.P. Labuan	3,717	85,740	56,019	53,747	61,722
W.P. Putrajaya	-	-	118	101	547

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

Jadual 3.14: Kuantiti buangan klinikal mengikut negeri, Malaysia, 2018-2022

Table 3.14: Quantity of clinical wastes by state, Malaysia, 2018-2022

Negeri State	Tan metrik Metric tonnes				
	2018	2019	2020	2021	2022
Malaysia	31,397.8	33,757.0	39,883.3	57,378.5	49,131.6
Johor	3,097.5	3,173.6	3,989.6	5,567.5	4,652.6
Kedah	1,466.3	1,609.2	1,659.7	2,390.2	1,972.3
Kelantan	1,225.7	1,355.5	1,377.4	1,857.4	1,681.3
Melaka	1,186.7	1,895.0	1,800.2	1,594.0	1,895.7
Negeri Sembilan	1,242.9	1,364.4	1,645.7	3,950.8	2,530.5
Pahang	1,315.9	1,429.9	2,999.4	2,461.9	1,879.1
Perak	2,345.1	2,644.2	792.8	4,326.4	820.8
Perlis	251.3	262.9	33.1	1,078.5	3,100.6
Pulau Pinang	2,344.7	2,360.3	3,336.0	2,206.4	3,952.7
Sabah	1,849.3	1,900.0	2,606.0	3,209.9	3,268.6
Sarawak	3,348.6	3,683.8	4,105.0	8,265.6	4,731.9
Selangor	6,035.0	7,343.2	9,703.4	12,992.8	10,554.0
Terengganu	818.2	846.3	937.5	1,287	1,182.6
W.P. Kuala Lumpur ¹	4,808.1	3,822.4	4,180.7	5,892.9	5,808.7
W.P. Labuan	62.5	66.3	716.8	296.4	1,100.3

Nota:

Notes:

¹Termasuk W.P. Putrajaya

Includes W.P. Putrajaya

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

Jadual 3.15: Peratus buangan terjadual mengikut kategori, Malaysia, 2020-2022*Table 3.15: Percentage of scheduled wastes by category, Malaysia, 2020-2022*

Nama buangan Name of waste	Kod buangan Waste code	2020		2021		2022	
		Tan metrik Metric tonnes	%	Tan metrik Metric tonnes	%	Tan metrik Metric tonnes	%
Debu, sanga, dros atau abu yang mengandungi arsenic, raksa, plumbum, kadmium, kromium, nikel, kuprum, vanadium, berilium, antimony, tellurium, talium, atau selenium, tidak termasuk sanga daripada kilang besi dan keluli <i>Dust, slag, dross or ash containing arsenic, mercury, lead, cadmium, chromium, nickel, copper, vanadium, beryllium, antimony, tellurium, thallium or selenium excluding slag from iron and steel factory</i>	SW 104	3,078,454.7	42.8	3,828,937.3	51.0	2,780,750.6	47.0
Enap cemar yang mengandungi satu atau beberapa logam termasuklah kromium, kuprum, nikel, zink, plumbum, kadmium, aluminium, timah vanadium dan berilium <i>Sludges containing one or several metals including chromium, copper, nickel, zinc, lead, cadmium, aluminium, tin, vanadium and beryllium</i>	SW 204	1,389,730.5	19.3	1,473,272.7	19.6	549,179.8	9.3
Buangan gypsum yang terhasil daripada proses industri kimia atau loji janakuasa <i>Waste gypsum arising from chemical industry or power plant</i>	SW 205	528,999.0	7.4	480,892.2	6.4	441,008.4	7.5
Buangan daripada pemasangan elektrik dan elektronik yang mengandungi komponen seperti akumulator, suis raksa, kaca daripada tiub sinar katod dan kaca teraktif atau kapasitor bifenil terpoliklorin yang lain, atau yang dicemari dengan kadmium, raksa, plumbum, nikel, kromium, kuprum, litium, perak, mangan, atau bifenil terpoliklorin <i>Waste from electrical and electronic assemblies containing components such as accumulators, mercury-switches, glass from cathode-ray tubes and other activated glass or polychlorinated biphenyl-capacitors, or contaminated with cadmium, mercury, lead, nickel, chromium, copper, lithium, silver, manganese or polychlorinated biphenyl</i>	SW 110	94,008.9	1.3	85,640.7	1.1	286,205.8	4.8
Buangan atau enap cemar getah atau lateks yang mengandungi pelarut organik atau logam berat <i>Rubber or latex wastes or sludge containing organic solvents or heavy metals</i>	SW 321	200,855.7	2.8	207,617.0	2.8	210,857.1	3.6
Campuran buangan terjadual dan buangan tidak terjadual <i>A mixture of scheduled and non-scheduled wastes</i>	SW 422	230,147.4	3.2	110,997.1	1.5	195,007.0	3.0
Minyak pelincir terpakai <i>Spent lubricating oil</i>	SW 305	229,887.2	3.2	219,193.9	2.9	176,910.6	3.0
Emulsi minyak mineral-air terpakai <i>Spent mineral oil-water emulsion</i>	SW 307	125,285.2	1.7	34,638.6	0.5	171,056.6	2.9
Dadah terbuang yang mengandungi bahan psikotrofik atau yang mengandungi bahan yang bertoksik, berbahaya, karsinogenik, mutagenik atau teratogenik <i>Discarded drugs containing psychotropic substances or containing substances that are toxic, harmful, carcinogenic, mutagenic or teratogenic</i>	SW 403	100,767.1	1.4	440.3	0.0	113,578.0	1.9

Jadual 3.15: Peratus buangan terjadual mengikut kategori, Malaysia, 2020-2022 (samb.)Table 3.15: *Percentage of scheduled wastes by category, Malaysia, 2020-2022 (cont'd)*

Nama buangan <i>Name of waste</i>	Kod buangan <i>Waste code</i>	2020		2021		2022	
		Tan metrik <i>Metric tonnes</i>	%	Tan metrik <i>Metric tonnes</i>	%	Tan metrik <i>Metric tonnes</i>	%
Buangan pelarut organik bukan terhalogen <i>Waste of non-halogenated solvent</i>	SW 322	310,522.7	4.3	173,571.2	2.3	112,332.0	1.9
Bekas, beg atau kelengkapan yang dilupuskan yang dicemari dengan bahan kimia, racun makhluk perosak, minyak mineral atau buangan terjadual <i>Disposed containers, bags or equipment contaminated with chemicals, pesticides, mineral oil or scheduled wastes</i>	SW 409	116,872.8	1.6	82,130.7	1.1	110,984.3	1.9
Enap cemar yang mengandungi fluorida <i>Sludge containing flouride</i>	SW 207	111,260.0	1.6	105,264.7	1.4	97,441.3	1.7
Asid tidak organik terpakai <i>Spent inorganic acids</i>	SW 206	84,566.5	1.2	137,075.1	1.8	76,253.9	1.3
Buangan minyak atau enap cemar berminyak <i>Waste oil or oily sludges</i>	SW 311	28,386.6	0.4	75,569.9	1.0	63,716.6	1.1
Enap cemar mineral termasuklah enap cemar kalsium hidroksida, enap cemar pemfosfatan, enap cemar kalsium sulfit dan enap cemar karbonat <i>Mineral sludges including calcium hydroxide sludges, phosphating sludges, calcium sulphite sludges and carbonates sludges</i>	SW 427	32,401.8	0.5	62,147.0	0.8	62,728.6	1.1
Kain buruk, plastik, kertas atau turas yang dicemari dengan buangan terjadual <i>Rags, plastics, papers or filters contaminated with scheduled wastes</i>	SW 410	58,930.9	0.8	46,915.5	0.6	62,310.8	1.1
Buangan pelekat atau glu yang mengandungi pelarut organik tidak termasuk bahan polimer pepejal <i>Adhesive or glue waste containing organic solvents excluding solid polymeric materials</i>	SW 303	2,985.6	0.0	19,812.5	0.3	53,761.0	0.9
Buangan patogenik, buangan klinikal atau bahan yang dikuarantinkan <i>Pathogenic wastes, clinical wastes or quarantined materials</i>	SW 404	39,883.3	0.6	57,378.5	0.8	49,131.6	0.8
Apa-apa sisa daripada pengolahan atau pemerolehan kembali buangan terjadual <i>Any residues from treatment or recovery of scheduled wastes</i>	SW 501	73,402.0	1.0	35,752.1	0.5	36,096.4	0.6
Buangan dakwat, cat, pigmen, lakuer, perwarna atau varnis <i>Waste of inks, paints, pigments, lacquer, dye or varnish</i>	SW 417	27,934.2	0.4	35,367.8	0.5	35,899.1	0.6
Karbon teraktif yang terpakai tidak termasuk karbon daripada pengolahan air boleh diminum dan proses industri makanan dan penghasilan vitamin <i>Spent activated carbon excluding carbon from the treatment of potable water and processes of the food industry and vitamin production</i>	SW 411	6,036.8	0.1	9,680.0	0.1	25,874.9	0.4
Buangan resin tidak matang yang mengandungi pelarut organik atau logam berat termasuklah resin epoksi dan resin fenolik <i>Uncured resin waste containing organic solvents or heavy metals including epoxy resin and phenolic resin</i>	SW 325	22,312.7	0.3	23,281.6	0.3	22,373.4	0.4

Jadual 3.15: Peratus buangan terjadual mengikut kategori, Malaysia, 2020-2022 (samb.)Table 3.15: *Percentage of scheduled wastes by category, Malaysia, 2020-2022 (cont'd)*

Nama buangan Name of waste	Kod buangan Waste code	2020		2021		2022	
		Tan metrik Metric tonnes	%	Tan metrik Metric tonnes	%	Tan metrik Metric tonnes	%
Larutan pemprosesan terpakai, bahan kimia fotografi terbuang atau buangan fotografi terbuang <i>Spent processing solution, discarded photographic chemicals or discarded photographic wastes</i>	SW 423	20,514.1	0.3	20,978.1	0.3	21,068.8	0.4
Enap cemar dakwat, cat pigmen, lakuer, perwarna atau varnis <i>Sludges of inks, paints, pigments, lacquer, dye or varnish</i>	SW 416	14,294.9	0.2	16,053.2	0.2	19,658.7	0.3
Buangan mangkin <i>Waste catalyst</i>	SW 202	19,085.4	0.3	18,539.3	0.2	18,779.8	0.3
Campuran minyak-air seperti air ballast <i>Oil-water mixture such as ballast water</i>	SW 309	28,617.4	0.4	13,906.8	0.2	16,952.6	0.3
Bahan kimia yang terbuang atau tidak mengikut spesifikasi <i>Chemicals that are discarded or off-specification</i>	SW 429	112,634.3	1.6	16,813.3	0.2	16,528.5	0.3
Produk dakwat, cat, pigmen, lakuer, perwarna atau varnish yang terbuang atau yang tidak mengikut spesifikasi yang mengandungi pelarut organik <i>Discarded or off-specification inks, paints, pigments, lacquer, dye or varnish products containing organic solvent</i>	SW 418	8,823.8	0.1	8,985.2	0.1	10,523.8	0.2
Alkali terpakai yang mengandungi logam berat <i>Alkali terpakai yang mengandungi logam berat</i>	SW 401	9,966.6	0.1	7,262.9	0.1	9,497.01	0.2
Minyak hidrolik terpakai <i>Spent hydraulic oil</i>	SW 306	8,189.4	0.1	22,282.2	0.3	8,611.1	0.2
Buangan pelarut organik terhalogen <i>Waste of halogenated solvents</i>	SW 323	6,333.1	0.1	7,227.1	0.1	6,384.8	0.1
Campuran buangan terjadual <i>A mixture of scheduled wastes</i>	SW 421	2,934.3	0.0	8,539.5	0.1	6,228.8	0.1
Buangan cecair terma (pemindahan haba) seperti glikol etilena <i>Waste of thermal fluids (heat transfer) such as ethylene glycol</i>	SW 327	3,981.4	0.1	7,604.5	0.1	5,738.2	0.1
Tanah, puing, atau bahan tercemar yang terhasil daripada pembersihan tumpahan bahan kimia, minyak mineral, atau buangan terjadual <i>Contaminated soil, debris or matter resulting from cleaning-up of a spill of chemical, mineral oil or scheduled wastes</i>	SW 408	104,534.6	1.5	4,369.6	0.1	5,284.6	0.1
Buangan bateri asid plumbum dalam bentuk sempurna atau hancur <i>Waste of lead acid batteries in whole or crushed form</i>	SW 102	3,559.0	0.1	8,825.8	0.1	5,275.1	0.1
Minyak atau enap cemar daripada operasi penyenggaraan loji penapisan minyak <i>Oil or sludge from oil refinery plant maintenance operation</i>	SW 314	12,146.8	0.2	3,274.4	0.0	4,006.0	0.1
Alkali terpakai dengan pH yang lebih daripada atau sama dengan 11.5 yang mengakis atau berbahaya <i>Spent alkalis with pH more or equal to 11.5 which are corrosive or hazardous</i>	SW 402	9,355.6	0.1	4,263.2	0.1	3,332.8	0.1

Jadual 3.15: Peratus buangan terjadual mengikut kategori, Malaysia, 2020-2022 (samb.)

Table 3.15: Percentage of scheduled wastes by category, Malaysia, 2020-2022 (cont'd)

Nama buangan Name of waste	Kod buangan Waste code	2020		2021		2022	
		Tan metrik Metric tonnes	%	Tan metrik Metric tonnes	%	Tan metrik Metric tonnes	%
Klinker, sanga dan abu dari penunu buangan terjadual <i>Clinker, slag and ashes from scheduled wastes incinerator</i>	SW 406	6,279.6	0.1	7,951.2	0.1	3,382.5	0.1
Buangan bateri yang mengandungi kadmium dan nikel atau raksa atau litium <i>Waste of batteries containing cadmium and nickel or mercury or lithium</i>	SW 103	25,562.0	0.4	3,682.8	0.0	3,280.3	0.1
Sisa berminyak dari bengkel automotif, stesen servis minyak atau perangkap gris <i>Oily residue from automotive workshop, service station, oil or grease interceptor</i>	SW 312	2,841.1	0.0	2,479.8	0.0	2,578.6	0.0
Asid organik terpakai dengan pH yang kurang daripada atau sama dengan 2 yang mengakis atau berbahaya <i>Spent organic acids with pH less or equal to 2 which are corrosive or hazardous</i>	SW 301	3,124.7	0.0	4,350.3	0.1	2,475.1	0.0
Larutan alkali berair terpakai yang mengandungi sianida <i>Spent aqueous alkaline containing cyanide</i>	SW 414	6,009.6	0.1	2,783.0	0.0	1,719.6	0.0
Buangan yang mengandungi formaldehid <i>Waste containing formaldehyde</i>	SW 320	753.5	0.0	1,764.3	0.0	1,681.0	0.0
Buangan yang mengandungi raksa atau sebatianannya <i>Waste containing mercury or its compound</i>	SW 109	1,639.5	0.0	1,773.8	0.0	1,411.7	0.0
Enap cemar dari tangki penyimpanan minyak mineral <i>Sludge from mineral oil storage tank</i>	SW 310	1,277.0	0.0	1,359.9	0.0	1,380.7	0.0
Enap cemar dari tangki minyak <i>Oil tankers sludges</i>	SW 308	104.2	0.0	22.3	0.0	1,070.1	0.0
Buangan asbestos dalam bentuk enap cemar, debu atau gentian <i>Asbestos wastes in sludges, dust or fibre forms</i>	SW 201	749.1	0.0	402.1	0.0	959.2	0.0
Buangan yang terhasil daripada peyediaan dan pengeluaran barangan farmaseutikal <i>Waste arising from the preparation and production of pharmaceutical product</i>	SW 405	550.9	0.0	576.0	0.0	818.1	0.0
Buangan terjadual tidak boleh bergerak termasuklah enap cemar yang ditetapkan secara kimia, dikapsulkan, dipejalkan atau distabilkan <i>Immobilized scheduled wastes including chemically fixed, encapsulated, solidified or stabilized sludges</i>	SW 203	246.4	0.0	181.1	0.0	639.3	0.0
Tar atau sisa bertar dari loji penapisan minyak atau loji petrokimia <i>Tar or tarry residues from oil refinery or petrochemical plant</i>	SW 315	569.3	0.0	866.8	0.0	608.9	0.0
Bahan kimia makmal yang usang <i>Obsolete laboratory chemicals</i>	SW 430	393.0	0.0	356.4	0.0	424.1	0.0
Buangan sisa penyulingan tidak berair terhalogen atau bukan terhalogen yang terhasil daripada proses permeolehan kembali pelarut organik <i>Waste of halogenated or unhalogenated non-aqueous distillation residues arising from organic solvents recovery process</i>	SW 324	535.5	0.0	425.0	0.0	323.2	0.0

Jadual 3.15: Peratus buangan terjadual mengikut kategori, Malaysia, 2020-2022 (samb.)Table 3.15: *Percentage of scheduled wastes by category, Malaysia, 2020-2022 (cont'd)*

Nama buangan Name of waste	Kod buangan Waste code	2020		2021		2022	
		Tan metrik Metric tonnes	%	Tan metrik Metric tonnes	%	Tan metrik Metric tonnes	%
Tanah yang dicemari minyak daripada penapisan semula minyak pelincir terpakai <i>Oil contaminated earth from re-refining of used lubricating oil</i>	SW 313	528.3	0.0	318.4	0.0	277.7	0.0
Buangan fluks yang mengandungi campuran asid organik, pelarut atau sebatian ammonium klorida <i>Flux waste containing mixture of organic acids, solvents or compounds of ammonium chloride</i>	SW 302	227.8	0.0	178.6	0.0	204.2	0.0
Buangan daripada pengeluaran, formulasi, perdagangan atau penggunaan racun mahkluk perosak, racun herba atau biosid <i>Wastes from the production, formulation, trade or use of pesticides, herbicides or biocides</i>	SW 425	126.0	0.0	99.8	0.0	164.7	0.0
Sisa dari pemerolehan kembali likuor penjerukan asid <i>Residue from recovery of acid pickling liquor</i>	SW 106	154.8	0.0	138.8	0.0	126.6	0.0
Produk yang tidak mengikut spesifikasi daripada pengeluaran, formulasi, perdagangan, atau penggunaan racun mahkluk perosak, racun herba, atau biosid <i>Off-specification products from the production, formulation, trade or use of pesticides, herbicides or biocides</i>	SW 426	36.3	0.0	90.4	0.0	67.2	0.0
Diisosianat terpakai dan sisa sebatian isosianat tidak termasuk bahan berpolimer pepejal daripada proses pengilangan busa <i>Spent di-isocyanates and residues of isocyanate compounds excluding solid polymeric material from foam manufacturing process</i>	SW 419	63.2	0.0	32.5	0.0	56.3	0.0
Enap cemar asid <i>Acid sludge</i>	SW 316	12.6	0.0	6.4	0.0	51.5	0.0
Buangan fenol atau sebatian fenol termasuklah klorofenol dalam bentuk cecair atau enapcemar <i>Waste of phenols or phenol compounds including chlorophenol in the form of liquids or sludges</i>	SW 319	30.6	0.0	53.7	0.0	40.0	0.0
Buangan yang mengandungi arsenik atau sebatianannya <i>Waste containing arsenic or its compound</i>	SW 101	13.5	0.0	7.9	0.0	34.8	0.0
Buangan yang mengandungi, yang terdiri daripada, atau yang dicemari dengan peroksida <i>Waste containing, consisting of or contaminated with peroxides</i>	SW 432	25.9	0.0	33.9	0.0	22.4	0.0
Buangan daripada pengilangan atau pemprosesan atau penggunaan bahan letupan <i>Waste from manufacturing or processing or use of explosives</i>	SW 431	7.3	0.0	14.7	0.0	21.8	0.0
Agen pengoksidaan terpakai <i>Spent oxidizing agent</i>	SW 424	22.8	0.0	720.0	0.0	17.5	0.0
Enap cemar yang mengandungi sianida <i>Sludges containing cyanide</i>	SW 412	1.7	0.0	2.9	0.0	4.1	0.0

Jadual 3.15: Peratus buangan terjadual mengikut kategori, Malaysia, 2020-2022 (samb.)Table 3.15: *Percentage of scheduled wastes by category, Malaysia, 2020-2022 (cont'd)*

Nama buangan Name of waste	Kod buangan Waste code	2020		2021		2022	
		Tan metrik Metric tonnes	%	Tan metrik Metric tonnes	%	Tan metrik Metric tonnes	%
Sanga daripada pemprosesan kuprum bagi pemprosesan lanjut atau penapisan yang mengandungi arsenik, plumbum, atau kadmium <i>Slags from copper processing for further processing or refining containing arsenic, lead or cadmium</i>	SW 107	1.2	0.0	0.9	0.0	1.3	0.0
Sisa larutan resap daripada pemprosesan zink dalam bentuk debu dan enap cemar <i>Leaching residues from zinc processing in dust and sludges form</i>	SW 108	0.5	0.0	1.0	0.0	1.2	0.0
Garam terpakai yang mengandungi sianida <i>Spent salt containing cyanide</i>	SW 413	0.9	0.0	1.0	0.0	1.0	0.0
Buangan sebatian fosforus organik <i>Waste of organic phosphorus compound</i>	SW 326	1.3	0.0	0.9	0.0	0.9	0.0
Sebatian organologam terpakai termasuklah plumbum tetraetil, plumbum tetrametil dan sebatian organotimah <i>Spent organometallic compounds including tetraethyl lead, tetramethyl lead and organotin compounds</i>	SW 317	0.1	0.0	0.1	0.0	0.1	0.0
Buangan yang mengandungi dioksin atau furan <i>Waste containing dioxins or furans</i>	SW 407	0.1	0.0	0.0	0.0	0.1	0.0
Enap cemar galvanik <i>Galvanic sludges</i>	SW 105	-	-	-	-	-	0.0
Kek tekan daripada prapengolahan lai sabun gliserol <i>Press cake from pretreatment of glycerol soap lye</i>	SW 304	0.1	0.0	-	-	-	0.0
Buangan, bahan dan artikel yang mengandungi atau yang dicemari dengan bifenil terpoliklorin (BFT) atau trifenil terpoliklorin (TFT) <i>Waste, substances and articles containing or contaminated with polychlorinated biphenyls (PCB) or polychlorinated triphenyls (PCT)</i>	SW 318	4.6	0.0	-	0.0	-	0.0
Minyak pelindapan terpakai yang mengandungi sianida <i>Spent quenching oil containing cyanide</i>	SW 415	0.2	0.0	-	-	-	0.0
Larutan resap dari tapak pelupusan buangan terjadual <i>Leachate from scheduled waste landfill</i>	SW 420	-	-	-	-	-	0.0
Buangan daripada operasi pengawetan kayu yang menggunakan garam tidak organik yang mengandungi kuprum, kromium, atau arsenik daripada sebatian fluoride atau yang menggunakan sebatian yang mengandungi fenol berklorin atau kreosot <i>Wastes from wood preserving operation using inorganic salts containing copper, chromium or arsenic of fluoride compounds or using compound containing chlorinated phenol or creosote</i>	SW 428	15.8	0.0	17.7	0.0	-	0.0

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

Jadual 3.16: Kuantiti buangan terjadual yang dieksport mengikut jenis buangan, Malaysia, 2018-2022

Table 3.16: Quantity of scheduled wastes exported by type of waste, Malaysia, 2018-2022

Tan metrik
Metric tonnes

Jenis buangan Type of waste	2018	2019	2020	2021	2022
Malaysia	13,321	20,807	168,002	114,845	4,329
Buangan bateri nikel-kadmium Nickel cadmium battery waste	1	10	190	435	-
Buangan elektrik & elektronik Electrical & electronic waste	1,498	2,350	1,680	1,595	-
Dross aluminium Aluminium dross	9,797	13,500	1,800	2,184	2,160
Enap cemar hidroksida logam Metal hydroxide sludge	20	160	160	-	-
Mangkin terpakai Spent catalyst	814	947	319	1,196	1,269
Pelarut organik Waste organic solvent	122	240	480	-	240
Toner terpakai Used toner	313	500	500	-	500
Glass Waste from CRT	-	-	-	-	-
Wire Saw Slurry	756	840	693	420	-
Sisa Residue	-	2,260	162,180	244	-
Buangan minyak atau enap cemar berminyak Waste of oil or oily sludge	-	-	-	108,000	-
Bahan kimia yang terbuang atau tidak mengikut spesifikasi Chemicals that are discarded or off- specification	-	-	-	46	-
Enapcemar yang mengandungi logam Sludges containing metals	-	-	-	224	160
Produk dakwat, cat, pigmen, lakuer, pewarna atau varnis yang terbuang atau yang tidak mengikut spesifikasi yang mengandungi pelarut organik Discarded or off-specification inks, paints, pigments, lacquer, dye or vanish products containing organic solvent	-	-	-	500	-

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

Jadual 3.17: Bilangan tapak pelupusan sisa pepejal yang beroperasi mengikut negeri, Malaysia, 2018-2022

Table 3.17: Number of operating solid waste landfills by state, Malaysia, 2018-2022

Negeri State	2018			2019			2020			2021			2022		
	Tapak pelupusan Landfills														
	Sanitari Sanitary	Bukan sanitari Non sanitary	Lengai Inert	Sanitari Sanitary	Bukan sanitari Non sanitary	Lengai Inert	Sanitari Sanitary	Bukan sanitari Nonsanitary	Lengai Inert	Sanitari Sanitary	Bukan sanitari Non sanitary	Lengai Inert	Sanitari Sanitary	Bukan sanitari Nonsanitary	Lengai Inert
Malaysia	150			142			142			141			142		
Johor	1	11	-	1	8	-	1	8	-	1	7	-	1	7	-
Kedah	1	5	-	2	2	-	3	1	-	3	1	-	3	1	-
Kelantan	-	10	-	-	10	-	-	10	-	-	10	-	-	10	-
Melaka	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-
Negeri Sembilan	1	3	-	1	2	-	1	2	-	1	2	-	1	2	-
Pahang	2	10	-	2	8	-	3	7	-	3	7	-	3	7	1
Perak	1	15	-	1	15	-	1	15	-	1	15	-	1	15	-
Perlis	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-
Pulau Pinang	1	-	1	1	-	1	1	-	1	1	-	1	1	-	1
Sabah	1	21	-	1	21	-	1	21	-	1	21	-	1	21	-
Sarawak	3	43	-	3	43	-	3	43	-	3	43	-	3	43	-
Selangor	3	2	3	3	2	3	3	2	3	3	2	3	3	2	3
Terengganu	1	8	-	1	8	-	1	8	-	1	8	-	1	8	-
W.P. Labuan	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-
Jumlah Total	18	128	4	19	119	4	21	117	4	21	116	4	21	116	5

Sumber: Kementerian Pembangunan Kerajaan Tempatan
Source: Ministry Local Government Development

Jadual 3.18: Pengeluaran dan import baja, Malaysia, 2018-2022Table 3.18: *Production and imports of fertilisers, Malaysia, 2018-2022*Tan metrik
Metric tonnes

Tahun Year	Pengeluaran ¹ Production	Import baja Imports of fertilisers
2018	3,616,402	4,328,031
2019	3,720,847	3,176,367
2020	4,080,289	3,213,222
2021	5,839,960	4,138,517
2022	7,584,494	3,511,062

Nota: ¹Termasuk urea

Notes: Includes urea

Jadual 3.19: Pengeluaran herbisid, Malaysia, 2018-2022Table 3.19: *Production of herbicides, Malaysia, 2018-2022*

Tahun Year	Herbisid (bukan cecair) Herbicides (non-liquid) (tan metrik/tonnes)	Herbisid (cecair) Herbicides (liquid) ('000 liter/litres)
2018	32,139	58,626
2019	26,842	38,807
2020	43,157	55,497
2021	66,062	68,379
2022	91,308	97,264

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KOMPONEN COMPONENT

4

**KEJADIAN EKSTREM DAN
BENCANA**

***EXTREME EVENTS AND
DISASTERS***

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Jadual 4.1: Kejadian bencana di Malaysia, 2018-2022

Table 4.1: Disaster events in Malaysia, 2018-2022

Negeri State	2018	2019	2020	2021	2022
Jumlah Total	85	105	64	68	139
Banjir Flood	48	43	51	61	109
Ribut Storm	25	39	1	2	7
Tanah runtuh Landslide	3	2	1	3	5
Kebakaran Fire	9	14	11	2	18
Chemical, biological, radiological and nuclear (CBRN)	-	7	-	-	-

Nota: Bilangan kejadian bencana adalah berdasarkan keluarga dan mangsa yang telah ditempatkan di Pusat Pemindahan Sementara (PPS) akibat bencana

Notes: Number of disaster events is based on families and victims placed at Temporary Evacuation Centers (PPS) affected by disaster

Sumber: Agensi Pengurusan Bencana Negara

Source: National Disaster Management Agency

Jadual 4.2: Impak bencana di Malaysia, 2018-2022

Table 4.2: Disaster impact in Malaysia, 2018-2022

Negeri State	2018	2019	2020	2021	2022
Mangsa Victim	51,106	65,933	35,376	208,643	192,707
Keluarga Family	16,847	19,836	9,750	53,814	53,095
Pusat pemindahan Evacuation center	408	704	510	1,778	1,498
Kematian Death	27	2	16	58	50
Populasi terjejas (peratus) Population affected (percentage)	0.19	0.20	0.11	0.64	0.58

Sumber: Agensi Pengurusan Bencana Negara

Source: National Disaster Management Agency

Jadual 4.3: Kejadian bencana mengikut negeri, Malaysia, 2018-2022

Table 4.3: Disaster events by state, Malaysia, 2018-2022

Negeri State	Tahun Year	Bilangan kejadian Number of events	Mangsa Victim	Keluarga Family	Pusat pemindahan Evacuation center	Kematian Death	Rumah rosak House damaged
Malaysia	2018	85	51,106	16,847	408	27	151
	2019	105	65,933	19,836	704	2	7,878
	2020	64	35,376	9,750	510	16	-
	2021	68	208,643	53,814	1,778	58	-
	2022	139	192,707	53,095	1,498	50	-
Johor	2018	11	5,138	4,335	55	-	12
	2019	18	13,955	3,696	132	-	143
	2020	5	4,336	1,308	63	3	-
	2021	5	17,530	4,530	119	-	-
	2022	16	11,592	1,799	159	1	-
Kedah	2018	9	4,636	1,254	45	-	56
	2019	10	235	36	14	2	2,531
	2020	6	1,508	437	34	-	-
	2021	5	2,681	757	62	6	-
	2022	9	2,470	621	32	3	-
Kelantan	2018	-	94	27	3	-	-
	2019	3	23,916	8,420	109	-	-
	2020	2	2,101	679	50	5	-
	2021	5	18,246	5,065	187	4	-
	2022	10	57,962	17,652	263	7	-
Melaka	2018	7	1,280	359	15	-	2
	2019	5	1,473	340	15	-	-
	2020	3	818	236	13	-	-
	2021	5	3,069	738	42	-	-
	2022	4	3,547	931	38	-	-
Negeri Sembilan	2018	4	55	15	2	-	-
	2019	4	292	74	7	-	-
	2020	5	632	145	9	-	-
	2021	4	907	212	23	-	-
	2022	6	2,333	653	28	-	-
Pahang	2018	12	14,853	4,069	96	-	37
	2019	11	1,799	455	124	-	411
	2020	5	1,093	294	28	8	-
	2021	6	94,865	25,613	841	21	-
	2022	13	6,160	1,590	114	2	-
Perak	2018	9	2,251	616	17	-	16
	2019	10	1,222	389	22	-	274
	2020	8	1,878	543	43	-	-
	2021	9	2,939	851	40	-	-
	2022	12	3,015	841	53	-	-

Jadual 4.3: Kejadian bencana mengikut negeri, Malaysia, 2018-2022 (samb.)

Table 4.3: Disaster events by state, Malaysia, 2018-2022 (cont'd)

Negeri State	Tahun Year	Bilangan kejadian Number of events	Mangsa Victim	Keluarga Family	Pusat pemindahan Evacuation center	Kematian Death	Rumah rosak House damaged
Perlis	2018	1	-	-	-	4	13
	2019	4	107	25	1	-	1,123
	2020	1	6	20	1	-	-
	2021	1	98	27	3	-	-
	2022	3	38	10	3	-	-
Pulau Pinang	2018	5	1,086	278	15	13	-
	2019	6	331	71	11	-	2,648
	2020	5	241	51	4	-	-
	2021	2	59	19	3	-	-
	2022	2	402	91	4	-	-
Sabah	2018	7	1,358	491	12	-	-
	2019	6	6,260	1,860	43	-	18
	2020	2	1,363	423	16	-	-
	2021	6	9,926	3,088	74	2	-
	2022	23	10,742	3,231	95	-	-
Sarawak	2018	4	9,729	2,514	46	10	-
	2019	4	1,805	250	14	-	-
	2020	4	626	182	5	-	-
	2021	6	9,217	2,407	105	-	-
	2022	9	1,923	525	30	-	-
Selangor	2018	10	3,707	1,057	33	-	15
	2019	14	2,237	608	31	-	69
	2020	10	2,135	568	40	-	-
	2021	9	28,952	5,285	178	25	-
	2022	20	6,382	1,667	77	35	-
Terengganu	2018	3	6,769	1,812	67	-	-
	2019	5	11,852	3,480	173	-	636
	2020	2	18,429	4,799	199	-	-
	2021	2	19,515	5,051	96	-	-
	2022	8	85,253	23,195	592	2	-
W.P. Kuala Lumpur	2018	3	150	20	2	-	-
	2019	4	449	132	8	-	21
	2020	4	43	11	4	-	-
	2021	3	599	164	4	-	-
	2022	4	888	289	10	-	-
W.P. Labuan	2018	-	-	-	-	-	-
	2019	-	-	-	-	-	-
	2020	2	167	54	1	-	-
	2021	1	40	7	1	-	-
	2022	-	-	-	-	-	-

Jadual 4.3: Kejadian bencana mengikut negeri, Malaysia, 2018-2022 (samb.)

Table 4.3: Disaster events by state, Malaysia, 2018-2022 (cont'd)

Negeri State	Tahun Year	Bilangan kejadian Number of events	Mangsa Victim	Keluarga Family	Pusat pemindahan Evacuation center	Kematian Death	Rumah rosak House damaged
W.P. Putrajaya	2018	-	-	-	-	-	-
	2019	1	-	-	-	-	4
	2020	-	-	-	-	-	-
	2021	-	-	-	-	-	-
	2022	-	-	-	-	-	-

Nota: Bilangan kejadian bencana adalah berdasarkan keluarga dan mangsa yang telah ditempatkan di Pusat Pemindahan Sementara (PPS) akibat bencana

Notes: Number of disaster events is based on families and victims placed at Temporary Evacuation Centers (PPS) affected by disaster

Sumber: Agensi Pengurusan Bencana Negara

Source: National Disaster Management Agency

Jadual 4.4: Bilangan kejadian banjir yang dilaporkan mengikut negeri, Malaysia, 2018-2022

Table 4.4: Number of flood incidents reported by state, Malaysia, 2018-2022

Negeri State	2018	2019	2020	2021	2022
Malaysia	844	535	869	1,057	983
Johor	24	30	35	92	92
Kedah	61	53	79	88	108
Kelantan	3	18	19	29	26
Melaka	19	12	32	21	39
Negeri Sembilan	84	16	42	56	99
Pahang	34	28	70	95	69
Perak	57	65	100	119	7
Perlis	1	7	9	3	5
Pulau Pinang	29	31	28	30	13
Sabah	18	39	44	85	63
Sarawak	331	118	225	270	242
Selangor	158	93	132	120	107
Terengganu	15	9	39	36	107
W.P. Kuala Lumpur	6	10	13	4	3
W.P. Labuan	4	6	2	9	3

Sumber: Jabatan Pengairan dan Saliran

Source: Department of Irrigation and Drainage

Jadual 4.5: Bilangan kejadian gempa bumi, Malaysia, 2018-2022

Table 4.5: Number of earthquake incidents, Malaysia, 2018-2022

Lokasi Location	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.	Jumlah Total
Jumlah Total	2018	18	17	264	120	63	36	17	23	28	25	23	14	648
	M						0.5 - 5.0							
	2019	10	12	19	14	19	18	20	18	11	18	12	13	184
	M						0.5 - 4.0							
	2020	11	4	9	6	1	1	1	5	7	7	3	1	56
	M						1.1 - 3.6							
Beluran, Sabah	2021	7	3	4	14	-	1	-	-	2	-	4	5	40
	M						1.0 - 3.4							
	2022	7	13	14	15	7	10	5	7	3	-	1	-	82
	M						0.9 - 3.5							
	2018	1	2	3	1	-	-	-	1	-	-	-	-	8
	M						1.5 - 2.8							
Gerik, Perak	2019	-	-	-	1	1	-	-	1	-	1	-	-	4
	M						2.4 - 3.2							
	2020	-	-	-	-	-	-	-	-	2	-	-	-	1
	M						2.5 - 3.2							
	2021	1	-	-	1	-	-	-	-	-	-	-	-	2
	M						2.6 - 2.8							
Kalabakan, Sabah	2022	-	-	1	-	-	-	-	-	-	-	-	-	1
	M						3.3							
	2018	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2019	-	-	-	-	-	-	1	-	-	-	-	-	1
	M						2.9							
Gerik, Perak	2020	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
Kalabakan, Sabah	2018	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2019	-	-	-	-	-	1	-	-	-	-	-	-	1
	M						2.9							
	2020	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
Gerik, Perak	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							

Jadual 4.5: Bilangan kejadian gempa bumi, Malaysia, 2018-2022 (samb.)

Table 4.5: Number of earthquake incidents, Malaysia, 2018-2022 (cont'd)

Lokasi Location	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.	Jumlah Total
Keningau, Sabah	2018	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2019	-	-	-	-	-	1	-	1	-	1	-	-	3
	M						2.6 - 2.9							
	2020	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
Kinabata- ngan, Sabah	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2018	-	-	1	-	-	-	-	-	3	-	-	-	4
	M						2.4 - 3.9							
Kota Belud, Sabah	2019	-	-	-	-	-	-	-	-	-	1	1	-	2
	M						2.2 - 2.8							
	2020	-	-	-	-	-	-	-	-	1	-	-	-	1
	M						2.4							
	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
Kota Kinabalu, Sabah	2022	-	-	-	-	-	-	-	-	1	-	-	-	1
	M						2.5							
	2018	-	-	-	-	-	-	-	-	-	-	1	-	1
	M						2.6							
	2019	-	-	-	-	-	-	-	1	-	-	-	-	1
	M						1.0							
Kota Kinabalu, Sabah	2020	-	-	-	-	-	-	-	-	1	-	-	-	1
	M						2.3							
	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
Kota Kinabalu, Sabah	2018	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2019	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2020	1	-	-	-	-	-	-	-	-	-	-	-	1
	M						1.9							
Kota Kinabalu, Sabah	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
Kota Kinabalu, Sabah	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							

Jadual 4.5: Bilangan kejadian gempa bumi, Malaysia, 2018-2022 (samb.)

Table 4.5: Number of earthquake incidents, Malaysia, 2018-2022 (cont'd)

Lokasi Location	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.	Jumlah Total
Kota Marudu, Sabah	2018	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2019	-	1	-	-	-	-	-	1	-	-	1	-	3
	M						1.8 - 2.5							
	2020	-	-	1	-	-	-	-	-	-	-	-	-	1
	M						2.1							
Kudat, Sabah	2021	-	-	-	1	-	-	-	-	-	-	-	-	1
	M						1.5							
	2022	-	-	-	-	1	1	-	-	-	-	-	-	2
	M						1.9 - 2.1							
	2018	1	1	-	1	-	-	-	-	-	1	1	-	5
	M						1.5 - 2.4							
Kunak, Sabah	2019	-	-	1	-	-	-	-	-	-	-	-	-	1
	M						2.2							
	2020	-	-	1	-	-	1	-	-	1	-	-	-	3
	M						2.2 - 3.6							
	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
Kundasang, Sabah	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2018	1	-	-	-	-	-	-	1	-	-	-	1	3
	M						2.7 - 3.4							
	2019	-	-	1	-	-	-	1	-	2	-	1	-	5
	M						2.2 - 3.0							
Kundasang, Sabah	2020	-	2	-	5	-	-	-	-	-	-	1	-	8
	M						2.1 - 3.6							
	2021	-	-	-	-	-	1	-	-	-	-	-	-	1
	M						2.8							
	2022	-	1	-	-	-	-	-	-	-	-	-	-	1
	M						2.2							
Kundasang, Sabah	2018	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2019	-	-	-	2	1	-	1	-	9	6	3	1	17
	M						0.5 - 2.3							
	2020	2	-	3	-	-	-	-	2	1	4	1	-	13
	M						1.4 - 2.9							
Kundasang, Sabah	2021	2	2	3	8	-	-	-	-	1	-	3	2	21
	M						1.0 - 3.4							
Kundasang, Sabah	2022	3	11	8	8	5	5	5	4	2	-	1	-	52
	M						0.9 - 3.5							

Jadual 4.5: Bilangan kejadian gempa bumi, Malaysia, 2018-2022 (samb.)

Table 4.5: Number of earthquake incidents, Malaysia, 2018-2022 (cont'd)

Lokasi Location	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.	Jumlah Total
Lahad Datu, Sabah	2018	-	-	1	1	1	1	-	-	-	-	2	-	6
	M						1.9 - 2.9							
	2019	-	-	-	1	1	-	-	1	1	-	-	-	4
	M						2.2 - 2.9							
	2020	-	-	1	-	1	-	1	2	1	-	-	-	6
	M						2.0 - 3.3							
Laut Sulawesi (Celebes Sea)	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2022	-	-	-	1	-	-	-	-	-	-	-	-	1
	M						2.8							
	2018	-	1	-	-	-	-	-	-	2	-	-	-	3
	M						2.6 - 2.9							
Nabawan, Sabah	2019	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2020	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
Niah, Sarawak	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2018	-	-	-	-	1	-	-	-	-	-	-	-	1
	M						3.6							
	2019	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2020	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							

Jadual 4.5: Bilangan kejadian gempa bumi, Malaysia, 2018-2022 (samb.)

Table 4.5: Number of earthquake incidents, Malaysia, 2018-2022 (cont'd)

Lokasi Location	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.	Jumlah Total
Perairan Kunak, Sabah	2018	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2019	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2020	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
Pitas, Sabah	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2022	-	-	-	-	-	1	-	-	-	-	-	-	1
	M						2.2							
	2018	-	-	1	-	-	-	-	-	-	-	-	-	1
	M						1.6							
Ranau, Sabah	2019	-	-	-	-	1	-	-	-	-	-	-	-	1
	M						2.1							
	2020	-	-	1	-	-	-	-	-	-	-	-	-	1
	M						2.6							
	2021	-	-	-	1	-	-	-	-	-	-	-	-	1
	M						2.6							
Sandakan, Sabah	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
Ranau, Sabah	2018	11	11	254	113	55	35	16	21	21	21	16	12	586
	M						0.5 - 5.0							
	2019	10	10	16	9	12	13	15	10	3	7	5	10	120
	M						0.6 - 3.1							
	2020	8	2	-	-	-	-	-	-	-	2	-	-	12
	M						1.1 - 2.9							
Sandakan, Sabah	2021	1	1	-	3	-	-	-	-	-	-	1	1	7
	M						1.7 - 2.9							
	2022	3	-	4	5	-	2	-	2	-	-	-	-	16
	M						0.9 - 2.5							
	2018	-	-	1	-	-	-	-	-	-	1	-	-	2
	M						2.1 - 2.3							
Sandakan, Sabah	2019	-	-	-	1	-	-	-	1	1	-	-	1	4
	M						2.0 - 2.9							
	2020	-	-	1	-	-	-	-	-	-	-	-	1	2
	M						2.7							
	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
Sandakan, Sabah	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							

Jadual 4.5: Bilangan kejadian gempa bumi, Malaysia, 2018-2022 (samb.)

Table 4.5: Number of earthquake incidents, Malaysia, 2018-2022 (cont'd)

Lokasi Location	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.	Jumlah Total
Sapulut, Sabah	2018	-	-	1	-	-	-	-	-	-	-	-	1	4
	M	3.1												
	2019	-	-	-	-	1	1	-	1	1	-	-	-	4
	M	2.6												
	2020	-	-	-	1	-	-	-	1	-	-	-	-	2
	M	-												
Semporna, Sabah	2021	-	-	-	-	-	-	-	-	1	-	-	-	2
	M	-												
	2022	-	-	-	-	-	-	-	1	-	-	-	-	1
	M	2.9												
	2018	2	1	1	-	-	-	-	-	-	-	-	1	4
	M	2.1 - 2.9												
Silam, Sabah	2019	-	-	-	-	1	1	-	1	1	-	-	-	4
	M	1.5 - 2.9												
	2020	-	-	-	1	-	-	-	1	-	-	-	-	2
	M	2.8 - 3.5												
	2021	1	-	-	-	-	-	-	-	1	-	-	-	2
	M	2.9 - 3.2												
Tambunan, Sabah	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-												
	2018	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-												
	2019	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-												
Tambunan, Sabah	2020	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-												
	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M	-												
	2022	-	1	-	-	1	-	-	-	-	-	-	-	2
	M	1.8 - 2.2												

Jadual 4.5: Bilangan kejadian gempa bumi, Malaysia, 2018-2022 (samb.)

Table 4.5: Number of earthquake incidents, Malaysia, 2018-2022 (cont'd)

Lokasi Location	Tahun Year	Jan.	Feb.	Mac Mar.	Apr.	Mei May	Jun June	Julai July	Ogos Aug.	Sept.	Okt. Oct.	Nov.	Dis. Dec.	Jumlah Total
Tawau, Sabah	2018	1	1	1	1	1	-	-	-	-	1	-	-	6
	M						1.6 - 2.9							
	2019	-	-	-	-	-	-	-	-	-	-	1	-	1
	M						2.0							
	2020	-	-	1	-	-	-	-	-	-	1	-	-	2
	M						2.0 - 2.4							
Telupid, Sabah	2021	-	-	-	-	-	-	-	-	-	-	-	2	2
	M						1.8 - 2.0							
	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2018	-	-	-	-	-	-	-	-	1	-	-	-	1
	M						2.5							
Tongod, Sabah	2019	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2020	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
Tuaran, Sabah	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2018	-	-	1	3	2	-	1	-	1	-	3	-	11
	M						1.5 - 3.1							
	2019	-	1	-	-	1	2	2	-	-	1	-	1	8
	M						1.6 - 4.0							
	2020	-	-	-	-	-	-	-	-	-	-	1	-	1
	M						2.8							
	2021	2	-	1	-	-	-	-	-	-	-	-	-	3
	M						2.0 - 2.8							
	2022	1	-	-	-	-	1	-	-	-	-	-	-	2
	M						1.4 - 2.2							
	2018	-	-	1	-	-	-	-	-	-	1	-	-	2
	M						0.6 - 2.2							
	2019	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2020	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2021	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							
	2022	-	-	-	-	-	-	-	-	-	-	-	-	-
	M						-							

Nota: M: Magnitud
Note: M: Magnitude

Sumber: Jabatan Meteorologi Malaysia
Source: Malaysia Meteorological Department

Jadual 4.6: Insiden tumpahan minyak di laut, Malaysia, 2018-2022

Table 4.6: Oil spill incidents at sea, Malaysia, 2018-2022

						Bilangan Number
Laut Sea	2018	2019	2020	2021	2022	
Jumlah Total	45	13	16	7	3	
Selat Melaka <i>Straits of Malacca</i>	17	4	6	3	-	
Laut China Selatan <i>South China Sea</i>	18	9	8	3	3	
Selat Johor <i>Straits of Johor</i>	9	-	2	-	-	
Laut Sulu dan Sulawesi <i>Sulu and Sulawesi Sea</i>	1	-	-	1	-	

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Jadual 4.7: Bilangan insiden tumpahan minyak mengikut punca dan sebab, Malaysia, 2018-2022

Table 4.7: Number of oil spill incidents by source and cause, Malaysia, 2018-2022

							Bilangan Number
Punca Source	Sebab Cause	2018	2019	2020	2021	2022	
Jumlah Total		45	13	16	7	3	
Kapal Vessels	Desludging	-	-	-	-	-	
	Letupan dan/ atau kebakaran <i>Explosion and/ or fire</i>	-	-	-	-	-	
	Pelanggaran <i>Collision</i>	1	-	1	1	-	
	Pelepasan haram <i>Illegal discharging</i>	-	-	-	-	-	
	Terkandas <i>Grounding</i>	-	-	2	-	-	
	Pemindahan minyak dari kapal ke kapal <i>Ship to ship transfer</i>	-	1	-	1	-	
Pelantar minyak <i>Oil platform</i>	Kerosakan mekanikal <i>Mechanical failure</i>	-	-	-	1	1	
Pengkalan dan gudang <i>Terminal and depot</i>	Kebocoran injap dan <i>phlanges</i> <i>Leaking valves and phlanges</i>	5	1	2	1	1	
	Pembersihan tangki dan 'deballasting' <i>Tank washing and deballasting</i>	-	-	-	-	-	
	Pengisian berlebihan <i>Overfilling</i>	2	-	-	-	-	
Saluran paip <i>Pipeline</i>	Pecah <i>Rupture</i>	1	-	1	-	-	
Lain-lain <i>Others</i>	Tiada maklumat lengkap <i>Insufficient information</i>	36	11	10	3	1	

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Jadual 4.8: Bilangan kemalangan jalan raya dan kecederaan yang dilaporkan mengikut negeri, Malaysia, 2018-2022

Table 4.8: Number of road accidents and casualties reported by state, Malaysia, 2018-2022

Negeri State	Tahun Year	Kemalangan jalan raya Road accidents	Kecederaan Casualties		Jumlah Total
			Kecederaan ¹ Injury	Kematian Death	
Malaysia	2018	548,598	8,341	6,284	14,625
	2019	567,516	8,877	6,167	15,044
	2020	418,237	12,602	4,634	17,236
	2021	370,286	18,530	4,539	23,069
	2022	545,585	33,852	6,080	39,932
Johor	2018	78,812	574	977	1,551
	2019	82,502	569	1,040	1,609
	2020	58,207	1,038	697	1,735
	2021	49,559	1,172	614	1,786
	2022	76,028	2,062	852	2,914
Kedah	2018	23,239	797	509	1,306
	2019	24,867	999	446	1,445
	2020	19,651	1,163	354	1,517
	2021	18,414	1,622	406	2,028
	2022	25,547	2,462	518	2,980
Kelantan	2018	10,983	1,626	420	2,046
	2019	11,295	1,475	338	1,813
	2020	9,752	1,892	276	2,168
	2021	7,982	1,818	224	2,042
	2022	12,664	2,949	336	3,285
Melaka	2018	19,120	166	191	357
	2019	19,593	189	217	406
	2020	14,543	235	151	386
	2021	13,049	563	136	699
	2022	19,713	1,382	226	1,608
Negeri Sembilan	2018	25,123	796	362	1,158
	2019	25,838	976	337	1,313
	2020	19,905	1,565	235	1,800
	2021	18,014	1,462	249	1,711
	2022	26,934	1,920	334	2,254
Pahang	2018	20,641	330	485	815
	2019	21,196	413	454	867
	2020	17,000	449	356	805
	2021	15,120	610	319	929
	2022	22,517	838	448	1,286
Perak	2018	38,278	1,006	693	1,699
	2019	39,720	1,060	667	1,727
	2020	30,669	1,903	491	2,394
	2021	28,148	2,231	575	2,806
	2022	40,281	2,183	703	2,886

¹Kecederaan merujuk kepada kecederaan ringan dan parah
Injury refer to minor and serious injuries

Jadual 4.8: Bilangan kemalangan jalan raya dan kecederaan yang dilaporkan mengikut negeri, Malaysia, 2018-2022 (samb.)

Table 4.8: Number of road accidents and casualties reported by state, Malaysia, 2018-2022 (cont'd)

Negeri State	Tahun Year	Kemalangan jalan raya Road accidents	Kecederaan Casualties		Jumlah Total
			Kecederaan ¹ Injury	Kematian Death	
Perlis	2018	2,093	289	64	353
	2019	2,098	216	76	292
	2020	1,615	199	46	245
	2021	1,593	199	42	241
	2022	2,276	336	63	399
Pulau Pinang	2018	45,734	221	390	611
	2019	47,198	152	392	544
	2020	35,234	244	287	531
	2021	32,792	4,213	328	4,541
	2022	48,694	13,561	429	13,990
Sabah	2018	17,401	664	298	962
	2019	17,902	632	284	916
	2020	12,498	368	214	582
	2021	12,563	365	213	578
	2022	17,623	569	269	838
Sarawak	2018	20,600	509	333	842
	2019	21,341	514	369	883
	2020	16,158	503	315	818
	2021	14,231	554	326	880
	2022	19,508	662	387	1,049
Selangor	2018	163,078	495	1,046	1,541
	2019	168,222	824	1,054	1,878
	2020	123,230	2,386	805	3,191
	2021	108,564	2,173	742	2,915
	2022	156,815	2,205	1,003	3,208
Terengganu	2018	10,607	385	275	660
	2019	11,355	457	277	734
	2020	9,152	384	238	622
	2021	8,458	452	190	642
	2022	12,084	914	282	1,196
W.P. Kuala Lumpur	2018 ²	72,889	482	241	724
	2019	71,917	339	200	539
	2020	48,796	233	156	389
	2021	40,237	981	167	1,148
	2022	62,428	1,599	212	1,811
W.P. Labuan	2018	-	-	-	-
	2019	618	34	7	41
	2020	408	17	6	23
	2021	387	18	3	21
	2022	564	84	11	95

Jadual 4.8: Bilangan kemalangan jalan raya dan kecederaan yang dilaporkan mengikut negeri, Malaysia, 2018-2022 (samb.)

Table 4.8: Number of road accidents and casualties reported by state, Malaysia, 2018-2022 (cont'd)

Negeri State	Tahun Year	Kemalangan jalan raya Road accidents	Kecederaan Casualties		
			Kecederaan ¹ Injury	Kematian Death	Jumlah Total
W.P. Putrajaya	2018	-	-	-	-
	2019	1,854	28	9	37
	2020	1,419	23	7	30
	2021	1,175	97	5	102
	2022	1,909	126	7	133

¹Kecederaan merujuk kepada kecederaan ringan dan parah
Injury refer to minor and serious injuriesSumber: Jabatan Siasatan dan Penguatkuasaan Trafik
Polis Diraja Malaysia²Termasuk W.P. Putrajaya dan W.P. Labuan
Includes W.P. Putrajaya and W.P. LabuanSource: Investigation and Enforcement of the Traffic Department
Royal Malaysia Police**Jadual 4.9: Statistik punca kebakaran, Malaysia, 2018-2022**

Table 4.9: Cause of fire statistics, Malaysia, 2018-2022

Kejadian kebakaran Fire incidents	2018	2019	2020	2021	2022
Jumlah Total	36,758	50,720	38,865	35,902	28,489
Elektrik Electricity	1,563	1,234	1,239	1,232	1,291
Puntung rokok Cigarette bud	322	454	215	157	110
Percikan api Fire sparks	188	187	138	99	104
Mercun/ bunga api Firecrackers/ fireworks	33	24	7	13	9
Ubat nyamuk/ lilin/ colok Mosquito coil/ candle/ joss sticks	68	72	54	45	53
Dapur gas/ minyak Gas stove/ kerosene	398	414	342	311	326
Reaksi spontan Spontaneous reaction	91	116	73	73	44
Sengaja dibakar (niat baik) Deliberately set fire (good intention)	1,818	2,296	1,519	1,105	514
Sengaja dibakar (niat jahat) Deliberately set fire (arson)	171	220	129	137	78
Tidak diketahui Unknown	282	498	336	343	240
Tindak balas kimia Chemical reaction	3	10	5	5	4
Mancis api Matches	68	83	82	66	50
Lain-lain Others	31,753	45,112	34,726	32,316	25,666

Sumber: Kementerian Pembangunan Kerajaan Tempatan
Source: Ministry of Local Government Development

Jadual 4.10: Bilangan kejadian kebakaran mengikut negeri, Malaysia, 2018-2022

Table 4.10: Number of fire incidents by state, Malaysia, 2018-2022

Negeri State	2018	2019	2020	2021	2022
Malaysia	36,758	50,720	38,865	35,902	28,489
Johor	4,928	8,354	5,066	4,627	3,761
Kedah	2,493	3,650	3,860	2,968	2,191
Kelantan	1,325	2,088	1,559	1,247	1,111
Melaka	1,561	2,496	1,898	1,508	1,196
Negeri Sembilan	1,967	2,438	1,766	1,921	1,416
Pahang	2,163	2,902	1,891	1,715	1,302
Perak	3,863	4,615	3,596	4,105	3,246
Perlis	556	786	911	509	330
Pulau Pinang	2,203	2,860	2,758	2,554	2,062
Sabah	2,475	4,534	2,927	1,655	1,461
Sarawak	2,377	3,403	1,632	1,975	1,644
Selangor	7,345	8,234	7,521	8,133	6,215
Terengganu	1,623	2,251	1,668	1,296	1,019
W.P. Kuala Lumpur	1,561	1,662	1,472	1,498	1,298
W.P. Labuan	221	379	280	130	171
W.P. Putrajaya	97	68	60	61	66

Sumber: Kementerian Pembangunan Kerajaan Tempatan
Source: Ministry of Local Government Development

Jadual 4.11: Kes kebakaran mengikut jenis, Malaysia, 2018-2022

Table 4.11: Fire cases by type, Malaysia, 2018-2022

Jenis Type	2018	2019	2020	2021	2022
Jumlah Total	36,758	50,720	38,865	35,902	28,489
Bangunan dan isinya Building and its content	5,368	5,449	4,599	4,538	4,695
Kenderaan Vehicle	3,762	4,004	3,622	3,328	3,615
Mesin Machine	172	194	166	109	110
Alat perkakas Tools	1,470	1,593	1,419	1,172	1,426
Petrol	12	4	7	3	6
Bahan kimia Chemical item	6	15	5	5	7
Gas	582	584	504	432	419
Kapal terbang Aeroplane	1	1	1	-	-
Helikopter Helicopter	-	-	-	-	1
Kapal laut Ship	15	13	2	14	9
Feri Ferry	1	1	-	1	2
Bot Boat	14	16	24	11	11
Kebun/ Ladang Farm	873	2,235	1,125	1,108	344
Hutan Forest	1,892	3,661	2,002	1,753	692
Belukar/ Lalang Bush/ Weed	10,754	18,927	12,600	10,945	6,086
Sampah Garbage	3,047	4,084	3,364	3,126	2,474
Gerai Stall	86	113	100	77	76
Lain-lain Others	8,703	9,826	9,325	9,280	8,516

Sumber: Kementerian Pembangunan Kerajaan Tempatan
Source: Ministry of Local Government Development

Jadual 4.12: Kes kebakaran mengikut jenis bangunan, Malaysia, 2018-2022

Table 4.12: Fire cases by type of buldings, Malaysia, 2018-2022

Jenis Type	2018	2019	2020	2021	2022
Jumlah Total	5,368	5,449	4,599	4,538	4,695
Kedai Shop	567	469	456	440	475
Kilang Factory	280	288	251	251	260
Gudang Warehouse	25	27	16	28	23
Stor Store	291	343	257	291	269
Bengkel Workshop	81	96	78	81	72
Hotel	45	36	25	25	26
Pusat membeli-belah Shopping centre	20	17	23	7	8
Pejabat Office	108	99	102	89	55
Dewan orang ramai Public hall	23	10	9	8	8
Panggung wayang Cinema	1	-	-	1	1
Kelab/ pub/ bar hiburan Entertainment club/ pub/ bar	7	5	10	3	4
Kedai makan/ restoran Food shop/ restaurant	86	88	73	54	53
Rumah teres Terrace house	880	863	640	629	684
Rumah flat Flat house	257	257	168	135	152
Rumah apartment/ kondominium Apartment/ condominium	188	234	146	98	139
Setinggan Squatters	101	116	54	71	60
Rumah panjang/ tradisional Long/ traditional house	114	125	73	56	41
Masjid/ surau Mosque/ surau	20	26	17	16	15
Tokong Temple	18	20	8	22	26
Kuil Temple	1	3	4	5	7
Gereja Church	1	1	1	1	3
Dapur Kitchen	351	443	465	392	353
Makmal Laboratory	7	7	3	4	4
Institusi pengajian tinggi awam Public higher education institution	15	7	5	9	6

Jadual 4.12: Kes kebakaran mengikut jenis bangunan, Malaysia, 2018-2022 (samb.)

Table 4.12: Fire cases by type of buildings, Malaysia, 2018-2022 (cont'd)

Jenis Type	2018	2019	2020	2021	2022
Institusi pengajian tinggi swasta <i>Private higher education institution</i>	3	2	3	2	2
Sekolah rendah kerajaan <i>Government primary school</i>	31	29	14	12	10
Sekolah rendah swasta <i>Private primary school</i>	4	2	2	1	3
Sekolah menengah kerajaan <i>Government secondary school</i>	26	32	19	9	27
Sekolah menengah swasta <i>Private secondary school</i>	-	2	-	-	1
Pra-sekolah/ tadika kerajaan <i>Government pre-school/ kindergarden</i>	5	9	3	3	6
Pra-sekolah/ tadika swasta <i>Private pre-school/ kindergarden</i>	1	5	2	2	1
Asrama sekolah <i>School hostel</i>	25	13	15	4	13
Asrama pekerja <i>Workers hostel</i>	47	58	36	45	45
Hospital/ klinik awam <i>Public hospital/ clinic</i>	34	23	22	17	12
Hospital/ klinik swasta <i>Private hospital/ clinic</i>	6	7	5	10	6
Rumah kediaman <i>Residential house</i>	1,327	1,341	1,201	1,368	1,432
Premis ladang ternakan <i>Livestock estate premises</i>	9	11	9	13	12
Premis/ hotel bajet <i>Budget hotel/ premises</i>	2	4	5	-	2
Asrama/ rumah tumpangan <i>Hostel/ homestay</i>	23	16	11	13	11
Rumah kedai <i>Shop house</i>	124	110	118	83	88
Pusat tahfiz <i>Tahfiz centre</i>	-	-	-	4	12
Lain-lain <i>Others</i>	214	205	250	236	268

Sumber: Kementerian Pembangunan Kerajaan Tempatan
Source: Ministry of Local Government Development

Jadual 4.13: Bilangan kematian, kecederaan dan anggaran kerugian akibat kebakaran yang dilaporkan mengikut negeri, Malaysia, 2018-2022

Table 4.13: Number of deaths, injuries and estimated losses caused by fire reported by state, Malaysia, 2018-2022

Negeri State	2018			2019			2020		
	Kematian Death	Kecederaan Injury	Kerugian Loss (RM juta/ millions)	Kematian Death	Kecederaan Injury	Kerugian Loss (RM juta/ millions)	Kematian Death	Kecederaan Injury	Kerugian Loss (RM juta/ millions)
Malaysia	97	397	3,317.1	121	455	3,605.5	118	413	2,247.0
Johor	11	54	534.3	14	91	1,246.8	16	45	77.3
Kedah	7	24	43.1	7	35	138.6	1	16	244.2
Kelantan	1	13	27.2	2	18	191.0	2	21	31.1
Melaka	3	34	9.6	2	14	17.7	6	19	65.4
Negeri Sembilan	3	24	21.1	8	16	174.6	4	16	52.5
Pahang	5	21	477.2	12	28	199.6	5	33	185.4
Perak	16	22	54.5	18	43	209.5	16	49	57.0
Perlis	1	5	2.7	-	3	2.1	3	1	1.9
Pulau Pinang	3	31	495.5	2	29	66.2	14	44	101.1
Sabah	14	24	176.6	14	29	374.2	17	44	941.9
Sarawak	10	37	59.9	10	34	179.3	13	16	63.7
Selangor	14	68	1,108.2	29	70	691.4	17	66	356.9
Terengganu	1	11	252.9	-	16	55.7	3	9	11.4
W.P. Kuala Lumpur	7	29	50.6	3	27	58.1	1	32	55.1
W.P. Labuan	1	-	2.5	-	2	0.5	-	2	1.6
W.P. Putrajaya	-	-	1.1	-	-	0.2	-	-	0.4

Hasil tambah mungkin berbeza kerana pembundaran

The added total may differ due to rounding

Jadual 4.13: Bilangan kematian, kecederaan dan anggaran kerugian akibat kebakaran yang dilaporkan mengikut negeri, Malaysia, 2018-2022 (samb.)

Table 4.13: Number of deaths, injuries and estimated losses caused by fire reported by state, Malaysia, 2018-2022 (cont'd.)

Negeri State	2021			2022		
	Kematian Death	Kecederaan Injury	Kerugian Loss (RM juta/ millions)	Kematian Death	Kecederaan Injury	Kerugian Loss (RM juta/ millions)
Malaysia	79	361	1,762.1	121	400	2,251.4
Johor	12	49	71.4	14	62	73.3
Kedah	8	29	189.7	12	36	72.2
Kelantan	4	14	45.2	3	9	16.9
Melaka	2	8	15.3	9	20	23.6
Negeri Sembilan	5	22	39.7	2	20	94.2
Pahang	2	14	65.9	5	15	31.2
Perak	9	42	70.4	14	43	240.4
Perlis	1	-	1.6	-	1	2.9
Pulau Pinang	3	27	205.2	3	27	1,045.8
Sabah	9	29	271.7	15	40	117.6
Sarawak	2	23	309.5	22	39	74.9
Selangor	14	58	385.2	16	50	363.3
Terengganu	2	12	14.0	1	9	15.3
W.P. Kuala Lumpur	5	28	71.0	5	24	44.2
W.P. Labuan	1	5	4.2	-	2	3.2
W.P. Putrajaya	-	1	2.1	-	3	32.2

Hasil tambah mungkin berbeza kerana pembundaran
The added total may differ due to rounding

Sumber: Kementerian Pembangunan Kerajaan Tempatan
Source: Ministry of Local Government Development

Jadual 4.14: Statistik nilai kerugian banjir mengikut negeri, Malaysia, 2021 dan 2022

Table 4.14: Statistics on value of flood losses by state, Malaysia, 2021 and 2022

Negeri State	*Bilangan tempat kediaman Number of living quarters	Nilai kerugian banjir Value of flood losses					
		(A) Tempat Kediaman Living Quarters (RM '000)		(B) Kenderaan Vehicles (RM '000)		(C) Premis Perniagaan Business Premises (RM '000)	
		2021	2022	2021	2022	2021	2022
Malaysia	8,046,946	1,621,956	157,393	982,774	18,801	525,764	50,302
Johor	1,017,727	19,891	611	16,375	36	13,814	47
Kedah	528,228	1,042	15,272	-	11,548	-	2,777
Kelantan	363,251	15,992	44,434	1,457	2,033	4,536	18,324
Melaka	267,074	69,694	558	5,769	46	9,756	65
Negeri Sembilan	315,497	45,558	37	18,271	-	12,077	57
Pahang	401,534	425,508	1,828	78,224	76	83,844	265
Pulau Pinang	495,347	-	98	-	2	-	26
Perak	672,855	2,708	1,575	464	53	250	246
Perlis	80,850	-	6	-	-	-	-
Selangor	1,836,410	1,011,762	2,549	855,018	57	396,389	519
Terengganu	282,373	254	84,162	42	3,421	141	25,254
Sabah	594,163	7,165	5,360	1,034	152	1,147	453
Sarawak	618,108	10	903	-	28	-	251
W.P. Kuala Lumpur	573,529	22,371	-	6,120	1,350	3,810	2,019

Jadual 4.14: Statistik nilai kerugian banjir mengikut negeri, Malaysia, 2021 dan 2022 (samb.)

Table 4.14: Statistics on value of flood losses by state, Malaysia, 2021 and 2022 (cont'd.)

Negeri State	Nilai kerugian banjir Value of flood losses						Jumlah kerugian Total loss (RM '000)	
	(D) Pembuatan Manufacturing (RM '000)		(E) Pertanian Agriculture (RM '000)		(F) Infrastruktur Infrastructure (RM '000)		2021	2022
	2021	2022	2021	2022	2021	2022		
Malaysia	891,360	8,707	90,600	154,515	2,000,000	232,695	6,112,453	622,413
Johor	-	-	n.a	247	n.a	3,450	50,081	4,391
Kedah	-	-	n.a	327	n.a	880	1,042	30,804
Kelantan	-	1,154	n.a	66,035	n.a	21,140	21,985	153,120
Melaka	-	-	n.a	98	n.a	1,500	85,219	2,267
Negeri Sembilan	1,232	-	n.a	3,007	n.a	17,940	77,138	21,041
Pahang	5,592	-	n.a	1,693	n.a	140,090	593,168	143,953
Pulau Pinang	-	-	n.a	75	n.a	-	-	200
Perak	-	106	n.a	768	n.a	12,160	3,421	14,907
Perlis	-	-	n.a	-	n.a	-	-	6
Selangor	884,475	-	n.a	3,145	n.a	19,250	3,147,645	25,519
Terengganu	-	7,099	n.a	79,022	n.a	16,285	437	215,244
Sabah	-	348	n.a	-	n.a	-	9,346	6,312
Sarawak	-	-	n.a	99	n.a	-	10	1,280
W.P. Kuala Lumpur	60	-	n.a	-	n.a	-	32,361	3,369

Nota:

Notes:

***Bilangan Tempat Kediaman merujuk kepada data Banci Penduduk dan Perumahan Malaysia 2020.**

Number of Living Quarters refers to the data of Population and Housing Census Malaysia 2020.

"-" Tidak terkesan banjir

"-" Not affected by the flood

Data mengikut negeri bagi Pertanian dan Infrastruktur bagi tahun 2021 tidak diterbitkan

Data by state for Agriculture and Infrastructure for year 2021 were not published

"n.a" - Data tidak tersedia

"n.a." - Data not available

Jadual 4.15: Taburan kawasan hakisan pantai di Malaysia, 2022

Table 4.15: Distribution of coastal erosion areas in Malaysia, 2022

Panjang (km)
Length

Negeri State	Jumlah (km) Total	Pantai yang mengalami hakisan mengikut kategori ^e <i>Coastal erode by category</i>						Jumlah hakisan (km) <i>Total erosion</i>	%
		Kategori 1 <i>Category</i>		Kategori 2 <i>Category</i>		Kategori 3 <i>Category</i>			
		Bil. kawasan <i>No. of area</i>	Panjang agregat (km) <i>Aggregate length</i>	Bil. kawasan <i>No. of area</i>	Panjang agregat (km) <i>Aggregate length</i>	Bil. kawasan <i>No. of area</i>	Panjang agregat (km) <i>Aggregate length</i>		
Malaysia	8,840.0	44	55.4	309	375.9	2,344	916.3	1,347.6	15.2
Johor	813.6	-	-	30	38.1	42	26.6	64.7	8.0
Kedah	639.8	4	1.9	28	13.6	90	11.3	26.8	4.2
Kelantan	179.5	2	2.0	2	2.5	43	15.3	19.8	11.0
Melaka	120.5	1	0.2	6	1.7	3	1.8	3.7	3.1
Negeri Sembilan	65.0	6	5.5	9	4.1	2	0.2	9.8	15.1
Pahang	378.4	2	1.5	14	16.9	58	43.4	61.8	16.3
Perak	397.5	1	0.3	21	33.6	105	61.2	95.1	23.9
Perlis	26.4	-	-	-	-	2	0.1	0.1	0.4
Pulau Pinang	215.6	7	4.7	13	5.0	31	6.6	16.3	7.6
Sabah	3,752.9	3	3.0	63	79.1	1,120	347.2	429.3	11.4
Sarawak	1,234.1	7	18.6	78	144.8	566	329.1	492.5	39.9
Selangor	492.1	2	4.8	16	18.6	156	51.2	74.6	15.2
Terengganu	443.1	8	12.3	20	15.4	115	21.0	48.7	11.0
W.P. Labuan	81.5	1	0.6	9	2.5	11	1.3	4.4	5.4

Sumber: Jabatan Pengairan dan Saliran
Source: Department of Irrigation and Drainage

Nota:
Notes:

Kategori 1: Pengunduran garis pantai yang cepat dengan kadar melebihi 4 meter/ tahun umumnya di kawasan dengan penduduk yang agak padat bersama aktiviti komersial/industri yang mendapat perkhidmatan infrastruktur dan kemudahan awam.

Category 1: Fast retreating coastline at the rate of more than 4m/ year with generally fairly dense human settlement, with some commercial/ industrial activities being served by significant public infrastructure and facilities.

Kategori 2: Pengunduran garis pantai dengan kadar lebih dari 1 meter/ tahun tetapi kurang dari 4 meter/tahun umumnya di kawasan berpenduduk tidak padat dengan sedikit aktiviti pertanian yang mendapat perkhidmatan infrastruktur dan kemudahan awam yang kurang sempurna.

Category 2: Retreating coastline at the rate of between more than 1m/ year but less than 4m/ year with generally sparsely-populated area, with some agricultural activities being served by relatively minor public infrastructure and facilities.

Kategori 3: Pengunduran garis pantai dengan kadar kurang dari 1 meter/ tahun umumnya di kawasan tanpa penduduk dengan aktiviti pertanian yang minimum yang tidak mendapat perkhidmatan infrastruktur dan kemudahan awam.

Category 3: Slowly retreating coastline of less than 1m/ year with generally no human settlement and minimal agricultural activities, and not served by public infrastructure and facilities.

Berdasarkan National Coastal Erosion Study for Malaysia (2015)
Based on National Coastal Erosion Study for Malaysia (2015)

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KOMPONEN **5** COMPONENT

**PENEMPATAN PENDUDUK
DAN KESIHATAN
PERSEKITARAN**

**HUMAN SETTLEMENTS AND
ENVIRONMENTAL HEALTH**

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Jadual 5.1: Anggaran penduduk pertengahan tahun, Malaysia, 2019-2023

Table 5.1: Mid-year population estimates, Malaysia, 2019-2023

Negeri State	2019	2020	2021	2022	2023 ^P	Kadar pertumbuhan penduduk tahunan Annual population growth rate (%)	
	('000)					2021/2022	2022/2023
Malaysia	32,523.0	32,447.4	32,576.3	32,698.1	33,379.5	0.4	2.1
Johor	3,761.2	4,009.7	4,020.0	4,028.3	4,100.9	0.2	1.8
Kedah	2,173.7	2,131.4	2,151.7	2,163.1	2,187.5	0.5	1.1
Kelantan	1,883.8	1,792.5	1,812.3	1,830.6	1,857.6	1.0	1.5
Melaka	928.4	998.4	1,004.5	1,008.6	1,027.5	0.4	1.9
Negeri Sembilan	1,126.2	1,200.0	1,204.2	1,207.9	1,224.3	0.3	1.4
Pahang	1,671.4	1,591.3	1,601.5	1,614.3	1,642.7	0.8	1.7
Perak	2,508.8	2,496.0	2,515.8	2,514.4	2,540.4	-0.1	1.0
Perlis	254.0	284.9	287.6	289.8	292.7	0.7	1.0
Pulau Pinang	1,768.8	1,740.4	1,740.0	1,740.9	1,771.6	0.1	1.7
Sabah	3,904.4	3,418.8	3,412.6	3,414.9	3,592.8	0.1	5.1
Sarawak	2,806.0	2,453.7	2,465.6	2,473.5	2,509.5	0.3	1.4
Selangor	6,506.1	6,994.4	7,014.7	7,050.3	7,205.3	0.5	2.2
Terengganu	1,244.5	1,149.4	1,170.7	1,186.6	1,209.4	1.4	1.9
W.P. Kuala Lumpur	1,782.5	1,982.1	1,964.0	1,961.2	1998.6	-0.1	1.9
W.P. Labuan	99.3	95.1	96.0	96.9	99.5	0.9	2.6
W.P. Putrajaya	103.7	109.2	115.2	117.0	119.2	1.5	1.9

Nota:

Note:

2020-2023^P

Berdasarkan Anggaran Penduduk Pertengahan Tahun berdasarkan data Banci Penduduk dan Perumahan 2020

Mid-Year Population Estimates based on Population and Housing Census of Malaysia 2020

2018 - 2019

Berdasarkan Anggaran Penduduk Pertengahan Tahun berdasarkan data Banci Penduduk dan Perumahan 2010

Mid-Year Population Estimates based on Population and Housing Census of Malaysia 2010

^P Permulaan/ Preliminary

Hasil tambah mungkin berbeza kerana pembundaran

The added total may differ due to rounding

Jadual 5.2: Kepadatan penduduk mengikut negeri, Malaysia, 2019-2023

Table 5.2: Population density by state, Malaysia, 2019-2023

Negeri State	Bilangan orang bagi setiap km ² Number of persons per km ²				
	2019	2020	2021	2022	2023 ^p
Malaysia	98	98	99	99	101
Johor	196	209	210	210	214
Kedah	229	225	227	227	230
Kelantan	125	119	120	122	124
Melaka	542	583	586	575	585
Negeri Sembilan	169	180	181	180	182
Pahang	46	44	45	45	45
Perak	120	119	119	119	120
Perlis	310	348	350	355	359
Pulau Pinang	1,686	1,659	1,658	1,689	1,718
Sabah	53	46	46	46	48
Sarawak	23	20	20	20	20
Selangor	818	880	883	888	907
Terengganu	96	89	90	92	93
W.P. Kuala Lumpur	7,336	8,157	8,106	8,080	8,235
W.P. Labuan	1,079	1,034	1,042	1,277	1,301
W.P. Putrajaya	2,115	2,215	2,318	1,965	2,017

Nota:

Notes:

2020-2022^p

Berdasarkan Anggaran Penduduk Pertengahan Tahun berasaskan data Banci Penduduk dan Perumahan 2020

Mid-Year Population Estimates based on Population and Housing Census of Malaysia 2020

2018 - 2019

Berdasarkan Anggaran Penduduk Pertengahan Tahun berasaskan data Banci Penduduk dan Perumahan 2010

Mid-Year Population Estimates based on Population and Housing Census of Malaysia 2010

^p Permulaan/ Preliminary

Hasil tambah mungkin berbeza kerana pembundaran

The added total may differ due to rounding

Jadual 5.3: Penduduk mengikut kumpulan umur dan jantina, Malaysia, 2023^p

Table 5.3: Population by age group and sex, Malaysia, 2023^p

Kumpulan umur Age group	Jumlah Total		Lelaki Male		Perempuan Female	
	Bilangan Number ('000)	%	Bilangan Number ('000)	%	Bilangan Number ('000)	%
Jumlah Total	33,379.5	100.0	17,460.0	100.0	15,919.5	100.0
0 – 4	2,345.7	7.0	1,205.0	6.9	1,140.8	7.2
5 – 9	2,584.6	7.7	1,324.2	7.6	1,260.3	7.9
10 – 14	2,618.7	7.8	1,360.1	7.8	1,258.6	7.9
15 – 19	2,775.4	8.3	1,455.0	8.3	1,320.4	8.3
20 – 24	3,042.0	9.1	1,650.1	9.5	1,391.9	8.7
25 – 29	2,926.9	8.8	1,625.1	9.3	1,301.7	8.2
30 – 34	2,890.9	8.7	1,571.2	9.0	1,319.7	8.3
35 – 39	2,845.7	8.5	1,505.7	8.6	1,340.0	8.4
40 – 44	2,480.5	7.4	1,323.1	7.6	1,157.4	7.3
45 – 49	1,955.3	5.9	1,008.0	5.8	947.3	6.0
50 – 54	1,674.9	5.0	850.7	4.9	824.2	5.2
55 – 59	1,471.1	4.4	736.5	4.2	734.6	4.6
60 – 64	1,288.8	3.9	646.8	3.7	642.0	4.0
65 – 69	1,011.9	3.0	497.0	2.8	515.0	3.2
70 – 74	710.9	2.1	345.3	2.0	365.6	2.3
75 +	756.2	2.3	356.3	2.0	399.9	2.5

Nota: Berdasarkan Anggaran Penduduk Pertengahan Tahun berasaskan data Banci Penduduk dan Perumahan 2020

Note: Mid-Year Population Estimates based on Population and Housing Census of Malaysia 2020

^p Permulaan/ Preliminary

Hasil tambah mungkin berbeza kerana pembundaran

The added total may differ due to rounding

Jadual 5.4: Penduduk dengan air paip yang dirawat mengikut negeri dan strata, Malaysia, 2019-2022

Table 5.4: Population with treated piped water by state and strata, Malaysia, 2019-2022

Negeri State	2019			2020			2021			2022		
	Bandar Urban	Luar bandar Rural	Purata negeri State average	Bandar Urban	Luar bandar Rural	Purata negeri State average	Bandar Urban	Luar bandar Rural	Purata negeri State average	Bandar Urban	Luar bandar Rural	Purata negeri State average
%												
Malaysia	97.3^r	93.1^r	95.2^r	97.3	91.6^r	94.5^r	97.5^r	91.9	94.7	97.4	92.3	94.9
Johor	100.0	99.5	99.8	100.0	99.8	99.9	100.0	99.8	99.9	100.0	99.8	99.9
Kedah	100.0	96.5	98.3	100.0	96.5	98.3	100.0	96.5	98.3	100.0	96.5	98.3
Kelantan ¹	63.5	77.8	70.7	64.5	78.9	71.7	65.4	80.8	73.1	65.8	82.0	73.9
Melaka	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Negeri Sembilan	100.0	99.8	99.9	100.0	99.8	99.9	100.0	99.8	99.9	100.0	99.8	99.9
Pahang	100.0	96.0	98.0	100.0	96.0	98.0	100.0	96.0	98.0	100.0	96.0	98.0
Perak	100.0	99.2	99.6	100.0	99.2	99.6	100.0	99.2	99.6	100.0	99.2	99.6
Perlis	100.0	99.0	99.5	100.0	99.0	99.5	100.0	99.0	99.5	100.0	99.0	99.5
Pulau Pinang	100.0	99.8	99.9	100.0	99.8	99.9	100.0	99.8	99.9	100.0	99.8	99.9
Sabah	100.0	78.0	89.0	100.0	54.0 ^r	77.0 ^r	100.0	56.0	78.0	100.0	61.0	80.5
Sarawak ²	99.0	64.8	82.6	99.0	66.5	83.4	99.0	66.9	83.6	99.0	67.2	83.7
Selangor ³	100.0	99.5	99.8	100.0	99.5	99.8	100.0	99.5	99.8	100.0	99.5	99.8
Terengganu	99.1	92.9	96.0	99.1	92.9	96.0	99.1	92.9	96.0	99.1	92.9	96.0
W.P. Labuan	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sumber: Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim
Suruhanjaya Perkhidmatan Air Negara

Source: Ministry of Natural Resources, Environment and Climate Change
National Water Services Commission

Nota:
Notes:

¹Peratusan populasi yang mendapat liputan bekalan air bagi Kelantan merujuk kepada peratusan populasi yang memiliki sambungan terhadap sistem bekalan air. Peratusan premis yang memiliki penyambungan adalah rendah walaupun terdapat akses terhadap sistem bekalan air kerana masih ramai isi rumah yang memilih untuk menggunakan sumber air alternatif iaitu air bawah tanah. Bagi negeri-negeri lain, liputan bekalan air adalah berdasarkan peratusan populasi yang mempunyai akses terhadap sistem bekalan air awam
Kelantan's percentage of population served refers to percentage of population with connected water supply. The percentage of premises with connected services is low although there is accessibility; many households still using alternative sources i.e. ground water. For other states, population served based on percentage of population that have access to the public water supply system

²Termasuk LAKU Management Sdn. Bhd. (Bintulu, Miri & Limbang), Lembaga Air Sibu, Lembaga Air Kuching dan Jabatan Bekalan Air Luar Bandar (JBALB), Sarawak. Angka bagi kawasan luar bandar Sarawak tidak termasuk bekalan air separa terawat yang dibekalkan oleh agensi lain seperti Kementerian Kemajuan Luar Bandar dan Wilayah, Kementerian Kesihatan dan bekalan air persendirian
Includes LAKU Management Sdn. Bhd. (Bintulu, Miri & Limbang), Sibu Water Board, Kuching Water Board and Sarawak Rural Water Supply Department. Figures for the rural areas of Sarawak exclude partly treated portable water supplied by the other agencies such as Ministry of Rural and Regional Development, Ministry of Health and private water supply

³Termasuk W.P. Kuala Lumpur dan W.P. Putrajaya
Includes W.P. Kuala Lumpur and W.P. Putrajaya

Perubahan data bagi Sabah mulai 2020 dan Sarawak mulai 2018 disebabkan perubahan metodologi pengiraan. Oleh yang demikian, perbandingan untuk peringkat Malaysia dari tahun 2019 dan sebelumnya tidak boleh dibandingkan.
The changes in data for Sabah from 2020 and Sarawak from 2018 are due to a change in calculation methodology. Therefore, comparisons at Malaysia level from 2019 and earlier cannot be made.

Jadual 5.5: Peratus isi rumah yang mempunyai kemudahan sanitasi mengikut strata, Malaysia, 2014, 2016 dan 2019

Table 5.5: Percentage of households using improved sanitation facilities by strata, Malaysia, 2014, 2016 and 2019

Tahun Year	Penduduk yang mempunyai kemudahan sanitasi Population using improved sanitation facilities		
	Jumlah Total (%)	Bandar Urban (%)	Luar bandar Rural (%)
2014	99.5	99.7	98.5
2016	99.7	99.8	99.1
2019	99.7	99.9	98.9

Jadual 5.6: Kadar tarif air bagi domestik, Malaysia, 2022

Table 5.6: Water tariff rates for domestic, Malaysia, 2022

RM/m³

Negeri State	Semakan tarif terakhir Last tariff review	Purata tarif air Average water tariff		
		20m ³ pertama first 20m ³	30m ³ pertama first 30m ³	35m ³ pertama first 35m ³
Purata negara National average		0.52	0.64	0.68
Johor	2015	0.80	1.20	1.31
Kedah	2010	0.50	0.63	0.67
Kelantan	2013	0.45	0.62	0.67
Melaka	2011	0.60	0.72	0.75
Negeri Sembilan	2000	0.55	0.65	0.68
Pahang	1983	0.41	0.54	0.57
Perak	2006	0.50	0.67	0.71
Perlis	1996	0.48	0.55	0.57
Pulau Pinang	2015	0.22	0.30	0.32
Sabah	2015	0.45	0.50	0.59
Sarawak ¹	1992	0.54	0.60	0.62
Sarawak ²	1995	0.51	0.55	0.56
Sarawak ³	1984	0.49	0.55	0.56
Selangor	2006	0.57	0.72	0.77
Terengganu	1997	0.42	0.50	0.52
W.P. Labuan	2015	0.70	0.87	0.91

Sumber: Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim
Suruhanjaya Perkhidmatan Air Negara

Source: Ministry of Natural Resources, Environment and Climate Change
National Water Services Commission

Nota:

Notes:

¹Termasuk Sibul, Kuching, Sri Aman, Limbang, Sarikei, Kapit, Miri
Includes Sibul, Kuching, Sri Aman, Limbang, Sarikei, Kapit, Miri

²Termasuk Bintulu
Includes Bintulu

³Bahagian lain di Sarawak
Other parts of Sarawak

Jadual 5.7: Kadar tarif air bagi industri, Malaysia, 2022

Table 5.7 : Water tariff rates for industry, Malaysia, 2022

RM/m³

Negeri State	Semakan tarif terakhir Last tariff review	Purata tarif air Average water tariff		
		80m ³ pertama first 80m ³	120m ³ pertama first 120m ³	500m ³ pertama first 500m ³
Purata negara National average		1.94	1.96	1.96
Johor	2023	3.33	3.38	3.47
Kedah	2022	1.88	1.93	2.02
Kelantan	2022	2.09	2.13	2.18
Melaka	2022	2.43	2.44	2.45
Negeri Sembilan	2023	2.33	2.45	2.08
Pahang	2022	1.97	2.01	1.45
Perak	2022	2.01	1.59	1.64
Perlis	2022	1.61	1.64	1.69
Pulau Pinang	2023	1.84	1.93	2.06
Sabah	2015	1.65	1.77	1.94
Sarawak ¹	1992	1.26	1.28	1.32
Sarawak ²	1995	1.17	1.18	1.20
Sarawak ³	1984	1.12	1.15	1.19
Selangor	2022	2.76	2.79	2.84
Terengganu	2022	1.23	1.28	1.37
W.P. Labuan	2022	2.37	2.41	2.48

Nota:

¹Termasuk Sibul, Kuching, Sri Aman, Limbang, Sarikei, Kapit, Miri
Includes Sibul, Kuching, Sri Aman, Limbang, Sarikei, Kapit, Miri

²Termasuk Bintulu
Includes Bintulu

³Bahagian lain di Sarawak
Other parts of Sarawak

**Sumber: Kementerian Sumber Asli,
Alam Sekitar dan Perubahan Iklim
Suruhanjaya Perkhidmatan Air Negara**
Source: Ministry of Natural Resources,
Environment and Climate Change
National Water Services Commission

Jadual 5.8: Peratus isi rumah dengan kemudahan bekalan elektrik mengikut negeri dan strata, Malaysia, 2022

Table 5.8: Percentage of households with the accessibility to electricity supply by state and strata, Malaysia, 2022

Negeri State	Kemudahan bekalan elektrik Accessibility to electricity supply		
	Jumlah Total	Bandar Urban	Luar bandar Rural
Malaysia	99.7	99.9	99.0
Johor	100.0	100.0	100.0
Kedah	100.0	100.0	100.0
Kelantan	100.0	100.0	100.0
Melaka	100.0	100.0	100.0
Negeri Sembilan	100.0	100.0	100.0
Pahang	99.5	100.0	98.9
Pulau Pinang	100.0	100.0	100.0
Perak	100.0	100.0	99.9
Perlis	100.0	100.0	100.0
Selangor	100.0	100.0	100.0
Terengganu	100.0	100.0	100.0
Sabah	99.0	99.8	97.7
Sarawak	97.8	99.3	95.6
W.P. Kuala Lumpur	100.0	100.0	n.a.
W.P. Labuan	100.0	100.0	100.0
W.P. Putrajaya	100.0	100.0	n.a.

Nota/ Note:

Berdasarkan Laporan Survei Kemudahan Asas 2022

Based on Basic Amenities Survey Report 2022

Hasil tambah mungkin berbeza kerana pembundaran

The added total may differ due to rounding

Jadual 5.9a: Tarif elektrik, Semenanjung Malaysia

Table 5.9a: Electricity tariff, Peninsular Malaysia

Kategori tarif Tariff category	Unit	Kadar semasa Existing rates (1 Jun 2011)	Kadar baru New rates (1 Januari 2014)
1. Tarif A - Tarif Kediaman <i>Tariff A - Domestic Tariff</i>			
200 kWj pertama (1 - 200 kWj) sebulan <i>For the first 200 kWh (1 - 200 kWh) per month</i>	sen/kWj cent/kWh	21.80	
100 kWj berikutnya (201 - 300 kWj) sebulan <i>For the next 100 kWh (201 - 300 kWh) per month</i>	sen/kWj cent/kWh	33.40	
100 kWj berikutnya (301 - 400 kWj) sebulan <i>For the next 100 kWh (301 - 400 kWh) per month</i>	sen/kWj cent/kWh	40.00	
100 kWj berikutnya (401 - 500 kWj) sebulan <i>For the next 100 kWh (401 - 500 kWh) per month</i>	sen/kWj cent/kWh	40.20	
100 kWj berikutnya (501 - 600 kWj) sebulan <i>For the next 100 kWh (501 - 600 kWh) per month</i>	sen/kWj cent/kWh	41.60	
100 kWj berikutnya (601 - 700 kWj) sebulan <i>For the next 100 kWh (601 - 700 kWh) per month</i>	sen/kWj cent/kWh	42.60	
100 kWj berikutnya (701 - 800 kWj) sebulan <i>For the next 100 kWh (701 - 800 kWh) per month</i>	sen/kWj cent/kWh	43.70	
100 kWj berikutnya (801 - 900 kWj) sebulan <i>For the next 100 kWh (801 - 900 kWh) per month</i>	sen/kWj cent/kWh	45.30	
Setiap kWj berikutnya (901 kWj ke atas) sebulan <i>For the next kWh (901 kWh onwards) per month</i>	sen/kWj cent/kWh	45.40	
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	3.00	
Struktur baru <i>New structure</i>			
200 kWj pertama (1 - 200 kWj) sebulan <i>For the first 200 kWh (1 - 200 kWh) per month</i>	sen/kWj cent/kWh		21.80
100 kWj berikutnya (201 - 300 kWj) sebulan <i>For the next 100 kWh (201 - 300 kWh) per month</i>	sen/kWj cent/kWh		33.40
300 kWj berikutnya (301 - 600 kWj) sebulan <i>For the next 300 kWh (301 - 600 kWh) per month</i>	sen/kWj cent/kWh		51.60
300 kWj berikutnya (601 - 900 kWj) sebulan <i>For the next 300 kWh (601 - 900 kWh) per month</i>	sen/kWj cent/kWh		54.60
Setiap kWj berikutnya (901 kWj ke atas) sebulan <i>For the next kWh (901 kWh onwards) per month</i>	sen/kWj cent/kWh		57.10
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM		3.00
2. Tarif B - Tarif perdagangan voltan rendah <i>Tariff B - Low voltage commercial tariff</i>			
Bagi jumlah penggunaan keseluruhan di antara 0 - 200 kWj sebulan: <i>For overall monthly consumption between 0 - 200 kWh per month:</i>			
Bagi semua kWj <i>For all kWh</i>	sen/kWj cent/kWh	39.30	
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	7.20	

Jadual 5.9a: Tarif elektrik, Semenanjung Malaysia (samb.)

Table 5.9a: Electricity tariff, Peninsular Malaysia (cont'd)

Kategori tarif Tariff category	Unit	Kadar semasa Existing rates (1 Jun 2011)	Kadar baru New rates (1 Januari 2014)
Bagi jumlah penggunaan keseluruhan melebihi 200 kWj sebulan: For overall monthly consumption more than 200 kWh per month:			
Bagi semua kWj (dari 1 kWj ke atas) For all kWh (from 1kWh and above)	sen/kWj cent/kWh	43.00	
Caj minimum bulanan ialah The Minimum Monthly Charge is	RM	7.20	
Struktur Baru New Structure			
200 kWj pertama (1 - 200 kWj) sebulan For the first 200 kWh (1 - 200 kWh) per month	sen/kWj cent/kWh		43.50
Setiap kWj berikutnya (201 kWj ke atas) sebulan For the next kWh (201 kWh onwards) per month	sen/kWj cent/kWh		50.90
Caj minimum bulanan ialah The minimum monthly charge is	RM		7.20
3. Tarif C1 - Tarif perdagangan am voltan sederhana Tariff C1 - Medium voltage general commercial tariff			
Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM/kW RM/kW	25.90	30.30
Bagi semua kWj For all kWh	sen/kWj cent/kWh	31.20	36.50
Caj minimum bulanan ialah The minimum monthly charge is	RM	600.00	600.00
4. Tarif C2 - Tarif perdagangan puncak/luar puncak voltan sederhana Tariff C2 - Medium voltage peak/off-peak commercial tariff			
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW RM/kW	38.60	45.10
Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj cent/kWh	31.20	36.50
Bagi semua kWj dalam tempoh luar puncak For all kWh during the off-peak period	sen/kWj cent/kWh	19.20	22.40
Caj minimum bulanan ialah The minimum monthly charge is	RM	600.00	600.00
5. Tarif D - Tarif perindustrian voltan rendah Tariff D - Low voltage industrial tariff			
Bagi jumlah penggunaan keseluruhan di antara 0 - 200 kWj sebulan: For overall monthly consumption between 0-200 kWh per month:			
Bagi semua kWj For all kWh	sen/kWj cent/kWh	34.50	
Caj minimum bulanan ialah The minimum monthly charge is	RM	7.20	

Jadual 5.9a: Tarif elektrik, Semenanjung Malaysia (samb.)

Table 5.9a: Electricity tariff, Peninsular Malaysia (cont'd)

Kategori tarif Tariff category	Unit	Kadar semasa Existing rates (1 Jun 2011)	Kadar baru New rates (1 Januari 2014)
Bagi jumlah penggunaan keseluruhan melebihi 200 kWj sebulan: For overall monthly consumption more than 200 kWh per month:			
Bagi semua kWj (dan 1kWj ke atas) For all kWh (from 1kWh and above)	sen/kWj cent/kWh	37.70	
Caj minimum bulanan ialah The minimum monthly charge is	RM	7.20	
Struktur baru New structure			
200 kWj pertama (1 - 200 kWj) sebulan For the first 200 kWh (1 - 200 kWh) per month	sen/kWj cent/kWh		38.00
Setiap kWj berikutnya (201kWj ke atas) sebulan For the next kWh (201 kWh onwards) per month	sen/kWj cent/kWh		44.10
Caj minimum bulanan ialah The minimum monthly charge is	RM		7.20
Tarif Ds - Tarif perindustrian khas (untuk pengguna yang layak sahaja) Tariff Ds - Special industrial tariff (for consumers who qualify only)			
Bagi semua kWj For all kWh	sen/kWj cent/kWh	35.90	42.70
Caj minimum bulanan ialah The minimum monthly charge is	RM	7.20	7.20
6. Tarif E1 - Tarif perindustrian am voltan sederhana Tariff E1 - Medium voltage general industrial tariff			
Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM/kW RM/kW	25.30	29.60
Bagi semua kWj For all kWh	sen/kWj cent/kWh	28.80	33.70
Caj minimum bulanan ialah The minimum monthly charge is	RM	600.00	600.00
Tarif E1s - Tarif perindustrian khas (untuk pengguna yang layak sahaja) Tariff E1s - Special industrial tariff (for consumers who qualify only)			
Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM/kW RM/kW	19.90	23.70
Bagi semua kWj For all kWh	sen/kWj cent/kWh	28.30	33.60
Caj minimum bulanan ialah The minimum monthly charge is	RM	600.00	600.00
7. Tarif E2 - Tarif perindustrian puncak/luar puncak voltan sederhana Tariff E2 - Medium voltage peak/off-peak industrial tariff			
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW RM/kW	31.70	37.00

Jadual 5.9a: Tarif elektrik, Semenanjung Malaysia (samb.)

Table 5.9a: Electricity tariff, Peninsular Malaysia (cont'd)

Kategori tarif Tariff category	Unit	Kadar semasa Existing rates (1 Jun 2011)	Kadar baru New rates (1 Januari 2014)
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj cent/kWh	30.40	35.50
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj cent/kWh	18.70	21.90
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	600.00	600.00
Tarif E2s - Tarif perindustrian khas (untuk pengguna yang layak sahaja) <i>Tariff E2s - Special industrial tariff (for consumers who qualify only)</i>			
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW RM/kW	27.70	32.90
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj cent/kWh	28.30	33.60
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj cent/kWh	16.10	19.10
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	600.00	600.00
8. Tarif E3 - Tarif perindustrian puncak/luar puncak voltan tinggi <i>Tariff E3 - High voltage peak/off - peak industrial tariff</i>			
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW RM/kW	30.40	35.50
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj cent/kWh	28.80	33.70
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj cent/kWh	17.30	20.20
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	600.00	600.00
Tarif E3s - Tarif perindustrian khas (untuk pengguna yang layak sahaja) <i>Tariff E3s - Special industrial tariff (for consumers who qualify only)</i>			
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW RM/kW	24.40	29.00
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj cent/kWh	26.70	31.70
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj cent/kWh	14.70	17.50
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	600.00	600.00

Jadual 5.9a: Tarif elektrik, Semenanjung Malaysia (samb.)

Table 5.9a: Electricity tariff, Peninsular Malaysia (cont'd)

Kategori tarif Tariff category	Unit	Kadar semasa Existing rates (1 Jun 2011)	Kadar baru New rates (1 Januari 2014)
9. Tarif F - Tarif perlombongan voltan rendah <i>Tariff F - Low voltage mining tariff</i>			
Bagi semua kWj <i>For all kWh</i>	sen/kWj <i>cent/kWh</i>	32.60	38.10
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	120.00	120.00
10. Tarif F1 - Tarif perlombongan am voltan sederhana <i>Tariff F1 - Medium voltage general mining tariff</i>			
Bagi setiap kilowatt kehendak maksimum sebulan <i>For each kilowatt of maximum demand per month</i>	RM/kW <i>RM/kW</i>	18.10	21.10
Bagi semua kWj <i>For all kWh</i>	sen/kWj <i>cent/kWh</i>	26.80	31.30
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	120.00	120.00
11. Tarif F2 - Tarif perlombongan puncak/luar puncak voltan sederhana <i>Tariff F2 - Medium voltage peak/off-peak mining tariff</i>			
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW <i>RM/kW</i>	25.50	29.80
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj <i>cent/kWh</i>	26.80	31.30
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj <i>cent/kWh</i>	14.70	17.20
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	120.00	120.00
12. Tarif G - Tarif lampu jalanraya <i>Tariff G - Street lighting tariff</i>			
Bagi semua kWj (termasuk senggaraan) <i>For all kWh (including maintenance)</i>	sen/kWj <i>cent/kWh</i>	26.10	30.50
Bagi semua kWj (tidak termasuk senggaraan) <i>For all kWh (excluding maintenance)</i>	sen/kWj <i>cent/kWh</i>	16.40	19.20
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	7.20	7.20
13. Tarif G1 - Tarif lampu neon & lampu limpah <i>Tariff G1 - Neon & floodlight tariff</i>			
Bagi semua kWj <i>For all kWh</i>	sen/kWj <i>cent/kWh</i>	17.80	20.80
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	7.20	7.20

Jadual 5.9a: Tarif elektrik, Semenanjung Malaysia (samb.)

Table 5.9a: Electricity tariff, Peninsular Malaysia (cont'd)

Kategori tarif Tariff category	Unit	Kadar semasa Existing rates (1 Jun 2011)	Kadar baru New rates (1 Januari 2014)
14. Tarif H - Tarif pertanian spesifik voltan rendah <i>Tariff H - Low voltage specific agriculture tariff</i>			
Bagi jumlah penggunaan keseluruhan di antara 0 - 200 kWj sebulan: <i>For overall monthly consumption between 0 - 200 kWh per month:</i>			
Bagi semua kWj (dari 1kWj dan ke atas) <i>For all kWh (from 1kWh and above)</i>	sen/kWj cent/kWh	36.90	
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	7.20	
Bagi jumlah penggunaan keseluruhan melebihi 200 kWj sebulan: <i>For overall monthly consumption more than 200 kWh per month:</i>			
Bagi semua kWj (dari 1kWj ke atas) <i>For all kWh (from 1kWh and above)</i>	sen/kWj cent/kWh	40.30	
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	7.20	
Struktur baru <i>New structure</i>			
200 kWj pertama (1 - 200 kWj) sebulan <i>For the first 200 kWh (1-200 kWh) per month</i>	sen/kWj cent/kWh		39.00
Setiap kWj berikutnya (201 kWj ke atas) sebulan <i>For the next kWh (201 kWh onwards) per month</i>	sen/kWj cent/kWh		47.20
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM		7.20
15. Tarif H1 - Tarif pertanian spesifik am voltan sederhana <i>Tariff H1 - Medium voltage general specific agriculture tariff</i>			
Bagi setiap kilowatt kehendak maksimum sebulan <i>For each kilowatt of maximum demand per month</i>	RM/kW RM/kW	25.90	30.30
Bagi semua kWj <i>For all kWh</i>	sen/kWj cent/kWh	30.00	35.10
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	600.00	600.00

Jadual 5.9a: Tarif elektrik, Semenanjung Malaysia (samb.)

Table 5.9a: Electricity tariff, Peninsular Malaysia (cont'd)

Kategori tarif Tariff category	Unit	Kadar semasa Existing rates (1 June 2011)	Kadar baru New rates (1 January 2014)
16. Tarif H2 - Tarif pertanian spesifik puncak/luar puncak voltan sederhana <i>Tariff H2 - Medium voltage peak/off-peak specific agriculture tariff</i>			
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	34.90	40.80
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj cent/kWh	31.20	36.50
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj cent/kWh	19.20	22.40
Caj minimum bulanan ialah <i>The minimum monthly charge is</i>	RM	600.00	600.00

Sumber: Tenaga Nasional Berhad
Source:

Nota: Kutipan 1.6% *Feed-in Tariff* (FiT) akan dikenakan ke atas bil elektrik bulanan pengguna (kecuali pengguna domestik yang menggunakan sehingga 300kWj sebulan) berkuatkuasa mulai 1 Januari 2014. Tarif ini adalah berkuatkuasa mulai 1 Januari 2014 dan akan menggantikan tarif sebelumnya yang berkuatkuasa pada 1 Jun 2011

Note: 1.6% for *Feed-in-Tariff* (FiT) is imposed on consumers' monthly bill (excluding domestic consumers with monthly consumption of 300kWh and below) effective from 1st January 2014. This tariff is effective from 1st January 2014 and supersedes the previous tariff schedule which was effective from 1st June 2011

Jadual 5.9b: Tarif elektrik, Sabah

Table 5.9b: Electricity tariff, Sabah

Bil. No.	Kategori tarif Tariff category	Unit	Kadar semasa Current rate
1.	Tarif DM - Tarif kediaman <i>Tariff DM - Domestic tariff</i>		
	100 kWj pertama (1-100 kWj) sebulan <i>For the first 100 kWh (1-100 kWh) per month</i>	sen/kWj cent/kWh	17.50
	100 kWj berikutnya (101-200 kWj) sebulan <i>For the next 100 kWh (101-200 kWh) per month</i>	sen/kWj cent/kWh	18.50
	300 kWj berikutnya (201-300 kWj) sebulan <i>For the next 300 kWh (201-300 kWh) per month</i>	sen/kWj cent/kWh	33.00
	200 kWj berikutnya (301-500 kWj) sebulan <i>For the next 200 kWh (301-500 kWh) per month</i>	sen/kWj cent/kWh	44.50
	500 kWj berikutnya (501-1000 kWj) sebulan <i>For the next 500 kWh (501-1000 kWh) per month</i>	sen/kWj cent/kWh	45.00
	Setiap kWj berikutnya (1001 kWj ke atas) sebulan <i>For the next kWh (1001 kWh and above) per month</i>	sen/kWj cent/kWh	47.00
	Caj minimum bulanan <i>Minimum monthly charge</i>	RM/kW	5.00
2.	Tarif CM1 - Tarif Perdagangan voltan rendah <i>Tariff CM1 - Low voltage commercial tariff</i>		
	200 kWj pertama (1-200 kWj) sebulan <i>For the first 200 kWh (1-200 kWh) per month</i>	sen/kWj cent/kWh	38.50
	Setiap kWj berikutnya (201 kWj ke atas) sebulan <i>For the next kWh (201 kWh and above) per month</i>	sen/kWj cent/kWh	39.50
	Caj minimum bulanan <i>Minimum monthly charge</i>	RM	15.00
3.	Tarif CM2 - Perdagangan am voltan sederhana <i>Tariff CM2 - Medium voltage general commercial tariff</i>		
	Bagi setiap kilowatt kehendak maksimum sebulan <i>For each kilowatt of maximum demand per month</i>	RM/kW	23.20
	Bagi semua kWj <i>For all kWh</i>	sen/kWj cent/kWh	32.40
	Caj minimum bulanan <i>Minimum monthly charge</i>	RM	1,000.00
4.	Tarif CM3 - Tarif perdagangan <i>Tariff CM3 - Commercial tariff</i>		
	Puncak/luar puncak voltan sederhana <i>Tariff CM3 – Medium voltage peak/off peak commercial</i>		
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	32.60
	Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj cent/kWh	32.40
	Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj cent/kWh	19.50
	Caj minimum bulanan <i>Minimum monthly charge</i>	RM	1,000.00

Jadual 5.9b: Tarif elektrik, Sabah (samb)

Table 5.9b: Electricity tariff, Sabah (cont'd)

Bil. No.	Kategori Tarif Tariff Category	Unit	Kadar semasa Current rate
5.	Tarif ID1 – Tarif perindustrian voltan rendah <i>Tariff ID1 - Low voltage Industrial tariff</i>		
	Bagi semua kWj <i>For all kWh</i>	sen/kWj cent/kWh	37.6
	Caj minimum bulanan <i>Minimum monthly charge</i>	RM	15.00
6.	Tarif F1 - Perlombongan am voltan sederhana <i>Tariff F1 - Medium voltage general mining tariff</i>		
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/ kW	21.75
	Bagi semua kWj <i>For all kWh</i>	sen/kWj cent/kWh	26.80
	Caj minimum bulanan <i>Minimum monthly charge</i>	RM	1,000.00
7.	Tarif ID3 - Tarif perindustrian puncak/luar puncak voltan sederhana <i>Tariff ID3 - Medium voltage peak/off peak industrial</i>		
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	sen/kWj cent/kWh	28.00
	Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj cent/kWh	28.60
	Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	RM	18.00
	Caj minimum bulanan <i>Minimum monthly charge</i>	RM	1,000.00
8.	Tarif PL - Tarif lampu jalanraya <i>Tariff PL - Public lighting</i>		
	Bagi semua kWj (Tidak termasuk senggaraan) <i>For all kWh (excluding maintenance)</i>	sen/kWj cent/kWh	20.30
	Bagi semua kWj (termasuk senggaraan) <i>For all kWh (including maintenance)</i>	sen/kWj cent/kWh	36.30
	Caj minimum bulanan <i>Minimum monthly charge</i>	RM	15.00

Sumber: Sabah Electricity Sdn Bhd.

Source: Sabah Electricity Sdn. Bhd.

Jadual 5.9c: Tarif elektrik, Sarawak

Table 5.9c: Electricity tariff, Sarawak

Kategori tarif Tariff category	Kadar per unit Rate per unit
Tarif D - Kediaman <i>Tariff D - Domestic</i>	
1 - 100 unit units	18.0 sen
1 - 150 unit units	18.0 sen
1 - 200 unit units	22.0 sen
1 - 300 unit units	25.0 sen
1 - 400 unit units	27.0 sen
1 - 500 unit units	29.5 sen
1 - 700 unit units	30.0 sen
1 - 800 unit units	30.5 sen
1 - 1,300 unit units	31.0 sen
Melebihi 1,300 unit Above 1,300 units	31.5 sen
Caj minimum bulanan Minimum monthly charge	RM5.00
Tarif C1 - Komersil <i>Tariff C1 - Commercial</i>	
1 - 100 unit units	20.0 sen
1 - 200 unit units	24.0 sen
1 - 300 unit units	26.0 sen
1 - 400 unit units	28.0 sen
1 - 500 unit units	30.0 sen
1 - 3,000 unit units	31.5 sen
1 - 10,000 unit units	32.0 sen
1 - 20,000 unit units	31.0 sen
1 - melebihi 20,000 unit 1 - above 20,000 units	30.0 sen
Caj minimum bulanan Minimum monthly charge	RM10.00

Jadual 5.9c: Tarif elektrik, Sarawak (samb.)

Table 5.9c: Electricity tariff, Sarawak (cont'd.)

Kategori tarif Tariff category	Kadar per unit Rate per unit
Tarif C2 - Kehendak perdagangan Tariff C2 - Commercial demand	
Semua penggunaan All consumption	24.5 sen
Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM16.00
Caj minimum bulanan Minimum monthly charge	RM 16.00 per kilowatt x kehendak bil RM 16.00 per kilowatt x billing demand
Tarif C3 - Kehendak waktu puncak/bukan waktu puncak perdagangan Tariff C3 - Commercial peak/off-peak demand	
Bagi setiap unit waktu puncak For each unit during the peak period	24.5 sen
Bagi setiap unit bukan waktu puncak For each unit during the off-peak period	13.9 sen
Bagi setiap kilowatt kehendak maksimum sebulan semasa waktu puncak For each kilowatt of maximum demand per month during the peak period	RM20.00
Caj minimum bulanan Minimum monthly charge	RM 20.00 per kilowatt x kehendak bil RM 20.00 per kilowatt X billing demand

Sumber: Sarawak Energy Berhad

Source: Sarawak Energy Berhad

Jadual 5.10: Penjanaaan tenaga elektrik mengikut kawasan dan stesen, Malaysia, 2018-2022

Table 5.10: Electricity generated by region and station, Malaysia, 2018-2022

Kawasan Region	Tahun Year	Stesen wap Steam stations	Stesen diesel Diesel stations	Stesen hidro Hydro stations	Turbin gas Gas turbines	Lain-lain ¹ Others	Jumlah Total
Malaysia	2018	24.6	659.9	26,328.9	61,200.1	75,248.3	163,461.7
	2019	84.5	735.2	25,770.8	63,918.8	78,257.8	168,767.1
	2020	78.7	696.9	27,470.0	47,353.5	87,328.9	162,928.0
	2021	79.6	939.4	30,391.74	53,768.2	81,638.2	166,817.1
	2022 ^p	79.7	1,572.5	32,284.2	59,489.3	81,132.0	174,557.7
Semenanjung Malaysia ¹ Peninsular Malaysia	2018	0.0	151.4	4,915.1	50,879.5	72,080.8	128,026.9
	2019	0.0	157.9	3,918.6	53,182.8	74,083.3	131,342.6
	2020	0.0	164.1	5,426.0	37,293.7	83,904.2	126,788.0
	2021	0.0	284.6	6,798.8	43,266.9	77,696.3	128,046.6
	2022 ^p	0.0	951.5	6,751.5	48,414.8	76,803.3	132,920.8
Sabah	2018	24.6	346.3	369.7	5,559.7	245.0	6,545.4
	2019	84.5	410.1	343.9	5,794.3	313.0	6,945.8
	2020	78.7	382.9	421.7	5,541.0	282.6	6,706.9
	2021	79.6	503.9	392.1	5,620.1	244.9	6,840.6
	2022 ^p	79.7	457.0	315.9	5,611.8	310.4	7,074.8
Sarawak	2018	0.0	162.1	21,044.1	4,760.8	2,922.5	28,889.5
	2019	0.0	167.2	21,508.3	4,941.7	3,861.6	30,478.7
	2020	0.0	149.9	21,622.2	4,518.9	3,142.1	29,433.2
	2021	0.0	150.9	23,200.9	4,881.1	3,697.0	31,929.9
	2022 ^p	0.0	164.0	25,216.8	5,162.8	4,018.2	34,561.7

Sumber: Tenaga Nasional Berhad, Sabah Electricity Sdn Bhd., Sarawak Energy Berhad dan Pengeluar Tenaga Bebas

Source: Tenaga Nasional Berhad, Sabah Electricity Sdn. Bhd., Sarawak Energy Berhad and Independent Power Producer

Nota:
Notes:

¹Semenanjung Malaysia merujuk kepada stesen penjanaaan bersumberkan arang batu dan minyak, Sabah merujuk kepada biomas dan Sarawak merujuk kepada arang batu

Peninsular Malaysia refers to the coal and oil sourced generating station, Sabah refers to biomass and Sarawak refers to coal

Nilai 0.0 merujuk kepada kurang daripada setengah unit terkecil yang ditunjukkan

0.0 value refers to less than half the smallest unit shown

Jadual 5.11: Tenaga elektrik yang dibekalkan dan digunakan, Malaysia, 2018-2022

Table 5.11: Electricity supplied and consumed, Malaysia, 2018-2022

	Juta kWj Million kWh				
Transaksi Transaction	2018	2019	2020	2021	2022 ^P
Tenaga elektrik yang dijana Electricity generated	163,461.7	168,767.0	162,928.0	166,877.1	174,557.7
Tenaga elektrik yang diimport Electricity imported	25.1	35.9	17.9	33.8	2.9
Jumlah bekalan Total supply	163,486.8	168,803.0	162,945.9	166,850.9	174,560.2
Kegunaan tenaga elektrik:- Consumption of electricity:-					
Kegunaan sendiri oleh pemasangan swasta Own consumption by private installations	2,043.5	2,316.6	2,338.4	2,201.1	2,195.5
Edaran oleh pemasangan awam mengikut jenis pengguna:- Distribution by public installations by type of consumers:-					
(i) Kediaman Domestic	29,779.8	31,531.5	34,616.2	36,445.1	36,410.1
(ii) Perniagaan Commercial	45,115.7	46,348.4	41,271.3	39,528.9	46,454.4
(iii) Perindustrian Industrial	68,657.6	69,641.1	64,862.3	68,147.4	71,298.6
(iv) Lampu awam Public lighting	1,662.6	1,769.9	1,666.1	1,683.6	390.5
Jumlah edaran Total distribution	145,215.5	149,290.9	142,416.0	145,805.0	154,553.6
Tenaga elektrik yang dieksport Electricity exported	1,508.5	1,697.5	1,570.5	974.5	815.7
Kehilangan dalam pancaran dan perbezaan perangkaan Losses in transmissions and statistical discrepancies	14,719.3	15,498.0	16,621.0	17,870.4	16,995.4
Jumlah Total	163,486.8	168,803.0	162,945.9	166,850.9	174,560.2

Sumber: Tenaga Nasional Berhad, Sabah Electricity Sdn. Bhd., Sarawak Energy Berhad dan Pengeluar Tenaga Bebas

Source: Tenaga Nasional Berhad, Sabah Electricity Sdn. Bhd., Sarawak Energy Berhad and Independent Power Producer

Jadual 5.12: Nisbah personel perubatan terlatih¹- penduduk, Malaysia, 2018-2022

Table 5.12: Trained medical personnel-population ratio, Malaysia, 2018-2022

Personel perubatan Medical personnel	2018	2019	2020	2021	2022
Doktor Doctor	1:530	1:482	1:441	1:420	1:412
Doktor gigi Dentist	1:3,339	1:3,017	1:2,816	1:2,597	1:2,434
Jururawat Nurses	1:304	1:302	1:297	1:283	1:279

Nota:

Notes:

Sumber: Kementerian Kesihatan Malaysia

Source: Ministry of Health Malaysia

¹Personel perubatan terlatih kerajaan dan swasta

Government and private trained medical personnel

Pengiraan nisbah adalah berasaskan anggaran penduduk semasa, Jabatan Perangkaan Malaysia

The calculation of the ratios was based on the current population estimates, Department of Statistics, Malaysia

Jadual 5.13: Panjang jalan raya mengikut jenis jalan raya dan bidang kuasa¹, Malaysia, 2018-2022

Table 5.13: Road length by type of road and jurisdiction, Malaysia, 2018-2022

		Kilometer Kilometre				
Bidang kuasa Jurisdiction	Jenis Type	2018	2019	2020	2021	2022
Jumlah Total		245,775	254,479	290,247	301,086	303,079
Persekutuan Federal	Berturap Paved	19,913	19,952	43,072	43,093	43,187
Negeri State	Jumlah Total	225,862	234,526	247,176	257,993	259,892
	Berturap Paved	165,639	170,406	178,568	182,918	178,961
	Kelikir Gravel	40,875	43,794	45,854	49,313	51,126
	Tanah Earth	19,348	20,325	22,754	25,762	29,805

Nota:

Notes:

Sumber: Jabatan Kerja Raya

Source: Public Works Department

¹Tidak termasuk jalan di bawah tanggungjawab Pihak Berkuasa Tempatan

Excludes roads maintain by Local Authorities

Jadual 5.14: Pendaftaran baharu kenderaan bermotor mengikut jenis, Malaysia, 2018-2022

Table 5.14: New registrations of motor vehicles by type, Malaysia, 2018-2022

Jenis kenderaan Vehicles type	2018	2019	2020	2021	2022
Jumlah Total	1,218,573	1,258,543	1,163,262	1,192,413	1,522,766
Kenderaan awam Public transport	8,432	7,768	5,748	2,789	4,414
Kenderaan perdagangan Commercial vehicles	40,760	35,886	30,559	33,657	41,129
Motokar Motorcars	578,600	580,201	534,657	523,886	735,643
Motosikal Motorcycles	552,429	595,740	569,072	614,599	718,390
Lain-lain kenderaan ¹ Other vehicles	38,352	38,948	23,226	17,482	23,190

Nota:

Notes:

Sumber: Jabatan Pengangkutan Jalan

Source: Road Transport Department

¹Merangkumi kenderaan seperti karavan, kenderaan bomba kerajaan & swasta, kenderaan sekolah memandu, kenderaan mayat, kenderaan orang cacat, kenderaan kerajaan, kenderaan pihak berkuasa tempatan, ambulan dan kenderaan kedutaan
Includes vehicles such as caravans, government & private fire vehicles, driving school vehicles, hearse, vehicle for disabled person, government vehicles, local authority vehicles, ambulance and embassy vehicles

Jadual 5.15: Bilangan ketibaan dan pelepasan kapal laut yang terlibat dalam perdagangan antarabangsa di pelabuhan terpilih, Malaysia, 2018-2022

Table 5.15: Number of arrivals and departures of ocean-going vessel engaged in foreign trade at selected ports, Malaysia, 2018-2022

Pelabuhan Port	Ketibaan Arrivals					Pelepasan Departures				
	2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Jumlah Total	29,328	28,066	18,385	29,276	27,275	29,359	28,105	18,230	29,320	27,899
Bintulu	2,152	2,126	1,955	1,536	1,477	2,374	2,322	2,104	1,517	1,492
Klang	12,998	12,551	11,776	11,507	10,870	12,998	12,551	11,776	11,469	11,450
Kota Kinabalu	427	483	339	430	455	427	483	339	417	443
Kuantan	1,865	2,117	-	1,858	1,566	1,865	2,117	-	1,861	1,571
Kuching	1,113	1,180	1,160	458	492	897	983	826	458	493
Kudat dan Kunak	133	169	136	4	-	133	169	136	4	-
Lahad Datu	488	559	500	500	481	488	559	500	497	480
Melaka ¹	-	-	-	346	-	-	-	-	346	-
Miri	665	702	483	192	84	725	790	545	189	81
Port Dickson	-	-	-	491	557	-	-	-	490	555
Pulau Pinang	3,721	5,770	-	1,804	1,660	3,776	5,798	-	1,799	1,648
Rajang ²	518	497	382	-	-	430	421	350	-	-
Sandakan	1,080	822	756	492	518	1,080	822	756	488	511
Sepanggar Bay Oil Terminal	295	253	200	-	-	295	253	200	-	-
Sepanggar Bay Container Port	218	240	154	-	-	218	240	154	-	-
Tanjung Pelepas	3,014	-	-	9,254	8,715	3,012	-	-	9,372	8,778
Tawau	641	597	544	404	400	641	597	544	413	397

Nota:
Notes:

Sumber: Jabatan Laut Malaysia
Source: Malaysia Marine Department

¹Merujuk kepada Pelabuhan Melaka, Sungai Udang dan Tanjung Bruas
Refers to Port of Melaka, Sungai Udang and Tanjung Bruas

²Termasuk pelabuhan di Sibul, Bintangor, Sarikei dan Tanjung Manis
Includes port at Sibul, Bintangor, Sarikei and Tanjung Manis

Jadual 5.16: Kargo yang dikendalikan mengikut pelabuhan, Malaysia, 2018-2022

Table 5.16: Cargo throughput by port, Malaysia, 2018-2022

		Tan metrik (<i>freightweight</i>) '000 Tonnes				
Pelabuhan Port		2018	2019	2020	2021	2022
	Jumlah Total	437,222	465,245	426,206	426,301	421,351
Jumlah Total	Import <i>Imports</i>	214,285	223,453	203,503	207,882	205,921
	Eksport <i>Exports</i>	222,937	241,792	222,703	218,419	215,430
	Jumlah Total	42,479	43,947	41,499	37,072	41,956
Bintulu	Import <i>Imports</i>	5,485	4,370	4,245	4,083	4,783
	Eksport <i>Exports</i>	36,994	39,577	37,254	32,989	37,173
	Jumlah Total	31,012	31,144	30,036	30,331	30,769
Johor	Import <i>Imports</i>	18,001	17,478	16,578	16,594	17,275
	Eksport <i>Exports</i>	13,011	13,666	13,457	13,737	13,494
	Jumlah Total	5,110	8,119	6,956	5,447	4,529
Kemaman	Import <i>Imports</i>	2,474	3,968	3,438	2,524	2,019
	Eksport <i>Exports</i>	2,636	4,151	3,518	2,923	2,510
	Jumlah Total	220,700	243,108	221,421	235,539	226,143
Klang	Import <i>Imports</i>	116,282	126,303	115,993	122,987	119,443
	Eksport <i>Exports</i>	104,418	116,805	105,428	112,552	106,700
	Jumlah Total	17,998	26,099	27,266	22,859	22,366
Kuantan	Import <i>Imports</i>	8,641	12,842	12,835	11,011	11,130
	Eksport <i>Exports</i>	9,357	13,257	14,431	11,848	11,236
	Jumlah Total	9,008	9,053	8,197	8,892	9,869
Kuching	Import <i>Imports</i>	7,343	7,295	6,206	7,202	8,327
	Eksport <i>Exports</i>	1,665	1,758	1,991	1,690	1,543
	Jumlah Total	4,782	4,606	3,496	3,218	3,366
Miri	Import <i>Imports</i>	750	711	595	564	488
	Eksport <i>Exports</i>	4,032	3,895	2,901	2,654	2,877

Jadual 5.16: Kargo yang dikendalikan mengikut pelabuhan, Malaysia, 2018-2022 (samb.)

Table 5.16: Cargo throughput by ports, Malaysia, 2018-2022 (cont'd)

		Tan metrik (freightweight) '000 Tonnes				
Pelabuhan Port		2018	2019	2020	2021	2022
	Jumlah Total	22,606	18,350	15,846	11,624	11,555
Port Dickson	Import Imports	19,234	15,386	12,379	9,830	9,236
	Eksport Exports	3,372	2,964	3,467	1,794	2,320
	Jumlah Total	33,739	32,575	29,236	28,735	29,664
Pulau Pinang	Import Imports	18,658	17,654	15,876	15,932	16,161
	Eksport Exports	15,081	14,921	13,360	12,803	13,503
	Jumlah Total	1,325	1,289	1,360	1,412	1,493
Rajang	Import Imports	1,047	995	1,058	1,165	1,247
	Eksport Exports	278	294	302	247	246
	Jumlah Total	36,449	34,163	29,558	30,151	29,234
Sabah	Import Imports	12,892	12,526	10,674	11,904	12,724
	Eksport Exports	23,557	21,637	18,883	18,247	16,510
	Jumlah Total	713	986	819	584	487
Tanjung Bruas	Import Imports	675	928	786	508	402
	Eksport Exports	38	58	33	76	85
	Jumlah Total	8,573	8,772	8,697	8,080	7,809
Tanjung Pelepas	Import Imports	2,342	2,500	2,446	3,141	2,280
	Eksport Exports	6,231	6,272	6,251	4,939	5,529
	Jumlah Total	2,728	3,035	1,819	2,357	2,110
Teluk Ewa	Import Imports	451	499	394	437	406
	Eksport Exports	2,277	2,536	1,425	1,920	1,703

Nota: Tidak termasuk pindah kapal
Note: Excluding trans-shipment

Sumber: Kementerian Pengangkutan
Source: Ministry of Transport

Jadual 5.17: Penumpang yang dikendalikan di lapangan terbang, Malaysia, 2018-2022

Table 5.17: *Passengers handled at airports, Malaysia, 2018-2022*

Bilangan penumpang
Number of passengers

Penumpang yang dikendalikan <i>Passengers handled</i>	2018	2019	2020	2021	2022
Jumlah <i>Total</i>	102,624,327	109,532,710	26,857,647	11,109,303	54,935,773
Pelepasan <i>Departure</i>	51,451,712	55,088,643	13,553,488	5,748,382	27,407,649
Ketibaan <i>Arrival</i>	50,981,342	54,274,433	13,232,437	5,270,556	27,328,436
Transit <i>Transit</i>	191,273	169,634	71,722	90,365	199,688

Sumber: Kementerian Pengangkutan
Source: Ministry of Transport

Jadual 5.18: Kargo yang dikendalikan di lapangan terbang, Malaysia, 2018-2022

Table 5.18: *Cargo handled at airports, Malaysia, 2018-2022*

Tan metrik
Tonnes

Kargo yang dikendalikan <i>Cargo handled</i>	2018	2019	2020	2021	2022
Jumlah <i>Total</i>	991,794	958,475	804,441	1,051,190	1,091,115
Diangkut <i>Loaded</i>	465,714	447,369	383,387	498,551	506,705
Dihantar <i>Unloaded</i>	500,086	495,257	405,751	509,523	553,821
Transit <i>Transit</i>	15,994	15,849	15,303	43,116	30,589

Sumber: Kementerian Pengangkutan
Source: Ministry of Transport

Jadual 5.19: Bilangan kes dan kadar insiden Penyakit Bawaan Makanan dan Air, Malaysia, 2018-2022

Table 5.19: Number of cases and incidence rate of Food and Water Borne Diseases, Malaysia, 2018-2022

Tahun Year	Disentri Dysentery		Keracunan makanan Food poisoning		Kolera Cholera		Tifoid* Typhoid		Hepatitis A	
	Kes Cases	(KI) (IR)	Kes Cases	(KI) (IR)	Kes Cases	(KI) (IR)	Kes Cases	(KI) (IR)	Kes Cases	(KI) (IR)
2018	164	0.5	15,023	45.7	165	0.5	173	0.5	100	0.3
2019	219	0.7	16,583	50.9	81	0.3	180	0.6	94	0.3
2020	157	0.5	9,425	28.9	115	0.4	64	0.2	47	0.1
2021	198	0.6	6,007	18.4	64	0.2	102	0.3	24	0.1
2022	254	0.8	14,293	43.8	8	0.0	93	0.3	63	0.2

Nota: KI - Kadar insiden bagi setiap 100,000 penduduk

Note: IR - Incidence rate per 100,000 populations

Sumber: Kementerian Kesihatan Malaysia

Source: Ministry of Health Malaysia

* Mulai tahun 2019, penyakit Tifoid termasuk Paratyphi

* Starting from year 2019, Typhoid also include Paratyphi

Jadual 5.20: Kadar insiden keracunan makanan mengikut negeri, Malaysia, 2018-2022

Table 5.20: Incidence rate of food poisoning by state, Malaysia, 2018-2022

Bagi setiap 100,000 penduduk
Per 100,000 population

Negeri State	2018	2019	2020	2021	2022
Malaysia	45.7	50.9	28.9	18.4	43.8
Johor	39.0	40.4	29.2	13.6	34.2
Kedah	55.6	59.9	48.1	11.4	44.5
Kelantan	36.1	47.7	22.6	3.5	49.8
Melaka	95.8	61.4	39.7	26.1	79.5
Negeri Sembilan	62.8	63.6	113.3	47.7	55.8
Pahang	53.0	64.9	39.6	30.9	43.8
Perak	33.2	28.3	16.8	16.0	41.9
Perlis	21.6	37.3	123.0	15.7	71.4
Pulau Pinang	65.5	35.7	18.4	21.4	41.5
Sabah	41.9	71.2	15.9	11.5	59.1
Sarawak	34.6	49.5	13.9	6.0	20.0
Selangor	47.9	48.1	23.1	21.4	38.4
Terengganu	33.2	68.9	39.8	17.8	84.9
W.P. Kuala Lumpur ¹	36.7	39.8	23.8	42.6	27.2
W.P. Labuan	170.3	165.2	31.2	66.9	105.4

Nota: ¹Termasuk W.P. Putrajaya

Notes: Includes W.P. Putrajaya

Sumber: Kementerian Kesihatan Malaysia

Source: Ministry of Health Malaysia

Jadual 5.21: Kadar insiden kolera mengikut negeri, Malaysia, 2018-2022

Table 5.21: Incidence rate of cholera by state, Malaysia, 2018-2022

Bagi setiap 100,000 penduduk
Per 100,000 population

Negeri State	2018	2019	2020	2021	2022
Malaysia	0.5	0.3	0.4	0.2	0.0
Johor	-	-	-	-	-
Kedah	-	-	-	-	-
Kelantan	-	-	-	-	-
Melaka	-	-	-	-	-
Negeri Sembilan	-	-	-	-	-
Pahang	-	0.1	-	-	-
Perlis	-	-	-	-	-
Pulau Pinang	-	-	-	-	-
Perak	-	-	-	-	-
Sabah	4.2	2.0	2.9	1.6	0.2
Sarawak	-	-	-	-	-
Selangor	0.0	-	-	0.0	-
W.P. Kuala Lumpur ¹	0.1	0.1	0.1	-	0.1
W.P. Labuan	-	-	1.0	-	-

Sumber: Kementerian Kesihatan Malaysia
Source: Ministry of Health Malaysia

Jadual 5.22: Kadar insiden tifoid* mengikut negeri, Malaysia, 2018-2022

Table 5.22: Incidence rate of typhoid by state, Malaysia, 2018-2022

Bagi setiap 100,000 penduduk
Per 100,000 population

Negeri State	2018	2019	2020	2021	2022
Malaysia	0.5	0.6	0.2	0.3	0.3
Johor	0.5	0.2	0.1	-	0.1
Kedah	0.1	0.2	0.1	-	0.2
Kelantan	2.3	0.7	0.7	0.3	2.1
Melaka	-	0.1	-	-	0.4
Negeri Sembilan	-	0.2	-	-	0.1
Pahang	0.2	0.3	0.1	0.1	0.1
Perak	0.2	0.4	0.0	0.2	0.2
Perlis	-	-	0.4	-	-
Pulau Pinang	0.3	0.7	0.2	-	0.1
Sabah	1.5	2.4	0.6	0.9	0.5
Sarawak	0.2	0.3	0.0	0.6	0.3
Selangor	0.2	0.2	0.1	0.5	0.1
Terengganu	0.1	0.1	-	-	-
W.P. Kuala Lumpur ¹	0.8	0.5	0.2	0.2	0.2
W.P. Labuan	-	-	-	1.0	-

Nota: ¹Termasuk W.P. Putrajaya

Notes: Includes W.P. Putrajaya

Sumber: Kementerian Kesihatan Malaysia
Source: Ministry of Health Malaysia

* Mulai tahun 2019, penyakit Tifoid termasuk Paratyphi
Starting from year 2019, Typhoid also include Paratyphi

Nilai 0.0 merujuk kepada kurang daripada setengah unit terkecil yang ditunjukkan
0.0 value refers to less than half the smallest unit shown

Jadual 5.23: Bilangan kes demam denggi mengikut negeri, Malaysia, 2018-2022

Table 5.23: Number of dengue fever cases by state, Malaysia, 2018-2022

Negeri State	2018	2019	2020	2021	2022
Malaysia	80,210	129,578	89,960	26,301	65,987
Johor	5,863	10,839	11,578	1,770	4,214
Kedah	2,181	1,578	777	641	1,458
Kelantan	1,944	5,992	3,881	223	1,223
Melaka	718	2,148	2,832	611	662
Negeri Sembilan	1,856	2,291	2,879	647	2,050
Pahang	986	2,863	3,209	425	974
Perak	2,721	3,219	2,658	554	1,381
Perlis	369	287	80	20	160
Pulau Pinang	6,052	4,107	1,039	406	1,618
Sabah	3,386	5,451	4,057	1,758	7,092
Sarawak	821	2,634	1,511	425	666
Selangor	45,205	72,331	44,523	15,712	37,502
Terengganu	546	538	404	49	245
W.P. Kuala Lumpur ¹	7,460	15,264	10,525	3,055	6,714
W.P. Labuan	102	36	7	5	28

Sumber: Kementerian Kesihatan Malaysia
Source: Ministry of Health Malaysia

Jadual 5.24: Bilangan kes demam denggi berdarah mengikut negeri, Malaysia, 2018-2022

Table 5.24: Number of dengue haemorrhagic fever cases by state, Malaysia, 2018-2022

Negeri State	2018	2019	2020	2021	2022
Malaysia	405	523	344	64	115
Johor	22	34	44	5	10
Kedah	9	9	3	3	3
Kelantan	6	11	8	-	4
Melaka	4	8	11	-	3
Negeri Sembilan	8	14	12	2	3
Pahang	4	10	11	3	2
Perak	15	7	7	3	3
Perlis	-	1	-	1	1
Pulau Pinang	19	12	4	-	3
Sabah	37	27	21	5	18
Sarawak	2	14	5	1	5
Selangor	144	212	112	29	40
Terengganu	4	4	-	-	1
W.P. Kuala Lumpur ¹	131	160	106	12	19
W.P. Labuan	-	-	-	-	-

Nota: ¹Termasuk W.P. Putrajaya
Notes: Includes W.P. Putrajaya

Sumber: Kementerian Kesihatan Malaysia
Source: Ministry of Health Malaysia

Jadual 5.25: Bilangan kes malaria mengikut negeri, Malaysia, 2018-2022

Table 5.25: Number of malaria cases by state, Malaysia, 2018-2022

Negeri State	2018	2019	2020	2021	2022
Malaysia	4,630	3,941	2,839	3,688	2,807
Johor	64	28	28	15	52
Kedah	34	12	13	8	21
Kelantan	135	119	111	124	163
Melaka	7	7	-	-	2
Negeri Sembilan	41	37	12	14	35
Pahang	123	128	74	104	82
Perak	184	93	99	94	84
Perlis	1	-	-	-	2
Pulau Pinang	6	6	2	2	7
Sabah	2,316	2,047	1,537	2,204	1,516
Sarawak	1,554	1,315	862	1,057	738
Selangor	102	113	68	29	50
Terengganu	45	25	28	36	32
W.P. Kuala Lumpur ¹	18	11	5	1	23
W.P. Labuan	-	-	-	-	-

Nota: ¹Termasuk W.P. Putrajaya
Notes: Includes W.P. Putrajaya

Sumber: Kementerian Kesihatan Malaysia
Source: Ministry of Health Malaysia

Jadual 5.26: Bilangan kematian mengikut jenis penyakit, Malaysia, 2018-2022

Table 5.26: Number of deaths by type of diseases, Malaysia, 2018-2022

Tahun Year	Demam denggi Dengue fever	Demam denggi berdarah Dengue haemorrhagic fever	Kolera Cholera	Malaria	Tifoid* Typhoid
2018	-	145	1	12	5
2019	-	182	2	6	7
2020	-	145	1	5	-
2021	-	20	-	13	1
2022	-	56	-	11	2

Nota: * Mulai tahun 2019, penyakit Tifoid termasuk Paratyphi
Notes: Starting from year 2019, Typhoid also include Paratyphi

Sumber: Kementerian Kesihatan Malaysia
Source: Ministry of Health Malaysia

KOMPONEN COMPONENT 6

**PENGLIBATAN,
PENGURUSAN DAN
PERLINDUNGAN ALAM
SEKITAR**

***ENVIRONMENTAL
PROTECTION, MANAGEMENT
AND ENGAGEMENT***

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Jadual 6.1: Perbelanjaan perlindungan alam sekitar mengikut sektor, Malaysia, 2017-2021

Table 6.1: Environmental protection expenditure by sector, Malaysia, 2017-2021

RM '000

Sektor Sector	2017	2018	2019	2020	2021
Jumlah Total	2,592,648	2,695,687	2,885,259	2,972,801	3,115,940
Pertanian Agriculture	45,473	45,518	32,671	34,917	47,098
Perlombongan & pengkuarian Mining & quarrying	313,213	305,462	96,310	100,421	110,847
Pembuatan Manufacturing	1,734,920	1,820,762	2,181,290	2,382,378	2,486,838
Pembinaan Construction	223,992	230,037	161,183	88,366	84,717
Perkhidmatan Services	275,050	293,907	413,806	366,720	386,440
Bekalan elektrik, gas, wap & pendingin udara Electricity, gas, steam & air conditioning supply	41,738	18,287	24,684	18,682	21,138
Bekalan air; pembetulan, pengurusan sisa & aktiviti pemulihan Water supply; sewerage, waste management & remediation activities	81,030	157,620	184,240	195,111	171,628
Pengangkutan & penyimpanan Transportation & storage	77,594	88,816	117,238	88,525	107,631
Lain-lain perkhidmatan Others services	74,688	29,184	87,645	64,399	86,043

Nota: Berdasarkan kepada Survei Ekonomi Tahunan 2022 - Perbelanjaan Perlindungan Alam Sekitar

Notes: Based on the Annual Economic Survey 2022 - Environmental Protection Expenditure

Jadual 6.2: Perbelanjaan modal perlindungan alam sekitar mengikut sektor, Malaysia, 2017-2021

Table 6.2: Capital expenditure on environmental protection by sector, Malaysia, 2017-2021

RM '000

Sektor Sector	2017	2018	2019	2020	2021
Jumlah Total	717,275	726,945	858,134	761,421	713,350
Pertanian Agriculture	5,122	7,790	3,794	11,428	12,892
Perlombongan & pengkuarian Mining & quarrying	28,814	31,023	3,554	10,902	13,351
Pembuatan Manufacturing	539,690	551,430	638,683	610,804	527,997
Pembinaan Construction	98,605	87,621	30,301	24,374	21,058
Perkhidmatan Services	45,045	49,080	181,802	103,913	138,052
Bekalan elektrik, gas, wap & pendingin udara Electricity, gas, steam & air conditioning supply	1,770	1,597	5,672	4,278	7,627
Bekalan air; pembetulan, pengurusan sisa & aktiviti pemulihan Water supply; sewerage, waste management & remediation activities	6,229	30,473	62,966	27,672	36,860
Pengangkutan & penyimpanan Transportation & storage	31,726	15,899	67,090	50,718	65,882
Lain-lain perkhidmatan Others services	5,320	1,111	46,075	21,245	27,683

Nota: Berdasarkan kepada Survei Ekonomi Tahunan 2022 - Perbelanjaan Perlindungan Alam Sekitar

Notes: Based on the Annual Economic Survey 2022 - Environmental Protection Expenditure

Jadual 6.3: Perbelanjaan operasi perlindungan alam sekitar mengikut sektor, Malaysia, 2017-2021

Table 6.3: Operating expenditure on environmental protection by sector, Malaysia, 2017-2021

RM '000

Sektor Sector	2017	2018	2019	2020	2021
Jumlah Total	1,875,373	1,968,742	2,027,125	2,211,380	2,402,589
Pertanian, perhutanan & perikanan <i>Agriculture, forestry & fishing</i>	40,351	37,729	28,876	23,489	34,206
Perlombongan & pengkuarian <i>Mining & quarrying</i>	284,399	274,439	92,756	89,519	97,497
Pembuatan <i>Manufacturing</i>	1,195,230	1,269,332	1,542,607	1,771,574	1,958,840
Pembinaan <i>Construction</i>	125,388	142,416	130,882	63,992	63,658
Perkhidmatan <i>Services</i>	230,005	244,827	232,004	262,807	248,388
Bekalan elektrik, gas, wap & pendingin udara <i>Electricity, gas, steam & air conditioning supply</i>	39,968	16,690	19,012	14,407	13,512
Bekalan air; pembetungan, pengurusan sisa & aktiviti pemulihan <i>Water supply; sewerage, waste management & remediation activities</i>	74,801	127,147	121,274	167,438	134,767
Pengangkutan & penyimpanan <i>Transportation & storage</i>	45,867	72,917	50,148	37,807	41,749
Lain-lain perkhidmatan <i>Others services</i>	69,369	28,073	41,570	43,154	58,359

Nota: Berdasarkan kepada Survei Ekonomi Tahunan 2022 - Perbelanjaan Perlindungan Alam Sekitar

Notes: Based on the Annual Economic Survey 2022 - Environmental Protection Expenditure

Jadual 6.4: Perbelanjaan perlindungan alam sekitar mengikut negeri dan jenis perbelanjaan, Malaysia, 2017-2021
Table 6.4: Environmental protection expenditure by state and type of expenditure, Malaysia, 2017-2021

RM '000							
Negeri States	Tahun Year	Jumlah Total	Pengurusan pencemaran Pollution management	Perlindungan hidupan liar & habitat Protection of wildlife & habitats	Penilaian dan caj alam sekitar Environmental assessment and charges	Pengurusan sisa Waste management	Perbelanjaan lain untuk perlindungan alam sekitar Other environmental protection expenditure
Malaysia	2017	2,592,648	1,659,677	9,750	62,465	789,012	71,744
	2018	2,695,687	1,834,973	5,621	91,594	726,120	37,380
	2019	2,885,259	2,021,209	6,392	64,935	751,746	40,977
	2020	2,972,801	2,103,668	18,005	67,187	766,765	17,176
	2021	3,115,940	2,210,166	12,189	70,599	803,705	19,281
Johor	2017	428,690	274,164	475	13,051	125,122	15,878
	2018	326,505	228,340	448	7,720	83,744	6,252
	2019	678,474	493,438	258	6,979	160,943	16,856
	2020	808,783	636,030	3,011	7,862	159,478	2,402
	2021	862,398	660,433	4,289	9,754	184,388	3,535
Kedah	2017	105,247	77,200	249	1,343	25,681	774
	2018	94,199	72,394	10	1,174	20,276	346
	2019	113,265	84,293	-	1,402	27,003	567
	2020	95,790	61,017	164	857	33,558	194
	2021	138,481	90,088	171	1,567	36,049	606
Kelantan	2017	31,434	19,492	361	1,620	9,057	903
	2018	14,625	10,088	104	489	3,867	78
	2019	10,650	7,518	15	505	2,568	43
	2020	28,912	12,400	6,310	1,711	8,400	91
	2021	25,186	17,233	806	1,234	5,800	112
Melaka	2017	100,608	72,835	23	1,281	24,219	2,250
	2018	78,231	49,125	20	613	27,781	691
	2019	83,447	51,878	3	1,016	28,575	1,975
	2020	106,161	85,347	3	887	19,661	264
	2021	95,676	78,090	-	922	16,335	328
Negeri Sembilan	2017	78,726	41,131	11	2,062	34,578	943
	2018	292,266	257,383	91	1,577	32,641	574
	2019	91,805	59,889	45	1,595	28,806	1,470
	2020	84,634	57,933	551	3,290	22,066	794
	2021	97,961	67,819	569	4,536	24,222	815
Pahang	2017	79,197	43,261	1,023	1,778	30,809	1,325
	2018	200,640	117,970	252	2,601	79,293	524
	2019	155,698	138,099	136	2,608	14,296	560
	2020	170,315	155,927	77	1,463	12,148	700
	2021	205,747	182,567	22	1,603	20,844	711

Jadual 6.4: Perbelanjaan perlindungan alam sekitar mengikut negeri dan jenis perbelanjaan, Malaysia, 2017-2021 (samb.)

Table 6.4: Environmental protection expenditure by state and type of expenditure, Malaysia, 2017-2021 (cont'd.)

RM '000

Negeri States	Tahun Year	Jumlah Total	Pengurusan pencemaran <i>Pollution management</i>	Perlindungan hidupan liar & habitat <i>Protection of wildlife & habitats</i>	Penilaian dan caj alam sekitar <i>Environmental assessment and charges</i>	Pengurusan sisa Waste <i>Waste management</i>	Perbelanjaan lain untuk perlindungan alam sekitar <i>Other environmental protection expenditure</i>
Perak	2017	74,682	45,697	0	1,962	25,181	1,842
	2018	71,625	52,035	14	1,511	17,406	659
	2019	93,303	69,561	-	2,127	20,529	1,086
	2020	122,630	88,600	877	3,451	28,551	1,150
	2021	121,367	85,945	455	2,428	31,288	1,251
Perlis	2017	9,009	7,406	-	44	1,499	60
	2018	5,022	2,637	-	92	1,457	835
	2019	15,392	14,340	-	24	997	30
	2020	6,258	4,916	-	34	1,304	4
	2021	7,943	5,894	-	20	2,025	4
Pulau Pinang	2017	282,461	107,250	1,141	3,898	165,876	4,296
	2018	219,700	99,280	0	3,109	115,968	1,343
	2019	177,632	115,353	-	3,781	57,054	1,443
	2020	211,486	113,914	10	3,850	91,971	1,740
	2021	198,977	114,391	12	4,221	78,889	1,465
Sabah	2017	90,282	54,852	1,186	4,696	29,569	2,980
	2018	100,026	67,330	2,709	6,824	22,013	1,150
	2019	249,863	215,962	2,228	10,207	19,689	1,777
	2020	109,520	74,430	4,173	7,969	19,961	2,987
	2021	130,864	95,273	3,244	7,781	21,818	2,748
Sarawak	2017	248,621	165,970	2,678	13,613	60,945	5,415
	2018	100,026	67,330	2,709	6,824	22,013	1,150
	2019	251,732	150,348	1,471	5,551	90,865	3,497
	2020	235,613	138,970	815	9,068	85,902	858
	2021	239,412	137,636	543	14,045	84,967	2,222
Selangor	2017	489,284	285,558	343	7,975	184,715	10,692
	2018	500,592	328,075	-	22,477	136,923	13,118
	2019	543,455	345,275	-	18,968	174,370	4,843
	2020	530,436	322,866	18	12,244	192,452	2,858
	2021	557,525	363,703	23	7,196	184,977	1,626
Terengganu	2017	308,052	268,851	1,823	3,098	26,977	7,303
	2018	247,830	226,276	562	790	19,475	726
	2019	126,597	101,876	30	1,926	21,331	1,435
	2020	236,448	211,445	52	2,519	22,070	363
	2021	220,152	184,519	55	2,129	32,338	1,111

Jadual 6.4: Perbelanjaan perlindungan alam sekitar mengikut negeri dan jenis perbelanjaan, Malaysia, 2017-2021 (samb.)

Table 6.4: *Environmental protection expenditure by state and type of expenditure, Malaysia, 2017-2021 (cont'd.)*

RM '000

Negeri States	Tahun Year	Jumlah Total	Pengurusan pencemaran <i>Pollution management</i>	Perlindungan hidupan liar & habitat <i>Protection of wildlife & habitats</i>	Penilaian dan caj alam sekitar <i>Environmental assessment and charges</i>	Pengurusan sisa Waste <i>Waste management</i>	Perbelanjaan lain untuk perlindungan alam sekitar <i>Other environmental protection expenditure</i>
W.P. Kuala Lumpur	2017	260,882	195,299	366	5,476	43,155	16,586
	2018	325,150	191,305	676	38,749	85,935	8,485
	2019	292,570	173,051	2,206	8,193	103,730	5,389
	2020	223,988	139,231	1,945	11,914	68,125	2,772
	2021	221,029	125,313	1,999	13,112	77,863	2,742
W.P. Labuan	2017	2,152	561	-	141	1,439	11
	2018	6,517	768	-	54	5,681	15
	2019	1,144	278	-	39	822	6
	2020	1,366	423	-	30	912	-
	2021	2,586	945	-	-	1,641	-
W.P. Putrajaya	2017	4,321	150	71	425	3,189	487
	2018	2,120	303	-	48	1,755	14
	2019	232	50	-	13	169	-
	2020	462	220	-	38	205	-
	2021	635	318	-	50	262	5

Nota: Berdasarkan kepada Survei Ekonomi Tahunan 2022 - Perbelanjaan Perlindungan Alam Sekitar

Notes: Based on the Annual Economic Survey 2022 - Environmental Protection Expenditure

Jadual 6.5: Perbelanjaan modal perlindungan alam sekitar mengikut negeri dan jenis perbelanjaan, Malaysia, 2017-2021

Table 6.5: Capital expenditure on environmental protection by state and type of expenditure, Malaysia, 2017-2021

							RM '000
Negeri States	Tahun Year	Jumlah Total	Pengurusan pencemaran Pollution management	Perlindungan hidupan liar & habitat Protection of wildlife & habitats	Penilaian dan caj alam sekitar Environmental assessment and charges	Pengurusan sisa Waste management	Perbelanjaan lain untuk perlindungan alam sekitar Other environmental protection expenditure
Malaysia	2017	717,275	628,242	753	9,381	67,104	11,794
	2018	726,945	677,312	770	8,417	29,919	10,528
	2019	858,134	775,197	900	13,143	56,130	12,764
	2020	761,421	716,239	9,906	14,850	18,702	1,724
	2021	713,350	615,428	4,007	16,488	75,886	1,542
Johor	2017	130,713	112,015	39	3,490	9,675	5,495
	2018	74,292	70,035	407	2,238	1,378	235
	2019	138,470	123,100	92	1,435	2,158	11,683
	2020	179,231	168,219	2,752	1,350	6,782	128
	2021	195,199	158,045	2,710	3,359	30,916	168
Kedah	2017	33,020	31,246	66	96	1,612	-
	2018	12,121	11,639	-	66	401	15
	2019	31,473	30,118	-	3	1,352	-
	2020	18,371	16,366	63	56	1,884	1
	2021	33,555	28,368	72	93	4,981	40
Kelantan	2017	2,788	2,331	10	24	424	-
	2018	1,072	876	29	119	-	51
	2019	3,517	3,462	-	50	5	-
	2020	8,342	2,030	6,237	13	14	48
	2021	4,270	3,410	276	255	291	38
Melaka	2017	40,917	37,471	-	99	3,348	-
	2018	22,447	21,222	-	7	1,077	141
	2019	16,221	15,574	-	47	462	137
	2020	48,840	46,044	-	72	2,684	40
	2021	36,837	34,175	-	423	2,187	52
Negeri Sembilan	2017	17,235	10,239	1	66	6,929	-
	2018	222,506	221,448	44	32	969	13
	2019	13,437	12,513	-	41	821	62
	2020	10,123	8,956	267	157	578	165
	2021	18,591	15,773	276	144	2,099	300
Pahang	2017	11,343	8,473	287	281	2,286	17
	2018	23,706	22,537	206	952	12	-
	2019	44,571	43,156	64	777	535	39
	2020	23,885	22,575	33	335	747	195
	2021	12,003	10,130	11	139	1,472	251

Jadual 6.5: Perbelanjaan modal perlindungan alam sekitar mengikut negeri dan jenis perbelanjaan, Malaysia, 2017-2021 (samb.)

Table 6.5: Capital expenditure on environmental protection by state and type of expenditure, Malaysia, 2017-2021 (cont'd.)

RM '000

Negeri States	Tahun Year	Jumlah Total	Pengurusan pencemaran Pollution management	Perlindungan hidupan liar & habitat Protection of wildlife & habitats	Penilaian dan caj alam sekitar Environmental assessment and charges	Pengurusan sisa Waste management	Perbelanjaan lain untuk perlindungan alam sekitar Other environmental protection expenditure
Perak	2017	11,138	9,473	-	533	1,119	12
	2018	17,632	17,289	-	66	240	37
	2019	29,087	37,019	-	383	1,664	21
	2020	32,821	30,993	201	226	1,279	122
	2021	24,073	22,412	182	456	945	77
Perlis	2017	4,233	3,600	-	7	626	-
	2018	1	-	-	-	-	1
	2019	11,710	11,710	-	-	-	-
	2020	820	815	-	-	5	-
	2021	869	629	-	20	220	-
Pulau Pinang	2017	50,204	43,778	4	334	3,565	2,523
	2018	35,828	35,336	0	108	252	132
	2019	30,367	29,620	-	94	608	44
	2020	44,019	42,681	-	745	568	25
	2021	30,920	29,587	-	969	334	29
Sabah	2017	16,048	12,879	79	129	2,928	32
	2018	40,613	38,692	62	1,434	395	30
	2019	186,456	182,704	302	2,530	860	59
	2020	29,379	26,863	104	1,105	1,283	24
	2021	40,830	35,747	204	1,168	3,444	267
Sarawak	2017	116,479	107,204	-	621	8,654	-
	2018	46,254	44,894	14	529	306	512
	2019	72,579	71,224	25	762	446	122
	2020	77,870	71,420	13	5,435	879	122
	2021	79,784	67,489	8	3,765	8,521	1
Selangor	2017	113,855	94,957	196	1,517	17,085	100
	2018	98,223	82,697	-	1,708	4,547	9,271
	2019	102,286	90,528	-	2,093	9,076	589
	2020	79,742	77,237	-	570	1,104	830
	2021	84,155	73,739	-	741	9,491	183
Terengganu	2017	54,142	51,090	1	976	2,075	-
	2018	7,855	7,713	7	-	44	90
	2019	6,701	6,410	-	248	44	-
	2020	101,039	100,258	-	109	664	8
	2021	52,460	52,321	-	53	60	26

Jadual 6.5: Perbelanjaan modal perlindungan alam sekitar mengikut negeri dan jenis perbelanjaan, Malaysia, 2017-2021 (samb.)

Table 6.5: Capital expenditure on environmental protection by state and type of expenditure, Malaysia, 2017-2021 (cont'd.)

RM '000							
Negeri States	Tahun Year	Jumlah Total	Pengurusan pencemaran Pollution management	Perlindungan hidupan liar & habitat Protection of wildlife & habitats	Penilaian dan caj alam sekitar Environmental assessment and charges	Pengurusan sisa Waste management	Perbelanjaan lain untuk perlindungan alam sekitar Other environmental protection expenditure
W.P. Kuala Lumpur	2017	113,140	103,485	-	875	5,166	3,617
	2018	124,232	102,771	-	1,160	20,299	2
	2019	171,214	128,059	416	4,680	38,052	7
	2020	106,827	101,669	235	4,676	229	18
	2021	98,644	83,364	268	4,896	10,009	107
W.P. Labuan	2017	2	2	-	-	-	-
	2018	163	163	-	-	-	-
	2019	-	-	-	-	-	-
	2020	113	113	-	-	-	-
	2021	1,083	187	-	-	896	-
W.P. Putrajaya	2017	2,020	-	71	335	1,614	-
	2018	-	-	-	-	-	-
	2019	46	-	-	-	46	-
	2020	-	-	-	-	-	-
	2021	78	50	-	7	18	3

Nota: Berdasarkan kepada Survei Ekonomi Tahunan 2022 - Perbelanjaan Perlindungan Alam Sekitar

Notes: Based on the Annual Economic Survey 2022 - Environmental Protection Expenditure

Jadual 6.6: Perbelanjaan operasi perlindungan alam sekitar mengikut negeri dan jenis perbelanjaan, Malaysia, 2017-2021

Table 6.6: Operating expenditure on environmental protection by state and type of expenditure, Malaysia, 2017-2021

Negeri States	Tahun Year	Jumlah Total	Pengurusan pencemaran <i>Pollution management</i>	Perlindungan hidupan liar & habitat <i>Protection of wildlife & habitats</i>	Penilaian dan caj alam sekitar <i>Environmental assessment and charges</i>	Pengurusan sisa Waste <i>Waste management</i>	Perbelanjaan lain untuk perlindungan alam sekitar <i>Other environmental protection expenditure</i>
Malaysia	2017	1,875,373	1,031,435	8,997	53,083	721,907	59,950
	2018	1,968,742	1,157,662	4,851	83,177	696,201	26,852
	2019	2,027,125	1,246,012	5,492	51,792	695,616	28,213
	2020	2,221,380	1,387,429	8,099	52,337	748,063	15,452
	2021	2,402,589	1,594,739	8,182	54,111	727,819	17,739
Johor	2017	297,977	162,149	435	9,561	115,448	10,384
	2018	252,212	158,305	42	5,482	82,366	6,017
	2019	540,004	370,338	166	5,543	158,785	5,175
	2020	629,551	467,811	259	6,512	152,696	2,274
	2021	667,199	502,388	1,579	6,394	153,471	3,367
Kedah	2017	72,227	45,954	183	1,248	24,070	774
	2018	82,079	60,755	10	1,108	19,875	331
	2019	81,792	54,175	-	1,399	25,650	567
	2020	77,419	44,651	100	801	31,674	193
	2021	94,926	61,720	98	1,475	31,068	565
Kelantan	2017	28,646	17,161	352	1,596	8,633	903
	2018	13,553	9,212	74	373	3,867	27
	2019	7,133	4,056	15	455	2,563	43
	2020	20,571	10,370	73	1,698	8,387	43
	2021	20,916	13,823	530	980	5,509	74
Melaka	2017	59,690	35,365	23	1,182	20,871	2,250
	2018	55,783	27,903	20	605	26,705	550
	2019	67,226	36,303	3	969	28,113	1,838
	2020	57,322	39,302	3	815	16,977	224
	2021	58,839	43,915	-	499	14,148	277
Negeri Sembilan	2017	61,491	30,892	11	1,996	27,650	943
	2018	69,760	35,935	47	1,545	31,672	561
	2019	78,368	47,376	45	1,555	27,985	1,408
	2020	74,511	48,977	284	3,133	21,487	629
	2021	79,369	52,045	293	4,392	22,124	515
Pahang	2017	66,853	34,788	736	1,498	28,523	1,308
	2018	176,934	95,433	46	1,649	79,281	524
	2019	111,127	94,943	72	1,831	13,760	520
	2020	146,430	133,351	44	1,128	11,401	505
	2021	193,744	172,437	12	1,464	19,372	460

Jadual 6.6: Perbelanjaan operasi perlindungan alam sekitar mengikut negeri dan jenis perbelanjaan, Malaysia, 2017-2021 (samb.)

Table 6.6: Operating expenditure on environmental protection by state and type of expenditure, Malaysia, 2017-2021 (cont'd)

Negeri States	Tahun Year	Jumlah Total	Pengurusan pencemaran Pollution management	Perlindungan hidupan liar & habitat Protection of wildlife & habitats	Penilaian dan caj alam sekitar Environmental assessment and charges	Pengurusan sisa Waste management	Perbelanjaan lain untuk perlindungan alam sekitar Other environmental protection expenditure
Perak	2017	63,544	36,224	0	1,429	24,061	1,830
	2018	53,933	34,746	14	1,445	17,166	622
	2019	64,216	42,542	-	1,744	18,864	1,065
	2020	89,809	57,607	676	3,225	27,272	1,028
	2021	97,295	63,532	273	1,973	30,343	1,174
Perlis	2017	4,776	3,806	-	37	873	60
	2018	5,021	2,637	-	92	1,457	835
	2019	3,682	2,630	-	24	997	30
	2020	5,438	4,101	-	34	1,299	4
	2021	7,074	5,265	-	-	1,805	4
Pulau Pinang	2017	232,257	63,472	1,138	3,563	162,311	1,773
	2018	183,872	63,944	0	3,001	115,716	1,211
	2019	147,266	85,733	-	3,687	56,446	1,399
	2020	167,466	71,233	10	3,105	91,403	1,716
	2021	168,057	84,804	12	3,251	78,554	1,436
Sabah	2017	74,234	41,973	1,106	4,566	23,640	2,948
	2018	59,413	28,638	2,647	5,390	21,618	1,120
	2019	63,407	33,258	1,926	7,677	18,829	1,718
	2020	80,141	47,567	4,069	6,864	18,678	2,963
	2021	90,034	59,526	3,041	6,612	18,374	2,481
Sarawak	2017	132,143	58,766	2,678	12,992	52,292	5,415
	2018	164,385	86,770	720	3,236	71,600	2,060
	2019	179,153	19,123	1,447	4,789	90,419	3,375
	2020	157,743	67,549	802	3,633	85,023	736
	2021	159,628	70,147	535	10,280	76,445	2,222
Selangor	2017	375,430	190,602	148	6,458	167,630	10,592
	2018	402,370	245,378	-	20,769	132,375	3,847
	2019	441,169	254,748	-	16,875	165,294	1,253
	2020	450,695	245,628	18	11,674	191,347	2,028
	2021	473,370	289,964	23	6,455	175,486	1,442
Terengganu	2017	253,910	217,761	1,822	2,122	24,902	7,303
	2018	239,975	218,563	555	790	19,431	636
	2019	119,896	95,466	30	1,678	21,288	1,435
	2020	135,409	111,187	52	2,409	21,405	355
	2021	167,692	132,198	55	2,077	32,277	1,085

Jadual 6.6: Perbelanjaan operasi perlindungan alam sekitar mengikut negeri dan jenis perbelanjaan, Malaysia, 2017-2021 (samb.)

Table 6.6: Operating expenditure on environmental protection by state and type of expenditure, Malaysia, 2017-2021 (cont'd)

							RM '000
Negeri States	Tahun Year	Jumlah Total	Pengurusan pencemaran Pollution management	Perlindungan hidupan liar & habitat Protection of wildlife & habitats	Penilaian dan caj alam sekitar Environmental assessment and charges	Pengurusan sisa Waste management	Perbelanjaan lain untuk perlindungan alam sekitar Other environmental protection expenditure
W.P. Kuala Lumpur	2017	147,742	91,813	366	4,604	37,990	12,970
	2018	200,918	88,533	676	37,589	65,637	8,483
	2019	121,356	44,992	1,790	3,514	65,678	5,382
	2020	117,161	37,562	1,710	7,238	67,896	2,755
	2021	122,386	41,949	1,731	8,216	67,855	2,635
W.P. Labuan	2017	2,150	559	-	141	1,439	11
	2018	6,354	605	-	54	5,681	15
	2019	1,144	278	-	39	822	6
	2020	1,235	310	-	30	912	-
	2021	1,503	759	-	-	745	-
W.P. Putrajaya	2017	2,301	150	-	90	1,575	487
	2018	2,120	303	-	48	1,755	14
	2019	186	50	-	13	123	-
	2020	462	220	-	38	205	-
	2021	558	268	-	43	244	2

Nota: Berdasarkan kepada Survei Ekonomi Tahunan 2022 - Perbelanjaan Perlindungan Alam Sekitar

Notes: Based on the Annual Economic Survey 2022 - Environmental Protection Expenditure

Jadual 6.7: Peruntukan dan perbelanjaan pembangunan hutan, Malaysia, 2017-2021

Table 6.7: Forest development allocation and expenditure, Malaysia, 2017-2021

RM juta
RM million

Negeri State	Bidang Kuasa Jurisdiction	Perkara Items	2017	2018	2019	2020	2021
Malaysia	Jumlah Total	Peruntukan Allocation	147.75	114.36	176.08	187.41	224.61
		Perbelanjaan Expenditure	140.66	102.51	139.29	147.00	181.18
	Negeri State	Peruntukan Allocation	69.31	65.23	116.11	108.27	135.25
		Perbelanjaan Expenditure	63.26	54.14	82.01	77.13	93.2
	Persekutuan Federal	Peruntukan Allocation	78.41	49.12	60.07	79.14	89.36
		Perbelanjaan Expenditure	77.39	48.38	57.18	69.88	87.99
Semenanjung Malaysia Peninsular Malaysia	Jumlah Total	Peruntukan Allocation	66.52	57.84	105.92	129.08	149.03
		Perbelanjaan Expenditure	62.36	48.38	84.01	97.43	114.57
	Negeri State	Peruntukan Allocation	32.44	31.01	79.36	84.64	104.52
		Perbelanjaan Expenditure	28.78	21.71	58.41	56.49	70.85
	Persekutuan Federal	Peruntukan Allocation	34.08	26.83	26.56	44.44	44.51
		Perbelanjaan Expenditure	33.57	26.68	25.60	40.95	43.72
Sabah	Jumlah Total	Peruntukan Allocation	44.53	35.91	33.26	45.33	53.99
		Perbelanjaan Expenditure	43.90	35.79	32.68	42.87	53.75
	Negeri State	Peruntukan Allocation	23.27	22.92	17.95	20.53	18.11
		Perbelanjaan Expenditure	22.88	22.85	17.40	19.34	18.07
	Persekutuan Federal	Peruntukan Allocation	21.23	12.99	15.31	24.80	35.88
		Perbelanjaan Expenditure	21.02	12.94	15.28	23.53	35.69
Sarawak	Jumlah Total	Peruntukan Allocation	36.70	20.61	36.90	13.00	21.59
		Perbelanjaan Expenditure	34.40	18.34	22.60	6.70	12.86
	Negeri State	Peruntukan Allocation	13.60	11.30	18.80	3.10	12.62
		Perbelanjaan Expenditure	11.60	9.58	6.20	1.30	4.28
	Persekutuan Federal	Peruntukan Allocation	23.10	9.30	18.20	9.90	8.97
		Perbelanjaan Expenditure	22.80	8.76	16.30	5.40	8.58

Sumber: Kementerian Sumber Asli, Alam Sekitar dan Perubahan Iklim
Source: Ministry of Natural Resources, Environment and Climate Change

Jadual 6.8: Pembangunan sumber hutan dan pemeliharaan/ pemuliharaan alam sekitar, Semenanjung Malaysia, 2017-2021

Table 6.8: Forest resource development and environmental conservation/ rehabilitation, Peninsular Malaysia, 2017-2021

	Hektar Hectares				
Sumber Resource	2017	2018	2019	2020	2021
Silvikultur dan pemuliharaan hutan Silviculture and forest rehabilitation					
Inventori selepas tebangan Post felling inventory	14,980	14,464	12,233	13,781	14,700
Rawatan memotong akar/Pepanjat Cutting of lianas (CL)/Treatment	2,709	800	-	-	-
Tanaman mengaya ¹ Enrichment planting	507	346	529	576	914
Kutipan biji benih ² (kg) Seeds collections	839	836	557	-	769
Perhutanan masyarakat Community forestry					
Hutan lipur dan hutan taman negeri (bil.) Amenity forest and state park forest (no.)	124	126	128	132	133
Hutan bandar (pokok) Urban forestry (trees)	-	-	-	-	-
Hutan pelajaran (bil.) Education forest (no.)	38	42	43	43	43
Tanaman tumbuhan ubatan Planting of medicinal plants	-	-	-	-	-
Pemeliharaan dan pemuliharaan alam sekitar Environmental conservation and rehabilitation					
Tanaman persisiran pantai ³ (pokok) Coastal planting (trees)	137,818	116,541	54,692	70,786	234,607

Sumber: Jabatan Perhutanan Semenanjung Malaysia
Source: Forestry Department Peninsular Malaysia

Nota:

Notes:

¹Termasuk kawasan dirian hutan miskin, kawasan terosot dan lapang (bekas matau, bekas tapak kongsi, lorong penarik dan kawasan tanaman pindah)

Includes poor forest stand, degraded and open areas (former log landing areas, former logging camp sites, skid trails and shifting cultivation areas)

²Maklumat kutipan biji benih hanya meliputi Tapak Semaian Lentang

Seeds collection data from Lentang Nursery

³Tanaman pokok bakau dan spesis yang sesuai di persisiran pantai negara

Planting of mangroves and other suitable tree species along the national coastline

Jadual 6.9: Pembangunan sumber hutan, Sabah, 2017-2021

Table 6.9: Forest resource development, Sabah, 2017-2021

Sumber Source	2017	2018	2019	2020	Hektar Hectares 2021
Tanaman mengaya Enrichment planting	60,297	61,296	63,132	63,773	65,509
Ladang hutan Forest plantation	278,565	288,710	290,762	274,762	280,756
Tanaman bakau Mangroves	55	23	20	24	167
Rawatan silvikultur Silviculture treatment	345,603	367,911	393,672	417,641	431,969

Sumber: Jabatan Perhutanan Sabah
Source: Sabah Forestry Department

Jadual 6.10: Pembangunan sumber hutan, Sarawak, 2017-2021

Table 6.10: Forest resource development, Sarawak, 2017-2021

Sumber Source	2017	2018	2019	2020	Hektar Hectares 2021
Ladang hutan Forest plantation	16,543	22,463	24,754	19,355	18,495
Tanaman bakau Mangroves	15	13	5.5	3.7	19
Tanaman kawasan pantai (bilangan pokok) Coastal plantation (number of trees)	10,008	6,826	3,428	2,599	20,774

Sumber: Jabatan Hutan Sarawak
Source: Forest Department Sarawak

Jadual 6.11: Pematuhan dalam penguatkuasaan pelepasan asap hitam mengikut jenis kenderaan, Malaysia, 2018-2022

Table 6.11: Compliance on enforcement of black smoke emission by type of vehicles, Malaysia, 2018-2022

Jenis kenderaan Type of vehicles	Peratus pematuhan Percentage of compliance				
	2018	2019	2020	2021	2022
Bas ¹ Buses	98.7	99.1	99.2	95.9	98.9
Kereta ² Cars	100.0	100.0	100.0	99.9	100.0
Lori ³ Lorries	98.5	98.2	96.2	98.5	97.7
Trak ringan Light trucks	99.7	99.2	98.1	99.4	99.2
Van Vans	99.4	98.9	96.8	98.5	99.3

Nota:
Notes:Sumber: Jabatan Alam Sekitar
Source: Department of Environment¹Bas mini termasuk dalam kategori bas
Mini buses was included in buses category²Teksi termasuk dalam kategori kereta
Taxi was included in cars category³Lori kecil termasuk dalam kategori lori
Small lorries were included in lorries category**Jadual 6.12: Bilangan saman yang dikeluarkan bagi pelepasan asap hitam mengikut jenis kenderaan, Malaysia, 2018-2022**

Table 6.12: Number of summonses issued for black smoke emission by type of vehicles, Malaysia, 2018-2022

Jenis kenderaan Type of vehicles	Bilangan saman Number of summons				
	2018	2019	2020	2021	2022
Jumlah Total	415	419	706	288	631
Bas ¹ Buses	35	17	9	16	14
Kereta ² Cars	-	-	-	1	-
Lori ³ Lorries	327	324	525	235	550
Trak ringan Light trucks	32	55	113	19	50
Van Vans	21	23	59	17	17

Nota:
Notes:Sumber: Jabatan Alam Sekitar
Source: Department of Environment¹Bas mini termasuk dalam kategori bas
Mini buses was included in buses category²Teksi termasuk dalam kategori kereta
Taxi was included in cars category³Lori kecil termasuk dalam kategori lori
Small lorries were included in lorries category

Jadual 6.13a: Status pematuhan oleh industri terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014, Malaysia, 2017-2021

Table 6.13a: Compliance status by industries on Environmental Quality (Clean Air) Regulations 2014, Malaysia, 2017-2021

Jenis industri Type of industries	Peratus pematuhan Percentage of compliance				
	2017	2018	2019	2020	2021
Asas logam Basic metal	100	100	99	99	99
Berasaskan getah Rubber-based	97	98	97	99	99
Berasaskan kayu Wood-based	100	100	99	99	99
Berasaskan kimia Chemical-based	100	100	99	99	99
Berasaskan pengangkutan Transport-based	100	100	99	100	99
Elektrik & elektronik Electrical & electronics	99	100	99	99	99
Fabrikasi logam Metal fabrication	100	100	99	99	99
Galian bukan logam Non-metallic mineral	100	99	99	99	99
Getah asli mentah Raw natural rubber	98	97	100	98	98
Jentera Machinery	100	100	100	100	100
Kertas Paper	98	99	99	99	99
Kilang minyak kelapa sawit mentah Crude palm oil mill	93	95	99	99	94
Kilang padi Rice mill	100	100	99	99	99
Kuari Quarry	100	100	99	99	99
Makanan & minuman Food & beverage	100	99	98	99	99
Makanan ternakan Animal feed	98	98	99	100	100
Penapisan minyak masak Edible oil refinery	99	99	100	97	100
Penapisan petroleum Petroleum refinery	100	100	99	100	99
Penyudahan logam & sadur elektrik Metal finishing & electroplating	99	100	98	98	99
Plastik Plastic	100	99	97	99	98
Simen Cement	100	100	98	99	98
Tekstil Textile	100	100	99	99	100
Lain-lain Others	100	99	98	98	99

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Jadual 6.13b: Status pematuhan oleh industri terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014, Malaysia, 2022

Table 6.13b: Compliance status by industries on Environmental Quality (Clean Air) Regulations 2014, Malaysia, 2022

Kod MSIC MSIC code	Jenis industri Type of industries	Peratus pematuhan Percentage of compliance
A	Pertanian, Perhutanan dan Perikanan Agriculture, Forestry and Fishing	
01	Pengeluaran tanaman dan ternakan, pemburuan dan aktiviti perkhidmatan berkaitan Crops and animal production, hunting and related service activities	100
03	Perikanan dan akuakultur Fishing and aquaculture	100
B	Perlombongan dan Pengkuarian Mining and Quarrying	
06	Pengekstrakan petroleum mentah dan gas asli Extraction of crude petroleum and natural gas	100
07	Perlombongan bijih besi Mining of metal ores	100
08	Perlombongan dan pengkuarian lain Other mining and quarrying	99
09	Aktiviti perkhidmatan sokongan perlombongan Mining support service activities	100
C	Pembuatan Manufacturing	
10	Pembuatan produk makanan Manufacture of food products	97
11	Pembuatan minuman Manufacture of beverages	100
12	Pembuatan produk tembakau Manufacture of tobacco products	100
13	Pembuatan tekstil Manufacture of textiles	99
14	Pembuatan pakaian Manufacture of wearing apparel	100
15	Pembuatan produk kulit dan barangan berkaitan Manufacture of leather and related products	100
16	Pembuatan kayu dan produk kayu dan gabus, kecuali perabot; pembuatan bagi artikel jerami dan bahan-bahan anyaman Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	97
17	Pembuatan kertas dan produk kertas Manufacture of paper and paper products	99
18	Percetakan dan penerbitan semula media rakaman Printing and reproduction of recorded media	99
19	Pembuatan kok dan produk petroleum bertapis Manufacture of coke and refined petroleum products	98
20	Pembuatan kimia dan produk kimia Manufacture of chemicals and chemical products	98
21	Pembuatan produk farmaseutikal asas, kimia perubatan dan botani Manufacture of basic pharmaceuticals, medicinal chemical and botanical products	100
22	Pembuatan produk getah dan plastic Manufacture of rubber and plastic products	97
23	Pembuatan produk galian bukan logam lain Manufacture of other non-metallic mineral products	99
24	Pembuatan logam asas Manufacture of basic metals	96
25	Pembuatan produk logam, kecuali mesin dan kelengkapan Manufacture of fabricated metal products, except machinery and equipment	97
26	Pembuatan komputer, produk elektronik dan optikal Manufacture of computer, electronic and optical products	99

Jadual 6.13b: Status pematuhan oleh industri terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014, Malaysia, 2022 (samb.)

Table 6.13b: Compliance status by industries on Environmental Quality (Clean Air) Regulations 2014, Malaysia, 2022 (cont'd)

Kod MSIC MSIC code	Jenis industri Type of industries	Peratus pematuhan Percentage of compliance
27	Pembuatan kelengkapan elektrik <i>Manufacture of electrical equipment</i>	99
28	Pembuatan jentera dan peralatan t.t.t.l. <i>Manufacture of machinery and equipment n.e.c.</i>	99
29	Pembuatan kenderaan bermotor, treler dan semi treler <i>Manufacture of motor vehicles, trailers and semi-trailers</i>	99
30	Pembuatan kelengkapan pengangkutan lain <i>Manufacture of other transport equipment</i>	100
31	Pembuatan perabot <i>Manufacture of furniture</i>	93
32	Pembuatan lain <i>Other manufacturing</i>	97
33	Pembaikan dan pemasangan mesin dan kelengkapan <i>Repair and installation of machinery and equipment</i>	99
D	Pembinaan Construction	
41	Pembinaan bangunan <i>Construction of buildings</i>	100
42	Kejuruteraan awam <i>Civil engineering</i>	100
E	Perkhidmatan Services	
35	Bekalan elektrik, gas, wap dan pendingin udara <i>Electricity, gas, steam and air conditioning supply</i>	99
36	Penakungan, perawatan dan bekalan air <i>Water collection, treatment and supply</i>	100
38	Aktiviti pengumpulan, rawatan dan pelupusan sisa; pemulihan semula bahan <i>Waste collection, treatment and disposal activities; materials recovery</i>	99
39	Aktiviti pemulihan dan lain-lain perkhidmatan pengurusan sisa <i>Remediation activities and other waste management</i>	100
45	Perdagangan borong dan runcit dan pembaikan kenderaan bermotor dan motosikal <i>Wholesale and retail trade and repair of motor vehicles and motorcycles</i>	100
46	Perdagangan borong kecuali kenderaan bermotor dan motosikal <i>Wholesale trade, except of motor vehicles and motorcycles</i>	100
47	Perdagangan runcit kecuali kenderaan bermotor dan motosikal <i>Retail trade, except of motor vehicles and motorcycles</i>	100
49	Pengangkutan darat dan pengangkutan melalui saluran paip <i>Land transport and transport via pipelines</i>	100
52	Penggudangan dan aktiviti sokongan untuk pengangkutan <i>Warehousing and support activities for transportation</i>	100
55	Penginapan <i>Accommodation</i>	99
56	Aktiviti perkhidmatan makanan dan minuman <i>Food and beverage service activities</i>	100
61	Telekomunikasi <i>Telecommunications</i>	100
64	Aktiviti perkhidmatan kewangan, kecuali insurans/takaful dan tabungan pencen <i>Financial service activities, except insurance/ takaful and pension funding</i>	100
71	Aktiviti arkitek dan kejuruteraan; ujian teknikal dan analisis <i>Architectural and engineering activities; technical testing and analysis</i>	100
72	Penyelidikan dan pembangunan saintifik <i>Scientific research and development</i>	100

Jadual 6.13b: Status pematuhan oleh industri terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 2014, Malaysia, 2022 (samb.)

Table 6.13b: Compliance status by industries on Environmental Quality (Clean Air) Regulations 2014, Malaysia, 2022 (cont'd)

Kod MSIC MSIC code	Jenis industri Type of industries	Peratus pematuhan Percentage of compliance
79	Agensi pengembaraan, operator pelancongan, khidmat penempahan dan aktiviti berkaitan Travel agency, tour operator, reservation service and related activities	100
86	Aktiviti kesihatan kemanusiaan Human health activities	100
82	Aktiviti pengurusan pejabat, sokongan pejabat dan sokongan perniagaan lain Office administrative, office support and other business support activities	100
94	Aktiviti keahlian organisasi Activities of membership organizations	100
95	Pembaikan komputer dan barangan persendirian dan isi rumah Repair of computers and personal and household goods	100
96	Aktiviti perkhidmatan persendirian lain Other personal service activities	83

Nota: Mulai 2022, pengkelasan industri disusun berdasarkan kod Piawaian Klasifikasi Industri Malaysia 2008 versi 1.0

Notes: Starting 2022, the industry classification is based on the Malaysia Standard Industrial Classification 2008 code version 1.0

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

Jadual 6.14: Pendakwaan kesalahan bagi pencemaran air, Malaysia, 2018-2022

Table 6.14: Prosecution of offences on water pollution, Malaysia, 2018-2022

Akta Act	2018	2019	2020	2021	2022
Jumlah Total	135	149	229	168	314
PPKAS (EP) 2009 EQR (IE) 2009	54	54	75	64	181
PPKAS (K) 2009 EQR (S) 2009	2	15	7	5	4
Seksyen 25 AKAS 1974 Section 25 EQA 1974	-	25	15	11	2
Seksyen 16 AKAS 1974 Section 16 EQA 1974	55	52	58	32	74
Seksyen 27 AKAS 1974 Section 27 EQA 1974	3	2	-	-	-
Seksyen 34A (7) AKAS 1974 Section 34A (7) EQA 1974	20	-	69	45	51
PPKAS (KPSPSPKT) 2009 EQ (PCSWTSL) Regulations 2009	1	1	5	11	2

Sumber: Jabatan Alam Sekitar

Source: Department of Environment

Nota:

Notes:

AKAS - Akta Kualiti Alam Sekeliling

EQA - Environmental Quality Act

PPKAS - Peraturan-peraturan Kualiti Alam Sekeliling

EQR - Environmental Quality Regulations

EP - Efluen Perindustrian

IE - Industrial Effluents

K - Kumbahan

S - Sewage

KPSPSPKT - Kawalan Pencemaran Daripada Stesen Pemindahan Sisa Pepejal dan Kambus Tanah

PCSWTSL - Pollution Control from Solid Waste Transfer Stations and Landfills

**PERBANDINGAN
ANTARA NEGARA
COMPARISON
BETWEEN COUNTRIES**

**PELEPASAN RUMAH KACA
GREEN HOUSE GASES (GHG)**

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Jadual 7.1: Jumlah Pelepasan GHG tidak termasuk LULUCF untuk tahun 1994, 2000, 2005, 2011, 2014, 2016 dan 2019

Table 7.1: Total GHG Emissions Excluding LULUCF for the year 1994, 2000, 2005, 2011, 2014, 2016 and 2019

Pelepasan (CO ₂ eq.) juta tan/Emissions (CO ₂ eq.) million tonnes							
Negara Country	1994	2000	2005	2011	2014	2016	2019
Malaysia	119.454	183.928	250.044	284.633	314.788	314.179	330.358
Australia	442.611	501.589	535.590	549.007	535.451	552.355	555.245
German Germany	1,127.793	1,040.192	984.987	907.502	893.394	898.560	794.634
Jepun	1,352.430	1,373.303	1,377.464	1,350.741	1,356.511	1,300.147	1,207.742
Korea	403.569	502.730	561.522	684.756	692.089	693.688	701.214
United Kingdom	763.724	723.920	699.595	570.234	531.430	488.309	453.234
Amerika Syarikat United States	6,745.167	7,369.163	7,477.358	6,907.203	6,898.526	6,578.432	6,617.917

Sumber/ Source:

Malaysia - Malaysia Fourth Biennial Update Report Under the United Nations Framework Convention on Climate Change
Negara Lain/ Other Country - Organisation for Economic Co-operation and Development (OECD)

Nota/ Notes:

LULUCF - Land Use, Land-Use Change and Forestry

Jadual 7.2: Jumlah Pelepasan GHG Tenaga untuk tahun 1994, 2000, 2005, 2011, 2014, 2016 dan 2019

Table 7.2: Total GHG Emissions Energy for the year 1994, 2000, 2005, 2011, 2014, 2016 and 2019

Pelepasan (CO ₂ eq.) juta tan/Emissions (CO ₂ eq.) million tonnes							
Negara Country	1994	2000	2005	2011	2014	2016	2019
Malaysia	92.978	146.926	202.676	230.603	255.080	253.157	259.326
Australia	309.511	368.518	403.748	419.233	410.566	430.847	434.363
German Germany	926.793	872.552	832.819	776.304	762.833	768.841	671.198
Jepun	1,155.388	1,197.824	1,228.831	1,213.768	1,211.475	1,152.462	1,055.453
Korea	327.800	411.585	469.373	594.655	596.948	602.228	611.567
United Kingdom	566.023	553.791	550.290	457.772	419.447	385.563	352.680
Amerika Syarikat United States	5,606.350	6,222.786	6,351.529	5,783.731	5,754.117	5,450.777	5,460.638

Sumber/ Source:

Malaysia - Malaysia Fourth Biennial Update Report Under the United Nations Framework Convention on Climate Change
Negara Lain/ Other Country - Organisation for Economic Co-operation and Development (OECD)

Jadual 7.3: Jumlah Pelepasan GHG IPPU untuk tahun 1994, 2000, 2005, 2011, 2014, 2016 dan 2019

Table 7.3: Total GHG Emissions IPPU for the year 1994, 2000, 2005, 2011, 2014, 2016 and 2019

Pelepasan (CO ₂ eq.) juta tan/Emissions (CO ₂ eq.) million tonnes							
Negara Country	1994	2000	2005	2011	2014	2016	2019
Malaysia	5.679	11.532	15.102	17.042	20.235	23.746	32.854
Australia	24.887	25.767	30.130	34.249	29.619	30.557	32.550
German Germany	96.329	76.658	74.091	61.816	60.674	61.518	59.534
Jepun	126.111	108.272	87.082	82.477	91.994	96.072	101.078
Korea	38.743	50.870	54.562	52.954	57.917	53.467	52.169
United Kingdom	73.149	53.404	49.695	39.065	45.120	37.940	35.713
Amerika Syarikat United States	333.890	380.991	356.057	366.976	368.666	357.576	366.823

Sumber/ Source:

Malaysia - Malaysia Fourth Biennial Update Report Under the United Nations Framework Convention on Climate Change

Negara Lain/ Other Country - Organisation for Economic Co-operation and Development (OECD)

Nota/ Notes:

IPPU - Industrial processes and product use

Jadual 7.4: Jumlah Pelepasan GHG Pertanian untuk tahun 1994, 2000, 2005, 2011, 2014, 2016 dan 2019

Table 7.4: Total GHG Emissions Agriculture for the year 1994, 2000, 2005, 2011, 2014, 2016 and 2019

Pelepasan (CO ₂ eq.) juta tan/Emissions (CO ₂ eq.) million tonnes							
Negara Country	1994	2000	2005	2011	2014	2016	2019
Malaysia	8.185	8.753	10.265	9.906	11.096	10.711	9.922
Australia	86.039	88.716	85.972	79.932	82.028	77.867	75.066
German Germany	63.179	62.732	59.623	59.394	62.108	61.546	58.525
Jepun	38.001	35.239	34.528	32.929	32.374	32.142	31.991
Korea	22.554	21.369	20.739	21.121	21.374	20.810	20.964
United Kingdom	50.103	48.571	46.421	43.748	44.514	43.978	43.848
Amerika Syarikat United States	566.158	564.997	577.719	582.369	603.008	601.754	614.462

Sumber/ Source:

Malaysia - Malaysia Fourth Biennial Update Report Under the United Nations Framework Convention on Climate Change

Negara Lain/ Other Country - Organisation for Economic Co-operation and Development (OECD)

Jadual 7.5: Jumlah Pelepasan GHG Sisa untuk tahun 1994, 2000, 2005, 2011, 2014, 2016 dan 2019

Table 7.5: Total GHG Emissions Waste for the year 1994, 2000, 2005, 2011, 2014, 2016 and 2019

Pelepasan (CO ₂ eq.) juta tan/Emissions (CO ₂ eq.) million tonnes							
Negara Country	1994	2000	2005	2011	2014	2016	2019
Malaysia	12.613	16.717	22.001	27.082	28.378	26.565	28.257
Australia	22.174	18.588	15.739	15.593	13.238	13.084	13.267
German Germany	41.492	28.250	18.454	9.987	7.780	6.655	5.377
Jepun	32.929	31.969	27.024	21.567	20.668	19.471	19.220
Korea	14.472	18.907	16.849	16.026	15.849	17.183	16.513
United Kingdom	74.449	68.154	53.190	29.648	22.350	20.829	20.993
Amerika Syarikat United States	238.769	200.389	192.054	174.127	172.735	168.326	175.994

Sumber/ Source:

Malaysia - Malaysia Fourth Biennial Update Report Under the United Nations Framework Convention on Climate Change

Negara Lain/ Other Country - Organisation for Economic Co-operation and Development (OECD)

Jadual 7.6: Jumlah Pelepasan GHG LULUCF untuk tahun 1994, 2000, 2005, 2011, 2014, 2016 dan 2019

Table 7.6: Total GHG Emissions LULUCF for the year 1994, 2000, 2005, 2011, 2014, 2016 and 2019

Pelepasan (CO ₂ eq.) juta tan/Emissions (CO ₂ eq.) million tonnes							
Negara Country	1994	2000	2005	2011	2014	2016	2019
Malaysia	-188.627	-169.397	-197.077	-241.252	-249.953	-215.375	-214.715
Australia	88.348	64.769	80.703	45.025	20.366	-39.872	-49.388
German Germany	-29.316	-0.151	7.832	-8.809	-8.999	-13.727	-6.822
Jepun	-78.849	-84.086	-88.841	-69.120	-61.734	-52.286	-50.700
Korea	-33.921	-60.084	-56.309	-55.231	-45.866	-46.934	-37.710
United Kingdom	8.802	6.327	3.482	1.160	0.885	1.149	1.829
Amerika Syarikat United States	-873.580	-835.788	-781.095	-791.225	-768.837	-815.338	-704.045

Sumber/ Source:

Malaysia - Malaysia Fourth Biennial Update Report Under the United Nations Framework Convention on Climate Change

Negara Lain/ Other Country - Organisation for Economic Co-operation and Development (OECD)

Nota/ Notes:

LULUCF - Land Use, Land-Use Change and Forestry

Jadual 7.7: Jumlah Pelepasan GHG termasuk LULUCF untuk tahun 1994, 2000, 2005, 2011, 2014, 2016 dan 2019
Table 7.7: Total GHG Emissions Including LULUCF for the year 1994, 2000, 2005, 2011, 2014, 2016 and 2019

Pelepasan (CO ₂ eq.) juta tan/ <i>Emissions (CO₂ eq.) million tonnes</i>							
<i>Negara Country</i>	1994	2000	2005	2011	2014	2016	2019
Malaysia	-69.173	14.531	52.967	43.381	64.854	98.804	115.644
Australia	530.959	566.358	616.293	594.032	555.817	512.483	505.857
German <i>Germany</i>	1,098.477	1,040.041	992.819	898.693	884.395	884.832	787.811
Jepun	1,273.580	1,289.218	1,288.623	1,281.621	1,294.777	1,247.861	1,157.042
Korea	369.648	442.647	505.213	629.525	646.223	646.754	663.504
United Kingdom	772.526	730.246	703.077	571.394	532.315	489.458	455.063
Amerika Syarikat <i>United States</i>	5,871.587	6,533.375	6,696.264	6,115.979	6,129.689	5,763.095	5,913.872

Sumber/ Source:

Malaysia - *Malaysia Fourth Biennial Update Report Under the United Nations Framework Convention on Climate Change*
Negara Lain/ Other Country - *Organisation for Economic Co-operation and Development (OECD)*

Nota/ Notes:

LULUCF - *Land Use, Land-Use Change and Forestry*



LAMPIRAN

APPENDICES

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**Framework for the Development of Environment Statistics (FDES) dan hubungkait dengan rangka kerja
Daya Penggerak-Tekanan-Keadaan-Impak-Respon (DPSIR)**

The FDES and its relationship with the Driving Force-Pressure-State-Impact-Response (DPSIR) framework



Daya Penggerak:	Sosio-ekonomi dan sosio-kultur yang memacu aktiviti manusia bagi meningkatkan atau mengurangkan tekanan terhadap alam sekitar
<i>Driving Force:</i>	<i>The socioeconomic and sociocultural forces driving human activities, which increase or mitigate pressures on environment</i>
Tekanan:	Tekanan aktiviti manusia kepada alam sekitar
<i>Pressure:</i>	<i>The stresses that human activities place in the environment</i>
Keadaan:	Situasi terkini alam sekitar
<i>State:</i>	<i>The current condition of environment</i>
Impak:	Kesan degradasi alam sekitar
<i>Impact:</i>	<i>The effects of environmental degradation</i>
Respon:	Tindak balas oleh masyarakat terhadap keadaan alam sekitar
<i>Response:</i>	<i>Responses by society to the environmental situation</i>

Sumber: Framework for the Development of Environment Statistics (FDES 2013)
Source:

Punca dan kesan bahan pencemar udara kepada manusia dan tumbuhan*Sources and effects of air pollutants on human and plants*

Bahan pencemar udara <i>Air pollutant</i>	Punca <i>Source</i>	Kesan kepada kesihatan manusia dan ekologi <i>Human health and ecological effects</i>
Ozon (O ₃) <i>Ozone</i>	Motosikal dua lejang, kenderaan bermotor dan punca-punca industri <i>Two stroke motor cycles, motor vehicles and industrial sources</i>	Manusia/Human Menjejaskan fungsi pernafasan dan penurunan prestasi atlet yang melakukan senaman lasak dan bahaya penyakit barah kulit <i>Impairment of respiratory function and decreasing performance by some athletes exercising heavily and skin cancer risks</i> Tumbuhan/Plants Memusnahkan tumbuhan dan mengurangkan pengeluaran tanaman <i>Damage vegetation and reduces crop production</i>
Plumbum (Pb) <i>Lead</i>	Sektor pengangkutan <i>Transport sector</i>	Manusia/Human Pendedahan yang berlarutan boleh mengakibatkan gangguan sistem saraf <i>Long-term exposure can lead to nervous disorders</i>
Karbon Monoksida (CO) <i>Carbon Monoxide</i>	Sektor pengangkutan <i>Transport sector</i>	Manusia/Human Menjejaskan mereka yang merokok dan yang mengidap masalah peredaran darah dan anemia <i>Affects smokers and people with circulatory and anaemic problems</i>
Sulfur Dioksida (SO ₂) <i>Sulphur Dioxide</i>	Industri minyak dan gas, pengeluaran tenaga, pembakaran arang, proses industri dan industri berasaskan pembakaran <i>Oil and gas industry, energy production, coal burning, industrial combustion and industrial process</i>	Manusia/Human Menambahkan derita pesakit yang mengidap asma dan bronkitis <i>Aggravates asthmatic and bronchitis patients</i> Tumbuhan/Plants Memusnahkan tumbuhan <i>Damages vegetation</i>
Nitrogen Dioksida (NO ₂) <i>Nitrogen Dioxide</i>	Pengangkutan, penjaan kuasa dan industri berasaskan pembakaran <i>Transport, power generation and industrial combustion</i>	Manusia/Human Menjejaskan fungsi pernafasan <i>Affects respiratory function</i> Tumbuhan/Plants Menyekat pertumbuhan tanaman <i>Suppresses vegetation growth</i>
Habuk Halus (PM ₁₀) <i>Particulate Matter</i>	Pembakaran terbuka <i>Open burning</i>	Manusia/Human Melemahkan fungsi pernafasan <i>Impairs respiratory function</i> Tumbuhan/Plants Memusnahkan tumbuhan <i>Damages vegetation</i>

Sumber: Kementerian Kesihatan Malaysia
Source: Ministry of Health Malaysia

Perbandingan nilai IPU dengan tahap pencemaran dan kawalan kesihatan

Comparison of API values with level of pollution and health measures

Indeks Pencemaran Udara (IPU) <i>Air Pollutant Index (API)</i>	Status	Tahap pencemaran <i>Level of pollution</i>	Kawalan kesihatan <i>Health measures</i>
0 – 50	Baik	Pencemaran rendah yang tidak ada kesan buruk terhadap kesihatan	Tidak ada sekatan aktiviti bagi semua lapisan orang. Amalkan gaya hidup yang sihat seperti tidak merokok, kerap bersenam dan mengamalkan pemakanan yang sesuai
	Good	<i>Low pollution and has no ill-effects on health</i>	<i>No restriction of activities for all groups of people. To practice healthy lifestyle e.g. not to smoke, exercise regularly and to observe proper nutrition</i>
51 – 100	Sederhana	Pencemaran sederhana dan tidak ada kesan buruk terhadap kesihatan	Tidak ada sekatan aktiviti bagi semua lapisan orang. Amalkan gaya hidup yang sihat seperti tidak merokok, kerap bersenam dan mengamalkan pemakanan yang sesuai
	Moderate	<i>Moderate pollution and has no ill-effects on health</i>	<i>No restriction of activities for all groups of people. To practice healthy lifestyle e.g. not to smoke, exercise regularly and to observe proper nutrition</i>
101 – 200	Tidak Sihat	Tanda-tanda sederhana yang menyebabkan bertambah teruk di kalangan orang berisiko tinggi, iaitu mereka yang menghidap sakit jantung dan paru-paru	Sekatan aktiviti kegiatan luar terhadap bagi orang yang berisiko tinggi. Penduduk amnya perlu mengurangkan aktiviti yang lasak
	Unhealthy	<i>Mild aggravation of symptoms among high risk persons, i.e those with heart or lung disease</i>	<i>Restriction of outdoor activities for high risk persons. Population should reduce vigorous outdoor activity</i>
201 – 300	Sangat Tidak Sihat	Tanda-tanda ketara yang menyebabkan bertambah teruk dan toleransi senaman rendah di kalangan orang yang mengidap sakit jantung atau paru-paru	Warga tua dan orang yang menghidap penyakit jantung atau paru-paru dilarang keluar dan kurangkan aktiviti fizikal. Penduduk amnya mesti mengelakkan dari aktiviti luar yang lasak. Sesiapa yang menghadapi masalah kesihatan perlu merujuk kepada doktor
	Very Unhealthy	<i>Significant aggravation of symptoms and decreased exercise tolerance in person with heart or lung disease</i>	<i>Elderly and persons with known heart or lung disease should stay indoors and reduce physical activity. Population should avoid vigorous outdoor activity. Those with any health problems to consult doctor</i>
301 – 500	Berbahaya	Tanda-tanda yang menyebabkan bertambah teruk dan membahayakan kesihatan	Warga tua dan orang yang menghidap penyakit jantung atau paru-paru dilarang keluar dan kurangkan aktiviti lasak. Penduduk amnya mesti menghindari aktiviti luar yang lasak
	Hazardous	<i>Severe aggravation of symptoms and endangers health</i>	<i>Elderly and persons with existing heart or lung disease should stay indoors and reduce physical activity. General population should avoid vigorous outdoor activity</i>
Melebihi 500	Kecemasan	Tanda-tanda yang menyebabkan bertambah teruk dan membahayakan kesihatan	Penduduk amnya dinasihatkan mengikut peraturan oleh Majlis Keselamatan Negara dan sentiasa mengikut pengumuman melalui media massa
Above 500	Emergency	<i>Severe aggravation of symptoms and endangers health</i>	<i>General population are advised to follow the orders of the National Security Council and follow the announcements through the mass media</i>

Sumber: Kementerian Kesihatan Malaysia
Source: Ministry of Health Malaysia

Klasifikasi kualiti air berdasarkan Indeks Kualiti Air*Water quality classification based on Water Quality Index*

Parameter	Indeks Index		
	Bersih (B) Clean (C)	Sederhana Tercemar (ST) Slightly Polluted (SP)	Tercemar (T) Polluted (P)
Indeks Kualiti Air (IKA) <i>Water Quality Index (WQI)</i>	81 – 100	60 – 80	0 – 59
Keperluan Oksigen Biokimia (BOD ₅) <i>Biochemical Oxygen Demand</i>	91 – 100	80 – 90	0 – 79
Ammoniakal Nitrogen (NH ₃ -N) <i>Ammoniacal Nitrogen</i>	92 – 100	71 – 91	0 – 70
Pepejal Terampai (SS) <i>Suspended Solids</i>	76 – 100	70 – 75	0 – 69

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Klasifikasi Indeks Kualiti Air
Water Quality Index classification

Parameter	Unit	Kelas Class				
		I	II	III	IV	V
Ammoniakal Nitrogen (NH ₃ -N) <i>Ammoniacal Nitrogen</i>	mg/l	< 0.1	0.1 - 0.3	0.3 - 0.9	0.9 - 2.7	> 2.7
Keperluan Oksigen Biokimia (BOD ₅) <i>Biochemical Oxygen Demand</i>	mg/l	< 1	1 - 3	3 - 6	6 - 12	> 12
Keperluan Oksigen Kimia (COD) <i>Chemical Oxygen Demand</i>	mg/l	< 10	10 - 25	25 - 50	50 - 100	> 100
Oksigen Terlarut <i>Dissolved Oxygen</i>	mg/l	> 7	5 - 7	3 - 5	1 - 3	< 1
pH	-	> 7.0	6.0 - 7.0	5.0 - 6.0	< 5.0	< 5.0
Jumlah Pepejal Terampai (SS) <i>Total Suspended Solid</i>	mg/l	< 25	25 - 50	50 - 150	150 - 300	> 300
Indeks Kualiti Air (IKA) <i>Water Quality Index (WQI)</i>		> 92.7	76.5 - 92.7	51.9 - 76.5	31.0 - 51.9	< 31.0

Kelas air dan kegunaan
Water classes and uses

Kelas Class	Kegunaan Uses
Kelas I Class I	Pemuliharaan alam semula jadi <i>Conservation of natural environment</i> Bekalan Air I – Hampir tiada rawatan diperlukan <i>Water Supply I – Practically no treatment necessary</i> Perikanan I – Spesis akuatik yang sangat sensitif <i>Fishery I – Very sensitive aquatic species</i>
Kelas IIA Class IIA	Bekalan Air II – Memerlukan rawatan secara konvensional sahaja <i>Water Supply II – Conventional treatment required</i> Perikanan II – Spesis akuatik yang sensitif <i>Fishery II – Sensitive aquatic species</i>
Kelas IIB Class IIB	Kegunaan rekreasi yang melibatkan persentuhan badan dengan air <i>Recreational use with body contact</i>
Kelas III Class III	Bekalan Air III – Memerlukan rawatan yang ekstensif <i>Water Supply III – Extensive treatment required</i> Perikanan III – Spesis tertentu yang mempunyai nilai ekonomi biasa Bekalan air minum haiwan ternakan <i>Fishery III – Common, of economic value and tolerant species</i> <i>Livestock drinking</i>
Kelas IV Class IV	Pengairan <i>Irrigation</i>
Kelas V Class V	Tiada seperti di atas. <i>None of the above</i>

Sumber: Jabatan Alam Sekitar
 Source: Department of Environment

Standard dan kriteria kualiti air marin
Marine water quality criteria and standards

	Parameter	KELAS 1 CLASS 1	KELAS 2 CLASS 2	KELAS 3 CLASS 3	KELAS E CLASS E
	Kegunaan	Pemeliharaan, kawasan dilindungi, Taman Laut	Kehidupan laut, Perikanan, Terumbu Karang, Rekreasi dan Marikultur	Pelabuhan, Lapangan Minyak & Gas	Paya Bakau & Muara Sungai
	Uses	<i>Preservation, marine protected areas, Marine Parks</i>	<i>Marine Life, Fisheries, Coral Reefs, Recreational and Mariculture</i>	<i>Ports, Oil & Gas Fields</i>	<i>Mangroves, Estuarine & River-mouth Water</i>
1	Suhu (°C) <i>Temperature</i>	≤ 2 °C peningkatan terhadap ambien maksimum ≤ 2 °C increase over maximum ambient			
2	Oksigen Terlarut (mg/L) <i>Dissolved Oxygen</i>	>80% tepu >80% saturation	5	3	4
3	Jumlah Pepejal Terampai* (mg/L) <i>Total Suspended Solid</i>	25 mg/L atau $\leq 10\%$ peningkatan dalam purata bermusim, yang mana lebih rendah 25 mg/L or $\leq 10\%$ increase in seasonal average, whichever is lower	50 mg/L (25 mg/L) atau $\leq 10\%$ peningkatan dalam purata bermusim, yang mana lebih rendah 50mg/L (25 mg/L) or $\leq 10\%$ increase in seasonal average, whichever is lower	100 mg/L atau $\leq 10\%$ peningkatan dalam purata bermusim, yang mana lebih rendah 100 mg/L or $\leq 10\%$ increase in seasonal average, whichever is lower	100 mg/L atau $\leq 30\%$ peningkatan dalam purata bermusim, yang mana lebih rendah 100 mg/L or $\leq 30\%$ increase in seasonal average, whichever is lower
4	Minyak dan Gris (mg/L) <i>Oil and Grease</i>	0.01	0.14	5	0.14
5	Raksa*(µg/L) <i>Mercury</i>	0.04	0.16 (0.04)	50	0.5
6	Kadmium*(µg/L) <i>Cadmium</i>	0.5	2 (3)	10	2
7	Kromium (VI) (µg/L) <i>Chromium</i>	5	10	48	10
8	Kuprum (µg/L) <i>Copper</i>	1.3	2.9	10	2.9
9	Arsenik (III)* (µg/L) <i>Arsenic</i>	3	20(3)	50	20(3)
10	Plumbum(µg/L) <i>Lead</i>	4.4	8.5	50	8.5
11	Zink (µg/L) <i>Zinc</i>	15	50	100	50
12	Sianida(µg/L) <i>Cyanide</i>	2	7	20	7
13	Ammonia (tidak terion) (µg/L) <i>Ammonia (unionized)</i>	35	70	320	70
14	Nitrit(NO ₂) (µg/L) <i>Nitrite (NO₂)</i>	10	55	1,000	55
15	Nitrat(NO ₃) (µg/L) <i>Nitrate (NO₃)</i>	10	60	1,000	60
16	Fosfat(µg/L) <i>Phosphate</i>	5	75	670	75
17	Fenol (µg/L) <i>Phenol</i>	1	10	100	10
18	Tributyltin (TBT) (µg/L)	0.001	0.01	0.05	0.01
19	Faecal Coliform	70 faecal coliform 100mL ⁻¹	70 faecal coliform 100mL ⁻¹ & (70 faecal coliform 100mL ⁻¹)	200 faecal coliform 100mL ⁻¹	100 faecal coliform 100mL ⁻¹ & (70 faecal coliform 100mL ⁻¹)
20	Polycyclic Aromatic Hydrocarbon (PAHs) µg/L	100	200	1,000	1,000

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

*Nilai Standard dan Kriteria Kualiti Air Marin (SKKAM) dalam kurungan digunakan untuk kawasan air marin yang menjadi sumber makanan laut
Marine Water Quality Criteria and Standard (MWQCS) in parentheses are for coastal and marine water areas where seafood for human consumption is applicable

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022*Water quality status by stations, Malaysia, 2020-2022*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Perlis	Sg. Perlis	Sg. Arau	1RPLS012	79	88	85	B/C
		Sg. Arau	1RPLS014	91	92	93	B/C
		Sg. Empangan Timah Tasoh	1RPLS015	93	95	96	B/C
		Sg. Jarum	1RPLS006	88	91	89	B/C
		Sg. Jernih	1RPLS004	92	92	95	B/C
		Sg. Jernih	1RPLS005	90	95	94	B/C
		Sg. Kok Mak	1RPLS007	88	87	88	B/C
		Sg. Korok	1RPLS013	75	76	74	ST/SP
		Sg. Ngulang	1RPLS002	90	92	93	B/C
		Sg. Pelarit	1RPLS008	94	96	96	B/C
		Sg. Perlis	1RPLS001	76	77	78	ST/SP
		Sg. Serai	1RPLS003	82	86	90	B/C
		Sg. Terusan Mada	1RPLS010	88	91	92	B/C
		Sg. Terusan Mada	1RPLS011	89	92	89	B/C
		Sg. Wang Kelian	1RPLS009	95	97	97	B/C
Kedah	Sg. Kedah	Sg. Ahning	1KKDH011	92	96	95	B/C
		Sg. Changlun	1KKDH016	87	88	87	B/C
		Sg. Janing	1KKDH007	93	97	97	B/C
		Sg. Kedah	1KKDH001	70	77	76	ST/SP
		Sg. Napoh	1KKDH017	82	89	90	B/C
		Sg. Padang Terap	1KKDH002	87	91	89	B/C
		Sg. Padang Terap	1KKDH003	88	91	90	B/C
		Sg. Padang Terap	1KKDH004	85	96	95	B/C
		Sg. Padang Terap	1KKDH009	74	81	78	ST/SP
		Sg. Padang Terap	1KKDH012	92	97	95	B/C
		Sg. Pedu	1KKDH005	91	95	94	B/C
		Sg. Pendang	1KKDH008	81	82	85	B/C
		Sg. Sintok	1KKDH018	92	96	95	B/C
		Sg. Tekai	1KKDH006	88	94	93	B/C
		Sg. Temin	1KKDH010	84	89	89	B/C
		Sg. Terusan Lengkuas	1KKDH014	86	92	92	B/C
		Sg. Terusan Mada Selatan	1KKDH013	89	92	90	B/C
		Sg. Terusan Tengah	1KKDH015	88	93	93	B/C
	Sg. Kerian	Sg. Kerian	1KKER001	94	95	96	B/C
	Sg. Kisap	Sg. Kisap	1KKSP001	95	97	97	B/C
	Sg. Kuah	Sg. Kuah	1KKUA001	81	79	81	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Kedah	Sg. Merbok	Sg. Bakar Arang	1KMBK008	56	69	66	ST/SP
		Sg. Batu	1KMBK002	70	64	59	T/P
		Sg. Bongkok	1KMBK003	71	75	71	ST/SP
		Sg. Bukit Merah	1KMBK006	92	92	89	B/C
		Sg. Bukit Nanas	1KMBK011	95	97	97	B/C
		Sg. Korok	1KMBK009	65	71	66	ST/SP
		Sg. Merbok	1KMBK001	79	81	81	B/C
		Sg. Petani	1KMBK007	63	68	64	ST/SP
		Sg. Tok Pawang	1KMBK004	90	95	94	B/C
		Sg. Tok Pawang	1KMBK005	90	95	96	B/C
		Sg. Tupah	1KMBK010	94	97	97	B/C
		Sg. Chepir	1KMUD012	89	91	92	B/C
	Sg. Muda	Sg. Gunung Inas	1KMUD021	93	93	95	B/C
		Sg. Jerong	1KMUD002	66	75	73	ST/SP
		Sg. Jerong	1KMUD003	74	78	70	ST/SP
		Sg. Karangan	1KMUD009	85	91	93	B/C
		Sg. Ketil	1KMUD007	87	93	91	B/C
		Sg. Muda	1KMUD001	86	92	90	B/C
		Sg. Muda	1KMUD004	85	90	91	B/C
		Sg. Muda	1KMUD005	88	94	95	B/C
		Sg. Muda	1KMUD013	86	92	91	B/C
		Sg. Muda	1KMUD014	90	91	94	B/C
		Sg. Muda	1KMUD015	88	92	94	B/C
		Sg. Muda	1KMUD016	85	90	91	B/C
		Sg. Muda	1KMUD018	86	94	91	B/C
		Sg. Muda	1KMUD019	90	93	96	B/C
		Sg. Muda	1KMUD023	87	92	91	B/C
		Sg. Muda	1KMUD024	85	90	91	B/C
		Sg. Muda	1KMUD025	89	94	95	B/C
		Sg. Pegang	1KMUD011	95	97	97	B/C
		Sg. Sedim	1KMUD008	90	93	91	B/C
		Sg. Sedim	1KMUD017	89	91	93	B/C
		Sg. Tawar	1KMUD006	89	91	92	B/C
		Sg. Tawar	1KMUD010	88	89	94	B/C
		Sg. Tawar	1KMUD020	88	90	93	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Kedah	Sg. Perai	Sg. Jarak	1KPRI018	74	77	69	ST/SP
		Sg. Jarak	1KPRI019	74	76	69	ST/SP
		Sg. Jarak	1KPRI024	72	70	71	ST/SP
		Sg. Keladi	1KPRI015	78	81	82	B/C
		Sg. Kulim	1KPRI014	77	82	78	ST/SP
		Sg. Kulim	1KPRI016	90	91	92	B/C
		Sg. Kulim	1KPRI017	91	93	94	B/C
		Sg. Kulim	1KPRI023	90	92	91	B/C
		Sg. Kulim	1KPRI025	88	94	94	B/C
		Sg. Seluang	1KPRI021	64	67	65	ST/SP
		Sg. Seluang Bawah	1KPRI020	67	71	66	ST/SP
		Sg. Chenang	1KMLK006	78	84	77	ST/SP
	Sg. Ulu Melaka	Sg. Melaka	1KMLK002	81	90	85	B/C
		Sg. Melaka	1KMLK003	87	91	91	B/C
		Sg. Melaka	1KMLK007	96	97	97	B/C
		Sg. Petang	1KMLK001	96	97	98	B/C
		Sg. Saga	1KMLK004	81	92	88	B/C
		Sg. Tuba	1KMLK005	94	96	97	B/C
P. Pinang	Sg. Bayan Lepas	Sg. Bayan Lepas	1PBLS003	64	74	69	ST/SP
		Sg. Tiram	1PBLS001	77	76	78	ST/SP
		Sg. Tiram	1PBLS002	67	67	71	ST/SP
	Sg. Jawi	Sg. Chempedak	1PJWI003	47	41	39	T/P
		Sg. Jawi	1PJWI001	55	52	57	T/P
		Sg. Junjong	1PJWI002	64	60	57	T/P
		Sg. Junjong	1PJWI004	57	52	58	T/P
		Sg. Junjong	1PJWI006	94	95	96	B/C
		Sg. Machang Bubok	1PJWI007	76	72	68	ST/SP
		Sg. Tengah	1PJWI005	49	58	47	T/P
		Sg. Ara	1PJRU006	67	77	75	ST/SP
	Sg. Juru	Sg. Juru	1PJRU001	68	69	66	ST/SP
		Sg. Juru	1PJRU012	64	65	70	ST/SP
		Sg. Kilang Ubi	1PJRU002	70	69	68	ST/SP
		Sg. Kilang Ubi	1PJRU003	75	70	68	ST/SP
		Sg. Kilang Ubi	1PJRU009	93	97	96	B/C
		Sg. Kilang Ubi	1PJRU010	63	60	61	ST/SP
		Sg. Kilang Ubi	1PJRU011	66	69	68	ST/SP

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
P. Pinang	Sg. Juru	Sg. Pasir	1PJRU004	65	75	66	ST/SP
		Sg. Permatang Rawa	1PJRU008	53	60	55	T/P
		Sg. Permatang Rawa	1PJRU013	66	90	87	B/C
		Sg. Rambai	1PJRU005	57	57	56	T/P
		Sg. Rambai	1PJRU007	56	62	55	T/P
	Sg. Kerian	Sg. Kechil	1PKER002	87	90	91	B/C
		Sg. Kechil	1PKER005	84	87	84	B/C
		Sg. Kerian	1PKER003	88	89	87	B/C
		Sg. Kerian	1PKER004	85	89	92	B/C
		Sg. Kerian	1PKER006	86	89	89	B/C
		Sg. Kerian	1PKER009	80	84	82	B/C
		Sg. Kerian	1PKER014	85	86	85	B/C
		Sg. Serdang	1PKER007	71	80	83	B/C
	Sg. Kluang	Sg. Ara	1PKLU002	95	97	97	B/C
		Sg. Ara	1PKLU003	68	69	72	ST/SP
		Sg. Dua Besar	1PKLU005	64	68	67	ST/SP
		Sg. Kluang	1PKLU001	65	68	52	T/P
		Sg. Relau	1PKLU004	66	68	69	ST/SP
	Sg. Perai	Sg. Air Melintas	1PPRI007	58	57	60	T/P
		Sg. Jarak	1PPRI009	74	79	71	ST/SP
		Sg. Jarak	1PPRI011	72	70	74	ST/SP
		Sg. Jarak	1PPRI012	71	71	76	ST/SP
		Sg. Kereh	1PPRI006	47	59	57	T/P
		Sg. Kereh	1PPRI008	55	60	56	T/P
		Sg. Kereh	1PPRI024	64	66	64	ST/SP
		Sg. Kubang Semang	1PPRI005	64	66	68	ST/SP
		Sg. Perai	1PPRI003	64	74	62	ST/SP
		Sg. Perai	1PPRI004	67	70	62	ST/SP
		Sg. Pertama	1PPRI022	65	69	52	T/P
		Sg. Seluang Bawah	1PPRI010	61	68	67	ST/SP
	Sg. Pinang	Sg. Air Itam	1PPNG006	70	74	69	ST/SP
		Sg. Air Itam	1PPNG011	76	76	65	ST/SP
		Sg. Air Itam	1PPNG018	96	97	96	B/C
		Sg. Air Terjun	1PPNG019	95	97	97	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
P. Pinang	Sg. Pinang	Sg. Batu Feringghi	1PPNG001	80	82	81	B/C
		Sg. Batu Feringghi	1PPNG002	95	96	96	B/C
		Sg. Dondang	1PPNG012	83	86	54	T/P
		Sg. Dondang	1PPNG013	84	87	58	T/P
		Sg. Dondang	1PPNG014	71	79	75	ST/SP
		Sg. Dondang	1PPNG015	73	75	73	ST/SP
		Sg. Dondang	1PPNG016	71	73	68	ST/SP
		Sg. Dondang	1PPNG017	67	63	61	ST/SP
		Sg. Jelutong	1PPNG010	63	65	68	ST/SP
		Sg. Pinang	1PPNG003	88	94	92	B/C
		Sg. Pinang	1PPNG008	69	67	61	ST/SP
		Sg. Pinang	1PPNG021	55	63	56	T/P
		Sg. Satu	1PPNG020	96	97	97	B/C
		Sg. Titi Kerawang	1PPNG004	68	75	63	ST/SP
Perak	Sg. Bernam	Sg. Bernam	1ABNM001	64	73	74	ST/SP
		Sg. Bernam	1ABNM002	72	66	63	ST/SP
		Sg. Bernam	1ABNM003	80	81	82	B/C
		Sg. Bernam	1ABNM004	86	93	93	B/C
		Sg. Bernam	1ABNM005	86	93	93	B/C
		Sg. Bernam	1ABNM006	90	97	96	B/C
		Sg. Gelinting	1ABNM015	92	96	96	B/C
		Sg. Inki	1ABNM012	94	97	97	B/C
		Sg. Slim	1ABNM007	87	94	95	B/C
		Sg. Slim	1ABNM008	88	94	95	B/C
		Sg. Slim	1ABNM011	89	94	91	B/C
		Sg. Trolak	1ABNM009	91	96	96	B/C
		Sg. Trolak	1ABNM010	92	97	95	B/C
		Sg. Trolak	1ABNM014	93	96	96	B/C
	Sg. Bruas	Sg. Bruas	1ABRU001	72	75	69	ST/SP
		Sg. Bruas	1ABRU004	91	94	95	B/C
		Sg. Bruas	1ABRU005	96	97	97	B/C
		Sg. Dandang	1ABRU006	91	94	95	B/C
		Sg. Licin	1ABRU007	96	97	97	B/C
		Sg. Rotan	1ABRU002	92	96	94	B/C
		Sg. Rotan	1ABRU003	83	88	83	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Perak	Sg. Kerian	Sg. Selama	1AKER011	86	88	86	B/C
		Sg. Selama	1AKER012	87	88	89	B/C
		Sg. Selama	1AKER016	94	97	97	B/C
		Sg. Semang	1AKER013	81	80	81	B/C
		Sg. Terusan Bagan Serai	1AKER015	93	93	93	B/C
	Sg. Kurau	Sg. Air Hitam	1AKRU007	95	98	97	B/C
		Sg. Ara	1AKRU001	92	96	94	B/C
		Sg. Ara	1AKRU006	95	97	97	B/C
		Sg. Kurau	1AKRU002	77	76	78	ST/SP
		Sg. Kurau	1AKRU003	77	78	79	ST/SP
		Sg. Kurau	1AKRU004	91	94	93	B/C
		Sg. Kurau	1AKRU005	91	91	90	B/C
		Sg. Batang Padang	1APRK003	83	86	87	B/C
	Sg. Perak	Sg. Batang Padang	1APRK006	90	95	96	B/C
		Sg. Batang Padang	1APRK009	87	90	90	B/C
		Sg. Behrang	1APRK077	97	97	98	B/C
		Sg. Berok	1APRK068	96	97	97	B/C
		Sg. Bidor	1APRK002	71	84	87	B/C
		Sg. Bidor	1APRK004	88	89	91	B/C
		Sg. Bidor	1APRK005	91	88	87	B/C
		Sg. Chenderiang	1APRK012	94	95	94	B/C
		Sg. Chenderiang	1APRK013	92	93	94	B/C
		Sg. Chepor	1APRK056	96	97	96	B/C
		Sg. Cuar	1APRK046	87	96	95	B/C
		Sg. Ibol	1APRK066	94	97	96	B/C
		Sg. Kampar	1APRK031	93	95	96	B/C
		Sg. Kampar	1APRK032	90	94	93	B/C
		Sg. Kangsar	1APRK043	89	93	94	B/C
		Sg. Kangsar	1APRK044	90	91	93	B/C
		Sg. Kangsar	1APRK079	96	97	97	B/C
		Sg. Kepayang	1APRK037	79	86	78	ST/SP
		Sg. Kepayang	1APRK038	78	83	78	ST/SP
		Sg. Kerbau	1APRK064	94	96	95	B/C
		Sg. Kerbau	1APRK078	93	94	91	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Perak	Sg. Perak	Sg. Kerdah	1APRK041	74	73	69	ST/SP
		Sg. Kerdah	1APRK053	86	85	86	B/C
		Sg. Kinjang	1APRK055	96	97	97	B/C
		Sg. Kinta	1APRK019	78	86	83	B/C
		Sg. Kinta	1APRK022	90	95	96	B/C
		Sg. Kinta	1APRK024	86	85	67	ST/SP
		Sg. Kinta	1APRK025	75	79	78	ST/SP
		Sg. Kinta	1APRK033	78	84	84	B/C
		Sg. Kinta	1APRK034	81	85	83	B/C
		Sg. Kinta	1APRK057	80	83	80	ST/SP
		Sg. Kinta	1APRK058	82	83	85	B/C
		Sg. Kinta	1APRK063	92	95	96	B/C
		Sg. Klah	1APRK014	91	95	90	B/C
		Sg. Klah	1APRK015	91	95	91	B/C
		Sg. Klian Baru	1APRK016	82	84	80	ST/SP
		Sg. Klian Baru	1APRK017	78	84	77	ST/SP
		Sg. Klian Gunong	1APRK081	96	97	96	B/C
		Sg. Kuang	1APRK042	81	88	85	B/C
		Sg. Manong	1APRK060	95	97	97	B/C
		Sg. Nyamok	1APRK052	76	77	74	ST/SP
		Sg. Pari	1APRK023	79	83	87	B/C
		Sg. Pari	1APRK028	80	79	83	B/C
		Sg. Pelus	1APRK039	82	86	89	B/C
		Sg. Pelus	1APRK040	89	91	87	B/C
		Sg. Perak	1APRK001	84	86	88	B/C
		Sg. Perak	1APRK018	87	90	92	B/C
		Sg. Perak	1APRK020	90	92	94	B/C
		Sg. Perak	1APRK045	88	94	95	B/C
		Sg. Perak	1APRK047	86	88	86	B/C
		Sg. Perak	1APRK048	90	94	94	B/C
		Sg. Perak	1APRK049	86	92	92	B/C
		Sg. Perak	1APRK051	87	94	94	B/C
		Sg. Perak	1APRK059	95	97	97	B/C
		Sg. Perak	1APRK065	88	95	95	B/C
		Sg. Perak	1APRK069	88	91	86	B/C
		Sg. Perak	1APRK070	89	92	93	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Perak	Sg. Perak	Sg. Perak	1APRK071	88	92	92	B/C
		Sg. Perak	1APRK072	86	93	94	B/C
		Sg. Perak	1APRK074	87	92	92	B/C
		Sg. Perak	1APRK080	95	97	97	B/C
		Sg. Perak	1APRK082	95	96	96	B/C
		Sg. Perak	1APRK086	96	94	96	B/C
		Sg. Pinji	1APRK021	75	75	77	ST/SP
		Sg. Pinji	1APRK036	72	78	79	ST/SP
		Sg. Pulau	1APRK067	95	97	97	B/C
		Sg. Raia	1APRK030	89	90	93	B/C
		Sg. Raia	1APRK035	86	89	89	B/C
		Sg. Rui	1APRK084	95	96	93	B/C
		Sg. Rui	1APRK085	86	91	88	B/C
		Sg. Seluang	1APRK050	72	62	62	ST/SP
		Sg. Serokai	1APRK026	71	71	77	ST/SP
		Sg. Serokai	1APRK027	77	86	87	B/C
		Sg. Sintang	1APRK054	72	72	67	ST/SP
		Sg. Sungkai	1APRK007	95	95	94	B/C
		Sg. Sungkai	1APRK008	90	91	91	B/C
		Sg. Sungkai	1APRK073	92	93	92	B/C
		Sg. Sungkai	1APRK075	91	93	93	B/C
		Sg. Sungkai Mati	1APRK010	57	65	67	ST/SP
		Sg. Sungkai Mati	1APRK011	92	87	89	B/C
		Sg. Tapah	1APRK076	96	97	96	B/C
		Sg. Teja	1APRK083	82	88	85	B/C
		Sg. Tesong	1APRK062	96	97	97	B/C
		Sg. Tumboh	1APRK029	73	73	76	ST/SP
		Sg. Woh	1APRK061	96	97	98	B/C
	Sg. Raja Hitam	Sg. Derhaka	1ARHT004	79	78	74	ST/SP
		Sg. Derhaka	1ARHT006	76	79	75	ST/SP
		Sg. Manjong	1ARHT001	85	88	87	B/C
		Sg. Manjong	1ARHT002	86	86	85	B/C
		Sg. Nyior	1ARHT007	96	97	97	B/C
		Sg. Raja Hitam	1ARHT003	76	81	78	B/C
		Sg. Raja Hitam	1ARHT005	72	84	78	B/C
		Sg. Raja Hitam	1ARHT008	52	39	30	T/P

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Perak	Sg. Sepetang	Sg. Batu Tegoh	1ASPT006	85	87	84	B/C
		Sg. Batu Tegoh	1ASPT007	87	92	91	B/C
		Sg. Batu Tegoh	1ASPT009	87	90	89	B/C
		Sg. Batu Tegoh	1ASPT012	96	97	97	B/C
		Sg. Batu Tegoh	1ASPT016	95	97	97	B/C
		Sg. Jana	1ASPT004	72	68	72	ST/SP
		Sg. Jana	1ASPT013	95	97	97	B/C
		Sg. Lidin	1ASPT008	84	86	84	B/C
		Sg. Limau	1ASPT014	91	96	96	B/C
		Sg. Malai	1ASPT002	77	82	77	ST/SP
		Sg. Malai	1ASPT019	73	77	73	ST/SP
		Sg. Nyior	1ASPT018	97	97	98	B/C
		Sg. Nyior	1ASPT020	88	94	92	B/C
		Sg. Sepetang	1ASPT001	76	75	72	ST/SP
		Sg. Sepetang	1ASPT003	83	84	83	B/C
		Sg. Temerloh	1ASPT010	90	96	95	B/C
		Sg. Temerloh	1ASPT011	86	92	92	B/C
		Sg. Trong	1ASPT015	92	96	94	B/C
		Sg. Trong	1ASPT017	96	97	97	B/C
		Sg. Deralik	1AWGI001	71	70	74	ST/SP
		Sg. Deralik	1AWGI002	76	79	77	ST/SP
Selangor	Sg. Wangi	Sg. Wangi	1AWGI003	82	82	75	ST/SP
		Sg. Wangi	1AWGI004	79	68	65	ST/SP
	Sg. Bernam	Sg. Bernam	2BBNM013	84	92	91	B/C
		Sg. Bernam	2BBNM016	84	91	90	B/C
		Sg. Dusun	2BBNM017	91	95	95	B/C
		Sg. Buloh	2BBLH001	58	67	55	T/P
	Sg. Buloh	Sg. Buloh	2BBLH002	54	61	51	T/P
		Sg. Buloh	2BBLH003	57	47	46	T/P
		Sg. Buloh	2BBLH004	59	43	45	T/P
		Sg. Buloh	2BBLH005	79	82	84	B/C
		Sg. Buloh	2BBLH006	57	55	50	T/P
	Sg. Klang	Sg. Ampang	2BKLG032	63	64	64	ST/SP
		Sg. Ampang	2BKLG042	70	76	81	B/C
		Sg. Anak Air Batu	2BKLG047	81	89	80	B/C
		Sg. Batu	2BKLG007	93	97	97	B/C
		Sg. Batu	2BKLG036	92	96	97	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Selangor	Sg. Klang	Sg. Damansara	2BKLG008	62	71	68	ST/SP
		Sg. Damansara	2BKLG009	66	71	66	ST/SP
		Sg. Damansara	2BKLG017	64	64	65	ST/SP
		Sg. Damansara	2BKLG055	66	71	70	ST/SP
		Sg. Damansara	2BKLG067	92	95	95	B/C
		Sg. Gombak	2BKLG020	93	97	97	B/C
		Sg. Gombak	2BKLG027	93	97	95	B/C
		Sg. Jinjang	2BKLG044	81	84	86	B/C
		Sg. Kerayong	2BKLG013	51	55	50	T/P
		Sg. Kerayong	2BKLG051	66	65	63	ST/SP
		Sg. Keroh	2BKLG030	95	97	97	B/C
		Sg. Klang	2BKLG005	93	97	96	B/C
		Sg. Klang	2BKLG006	84	84	91	B/C
		Sg. Klang	2BKLG016	58	64	77	ST/SP
		Sg. Klang	2BKLG022	58	60	61	ST/SP
		Sg. Klang	2BKLG023	56	61	63	ST/SP
		Sg. Klang	2BKLG024	55	60	66	ST/SP
		Sg. Klang	2BKLG034	61	67	64	ST/SP
		Sg. Klang	2BKLG050	52	56	60	ST/SP
		Sg. Kuyoh	2BKLG011	59	69	72	ST/SP
		Sg. Penchala	2BKLG019	53	72	60	ST/SP
		Sg. Penchala	2BKLG054	57	73	75	ST/SP
		Sg. Pusu	2BKLG021	71	80	78	ST/SP
		Sg. Rasau	2BKLG003	83	87	93	B/C
		Sg. Rumpit	2BKLG033	92	97	95	B/C
		Sg. Semelah	2BKLG025	83	87	90	B/C
	Sg. Langat	Sg. Anak Chuau	2BCHU004	89	94	94	B/C
		Sg. Balak	2BLGT025	71	70	71	ST/SP
		Sg. Batang Labu	2BLGT028	79	75	83	B/C
		Sg. Batang Labu	2BLGT030	74	80	81	B/C
		Sg. Batang Labu	2BLGT031	69	71	78	ST/SP
		Sg. Batang Labu	2BLGT032	66	65	79	ST/SP
		Sg. Batang Labu	2BLGT033	86	91	88	B/C
		Sg. Batang Labu	2BLGT035	91	94	91	B/C
		Sg. Chuau	2BCHU001	91	94	94	B/C
		Sg. Chuau	2BCHU002	91	93	94	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Selangor	Sg. Langat	Sg. Langat	2BLGT002	77	82	85	B/C
		Sg. Langat	2BLGT003	77	82	80	ST/SP
		Sg. Langat	2BLGT004	70	72	76	ST/SP
		Sg. Langat	2BLGT005	68	71	79	ST/SP
		Sg. Langat	2BLGT006	93	96	97	B/C
		Sg. Langat	2BLGT007	83	84	84	B/C
		Sg. Langat	2BLGT008	95	95	93	B/C
		Sg. Langat	2BLGT026	73	78	80	ST/SP
		Sg. Langat	2BLGT027	72	72	74	ST/SP
		Sg. Limau Manis	2BCHU003	71	75	82	B/C
		Sg. Rinching	2BLGT014	81	84	80	ST/SP
		Sg. Rinching	2BLGT015	94	97	94	B/C
		Sg. Semenyih	2BLGT010	83	88	85	B/C
		Sg. Semenyih	2BLGT011	82	86	84	B/C
		Sg. Semenyih	2BLGT012	84	86	89	B/C
		Sg. Sering	2BLGT034	69	72	80	ST/SP
	Sg. Selangor	Sg. Air Hitam	2BSEL002	74	80	74	ST/SP
		Sg. Air Hitam	2BSEL024	76	80	79	ST/SP
		Sg. Batang Kali	2BSEL003	90	96	93	B/C
		Sg. Guntong	2BSEL021	80	81	83	B/C
		Sg. Kanching	2BSEL007	90	96	93	B/C
		Sg. Kerling	2BSEL006	94	97	96	B/C
		Sg. Kundang	2BSEL012	70	71	77	ST/SP
		Sg. Rangkap	2BSEL016	95	96	97	B/C
		Sg. Rawang	2BSEL013	77	81	81	B/C
		Sg. Selangor	2BSEL001	77	81	80	ST/SP
		Sg. Selangor	2BSEL004	92	96	96	B/C
		Sg. Selangor	2BSEL005	95	97	96	B/C
		Sg. Selangor	2BSEL010	79	83	86	B/C
		Sg. Selangor	2BSEL011	82	91	91	B/C
		Sg. Selangor	2BSEL014	80	84	85	B/C
		Sg. Selangor	2BSEL015	93	97	96	B/C
		Sg. Selangor	2BSEL017	92	95	94	B/C
		Sg. Selangor	2BSEL018	86	88	88	B/C
		Sg. Selangor	2BSEL023	80	83	85	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Selangor	Sg. Selangor	Sg. Sembah	2BSEL009	74	80	80	ST/SP
		Sg. Sembah	2BSEL019	76	83	84	B/C
		Sg. Serendah	2BSEL008	90	96	95	B/C
	Sg. Sepang	Sg. Sepang	2BSPG001	85	83	88	B/C
		Sg. Sepang	2BSPG002	73	78	81	B/C
		Sg. Sepang	2BSPG003	76	80	83	B/C
	Sg. Tenggi	Sg. Tenggi	2BTGI001	76	80	72	ST/SP
		Sg. Tenggi	2BTGI002	92	96	96	B/C
		Sg. Tenggi	2BTGI003	79	84	82	B/C
		Sg. Tenggi	2BTGI004	92	94	95	B/C
W.P. Kuala Lumpur	Sg. Klang	Sg. Air Busuk	2WKLG041	41	40	52	T/P
		Sg. Batu	2WKLG028	63	58	64	ST/SP
		Sg. Batu	2WKLG056	59	67	72	ST/SP
		Sg. Batu	2WKLG061	68	61	78	ST/SP
		Sg. Belongkong	2WKLG040	69	73	65	ST/SP
		Sg. Bunos	2WKLG006	71	63	44	T/P
		Sg. Bunos	2WKLG039	68	75	71	ST/SP
		Sg. Bunos	2WKLG043	73	85	83	B/C
		Sg. Gombak	2WKLG018	61	65	67	ST/SP
		Sg. Gombak	2WKLG026	73	74	80	ST/SP
		Sg. Gombak	2WKLG060	61	69	70	ST/SP
		Sg. Jinjang	2WKLG014	61	69	67	ST/SP
		Sg. Jinjang	2WKLG031	62	70	70	ST/SP
		Sg. Jinjang	2WKLG045	56	59	63	ST/SP
		Sg. Kerayong	2WKLG046	58	61	64	ST/SP
		Sg. Kerayong	2WKLG058	62	64	58	T/P
		Sg. Keroh	2WKLG015	62	65	61	ST/SP
		Sg. Keroh	2WKLG048	61	61	65	ST/SP
		Sg. Klang	2WKLG001	63	67	72	ST/SP
		Sg. Klang	2WKLG002	65	69	70	ST/SP
		Sg. Klang	2WKLG003	67	68	74	ST/SP
		Sg. Klang	2WKLG004	67	75	70	ST/SP
		Sg. Klang	2WKLG049	66	69	72	ST/SP
		Sg. Kuyoh	2WKLG052	64	70	66	ST/SP
		Sg. Penchala	2WKLG010	92	92	89	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
W.P. Kuala Lumpur	Sg. Klang	Sg. Toba	2WKL037	61	69	63	ST/SP
		Sg. Untut	2WKL038	64	73	78	ST/SP
N. Sembilan	Sg. Langat	Sg. Batang Benar	3NLGT013	74	74	76	ST/SP
		Sg. Batang Labu	3NLGT009	81	87	85	B/C
		Sg. Batang Labu	3NLGT025	90	94	89	B/C
		Sg. Batang Nilai	3NLGT023	83	87	83	B/C
		Sg. Batang Nilai	3NLGT024	76	75	75	ST/SP
		Sg. Beranang	3NLGT019	82	87	85	B/C
		Sg. Buan	3NLGT022	80	83	85	B/C
		Sg. Jijan	3NLGT026	85	82	88	B/C
		Sg. Pajam	3NLGT020	82	85	86	B/C
		Sg. Pajam	3NLGT021	60	56	58	T/P
	Sg. Linggi	Sg. Batang Penar	3NLGI009	81	89	84	B/C
		Sg. Batang Penar	3NLGI010	92	95	91	B/C
		Sg. Batang Penar	3NLGI020	84	92	89	B/C
		Sg. Batang Penar	3NLGI021	95	95	93	B/C
		Sg. Batang Penar	3NLGI027	94	96	97	B/C
		Sg. Batang Penar	3NLGI034	80	78	84	B/C
		Sg. Batu Hampar	3NLGI024	93	91	93	B/C
		Sg. Chembong	3NLGI012	93	88	89	B/C
		Sg. Empangan Terip	3NLGI022	80	82	85	B/C
		Sg. Jelai	3NLGI025	89	86	88	B/C
		Sg. Kayu Ara	3NLGI016	77	80	84	B/C
		Sg. Kenaboi	3NLGI032	83	87	85	B/C
		Sg. Kepayong	3NLGI007	78	80	79	ST/SP
		Sg. Kepayong	3NLGI023	94	97	97	B/C
		Sg. Kundur Besar	3NLGI013	91	92	92	B/C
		Sg. Linggi	3NLGI001	83	87	86	B/C
		Sg. Linggi	3NLGI002	82	86	86	B/C
		Sg. Linggi	3NLGI003	83	85	87	B/C
		Sg. Linggi	3NLGI004	77	85	85	B/C
		Sg. Linggi	3NLGI005	78	82	82	B/C
		Sg. Linggi	3NLGI006	77	82	83	B/C
		Sg. Muar	3NLGI026	88	93	91	B/C
		Sg. Ngoi Ngoi	3NLGI040	76	80	83	ST/SP
		Sg. Paroi	3NLGI018	78	80	85	ST/SP

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
N. Sembilan	Sg. Linggi	Sg. Pedas	3NLGI014	90	94	93	B/C
		Sg. Rembau	3NLGI011	91	92	91	B/C
		Sg. Senawang	3NLGI017	73	77	81	B/C
		Sg. Simin	3NLGI015	82	85	87	B/C
		Sg. Temiang	3NLGI019	83	85	87	B/C
		Sg. Temiang	3NLGI033	68	61	70	ST/SP
	Sg. Lukut	Sg. Lukut	3NLKT001	74	73	80	ST/SP
	Sg. Melaka	Sg. Dusun	3NMLK017	93	94	94	B/C
		Sg. Kemunting	3NMLK039	92	92	91	B/C
		Sg. Tampin	3NMLK038	95	96	95	B/C
		Sg. Tampin	3NMLK041	81	83	84	B/C
	Sg. Muar	Sg. Gemas	3NMUA041	70	71	76	ST/SP
		Sg. Gemencheh	3NMUA043	82	91	88	B/C
		Sg. Gemencheh	3NMUA045	82	90	85	B/C
		Sg. Jelai	3NMUA054	88	92	91	B/C
		Sg. Kelamah	3NMUA044	71	88	79	ST/SP
		Sg. Muar	3NMUA042	91	95	96	B/C
		Sg. Muar	3NMUA046	84	90	84	B/C
		Sg. Muar	3NMUA047	86	90	85	B/C
		Sg. Muar	3NMUA048	85	86	86	B/C
		Sg. Muar	3NMUA049	88	89	89	B/C
		Sg. Muar	3NMUA050	85	88	87	B/C
		Sg. Muar	3NMUA051	86	90	86	B/C
		Sg. Muar	3NMUA052	85	91	90	B/C
		Sg. Muar	3NMUA053	85	90	90	B/C
		Sg. Muar	3NMUA055	84	91	91	B/C
	Sg. Pahang	Sg. Pertang	3NPHG002	89	92	91	B/C
		Sg. Serting	3NPHG003	80	87	82	B/C
		Sg. Serting	3NPHG004	79	86	81	B/C
		Sg. Serting	3NPHG005	77	81	77	ST/SP
		Sg. Triang	3NPHG006	84	93	89	B/C
	Sg. Sepang	Sg. Rambai	2BSPG004	25	25	60	ST/SP
Melaka	Sg. Baru	Sg. Baru	3MBAR001	74	70	75	ST/SP
	Sg. Duyong	Sg. Duyong	3MDYG001	63	69	72	ST/SP
		Sg. Duyong	3MDYG002	58	65	66	ST/SP
		Sg. Duyong	3MDYG003	77	84	87	B/C
		Sg. Gapam	3MDYG004	88	92	93	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Melaka	Sg. Duyong	Sg. Punggur	3MPGR001	52	67	58	T/P
		Sg. Punggur	3MPGR002	49	58	56	T/P
	Sg. Kesang	Sg. Chin-Chin	3MKSG006	62	53	66	ST/SP
		Sg. Chin-Chin	3MKSG008	79	87	84	B/C
		Sg. Chin-Chin	3MKSG009	78	89	86	B/C
		Sg. Chohong	3MKSG004	86	91	93	B/C
		Sg. Chohong	3MKSG005	90	94	94	B/C
		Sg. Kesang	3MKSG001	72	82	83	B/C
		Sg. Kesang	3MKSG002	79	88	84	B/C
		Sg. Kesang	3MKSG003	77	88	88	B/C
		Sg. Tangkak	3MKSG007	67	77	74	ST/SP
	Sg. Linggi	Sg. Simpang Ampat	3MLGI029	83	87	84	B/C
		Sg. Siput	3MLGI030	87	90	91	B/C
		Sg. Siput	3MLGI031	86	92	89	B/C
		Sg. Tuang	3MTUG002	57	62	70	ST/SP
	Sg. Melaka	Sg. Batang Melaka	3MMLK008	90	91	91	B/C
		Sg. Batang Melaka	3MMLK027	87	91	91	B/C
		Sg. Batang Melaka	3MMLK028	86	89	92	B/C
		Sg. Durian Tunggal	3MMLK011	79	86	88	B/C
		Sg. Malim	3MMLK014	67	71	70	ST/SP
		Sg. Malim	3MMLK034	67	68	71	ST/SP
		Sg. Melaka	3MMLK007	72	71	74	ST/SP
		Sg. Melaka	3MMLK009	91	93	92	B/C
		Sg. Melaka	3MMLK010	93	96	96	B/C
		Sg. Melaka	3MMLK012	70	72	71	ST/SP
		Sg. Melaka	3MMLK013	63	68	73	ST/SP
		Sg. Melaka	3MMLK015	81	82	84	B/C
		Sg. Melaka	3MMLK021	81	85	86	B/C
		Sg. Melaka	3MMLK022	83	86	87	B/C
		Sg. Melaka	3MMLK023	72	72	67	ST/SP
		Sg. Melaka	3MMLK024	59	69	72	ST/SP
		Sg. Melaka	3MMLK025	79	84	84	B/C
		Sg. Melaka	3MMLK026	80	81	83	B/C
		Sg. Melaka	3MMLK030	82	84	85	B/C
		Sg. Melaka	3MMLK032	70	67	68	ST/SP

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)	
				2020	2021	2022		
Melaka	Sg. Melaka	Sg. Putat	3MMLK029	62	74	68	ST/SP	
		Sg. Putat	3MMLK033	59	63	64	ST/SP	
		Sg. Rembia	3MMLK035	73	82	77	ST/SP	
		Sg. Rembia	3MMLK036	68	54	82	B/C	
		Sg. Tampin	3MMLK031	91	94	90	B/C	
	Sg. Merlimau	Sg. Merlimau	3MMLU001	60	55	57	T/P	
		Sg. Merlimau	3MMLU002	52	56	51	T/P	
		Sg. Merlimau	3MMLU003	40	58	61	ST/SP	
		Sg. Merlimau	3MMLU004	58	58	63	ST/SP	
		Sg. Merlimau	3MMLU005	67	68	66	ST/SP	
	Sg. Seri Melaka	Sg. Air Salak	3MSMK001	62	79	78	ST/SP	
		Sg. Seri Melaka	3MSMK002	65	66	69	ST/SP	
		Sg. Sg.Udang	3MSUD001	87	86	91	B/C	
	Sg. Tuang	Sg. Tuang	3MTUG001	59	63	75	ST/SP	
	Johor	Sg. Air Baloi	Sg. Air Baloi	3JABL001	60	56	55	T/P
			Sg. Air Baloi	3JABL002	59	52	56	T/P
			Sg. Air Baloi	3JABL003	60	57	61	T/P
			Sg. Amran	3JBPT018	75	81	80	ST/SP
Sg. Bantang			3JBPT020	96	97	97	B/C	
Sg. Batu Pahat			3JBPT001	66	64	61	ST/SP	
Sg. Bekok			3JBPT005	79	84	81	B/C	
Sg. Bekok			3JBPT008	57	67	58	T/P	
Sg. Bekok			3JBPT016	85	91	85	B/C	
Sg. Bekok			3JBPT017	87	91	90	B/C	
Sg. Bekok			3JBPT019	92	94	93	B/C	
Sg. Bekok			3JBPT023	57	63	60	ST/SP	
Sg. Berlian			3JBPT007	78	77	79	ST/SP	
Sg. Chaah			3JBPT010	88	93	90	B/C	
Sg. Kahang			3JBPT022	90	92	82	B/C	
Sg. Lenik			3JBPT011	82	91	90	B/C	
Sg. Merek			3JBPT009	88	89	88	B/C	
Sg. Merpo		3JBPT006	91	90	91	B/C		
Sg. Panchor		3JBPT025	59	63	59	T/P		
Sg. Semberong		3JBPT003	57	64	63	ST/SP		
Sg. Semberong		3JBPT004	64	77	72	ST/SP		
Sg. Semberong Dam		3JBPT021	89	91	89	B/C		

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Johor	Sg. Batu Pahat	Sg. Simpang Kanan	3JBPT002	58	62	59	T/P
		Sg. Simpang Kanan	3JBPT013	59	60	59	T/P
		Sg. Simpang Kiri	3JBPT012	81	82	80	B/C
		Sg. Simpang Kiri	3JBPT014	65	71	76	ST/SP
		Sg. Simpang Kiri	3JBPT015	60	64	66	ST/SP
		Sg. Temehel	3JBPT024	57	54	59	T/P
	Sg. Benut	Sg. Benut	3JBNT001	86	92	92	B/C
		Sg. Benut	3JBNT002	79	86	86	B/C
		Sg. Benut	3JBNT005	64	66	68	ST/SP
		Sg. Benut	3JBNT006	69	62	62	ST/SP
		Sg. Machap Dam	3JBNT008	92	94	93	B/C
		Sg. Parit Hj. Yassin	3JBNT004	85	81	81	B/C
		Sg. Pinggan	3JBNT007	60	59	63	ST/SP
	Sg. Danga	Sg. Ulu Benut	3JBNT003	89	90	86	B/C
		Sg. Danga	3JDGA001	58	62	66	ST/SP
	Sg. Endau	Sg. Danga	3JDGA002	55	59	62	T/P
		Sg. Anak Sg. Semberong	3JEND007	84	85	84	B/C
		Sg. Dengar	3JEND010	84	91	90	B/C
		Sg. Empangan Labong	3JEND027	89	91	91	B/C
		Sg. Endau	3JEND019	85	88	89	B/C
		Sg. Endau	3JEND022	87	90	91	B/C
		Sg. Endau	3JEND023	93	96	92	B/C
		Sg. Jasin	3JEND024	94	97	96	B/C
		Sg. Jebong	3JEND005	74	82	75	ST/SP
		Sg. Kahang	3JEND020	90	89	89	B/C
		Sg. Kahang	3JEND026	90	94	92	B/C
		Sg. Kahang	3JEND028	90	88	88	B/C
		Sg. Lenga	3JEND008	68	69	74	ST/SP
		Sg. Lenggong	3JEND009	82	89	89	B/C
		Sg. Lenggong	3JEND029	81	88	90	B/C
		Sg. Mamai	3JEND015	87	88	89	B/C
		Sg. Melatai	3JEND017	70	71	73	ST/SP
		Sg. Mengkibol	3JEND001	88	89	92	B/C
		Sg. Mengkibol	3JEND002	77	84	82	B/C
		Sg. Mengkibol	3JEND003	69	75	77	ST/SP

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Johor	Sg. Endau	Sg. Paloh	3JEND016	82	85	85	B/C
		Sg. Pamol	3JEND011	72	76	73	ST/SP
		Sg. Selai	3JEND025	92	94	94	B/C
		Sg. Semberong	3JEND004	89	90	87	B/C
		Sg. Semberong	3JEND006	84	84	80	ST/SP
		Sg. Semberong	3JEND012	76	80	77	ST/SP
		Sg. Semberong	3JEND018	85	88	88	B/C
		Sg. Semberong	3JEND021	84	88	89	B/C
		Sg. Singol	3JEND013	79	83	87	B/C
		Sg. Tamok	3JEND014	91	90	91	B/C
	Sg. Jemaluang	Sg. Jemaluang	3JJML001	81	90	90	B/C
		Sg. Jemaluang	3JJML002	81	86	80	ST/SP
	Sg. Johor	Sg. Anak Sg. Sayong	3JJHR023	86	92	92	B/C
		Sg. Anak Sg. Sayong	3JJHR032	75	84	72	ST/SP
		Sg. Belitong	3JJHR038	83	89	86	B/C
		Sg. Berangan	3JJHR013	71	82	81	B/C
		Sg. Bukit Besar	3JJHR007	61	60	56	T/P
		Sg. Bukit Besar	3JJHR009	90	95	95	B/C
		Sg. Chemangar	3JJHR019	70	73	77	ST/SP
		Sg. Johor	3JJHR011	83	89	91	B/C
		Sg. Johor	3JJHR014	85	89	91	B/C
		Sg. Johor	3JJHR015	86	91	92	B/C
	Sg. Layang	Sg. Layang	3JJHR001	93	93	93	B/C
		Sg. Layau Kiri	3JJHR017	87	92	89	B/C
		Sg. Lebam	3JJHR020	79	87	88	B/C
		Sg. Linggiu	3JJHR030	84	93	92	B/C
		Sg. Panti	3JJHR037	79	87	86	B/C
		Sg. Papan	3JJHR034	81	86	87	B/C
		Sg. Pelepah	3JJHR039	95	97	97	B/C
		Sg. Pelepah	3JJHR043	86	87	87	B/C
		Sg. Pelepah	3JJHR044	87	88	90	B/C
		Sg. Pelepah	3JJHR045	90	92	93	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Johor	Sg. Johor	Sg. Penggeli	3JJHR028	89	87	90	B/C
		Sg. Penggeli	3JJHR031	89	88	89	B/C
		Sg. Remis	3JJHR026	86	89	89	B/C
		Sg. Santi	3JJHR022	89	87	90	B/C
		Sg. Sayong	3JJHR024	82	85	82	B/C
		Sg. Sayong	3JJHR025	78	84	88	B/C
		Sg. Sayong	3JJHR027	82	84	88	B/C
		Sg. Sayong	3JJHR033	83	88	89	B/C
		Sg. Sebol	3JJHR029	73	80	79	ST/SP
		Sg. Seluyut	3JJHR035	83	87	83	B/C
		Sg. Semangar	3JJHR008	81	92	90	B/C
		Sg. Semenchu	3JJHR018	66	85	86	B/C
		Sg. Sening	3JJHR021	89	93	96	B/C
		Sg. Serai	3JJHR002	67	60	62	ST/SP
		Sg. Telor	3JJHR012	88	89	93	B/C
		Sg. Temoh	3JJHR016	74	84	88	B/C
		Sg. Tiram	3JJHR003	71	79	77	ST/SP
		Sg. Tiram	3JJHR004	86	91	89	B/C
		Sg. Tiram	3JJHR005	69	68	77	ST/SP
		Sg. Tiram	3JJHR006	88	93	92	B/C
	Sg. Kaw. Pasir Gudang	Sg. Buluh	3JPGD002	41	43	40	T/P
		Sg. Lato	3JPGD004	62	68	71	ST/SP
		Sg. Masai	3JPGD005	63	60	63	ST/SP
		Sg. Perembi	3JPGD001	57	47	59	T/P
		Sg. Tukang Batu	3JPGD003	42	35	34	T/P
	Sg. Kempas	Sg. Kempas	3JKPS001	29	33	39	T/P
		Sg. Kempas	3JKPS002	37	42	43	T/P
	Sg. Kim-Kim	Sg. Kim-Kim	3JKIM001	51	66	57	T/P
		Sg. Kim-Kim	3JKIM002	85	90	89	B/C
	Sg. Mersing	Sg. Empangan Congok	3JMSG004	85	88	86	B/C
		Sg. Mersing	3JMSG001	87	95	93	B/C
		Sg. Mersing	3JMSG002	84	88	81	B/C
		Sg. Mersing	3JMSG003	83	92	87	B/C
	Sg. Muar	Sg. Air Panas	3JMUA035	94	97	96	B/C
		Sg. Belemang	3JMUA051	94	95	94	B/C
		Sg. Gemas	3JMUA036	80	85	86	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Johor	Sg. Muar	Sg. Jementah	3JMUA040	93	96	95	B/C
		Sg. Juasseh	3JMUA014	94	96	92	B/C
		Sg. Juasseh	3JMUA037	93	95	95	B/C
		Sg. Juasseh	3JMUA045	94	95	94	B/C
		Sg. Labis	3JMUA011	89	88	87	B/C
		Sg. Labis	3JMUA012	89	89	88	B/C
		Sg. Labis	3JMUA015	87	87	82	B/C
		Sg. Meda	3JMUA034	82	85	80	ST/SP
		Sg. Merbudu	3JMUA030	63	77	72	ST/SP
		Sg. Merlimau	3JMUA020	70	66	73	ST/SP
		Sg. Muar	3JMUA017	82	86	81	B/C
		Sg. Muar	3JMUA019	85	87	76	ST/SP
		Sg. Muar	3JMUA022	85	89	82	B/C
		Sg. Muar	3JMUA026	84	89	85	B/C
		Sg. Muar	3JMUA027	85	84	83	B/C
		Sg. Muar	3JMUA028	83	81	83	B/C
		Sg. Muar	3JMUA029	75	84	85	B/C
		Sg. Muar	3JMUA031	77	83	84	B/C
		Sg. Muar	3JMUA033	73	77	80	ST/SP
		Sg. Muar	3JMUA039	82	85	82	B/C
		Sg. Muar	3JMUA041	80	86	84	B/C
		Sg. Muar	3JMUA042	78	86	85	B/C
		Sg. Muar	3JMUA043	79	83	85	B/C
		Sg. Muar	3JMUA046	86	89	83	B/C
		Sg. Muar	3JMUA047	81	87	84	B/C
		Sg. P. Mengkuang	3JMUA018	89	92	91	B/C
		Sg. Pagoh	3JMUA049	66	74	76	ST/SP
		Sg. Palong	3JMUA024	88	89	87	B/C
		Sg. Palong	3JMUA025	84	85	81	B/C
		Sg. Pendol	3JMUA050	90	95	93	B/C
		Sg. Sarang Buaya	3JMUA038	58	60	60	ST/SP
		Sg. Segamat	3JMUA016	89	90	86	B/C
		Sg. Segamat	3JMUA044	91	94	89	B/C
		Sg. Segamat	3JMUA048	92	95	91	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Johor	Sg. Muar	Sg. Senarut	3JMUA021	75	77	79	ST/SP
		Sg. Serom	3JMUA032	63	63	63	ST/SP
		Sg. Simpang Loi	3JMUA023	77	84	73	ST/SP
		Sg. Tenang	3JMUA013	79	76	81	B/C
	Sg. Paloi	Sg. Paloi	3JPAL001	89	90	90	B/C
		Sg. Air Hitam	3JPBS001	71	74	73	ST/SP
		Sg. Ayer Merah	3JPBS005	43	54	54	T/P
	Sg. Pontian Besar	Sg. Pontian Besar	3JPBS002	65	65	63	ST/SP
		Sg. Pontian Besar	3JPBS003	80	85	78	ST/SP
		Sg. Pontian Besar	3JPBS004	86	84	85	B/C
		Sg. Pontian Besar	3JPBS006	64	63	60	ST/SP
		Sg. Pontian Besar	3JPBS007	73	73	74	ST/SP
	Sg. Pontian Kecil	Sg. Pontian Kecil	3JPKC001	86	84	85	B/C
		Sg. Pontian Kecil	3JPKC002	76	75	70	ST/SP
	Sg. Pulai	Sg. Pulai	3JPLI001	82	83	86	B/C
		Sg. Pulai	3JPLI002	72	77	82	B/C
		Sg. Pulai Dam	3JPLI004	95	95	96	B/C
		Sg. Ulu Choh	3JPLI003	72	72	74	ST/SP
	Sg. Rambah	Sg. Rambah	3JRBH001	75	69	78	ST/SP
		Sg. Rambah	3JRBH002	65	63	70	ST/SP
	Sg. Sanglang	Sg. Sanglang	3JSLG001	59	57	51	T/P
		Sg. Ambat	3JSBE005	86	84	76	ST/SP
	Sg. Sedili Besar	Sg. Dohol	3JSBE001	89	90	86	B/C
		Sg. Mupur	3JSBE009	67	73	73	ST/SP
		Sg. Pasir Panjang	3JSBE010	88	87	76	ST/SP
		Sg. Sedili Besar	3JSBE002	86	86	86	B/C
		Sg. Sedili Besar	3JSBE004	91	93	91	B/C
		Sg. Sedili Besar	3JSBE006	82	87	85	B/C
		Sg. Sedili Besar	3JSBE007	74	72	70	ST/SP
		Sg. Sedili Besar	3JSBE008	87	89	85	B/C
		Sg. Sedili Besar	3JSBE011	90	88	87	B/C
		Sg. Temubor Kanan	3JSBE003	93	95	93	B/C
	Sg. Sedili Kecil	Sg. Anak Sedili Kecil	3JSKE005	25	24	74	ST/SP
		Sg. Anak Sedili Kecil	3JSKE006	79	85	75	ST/SP

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Johor	Sg. Sedili Kecil	Sg. Bahan	3JSKE002	78	73	64	ST/SP
		Sg. Bahan	3JSKE004	74	78	76	ST/SP
		Sg. Sedili Kecil	3JSKE001	89	88	83	B/C
		Sg. Sedili Kecil	3JSKE003	80	76	78	ST/SP
	Sg. Segget	Sg. Segget	3JSGT001	81	71	64	ST/SP
		Sg. Segget	3JSGT002	77	68	72	ST/SP
		Sg. Segget	3JSGT003	59	67	65	ST/SP
		Sg. Segget	3JSGT004	63	78	76	ST/SP
		Sg. Segget	3JSGT005	54	65	72	ST/SP
	Sg. Skudai	Sg. Melana	3JSKU008	91	95	94	B/C
		Sg. Melana	3JSKU009	61	59	66	ST/SP
		Sg. Skudai	3JSKU001	55	63	65	ST/SP
		Sg. Skudai	3JSKU002	66	71	65	ST/SP
		Sg. Skudai	3JSKU003	61	74	74	ST/SP
		Sg. Skudai	3JSKU004	89	90	93	B/C
		Sg. Skudai	3JSKU005	72	79	81	B/C
		Sg. Skudai	3JSKU006	66	76	77	ST/SP
		Sg. Skudai	3JSKU007	43	54	63	ST/SP
		Sg. Skudai	3JSKU010	55	62	61	ST/SP
		Sg. Skudai	3JSKU011	92	92	95	B/C
	Sg. Tebrau	Sg. Bala	3JTRU008	55	47	55	T/P
		Sg. Pandan	3JTRU007	46	43	58	T/P
		Sg. Plentong	3JTRU004	56	66	67	ST/SP
		Sg. Sebulung	3JTRU009	53	58	62	ST/SP
		Sg. Sengkuang	3JTRU011	52	53	50	T/P
		Sg. Tampoi	3JTRU010	52	60	58	T/P
		Sg. Tebrau	3JTRU001	44	65	57	T/P
		Sg. Tebrau	3JTRU002	55	72	54	T/P
		Sg. Tebrau	3JTRU003	65	72	68	ST/SP
		Sg. Tebrau	3JTRU005	57	65	62	ST/SP
		Sg. Tebrau	3JTRU006	64	69	71	ST/SP
Pahang	Sg. Anak Endau	Sg. Anak Endau	4CAED001	94	95	95	B/C
		Sg. Anak Endau	4CAED002	84	87	86	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Pahang	Sg. Balok	Sg. Balok	4CBLK001	66	82	74	ST/SP
		Sg. Balok	4CBLK002	70	77	77	ST/SP
		Sg. Panjang	4CBLK004	76	78	72	ST/SP
		Sg. Yior	4CBLK003	62	75	74	ST/SP
	Sg. Bebar	Sg. Bebar	4CBBR001	76	86	83	B/C
		Sg. Bebar	4CBBR002	82	92	89	B/C
		Sg. Merba	4CBBR005	85	91	88	B/C
		Sg. Serai	4CBBR003	75	85	74	ST/SP
		Sg. Serai	4CBBR004	85	88	86	B/C
	Sg. Cherating	Sg. Cherating	4CCHE001	81	86	85	B/C
	Sg. Kuantan	Sg. Belat	4CKTN001	80	86	88	B/C
		Sg. Charu	4CKTN006	93	96	95	B/C
		Sg. Galing Besar	4CKTN003	63	70	76	ST/SP
		Sg. Galing Besar	4CKTN004	64	62	76	ST/SP
		Sg. Kenau	4CKTN010	94	97	96	B/C
		Sg. Kuantan	4CKTN002	88	93	87	B/C
		Sg. Kuantan	4CKTN015	87	93	87	B/C
		Sg. Kuantan	4CKTN016	90	93	94	B/C
		Sg. Kuantan	4CKTN017	93	96	96	B/C
		Sg. Kuantan	4CKTN018	94	96	97	B/C
		Sg. Kuantan	4CKTN019	80	85	87	B/C
		Sg. Kuantan	4CKTN020	86	93	87	B/C
		Sg. Kuantan	4CKTN021	85	88	89	B/C
	Sg. Merchong	Sg. Merchong	4CMCO002	82	92	86	B/C
		Sg. Merchong	4CMCO003	89	93	89	B/C
	Sg. Pahang	Sg. Anak Sg. Lepar	4CPHG136	85	93	89	B/C
		Sg. Batu	4CPHG056	84	92	91	B/C
		Sg. Belayar	4CPHG135	94	94	92	B/C
		Sg. Bentong	4CPHG040	92	95	95	B/C
		Sg. Bentong	4CPHG045	87	91	89	B/C
		Sg. Bentong	4CPHG092	92	95	90	B/C
		Sg. Bentong	4CPHG133	86	93	94	B/C
		Sg. Bentong	4CPHG134	92	96	96	B/C
		Sg. Bentong	4CPHG144	86	89	88	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Pahang	Sg. Pahang	Sg. Benus	4CPHG047	91	91	91	B/C
		Sg. Benus	4CPHG118	94	94	92	B/C
		Sg. Benus	4CPHG152	93	96	91	B/C
		Sg. Bera	4CPHG019	83	86	85	B/C
		Sg. Bera	4CPHG020	84	86	89	B/C
		Sg. Bera	4CPHG058	85	86	88	B/C
		Sg. Bera	4CPHG059	85	91	85	B/C
		Sg. Bera	4CPHG063	85	86	85	B/C
		Sg. Berkelah	4CPHG098	93	97	97	B/C
		Sg. Bertam	4CBTM002	91	94	89	B/C
		Sg. Bertam	4CBTM010	74	79	78	ST/SP
		Sg. Bertam	4CBTM011	96	96	97	B/C
		Sg. Bertam	4CBTM013	97	97	97	B/C
		Sg. Bilut	4CPHG119	83	88	85	B/C
		Sg. Bilut	4CPHG129	85	92	92	B/C
		Sg. Burung	4CBTM005	96	96	95	B/C
		Sg. Chini	4CPHG004	82	84	85	B/C
		Sg. Gapoi	4CPHG086	94	97	96	B/C
		Sg. Habu	4CBTM004	90	96	94	B/C
		Sg. Jelai	4CPHG013	90	93	93	B/C
		Sg. Jelai	4CPHG096	86	91	88	B/C
		Sg. Jelai	4CPHG125	88	90	90	B/C
		Sg. Jempol	4CPHG049	83	91	90	B/C
		Sg. Jempol	4CPHG050	93	97	94	B/C
		Sg. Jempol	4CPHG087	93	95	93	B/C
		Sg. Jempol	4CPHG088	90	95	91	B/C
		Sg. Jempol	4CPHG121	85	95	94	B/C
		Sg. Jengka	4CPHG041	92	95	93	B/C
		Sg. Jengka	4CPHG051	86	89	90	B/C
		Sg. Kecau	4CPHG091	83	87	91	B/C
		Sg. Kecau	4CPHG116	84	87	84	B/C
		Sg. Kecau	4CPHG151	89	89	95	B/C
		Sg. Kelau	4CPHG117	88	91	94	B/C
		Sg. Kelau	4CPHG145	82	86	86	B/C
		Sg. Kelau	4CPHG146	91	93	94	B/C
		Sg. Kelau	4CPHG153	84	89	84	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Pahang	Sg. Pahang	Sg. Kertam	4CPHG014	91	91	93	B/C
		Sg. Koyan	4CPHG033	89	94	92	B/C
		Sg. Krau	4CPHG003	92	94	92	B/C
		Sg. Kundang	4CPHG018	79	82	85	B/C
		Sg. Lenggok	4CBTM003	93	96	92	B/C
		Sg. Lepar	4CPHG006	92	91	93	B/C
		Sg. Lipis	4CPHG029	85	90	89	B/C
		Sg. Lipis	4CPHG030	88	91	91	B/C
		Sg. Lipis	4CPHG035	93	96	94	B/C
		Sg. Luit	4CPHG015	91	93	92	B/C
		Sg. Maran	4CPHG016	93	96	96	B/C
		Sg. Mentiga	4CPHG005	80	77	83	B/C
		Sg. Mentiga	4CPHG042	85	86	88	B/C
		Sg. Mentiga	4CPHG089	85	87	89	B/C
		Sg. Pahang	4CPHG007	82	90	88	B/C
		Sg. Pahang	4CPHG008	93	93	91	B/C
		Sg. Pahang	4CPHG010	87	90	92	B/C
		Sg. Pahang	4CPHG011	88	93	89	B/C
		Sg. Pahang	4CPHG012	89	93	90	B/C
		Sg. Pahang	4CPHG013	89	91	90	B/C
		Sg. Pahang	4CPHG021	87	92	90	B/C
		Sg. Pahang	4CPHG022	87	91	91	B/C
		Sg. Pahang	4CPHG023	91	94	92	B/C
		Sg. Pahang	4CPHG027	88	94	92	B/C
		Sg. Pahang	4CPHG054	87	90	88	B/C
		Sg. Pahang	4CPHG055	86	91	90	B/C
		Sg. Pahang	4CPHG097	88	93	89	B/C
		Sg. Pahang	4CPHG100	84	89	88	B/C
		Sg. Pahang	4CPHG104	87	91	90	B/C
		Sg. Pahang	4CPHG111	89	92	93	B/C
		Sg. Pahang	4CPHG113	87	92	88	B/C
		Sg. Pahang	4CPHG124	89	91	91	B/C
		Sg. Pahang	4CPHG126	88	92	91	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Pahang	Sg. Pahang	Sg. Pahang	4CPHG127	89	88	96	B/C
		Sg. Pahang	4CPHG131	88	88	89	B/C
		Sg. Pahang	4CPHG137	86	93	90	B/C
		Sg. Pahang	4CPHG138	85	90	89	B/C
		Sg. Pahang	4CPHG139	83	90	89	B/C
		Sg. Pahang	4CPHG141	87	91	93	B/C
		Sg. Pahang	4CPHG148	88	92	88	B/C
		Sg. Pahang	4CPHG150	87	89	89	B/C
		Sg. Penjuring	4CPHG044	94	97	97	B/C
		Sg. Pertang	4CPHG132	91	90	91	B/C
		Sg. Perting	4CPHG120	94	96	97	B/C
		Sg. Raub	4CPHG123	93	95	95	B/C
		Sg. Retang	4CPHG105	92	93	94	B/C
		Sg. Ringlet	4CBTM001	83	91	89	B/C
		Sg. Salak	4CPHG122	87	91	91	B/C
		Sg. Semantan	4CPHG025	87	92	88	B/C
		Sg. Semantan	4CPHG036	91	92	93	B/C
		Sg. Semantan	4CPHG061	87	90	85	B/C
		Sg. Semantan	4CPHG084	88	93	88	B/C
		Sg. Serting	4CPHG101	84	85	86	B/C
		Sg. Serting	4CPHG102	85	84	86	B/C
		Sg. T. Paya Bungor	4CPHG002	91	91	92	B/C
		Sg. Tahan	4CPHG109	91	92	94	B/C
		Sg. Tanglir	4CPHG048	88	94	90	B/C
		Sg. Tanglir	4CPHG053	89	87	89	B/C
		Sg. Tanglir	4CPHG057	87	84	89	B/C
		Sg. Tanglir	4CPHG106	88	86	97	B/C
		Sg. Tanglir	4CPHG107	88	88	90	B/C
		Sg. Tasik Bera	4CPHG140	91	88	89	B/C
		Sg. Tasik Chini	4CPHG043	92	88	93	B/C
		Sg. Tasik Chini	4CPHG060	93	90	92	B/C
		Sg. Tasik Chini	4CPHG071	91	92	93	B/C
		Sg. Tasik Chini	4CPHG108	92	93	93	B/C
		Sg. Tasik Chini	4CPHG110	91	87	93	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Pahang	Sg. Pahang	Sg. Tasik Chini	4CPHG112	93	89	92	B/C
		Sg. Tasik Chini	4CPHG114	92	92	93	B/C
		Sg. Tasik Chini	4CPHG115	92	90	92	B/C
		Sg. Tasik Chini	4CPHG130	92	90	92	B/C
		Sg. Tasik Chini	4CPHG143	92	87	90	B/C
		Sg. Teh	4CPHG090	93	94	94	B/C
		Sg. Tekal	4CPHG062	85	89	87	B/C
		Sg. Telang	4CPHG032	91	94	93	B/C
		Sg. Telemong	4CPHG046	94	96	95	B/C
		Sg. Telemong	4CPHG093	93	93	93	B/C
		Sg. Telemong	4CPHG094	91	97	94	B/C
		Sg. Telom	4CBTM008	86	95	94	B/C
		Sg. Telom	4CBTM009	86	93	92	B/C
		Sg. Tembeling	4CPHG142	91	90	94	B/C
		Sg. Teranum	4CPHG038	95	96	96	B/C
		Sg. Teras	4CPHG037	93	96	95	B/C
		Sg. Teras	4CPHG147	91	96	96	B/C
		Sg. Teris	4CPHG081	91	94	95	B/C
		Sg. Teris	4CPHG082	92	95	94	B/C
		Sg. Teris	4CPHG083	92	94	94	B/C
		Sg. Terla	4CBTM007	92	95	97	B/C
		Sg. Terla	4CBTM012	95	97	97	B/C
		Sg. Triang	4CPHG024	88	91	85	B/C
		Sg. Triang	4CPHG074	88	91	84	B/C
		Sg. Tringkap	4CBTM006	89	94	96	B/C
		Sg. Ulong	4CBTM014	96	97	97	B/C
	Sg. Rompin	Sg. Aur	4CRPN005	86	91	90	B/C
		Sg. Bakar	4CRPN016	75	69	92	B/C
		Sg. Jekatih	4CRPN012	87	91	92	B/C
		Sg. Jekatih	4CRPN013	87	90	91	B/C
		Sg. Jeram	4CRPN006	88	93	90	B/C
		Sg. Kepasing	4CRPN010	88	90	92	B/C
		Sg. Keratong	4CRPN011	84	87	91	B/C
		Sg. Keratong	4CRPN018	84	91	91	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Pahang	Sg. Rompin	Sg. Keratong	4CRPN021	86	93	90	B/C
		Sg. Keratong	4CRPN022	88	93	90	B/C
		Sg. Pontian	4CRPN003	85	90	84	B/C
		Sg. Pukin	4CRPN014	87	90	92	B/C
		Sg. Pukin	4CRPN015	84	90	94	B/C
		Sg. Pukin	4CRPN017	87	89	94	B/C
		Sg. Rompin	4CRPN004	78	88	87	B/C
		Sg. Rompin	4CRPN007	79	92	88	B/C
		Sg. Rompin	4CRPN008	85	93	91	B/C
		Sg. Rompin	4CRPN020	83	93	91	B/C
		Sg. Rompin	4CRPN030	86	90	91	B/C
		Sg. Sepayang	4CRPN002	77	84	86	B/C
	Sg. Tonggok	Sg. Tonggok	4CTGK001	80	82	67	ST/SP
		Sg. Tonggok	4CTGK002	65	80	75	ST/SP
Terengganu	Sg. Besut	Sg. Besut	4TBST002	91	93	94	B/C
		Sg. Besut	4TBST003	92	94	93	B/C
		Sg. Besut	4TBST004	93	96	93	B/C
		Sg. Besut	4TBST005	92	93	95	B/C
		Sg. Besut	4TBST006	92	94	95	B/C
		Sg. Jertih	4TBST001	88	92	91	B/C
	Sg. Chukai	Sg. Bungkus	4TCKI006	80	83	81	B/C
		Sg. Chukai	4TCKI003	80	87	88	B/C
		Sg. Ibok	4TCKI001	81	87	89	B/C
		Sg. Ibok	4TCKI002	91	91	87	B/C
		Sg. Ruang	4TCKI004	74	80	80	ST/SP
		Sg. Ruang	4TCKI005	65	80	79	ST/SP
	Sg. Dungun	Sg. Dungun	4TDGN002	92	96	95	B/C
		Sg. Dungun	4TDGN003	91	95	93	B/C
		Sg. Dungun	4TDGN004	90	94	91	B/C
		Sg. Dungun	4TDGN005	90	94	92	B/C
		Sg. Dungun	4TDGN006	91	94	91	B/C
	Sg. Ibai	Sg. Telembuh	4TDGN001	86	89	89	B/C
		Sg. Ibai	4TIBI001	81	75	73	ST/SP
		Sg. Ibai	4TIBI002	79	84	83	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Terengganu	Sg. Ibai	Sg. Ibai	4TIBI003	85	82	87	B/C
		Sg. Cherul	4TKMM003	90	92	92	B/C
		Sg. Cherul	4TKMM004	91	91	90	B/C
		Sg. Cherul	4TKMM010	89	90	91	B/C
		Sg. Kemaman	4TKMM007	92	95	95	B/C
		Sg. Kemaman	4TKMM008	87	94	89	B/C
		Sg. Kemaman	4TKMM009	86	90	92	B/C
		Sg. Neram	4TKMM005	75	86	85	B/C
		Sg. Perasing	4TKMM006	82	92	94	B/C
		Sg. Ransan	4TKMM001	65	78	79	ST/SP
	Sg. Kertih	Sg. Kertih	4TKTH001	82	88	91	B/C
		Sg. Kertih	4TKTH002	87	83	86	B/C
	Sg. Kluang	Sg. Kluang	4TKLU005	88	84	84	B/C
		Sg. Kerak	4TMRG001	79	82	85	B/C
	Sg. Marang	Sg. Marang	4TMRG002	88	89	94	B/C
		Sg. Temala	4TMRG003	91	92	91	B/C
	Sg. Merang	Sg. Merang	4TMER001	82	77	77	ST/SP
	Sg. Merchang	Sg. Landas	4TMCA001	71	87	87	B/C
		Sg. Merchang	4TMCA002	71	80	73	ST/SP
	Sg. Paka	Sg. Besul	4TPKA001	92	96	96	B/C
		Sg. Paka	4TPKA005	87	88	89	B/C
		Sg. Paka	4TPKA006	88	92	91	B/C
		Sg. Paka	4TPKA007	88	90	91	B/C
		Sg. Rasau	4TPKA003	83	85	86	B/C
		Sg. Rasau	4TPKA004	77	83	79	B/C
		Sg. Rengat	4TPKA002	84	91	91	B/C
	Sg. Setiu	Sg. Bari	4TSTU002	92	95	95	B/C
		Sg. Chalok	4TSTU001	85	94	91	B/C
		Sg. Chalok	4TSTU005	90	92	93	B/C
		Sg. Chalok	4TSTU006	83	83	85	B/C
		Sg. Setiu	4TSTU004	87	93	93	B/C
		Sg. Setiu	4TSTU007	90	94	93	B/C
		Sg. Tarom	4TSTU003	89	94	95	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Terengganu	Sg. Terengganu	Sg. Berang	4TTGG002	89	92	96	B/C
		Sg. Berang	4TTGG011	92	97	96	B/C
		Sg. Nerus	4TTGG004	85	91	87	B/C
		Sg. Nerus	4TTGG005	92	95	96	B/C
		Sg. Nerus	4TTGG006	89	93	95	B/C
		Sg. Nerus	4TTGG010	66	68	72	ST/SP
		Sg. Nerus	4TTGG014	90	94	94	B/C
		Sg. Nerus	4TTGG015	91	94	95	B/C
		Sg. Pueh	4TTGG007	70	82	86	B/C
		Sg. Pueh	4TTGG008	77	89	93	B/C
		Sg. Telemong	4TTGG012	88	93	91	B/C
		Sg. Terengganu	4TTGG001	87	91	90	B/C
		Sg. Terengganu	4TTGG003	90	95	96	B/C
		Sg. Terengganu	4TTGG009	87	88	89	B/C
		Sg. Terengganu	4TTGG013	89	92	93	B/C
Kelantan	Sg. Golok	Sg. Golok	4DGLK002	86	93	91	B/C
		Sg. Golok	4DGLK003	94	97	94	B/C
		Sg. Golok	4DGLK004	87	93	89	B/C
		Sg. Golok	4DGLK005	89	93	90	B/C
		Sg. Golok	4DGLK006	86	91	88	B/C
		Sg. Jedok	4DGLK008	90	95	95	B/C
		Sg. Lanas	4DGLK007	84	94	90	B/C
		Sg. Tasik Garu	4DGLK001	80	85	82	B/C
	Sg. Kelantan	Sg. Aring	4DKLT013	79	80	83	B/C
		Sg. Belatop	4DKLT020	83	89	87	B/C
		Sg. Belatop	4DKLT021	87	96	93	B/C
		Sg. Belatop	4DKLT046	78	82	82	B/C
		Sg. Ber	4DKLT018	87	91	91	B/C
		Sg. Berok	4DKLT016	81	83	85	B/C
		Sg. Berok	4DKLT019	88	90	90	B/C
		Sg. Berok	4DKLT022	81	84	81	B/C
		Sg. Betis	4DKLT017	86	93	92	B/C
		Sg. Chiku	4DKLT037	88	88	90	B/C
		Sg. Chiku	4DKLT043	89	90	92	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Kelantan	Sg. Kelantan	Sg. Galas	4DKLT014	89	89	81	B/C
		Sg. Galas	4DKLT031	89	90	92	B/C
		Sg. Galas	4DKLT032	87	92	87	B/C
		Sg. Galas	4DKLT033	84	81	91	B/C
		Sg. Galas	4DKLT034	82	79	92	B/C
		Sg. Isos	4DKLT049	73	73	78	ST/SP
		Sg. Kelantan	4DKLT001	82	83	87	B/C
		Sg. Kelantan	4DKLT006	78	87	89	B/C
		Sg. Kelantan	4DKLT010	84	83	82	B/C
		Sg. Kelantan	4DKLT045	80	84	87	B/C
		Sg. Kelantan	4DKLT054	88	89	91	B/C
		Sg. Kelantan	4DKLT055	85	93	90	B/C
		Sg. Kelantan	4DKLT056	81	83	87	B/C
		Sg. Kelesa	4DKLT015	87	94	91	B/C
		Sg. Kenkren	4DKLT047	92	93	94	B/C
		Sg. Kerilla	4DKLT002	92	94	94	B/C
		Sg. Kerilla	4DKLT003	91	94	93	B/C
		Sg. Ketil	4DKLT036	90	97	90	B/C
		Sg. Ketil	4DKLT053	90	96	90	B/C
		Sg. Lebir	4DKLT026	92	94	91	B/C
		Sg. Lebir	4DKLT027	85	87	79	ST/SP
		Sg. Lebir	4DKLT028	88	94	94	B/C
		Sg. Lebir	4DKLT029	84	87	81	B/C
		Sg. Lebir	4DKLT058	88	95	91	B/C
		Sg. Muring	4DKLT059	85	92	90	B/C
		Sg. Nal	4DKLT007	89	93	90	B/C
		Sg. Nal	4DKLT008	88	91	89	B/C
		Sg. Nal	4DKLT009	87	91	88	B/C
		Sg. Nenggiri	4DKLT023	82	83	86	B/C
		Sg. Nenggiri	4DKLT024	83	86	87	B/C
		Sg. Nenggiri	4DKLT025	80	78	91	B/C
		Sg. Pehi	4DKLT011	88	92	91	B/C
		Sg. Pehi	4DKLT044	86	90	91	B/C
		Sg. Pelaur	4DKLT048	90	96	95	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Kelantan	Sg. Kelantan	Sg. Penangau	4DKLT050	78	87	89	B/C
		Sg. Pergau	4DKLT004	91	96	97	B/C
		Sg. Pergau	4DKLT005	90	95	94	B/C
		Sg. Pergau	4DKLT038	94	96	97	B/C
		Sg. Pergau	4DKLT039	94	97	97	B/C
		Sg. Pergau	4DKLT040	94	97	97	B/C
		Sg. Pergau	4DKLT041	90	94	93	B/C
		Sg. Pergau	4DKLT051	91	96	97	B/C
		Sg. Pergau	4DKLT052	92	94	94	B/C
		Sg. Rasau	4DKLT061	80	80	85	ST/SP
		Sg. Relai	4DKLT012	90	91	88	B/C
		Sg. Relai	4DKLT030	88	91	94	B/C
		Sg. Sokor	4DKLT042	86	89	89	B/C
		Sg. Tuang	4DKLT035	90	94	91	B/C
	Sg. Kemasin	Sg. Gali	4DKMS006	79	75	83	B/C
		Sg. Kemasin	4DKMS001	84	90	90	B/C
		Sg. Kemasin	4DKMS003	75	76	76	ST/SP
		Sg. Semerak	4DKMS002	85	91	88	B/C
		Sg. Semerak	4DKMS004	86	89	89	B/C
		Sg. Semerak	4DKMS005	80	77	80	ST/SP
	Sg. Pengkalan Chepa	Sg. Alor B	4DPCH003	65	63	59	T/P
		Sg. Alor Lintah	4DPCH004	76	68	70	ST/SP
		Sg. Keladi	4DPCH002	76	84	89	B/C
		Sg. Pengkalan Chepa	4DPCH005	68	70	70	ST/SP
		Sg. Pengkalan Chepa	4DPCH006	75	82	76	ST/SP
Sarawak	Sg. Pengkalan Datu	Sg. Raja Gali	4DPCH001	79	87	81	B/C
		Sg. Pasir Hor	4DPDT004	73	77	75	ST/SP
		Sg. Pengkalan Datu	4DPDT001	83	86	88	B/C
		Sg. Pengkalan Datu	4DPDT002	83	87	85	B/C
	Sg. Balingian	Sg. Pengkalan Datu	4DPDT003	86	86	87	B/C
		Sg. Balingian	6QBLG001	90	87	84	B/C
	Sg. Baram	Sg. Balingian	6QBLG002	88	86	89	B/C
		Sg. Baram	6QBRM001	79	81	83	B/C
		Sg. Baram	6QBRM002	81	83	83	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Sarawak	Sg. Baram	Sg. Baram	6QBRM003	89	89	88	B/C
		Sg. Baram	6QBRM004	90	88	88	B/C
		Sg. Tutuh	6QBRM005	90	-	87	B/C
	Sg. Kayan	Sg. Kayan	6QKYN001	77	76	76	ST/SP
		Sg. Kayan	6QKYN002	82	83	84	B/C
		Sg. Kayan	6QKYN003	87	88	87	B/C
	Sg. Kemena	Sg. Kemena	6QKMN001	82	82	82	B/C
		Sg. Kemena	6QKMN002	89	83	84	B/C
		Sg. Kemena	6QKMN003	81	80	85	ST/SP
		Sg. Kemena	6QKMN004	91	83	84	B/C
		Sg. Sibiu	6QKMN005	81	79	83	ST/SP
	Sg. Kerian	Sg. Kerian	6QKRN014	82	81	86	B/C
		Sg. Kerian	6QKRN015	89	84	88	B/C
		Sg. Seblak	6QKRN016	84	88	87	B/C
		Sg. Selalang	6QKRN017	92	92	90	B/C
	Sg. Lawas	Sg. Lawas	6QLWS001	89	87	90	B/C
		Sg. Lawas	6QLWS002	87	88	91	B/C
		Sg. Lawas	6QLWS003	89	90	92	B/C
	Sg. Limbang	Sg. Limbang	6QLBG001	88	86	88	B/C
		Sg. Limbang	6QLBG002	87	86	88	B/C
		Sg. Limbang	6QLBG003	88	90	89	B/C
		Sg. Limbang	6QLBG004	90	91	88	B/C
		Sg. Limbang	6QLBG005	92	88	90	B/C
	Sg. Lupar	Sg. Ai	6QLPR001	89	91	88	B/C
		Sg. Ai	6QLPR002	91	91	89	B/C
		Sg. Lupar	6QLPR003	77	83	88	B/C
		Sg. Lupar	6QLPR004	82	85	87	B/C
		Sg. Lupar	6QLPR005	89	85	90	B/C
		Sg. Sekerang	6QLPR006	92	88	87	B/C
		Sg. Seterap	6QLPR007	82	86	89	B/C
		Sg. Undup	6QLPR008	91	85	89	B/C
	Sg. Miri	Sg. Adong	6QMRI001	83	78	57	T/P
		Sg. Dalam	6QMRI002	84	83	80	ST/SP

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Sarawak	Sg. Miri	Sg. Lutong	6QMRI003	80	82	83	B/C
		Sg. Lutong	6QMRI004	77	80	74	ST/SP
		Sg. Miri	6QMRI005	87	88	56	T/P
		Sg. Miri	6QMRI006	88	88	60	ST/SP
		Sg. Padang Liku	6QMRI007	89	88	83	B/C
	Sg. Mukah	Sg. Mukah	6QMKH001	85	80	81	B/C
		Sg. Mukah	6QMKH002	89	82	86	B/C
		Sg. Mukah	6QMKH003	89	81	86	B/C
		Sg. Mukah	6QMKH004	89	87	88	B/C
		Sg. Mukah	6QMKH005	89	84	87	B/C
	Sg. Niah	Sg. Niah	6QNIA001	86	87	85	B/C
		Sg. Niah	6QNIA002	86	86	86	B/C
		Sg. Sekaloh	6QNIA003	68	64	79	ST/SP
		Sg. Sekaloh	6QNIA004	87	86	84	B/C
	Sg. Oya	Sg. Oya	6QOYA001	79	76	83	B/C
		Sg. Oya	6QOYA001	89	81	87	B/C
		Sg. Oya	6QOYA001	89	89	86	B/C
	Sg. Rajang	Sg. Baloi	6QRJG019	89	-	89	B/C
		Sg. Binatang	6QRJG004	89	89	87	B/C
		Sg. Daro	6QRJG021	80	62	66	ST/SP
		Sg. Jemoreng	6QRJG022	80	63	66	ST/SP
		Sg. Julau	6QRJG005	88	86	85	B/C
		Sg. Kanowit	6QRJG006	89	87	87	B/C
		Sg. Meradong	6QRJG003	80	82	86	B/C
		Sg. Pakan	6QRJG020	88	89	88	B/C
		Sg. Pila Parit	6QRJG023	62	77	78	ST/SP
		Sg. Rajang	6QRJG008	83	86	86	B/C
		Sg. Rajang	6QRJG009	84	86	87	B/C
		Sg. Rajang	6QRJG010	82	86	85	B/C
		Sg. Rajang	6QRJG011	80	85	87	B/C
		Sg. Rajang	6QRJG012	85	84	89	B/C
		Sg. Rajang	6QRJG013	87	86	87	B/C
		Sg. Rajang	6QRJG014	85	84	86	B/C
		Sg. Rajang	6QRJG015	85	83	84	B/C
		Sg. Rajang	6QRJG016	85	86	87	B/C
		Sg. Rajang	6QRJG017	90	86	86	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Sarawak	Sg. Rajang	Sg. Rajang	6QRJG018	90	84	87	B/C
		Sg. Salim	6QRJG007	83	81	86	B/C
		Sg. Sarikei	6QRJG001	80	86	87	B/C
		Sg. Sarikei	6QRJG002	89	90	88	B/C
	Sg. Sadong	Sg. Karangan	6QSDG001	68	69	76	ST/SP
		Sg. Karangan	6QSDG002	87	87	88	B/C
		Sg. Sadong	6QSDG003	73	81	84	B/C
		Sg. Sadong	6QSDG004	72	66	78	ST/SP
		Sg. Sadong	6QSDG005	88	90	87	B/C
		Sg. Sadong	6QSDG006	90	91	88	B/C
		Sg. Tarat	6QSDG007	91	90	90	B/C
	Sg. Sarawak	Sg. Kelantan	6QSWK017	74	59	68	ST/SP
		Sg. Kuap	6QSWK009	79	88	86	B/C
		Sg. Kuap	6QSWK010	87	88	89	B/C
		Sg. Maong Kiri	6QSWK0 11	72	73	82	B/C
		Sg. Samarahan	6QSWK013	65	63	66	ST/SP
		Sg. Samarahan	6QSWK014	80	85	87	B/C
		Sg. Sarawak	6QSWK001	81	84	84	B/C
		Sg. Sarawak	6QSWK003	83	85	87	B/C
		Sg. Sarawak	6QSWK004	88	87	88	B/C
		Sg. Sarawak	6QSWK006	84	80	84	B/C
		Sg. Sarawak	6QSWK007	90	88	91	B/C
		Sg. Sarawak	6QSWK008	91	89	90	B/C
		Sg. Sarawak Kanan	6QSWK002	82	84	85	B/C
		Sg. Sarawak Kiri	6QSWK005	88	87	87	B/C
		Sg. Semadang	6QSWK016	89	90	90	B/C
		Sg. Semenggoh	6QSWK012	71	78	83	B/C
		Sg. Tabuan	6QSWK015	77	76	78	ST/SP
		Sg. Tapah	6QSWK018	89	91	90	B/C
	Sg. Saribas	Sg. Layar	6QSRB002	85	88	87	B/C
		Sg. Layar	6QSRB003	87	90	88	B/C
		Sg. Saribas	6QSRB001	74	79	87	B/C
	Sg. Semunsam	Sg. Semunsam	6QSMS001	87	80	85	B/C
	Sg. Sibuti	Sg. Kabuloh	6QSBT001	76	61	70	ST/SP
		Sg. Kabuloh	6QSBT002	69	64	87	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Sarawak	Sg. Sibuti	Sg. Kejapil	6QSBT003	88	89	85	B/C
		Sg. Satap	6QSBT004	88	84	84	B/C
		Sg. Sibuti	6QSBT005	82	84	77	B/C
		Sg. Sibuti	6QSBT006	87	88	84	ST/SP
	Sg. Similajau	Sg. Similajau	6QSML001	90	86	86	B/C
		Sg. Similajau	6QSML002	89	84	88	B/C
	Sg. Suai	Sg. Suai	6QSUA001	88	87	85	B/C
	Sg. Tatau	Sg. Tatau	6QTTU001	88	85	86	B/C
	Sg. Trusan	Sg. Trusan	6QTSN001	88	88	90	B/C
	Sg. Apas	Sg. Apas	5SAPS001	89	90	92	B/C
Sabah	Sg. Balung	Sg. Balung	5SBLU001	87	91	92	B/C
	Sg. Bengkoka	Sg. Bengkoka	5SBKK001	90	91	90	B/C
		Sg. Bengkoka	5SBKK002	86	86	88	B/C
	Sg. Bingkongan	Sg. Bandau	5SBKG001	91	92	92	B/C
		Sg. Bingkongan	5SBKG005	92	94	93	B/C
		Sg. Bingkongan	5SBKG006	91	94	94	B/C
		Sg. Menggaris	5SBKG002	93	93	90	B/C
		Sg. Menggaris	5SBKG003	92	92	93	B/C
		Sg. Tandek	5SBKG004	91	91	91	B/C
	Sg. Bongawan	Sg. Bongawan	5SBGW001	87	87	88	B/C
	Sg. Brantian	Sg. Brantian	5SBTN001	86	84	90	B/C
	Sg. Kalabakan	Sg. Kalabakan	5SKBK001	85	85	90	B/C
		Sg. Kalabakan	5SKBK002	84	84	86	B/C
		Sg. Kalabakan	5SKBK003	82	83	86	B/C
	Sg. Kalumpang	Sg. Kalumpang	5SKLP001	86	86	91	B/C
		Sg. Kalumpang	5SKLP002	86	90	88	B/C
		Sg. Kalumpang	5SKLP003	84	85	86	B/C
		Sg. Pang Burong 1	5SKLP004	83	86	86	B/C
		Sg. Pang Burong 2	5SKLP005	69	85	80	ST/SP
	Sg. Kedamaian	Sg. Kedamaian	5SKDI004	90	93	92	B/C
		Sg. Tempasuk	5SKDI001	87	93	91	B/C
		Sg. Tempasuk	5SKDI002	91	92	92	B/C
		Sg. Wariu	5SKDI003	91	93	93	B/C
	Sg. Kimanis	Sg. Kimanis	5SKMA001	87	90	92	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Sabah	Sg. Kinabatangan	Sg. Karamuak	5SKBT006	91	92	92	B/C
		Sg. Kinabatangan	5SKBT001	85	86	83	B/C
		Sg. Kinabatangan	5SKBT002	82	84	85	B/C
		Sg. Kinabatangan	5SKBT004	84	87	84	B/C
		Sg. Kinabatangan	5SKBT005	86	85	83	B/C
		Sg. Koyah	5SKBT003	87	89	88	B/C
		Sg. Leepang	5SKBT009	84	85	84	B/C
		Sg. Menanggul	5SKBT008	81	86	86	B/C
		Sg. Pin	5SKBT010	86	87	86	B/C
		Sg. Takala	5SKBT007	85	88	87	B/C
	Sg. Labok	Sg. Kinipir	5SLBK001	90	91	90	B/C
		Sg. Kinipir	5SLBK002	86	91	91	B/C
		Sg. Labok	5SLBK006	87	86	88	B/C
		Sg. Liwagu	5SLBK003	88	89	86	B/C
		Sg. Liwagu	5SLBK004	88	88	91	B/C
		Sg. Maliau	5SLBK005	92	94	93	B/C
		Sg. Tungud	5SLBK007	88	91	85	B/C
	Sg. Lakutan	Sg. Lakutan	5SLKT001	89	93	88	B/C
		Sg. Darau	5SLKS008	80	83	83	B/C
		Sg. Inanam	5SLKS001	79	81	80	ST/SP
		Sg. Inanam	5SLKS002	84	87	90	B/C
		Sg. Inanam	5SLKS003	92	93	93	B/C
		Sg. Likas	5SLKS004	77	73	78	ST/SP
		Sg. Likas	5SLKS005	78	77	80	ST/SP
		Sg. Menggatal	5SLKS006	81	87	89	B/C
		Sg. Menggatal	5SLKS007	87	91	92	B/C
		Sg. Bukau	5SLKG002	88	92	87	B/C
	Sg. Lingkungan	Sg. Lingkungan	5SLKG001	91	93	89	B/C
		Sg. Membakut	5SMBT001	85	87	89	B/C
	Sg. Menggalong	Sg. Menggalong	5SMGL001	86	91	85	B/C
		Sg. Menggalong	5SMGL002	92	93	92	B/C
	Sg. Merotai	Sg. Merotai	5SMRT001	88	90	91	B/C
		Sg. Merotai	5SMRT002	92	94	92	B/C
		Sg. Merotai	5SMRT003	87	90	87	B/C

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Sabah	Sg. Mounad	Sg. Mounad	5SMND001	85	89	88	B/C
		Sg. Mounad	5SMND002	86	86	89	B/C
	Sg. Moyog	Sg. Moyog	5SMYG001	86	88	91	B/C
		Sg. Moyog	5SMYG002	89	92	91	B/C
		Sg. Moyog	5SMYG003	92	94	93	B/C
		Sg. Moyog	5SMYG004	92	94	92	B/C
	Sg. Padas	Sg. Bunsit	5SPDS001	91	93	92	B/C
		Sg. Liawan	5SPDS002	91	91	92	B/C
		Sg. Padas	5SPDS003	86	87	88	B/C
		Sg. Padas	5SPDS004	88	90	88	B/C
		Sg. Padas	5SPDS005	86	88	87	B/C
		Sg. Padas	5SPDS011	85	88	82	B/C
		Sg. Pangatan	5SPDS006	87	88	87	B/C
		Sg. Pegalan	5SPDS008	89	91	90	B/C
		Sg. Pegalan	5SPDS009	87	86	86	B/C
		Sg. Pegalan	5SPDS010	86	87	84	B/C
		Sg. Tandulu	5SPDS007	91	92	92	B/C
	Sg. Paitan	Sg. Paitan	5SPTN001	85	91	90	B/C
		Sg. Papar	5SPPR001	89	91	90	B/C
	Sg. Papar	Sg. Papar	5SPPR002	90	91	90	B/C
		Sg. Papar	5SPPR003	89	90	88	B/C
		Sg. Papar	5SPPR004	90	91	93	B/C
		Sg. Papar	5SPPR005	92	91	93	B/C
	Sg. Sapi	Sg. Sapi	5SSAP002	85	85	83	B/C
		Sg. Sapi	5SSAP003	86	86	84	B/C
		Sg. Sapi	5SSAP004	87	88	87	B/C
		Sg. Sualong	5SSAP001	92	92	93	B/C
	Sg. Segaliud	Sg. Segaliud	5SSLD001	86	85	81	B/C
		Sg. Segaliud	5SSLD002	87	86	84	B/C
	Sg. Segama	Sg. Segama	5SSGM001	86	87	86	B/C
		Sg. Segama	5SSGM002	85	88	87	B/C
		Sg. Segama	5SSGM003	85	88	87	B/C
	Sg. Sembulan	Sg. Sembulan	5SSBL001	84	81	74	ST/SP
		Sg. Sembulan	5SSBL002	74	80	69	ST/SP

Status kualiti air sungai mengikut stesen, Malaysia, 2020-2022 (samb.)*Water quality status by stations, Malaysia, 2020-2022 (cont'd)*

Negeri State	Lembangan Basin	Sungai River	Nombor stesen Station number	Nilai IKA / WQI value			Kategori IKA/ WQI category (2022)
				2020	2021	2022	
Sabah	Sg. Silabukan	Sg. Silabukan	5SSBK001	86	87	83	B/C
		Sg. Silabukan	5SSBK002	89	91	91	B/C
	Sg. Sugut	Sg. Bongkud	5SSUG001	91	92	93	B/C
		Sg. Lohan	5SSUG002	91	92	93	B/C
		Sg. Merali	5SSUG003	88	91	90	B/C
		Sg. Sugut	5SSUG004	91	91	91	B/C
		Sg. Sugut	5SSUG005	88	92	91	B/C
		Sg. Sugut	5SSUG006	85	89	87	B/C
	Sg. Tawau	Sg. Tawau	5STWU001	77	83	78	ST/SP
		Sg. Tawau	5STWU002	83	88	88	B/C
		Sg. Tawau	5STWU003	91	93	92	B/C
		Sg. Tawau	5STWU004	91	93	93	B/C
	Sg. Telipok	Sg. Telipok	5STLP001	70	70	82	B/C
		Sg. Telipok	5STLP002	90	90	91	B/C
	Sg. Tenghilan	Sg. Tenghilan	5STHL001	92	92	90	B/C
	Sg. Tingkayu	Sg. Tingkayu	5STKY001	84	85	85	B/C
		Sg. Tingkayu	5STKY002	86	86	84	B/C
	Sg. Tuaran	Sg. Damit	5STUA001	89	87	88	B/C
		Sg. Damit	5STUA002	87	87	90	B/C
		Sg. Song Sai	5STUA003	90	92	92	B/C
		Sg. Tuaran	5STUA004	92	93	93	B/C
		Sg. Tuaran	5STUA005	92	93	93	B/C
	Sg. Tungku	Sg. Tungku	5STKU001	89	90	88	B/C
		Sg. Tungku	5STKU002	90	89	90	B/C
	Sg. Umas-Umas	Sg. Umas-Umas	5SUSM001	83	84	89	B/C

Nota:
Notes:

B/C: Bersih/ Clean
ST/SP: Sederhana tercemar/ Slightly polluted
TIP: Tercemar/ Polluted

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Status kualiti air marin di kawasan pantai, Malaysia, 2020-2022*Marine water quality status for coastal, Malaysia, 2020-2022*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Kedah	Pantai Merdeka	71	85	88	Baik/Good
	Langkawi Island Resort	93	94	94	Terbaik/Excellent
	Pantai Kok	95	90	83	Baik/Good
	Pantai Kuah	89	88	90	Terbaik/Excellent
	Pantai Pasir Tengkorak	93	96	93	Terbaik/Excellent
	Pantai Teluk Burau	89	94	86	Baik/Good
	Pantai Teluk Nibong	94	86	92	Terbaik/Excellent
	Pantai Tengah	96	92	92	Terbaik/Excellent
	Pantai Beras Basah	95	92	96	Terbaik/Excellent
Pulau Pinang	Gertak Sanggul	84	81	83	Baik/Good
	Kawasan Perindustrian Bayan Lepas I	56	72	60	Sederhana/Moderate
	Pantai Bersih	58	75	86	Baik/Good
	Pantai Miami	81	70	86	Baik/Good
	Pantai Pasir Panjang	81	93	95	Terbaik/Excellent
	Batu Ferringgi (Casuarina)	58	83	82	Baik/Good
	Luar Pantai Teluk Bahang	83	81	88	Baik/Good
	Persiaran Gurney	59	60	79	Sederhana/Moderate
	Rumah Pam Baru Perai	61	68	76	Sederhana/Moderate
	Rumah Pam Lama Perai	60	65	59	Sederhana/Moderate
	Selat PP Selatan (Jelutong)	55	59	59	Sederhana/Moderate
	Tanjung Bungah	70	67	72	Sederhana/Moderate
	Teluk Tempoyak	69	70	63	Sederhana/Moderate
	Batu Maung	56	69	58	Sederhana/Moderate
	Pantai Sungai Batu Ferringhi 3	84	86	92	Terbaik/Excellent
	Pantai Sungai Batu Ferringhi 2	74	90	94	Terbaik/Excellent
	Pantai Sungai Batu Ferringhi 1	85	91	91	Terbaik/Excellent

Status kualiti air marin di kawasan pantai, Malaysia, 2020-2022 (samb.)*Marine water quality status for coastal, Malaysia, 2020-2022 (cont'd)*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Perak	Pantai Pasir Bogak	93	95	94	Terbaik/ Excellent
	Pantai Teluk Dalam	89	94	92	Terbaik/ Excellent
	Pantai Teluk Batik	84	78	89	Baik/Good
	Pantai Tanjung Batu	83	93	94	Terbaik/ Excellent
	Pantai Teluk Rubiah	92	90	81	Baik/Good
	Pantai Damai Laut	93	94	91	Terbaik/ Excellent
	Pantai Teluk Senangin	90	90	93	Terbaik/ Excellent
	Pantai Pasir Panjang	94	91	95	Terbaik/ Excellent
Selangor	Pantai Bagan Lalang	91	84	84	Baik/Good
	Pantai Morib	68	68	84	Baik/Good
	Selat Pulau Babi	73	87	91	Terbaik/ Excellent
	Selat Klang Utara	55	62	56	Sederhana/ Moderate
	Pantai Remis	63	83	79	Sederhana/ Moderate
	Pantai Klanang	71	74	69	Sederhana/ Moderate
Negeri Sembilan	Bagan Pinang	85	91	90	Terbaik/ Excellent
	Telok Sinting	86	87	94	Terbaik/ Excellent
	Port Dickson Bandar	74	88	88	Baik/Good
	Port Dickson Batu 4	86	88	89	Baik/Good
	Port Dickson Batu 5	67	73	81	Baik/Good
	Port Dickson Batu 6	90	90	93	Terbaik/ Excellent
	Port Dickson Batu 7	92	93	95	Terbaik/ Excellent
	Port Dickson Batu 8	85	93	95	Terbaik/ Excellent
	Port Dickson Batu 10	92	92	97	Terbaik/ Excellent
	Port Dickson Janakuasa TNB	89	70	90	Terbaik/ Excellent
	Telok Pelanduk	83	91	94	Terbaik/ Excellent
	Pantai Cermin	83	94	94	Terbaik/ Excellent
	Pantai Telok Kemang	94	91	95	Terbaik/ Excellent
	Pantai Seri Purnama	90	94	96	Terbaik/ Excellent

Status kualiti air marin di kawasan pantai, Malaysia, 2020-2022 (samb.)*Marine water quality status for coastal, Malaysia, 2020-2022 (cont'd)*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Melaka	Pantai Rombang	89	88	88	Baik/Good
	Pantai Kundur	90	89	83	Baik/Good
	Pantai Tanjung Bidara	90	69	87	Baik/Good
	Teluk Gong	83	60	90	Terbaik/ Excellent
	Pulau Melaka Point A ¹	91	89	83	Baik/Good
	Pulau Melaka Point A ²	79	80	83	Baik/Good
	Pulau Melaka Point B ¹	58	58	57	Sederhana/ Moderate
	Pulau Melaka Point B ²	57	57	57	Sederhana/ Moderate
	Pulau Klebang	78	87	89	Baik/Good
Johor	Tanjung Bin	90	90	91	Terbaik/ Excellent
	Pelabuhan Tanjung Pelepas	92	91	82	Baik/Good
	Hadapan Jabatan Laut	87	82	81	Baik/Good
	Pantai Stulang Laut	48	56	55	Sederhana/ Moderate
	Jeti Teluk Jawa	62	70	59	Sederhana/ Moderate
	Pelabuhan Pasir Gudang	57	59	66	Sederhana/ Moderate
	Hadapan HSAJB	49	58	51	Sederhana/ Moderate
	Pantai Lido	44	54	50	Sederhana/ Moderate
	Pantai Teluk Mahkota	90	93	95	Terbaik/ Excellent
	Pantai Tanjung Leman	83	97	94	Terbaik/ Excellent
	Pantai Sri Pantai	87	91	95	Terbaik/ Excellent
	Tanjung Merak	89	85	89	Baik/Good
	Tanjung Pengelih	90	92	88	Baik/Good
	Pantai Tanjong Stapa	91	72	77	Sederhana/ Moderate
	Pantai Teluk Gorek	83	93	93	Terbaik/ Excellent
	Pantai Air Papan	95	92	93	Terbaik/ Excellent
	Jeti Kukup	59	62	83	Baik/Good
	Pasir Gogok	92	89	89	Baik/Good

Status kualiti air marin di kawasan pantai, Malaysia, 2020-2022 (samb.)*Marine water quality status for coastal, Malaysia, 2020-2022 (cont'd)*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Johor	Tanjong Buai	75	91	87	Baik/Good
	Pantai Desaru	95	94	95	Terbaik/ Excellent
	Tanjung Sepang	92	90	93	Terbaik/ Excellent
	Tanjung Penyusup	83	93	93	Terbaik/ Excellent
	Pantai Sungai Lurus	74	88	85	Baik/Good
	Punggur	69	90	79	Sederhana/ Moderate
	Pantai Penyabung	82	95	96	Terbaik/ Excellent
	Tanjung Resang	90	92	94	Terbaik/ Excellent
	Tanjung Balau	93	94	94	Terbaik/ Excellent
	Batu Layar	90	92	95	Terbaik/ Excellent
	Tanjung Sengat	72	85	92	Terbaik/ Excellent
Pahang	Pantai Cherating (Club Med A)	91	95	80	Baik/Good
	Pantai Cherating (Club Med B)	94	97	87	Baik/Good
	Pantai Cherating (Legend A)	96	93	93	Terbaik/ Excellent
	Pantai Cherating (Legend B)	96	95	94	Terbaik/ Excellent
	Pantai Muhibbah Balok A	73	90	93	Terbaik/ Excellent
	Pantai Muhibbah Balok B	67	74	90	Terbaik/ Excellent
	Pantai Batu Hitam A	76	92	93	Terbaik/ Excellent
	Pantai Batu Hitam B	73	84	96	Terbaik/ Excellent
	Pantai Berserah A	76	93	93	Terbaik/ Excellent
	Pantai Berserah B	60	90	90	Terbaik/ Excellent
	Pantai Teluk Cempedak A	84	94	95	Terbaik/ Excellent
	Pantai Teluk Cempedak B	95	93	95	Terbaik/ Excellent
	Pantai Teluk Gelora A	60	72	70	Sederhana/ Moderate
	Pantai Teluk Gelora B	59	59	59	Sederhana/ Moderate
	Pantai Sepat A	92	94	96	Terbaik/ Excellent
	Pantai Sepat B	92	95	95	Terbaik/ Excellent
	Pantai Legenda A	97	92	95	Terbaik/ Excellent

Status kualiti air marin di kawasan pantai, Malaysia, 2020-2022 (samb.)*Marine water quality status for coastal, Malaysia, 2020-2022 (cont'd)*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Pahang	Pantai Legenda B	96	96	95	Terbaik/ Excellent
	Pantai Kuala Api-Api	85	94	95	Terbaik/ Excellent
	Pantai Tanjung Batu	85	94	92	Terbaik/ Excellent
	Pantai Chendor	87	92	84	Baik/Good
	Pantai Lanjut	85	94	91	Terbaik/ Excellent
Terengganu	Pantai Batu Buruk	93	88	95	Terbaik/ Excellent
	Pantai Bukit Keluang	95	96	95	Terbaik/ Excellent
	Pantai Chendering	93	95	95	Terbaik/ Excellent
	Pantai Rantau Abang	95	96	97	Terbaik/ Excellent
	KIPC Utara	78	95	94	Terbaik/ Excellent
	KIPC Tengah	88	94	94	Terbaik/ Excellent
	KIPC Selatan	88	95	95	Terbaik/ Excellent
	Pantai Rhu 10	95	97	90	Terbaik/ Excellent
	Pantai Tok Jembal	96	95	96	Terbaik/ Excellent
	Pantai Kelulut	93	96	97	Terbaik/ Excellent
	Pantai Teluk Ketapang	95	96	96	Terbaik/ Excellent
	Pantai Kuala Abang	94	95	97	Terbaik/ Excellent
	Pantai Telok Kalong	94	95	97	Terbaik/ Excellent
	Pantai Sura	94	94	96	Terbaik/ Excellent
	Pantai Tanjung Bidara	93	94	97	Terbaik/ Excellent
	Pantai Kemasik	90	97	97	Terbaik/ Excellent
Kelantan	Pantai Seri Tujuh	84	93	94	Terbaik/ Excellent
	Pantai Cahaya Bulan	92	95	95	Terbaik/ Excellent
	Pantai Sabak	89	95	95	Terbaik/ Excellent
	Pantai Irama Bachok	66	95	93	Terbaik/ Excellent
	Pantai Bisikan Bayu	83	95	94	Terbaik/ Excellent
	Pantai Melawi	83	95	95	Terbaik/ Excellent
Sarawak	Pantai Sematan	72	93	90	Terbaik/ Excellent
	Pantai Pandan	75	92	86	Baik/Good

Status kualiti air marin di kawasan pantai, Malaysia, 2020-2022 (samb.)*Marine water quality status for coastal, Malaysia, 2020-2022 (cont'd)*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Sarawak	Pantai Pasir Putih	80	84	85	Baik/Good
	Pantai Bako	85	89	91	Terbaik/ Excellent
	Pantai Damai	68	86	89	Baik/Good
	Pantai Tanjung Kembang	86	77	90	Terbaik/ Excellent
	Pantai Harmoni Mukah	60	67	73	Sederhana/ Moderate
	Pantai Tanjung Batu	56	81	74	Sederhana/ Moderate
	Pantai Likau	62	88	66	Sederhana/ Moderate
	Pantai Emas	62	75	66	Sederhana/ Moderate
	Pantai Piasau	70	85	74	Sederhana/ Moderate
	Pantai Brighton	79	75	56	Sederhana/ Moderate
	Pantai Esplaned	70	83	56	Sederhana/ Moderate
	Pantai Beraya	65	83	57	Sederhana/ Moderate
	Pantai Bungai	68	75	66	Sederhana/ Moderate
	Pantai Belawai	66	67	92	Terbaik/ Excellent
	Pantai Mukah	49	89	89	Baik/Good
	Tanjung Kidurong	63	80	90	Terbaik/ Excellent
	Pasir Pandak	74	91	91	Terbaik/ Excellent
	Rambungan	69	93	83	Baik/Good
	Sri Tanjung Lawas	71	68	67	Sederhana/ Moderate
	Pantai Luak	77	84	56	Sederhana/ Moderate
	Pasir Panjang	55	86	78	Sederhana/ Moderate
Sabah	Pantai Teluk Brunei 1	67	73	61	Sederhana/ Moderate
	Pantai Teluk Brunei 2	69	84	67	Sederhana/ Moderate
	Pantai Teluk Brunei 3	62	75	67	Sederhana/ Moderate
	Pantai Teluk Brunei 4	72	84	60	Sederhana/ Moderate
	Pantai Teluk Brunei 5	64	69	59	Sederhana/ Moderate

Status kualiti air marin di kawasan pantai, Malaysia, 2020-2022 (samb.)*Marine water quality status for coastal, Malaysia, 2020-2022 (cont'd)*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Sabah	Pantai Teluk Brunei 6	67	58	59	Sederhana/ Moderate
	Borneo Golf Seawater	72	59	67	Sederhana/ Moderate
	Pantai Manis Papar	60	59	60	Sederhana/ Moderate
	Pantai Melinsung	67	70	59	Sederhana/ Moderate
	Pantai Tanjung Aru (Roll Skating)	67	65	57	Sederhana/ Moderate
	Pantai Tanjung Aru (No. 3)	64	76	57	Sederhana/ Moderate
	Pantai Lok Kawi	72	65	58	Sederhana/ Moderate
	Pantai Tanjung Aru (Rest Lido)	63	69	58	Sederhana/ Moderate
	Pantai Dalit Tuaran	78	58	58	Sederhana/ Moderate
	Mangrove Paradise	73	58	58	Sederhana/ Moderate
	Pantai Sabandar	75	58	58	Sederhana/ Moderate
	Pantai Bak-Bak Kudat	62	76	85	Baik/Good
	Pasir Putih Sandakan	63	83	82	Baik/Good
	Pantai TLDM	72	75	62	Sederhana/ Moderate
	Pantai Batu Sapi	61	76	72	Sederhana/ Moderate
	Pantai Ulu Tungku	66	57	58	Sederhana/ Moderate
	Pantai Sarina Kunak	74	58	58	Sederhana/ Moderate
	Pantai Kg. Lamak	64	57	61	Sederhana/ Moderate
	Pantai Tinagat	58	58	68	Sederhana/ Moderate
W.P. Labuan	Pulau Papan	62	59	58	Sederhana/ Moderate
	Kiamsam	68	58	58	Sederhana/ Moderate
	Sungai Pagar	61	58	59	Sederhana/ Moderate
	Layang-Layangan	69	57	58	Sederhana/ Moderate
	Tanjung Aru	58	59	60	Sederhana/ Moderate

Sumber: Jabatan Alam Sekitar
Source: Department of Environment

Status kualiti air marin di kawasan muara sungai, Malaysia, 2020-2022*Marine water quality status for estuary, Malaysia, 2020-2022*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Perlis	Kuala Sungai Baru	56	57	57	Sederhana/ Moderate
	Kuala Sungai Perlis	54	57	57	Sederhana/ Moderate
Kedah	Kuala Kedah	53	57	56	Sederhana/ Moderate
	Kuala Jerlun	57	55	54	Sederhana/ Moderate
	Kuala Segantang Garam	70	69	72	Sederhana/ Moderate
	Kuala Sungai Muda	58	56	57	Sederhana/ Moderate
Pulau Pinang	Kuala Sungai Jawi	38	43	52	Sederhana/ Moderate
	Kuala Sungai Juru	30	42	53	Sederhana/ Moderate
	Kuala Sungai Kerian	54	56	73	Sederhana/ Moderate
	Kuala Sungai Pinang	53	52	54	Sederhana/ Moderate
	Kuala Sungai Perai	43	55	55	Sederhana/ Moderate
	Kuala Sungai Tengah	52	57	81	Baik/Good
	Kuala Sungai Pinang (Balik Pulau)	48	56	58	Sederhana/ Moderate
Perak	Kuala Sungai Manjung	75	73	85	Baik/Good
	Kuala Sungai Gula	53	54	79	Sederhana/ Moderate
	Kuala Sungai Kurau	53	54	64	Sederhana/ Moderate
	Kuala Sungai Tanjung Piandang	38	45	50	Sederhana/ Moderate
	Kuala Sungai Sepetang	48	55	53	Sederhana/ Moderate
	Kuala Sungai Perak	58	55	75	Sederhana/ Moderate
Selangor	Kuala Sungai Sepang	57	66	72	Sederhana/ Moderate
	Kuala Sungai Sepang (Kecil)	88	80	58	Sederhana/ Moderate
	Kuala Sungai Sepang (Kawalan)	88	81	91	Terbaik/ Excellent
	Kuala Sungai Langat (Jugra)	44	54	58	Sederhana/ Moderate
	Kuala Sungai Klang	35	40	43	Tercemar/Poor
	Kuala Sungai Langat (Lumut)	45	54	55	Sederhana/ Moderate
	Kuala Sungai Buloh	58	57	56	Sederhana/ Moderate
	Kuala Sungai Selangor	45	43	51	Sederhana/ Moderate

Status kualiti air marin di kawasan muara sungai, Malaysia, 2020-2022 (samb.)*Marine water quality status for estuary, Malaysia, 2020-2022 (cont'd)*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Selangor	Kuala Sungai Tenggi	43	51	48	Tercemar/Poor
	Kuala Sungai Bernam	55	55	61	Sederhana/ Moderate
Negeri Sembilan	Kuala Sungai Linggi	64	68	55	Sederhana/ Moderate
	Kuala Sungai Lukut	52	56	53	Sederhana/ Moderate
Melaka	Kuala Sungai Melaka	56	60	63	Sederhana/ Moderate
	Kuala Sungai Sri Melaka	53	50	54	Sederhana/ Moderate
	Kuala Sungai Merlimau	55	58	57	Sederhana/ Moderate
	Kuala Sungai Kesang	85	74	57	Sederhana/ Moderate
	Kuala Sungai Sebatu	63	63	75	Sederhana/ Moderate
	Kuala Sungai Melaka 2	54	56	54	Sederhana/ Moderate
	Kuala Sungai Baru	56	57	64	Sederhana/ Moderate
	Kuala Sungai Lereh	57	55	56	Sederhana/ Moderate
	Kuala Sungai Segget	41	51	46	Tercemar/Poor
Johor	Kuala Sungai Laloh	42	55	54	Sederhana/ Moderate
	Kuala Sungai Johor	88	92	92	Terbaik/ Excellent
	Kuala Sungai Batu Pahat	67	58	57	Sederhana/ Moderate
	Kuala Sungai Muar	57	57	55	Sederhana/ Moderate
	Kuala Sungai Mersing	62	59	59	Sederhana/ Moderate
	Kuala Kuantan	59	58	58	Sederhana/ Moderate
Pahang	Kuala Rompin Kecil	79	72	79	Sederhana/ Moderate
	Kuala Pahang	59	57	59	Sederhana/ Moderate
	Kuala Nenasi	93	85	91	Terbaik/ Excellent
	Kuala Sungai Balok	59	55	65	Sederhana/ Moderate
	Kuala Sungai Besut	59	74	70	Sederhana/ Moderate
Terengganu	Kuala Sungai Dungun	60	69	65	Sederhana/ Moderate

Status kualiti air marin di kawasan muara sungai, Malaysia, 2020-2022 (samb.)*Marine water quality status for estuary, Malaysia, 2020-2022 (cont'd)*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Terengganu	Kuala Sungai Ibai	77	90	87	Baik/Good
	Kuala Sungai Kerteh	73	58	75	Sederhana/ Moderate
	Kuala Sungai Marang	71	84	84	Baik/Good
	Kuala Sungai Paka	73	65	87	Baik/Good
	Kuala Sungai Setiu	64	92	75	Sederhana/ Moderate
	Kuala Sungai Terengganu	59	66	59	Sederhana/ Moderate
	Kuala Sungai Kemaman/ Chukai	60	58	59	Sederhana/ Moderate
	Tioxide Utara (Kg. Bukit Kuang, Kijal)	94	94	97	Terbaik/ Excellent
	Tioxide Tengah (Pupuk Semangat, Kijal)	87	93	96	Terbaik/ Excellent
	Tioxide Selatan (KSB, T. Kalong)	94	86	95	Terbaik/ Excellent
Kelantan	Pulau Duyung	59	59	60	Sederhana/ Moderate
	Kuala Sungai Golok	59	79	65	Sederhana/ Moderate
	Kuala Sungai Kelantan	58	70	57	Sederhana/ Moderate
	Kuala Sungai Pengkalan Chepa	56	64	59	Sederhana/ Moderate
	Kuala Sungai Pengkalan Datu	59	59	69	Sederhana/ Moderate
	Kuala Sungai Kemasin	56	59	58	Sederhana/ Moderate
	Kuala Sungai Semerak	59	85	60	Sederhana/ Moderate
Sarawak	Kuala Sungai Semantan	65	90	70	Sederhana/ Moderate
	Kuala Sungai Sarawak	64	85	82	Baik/Good
	Kuala Sungai Bako	56	79	88	Baik/Good
	Kuala Sungai Santubong	76	90	90	Terbaik/ Excellent
	Kuala Batang Krian (Kabong)	83	71	87	Baik/Good
	Kuala Batang Rejang	66	85	82	Baik/Good
	Kuala Mukah	50	62	70	Sederhana/ Moderate
	Kuala Batang Kemena	53	58	55	Sederhana/ Moderate
	Kuala Tanjung Similajau	55	85	67	Sederhana/ Moderate
	Kuala Sungai Panipah	55	83	64	Sederhana/ Moderate
	Kuala Pantai Nyalau	58	71	84	Baik/Good

Status kualiti air marin di kawasan muara sungai, Malaysia, 2020-2022 (samb.)*Marine water quality status for estuary, Malaysia, 2020-2022 (cont'd)*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Sarawak	Kuala Sungai Baram	57	76	55	Sederhana/ Moderate
	Kuala Sungai Miri	68	63	54	Sederhana/ Moderate
	Kuala Sungai Trusan	54	64	56	Sederhana/ Moderate
Sabah	Kuala Penyu	63	58	66	Sederhana/ Moderate
	Muara Sungai Inanam	57	59	58	Sederhana/ Moderate

Sumber: Jabatan Alam Sekitar*Source: Department of Environment*

Status kualiti air marin di kawasan pulau, Malaysia, 2020-2022*Marine water quality status for island, Malaysia, 2020-2022*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Kedah	Singa Besar	94	88	90	Terbaik/ Excellent
	Dayang Bunting	87	95	91	Terbaik/ Excellent
	Dayang Bunting 2	94	92	94	Terbaik/ Excellent
	Pulau Perak	89	92	96	Terbaik/ Excellent
	Payar	96	95	96	Terbaik/ Excellent
	Kaca	95	95	94	Terbaik/ Excellent
	Segantang	95	96	96	Terbaik/ Excellent
	Pantai Kuah	92	93	91	Terbaik/ Excellent
	Teluk Ewa	93	92	96	Terbaik/ Excellent
	Pantai Chenang	93	91	89	Baik/Good
	Tanjung Rhu	94	91	91	Terbaik/ Excellent
	Pasir	96	96	96	Terbaik/ Excellent
	Gasing	95	92	97	Terbaik/ Excellent
	Dangli	95	91	97	Terbaik/ Excellent
Pulau Pinang	Tanjung Tokong	71	68	83	Baik/Good
	Batu Maung	57	57	59	Sederhana/ Moderate
	Padang Kota	67	60	81	Baik/Good
	Teluk Bahang	85	83	87	Baik/Good
	Aman	72	72	92	Terbaik/ Excellent
	Jerejak	58	76	59	Sederhana/ Moderate
	Kendi	93	92	85	Baik/Good
	Rimau	90	92	93	Terbaik/ Excellent
	Gedong	84	82	91	Terbaik/ Excellent
Perak	Pantai Teluk Gedong	79	88	84	Baik/Good
	Pantai Puteri Dewi	95	95	94	Terbaik/ Excellent
	Pangkor Laut	93	96	95	Terbaik/ Excellent
	Sembilan	91	94	96	Terbaik/ Excellent
	Tukun Perak	93	96	96	Terbaik/ Excellent

Status kualiti air marin di kawasan pulau, Malaysia, 2020-2022 (samb.)*Marine water quality status for island, Malaysia, 2020-2022 (cont'd)*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Selangor	Ketam	68	72	85	Baik/Good
	Angsa	59	89	83	Baik/Good
	Lumut	46	50	47	Tercemar/ Poor
Negeri Sembilan	Arang	92	94	92	Terbaik/ Excellent
Melaka	Upeh (Point A)	87	77	77	Sederhana/ Moderate
	Upeh (Point B)	80	87	85	Baik/Good
	Besar (Point A)	95	96	95	Terbaik/ Excellent
	Besar (Point B)	95	94	94	Terbaik/ Excellent
	Undan (Point A)	96	96	94	Terbaik/ Excellent
	Undan (Point B)	96	95	94	Terbaik/ Excellent
Johor	Setindan	94	97	97	Terbaik/ Excellent
	Babi Tengah	94	93	97	Terbaik/ Excellent
	Dayang	94	95	93	Terbaik/ Excellent
	Nanga Besar	78	78	94	Terbaik/ Excellent
	Sibu Tengah	86	96	96	Terbaik/ Excellent
	Pemanggil	95	94	95	Terbaik/ Excellent
	Kukup	62	70	89	Baik/Good
	Pisang	94	86	90	Terbaik/ Excellent
Pahang	Tioman (Teluk Salang)	89	96	96	Terbaik/ Excellent
	Tioman (Kg. Nipah)	95	96	97	Terbaik/ Excellent
	Tulai	95	97	97	Terbaik/ Excellent
	Labas	95	97	97	Terbaik/ Excellent
	Cebah	96	96	97	Terbaik/ Excellent
	Sepui	96	97	96	Terbaik/ Excellent
	Sembilang	94	97	97	Terbaik/ Excellent
	Seri Buat	93	97	97	Terbaik/ Excellent
	Tokong Bahara	69	95	97	Terbaik/ Excellent
Terengganu	Gemia	90	94	97	Terbaik/ Excellent

Status kualiti air marin di kawasan pulau, Malaysia, 2020-2022 (samb.)*Marine water quality status for island, Malaysia, 2020-2022 (cont'd)*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Terengganu	Perhentian Besar (South)	95	97	96	Terbaik/ Excellent
	Perhentian Besar (West)	96	96	97	Terbaik/ Excellent
	Perhentian Kecil	96	97	97	Terbaik/ Excellent
	Redang (North)	96	96	97	Terbaik/ Excellent
	Redang (South)	95	96	97	Terbaik/ Excellent
	Lang Tengah	96	97	97	Terbaik/ Excellent
	Pinang	95	96	97	Terbaik/ Excellent
	Ekor Tebu	97	97	97	Terbaik/ Excellent
	Lima	96	97	97	Terbaik/ Excellent
	Kapas	94	96	97	Terbaik/ Excellent
Kelantan	Panjang	77	92	95	Terbaik/ Excellent
	Kundur	84	92	96	Terbaik/ Excellent
Sarawak	Satang	76	86	89	Baik/Good
	Talang-Talang Kecil	69	93	86	Baik/Good
	Talang-Talang Besar	79	93	80	Baik/Good
Sabah	Gaya	68	72	58	Sederhana/ Moderate
	Mabul	58	71	74	Sederhana/ Moderate
	Sipadan (N)	59	66	86	Baik/Good
	Sipadan (W)	58	61	62	Sederhana/ Moderate
	Sapi	65	81	58	Sederhana/ Moderate
	Manukan	75	86	57	Sederhana/ Moderate
	Tiga	72	58	61	Sederhana/ Moderate
	Kalampunian Besar	67	58	64	Sederhana/ Moderate
	Kapalai	58	77	69	Sederhana/ Moderate
	Molleangan Besar	61	61	85	Baik/Good
	Banggi (South)	65	58	81	Baik/Good
	Banggi (East)	75	60	85	Baik/Good
	Balambangan	69	71	85	Baik/Good

Status kualiti air marin di kawasan pulau, Malaysia, 2020-2022 (samb.)*Marine water quality status for island, Malaysia, 2020-2022 (cont'd)*

Negeri State	Kawasan Area	Nilai IKAM MWQI Value			Kategori Category (2022)
		2020	2021	2022	
Sabah	Selingan	60	74	81	Baik/ <i>Good</i>
	Gulisan	65	70	72	Sederhana/ <i>Moderate</i>
	Bakungan Kecil	59	75	88	Baik/ <i>Good</i>
	Mantanani Besar	72	58	58	Sederhana/ <i>Moderate</i>
W.P. Labuan	Kuraman	67	58	58	Sederhana/ <i>Moderate</i>
	Rusukan Besar	59	58	64	Sederhana/ <i>Moderate</i>
	Rusukan Kecil	64	58	59	Sederhana/ <i>Moderate</i>
	Pohon Batu	67	58	58	Sederhana/ <i>Moderate</i>
	Water Front	59	58	63	Sederhana/ <i>Moderate</i>
	Lubuk Temiang	69	58	63	Sederhana/ <i>Moderate</i>
	Ranca-Ranca	64	58	59	Sederhana/ <i>Moderate</i>

Sumber: Jabatan Alam Sekitar*Source: Department of Environment*

NOTA DAN SIMBOL
NOTES AND SYMBOLS

-	tiada/kosong/tiada kes <i>nil/blank/no cases</i>
..	tidak diperoleh <i>not available</i>
n.a.	tidak berkenaan <i>not applicable</i>
Def.	nilai defektif <i>defective value</i>
0.0	kurang daripada setengah unit terkecil yang ditunjukkan <i>less than half the smallest unit shown</i>
r	pindaan <i>revised</i>
e	anggaran <i>estimate</i>
p	awalan <i>preliminary</i>
i.e.	iaitu <i>that is</i>
PM	Habuk Halus <i>Particulate Matter</i>
CO	Karbon Monoksida <i>Carbon Monoxide</i>
NO ₂	Nitrogen Dioksida <i>Nitrogen Dioxide</i>
O ₃	Ozon <i>Ground Level Ozone</i>
SO ₂	Sulfur Dioksida <i>Sulphur Dioxide</i>
µg/m ³	mikrogram setiap meter padu <i>microgram per cubic metre</i>
ppm	bahagian setiap juta <i>parts per million</i>
ppb	bahagian setiap billion <i>parts per billion</i>
km ²	kilometer persegi <i>square kilometres</i>
mg/l	miligram setiap liter <i>milligram per litres</i>
JKPS MMscf	juta kaki padu standard <i>million standard cubic feet</i>

bil. <i>no.</i>	bilangan <i>number</i>
max.	maksimum <i>maximum</i>
min.	minimum
RM	Ringgit Malaysia
FDES	Rangka Kerja untuk Pembangunan Perangkaan Alam Sekitar <i>Framework for the Development of Environment Statistics</i>
KETSA	Kementerian Tenaga dan Sumber Asli <i>Ministry of Energy and Natural Resources</i>
ILP	Institut Latihan Perindustrian <i>Industrial Training Institute</i>
IPD	Ibu Pejabat Polis Daerah
LPG	Gas asli cecair <i>Liquefied Petroleum Gas</i>
MPOB	Lembaga Minyak Sawit Malaysia <i>Malaysian Palm Oil Board</i>
PERHILITAN <i>DWNP</i>	Jabatan Perlindungan Hidupan Liar dan Taman Negara <i>Department of Wildlife and National Parks</i>
UPE <i>EPU</i>	Unit Perancang Ekonomi <i>Economic Planning Unit</i>
UNEP	Program Alam Sekitar Bangsa-Bangsa Bersatu <i>United Nations Environment Programme</i>
USM	Universiti Sains Malaysia
W.P.	Wilayah Persekutuan

NOTA
NOTE

Pembundaran:	Jumlah bagi komponen mungkin berbeza dengan jumlah besar dalam jadual penerbitan disebabkan oleh pembundaran angka
<i>Rounding:</i>	<i>The sum of components may not add up to the totals in the tables presented in this publication due to rounding</i>



GLOSARI

GLOSSARY

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TERMA	PENERANGAN	TERMS	EXPLANATIONS
A			
Air payau	Air yang mengandung garam yang mana kepekatan garamnya kurang daripada kepekatan garam dalam air laut. Kepekatan jumlah garam yang terlarut biasanya dalam lingkungan 1,000-10,000 miligram per liter (mg/l).	Brackishwater	<i>Water containing salts at a concentration significantly lower than that of sea water. The concentration of total dissolved salts is usually in the range of 1,000-10,000 milligrams per litre (mg/l).</i>
Air tawar	Air bersih semula jadi yang mengandungi kurang kepekatan garam. Pada amnya ia sesuai untuk pengeluaran dan dirawat supaya menjadi air bersih yang sesuai untuk minum.	Freshwater	<i>Naturally occurring water having a low concentration of salts. It is generally accepted as suitable for abstraction and treatment to produce potable water.</i>
Aktiviti perlindungan alam sekitar	Tujuan utama adalah pencegahan, pengurangan dan penghapusan pencemaran dan lain-lain bentuk degradasi alam sekitar.	Environmental protection activities	<i>Primary purpose is the prevention, reduction and elimination of pollution and other forms of degradation of the environment.</i>
Ammoniakal Nitrogen (NH₃-N)	Komponen nitrogen yang digunakan sebagai penunjuk untuk menentukan pencemaran oleh kumbahan. Ia terhasil daripada aktiviti mikrobiologi dan biasanya wujud di dalam air permukaan dan air bawah tanah. Sumber utama bagi bahan pencemar NH ₃ -N adalah kumbahan domestik dan ladang ternakan.	Ammoniacal Nitrogen	<i>A component of nitrogen which is adopted as an indicator to determine pollution by sewage. It is formed from microbiology activity and usually exists inside surface water and groundwater. The main sources of NH₃-N were domestic sewage and livestock farming.</i>
Akuakultur	Akuakultur ialah proses pengeluaran yang melibatkan pengkulturan (termasuk tuaian) organisma akuatik (ikan, moluska, krustasia, tumbuhan) dengan menggunakan teknik yang direka bentuk untuk meningkatkan pengeluaran organisma tersebut melebihi kapasiti persekitaran semulajadinya.	Aquaculture	<i>Aquaculture refer to the production process involving the culturing or farming (including harvesting) of aquatic organisms (fish, molluscs, crustaceans, plant) using techniques designed to increase the production of the organism beyond the natural capacity of the environment.</i>
Atmosfera	Jisim udara yang mengelilingi bumi yang sebahagian besarnya terdiri daripada oksigen dan nitrogen.	Atmosphere	<i>Mass of air surrounding the earth, composed largely of oxygen and nitrogen.</i>
B			
Bahan pencemar udara	Bahan yang terkandung di dalam udara pada kepekatan yang cukup tinggi, boleh memudaratkan kesihatan manusia, haiwan, tanaman dan harta benda. Pencemar udara adalah termasuk bahan yang hampir kepada bentuk asal atau kandungan tiruan yang wujud terapung di udara. Ia boleh terdiri daripada pepejal, titisan cecair atau gas atau gabungan kesemuanya.	Air pollutants	<i>Substances in air that could, at high enough concentrations, harm human beings, animals, vegetation or material. Air pollutants may thus include forms of matter of almost any natural or artificial composition capable of being airborne. They may consist of solid particles, liquid droplets or gases or combination of these forms.</i>

TERMA	PENERANGAN	TERMS	EXPLANATIONS
Bahan pencemar	Bahan yang terdapat dalam kepekatan yang boleh membahayakan organisma (manusia, tumbuhan dan haiwan) atau melebihi standard kualiti alam sekitar. Istilah ini sering digunakan seiring dengan pencemar.	Pollutant	<i>Substance that is present in concentration that may harm organisms (humans, plants and animals) or exceed an environmental quality standard. The term is frequently used synonymously with contaminant.</i>
Banjir	Kuantiti air yang melimpah keluar dari tebing sungai, tasik atau sistem perparitan sedia ada yang disebabkan oleh curahan hujan yang lebat, air laut pasang dan halangan pada sistem saliran.	Flood	<i>A body of water, rising, swelling and overflowing land not usually thus covered. It is also, overflowing of the bank of a stream, lake or drainage system of water onto adjacent land as a result of storm tidal action and channel obstruction.</i>
Bencana	Bencana merupakan peristiwa luar jangka dan berlaku secara tiba-tiba yang boleh menyebabkan kerosakan, kemusnahan dan penderitaan manusia. Bencana sering digambarkan sebagai kesan daripada pendedahan kepada peristiwa melampau dan boleh dikelaskan sebagai semula jadi dan teknologi bergantung kepada punca.	Disasters	<i>Disasters are unforeseen and often sudden events that cause great damage, destruction and human suffering. A disaster is often described as a result of exposure to the extreme event and can be both natural and technological depending on their cause.</i>
Bencana teknologi	Mungkin disebabkan oleh niat, kecuaiian atau kesilapan manusia, atau daripada aplikasi teknologi yang rosak atau gagal. Tiga jenis bencana teknologi: kemalangan industri, kemalangan pengangkutan dan pelbagai kemalangan.	Technological disasters	<i>May arise as a result of human intent, negligence or error, or from faulty or failed technological applications. Three types of technological disasters: industrial accidents, transport accidents and miscellaneous accidents.</i>
Buangan terjadual	Merupakan buangan toksik dan berbahaya yang dihasilkan oleh industri, pertanian, bengkel, kontraktor buangan terjadual, aktiviti domestik dan buangan klinikal dari hospital. Kategori sisa adalah yang tersenarai dalam Jadual Pertama Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005.	Scheduled waste	<i>Defined as toxic waste and hazardous generated by industries, agriculture, workshop, scheduled waste contractors, domestic activities and clinical wastes from hospitals. The waste category listed in the First Schedule Environmental Quality Regulation (Scheduled Waste) 2005.</i>
D			
Rangka Kerja Driving Force-Pressure-State-Impact-Response (DPSIR)	Rangka analitikal yang berdasarkan hubungan di antara komponen D-P-S-I-R.	Driving Force-Pressure-State-Impact-Response (DPSIR) framework	<i>An analytical framework that is based on the casual relationship between its D-P-S-I-R components.</i>
Demam denggi	Penyakit jangkitan virus yang merebak melalui gigitan nyamuk Aedes aegypti yang telah dijangkiti.	Dengue fever	<i>A type of viral infection that spreads through infected Aedes aegypti mosquito bites</i>

TERMA	PENERANGAN	TERMS	EXPLANATIONS
Disentri	Disentri adalah cirit-birit akut yang mengandungi darah di dalam najis. Disentri kebanyakannya disebabkan oleh spesis <i>Shigella</i> (<i>disentri bacillary</i>) atau <i>Entamoeba histolytica</i> (<i>disentri amoebic</i>).	Dysentery	<i>Dysentery is acute diarrhoea with visible blood in the stool. Dysentery is most often caused by Shigella species (bacillary dysentery) or Entamoeba histolytica (amoebic dysentery).</i>
F			
Fauna	Semua kehidupan haiwan.	Fauna	<i>All animal life.</i>
Flora	Semua kehidupan tumbuhan.	Flora	<i>All plant life.</i>
H			
Habuk Halus (PM)	Partikel pepejal atau titisan cecair dalam udara atau pelepasan yang saiznya 0.01-100µm, contohnya habuk, asap, wasap, semburan dan kabut.	Particulate Matter (PM)	<i>Solid particles or liquid droplets in the air or emission 0.01-100µm size, eg: dust, smoke, fume, spray and mist.</i>
Habuk Halus (PM₁₀)	Partikel terampai berukuran kurang daripada diameter 10 mikron. PM ₁₀ boleh berbentuk pepejal atau cecair dan ia termasuk aerosol, debu, asap dan debunga. Partikel ini berpunca daripada stesen janakuasa, proses industri dan aktiviti pembakaran terbuka.	Particulate Matter (PM₁₀)	<i>Respirable particles of less than 10 micron in diameter. PM₁₀ can be in solid or liquid form and it includes aerosol, dust, smoke and pollen. These particles originate from power plants, industrial processes and open burning activities.</i>
Halaju angin	Suatu kuantiti vektor di mana ia mempunyai magnitud dan arah. Magnitud halaju angin dipanggil laju angin manakala arah angin merujuk dari mana angin bertiup.	Wind velocity	<i>A quantity of vectors in which it has magnitude and direction. The magnitude of the wind velocity is called the wind speed while the wind direction refers to where the wind blows.</i>
Hakisan	Proses penghausan permukaan fizikal. Biasanya dikaitkan dengan kehilangan tanah disebabkan air, salji atau angin. Hakisan berlaku secara semula jadi dan menyebabkan bertambah buruk akibat pembersihan tanah yang berkaitan dengan aktiviti manusia seperti pertanian, perumahan atau perindustrian.	Erosion	<i>Wearing away and transport of the soil by wind or running water, glaciers or waves. Erosion occurs naturally but is often intensified by human land-clearing activities related to farming, residential or industrial development.</i>
Hutan	Tanah merangkumi lebih daripada 0.5 hektar dengan ketinggian pokok lebih daripada 5 meter dan penutup kanopi lebih daripada 10 peratus, atau pokok yang dapat mencapai ambang in situ. Ia tidak termasuk tanah yang didominasi oleh penggunaan tanah pertanian atau bandar.	Forest	<i>Land spanning more than 0.5 hectares with tree higher than 5 metres and a canopy cover of more than 10 per cent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use.</i>

TERMA	PENERANGAN	TERMS	EXPLANATIONS
Hutan bandar	Menanam, memelihara dan mengurus pokok di kawasan awam seperti taman rekreasi, taman permainan dan kawasan lapang termasuk sepanjang lebuh raya.	Urban forest	<i>Planting, protecting and managing trees in public areas such as recreational parks, playgrounds and open spaces includes the route along the highway.</i>
Hutan Simpanan Kekal (HSK)	Mana-mana tanah (tanah berhutan dan tidak berhutan) yang diwartakan atau disifatkan sebagai HSK untuk tujuan perhutanan di bawah Seksyen 7, 8 dan 9 Akta Perhutanan Negara.	Permanent Reserved Forest (PRF)	<i>Any land (forested and non-forested land) that has been enacted or deemed PRF for forestry purposes under Sections 7, 8 and 9, the National Forestry Act.</i>
I			
Indeks Kualiti Air	Purata pemberat bagi kepekatan ambien bahan pencemar terpilih biasanya berkait kepada pengelasan kualiti air.	Water Quality Index	<i>Weighted average of selected ambient concentrations of pollutants usually linked to water quality classes.</i>
Indeks Pencemaran Udara (IPU)	Satu indikator yang dicipta berdasarkan kepada penilaian saintifik bagi memaklumkan dengan cara yang mudah difahami kehadiran pencemaran udara dan impaknya terhadap kesihatan manusia. Nilai IPU dikira berdasarkan kepekatan purata setiap pencemar udara iaitu SO ₂ , NO ₂ , CO, O ₃ dan PM ₁₀ . Pencemar udara yang dominan dengan kepekatan tertinggi diambilkira sebagai pencemar yang akan menentukan nilai IPU. Pada lazimnya, kepekatan (PM ₁₀) adalah yang tertinggi berbanding dengan pencemar yang lain dan ini menentukan bacaan IPU.	Air Pollutant Index (API)	<i>An indicator which is created based on scientific assessment to provide user friendly information about the presence of air pollution and its impact on human health. API value is calculated based on the average concentration of each air pollutant SO₂, NO₂, CO, O₃ and PM₁₀. Dominant of air pollutant with the highest concentrations of pollutants are accounted for as that will determine the value of the API. In general, concentrations of pm₁₀ are the highest compared to other concentrations and this determines the API readings.</i>
Indeks UV Suria (UVI)	Menerangkan tentang sinaran UV di permukaan Bumi. Nilai indeks tersebut mempunyai julat dari sifar ke atas – semakin tinggi nilai indeks, semakin besar potensi berlaku kerosakan pada kulit dan mata dan semakin cepat kesan tersebut boleh berlaku.	Solar UV Index (UVI)	<i>Describes the UV rays on the Earth's surface. The value of the index has a range from zero upwards - the higher the value of the index, the greater the potential for damage to the skin and eyes and the faster the effect can occur.</i>
Insinerator	Relau untuk membakar bahan buangan di bawah keadaan terkawal.	Incinerator	<i>Furnace for burning wastes under controlled conditions.</i>

TERMA	PENERANGAN	TERMS	EXPLANATIONS
K			
Kadar mortaliti bayi	Nisbah bilangan kematian bayi di bawah umur 1 tahun dalam sesuatu tahun kepada jumlah bilangan kelahiran hidup dalam tahun itu (bagi setiap seribu kelahiran hidup).	Infant mortality rate	<i>The ratio number of deaths of infants under 1 year of age in a given year to the total number of live births in that year (per thousand live births).</i>
Kawasan tadahan	Kawasan di mana hujan mengalir ke dalam sungai, tasik, atau takungan.	Catchment area	<i>The area from which rainfall flows into a river, lake, or reservoir.</i>
Kapasiti pengeluaran	Keupayaan pengeluaran air bagi loji yang beroperasi sepenuhnya dalam tahun berkenaan. Kapasiti pengeluaran berbeza setiap tahun tertakluk kepada reka bentuk loji.	Production capacity	<i>The ability to produce water by fully operated plants in the respective year. The production capacity varies every year according to the design of the plants.</i>
Karbon Monoksida	Tidak berwarna, tidak berbau dan gas beracun yang dihasilkan oleh pembakaran bahan api dan fossil yang tidak lengkap.	Carbon Monoxide	<i>Colourless odourless and poisonous gas produced by incomplete fossil fuel combustion.</i>
Kawasan bandar	Kawasan yang diwartakan serta kawasan tepubina yang bersempadan dengannya dan gabungan kedua-dua kawasan ini mempunyai penduduk seramai 10,000 atau lebih. Kawasan tepubina didefinisikan sebagai kawasan yang terletak bersebelahan kawasan yang diwartakan dan mempunyai sekurang-kurangnya 60 peratus (berumur 15 tahun dan lebih) yang terlibat dalam aktiviti bukan Pertanian.	Urban area	<i>Gazetted areas with their adjoining built-up areas which had a combined population of 10,000 or more. Built-up areas were defined as areas contiguous to a gazetted area and had at least 60 per cent of their population (aged 15 years and over) engaged in non-agricultural activities.</i>
Kawasan perlindungan/ simpanan	Kawasan tanah dan/atau laut khususnya bagi perlindungan dan pemuliharaan kepelbagaian biologi, yang berkaitan dengan sumber semula jadi dan diurus melalui perundangan ataupun cara lain yang berkesan. Definisi ini diadaptasi daripada <i>The International Union for Conservation of Nature</i> (IUCN).	Protected/ preserved area	<i>An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity and of natural and associated cultural resources and managed through legal or other effective means. This definition is adopted by The International Union for Conservation of Nature (IUCN).</i>
Kemalangan jalan raya	Kemalangan atau kejadian yang mana kerosakan berlaku ke atas mana-mana orang, harta, kenderaan, struktur atau haiwan dan berlaku di mana-mana jalan awam termasuklah jambatan, terowong, hentian sebelah, jalan bertingkat, jejambat, plaza tol dan sebagainya.	Road traffic crash	<i>Accidents or occurrences whereby damage or injury is caused to any person, property, vehicle, structure or animal and occurs in any public road including bridge, tunnels, lay-bye, interchanges, overpasses, toll plazas and so on.</i>
Kelajuan angin permukaan	Merujuk kepada laju angin pada ketinggian piawai 10m di atas tanah.	Surface wind speed	<i>Refers to the wind speed at a standard altitude of 10m above ground.</i>

TERMA	PENERANGAN	TERMS	EXPLANATIONS
Kepadatan penduduk	Jumlah bilangan penduduk setiap unit per segi di kawasan muka bumi.	Population density	<i>Total number of inhabitants per square unit of surface area.</i>
Kepelbagaian biologi	Kepelbagaian biologi bermaksud variasi di antara organisma hidup daripada pelbagai sumber termasuk daratan, marin serta ekosistem akuatik lain; ia termasuklah kepelbagaian di dalam peringkat genetik, spesis dan ekosistem. Definisi ini diadaptasi daripada <i>United Nations Convention on Biological Diversity</i> .	Biological diversity	<i>Biological diversity means the variability among living organisms from various sources including terrestrial, marine and other aquatic ecosystems; this includes diversity at the genetic, species and ecosystem level. This definition is adopted by the United Nations Convention on Biological Diversity.</i>
Keperluan Oksigen Biokimia (BOD₅)	Ukuran jumlah oksigen terlarut yang diperlukan oleh organisma untuk mengurai bahan organik yang terdapat di dalam air. Biasanya bacaan diambil dalam tempoh 5 hari.	Biochemical Oxygen Demand (BOD₅)	<i>Dissolved oxygen required by organisms for the aerobic decomposition of organic matter present in water. This measurement is usually taken within 5 days.</i>
Keperluan Oksigen Kimia (COD)	Indeks pencemaran air yang digunakan sebagai ukuran kepekatan jisim oksigen yang diperlukan untuk mengurai bahan organik dan bukan organik.	Chemical Oxygen Demand (COD)	<i>Index of water pollution measuring the mass concentration of oxygen consumed by the chemical breakdown of organic and inorganic matter.</i>
Kolera	Penyakit usus pada umumnya disebabkan oleh pencemaran najis daripada air dan makanan.	Cholera	<i>Intestinal disease generally caused by faecal contamination of water and food.</i>
Kuasa hidro	Tenaga primer yang disimpulkan tersedia untuk pengeluaran elektrik dan ditunjukkan dari segi konvensional setara dengan bahan api fosil menggunakan kecekapan purata penukaran haba untuk tahun tersebut.	Hydropower	<i>Is the inferred primary energy available for electricity production and is shown in terms of conventional fossil fuel equivalent using the average thermal efficiency of conversion for the year.</i>
Kutipan biji benih	Biji benih pokok hutan yang dikutip secara terus dari atas pokok.	Seeds collections	<i>Seeds of forest trees collected directly from the tree.</i>
L			
Ladang hutan	Kawasan yang ditanam dengan pokok atau tumbuh-tumbuhan hutan, sama ada daripada spesis tempatan atau dagang, dengan kaedah tanaman secara terbuka yang luasnya tidak kurang daripada 50 ha. Ladang hutan boleh merangkumi kawasan yang terletak di dalam atau di luar HSK.	Forest plantation	<i>Area planted with trees or forest plants, whether from local or foreign species, the method of cultivation as wide open no less than 50 ha. Forest plantations can include areas that are located within or outside the PRF.</i>

TERMA	PENERANGAN	TERMS	EXPLANATIONS
Latar belakang	Stesen yang tidak terpengaruh dengan faktor-faktor pencemaran udara dari industri dan kenderaan bermotor. Stesen ini biasanya ditempatkan di kawasan yang jauh dari punca pencemar dan dijadikan bacaan rujukan bagi kategori stesen yang lain.	Background	<i>Stations that is not affected by air pollution factors from industry and motor vehicles. The station is usually located in a remote area of interest and is a reference point for other categories of stations.</i>
Logam berat	Logam bertoksik yang digunakan dalam proses industri, sebagai contoh, arsenik, kadmium, kromium, tembaga, plumbum, raksa, nikel dan zink. Ia boleh merosakkan kehidupan tumbuhan dan haiwan pada kepekatan yang rendah dan cenderung untuk berkumpul dalam rantai makanan.	Heavy metals	<i>Potentially toxic metals used in industrial processes, for example, arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc. They may damage plant and animal life at low concentrations and tend to accumulate in the food chain.</i>
N			
Nilai defektif	Nilai yang diragui atau nilai yang tidak diterima setelah menjalani proses semakan kualiti data.	Defective value	<i>A doubtful value or an unacceptable value after undergoing a data quality review process.</i>
Nilai pH	Ukuran kepada keasidan untuk nilai alkali dalam cecair. Nilai pH di antara lingkungan 0 ke 7 menunjukkan asid, nilai pH di antara lingkungan 7 ke 14 menunjukkan alkali, dan nilai pH 7 menandakan neutral.	pH Value	<i>Measure of the acidity or alkalinity of a liquid. A pH value in the range of 0 to 7 indicates acidity, a pH value in the range of 7 to 14 indicates alkalinity, and a pH value of 7 signifies neutrality.</i>
Nitrogen Dioksida (NO₂)	Nitrogen Dioksida terbentuk di persekitaran udara melalui pengoksidaan Nitrogen Monoksida (NO). Gas bertoksik berwarna merah keperangan ini mempunyai bau yang kuat dan tajam.	Nitrogen Dioxide (NO₂)	<i>Nitrogen Dioxide is formed in the ambient air through the oxidation of Nitrogen Monoxide (NO). This reddish brown toxic gas has a sharp and pungent odour.</i>
O			
Oksigen Terlarut (DO)	Jumlah gas oksigen (O ₂) yang berada dalam air, dikira mengikut kandungannya dalam isipadu air (miligram O ₂ seliter) atau jumlah peratusnya dalam air tepu.	Dissolved Oxygen (DO)	<i>Amount of gaseous oxygen (O₂) actually present in water expressed in terms either of its presence in the volume of water (milligrams of O₂ per litre) or of its share in saturated water (percentage).</i>

TERMA	PENERANGAN	TERMS	EXPLANATIONS
Ozon (O₃)	Gas yang mengeluarkan bau yang tidak menyenangkan, tidak berwarna dan bertoksik yang menyumbang kepada fotokimia asbut (campuran asap dan kabut). O ₃ terbentuk hasil daripada reaksi kimia antara Sebatian Organik Meruap (VOC) dan Nitrogen Oksida (NO _x). Pada lewat tengahari atau awal petang, lazimnya kepekatan ozon adalah tinggi dan mendominasi bacaan IPU di sesetengah kawasan. Di bawah pengaruh cahaya matahari, NO _x dan VOC yang dilepaskan dari ekzos kenderaan bermotor dan industri ia bertindakbalas bagi membentuk ozon di permukaan bumi.	Ground Level Ozone (O₃)	<i>A pungent, colourless and toxic gas that contributes to photochemical smog. O₃ is formed as a result of chemical reaction in the air between Volatile Organic Compounds (VOCs) and Nitrogen Oxide (NO_x). By the late afternoon or early evening, usually O₃ concentration is high and dominating API readings in some areas. Under the sunlight influence, and reaction between NO_x and VOC that released from motor vehicles exhaust and industrial which form the O₃ in the earth's surface. Under the influence of sunlight, nitrogen oxide (NO_x) and volatile organic compounds (VOCs) emitted from motor vehicle exhaust and industry reacts to form O₃ in the earth's surface.</i>
P			
Pelepasan	Pembuangan bahan pencemar ke atmosfera dari punca tetap seperti cerobong asap dan lain-lain, kawasan komersial atau perindustrian dan juga berpunca daripada punca bergerak seperti kenderaan bermotor, lokomotif dan pesawat.	Emission	<i>Discharge of pollutants into the atmosphere from stationary sources such as smokestacks, other vents, surface areas of commercial or industrial facilities and mobile sources, for example, motor vehicles, locomotives and aircraft.</i>
Pemantauan kualiti udara	Bacaan <i>standard</i> dan pemerhatian terhadap udara yang diambil secara berterusan atau kerap yang digunakan sebagai peringatan dan kawalan.	Air quality monitoring	<i>Continuous or frequent standardised measurement and observation of the air, often used for warning and control.</i>
Pencemaran marin	Pengenalan langsung atau tidak langsung oleh manusia atau tenaga ke dalam alam sekitar marin (termasuk muara), menghasilkan kemusnahan kepada sumber kehidupan, berbahaya kepada kesihatan hidupan, halangan kepada kegiatan marin termasuk memancing, merosakkan kualiti air laut dan mengurangkan keselesaan.	Marine pollution	<i>Direct or indirect introduction by humans of substances or energy into the marine environment (including estuaries), resulting in harm to living resources, hazards to human health, hindrances to marine activities including fishing, impairment of the quality of sea water and reduction of amenities.</i>
Pencemaran udara	Kandungan sesuatu gas, cecair atau zarah yang terampai di udara ambien yang boleh menjejaskan kehidupan atau memberi kesan negatif kepada manusia, tumbuh-tumbuhan dan haiwan.	Air pollution	<i>Content of a gas, liquid or particles suspended in the ambient air that could affect life or a negative impact on humans, plants and animals.</i>

TERMA	PENERANGAN	TERMS	EXPLANATIONS
Penempatan penduduk	Konsep penyatuan yang terdiri daripada (a) komponen fizikal tempat berteduh dan infrastruktur dan (b) perkhidmatan yang mana menyokong penyediaan elemen fizikal. Ini boleh dikatakan seperti perkhidmatan komuniti seperti pendidikan, kesihatan, kebudayaan, kebajikan, rekreasi dan pemakanan.	Human settlements	<i>Integrative concept that comprises (a) physical components of shelter and infrastructure and (b) services to which the physical elements provide support, that is to say, community services such as education, health, culture, welfare, recreation and nutrition.</i>
Pengawasan kualiti air	Bacaan <i>standard</i> dan pemerhatian terhadap air yang diambil secara berterusan atau kerap yang digunakan sebagai peringatan dan kawalan.	Water quality monitoring	<i>Continuous or frequent standardised measurement and observation of the water often used for warning and control.</i>
Penyejatan	Suatu proses yang melibatkan perubahan fasa cecair kepada gas apabila cecair terdedah kepada atmosfera. Dalam meteorologi ia diukur sebagai jumlah sejatan iaitu jumlah air yang disejat daripada tangki sejatan.	Evaporation	<i>A process that involves the phase change of a liquid to a gas when the liquid is exposed to the atmosphere. In meteorology, it is measured as the amount of evaporation i.e. the amount of water evaporated from the evaporation tank.</i>
Pepejal Terampai (SS)	Pepejal Terampai berpunca daripada hakisan tanah dan mendapan daripada pembangunan kawasan tanah tinggi dan pembukaan tanah untuk pembalakan dan perlombongan. Ia akan mengakibatkan peningkatan SS dan perubahan kepada kualiti air di dalam lembangan sungai.	Suspended Solids	<i>Suspended Solids (SS) is caused by soil erosion and sedimentation from the development in highlands and clearance of land for logging and mining. It is resulted in the increase of SS and affects water quality in the river basins.</i>
Perangkaan alam sekitar	Statistik yang menerangkan keadaan dan arah aliran alam sekitar, meliputi media alam sekitar semula jadi (udara/iklim, air, tanah), biota dalam media dan penempatan penduduk. Perangkaan alam sekitar mengukur aktiviti manusia dan kejadian semula jadi yang membawa kesan kepada alam sekitar, kesan daripada aktiviti-aktiviti dan kejadian ini, reaksi masyarakat kepada kesan alam sekitar dan kualiti kesediaan aset semula jadi. Definisi lengkap termasuk petunjuk alam sekitar, indeks dan perakaunan.	Environment statistics	<i>Statistics that describe the state and trends of the environment, covering the media of the natural environment (air/climate, water, land/soil), the biota within the media, and human settlements. Environment statistics are integrative in nature, measuring human activities and natural events that affect the environment, the impacts of these activities and events, social responses to the environmental impacts, and the quality and availability of natural assets. Broad definitions include environmental indicators, indices and accounting.</i>

TERMA	PENERANGAN	TERMS	EXPLANATIONS
Perubahan iklim	Istilah yang kerap digunakan merujuk kepada kepanasan sejagat berkaitan pelepasan gas rumah kaca hasil kegiatan manusia.	<i>Climate change</i>	<i>Term frequently used in reference to global warming due to greenhouse gas emissions from human activities.</i>
R			
Rangka Kerja Pembangunan Perangkaan Alam Sekitar	Konsep rangka kerja bagi membantu membangunkan, menyelaraskan dan menguruskan perangkaan alam sekitar dan perangkaan berkaitan dengan sosial ekonomi dan demografi. Ia dibangunkan oleh <i>United Nations Statistics Division</i> dalam tahun 1984, dan ianya berdasarkan kepada prinsip tekanan-tindak balas impak alam sekitar.	<i>Framework for the Development of Environment Statistics (FDES)</i>	<i>Conceptual framework that assists in development, coordination and organisation of environment statistics and related socio-economic and demographic statistics. It was developed by the United Nations Statistics Division in 1984, and is based on stress-response principles of environmental impacts.</i>
S			
Sinaran global	Jumlah sinaran radiasi elektromagnet yang dipancarkan oleh matahari ke permukaan bumi.	<i>Global radiation</i>	<i>The amount of electromagnetic radiation emitted by the sun to the earth's surface.</i>
Sisa	Aliran bahan pepejal, cecair dan gas, serta tenaga, yang dibuang, dilepaskan atau dikeluarkan oleh pertubuhan dan isi rumah melalui proses pengeluaran, penggunaan atau pengumpulan.	<i>Residuals</i>	<i>Flows of solid, liquid and gaseous materials, and energy, discarded, discharged or emitted by establishments and households through production, consumption or accumulation processes.</i>
Sistem bekas lombong	Sistem untuk menternak ikan di mana-mana tanah yang pernah (tetapi tidak lagi) diberi atau dikeluarkan pajakan lombong atau sijil lombong di bawah mana-mana undang-undang bertulis mengenai perlombongan.	<i>Ex-mining culture system</i>	<i>System of fish culture on any land in respect of which a mining lease or certificate were once but no longer granted or issued under any written law relating to mining.</i>
Sistem kandang	Sistem yang merupakan suatu kepungan yang dibuat daripada bahan pengadang yang dilekatkan pada tiang yang ditanam ke dasar laut.	<i>Pen culture system</i>	<i>System of fish culture in an enclosure made of any screening material attached to poles staked to the seabed.</i>
Sistem kolam	Sistem ternakan ikan di dalam kolam.	<i>Culture system</i>	<i>System of fish culture in ponds.</i>
Sistem sangkar	Sistem untuk menternak ikan di dalam suatu kepungan yang dibuat daripada apa-apa bahan saringan yang diikat pada struktur yang dilabuhkan pada dasar perairan sungai atau mana-mana tempat di darat.	<i>Cage culture system</i>	<i>System of fish culture in an enclosure on whatever shape or size made of any screening material and attached to floating structures which are anchored to the sea-bed.</i>

TERMA	PENERANGAN	TERMS	EXPLANATIONS
Sistem tangki	Sistem ternakan ikan di dalam tangki di atas tanah.	<i>Tank culture system</i>	<i>System of fish culture in tanks on land.</i>
Standard kualiti udara	Tahap pencemaran udara ditetapkan oleh peraturan-peraturan dimana tidak boleh melebihi bagi sesuatu tempoh masa di kawasan yang ditetapkan.	<i>Air quality standards</i>	<i>Levels of air pollutants prescribed by regulations that may not be exceeded during a specified time in a defined area.</i>
Subbandar	Stesen pengawasan kualiti udara yang terletak di kawasan pinggir bandar.	<i>Suburban</i>	<i>Air quality monitoring stations located in the suburban areas.</i>
Sulfur Dioksida (SO₂)	Berat, tajam, gas tidak berwarna terbentuk terutamanya oleh pembakaran bahan api fosil. Ia adalah berbahaya kepada manusia dan tumbuh-tumbuhan dan menyumbang kepada keasidan dalam hujan.	<i>Sulphur Dioxide (SO₂)</i>	<i>Heavy, pungent, colourless gas formed primarily by the combustion of fossil fuels. It is harmful to human beings and vegetation and contributes to the acidity in precipitation.</i>
T			
Taman Laut	Kawasan perairan laut yang dizonkan sejauh dua batu nautika dari tikas air surut terendah, kecuali Pulau Kapas di Terengganu, Pulau Kuraman, Pulau Rusukan Besar dan Pulau Rusukan Kecil di W.P. Labuan yang dizonkan sejauh satu batu nautika dari tikas air surut terendah. Taman Laut ditubuhkan untuk melindungi dan memulihara pelbagai habitat dan hidupan marin akuatik.	<i>Marine Park</i>	<i>Sea zoned area for a distance of two nautical miles from the lowest sea level, except in Kapas Island in Terengganu, Kuraman Island, Rusukan Besar Island and Rusukan Kecil Island in W.P. Labuan. These areas are zoned for a distance of one nautical mile from the lowest sea level. Marine Park is established to protect and conserve various habitat and aquatic marine life.</i>
Tanah Bencah-Ramsar	Kawasan yang berpayau, fen, tanah gambut atau berair samada semula jadi atau buatan manusia, kekal atau sementara, mengandungi air yang tidak mengalir, mengalir, air bersih, air tawar atau masin termasuk kawasan perairan laut, di mana dalamannya tidak melebihi enam meter.	<i>Wetland-Ramsar</i>	<i>Areas of marshes, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static, flowing, fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six metres.</i>
Tanah bencah	Kawasan dari lapisan tanah rendah yang mana aras air bumi yang berada atau berhampiran dengan permukaan tanah pada kebanyakan masa. Tanah bencah termasuk semua tanah berpayau, tanah berlumpur, fen dan muara.	<i>Wetland</i>	<i>Area of low-lying land where the water table is at or near the surface most of the time. Wetlands include swamps, bogs, fens, marshes and estuaries.</i>

TERMA	PENERANGAN	TERMS	EXPLANATIONS
Tanah berhutan	Tanah yang merangkumi lebih daripada 0.5 hektar dengan pokok-pokok yang lebih tinggi daripada 5 meter dan litupan kanopi melebihi 10%, atau pokok yang mampu untuk mencapai tahap in-situ. Ia tidak termasuk tanah di bawah penggunaan tanah pertanian atau bandar (dirian pokok di kawasan pertanian, taman dan sebagainya). (FAO 1998; FRA 2000). Keluasan kawasan berhutan ini dibahagikan kepada Hutan Simpanan Kekal (HSK), Hutan Tanah Kerajaan (HTK), Hutan Hidupan Liar di luar kawasan HSK, lain-lain Rizab Berhutan dan Tanah Bermilik.	Forested land	<i>A land area of more than 0.5 ha. The trees should be able to reach a minimum height of 5 metres with a tree canopy cover of more than 10 per cent. It does not include land under agricultural or urban land use (stand of trees in agricultural areas, parks, etc.). Forested land is divided into permanent forest reserve (PRF), forest land government (FLG), forest wildlife outside the PRF, others forested reserve and alienated land.</i>
Tanaman	Tanaman merujuk kepada tumbuhan atau hasil pertanian yang ditanam untuk makanan atau keperluan ekonomi lain, seperti pakaian atau makanan ternakan.	Crops	<i>Crops refer to plants or agricultural produce grown for food or other economic purposes, such as clothes or livestock fodder.</i>
Tanaman buluh	Buluh digunakan secara meluas dalam industri pembuatan perabot, kraftangan, bekas barangan, tikar, pulpa, kertas, bahan bakar, pembinaan dan peralatan rumah.	Bamboo plantation	<i>Bamboo is a widely used in the furniture manufacturing industry, handicrafts, container products, matting, pulp, paper, fuel, and construction as well as home appliances.</i>
Tanaman mengaya	Merupakan suatu rawatan pemulihan hutan ke atas kawasan hutan miskin dan kawasan lapang yang dilaksanakan ke atas kawasan di dalam HSK yang telah diusahailah bagi membantu meningkatkan isi kandungan hutan tersebut supaya mencapai tahap yang dikehendaki.	Enrichment planting	<i>Forest restoration treatments on poor forest areas and open spaces that are performed on the areas in PRF which has been harvested to help improve the content of the forest to reach the desired level.</i>
Tanaman rotan	Salah satu hasil hutan bukan kayu utama. Bertujuan untuk meningkatkan stok tumbuhan dalam kawasan HSK yang sesuai bagi memastikan pengeluaran sumber ini secara berkekalan untuk menampung keperluan industri perabot rotan tempatan.	Rattan plantation	<i>One of the main non-timber forest products. The plantation is to increase the stock of this plant in the PRF appropriate to ensure sustainable production of these resources to meet the needs of the local rattan furniture industry.</i>
Tanaman tumbuhan ubatan	Spesis tumbuhan yang mempunyai nilai perubatan dan ditanam secara ladang.	Planting of medicinal plants	<i>Species of plants that have medicinal value and cultivated fields.</i>

TERMA	PENERANGAN	TERMS	EXPLANATIONS
Tapak pelupusan	Pemindahan terakhir bahan sisa di dalam atau di atas tanah yang dikawal atau tidak dikawal mengikut cara kebersihan yang berbeza, perlindungan alam sekitar dan keperluan keselamatan yang lain.	Landfill	<i>Final replacement of waste in or on the land in a controlled or uncontrolled way according to different sanitary, environmental protection and other safety requirements.</i>
Tapak pelupusan sanitari	Kaedah untuk melupuskan sisa pepejal di atas tanah tanpa menimbulkan gangguan atau bahaya kepada kesihatan awam dan alam sekitar. Berdasarkan prinsip kejuruteraan, sisa pepejal dihadkan kepada kawasan kecil, dikurangkan kepada jumlah yang lebih kecil dan ditutup dengan lapisan tanah pada penghujung waktu operasi setiap hari, atau pada jangka masa yang lebih kerap mengikut keperluan.	Sanitary landfill	<i>A method of disposing of solid wastes on land without creating nuisances or hazards to public health or the environment. Using the principles of engineering, the solid waste is confined to the smallest practical area, reduced to the smallest practical volume and covered with a layer of earth at the conclusion of each day's operation (daily cover), or at more frequent intervals as may be necessary.</i>
Tapak semaian	Menghasilkan anak benih dan anak pokok untuk digunakan bagi projek-projek penghutan semula, penyelidikan, perhutanan bandar dan aktiviti landskap.	Nursery	<i>Produce seedlings and saplings to be used for reforestation projects, research, urban forestry and landscape activities.</i>
Tekanan aras laut	Tekanan udara yang diukur berdasarkan jarak ketinggian dari paras purata aras laut (mean sea level) mengikut <i>ICAO Standard Atmosphere</i> .	Sea level pressure	<i>The air pressure measured based on the altitude distance from the mean sea level according to the ICAO Standard Atmosphere.</i>
Tidak diperoleh	Tiada pencerapan dilaksanakan.	Not available	<i>No observations are performed.</i>
Topografi	Bentuk fizikal kawasan permukaan, termasuk muka bumi atau ketinggian relatif dan kedudukan bentuk muka bumi buatan manusia dan semula jadi.	Topography	<i>Physical feature of a surface area, including its relief or relative elevations, and the position of human-made and natural features.</i>
V			
Viral Hepatitis A	Penyakit akut biasanya termasuk demam, dedar, keletihan melampau, anoreksia, loya, jaundis akut dan kuadran atas kanan abdomen dengan pertambahan lebih alanine aminotransferase melebihi 2.5 kali kadar biasa.	Viral Hepatitis A	<i>Acute illness typically including fever, malaise, extreme fatigue, anorexia, nausea, acute jaundice and right upper quadrant of abdomen tenderness with raised alanine aminotransferase more than 2.5 times normal rate.</i>

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