# Malaysia Environmental and Safety Country Report

2022 SEAISI Steel Mega Event & Expo
(Technology, Sustainability, Construction)

Malaysia

14 – 18 November 2022

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# Environmental Institutional Arrangement

## Institutional Arrangements

#### **Ministries**

#### **Key Ministries for CC May 2018 March 2020** The Ministry of Energy, The Ministry of The Ministry of Science, Technology, Natural Resources and **Environment** and **Environment and Climate** Environment (MNRE) Water (KASA) Change (MESTECC) The Ministry of The Ministry of The Ministry of Water, Energy, Green **Energy and Natural Lands and Natural** Technology and Water Resources (KeTSA) Resources

Focal point to the UNFCCC

## Institutional Arrangements

#### **Policy making**

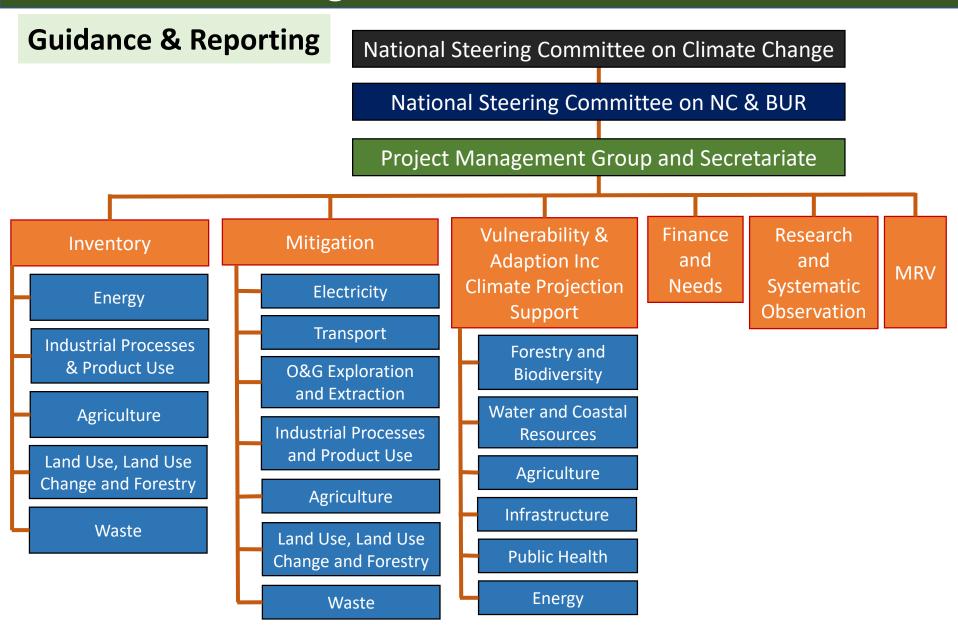
The National Green Technology and Climate Change Council was established in September 2009 to set the policy direction on addressing climate change (it has since been renamed as the Malaysia Climate Change Action Council in December 2020). It is chaired by the Prime Minister and has several key Cabinet Ministers as members.

The Cabinet is the highest policy decision-making body in the country with climate change matters under the purview of the Minister of Environment and Water. Any decisions taken at the Malaysia Climate Change Action Council and other bodies require a final endorsement by the Cabinet

#### **Development Planning and Implementation**

Development planning and implementation is coordinated by the Economic Planning Unit (EPU) under the Prime Minister's Department in consultation with other Ministries. These are carried out through the five-year development plans and include climate change mitigation and adaptation programmes.

## **Institutional Arrangements**



## Institutional Arrangements – Guidance & Reporting

#### **Guidance & Reporting**

#### National Steering Committee on REDD plus (NSCREDD)

- was established in 2011
- to formulate the directions and strategies for REDD plus implementation.
- chaired by the Secretary General of the Ministry of Energy and Natural Resources with membership from State Economic Planning Units, Forestry Departments and relevant Ministries.

#### National Committee on Clean Development Mechanism (NCCDM)

- was established in 1994
- to guide CDM implementation.
- chaired by the Deputy Secretary General of the Ministry of Environment and Water with the Secretary General being the Designated National Authority.

#### Remark:

REDD plus: Reducing Emissions from Deforestation and Forest Degradation, and the Role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks in Developing Countries

# National GHG Inventory, Sources and Action Plan

## National GHG Inventory 2016

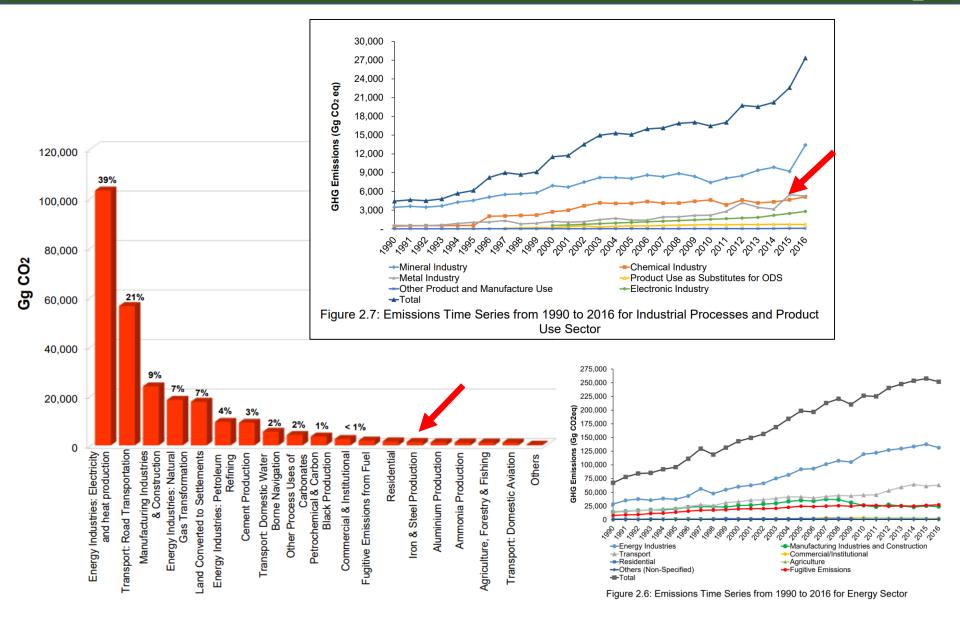
| Sector  | or Emissions / Removals |                 |    |  |
|---|-------------------------|-----------------|----|--|
|   | Gg CO₂ eq.              | %               |    |  |
| Energy  | 251,695.03              | 79.4            |    |  |
| Industrial Processes and Product Use              | 27,348.83               | 8.6             |    |  |
| AFOLU – Agriculture                               | 10,627.72               | 3.4             |    |  |
| Waste   | 27,161.66               | 8.6             |    |  |
| Total Emissions (without LULUCF)                  | 316,833.23              | 100.0           |    |  |
| AFOLU – LULUCF (Emissions)                        | 17,801.27               | GHG             | %  |  |
| AFOLU – LULUCF (Removals)                         | -259,146.03             | CO <sub>2</sub> | 80 |  |
| AFOLU – LULUCF (Sub-total)                        | -241,344.75             | CH <sub>4</sub> | 17 |  |
| Total Emissions (with LULUCF emissions part only) | 334,634.51              | N2O & F-Gases   | 2  |  |
| Total Emissions (with LULUCF)                     | 75,488.48               | Others          | 1  |  |

#### Remark:

- AFOLU: Agriculture, Forestry and Other Land Use
- GHG inventory estimates were obtained following the 2006
   IPCC Guidelines for National Greenhouse Gas Inventories

Increase 57.7% against Y2005

# National GHG Inventory 2016 – Major sources of CO<sub>2</sub>



# Mitigation Actions and their effects 2016

| Willigation Actions and their effects 2010 |                   |   |                        |      |  |
|--|-------------------|---|------------------------|------|--|
| Sector Sub-sector                          |                   | National Actions  | Emissions avoidance    |      |  |
|  |                   | Mitigation Actions                                      | Gg CO <sub>2</sub> eq. | %    |  |
| Renewable<br>Energy (Power)                |                   | Feed-in-Tariff (FiT)                                    | 460.52                 | 20.2 |  |
|  |                   | Hydropower  | 6,570.15               |      |  |
|  | Energy (Fower)    | Other RE by public and private licensees                | 231.92                 |      |  |
|  | Energy Efficiency | Efficiency Action Plan (NEEAP)                          | 458.02                 | 1.3  |  |
| Energy                                     | Transportation    | Rail based public transport                             | 212.93                 |      |  |
|  |                   | Use of energy-efficient vehicles                        | 90.65                  |      |  |
|  |                   | Use of palm-based biodiesel in blended petroleum diesel | 1,127.34               | 4.3  |  |
|  |                   | Use of natural gas in vehicles                          | 114.7                  |      |  |
| Masta                                      | Paper recycling   |   | 3,937.76               | 17.6 |  |
| Waste                                      |                   |   |                        | 17.6 |  |

2,377.84

56.6

Forestry Reducing deforestation, Sustainable management of forest and Conservation of carbon stocks 20,307.50

Remark: Mitigations in the other sectors, IPPU and Agriculture sectors have yet to be quantified.

Malaysia Third Biennial Update Report to The UNFCCC, 2020. Ministry of Environment and Water

Biogas recovery from palm oil mill effluent

## Mitigation Actions and their effects 2016

#### **Power Sector Development Plan**

The Mi Implementation of A Natural Resource.

se energy efficiency levelopment plan laysia. In 2020, the laysia. In 2020, the laysia. In 2020, the laysia in 2020, the

emissions Renewable energy (RE)
from forests implementation through
Feed-in Tariff (FiT) mechanism

# Green Investment Tax Allowances (GITA) and Green Income Tax Exemption (GITE) In

To Use of Natural Gas as fuel in vehicles

The Government have introduced the Biogas recovery from palm oil mill effluent treatment the Green Investment and the Green Inve

Allowances (OITA) for Promoting the projects as well use of energy-efficient vehicles (EEVs)

Generation of electricity by hydropower stations

#### **Green Technology Financing Scheme (GTFS)**

CTES is a financing scheme to facilitate the RE by public of green technology projects, providing and private cess to private funds. The scheme, which licensees targets both producers and users of green techr government guarantee of 60% Waste paper int and recycling Use of palm-based Pbc. biodiesel in blended nnancial institutions. petroleum diesel

#### **Low Carbon Cities Framework (LCCF)**

Introduced in 2011, the Low Carbon Cities
Framework (LCCF) is a national framework to
Lide Local Governments in transforming their
Cities into Low Carbon Complementation
Implementation
of green building
rating scheme
public transport
Implement low carbon strategies
that are both systematic and impactful.

# Overview Environment – Air Quality & Pollution Sources

New Ambient Air Quality Standard was established in order to replace the older Malaysia Ambient Air Quality Guideline that has been used since 1989.

The New Ambient Air Quality Standard adopts 6 air pollutants criteria that include 5 existing air pollutants which are particulate matter with the size of less than 10 micron ( $PM_{10}$ ), sulfur dioxide ( $SO_2$ ), carbon monoxide (CO), nitrogen dioxide ( $NO_2$ ), and ground level ozone ( $O_3$ ) as well as 1 additional parameter which is particulate matter with the size of less than 2.5 micron ( $PM_{2.5}$ ).

5. 5. (· ····<sub>2.5</sub>).

Table 1: New Malaysia Ambient Air Quality Standard

The air pollutants concentration limit will be strengthen in stages until 2020. There are 3 interim targets set which include interim target 1 (IT-1) in 2015, interim target 2 (IT-2) in 2018 and the full implementation of the standard in 2020.

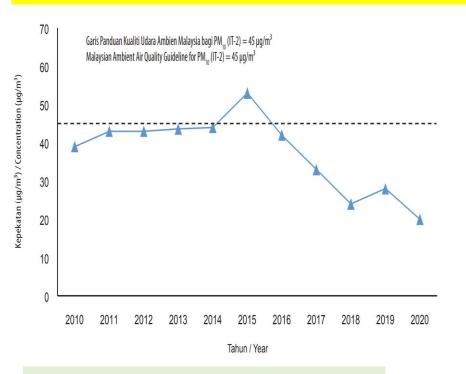
| IPU / API | STATUS KUALITI UDARA / AIR QUALITY STATUS |  |  |  |
|-----------|---|--|--|--|
| 0 - 50    | Baik / Good                               |  |  |  |
| 51 - 100  | Sederhana / Moderate                      |  |  |  |
| 101 - 200 | Tidak Sihat / Unhealthy                   |  |  |  |
| 201 - 300 | Sangat Tidak Sihat / Very Unhealthy       |  |  |  |
| > 300     | Berbahaya / Hazardous                     |  |  |  |

| Pollutants                               | Averaging Time | Ambient Air Quality Standard |             |                 |
|--|----------------|------------------------------|-------------|-----------------|
|  |                | IT-1 (2015)                  | IT-2 (2018) | Standard (2020) |
|  |                | μg/m³                        | μg/m³       | μg/m³           |
| Particulate Matter with the size of less | 1 Year         | 50                           | 45          | 40              |
| than 10 micron (PM <sub>10</sub> )       | 24 Hour        | 150                          | 120         | 100             |
| Particulate Matter with the size of less | 1 Year         | 35                           | 25          | 15              |
| than 2.5 micron (PM <sub>2.5</sub> )     | 24 Hour        | 75                           | 50          | 35              |
| Sulfur Dioxide (SO <sub>2</sub> )        | 1 Hour         | 350                          | 300         | 250             |
|  | 24 Hour        | 105                          | 90          | 80              |
| Nitrogen Dioxide (NO <sub>2</sub> )      | 1 Hour         | 320                          | 300         | 280             |
|  | 24 Hour        | 75                           | 75          | 70              |
| Ground Level Ozone (O <sub>3</sub> )     | 1 Hour         | 200                          | 200         | 180             |
|  | 8 Hour         | 120                          | 120         | 100             |
| *Carbon Monoxide (CO)                    | 1 Hour         | 35                           | 35          | 30              |
|  | 8 Hour         | 10                           | 10          | 10              |

<sup>\*</sup>mg/m<sup>3</sup>

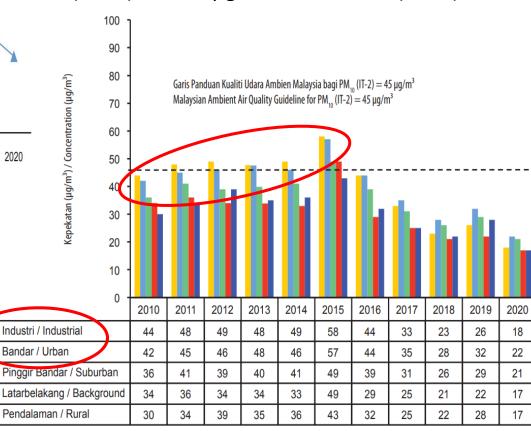
## Overview – Environment – Air Quality (PM<sub>10</sub>)

#### Annual Average Concentration of Particulate Matter [PM<sub>10</sub>], 2010-2020



The MCO imposed by the Government that restrained industrial, commercial and social activities have reduced air pollution particularly the concentration of fine particles in the air

In year 2020, the annual average value of  $PM_{10}$  in the ambient air was 20  $\mu g/m^3$  which is well below the Malaysia Ambient Air Quality Standard value of 45  $\mu g/m^3$  in IT-2 (2018) and 40  $\mu g/m^3$  in Standard (2020).

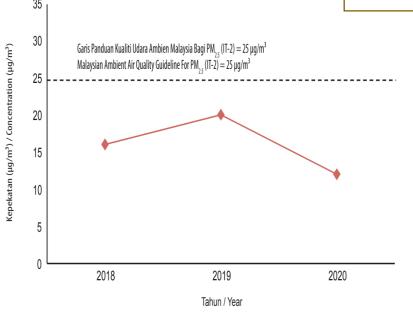


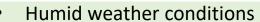
## Overview – Environment – Air Quality (PM<sub>2.5</sub>)

#### Annual Average Concentration of Particulate Matter [PM<sub>2.5</sub>], 2018-2020

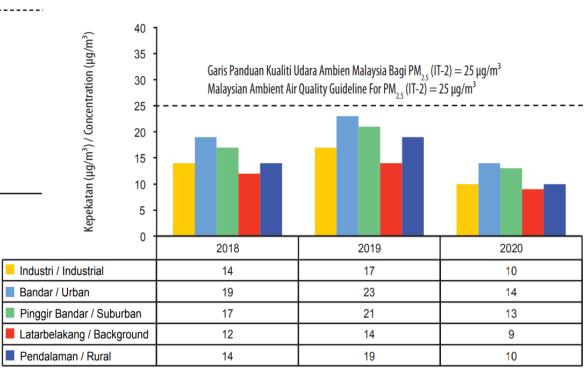
PM2.5 was started to be measured ad analysed in year 2017 and it was first reported in Environmental Quality Report 2018.

In year 2020, the annual average value of  $PM_{2.5}$  in the ambient air was 12  $\mu g/m^3$  which is well below the Malaysia Ambient Air Quality Standard value of 25  $\mu g/m^3$  in IT-2 (2018). The achievement of level below Malaysia Ambient Air Quality Standard 2020 value of 15  $\mu g/m^3$  yet to be monitored.



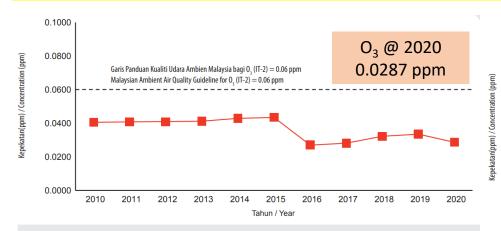


- Reduction of forest and bush fire cases in the country
- The absence of transboundary haze incidents in 2020

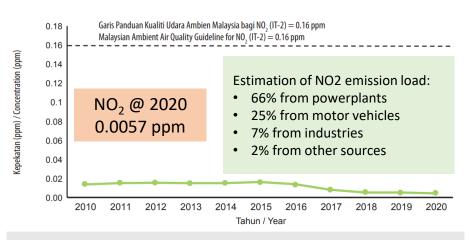


# Overview – Environment – Air Quality (03, co, so2 & NO2)

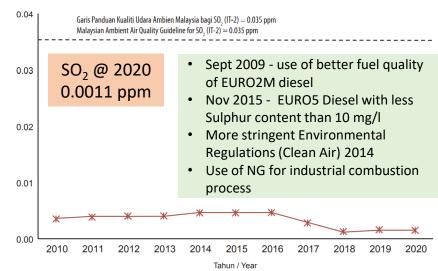
#### Annual Average Concentration of O<sub>3</sub>, CO, SO<sub>2</sub> & NO<sub>2</sub> (Year 2010 to 2020)



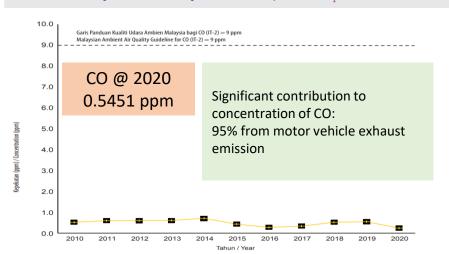
Rajah 1.9: Purata Kepekatan Tahunan Ozon (0<sub>3</sub>), 2010-2020 Figure 1.9: Annual Average Concentration of Ozone (0<sub>.</sub>), 2010-2020



Rajah 1.11: Purata Kepekatan Tahunan Nitrogen Dioksida (NO<sub>2</sub>), 2010-2020 Figure 1.11: Annual Average Concentration of Nitrogen Dioxide (NO<sub>3</sub>), 2010-2020



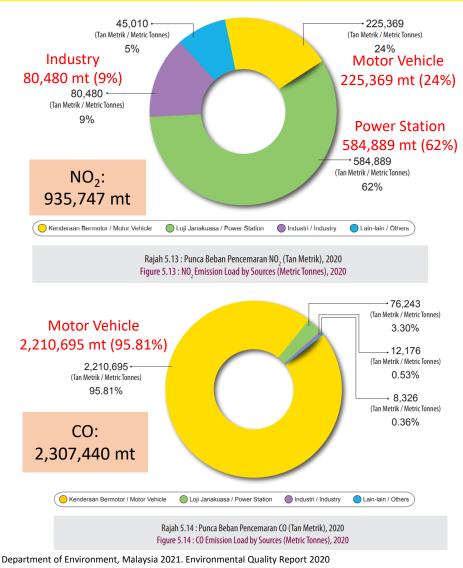
Rajah 1.10: Purata Kepekatan Tahunan Sulfur Dioksida (SO<sub>2</sub>), 2010-2020 Figure 1.10: Annual Average Concentration of Sulphur Dioxide (SO<sub>2</sub>), 2010-2020

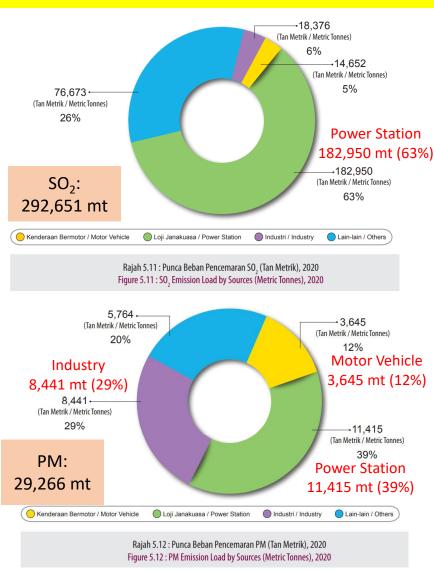


Rajah 1.12 : Purata Kepekatan Tahunan Karbon Monoksida (CO), 2010-2020 Figure 1.12 : Annual Average Concentration of Carbon Monoxide (CO), 2010-2020

## Overview – Environment – Air Pollution (2020)

Overall cumulative air pollutant emission load was 2,307,440 metric tonnes of carbon monoxide (CO), 935,747 metric tonnes of nitrogen dioxide (NO2), 292,651 metric tonnes of sulphur dioxide (SO2) and 29,266 metric tonnes of particulate matter (PM).





# Overview

Environment – Water Quality & Pollution Sources

#### **River Water Quality**

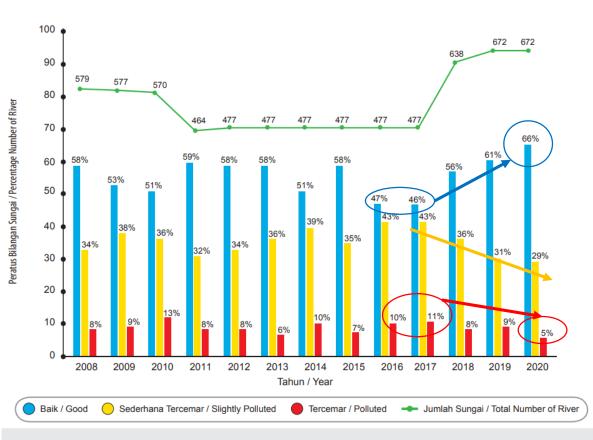
In year 2020, total of 8,098 samples were taken from a total of 1,353 manual monitoring stations covering 672 rivers in Malaysia for river water quality assessment.

According to Water Quality Index, out of the 672 rivers monitored:

- 443 (66%) rated clean
- 195 (29%) rated slightly polluted
- 34 (5%) rated polluted.

WQI takes into consideration parameters:

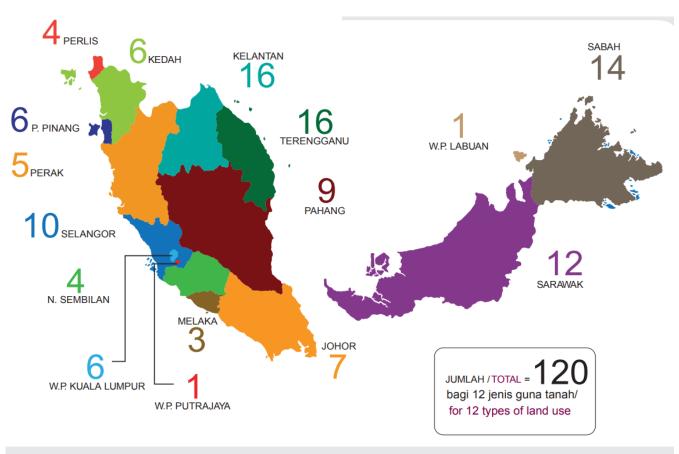
- 1. Dissolved Oxygen (DO),
- Biochemical Oxygen Demand (BOD),
- 3. Chemical Oxygen Demand (COD),
- 4. Ammoniacal Nitrogen (AN), and
- 5. Suspended Solids (SS)



Rajah 2.1 : Tren Kualiti Air Sungai, 2008-2020

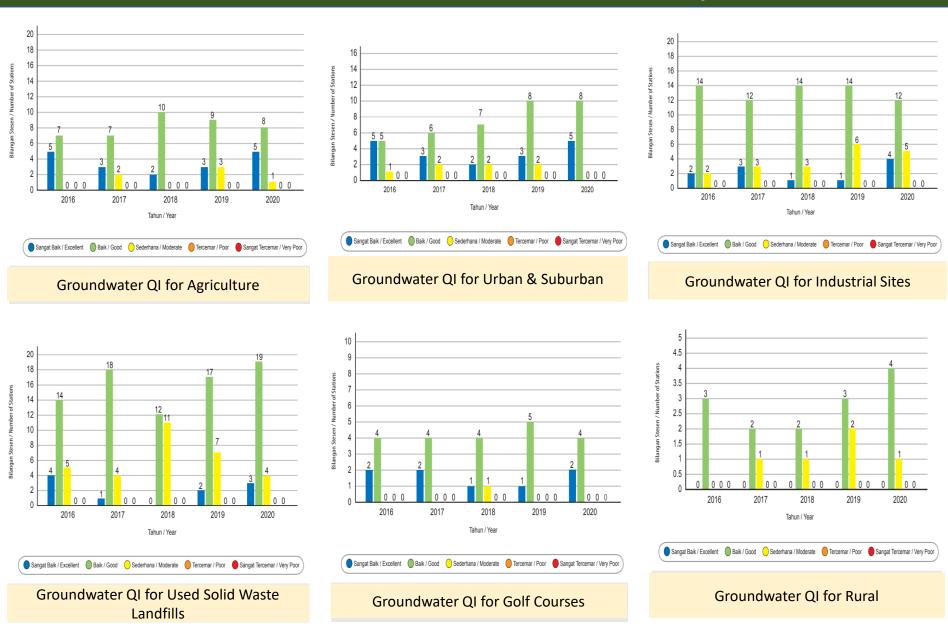
Figure 2.1 : River Water Quality Trend, 2008-2020

#### **Groundwater Quality**



Jumlah Telaga Pengawasan bagi Setiap Negeri Seluruh Malaysia, 2020 Total Number of Monitoring Wells for Each State in Malaysia, 2020







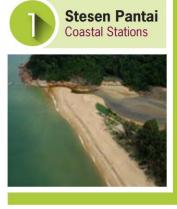
#### **Marine Water Quality**

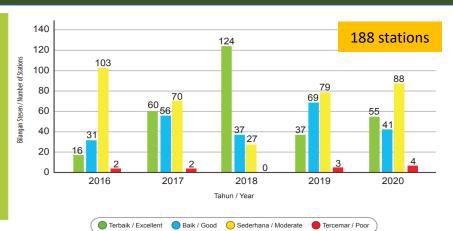
 Excellence
 90 – 100

 Good
 80 – 90

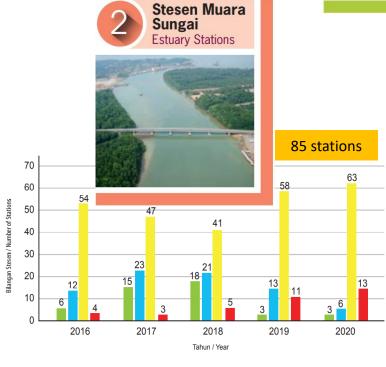
 Moderate
 50 - 80

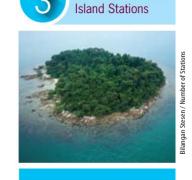
 Poor
 0 – 50



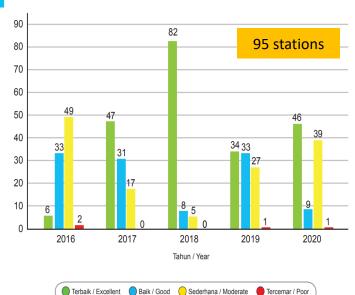


Rajah 4.7 : Tren Status Kualiti Air Marin bagi Kawasan Pantai, 2016-2020 Figure 4.7 : The Trend of Marine Water Quality Status for Coastal Area, 2016-2020





Stesen Pulau



Rajah 4.9: Tren Status Kualiti Air Marin bagi Pulau, 2016-2020 Figure 4.9: The Trend of Marine Water Quality Status for Islands, 2016-2020

Rajah 4.8: Tren Status Kualiti Air Marin bagi Muara Sungai, 2016-2020 Figure 4.8: The Trend of Marine Water Quality Status for Estuaries, 2016-2020

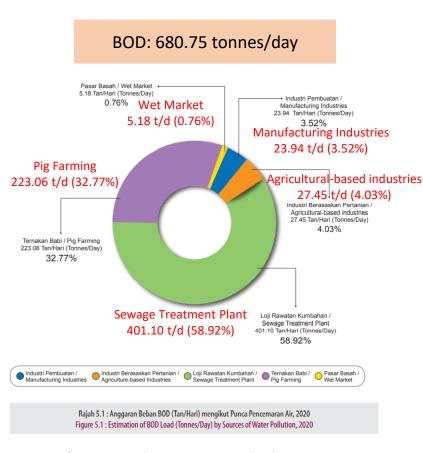
Terbaik / Excellent Baik / Good Sederhana / Moderate Tercemar / Poor

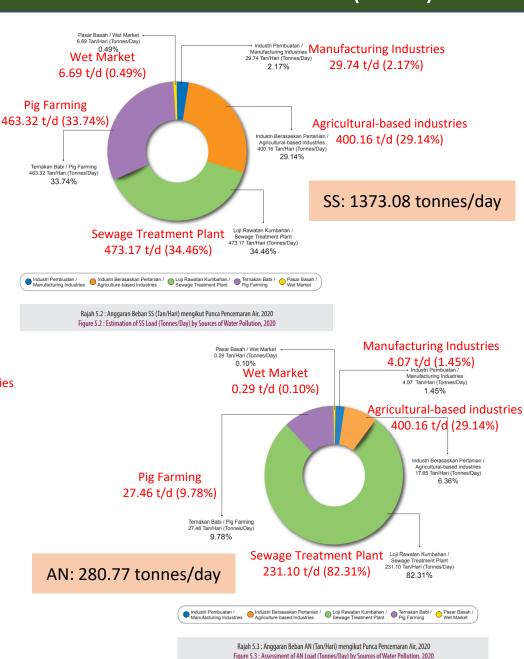
Department of Environment, Malaysia 2021. Environmental Quality Report 2020

## Overview – Environment – Water Pollution (2020)

Calculations on water pollution load are mainly focused on:

- Biochemical Oxygen Demand (BOD)
- Suspended Solids (SS)
- Ammoniacal Nitrogen (AN)



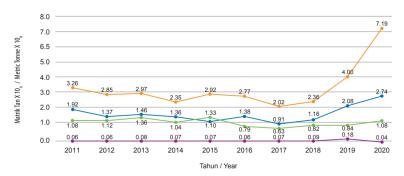


# Overview Environment – Pollutions

## Overview – Environment – Scheduled Waste (2020)

#### Scheduled waste (SW) sent to licensed premises:

- Kualiti Alam Sdn. Bhd. and
- Trienekens (Sarawak) Sdn. Bhd.]



- Jumlah Buangan Terjadual yang Dihasilkan / Total Scheduled Waste Generated
- Jumlah Buangan Terjadual yang Mengaplikasikan 4R / Quantity of Scheduled Waste Managed Using 4R
- Jumlah Buangan Terjadual yang Dilupuskan Menggunakan Penunu Buangan Terjadual / Quantity of Scheduled Waste Disposes by Incinerator
- Jumlah Buangan Terjadual yang Dilupuskan di Tapak Pelupusan Selamat / Quantity of Scheduled Waste Disposed at Secured Landfill

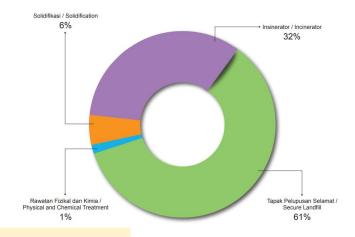
Rajah 5.17 : Trend Pengurusan Buangan Terjadual, 2011-2020 Figure 5.17 : Scheduled Waste Management Trend, 2011-2020

#### 7,185,227.76 mt

- SW generated in year 2020

2,168,426.92 mt (30.18%)

SW managed under Special Management



#### The wastes were either

- Incinerated (32%)
- treated physically and chemically (1%),
- solidified (6%), or
- disposed of in a secured landfill (61%).

Trienekens : Jenis Rawatan dan Pelupusan Buangan Terjadual, 2020 Trienekens : Types of Scheduled Waste Treatment and Disposal, 2020

Table 5.3: Facilities Handling Scheduled Wastes, 2020

| BIL /<br>NO | KEMUDAHAN / FACILITIES  | (MT/TAHUN) / (MT/YEAR) | PERATUSAN (%) / PERCENTAGE (%) |
|-------------|---|------------------------|--------------------------------|
| 1           | Pengurusan Khas / Special Waste Management  | 2,168,426.92           | 30.18                          |
| 2           | Pengolahan Dalam Tapak / On-Site Treatment  | 1,104,481.07           | 15.37                          |
| 3           | Kemudahan Pemerolehan Kembali Luar Tapak Tempatan /<br>Local Off-Site Recovery Facilities   | 546,290.52             | 7.60                           |
| 4           | Penstoran Dalam Tapak / On-Site Storage   | 2,983,676.57           | 41.53                          |
| 5           | Kualiti Alam Sdn Bhd  | 142,479.00             | 1.98                           |
| 6           | Kemudahan Buangan Klinikal (Penunu Buangan Klinikal,<br>Gelombang Mikro dan Tapak Pelupusan Selamat) /<br>Off-Site Clinical Waste Facilities (Incinerator, Microwave<br>and Secured Landfill) | 39,883.32              | 0.56                           |
| 7           | Kemudahan Luar Negara (Ekspot) / Foreign Facilities (Export)  | 168,001.594            | 2.34                           |
| 8           | Trienekens (Sarawak) Sdn Bhd  | 31,988.77              | 0.45                           |
|             | JUMLAH / TOTAL  | 7,185,227.76           | 100.00                         |

# **Environmental Activities**

#### **Environmental activities**

### 100 million Tree-Planting Campaign 2021-2025

- Launched in January 2021
- Part of the Greening Malaysia programme

An effort to conserve the country's biodiversity while improving the quality of the natural environment and rivers

#### **Environmental Activities**





# **Environmental Incident**

### **Environmental incident**

### Pulau Burung – Rubbish Degradation Area



First fire a fire broke out involving 11.3 hectares (ha) out of a total of 16.2 ha, and it took nearly a month before the fire was doused.

The fire also resulted in the area being declared as a Level 1 disaster area based on the National Security Council (MKN).

Following the incident, 86 families with about 400 residents living nearby had to be evacuated to ensure their safety, while 10 schools were also closed for three days (12 Jan 2022)

Second fire with blaze covering 40,000 square feet (23 May 2022)



Release blackish water from water retention pool to mangrove forest and subsequently to sea (21 Sept 2022)



JAS-siasat-pelepasan-air-tercemar-berwarna-hitam-dari-Tapak-Pelupusan-Sampah-Pulau-Burung.pdf (doe.gov.my) https://www.thestar.com.my/news/nation/2022/05/24/fire-at-pulau-burung-landfill-extinguished https://www.thestar.com.my/news/nation/2022/01/19/helicopter-flies-in-to-tackle-pulau-burung-landfill-fire



# Overview - Safety

#### National Occupational Accident & Fatality Rate

| Year                              | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|-----------------------------------|------|------|------|------|------|------|------|------|
| Accident Rate per 1,000 worker    | 3.10 | 2.81 | 2.88 | 2.93 | 2.40 | 2.71 | 2.18 | 1.43 |
| Fatality Rate per 100,000 workers | 4.21 | 4.84 | 4.84 | 4.90 | 4.14 | 3.83 | 2.09 | 2.00 |

## Overview - Safety

#### Occupational accident statistics by sector, year 2021

#### OCCUPATIONAL ACCIDENT STATISTICS BY SECTOR UNTIL DECEMBER 2021 (REPORTED TO DOSH ONLY)

| SECTOR   | NPD  | PD  | DEATH | TOTAL |
|--|------|-----|-------|-------|
| Hotel and Restaurant                                     | 125  | 1   | 0     | 126   |
| Utilities (Electricity, Gas, Water and Sanitary Service) | 198  | 1   | 8     | 207   |
| Finance, Insurance, Real Estate and Business Services    | 264  | 4   | 17    | 285   |
| Construction   | 147  | 5   | 65    | 217   |
| Transport, Storage and Communication                     | 281  | 5   | 6     | 292   |
| Manufacturing  | 4015 | 206 | 48    | 4269  |
| Wholesale and Retail Trade                               | 182  | 3   | 2     | 187   |
| Public Services and Statutory Authorities                | 68   | 2   | 4     | 74    |
| Mining and Quarrying                                     | 44   | 4   | 8     | 56    |
| Agriculture, Forestry and Fishery                        | 939  | 18  | 16    | 973   |
| TOTAL  | 6263 | 249 | 174   | 6686  |

#### LEGEND:

PD - PERMANENT DISABILITY

NPD- NON PERMANENT DISABILITY

Source: International Policy and Research Development Division

## Overview - Safety

Occupational accident statistics by sector, year 2022 (January to August)

#### OCCUPATIONAL ACCIDENT STATISTICS BY SECTOR UNTIL AUGUST 2022 (REPORTED TO DOSH ONLY)

| SECTOR   | NPD  | PD  | DEATH | TOTAL |
|--|------|-----|-------|-------|
| Hotel and Restaurant                                     | 80   | 1   | 0     | 81    |
| Utilities (Electricity, Gas, Water and Sanitary Service) | 138  | 2   | 8     | 148   |
| Finance, Insurance, Real Estate and Business Services    | 270  | 4   | 17    | 291   |
| Construction   | 77   | 1   | 51    | 129   |
| Transport, Storage and Communication                     | 178  | 2   | 9     | 189   |
| Manufacturing  | 3447 | 142 | 48    | 3637  |
| Wholesale and Retail Trade                               | 97   | 1   | 2     | 100   |
| Public Services and Statutory Authorities                | 62   | 3   | 0     | 65    |
| Mining and Quarrying                                     | 22   | 1   | 7     | 30    |
| Agriculture, Forestry and Fishery                        | 663  | 18  | 15    | 696   |
| TOTAL  | 5034 | 175 | 157   | 5366  |

#### LEGEND:

PD - PERMANENT DISABILITY

NPD- NON PERMANENT DISABILITY

Source: International Policy and Research Development Division

## Occupational Safety and Health Master Plan 2021-2025

Based on the confidence that safe and healthy work culture can further increase the well-being of employers, employees and the country, therefore the OSHMP25 five -(5) year plan focuses efforts to reduce accident and death rates to 2.13 accidents for every 1,000 employees and 2.93 deaths for every 100,000 employees by 2025. This OSH master plan will also continue its target of increasing occupational diseases and poisoning reporting as much as 30% by 2025

# OSHMP 2025 Lagging Indicator



#### DEATH RATE

To reduce the occupational death rate to **2.93** deaths for every 100,000 employees in 2025.



#### ACCIDENT RATE

To reduce the occupational accident rate to **2.13** accidents for every 1,000 employees in 2025.

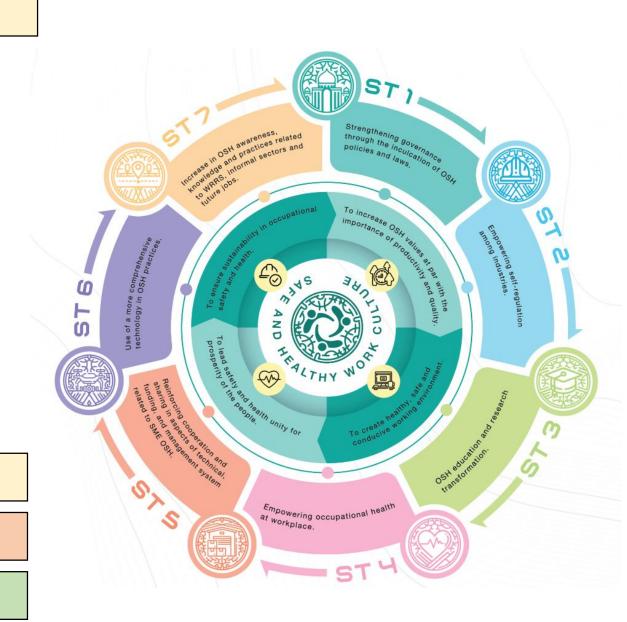


#### DISEASE REPORTING

Increase in occupational diseases and poisoning reporting as much as 30% in 2025.

## Occupational Safety and Health Master Plan 2021-2025

Implementation Concept Model



4 Objectives

7 Strategic Thrusts (Outcomes)

25 Programs