



KEMENTERIAN SUMBER ASLI
DAN KELESTARIAN ALAM



MINISTRY OF ECONOMY
DEPARTMENT OF STATISTICS MALAYSIA



Joint Committee
on Climate Change

Information Note

Mapping of the Sectoral Greenhouse Gas (GHG) Emissions from the Intergovernmental Panel on Climate Change (IPCC) Guideline to the Malaysia Standard Industrial Classification (MSIC)

June 2026

This Information Note is intended solely to share insights from the exploratory mapping exercise conducted to bridge the data gaps due to the unavailability of GHG emissions data by MSIC industrial sectors, which is required by the financial sector. It does not constitute, nor should it be interpreted as, a directive, policy recommendation, or decision-making guidance. The preparer and all parties referenced in this document make no representations or warranties regarding the accuracy, completeness, or suitability of the information provided, and accept no liability for any loss or damage arising from its use.

Contents

List of Abbreviations	4
Preamble	5
Objectives of the GHG Emissions Mapping Exercise	7
Scope and Limitation	8
1. The importance of Sectoral GHG Emissions Data Aligned to MSIC: Use Cases for Malaysia’s Financial Institutions	9
1.1 Enabling Climate-Aligned Risk Assessment.....	9
1.2 Supporting Regulatory and Disclosure Requirements	9
1.3 Addressing the Limited Availability of GHG Emissions Data for Small and Medium-sized Enterprises (SME)	10
1.4 Facilitating Transition Planning and Strategy Development	10
1.5 Strengthening National Climate Effort Through Financial Sector Integration	10
2. Countries Benchmarking	11
3. Mapping Methodology	13
4. Outcome from the Mapping Exercise	16
4.1 The Sectoral GHG emissions by MSIC Sector	16
4.2 Key Observations from the Result of GHG Emissions by MSIC Sectors	17
4.3 High-level GHG Emissions’ Comparison Between IPCC and MSIC Sectors.....	19
5. Data Challenges	20
6. Conclusion	22
Acknowledgement	23

List of Abbreviations

AFOLU	Agriculture, Forestry and Other Land Use
BNM	Bank Negara Malaysia
BTR	Malaysia's Biennial Transparency Report 1
CCPT	Climate Change and Principle-based Taxonomy
CRMSA	Climate Risk Management and Scenario Analysis
CRST	Climate Risk Stress Testing
DOSM	Department of Statistics Malaysia
FIs	Financial institutions
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
ISIC	International Standard Industrial Classification
ISSB	International Sustainability Standards Board
JC3	Joint Committee on Climate Change
MSIC	Malaysia Standard Industrial Classification
NACE	Nomenclature of Economic Activities
NDCs	Nationally Determined Contributions
NETR	National Energy Transition Roadmap
NICDR	National Integrated Climate Data Repository
NRES	Ministry of Natural Resources and Environmental Sustainability
NSRF	National Sustainability Reporting Framework
RUUPIN	Rang Undang-Undang Perubahan Iklim Negara
SC	Securities Commission Malaysia
SICS	Standard Industrial Classification System
UNFCCC	United Nations Framework Convention on Climate Change

Preamble

Climate change presents unprecedented challenges and opportunities for the financial sector, particularly in embedding climate-related considerations into business strategies, operational processes, and risk management frameworks. To support a smooth and sustainable transition to a low-carbon economy, the financial sector requires access to high-quality climate data, which is essential for climate-related risk assessments, supports regulatory compliance and national climate strategies. This aligns with the nation's strategic commitment to achieving net zero GHG emissions by as early as 2050.

Currently, Malaysia's commitment to climate transparency and mitigation is increasingly evident through its progressive refinement of GHG emissions data reporting. Globally, the availability and granularity of sectoral GHG emissions data remain uneven and fragmented. While sector-level data is highly valuable for comparative analysis and estimating emissions where direct data is unavailable, inconsistencies in classification systems such as SICS, NACE,¹ and ISIC² pose challenges for cross-sectoral and cross-border comparisons. In many jurisdictions, emissions are reported solely using IPCC³ categories, which are designed for environmental inventories and do not align directly with economic classifications. This limits the ability to attribute emissions to specific economic sectors and hinders the integration of climate data into financial analysis.

High-quality climate data, particularly granular sectoral GHG data is foundational for financial institutions seeking to embed climate considerations into their risk management frameworks. Domestically, sector-specific emissions data mapped across international and national classifications such as the IPCC and MSIC⁴ would enable financial institutions to assess exposure, model transition risks, and align strategies with evolving climate policies. Beyond internal decision-making, this data serves as a critical enabler of Malaysia's broader transition toward a low-carbon and sustainable economy, supporting informed policy development and strategic alignment across sectors.

Over the long term, Malaysia's National Integrated Climate Data Repository (NICDR) is envisioned as a centralised platform to store, analyse, integrate, track, monitor, report, and present climate actions and data. It is a cornerstone of the proposed RUUPIN, which aims to institutionalise climate governance and reporting mechanisms. Importantly, NICDR is designed to adopt a bottom-up approach to national GHG emissions reporting. This shall enable granular, sector-specific data collection and integration from various economic activities, including classification under MSIC. This approach will improve the

¹ NACE: <https://ec.europa.eu/eurostat/web/nace>

² ISIC: https://unstats.un.org/unsd/publication/seriesm/seriesm_4rev4e.pdf

³ IPCC 2006: <https://www.ipcc-nggip.iges.or.jp/public/2006gl/>

⁴ MSIC 2008: https://itksm.mohr.gov.my/sites/default/files/2022-12/msic_2008_ver_1.0.pdf

availability and comprehensiveness of climate data that will enhance perspective of Malaysia's diverse economic landscape.

Objectives of the GHG Emissions Mapping Exercise

The Joint Committee on Climate Change (JC3), established in September 2019 by Bank Negara Malaysia (BNM) and the Securities Commission Malaysia (SC), serves as a collaborative platform that brings together regulators and financial industry stakeholders to strengthen climate resilience within Malaysia's financial sector and accelerate the transition toward a low-carbon economy. Through its Climate Data Catalogue, JC3 has identified one of the critical data gaps on the limited availability of GHG emissions data classified by economic sectors. This gap, first highlighted in the catalogue's inaugural 2022 publication, presents significant challenges for financial institutions aiming to incorporate climate considerations into their risk management frameworks and strategic planning.

To address this, JC3 has initiated the exercise to map IPCC categories to MSIC, in collaboration with the Ministry of Natural Resources and Environmental Sustainability (NRES) and the Department of Statistics Malaysia (DOSM). The initiative strives to achieve methodological alignment and consistency across sectoral classifications, enabling the attribution of emissions to economic activities. It is further supported by ongoing harmonisation of international standards and active peer learning particularly around practical solutions such as leveraging technology and existing data sources to enhance the availability and quality of sectoral GHG data.

Scope and Limitations

This Information Note provides an overview of the rationales and methodology behind the mapping of sectoral GHG emissions data from the IPCC guideline to the MSIC. The objective of this mapping is to harmonise GHG emissions data reported under the IPCC guideline with Malaysia's MSIC economic sector classification, to enable sectoral analysis and policy alignment.

This note is intended as a methodological contribution to support analytical effort to perform sectoral climate risk assessments, transition planning and support compliance with frameworks such as Climate Change and Principle-based Taxonomy (CCPT),⁵ Climate Risk Management and Scenario Analysis (CRMSA),⁶ Climate Risk Stress Testing (CRST),⁷ National Sustainability Reporting Framework (NSRF)⁸ and Bursa Malaysia's Sustainability Reporting.⁹

The GHG emissions mapping to MSIC 2008 was conducted on an exploratory basis by striving to align relevant IPCC sectors with corresponding economic activities, guided by the 2006 IPCC Guidelines. As the current exercise assigns emissions at the MSIC Section level, there remains scope to extend the work to more detailed subsector classifications where data availability allows. Several inherent limitations should also be acknowledged. For example, household-level emissions, such as residential fuel use and mobile air conditioning, were grouped under a separate category titled "Fuel/Gas Consumption by Households" due to lack of direct MSIC alignment. The approach relies solely on existing national inventories and statistical classifications, without bottom-up data collection. While this initiative provides broad coverage and consistency with Malaysia's Biennial Transparency Report 1 (BTR1),¹⁰ users should take note of limitations in attributing emissions precisely to specific economic activities.

⁵ CCPT: <https://www.bnm.gov.my/documents/20124/938039/Climate+Change+and+Principle-based+Taxonomy.pdf>

⁶ CRMSA:

https://www.bnm.gov.my/documents/20124/938039/PD_Climate+Risk+Management+Scenario+Analysis_17+March+2025.pdf

⁷ CRST: https://www.bnm.gov.my/documents/20124/3770663/DP_2024_CRST.pdf

⁸ NSRF: <https://www.sc.com.my/nsrf>

⁹ Bursa Malaysia's Sustainable Reporting:

https://www.bursamalaysia.com/sites/5bb54be15f36ca0af339077a/content_entry5ce3b5005b711a1764454c1a/5ce3c83239fba2627b286508/files/bursa_malaysia_sustainability_reporting_guide-final.pdf?1570701456

¹⁰ Malaysia's BTR1: <https://www.nres.gov.my/en-my/medialibrary/Pages/MinistryPublication.aspx>

1. The importance of Sectoral GHG Emissions Data Aligned to MSIC: Use Cases for Malaysia's Financial Institutions

As Malaysia's financial institutions (FIs) enhance their climate risk management capabilities, the need for granular GHG emissions data aligned with the MSIC has become increasingly critical. This alignment not only enables more accurate climate-related risk assessments, supports regulatory compliance and facilitates practical use cases such as portfolio-level emissions analysis, sectoral exposure assessments, and climate scenario modelling that will strengthen both institutional decision-making and national climate strategies.

1.1 Enabling Climate-Aligned Risk Assessment

Mapping sectoral GHG data to MSIC enables FIs to assess climate-related risks across sectors within their portfolios. Since MSIC reflects how businesses structure their operations and financial reporting, aligning emissions data with MSIC enables FIs to:

- Identify high-emissions sectors within their lending and investment portfolios.
- Conduct scenario analysis and stress testing (e.g., impact of carbon pricing on financials).
- Benchmark emissions within and across sectors for Scope 3 reporting.

1.2 Supporting Regulatory and Disclosure Requirements

FIs are increasingly required to report financed emissions under regulatory frameworks like CCPT, CRMSA, CRST, NSRF and Bursa Malaysia's Sustainable Reporting. These frameworks rely heavily on MSIC-based sectoral classification, making granular GHG data essential for:

- Meeting disclosure standards proposed by International Sustainability Standards Board (ISSB),¹¹ which require industry-level disaggregation.
- Aligning with existing economic sectoral data analysis and publications to enable consistent, transparent and comparable assessment.

¹¹ ISSB: <https://www.ifrs.org/groups/international-sustainability-standards-board/>

1.3 Addressing the Limited Availability of GHG Emissions Data for Small and Medium-sized Enterprises (SME)

Many SMEs do not currently report their own GHG emissions. In such cases, sectoral GHG data serves as a valuable proxy for estimating emissions, enabling FIs to be:

- More inclusive in their climate risk assessments.
- More informed when making lending decisions, especially in sectors like power, steel, construction, and transportation.

1.4 Facilitating Transition Planning and Strategy Development

Granular emissions data aligned with MSIC enables FIs to strengthen their climate-related strategies and client engagement. Specifically, it supports them to:

- Understand sectoral exposure to transition risks.
- Design targeted decarbonisation strategies.
- Support clients in their transition to low-carbon operations.

1.5 Strengthening National Climate Effort Through Financial Sector Integration

This initiative supports Malaysia's broader climate agenda while delivering direct value to the financial sector by:

- Contributing to national climate goals and the National Energy Transition Roadmap (NETR)¹² through the availability of better quality data.
- Being able to assess climate-related risks and opportunities across portfolios in a consistent and comparable manner.

¹² NETR: https://ekonomi.gov.my/sites/default/files/2023-09/National%20Energy%20Transition%20Roadmap_0.pdf

2. Countries Benchmarking

Several countries have advanced their GHG reporting frameworks by complementing IPCC-based environmental inventories with economic sector classifications, such as ISIC or national equivalents. These efforts enhance the usability of emissions data for financial institutions, policymakers, and climate-related economic planning.

Examples of countries maintaining granular GHG emissions dataset based on economic sector classifications, in addition to IPCC reporting.

Country	Description	Data Source
Canada	- GHG Accounts Statistics Canada compiles their GHG Accounts following United Nations (UN) System of Environmental-Economic Accounting (SEEA) guidelines.¹³ - Direct GHG emissions published following the industry classification set out in Statistics Canada's Supply-Use Tables.	Compiled annually through the National Inventory Report and data reporting tables, by the Pollutant Inventories and Reporting Division of Environment Canada with input from numerous experts and scientists.¹⁴
United Kingdom	- Reports its provisional air emissions and energy use under the UK Environmental Account compiled by Ricardo Energy and Environment on behalf of the Office for National Statistics (ONS).¹⁵ - The emissions data are categorized based on SIC 2007. - These data are measured under the UK Environmental Account which is a satellite account to the main UK National Account and compiled in accordance with the System of Environmental Economic Accounting (SEEA).	- The UK's National Inventory System (NIS)¹⁶ ensures compliance with the Kyoto Protocol's requirements for GHG reporting. The Department for Business, Energy & Industrial Strategy (BEIS) manages the system, while Ricardo Energy & Environment compiles the data. - Key data providers include various government agencies and private companies. Energy statistics come from the Digest of UK Energy Statistics (DUKES), and data for other sectors is provided by

¹³ [Complementary approaches to reporting Canada's greenhouse gas emissions](#)

¹⁴ [Canada's official greenhouse gas inventory - Canada.ca](#)

¹⁵ [Greenhouse gas emissions, UK - Office for National Statistics](#)

¹⁶ [National inventory system | National Atmospheric Emissions Inventory](#)

		relevant environmental agencies and research organisations.
Norway	• Uses their own national accounts definition of Norwegian economic activity (residence principle)¹⁷ to compute their environmental accounts instead of geographical definitions (territorial principle) used for reporting to the Kyoto Protocol. • Norway's SN2007 classification is based on NACE rev. 2.	• Used published figures at Statistics Norway for air emissions and national accounts, where a detailed description of the data sources for the national air emissions surveys is presented in the documentation reports National Inventory Report and Informative Inventory report. • Data reported directly by companies to the Norwegian Environment Agency (emissions data from point sources, data from large industrial plants).
Indonesia	• Uses the SEEA framework in their Energy Flow Accounts.¹⁸ • National energy input classification based on Eurostat and adjusted to the availability of energy resources in Indonesia.	• The main data source is Energy Balance published by BPS-Statistics Indonesia. • Supporting data sources, such as Supply and Use Table (SUT), exports data, and annual report of transportation companies.

In contrast to the above countries, Malaysia currently lacks granular GHG emissions dataset at the sectoral level. Instead, national emissions reporting, such as in the BTR1, relies on aggregated data compiled from multiple sources. Given this limitation, a benchmarking exercise has been conducted, making reference to the taxonomy framework introduced by the Bank of Thailand¹⁹ in June 2023. As part of its Phase 1 rollout, Thailand developed a sector prioritisation matrix that maps GHG emissions data from IPCC categories to ISIC economic classifications. This alignment enables sector-specific emissions tracking that supports both national climate goals and financial sector analysis. The methodology was developed in collaboration with the International Financial Corporation (IFC) and Climate Bonds Initiative and refined using Thailand's national ISIC datasets.

¹⁷ [Emissions from Norwegian economic activity – SSB](#)

¹⁸ [Laporan Penyusunan Neraca Arus Energi Indonesia 2014-2018 - Badan Pusat Statistik Indonesia](#)

¹⁹ [Thailand Taxonomy: A Reference Tool for Sustainable Economy](#)

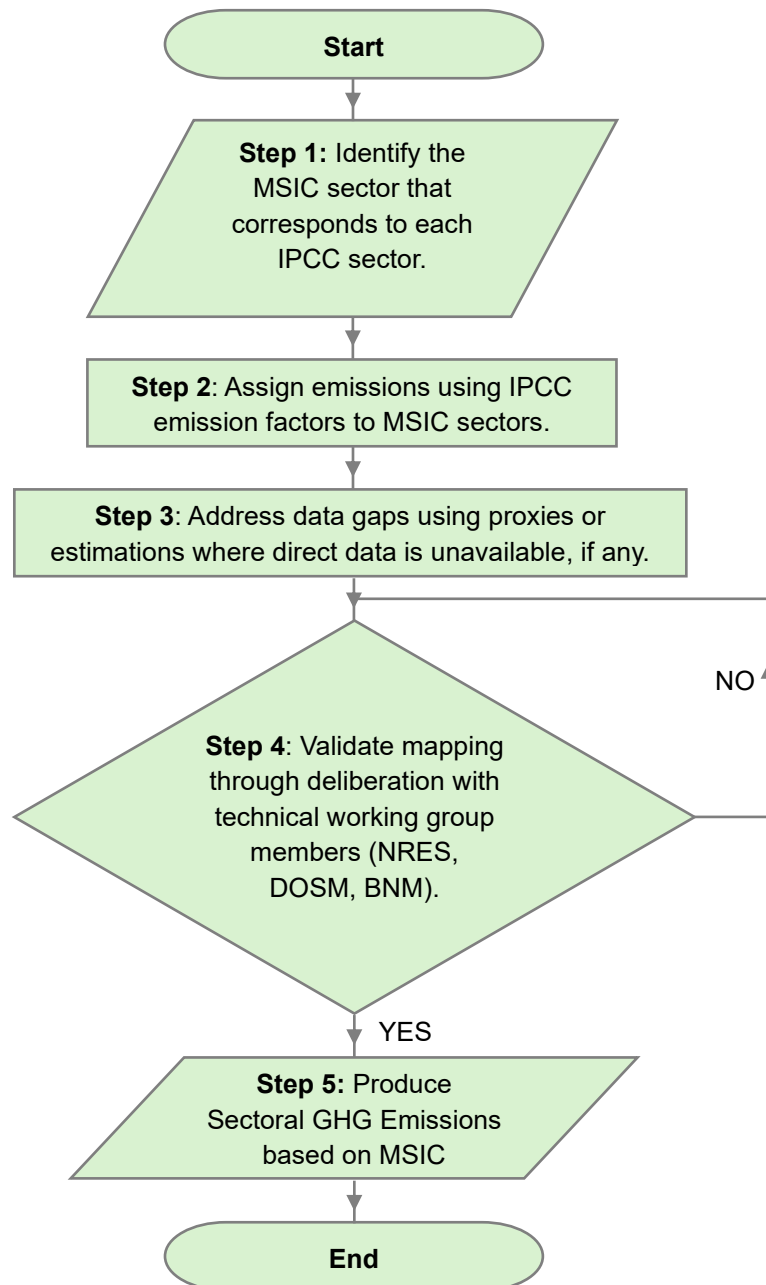
3. Mapping Methodology

Mapping of GHG emissions to MSIC 2008 is conducted on a best-effort basis by identifying relevant IPCC sectors and aligning them with corresponding economic and industrial activities, referencing the 2006 IPCC Guidelines (Volume 1, Chapter 8: Reporting Guidance and Tables).²⁰ Certain subsectors such as IPCC 1.A.4.b (Residential) and 2.F.1.e (Mobile Air Conditioning) are not directly associated with any specific MSIC classification, as they relate to household-level activities. These have been grouped under a separate category titled 'Fuel/Gas Consumption by Households' for comprehensiveness coverage of emissions sources.

The mapping of GHG emissions to MSIC sectors is based solely on existing data sources and does not involve detailed or bottom-up data collection. This approach prioritises feasibility and consistency, leveraging national inventories and statistical classifications without requiring direct emissions reporting from individual entities. A notable example is the Waste Management sector, where reported GHG emissions encompass not only the sector's own operational activities but also emissions resulting from waste generated by other sectors. This reflects the cross-sectoral nature of waste-related emissions and aligns with the classification and reporting methodology adopted in Malaysia's BTR1. While this method provides broad coverage and compatibility with national reporting frameworks, it also introduces limitations in attributing emissions precisely to economic activities, which users of the data should consider when interpreting sectoral figures.

²⁰ https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/1_Volume1/V1_8_Ch8_Reporting_Guidance.pdf

Steps in assigning the GHG emissions to MSIC sectors are as follows:



To demonstrate the mapping process, the following example outlines how emissions reported under IPCC subsector 1.A.1.a – Main Activity Electricity and Heat Production are attributed to MSIC Section D – Electricity, Gas, Steam and Air Conditioning Supply, and how the sectoral percentage is calculated.

Step 1: Identify the MSIC sector that corresponds to each IPCC sector

- IPCC subsector: 1.A.1.a – Main Activity Electricity and Heat Production.
- MSIC Section D – Electricity, Gas, Steam and Air Conditioning Supply.

Step 2: Assign emissions using IPCC emissions data to MSIC sectors

- Reported emissions: 114,005.52 Gg CO₂ eq.
- The emissions are directly attributable to MSIC Sector D, as the activities align with the scope of electricity and heat production under MSIC 2008.

Step 3: Address data gaps using proxies or estimations where direct data is unavailable, if any

- In this case, the mapping is direct and does not require proxy estimation.

Step 4: Validate mapping through deliberation with technical working group members

- The mapping is reviewed and validated by technical working group from NRES, DOSM, and BNM based on the 2006 IPCC Guidelines (Volume 1, Chapter 8: Reporting Guidance and Tables).

Step 5: Produce Sectoral GHG Emissions based on MSIC

- Total GHG emissions excluding Land-Use, Land-Use Change and Forestry (LULUCF) were 327,672.37 Gg CO₂ eq.
- Percentage contribution of MSIC sector D:

$$Percentage_{sector\ D} = \left(\frac{114,005.52}{327,672.37} \right) \times 100\% = 34.8\%$$

For this mapping exercise, LULUCF data is excluded to avoid potential double counting, and more appropriate for corporate or sector-level assessments because these removals are accounted for, at the national level and not attributable to operational activities.

4. Outcome from the Mapping Exercise

4.1 The Sectoral GHG emissions by MSIC Sectors

There are 21 sections outlined in the MSIC classification and the working group has introduced one new sector, namely 'Fuel/Gas Consumption by Households' as certain subsectors are not directly associated with any specific MSIC classification. Only 9 sections were successfully mapped, while the remaining sections are not available due to absence of corresponding mapping information from the IPCC.

MSIC Sectors	GHG Emissions (%)
A. Agriculture, Forestry and Fishing	3.2
B. Mining and Quarrying	6.2
C. Manufacturing	31.9
D. Electricity, Gas, Steam and Air Conditioning Supply	34.8
E. Water Supply; Sewerage, Waste Management and Remediation Activities	7.2
F. Construction	n.a. ^{1/}
G. Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	0.4
H. Transportation and Storage	15.1
I. Accommodation and Food Service Activities	n.a. ^{1/}
J. Information and Communication	
K. Financial and Insurance/Takaful Activities	
L. Real Estate Activities	
M. Professional, Scientific and Technical Activities	
N. Administrative and Support Service Activities	
O. Public Administration and Defence; Compulsory Social Security	
P. Education	
Q. Human Health and Social Work Activities	
R. Arts, Entertainment and Recreation	
S. Other Service Activities ^{2/}	0.1
T. Activities of Households as Employers; Undifferentiated Goods- and Services-Producing Activities of Households for Own Use	n.a. ^{1/}
U. Activities of Extraterritorial Organisations and Bodies	

Additional: Fuel/Gas Consumption by Households ^{3/}	1.1
TOTAL	100.0

Note:

^{1/} “n.a.” indicates that data is not available due to absence of corresponding mapping information from the IPCC.

^{2/} Includes public administration activities.

^{3/} Includes mobile air conditioning (does not include emissions resulting from disposal and only passenger cars and non-commercial vehicles are included) and fuel consumed in the residential sector (kerosene, liquified natural gas and natural gas).

4.2 Key Observations from the Result of GHG Emissions by MSIC Sectors

I. Top Emitting Sectors

- **D - Electricity, Gas, Steam and Air Conditioning Supply (34.8%)**

This sector is the largest contributor to GHG emissions, reflecting the carbon intensity of Malaysia’s energy generation mix, as electricity generation is heavily reliant on fossil fuels. It is a critical focus area for decarbonisation strategies and transition risk assessments. Covers emissions from main activity producers of fuel combustion of electricity generation, combined heat and power generation, and heat plants.

- **C - Manufacturing (31.9%)**

Manufacturing sector is the second-largest emitter, mainly driven by fuel combustion activities in manufacturing industries and industrial processes and energy use. A detailed breakdown using MSIC is crucial to identify high-emissions sub-industries, such as solid fuels and other energy industries, iron and steel, non-metallic minerals, food processing activities, chemicals and etc.

Emissions from this sector encompass all combustion activities that support the transformation of natural gas at Liquefied Natural Gas (LNG) and Gas to Liquid (GTL) plants. This includes on-site combustion for the generation of electricity and heat used internally by these facilities.

Additionally, the sector covers combustion activities related to petroleum refining, including on-site electricity and heat generation for operational needs.

- **H - Transportation and Storage (15.1%)**

Emissions from this sector are primarily associated with fuel consumption in transportation, with road transport being the largest contributor, followed by air and maritime transport. It is a critical focus for low-carbon mobility initiatives and infrastructure investments aimed at reducing GHG emissions.

II. Moderate Emissions Contributors

- **E - Water Supply; Sewerage, Waste Management and Remediation Activities (7.2%)**

Emissions in the waste sector primarily arise from the release of methane and nitrous oxide from solid waste disposal and wastewater treatment. This sector plays a vital role in advancing circular economy principles and waste-to-energy strategies.

As for the Waste Management sector, reported GHG emissions include not only those from its own operations but also emissions generated by waste originating from other sectors. This highlights the cross-sectoral nature of waste-related emissions and aligns with the classification and reporting methodology adopted in Malaysia's BTR1.

- **B - Mining and Quarrying (6.2%)**

Emissions are primarily linked to oil and natural gas extraction activities and associated energy use. The fugitive emissions are treated as a direct source of GHG due to the release of methane and formation of carbon dioxide, plus some carbon dioxide and nitrous oxide from non-productive combustion activities. This sector is particularly vulnerable to both physical and transition risks, making it a critical area for climate-related assessments and mitigation planning.

- **A - Agriculture, Forestry and Fishing (3.2%)**

Emissions mainly through methane from ruminant livestock digestion and nitrous oxide from fertiliser and organic amendments, while also offering potential for carbon removals through improved land use practices.

III. Low Emissions Sectors

- **G, O – Wholesale and Retail Trade and Other Services Activities (each ≤ 0.4%)**

These sectors have low direct emissions but may have significant indirect (Scope 3) exposure through the activities they finance or supported activities.

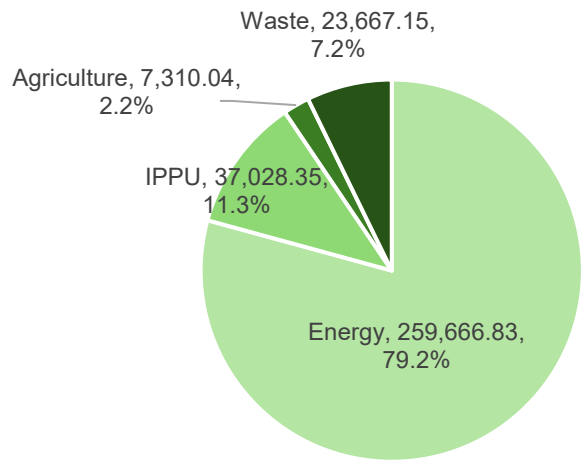
- **Household Fuel/Gas Consumption (1.1%)**

Only includes mobile air conditioning (does not include emissions resulting from disposal and only passenger cars and non-commercial vehicles are included) and fuel consumed in the residential sector (kerosene, liquified natural gas and natural gas).

Although relatively small, this category represents residential energy consumption and is relevant for demand-side efficiency measures and behavioural change programs.

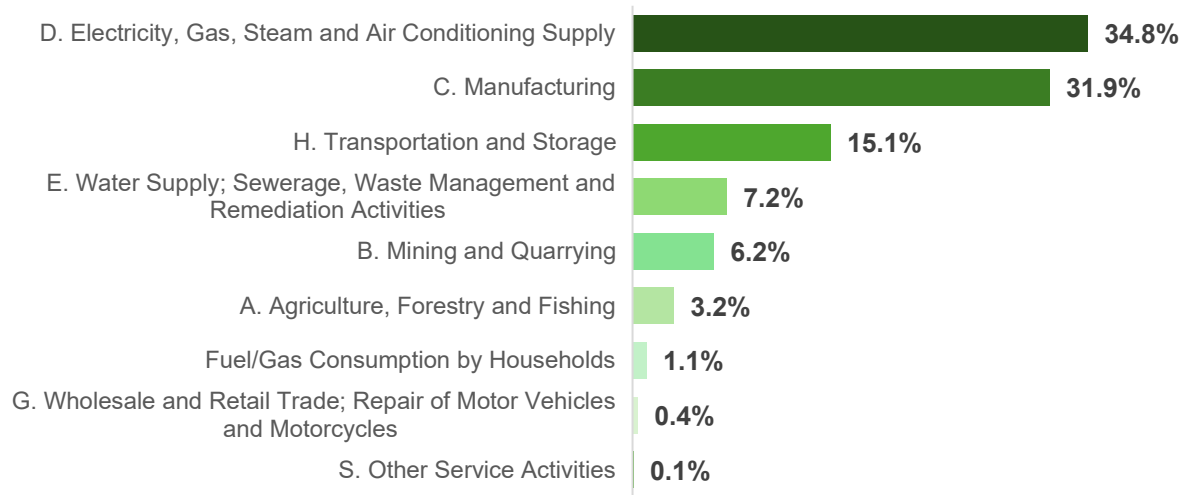
4.3 High-level GHG Emissions’ Comparison Between IPCC and MSIC Sectors

IPCC - Overall GHG emissions by sector in 2021
(Gg CO₂ eq.)



Source: Biennial Transparency Report 1 (BTR 1), issued by NRES in Dec 2024.

MSIC - Overall GHG emissions by sector in 2021
(Gg CO₂ eq.)



Source: Biennial Transparency Report 1 (BTR 1), joint-collaboration of sectoral mapping between BNM, NRES and DOSM.

5. Data Challenges

I. Different methodology

At present, the main motivation for GHG emissions data publications by public sector is to track the country's progress in fulfilling international commitment as Malaysia is a Party to the United Nations Framework Convention on Climate Change (UNFCCC).²¹ Such data publication tends to be highly aggregated in nature. In contrast, the financial sector often requires data that is more granular at the sector and entity level.

Examples of the differences in methodology for GHG emissions data compilation:

- Compilation of GHG National Inventory is based on the 2006 IPCC Guidelines for National GHG Inventories for the purpose of fulfilling the Nationally Determined Contributions (NDCs) and commitments under UNFCCC. In contrast, the financial sector requires GHG emissions inventory data based on the GHG Protocol Corporate Accounting and Reporting Standard (i.e. Scope 1, Scope 2 and Scope 3).²²
- National sectoral data for GHG inventory data is guided by the 2006 IPCC Guidelines (i.e. Energy, Industrial Processes and Product Use, Agriculture, Waste and Land Use, Land Use Change and Forestry sectors). They are not comparable against the MSIC which is widely used by the financial sector.

Establishing a more comparable methodology and definition will allow the financial sector to fill the missing entity or sector level data using public sector data.

II. Definition Misalignment

There is a notable misalignment in sector definitions between the IPCC and the MSIC classification. Certain sectors, such as “Iron and Steel”, fall under multiple IPCC emissions sectors, appearing in both the Energy sector (fuel combustion) and the IPPU sector (metal industry).

In contrast, FIs generally classify particular entity based on their primary economic activity as defined by MSIC, which assigns each entity to a single sub-sector. This approach does not account for combustion-related activities separately, potentially leading to inconsistencies in sectoral reporting and emissions attribution.

²¹ Malaysia is Non-Annex I Party to the UNFCCC [Malaysia | UNFCCC](#).

²² PCAF, “The Global GHG Accounting and Reporting Standard for the Financial Industry”, November 2020.

III. Granularity Gaps

The IPCC sector classification lacks sufficient granularity when compared to the MSIC, particularly in the context of GHG emissions attribution by economic sector. For example, emissions related to palm oil activities may be subsumed under both the Agriculture, Forestry and Other Land Use (AFOLU) sector and the Waste sector within the IPCC guideline, without a distinct breakdown for palm oil. This contrasts with MSIC, which provides a more detailed and specific classification for such economic activities.

Additionally, land-use change emissions are captured only at a headline level in IPCC reporting, making it difficult to attribute emissions to specific industrial sectors. This poses challenge for FIs attempting to classify and differentiate entities based on IPCC sectors, as the lack of sectoral detail hinders the ability to assess the environmental impact associated with economic activities—particularly those involving conversion of natural land.

IV. Out-of-Coverage Issues

Certain MSIC sectors do not have a direct counterpart within the IPCC classification. For example, household-level activities such as emissions from residential energy use (IPCC 1.A.4.b – Residential) and mobile air conditioning (IPCC 2.F.1.e) are not explicitly represented in MSIC, which focuses on economic activities at the entity level.

For comprehensiveness of coverage of emissions sources, these subsectors have been grouped under a separate category titled ‘Fuel/Gas Consumption by Households’. This approach addresses the classification gap and enables financial institutions to account for household-related emissions that are otherwise unclassified within MSIC.

6. Conclusion

In summary, this mapping initiative is an exploratory exercise which attempts to bridge the gaps between environmental and economic classifications of GHG emissions in Malaysia. By aligning IPCC categories with MSIC sectors, the exercise serves as an alternative for the financial sector to proxy for sectoral emissions for analytical purposes and support the assessment of climate-related risks, supporting regulatory compliance and guiding strategic decarbonisation effort. This alignment enables more granular sectoral analysis, facilitates scenario modelling, and strengthens the integration of climate considerations into both financial decision-making and national policy development.

While methodological and definitional challenges remain, this exercise lays the groundwork for the ongoing refinement of Malaysia's climate data infrastructure. The resulting sector-specific data will be instrumental in informing policy, guiding investment decisions, and supporting Malaysia's broader transition to a low-carbon economy. As Malaysia continues to advance its climate commitments and reporting requirements, this mapping serves as an initial baseline to support further development in methodology and data availability.

Acknowledgements

This Information Note, titled “*Mapping of the Sectoral Greenhouse Gas (GHG) Emissions from the Intergovernmental Panel on Climate Change (IPCC) Guideline to the Malaysia Standard Industrial Classification (MSIC)*” is a collaborative effort led by the Joint Committee on Climate Change (JC3), in partnership with the Ministry of Natural Resources and Environmental Sustainability (NRES) and the Department of Statistics Malaysia (DOSM).

The analysis and preparation of this Information Note were undertaken by the Secretariat of JC3 Sub-Committee on Bridging Data Gaps (SC5), with contribution from NRES and DOSM, reflecting a collaborative effort to address sectoral GHG emissions data.

Should you have any queries regarding the content of this Information Note, please contact the working group at bdgcc@bnm.gov.my.