

**The 20th Workshop on Greenhouse Gas Inventories in Asia (WGIA20)
26 June — 29 June 2023, Tomakomai, Hokkaido, Japan**

**MALAYSIA
FOURTH BIENNIAL
UPDATE REPORT TO THE
UNFCCC**



**MINISTRY OF NATURAL RESOURCES, ENVIRONMENT
AND CLIMATE CHANGE, MALAYSIA**

OUTLINE

1

Introduction

- **Reporting Obligation under the UNFCCC**
- **Institutional Arrangement**

2

Fourth Biennial Update Report (BUR4)

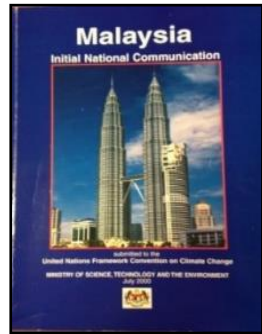
- **National GHG Inventory**

3

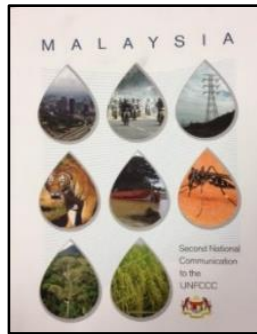
National GHG Improvement Plan

1

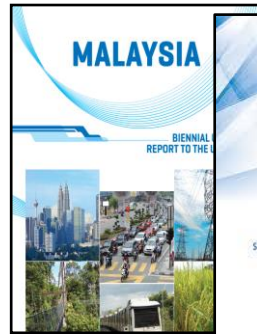
INTRODUCTION: REPORTING OBLIGATION UNDER THE UNFCCC



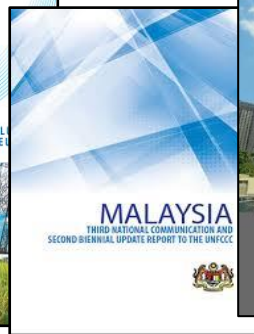
**NC1
2000**



**NC2
2011**



**BUR1
2016**



**NC3BUR2
2018**



**BUR3
2020**



**BUR4
2022**

**NC4
2023**



**BTR1
2024**



**NC5BTR2
2026**



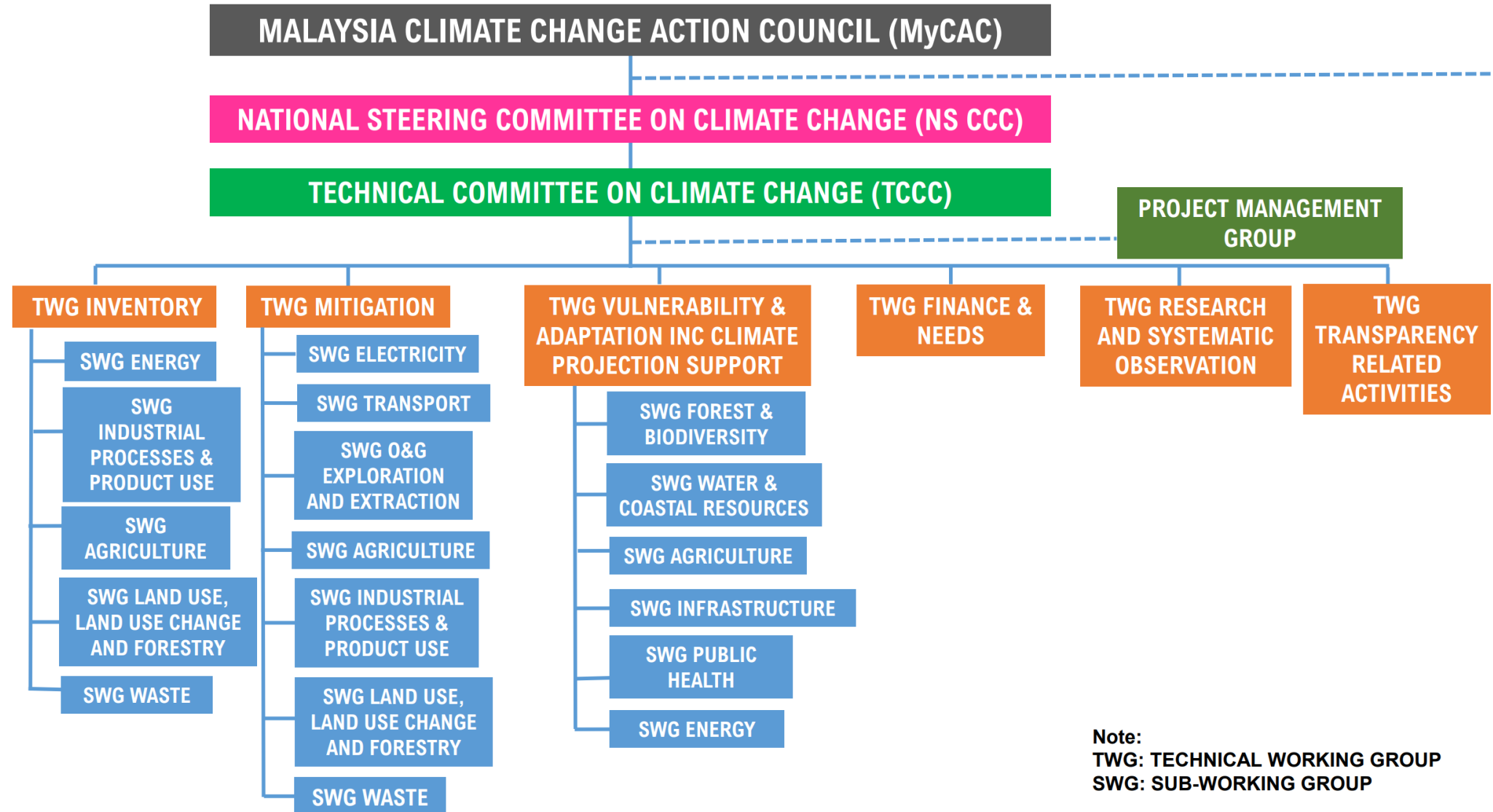
**BTR3
2028**

Early Reporting Framework

Measurement, Reporting & Verification (MRV) Framework

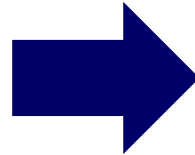
Enhanced Transparency Framework (ETF)

INSTITUTIONAL ARRANGEMENT



Contents:

1. National Circumstances
2. **GHG Inventory**
3. Mitigation Actions and their Effects
4. Level of Support Received, Constraints, Gaps and Needs



- The **2006 IPCC Guidelines for National Greenhouse Gas Inventories** and **2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands** were used to estimate the GHG emissions and removals.
- The **IPCC Inventory Software** was used to generate the GHG inventory estimates.
- **External spreadsheets as provided in the 2006 IPCC Guidelines were also created as a check** on the calculations from the software.

Technical Annex

GHG INVENTORY

Example of Methodological Tiers and Type of Emission Factors

Reference: Pages 87 – 91 of Malaysia’s BUR4

		CO ₂		CH ₄		N ₂ O	
		Method	EF	Method	EF	Method	EF
1 ENERGY							
1A Fuel Combustion Activities							
1A1 Energy Industries							
1A1a	Electricity and Heat Production						
1A1ai	Electricity Generation	T1	D	T1	D	T1	D
1A1a ii	Combined Heat and Power Generation (CHP)	T1	D	T1	D	T1	D
1A1 aiii	Heat Plants	-	-	-	-	-	-
1A1 b	Petroleum Refining	T1	D	T1	D	T1	D
1A1 c	Manufacture of Solid Fuels and Other Energy Industries						
1A1 ci	Manufacture of Solid Fuels	-	-	-	-	-	-
1A1 cii	Other Energy Industries	T1	D	T1	D	T1	D
1A2 Manufacturing Industries and Construction							
1A2 a	Iron and Steel	T1	D	T1	D	T1	D
1A2 b	Non-Ferrous Metals	T1	D	T1	D	T1	D
1A2 c	Chemicals	T1	D	T1	D	T1	D
1A2 d	Pulp, Paper and Print	T1	D	T1	D	T1	D
1A2 e	Food Processing, Beverages and Tobacco	T1	D	T1	D	T1	D
1A2 f	Non-Metallic Minerals	T1	D	T1	D	T1	D
1A2 g	Transport Equipment	T1	D	T1	D	T1	D
1A2 h	Machinery	T1	D	T1	D	T1	D
1A2 i	Mining (excluding fuels) and Quarrying	-	-	-	-	-	-
1A2 j	Wood and wood products	T1	D	T1	D	T1	D
1A2 k	Construction	-	-	-	-	-	-
1A2 l	Textile and Leather	T1	D	T1	D	T1	D

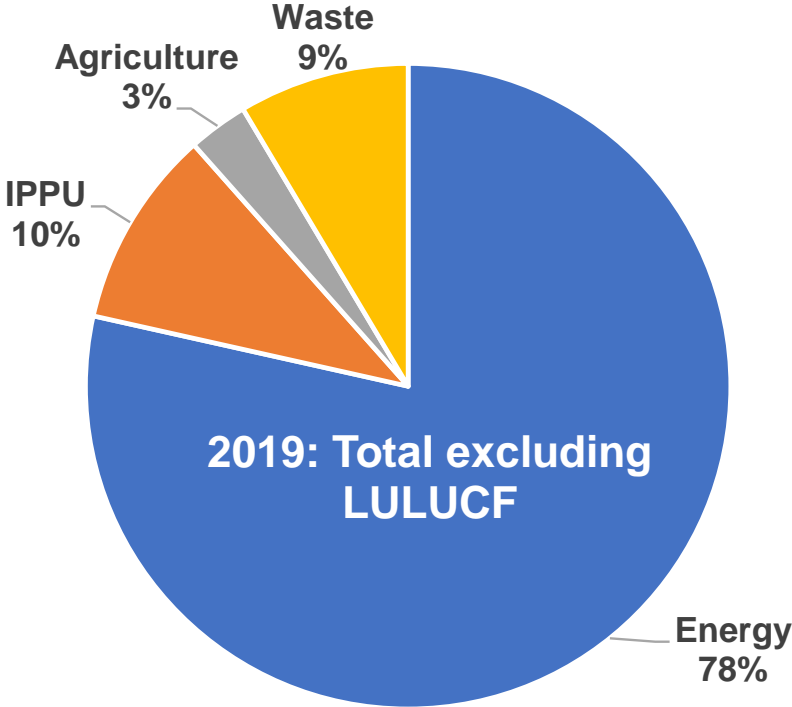
Example of Summary of Assumptions and Activity Data Sources

Reference: Pages 105 -121 of Malaysia’s BUR4

Sector & Sub Sector	Activity data	Assumptions	Data source
1. Energy Sector			
1 Fuel Combustion Activities			
1A1 Energy Industries			
1A1a - Electricity and Heat Production	Fuel Types in energy-producing industries	The type of fuels used for electricity generation combined heat and power generation.	NEB
1A1ai - Electricity Generation	Fuel types from thermal power plants. Biomass and Biogas are included.	All fuel consumption from thermal stations. Coal has been segregated into Bituminous, Sub-bituminous and Lignite.	NEB Energy Commission
1A1aii - Combined Heat and Power Generation (CHP)	Fuel types from the production of both heat and power plants. Biomass and biogas is included.	All fuel consumption from self-generation stations.	NEB
1A1aiii - Heat Plants	No activity data	No production of heat for sale by pipe network.	NEB
1A1b - Petroleum Refining	Refining of petroleum products including losses & own use for generation of electricity and heat.	Estimated from the refineries and petroleum losses and own use.	NEB
1A1c - Manufacture of Solid Fuels and Other Energy Industries			
1A1ci - Manufacture of Solid Fuels	No activity data	No combustion for production of coke, brown coal briquettes and patent fuel.	
1A1cii Other Energy Industries	Own use from the oil and gas extraction and processing of natural gas	Estimated from the gas plants’ losses and own use.	NEB

GHG INVENTORY (2019)

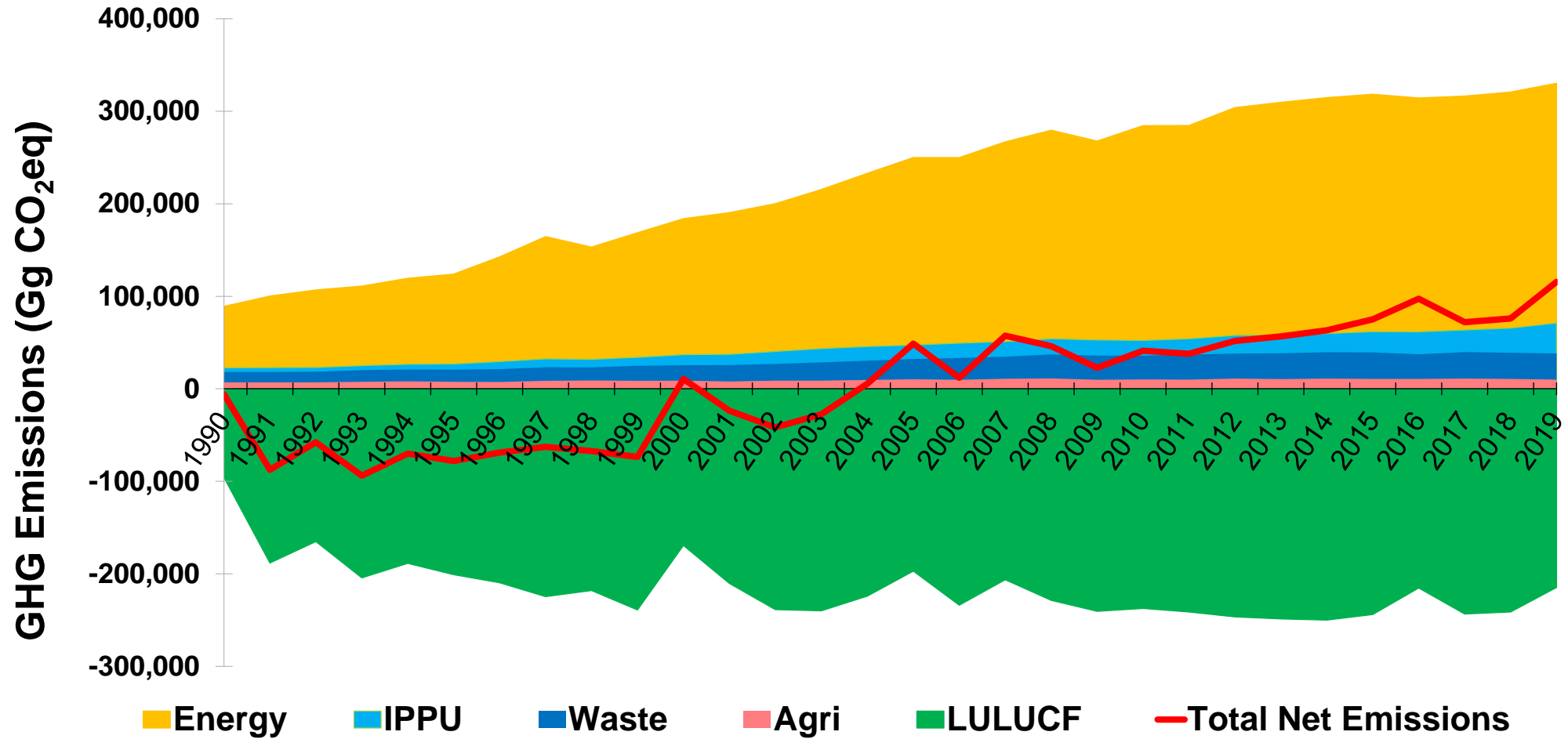
SECTOR	GHG EMISSIONS/ REMOVALS (Gg CO2 eq.) 2019
Energy	259,326.11
IPPU	32,853.80
Agriculture	9,921.71
LULUCF	-214,714.54
Waste	28,256.59
Total (Excluding LULUCF)	330,358.21
Total (Including LULUCF)	115,643.68

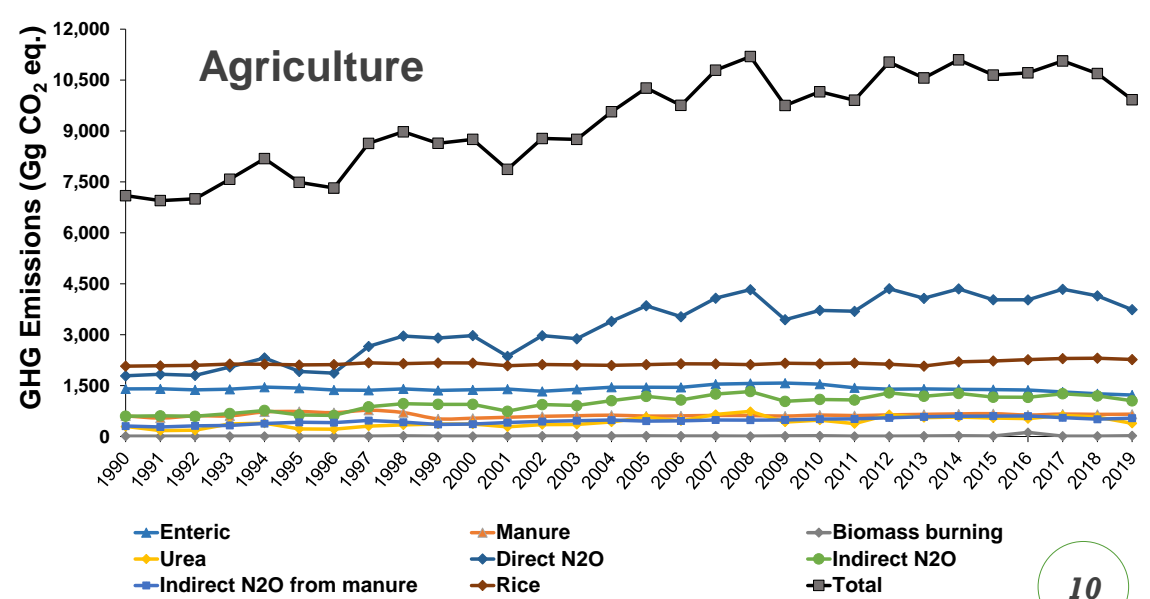
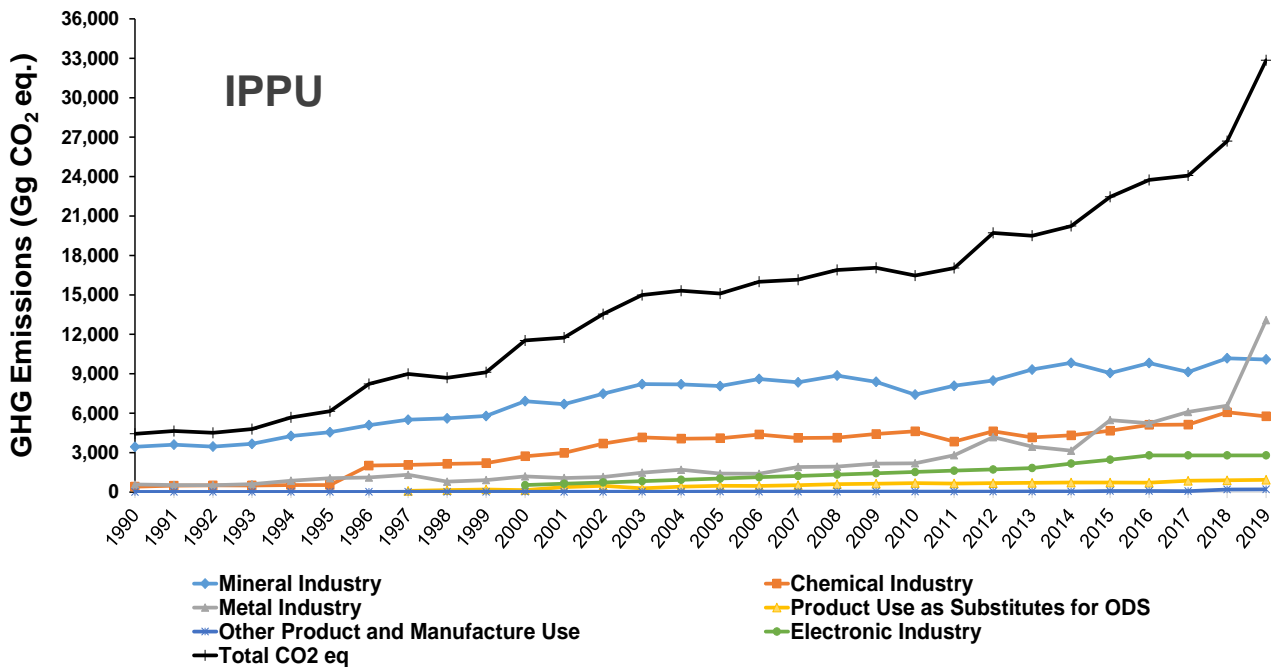
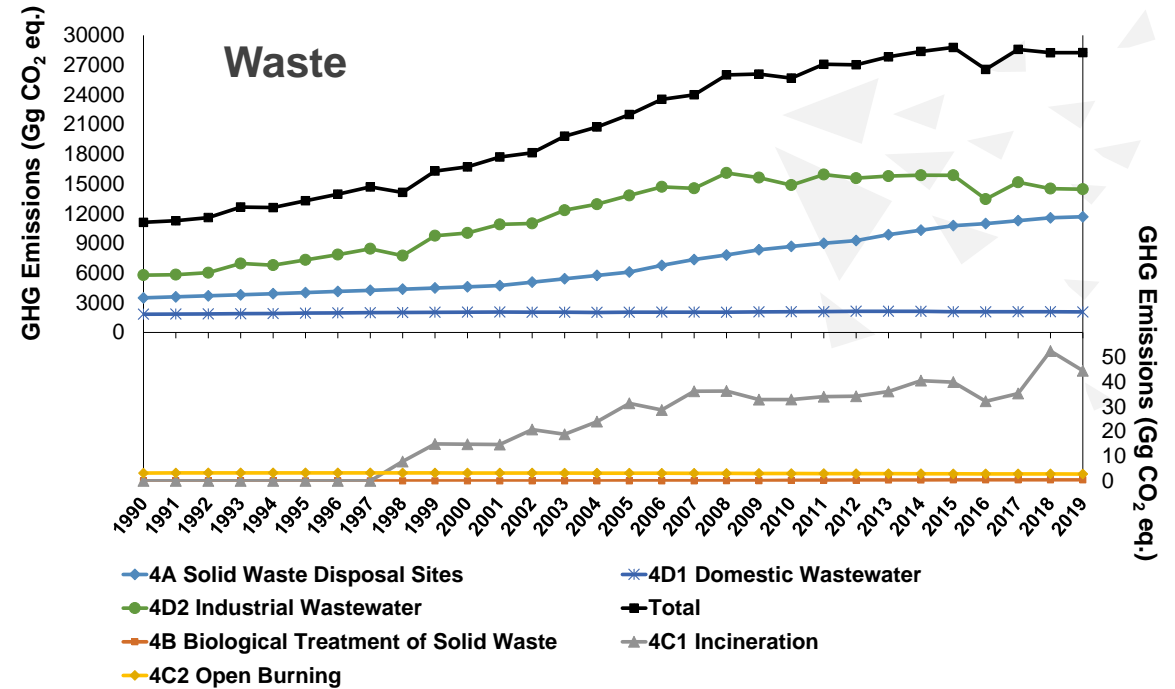
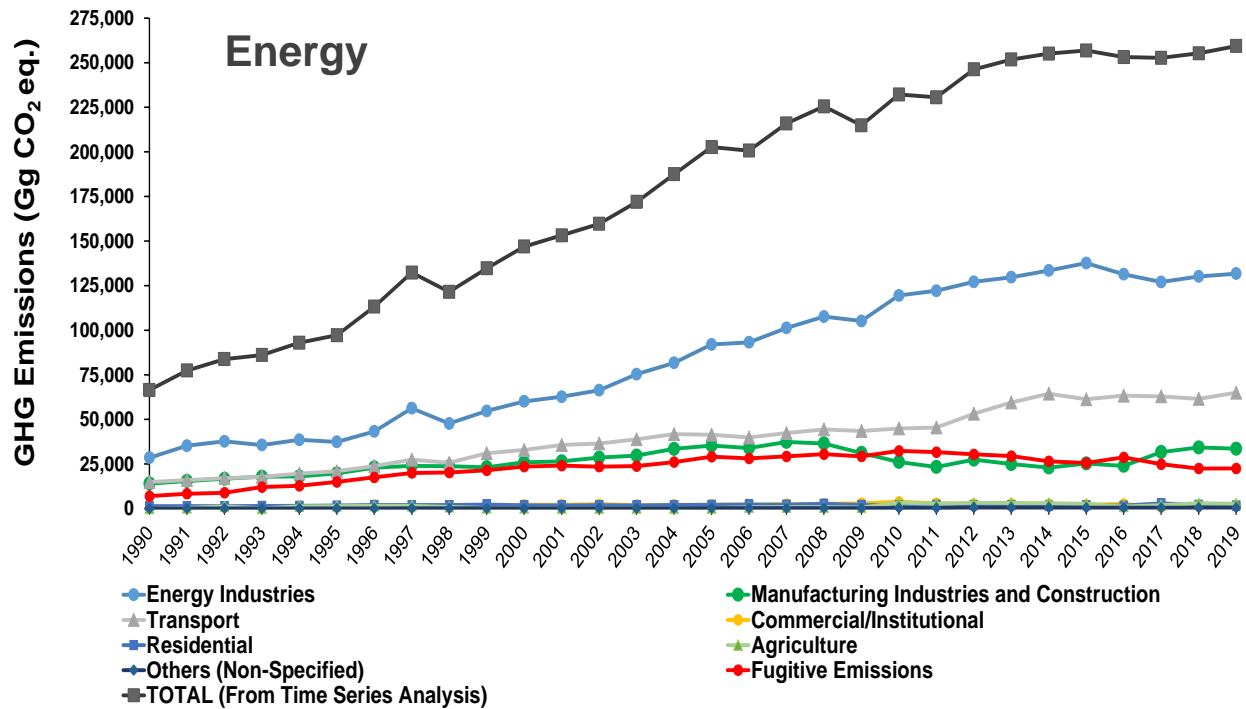


GHG INVENTORY (2005, 2016 - 2019)

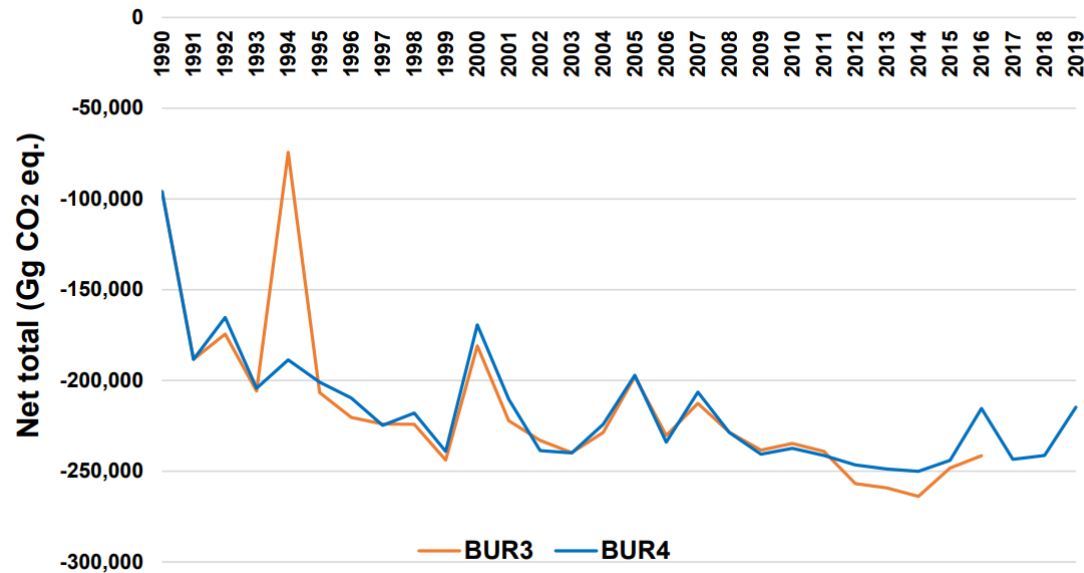
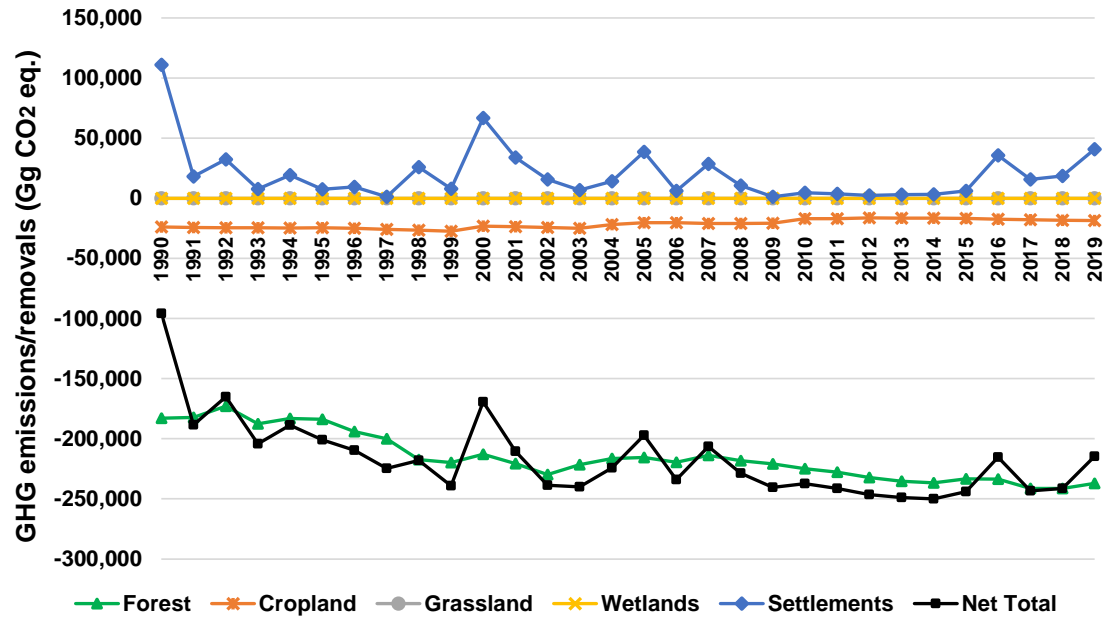
Greenhouse Gas Source and Sink by Sector	2005	2016	2017	2018	2019
Energy	202,676.41	253,156.64	252,710.49	255,231.55	259,326.11
IPPU	15,101.60	23,746.04	24,203.62	26,697.07	32,853.80
Agriculture	10,265.04	10,711.36	11,063.54	10,690.29	9,921.71
LULUCF	-197,076.76	-215,375.05	-243,369.73	-241,264.08	-214,714.54
Waste	22,000.75	26,565.41	28,585.40	28,247.87	28,256.59
Total Excluding LULUCF	250,043.80	314,179.45	316,563.05	320,866.78	330,358.21
Total Including LULUCF	52,967.03	98,804.40	73,193.32	79,602.70	115,643.68

GHG EMISSION TIME SERIES: 1990 – 2019





LULUCF



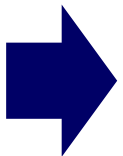
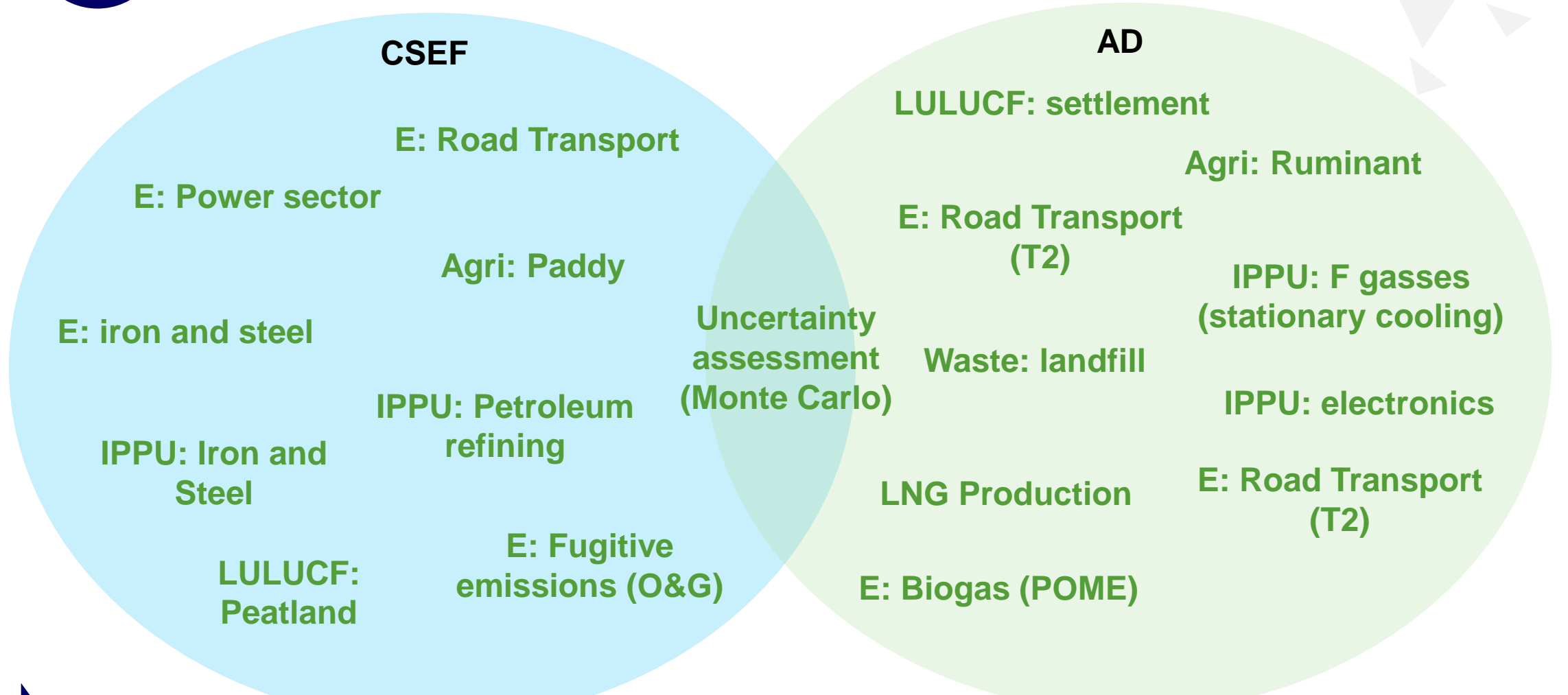
Recalculation of time series

- **Energy** (road transport, fugitive emissions),
- **IPPU** (minor update on other process uses of carbonates),
- **Agriculture** (updates in animal population),
- **LULUCF** (forestland and cropland), and
- **Waste** (minor update on solid waste disposal and updates on the recycling rate and domestic wastewater).

Uncertainty Assessment

2019 GHG Inventory	Uncertainty of Total Inventory (%)	Uncertainty in Trend (%)
Total Inventory excluding LULUCF	15.12	12.70
Total Inventory including LULUCF	57.47	168.34

NATIONAL GHG INVENTORY IMPROVEMENT PLAN



Focus on improving the disaggregation and completeness of the activity data according to the 2006 IPCC Guidelines and developing country specific emission factors for key categories. A National GHG Inventory Improvement Plan for emission factors had been launched in 2021 under the 12th Malaysia Plan (2021-2025).



THANK YOU

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