

**The 18th Workshop on GHG Inventories in Asia (WGIA 18)
8 – 14 July 2021**

**MALAYSIA'S THIRD BIENNIAL UPDATE REPORT
TO THE UNFCCC**



MINISTRY OF ENVIRONMENT AND WATER, MALAYSIA

OUTLINE

1. GHG Inventory

- GHG Inventory 2016
- Major Sources of CO₂, CH₄ and N₂O
- Key Category Analysis
- Uncertainty Analysis
- GHG Time Series

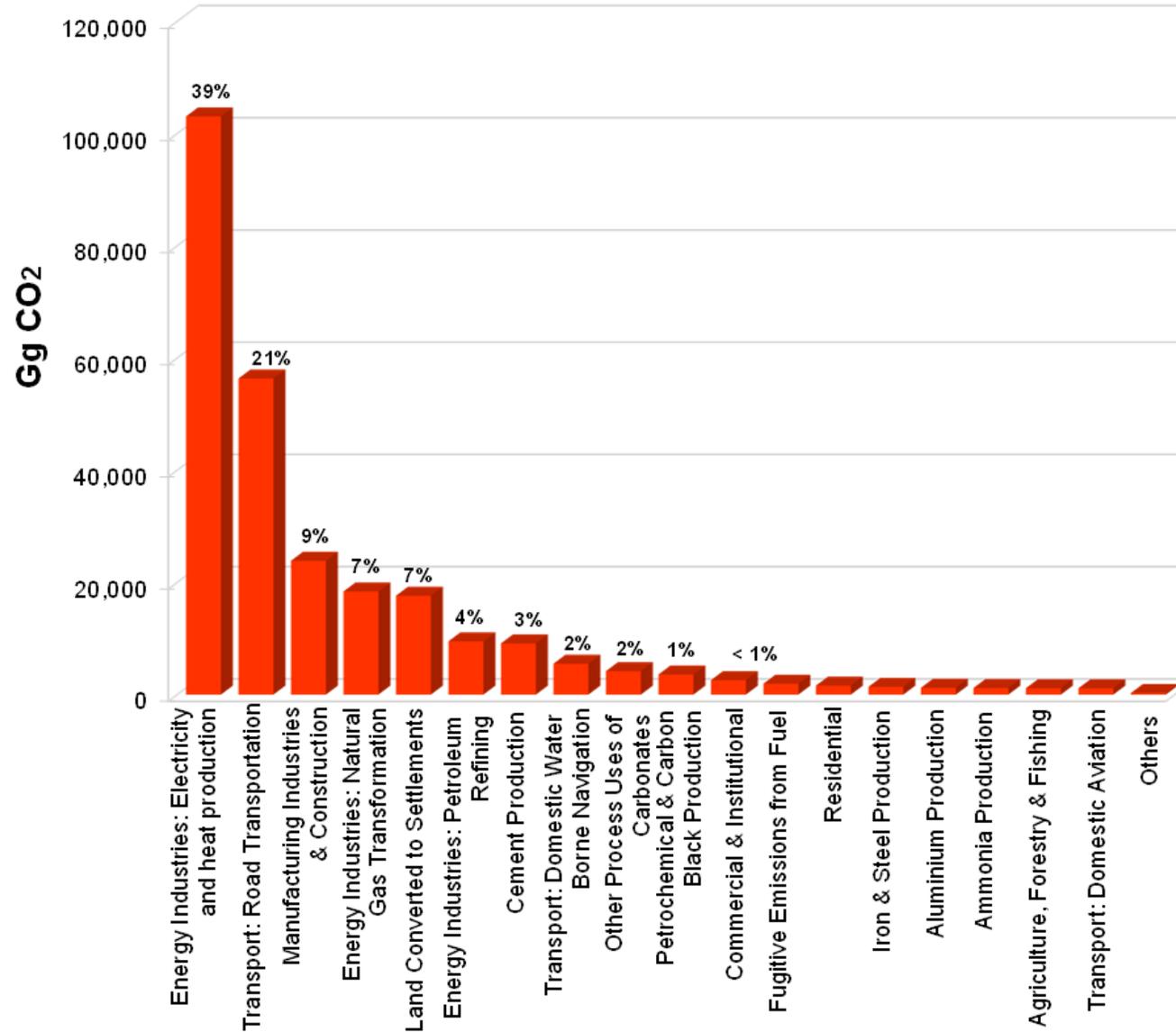
2. Mitigation Actions

3. Issues and Challenges

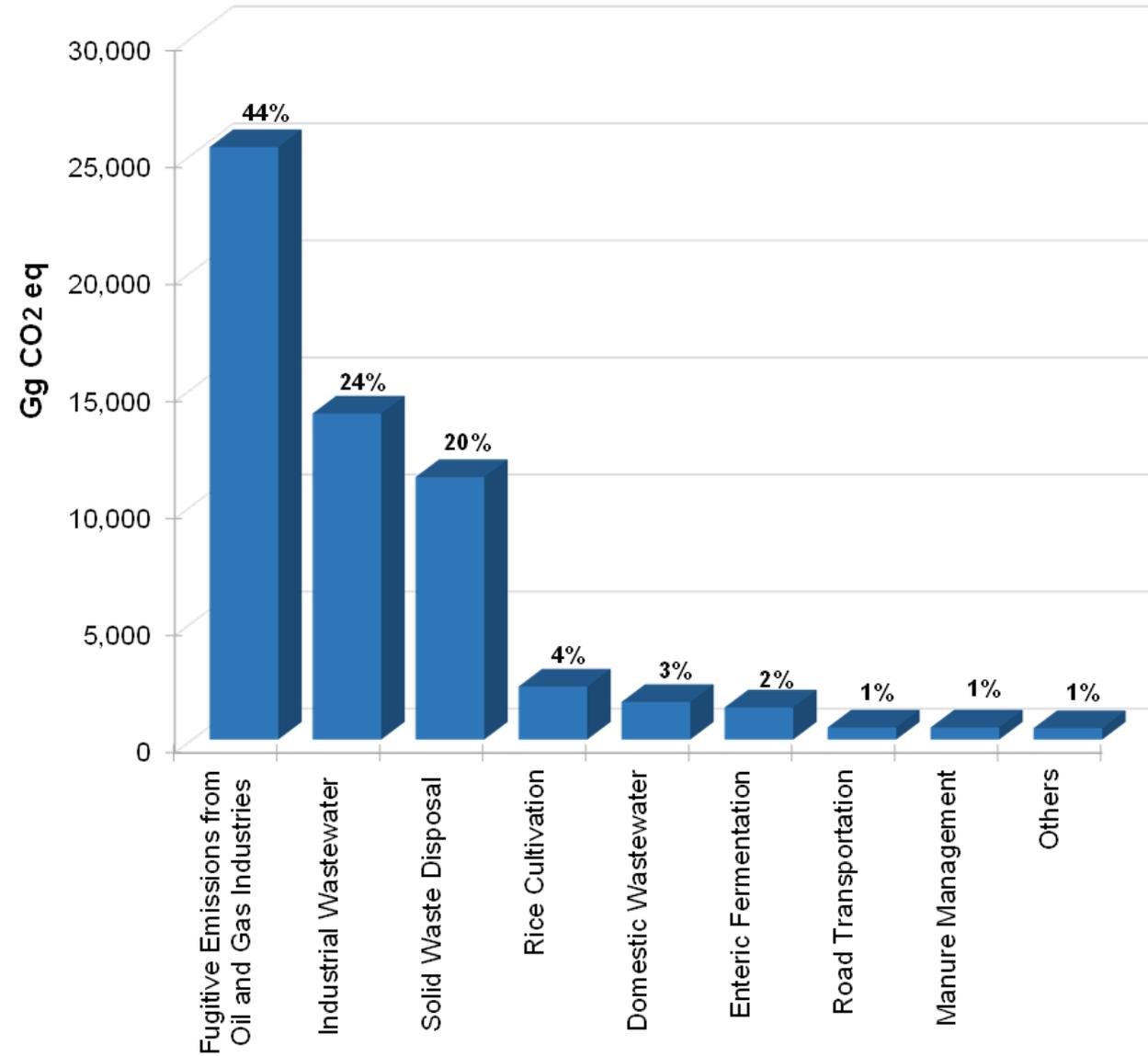
1. GHG INVENTORY (2016)

Sector	Emissions/ Removals (Gg CO ₂ eq.)
Energy	251,695.02
Industrial Processes and Product Use	27,348.83
AFOLU – Agriculture	10,627.72
AFOLU – LULUCF (Emissions)	17,801.27
AFOLU – LULUCF (Removals)	-259,146.03
AFOLU – LULUCF (Sub-total)	-241,344.75
Waste	27,161.66
Total Emissions (without LULUCF)	316,833.23
Total Emissions (with LULUCF)	75,488.48

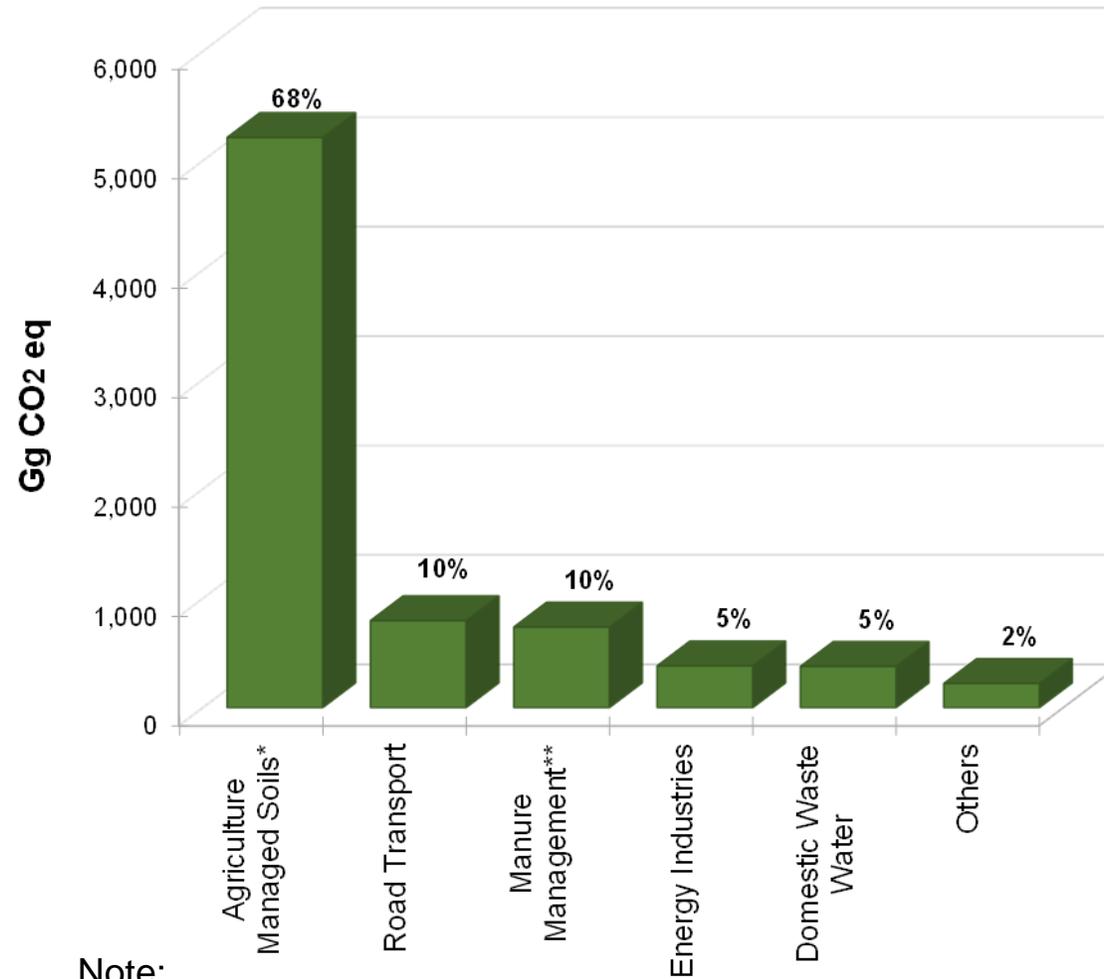
MAJOR SOURCES OF CO₂



MAJOR SOURCES OF CH₄



MAJOR SOURCES OF N₂O



Note:

* Included direct and indirect N₂O emissions from agriculture managed soils

** Included direct and indirect N₂O emissions from manure management

KEY CATEGORY ANALYSIS – WITHOUT LULUCF

Sector	IPCC Category Code	IPCC Category Name	Gas	2016 estimate (Gg CO ₂ eq)	Level Assessment (%)	Cumulative (%)
Energy	1.A.1	Energy Industries - Solid Fuels	CO ₂	68,189.15	21.52%	21.52%
Energy	1.A.3.b	Road Transportation	CO ₂	55,188.34	17.42%	38.94%
Energy	1.A.1	Energy Industries - Gaseous Fuels	CO ₂	52,070.82	16.43%	55.38%
Energy	1.B.2.b	Fugitive Emissions from Fuels - Natural Gas	CH ₄	24,446.89	7.72%	63.09%
Waste	4.D.2	Industrial Wastewater Treatment and Discharge	CH ₄	13,927.93	4.40%	67.49%
Waste	4.A	Solid Waste Disposal	CH ₄	11,214.23	3.54%	71.03%
Energy	1.A.2	Manufacturing Industries & Construction - Gaseous Fuels	CO ₂	10,896.28	3.44%	74.47%
Energy	1.A.1	Energy Industries - Liquid Fuels	CO ₂	10,663.81	3.37%	77.83%
IPPU	2.A.1	Cement Production	CO ₂	9,125.90	2.88%	80.71%
Energy	1.A.2	Manufacturing Industries and Construction - Solid Fuels	CO ₂	6,795.19	2.14%	82.86%
Energy	1.A.2	Manufacturing Industries and Construction - Liquid Fuels	CO ₂	6,164.27	1.95%	84.80%
Energy	1.A.3.d	Transport - Water-borne Navigation - Liquid Fuels	CO ₂	5,505.04	1.74%	86.54%
Energy	1.A.4	Other Sectors - Liquid Fuels	CO ₂	5,260.26	1.66%	88.20%
IPPU	2.A.4	Other Process Uses of Carbonates -Limestone & Dolomite	CO ₂	4,184.05	1.32%	89.52%
AFOLU-Agriculture	3.C.4	Direct N ₂ O Emissions from Managed Soils	N ₂ O	4,052.61	1.28%	90.80%
IPPU	2.B.8	Petrochemical and Carbon Black Production	CO ₂	3,583.40	1.13%	91.93%
AFOLU-Agriculture	3.C.7	Rice Cultivations	CH ₄	2,265.20	0.71%	92.65%
IPPU	2.C.3	Aluminium Production	PFC-14	2,246.56	0.71%	93.36%
Energy	1.B.2.a	Fugitive Emissions from Fuel - Oil	CO ₂	1,846.14	0.58%	93.94%
Waste	4.D.1	Domestic Wastewater Treatment and Discharge	CH ₄	1,608.12	0.51%	94.45%
IPPU	2.C.1	Iron and Steel Production	CO ₂	1,384.51	0.44%	94.88%
AFOLU-Agriculture	3.A.1	Enteric Fermentation	CH ₄	1,370.44	0.43%	95.31%

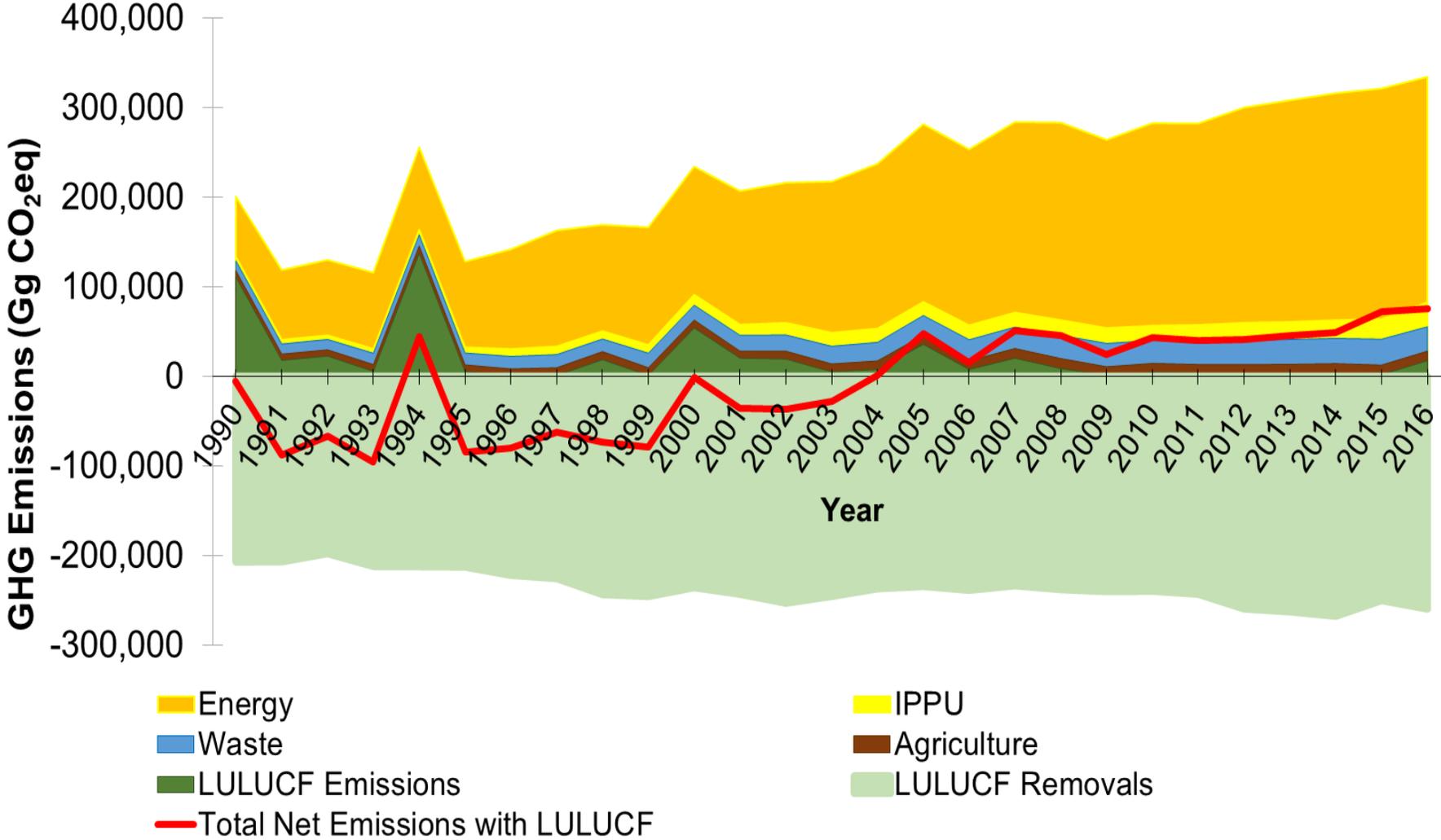
KEY CATEGORY ANALYSIS – WITH LULUCF

Sector	IPCC Category Code	IPCC Category Name	Gas	2016 estimate (Gg CO ₂ eq)	Level Assessment (%)	Cumulative (%)
AFOLU	3.B.1.a	Forest Land Remaining Forest Land	CO ₂	-243,831.71	41.06%	41.06%
Energy	1.A.1	Energy Industries - Solid Fuels	CO ₂	68,189.15	11.48%	52.55%
Energy	1.A.3.b	Road Transportation	CO ₂	55,188.34	9.29%	61.84%
Energy	1.A.1	Energy Industries - Gaseous Fuels	CO ₂	52,070.82	8.77%	70.61%
Energy	1.B.2.b	Fugitive Emissions from Fuels - Natural Gas	CH ₄	24,446.89	4.12%	74.73%
AFOLU	3.B.5.b	Land Converted to Settlements	CO ₂	17,753.21	2.99%	77.72%
AFOLU	3.B.2.a	Crop Land Remaining Cropland	CO ₂	-15,314.31	2.58%	80.30%
Waste	4.D.2	Industrial Wastewater Treatment and Discharge	CH ₄	13,927.93	2.35%	82.64%
Waste	4.A	Solid Waste Disposal	CH ₄	11,214.23	1.89%	84.53%
Energy	1.A.2	Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	10,896.28	1.84%	86.37%
Energy	1.A.1	Energy Industries - Liquid Fuels	CO ₂	10,663.81	1.80%	88.16%
IPPU	2.A.1	Cement Production	CO ₂	9,125.90	1.54%	89.70%
Energy	1.A.2	Manufacturing Industries and Construction - Solid Fuels	CO ₂	6,795.19	1.14%	90.84%
Energy	1.A.2	Manufacturing Industries and Construction - Liquid Fuels	CO ₂	6,164.27	1.04%	91.88%
Energy	1.A.3.d	Transport - Water-borne Navigation - Liquid Fuels	CO ₂	5,505.04	0.93%	92.81%
Energy	1.A.4	Other Sectors - Liquid Fuels	CO ₂	5,260.26	0.89%	93.70%
IPPU	2.A.4	Other Process Uses of Carbonates - Limestone and Dolomite	CO ₂	4,184.05	0.70%	94.40%
AFOLU	3.C.4	Direct N ₂ O Emissions from Managed Soils	N ₂ O	4,052.61	0.68%	95.08%

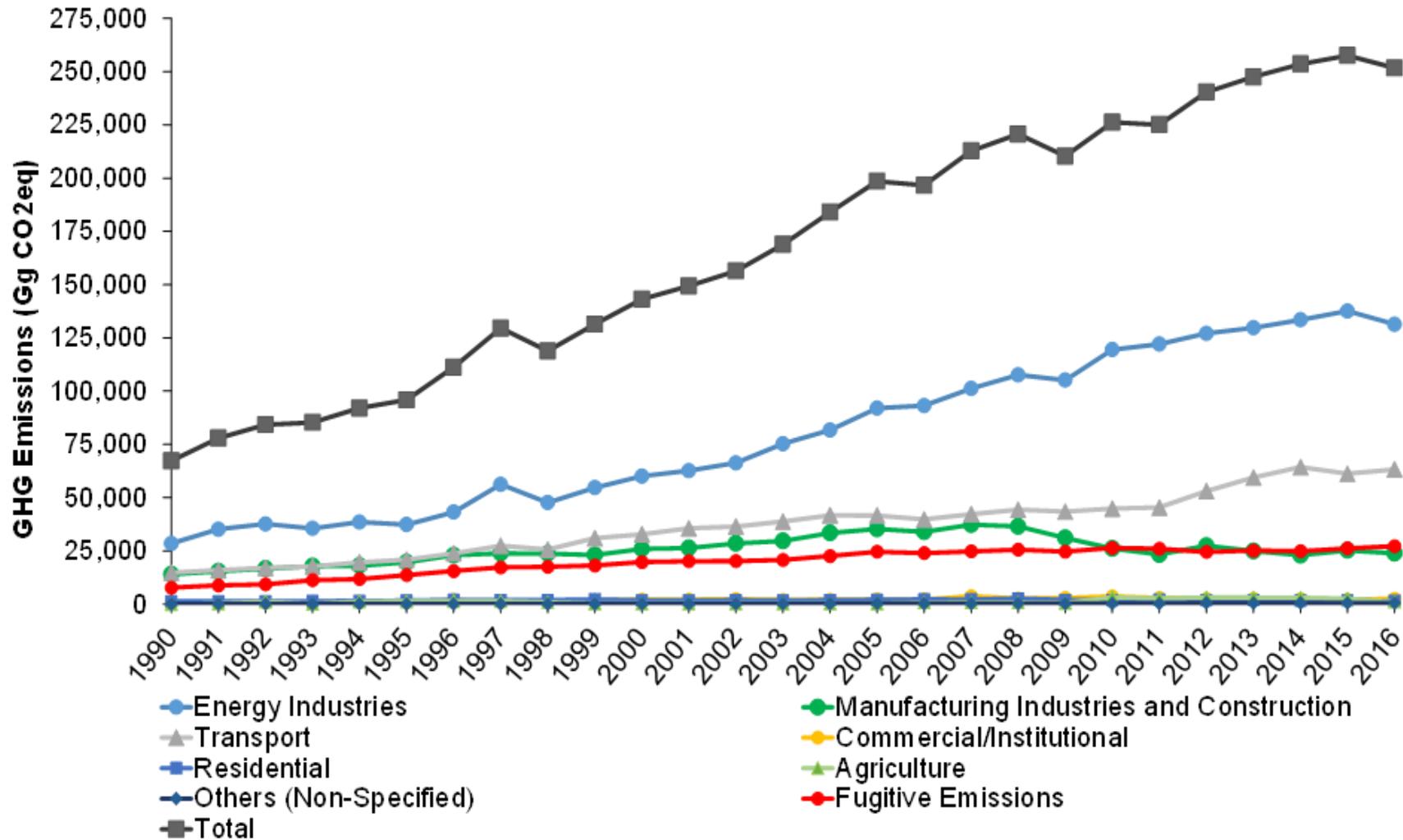
UNCERTAINTY ANALYSIS

Sector	Uncertainty in total Inventory (%)	Uncertainty in Trend (%)
Total Inventory without LULUCF	7.26	7.64
Total Inventory with LULUCF	66.2	119.71

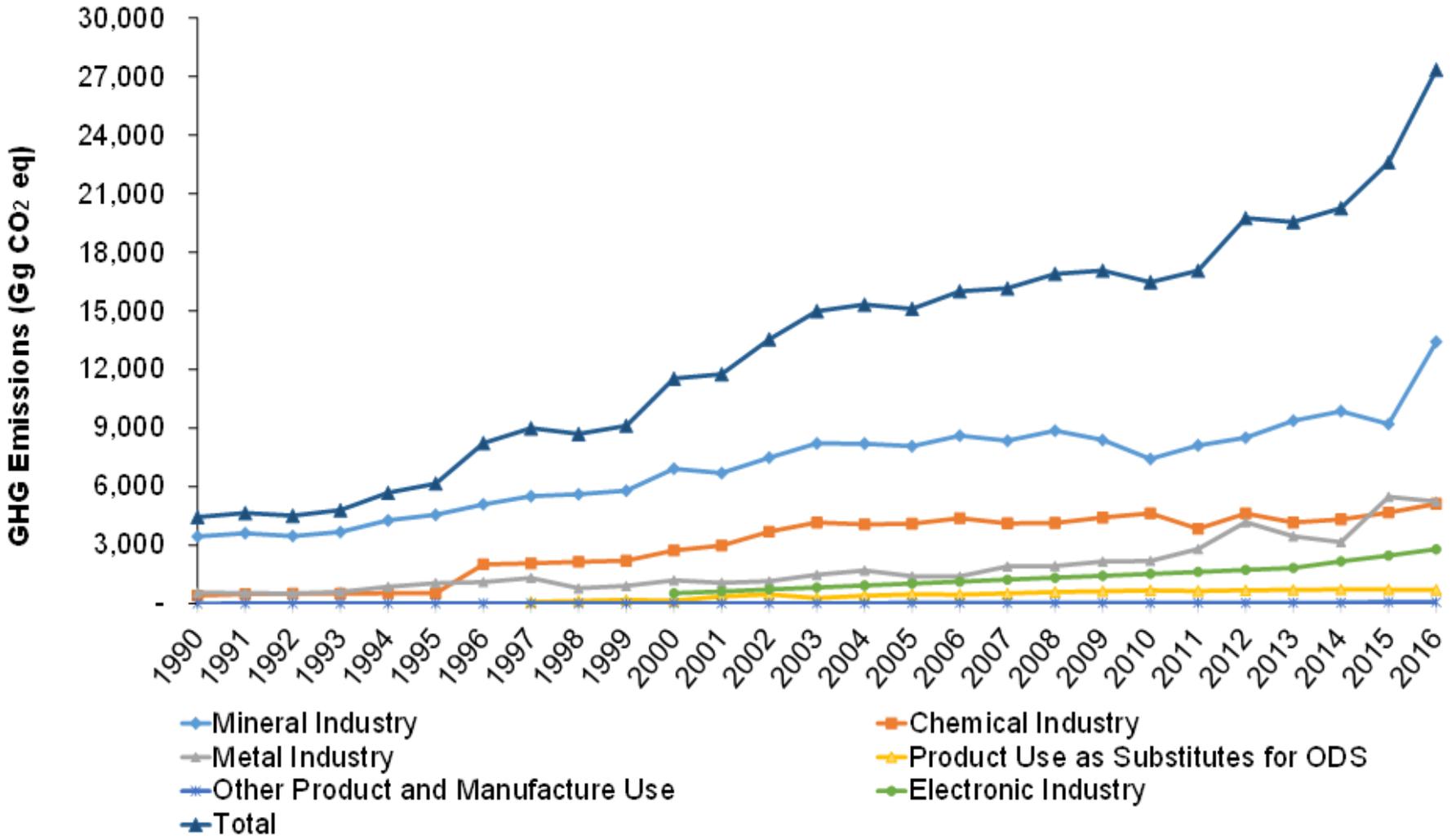
GHG EMISSIONS TIME SERIES



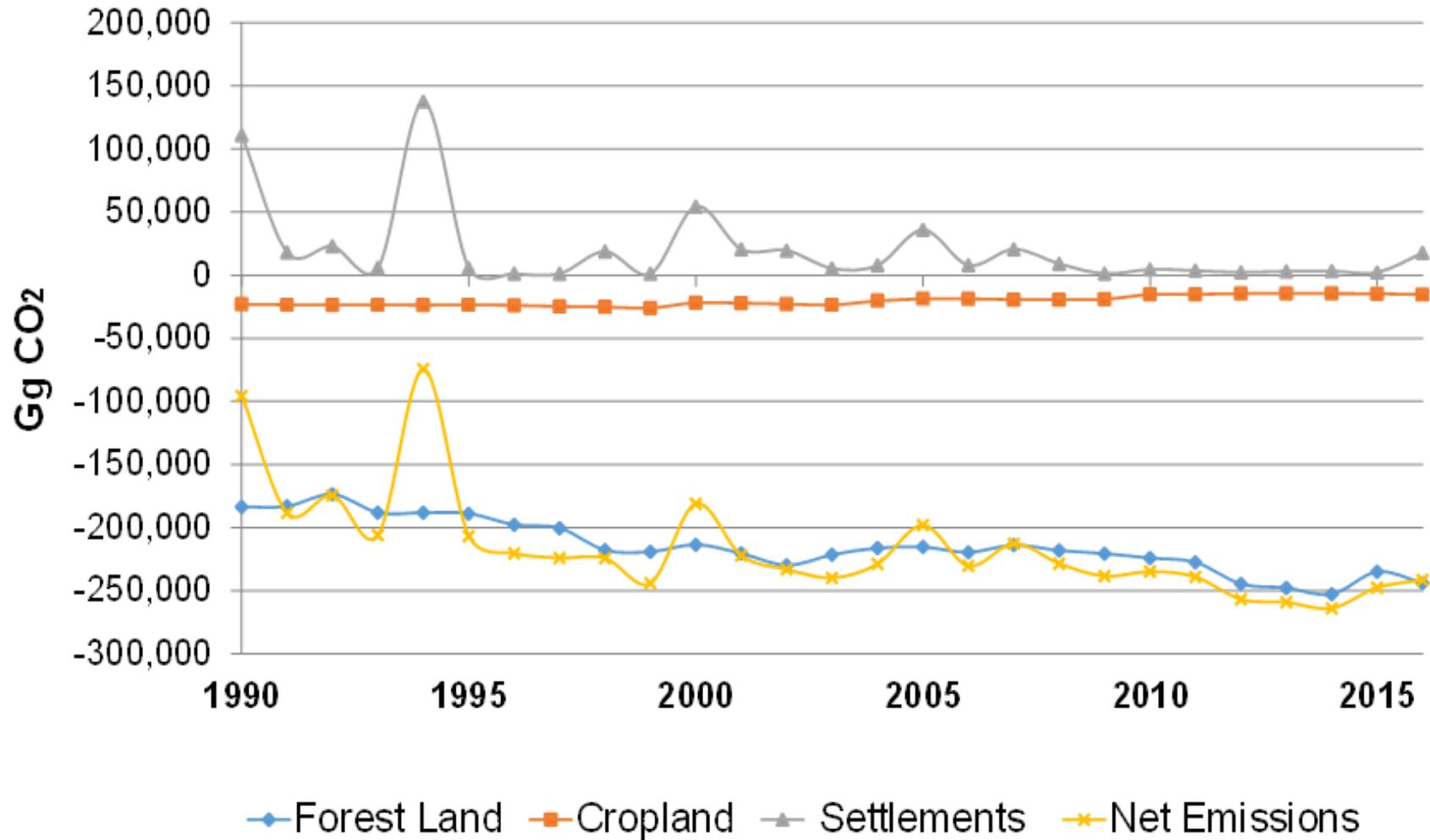
EMISSIONS TIME SERIES (ENERGY SECTOR)



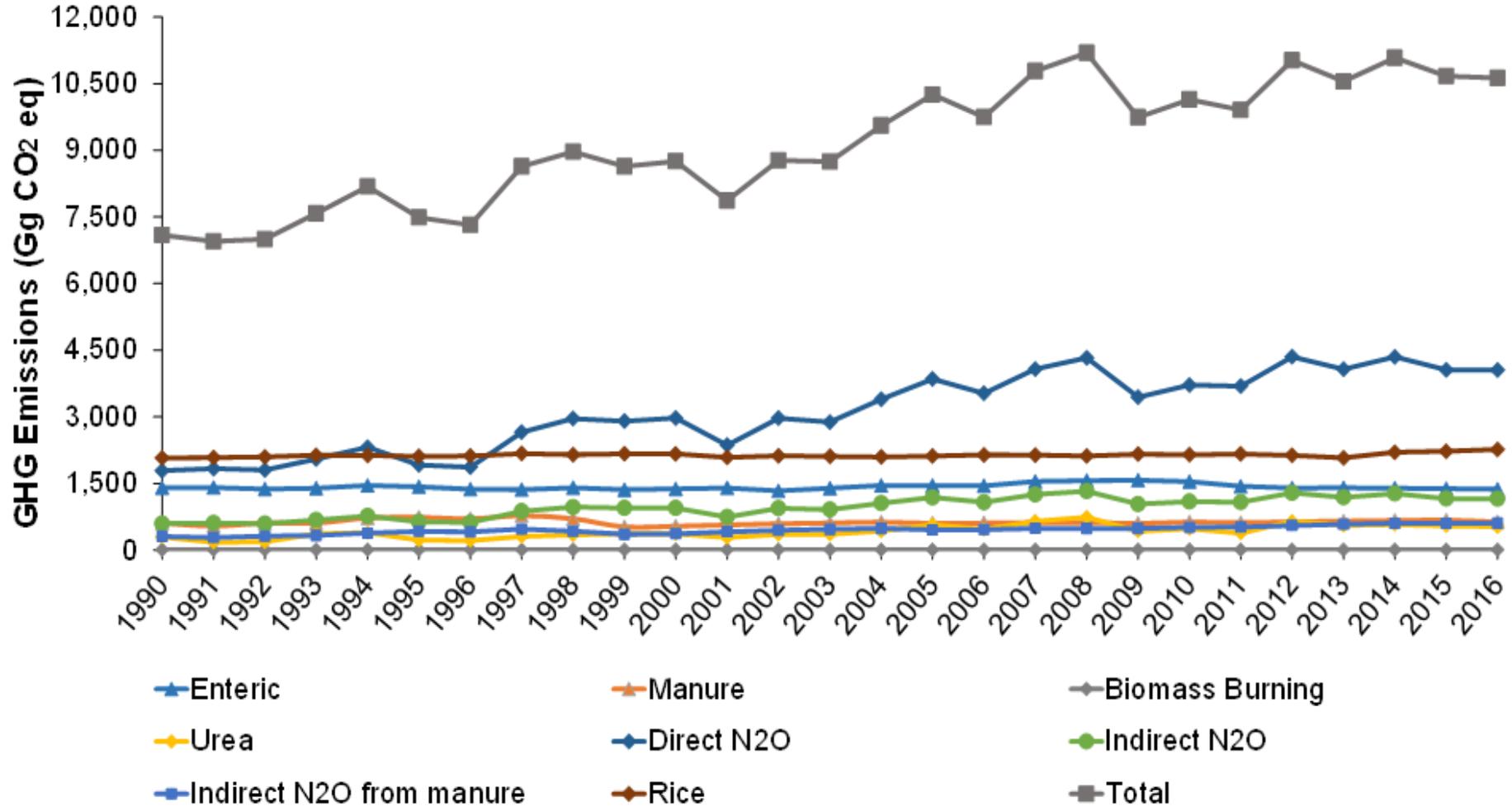
EMISSIONS TIME SERIES (IPPU SECTOR)



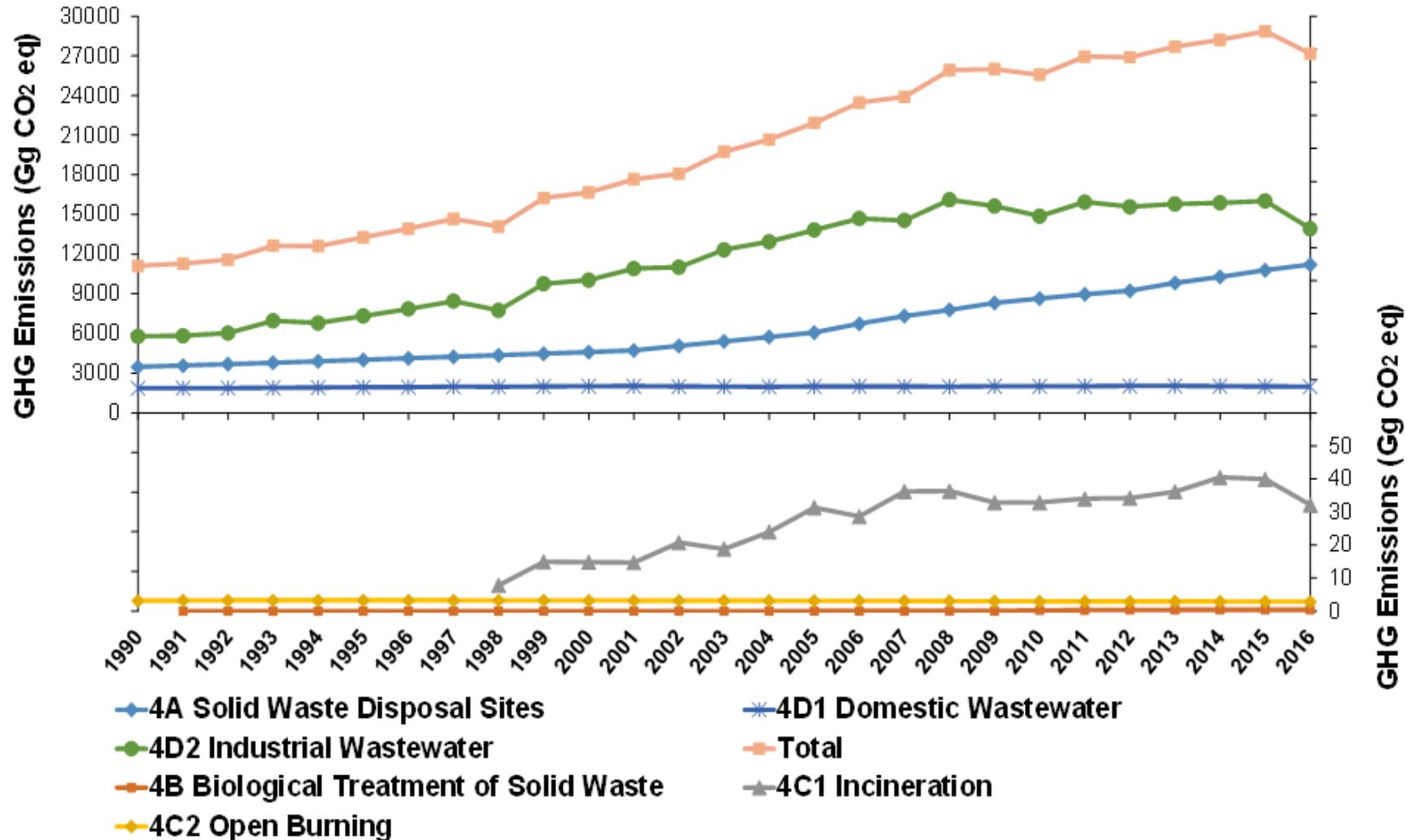
EMISSIONS TIME SERIES (LULUCF SECTOR)



EMISSIONS TIME SERIES (AGRICULTURE SECTOR)



EMISSIONS TIME SERIES (WASTE SECTOR)



2. MITIGATION ACTIONS

Sector	Sub-sector	Mitigation Actions	Emissions avoidance achieved in 2016 (Gg CO ₂ eq.)
Energy	Renewable Energy (Power)	Feed-in-Tariff (FiT)	460.52
		Hydropower	6,570.15
		Other RE by public and private licensees	231.92
	Energy Efficiency	National Energy Efficiency Action Plan (NEEAP)	458.02
	Transportation	Rail based public transport	212.93
		Use of energy-efficient vehicles	90.62
		Use of palm-based biodiesel in blended petroleum diesel	1,127.34
		Use of natural gas in vehicles	114.77
Waste	Paper recycling	1,654.75	
	Biogas recovery from palm oil mill effluent	2,377.84	
Forestry	Reducing deforestation, Sustainable management of forest and Conservation of carbon stocks		20,307.50

3. ISSUES AND CHALLENGES

- Pandemic Covid-19
- National Inventory Improvement Plan
- Uncertainty Analysis
- Development of a GHG Information Management System
- Enhanced Transparency Framework and preparation for BTR

THANK YOU

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