Republic of Namibia
Ministry of Environment, Forestry &Tourism

NAMIBIA'S GHG INVETORY

OUTLINE

- Relevant facts about Namibia
- Namibia's reporting obligations
- Institutional arrangements
- Coverage by sectors
- Activity data sources
- National GHG emissions
- Challenges and Lessons
- Next steps

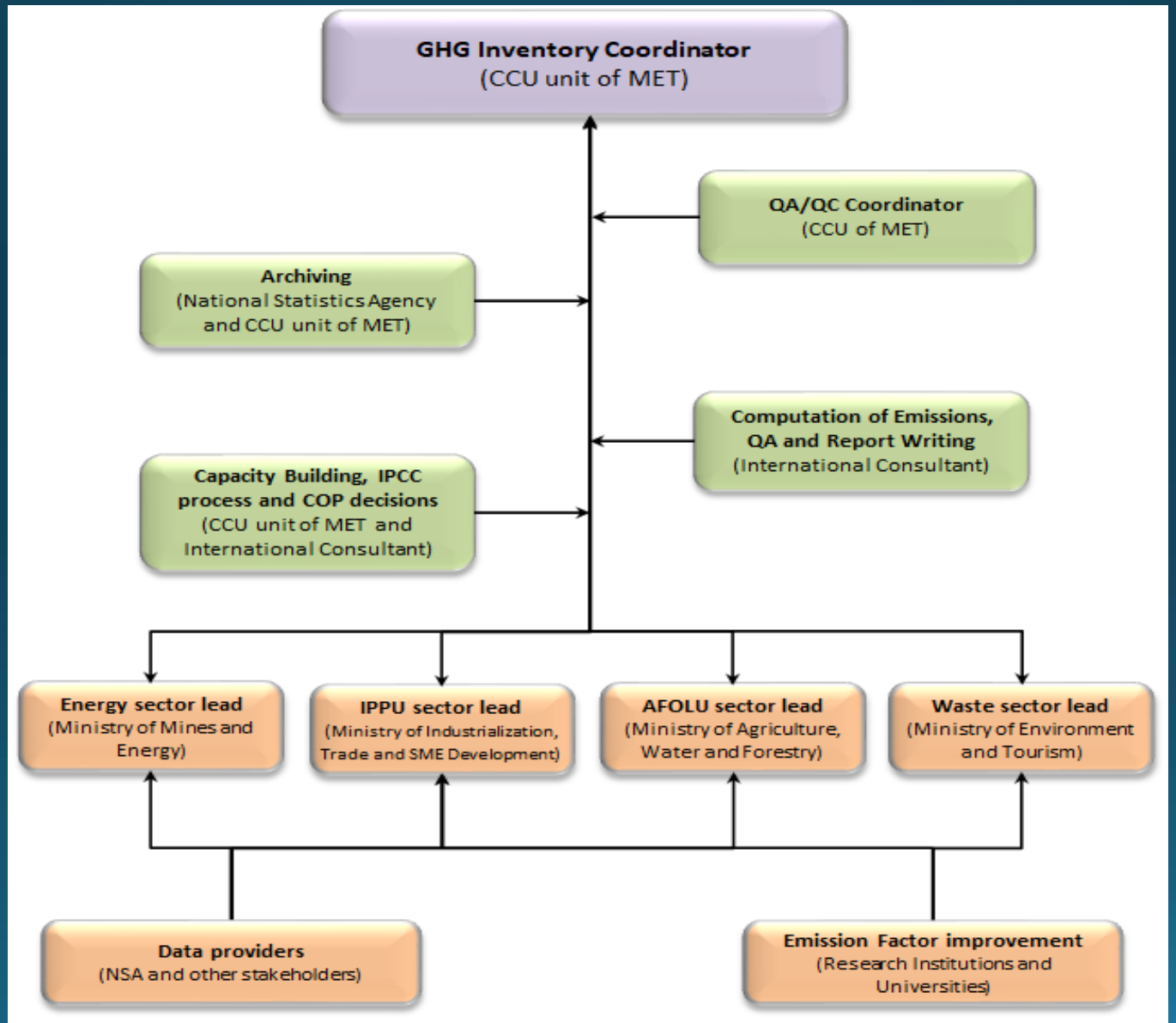
Relevant facts

- Namibia is un upper middle income country situated in South-Western Africa
- Population of 2.7 Million
- Namibia is one of the biggest and driest countries in sub-Saharan Africa
- Rainfall ranges from an average of 25 mm in the west to over 600 mm in the northeast
- Thus making it one of the most vulnerable countries to climate change
- More than 50% of the population depend on rain-fed agriculture
- Imports more than 60% of its energy needs

GHG inventories submitted by Namibia

Report	Inventory Year (s)	Methodology	Tier level	GWP
INC - 2002	1994	Revised 1996 GL	I	SAR
SNC - 2011	1994 and 2000	Revised 1996 GL	I and II (livestock)	
BUR1 - 2014	2010 (1994 and 2000 recalculated)	2006 GL	I and II (livestock and land)	
NC3 - 2015	2000 to 2010			
BUR2 - 2016	2000 to 2012			
BUR3 - 2018	1994 to 2014			
NC4 - 2020	1991 to 2015			
BUR4 - 2021	1990 to 2016			

INSTITUTIONAL ARRANGEMENTS AND INVENTORY PREPARATION



Coverage of sector Energy

Sector	Number of categories covered	
	INDC (TNC)	NDC (NC4)
Energy		
1.A.1 - Energy Industries	1	1
1.A.2 - Manufacturing Industries and Construction	2	2
1.A.3 - Transport	3	3
1.A.4 - Other Sectors	3	3
1.A.5 - Unspecified	1	1
Total	10	10
Gases	CO_2, CH_4, N_2O, NOx, CO, NMVOC, SO_2	CO_2, CH_4, N_2O, NOx, CO, NMVOC, SO_2

Full territory coverage

Coverage of sector IPPU

	NC4
Number of identified source categories	17
Number of activity areas estimated	10 (59%)
Activity areas covered	Cement production (Start 2011)
	Lime production
	Zinc production
	Lubricant use
	Paraffin wax use
	Solvent use
	Refrigeration and stationary air conditioning
	Mobile air conditioning
	Medical N_2O applications
	Food and beverage industry
Gases covered	CO_2, N_2O, HFC, NMVOC

Coverage of sector AFOLU

	NC4
Number of source categories identified	14
Number estimated	12 (86%)
Activity areas covered	Enteric fermentation
	Manure management
	Forestland
	Cropland
	Grassland
	Wetlands
	Settlements
	Biomass burning
	Urea application
	Direct and indirect N_2O from managed soils
	Indirect N2O from manure management
	Harvested Wood Products
Gas covered	CO_2, CH_4, N_2O, NMVOC, CO, NO_x

Coverage of sector Waste

	NC4
Number of identified source categories	5
Number of activity areas estimated	4 (80%)
Number of years estimated	
Activity areas covered	Solid waste management
	Open burning of waste
	Domestic wastewater
	Industrial wastewater
Gases covered	CO_2, CH_4, N_2O, NMVOC, CO, NO_x, SO_2

Activity Data sources

Activity data – Sources by activity area - Energy sector
Observed / Collected versus international / generated

Energy Sector			
Category	Fuel type	Data source	Observed / Collected versus international / generated
Energy industries	Fuel oil	Nampower	Collected
	Coal	Nampower	Collected
Mining	Gasolene/Diesel	ECB Project "Energy Policy, Regulatory Framework and Energy Future of Namibia (2011-2013)".	Collected
	Coal	ECB Project "Energy Policy, Regulatory Framework and Energy Future of Namibia (2011-2013)".	Collected
	Waste oil	National statistics.	Generated
Other manufacturing	Gasoline/Diesel	Ministry of Industrialization, Trade and SME Development.	Collected
Domestic aviation	Aviation Gasoline	Airport profile data and national statistics	Collected/generated
	Jet kerosene	Airport profile data and national statistics.	Collected/generated
Road Transport	Gasoline/Diesel	Gasoline and diesel estimated for the different IPCC vehicles classes in the fleet, mileage run by each and fuel consumption indicators for respective years	Generated
	LPG	Import and export data from NSA	Collected
Railways	Diesel/residual	TransNamib	Collected

Activity data – Sources by activity area - Energy sector
Observed / Collected versus international / generated

Energy Sector			
Category	Fuel type	Data source	Observed / Collected versus international / generated
Residential	Kerosene	Import and export data from NSA.	Collected/generated
	LPG	Import and export data from NSA.	Collected/generated
	Wax candles	Ministry of Industrialization, Trade and SME Development and import and export data from NSA	Generated
	Wood fuel	Derived from NSA census data.	Generated
	Charcoal	Derived from NSA census data and import and export data from NSA.	Generated
Agriculture/ fishing	Gasoline	Import and export data from NSA.	Collected/generated
	Diesel	National statistics on consumption and import and export from NSA.	Collected/generated
International aviation bunkers	Jet kerosene	Airport profile data and national statistics.	Collected/generated
International marine bunkers	Diesel	Ministry of Works and Transport, Maritime Affairs.	Collected/generated
	Gasoline	National statistics.	Generated/generated
	Residual fuel oil	SNC and National statistics.	Generated/generated

Activity data sources - Sector IPPU

Activity	Type	AD SOURCES
		NC4
Cement production	Observed	Ohorongo cement – Clicker production
Lime production	Collected	2011 to 2015 generated
Zinc production	Observed	Same as NC3
Lubricant use	Collected	Same as NC3
Paraffin wax use	Collected and generated	2011 to 2015 – Customs info + generated
Solvent use	Collected	Same as NC3
Refrigeration and stationary air conditioning	Collected	GIZ study – Green cooling Africa
Mobile air conditioning	Generated	GIZ study and vehicle population from road transport
Medical N_2O applications	Generated	WHO and NHIES
Food and beverage industry	Collected	2000 to 2015 – Customs info + corrections with WHO data

Activity data sources - Sector AFOLU

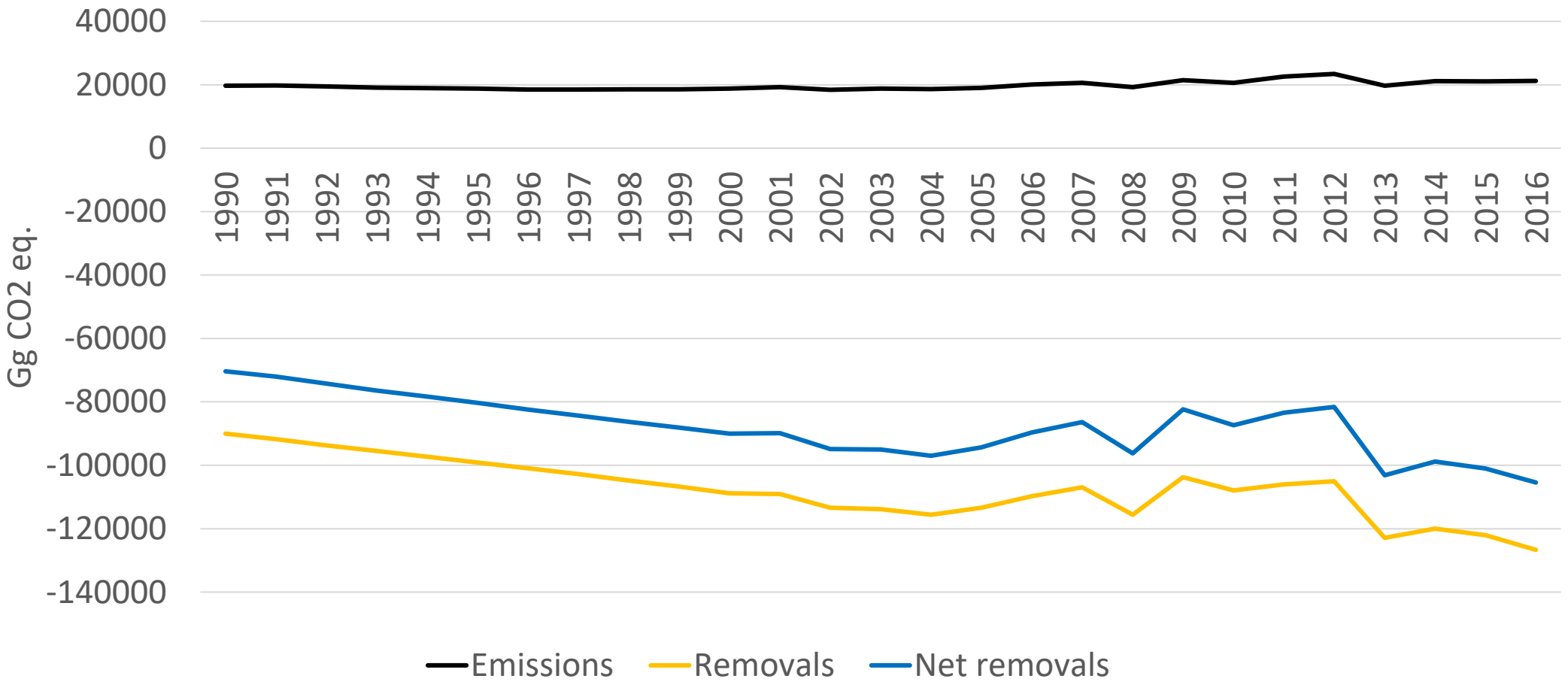
Activity	Type	AD SOURCES
		NC4
Enteric fermentation	Observed, collected and generated	DVS - (2011 to 2014)
Manure management		
Forestland	Collected, generated	Region forest assessment reports + FRA reports + RCMRD info + Atlas of Namibia + Debushing reports - Changes in all land categories except wetlands – Wood removal generated from NHIES survey and wood consumption from literature – Customs info for charcoal
Cropland		
Grassland		
Wetlands		
Settlements		
Biomass burning	Generated and observed	MAWF data from 2000 to 2015
Urea application	Collected	Customs
Direct and indirect N_2O from managed soils	Observed collected and generated	Part of info from livestock and part from Customs (fertilizers)
Indirect N2O from manure management	Observed collected and generated	Digest of Agricultural statistics (1995-2007, 2010) – Superfarm, Meatco, Agricultural bulletins
Harvested Wood Products	Observed and generated	Customs and NHIES

Coverage of sector Waste

Activity	Type	AD SOURCES
		NC4
Solid waste management	Observed, collected and generated	No change except for amount of sludge generated – Urban high and low
Open burning of waste	Generated	NHIES for population data
Domestic wastewater	Collected and generated	NHIES, FAOSTATS
Industrial wastewater	Collected and generated	Abattoirs – Meatco, agricultural statistics Fish catch – Min of fisheries, occasional papers

GHG EMISSIONS

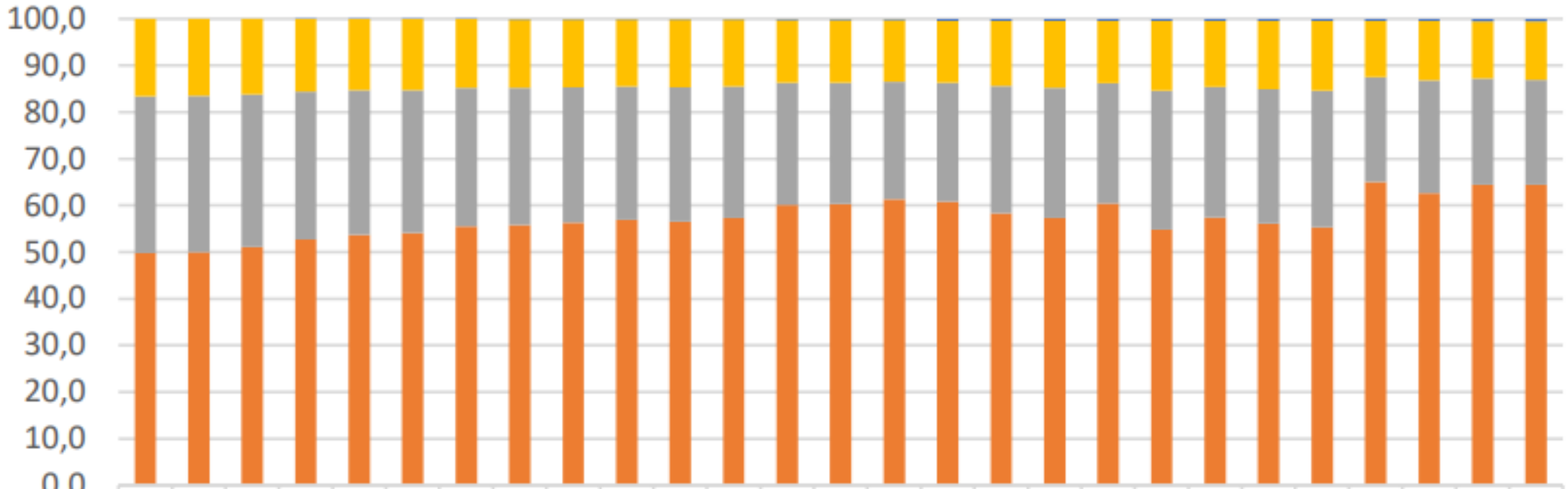
TRENDS OF GREENHOUSE GAS EMISSIONS 1990 to 2016



TRENDS OF GREENHOUSE GAS EMISSIONS 1990 to 2016

- Namibia remained a net GHG sink over the period 1990 to 2016 as the Land category removals exceeded emissions from the other categories.
- The net removal of CO_2 increased by 50% over these 27 years from 70,329 Gg in 1990 to 105,428 Gg in 2016.
- During the same period, the country recorded an increase of 8% in emissions, from 19,692 Gg CO_2-eq to 21,260 Gg CO_2-eq.
- The trend for the period 1990 to 2016 indicates that the total removals from the LAND category increased from 90,021 Gg CO_2-eq in 1990 to 126,688 Gg CO_2-eq in 2016

TRENDS OF GREENHOUSE EMISSIONS BY GAS

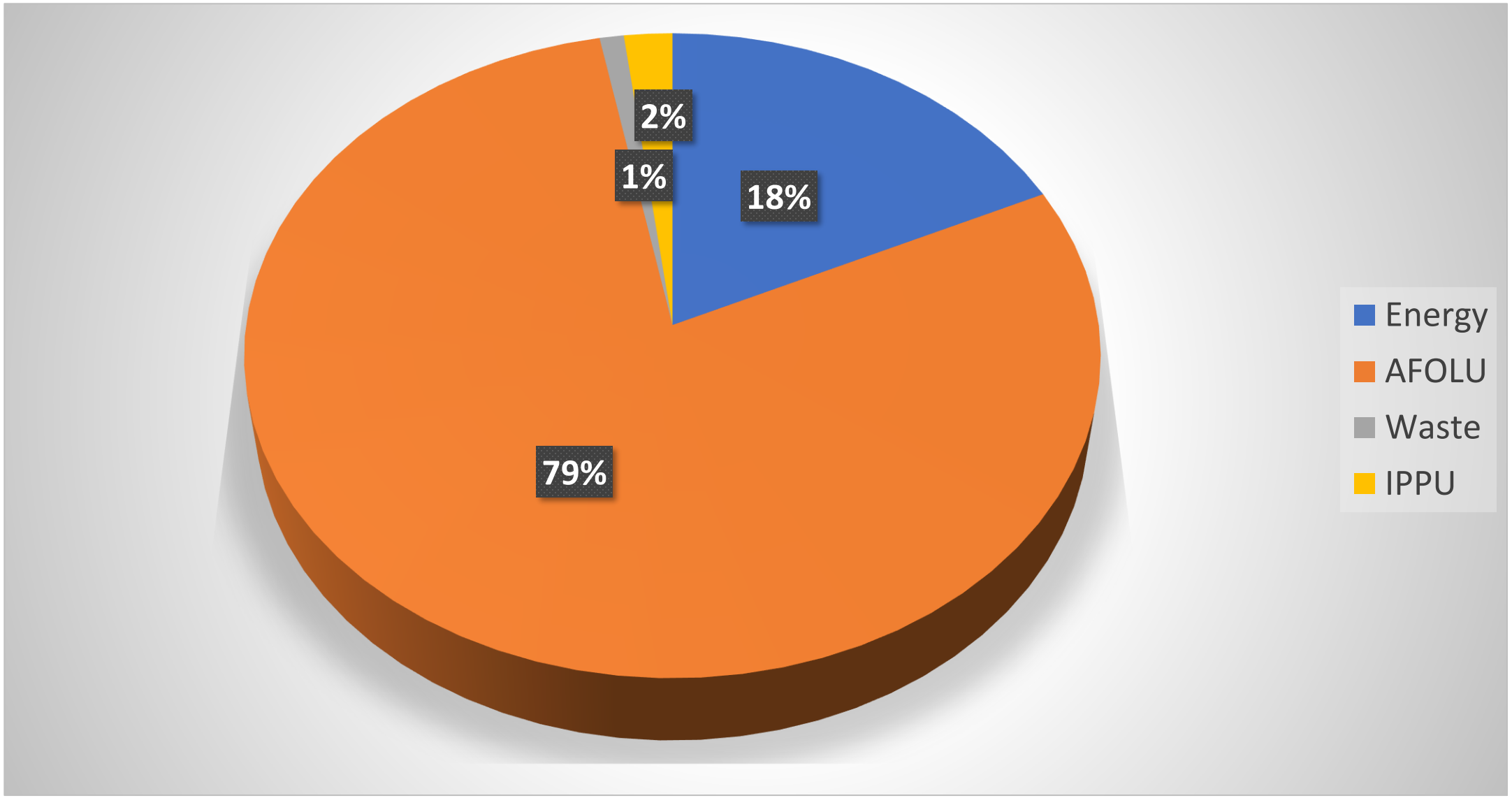


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Halogenated gases	0,0	0,0	0,0	0,0	0,0	0,0	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,3	0,5	0,5	0,4	0,4	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,6
N_2O	16,	16,	16,	15,	15,	15,	14,	14,	14,	14,	14,	14,	13,	13,	13,	13,	14,	14,	13,	15,	14,	14,	15,	12,	12,	12,	12,
CH_4	33,	33,	32,	31,	31,	30,	29,	29,	29,	28,	28,	28,	26,	26,	25,	25,	27,	27,	25,	29,	28,	28,	29,	22,	24,	22,	22,
CO_2	49,	50,	51,	52,	53,	54,	55,	55,	56,	56,	56,	57,	60,	60,	61,	60,	58,	57,	60,	54,	57,	56,	55,	65,	62,	64,	64,

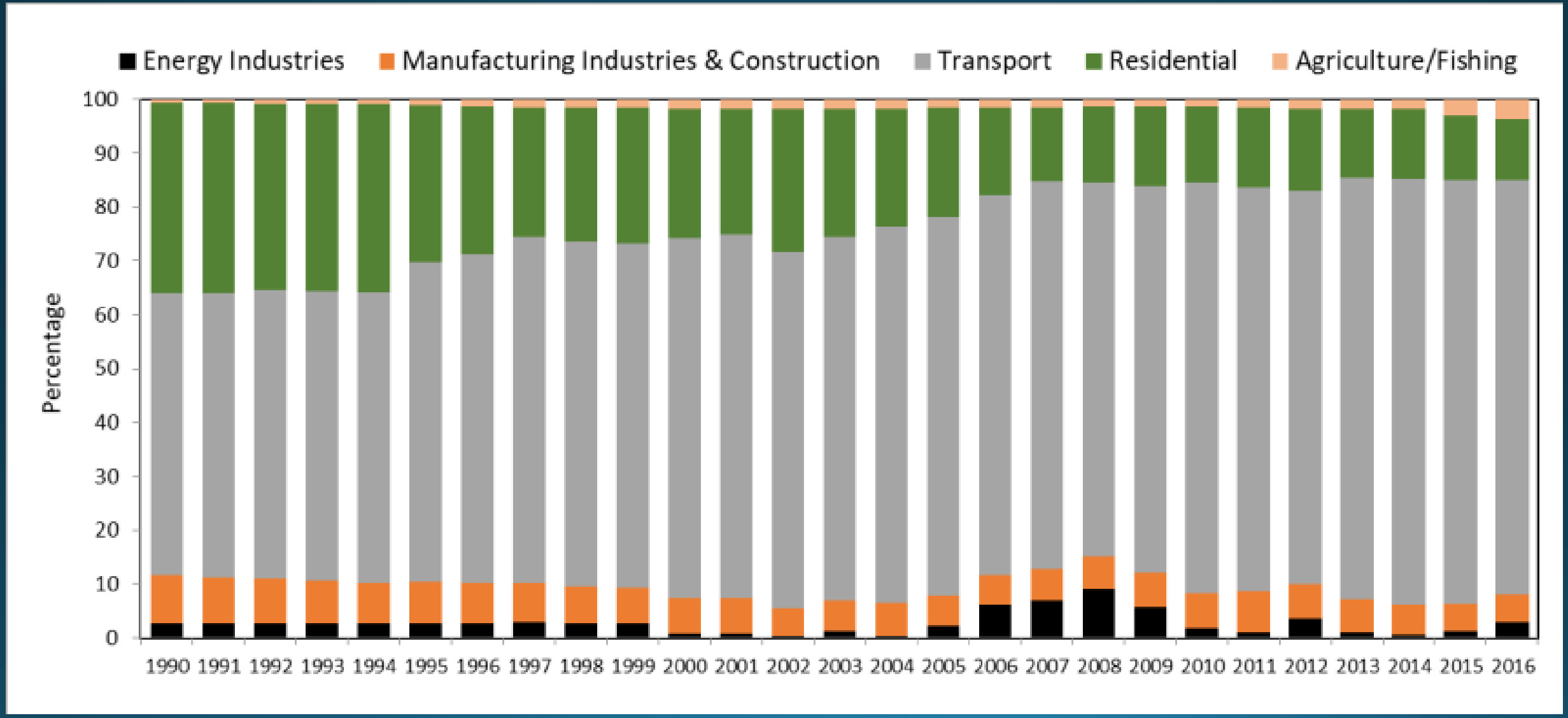
TRENDS OF GREENHOUSE EMISSIONS BY SECTOR

- The AFOLU sector remained the leading emitter throughout this period followed by Energy, for all years under review.
- Following the setting up of new industries, the IPPU sector took over as the third emitter in lieu of the Waste sector as from the year 2005
- Waste emissions on the other hand increased steadily but slowly over this period.

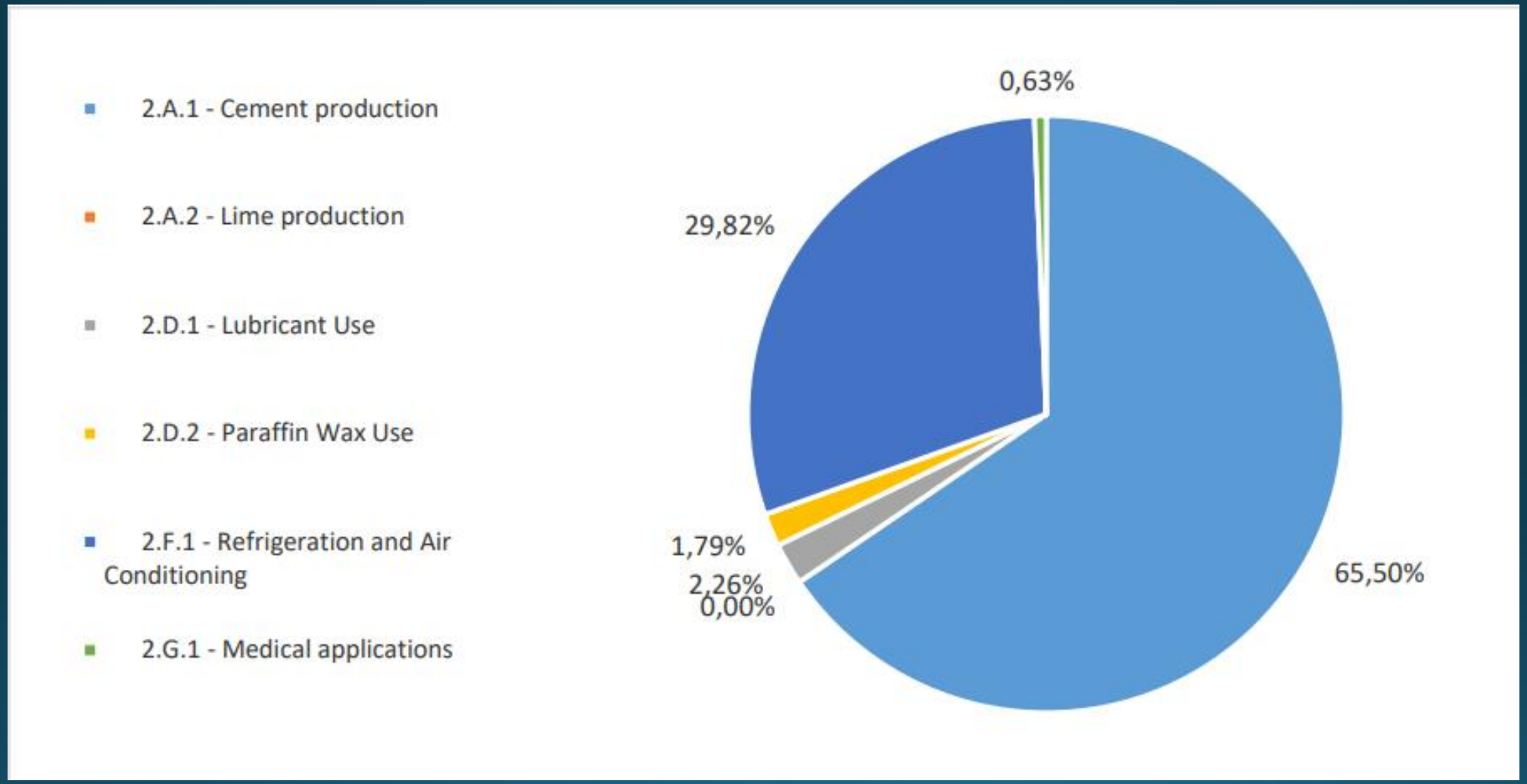
Emissions per sector



Energy

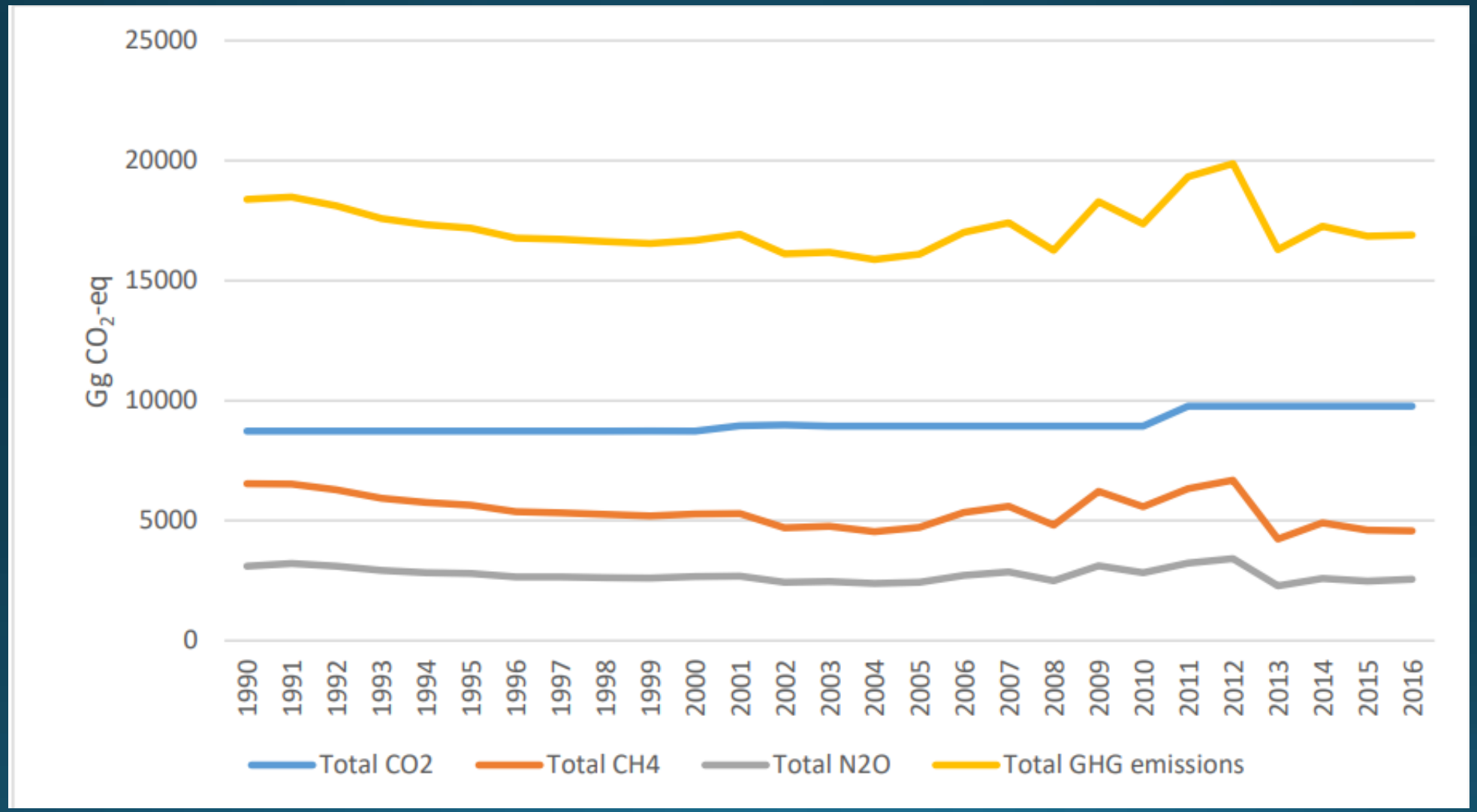

Energy Industries
Manufacturing Industries & Construction
Transport
Residential
Agriculture/Fishing
Percentage
100
90
80
70
60
50
40
30
20
10
0
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016

IPPU



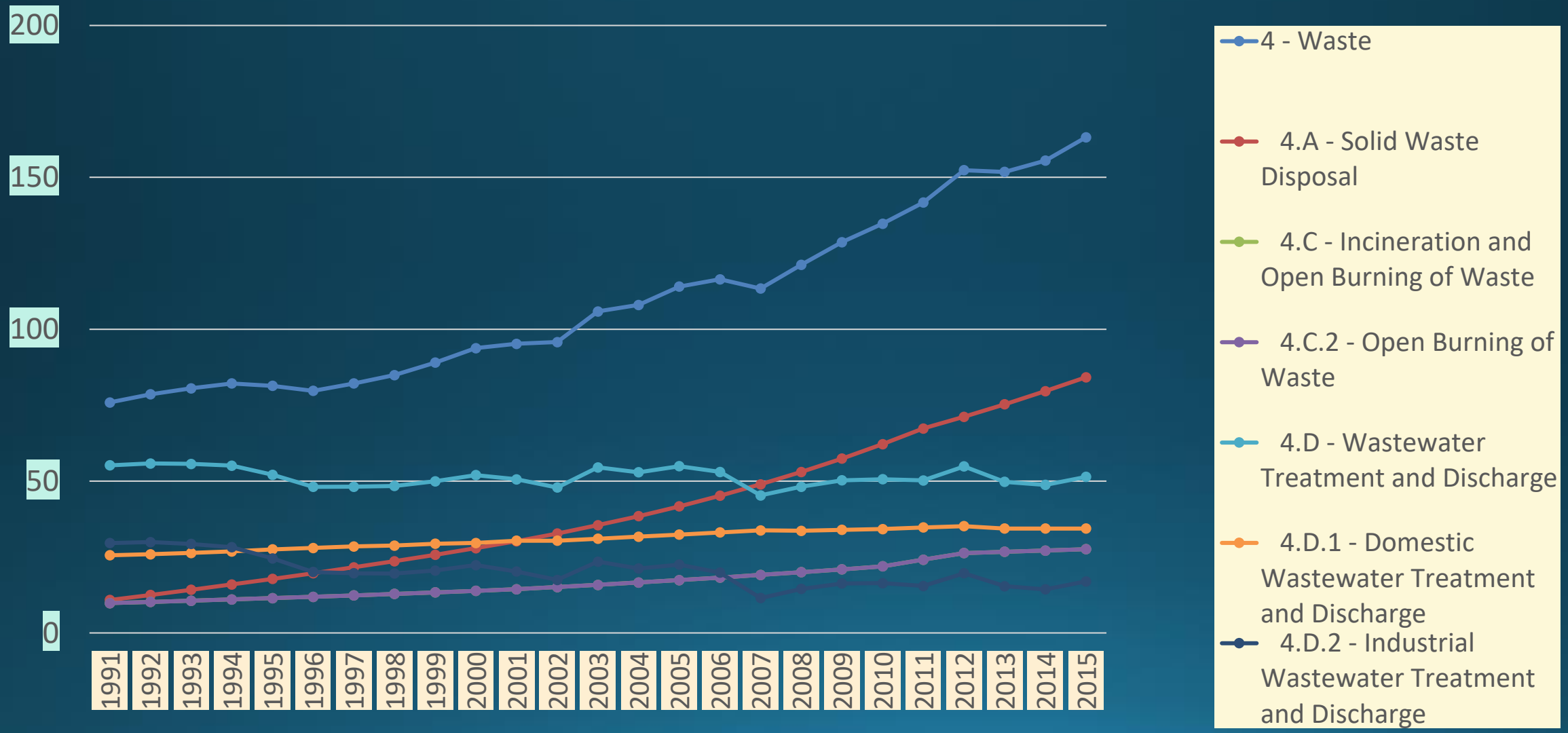
NC4 – 1.9 % of national

AFOLU



NC4 – 83 %
of national

Waste


200
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2015
4 - Waste
4.A - Solid Waste Disposal
4.C - Incineration and Open Burning of Waste
4.C.2 - Open Burning of Waste
4.D - Wastewater Treatment and Discharge
4.D.1 - Domestic Wastewater Treatment and Discharge
4.D.2 - Industrial Wastewater Treatment and Discharge

CHALLENGES

- Lack of formalised institutional arrangements for both data sharing and archiving
- Limited institutional capacity within NSA, academia and coordinating unit in MEFT
- Lack of activity data and data confidentiality issues
- Absence of a hosting platform
- Staff turn-over
- Lack of inter-ministerial and ministerial coordination
- Lack of a legal framework
- Lack of EFs to better represent national circumstances.

Lessons Learned and/or Best Practices

- Development of templates for data collection
- Consultations collaboration with stakeholders is key
- Avoiding gaps between one report to the next
- Establishing working groups and identifying sector leads.
- Having a dedicated unit to coordinate the GHG management system
- Use already existing structures and frameworks

Next Steps

- Currently developing MRV portal for data storage and archiving
- Develop a full National Inventory Improvement Plan (NIIP)
- Develop country specific EF for emerging key categories
- Develop and implements a full QA/QC plan
- Continue with data collection to fill data gaps in order to improve transparency
- Draft and implement MoAs with data providers and NSA for archiving and data storage
- Further capacity building of the working group members

Thank You!