Launching Workshop on Cambodia's 1st BUR under the UNFCCC

Mondulkiri, 10-11 September 2020

GHG-I Report of Cambodia's 1st BUR under UNFCCC

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DDG of GDEKI/MoE

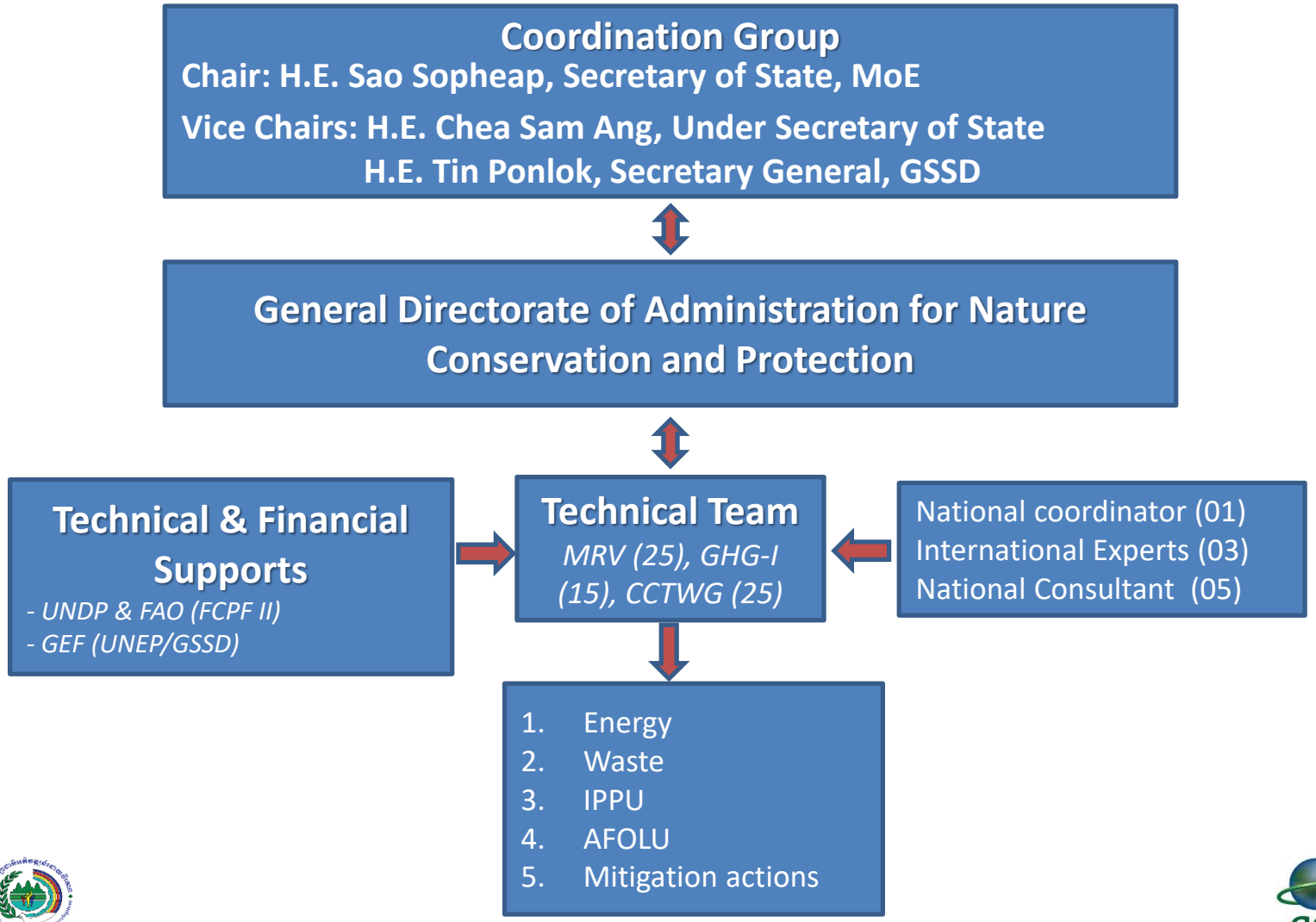
Goal & Objective

General goal: *To make BUR report available in time for MoE to apply for REDD+ Result Based Payment (RBP) from Green Climate Fund (GCF)*

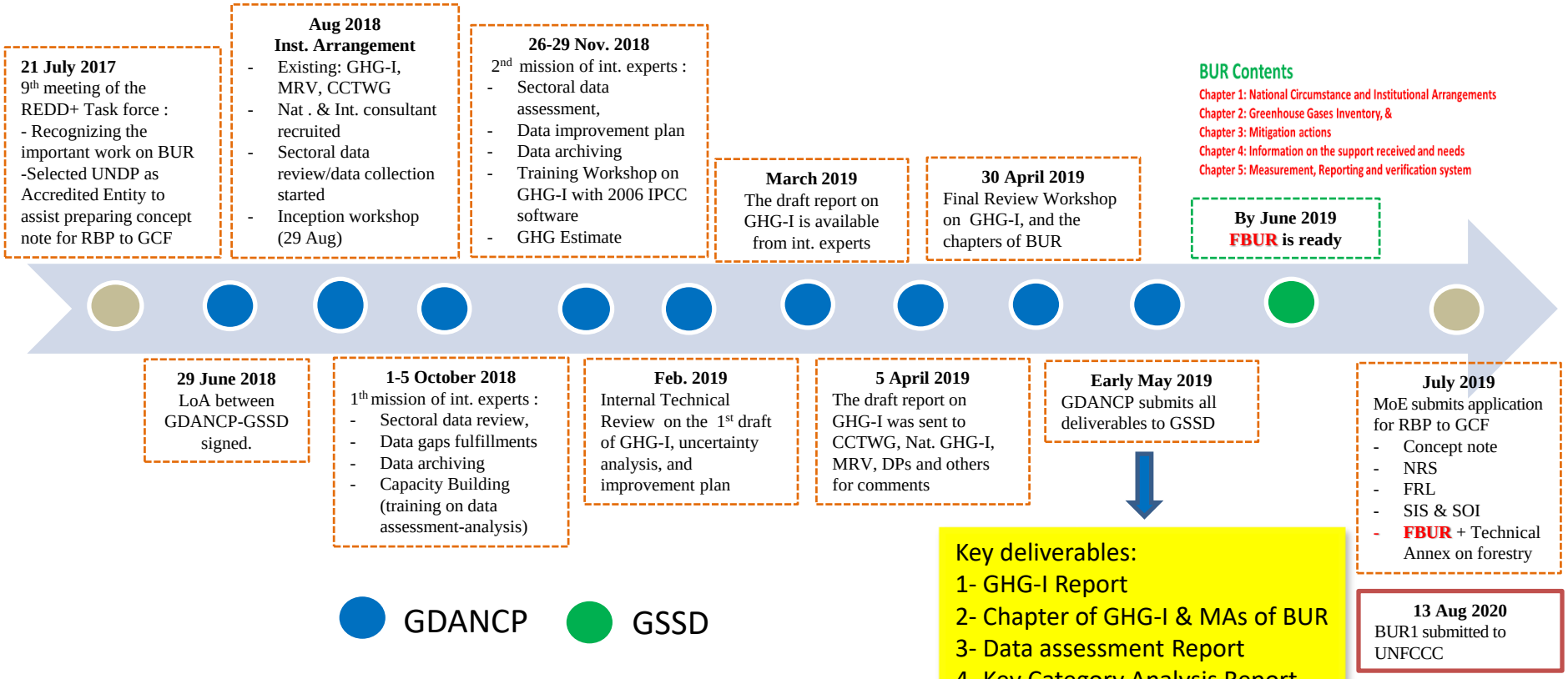
Specific Project objectives:

1. *The estimation of the national GHG emissions by sources and sink 2000 - 2016;*
2. *The development of the BUR chapters (GHG-I & mitigation actions).*

Inst. Arrangement and WG for this special report preparation



Report Preparation Process and key deliverables



Key deliverables:
1- GHG-I Report
2- Chapter of GHG-I & MAs of BUR
3- Data assessment Report
4- Key Category Analysis Report
5- Mission Reports (1&2)
6- Datasheets (Data archiving)

Photo Gallery: Training activities

Summary Result

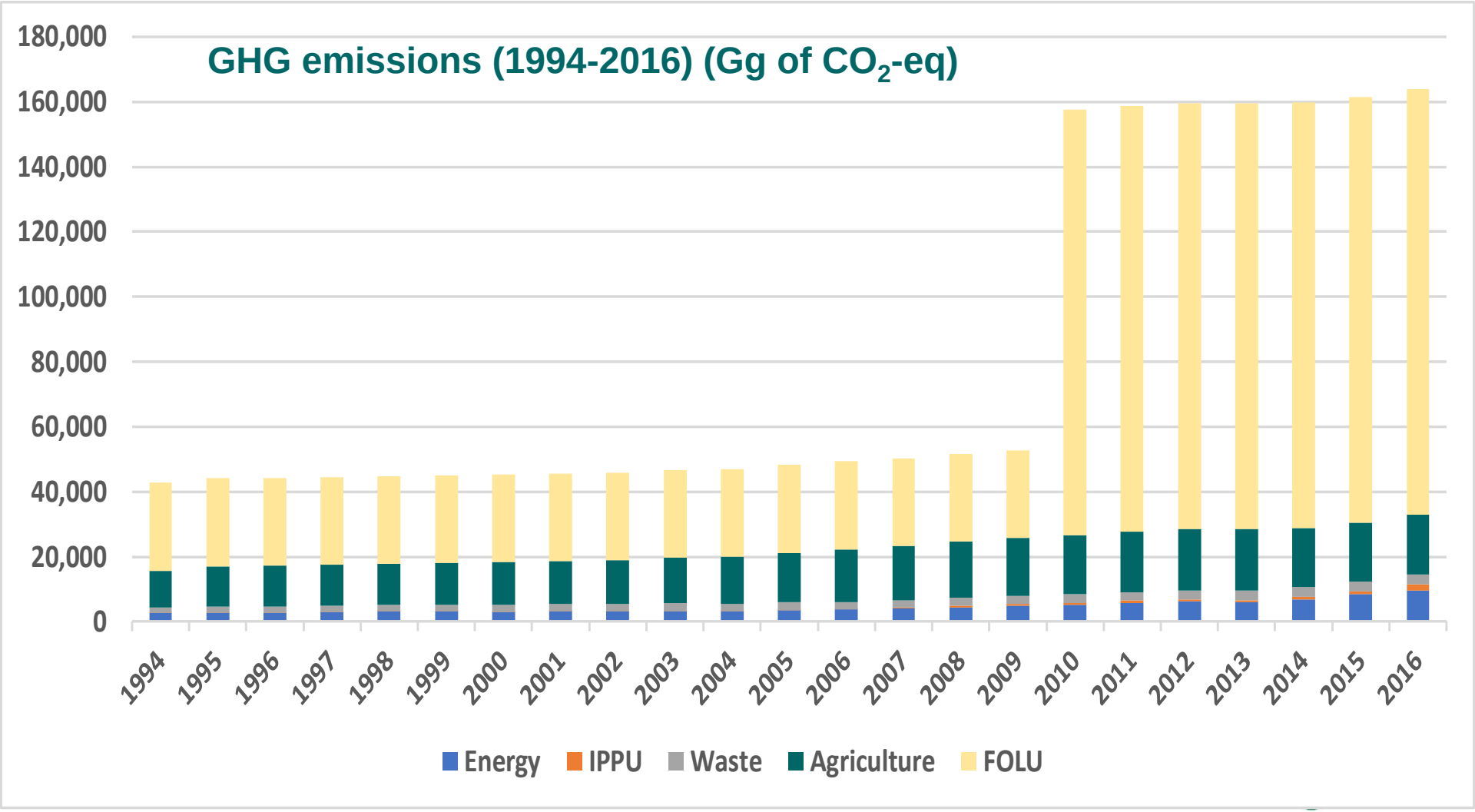
1. National GHG Inventory

Trend of emissions (GHG, Gg CO2-eq)

Inventory Sector	1994	2000	2005	2010	2015	2016
Energy	2690.95	3102.73	3454.41	5306.37	8356.31	9601.61
IPPU	3.81	6.04	12.73	492.84	1001.38	1821.15
Waste	1756.18	2111.61	2415.89	2633.62	2974.53	3050.67
Agriculture (3A + 3C)	11202.58	13032.31	15336.38	18136.08	18068.35	18397.67
Forest and Other Land Use (FOLU) (3B)	27018.62	27018.62	27018.62	131011.24	131011.24	131011.24
Total (without FOLU)	15653.52	18252.70	21219.42	26568.91	30400.57	32871.10
Total (with FOLU)	42672.14	45271.32	48238.04	157580.15	161411.82	163882.35

Key Reports and Findings

1. National GHG Inventory



Key messages

- The national GHG inventory includes emissions for the years 1994-2016 of the gases CO_2, CH_4, N_2O and HFC and the sectors of Energy, Industrial Processes and Product Use (IPPU), Agriculture, Forestry and Other Land Use (AFOLU) and Waste.

- The inventory has been calculated following the methodologies of the 2006 IPCC Guidelines. The global warming potentials uses are those of the Fourth Assessment Report of IPCC, based on the effects of GHGs over a 100-year time horizon. Data used are tier 1and tier 2 mostly.

- The major contributor to the GHG emissions during the entire period is the Forest and Other Land Use sector (FOLU). The second largest emitter sector in the country is the Agriculture sector. The third and fourth largest emitter sectors in the country are the Energy and Waste sectors. The fifth contributor the national total GHG emissions is IPPU.

- Emissions (including FOLU) per capita have increased from 4.00 to 10.44 tonnes $CO_{2\text{-eq}}$/ inhabitant/year (with FOLU), and emissions per capita have increased from 1.47 to 2.09 tonnes CO2-eq/ inhabitant/year (without FOLU).

- Conversely, GHG emissions (including FOLU) per unit of GDP have been reduced from a 15.41 to 8.26 tonnes $Co_{2\text{-eq}}$/thousand USD/year. Without FOLU, emissions per unit of GDP have decreased from 5.65 to 1.66 tonnes $Co_{2\text{-eq}}$/thousand USD/year. This reduction is due to the fact that the expansion of GDP is significantly higher than the increase of GHG emissions.

Key Result by sector

Energy

Waste GHG emissions show an increasing trend in all categories. The **increased population** and **GDP** are the main drivers for the emissions of the energy sector.

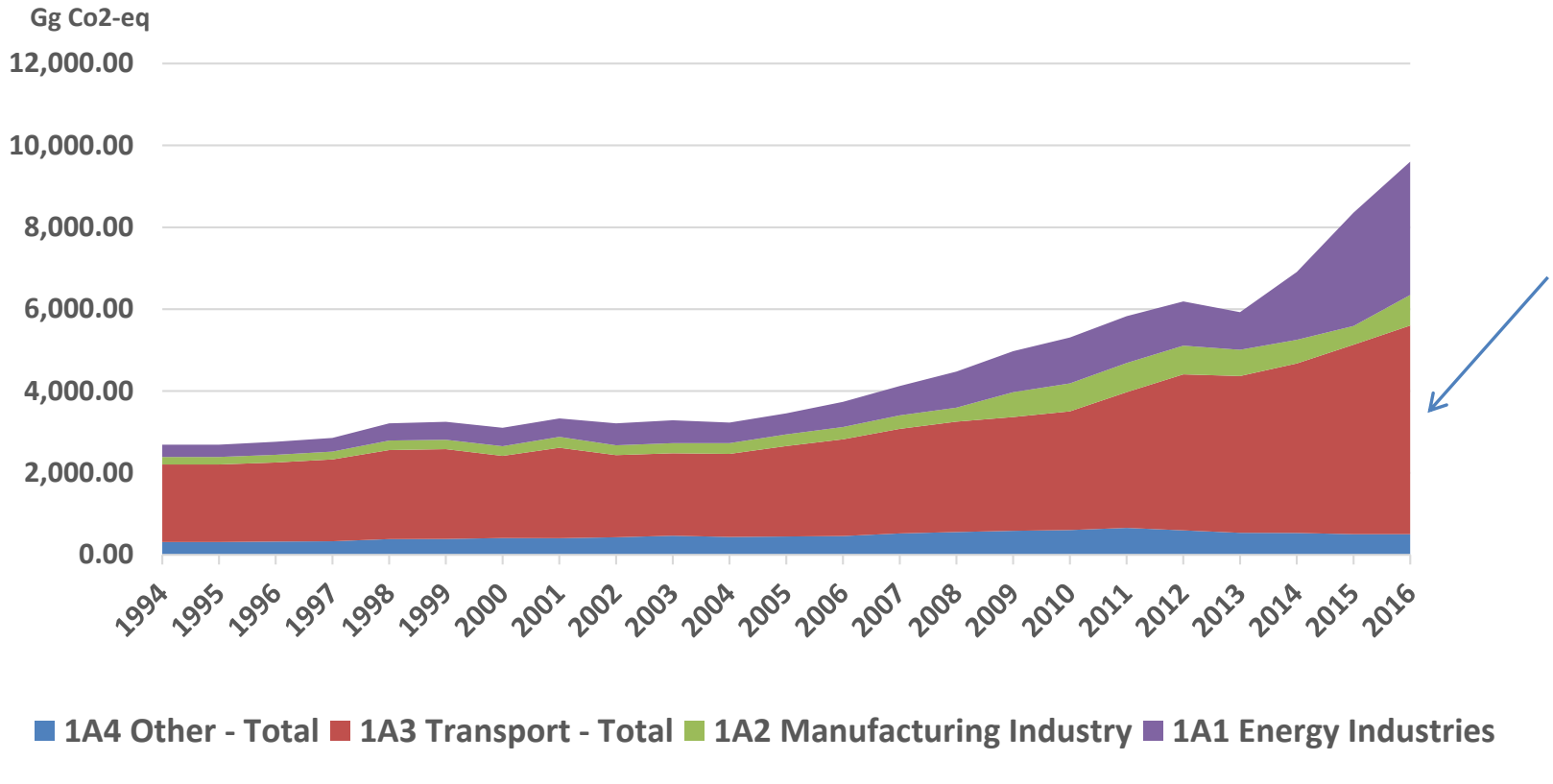
The **energy demand** has experienced a **significant increase**, **transport sector is expanding**, and the **population is migrating to cities**; all these factors combined led to increasing fuel consumption and higher GHG emissions in the energy sector.

GHG, Gg CO2-eq

Emission source	1994	2000	2005	2010	2015	2016
1A1 Energy	298.87	450.75	512.49	1 120.27	2 766.58	3 255.58
1A2 Manufacturing construction	186.38	236.59	287.03	682.46	458.28	746.19
1A3 Transport	1 892.04	2 003.53	2 205.42	2 897.00	4 625.81	5 094.21
1A4 Other (commercial/residenti /public services)	313.66	411.87	449.47	606.64	505.64	505.64
Total	2 690.95	3 102.73	3 454.41	5 306.37	8 356.31	9 601.61

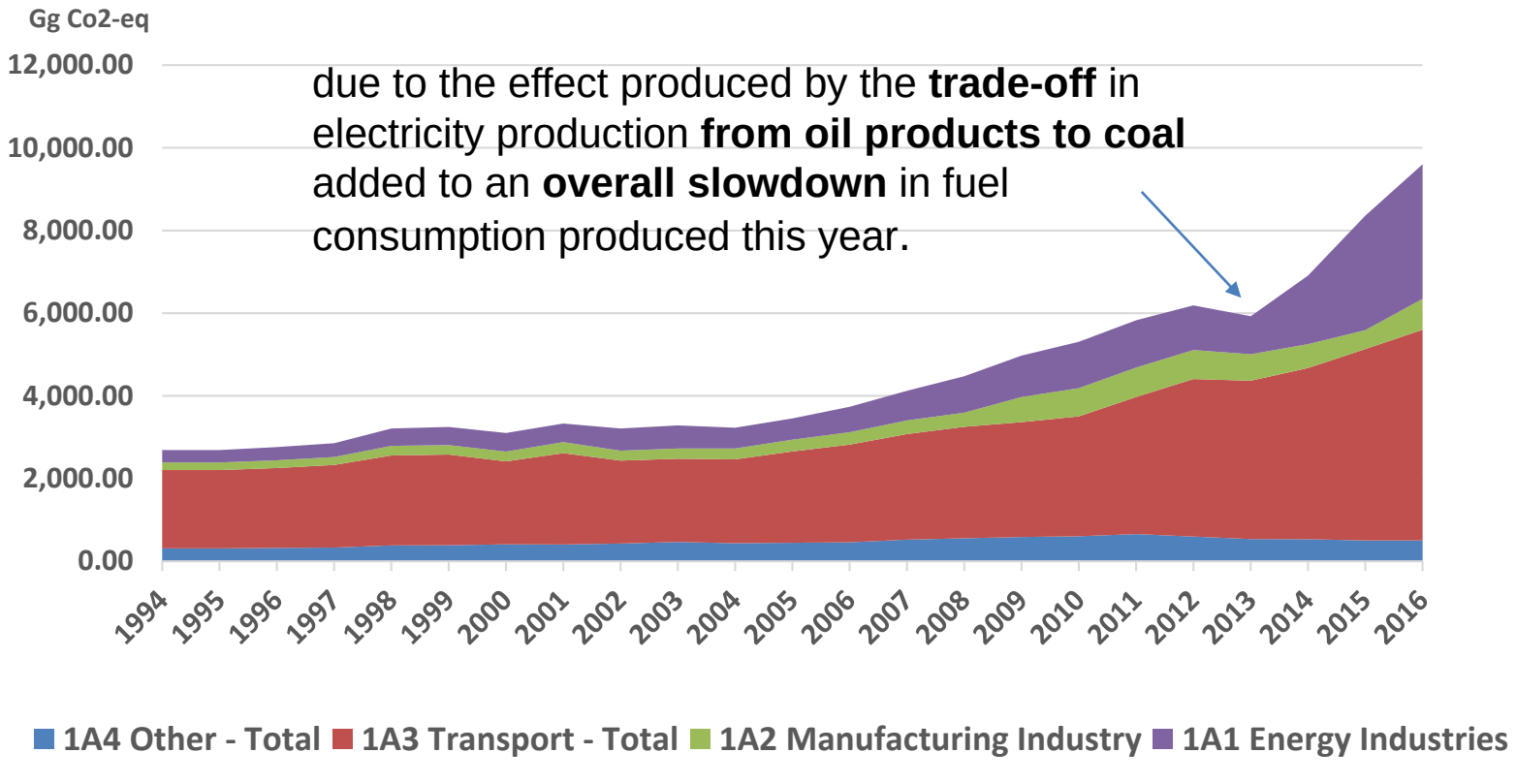
Energy

The main contributor to the emissions of the sector the main contributor to energy sector emissions is **transport** (category 1A3), with a contribution that ranges from a 70.5% in 1994, to a 52.9% in 2016.



Energy

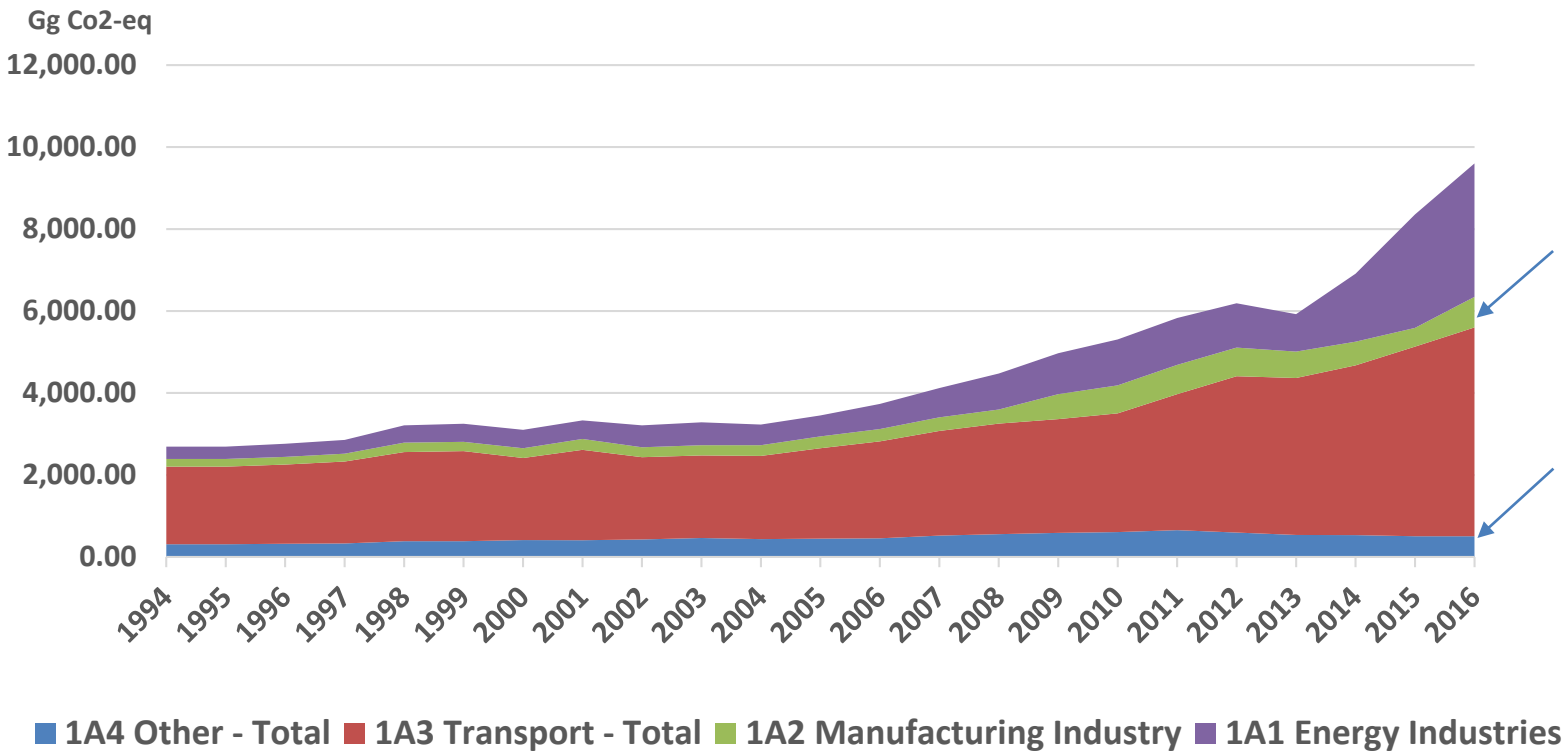
The second contributor to GHG emissions of the energy sector is **energy industries** (category 1A1), with a contribution that ranges from a 11.1% in 1994 to a 33.8% in 2016.



Energy

The third contributor to the emissions is the sector **other** (category 1A4), with a contribution that ranges from a 11.4% in 1994 to a 5.2% in 2016

The fourth contributor to the emissions is the sector is **manufacturing and construction industry, which** contributes with a 7.0% of emissions in 1994 and increased up to 8.2 in year 2016.



IPPU

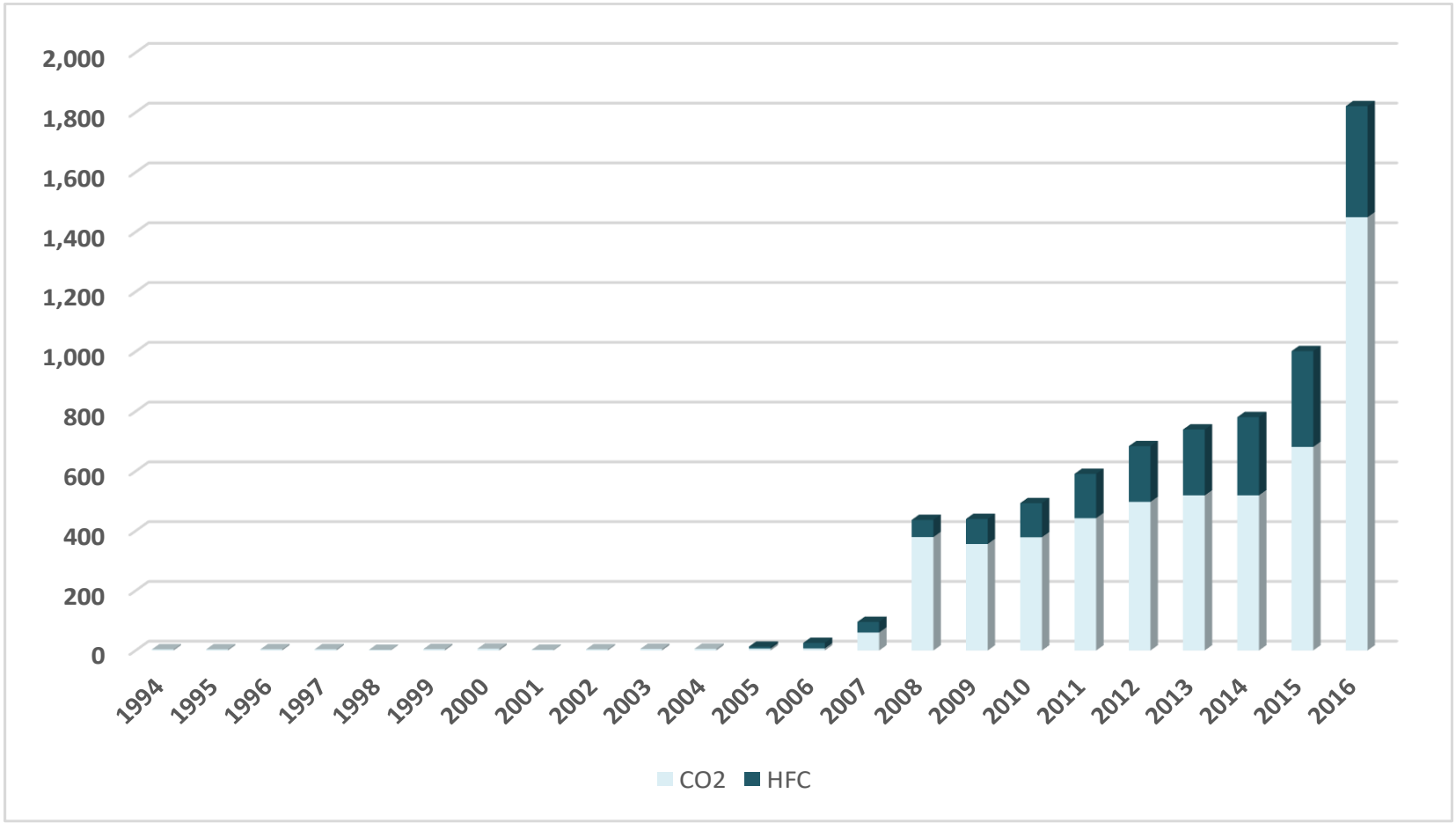
IPPU GHG emissions show an increasing trend in all emission categories. The increasing consumption of F-gases and production of cement, in turn motivated from an increasing GDP trend, are the main drivers of the sector.

GHG, Gg CO2-eq

Emission source	1994	2000	2005	2010	2015	2016
2A1. Cement production	NE	NO	NO	370	653	1 421
2D1. Lubricants	3.81	6.04	6.41	8.60	28.25	28.50
2F. Subst. for ODS (F-gases)	NO	NO	6.32	114.10	320.24	371.68
Total	3.81	6.04	12.73	492.84	1 001.38	1 821.15

IPPU

Emission by gas (Gg CO2-eq)



Waste

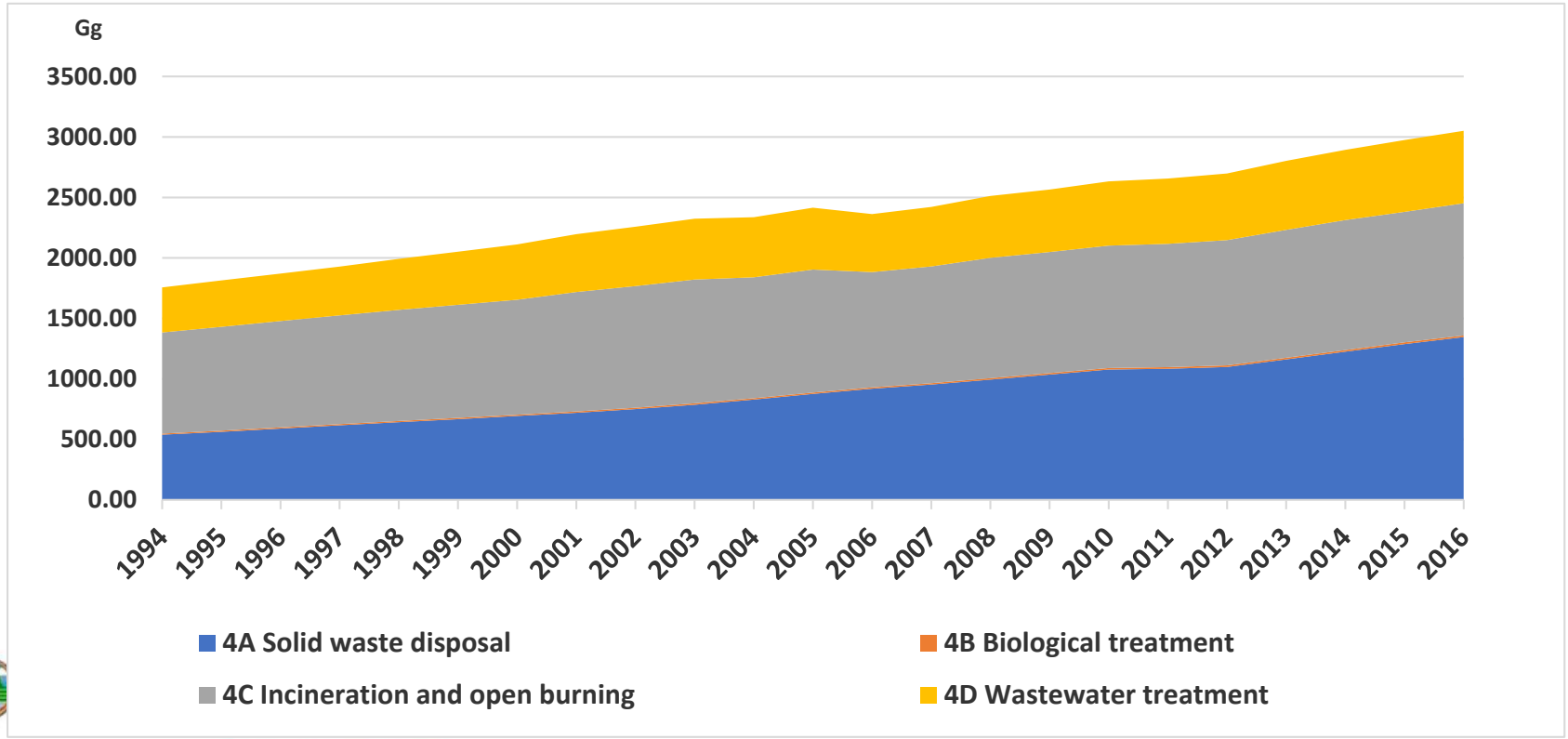
Waste GHG emissions show an increasing trend in all categories. The **increased population** and the **changes in waste management and sanitation** are the main drivers for the emissions of the waste sector.

GHG, Gg CO2-eq

Emission source	1994	2000	2005	2010	2015	2016
4A Solid waste disposal	539.20	693.44	875.61	1 077.14	1 288.36	1 345.77
4B Biological treatment	8.81	10.57	11.74	12.99	13.69	13.92
4C Incineration and Open Burning	836.27	950.24	1 016.52	1 011.41	1 079.29	1 093.05
4D Wastewater treatment and discharge	371.91	457.35	512.02	532.09	593.18	597.93
Total	1 756.18	2 111.61	2 415.89	2 633.62	2 974.53	3 050.67

Waste

The main contributor to the emissions of the sector is category 4A Solid waste disposal followed by 4C Incineration and open burning and 4D Wastewater treatment and discharge. Biological treatment of waste emissions are not yet significant. The evolution of the emissions is explained by the evolution of waste and wastewater practices (see assumptions).

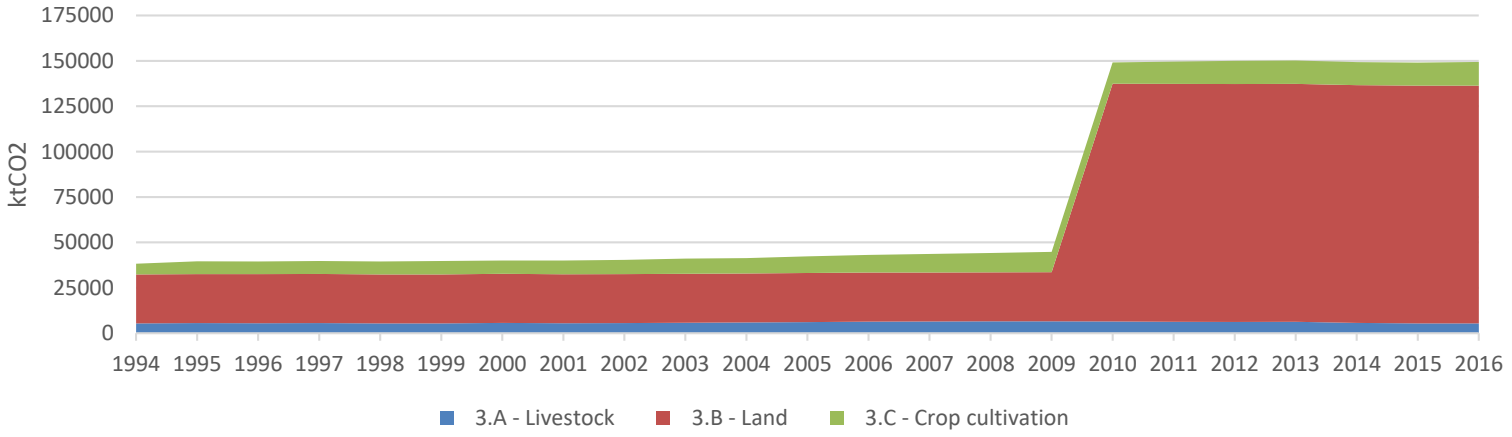


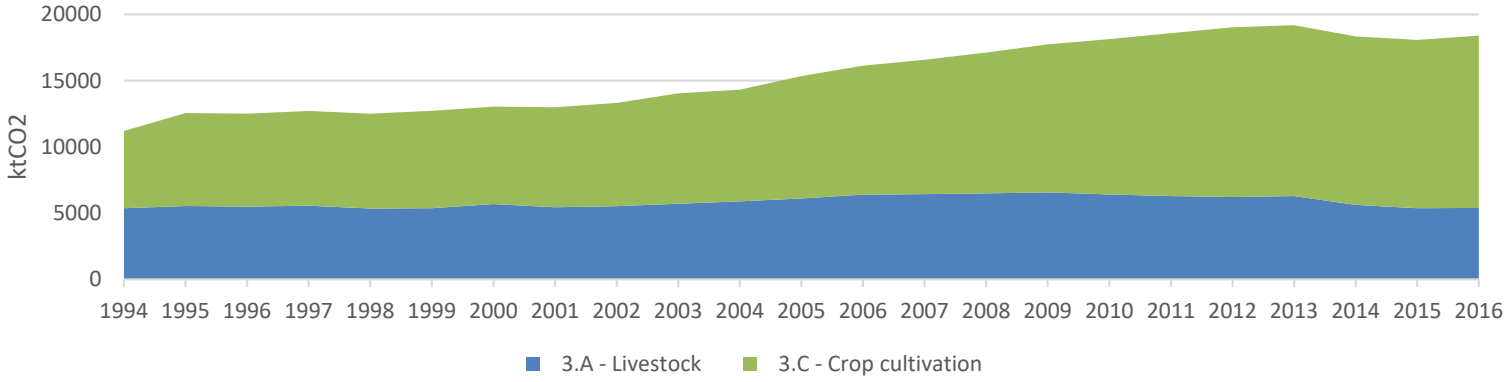
AFOLU

Categories \ Emissions & removals ($ktCO_2e$)	1994	2000	2005	2010	2015	2016
Total	**38 221**	**40 051**	**42 355**	**149 147**	**149 080**	**149 409**
3.A - Livestock	5 371	5 679	6 100	6 400	5 363	5 385
3.A.1 - Enteric Fermentation	4 249	4 525	4 756	5 118	4 173	4 188
3.A.2 - Manure Management	1 121	1 154	1 344	1 282	1 190	1 196
3.B - Land	27 019	27 019	27 019	131 011	131 011	131 011
3.C – Crop cultivation	5 832	7 353	9 236	11 736	12 706	13 013
3.C.1 - Biomass burning	134	143	148	160	169	156
3.C.2 - Liming	0	0	0	0	0	0
3.C.3 - Urea application	2	2	2	30	17	17
3.C.4 - Direct N2O from managed soils	684	764	850	1 000	974	944
3.C.5 - Indirect N2O from managed soils	266	293	329	388	440	404
3.C.6 - Indirect N2O from manure management	144	158	171	182	166	169
3.C.7 - Rice cultivation	4 603	5 994	7 737	9 977	10 939	11 323
3.C.8 – Other	0	0	0	0	0	0
3.D - Other	0	0	0	0	0	0

AFOLU

Two different periods are actually monitored for the category 3B (2006-2010 and 2010, 2014). It leads to a **very large** emissions for the most recent years.
CH_4 from rice is also increasing a lot in relation with **rice development i**n Cambodia.





Improvement Plan

- Archiving system
- Inventory Compilation team
- Institutional arrangements and roles and responsibilities
- Improvement of AD & EF
- Improvement of national statistics and ensure the consistency of the time series

THANK YOU