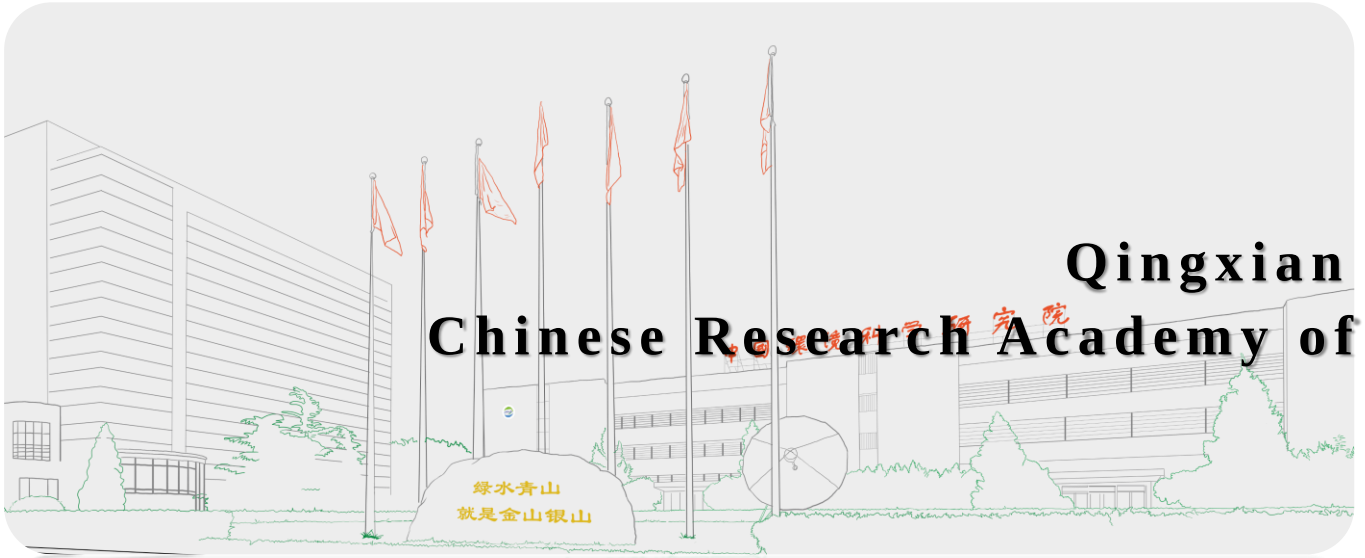
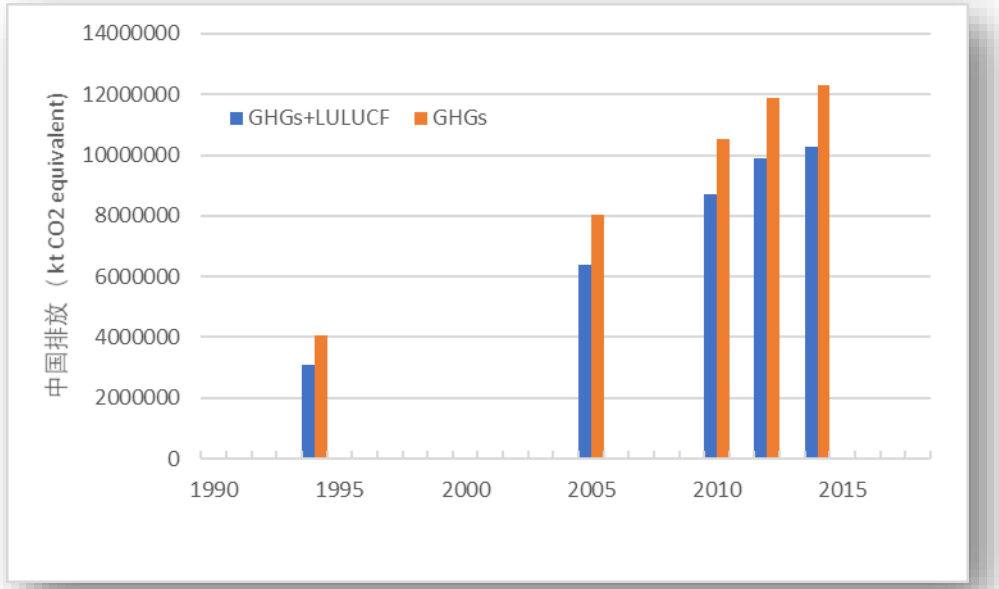
Brief Introduction of China's second BUR



Qingxian Gao

Chinese Research Academy of Environmental Sciences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中国排放（kt CO2 equivalent）
GHGs+LULUCF
GHGs
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1995
2000
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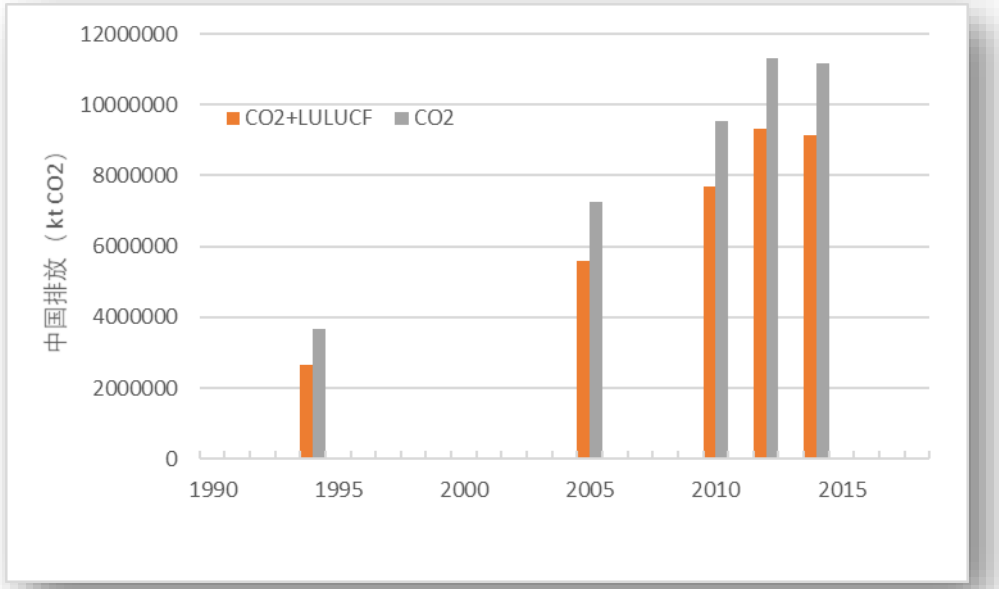
2015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中国排放（kt CO2）
CO2+LULUCF
CO2
1990
1995
2000
2005
2010
2015

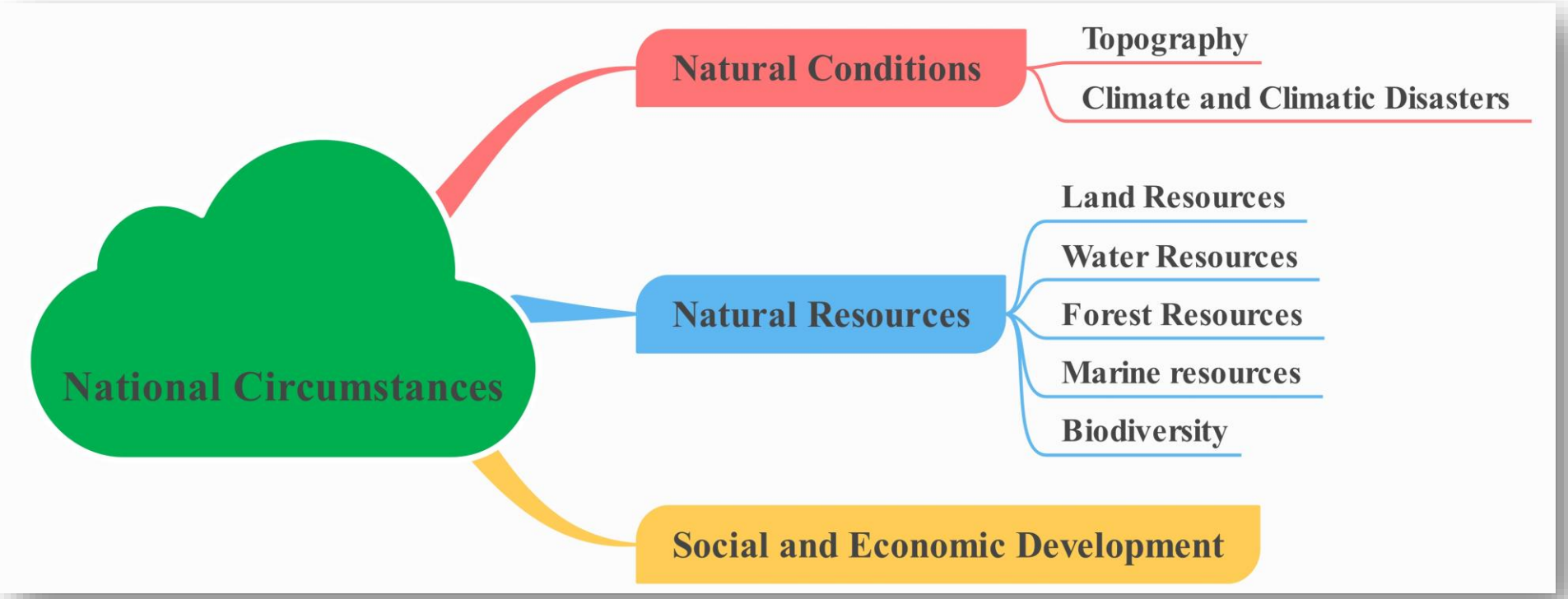
《中华人民共和国气候变化初始国家信息通报》(INC)
Inventory Year: 1994
2004
《中华人民共和国气候变化第一次两年更新报告》(1BUR)
Inventory Year: 2012
2017
中华人民共和国气候变化第三次国家信息通报》(TNC)
Inventory Year: 2010
2019
《中华人民共和国气候变化第二次国家信息通报》(SNC)
Inventory Year: 2005
2012
《中华人民共和国气候变化第二次两年更新报告》(2BUR)
Inventory Year: 2014
2019

Contents

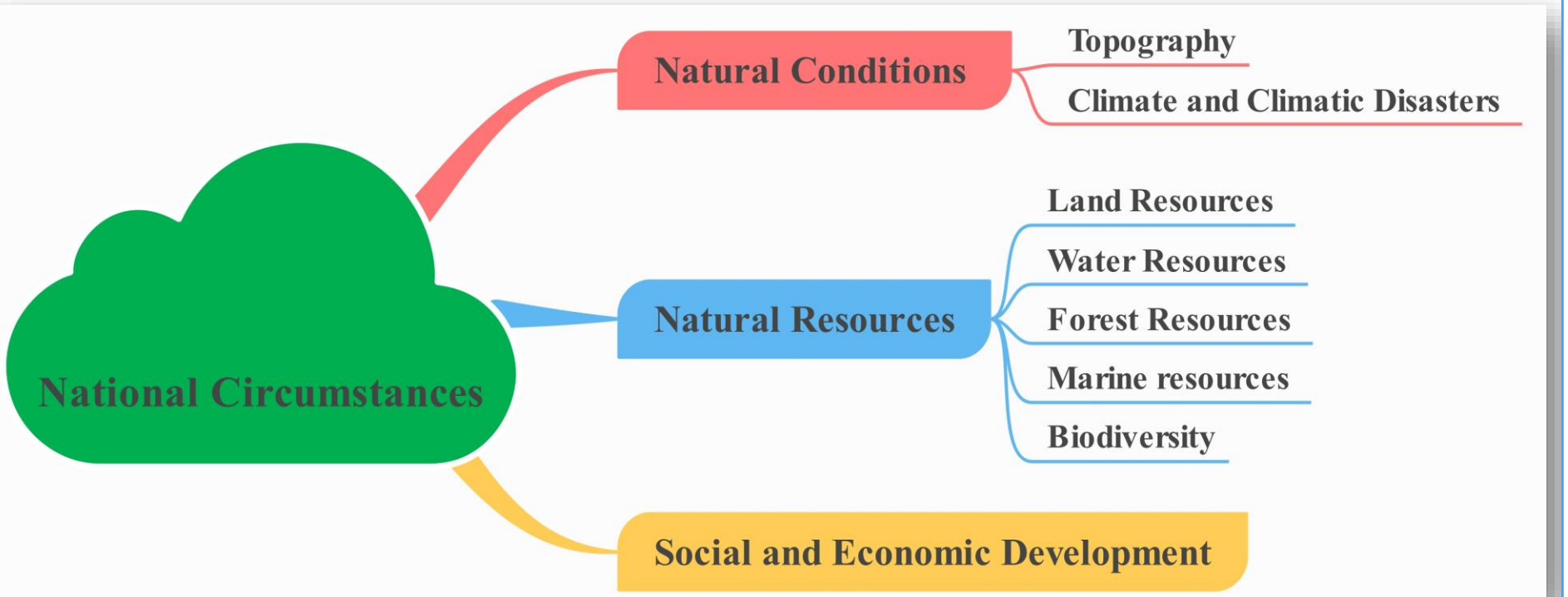
- Background
- National Circumstances and Intuitional Arrangements
- National Greenhouse Gas Inventory
- Mitigation Actions and their effects
- Basic information of HK SAR on addressing Climate Change
- Basic Information of Macao SAR on addressing Climate Change

Part I National Circumstances and Institutional Arrangements

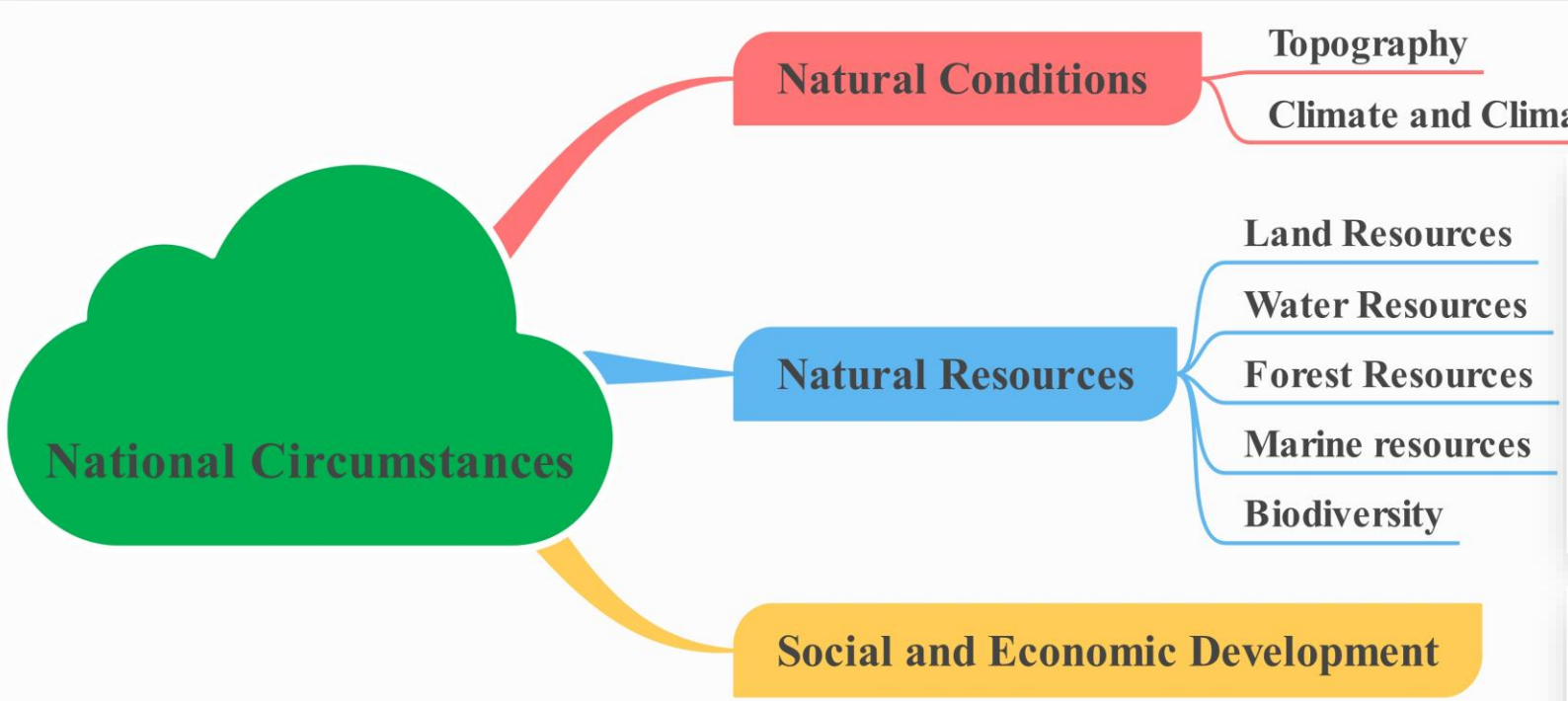
- National Circumstances
- National Institutional Arrangements for Addressing Climate Change



- Vary Significantly
- Complexity and diversity
  - Monsoon climate
  - Temperate continental climate
  - Alpine climate
- Frequent disastrous weather
  - Drought
  - Floods
  - Cold waves
  - Typhoons
  - Sandstorms



- FR-rank high 【area and stock】
  - Forest resources uneven
  - Per capita are lower than the global average.
- MR-wide see areas, Rich in
  - Marine organisms
  - Marine minerals
  - Ocean space
  - Ocean water
  - Marine renewable energy
- BD-protection of BD
  - Diversity of ecosystems
  - Diversity of species



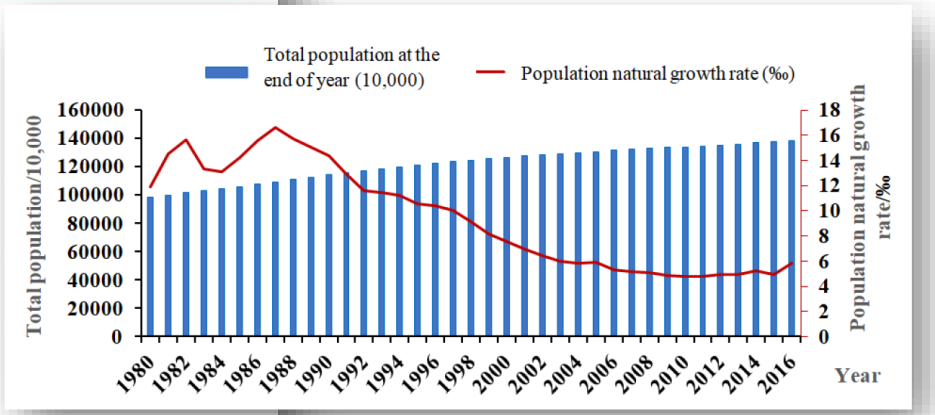
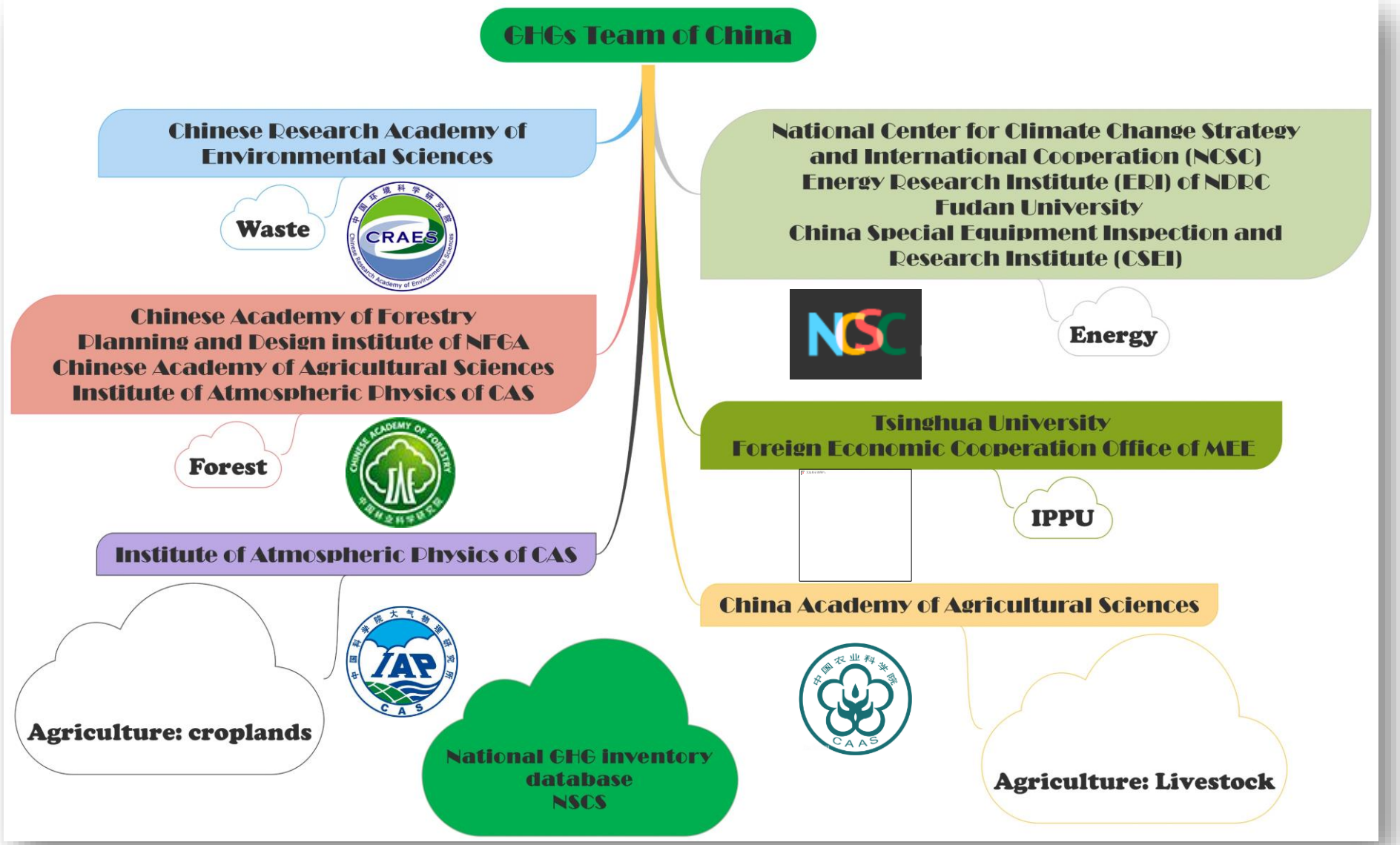


Table 1-1 Population Indicators of China and the World in 2016

Population Indicators	China	World
Population natural growth rate (‰)	5.86	11.24
Birth rate (‰)	12.95	18.89
Mortality rate (‰)	7.09	7.65
Average life expectancy (years)	76.5	71.9

Source: *China Health Statistical Yearbook 2018*, *China Statistical Yearbook 2018*, and the statistical database from the World Bank.

Main Organizations Involved in 【NC, BUR and NGI】



Part II National Greenhouse Gases Inventory

- Scope and Methodologies
- National GHG Inventory in 2014
- QA/QC
- Information on Inventories in Previous Submissions

Scope and Methodologies

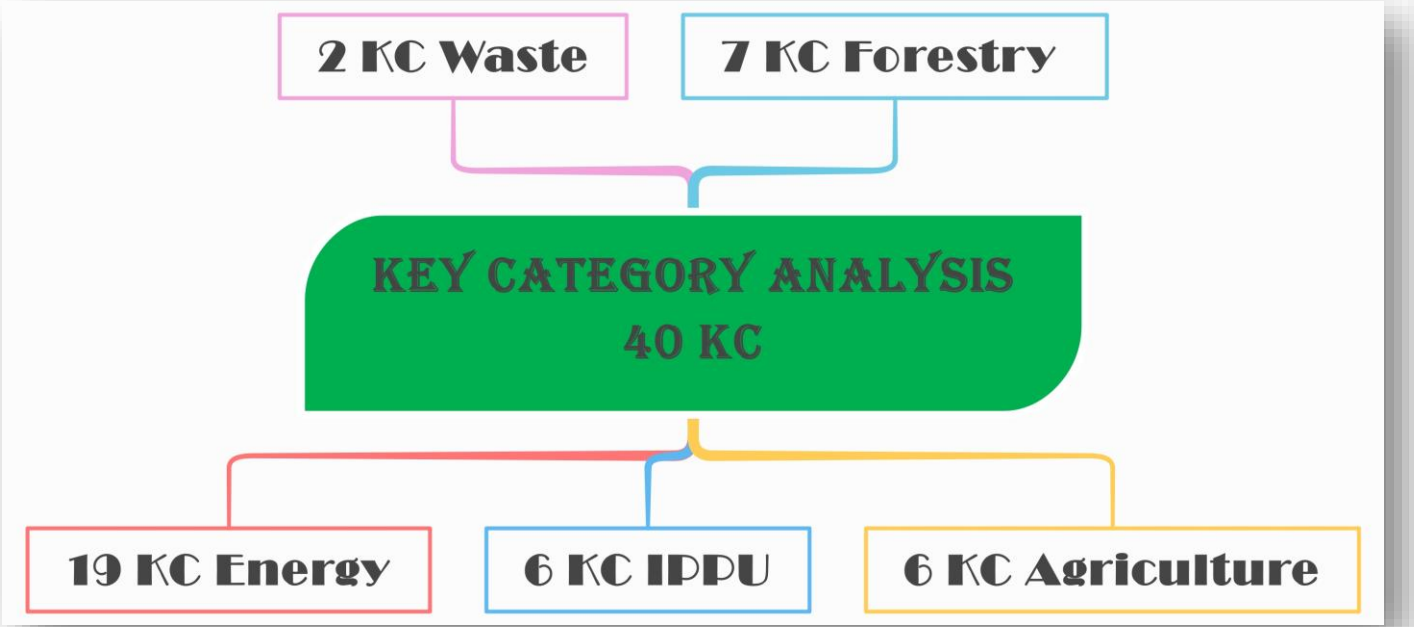
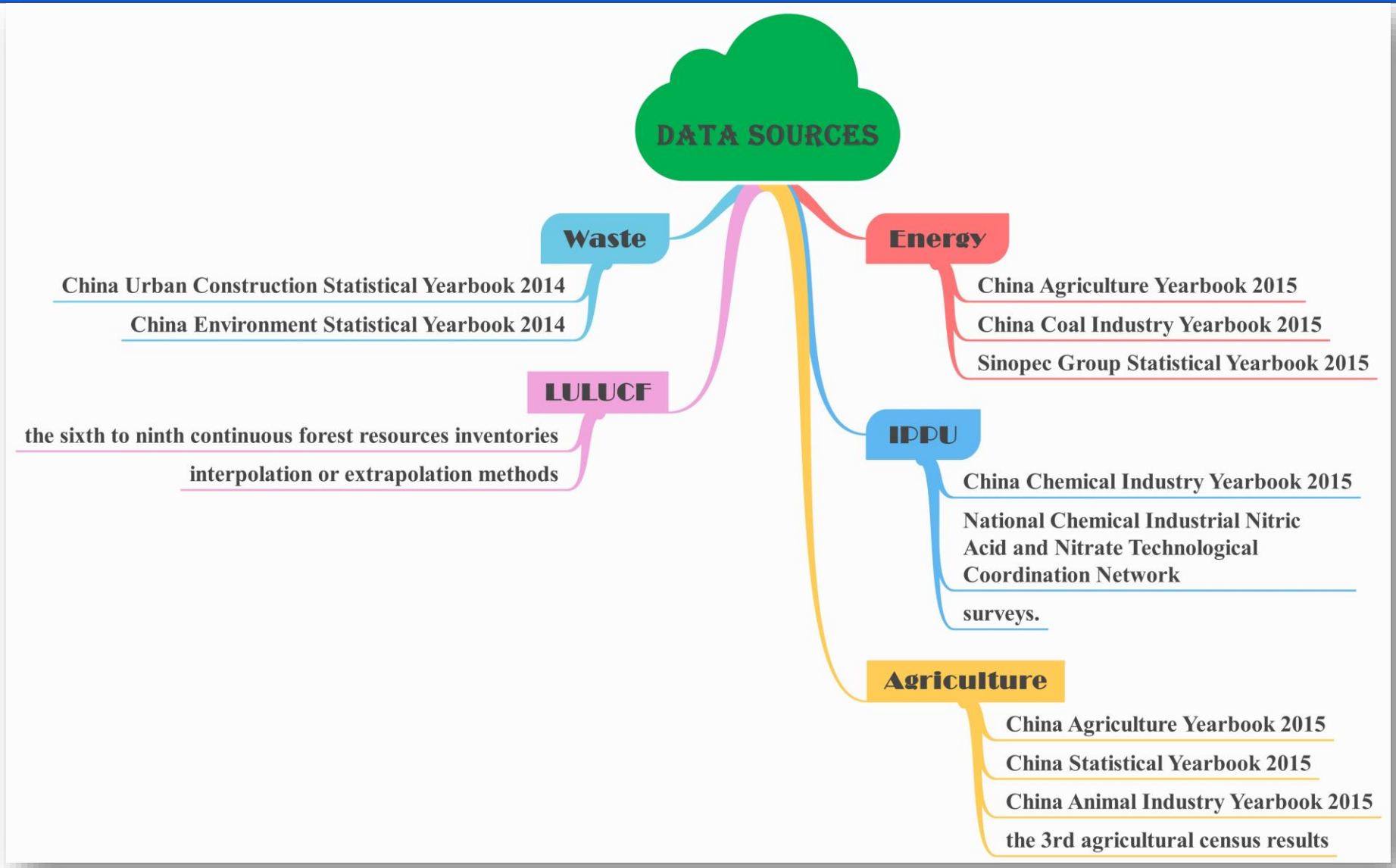


Table 2-1 Methodologies Used for the National GHG Inventory of 2014

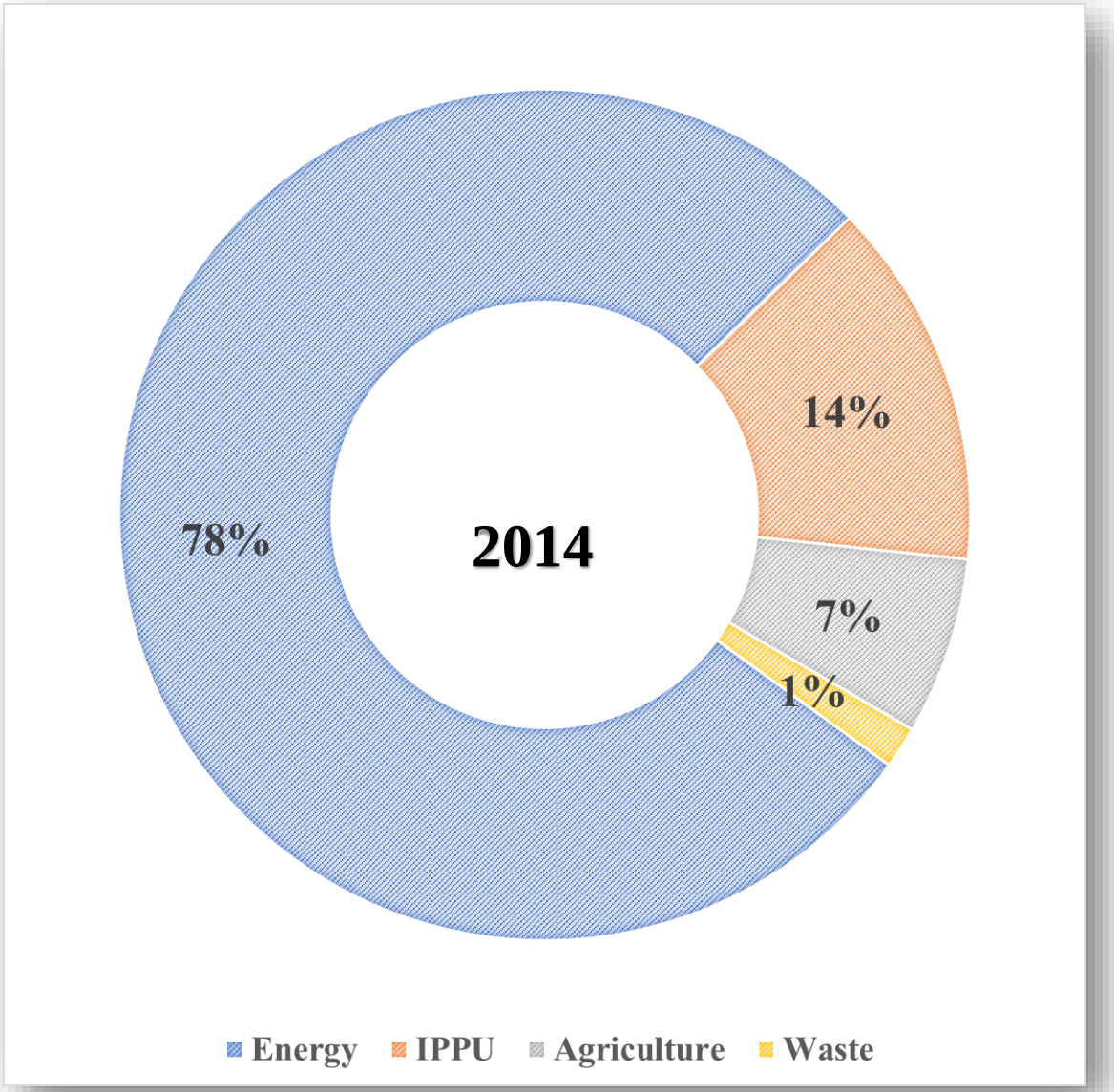
Source/ Sink Categories	CO_2		CH_4		N_2O	
	Method	Emission Factors	Method	Emission Factors	Method	Emission Factors
Energy industry	T2	CS	T1,T2	D,CS	T1,T2	D,CS
Manufacturing industries and construction	T2	CS	T1	D	T1	D
Transportation	T2	CS	T1,T3	D,CS	T1,T3	D,CS
Other sectors	T2	CS	T1	D	T1	D
Other	T2	CS	T1,T2	D,CS	T1,T2	D,CS
Fugitive emissions from solid fuels			T1,T2	D,CS		
Fugitive emissions from oil and natural gas			T1,T3	D,CS		
Mineral products	T1,T2	D,CS				
Chemical industry	T1,T2	D,CS	NE	NE	T3	CS
Metal production	T1,T2	D,CS	T1	D	NE	NE
Enteric fermentation			T1,T2	D,CS		
Manure management			T1,T2	D,CS	T2	D,CS
Rice cultivation			T3	CS		
Agricultural soils			NE	NE	T1,T2	D,CS
Field burning of agricultural residues			T1	D,CS	T1	D,CS
Forest land	T2	CS				
Cropland	T3	CS	IE	IE	IE	IE
Grassland	T2	CS	IE	IE	IE	IE
Wetlands	T2	CS	T2	CS	NE	NE
Settlements	T2	CS				
Other land	T1	D				
Harvested wood products	T2	CS				
Solid waste	T1,T2	CS	T1,T2	D,CS	T1	D,CS
Wastewater treatment			T1,T2	D,CS	T1,T2	D,CS

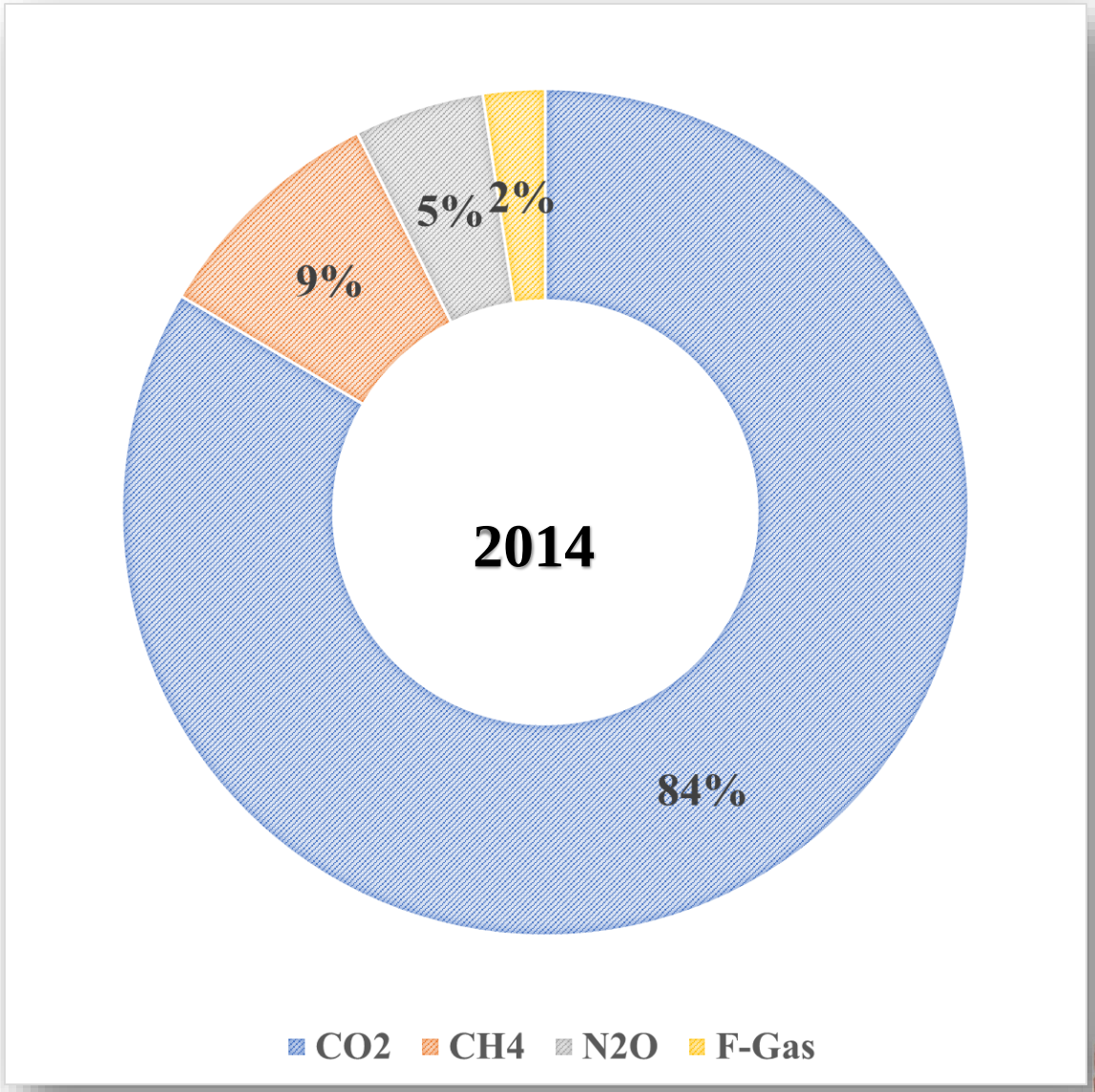
Note: 1. The methodological codes T1, T2 and T3 represent Tier 1, Tier 2 and Tier 3 methods respectively.
2. The emission factor code CS represents the country-specific emission factor in China, D represents the defaulted IPCC emission factor.
3. IE (included elsewhere) stands for sources which have been calculated and reported under other sub-categories. NE (not estimated) stands for existing emissions and removals which have not been estimated.
4. Their parallel appearance shows that the sub-items use different Tier methods or emission factor data sources.

Scope and Methodologies

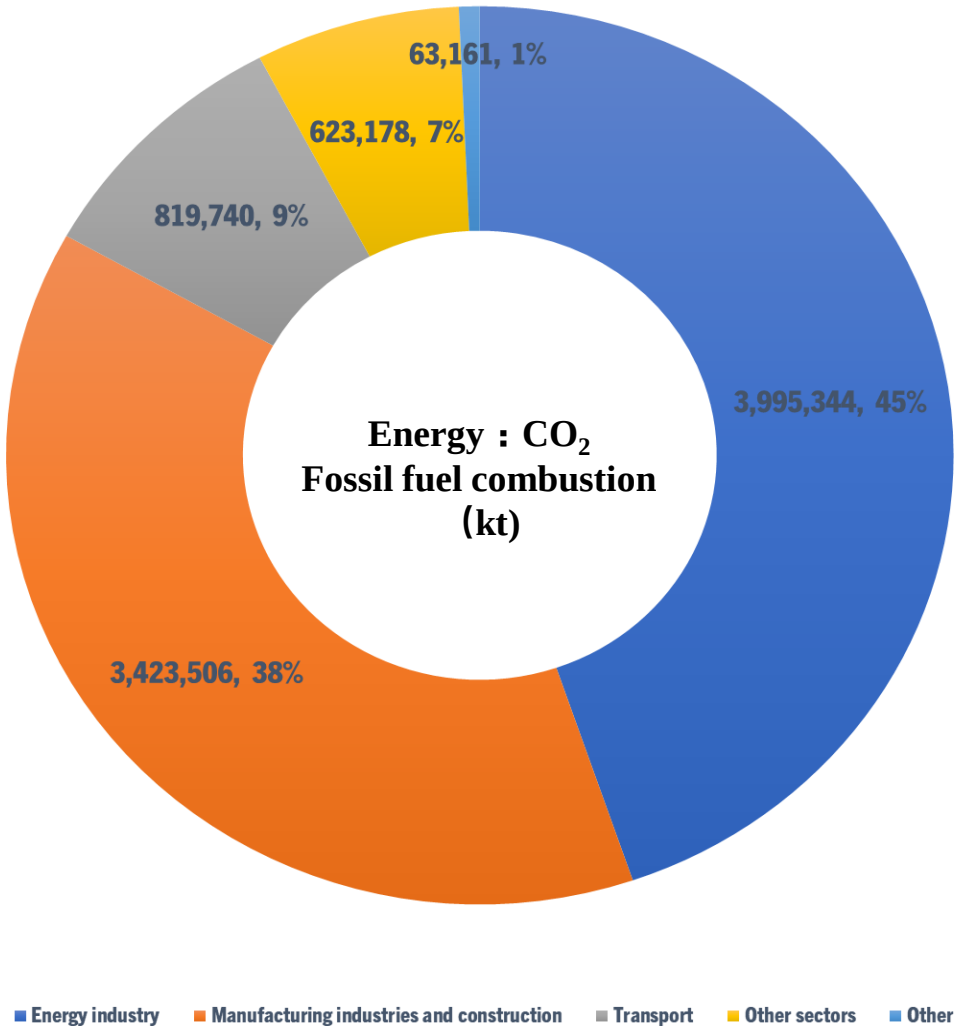


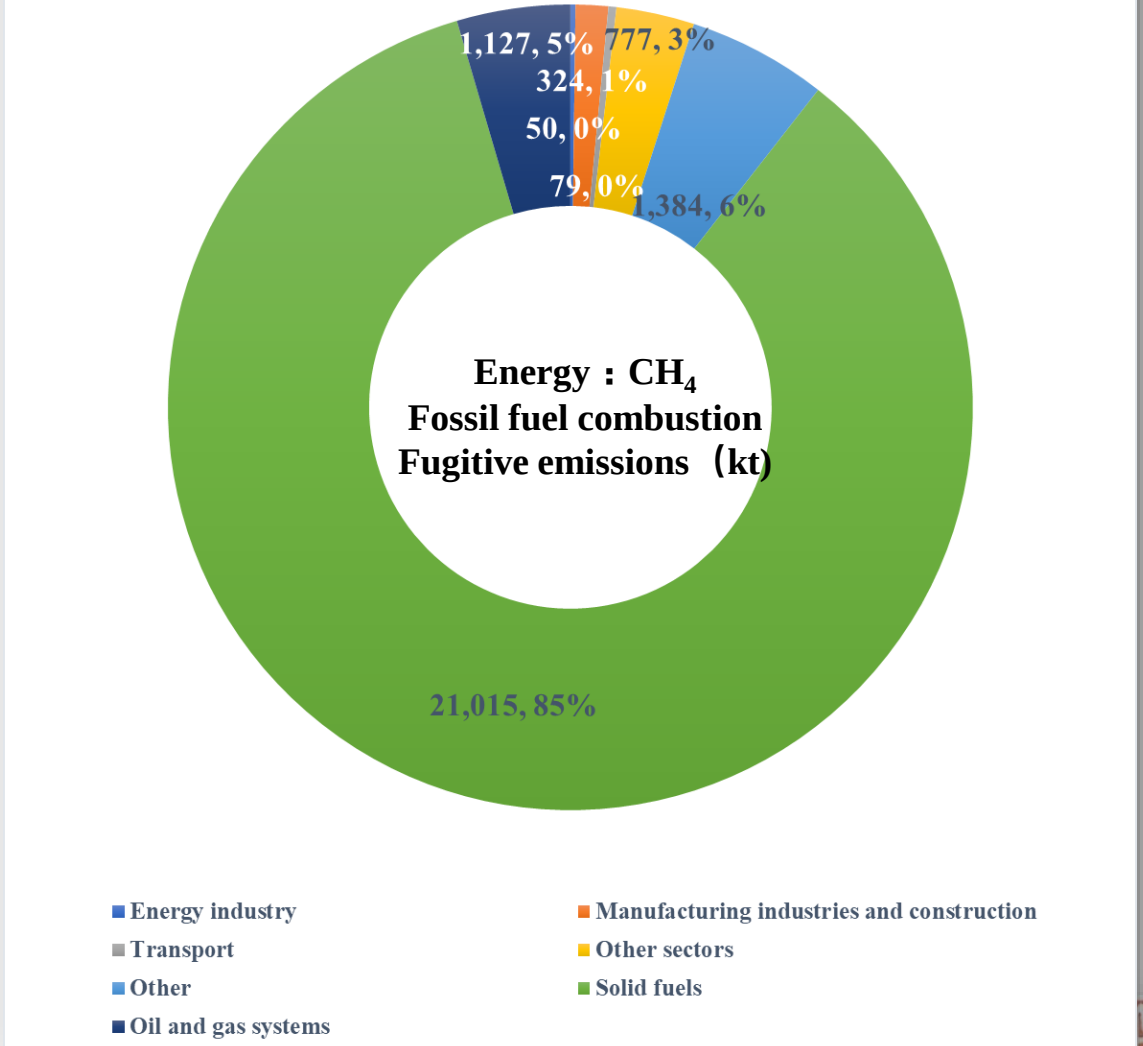
National GHG Inventory in 2014



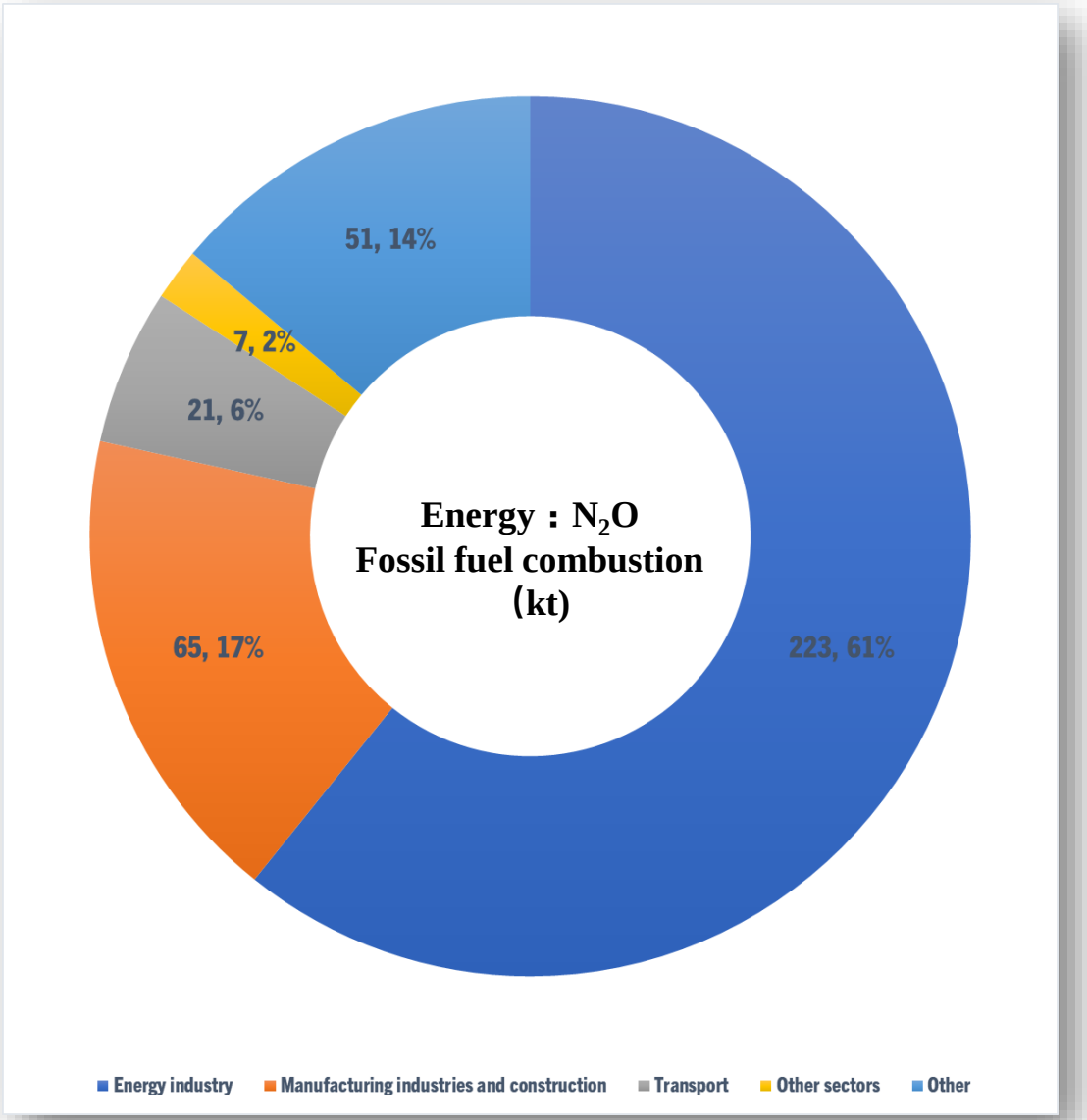


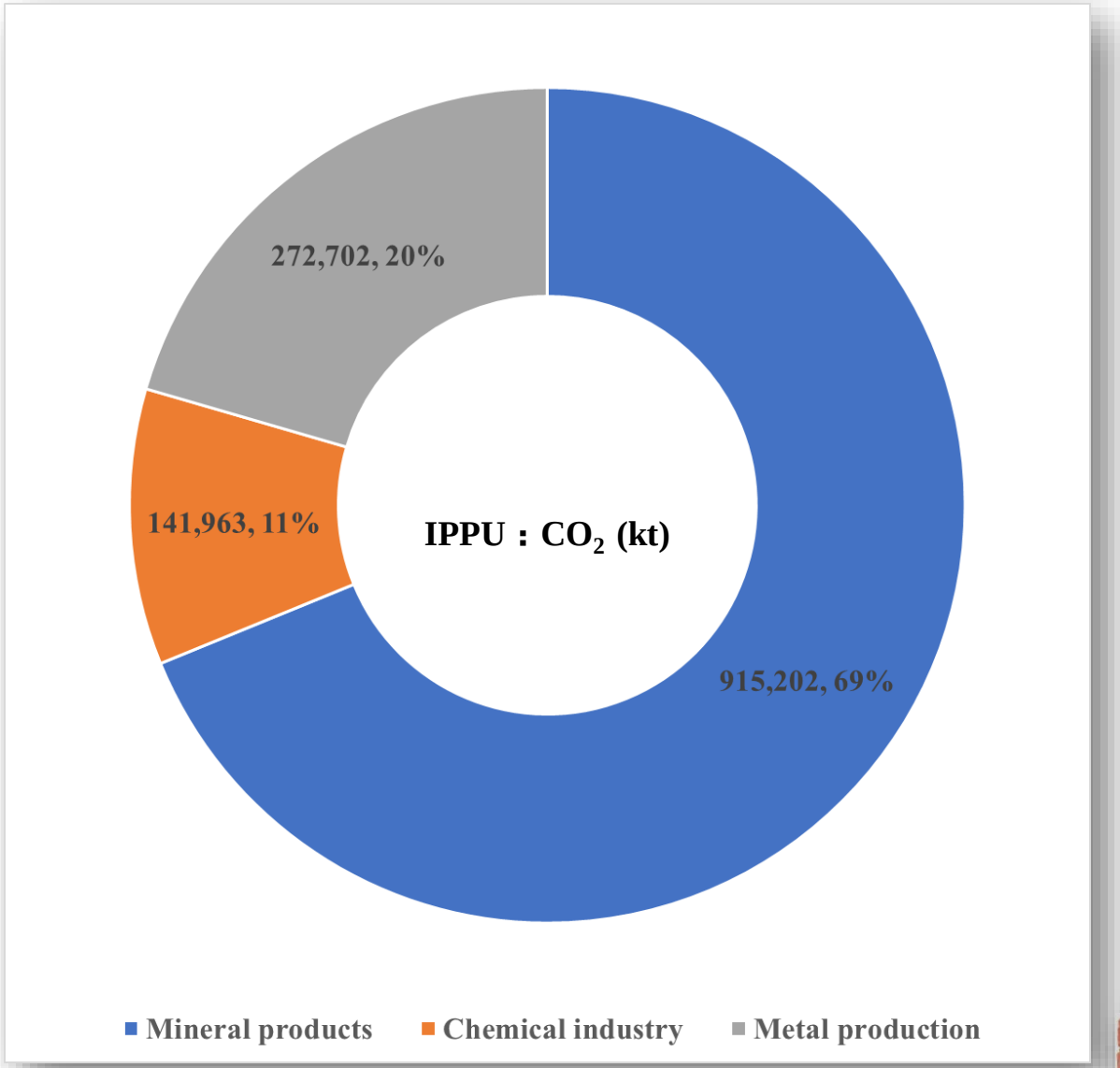
National GHG Inventory in 2014





National GHG Inventory in 2014





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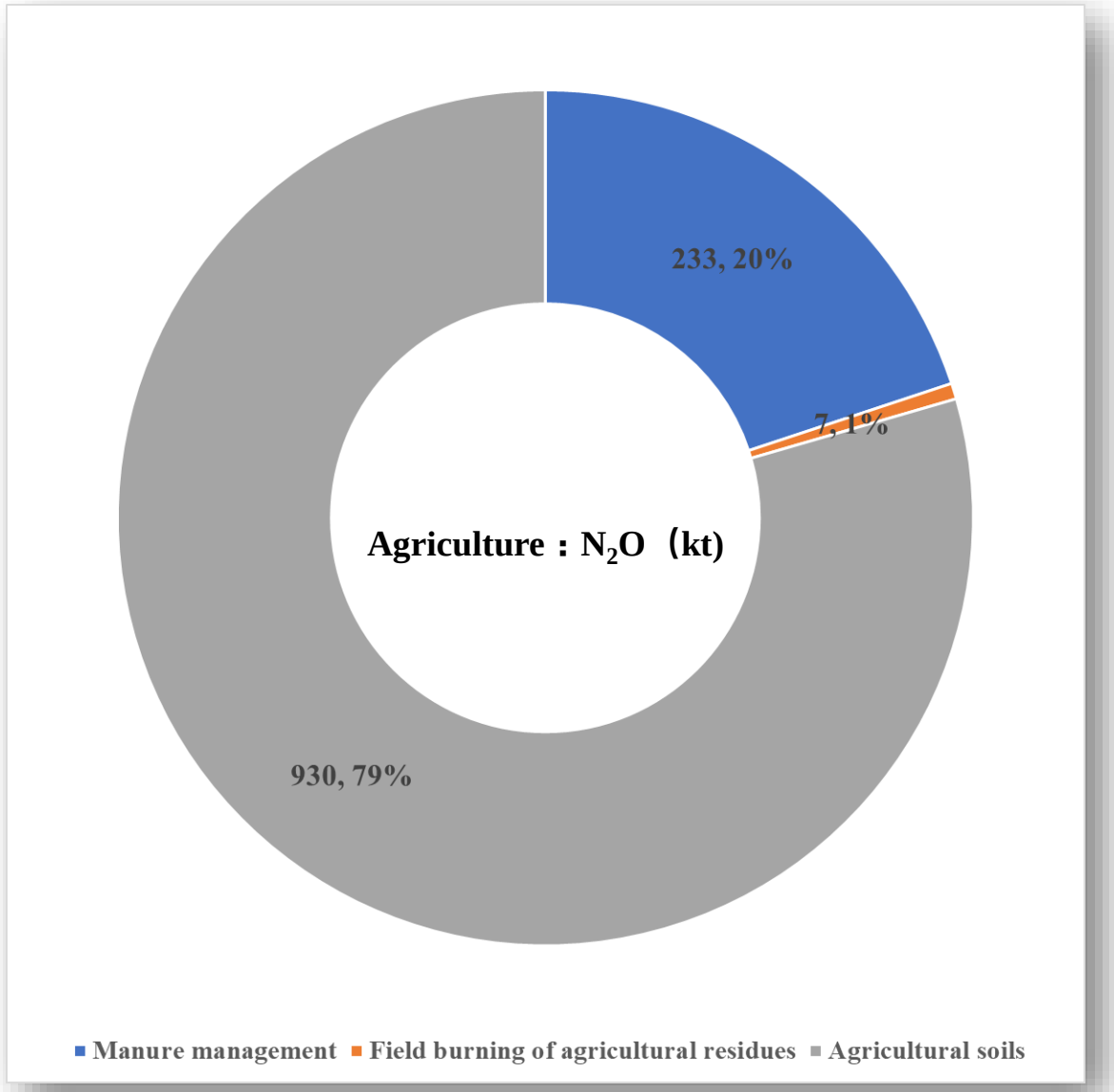
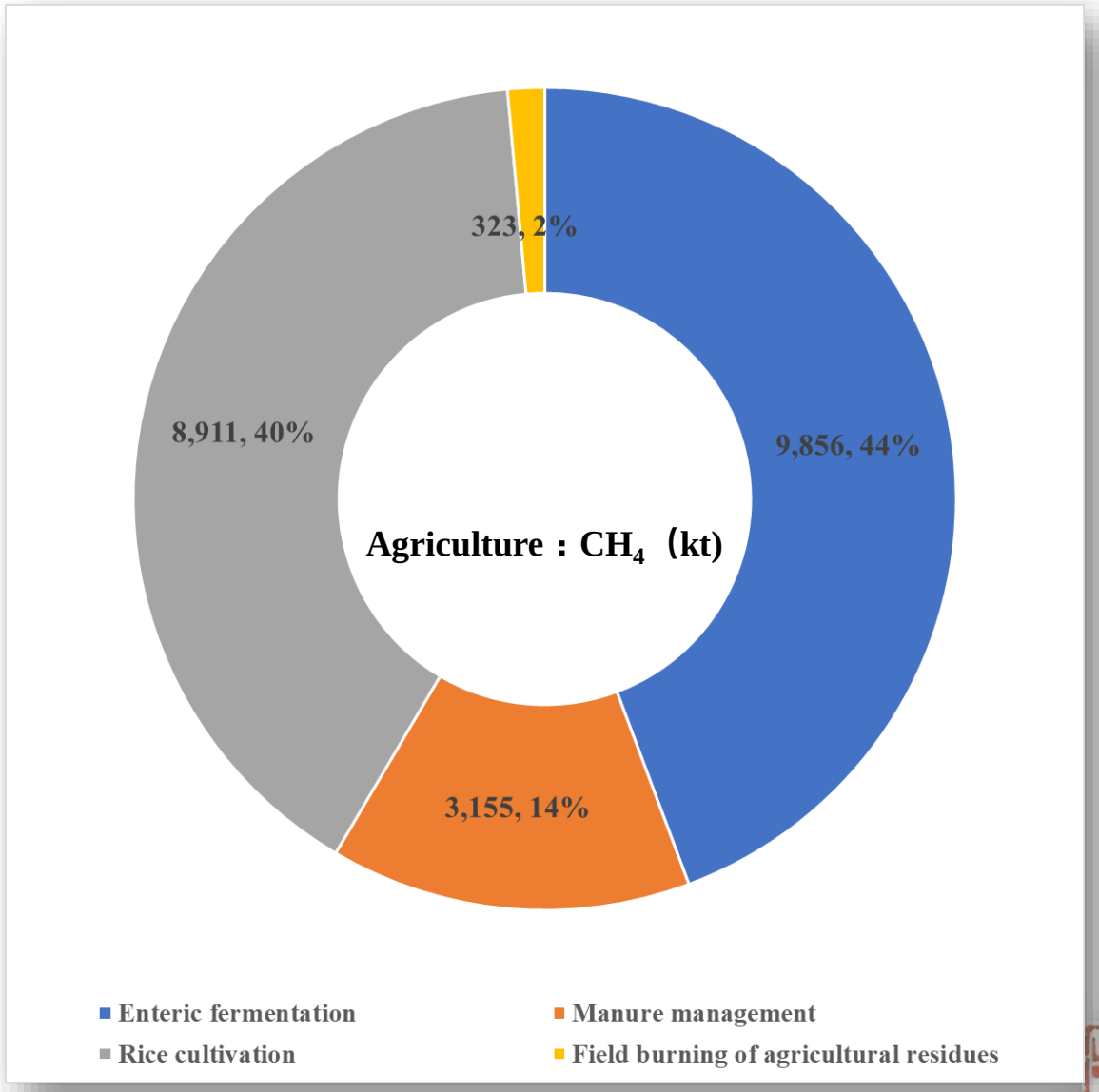
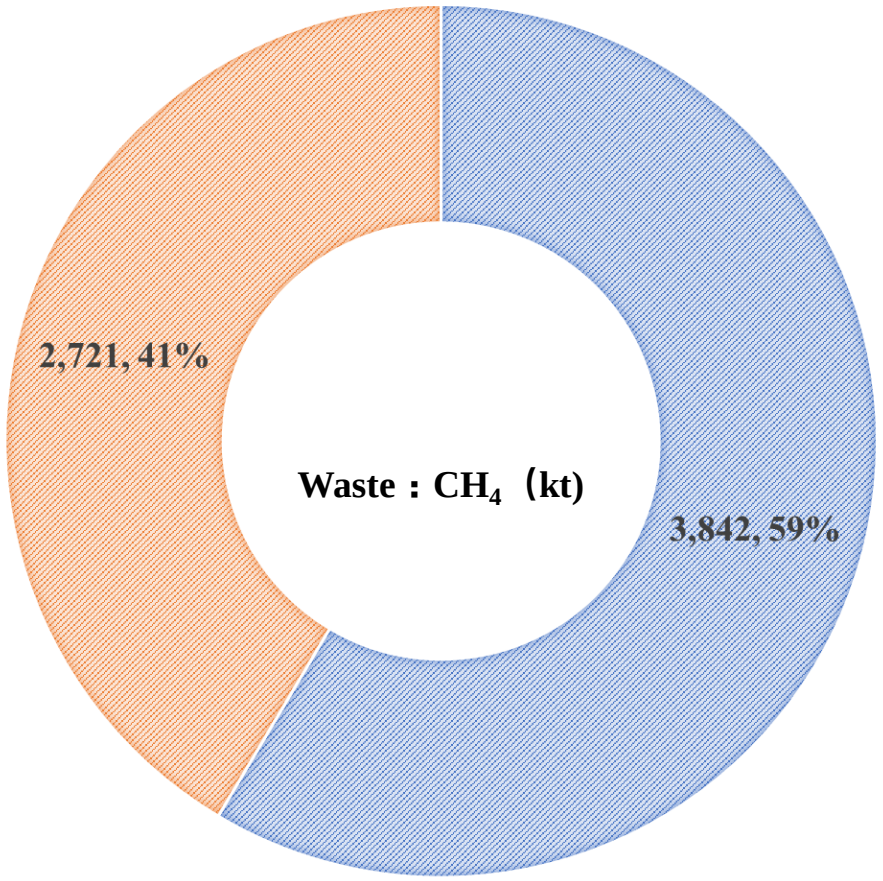
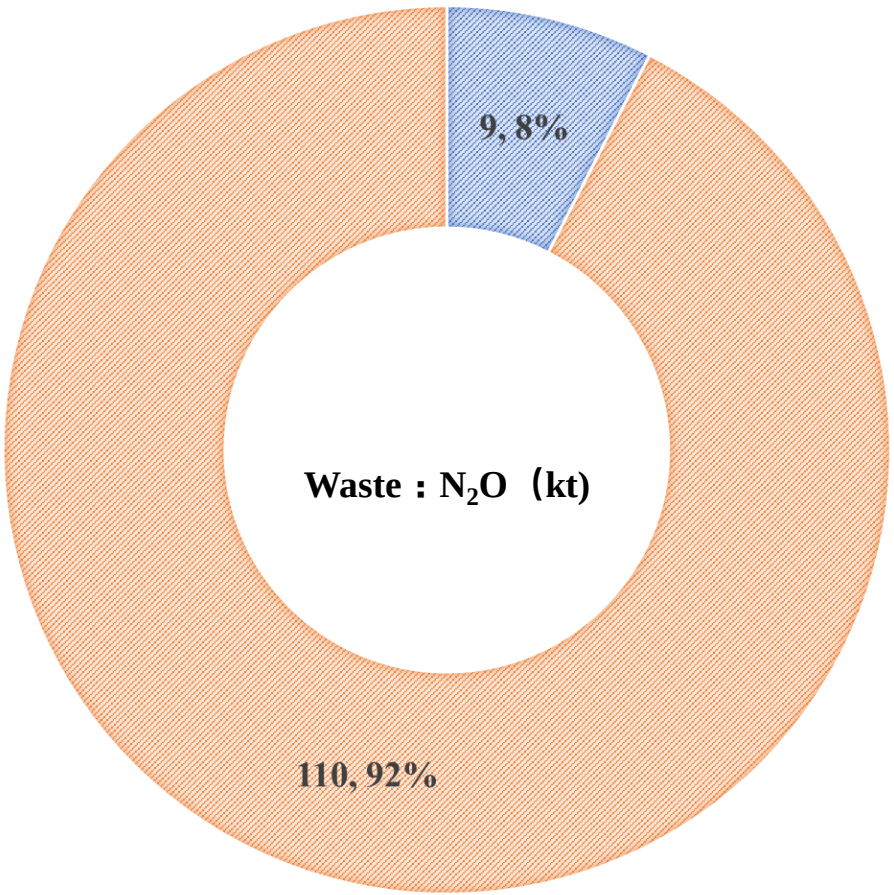


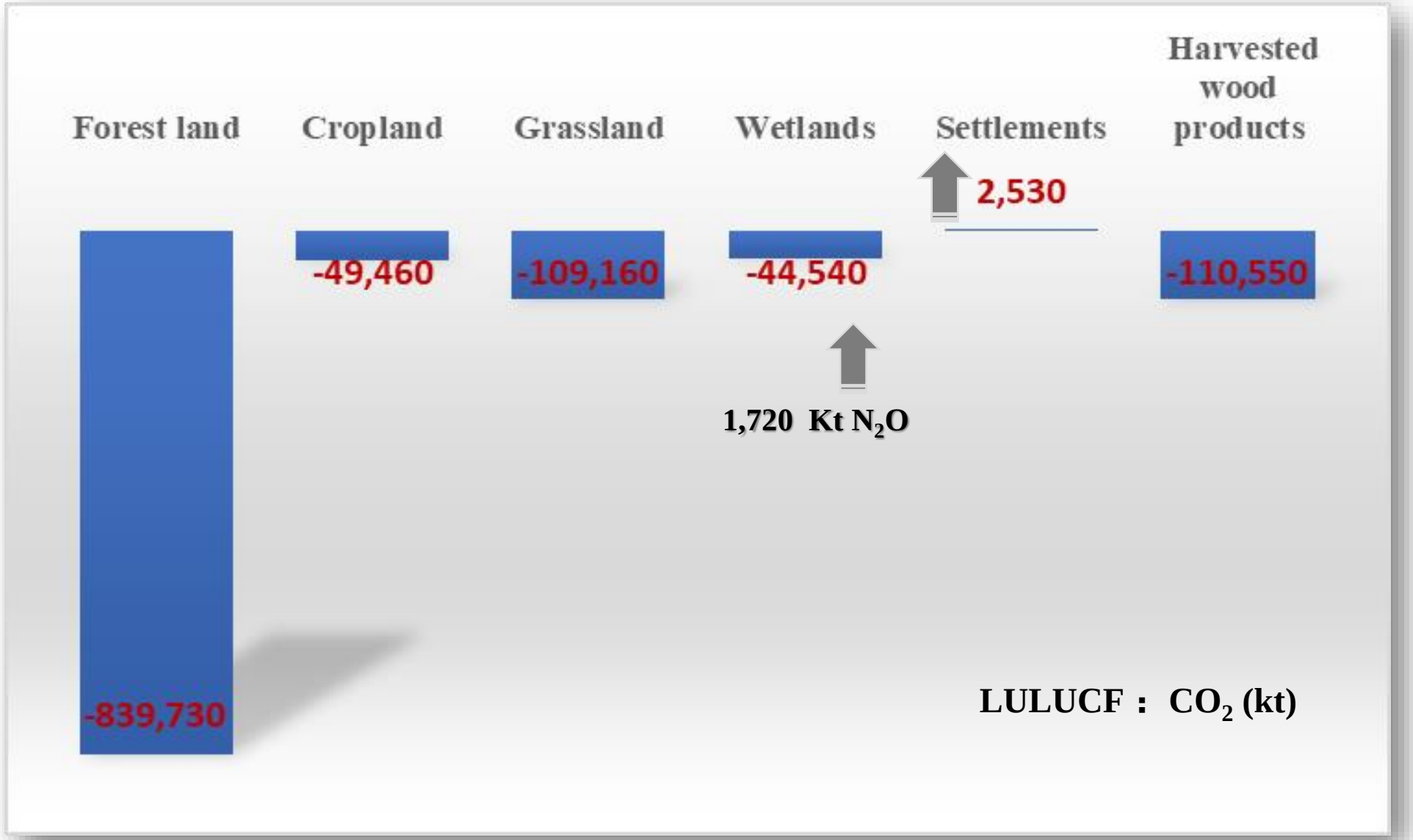


National GHG Inventory in 2014

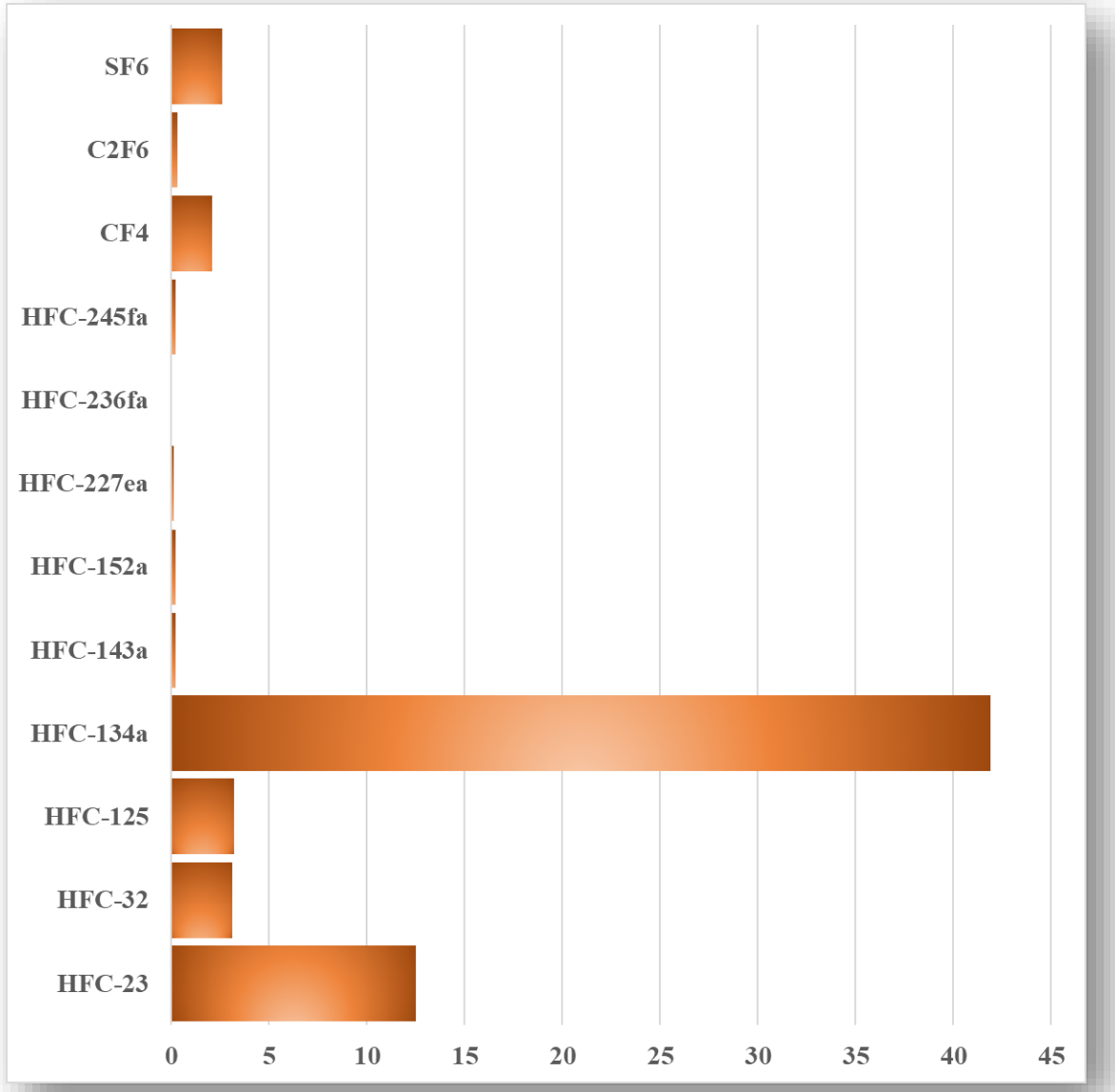


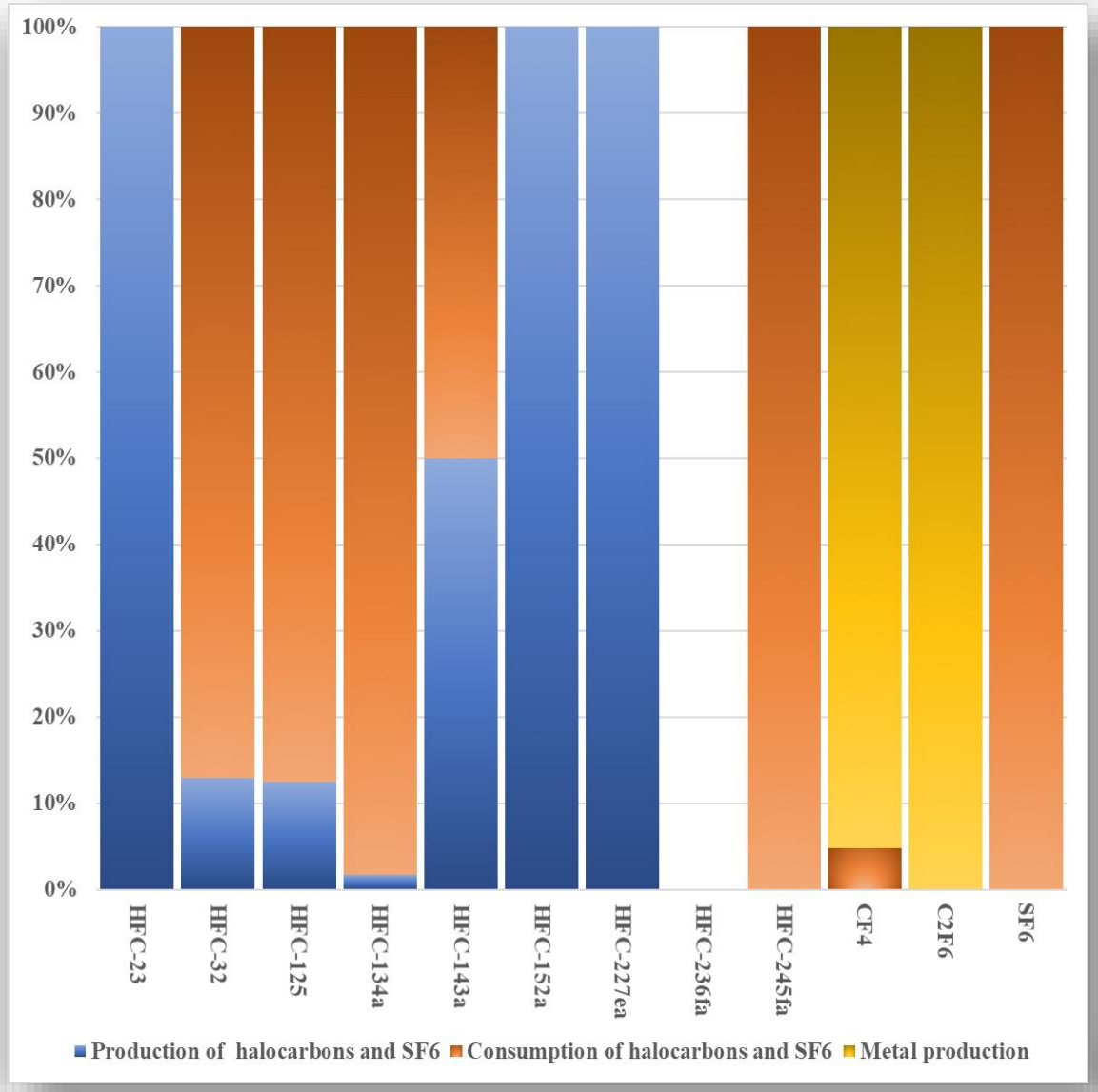


National GHG Inventory in 2014



National GHG Inventory in 2014





Efforts to Reduce Uncertainties

Emission factors:

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Methods :

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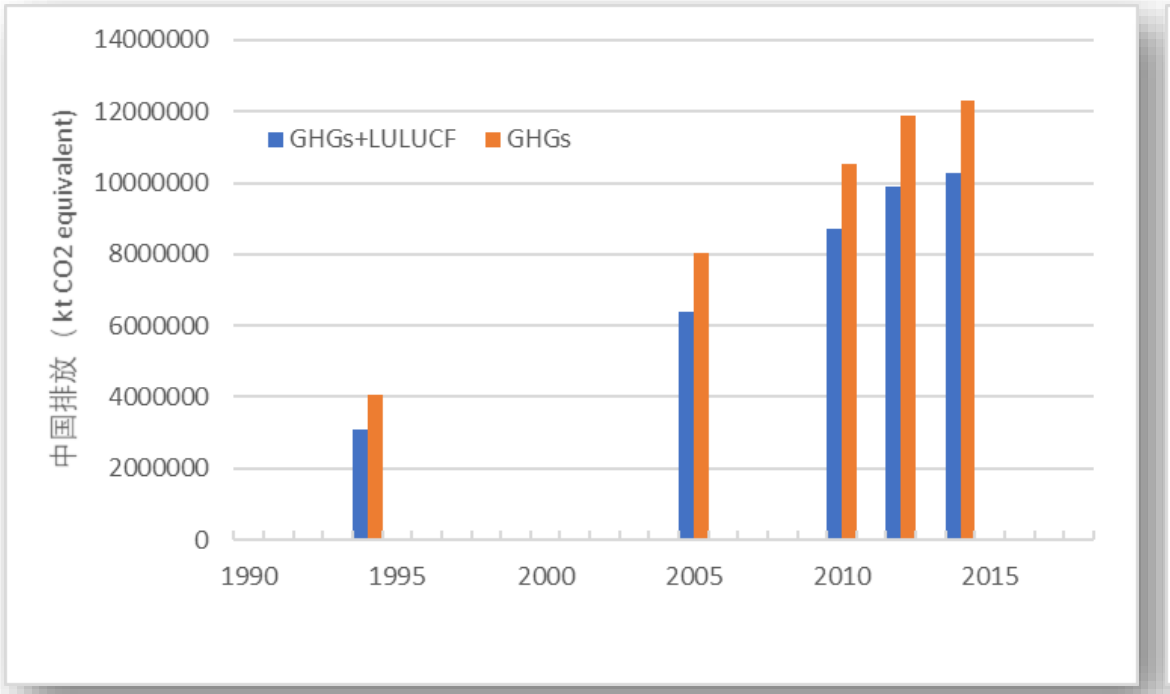
investigation.

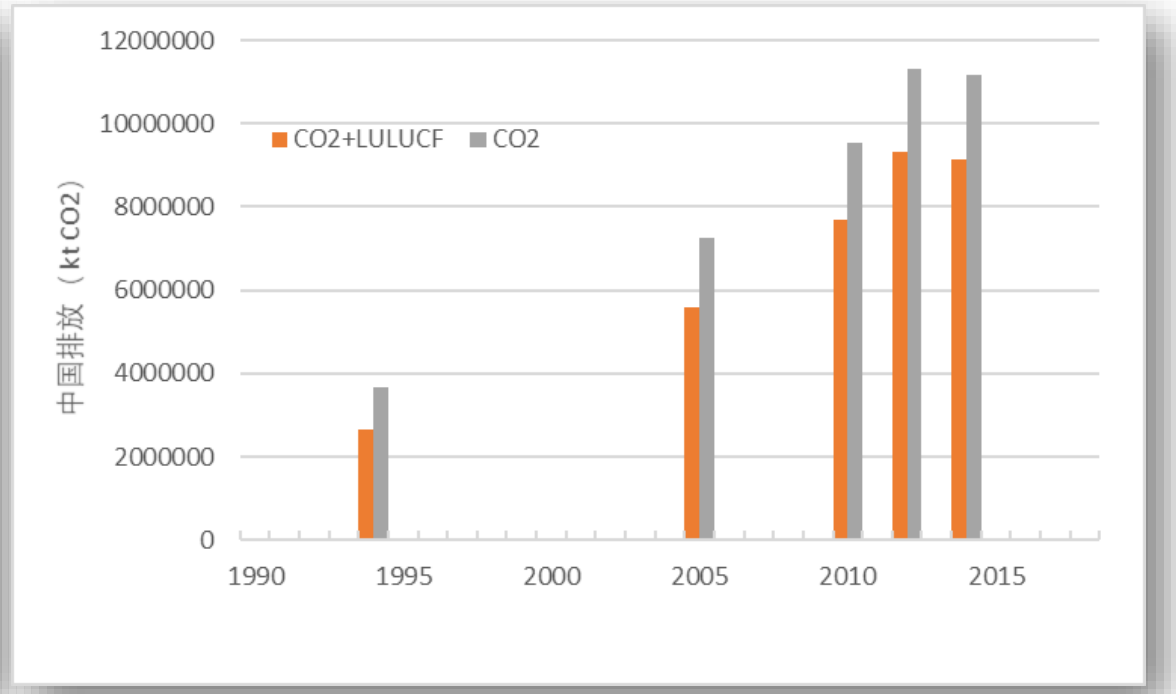
Management :

- Emphasized the management of data file.
- The materials supporting the preparation were archived in a timely manner.
- Established a database system for the national and sector GHG Inventories.
- Organized technical seminars.
- invited experts who were not involved in to carry out independent analysis and review of the inventory's methodologies and results.

Results of Uncertainty Analysis of 2014 National GHG Inventory		
Sector	**Emission/ Sink (Mt CO 2 eq)**	**Uncertainties**
Energy	9,559	-5.2%~5.3%
Industrial processes	1,718	-3.9%~3.9%
Agriculture	830	-19.2%~20.4%
LULUCF	1,115	-21.1%~21.2%
Waste	195	-23.2%~23.2%
Overall	-5.2%~5.3%	

Information on Inventories in Previous Submissions





Part III Mitigation Actions and Their Effects

- Policies and Targets for GHG Emission Control
- Mitigation Actions and Progress
- Analysis on the Results of Major Mitigation Actions

The nationally appropriate mitigation actions (NAMAs):

- To lower its CO2 emissions per unit of GDP by 40%-45% compared with the 2005level
- To increase the share of non-fossil energy in primary energy consumption to around 15%
- To increase forest area by40 million ha and forest stock volume by 1.3 billion m^3 compared with the 2005 level.

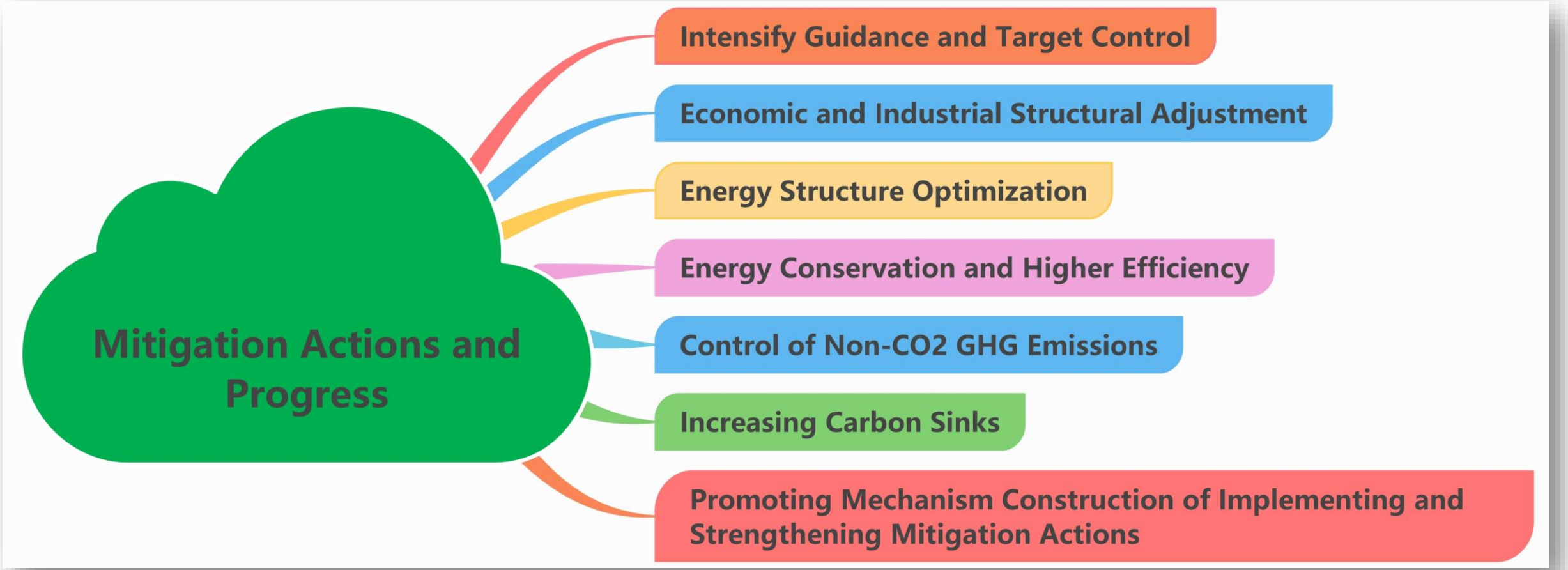
The Work Plan on Greenhouse Gas Emission Control for the 12th FYP

- The targets were to reduce carbon intensity dramatically, like a fall of 17% in 2015 compared with 2010;
- To achieve progress on the control of CO2 emissions from non-energy-related activities and other greenhouse gas emissions including CH4, N2O, HFC, PFC and SF6.

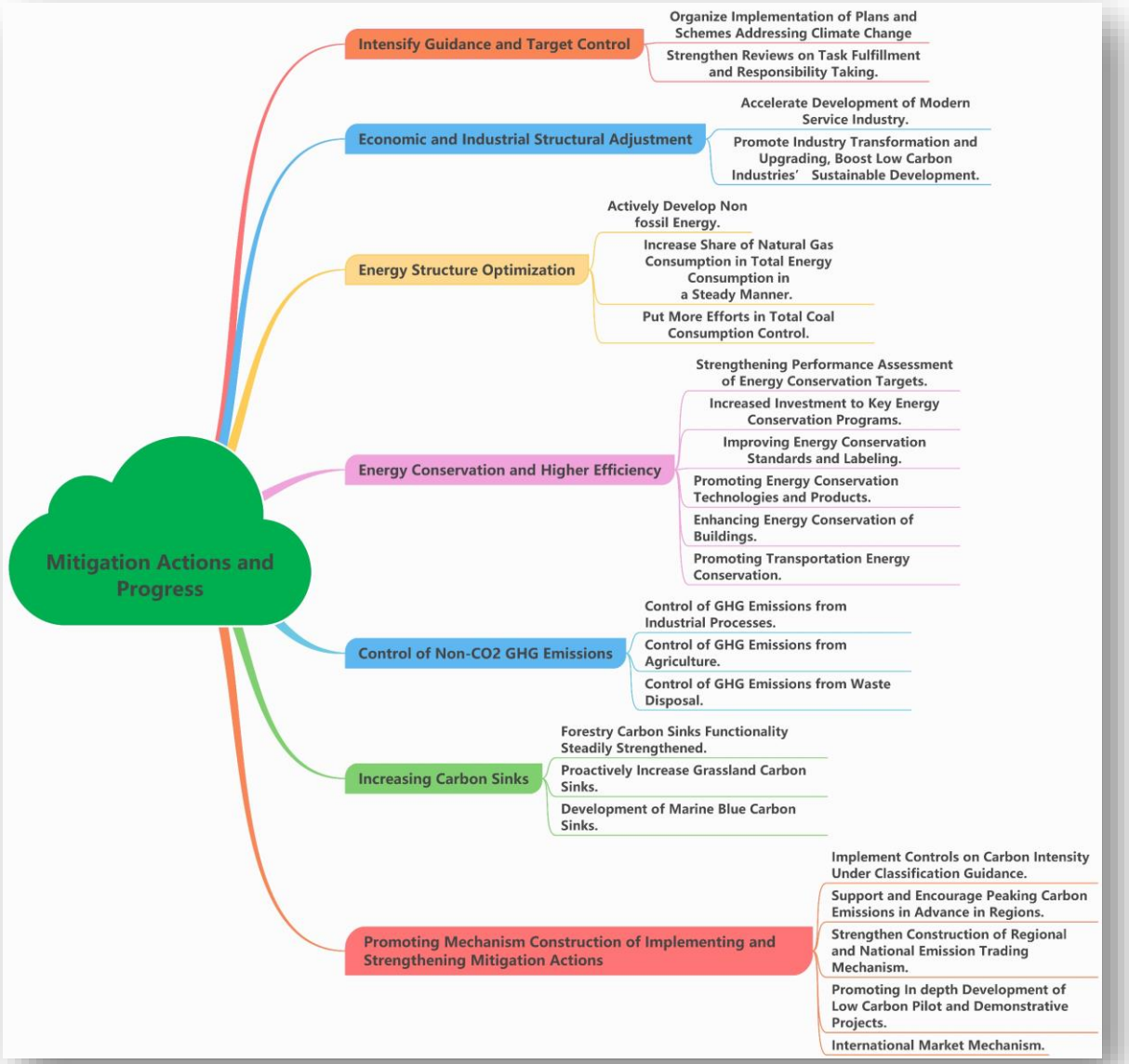
In GHG Control in 13th FYP

- To exert effective control on carbon emissions, and by 2020 carbon intensity is 18% lower than that of 2015;
- To put more efforts to control the emission of greenhouse gas other than CO2, including HFCs, CH4, N2O, PFCs and SF6;
- To increase significantly carbon sink capability.

Mitigation Actions and Progress

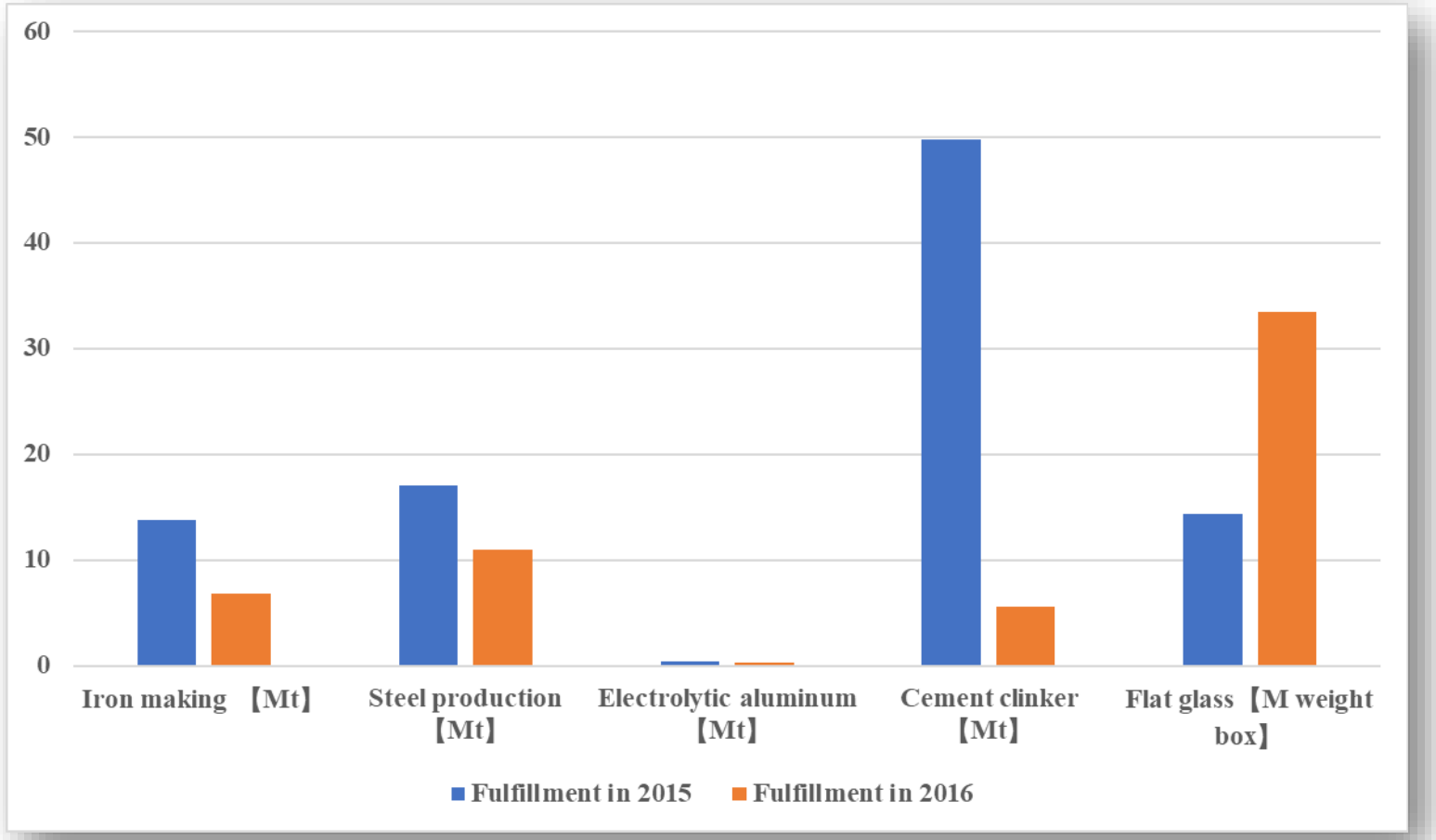


Mitigation Actions and Progress

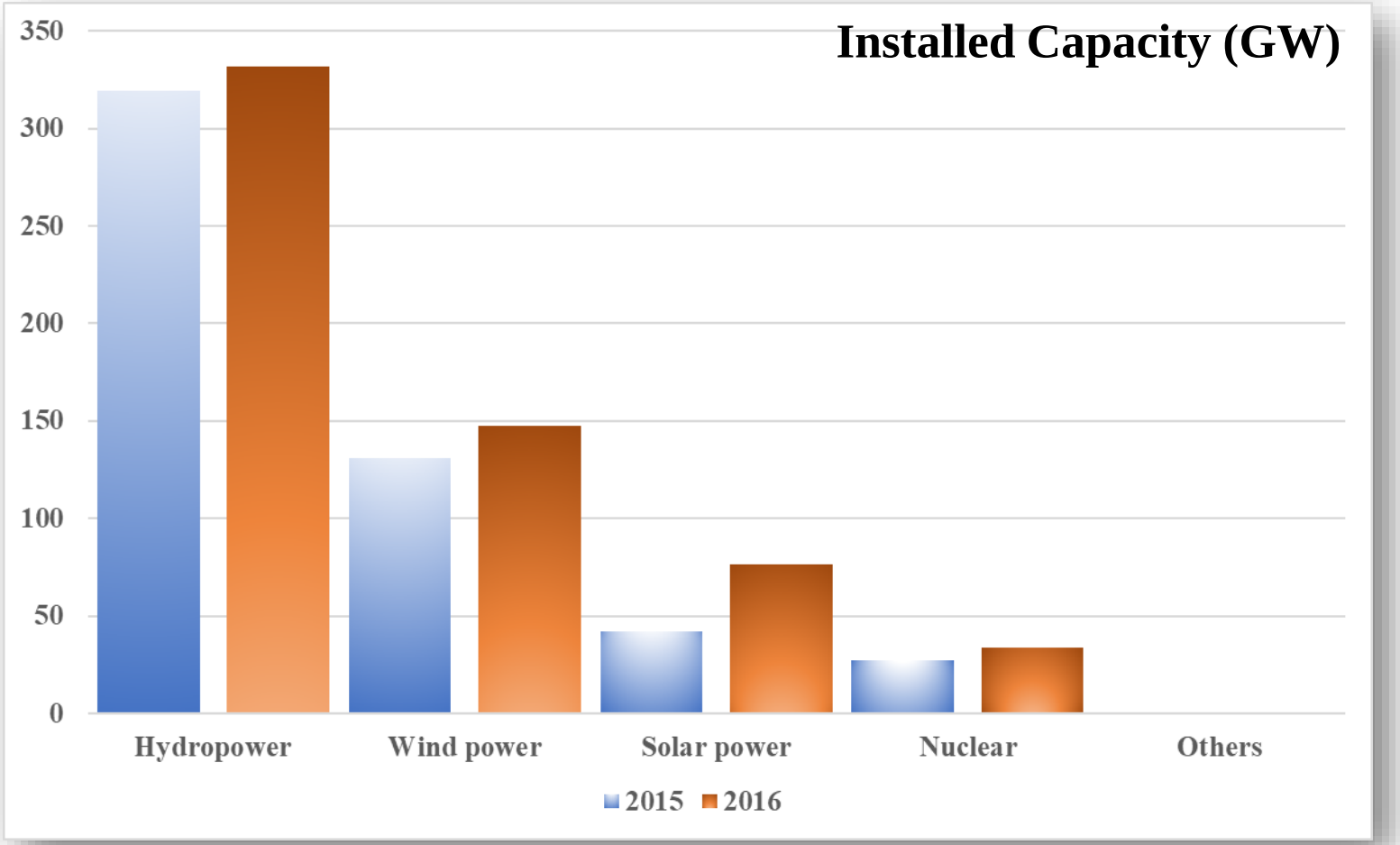


Mitigation Actions and Progress

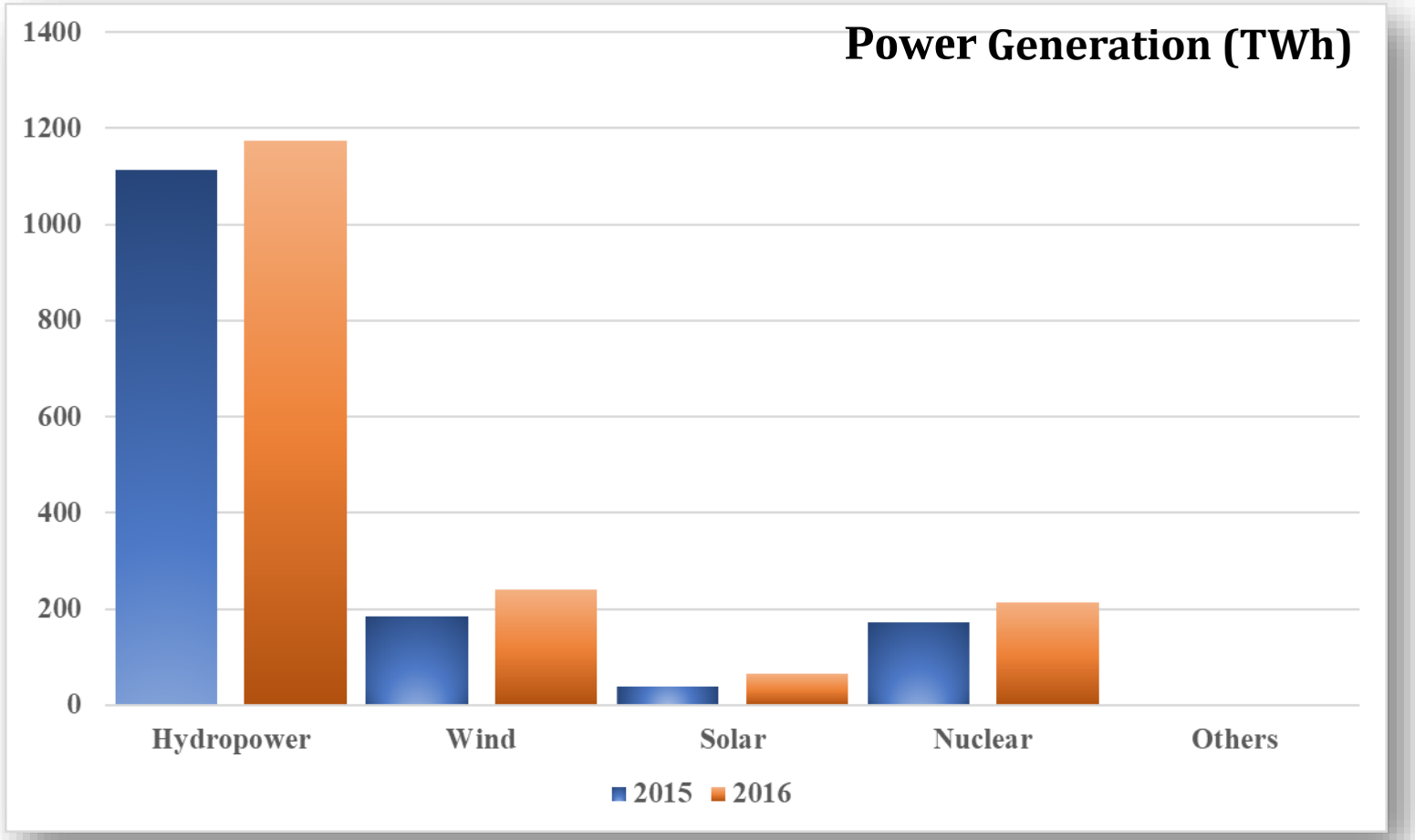
Promote Industry Transformation and Upgrading, Boost Low Carbon Industries' Sustainable Development.



Increase Share of Natural Gas Consumption in Total Energy Consumption in a Steady Manner.



Increase Share of Natural Gas Consumption in Total Energy Consumption in a Steady Manner.

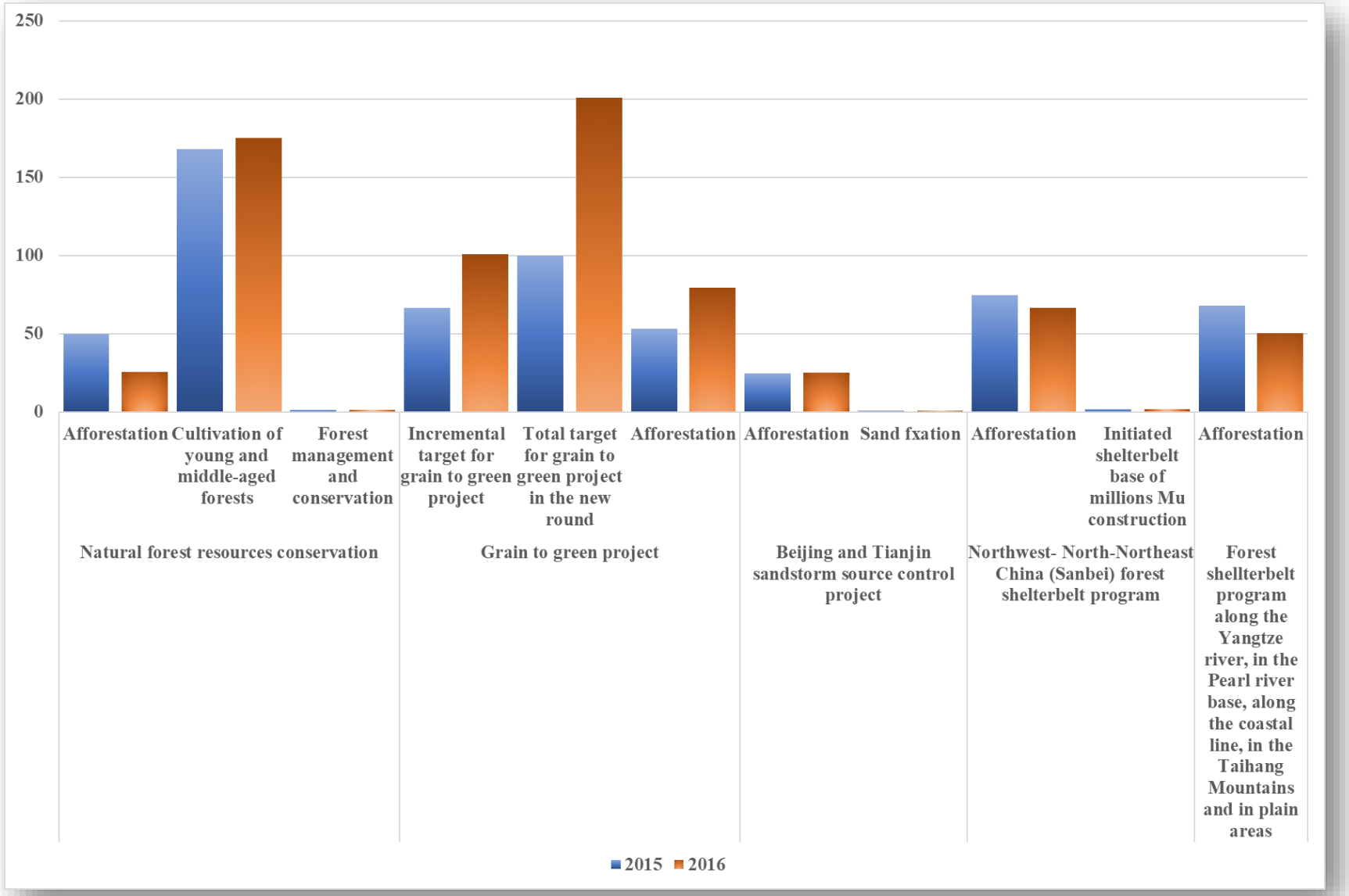


Mitigation Actions and Progress

Forestry Carbon Sinks Functionality Steadily Strengthened.

Progress of Five Major Forestry Protection and Restoration Projects				
project	Sub-project	Unit	2015	2016
Natural forest resources conservation	Afforestation	10000 hectares	49.9	25.6
	Cultivation of young and middle-aged forests	10000 hectares	167.8	175.3
	Forest management and conservation	100 million hectares	1.15	1.15
Grain to green project	Incremental target for grain to green project	10000 hectares	66.7	100.7
	Total target for grain to green project in the new round	10000 hectares	100	200.7
	Afforestation	10000 hectares	53.3	79.6
Beijing and Tianjin sandstorm source control project	Afforestation	10000 hectares	24.7	25.1
	Sand fxation	10000 hectares	0.79	0.98
Northwest- North-Northeast China (Sanbei) forest shelterbelt program	Afforestation	10000 hectares	74.55	66.7
	Initiated shelterbelt base of millions Mu construction	Piece	2	2
Forest shellterbelt program along the Yangtze river, in the Pearl river base, along the coastal line, in the Taihang Mountains and in plain areas	Afforestation	10000 hectares	68	50.6

Mitigation Actions and Progress



Analysis on the Results of Major Mitigation Actions

Table 3-6 Mitigation Actions and Effects

- **Avoided Carbon Emission from Energy Conservation.**
  - In 2016, the energy consumption per ten thousand yuan of GDP decreased by 5.0%
  - The annual energy reduction over 200 Mtce
  - Equivalent to emission reductions of 490 Mt of CO 2
- **Avoided Carbon Emission from Energy Structure Improvement.**
  - Non fossil energy in the tota energy consumption rose to 13.3% in 2016
  - The installed power generating capacity of non fossil energy was 590 GW, accounting to 35.7% of the total installed capacity
  - the power generation amount of non fossil energy was 1,700 TWh, with an increase of 190 TWh than 2015
  - The proportion of consumed natural gas in the total energy consumption increased from 5.9% in 2015 to 6.2%.
  - 112 Mt and 8 Mt of CO 2 emissions were saved respectively.

復天立地惠民，永實創新奉獻

Table 3-6 Mitigation Actions and Effects

No.	Action Name	Objectives or Main Contents	Concerned Departments/ GHG	Time - horizon	Nature of Action	Supervision Departments	Status	Progress	Methodologies and Hypotheses	Estimated Emission Reduction Effects[1]	Receive Support
1	Nationwide mitigation action	Reduce the CO_2 emissions per unit of GDP by 40%-45% over 2005 by 2020	Various Departments/ CO_2	2006 -2020	Compulsiv Governme			uce the CO_2 ssions per unit of by 6.1% over 2015 016	Calculate the CO_2 emission amount by multiplying the consumption of coal, petroleum and natural gas corresponding the average emission factor	/	Support from the central finance or the local finance
Energy Structure Optimization											
2	Developing non-fossil energy	Increase the proportion of non-fossil energy consumption to around 13% by 2016; Increase the proportion of non-fossil energy	CO_2 etc.	2016 -2020	Compulsiv Governme			proportion of non- il energy in energy sumption was % in 2016, up 1.2	Emission reduction=(current-year non-fossil fuel consumption –current-year energy consumption×2015 share of non-fossil energy in total energy consumption) ×implied emission	Reduce CO_2 emissions by 110 million tons in 2016	Support from the central finance or the local
3	Developing natural gas	natural gas consumption to around 6.3% by 2016; Increase the share of natural gas consumption in total energy consumption to over 10% by 2020	CO_2 etc.	2016 -2020	Government	NEA, NDRC and other relevant departments	In Progress	The proportion of natural gas in total energy consumption increased from 5.9% in 2015 to 6.2% in 2016	Emission reductions = (consumption of natural gas in the year – total energy consumption in the year ×share of natural gas in 2015) × (the 2014 overall energy consumption emission factor of 2.14tCO_2/tce – the natural gas emission factor of 1.56tCO_2/tce)	Reduce CO_2 emissions by 8 million tons in 2016	

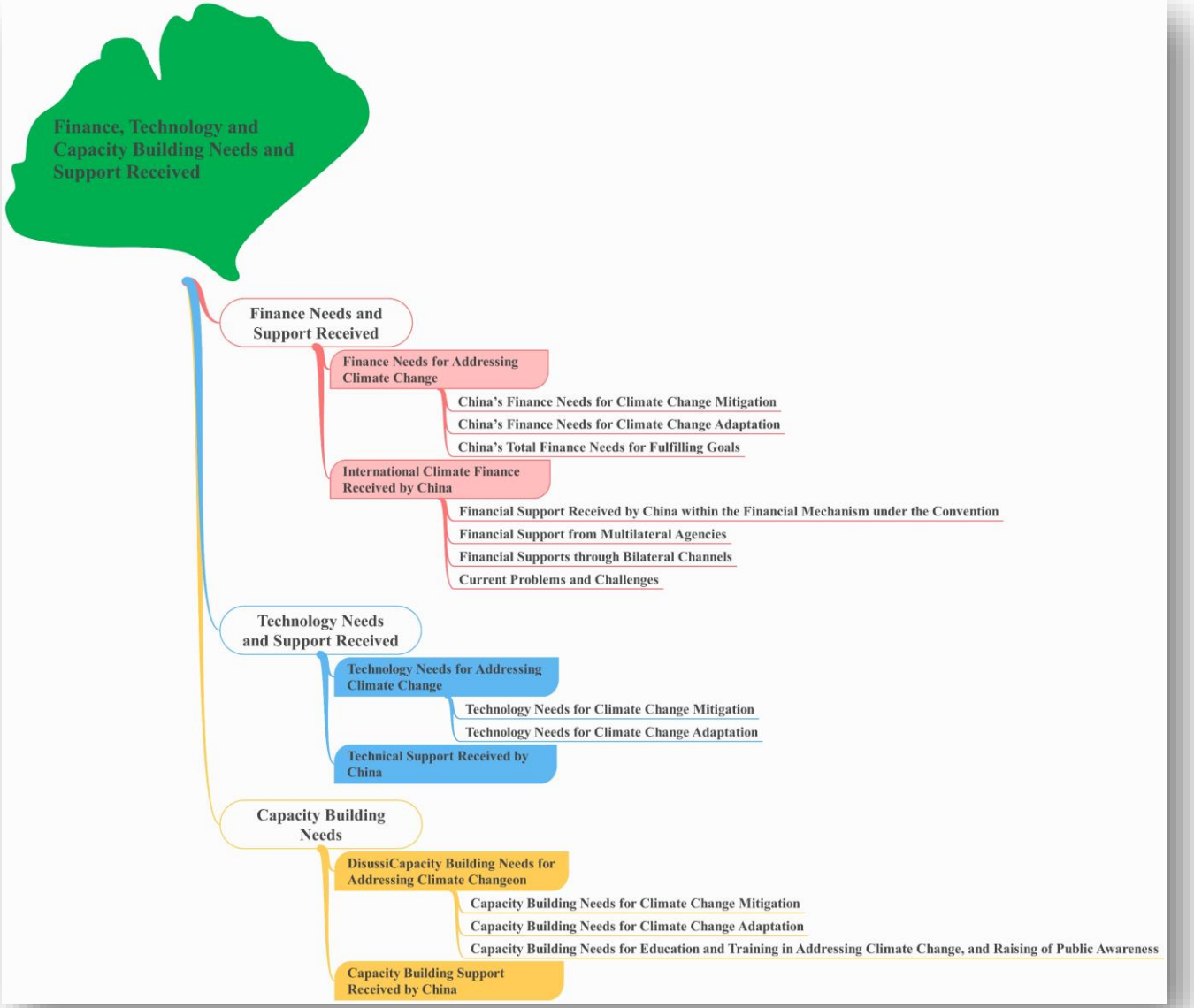
No. | Action Name | Objectives or Main Contents | Concerned Departments / GHG | Time - horizon | Nature of Action | Status | Progress | Methodologies and Hypotheses | Estimated Emission Reduction Effects | Receive Support

12 twelve

慎天立地惠民，求實創新奉獻

Part IV Finance, Technology and Capacity-Building Needs and Support Received

- Finance Needs and Support Received
- Technology Needs and Support Received
- Capacity Building Needs


Finance, Technology and Capacity Building Needs and Support Received
Finance Needs and Support Received
Finance Needs for Addressing Climate Change
China's Finance Needs for Climate Change Mitigation
China's Finance Needs for Climate Change Adaptation
China's Total Finance Needs for Fulfilling Goals
International Climate Finance Received by China
Financial Support Received by China within the Financial Mechanism under the Convention
Financial Support from Multilateral Agencies
Financial Supports through Bilateral Channels
Current Problems and Challenges
Technology Needs and Support Received
Technology Needs for Addressing Climate Change
Technology Needs for Climate Change Mitigation
Technology Needs for Climate Change Adaptation
Technical Support Received by China
Capacity Building Needs
DisussiCapacity Building Needs for Addressing Climate Changeon
Capacity Building Needs for Climate Change Mitigation
Capacity Building Needs for Climate Change Adaptation
Capacity Building Needs for Education and Training in Addressing Climate Change, and Raising of Public Awareness
Capacity Building Support Received by China

Part V Basic Information of Hong Kong SAR on addressing Climate Change

- Hong Kong's GHG Inventory in 2014
- Mitigation Measures and Their Effects

Part V Basic Information of Macao SAR on addressing Climate Change

- Macao's GHG Inventory in 2014
- Mitigation Measures and Their Effects

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