



中华人民共和国生态环境部

Ministry of Ecology and Environment of the People's Republic of China



The People's Republic of China

Second Biennial Update Report on Climate Change

Facilitative Sharing of Views

Nov. 24th, 2020, Beijing

Ministry of Ecology and Environment, P.R. China

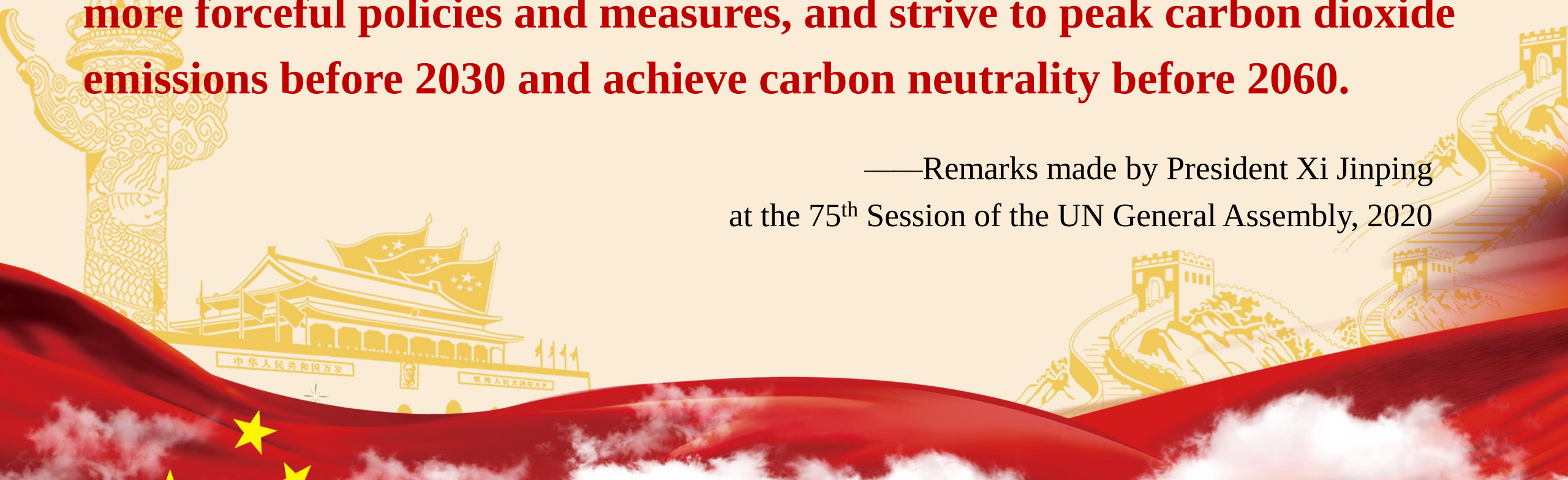


Preface

Recent Important Announcement on NDC

China will scale up its nationally determined contributions, adopt even more forceful policies and measures, and strive to peak carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060.

——Remarks made by President Xi Jinping
at the 75th Session of the UN General Assembly, 2020





OUTLINE

A decorative pillar with intricate carvings, including a dragon at the top and various floral and geometric patterns. A large, flowing red ribbon or banner is draped around the pillar, adding a dynamic element to the design.

I

Summary of China's Second Biennial Update Report (BUR)

II

Experience and Lessons Learned in Participating in the ICA process

III

Response to Questions Received



I. Summary of China's Second BUR



- National Circumstances
- National GHG Inventory
- Mitigation Actions and their Effects
- Support Needs and Received
- Information of HK SAR
- Information of Macao SAR





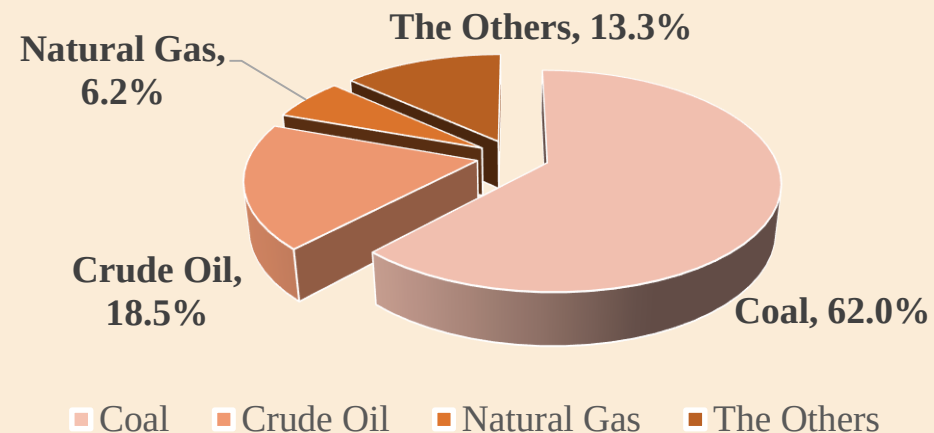
1

National Circumstances — the Year of 2016

Natural Conditions

- Climate — complexity and diversity
- Precipitation — annual average 730 mm
- Temperature — annual average 10.36℃
- Forest coverage rate — 22.3%
- Severe climatic disasters—high frequency, intensity and wide exposure

The Proportion of Energy Consumption



Per Capita GDP



Proportions of the Three Industries in GDP



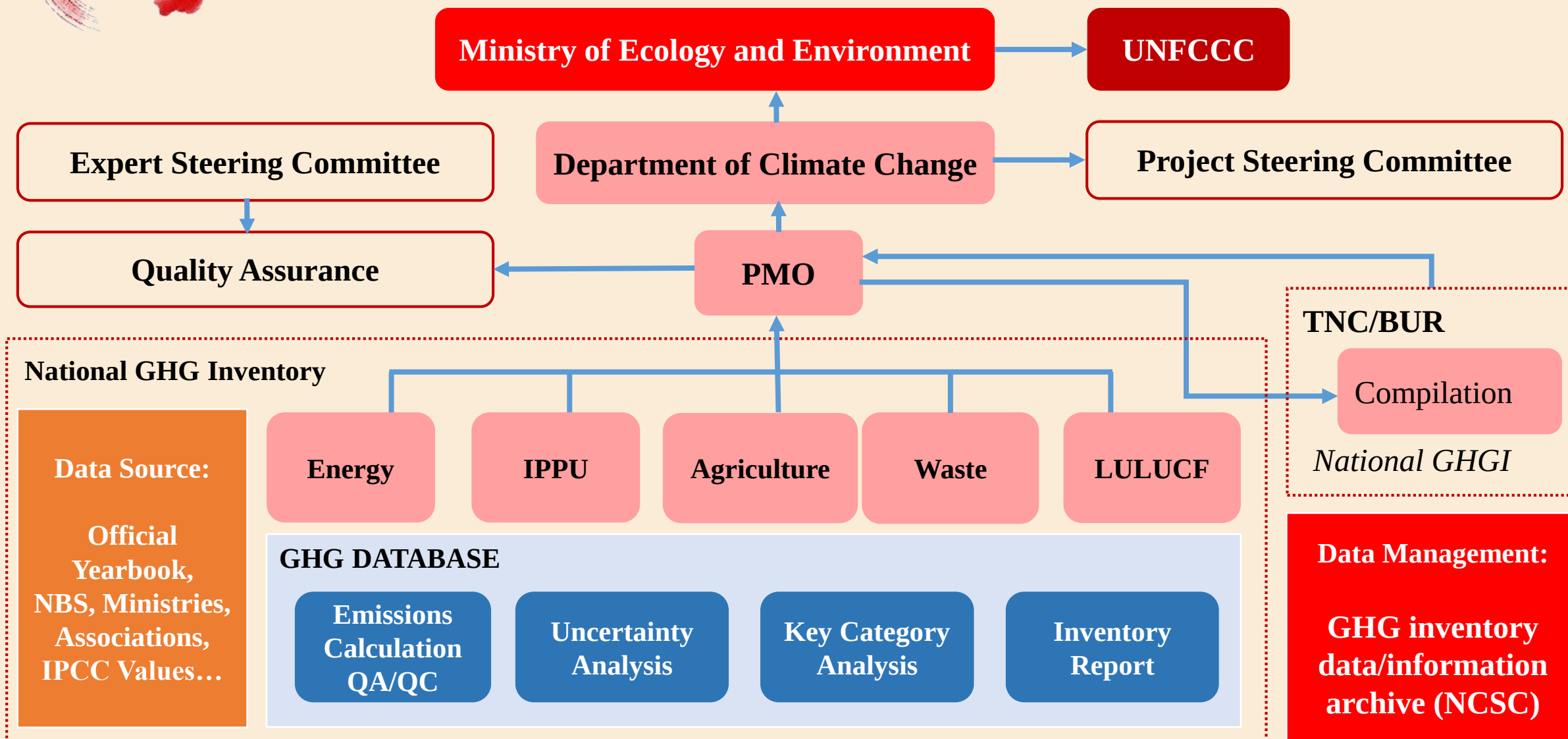
Total Energy Consumption





2

National GHG Inventory — Institutional Arrangements for Preparing GHGI





2

National GHG Inventory — Methods and Data sources

Improvements

- Contact with more data suppliers, make best use of available data, to upgrade the method of civil aviation from Tier 1 to Tier 2;
- Investigate on carbon content in net calorific value and unit heat value of different coal classes and of different uses, to gain more reliable carbon oxidation rate parameters;
- Use the COPERT model method to calculate the CH₄ and N₂O emissions from road traffic;
- Extend the sub-emission sources of fluorinated gas;
- Investigation on the straws returning-to-field rate before rice planting and on the composition of animal feed and fractions of animal manure management system;
- Extend the scope of carbon pool, and increase the estimates on the changes of soil carbon pool in different land-use patterns;
- Increase the estimates on CH₄ and N₂O emissions derived from biological treatment

Methods used for the National GHGI of 2014

Source/Sink Categories	CO ₂		CH ₄		N ₂ O	
	method	EF	method	EF	method	EF
Energy industries	T2	CS	T1, T2	D, CS	T1, T2	D, CS
Manufacturing industries and construction	T2	CS	T1	D	T1	D
Transport	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 fuel			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	T1, 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

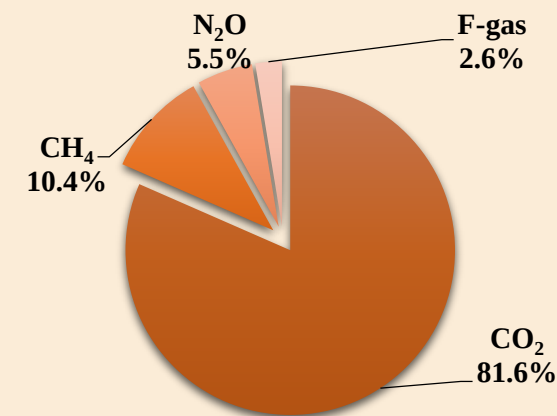


2 National GHG Inventory

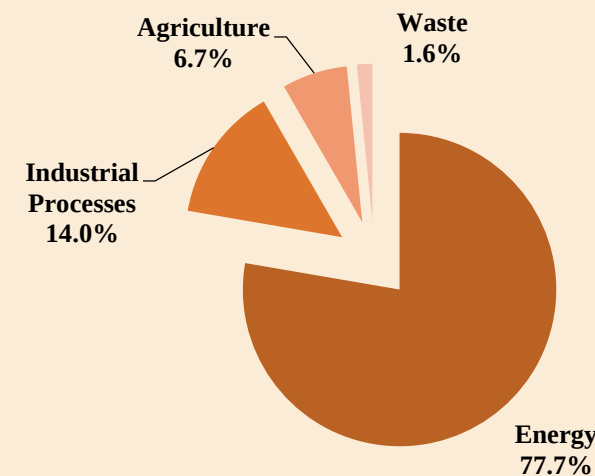
GHG Inventory of 2014 (100 Mt CO₂ eq)

	CO ₂	CH ₄	N ₂ O	HFCs	PFC	SF ₆	Total
Energy	89.25	5.20	1.14				95.59
Industrial Processes	13.30	0.00	0.96	2.14	0.16	0.61	17.18
Agriculture		4.67	3.63				8.30
Waste	0.20	1.38	0.37				1.95
Land Use, Land Use Change and Forestry (LULUCF)	-11.51	0.36	0.00				-11.15
Total (excluding LULUCF)	102.75	11.25	6.10	2.14	0.16	0.61	123.01
Total (including LULUCF)	91.24	11.61	6.10	2.14	0.16	0.61	111.86

Note: due to rounding, the aggregation of various items may be slightly different from the total.



GHG Emissions by Gases in 2014 (excluding LULUCF)



GHG Emissions by Sectors in 2014 (excluding LULUCF)



2

National GHG Inventory — Energy Sector

GHG inventory of Energy Sector in 2014 (kt)

Source/Sink categories	CO ₂	CH ₄	N ₂ O
Energy	8,924,929	24,757	367
Fuel combustion	8,924,929	2,614	367
Energy industries	3,995,344	50	223
Manufacturing industries and construction	3,423,506	324	65
Transport	819,740	79	21
Other sectors	623,178	777	7
Others	63,161	1,384	51
Fugitive emissions from fuel		22,142	
Solid fuels		21,015	
Oil and gas		1,137	

Highlights

- a) Fuel combustion
9,094 Mt CO₂ eq
- b) CO₂ emissions
8,925 Mt, all from fuel combustion
- c) CH₄ emissions
24,757 kt, 89.4% from fugitive emissions
- d) N₂O emissions
367 kt, all from fuel combustion



3

Mitigation Actions and their Effects

China's NAMAs for 2020

- Lower CO₂/GDP by 40%-45% compared to 2005;
- Increase the share of non-fossil fuels in primary energy consumption to around 15% ;
- Increase forest coverage by 40 million hectares and forest stock volume by 1.3 billion m³

Achievements by 2016

- CO₂/GDP dropped by 6.1% as against 2015;
- Non-fossil fuels accounted for 13.3% of the total energy consumption;
- Area of afforestation of the year : 6.788 million hectares

The 13th Five-Year Plan for National Economic and Social Development

- Lower CO₂/GDP by 18% compared to 2015;
- Put more efforts to control the emission of greenhouse gas other than CO₂, including HFC, CH₄, N₂O, PFC and SF₆ ;
- Increase significantly carbon sink capability



3 Mitigation Actions and their Effects — Progress

Economic and Industrial Structural Adjustment

- ◆ 30 provinces met their respective 2016 targets of total energy consumption amount and energy consumption intensity;
- ◆ In 2016, China's energy consumption per unit of industrial added value in 2016 decreased by 6.4% over 2015, saving about 190 Mtce

Energy Structure Optimization

- ◆ Between 2015 and 2016, China saw a reduction from 63.7% to 62.0% in the proportion of coal consumption among total energy consumption, a rise from 5.9% to 6.2% in the proportion of natural gas; consumption, and an increase from 12.1% to 13.3% in the proportion of non-fossil energy consumption

Increasing Carbon Sinks

- ◆ Forestry carbon sinks functionality steadily strengthened;
- ◆ Proactively increase grassland carbon sinks;
- ◆ Development of marine blue carbon sinks

Energy Conservation and Higher Efficiency

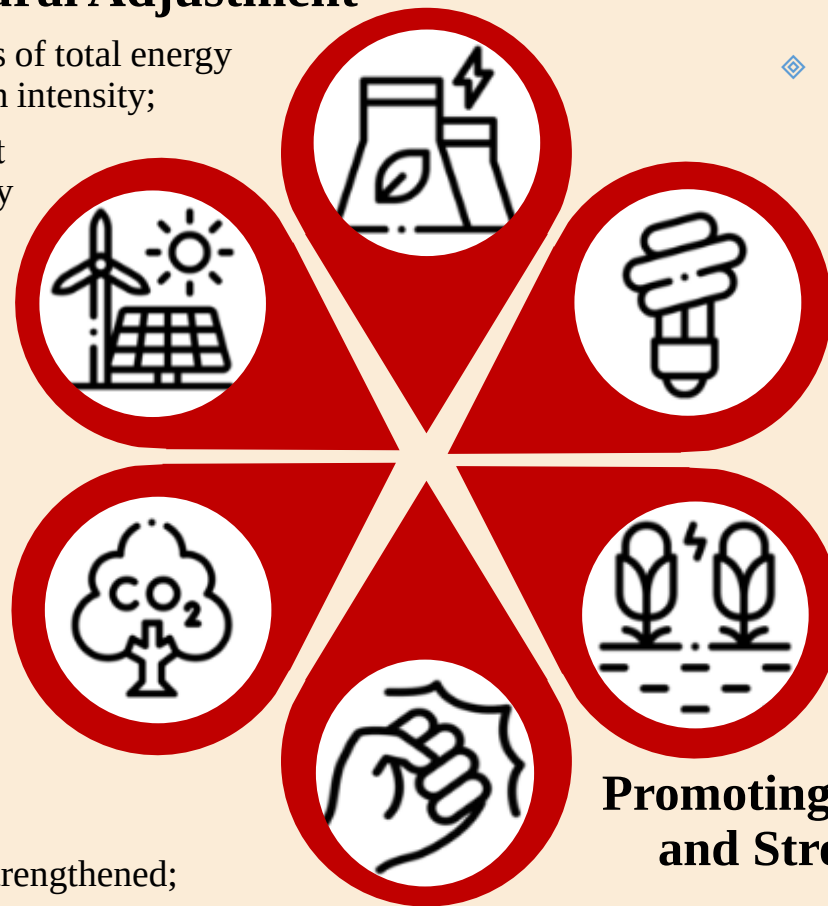
- ◆ China made significant achievements in energy conservation and efficiency improvement, with energy consumption of main energy-intensive products steadily reduced and the total energy saved by the whole society equaling more than 200 Mtce. As for the industrial department, energy consumption per unit of industrial value added in 2016 decreased by 6.4% over 2015, saving about 190 Mtce

Control of Non-CO₂ GHG Emissions

- ◆ Control of GHG emissions from industrial processes;
- ◆ Control of GHG emissions from agriculture;
- ◆ Control of GHG emissions from waste disposal

Promoting Mechanism Construction of Implementing and Strengthening Mitigation Actions

- ◆ In 2016, nearly 64 Mt of spot carbon allowance transactions were made in pilot carbon markets of 7 provinces and cities and the secondary market in Fujian, with the total trade volume about 1.045 billion yuan





3

Mitigation Actions and their Effects — Energy Structure Optimization



- ◆ The proportion of natural gas in total energy consumption increased to 6.2% in 2016;
- ◆ Reduce CO₂ emissions by 8 million tons in 2016



Non-fossil Energy

1

2

Natural Gas

Coal Reduction

3



- ◆ The proportion of non-fossil energy in energy consumption was 13.3% in 2016;
- ◆ Reduce CO₂ emissions by 110 million tons in 2016

- ◆ Between 2015 and 2016, China saw a reduction from 63.7% to 62.0% in the proportion of coal consumption among total energy consumption



3

Mitigation Actions and their Effects ——— Energy Conservation and Higher Efficiency

Nation-wide Energy Conservation Action

- ◆ The energy consumption per unit of GDP decreased by 5.0% in 2016 than that in 2015;
- ◆ In 2016, more than 200 Mtce were saved.

Energy Management Contracting (EMC) Extension Project

- ◆ Annual energy conservation of 35.79 Mtce was achieved in 2016;
- ◆ The CO₂ emission reduction reached 95.9 Mt in 2016

Energy Conservation in Industry Sector

- ◆ 2016 energy consumption per unit of industrial value added (above designated size) dropped by 6.4% against 2015; an accumulated energy conservation of about 190 Mtce;
- ◆ Reduce CO₂ emissions by 410 Mt in 2016.



Posters of National Low-Carbon Day



3

Mitigation Actions and their Effects — Increasing Carbon Sinks



Forestry Carbon Sinks

- ◆ Afforestation of 6.788 million hectares
- ◆ 8.5004 million ha of forests were tended



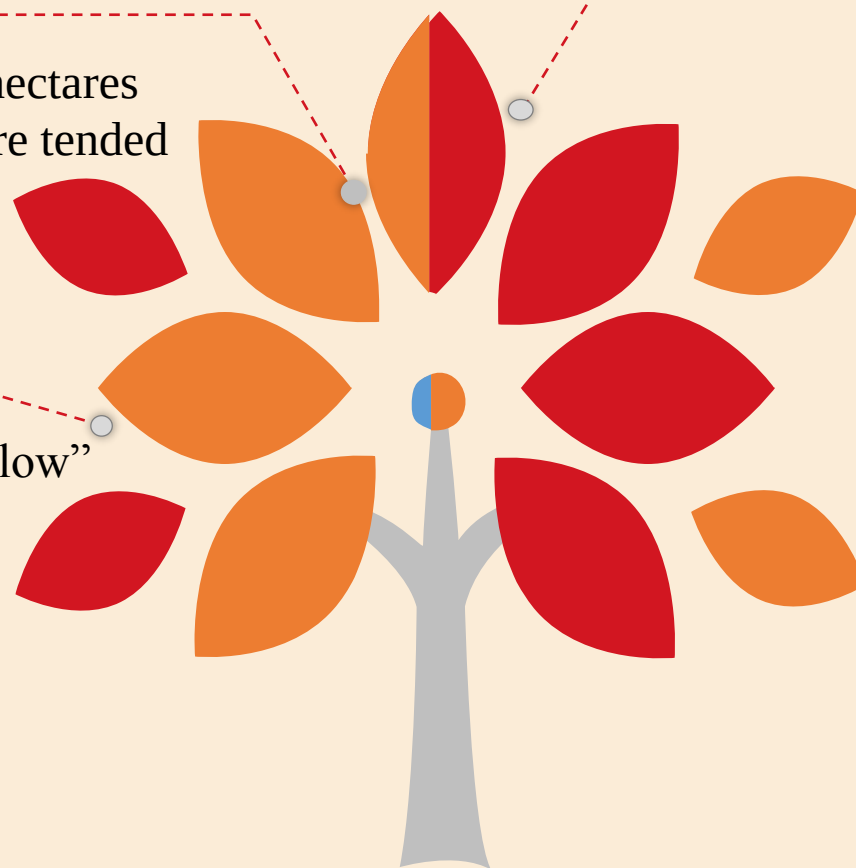
Marine Blue Carbon Sinks

- ◆ “South Mangrove and North Willow” wetland restoration program
- ◆ “Eco-Island and Reef” project
- ◆ “Blue Gulf” renovation program



Grassland Carbon Sinks

- ◆ In 2016, China increased grassland fences of 2.993 million ha
- ◆ Completed improvements of degraded grassland of 3.127 million ha
- ◆ Planted artificial grasslands of 13.079 million ha
- ◆ Implemented grazing prohibitions on grasslands of 105 million ha
- ◆ The total production of fresh grass from natural grasslands reached 1.04 billion tons





4

Finance, Technology and Capacity-Building Needs and Support Received

International Financial Support Received

- GEF grant: USD 132 million, 19 national climate change projects (in 2010-2016)
- Bilateral and multilateral international cooperation in the field of climate change, 72 projects listed in 2BUR

Financial Needs in the Future

- RMB 56 trillion yuan during 2016-2030, averaged to 3.7 trillion yuan annually: 32 trillion for achieving the goals and tasks of climate change mitigation, and RMB 24 trillion yuan for accomplishing the goals of climate change adaptation in NDCs.

Constraints, Challenges & Barriers

Lack of Amount

From 2016 to 2030, China will additionally need an average of 1.3 trillion yuan annually

Mainly for climate change mitigation, but less for climate change adaptation

Less for Adaptation



5

Basic Information of Hong Kong SAR

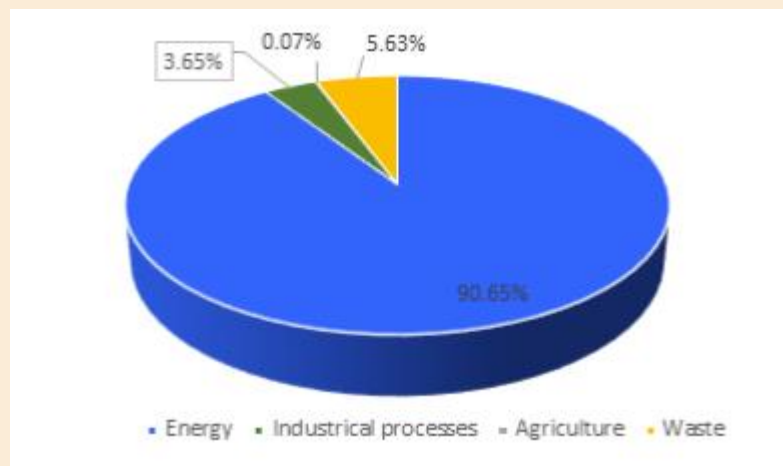
Regional Circumstances

- 1,106 km²
- Annual mean temperature: 23.3°C
- Average yearly rainfall: 2,400 mm
- Population: 7.34 million
- Eminent international financial, trading and shipping hub
- Highly urbanized economy
- Primary energy demand: 11.16 Mtce

Note: All data is for 2016

Greenhouse Gas Inventory

- 2014: 44.999 Mt CO₂ eq (excluding LUCF)



Hong Kong's GHG emissions
by sources in 2014

Mitigation Measures

- Hong Kong's Climate Action Plan 2030+
- Energy Saving Plan for Hong Kong's Built Environment 2015- 2025+
- Organic Resources Recovery Centre (ORRC)
- Integrated Waste Management Facilities (IWMF) Phase 1
- From 2005 to 2016, CO₂ emissions per unit GDP dropped by around 29%



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Basic Information of Macao SAR

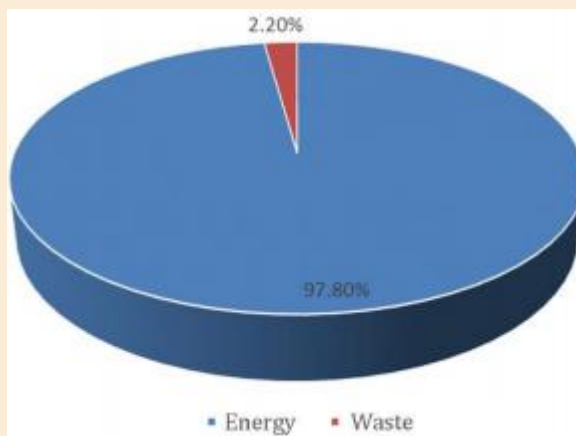
Regional Circumstances

- 30.5 km²
- Annual mean temperature: 22.6°C
- Annual average precipitation: 2,058.1 mm
- Population: 645 thousand
- World famous leisure centre
- Total energy consumption: 0.819 Mtce

Note: All data is for 2016

Greenhouse Gas Inventory

- 2014: 1,095 kt CO₂ eq (excluding LUCF)



**Macao's GHG emissions
by sources in 2014**

Mitigation Measures

- Increase the share of natural gas power generation
- Promote renewable energy
- Participate in “Airport Carbon Accreditation Program”
- Promote the use of environmentally friendly vehicles
- Energy conservation in Enterprises, public sectors and institutions, public outdoor lighting systems
- From 2010 to 2014: GHG/population decreased by 21.9%, GHG/GDP decreased by 37.1%



II. Experience and Lessons Learned in Participating in the ICA process





II Experience from ICA Process

Experience of First ICA

- Collective efforts of domestic team, TTE and the secretariat
- 33 clarifications on GHG inventory, mitigation actions and FTC
- 15 questions received during FSV session, over 1 hour was spent



Second Round of Technical Analysis

- Conducted during 2019 Sep. 2-6, video conference was held on Sep. 5
- TTE commend China for improving quality of 2BUR by taking consideration of the first round of TA
- More information was shared during the 2nd of TA
- Discussion was more interactive between TTE and domestic team
- The process for finalizing TASR could be accelerated





III. Responses to Questions Received





III

Responses to Written Questions — On GHG Inventory

Questions on obstacles and capacity building needs of using IPCC 2006 Guidelines– by Japan and New Zealand

- **Obstacles:** no activity data, country-specific emission factors and insufficient basic research for newly added emission categories; insufficient historical data to conduct recalculation; changes needed in statistical methods and scope
- **Capacity building needs:**
 - ❑ Strengthen the technical training of domestic greenhouse gas inventory experts on IPCC 2006 Guidelines; increase the participation of experts in relative departments; conduct research on activity level data sources, as well as investigation and analysis country-specific emission factors;
 - ❑ Strengthen technical exchanges on cross-cutting sectors, such as the overlapping sections between energy and IPPU (non-energy use), between agriculture, livestock and energy (biomass fuel), and IPPU (urea use), etc.;
 - ❑ Enhance experience sharing with Annex I parties
 - ❑ Increase financial support for non-Annex I parties



III

Responses to Written Questions — On GHG Inventory

Questions on LULUCF– by EU and Japan

- **Methodological changes:**

- ✓ Using IPCC 1996 GL, 1BUR only evaluated forest biomass carbon pool. By using GPG-LULUCF, IPCC 2006 GL and 2013 Wetland, 2BUR widened the scope of sources/sinks, including forest dead organic matter carbon pool (DOM) and soil carbon pool (SOC), farmland and grassland soil carbon pool (SOC), wetland and harvested wood products (HWP) carbon pools, which are all net carbon sinks.

- **Net carbon sink of farmland, grassland and wetland:**

- ✓ Farmland mainly evaluates the impact of organic matter input (organic fertilizer and straw return) and farming on changes in soil organic carbon storage. From a spatial perspective, the farmland soil organic carbon storage in northeastern China has decreased, while the farmland soil organic carbon storage in the southern region has increased. The overall estimation is a net carbon sink.
- ✓ Grassland mainly assesses the impact of human management activities (grazing prohibition, rotation grazing, rest grazing, fencing, artificial grass planting, etc.) and grassland degradation on changes in grassland soil carbon storage. Human management activities will increase grassland soil organic carbon, and grassland degradation will lead to grassland soil organic carbon loss. Overall, due to the gradual increase in the area of human management activities in recent years, the degradation of grassland has been controlled, so the overall carbon absorption is larger than emission, so it is a net carbon sink.
- ✓ Wetland is sink of CO₂ and a source of CH₄. After both are converted into CO₂eq, the wetland is a net carbon sink.



III

Responses to Written Questions — On Mitigation Actions

Questions on non-fossil fuel development – by EU and Australia

- **Main success factors that allowed for this increase in renewable power generation:**
 - ✓ Attaches great importance in the development of renewable energy industries as an important area for cultivating green growth, an important support for deepening supply-side structural reforms and building a modern economic system. Targets of developing renewable energy were clearly stated in national socio-economic plans.
 - ✓ Formulating a relatively complete policy system including renewable energy tariff, related subsidy policies, policy and management plans for integrating renewable energy generation to power grid, increasing the amounts of financial support, and improving the management process of funds collection and allocation.
 - ✓ Constituting a virtuous circle in China's huge market of renewable energy technology and production and its growing manufacturing capacity, promoting China to continuously improve its own technical capacity and gradually move to the high end in the global value chain.
- **Grid integration of renewable energy:**
 - ✓ Enhance the regulation capacity of coal power plants; increase flexible power sources such as pumped water storage and chemical battery energy storage to further enhance grid regulation capabilities; construction of power transmission channels; break the barriers to inter-provincial transactions and promote cross-regional renewable energy consumption; develop monitoring and early warning system on wind power investment and photovoltaic power generation market to limit the deployment in provinces with poor evaluation results; vigorously develop distributed renewable energy.



III

Responses to Written Questions — On Mitigation Actions

Questions on provincial-level work plans on GHG emission controls— by the U.S.

- **Provincial-level work plans on GHG emission controls:**
 - ✓ According to the five-year work plan for controlling greenhouse gas emissions issued by the central government, each province has formulated a five-year work plan for controlling greenhouse gas emissions. Some provinces have also issued annual work plan. Those plans may include different components according to their respective circumstances, such as annual carbon intensity reduction targets, energy structure adjustment target, carbon emission peaking plan, workplan for low-carbon pilot demonstration, compilation of greenhouse gas inventory, financial support mechanism, international cooperation and exchanges, etc.).
- **Role of the central government:**
 - ✓ The central government mainly support and coordinate local efforts in three aspects. The first is to provide overall guidance, such as instructions on low-carbon pilots or technical guidelines on peaking plan. The second is to organize different forms of workshop or seminars to promote the exchange and sharing of experiences between provinces on specific topics (such as the carbon market). The third is to assign annual carbon intensity target to provinces and conduct assessments of the achievement of these targets and the implementation of mitigation actions. The central government departments and national experts will also provide recommendations for local governments to improve their actions and plans.



III

Responses to Written Questions — On Mitigation Actions

Questions on carbon emission trading market– by EU and Canada

- **Impacts of MRV system for carbon emissions trading scheme on data collection for GHG inventory**
 - ✓ With the continuous improvement of the MRV system of the national carbon emission trading market, there will be more measured data available from enterprises, such as coal calorific value, carbon content per calorific value, and carbon oxidation rate. The above parameters can be used to update country-specific emission factor of the national GHG inventory; in addition, for some industries with a small number of companies, the total emissions of the industry can be directly obtained by summing up the emissions data reported by the companies, etc. upgraded to tier3 methods.
- **Capacity-building needs for effectively improving the functioning of the emissions trading mechanism:**
 - ❑ Data monitoring/accounting and reporting capacity in key sectors including power, steel, building materials, chemicals, non-ferrous metals;
 - ❑ Supervision capacity of ecology and environment department at municipal and district-level;
 - ❑ Verification capacity of third-party verification agencies.

The background is a stylized illustration of a Chinese landscape. On the left, a multi-tiered pagoda with a golden roof sits on a hill. In the distance, misty mountains are visible. On the right, the Great Wall of China winds across a hillside. The sky is a mix of soft pink and blue, with several red birds flying in the upper right corner. The overall style is painterly and evocative of traditional Chinese art.

谢谢!
多謝!

THANK YOU!

<http://english.mee.gov.cn/>