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Mitigation Actions and their Effects



Control of GHG Emissions from Non-Energy Activities

- **Control of GHG Emissions from Waste Sector:** 890 facilities for environment-friendly municipal waste treatment, including 640 sanitary landfills and 220 waste incineration stations



Increasing Carbon Sinks

- **Acceleration of Afforestation and Greening:** 460 million mu (307 thousand km²) or 28% more land afforested in the 12th FYP Period
- **Implementation of Forest Tending and Management:** From 2011-2015, the total area of forests tended in China reached 40.86 million hectares
- **Enhancement of Forest Disaster Control:** By the end of 2015, natural forest put under the management and protection reached 1,155 thousand km²





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Mitigation Actions and their Effects

Piloting and Demonstration of Low-Carbon Development

- **Launching Pilots of Low-Carbon Provinces and Cities:** in terms of carbon intensity, the 42 pilots had an average accumulated decrease of 19.4% from the 2010 level in 2014
- **Advancing Local Carbon Emission Trading Pilots:** By the end of 2015, the seven pilots in China had an accumulated quotas transaction of 50.32 million tons worth RMB 1.41 billion yuan at an average trading price of RMB 28 yuan per ton
- **Low-Carbon Industrial Parks and Community Pilots**



International Market Mechanism (CDM)

- 2,226 CDM projects in the 12th FYP Period (2,115 were successfully registered)
- 3,468 issuances of projects (including projects prior to 12th FYP) were given with CERs
- Totaling 695 Mt CO₂eq



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Finance, Technology and Capacity-Building Needs and Support Received

International Financial Support Received

- GEF grant: USD 149 million, 20 national climate change projects (in 2010-2014)
- Bilateral and multilateral international cooperation in the field of climate change, 14 projects listed in BUR

Financial Needs in Future

- RMB 30 trillion yuan in the next 15 years, or RMB 2 trillion yuan every year on average: 10 trillion for energy conservation and RMB 20 trillion yuan for low-carbon energy development

Sector	List of mitigation technologies needs	Sector	List of adaptation technologies needs	Sector	List of capacity building needs
Energy	<ul style="list-style-type: none"> • Advanced coal gasification technology • Advanced low-rank coal pyrolysis technology • High-efficiency ultra super-critical coal-fired power generation technology • Super-critical CO2 Brayton cycle power generation technology • Integrated gasification fuel cell combined cycle (IGFC-CC) power generation technology • Magnetohydrodynamic combined cycle (MHD-CC) power generation technology • High-efficiency gas turbine technology 	Water	<ul style="list-style-type: none"> • Solar PV water-lifting irrigation water-saving techniques • Rubber dam water supply technology • Large sprinkler irrigation technology • Drought adaptation technology • Rainwater catchment and utilization technology • Water development and integrated utilization technology for water-poor stratum • Waste water purification technology based on integrated-flow constructed wetland • Reclaimed water recycling and treatment device and technology • Mummified media filter (HF) technology for decentralized treatment of municipal waste water 	GHGI	<ul style="list-style-type: none"> • Furthering international exchanges on the preparation of GHG inventory, covering activity data collection, emission factor monitoring and testing, precise disaggregation of the domestic and international fuel consumption by airlines and by marine navigators, methodologies related to the estimation of emissions from non-fossil fuel sources, etc.; • Sharing experiences in database construction for GHG inventory preparation; • Strengthening exchanges on guidelines for preparing local GHG inventories.



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Information on Domestic MRV —

A Snapshot of China's Climate Change-Related MRV System

	National	Local	Enterprise
Basic Statistics	<ul style="list-style-type: none"> GHG emission statistical system and sector-specific parameter survey system Climate change statistical indicator system and sectoral statistical reporting system Working mechanism 	<ul style="list-style-type: none"> GHG emission basic statistical system Climate change statistical indicator system and statistical reporting system Working mechanism 	<ul style="list-style-type: none"> Energy consumption and GHG emission accounting system GHG emission monitoring plan
Reporting and Verification	<ul style="list-style-type: none"> Preparation and reporting of the GHG inventories CO₂ emission accounting on yearly basis. Data management system for GHG Inventories Direct reporting platform for key enterprises 	<ul style="list-style-type: none"> Preparation and reporting of the GHG inventories Guidelines on the preparation of the GHG Inventories On-line reporting system for key enterprises 	<ul style="list-style-type: none"> GHG emission reporting on yearly basis for key enterprises Guidelines on GHG emission accounting and reporting for key enterprises
Assessment and Verification	<ul style="list-style-type: none"> Accountability assessment with regard to the fulfillment of the CO₂ emission per unit of GDP reduction targets (measures and indicators) 	<ul style="list-style-type: none"> Provincial GHG Inventory Data Quality Assessment and Review system Measure of accountability assessment with regard to the prefectural governments' fulfillment of the carbon intensity reduction targets 	<ul style="list-style-type: none"> GHG emission verification for key enterprises Verification on and certification of voluntary GHG emission reductions



5

Information on Domestic MRV—

Demonstration of MRV work at national, local and enterprise level



In Feb 2014, leading group meeting on climate change statistics was held in Beijing, participated by 21 departments.



In Dec 2014, President Xi Jinping watched the demonstration of the low-carbon city construction management cloud platform developed by Zhenjiang City.



During the 12 FYP, the direct reporting system for GHG emissions data of key enterprises was established covering the functions of GHG accounting, reporting, monitoring, verification and release.



6 Other Information

- **Climate System Observation:** 4,000 new regional automatic weather stations from 2011-2015; 124 marine observing sites by the end of 2015
- **Advances in Climate Change Research:** Many findings were cited in IPCC AR5, in particularly the fields of atmospheric observations, regional climate change and its impacts, paleoclimate
- **Climate Change Adaptation:** 86,000 km² farmland with conservation tillage; eroded farmland reduced by 64.5 million tons; the area covered by the comprehensive soil and water loss prevention program has reached 74,000 square kilometers
- **South-South Cooperation:** Cooperation with nearly 100 developing countries ; 500 climate change projects; 100 Sino-African joint scientific and technological research and demonstration projects ; 130 projects for Pacific Island countries
- **Education, Outreach and Public Awareness:** Annual “National Low Carbon Day” event





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Basic Information of Hong Kong SAR

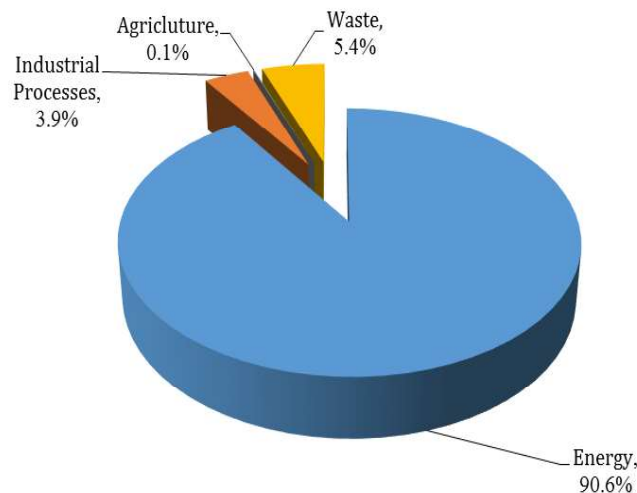
Regional Circumstances

- 1,105 km²
- Annual mean temperature: 23.3°C
- Average yearly rainfall: 2,400 mm
- Population: 7.242 million
- Eminent international financial, trading and shipping hub
- Highly urbanized economy
- Primary energy demand: 20.56 Mtce

Note: All data is for year 2014

Greenhouse Gas Inventory

- 2012: 43.176 Mt CO₂ eq (excluding LUCF)



Mitigation Measures

- Emission Reduction by Energy Industry
- Enhancing energy efficiency of buildings
- Promoting the wider use of electric vehicles
- Support waste reduction
- Tree-planting and Urban Greening
- From 2005 to 2012, CO₂ emissions per unit GDP dropped by around 20%



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Basic Information of Macao SAR

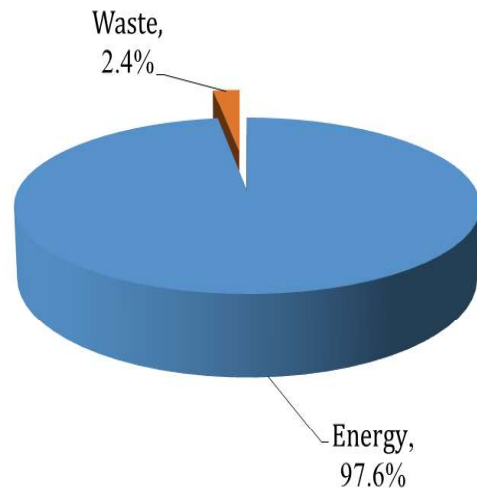
Regional Circumstances

- 30.3 km²
- Annual mean temperature: 22.6°C
- Annual average precipitation: 2,058.1 mm
- Population: 636 thousand
- World famous leisure centre
- Total energy consumption: 0.718 Mtce

Note: All data is for year 2014

Greenhouse Gas Inventory

- 2012: 978 kt CO₂ eq (excluding LUCF)



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 2005 to 2012: GHG/population decreased by 54.9%, GHG/GDP decreased by 76.4%



II Experience from ICA Process

Experience of Technical Analysis

- 22 to 26 May 2017 in Bonn
- 33 clarifications on GHG inventory, mitigation actions and FTC
- Most of the clarification and information provided during the TA process has been incorporated in the TASR



Value Addition of Technical Analysis

- Transparency of the report has been improved
- “Areas of Improvement” identified by the TTE has been used in the second round of BUR
- More discussions and conversation has been triggered internally
- Capacity building process for the BUR team
- The need to improve domestic MRV system becomes more urgent



III

Responses to Written Questions — On GHG Inventory

Questions on NCVs and emission factor updates— by the U.S.

- All of the GHG inventories of energy sector that were compiled and submitted by China, including 1994, 2005, 2012 inventory (submitted in 1BUR), have conducted special surveys on coal quality.
- The difference in the type of coal quality, carbon content and oxidation rate has been taken into consideration during preparation of inventories. For example, a special survey on the carbon oxidation rate of industrial boilers conducted by TNC (to be submitted by the end of this year) shows that the carbon oxidation rate of coal-fired industrial boilers has increased by about 5% comparing with SNC, thus has an influence on the emission increase.
- China is currently applying for GEF's grants to carry out the 4NC work. If it is funded, the team will continue to update country-specific emission factors. We also welcome other countries to exchange experience with China and provide capacity building support, so as to strengthen the capacity for updating of emission factors and further improve the accuracy of our GHG inventories.



III

Responses to Written Questions — On GHG Inventory

Questions on activity data—by the U.S.

- China launched the fourth national economic census in 2018, with the census result expected to be released by the end of 2019. According to the experience of previous economic censuses, it will update relevant data in energy sector. On the basis of grants for 4NC, the inventory team will recalculate the inventories in previous years in accordance with the result of the fourth economic census in close collaboration with the National Bureau of Statistics.
- China welcomes other parties to exchange experience on data collection, so as to further improve the data gathering and analysis capability of China's inventory preparation and increase the quality of inventory compilation.
- China has basically completed the development of the direct reporting system of GHG emissions from key enterprises. With the launch of the national carbon emission trading market, it is expected that enterprises will use this system to submit their greenhouse gas emissions data. The inventory team is planning to study how to use the data in the system in the future, in hope of updating China's country-specific NCVs and emissions factors through data directly measured and monitored by enterprises.



III

Responses to Written Questions — On GHG Inventory

Questions on data archive and database—by the U.S.

- All the documentation and QA/QC has been described in 1BUR.
- Data archive relevant experience for China's inventories includes: keep all the written records and store them promptly, such as selection criteria for methodology, data processing methods, etc.; establish a database that stores all activity data, key parameters, emissions factors, information sources/references, and also back up the data in electronic and hard copies.
- The main functions of the database involve the calculation of inventories, quality control, uncertainty analysis, key category analysis, data management & analysis, producing inventory report, so as to improve the efficiency and quality of inventory compilation. At present, the calculation methods of the database adopts an flexible approach that can be adaptable for methodologies updates. However, updating to IPCC 2006 guideline call for reconstructing the estimation methodologies, sources and sinks, and archive function for the purpose of recalculation, trend analysis, etc., thus needs more money, time and personnel.



III

Responses to Written Questions — On GHG Inventory

Questions on biggest and least challenges—by Turkey

- The data availability is the biggest difficulty when compiling the national greenhouse gas inventory for 2012. The greenhouse gas inventory compilation requires a great deal of information about activity data and emissions factors. To support the inventory compilation work, the National Bureau of Statistics implemented a statistical work program for climate changes in 2014. Based on the original statistics system, it has included basic statistical indicators of greenhouse gas emissions in the government's statistical indicator system, and established and optimized the basic statistics system that aligns with the greenhouse gas inventory compilation. However, as the system was just established, the quality of data still needs to be evaluated and the whole system is lacking financial support. Thus, China is still facing great challenges in compiling biennial inventory report.
- The least challenging part of China's compiling the 2012 national report on the greenhouse gas inventory report is that the process of selecting experts to build an inventory compilation team. On the basis of compiling first and second national communication for climate changes, China has gradually form a national compilation team of greenhouse gas inventories, which consists of relevant stable institutions and experts.



III Responses to Written Questions — On Mitigation Actions

Question on incorporating CC actions in national strategies—by Turkey

- China actively incorporates targets and tasks in response to climate change into its economic and social development planning, and enhances the guiding role of strategic planning on addressing climate change through years of efforts.
- But at the same time, as the largest developing country, China also faces some specific challenges: firstly, the level of awareness of the whole society to tackle climate change remains to be improved and in some regions and sectors, the importance of efforts to address climate change is not fully recognized and there is not enough knowledge about the risks and implications of climate change, which may impede the establishment of relevant targets and policies; secondly, due to the fact that addressing climate change call for comprehensive efforts, while taking into account economic development in different regions are hugely different, the efforts to address climate change are beset with difficulties in setting targets for regions and making overall coordination; thirdly, the institutional arrangement to cope with climate change still needs to be strengthened, for example, national laws on climate change have not been enacted yet, financial support for some key tasks is insufficient, and there is a huge demand for more capacity building at local level to integrate climate change actions into development plans.



III Responses to Written Questions — On Mitigation Actions

Question on effectiveness of energy mix optimization—by Turkey

- Developing renewable energy and decarbonizing energy mix have been the important components of China's energy revolution. China proposed to raise the proportion of non-fossil fuel in primary energy up to 15% by 2020 and to around 20% by 2030. Achieving a 20% share of non-fossil energy is about 2.6 times that of 2014 (0.47 Gtce) and equals the total energy consumption of Japan, UK and France.
- China faces more arduous tasks in energy mix low-carbon transformation than developed countries due to its specific energy mix. Energy demand tends to stabilize in post-industrial developed countries. They can displace coal and other fossil fuel to reduce the CO₂ emissions by developing new and renewable energy. However, China's energy demand still grows. Its renewable energy development has to satisfy the increment of energy consumption. Although China leads the global investment in renewable energy development, its increment of total energy consumption cannot be solely satisfied by renewable energy due to its low ratio and relatively high cost.



III

Responses to Written Questions — On Mitigation Actions

Experience and program on public awareness raising—by Turkey

- Improving energy efficiency standards and labeling. China further deeply advanced the implementation of the Project of Promoting One Hundred Energy Efficiency Standards and issued 221 national energy conservation standards during the 12th FYP period. In 2015, China worked out the detailed implementation rules for the Energy Efficiency Leaders scheme and launched the evaluation and selection of products and enterprises as Energy Efficiency Leaders.
- Carrying out low-carbon community pilots. In 2014, the NDRC issued the Notice on Carrying out Low-Carbon Community Pilots, and henceforth initiated relevant works all over the country. Improving the green procurement scheme. Through implementing procurement policies on mandatory and prioritized purchasing of energy-saving and environmental-labelling products, the government has played a positive and exemplary role in boosting green consumption, promoting low-carbon development and combating climate change.
- Extensive Public Participation. With the development of relevant education, training and publicity work on addressing climate change, the public has proactively and voluntarily chosen low-carbon lifestyle such as low-carbon transport, low-carbon eating and drinking, low-carbon housing and purchasing energy-saving and low-carbon goods.



III

Responses to Written Questions — On Mitigation Actions

Plans and policies for non-energy and non-CO₂ emissions —by UK

- During the 13th Five-Year Plan period, the Chinese government has plans for further controlling the emissions of non-CO₂ greenhouse gases, including actively developing and utilizing natural gas, coal-bed methane and shale gas, enhancing the recycling of vent natural gas and associated gas; controlling the greenhouse gas emissions during industrial activities, formulating actions plans to control HFCs emissions, and gradually reducing the production and utilization of controlled uses of HCFC-22; adopted the zero growth for the use of fertilizers, continue to popularize the soil testing and fertilizer recommendation approach, and lower N₂O emissions of farmland, so as to achieve the emissions peak by 2020. China will also control CH₄ emissions of farmland, cultivated improved varieties with high yields and low emissions, and improved water and fertilizer management. Other efforts include controlling greenhouse gas emissions of livestock and poultry, advancing large-scale standardized culture, and facilitating the comprehensive utilization of waste from livestock and poultry. By 2020, the proportion of waste disposal facilities in large-scale breeding farms and communities will reach over 75%. China has also carried out the work of the CH₄ collection and utilization in landfill sites and sewage plants and the collaborative treatment of conventional pollutants.



III Responses to Written Questions — On Mitigation Actions

Question on reconstruction of thermal power plants—by UK

- China has always promoted the clean utilization of fossil fuel. The Opinions on Promoting Safe, Green Exploration of Coal and Efficient, Clean Utilization of Coal and the Action Plan for Clean and Efficient Use of Coal (2015-2020) were published to promote the transformation of coal development pattern, improve the exploration and utilization performance of coal resource and promote the clean and efficient utilization of coal.
- In 2014, the MOF and the State Administration of Taxation (SAT) jointly issued the Notice of Implementation of Coal Resource Tax Reform, under which tax will be calculated ad valorem in order to promote the intensive use of resources and environment protection. In 2016, China advanced resource tax reform in a comprehensive manner and expanded the coverage of resource tax
- During the 12th FYP period, the energy consumption per KWh of thermal power units (with capacity of 6,000 KW and above) dropped by 18 gce accumulatively, and backward thermal power units with a total generating capacity of 28 GW were eliminated. Over 1,000 backward coal mines with a total production capacity of more than 70 Mt were shut down and the use of commercial coals with poor quality was forbidden.
- China has also improved the scale and level of natural gas utilization. In 2015, the ratio of natural gas in total energy consumption reached nearly 6 percent. The structure of natural gas utilization became more rational, and the proportion of urban gas and natural gas-fired electricity generation both increased.



III Responses to Written Questions — On domestic MRV

Question on climate change statistic system—by Turkey

- To improve the climate change statistics work, scientifically set the statistical indicators that reflect the climate change characteristics and address the climate change, and comprehensively reflect China's efforts and achievements in tackling climate changes, the National Development and Reform Commission (NDRC) has teamed up with the National Bureau of Statistics to issue the opinions on strengthening the statistical work for coping with climate changes. In this document, China proposed a statistical indicator system to tackle climate changes for the first time, which involves five categories, namely climate changes and the impacts, adapting to climate changes, controlling greenhouse gas emissions, investment in coping with climate changes and relevant management on climate changes, 19 sub-categories, totaling 36 indicators, and has established a statistical report forms system to tackle climate changes based on it.
- The detailed information is contained in 1BUR.



III Responses to Written Questions — FTC and others

Alternative plan to provide funding for low-carbon development—by Turkey

- On one hand, the Chinese government will provide its support directly through public funds such as fiscal budget funds and policy banks and other means, including energy-saving and carbon reduction awards, discount loans, reduction and exemption of taxes and fees, financing support, governmental procurement, green credit, etc.
- On the other hand, China will play the guiding and leveraging role of financial funds and actively adopt the PPP model and related investment policies to attract different types of enterprises to directly invest in the climate change tackling work in the energy conservation and low-carbon sector.
- Nevertheless, the demand of energy conservation and low-carbon transformation for funds cannot be fully satisfied through domestic investment alone, but still requires developed countries to further expand the scale of subsidies and provide the sufficient, stable and effective financial support for China to cope with climate changes.



III Responses to Written Questions — FTC and others

Plan for South-south cooperation—by Turkey

- In order to implement the international commitment of our leadership, we have made an extensive investigation into the framework, management and operation model of the fund, and carried out in-depth research and design concerning issues such as the organizational form and financing channels of the fund, with a preliminary scheme on fund preparation having taken shape.
- Next, the Chinese government will continue to actively fulfill its international commitments, provide support for other developing countries within the framework of South-South cooperation on climate change and help them improve the ability to respond to climate change by donating supplies and organizing capacity building training.



III Responses to Written Questions — FTC and others

Questions on one-belt and one-road—by UK

- There is not a unified international standard for green and low-carbon investment in the Belt and Road Initiative due to significant differences in the national conditions of countries along the Belt and Road route. However, during the implementation of specific projects, the Chinese government, enterprises and financial institutions have strictly obeyed relevant laws, regulations and standards of cooperating countries, and adopted more stringent investment standards formulated by the joint financing parties (such as multilateral development banks) as required.
- In the meantime, Chinese financial institutions are making all-out efforts to study the formulation of the green and low-carbon investment standard, and while the China-UK Green Finance Center, which was officially launched in March 2018, is drafting the Belt and Road green investment initiative, in an effort to make sure the investment in the Belt and Road Initiative is consistent with the realization of independent contribution goals by countries along the Belt and Road route, the 2°C temperature control target worldwide and the 2030 Agenda for Sustainable Development Goals.
- Under the Belt and Road Initiative, the investment cooperation in regional energy, infrastructure and other sectors has been constantly strengthened, which has increased the capacity of various countries along the route in coping with climate changes, promoted the implementation of sustainable development goals, such as economic growth, poverty alleviation and sustainable energy, and vigorously facilitated the publicity and application of low-carbon technologies like renewable energy and high-speed rails.



THANK YOU