*Tracking progress in the development and deployment of clean energy technology Wednesday, 15 November 2017, 10.30-12.00, Nordic Pavilion* 

NDCs implementation and longer-term pathways within the China's New Normal

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### NDC relevant exercises



### Targets set up in the 13<sup>th</sup> FYP

• Energy Production and Consumption Revolution Strategy : 50% of non-fossil fuel in PE

Outcome	2020 target
Growth rate of GDP	6.5%
CO <sub>2</sub> emissions reduction per unit of GDP based on the 2015 level	18%
Total consumption of primary energy	Less than 5 Gtce
Growth rate of primary energy during the 13 <sup>th</sup> FYP	2.5% per year (3.6% during the 12 <sup>th</sup> FYP)
Share of non-fossil fuels in primary energy consumption	15%
Maximum share of coal in total primary energy consumption	58%
Minimum share of natural gas in total primary energy consumption	10%
Total investment in Renewable during the 13 <sup>th</sup> FYP	2.5 Trillian RMB
Coal fired power plant installed capacity	1100 GW
Hydropower installed capacity	380 GW
Connected-grid wind power installed capacity	210 GW
Nuclear power installed capacity	58 GW
Connected-grid solar power installed capacity	105 GW

### New normal & Innovative development path

- China is seeking to shift to a 'new normal', a transition that it intends will be powered by an 'innovative development pathway'.
- China is integrating the innovative development pathway into all of its strategic planning and committed to creating the technological, financial, and other conditions necessary to achieve this fundamentally different model of development.

Traditional Development Model: Industrial, high-growth, export-orientated, model reliant on heavy use of material inputs. **The Innovative Development Pathway:** A low carbon form of development that reduces the energy intensity of GDP and carbon intensity of energy whilst maintaining economic growth. This is congruent with the five development concepts enshrined in China's 13<sup>th</sup> FYP The New Normal: An advanced economic structure focused on services, domestic demand and comparatives advantages in lowcarbon innovation.

#### the innovative development pathway and towards the 'new normal'. The economic "new normal".

driving forces of China's CO2 emission. In this regard, A successful transition to a 'new normal' for China's economic growth model is likely to have significant repercussions on future energy demand growth and CO2 emissions.



The economic "new normal" does not only mean slow down the speed of economic growth, but more importantly, a structural upgrading towards a model that is service-oriented and supported by innovation-driven of advanced technologies and high value-added products.

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Source: 2005 and 2010 data are from China Statistical Yearbook, China Energy Statistical Yearbook and China's official review of target completion. Data after 2015 are from an NDC scenario from PECE model developed by NCSC and Renmin University of China.

### 3 important pillars in achieving China's NDC

 In achieving China's NDC, improving energy efficiency, increasing the electrification rate of end-use sectors, reducing energy service demand by structural change and sustainable consumption, as well as decarbonization of the energy system are all expected to play key roles.



*Source: 2010 data are from China Statistical Yearbook. 2030 data are from an NDC scenario from the PECE model developed by NCSC and Renmin University of China.* 

# China's NDCs implementation will bring in co-<sup>8</sup> benefits



Source: the analysis conducted by Dr. Chai Qimin based on IAMC model

# An overview of domains where detailed policy<sup>9</sup> design and implementation is required

Overarching national strategies	Implementing proactive national strategies on climate change, including enacting climate change law, integrating climate change into mainstream social economic strategies and developing long-term strategies and roadmaps for low-carbon development.		
	<i>Improving regional strategies on climate change</i> , including decomposing national targets to the local level, development of regional low carbon strategies, promoting advanced regions to peak their emissions early, control of emissions and carbon intensity at the urban development zone level, etc.		
	Innovating a low-carbon development growth pattern, such as through low-carbon pilots in provinces, cities and industrial zones.		
	<b>Promoting international cooperation on climate change</b> , such as by actively engaging in international cooperation and establishing a Fund for South-South Cooperation on Climate Change.		
Energy system changes	<b>Building a low-carbon energy system</b> , including the shift away from coal and the development of renewables and nuclear power through policies like phasing out coal in specific regions, emission and energy standards for electricity supply, subsidies and quotas for electricity, reform of the electricity and energy pricing mechanism to take account of carbon scarcity, supply-demand conditions and other environmental costs, etc.		
Support for science and technology	<b>Building an energy-efficient and low-carbon industrial system</b> , including the promotion of low-carbon industries, control of industrial emissions by, for example, phasing out obsolete capacity, setting key industry investment entry barriers, improving energy efficiency and promoting decarbonization in energy intensive industries, as well as the promotion of recycling systems, etc.		
	Enhancing support for science and technology, including strengthening R&D on low-carbon technologies		
	<i>Improving statistical and accounting systems for greenhouse gas (GHG) emissions</i> , including regular GHG inventories and reporting requirements at national and provincial levels, carbon emission certification, etc.		
Sectoral plans	<b>Controlling emissions from the building and transportation sectors</b> , for example through low-carbon urbanization planning, optimized green transportation systems, stricter building codes, improving energy standards for electric devices, promoting distributed renewables, etc.		
	Increasing carbon sinks in forests, wetlands and grasslands		
	Enhancing overall climate resilience, for example, through infrastructure development and improved assessment and risk management of climate change		
Incentives and	Increasing financial and policy support, which might include the use of funds, innovative carbon financing mechanisms, preferential taxation policies, green		
behavior	government procurement systems green credit mechanisms, etc.		
	Promoting carbon emissions trading markets, building on emissions-trading pilots		
	Promoting a low-carbon way of life, by exploring ways in which to support low-carbon choices in daily life		
	Increasing broad participation of stakeholders, in order to increase public- and private-sector awareness of low-carbon development		

### Even more significant emission reductions will<sup>10</sup> be required beyond 2030 to meet 2°C

- Successful implementation of the NDC can foster the enabling conditions in the 2020s that will be essential for enhanced mitigation beyond 2030.
- Although challenges and uncertainties remain, China is on track to achieve its NDC goals and has significant potential to further enhance its action.
- China's NDC can also be the basis for the country to develop its long-term, midcentury low emission development strategy.



Note: The purple area represents IPCC AR5 emissions scenarios for China with more than 50% probability of achieving the 2  $^{\circ}$  goal given China's current status. Red and yellow lines indicate China's emissions trends after implementing NDC targets (with and without energy data adjustment following latest economic census). The green lines indicate an enhanced ambition scenario. To ensure comparability with global data, the CO<sub>2</sub> emissions here include energy-related CO<sub>2</sub> emissions plus CO<sub>2</sub> emissions from cement production.





Source: Fu Sha, 2017

### growth in energy use and more rapid decarburization

- *"A plateau period exist before rapid reduction"*
- *"Structural change will play more important role before 2030"*
- "Quicker phasing out of coal (especially the decentralized used coal) to maximize the air pollution improvement cobenefit"



Coal Oil Natural Gas Non-fossil Fuel



■ Coal ■ Oil ■ Gas ■ Nuclear ■ Hydro ■ Biomass ■ Wind ■ Solar ■ Other renewable



■ Coal ■ Oil ■ Gas ■ Nuclear ■ Hydro ■ Biomass ■ Wind ■ Solar ■ Other renewable



### With high share of RE, "new normal" scenario could further reduce China's emission





### Different sectors play different roles

- Industry peak first before
  2020, Building
  2025-2030,
  Transport after
  2030, Power
  around 2030.
- Delaying in restructuring will postpone the peaking of industry.



Source: NDC scenario from the PECE model developed by NCSC and Renmin University of China.



### **Policy Implementation**

China has the potential to overachieve its NDCs but still face challenges, e.g. political willingness in local governments, pace of restructuring

Delayed efforts in pursuing new normal development path will result in incredible increases in China's future emission

Coordination between the longer term strategy and near-mid term targets are required in order to avoid huge lock in and low carbon Infrastructure is the Key

Linkage with other development goals and integrated cost benefit assessment would be helpful to mainstreaming climate change issue

China's development strategy, e.g. OBOR, will not only affect its own emission path but other countries thus should be treated in the global context

### A global model focusing on OBOR (BRIAM)



#### Thank you for your attention!

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