INDC China

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China's INDC

- To achieve the peaking of carbon dioxide emissions around 2030 and making best efforts to peak early;

- To lower carbon dioxide emissions per unit of GDP by **60 to 65%** from the 2005 level;

- To increase the share of non-fossil fuels in primary energy consumption to around **20%**; and

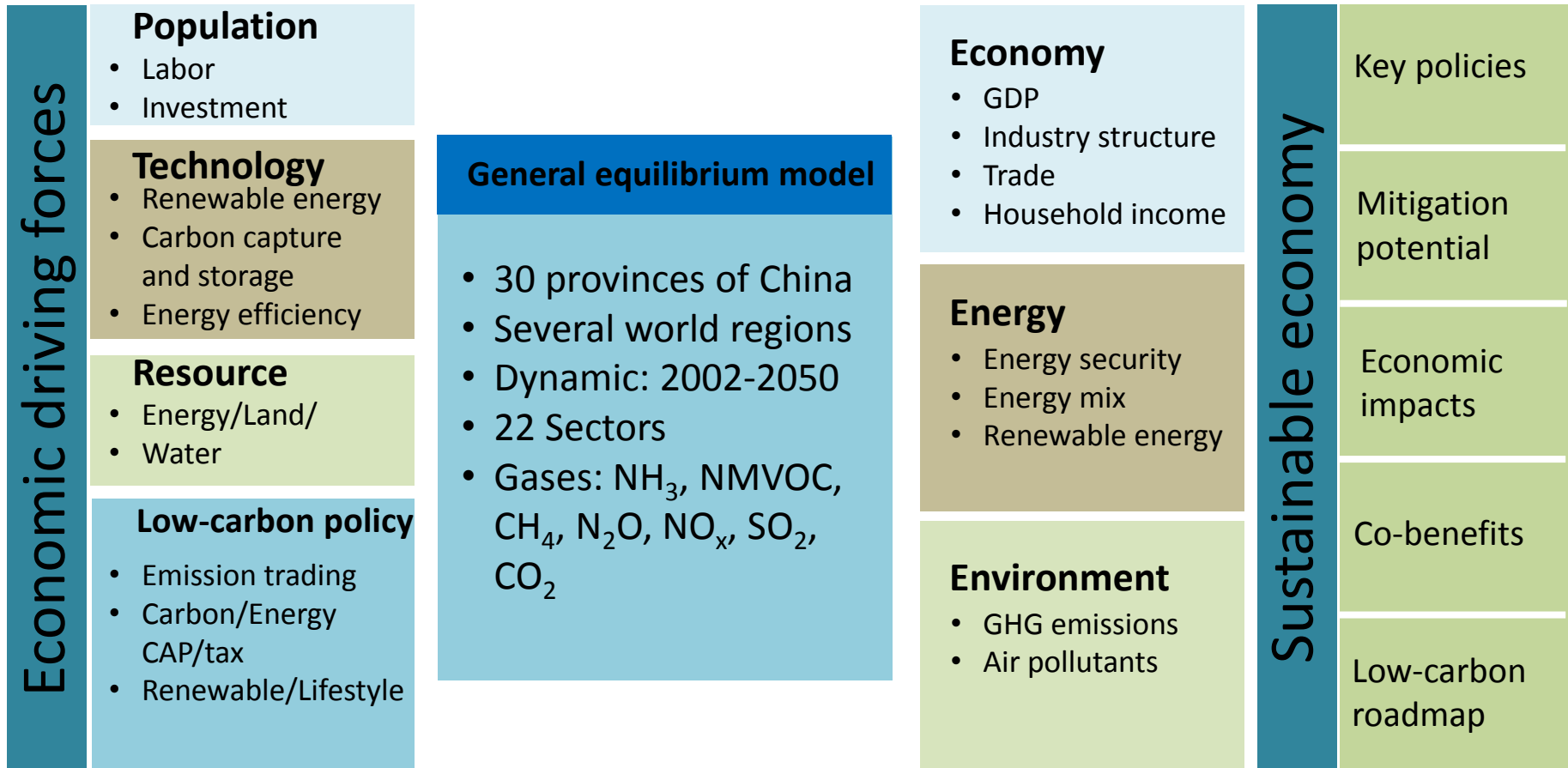- To increase the forest stock volume by around **4.5 billion** cubic meters on the 2005 level.

Action plan

- Implementing Proactive National Strategies on Climate Change
- Improving Regional Strategies on Climate Change
- Building Low-Carbon Energy System
- Building Energy Efficient and Low-Carbon Industrial System
- Controlling Emissions from Building and Transportation Sectors
- Increasing Carbon Sinks
- Promoting the Low-Carbon Way of Life
- Enhancing Overall Climate Resilience
- Innovating Low-Carbon Development Growth Pattern
- Enhancing Support in terms of Science and Technology
- Increasing Financial and Policy Support
- Promoting Carbon Emission Trading Market
- Improving Statistical and Accounting System for GHG Emissions
- Broad Participation of Stakeholders
- Promoting International Cooperation on Climate Change

Contributions to 2015 agreement negotiation

- **Mitigation**
  - Developed countries: absolute emissions reduction targets by 2030
  - Developing countries: enhanced mitigation actions
- **Adaptation**: Establish a subsidiary body on adaptation
- **Finance**: The scale should increase yearly starting from 100 billion USD per year from 2020
- **Technology** Development and Transfer
- **Capacity Building** for mitigation and adaptation in developing countries
- **Transparency** of Action and Support
- **Legal Form**: 2015 agreement shall be legally binding agreement.
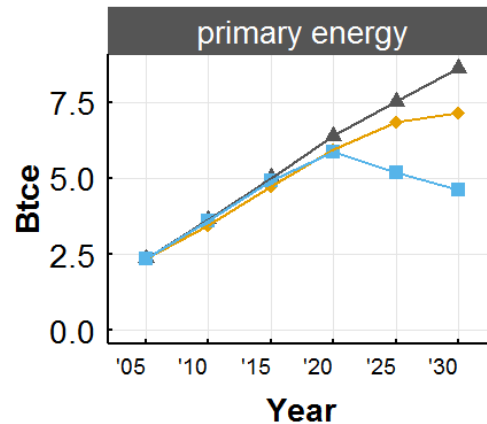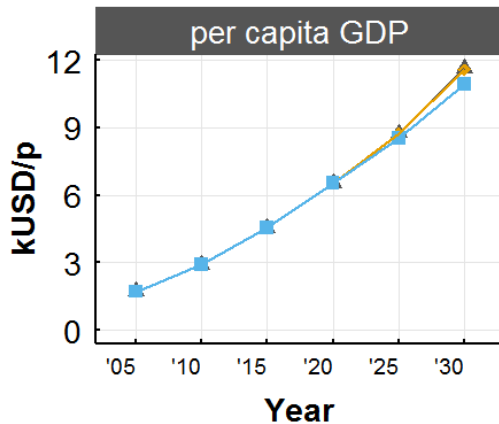
Assessing China's INDC with CGE model

Economic driving forces

Population
- Labor
- Investment

Technology
- Renewable energy
- Carbon capture and storage
- Energy efficiency

Resource
- Energy/Land/
- Water

Low-carbon policy
- Emission trading
- Carbon/Energy CAP/tax
- Renewable/Lifestyle

General equilibrium model

- 30 provinces of China
- Several world regions
- Dynamic: 2002-2050
- 22 Sectors
- Gases: NH_3, NMVOC, CH_4, N_2O, NO_x, SO_2, CO_2

Economy
- GDP
- Industry structure
- Trade
- Household income

Energy
- Energy security
- Energy mix
- Renewable energy

Environment
- GHG emissions
- Air pollutants

Sustainable economy

Key policies

Mitigation potential

Economic impacts

Co-benefits

Low-carbon roadmap

For more details: Dai, H., P. Mischke, X. Xie, Y. Xie and T. Masui (In press). "Closing the gap? Top-down versus bottom-up projections of China's regional energy use and CO2 emissions." Applied Energy.
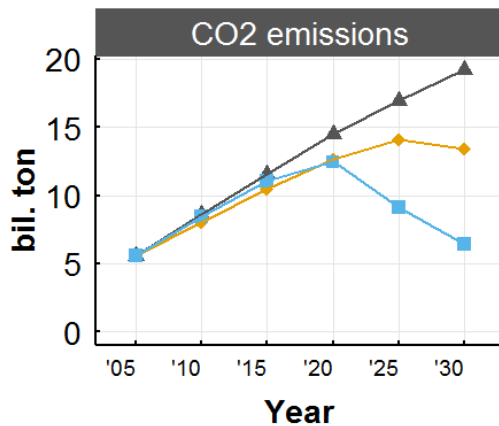
Results: macro indicators

From 2005 to 2030:

- Per capita GDP rises from 1.72 to 11.65 kUSD/capita;
- CO_2 rises from 5.56 to 13.42 billion ton, not enough for 2-degree target;
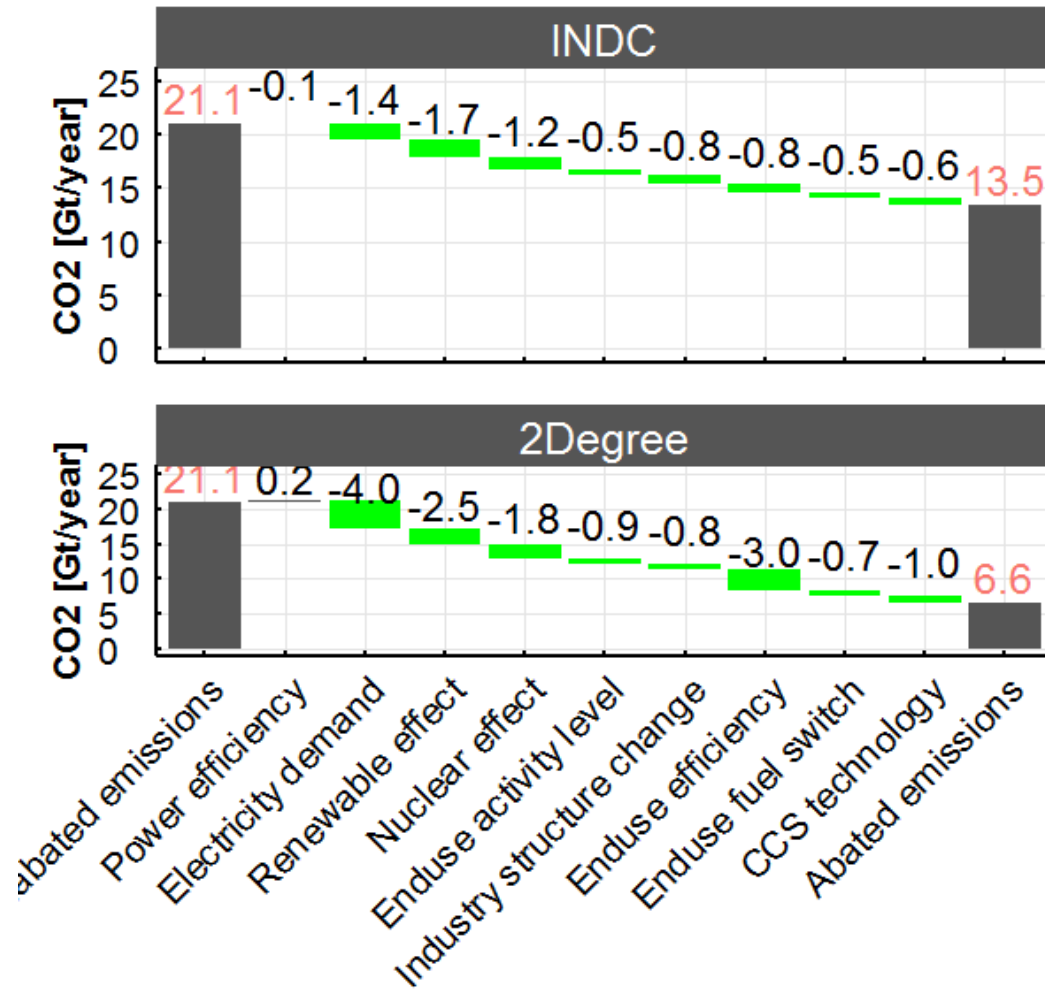- primary energy rises from 2.36 to 7.14 btce;
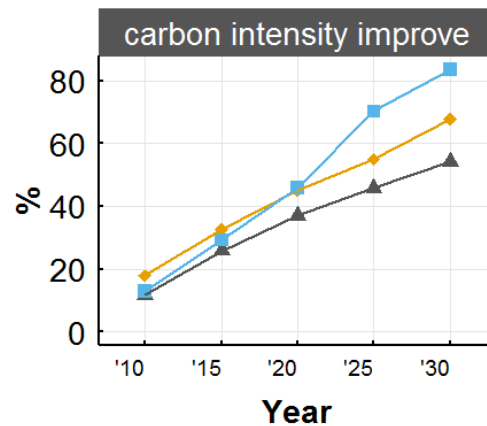
Results: contribution of key options

Key measures:
- **primary**: renewable and nuclear energy; energy efficiency, industry structure change etc;
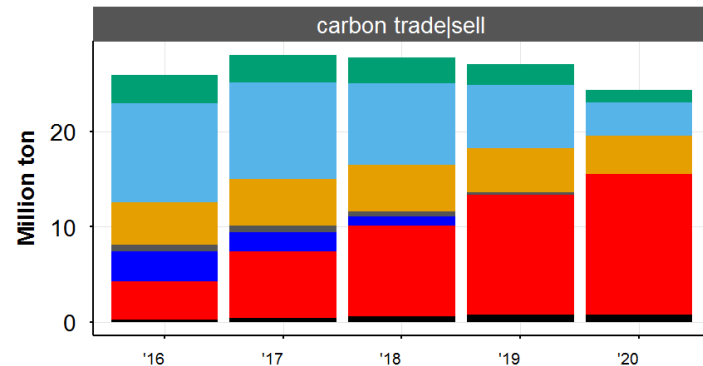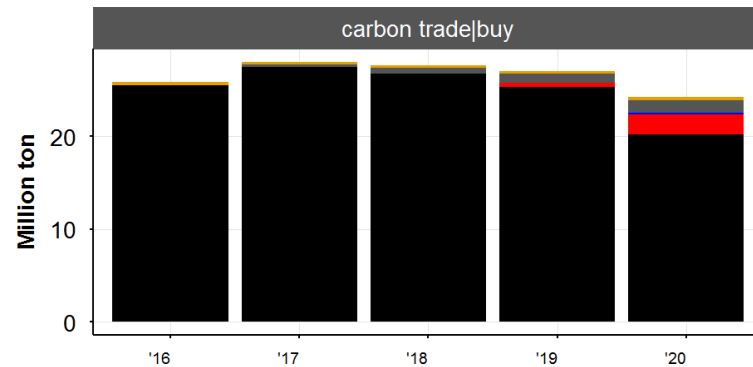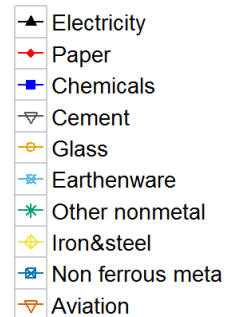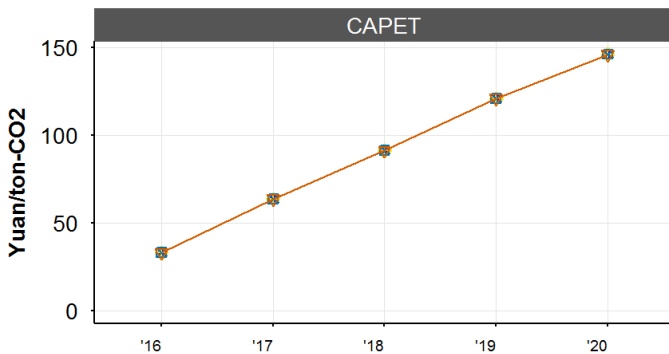
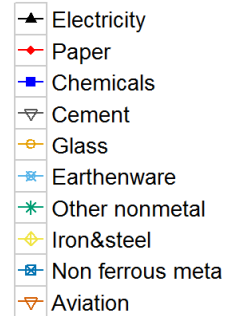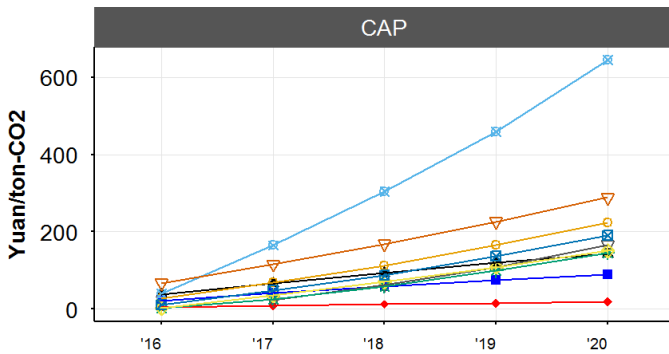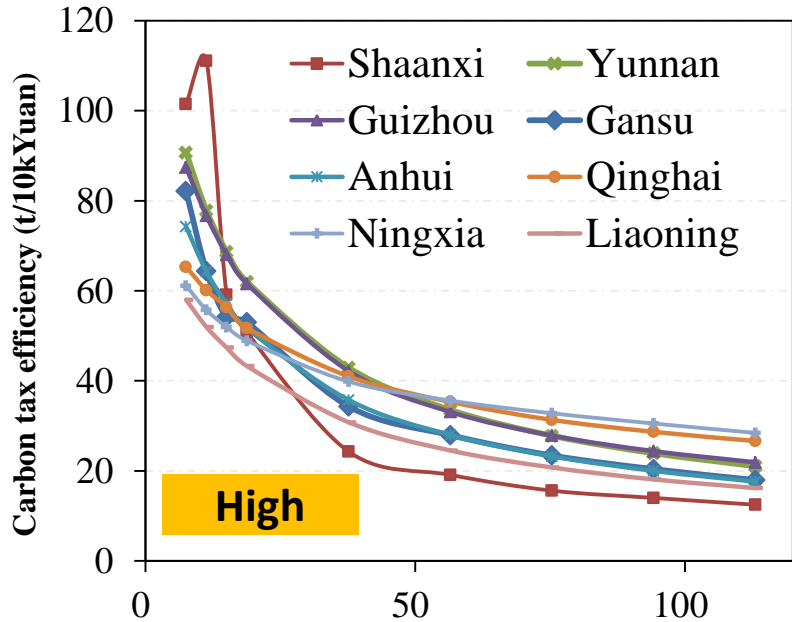- **secondary**: CCS technology and fuel switch

Results: sectoral carbon emission trade

Key points:
- Sectoral carbon prices are different
- **- Carbon price in 2020:** around 20 USD/ton-CO2;

Buyers: power and non-metal products sectors;
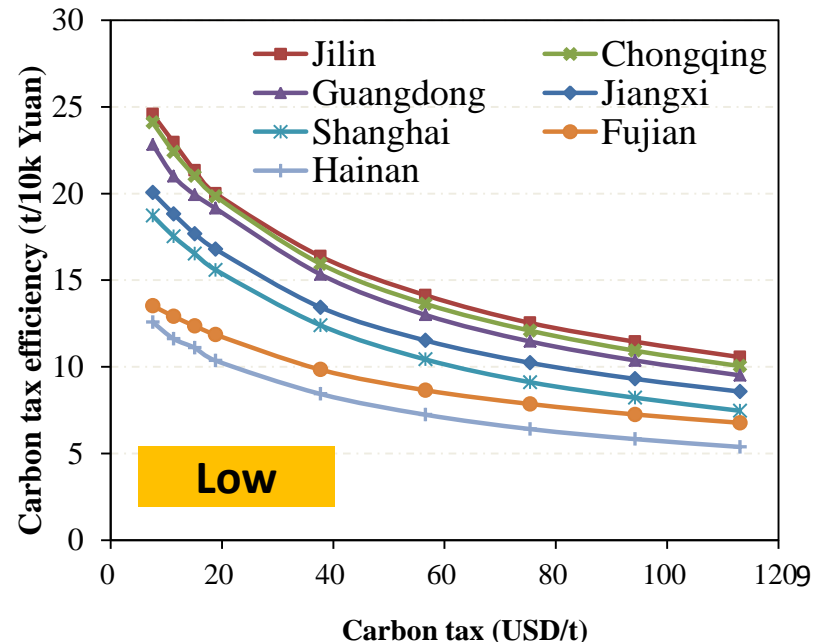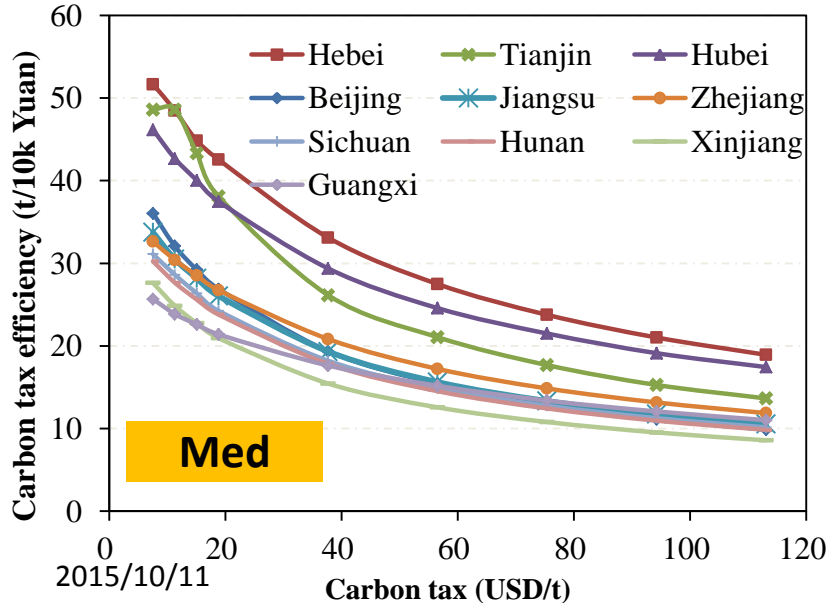**Sellers**: Chemicals, iron and steel sectors

Results: regional efficiency of carbon tax

Efficiency of carbon tax, measured by carbon reduction by unit GDP loss, is different among Regions

◆ More efficient in less developed southeast provinces

◆ Less efficient in more developed coastal provinces

→ Regional climate policy should consider such disparity

Problems & Challenges

- Secure supply of clean energy such as natural gas;
- Urbanization and low-carbon transition: continuous construction of infrastructure;
- Income rise of middle class and their consumption pattern: emissions from building and transportation;
- Reliable low-carbon technology: renewable, nuclear, CCS;
- Economic impacts of low-carbon investment and eliminating outdated industrial capacity;
- Capacity building of stakeholders;

Thank you for your attention

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