China's Role in Global Green Transition: Opportunities and Challenges

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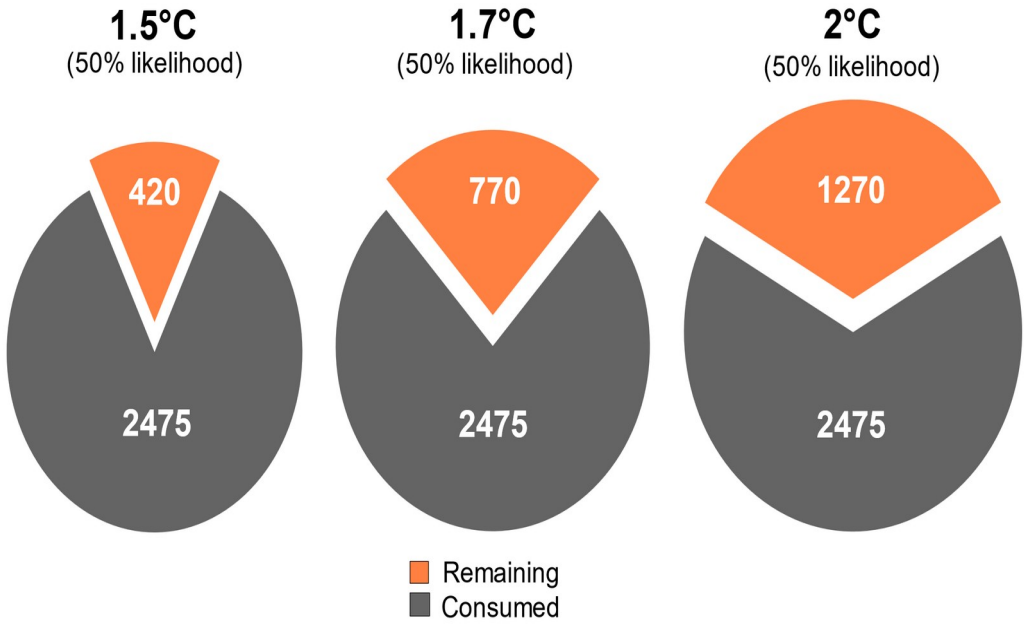
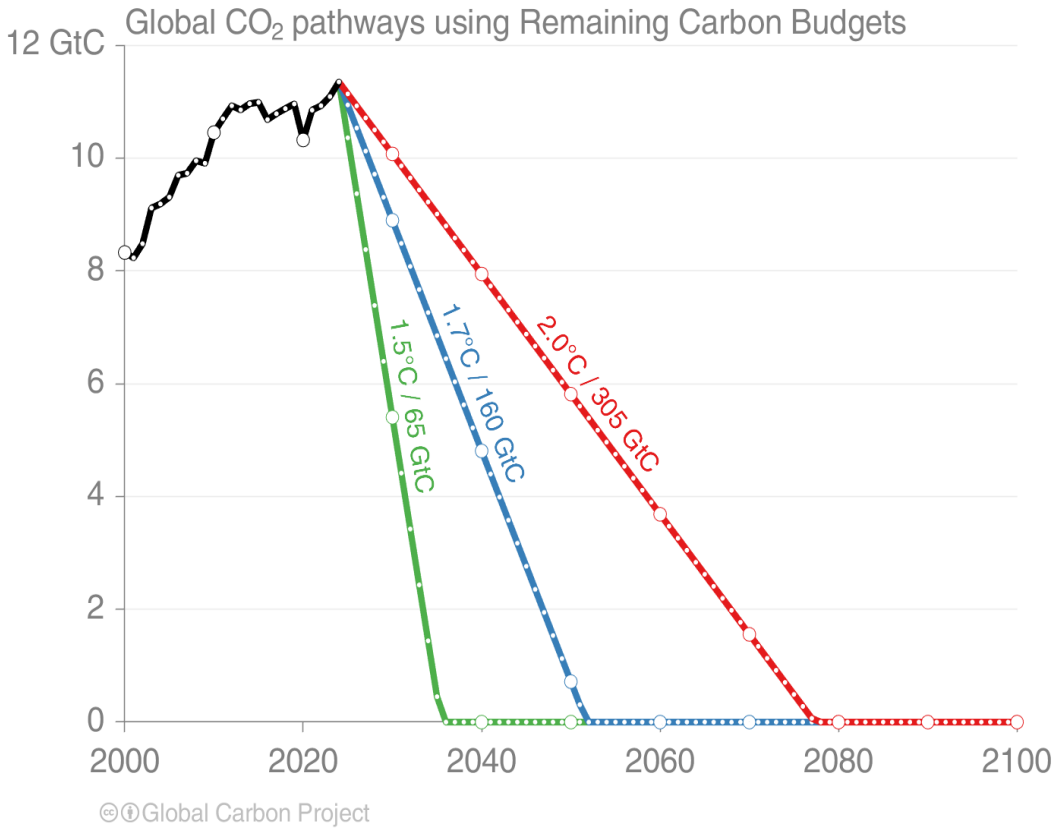
China's perspective ： carbon neutrality goal faces great challenges

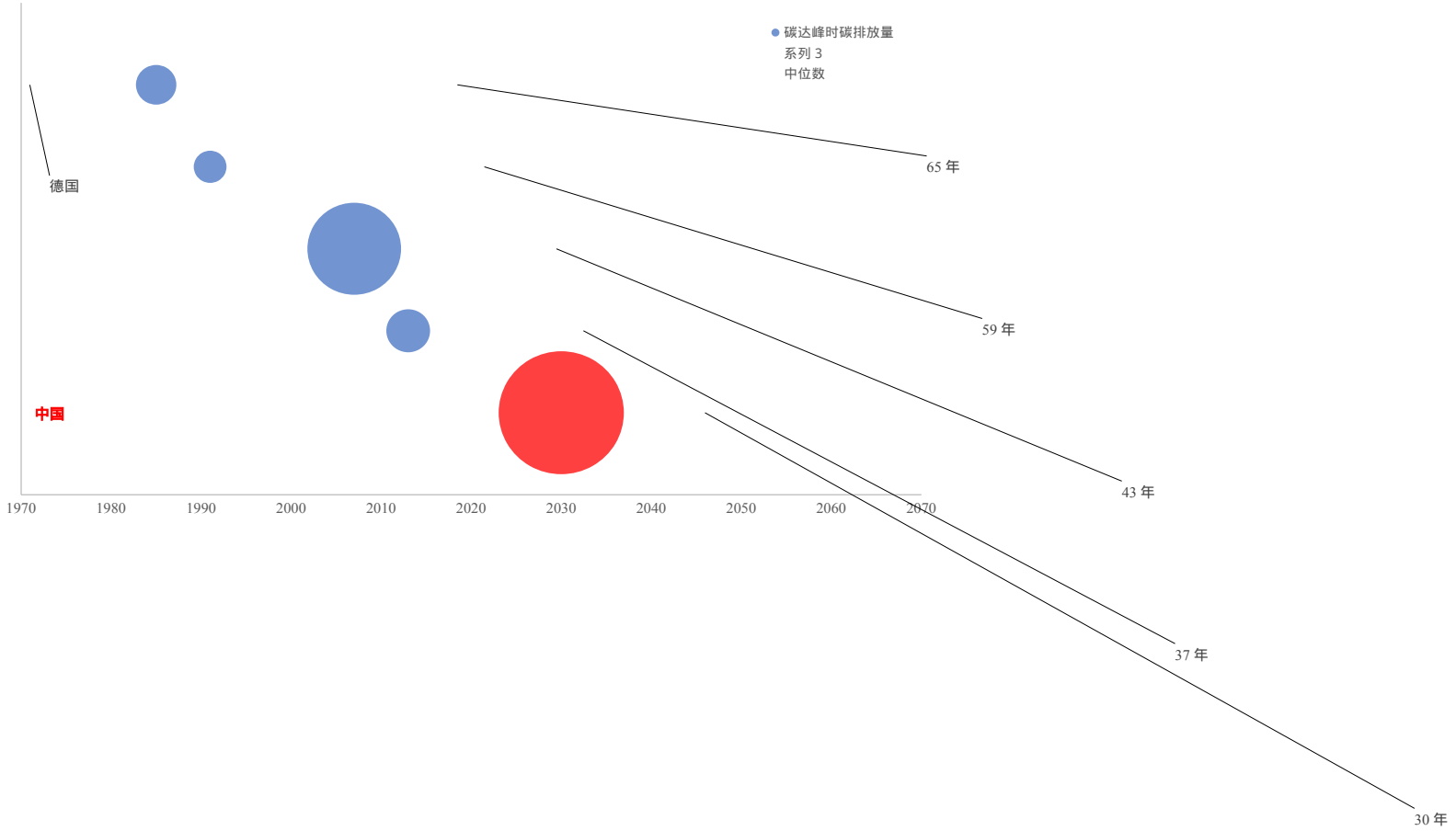
Global Green Transition: Urgent and Challenging

- Current Status





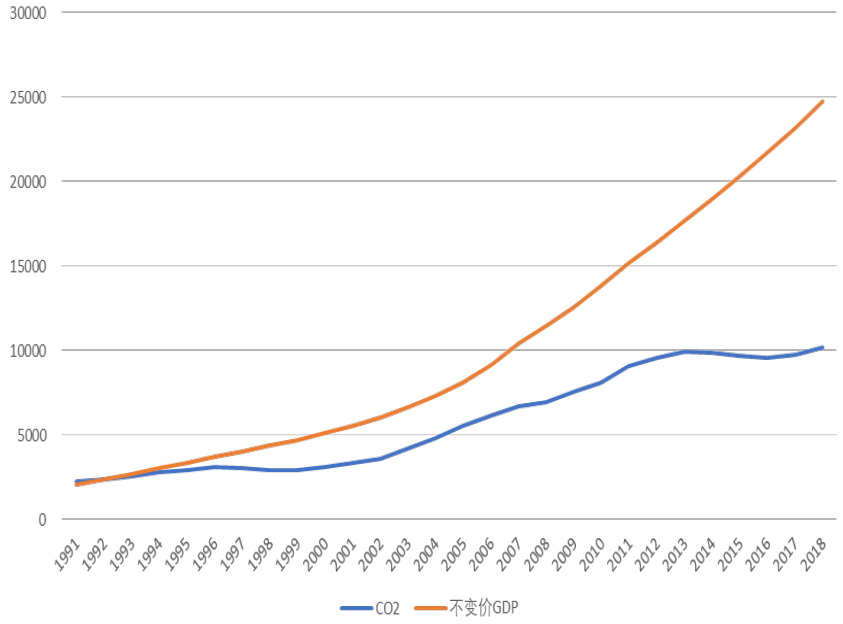
Sep 2020: China pledged carbon peaking and neutrality goal

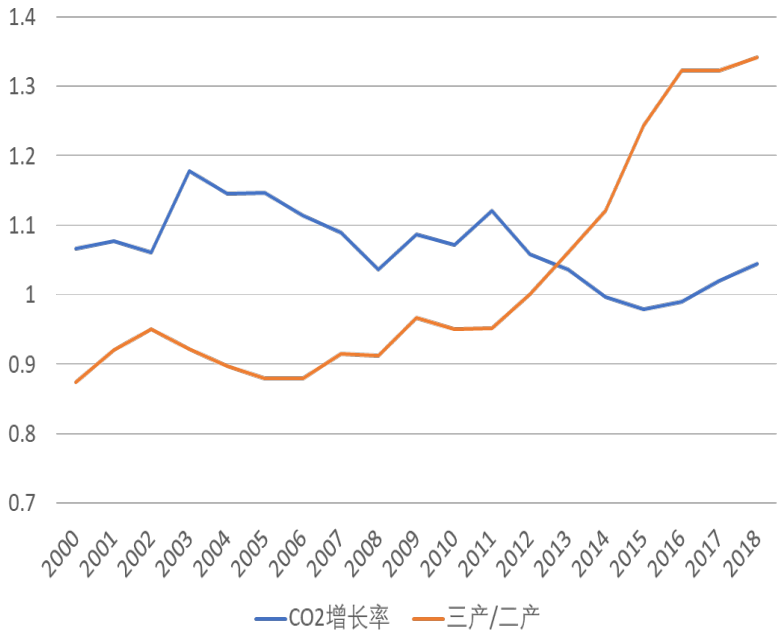


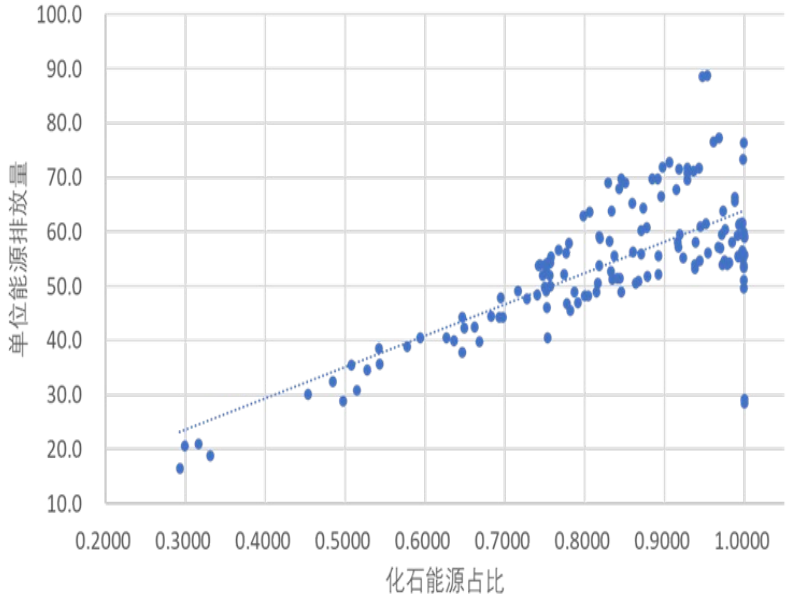
- Carbon peaking is not a big problem since given the dynamics of economic development, economic structure, population etc, China's carbon peaking will come around 2030.
- Although China has made substantial progress in curb the rising trend of carbon emission and more in general, the environmental protection, carbon neutrality is unprecedently challenging.

Why challenging ？ --size, structure and endowment

Fact I. Carbon emissions are related to economic aggregate, industrial structure and energy supply structure.







Carbon emission & economic aggregate

correlation coefficient

1991-2000:0.87
2001-2010: 0.98
2011-2018: 0.67

Carbon emission & industrial structure

The growth rate of carbon emissions and industrial structure are closely correlated, and the correlation coefficient reaches over 0.71 after 2000.

Carbon emission & energy supply structure

The share of fossil fuels determines emissions per unit of energy. The chart shows the share of fossil energy in relation to emissions per unit of energy by country in 2019 and 2020

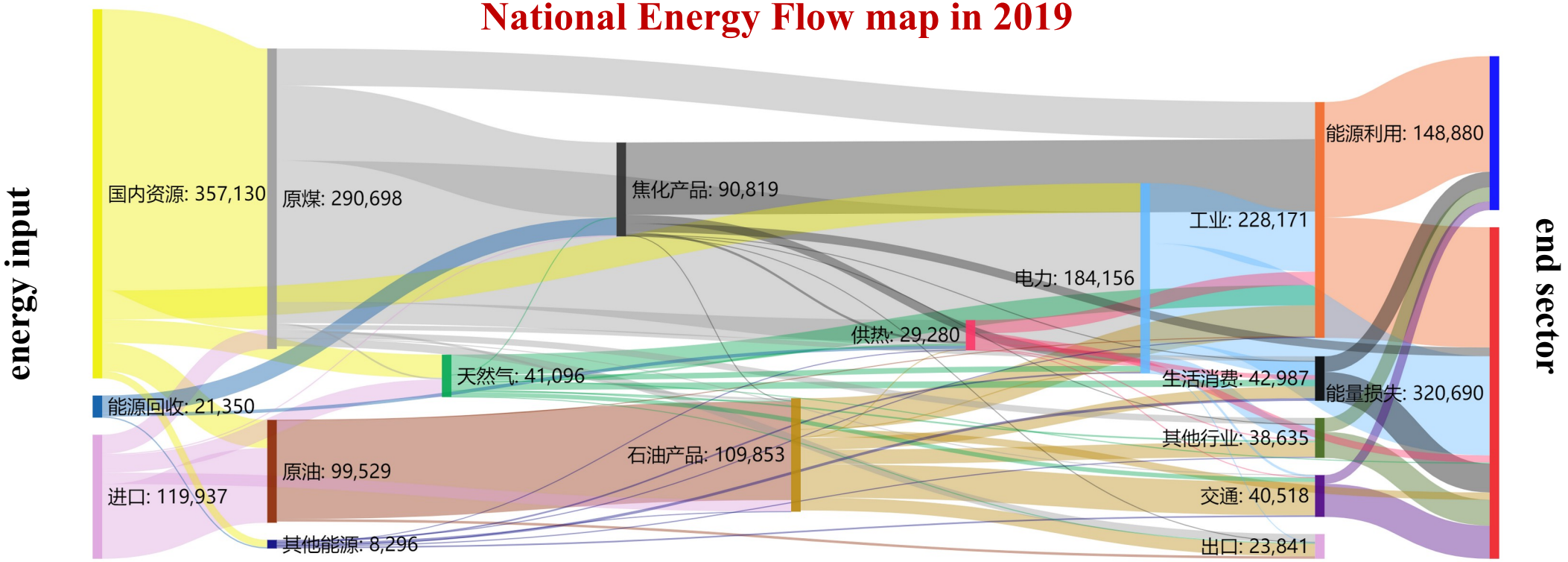
Challenge 1: economic growth

- Stable economic grow is critical for developing country to successfully overcome middle-income trap.
- Development is the top priority:
  - Basically achieve Socialist Modernization in 2035 , achieve a modern powerful socialist country in 2050, double the size of the economy by 2035 with the per capita GDP exceeding $20,000
  - The average GDP growth rate needs to be around 6% in the 14th Five-Year Plan, 5% in the 15th Five-year Plan and 4% in the 16th Five-year Plan
- China needs to maintain an average annual growth rate of 5% to realize the development goal of 2035.
- Still in the process of industrialization and urbanization, development and people's wellbeing remain major tasks, so as to prevent major economic fluctuations.

Challenge 2: industry sector is (will be) the major caron emitter

- From the perspective of end demand, manufacturing is both the major emitter of carbon emissions and the main force of the economy

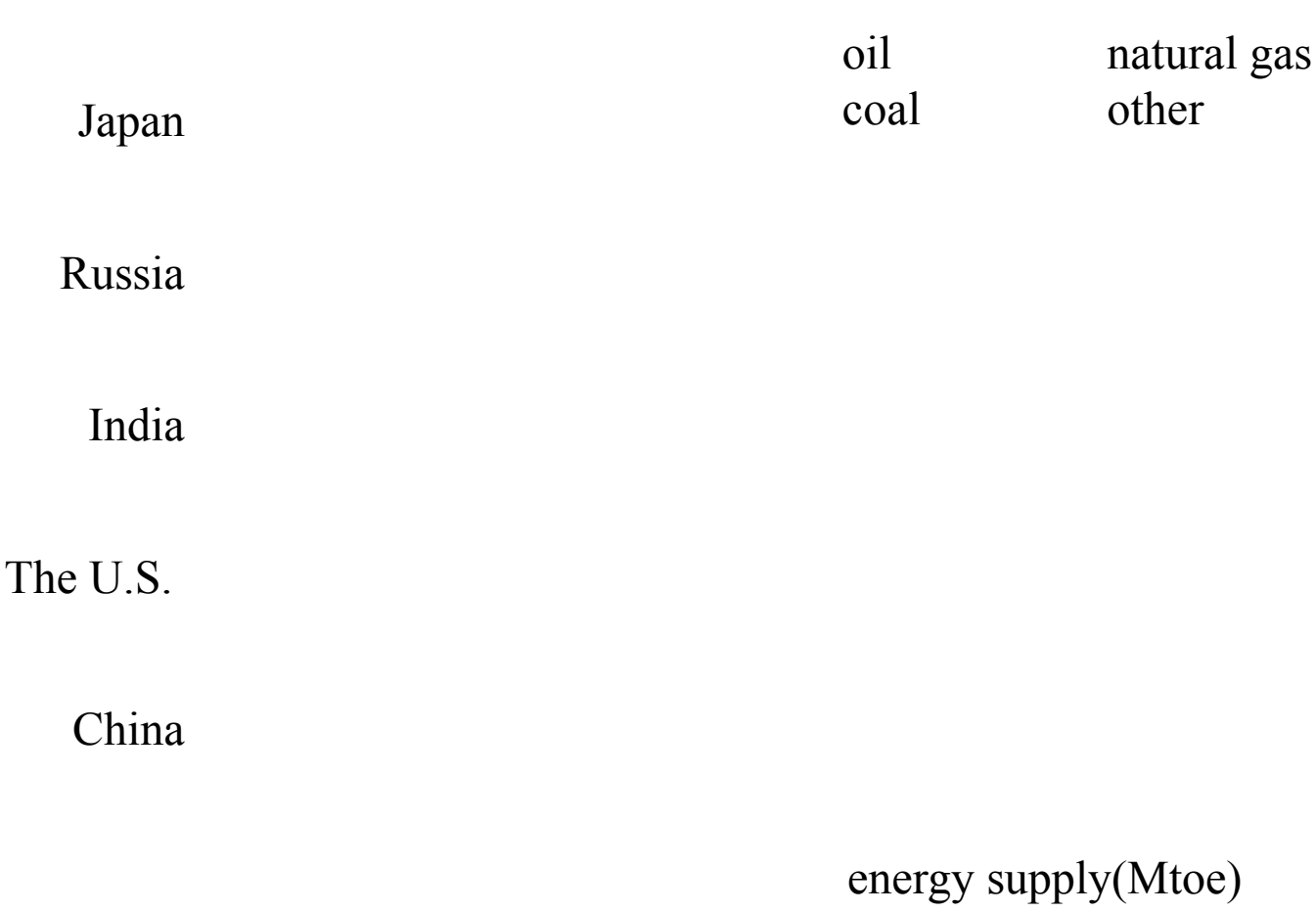
National Energy Flow map in 2019

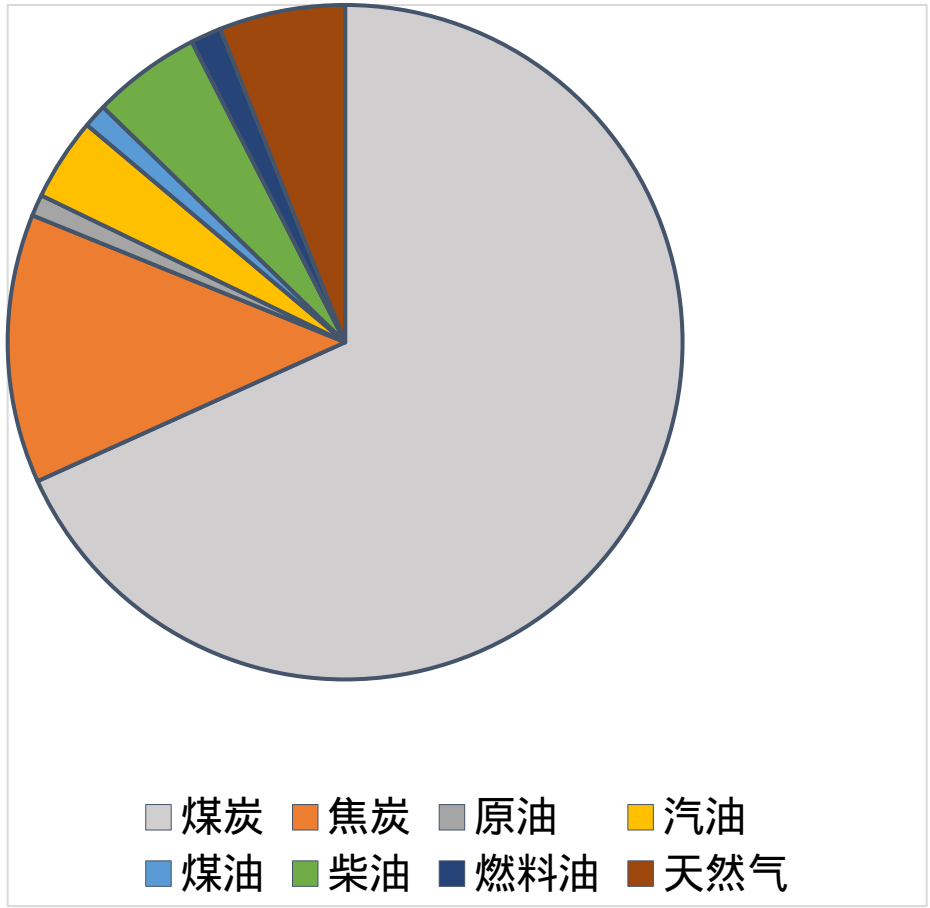


- From the perspective of the end demand sector, China's carbon emissions have always been in the "two-three-one" pattern, with more than 80% of carbon emissions coming from industrial production, mainly concentrated in the three high-carbon emission sectors of electricity, steel and non-metallic mineral products, and the concentration keeps rising. (Zhang et al., 2021).

Challenge 3: coal is abundant and cheap in China

Fact 4. From the perspective of supply side, coal endowment is the main reason for China's high total emissions and high intensity.

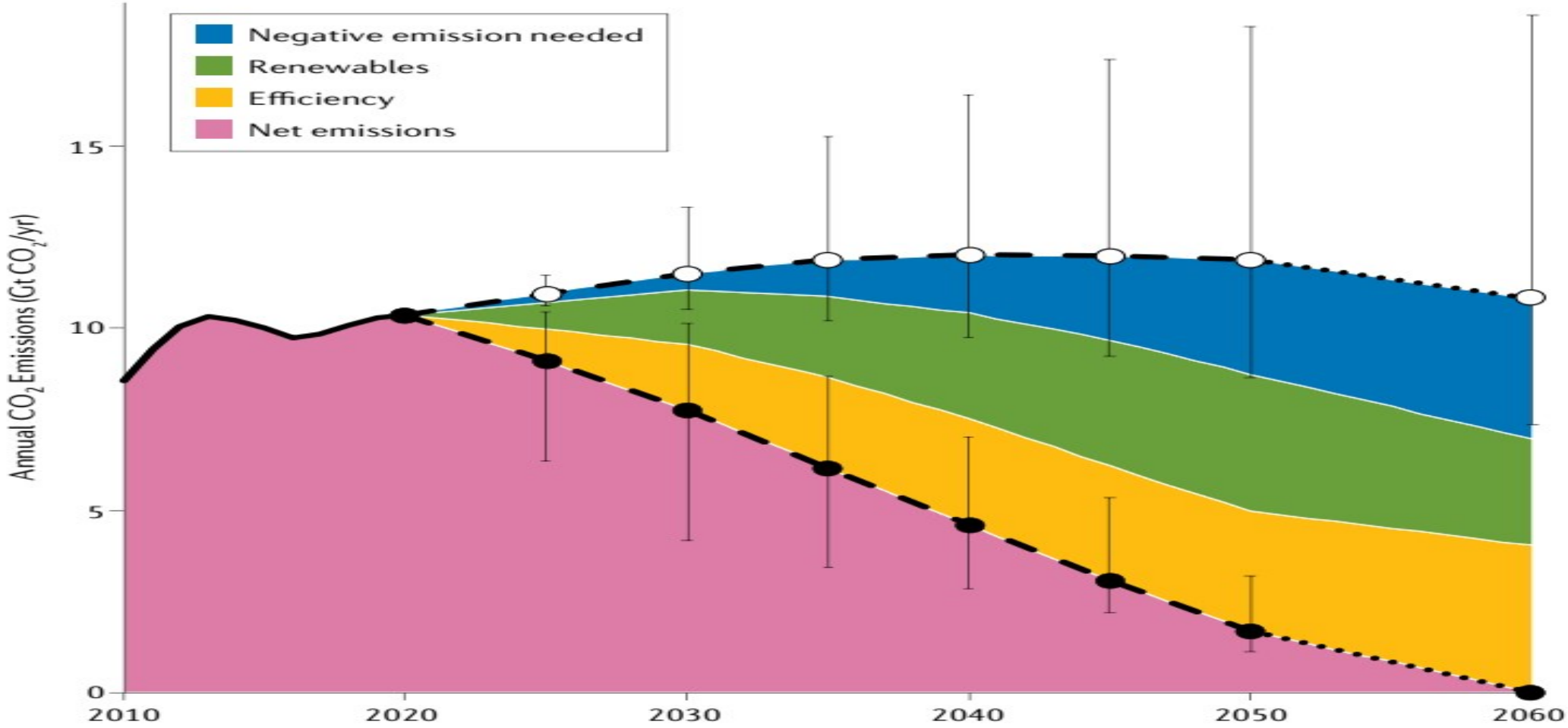




China’s perspective ： how to achieve carbon neutrality goal

Roadmap toward 2060 carbon neutrality

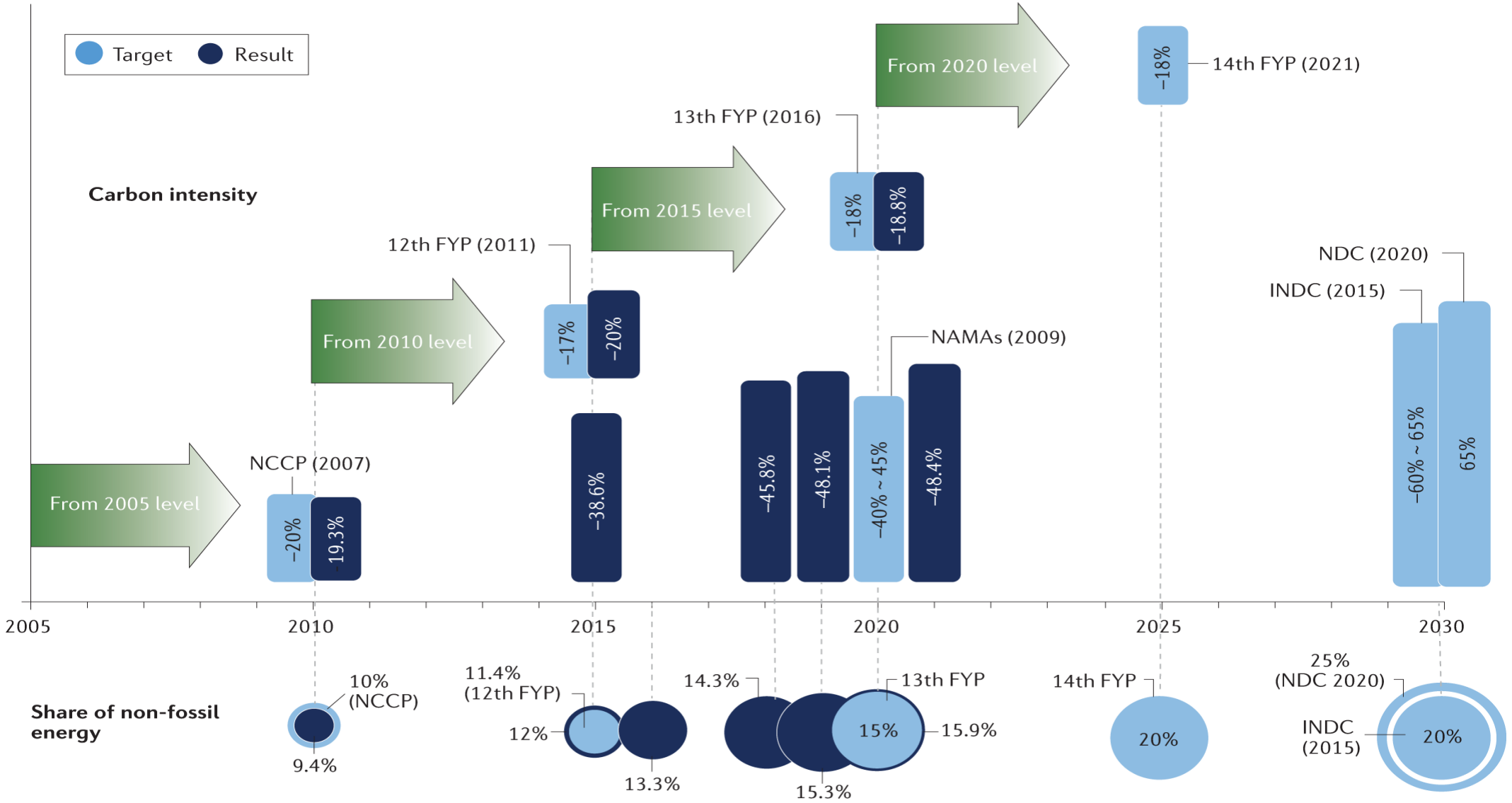
- Illustration of how negative emissions, renewables and improved efficiencies can reduce net emissions, and thus achieve carbon neutrality by 2060.



Transition to a carbon-neutral power system is critical to target carbon neutrality in China.

- How to deliver carbon neutrality in China
  - ➢It's more challenging to deliver decarbonization in industry , buildings and road transport.
  - ➢Transition to a carbon-neutral power system by 2050 (earlier than other sectors).
  - ➢Pathway: a carbon-neutral power system and highly electrified industry, buildings and road transport
- "China will target a new-type power system based on renewables "
  - first announced by the Central Finance and Economics Committee on March 15,2021.

China has sticked to what has been promised



Expansion of wind and solar capacity is faster than expected and promised

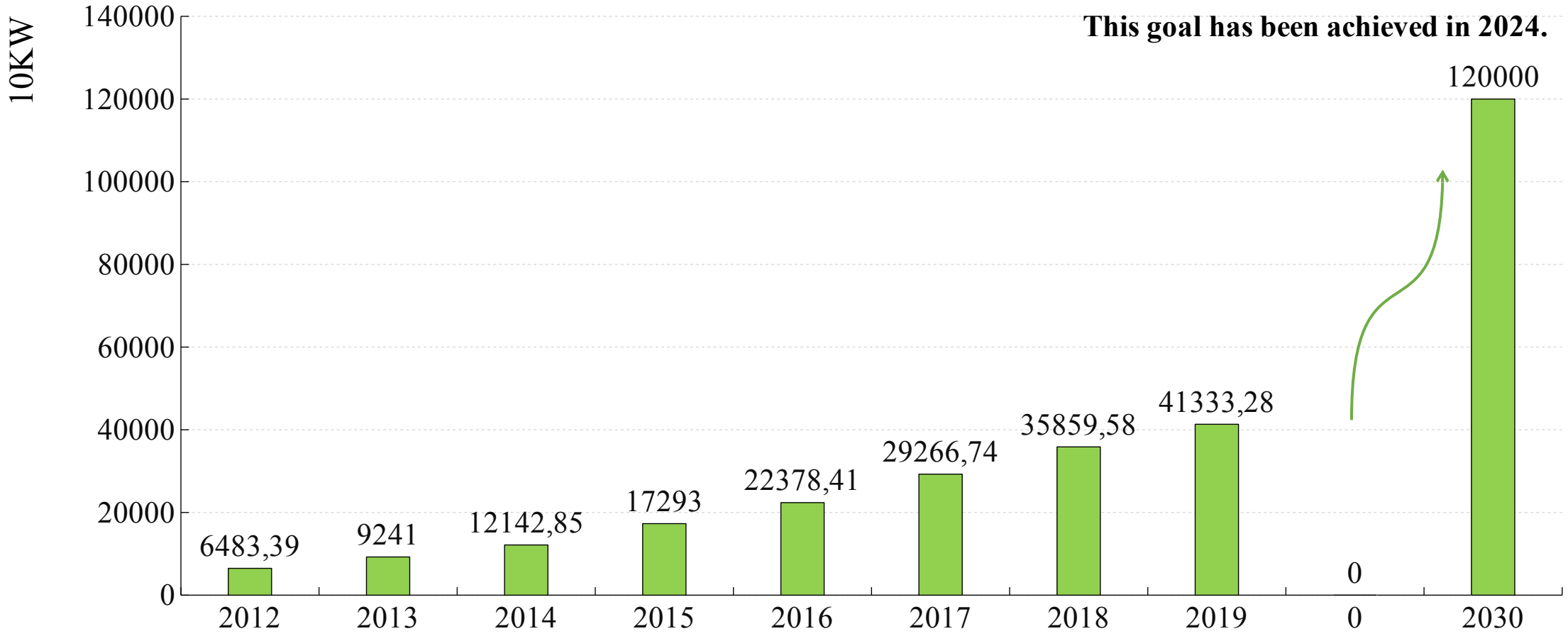


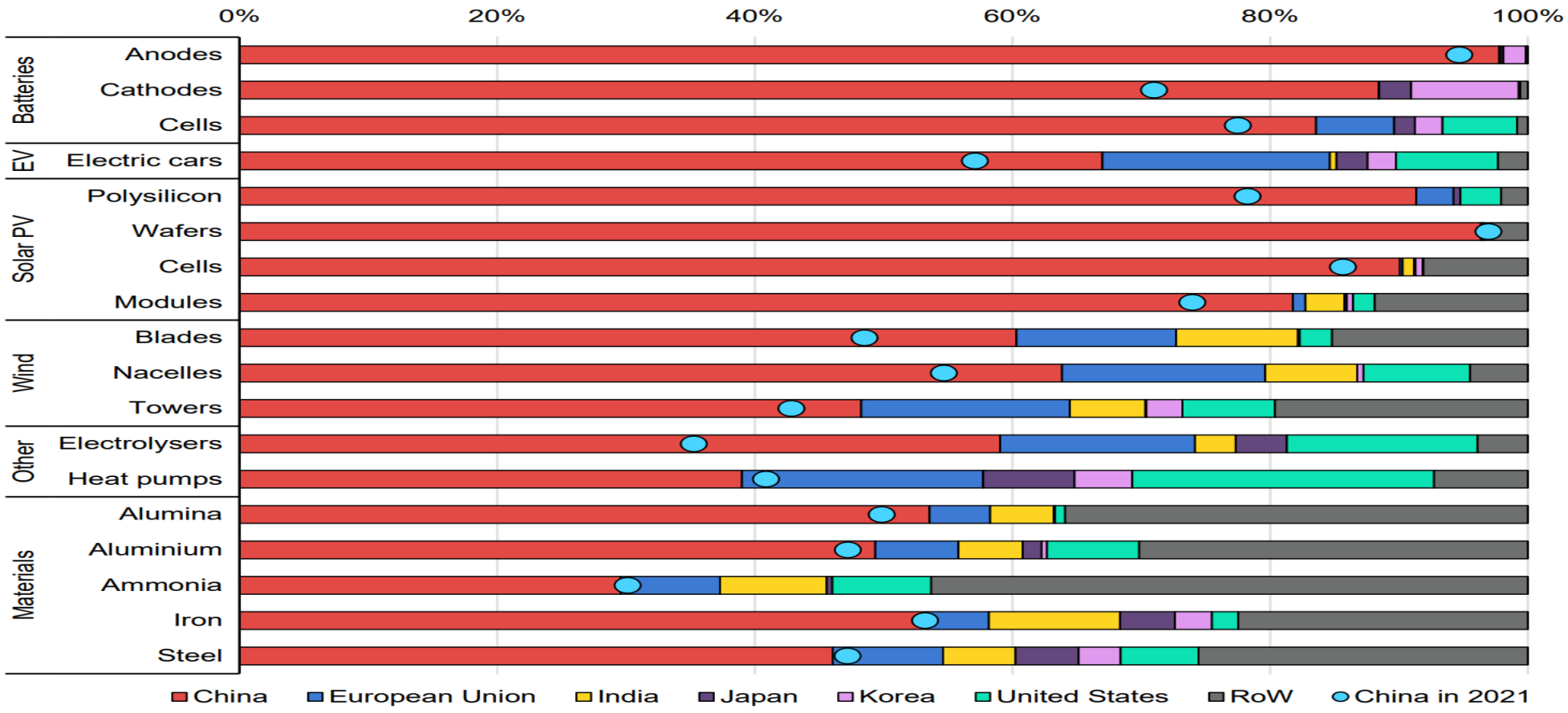
Fig. National total installed capacity of wind and solar power, 2012-2019

Global Perspective ： China’s role in the green transition

Essential Clean Technologies

- Green transition needs innovation and production expansion in clean technologies.
- IEA identified six of the main clean energy technologies – solar PV, wind, electric vehicles (EVs), batteries, electrolysers and heat pumps – has grown nearly fourfold since 2015 to exceed USD 700 billion in 2023, which is around half the value of all the natural gas produced globally that year.
- Growth has been driven by surging clean technology deployment, particularly for EVs, solar PV and wind. Under today's policy settings, the market for key clean technologies is set to nearly triple by 2035, to more than USD 2 trillion.

China is playing a key role in providing key green technologies



IEA. CC BY 4.0.

Note: RoW = Rest of World. "Electric cars" values are calculated based on 2023 production numbers, adjusted according to the utilisation rates of car assembly plants in the region.
Source: IEA analysis based on IEA (2024a); and IEA (2023b).

Installed manufacturing capacity by country/region, 2023

Accusation of the China's overcapacity in renewables

Yellen to warn China on ex
production capacity, want
talks

By **Rich McKay** and **David Lawder**

March 28, 2024 7:43 AM GMT+8 · Updated a year

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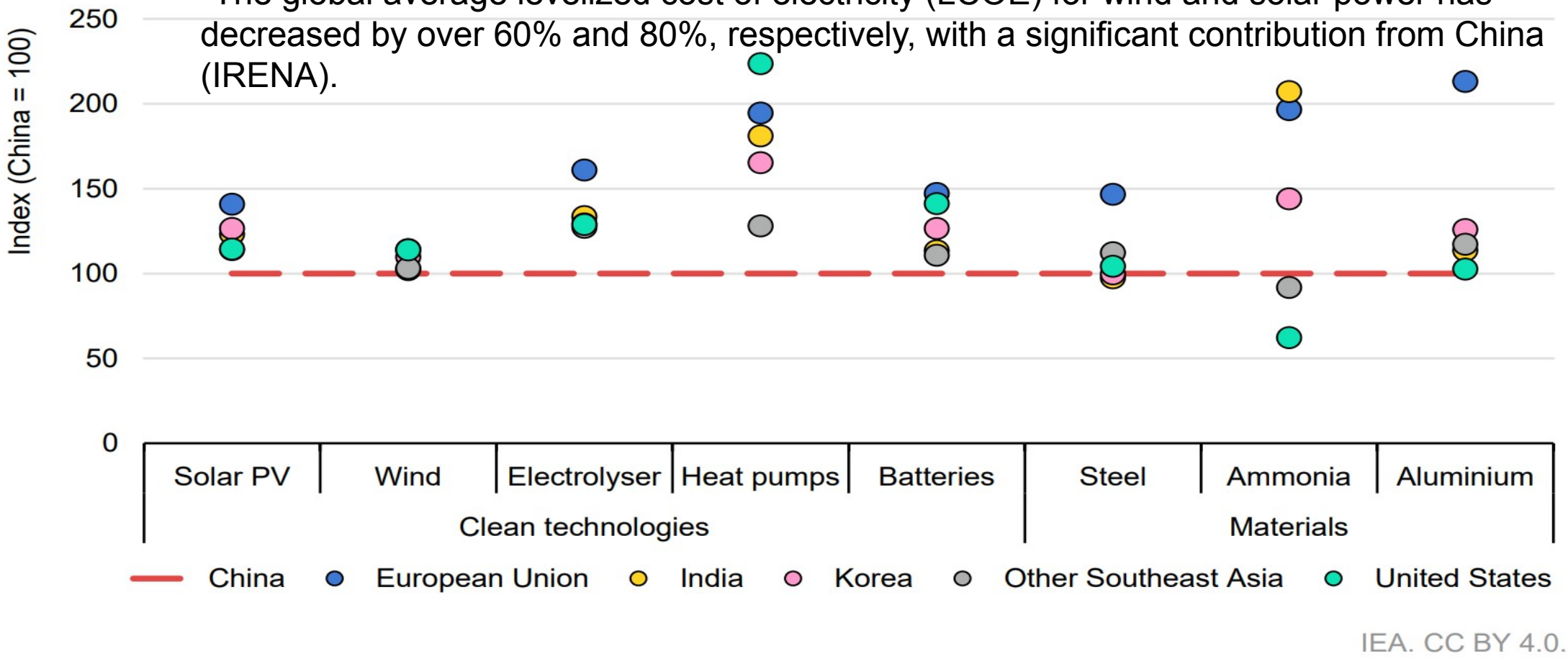
China's overcapacity 'problem' in five charts

Competiveness is the key driver

•The global average levelized cost of electricity (LCOE) for wind and solar power has decreased by over 60% and 80%, respectively, with a significant contribution from China (IRENA).



Levelised cost of production for selected clean energy technologies and materials by country/region, 2023

US and EU trade policy: does it help?

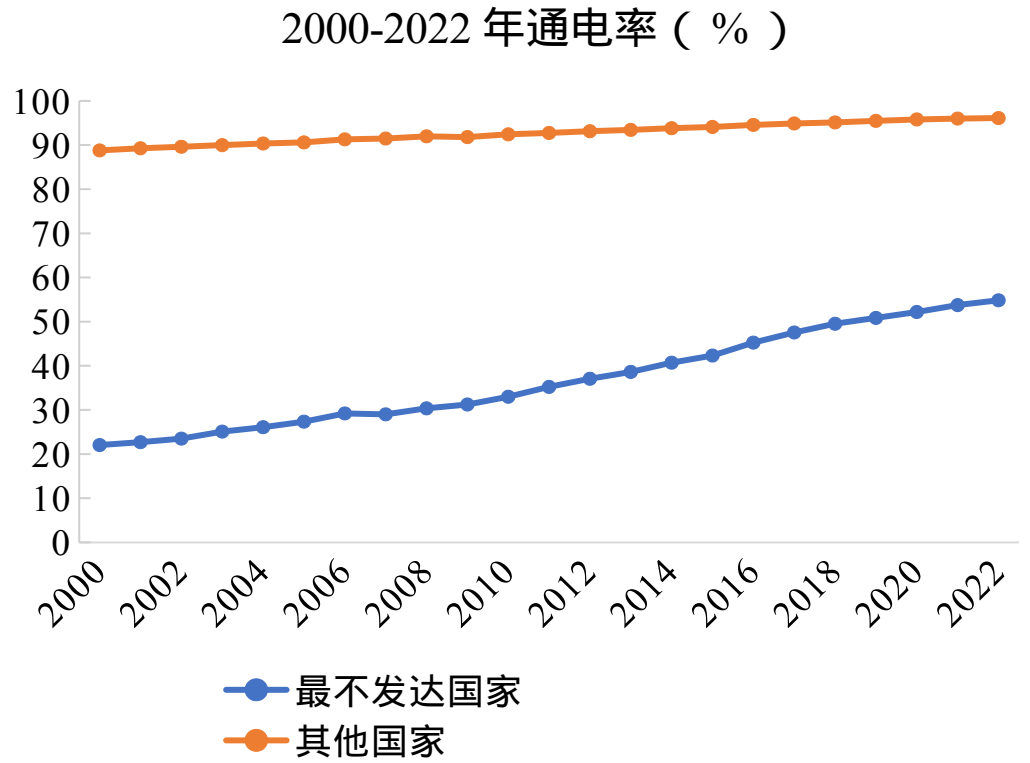
- US ： 10% tariff on all Chinese imports, which took effect on February 4. By early 2025, tariffs on certain solar products, including solar cells, wafers, and polysilicon, reached up to 60%.
- Regarding electric vehicles, the U.S. imposed a 100% tariff on all EVs imported from China in September 2024. Additionally, President Trump announced plans to impose new tariffs on imported cars, which could be revealed later this week. These tariffs are part of a broader strategy to address trade imbalances and protect domestic industries
- EU: Chinese-made EVs, effective October 30, 2024. These tariffs, ranging from 17.0% to 35.3%, were added to the existing 10% duty on imported cars.

No: it is hurting the global green transition

- The blaming point is “unfair subsidy”
- Eeven it is true (which is not), remember: carbon reduction is a global public goods.
- Any domestic policies supporting the green technologies actually subsidizing all countries.
- By subsidizing the wind and solar industries at the initial development stage, the policies speed up the global transition. When we export the products, consumers of other countries also benefits from China’s subsidies. It reduce the global transition costs.

The view from the Global South: Least developed countries have low energy accessibility

- Majority of other countries have electricity coverage of 100% or near, while least developed countries average only 55%.
- In 2022, only 7 countries have electricity access for more than 90% of the population.
- In 2022, 21 countries have electricity access below 50%, mainly located in Africa.



Looking for the future

- Is trade war the solution to the concerns?
  - back to common sense: NO!
  - The imbalance of international trade is essentially a distribution problem between producers and consumers. The nature is domestic distribution system.
- China's attitude towards green transition and carbon neutrality goal
  - committed and consistent:
  - Coorperative, constructive
- Mutual beneficial: trade is mutual benefitial,

Looking into the future

- China is willing to contribute to addressing climate change and achieving sustainable development
  - **Infrastructure Investment**
    - **Co-develop** energy production infrastructure.
    - China's production of photovoltaic modules and wind power equipment has created conditions for the widespread and economic use of renewable energy.
  - **Technology Transfer and Capacity Building**
    - Provide technical support and training to help least developed countries master modern energy technologies.
    - Ensure the sustainable operation and maintenance of energy projects.

Thank you for your time!