


碳中和导向下CO₂排放达峰及“十四五”规划

Peaking of CO₂ emission and the 14th Five-Year Plan under carbon neutrality



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1. 习近平主席在联合国大会重要讲话，提出中国强化2030年自主贡献（NDC）目标和长期碳中和目标

President Xi Jinping delivered an important address at the UN General Assembly, proposing that China will enhance its 2030 Nationally Determined Contribution (NDC) and long-term carbon neutrality goal

- 确立“力争2030年前CO₂排放达峰，努力争取2060年前实现碳中和”的目标，对国内疫情后加速绿色低碳转型和长期低碳发展战略的实施，以及推进全球气候治理进程都将发挥重要指引作用。

China's targets of the peaking of CO₂ emissions before 2030 and achieving carbon neutrality before 2060 will play an important role in accelerating the country's post-pandemic green low-carbon transition and the implementation of long-term low-carbon strategies as well as facilitating the process of global climate governance.

- 对内推进目标导向下紧迫的低碳转型，成为国家现代化建设的重要目标和生态文明建设的核心内容。
Promoting the much-needed low-carbon transition at home has become an important target of socialist modernization in the new era and is at the core of building an ecological civilization.
- 国际上提振各方应对气候变化信心和行动意愿，引领全球经济技术变革潮流。
Internationally, China's pledge will boost the confidence and willingness to act against climate change, and lead global economic and technological transformation.

2. 远近统筹，进行两个阶段的战略部署 (1)

Coordinate the far and the near and conduct a two-step strategic deployment

□ 第一阶段：2030年之前实现CO₂排放达峰。

Step 1: Striving to achieve the peaking of CO₂ emissions before 2030.

- 中国NDC目标：CO₂排放2030年左右达到峰值并努力早日达峰。

China's NDC target: To achieve the peaking of carbon dioxide emissions around 2030 and making best efforts to peak early.

- 中国仍处于工业化、城镇化发展阶段，随经济较快增长，能源消费和CO₂排放仍会有所增长。

China is still in the stage of industrialization and urbanization. With the rapid economic growth, energy consumption and CO₂ emissions will still increase.

- 力争早日实现CO₂排放达峰，首先要控制和减少CO₂排放增量，使经济增长和CO₂排放脱钩。

To peak CO₂ emissions, the increase in CO₂ emissions shall be firstly controlled and reduced to decouple economic growth from CO₂ emissions.

- 以国内2020~2035年现代化建设第一阶段基本实现现代化、生态环境根本好转、美丽中国建设目标基本实现的目标为指引，强化低碳发展政策导向，落实和强化NDC目标。

Guided by the target of realizing basic modernization, fundamental improvement of the ecology and environment, and building a Beautiful China in the first stage of domestic modernization construction from 2020 to 2035, the policy orientation of low-carbon development shall be strengthened and the NDC goal shall be implemented and enhanced.

2. 远近统筹，进行两个阶段的战略部署 (2)

Coordinate the far and the near and conduct a two-step strategic deployment

□ 第二阶段：2060年之前实现碳中和。

Step 2: Achieving carbon neutrality before 2060

- 以《巴黎协定》确立的全球长期目标为导向：把全球平均气温升幅控制在工业化前2C°之内，并努力控制在1.5C°之内。

Guided by the global long-term goal established by the Paris Agreement, control the global average temperature rise to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to below 1.5°C.

- 实现“目标”导向下倒逼的能源和经济转型路径，推动能源革命和经济发展方式的根本性变革。

Realize the “target-oriented” energy and economic transition pathway and promote energy revolution and the fundamental transformation of economic development mode.

- 以中国本世纪中叶现代化强国建设目标为指导，在建成美丽中国的同时，以碳中和目标为导向，实现与全球控制温升低于2C°并努力低于1.5C°目标相契合的深度脱碳发展路径。

Guided by China’s goal of building a modern and powerful country in the middle of this century and the new carbon neutrality pledge, China should achieve a deep decarbonization pathway that is consistent with the goal of keeping the global temperature rise below 2 °C and striving to keep it below 1.5°C , while ensuring the realization of the goal of building a Beautiful China.

3. 实现CO₂排放达峰，是经济发展方式转变的重要转折点，也是最终实现碳中和的重要节点

Peaking of CO₂ emission implies an important transition in economic development mode and a milestone for carbon neutrality

- CO₂排放达峰以后，化石能源总体上不再增长，从源头控制了常规污染物来源，是环境质量根本改善重要保障。
After CO₂ emission peaks, fossil energy will not increase on the whole, indicating a control on the origin of conventional pollutants, and securing a fundamental improvement of environmental quality.
- 2030年之后，要实现全部温室气体绝对量快速减排。
A very fast absolute decline in all GHG emissions need to be achieved after 2030.
- 实现了经济增长与化石能源消费和CO₂排放脱钩，这也是基本实现现代化国家的重要标志。
The decoupling of economic growth from fossil energy consumption and CO₂ emission marks the general realization of national modernization.

4. 大幅度降低GDP的CO₂强度是保障经济社会持续发展同时推进CO₂排放尽早达峰的核心对策，其根本措施是大力节能和加速能源体系低碳化

To decrease the CO₂ intensity of GDP is the core measure for both sustainable economic and social development and the peaking of CO₂ emission as early as possible, and the key lies in energy saving and energy structural decarbonization

- 降低GDP的CO₂强度，抵消经济增长带来的CO₂排放增长，实现CO₂排放达峰。
Reduce the CO₂ intensity of GDP to offset the CO₂ emission increment from economic growth and realize the peaking of CO₂.
- 大力节能，降低GDP能耗强度，控制能源消费增长。
Making an effort to save energy, reduce energy intensity of GDP, and curb energy consumption growth.
- 改善能源结构，降低单位能耗CO₂强度，抵消能源消费增长带来的CO₂排放增加。
Perfect energy mix, and reduce CO₂ intensity of energy consumption to offset the CO₂ emission increment from energy consumption increase.

5. 实现2030年前CO₂排放达峰情景与对策 (1)

Scenarios and strategies for the peaking of CO₂ before 2030

- **经济发展**：2020~2035年GDP 翻一番，2020~2030年均约为5%。
Economic growth: GDP doubles from 2020 to 2035 and remains at about 5% from 2020 to 2030.
- **保持“十三五”节能降碳力度，GDP能源强度年下降率保持不低于3%的水平。**
Retain the 13th FYP strength for energy saving and carbon reduction, and keep the annual decline rate of energy intensity of GDP at no less than 3%.
 - **结构节能，产业转型升级，发展数字经济、高新科技产业和现代服务业。**
Promote structural energy saving, industrial transformation and upgrading; develop digital economy, high-tech industry and modern service industry.
 - **技术节能，提高能源转换和利用效率。**
Promote technological energy saving, enhance energy conversion and use efficiency.

5. 实现2030年前CO₂排放达峰情景与对策 (2)

Scenarios and strategies for the peaking of CO₂ before 2030

- **能源结构改善**：非化石能源占比“十四五”达20%，“十五五”达25%，单位能耗CO₂强度年下降率“十五五”将提升到1.5%以上，抵消能源消费年均约1.5%增长带来的新增排放。

Perfect energy structure: Non-fossil energy accounts for 20% and 25% in the 14th and 15th FYP periods respectively. Raise the annual decline in CO₂ intensity of energy consumption to above 1.5% to offset the additional emissions from energy consumption which grows by about 1.5% annually.

- 风电、太阳能发电每年合计新增装机超过1亿千瓦。

Annually added capacity of wind power and solar power totals at more than 100 million KW.

- **GDP的CO₂强度下降**：“十四五”达19~20%，“十五五”大于20%，“十五五”期间的CO₂强度年下降率将提升到4.5~5.0%的水平，从而实现CO₂排放达峰。

Reduce CO₂ intensity of GDP: The decrease reaches 19~20% in the 14th FYP period, and exceeds 20% with an annual decrease of 4.5~5.0% in the 15th FYP period for the peaking of CO₂ emission.

6. “十四五”规划强化节能降碳各项指标和措施 (1)

Targets and measures for strengthening energy saving and carbon reduction in the 14th FYP

□ 强化“十四五”规划中应对气候变化指标和措施

Strengthen addressing climate change targets and measures in the 14th Five-Year Plan.

□ “十四五”规划将受到世界广泛关注，被认为是疫情后全球经济复苏的风向标。

The 14th Five-Year Plan will be closely watched by the world as a bellwether for global economic recovery from the pandemic.

■ 中国抗击疫情成功，经济复苏全球起带头作用。

China's success in fighting the pandemic gives it an opportunity to lead the world in economic recovery.

■ 普遍关注中国经济刺激的资金投向和政策导向。期待中国在坚持“绿色复苏，低碳转型”方面发挥引领性作用。

The world is watching the investment and policies of China's economic stimulus. China is expected to play a leading role in ensuring a “green recovery and low-carbon transition” .

□ “十四五”确立积极的节能降碳指标。

Establishing ambitious energy-saving and emission reduction targets in the 14th Five-

Year Plan.

6. “十四五”规划强化节能降碳各项指标和措施 (2)

Targets and measures for strengthening energy saving and carbon reduction in the 14th FYP

- 非化石能源比重达20%左右，GDP的CO₂强度下降19~20%，能源消费总量控制在55亿tce以内，CO₂排放总量低于105亿吨。

The share of non-fossil energy reaches about 20%, the CO₂ intensity of GDP decreases by 19~20%, total energy consumption is contained within 5.5 billion tce, and total CO₂ emissions less than 10.5 billion tons.

- 重点城市和高能耗强度行业CO₂排放率先达峰，制定十年达峰计划。
Publishing 10-year-plan for peaking emissions. Key cities and energy-intensive industries should take the lead in peaking CO₂ emissions.
- 严格控制煤电产能和煤炭消费总量反弹，力争“十四五”实现煤炭消费达峰甚至负增长。
Strict control of rebound in coal power capacity and total coal consumption, and strive to peak coal consumption or even achieve negative growth during the 14th FYP.
- 完善全国碳市场建设，扩大覆盖行业。
Improve the national carbon market and expand the sectoral coverage.
- 控制CH₄等非CO₂其他GHG排放，建立MRV体系。
Control the emission of non CO₂ GHGs; establish an MRV system.

7. 力争CO₂排放2030年前实现高质量达峰，其后迅速呈现快速下降趋势 (1)

Strive for the peaking of CO₂ emissions before 2030 and a very fast decrease in CO₂ emissions after that

- CO₂排放达峰时间越早，峰值排放量越低，越有利于实现碳中和目标，否则实现碳中和目标的难度和代价则更大。

The earlier peaking of CO₂ emissions, the lower peaking emission, and the more favorable for carbon neutrality, or carbon neutrality will be more difficult and more expensive.

- 峰值平台期要在2025年左右实现，2030年后要结束平台期，呈快速下降态势，2035年要比峰值有显著下降。
- The peaking plateau needs to be achieved around 2025. After 2030 the plateau needs to be ended and replaced by a rapid decline in the emission, realizing a significant reduction till 2035.

- 实现2060年前碳中和目标，2030至2050年CO₂排放年均下降率要达8~10%。

The annual decline in CO₂ emissions needs to reach 8~10% from 2030 to 2050 for the target of carbon neutrality before 2060.

- 2030年前实现CO₂排放达峰同时，要为2030年之后快速减排做好技术、基础设施、机制和政策等多方面准备，奠定良好基础。

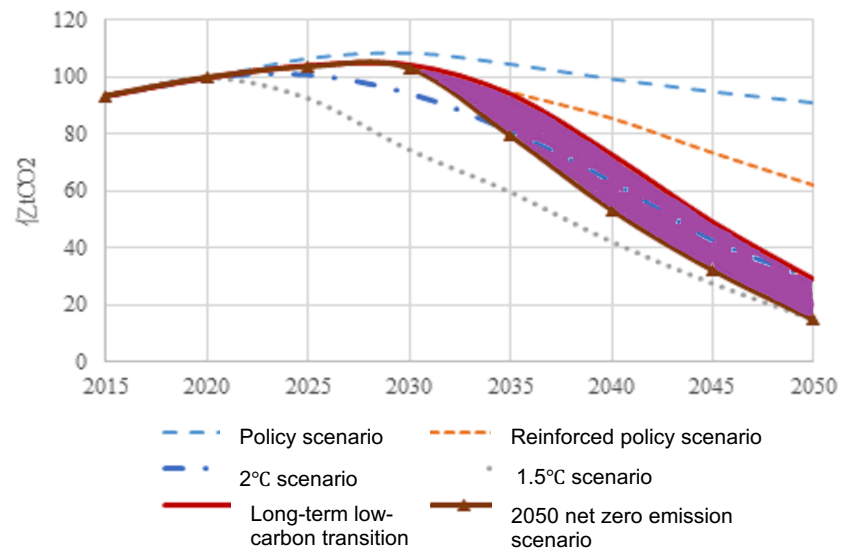
While striving for the peaking of CO₂ emissions before 2030, we need also prepare the technology, infrastructure, system and policy etc. for rapid emission reduction after 2030 so as to lay a solid foundation.

7. 力争CO₂排放2030年前实现高质量达峰，其后迅速呈现快速下降趋势 (2)

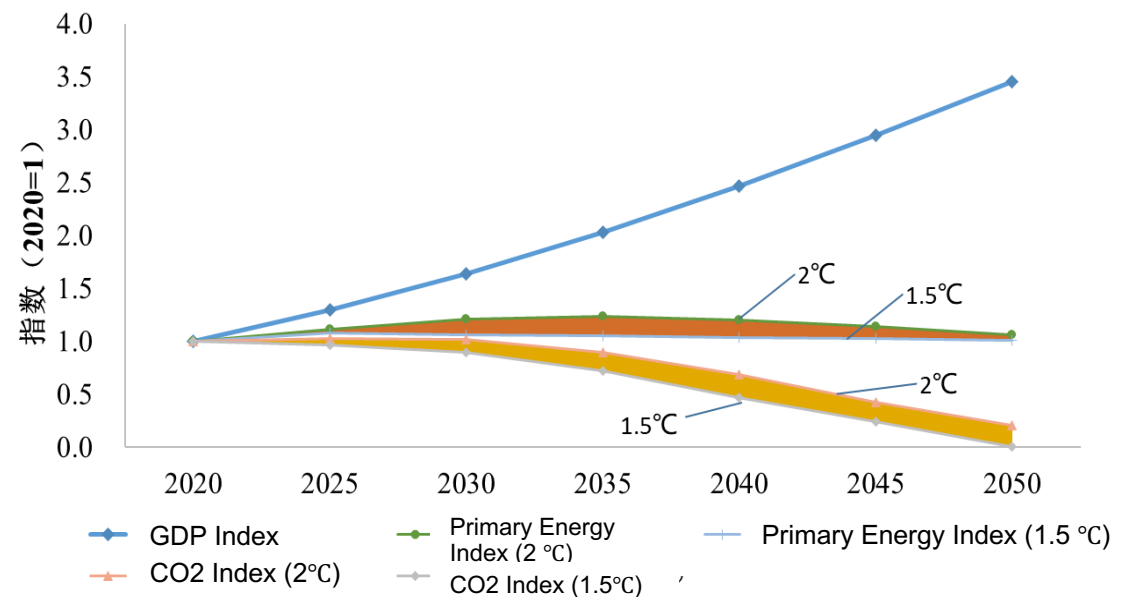
Strive for the peaking of CO₂ emissions before 2030 and a very fast decrease in CO₂ emissions after that

- Two-step goals: achieve the peaking of CO₂ emissions before 2030 and carbon neutrality before 2060.

能源消费二氧化碳排放路径分析 (不含CCS和碳汇)
CO₂ emission pathway of energy consumption (CCS and carbon sink not included)



GDP、一次能源消费和二氧化碳排放指数 (2020=1)
Index for GDP, primary energy consumption and CO₂ emissions (2020=1)



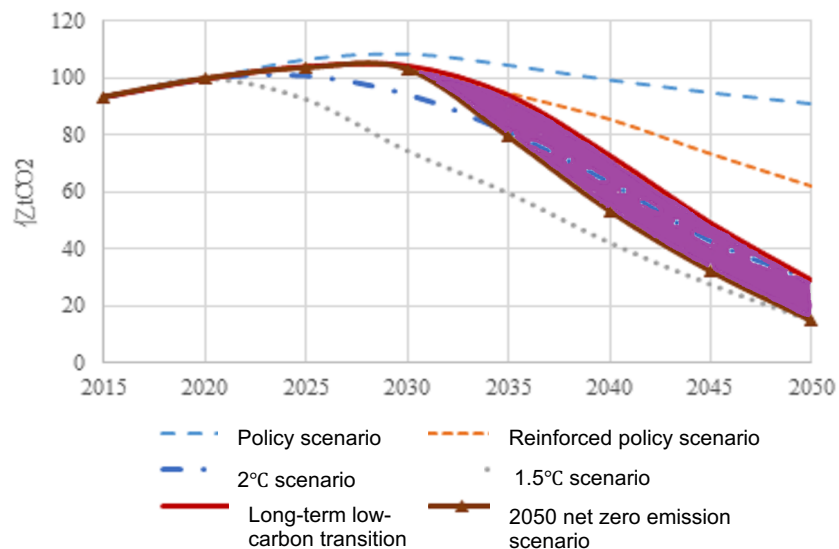
- Carbon neutrality before 2060 actually requires the long-term deep decarbonization pathway under the 1.5C° scenario.

7. 力争CO₂排放2030年前实现高质量达峰，其后迅速呈现快速下降趋势 (2)

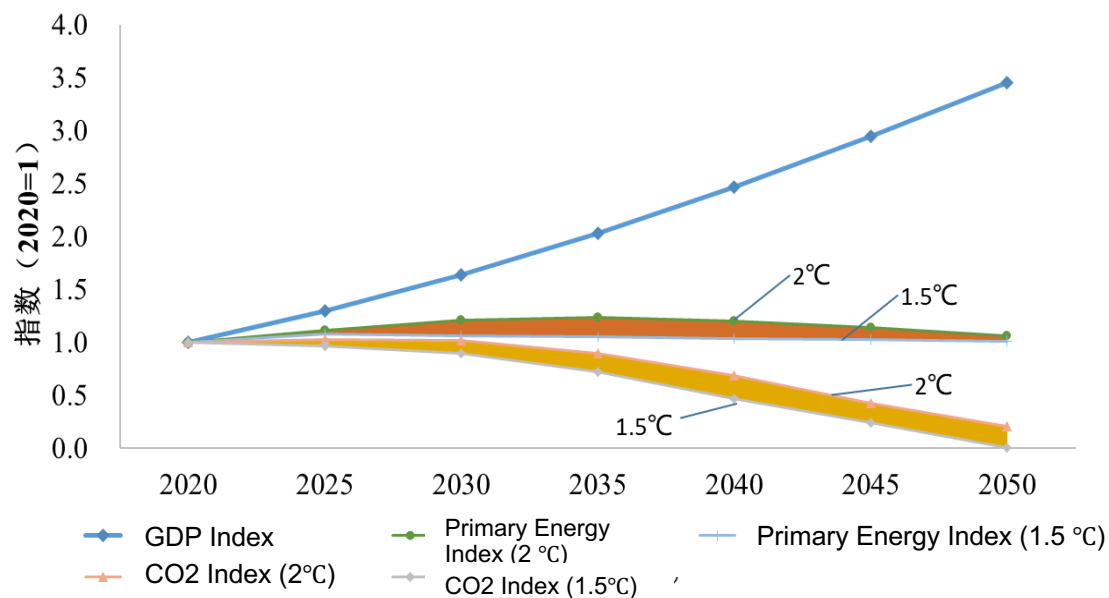
Strive for the peaking of CO₂ emissions before 2030 and a very fast decrease in CO₂ emissions after that

- 中国到2060年之前实现碳中和，实际上就是要努力实现以1.5C°目标为导向的长期深度脱碳转型路径。
Carbon neutrality before 2060 actually requires the long-term deep decarbonization pathway under the 1.5C° scenario.

能源消费二氧化碳排放路径分析 (不含CCS和碳汇)
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Index for GDP, primary energy consumption and CO₂ emissions (2020=1)



- CO₂排放达峰后要呈快速下降趋势，实现两个目标的衔接。
CO₂ emissions need decrease rapidly after it peaks so as to achieve the linking of the two targets.

8. 实现2030年前CO₂排放达峰和2060年前碳中和两个目标的对策和措施要统筹布局，超前部署 (1)

Strategies and measures for the peaking of CO₂ emission before 2030 and carbon neutrality before 2060 need overall coordination and forward deployment

- 顺应并引领世界范围经济技术变革趋势，打造核心竞争力，需要超前部署。

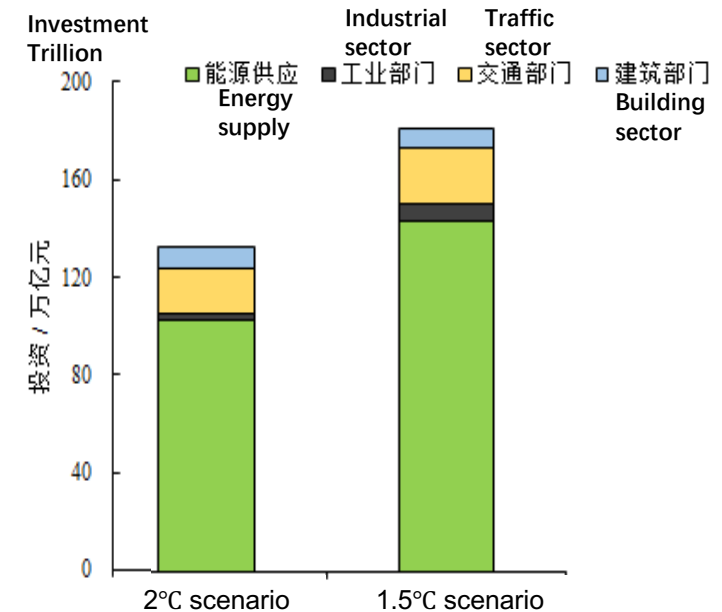
It requires forward deployment to adjust to and lead the economic and technology reform worldwide and create core competitiveness.

- 建立绿色低碳循环发展产业体系和社会消费方式，以数字化和深度电气化推进脱碳化。
Building a green low-carbon circular industrial system and social consumption pattern, and promoting decarbonization through digitalization and deep-electrification.
- 建立清洁低碳高效安全的能源生产和消费体系，形成以新能源和可再生能源为主体的零碳排放能源体系，基本结束化石能源时代。
Establishing a clean, low-carbon, efficient and safe energy production and consumption system, form a zero-carbon energy system with new and renewable energy as the main body, and basically end the fossil fuel era.
- 推进支撑深度脱碳技术研发和产业化发展。例如：氢能、储能、智能电网、零碳炼钢、零碳化工、CCS和BECCS、CDR等。
Promoting the R&D and industrialization of deep decarbonization technologies. For example, hydrogen energy, energy storage, smart grid, zero carbon steelmaking, zero carbon chemical industry, CCS and BECCS, CDR and so on.
- 推进体制机制改革和碳价机制与碳市场发展，为长期低碳化转型营造良好的制度环境、政策环境和市场环境。
Promoting institutional reform, carbon pricing mechanisms and carbon markets, and create an enabling institutional, policy and market environment for long-term low-carbon transition.

8. 实现2030年前CO₂排放达峰和2060年前碳中和两个目标的对策和措施要统筹布局，超前部署 (2)

Strategies and measures for the peaking of CO₂ emission before 2030 and carbon neutrality before 2060 need overall coordination and forward deployment

- 以长期碳中和目标为导向，避免近期高碳基础设施和产能扩张的技术锁定效应。
Have an eye on the long-term carbon neutrality target, and avoid the technical locking effect of short-term carbon-intensive infrastructure and capacity expansion.
 - 严格控制煤电、钢铁、化工、石化等高能耗强度产能扩张。
Strictly control the energy-intensive capacity expansion in coal electricity, steel, chemical, petrochemical and other industries.
- 顺应世界经济变革趋势，避免投资风险。
Conform to the world economic reform trend, and avoid investment risks.
 - 全球碳价机制下产业竞争力。
Industrial competitiveness under global carbon pricing system.
 - 高碳产能提前退役的搁浅成本。
Stranded costs of early decommissioning of carbon-intensive capacity.
- 以长期碳中和为目标导向，引导低碳技术发展和基础设施投资。打造新的经济增长点和新增就业机会。
The long-term carbon neutrality target directs low-carbon technology development and infrastructure investment and creates new economic growth areas and new jobs.



Thank you

