



Energy Technology Perspectives 2020

2020年能源技术展望报告

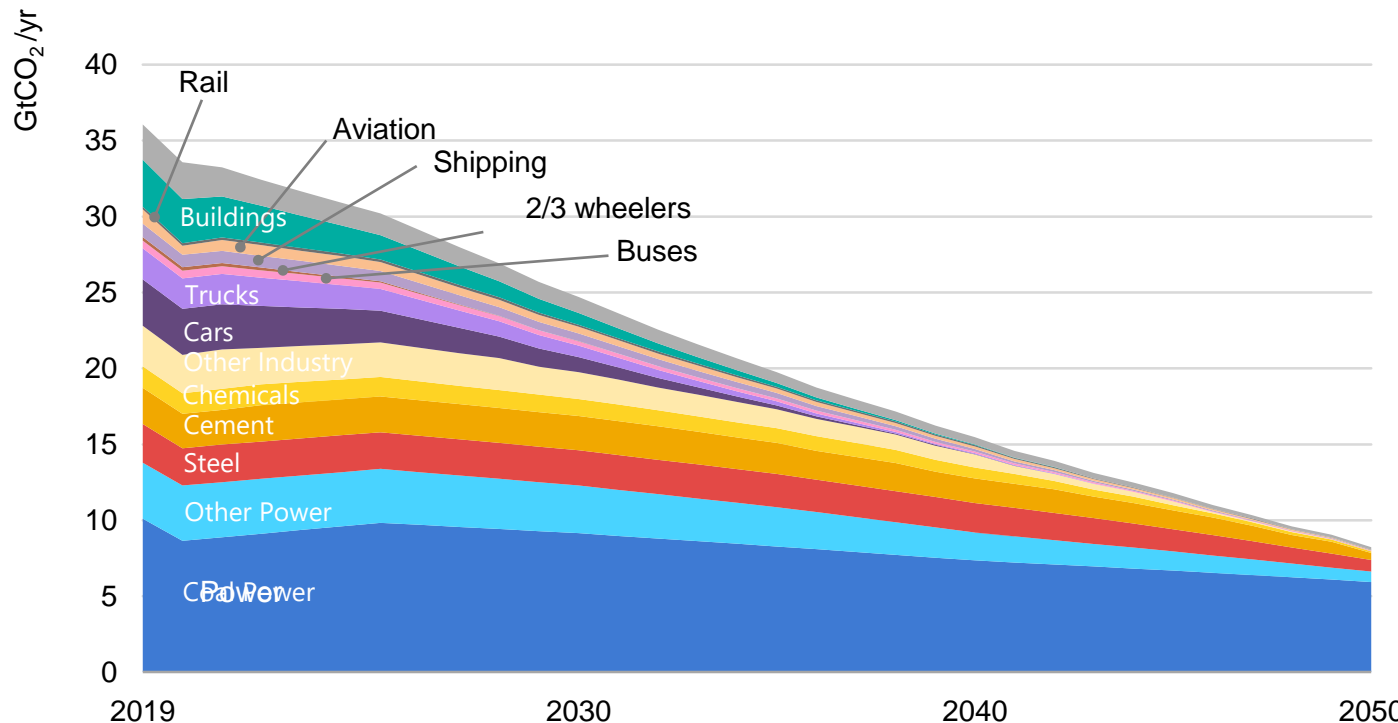
What do net-zero ambitions mean for energy technology?

零碳目标对能源技术意味着什么？

- A growing number of governments & companies are making ambitious pledges to reach net-zero emissions in coming decades. But achieving those goals & ensuring energy security is a big challenge.
越来越多的国家和企业正在制定各自在未来数十年中实现净零排放的目标。但是，在保证能源安全的前提下实现这些目标将是巨大的挑战。
- Major progress has been made: the rise of solar PV, wind and batteries has significantly reduced the costs of renewable electricity and electric cars.
部分领域已取得巨大进步：光伏、风能和电池的技术进步使得可再生能源和电动汽车的成本显著下降。
- But transitioning the energy system to net-zero emissions requires broader technology efforts in three critical areas:
但是，实现能源系统净零排放需要在以下三个技术领域的进一步进步：
 - Existing assets in power generation and industry
发电和工业领域现有资产/设备的升级
 - Clean energy technology & innovation
清洁能源技术与创新
 - Infrastructure that enables rapid technology deployment
能够促进新技术快速部署的基础设施

Our existing energy infrastructure is too big to ignore

现存能源基础设施的效应不容忽视

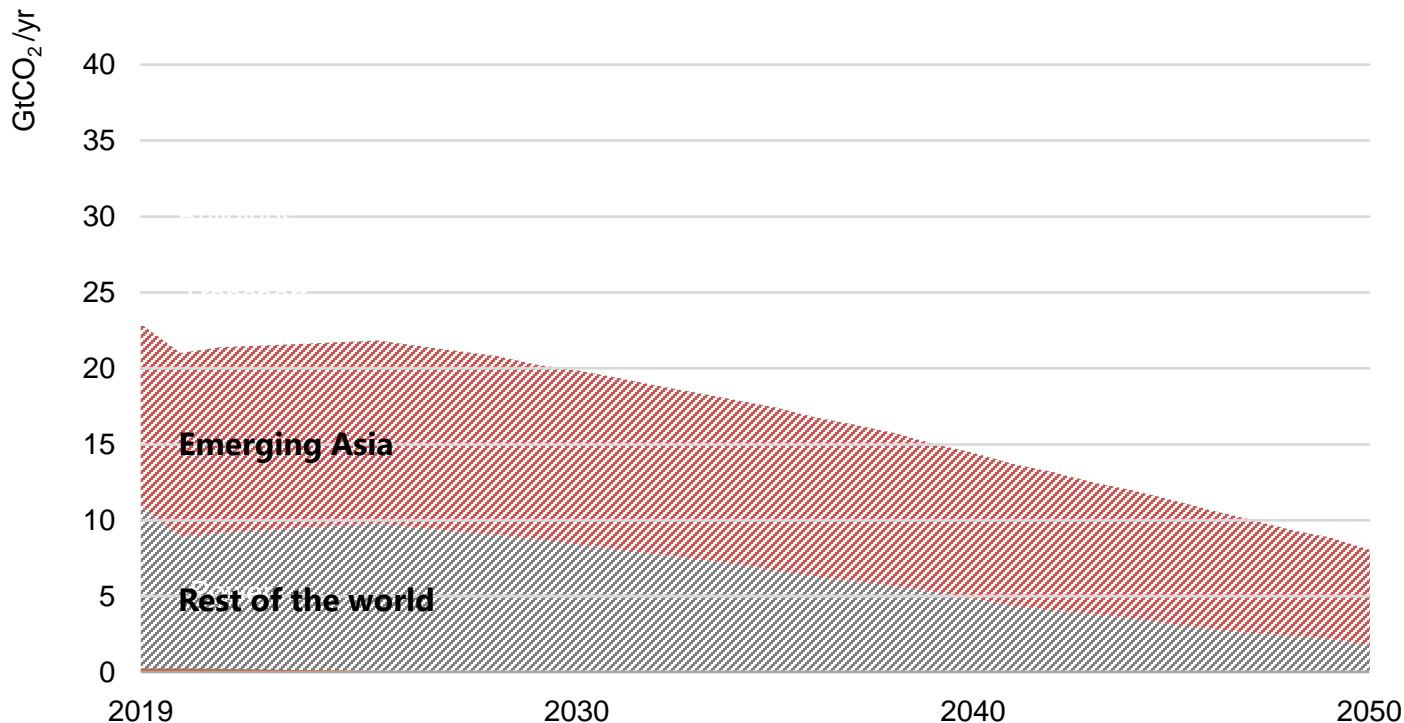


Reaching net-zero emissions requires tackling emissions from long-lived assets in power generation and heavy-industries. In emerging Asia, 80% of existing coal power capacity was built in the past 20 years.

实现净零排放需要解决具有较长寿命的现有发电和重工业资产和设备的排放效应。在亚洲新兴经济体中，80%的现有煤电装机容量是在最近20年中投产的。

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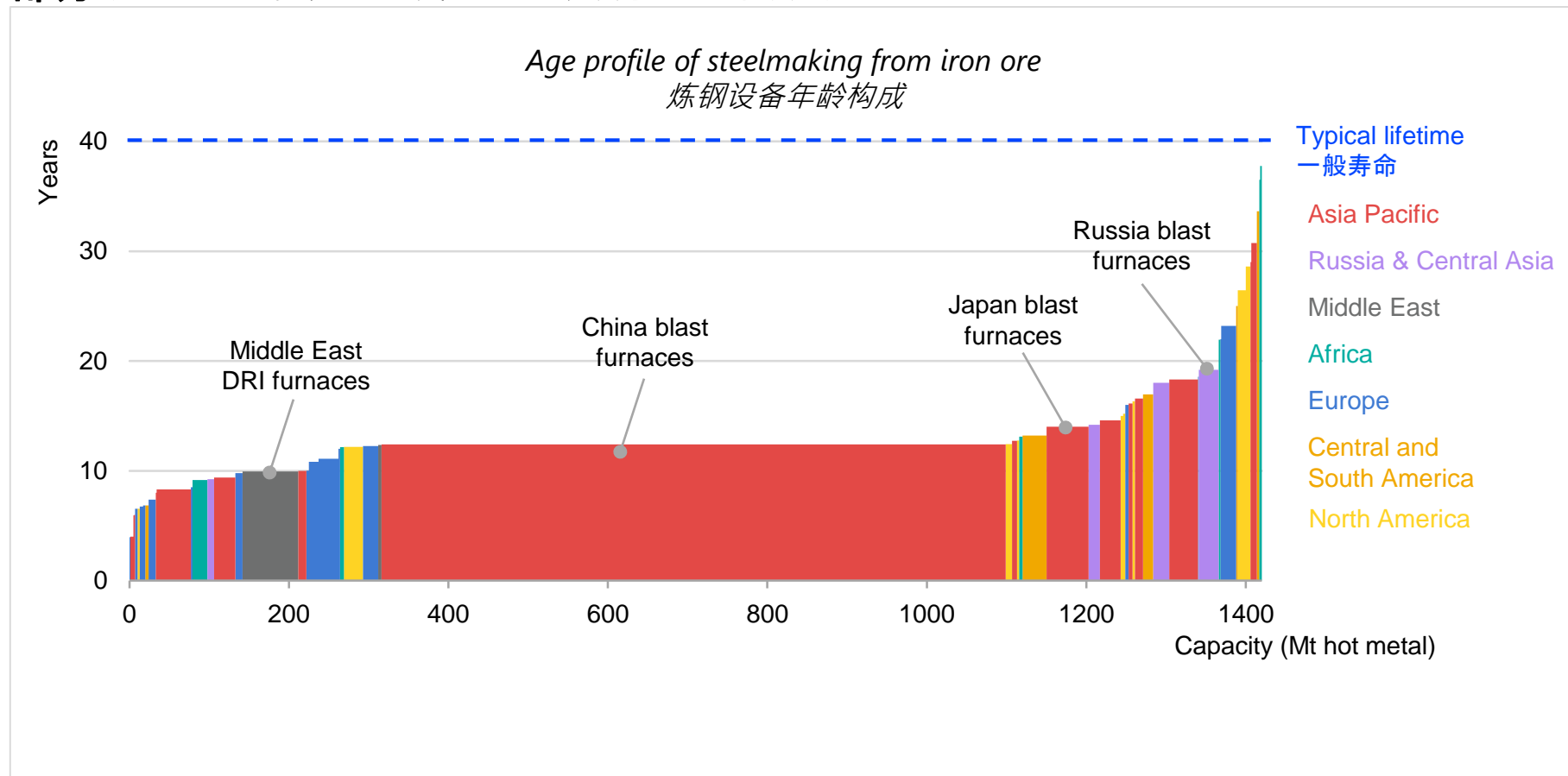


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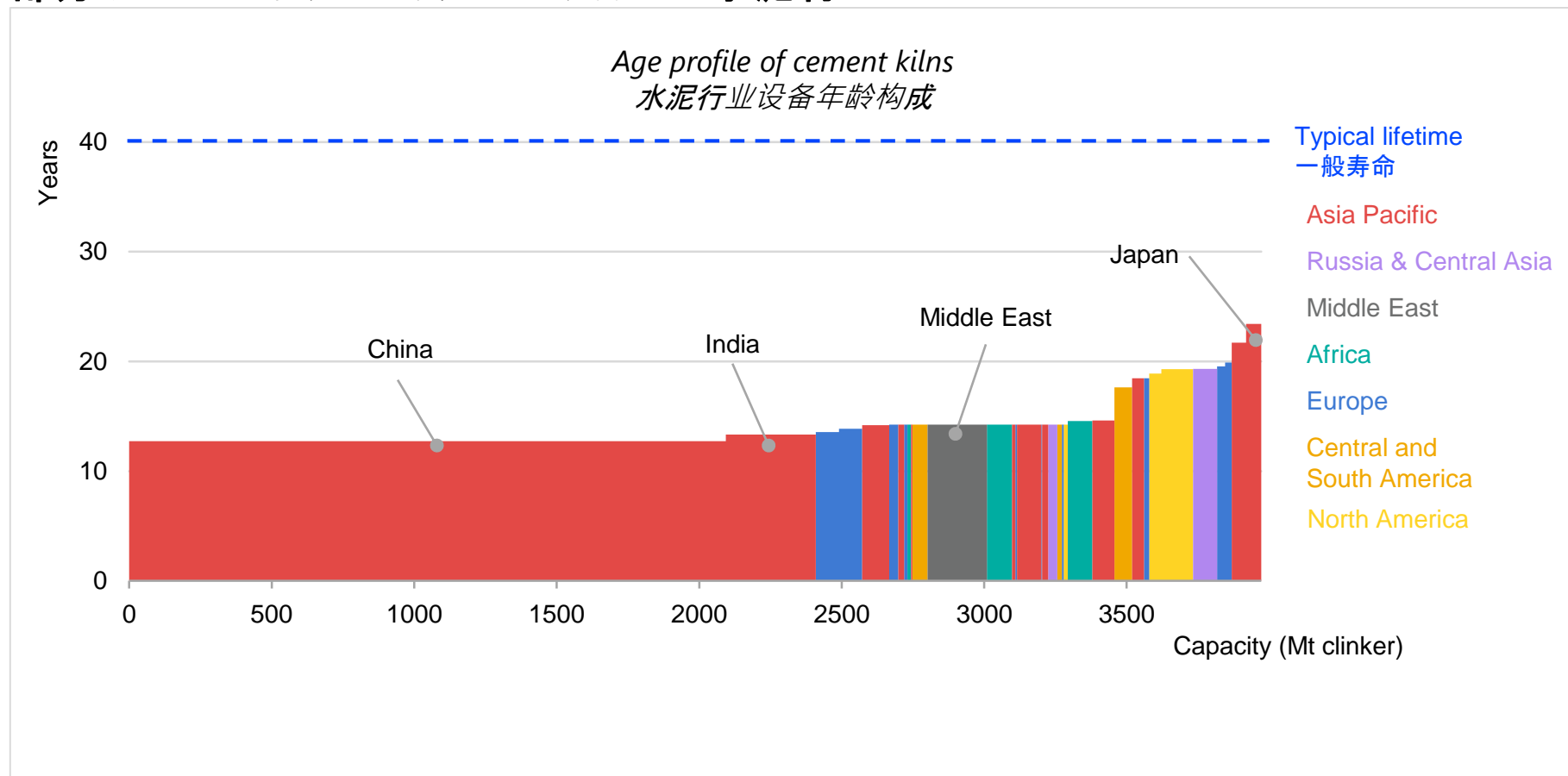
Many industry assets are still young – iron and steel production

部分现存工业资产和设备年龄较新：钢铁行业



Many industry assets are still young – cement production

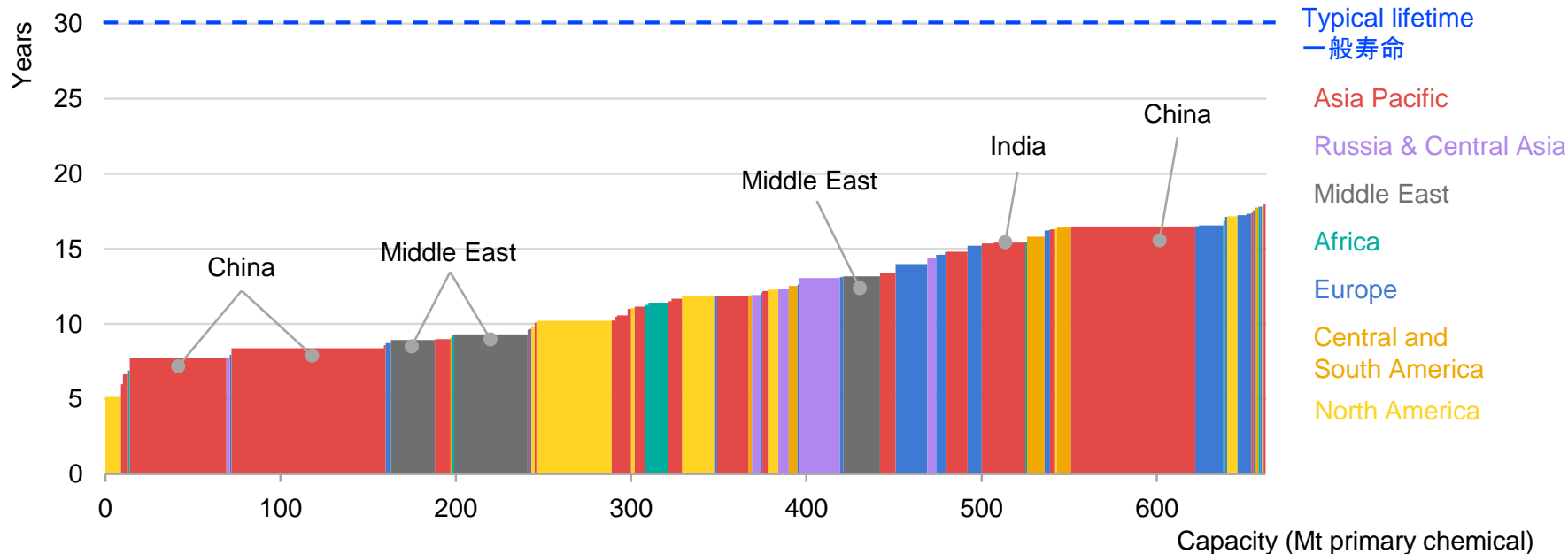
部分现存工业资产和设备年龄较新：水泥行业



Many industry assets are still young – chemicals production

部分现存工业资产和设备年龄较新：化工行业

Age profile of primary chemicals production facilities
初级化工产品制造设备年龄构成



China's middling-to-young production capacity accounts for upwards of 50% of the global total in key industrial sub-sectors. India and the Middle East are also key regions.

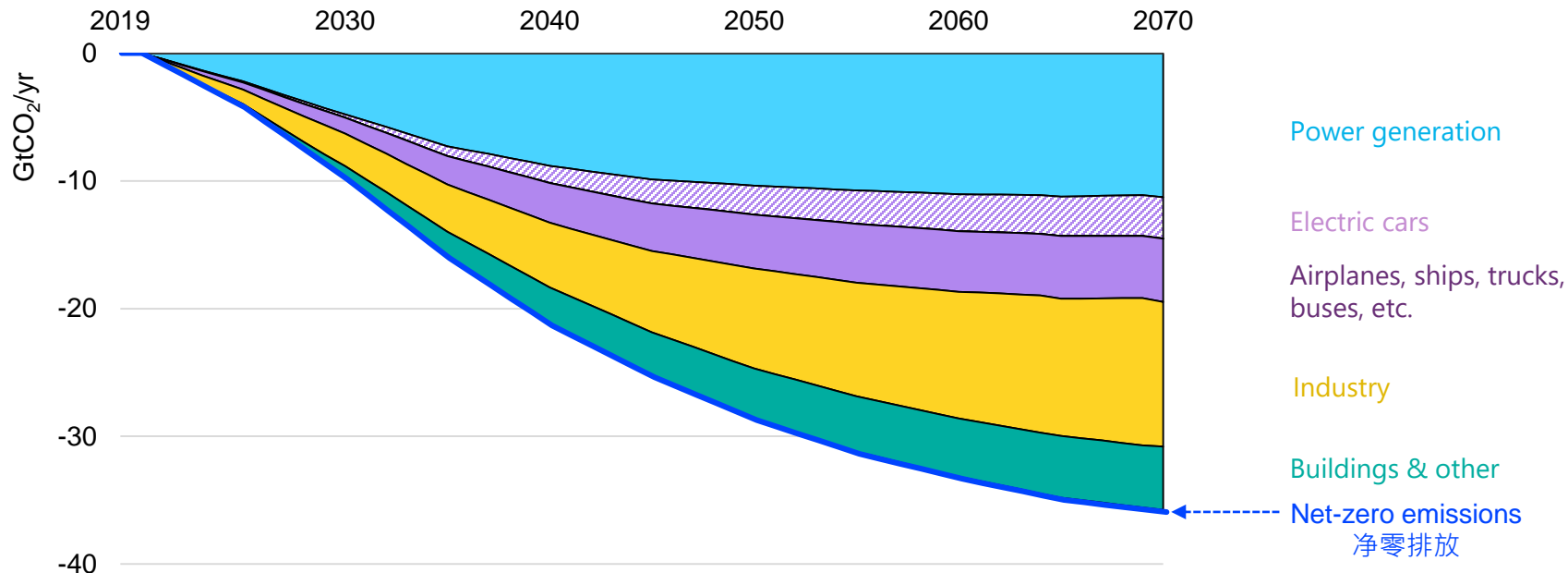
中国年龄较新的产能在部分重工业行业中占据全球总产能的一半以上。印度和中东国家在剩余部分中占据较高比例。

Focusing on the power sector is not enough to reach climate goals

仅关注电力行业无法实现气候目标

Global CO₂ emissions reductions in the Sustainable Development Scenario, relative to baseline trends

与基准情景相比，可持续发展情景所要求的全球二氧化碳减排量



Clean energy technology progress in the power sector and with electric cars is encouraging, but alone not sufficient to reach climate goals. A broad portfolio of technologies will be needed for a transition to net-zero emissions.

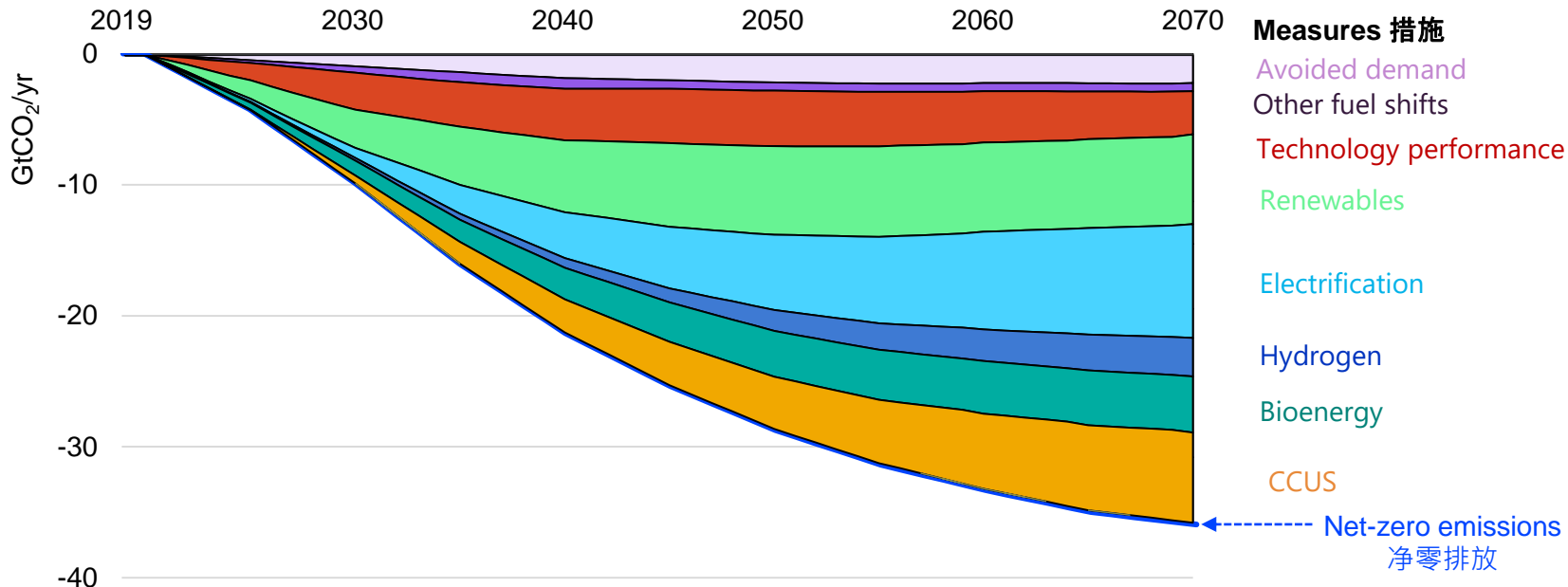
电力行业的清洁技术辅以电动汽车的普及将有巨大贡献，但不足以使全球实现气候目标。净零排放需要更多技术领域的突破。

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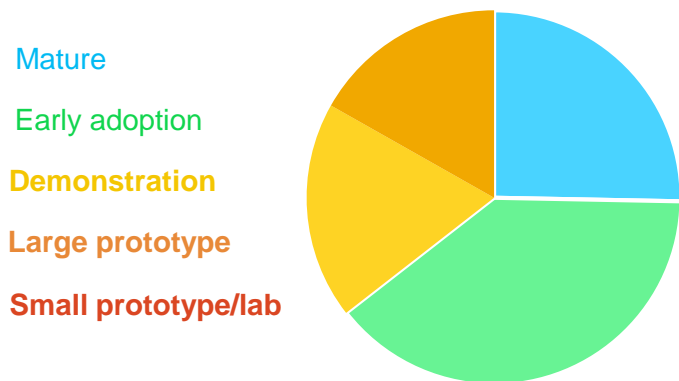
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Clean energy technology progress hinges on innovation

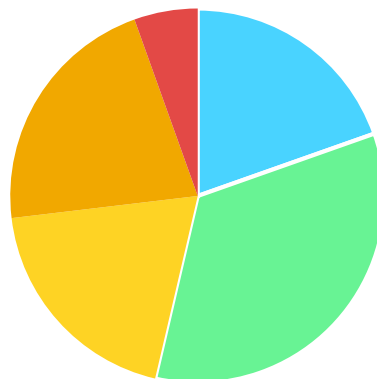
清洁能源技术进步取决于技术创新

Cumulative emissions reductions by technology maturity relative to baseline trends
不同发展阶段技术的累计碳减排贡献量

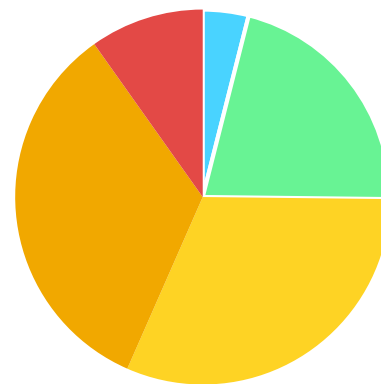
Net zero emissions by 2070



Net zero emissions by 2050



Heavy industry & long-distance transport



In the Faster Innovation Case, almost half of the emissions reductions for reaching net-zero by 2050 rely on technologies that are not yet commercial today. The share is higher in heavy industry & long-distance transport.

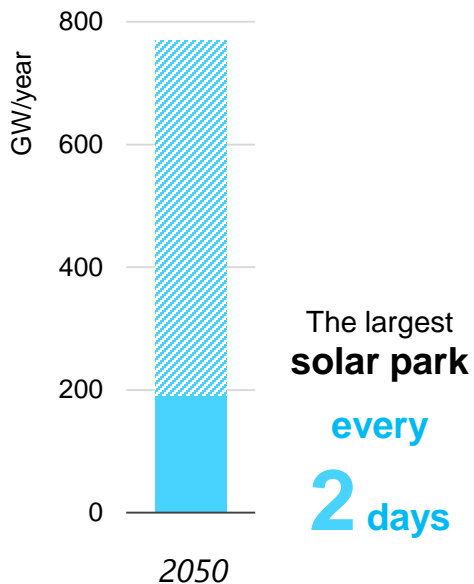
更快创新情景下（2050年实现净零排放），所需的一半碳减排量来自于今天仍未进入商用阶段的技术。在重工业和远距离运输领域中，未商用技术占据更高比例。

Net zero requires a major push to build clean energy infrastructure

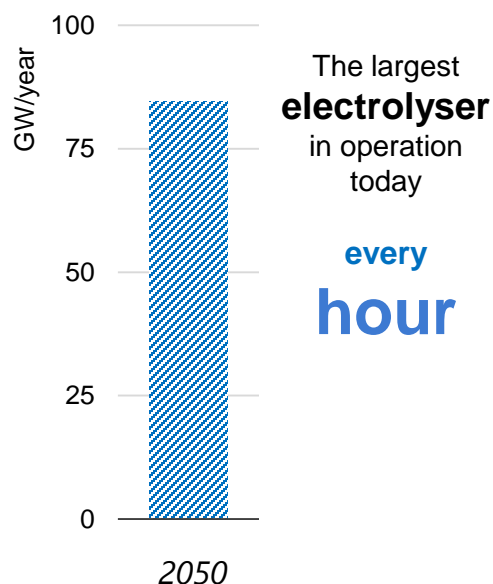
净零排放需要建设更多清洁能源基础设施

Selected indicators to reach net-zero emissions by 2050 through technology

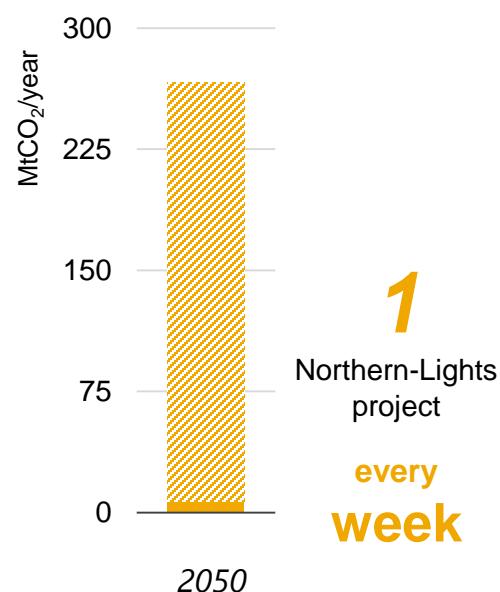
Renewable capacity additions



Electrolyser capacity additions



Additional CO₂ captured



Reaching net-zero emissions by 2050 would require a roll out of clean energy technologies & enabling infrastructure at unprecedented scale. Significant changes to consumer behaviour can moderate – but not eliminate – the needs.

在2050实现净零排放需要加快关键技术和基础设施的部署。消费者行为的显著改变可以在一定程度上降低紧迫性。

政府将扮演重要角色

Markets are vital for mobilising capital and catalysing innovation, but they will not deliver net-zero emissions on their own. Effective policy toolkits must address five core areas:

尽管市场在驱动资金投入和促进创新中十分关键，它们自身无法实现净零排放目标。有效的政策工具要用来解决以下领域的问题：

1. Tackle emissions from existing assets
降低现有资产的碳排放
2. Strengthen markets for technologies at an early stage of adoption
促进新技术市场在早期阶段的发展
3. Develop and upgrade infrastructure that enables technology deployment
发展和升级有助于技术推广的基础设施
4. Boost support for research, development and demonstration
增加研究、开发和演示等阶段的资金投入
5. Expand international technology collaboration
增强国际技术合作

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