Ratcliffe-On-Soar in Nottinghamshire – Making Coal History

诺丁汉郡的索尔河畔拉特克利夫火电厂- 燃煤发电终结

Britain‘s Energy Mission – Reaching Clean Power by 2030

英国能源使命 – 实现2030清洁能源目标

EVERY DEGREE COUNTS

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British Embassy
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Ratcliffe-on-Soar power station photographed in 1985. Credit: David Knighton / Alamy Stock Photo.

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Background
背景

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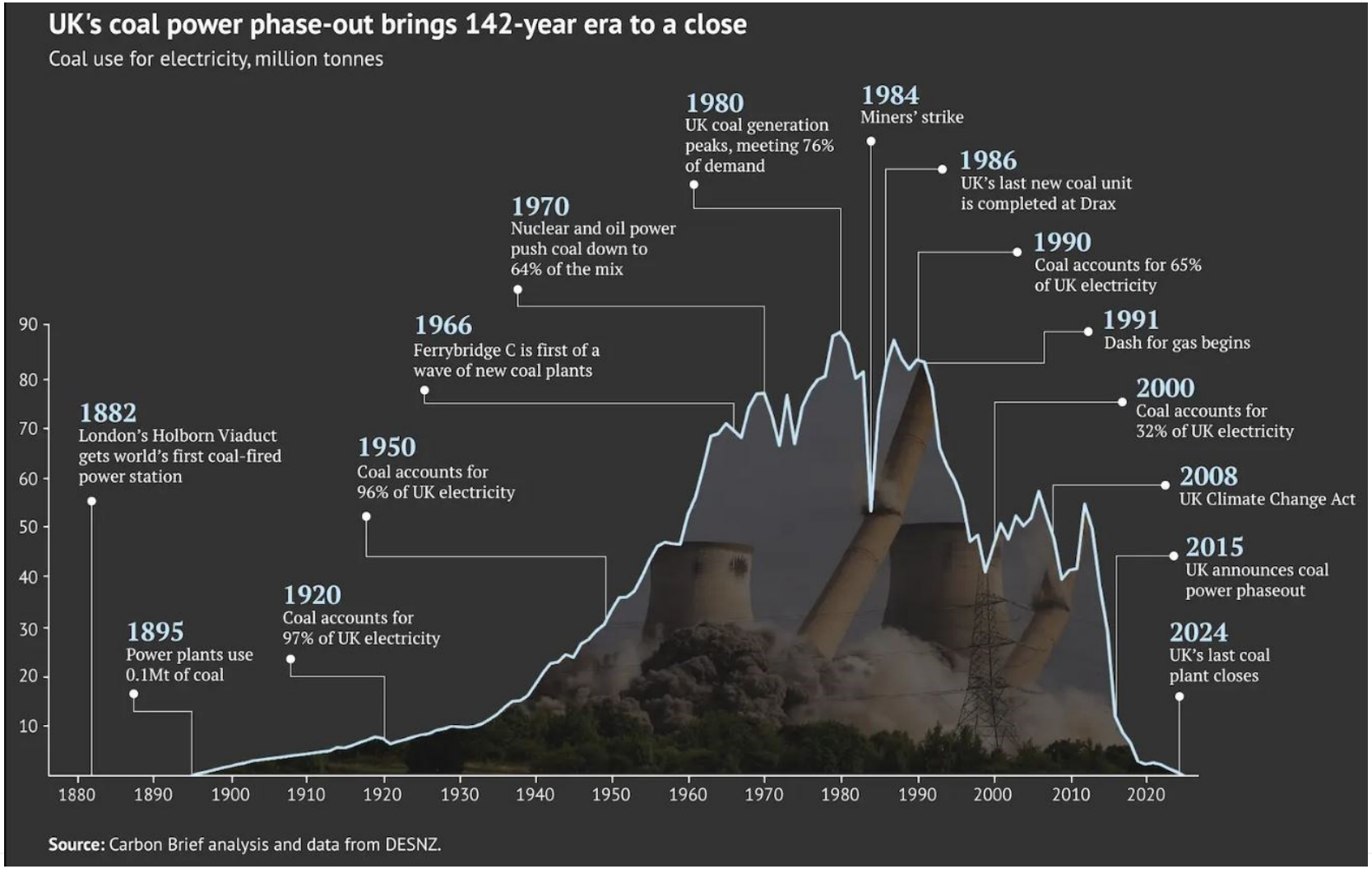
- On 30 September, the UK's last working coal power plant, Ratcliffe-on-Soar in the East Midlands, ceased operation. This makes Britain the first major economy to stop burning coal for power.

- Coal has provided power to the people of the UK since 1882, when the world's first coal-burning power plant opened in London at Holburn Viaduct. We have relied on coal for over 140 years.

- **The UK's experience demonstrates that rapid coal phaseouts are possible – and could be replicated internationally.**

- 英国最后一座燃煤发电厂- 诺丁汉郡的索尔河畔拉特克利夫火电厂，在服役了50年之后于9月30日关闭，这标志着英国142年燃煤发电时代的终结。**英国的经验表明，快速淘汰煤炭是可能的，并且可以在国际上复制。**



When did the UK start using coal power?
英国何时开始使用煤电?

The UK's resource endowment has long included abundant coal, which had been used in small quantities for centuries. Coal use for electricity generation only came much later.

长期以来，英国的资源禀赋就包括丰富的煤炭，但几个世纪以来煤炭的使用量一直很少。煤炭用于发电的时间要晚得多。

The earliest steam engines, in use from around 1700, burned coal to pump water out of mines, enabling deeper coal deposits to be accessed.

最早的蒸汽机从1700年左右开始使用。它通过燃煤将水从矿井中抽出，以便开采更深的煤矿。

Improvements by inventors which made the use of coal more economical and more widespread, then raised demand and fuelled greater use of coal.

这些蒸汽机的效率非常低，但发明家们对蒸汽机进行了改进，使煤的使用更加经济，也更广泛。

As a result, UK coal use began to surge, helping to power the Industrial Revolution, the spread of the overseas empire – and an explosion in global CO2 emissions.

经历了上述过程，英国的煤炭使用量开始激增，为工业革命、大英帝国以及全球CO2排放量的激增提供了动力。

In the middle of the 20th Century, coal dominated many major sectors of the UK economy: steel production; industrial processes; domestic heating; the production of 'Town gas' for lighting and cooking; railway transport; as well as fuel for electricity generation.

20 世纪中叶，煤炭主导着英国经济的所有领域：钢铁生产、工业流程、家庭供暖、使用"城市煤气"的照明和烹饪、铁路运输以及发电燃料。

70 years ago, in 1952, coal provided 96% of UK electricity production.

70年前，即1952年，煤炭提供了英国96%的电力生产。

'The way the UK's Industrial Revolution unfolded, coal was absolutely pivotal for Britain to develop into the world's first industrial economy in the 19th century. The steel industry was powered by coal. And over the late 18th – and certainly in the first half of the 19th century – Britain became a coal power economy. It was the world's first coal-fired economy'

'从英国工业革命的发展历程来看，煤炭对英国19世纪的工业经济发展绝对举足轻重。钢铁工业由煤炭提供动力。在18世纪晚期，当然也包括19世纪上半叶，英国成为了煤炭大国。这是世界上第一个以煤炭为动力的经济体'。

UK's Initiatives to Limit Emissions and Coal Use
英国停止使用煤电的政策倡议

The combination of the **Clean Air Act**, the switch from town gas to North Sea gas, deindustrialisation and globalisation had all helped drive down the use of coal in the second half of the 20th century.

20世纪下半叶，《清洁空气法令》的实施、从使用城镇燃气转向北海天然气、去工业化和全球化等因素共同推动了煤炭使用的减少。

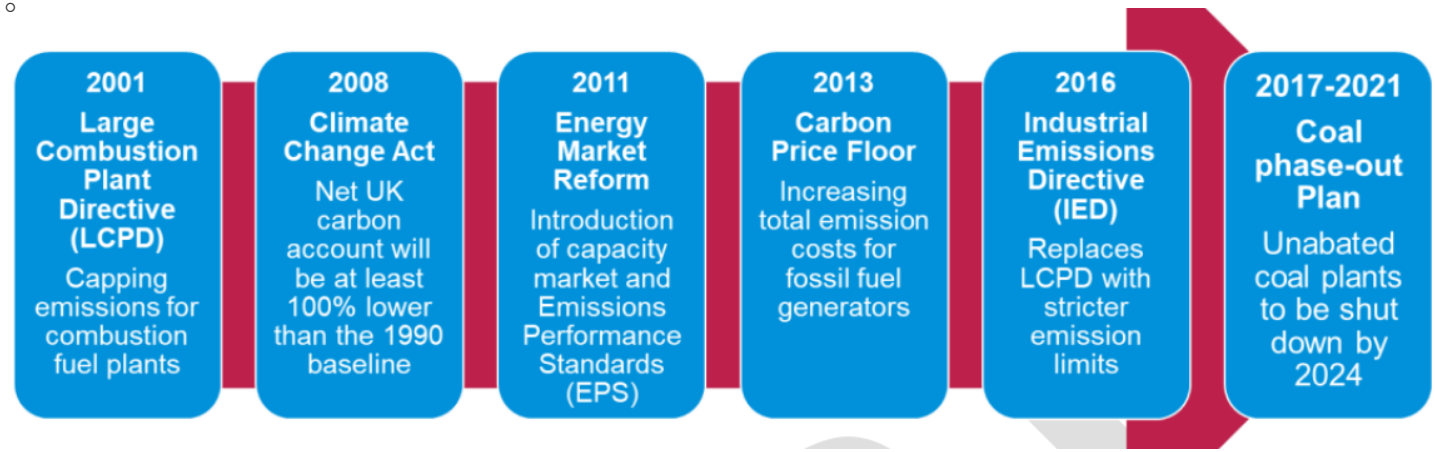
But coal power continued to thrive, as alternative sources of electricity generation failed to keep up with rising demand.

但煤电继续蓬勃发展，因为其他发电来源无法满足不断增长的用电需求。

As a result, coal generation did not peak until 1980 – and remained at similar levels in 1990.

因此，燃煤发电量直到1980年才达峰，在1990年仍保持在类似水平。

After a century dominating UK electricity supplies, coal was phased out in two rapid and distinct stages: first stage - '**Dash for Gas**' of the 1990s and second stage - buildout of **renewables** and **policies** to make coal plants pay for their pollution.
在主宰英国电力供应长达一个世纪之后，煤炭在两个快速但截然不同的阶段逐步淘汰：第一阶段1990年代的"天然气热潮"，和第二阶段则经历了可再生能源的发展，以及让煤电厂为污染买单的。



UK policy-supported transition from coal started in 2001 and has slowly increased the restrictions/limits to force the inevitable exit of coal. 英国由政策直接支持的煤炭转型始于 2001 年，并逐步加大限制力度，以迫使煤炭必然退出市场。

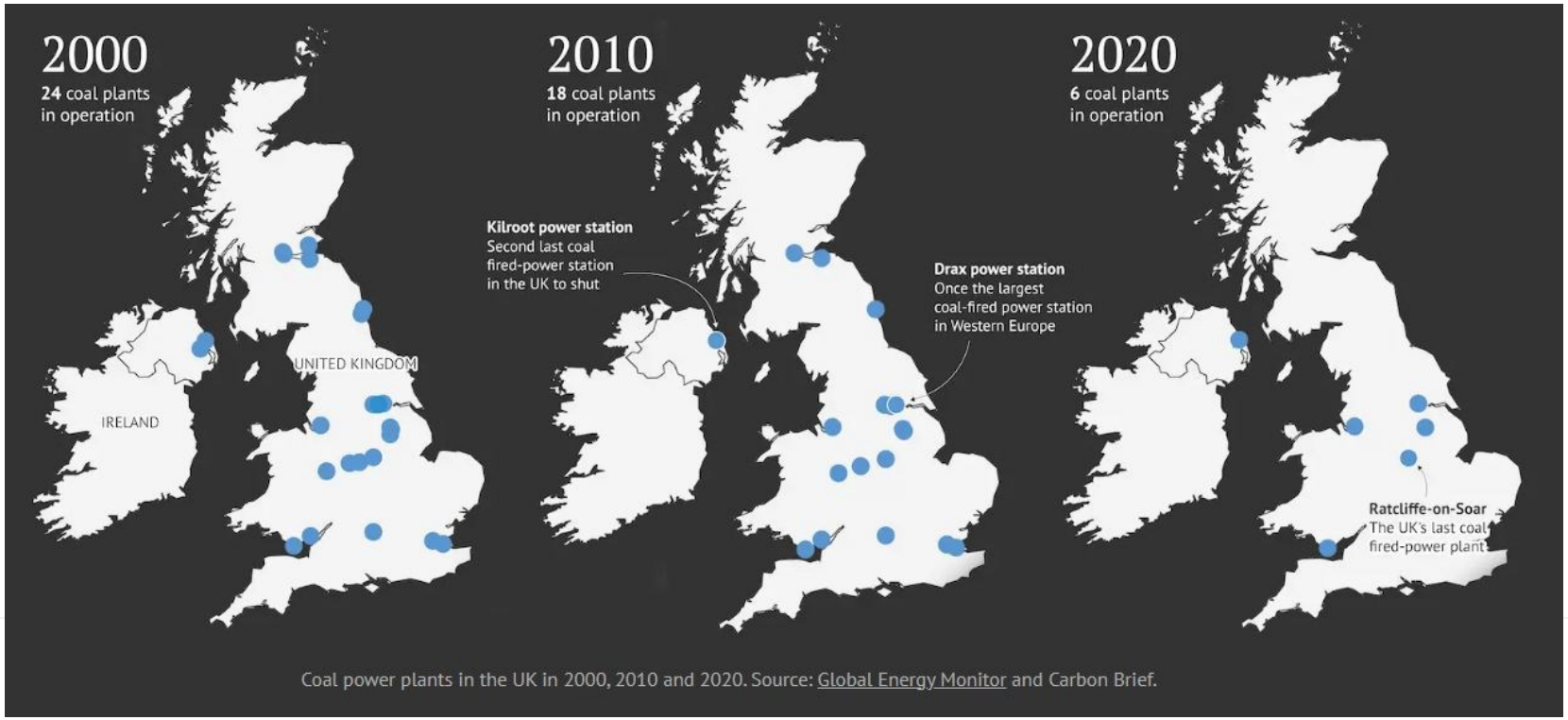
Policies introduced include regulatory limits like LCPD, EPS and IED, Carbon taxes and regulatory forced closures. 引入的政策包括《大型燃烧设备指令》、2013年的《能源法案》通过一项排放性能标准和《工业排放指令》等监管限制、碳税和监管强制关闭。

UK's Initiatives to Limit Emissions and Coal Use
英国停止使用煤电的政策倡议

In 2016 – after the last plant closures due to the EU's LCPD – coal power dropped precipitously to just 9% of annual electricity generation. 2016 also witnessed the **first hour** with no UK coal power since the Holborn Viaduct plant had opened in 1882. This was followed in 2017 by **the first full day** without coal power, in 2019 by the **first week** without the fuel and, in 2020, by the **first coal-free month**.
2016年，在欧盟的《大型燃烧设备指令》导致最后一家发电厂关闭之后，煤电占年发电量的比例骤降至仅9%。这一年也见证了自霍尔本高架桥发电厂于1882年投运以来，英国出现首个无煤电小时。随后，英国在2017年迎来了首个无煤电日，2019年迎来了首个无煤电周，2020年迎来了首个无煤电月。

The coal phaseout target was then brought forwards in 2021 to October 2024, with just 1.8% of the electricity mix having come from coal in 2020. 在此之后，煤电淘汰目标在2021年被提前至2024年10月，2020年煤炭发电量仅在电力结构中占到1.8%。

Coal plants continued to shutter throughout this period, as shown in the maps below. SSE's last coal-fired power station, Fiddler's Ferry, and RWE's Aberthaw B station closed in March 2020. Drax's two remaining coal units and EDF's West Burton A all closed in March 2023. Then, in late 2023, the UK's second-last coal-fired station – Kilroot in Northern Ireland – stopped generating electricity from coal, leaving just one plant remaining. 如下图所示，在此期间，继续有燃煤发电厂被关闭。2023年底，英国倒数第二家燃煤发电厂——北爱尔兰的基尔鲁特（Kilroot）——停止了燃煤发电，仅剩下索尔河畔拉特克利夫火电厂。



Coal power plants in the UK in 2000, 2010 and 2020. Source: Global Energy Monitor and Carbon Brief.

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Ratcliffe's Challenges
当地挑战

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- **THE END OF AN ERA 时代的终结**

- Ratcliffe power station played a key role in keeping the lights on over the past 57 years.
- 在过去的 57 年里，Ratcliffe发电站在保持英国灯火通明方面发挥了关键作用。
- Since construction, it has produced enough energy to make more than 21 trillion cups of tea and its 2GW capacity is enough to power two million homes and businesses – equivalent to the entire East Midlands region. And its eight iconic 114-metre-high cooling towers are a key part of the East Midlands skyline.
- 自上线以来，它产生的能源足以制作超过 21 万亿杯茶，其 2GW 的产能足以为 200 万户家庭和企业供电——相当于整个东米德兰兹地区。其 8 座标志性的 114 米高的冷却塔是东米德兰兹郡天际线的重要组成部分。

- Following closure, the site will go through a decommissioning process, which is expected to last around two years, before the site can be handed over to a demolition contractor.
- 关闭后，该场地将进行退役程序，预计持续约两年，然后才能将场地移交给拆除承包商。

CHALLENGES 挑战

- ❖ **Just Transition: Workers and Jobs 公正转型：工人与就业**
- ❖ **Future Sustainable Development Plan 未来可持续发展计划**
- ❖ **Mobilse Green Investments 促进绿色投资**

Key Policies and Mechanisms and Sources of Finance
主要政策机制及资金来源

Local Actions 当地措施

Uniper are offering internal redeployment opportunities, engagement with other external businesses that are looking to hire and outplacement support and learning initiatives to upskill colleagues to enhance their future employability. Uniper 正在提供内部重新部署机会，与其他寻求招聘和再就业支持的外部企业合作，以及提高同事技能的学习计划，以提高他们未来的就业能力。

The site has a Local Development Order which provides a framework for sustainable development, including advanced manufacturing, and research and development. A large section of the site is also part of the East Midlands Freeport, the UK's only in-land Freeport. 该基地有一个地方发展令，为可持续发展提供了框架，包括先进制造和研发。该场地的很大一部分也是东米德兰兹自由港的一部分，这是英国唯一的内陆自由港。

- **UK Government Actions 英国政府措施**

1. The UK government is working with Uniper, the utility company that runs Ratcliffe, to understand their plans for the Ratcliffe site. Ratcliffe has received a Local Development Order to **fast-track green investment and jobs**, and it is key part of the government's East Midlands Freeport area which will secure decent jobs and opportunity for the community. 英国政府正在与德国政府所有的公用事业公司 Uniper 接洽，以了解他们对Ratcliffe的计划。该工厂已获得地方发展令，以加快为Ratcliffe带来**绿色投资和就业机会**，而Ratcliffe是英国政府东米德兰兹自由港区的重要组成部分，将为社区提供体面的工作和机会。
2. The UK government and Uniper are engaging with the local community through this process to **ensure this transition is fair, just** and benefits the communities and workers who contributed so significantly to UK energy generation. 英国政府和 Uniper 正在通过这一过程与当地社区进行接触，以**确保这一转变公平、公正**，并让为英国能源生产做出重大贡献的社区和工人受益。
3. Most of the current workforce at Ratcliffe will **remain employed** at the site as it is decommissioned and transformed for the future. The site is currently running on a skeleton staff. Staff will retire, be redeployed within Uniper or take voluntary redundancy. Ratcliffe 的大部分现有员工将**继续留在该工厂工作**，因为该工厂将退役并进行改造以适应未来发展。该工厂目前仅靠精干人员运营。员工将退休、在 Uniper 内部调动或自愿离职。

Employment Support

- Office for Clean Energy Jobs 清洁能源工作办公室

International Action

- Powering Past Coal Alliance (PPCA) 助力淘汰煤炭联盟
- UK International Climate Finance (ICF) programmes 英国国际气候金融项目

What comes next for the UK's electricity mix?

英国电力的下一步是什么？

- **Reaching Clean Energy by 2030**
- Under the previous Conservative government, the UK was targeting a fully decarbonised power sector by 2035. The newly elected Labour government brought this forward to 2030.
- 在保守党政府执政期间，英国的目标是到2035年实现电力部门完全脱碳。新的工党政府将这一目标提前到2030年。
- Meeting this growth at the same time as phasing out unabated gas will require a very large increase in renewable generating capacity, as well as supporting systems to ensure the grid can run securely on predominantly variable generation from wind and solar.
- 要满足这一增长需求，英国需要大幅增加可再生能源发电能力，并安全运转靠风能和太阳能发电为主的电网。
- Even so, meeting the goal would require unabated gas power to be phased out within six years, from its current share of around 22%. This would be roughly twice as fast as the UK has phased out coal, from 39% in 2012 to zero in 2024.
- 要实现这一目标，还需要在六年内逐步淘汰未减排天然气发电。目前，天然气的发电占比约为22%。淘汰天然气的速度大约需要是淘汰煤炭速度——从2012年的39%降至2024年的0%——的两倍。
- In order to meet the 2030 target and wider UK climate goals, the Labour government has pledged to double onshore wind capacity, treble solar and quadruple offshore wind.
- 为了实现2030年目标和更广泛的英国气候目标，工党政府已承诺将陆上风电容量增加一倍，太阳能增加三倍，海上风电增加四倍。
- The expansion of renewables is continuing to be supported by the government's "contracts for difference" (CfD) scheme. The Labour government is also backing new nuclear projects, CCUS and a "strategic reserve of gas power stations" to guarantee security of electricity supplies.
- 政府的"差价合约"（CfD）计划继续支持可再生能源的扩张。工党政府还支持新的核项目、碳捕集、封存与利用技术和"天然气发电站战略储备"，以保证电力供应安全。

Implications for Other Coal Regions

英国对其他煤炭地区的启示

- Great Britain's coal phaseout shows that **rapid transitions away from coal power are indeed possible**. 英国的煤炭淘汰表明**快速摆脱煤炭发电是可能的**。
- We're the first major economy (G7) to stop burning coal for power. We have reduced coal's share of our electricity supply from around a third, to zero in the space of only ten years.英国是第一个停止燃煤发电的主要经济体。在短短十年的时间里，英国已经将煤炭在电力供应中的份额从大约三分之一减少到零。
- We aim to, **decarbonise our power sector by 2030** and supporting clean energy jobs as one of our key national missions. 我们的目标是，**到 2030 年实现电力部门脱碳**，并支持清洁能源就业是我们的主要国家使命之一。

- This progress hints at the potential for other countries – and indeed the whole world – to **replicate the UK's success** and, in so doing, making a major contribution to climate action. 这一进展暗示着其他国家——乃至全世界——有可能**复制英国的成功**，并在此过程中为气候行动做出重大贡献。
- The UK is eager to share lessons from our coal to clean energy transition journey with our international partners.英国愿意与国际合作伙伴分享我们从煤炭到清洁能源转型过程中的经验教训。
- **There are four key elements that enabled the UK phaseout 有四个关键因素促成了英国的淘汰:**

1. Building alternative sources of electricity generation, in sufficient quantities to meet and then exceed electricity demand growth.建设替代性发电来源，且使其数量足以满足甚至超过电力需求增长。
2. Stopping the construction of new coal-fired power plants.停止建设新的燃煤电厂。
3. Internalising externalities, via policies and regulations, so that coal plants face the cost of the air pollution and greenhouse gas emissions they generate.通过政策和法规让燃煤电厂承担其产生的空气污染和温室气体排放的成本。
4. Sending clear political signals that market actors can work towards. 发出明确的政治信号，让市场也参与其中。

- **THANK YOU!**

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