

ENERGY

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Oil (石油)

Sinopec seeks \$5.5bn in Repsol arbitration

Chinese oil group Sinopec is seeking \$5.5bn in arbitration against Spanish oil firm Repsol stemming from disputes over a three-year old joint venture, Repsol said on Friday.

Sinopec and its Canadian listed subsidiary Addax formed the Talisman-Sinopec Energy UK Ltd joint venture with Talisman Energy in 2012.

The joint venture purchased a stake in a deepwater oil field off Nigeria that year, but in 2014 the Nigerian government declined to approve the purchase.

Repsol acquired Talisman in May of this year. A Sinopec spokesperson had no immediate comment.

中石化向雷普索尔索赔 55 亿美元

中石化因一个已存在三年的合资企业，与西班牙石油集团雷普索尔产生纠纷，通过仲裁向雷普索尔要求 55 亿美元。

西班牙石油集团雷普索尔(Repsol)周五表示，中国石油集团中石化(Sinopec)因一个存在三年的合资企业与其产生纠纷，就此对该公司提出仲裁，要求获得 55 亿美元。

中石化及其加拿大上市子公司 Addax 与塔里斯曼能源(Talisman Energy)在 2012 年成立了 Talisman-Sinopec Energy UK Ltd 合资企业。

该合资企业在当年收购了尼日利亚一个深水油田的股份，但 2014 年尼日利亚政府拒绝批准这一收购计划。

雷普索尔在今年 5 月收购了塔里斯曼能源。中石化发言人未就此事置评。

Nigeria unveils provisional oil infrastructure agreements with China

Nigeria says it has signed provisional deals worth \$80bn with Chinese companies to upgrade its oil and gas infrastructure, in a sign of Beijing's willingness to bolster Africa's largest economy during its worst crisis in decades.

The memorandums of understanding cover all aspects of Nigeria's energy sector, from rehabilitating decaying refineries and building new pipelines to developing the neglected gas and power sectors, the country's state oil company NNPC said.

The agreements were reached during a visit this week to Beijing by Emmanuel Ibe Kachikwu, Nigeria's oil minister. NNPC said 38 Chinese companies were involved in the agreements, including Sinopec, an oil group, and Norinco, a weapons maker.

However, it was not immediately clear how the deals would be financed and industry observers are waiting to see whether the agreements will be implemented.

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Nigeria badly needs investment to boost oil production and improve fuel and power supplies for its 180m people. In spite of its oil riches, the country imports nearly all of its fuel because its rundown refineries cannot process crude.

“Clearly this shows that China is interested [in investing in Nigeria’s oil and gas sector] — there isn’t the same appetite from the west,” said Dolapo Oni, head of energy research for Ecobank in Lagos.

Nigeria has been Africa’s top oil producer, but a fresh bout of insurgent attacks in the Niger Delta this year has slashed output to its lowest level in 25 years. The government said this week that production had returned to 1.9m barrels per day, but industry insiders say that figure seems too high, as one of the country’s biggest export terminals, the Shell-operated Forcados facility, remains closed after an attack.

The violence has coincided with the decline in oil prices that has plunged Nigeria — it relies on petrodollars for 90 per cent of its export earnings — into a deepening economic crisis.

Muhammadu Buhari, Nigeria’s president, first turned to China for support during a visit to the country in April, when he secured \$6bn in loan pledges for infrastructure and inked a currency-swap deal. However, there has been no news since of when either deal will be implemented.

Mr Buhari, who took office last year, has pledged to overhaul the NNPC and reform Nigeria’s oil industry, which is notorious for corruption and wastage. But there is still confusion among western oil majors and other would-be investors over crucial issues such as the future structure of joint ventures.

Amid this uncertainty in the sector, observers are sceptical about the implementation of the agreements announced this week.

尼日利亚与中国签署能源基建协议

北京方面愿意在非洲最大经济体遭遇数十年最严重危机之际伸出援手，但协议最终能否落实仍然存疑。

尼日利亚宣布已经与中国企业签署了价值 800 亿美元的初步协议，拟对该国的石油和天然气基础设施进行升级改造，这个迹象表明北京方面愿意在非洲最大经济体遭遇数十年最严重危机时伸出援手。

国有的尼日利亚国家石油公司(NNPC)表示，这些谅解备忘录涵盖该国能源行业的各个方面，从改造陈旧的炼油厂和建造新管道，到开发被忽视的天然气和电力行业。

这些协议是在尼日利亚石油部长伊曼纽尔·伊笔·卡希库(Emmanuel Ibe Kachikwu)本周访问北京期间达成的。NNPC 表示，这些协议涉及 38 家中国企业，包括石油企业中石化(Sinopec)和军工集团北方工业(Norinco)。

然而，尚不清楚这些协议的资金将怎么解决，行业观察家们认为，对于它们会不会落实，还需观望一段时间。

尼日利亚迫切需要投资以提高石油产量，并改善面向国内 1.8 亿人口的燃油和电力供应。尽管坐拥大量石油储量，但该国几乎所有燃料都是进口的，因为其陈旧的炼油厂无法加工原油。

“显然，这表明中国有兴趣（投资于尼日利亚油气行业），而西方没有这样的胃口，”拉各斯 Ecobank 能源研究主管多拉普·奥尼(Dolapo Oni)表示。

尼日利亚一直是非洲最大的产油国，但今年尼日尔三角洲遭遇新的一波叛乱分子袭击，使该国石油产量降至 25 年来最低水平。政府本周表示，产量已恢复至每日 190 万桶，但业内人士表示，这个数字似乎偏高，因为该国最大的出口终端之一，壳牌(Shell)经营的福卡多斯(Forcados)港口，在遭受袭击后一直关闭。

暴力活动卷土重来之际，适逢石油价格下跌，这使 90% 出口收入依赖石油的尼日利亚越来越深地陷入经济危机。

尼日利亚总统穆罕马杜·布哈里(Muhammadu Buhari)在 4 月访华期间首次向中国寻求支持，那次他争

取到了 60 亿美元的基础设施贷款承诺，还签署了一份货币互换协议。但是，在这两项合作何时落实的问题上一直没有下文。

去年上台的布哈里承诺对 NNPC 进行整改，并在以腐败和浪费闻名的尼日利亚石油业推行改革。但是，西方大型石油企业和其他潜在投资者对于一些关键问题（如合资企业的未来结构）仍存在困惑。

在该行业弥漫这种不确定性的情况下，观察人士对本周公布的这些协议会不会落实表示怀疑。

US oil reserves surpass those of Saudi Arabia and Russia

The US holds more oil reserves than Saudi Arabia and Russia, the first time it has surpassed those held by the world's biggest exporting nations, according to a new study.

Rystad Energy estimates recoverable oil in the US from existing fields, discoveries and yet undiscovered areas amounts to 264bn barrels. The figure surpasses Saudi Arabia's 212bn and Russia's 256bn in reserves.

The analysis of 60,000 fields worldwide, shows total global oil reserves at 2.1tn barrels. This is 70 times the current production rate of about 30bn barrels of crude oil a year, Rystad Energy said on Monday.

Conventional oil producers, such as Saudi Arabia, have traditionally used their huge resource riches to wield power globally, particularly among big consumer countries such as the US.

This relationship has been disrupted in recent years by hydraulic fracturing and other new technologies that have helped the US unlock vast reserves and enabled it to become more energy independent.

More than half of the US's remaining oil reserves are in unconventional shale oil, Rystad Energy data show.

Other global oil reserves data, like the closely watched BP Statistical Review that is based on official reporting from national authorities, show the US still ranks behind countries such as Saudi Arabia, Russia, Canada, Iraq, Venezuela and Kuwait.

While the reserves numbers are crucial, the cost of production is just as vital, said Richard Mallinson at London-based consultancy Energy Aspects.

Although US shale oil has become more economical to produce — costs have halved over the past two years to below \$40 a barrel in some instances — Saudi Arabia and other Middle Eastern producers still pump oil for less than \$10 a barrel.

美国石油储量首次超过沙特、俄罗斯

咨询公司 Rystad Energy 的最新研究显示，美国石油储量总计 2640 亿桶，其中一半以上是非常规的页岩油。

一项新研究显示，美国石油储量已高于沙特阿拉伯、俄罗斯，这是美国石油储量首次超越世界最大的石油输出国。

咨询公司 Rystad Energy 估计，美国既有油田、已发现和尚未发现的可采石油总计 2640 亿桶。这一数字超过了沙特和俄罗斯的石油储量，后两者的储量分别为 2120 亿桶和 2560 亿桶。

这项对全球范围内 6 万处油田的分析显示，全球石油总储量为 2.1 万亿桶。Rystad Energy 周一表示，这一数字 70 倍于当前的原油年产量，后者约为 300 亿桶。

沙特等常规石油生产国一直利用其巨大的资源财富在全球发挥影响力，尤其是对美国等石油消费大国施加影响。

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近些年来，这种关系已被水力压裂等新技术颠覆，这些新技术帮助美国“解锁”了巨大的储量，令其在能源方面能够更加独立。

Rystad Energy 数据显示，美国剩余的石油储量中，一半以上是非常规的页岩油。

其他全球性石油储量数据——比如根据各国政府部门的官方报告汇编而成的、受到密切关注的《BP 世界能源统计年鉴》(BP Statistical Review)——显示，美国的石油储量仍落后于沙特、俄罗斯、加拿大、伊拉克、委内瑞拉和科威特。

伦敦咨询公司 Energy Aspects 的查德·马林森(Richard Mallinson)表示，尽管石油储量数据很关键，但生产成本同样重要。

虽然美国页岩油生产的经济性已经提高——一些例子显示，生产成本在过去两年里已经减半、降至每桶 40 美元以下——但沙特和其他中东产油国的石油开采成本依然不到每桶 10 美元。

IEA warns of ever-growing reliance on Middle Eastern oil supplies

The world risks becoming ever more reliant on Middle Eastern oil as lower prices derail efforts by governments to curb demand, the west's leading energy body has warned.

The head of the International Energy Agency told the Financial Times that Middle Eastern producers, such as Saudi Arabia and Iraq, now have the biggest share of world oil markets since the Arab fuel embargo of the 1970s.

Demand for their crude has surged amid a collapse in oil prices over the past two years that has cut output from higher-cost producers such as the US, Canada and Brazil.

Fatih Birol, IEA executive director, said policymakers risk becoming complacent as rhetoric surrounding a rise in North American energy supplies has overshadowed the world's growing reliance on Middle Eastern crude.

Middle Eastern producers now make up 34 per cent of global output, pumping 31m barrels a day, according to IEA data. This is the highest proportion since 1975 when it hit 36 per cent. In 1985, when North Sea production accelerated, their share fell to as little as 19 per cent.

Fast-growing supplies from US shale fields triggered the oil price plunge in mid-2014. Unlike in the 1980s, however, Opec producers — led by Saudi Arabia and its Gulf allies — decided to maintain output to defend market share for the 13-member group, rather than cutting output to bolster prices.

Demand has since surged as prices more than halved following years of trading above \$100 a barrel. Mr Birol said efforts to improve energy efficiency and reduce emissions were being thwarted as motorists returned to buying fuel-guzzling cars.

In the US, more than two-and-a-half times as many sports utility vehicles were being bought compared with standard cars, Mr Birol said.

Even more concerning for policymakers is China, where more than four times as many SUVs were bought, suggesting the country's rapidly growing car culture has adopted America's taste for larger more fuel-hungry cars.

China has been the centre of oil demand growth for the past decade, becoming the second-largest oil consumer — behind the US — and surpassing it as the world's biggest importer last year.

Hundreds of billions of dollars in energy investments have been cut since 2014 as oil companies have embarked on the biggest cost-saving measures in 30 years, Mr Birol said. That is cutting supplies outside Opec, with US and other countries' production expected to decline this year.

Higher output from Iraq, Saudi Arabia and Iran has filled the gap.

“The Middle East is reminding us that they are the largest source of low-cost oil,” said Mr Birol. He said the region was expected to meet three-quarters of demand growth over the next two decades.

IEA 警告：世界日益依赖中东石油

国际能源署署长称，低油价削弱了各国抑制石油需求的努力，沙特和伊拉克等中东产油国占世界市场的份额达 1970 年代以来最高。

西方领先的能源机构警告称，由于低油价削弱了各国政府抑制石油需求的努力，世界正面临日益依赖中东石油的危险。

国际能源署(IEA)署长法提赫·比罗尔(Fatih Birol)对英国《金融时报》表示，沙特和伊拉克等中东产油国占世界石油市场的份额如今达到了自 1970 年代阿拉伯世界对西方燃料禁运以来的最高水平。

过去两年里，随着油价的暴跌，世界对中东原油的需求量大幅增加。油价暴跌导致美国、加拿大和巴西等成本更高的产油国降低了产量。

比罗尔表示，由于围绕北美能源供应增加的言论掩盖住了世界对中东原油依赖加深的事实，政策制定者面临感到自满的风险。

IEA 数据显示，当前中东产油国的日产量为 3100 万桶，占到全球总产量的 34%。这是该比例自 1975 年达到 36% 以来的最高水平。1985 年，由于北海油田产量的加速增长，中东产油国的全球产量占比下降到很低的 19%。

2014 年年中，美国页岩油田供应量的快速增长，引发了油价暴跌。然而，与 1980 年代不同的是，以沙特及其海湾盟国为首的欧佩克(Opec)产油国决定维持产量以捍卫该组织的市场份额，而不是通过减产来支撑油价。

因为在多年高于每桶 100 美元之后，油价降幅超过 50%，需求自那时以来已大幅升高。比罗尔表示，由于车主重新购买高油耗车型，提高能效和减少排放的努力遭到了挫败。

比罗尔说，在美国，运动型多功能车(SUV)的销量高于标准车型的 2.5 倍。

甚至更让政策制定者担心的是中国。中国的 SUV 销量高于标准车型的 4 倍，这表明，在汽车文化飞速发展的中国，人们已像美国人一样喜欢体型更大、油耗更高的车型。

中国在过去 10 年里一直是石油需求增长的主力，成为了仅次于美国的全球第二大石油消费国，去年则超过美国成为全球头号石油消费国。

比罗尔说，由于产油国实施了 30 年来最大的节约成本措施，自 2014 年以来被砍掉的能源投资达到数千亿美元。这导致欧佩克之外的供应量降低，预计美国和其他国家今年的产量将有所下降。

伊拉克、沙特和伊朗的增产已弥补了这一差距。

“中东在提醒我们，它们才是最大的低成本石油供应方，”比罗尔说。他说，中东预计将满足未来 20 年需求增量的四分之三。

KazMunaiGas sweetens offer for London-listed unit

National Company KazMunaiGas has sweetened its offer to buy out minority shareholders in its London-listed subsidiary after talks with China's sovereign wealth fund, according to the Kazakh state oil company's chairman.

KazMunaiGas, which is 100 per cent owned by the Kazakh state, last month launched an attempt to tighten control over KazMunaiGas Exploration Production, or KMG EP, its UK-listed subsidiary, and offered to buy out its minority shareholders.

NC KMG's proposals to reform its relationship with KMG EP, Kazakhstan's third-largest oil producer, have run into stiff opposition from the London-listed unit's independent directors. They said the changes would "severely

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undermine the corporate governance of the company” and threatened to resign.

On Wednesday, NC KMG increased its buyout offer to KMG EP’s minority shareholders from \$7.88 to \$9 per global depositary receipt, meaning the transaction is worth up to \$1.3bn.

NC KMG also dropped one of the most contentious elements of the proposed package of changes to the agreement governing its relationship with KMG EP.

Frank Kuijlaars, chairman of NC KMG, said the company had dropped the element — which would have given the parent company veto powers over the appointment of independent directors to the board of its subsidiary — after a meeting with China Investment Corporation, the Chinese fund that is the largest minority shareholder in KMG EP, with an 11 per cent stake.

“That was their number one concern,” he told the Financial Times. “We said let’s give in, let’s recognise this. Giving up a veto doesn’t mean you cannot challenge certain decisions.”

The move underscores Beijing’s growing sway in central Asia as it targets investment in the region. Chinese companies own close to a quarter of Kazakhstan’s oil production.

Beijing’s concerns over KMG EP are in line with those of other shareholders, who described NC KMG’s offer to buy out minority investors as “a fiasco” and “outrageously low”, and told the Financial Times that they would shun a broader privatisation programme planned by the Kazakh government if the oil company did not alter its position.

NC KMG controls about 65 per cent of the voting rights in KMG EP.

Chris Hopkinson, deputy chief executive of NC KMG and chairman of the board of KMG EP, said that the proposed changes were necessary to allow the parent company to push through efficiency improvements at KMG EP’s Soviet-era oilfields.

Several shareholders in KMG EP said on Wednesday that the revisions to NC KMG’s proposals were not sufficient.

“Too little, too late,” said Jacob Grapengiesser, partner at East Capital, one of the top funds specialising in the former Soviet Union and a KMG EP shareholder.

Glass Lewis, the shareholder advisory service, on Wednesday advised that investors vote against the proposals by NC KMG to tighten its grip on KMG EP.

Mr Kuijlaars said that CIC had not indicated whether it would support NC KMG’s proposals, but added he would be surprised if the Chinese fund sold its shares.

KMG 提高买断伦敦上市子公司股权报价

这家哈萨克斯坦国有油气公司在和中国主权财富基金商谈后提高报价，突显北京方面在中亚地区影响力日益扩大。

哈萨克斯坦国家石油和天然气公司(KazMunaiGas, KMG)的董事长表示，在和中国的主权财富基金商谈之后，KMG 提高了其买断伦敦上市子公司少数股权的报价。

上月，哈萨克斯坦政府全资拥有的 KMG 试图收紧对其伦敦上市子公司 KazMunaiGas 勘探开采公司(KMG EP)的控制，提出收购少数股东所持全部股权。

KMG 旨在改变与 KMG EP 关系的提议，遭到了这家伦敦上市子公司的独立董事的强烈反对。KMG EP 是哈萨克斯坦的第三大石油公司。独立董事们表示这种改变将“严重削弱公司治理”，并威胁要辞职。

周三，KMG 把收购 KMG EP 全部少数股权的报价从每份全球存托凭证(global depositary receipt) 7.88 美元提高至 9 美元，这意味着交易价值高达 13 亿美元。

KMG 还放弃了旨在对规范其与 KMG EP 关系的协议进行调整的拟议方案中最具争议性的元素之一。

KMG 董事长 Frank Kuijlaars 表示，在与持有 KMG EP 11% 股权的最大少数股东、中国投资有限责任公司（CIC，中投公司）开会后，该公司已放弃了这一元素——该元素本来将让母公司有权否决子公司董事会的独立董事任命。

“那是他们的头号担忧，”他告诉英国《金融时报》。“我们说，那我们让步吧，我们承认这一点。放弃否决权并不意味着你不能挑战某些决定。”

此举凸显了北京方面在中亚地区日益扩大的影响力。中国正把投资目标瞄准中亚。中国企业控制着哈萨克斯坦近四分之一的石油产量。

北京方面对 KMG EP 的担忧与其他股东如出一辙，后者把 KMG 买断少数股权的报价称为“可耻结局”且“低得离谱”，并告诉英国《金融时报》，如果这家石油公司不改变立场，他们将冷落哈萨克斯坦政府一项更广泛的私有化计划。

KMG 控制着 KMG EP 大约 65% 的表决权。

KMG 副首席执行官、KMG EP 董事长克里斯·霍普金森(Chris Hopkinson)表示，所提议的改革对于允许母公司在 KMG EP 的苏联时代油田推进效率提升工作是必要的。

KMG EP 的几个股东周三表示，对 KMG 提议的修改是不充分的。

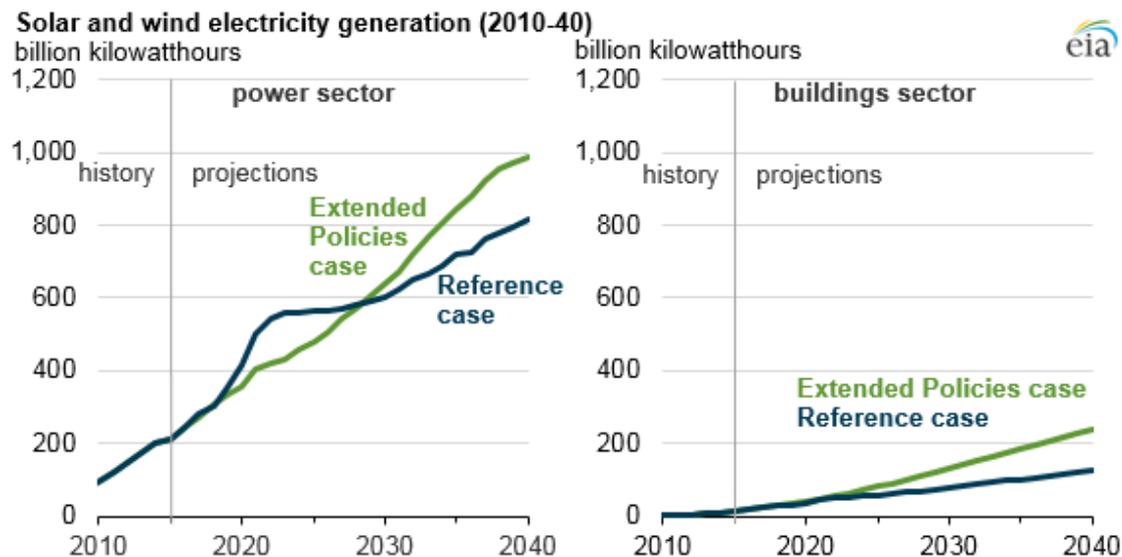
“太少了，也太迟了，”East Capital 合伙人雅各布·格拉彭吉塞尔(Jacob Grapengiesser)表示。East Capital 是一家专事投资前苏联地区的顶级基金之一，也是 KMG EP 的股东。

股东咨询服务公司 Glass Lewis 周三建议称，投资者应该对 KMG 收紧对 KMG EP 控制权的提议投反对票。

Frank Kuijlaars 说，中投公司尚未表示是否将支持 KMG 的提议，但接着说，如果这家中国基金卖出自己所持股份，他将感到意外。

New Energy (新能源)

Extended policies case shows reduced energy use, emissions, more renewables, efficiency

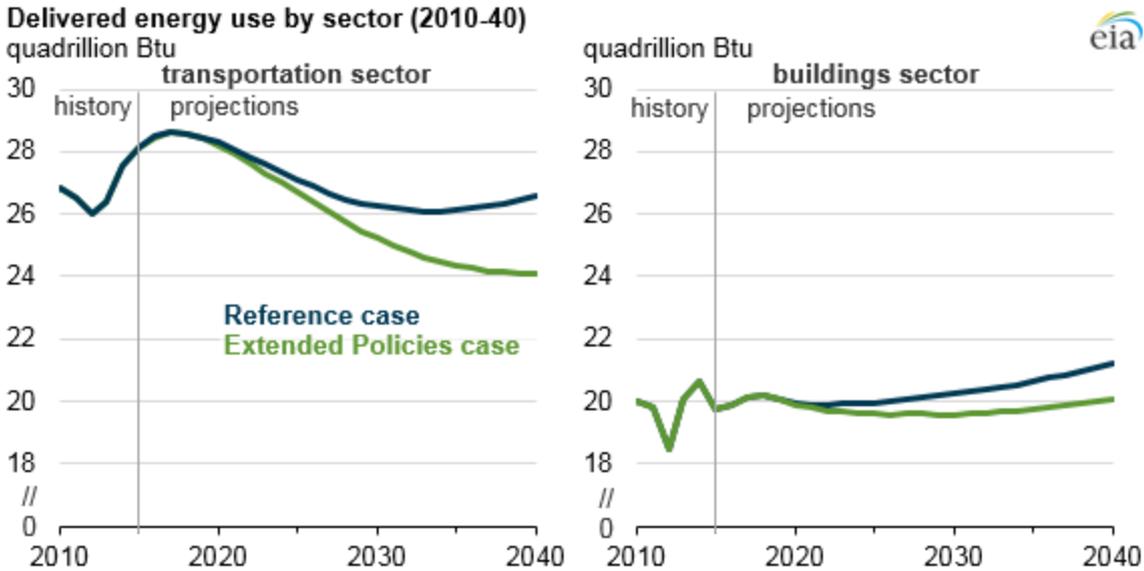


Source: U.S. Energy Information Administration, Annual Energy Outlook 2016

Tax credits and efficiency standards for appliances and vehicles have been key drivers for increasing renewable energy use and energy efficiency in the United States. Extending these policies and increasing the stringency of the Clean Power Plan beyond 2030 would reduce energy-related carbon dioxide (CO₂) emissions by reducing motor fuel use and energy use in buildings by increasing efficiency and by increasing the share of solar and wind in the electricity generation mix.

In EIA's Annual Energy Outlook 2016 (AEO2016) Reference case projection, which generally assumes current laws and policies, electricity generation from solar and wind sources across all sectors increases from 227 billion kilowatthours in 2015 to 950 billion kilowatthours in 2040. In the Extended Policies case, which perpetuates policies beyond their legislated expiration, solar and wind generation grow to 1,236 billion kilowatthours in 2040, or 30% above the Reference case level.

Production tax credits for renewable energy are legislated to expire or reduce in value in 2017, and investment tax credits for solar energy begin to decline in 2020. In the residential sector, these credits expire completely at the end of 2021. As these tax credits decline or expire, utilities and distributed generator (e.g., rooftop solar panels) customers accelerate investment and production projects to take advantage of the full value of the credits. In the Reference case, this acceleration results in a period of fast growth in renewable generation up to those expiration dates. In the Extended Policies case, these credits are extended at their current value through 2040, leading to steadier and ultimately larger growth in renewable energy.

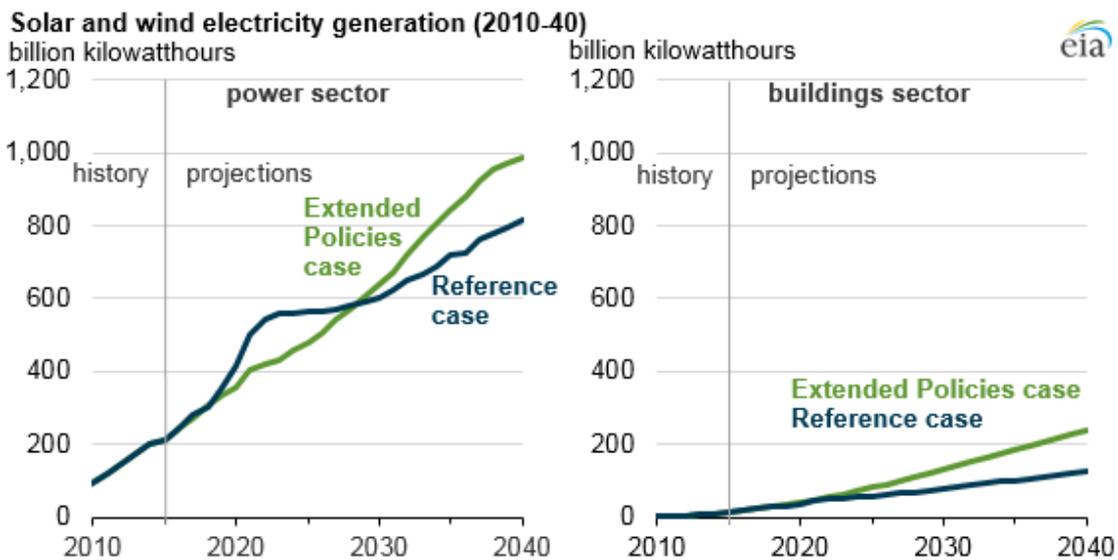


Source: U.S. Energy Information Administration, Annual Energy Outlook 2016

The Extended Policies case also extends federal energy efficiency policies that encourage the adoption of efficient appliances and equipment in the residential, commercial, industrial, and transportation sectors. Reductions in transportation energy use in the Extended Policies case are driven by extension of fuel economy requirements that further decrease energy consumption in light-duty, medium-duty, and heavy-duty vehicles.

Lower energy use and emissions in the buildings sector in the Extended Policies case result from improved energy efficiency of equipment for heating, cooling, and other uses, as well as increased adoption of more stringent building energy codes. Greater use of distributed generation, such as rooftop solar photovoltaic systems, reduces purchases of electricity.

拓展政策的案例表明，能源使用更可再生、更高效



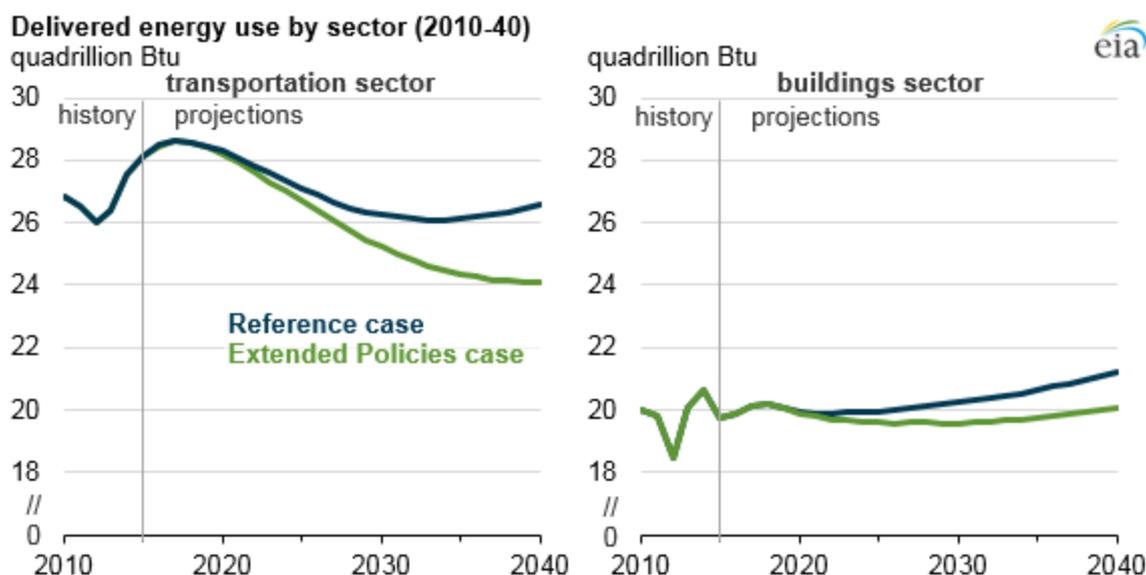
资料来源：2016年美国能源信息管理局年度能源展望

在美国，家用电器和汽车的税收抵免和税收效率标准已经是增加可再生能的使用和能源效率的关键促进因素。拓展这些政策，并且 2030 年后更加严格执行清洁能源计划，将减少汽车燃料和土木工程中能源

的使用，提高能源利用率，增加太阳能和风能在混合发电中的使用，从而降低能源消耗的二氧化碳（CO₂）排放。

根据 EIA 的 2016 年年度能源展望（AEO2016）参考案例推测，一般假现行的法律和政策，遍布全国的太阳能和风能资源发电量从 2015 年的 2270 亿千瓦时增加到 2040 年的 9500 亿千瓦时。在拓展政策的情况下，延续的政策超过了其立法有效期，太阳能和风能发电量 2040 年将增长到 1.2360 亿千瓦时，或者比参考案例中的水平高 30%。

可再生能源的生产税收抵免相关法律将在 2017 年失效或价值减少，太阳能投资税收抵免额在 2020 年开始下降。在住宅领域，这些税收抵免将在 2021 年底到期。由于这些税收抵免的降低或到期，公用设施和分散式发电（如屋顶太阳能电池板）客户将加快投资和生产项目，以充分利用税收抵免的价值。在参考案例中，投资和项目的加速推进将使可再生能源发电在到期之前快速发展一段时间。在拓展政策的案例中，这些抵免直到 2040 年都将扩展增加它们现有的价值，从而在可再生能源领域形成稳定的、长久的、大量的增长。



资料来源：2016 年美国能源信息管理局年度能源展望

拓展政策的案例中，同样也扩展联邦政府的能源效率政策，鼓励了节能电器和设备在住宅、商业、工业和运输领域的使用。拓展政策的案例中，进一步降低轻型、中型和重型车辆的能源消耗，由于扩展的燃油经济性要求驱使，运输能源消耗减少。

在拓展政策案例中，由于供暖、制冷和其他用途的设备提高了能源利用率，更多严格采用建筑物能源效益守则，建筑行业使用的能源减少，排放量降低。更多地采用分散式发电，如屋顶太阳能光伏发电系统，减少了电力的购买。

Commodities: Noble's House of woe

Richard Elman has always dreamt big. The British-born scrapyards dealer-turned-billionaire commodity trader and founder of Noble Group spent more than a decade riding the wave of China's growth. In April 2011 he promised investors there was more to come.

“We are in a position to be the best in the world,” he told shareholders in the Noble annual report as he boasted of record profits. “And among the biggest.”

He had every reason to be confident. China Investment Corp, the country's sovereign wealth fund, held a big stake in the company; Noble was expanding across the globe; and its market capitalisation had just topped \$14bn.

But few fully understood at the time that a tight-knit group of executives had embarked on a course that would leave Noble on its knees.

Today the market value of the company — which is listed in Singapore — has collapsed to \$1.1bn, its chief executive has left, and Mr Elman, 76, has announced he will step down as executive chairman in the next 12 months. In February, it reported annual losses for the first time in more than 20 years after taking \$1.2bn in writedowns and charges, largely related to the value of long-term contracts it has been accused of overstating by short sellers, hedge funds and a former employee turned financial blogger.

Noble, which acts as a middleman for oil, coal, iron ore and metals deals, is now tapping its shareholders for \$500m of cash and trying to sell prized assets in its efforts to pay down debt and free up capital for its trading operations.

A taste for sugar

Founded by Mr Elman 30 years ago with \$100,000 capital, Noble rose to become one of Asia's biggest commodity traders, helping meet China's seemingly insatiable appetite for raw materials. At one point it was among the top 100 companies in the world in terms of revenue. Its rivals included Glencore, Vitol and Trafigura, companies that together ship almost 14m barrels of oil per day.

As commodity prices crashed the company went from a highly regarded member of Singapore's stock exchange, with operations stretching from Brazil to Indonesia, to losing its blue-chip status and struggling to retain the confidence of lenders and counterparties.

The unravelling of the company, named after James Clavell's Noble House, a novel about an intrigue-riven Hong Kong trading group, is not just another tale of a high-flyer brought low by the end of the China-led commodity boom. It is also a story about how the use of legal accounting techniques can paint a potentially confusing picture of a company's financial health.

“Noble compounded its problems with aggressive accounting,” says Craig Pirrong, a finance professor at the University of Houston who has written on the industry for Trafigura. “The accounting issues took a big toll on management's credibility, and that made it very difficult to climb out of the hole.”

More than a dozen former and current Noble Group employees interviewed by the Financial Times say the company's problems started with its aggressive expansion plans once CIC bought 14 per cent of Noble in 2009.

Brazilian Ricardo Leiman, who joined the company in 2006 from Louis Dreyfus Company, was picked by Mr Elman as a successor who could lead the company's growth. This would be done through purchasing assets like ports and mills to create what he coined internally a “pipeline of profit”.

Mr Leiman led the company's \$950m acquisition of two sugar mills in his home country in 2010, making a big bet on growing consumption in Asia. Two months after the purchase sugar hit a 30-year peak, but then abruptly halved over the next 18 months as production swamped the market.

This deal and others saw Noble becoming increasingly asset heavy and more leveraged. The company's net debt rose from \$2.9bn in 2009 to almost \$4.9bn in 2011. Costs also rose. At its peak Noble employed 15,000 people. “Overheads were high,” says a former Noble executive.

Mounting debts and high costs began to weigh on the company as bets in niche markets such as carbon credits backfired. As a listed company, it wanted smoother earnings to keep the stock market happy, former employees say.

Noble did this by recognising upfront a portion of gains from long-term marketing and supply agreements and recording their value on its balance sheet, say ex-employees. This technique, while legal under accounting rules, has seen only limited use among Noble's rivals who say it is risky because the volatility of commodity prices means the amount of cash eventually received from the deals can be lower than the recorded profits.

At Noble it became a large part of its shareholder equity. From \$36m in 2009, the value of derivative contracts

Mcanxixun Information

held by Noble and the net fair value of its commodity deals — defined as assets minus liabilities and excluding cash flow hedges — rose to \$1.55bn in 2011.

Despite this increase, Noble recorded its first quarterly loss in more than a decade in late 2011 — the same day Mr Leiman departed the company. He was replaced by Yusuf Alireza, a polished Goldman Sachs executive.

At heart Mr Alireza was a salesman, contemporaries say, but above all he wanted to be in charge of a big company with global reach. During his 14 years at the Wall Street bank, he had helped build its securities business into one of the most powerful in Asia.

“He wanted to run a big business,” says one former colleague. “That’s why he left Goldman.”

Tip of the iceberg

Having spent his entire career in banking Mr Alireza had to learn about the commodities business including Noble’s use of mark-to-market accounting on its long-term deals which had provided the group with sizeable earnings in the past.

Under his tenure, they would continue to grow, almost tripling between 2012 and 2014 to \$4.6bn. At that time, net fair value gains on contracts and financial derivatives were equivalent to more than 80 per cent of Noble’s equity value. It says part of that growth was related to short-term hedging positions used by its expanding business.

The company’s problems intensified 18 months ago as the sell-off in commodity prices focused the spotlight on the industry. This was compounded by a former employee, working under the name of Iceberg Research, who published the first in a series of hard-hitting reports on the company.

The research by Arnaud Vagner, who had worked as a credit analyst at Noble but left the company in 2013, highlighted how the company had generated higher net profits between 2010 and 2015 than it generated in cash — often a red flag for investors.

Iceberg also raised concerns about how Noble accounted for investments in other companies, in particular Yancoal, an Australian mining company, as well as the valuation ascribed to its agricultural business, which Mr Alireza sold to Cofco, the Chinese state grain trader, in two separate deals in 2014 and 2015 as he moved to simplify the business and pay down debt.

Noble initially dismissed Iceberg as the work of a “disgruntled” former employee. That changed once it published its third report in March 2015 with Noble launching legal action alleging conspiracy to injure.

“Iceberg are not the independent research house they claim to be,” Noble said at the time. “Their actions, and their timing, have been calculated primarily to inflict damage.”

Mr Alireza remained largely dismissive of criticism even as the share price started to tumble. He told analysts in early 2015: “Profit is only recognised for the portion of the contract where there is a high level of certainty of execution.” Mr Elman told investors in August last year that unnamed people were “unqualified” to criticise Noble.

But in an interview with the Financial Times, Iceberg claimed its reports were the result of detailed analysis. “It was a laborious job to go through all the financial documents published by Noble over a five-year period and create a comprehensive financial model,” says Iceberg.

In February, Noble recognised \$1.2bn of impairments and exceptional items, largely from coal contracts after deciding to use a lower external forecast for long-term prices. It formed part of a \$1.7bn loss, the equivalent of wiping out the previous five years’ profits.

Noble has always defended its financial reporting and executives say it had to use mark-to-market accounting because of the way its contracts were structured. Last year it commissioned PwC to carry out an independent report. It found Noble’s treatment of the contracts met international accounting standards, though it made no statement on their value. The company also points out that coal and oil prices have rebounded since February.

Shortly after Noble announced the impairments Mr Elman told shareholders that talk from critics was “cheap” and coming up with strategies should be left to the ones “who have their boots on [the] ground”. Invoking Sir Winston Churchill, a former UK prime minister, Mr Elman said he had nothing to offer but “blood, toil, tears and sweat.”

What Noble really needed, however, was cash. Billions of dollars of credit lines were set to expire in May 2016 and the market was nervous. Cheap credit is the lifeblood of commodity trading, an industry where margins are razor thin.

Mr Alireza remained calm, saying Noble had a provisional agreement with its main lenders and would “move quickly” to close the refinancing. But discussions dragged on. Noble was eventually forced to reduce the amount of credit it was seeking by \$500m to \$3bn, money it desperately needed to finance its trading. The cost of its credit also rose sharply.

After first-quarter results showed that Noble had suffered a \$1.5bn “reduction in the availability of bank lines”, senior traders and Noble executives started to push for more decisive action, according to sources. Mr Alireza dug his heels in fearing further asset sales would leave the company a shadow of its former self.

He insisted that Noble Americas Energy Solutions, a San Diego-based business bought in 2010, was declared “core” despite estimates it could bring in more than \$1bn.

“There was a personal reluctance to downsize the business,” says a former colleague of Mr Alireza.

Less than three weeks later, Noble accepted the resignation of Mr Alireza, who declined to comment for this article, and put NAES up for sale, predicting it could fetch more than \$1bn.

The company named William Randall, founder of its coal business, and Jeff Frase, a former chief oil trader at Goldman Sachs and JPMorgan who had grown Noble’s oil business since 2013, as its co-chief executives. A few days later Noble launched a rights issue to raise \$500m and Mr Elman said he wanted to step down within a year.

“Something needed to happen,” says one banker involved in the refinancing.

Changes at the top

With new leadership and moves to raise additional money in place, Noble has bought itself some breathing space.

Executives say the sale of NAES should allow them to repay a \$650m loan, maturing next May. The remaining capital would go towards funding its main divisions — oil trading, largely in North America, and coal in Asia.

Rating agencies still have concerns. Standard & Poor’s yesterday downgraded Noble’s debt further, into junk territory, citing its need to refinance \$3bn of credit lines next year.

These are the challenges facing Mr Randall and Mr Frase as they try to restore confidence and lift Noble’s share price, which has fallen from a high of S\$2.30 in early 2011 to just S\$0.23 today.

As for Mr Elman, his presence is likely to be felt in the group’s Hong Kong headquarters for some time to come. After he steps down as chairman, the septuagenarian founder, is expected to remain on the board with a significant shareholding of more than 10 per cent, even after it is diluted in the rights issue.

Despite his advancing years he told staff in a recent email that he planned to be around for “the next 50 years”.

“Trust me,” the email said. “You won’t get rid of me that easily.”

FT 大视野：来宝的大宗商品之痛

来宝集团的衰落不仅和大宗商品繁荣终结有关，来宝员工称，公司问题始于被中投收购股份后所制定的扩张计划。

艾礼文(Richard Elman)总是胸怀大志。这位出生于英国的大宗商品交易员最初是一名废品经销商，后

来成为亿万富翁，并创立了来宝集团(Noble Group)，10多年来借助中国经济增长做大。2011年4月，他曾向投资者承诺，还会有更多的机遇。

他在来宝的年报中向股东表示：“我们将会成为全球最棒的公司，”他宣称公司利润创新高，“业内最大的公司之一”。

那时他完全有理由信心十足。中国主权财富基金——中投公司(CIC)持有该公司大量股份；来宝正在全球扩张；其市值刚刚突破140亿美元。

但当时很少有人完全明白，一个高管小圈子开启了将会让来宝陷入困境的进程。

如今，在新加坡上市的来宝市值暴跌至11亿美元，其首席执行官离职，而76岁的艾礼文宣布将会在今后12个月辞去执行主席的职务。今年2月，在计提了12亿美元的减值和费用之后——这在很大程度上与做空者、对冲基金以及曾是前雇员的一个财经博主指控该公司夸大长期合同价值有关——来宝报告出现20多年来首次年度亏损。

来宝是一家石油、煤炭、铁矿石和金属贸易经纪商，现在正在通过增发股份来筹集5亿美元现金，并试图出售宝贵资产以偿还债务和释放资本用于贸易业务。

对糖产生兴趣

艾礼文30年前用10万美元资本创办的来宝，如今已成为亚洲最大的大宗商品贸易商之一，帮助满足了中国对原材料似乎难以餍足的需求。就收入来说，来宝一度进入全球100强企业之列。其竞争对手包括嘉能可(Glencore)、维多(Vitol)和托克(Trafigura)，这些公司每天发运的石油总计接近1400万桶。

随着大宗商品价格暴跌，来宝从新加坡交易所备受重视的会员——业务范围从巴西到印尼等世界各地——沦落到失去蓝筹股地位，而且很难保持银行和交易对手方的信心。

来宝的名字来自詹姆斯·克拉维尔(James Clavell)的小说《洋行》(Noble House)，这部小说是关于一家充斥着尔虞我诈的香港贸易集团。来宝的衰落不只是关于又一个雄心勃勃的企业家因为中国主导的大宗商品繁荣结束而陷入困境，它还说明，使用合法的会计方法可能描绘出潜在令人困惑的有关公司财务健康状况的画面。

休斯顿大学(University of Houston)金融学教授克雷格·皮龙(Craig Pirrong)表示：“来宝激进的会计手法让问题恶化。会计问题对管理层信誉造成了巨大影响，进而让摆脱困境变得非常困难。”

接受英国《金融时报》采访的十多位来宝前员工和现员工表示，该公司的问题始于它在2009年被中投收购14%股份后制定的激进扩张计划。

2006年，巴西人里卡多·雷曼(Ricardo Leiman)从路易达孚(Louis Dreyfus)加入来宝。他被艾礼文选为可能带领公司发展的继任者。雷曼将通过购买港口和工厂等资产来创造他在内部所称的“利润管道”。

2010年，雷曼带领公司斥资9.5亿美元在巴西收购了两家糖厂，豪赌亚洲的消费将会不断增长。在收购两个月后，糖价创出30年来的最高水平，但在随后18个月里由于市场供应过剩而突然下跌一半。

该交易和其他交易让来宝背上越来越多的资产，杠杆化程度也更高。2011年，该公司的净债务从2009年的29亿美元上升至近49亿美元。成本也在上升。在峰值时期，来宝雇佣了1.5万名员工。来宝一位前高管表示：“管理费用非常高。”

随着在碳排放额度等利基市场押注失手，债务累积和高成本开始让来宝承压。前员工表示，作为一家上市公司，来宝希望实现更为平稳的盈利来取悦股市。

前员工称，为此，来宝从一开始就将长期营销和供应协议的一部分收益入账，并将它们的价值计入资产负债表。尽管按照会计规则，这种方法是合法的，但在来宝的竞争对手那里很少用，它们表示，这是有风险的，因为大宗商品价格波动意味着这些协议最终带来的资金可能低于入账利润。

在来宝，这种利润成为股东权益的一大部分。来宝持有的衍生品合约价值以及大宗商品交易的净公允价值（资产减去负债后的价值，不包括现金流对冲）从2009年的3600万美元升至2011年的15.5亿美元。

尽管有这种上升，但来宝在2011年末仍录得十多年来首次季度亏损——就在同一天，雷曼从来宝离职。接替他的是举止优雅的高盛(Goldman Sachs)高管优素福·阿里雷扎(Yusuf Alireza)。

同时代人表示，阿里雷扎本质上是一名销售员，但他最希望做的是执掌一家在全球开展业务的大公司。在他在高盛的 14 年间，他帮助将该公司的证券部门打造成亚洲最有影响力的证券业务之一。

一位前同事表示：“他想经营大公司。这就是他离开高盛的原因。”

冰山一角

整个职业生涯都在银行业度过的阿里雷扎，不得不学习大宗商品业务，包括来宝对长期协议使用市值计价的会计手法——这种方法过去为来宝带来了巨额盈利。

在他担任首席执行官期间，此类盈利继续增长，在 2012 年至 2014 年间增长近 3 倍，至 46 亿美元。当时，合约和金融衍生品的净公允价值收益占到来宝股权价值的 80% 以上。该公司表示，这种增长在一定程度上与其不断扩张的业务使用的短期对冲头寸有关。



随着大宗商品价格暴跌让人们将目光投向该行业，来宝的问题在 18 个月前恶化。一名前雇员以“冰山研究” (Iceberg Research) 的名义发表了首份抨击来宝的研报，一连串杀伤力巨大的报告让该公司雪上加霜。

阿瑙德·瓦格纳(Arnaud Vagner)曾经是来宝的一名信贷分析师，但在 2013 年从公司离职。他的研究突显出该公司在 2010 年至 2015 年期间产生的净利润比现金还多——这对投资者来说往往是危险信号。

“冰山研究”还担忧来宝投资其他公司（尤其是澳大利亚矿业公司 Yancoal）的入账方式，以及对其农业业务的估值。为简化业务并偿还债务，阿里雷扎在 2014 年和 2015 年通过两笔交易将农业业务出售给中国国有粮食贸易商中粮集团(Cofco)。

来宝最初指责“冰山研究”的报告只不过是一位“心怀不满的”前雇员炮制而来。但在 2015 年 3 月“冰山研究”发表第三份报告后改变了对策，提起法律诉讼，指控该机构恶意中伤。

来宝当时表示：“冰山并不是他们所宣称的独立研究机构。他们的行为及其时机都是为了造成损害。”

即便股价开始暴跌，但阿里雷扎仍基本上对批评不以为然。他在 2015 年年初向分析师表示：“只有执行确定性高的那部分合同才被记为利润。”艾礼文在去年 8 月告诉投资者，匿名者“没有资格”批评来宝。

但“冰山研究”在接受英国《金融时报》采访时宣称，其研报是仔细分析的结果。它表示：“消化来宝在 5 年期间发布的所有财务报表，然后创建一个全面的财务模型，是一件非常辛苦的事情。”

今年 2 月，来宝计提了 12 亿美元的减值和特殊项目，很大程度上来自煤炭合约，此前该公司决定对长期价格使用较低的外部预测。这构成了 17 亿美元亏损的一部分，相当于抹掉了前五年的利润。

来宝始终为其会计手法辩护，高管们表示，合约结构意味着该公司不得不使用市值计价。去年，来宝委托普华永道(PwC)展开独立研究。研究发现，来宝处理这些合约的方式符合国际会计标准，尽管它没有就其价值发表声明。来宝还指出，自今年 2 月以来煤炭和石油价格有所反弹。

来宝宣布减值之后不久，艾礼文向股东们表示，批评者的议论是“廉价的”，而战略应该由那些“深入第一线”的人制定。艾礼文借用英国前首相温斯顿·丘吉尔(Winston Churchill)的话说，他没什么可以奉献的，“有的只是热血、辛劳、眼泪和汗水”。

然而，来宝真正需要的是现金。数十亿美元信贷额度将于 2016 年 5 月失效，市场对此感到不安。廉价信贷是大宗商品交易的命脉——该行业的利润率非常微薄。



阿里雷扎保持平静，称来宝与其主要放贷机构签署了临时协议，将会“迅速行动起来”完成再融资。但相关讨论出现拖延。来宝最终被迫将寻求的信贷额度削减 5 亿美元，至 30 亿美元——它迫切需要资金为其贸易活动融资。其信贷成本也急剧上升。

消息人士称，在第一季度财报显示来宝“可获得银行信贷额度”削减 15 亿美元之后，资深交易员和来宝高管开始推动更具决定性的举措。阿里雷扎坚持不肯妥协，担心进一步的资产出售将让公司失去当年的荣耀。

他坚称，2010 年收购的圣迭戈业务 Noble Americas Energy Solutions (NAES)已被宣布为“核心业务”，尽管估计它可能卖得逾 10 亿美元。

阿里雷扎的一位前同事表示：“个人层面存在不愿缩减业务的情绪。”

不到3个星期之后，来宝接受了阿里雷扎的辞职，并将NAES挂牌出售，预计可能回笼逾10亿美元。阿里雷扎拒绝就本文置评。

来宝任命其煤炭业务创始人威廉·兰达尔(William Randall)以及高盛和摩根大通(JPMorgan)的前首席石油交易员杰夫·弗雷泽(Jeff Frase)担任公司的联合首席执行官——弗雷泽自2013年以来发展壮大来了宝的石油业务。数天后，来宝宣布增发股份以筹资5亿美元，艾礼文表示，他希望在一年内卸任。

一位参与此次再融资的银行家表示：“有些事需要发生。”

顶层的改变

随着新的领导层上任并采取措施筹到了额外的资金，来宝为自己赢得了一些喘息的空间。

高管们表示，出售NAES应该会让它们能够偿还明年5月到期的6.5亿美元贷款。剩余资金将为其主要业务提供融资——主要位于北美的石油贸易，以及亚洲的煤炭贸易。

评级机构仍有担忧。标准普尔(Standard & Poor's)最近将来宝债务评级进一步下调至垃圾级别，指出它明年需要再融资30亿美元信贷额度。

这些是兰德尔和弗雷泽面临的挑战，他们努力恢复信心，提升来宝的股价——来宝股价从2011年初的2.30新元的峰值跌至如今的0.23新元。

就艾礼文来说，在今后一段时间内该集团的香港总部可能感受到他的存在。在辞去董事长职务之后，这位70多岁的创始人预计将会留在董事会，并持有逾10%的可观股份，即便在增股之后该持股有所稀释。

尽管年事已高，但艾礼文在最近的一封邮件里向员工们表示，他计划“再干50年”。

他在邮件里说：“相信我，你们不会那么容易赶我走的。”

Wind turbine manufacturers look beyond Xinjiang to expand

Dabancheng wind farm's location in a natural wind tunnel in China's Xinjiang province makes it one of the best situated in the world. It is also a showcase for the turbine manufacturer Goldwind, which became the largest supplier in the world after installing so much turbine capacity in 2015 that it overtook Vestas of Denmark.

Wu Gang, Goldwind's founder and chairman, sweeps his hands gracefully to show how the wind courses through the narrow corridor between the Junggar basin and the Taklamakan desert, where Marco Polo wrote of hearing the voice of a genie calling from the whirlwinds.

Today more than 300 towers rise from the dusty desert floor, churned by that constant wind. Dabancheng is an engineer's heaven, studded with prototypes of nearly every generation of turbine technology, both Chinese-made and foreign. "I joke when I'm in Europe — I tell young people who want to know the history of European windpower technology to come to Dabancheng," Mr Wu says.

Whether or not those young enthusiasts make the trip, Goldwind is coming to them. Last year, China accounted for half the world's wind power installation. It now has a third of the world's total wind power generation capacity.

Goldwind is not the only company on the rise: five of the top 10 wind turbine manufacturers are Chinese according to FTI Consulting, a business advisory firm. Many cut their teeth in a protected market, after local rules effectively locked many foreign turbine manufacturers out of the Chinese market. Saturation in the domestic market now means that Goldwind and its fellow Chinese producers are looking to compete overseas. Pressure from Chinese exports is already fuelling a round of consolidation among established European players. Siemens of Germany, for example, is in talks to buy Spanish turbine maker Gamesa.

At home in Xinjiang province, Goldwind's home market, wind power capacity doubled in 2015, reaching 26 per

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cent of the region's total power generation capacity. However, a bottleneck in transmission lines out of the region means that almost half its installed wind power went unused in the first quarter of 2016.

“Xinjiang is pretty much maxed out in terms of installed wind capacity,” says Sebastian Meyer, research director for renewable energy consultancy Azure International.

To maintain its position as the world's largest wind turbine supplier Goldwind will have to increase sales in other Chinese provinces, notorious for their local protectionism, where it will also have to compete directly with its domestic rivals Guodian, Ming Yang and CSIC. Meanwhile curtailment — the amount of installed wind power capacity not being used by the grid — is rising, as provinces race to meet Beijing's renewable energy targets.

Mr Wu remembers the 1980s as an era of international wind power co-operation. He became fascinated by the potential for wind power while working on an experimental project in Xinjiang funded by the Dutch government. That experimental farm is now Dabancheng.

He is quick to point out that being big in China does not necessarily translate into strength overseas. “We are number one in the world in terms of market share, but we are well aware that we still lag behind multinationals like Siemens, GE and Vestas,” he says.

“Take Vestas. Their products are sold in more than 30 countries. Ours are only sold in 17 countries. This is a gap. As a Chinese company, we lag far behind our foreign competitors in internationalisation.”

But Goldwind is catching up. It hires local sales and installation teams overseas and also finances wind farms to sell to power producers after they are up and running.

Listed in Hong Kong and Shenzhen, the company has powerful backers, including state-owned dam builder China Three Gorges Corp and insurer Anbang Group, which has made a string of aggressive acquisitions over the past year. Most of Goldwind's technology is licensed from Germany's Vensys, although Goldwind has made alterations to the original designs.

Mr Wu says Goldwind's real competitor is not other wind power producers but coal. Currently, wind power generation in the north of China (home to strong and regular winds) costs slightly less than thermal power generation in the south, where coal is more expensive and emissions standards are stricter. However, coal is cheapest in Xinjiang and northern China, leaving wind power at a disadvantage in its most favourable region.

Further technological improvements and increased economies of scale could help to narrow the gap, Mr Wu believes. “Our competitors are not the foreign companies,” he says, citing UN goals that non-fossil energy should represent 85 per cent of primary energy consumption globally by 2050. “Thermal power is competing with us. The competition between wind and fossil energy is far greater than the competition within the wind industry.”

中国风电设备企业进军海外市场

全球十大风力发电机制造商中，有5家是中国企业。随着国内市场逐渐饱和，如今这些企业希望到海外开辟市场。

地处中国新疆一处天然风道的达坂城风电场是世界地理位置最佳的风电场之一。这里也是展示风力涡轮机制造商金风科技(Goldwind)的一个橱窗。2015年，凭借巨大的新增风电装机容量，金风科技超过丹麦的维斯塔斯(Vestas)，成为世界最大风机供应商。

金风科技创始人和董事长武钢以优美的姿势，用双手向我们展示强风穿过准噶尔盆地与塔克拉玛干沙漠之间狭窄走廊的情形。马可·波罗(Marco Polo)曾写道，他在途经此地时，听到了旋风中精灵的呼唤。

如今，在这片不断遭受强风侵扰、尘土飞扬的沙漠上，300多座塔架拔地而起。达坂城是工程技术人员的天堂，这里散布着几乎每一代涡轮机技术的样机，既有中国的，也有外国的。“在欧洲时我曾开玩笑——对那些想了解欧洲风电技术历史的年轻人说，来达坂城吧，”武钢说。

不管那些年轻的风电迷后来是否真的来过达坂城，金风科技正向他们走来。去年，中国的新增风电装

机容量占全球总量一半。如今，中国占到全球风电总装机容量的三分之一。

金风科技的崛起并非孤例：富事高商务咨询(FTI Consulting)的数据显示，全球十大风力涡轮机制造商中，有 5 家是中国企业。地方法规实际上把许多外国涡轮机制造商拒于中国市场之外，许多风机企业在受到保护的国内市场发展壮大。如今，国内市场饱和意味着，金风科技及其他中国同行希望能参与海外市场竞争。中国风机出口带来的压力已经在加快欧洲老牌制造商之间的新一轮整合。例如，德国的西门子(Siemens)正在洽购西班牙风机制造商 Gamesa。

2015 年，金风科技国内大本营新疆的风电装机容量翻了一番，达到该地区总发电装机容量的 26%。然而，向该地区以外输送电力遇到的瓶颈意味着，2016 年第一季度近一半风电装机容量未被利用。

可再生能源咨询公司安元易如(Azure International)研究总监麦振兴(Sebastian Meyer)表示：“在风电装机容量方面，新疆已处于严重过剩状态。”

为维持作为世界最大风力涡轮机供应商的地位，金风科技必须扩大在中国其他省份的销售，在这些地方保护主义盛行的省份，金风不得不直接与国内竞争对手——国电(Guodian)、明阳风电(Ming Yang)以及海装风电(CSIC)展开竞争。与此同时，随着各省竞相实现北京方面提出的可再生能源目标，弃风问题（未实现并网的风电装机容量）正愈演愈烈。

武钢记得上世纪 80 年代是国际风力发电合作的时代。他在由荷兰政府资助的新疆试验项目工作时，开始着迷于风力发电的潜力。这座试验风电场就是如今的达坂城。

他很快指出，在中国做大不一定意味着在海外成为强手。“在市场份额方面，我们是世界第一，但是我们清楚地知道我们仍然落后于西门子、通用电气(GE)和维斯塔斯等跨国企业，”他称。

“以维斯塔斯为例。他们的产品在超过 30 多个国家出售。我们的产品只在 17 个国家出售。这就是差距。作为一家中国企业，我们在国际化方面远远落后于我们的外国竞争对手。”

但是金风正在迎头赶上。该公司在海外聘请当地的销售和安装团队，还在风电场建成并投产后为它们提供资金把电力出售给发电商。

在香港和深圳上市的金风，背后拥有强大的支持者，其中包括国有的大坝建造商中国长江三峡集团公司(Three Gorges Corporation)、以及在过去一年中完成了一系列积极收购的保险商安邦集团(Anbang Group)。金风的多数技术都来自德国 Vensys 的授权，尽管金风对原有设计进行了改良。

武钢称，金风真正的竞争对手不是其他风电制造商，而是煤炭。目前，中国北方（风力强大且有规律）风力发电的成本略低于南方的燃煤发电，南方的煤炭价格更昂贵且排放标准更严格。然而，新疆和华北的煤炭价格最低，使得风力发电在最适合的地区处于劣势。

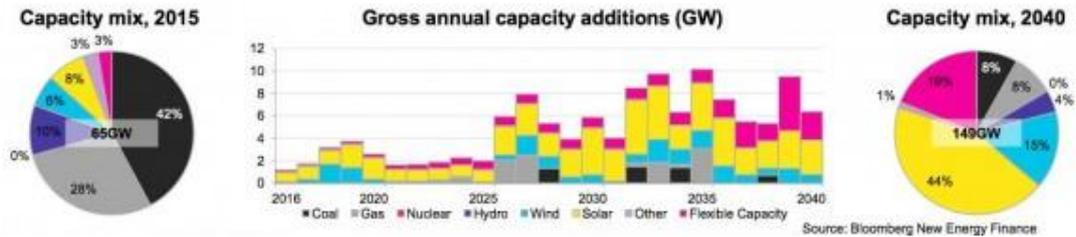
武钢认为，进一步的技术改进和规模经济递增可能会有助于缩小差距。“我们的竞争对手不是那些外国公司，”他称，并援引联合国的目标——到 2050 年非化石能源应该占到全球一次能源消费的 85%。“火力发电正在与我们竞争。风力和化石能源之间的竞争远比风电行业内部的竞争激烈得多。”

Australia's big energy switch: from coal and gas to wind and solar

The policies may not yet be in place, and the resistance from the incumbents will be fierce, but according to global analysts Bloomberg New Energy Finance, the future is clear: wind and solar will replace coal and gas fired generation, and a lot quicker than many think.

By 2040, BNEF predicts, one third of all capacity which will be located “behind the meter” – which means via rooftop solar on households and businesses (38GW), and mostly tied to battery storage (15GW).

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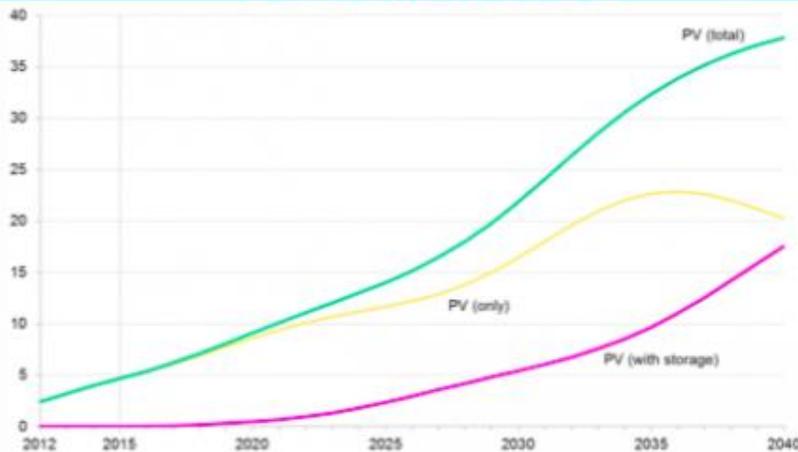
Over the same period, some 27GW of large scale solar plants and 19GW of large scale wind farms will be added to the system. Combined with small scale solar PV and hydro, this will provide two thirds of Australia’s power capacity and 59 per cent of generation by 2040.

These new solar and wind farms will replace 16GW of coal fired generation that has been retired either because of old age, or because they are not flexible enough to compete in a high renewables market. Only 12GW will remain in the market by 2040, with nearly of that with “life extensions”.

“This is a fundamental change,” says BNEF’s chief analyst in Australia, Kobad Bhavnagri. “Australia’s power sector is expected to fundamentally change over the next 25 years as an influx of end-user PV and energy storage is driven into the system.”

He estimates that \$A116 billion will be invested to achieve this near 60 per cent renewable energy capacity, and 89 per cent of that money will be spent on renewables themselves.

INFLUX OF BEHIND-THE-METER GENERATION

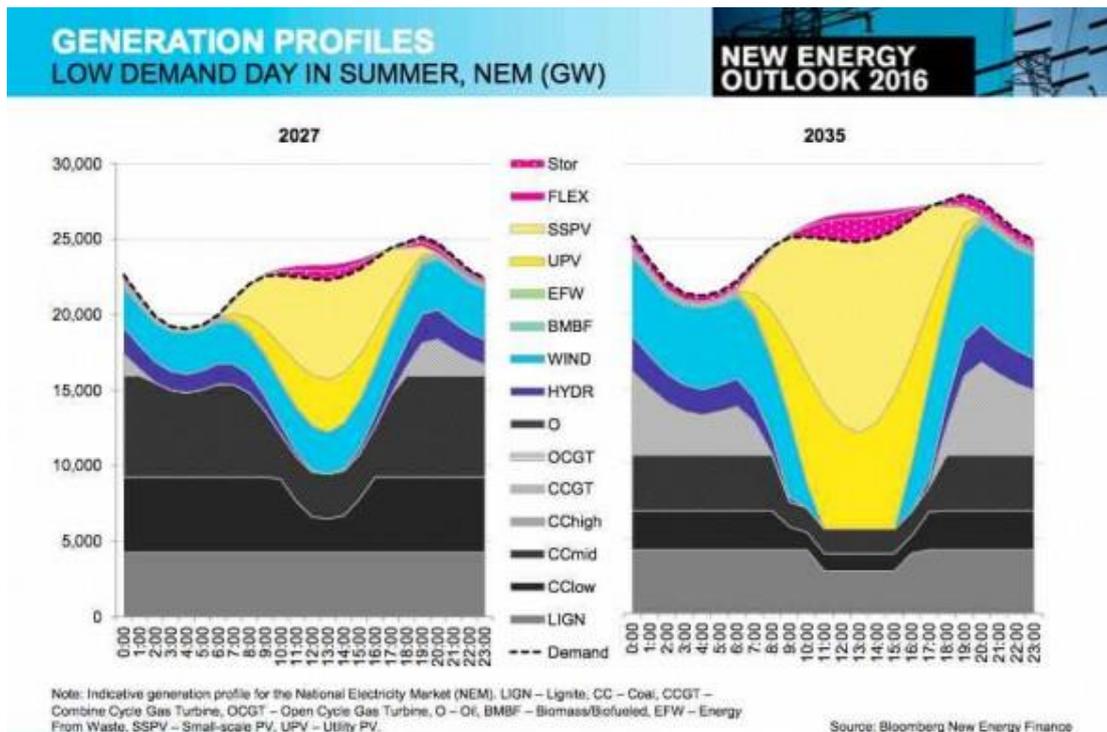


The biggest change though is through the customer, who will invest in rooftop solar and batter storage because of the “superior economics” of these technologies, which he says will be able to supply consumers with electricity at a lower cost than the grid.

On large scale generation, Bhavnagri says it is clear that renewables lead on cost – as coal retires, its generation will predominantly be replaced by lower cost renewables. That's because wind and solar, while possibly more expensive than existing coal fired generators (if you ignore the environmental costs) will be much cheaper than new coal or gas plants).

The economics of even existing coal fired generator will be challenged because they are not flexible enough. In effect, many will fall the way of the Northern power station, the last coal generator in South Australia which was

closed because of falling wholesale power prices and the impact of wind energy.



Indeed, this graph above shows the changing nature of the grid, with solar carving out large amount of supply during the day. This accords with predictions for market operators that rooftop solar alone will account for all daytime demand on some days, as soon as 2025 in states such as South Australia and West Australia.

Bhavnagri says gas-fired generation, because of its better flexibility, will play an important role at times of low renewable output, but its overall generation share will remain small.

Instead, demand response technologies (6GW) and other flexible technologies (7GW) such as large-scale storage could also contribute, potentially limiting the need for more gas.

Despite all of this, greenhouse gas emissions fall, but not enough – a similar conclusion brought by BNEF in its global report released earlier this month.

“The exit of coal and replacement by renewables will see emissions fall after 2017, but not enough to meet Australia’s targets. By 2020, power sector emissions are still 7 per cent above 2000 levels, and by 2030 they are some 23% below 2005 levels.”

The BNEF scenarios are based on no changes to policies: i.e. that the renewable energy target is not extended, and the various elements of “Direct Action” – the emissions reduction fund and the safeguards mechanism – have no impact on the power sector.

In other words, it is a forecast based on economics and market forces. But, it warns: “The lack of sound policy in Australia is a risk to the outlook.”

In particular, Bhavnagri says, it is large contingent on the Large-scale Renewable Energy Target being met – because it will key to deciding whether the future is shaped by variable renewable energy sources such as wind and solar, or the incumbents coal and gas.

That is because if the target is met, there will be enough new variable wind and solar capacity in the system to change the market to the point that it will trigger the retirement of coal fired power (see that graph above).

That will be followed by another key event – in 2035 – when more renewable energy capacity means that the retirement of coal becomes unstoppable – driven by volatile wholesale markets and coal generators’ inability to

cope with the need to flexibility.

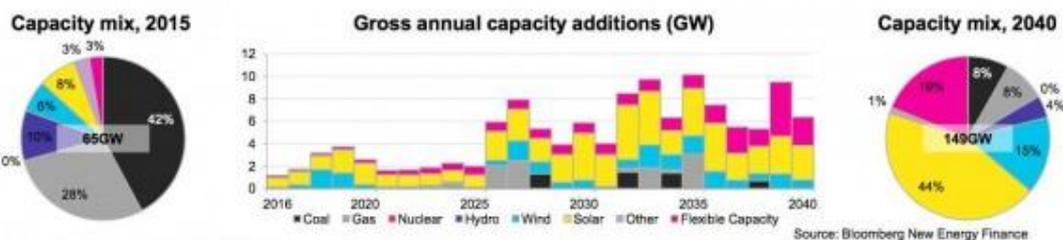
“Baseload generation will become a liability,” Bhavnagri says. “Flexible generation will be the key attribute.” And this may explain the fierce resistance from the coal generators, not just to the federal target, but to the increased state-based targets unveiled by the likes of South Australia, Victoria and Queensland.

And the news is not good for the Australian coal mining industry either. BNEF, like others, believes that the seaborne thermal coal market is in structural decline, mostly because the presumed biggest customer, India, will meet most of its demand from domestic supplies.

澳大利亚能源转变大：从煤和天然气到风能和太阳能

这些政策尚未被取代，并且任职者会强烈反对，但是根据全球分析员彭博新能源财经分析，未来是明朗的：风能和太阳能将会取代煤气，并且发展的可能比预想中要快。

到 2040 年，BNEF 预计，所有潜在能力的三分之一-这表示房顶上的家庭式太阳能（38GW），主要依赖电池存储（15GW）。



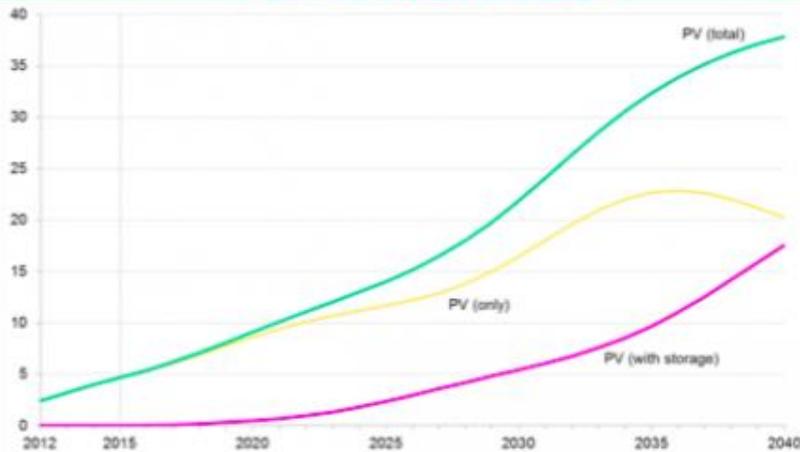
一段时期之后，系统中会加入 27GW 的大规模太阳能站和 19GW 的大规模风能厂。和太阳能光伏发电和水力发电相结合，这将攻击全澳大利亚三分之二的用电，到 2040 年将有 59% 的发电源于太阳能和风能。

这些新太阳能和风能发电站将取代 16GW 煤发电，不论是因为其年代久远，还是它们相对可再生能源市场竞争力太弱，煤发电都将会被淘汰。到 2040 年该市场的发电量还会有 12GW。

“这是个巨大的改变，”澳大利亚 BNEF 首席分析员 Kobad Bhavnagri 说，“在系统中引进终端光伏流入和能源储存后，未来 25 年澳大利亚的能源板块会出现根本性的改变。”

他预测，澳大利亚将投入 1160 亿澳元，以实现 60% 可再生能源发电量，89% 的款项将用于可再生能源本身。

INFLUX OF BEHIND-THE-METER GENERATION

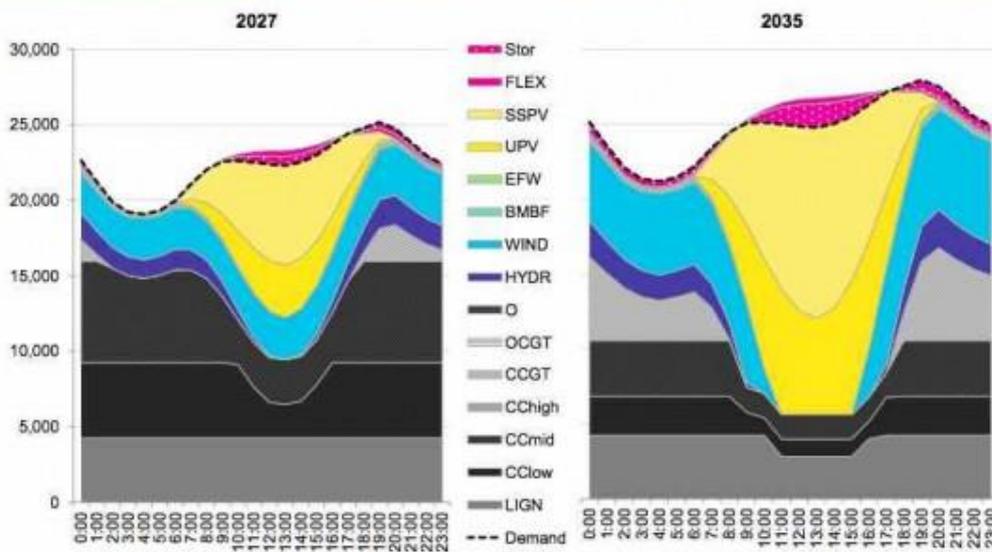


最大的改变需要通过客户，客户会投资于屋顶太阳能设备和电量储存设备，因为这些都为尖端科技，得到国家的支持，将可以以一个较低的成本为客户提供电力。

Bhavnagri 说很显然可再生能源成本优先-煤电被淘汰，低成本的可再生能源发电将取而代之。这是因为风能和太阳能，可能比现存的煤电要贵（如果忽略生态成本不谈的话）要比新的煤电厂或者气电厂要便宜的多。

燃煤发电的经济效益将会遭受挑战，因为它们不够灵活。事实上，许多燃煤发电站都随北方能源站的关闭而没落，北方能源站是南澳最后一个燃煤发电站，倒闭是因为总体销售价格下滑以及受到风能的影响。

GENERATION PROFILES LOW DEMAND DAY IN SUMMER, NEM (GW)



Note: Indicative generation profile for the National Electricity Market (NEM). LIGN – Lignite, CC – Coal, CCGT – Combine Cycle Gas Turbine, OCGT – Open Cycle Gas Turbine, O – Oil, BMBF – Biomass/Biofuelled, EFW – Energy From Waste, SSPV – Small-scale PV, UPV – Utility PV.

Source: Bloomberg New Energy Finance

确实，以上图表表明网格的变化，太阳能占据了日供应电量的大块地方。这个市场操作人员们的预期相一致，他们预计 2025 年，在如南澳和西澳地区，光是屋顶家庭式太阳能在一些天气条件下能够整个白

天都工作。

Bhavnagri 说燃气发电由于其相对不错的灵活性，在可再生能源使用的过程中仍然发挥重要作用，但是它所占比例还是很小。

反而，需求响应技术（6GW）和其他灵活的技术（7GW）比如大规模存储技术也会对此有所贡献，潜在限制了燃气的需求。

除这些以外，温室气体排放降低，但并不足够-BNEF 月初发表的全球报告中得出了相似的结论。

“可再生能源取代燃煤发电，2017 年后可以看到排放降低，但是不足以达到澳大利亚的目标。到 2020 年，能源板块的排放仍然会比 2000 年水平高出 7%，但是到 2030 年，其水平将比 2005 年低 23%。”

BNEF 的设想基于不改变政策：可再生能源的目标没有扩大，“直接行动”中的各种因素-减排基金和保险机制-对能源板块都没有影响。

换句话说，这个预想是基于经济和市场的作用。但是它警示人们：“澳大利亚缺乏明智的政策对发展前景是个威胁。”

Bhavnagri 说，他别是一个很大的团队在努力实现大规模可再生能源目标-因为未来能源结构会不会被可再生能源如风能，太阳能所改变是很重要的。

这是因为如果目标实现了，发电系统中有足够的风能和太阳能发电，这将会改变市场结构，加速淘汰燃煤发电（见上表）。

这将会紧随另一个重要事件-在 2035 年-越来越多的可再生能源发电导致燃煤发电淘汰的不可阻止-由于动荡的市场和燃煤发电机不能满足灵活性要求。

“基本负载发电将成为一向责任，” Bhavnagri 说，“灵活性将成为主要特征。”这就解释了燃煤发电的顽强抵抗，并不只是针对联邦目标，也针对日益增长的各国目标，比如南澳，Victoria 和昆士兰。

同样，这对澳大利亚燃煤工业来说也不是个好事。BNEF 和其他机构一样，认为海运动力煤市场遭遇结构化下降，大部分是因为大客户，印度，大部分的能源都由国内自行供应。

Natural Gas (天然气)

Iran to treble gas exports to Armenia

YEREVAN, JULY 2, ARMENPRESS. NIGEC managing director has reported on the agreement reached with Armenia to bring about a threefold increase in Iran's gas exports to the Caucasus region country, reports MEHR news agency.

Following an earlier power deal between Iran and Armenia over increasing the electricity exchange volume, the two countries have reached a new accord for boosting exports of natural gas.

Estimations reveal that electricity and gas exchanges between Iran and Armenia will climb threefold the current amount.

Head of National Iranian Gas Exports Company (NIGEC) Alireza Kameli said Iran is now deploying one million cubic meters of natural gas to Armenia per day asserting “on the basis of the preliminary agreement, the figure will hit three million cubic meters overall.”

“The two sides are currently preparing the required infrastructure for boosting natural gas exchange,” stressed the official adding “the accord will soon become finalized and operational with more negotiations.”

Kameli pointed to the country's gas production capacity reiterating “at the present time, there exist no limitations

for increasing gas exports to Armenia.”

Last summer, a contract was signed between the two countries for construction of the third 400-kV power transmission line worth more than 107 million Euros.

The transmission line between Iran and Armenia is 275 kilometers long and the entire process of procurement of equipment, construction, installation and commissioning will be carried out by the Iranian side.

It has been estimated that with construction of the new power network, electricity exchange volume between Iran and Armenia will rise from the current 300 to about 1000 megawatts.

One unique advantage of the new transmission line, in addition to development of power ties between Iran and Armenia, would be the possibility to connect Iran's power grid to Georgia and Russia providing grounds for power transit among various Caucasus region states.

伊朗出口到亚美尼亚的天然气增长 2 倍

据 MEHR 通讯社消息，埃里温 7 月 2 日，ARMENPRESS。NIGEC 总经理报告了与亚美尼亚达成将伊朗的天然气出口到高加索地区国家增加三倍的协议。

加上伊朗和亚美尼亚之间的早期增加电力交易量的能源协议，两国已达成了提高天然气出口的新协议。

估算表明，伊朗和亚美尼亚之间的电力和天然气贸易会增长三倍。

伊朗国家天然气主管出口公司（NIGEC）阿里 Kameli 说，伊朗现在每天断言部署的天然气百万立方米亚美尼亚“的初步协议，这一数字将达到整体 3000000 立方米的基础上。”

“双方目前正在准备所需的基础设施，增强天然气贸易”，官员强调到，“这项协议将达成，并继续进行更多的谈判。”

Kameli 指出，该国的天然气产能够持续供给，“目前，增加亚美尼亚的天然气出口没有任何限制。”

去年夏天，两国签署了建造第三个 400 千伏输电线路、价值超过 1.07 亿欧元的一项协议。

伊朗和亚美尼亚之间的交通传输线长 275 公里和设备采购，施工，安装和调试的整个过程将由伊朗方面进行。

据估计，随着新电力网络的建设，伊朗和亚美尼亚之间的电力交易量将从目前的 300 上升至约 1000 兆瓦。

除了伊朗和亚美尼亚之间能源运输链的发展，新的输电线路有一个得天独厚的优势，连接伊朗的电网到格鲁吉亚和俄罗斯，能提供各种高加索地区国家之间的电力运输的条件。

Egypt May Return to Gas Exports After Field Discovery, Snam Says

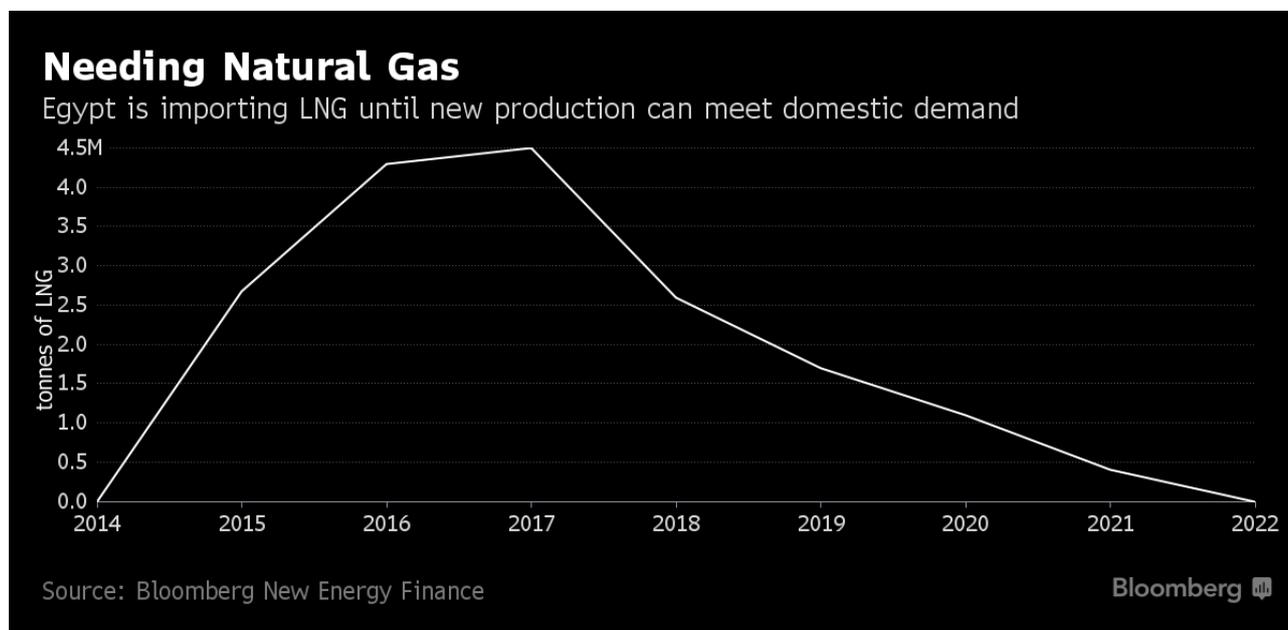
Egypt may resume natural gas exports thanks to major discoveries off its shores, according to Snam SpA, Europe's biggest gas infrastructure company.

The findings are “very significant for North Africa” and especially Egypt, the most populous Arab nation, where demand for gas is rising for electricity generation, said Marco Alvera, the chief executive officer of Milan-based Snam. Italian oil company Eni SpA called the “super-giant” Zohr field it discovered last year the largest in the Mediterranean. Eni and BP Plc also made a “significant” find this year in the Nile Delta.

“Certainly Zohr is a game changer,” Alvera said in an interview at Bloomberg's offices in London. “It allows Egypt to fulfill all its needs, which are great and significant,” as well as resume exports, he said.

Egypt was a net exporter of liquefied natural gas from 2005 until 2014, when declining output and power shortages as a result of political upheaval forced it to divert fuel for its own use. Egypt sent two cargoes this year as Royal Dutch Shell Plc, a buyer of the country's LNG, said sporadic exports are possible after the 2014 notice of force majeure — a provision protecting companies from liability for unfulfilled contracts.

Egypt's share in global LNG trade reached about 7 percent in 2006 with 10.5 million metric tons shipped, before declining each year since then, according to the International Group of LNG Importers.



Snam's unit GNL Italia owns and manages an LNG regasification terminal at La Spezia, the first LNG import plant to be built in Italy, and one of the country's three such facilities.

Egypt has said it would keep all the gas from its Zohr field, with production seen by the end of 2017. The discovery is deemed a super giant, which is a field that contains more than 850 billion cubic meters of natural gas, according to the Encyclopedia Britannica. That compares with a giant, with reserves of about 85 billion to 850 billion cubic meters.

The country has already installed two floating storage and regasification units and has said it plans to add a third such facility to meet the growing demand for LNG imports. Egypt's LNG import demand is likely to jump in this year before falling from 2018 until it becomes self-sufficient from 2022, Bloomberg New Energy Finance said this month.

Source: Bloomberg

埃及在能源新发现之后可能会恢复天然气出口

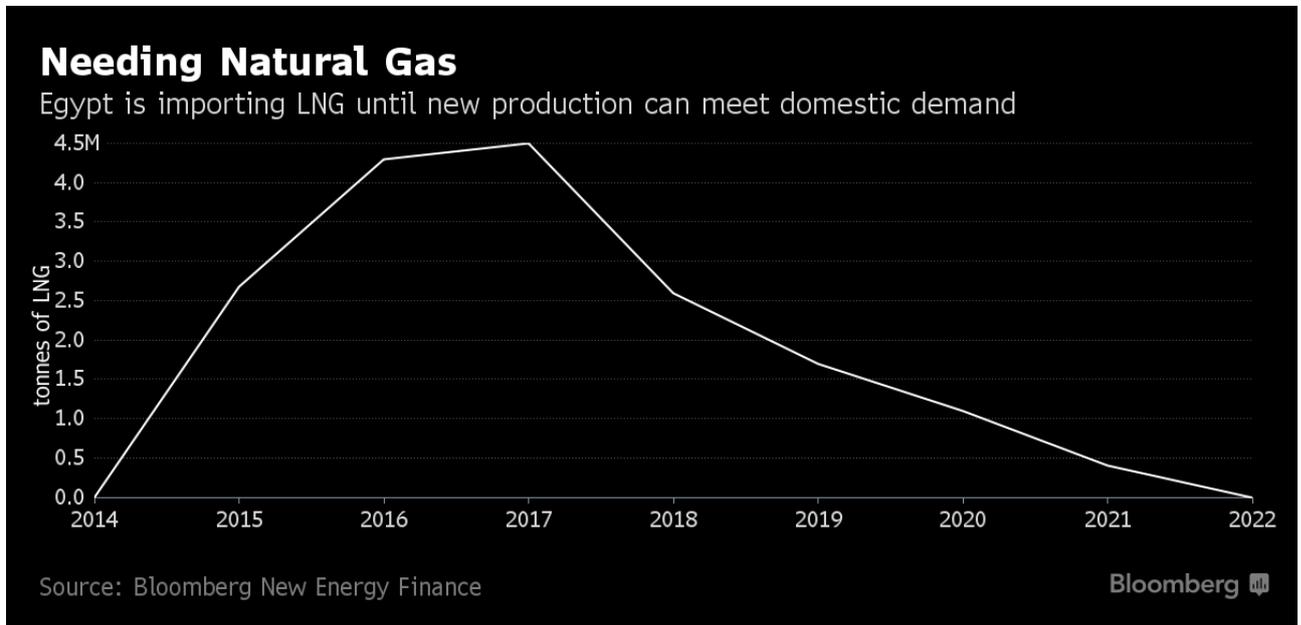
据欧洲最大的天然气基础设施的公司 SNAM SpA 公司，埃及可能会由于在海岸的重大发现恢复天然气出口。

调查结果“对北非十分重要”，特别是人口最多的阿拉伯民族埃及，那里的天然气需求正在壮大，米兰 SNAM 的首席执行官 Marco Alvera 说。意大利石油公司埃尼公司称为“超级巨大”的 Zohr 领域发现是去年在地中海最大的发现。埃尼公司和英国石油公司今年也在尼罗河三角洲有“显著”的发现。

“当然 Zohr 是一个改变游戏规则，” Alvera 在彭博社在伦敦的办公室接受采访时说，“它使得埃及能够满足自身庞大的需求”，并恢复出口。

从 2005 年至 2014 年，埃及一直是液化天然气的净出口国，但由于政治动荡产量下降、电力短缺，出口燃料不得不转为供自己使用。据该国的液化天然气买家荷兰皇家壳牌有限公司，截至今年埃及派出了两个货物，在接到 2014 年不可抗力通知后零星出口变为可能——在责任未履行合同中保护企业的规定。

据液化天然气进口商的国际集团，埃及在全球液化天然气贸易中的份额在 2006 年以 1050 万吨的出货达到了 7%，此后份额连年下降。



SNAM 的意大利 GNL 所有者并管理在拉斯佩齐亚的液化天然气再气化终端，第一个意大利的进口液化天然气厂，以及该国三个这样的设施之一。

埃及已表示，将保留 2017 年年底在 Zohr 地区发现的所有天然气。据大英百科全书，本次具有超过 8500 亿立方米天然气，被认为是超级大发现。相当于真正的巨人，储备约 850 亿至 8500 亿立方米。

彭博新能源财经表示，该国已经安装了两个浮动储存和再气化装置，并已表示，它计划增加第三个此类设施，以满足进口液化天然气不断增长的需求。在 2022 年能够自给自足之前，埃及的液化天然气进口需求可能下跌到 2018 年。

来源：Bloomberg

Brexit may alter trade flows in LNG market

THE UK's decision to exit the European Union, or Brexit, and the resulting currency volatility continue to reverberate through liquefied natural gas markets and may change some of the trade flows between regions in coming weeks, traders have said.

The wider price difference between regions has opened up the possibility for arbitrage trades and vessel owners are keen to get employment for LNG carriers if any trades do open up.

In the aftermath of the the UK's vote to leave the European Union, the British pound sank to a record 31-year low of \$1.3118 on Monday. It was still trading at around \$1.3211 on Thursday.

For the LNG market, the fall in the pound is particularly problematic because a key price benchmark called the National Balancing Point is denominated in the British currency, more specifically in pence per therm.

The NBP was initially a representative price for the British gas market but over the years its liquidity and popularity led to its wider adoption in northwest Europe.

Mcanxixun Information

It is now used to price the bulk of spot LNG cargoes sold to the European market, long-term supply contracts and LNG derivatives on the Intercontinental Exchange.

When news of the Brexit vote broke, LNG trading took a hit.

Singapore-based traders said that buyers and sellers pulled out of the market due to the uncertainty and bids and offers had fallen sharply as market participants tried to grapple with the implications of Brexit.

“Offers are down as interest from optimisers has declined. The lowest offer (on Thursday) was \$5.2/mmBtu for delivery to Middle East-India markets,” one of the traders said.

Implications for trade flows

The European price for LNG in dollar terms, based on NBP, was at \$4.92/mmBtu on June 23, one day before the Brexit vote. One week later on June 30, the European LNG price in dollar terms had fallen to \$4.44/mmBtu due to the fall in the pound.

Meanwhile, LNG prices in Asia were relatively stable between \$5.30 and \$5.40/mm Btu, but gained around 9% versus European LNG prices. This price gap is important for trade flows.

The cost of shipping LNG spot cargoes from producers in the Atlantic Basin like Nigeria, Angola and Trinidad and Tobago to consumers in northwest Europe, South America and Middle East or south Asia is practically the same. And lower European prices make Asian destinations more attractive.

For instance, LNG can be shipped from Angola to the Escobar terminal in Argentina for 38 cents/mmBtu and to Milford Haven in Europe for 39 cents. For another 10-15 cents it can even be sent to buyers in India or Singapore.

This is the trade opportunity shipowners are looking out for, especially after interregional arbitrage has been rare for several months.

Secondly, if the arbitrage can be optimised further with low freight costs, longer haul LNG reloads from Europe to Asia could return to the market again. One trader said that the LNG reload price from Europe is as low as \$4.62/mmBtu FOB for end July.

No shipments have been booked yet, and excess supply in the Asia-Pacific region from countries like Australia is a risk and could bring down Asian LNG prices further, preventing any arbitrage from opening up. But shipbrokers are reporting several enquiries from interested parties.

Gas prices remain exposed to Brexit

European LNG prices are expected to remain low due to Brexit and will eventually pull down global gas prices.

“Global gas markets are significantly more exposed than crude to Brexit. Sterling depreciation against the US dollar will drag on European demand for LNG, a bearish sign for global spot prices,” BMI Research senior oil and gas analyst Emma Richards said. BMI is a unit of Fitch Ratings.

She said currency weakness in the UK would compound the downtrend, and LNG exporters would struggle to clear cargoes into western Europe.

“We expect sterling will be slow to recover against the greenback, while our outlook on the euro is broadly neutral. This undercuts the value of regasified spot LNG sold onto European gas hubs, weakening demand,” Ms Richards said.

英国脱欧可能会改变液化天然气市场的贸易流通

交易商说，英国退出欧盟，或说是 Brexit，产生的货币波动持续通过液化天然气市场得到反响并可能改变未来几周地区之间的一些贸易的流动。

地区之间更大的价格差异打开了套利交易和如果任何行业开拓每一船主渴望得到 LNG 船的试用机会可能性。

在英国投票结果落在离开欧盟之后，英镑在周一贬值幅度达到纪录的 31 年最低点\$1.3118。它在周四仍是 1.3211\$。

对于液化天然气市场，因为国家平衡点的关键英国货币单位价格基准，更具体每千卡便士的下跌，英镑下跌尤其成问题。

NBP 是英国天然气市场最初的代表价格，但是这些年来他的流通以及流行导致了欧洲西北地区更为广泛的应用。

它现在被用于售于欧洲的液化天然气的标价，长期供给合同中以及液化天然气在国际交易中的分支。当英国宣布脱欧时，液化天然气贸易受到重击。

在新加坡的商人说，由于不确定的投标以及邀约随着市场参与者的随着脱欧贪婪获利极度下降。

以为商人说：“邀约减少是因为最优化的利润减少了。最低价的邀约（周四）是\$5.2/mmBtu 运送到印度中东部地区。”

贸易流通预测

基于 NBP，脱欧的前一天 6 月 23 日欧液化天然气的美元价格为\$4.92/mmBtu。一周后的 6 月 30 日，欧液化天然气的美元价格由于英镑的下跌，下跌到了\$4.44/mmBtu

同时，亚洲的液化天然气的价格在\$5.30 到 \$5.40/mm Btu 之间相对稳定，但相比欧洲的液化天然气价格增加了 9%。这个价格差对于贸易流通是十分重要的。

从大西洋盆地的制造商，例如 Nigeria, Angola 和 Trinidad 以及 Tobago，把液化天然气集装货物运输到欧洲西北部，南美洲以及中东或南亚所需要的价格实际上是一样的。更低的欧洲价格让亚洲目的地变得更有吸引力。

例如，液化天然气能够从 Angola 以 38 cents/mmBtu 的价格运输到 Escobar 最终到达 Argentina，也可以以 39 cents 的价格运输到欧洲的 Milford Haven。再加 10-15 分货物甚至可以被运到印度或者新加坡。这就是船主们正在寻找的在仲裁后已经几个月不见的贸易机会。

第二，如果仲裁以低运费更加优化，从欧洲到亚洲较长路程的液化天然气就有可能重回市场。以为商人说，在六月底以欧洲为始发点的液化天然气已经低至离岸价\$4.62/mmBtu

还没有船只被预定，预防更多套利现象出现，亚太地区的澳大利亚有让亚洲液化天然气更低的风险。但是船主收到了来自有意方的几件询盘。

天然气价格仍受脱欧影响

欧洲液化气价格由于英国脱欧预计会持续走低最终拉低全球天然气价格。

BMI 研究汽油分析师 Emma Richards 说，“全球天然气市场收到了英国脱欧举动的巨大影响。英镑对于美元的贬值会拉低欧洲对液化天然气的需求，这是一个熊市预兆，” BMI 是 Fitch Ratings 的一部分。

她说英国当前的弱点将会包含这种下降趋势，液化天然气的出口这也会挣扎地出口货物到西欧。

理查德说：“我们预计英镑在这种疾速下降的趋势中缓慢回复，同时我们对欧元的看法是相当中性的。这种买到欧洲加气站的在液化液化气价格的疾速下跌，减弱了需求。”

Israel-US consortium sinks \$265 million in new gas well

US-led consortium is also developing Israel's mammoth Leviathan gas field and aims to bring it online in 2019

A consortium led by US firm Noble Energy has approved a \$265-million project to sink a new well in a major natural gas field off Israel, officials said on Sunday.

Delek Drilling and Avner Oil Exploration, Israeli firms that are part of the partnership led by Noble, announced the financing for the Tamar field in the Mediterranean.

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"The Tamar partners decided to approve a budget of about \$265 million for drilling 'Tamar 8' and connecting to existing infrastructure in the Tamar field," Delek and Avner said in a joint statement.

It said the latest well would allow "maximum supply from Tamar field during times of peak demand, in light of the volume of production from Tamar and the existing and expected demand for natural gas from the field".

Tamar 8, the field's sixth production well, is located about 100 kilometres offshore and would reach a depth of around 3.5 kilometres below the sea bed, it said.

Drilling is projected to start in the last quarter of this year.

Completion of the well and its connection to the existing pipe network is expected to take four months, the statement added.

The Tamar field was discovered in 2009 and began pumping in 2013.

It is located some 130 kilometres off the Mediterranean port city of Haifa and has estimated reserves of up to 238 billion cubic metres (8.4 trillion cubic feet).

Its gas is so far being used for domestic supply within Israel.

The US-led consortium is also developing Israel's mammoth Leviathan gas field and aims to bring it online in 2019.

Israel hopes the development of Leviathan will allow it to export gas, which could help grease the wheels of regional diplomacy.

Leviathan, discovered in 2010, is estimated to hold 18.9 trillion cubic feet (535 billion cubic metres) of natural gas, along with 34.1 million barrels of condensate.

Development of its own energy resources is seen as a major strategic asset for Israel, which has no oil and little water.

以色列 - 美国财团投入 2.65 亿美元开凿新气井

美国牵头的财团也开发了以色列的猛犸利维坦气田并且旨在 2019 年使其能线上工作。

相关官员在周日说道,由美国 Noble 能源公司领导的财团已经批准了一个 2.65 亿美元的计划开凿新井,该新井是以色列一个重要的天然气气田。

以色列公司, Delek Drilling 和 Avner Oil Exploration, 是 Noble 能源公司的合作伙伴之一, 宣布投资在地中海的 Tamar 油田。

“Tamar 的合作伙伴决定批准投入约 2.65 亿美元开凿 Tamar 8 井, 以连接到 Tamar 油田的现有基础设施”, Delek 和 Avner 在一份联合声明中说道。

声明说道, 最新开凿的气井将“无论是从 Tamar 油田的产出体积, 还是从现存及预计的天然气需求的角度看, 在需求的高峰期, Tamar 油田供应量最大。”

Tamar 8, 是 Tamar 油田的第 6 个油井, 距海岸约 100 公里, 深度可能达到海底下 3.5 公里, 声明说道。钻井预计在今年最后一个季度开始。

声明补充说道, 该井的完成以及将它连接到现有的管道预计将花费 4 个月的时间。

Tamar 油田发现于 2009 年, 并且于 2013 年开始抽取。

它位于距地中海港口城市海法约 130 公里, 储量估计高达 2380 亿立方米 (8.4 万亿立方英尺)。

目前为止, 该气井的产出主要供应以色列。

美国牵头的财团也开发了以色列的猛犸利维坦气田并且旨在 2019 年使其能线上工作。

以色列希望通过开发利维坦油田, 出口天然气, 后者有利于以色列的区域外交。

利维坦油田，发现于 2010，估计有 18.9 万亿立方英尺（5350 亿立方米）的天然气，以及 3410 万桶凝析油。

以色列是一个缺油少水国，开发自己的能源资源，被认为是以色列的一大战略资产。

The US Drives Forward To Become A Player On The World LNG Market

The U.S. Gulf coast is positioning itself to soon have a hub of LNG export capability that will rival any country except for Qatar and Australia.

After usurping coal as the prime U.S. electricity source in January 2016, U.S. domestic supply is becoming saturated as companies compete for decreasing margins. The natural reaction to internal abundance is to look for exports.

With Qatar having the world's largest LNG export (liquefaction) capacity at around 158 Bcfd, the U.S. is looking to add competition to the global market.

Recently, two significant events changed the natural gas playing field: the advent of hydraulic fracking of natural gas in the U.S. around 2006, which caused an ever-increasing supply of cheaper gas, and the Fukushima nuclear disaster in Japan in 2009, causing Japan to import an ever-increasing amount of natural gas.

Over the past year, world LNG prices, shown in \$USD / Million British Thermal Units (\$/MBtu) have had the trend to lower and equalize across all regions.

While prices in the U.S. and Canada have decreased marginally, prices in all other areas of the globe have fallen by 40-50 percent. Prices in northeast Asia have fallen by the most, where prices averaged \$18/MBtu just two years ago, according to Platts. This equalization trend is driven largely by a significant increase in export capacity from countries such as Qatar, Papua New Guinea, Algeria and Australia, which has finally absorbed Japanese demand post-Fukushima.

A further equalization of prices across all regions can be expected as the trend toward medium and spot price buying increases over long-term contracts. In the early 2000s, long-term contracts made up over 95 percent of supply contracts; this number has since decreased to under 70 percent.

With the advent re-liquefaction at import terminals, and lower-cost shipping tracking by services such as kpler, non-long-term contracts will soon become the norm. This will allow markets to react to disturbances much faster than with long-term contracts, but will also act to equalize prices across regions.

Trends like these can be worrisome for huge billion-dollar LNG export terminal construction projects in the U.S. and Canada. BNP Paribas has been eyeing a \$36 billion dollar export terminal project in Canada for quite some time. Delays due to environmental concerns and assessments have put the project in question. Ultimately, jurisdictions with friendlier views towards LNG terminals have been winning the export rush.

Australia and Qatar have significantly added export capacity, fulfilling an export need that had been steadily growing since the early 2000s, and had a huge jump in 2009-2011 due to Fukushima.

The U.S. currently has two operational LNG (liquefaction) export terminals, ConocoPhillips' Kenai Alaska terminal with a capacity of 0.2 Bcfd opened in 1969 and the Cheniere/Sabine Pass LNG – Train 1 (out of a total 6 trains, 5 are currently under construction) with a capacity of 0.7 Bcfd. However, U.S. export capacity is currently being built up with expediency. By the end of next year, Cheniere expects Trains 1-4 to be operational, and Dominion expects to have its Cove Point LNG operational as well.

Canada, meanwhile, is stalling and has over 20 LNG export terminals under consideration—however, none of

them have secured their final investment decisions from backers.

If all construction goes as planned, by 2020, the U.S. Gulf coast will have a hub of LNG export capability rivalling any country except Qatar and Australia.

Recently, world LNG markets have been some of the most dynamic in the world, after new technologies and new exporting countries brought on new supply, while China and Southeast Asia brought on new demand. The 2020 LNG market will continue to be as dynamic as it has been, with the U.S. playing a more significant role on the world stage. However, despite satiating internal natural gas demand, the U.S. will find the international markets a more competitive marketplace when it becomes a significant player.

美国进军世界液化天然气市场

美国墨西哥湾沿岸地区不久就将其定位成一个液化天然气出口中心，除卡塔尔和澳大利亚之外，不逊于任何其他国家。

后来在 2016 年 1 月，替代煤炭成为美国主要电力源，随着各公司竞争着越来越少的利益，美国的国内供应正趋于饱和。对内在富足的自然反应是寻找出口。

卡塔尔是世界上最大的液化天然气出口国（液化），出口能力为 1580 立方英尺，而美国正试图增加全球市场的竞争力。

最近，两个重大事件改变了天然气领域：大约在 2006 年，美国出现了天然气水力压裂技术，这使得天然气的价格更便宜，供应量越来越大，而 2009 年日本福岛的核灾难，导致日本天然气的进口量不断增加。

在过去的一年内，世界液化天然气价格有降低的趋势，价格单位为美元/百万英热单位，且各地区价格趋于均衡。

美国和加拿大的价格有轻微下降，而在全球其他地区价格下跌 40-50%。据普氏能源资讯，在亚洲东北部地区的价格下降幅度最大，那里的平均价格两年前为 18 美元/百万英热单位。这种均衡化的趋势很大程度上是由卡塔尔、阿尔及利亚及澳大利亚等国的出口能力大幅增加驱动的，最终刺激了日本福岛核灾难后对这些国家的能源需求。

这些所有地区价格的进一步均衡化趋势，预计趋于中间，并且从长期合同角度，现货价格购买增加。在本世纪初，长期合同占供应合同的 95% 以上；这个数字现已降至 70% 以下。

随着进口端再液化的出现，以及诸如 kpler 等服务导致运输跟踪成本的降低，非长期合同不久后将成常态。短期合同市场相较于长期合同市场，对干扰的反应快得多，但是也会对地区间的价格均衡做出反应。

但是对美国和加拿大大型的数十亿美元的液化天然气出口码头建设项目在美国和加拿大，像这样的趋势令人担忧。法国巴黎银行已经盯上了加拿大一个 360 亿美元的出口端项目，并已盯了相当长时间。由于环境问题的延误以及评估使该项目陷入了问题之中。最终，对液化天然气端看法比较友好的司法管辖区占据了出口高峰。

自本世纪初，出口需求稳步增长，并且因为 2009-2011 年福岛核灾难，出口需求有一个大的跳跃，澳大利亚和卡塔尔明显增加的出口能力满足了这一需求。

美国现在有两个正在运转的液化天然气出口港口，ConocoPhillips 的 Kenai Alaska 出口港口开放于 1969 年，出口能力为 2 亿立方英尺，Cheniere/Sabine Pass LNG - 列 1(共有 6 列，其中 5 列现在正处于建设中的)出口能力为 7 亿立方英尺。然而，美国的出口能力建设现在正在权宜取舍中。到明年年底，Cheniere 列 1-4 预计投入运营，Dominion 也预计将其 Cove Point 液化天然气港口投入运营。

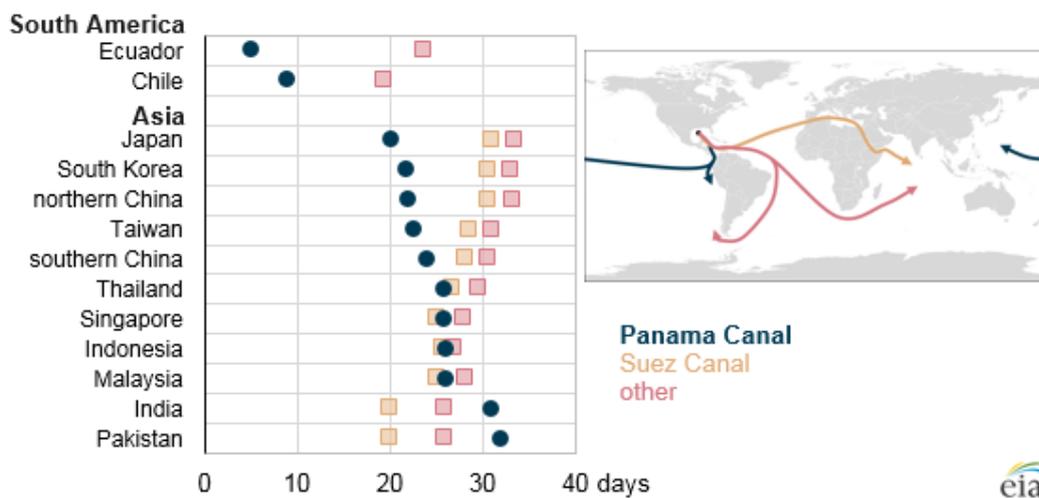
同时，加拿大陷入停滞，并且超过 20 个液化天然气出口港正处于考虑之中——然而，他们都没有得到投资者的最终投资决策。

如果施工顺利，到 2020 年底，美国海湾海岸会有一个 LNG 出口中心，其能力除了卡塔尔和澳大利亚以外，能媲美任何国家。

最近，在新技术以及新出口国开辟的新供应源，以及中国和东南亚的新需求，使世界液化天然气市场动荡最剧烈。随着美国在世界舞台上发挥更重要的作用，2020 年液化天然气市场将会持续动荡。然而，即使能满足国内天然气需求，美国将发现当其成为国际市场重要一员时，国际市场的竞争会更加激烈。

Expanded Panama Canal reduces travel time for shipments of U.S. LNG to Asian markets

Approximate voyage time from U.S. Gulf Coast through Panama Canal or other routes



Source: U.S. Energy Information Administration calculations based on IHS and other sources

Note: Calculations assume export from the Sabine Pass liquefaction terminal at an average LNG Carrier speed of 19.5 knots and one-day transit time through the Panama and Suez Canals.

The newly expanded Panama Canal will be able to accommodate 90% of the world's current liquefied natural gas (LNG) tankers with LNG-carrying capacity up to 3.9 billion cubic feet (Bcf). Prior to the expansion, only 30 of the smallest LNG tankers (6% of the current global fleet) with capacities up to 0.7 Bcf could transit the canal. The expansion has significant implications for LNG trade, reducing travel time and transportation costs for LNG shipments from the U.S. Gulf Coast to key markets in Asia and providing additional access to previously regionalized LNG markets.

The new locks in the canal provide access to a wider lane for vessels and are 180 feet across, compared with 109 feet in the original locks. Only the 45 largest LNG vessels, 4.5-Bcf to 5.7-Bcf capacity Q-Flex and Q-Max tankers used for exports from Qatar, will not be able to use the expanded canal.

Transit through the Panama Canal will considerably reduce voyage time for LNG from the U.S. Gulf Coast to markets in northern Asia. Four countries in northern Asia—Japan, South Korea, China, and Taiwan—collectively account for almost two-thirds of global LNG imports. A transit from the U.S. Gulf Coast through the Panama Canal to Japan will reduce voyage time to 20 days, compared to 34 days for voyages around the southern tip of Africa or 31 days if transiting through the Suez Canal. Voyage time to South Korea, China, and Taiwan will also be reduced by transiting through the Panama Canal.

The wider Panama Canal will also considerably reduce travel time from the U.S. Gulf Coast to South America,

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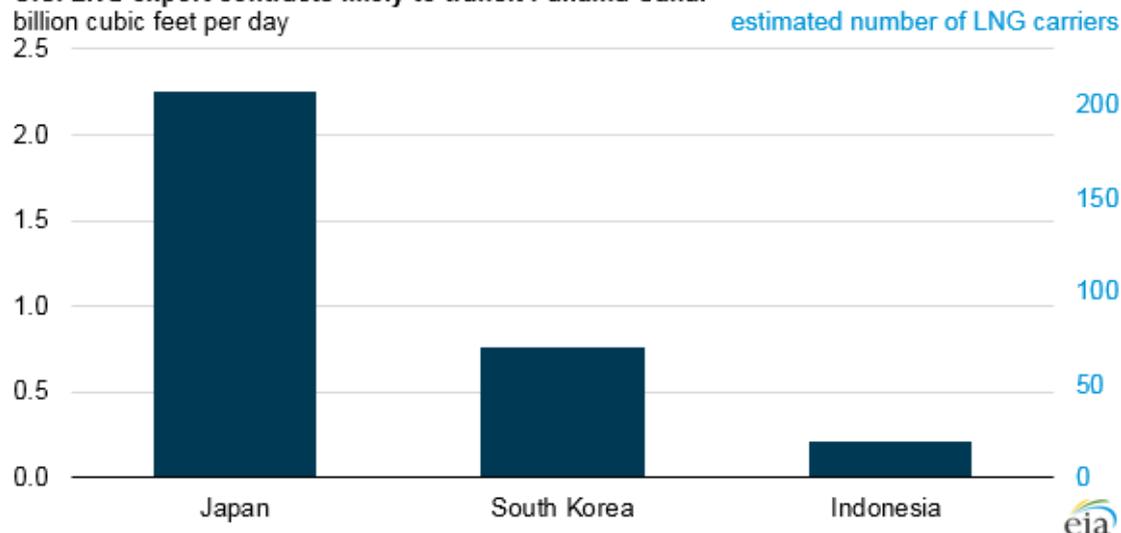
declining from 20 days to 8-9 days to Chilean regasification terminals, and from 25 days to 5 days to prospective terminals in Colombia and Ecuador. For markets west of northern Asia, including India and Pakistan, transiting the Panama Canal will take longer than either transiting the Suez Canal or going around the southern tip of Africa.

In addition to shortening transit times, using the Panama Canal will also reduce transportation costs. The Panama Canal Authority has introduced new toll structures for LNG vessels designed to encourage additional LNG traffic through the Canal, especially for round trips. Transit costs through the Panama Canal for an average 3.5 Bcf LNG carrier are estimated at \$0.20 per million British thermal units (MMBtu) for a round-trip voyage, representing about 9% to 12% of the round-trip voyage cost to countries in northern Asia.

Based on IHS data, the round trip voyage cost for ships traveling from the U.S. Gulf Coast and transiting the Panama Canal to countries in northern Asia is estimated to be \$0.30/MMBtu to \$0.80/MMBtu lower than transiting through the Suez Canal and \$0.20/MMBtu to \$0.70/MMBtu lower than traveling around the southern tip of Africa. Transiting the Panama Canal offers reduction in transportation costs to northern Asian countries such as Japan, South Korea, Taiwan, and China and may offer some minimal cost reductions to countries in southeast Asia (Malaysia, Thailand, Indonesia, and Singapore), depending on transit time. U.S. LNG exports to India, Pakistan, and the Middle East are not expected to flow through the Panama Canal because alternative routes, either the Suez Canal or around the southern tip of Africa, have lower transportation costs.

Currently, about 9.2 billion cubic feet per day (Bcf/d) of U.S. natural gas liquefaction capacity is either in operation or under construction in the United States. By 2020, the United States is set to become the world's third-largest LNG producer, after Australia and Qatar. More than 4.0 Bcf/d of U.S. liquefaction capacity has long-term (20 years) contracts with markets in Asia, of which 3.2 Bcf/d is contracted to Japan, South Korea, and Indonesia.

U.S. LNG export contracts likely to transit Panama Canal



Source: U.S. Energy Information Administration calculations based on IHS and trade press

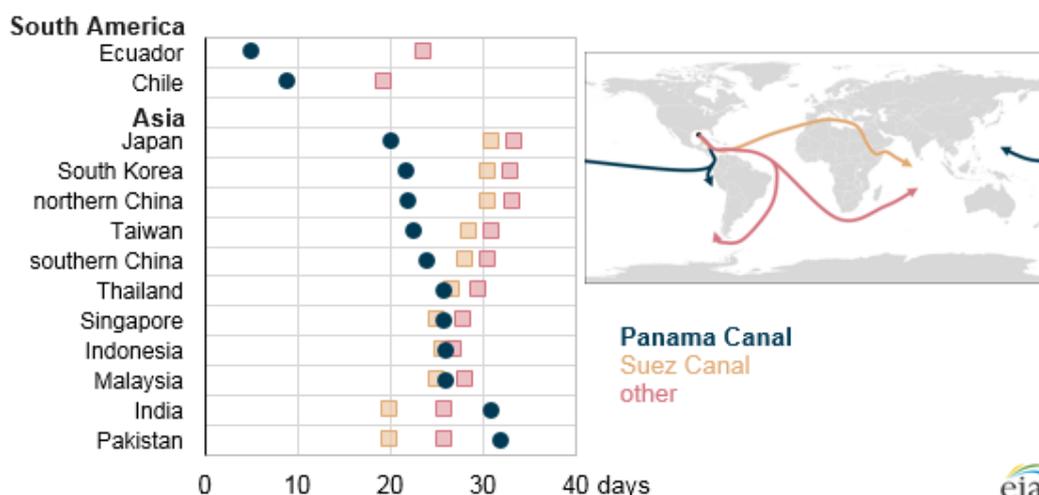
Note: Calculations of the number of vessels transiting Panama Canal assume the largest LNG vessel size allowed to transit the expanded Canal (approximate LNG-carrying capacity 3.9 Bcf).

An additional 2.9 Bcf/d of U.S. liquefaction capacity currently under construction has been contracted long-term to various countries. Flexibility in destination clauses allows these contracted volumes to be taken to any LNG market in the world. Assuming all contracted volumes transit the Panama Canal, EIA estimates that LNG traffic through the Canal could reach more than 550 vessels annually, or 1-2 vessels per day, by 2021.

巴拿马运河的扩建缩短了美国液化天然气公司对亚洲市场的货物运

输时间

Approximate voyage time from U.S. Gulf Coast through Panama Canal or other routes



资料来源：美国能源信息署基于 HIS 和其他资源的计算

注：计算以液化天然气运输船从萨宾帕斯海上终端以 19.5 节的平均速度，一天的航运时间穿过巴拿马运河和苏伊士运河为假设。

新扩建的巴拿马运河将能够容纳目前世界上 90% 的液化天然气 (LNG) 邮轮，液化天然气邮轮的容量高达 39 亿立方英尺 (BCF)。在扩建之前，只有 30 只的容量仅为 7 亿立方英尺的最小液化天然气邮轮（目前全球船队的 6%）能穿过运河。扩建对液化天然气贸易有着显著的影响，减少了液化天然气从美国墨西哥湾沿岸到亚洲的主要市场的航运时间和运输成本，并额外提供建立预先区域化的液化天然气市场的通道。

运河的新锁给运输船舶提供了更宽的通道，足有 180 英尺宽，相比之下，原来的锁只有 109 英尺。只有 45 只最大的液化天然气船，容量为 45 至 57 亿立方英尺的 Q-Flex 和 Q-Max 邮轮，以用于从卡塔尔的出口，将无法使用扩建的运河。

途经巴拿马运河将大大减少航行时间由中美墨西哥湾沿岸的 LNG 市场在亚洲北部。四国北部地区，日本，韩国，中国，台湾，共占全球液化天然气进口量近三分之二。从美国墨西哥湾沿岸通过巴拿马运河到日本过境航行时间缩短至 20 天，较 34 天左右的非洲南端航行或 31 天，如果通过苏伊士运河过境。航程时间到韩国，中国，台湾也将通过巴拿马运河过境降低。

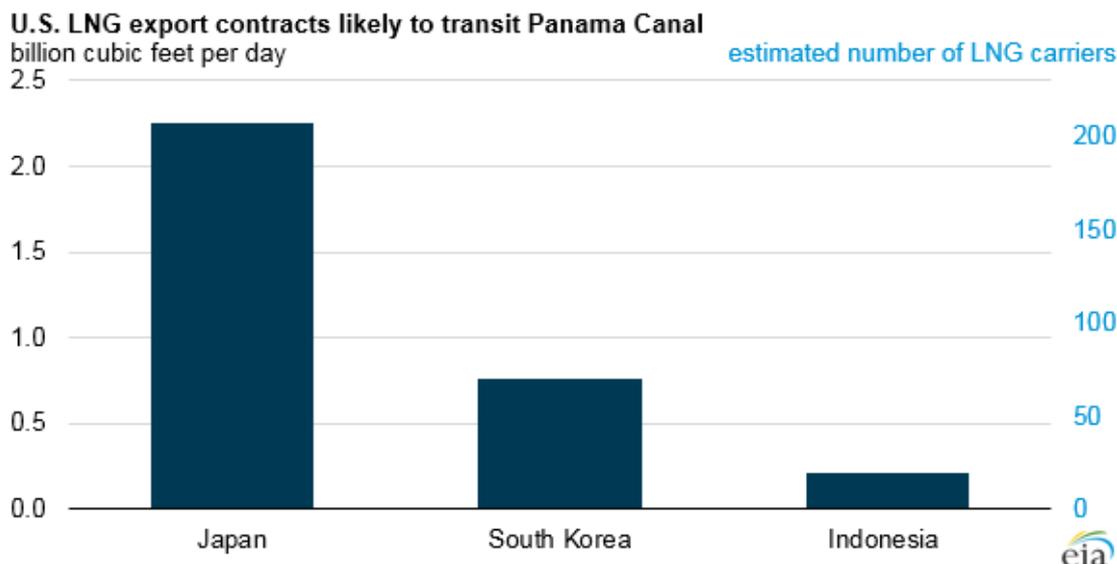
更宽的巴拿马运河也将大大减少从美国墨西哥湾至南美的旅行时间，到智利再气化终端的运输时间从 20 天减少至 8 到 9 天，到未来的哥伦比亚和厄瓜多尔终端的运输时间从 25 天减少到 5 天。对于亚洲的西北部市场，包括印度和巴基斯坦，穿过巴拿马运河将比穿过苏伊士运河或者绕过非洲南段支点消耗更多的时间。

除了缩短运输时间，使用巴拿马运河也将减少运输成本。巴拿马运河管理局为液化天然气，推出了新的收费制度，以计划鼓励更多为液化天然气通过巴拿马运河运输，尤其是往返运输。通过巴拿马运河的运输成本为，平均 35 亿立方英尺的液化天然气运输船往返航行为 0.20 美元每百万英国热量单位 (MMBtu)，相当于约 9% 至 12% 的往返北亚的成本。

根据 IHS 的数据，从美国墨西哥湾沿岸出发，穿过巴拿马运河，到达亚洲北部国家的往返航运成本预计比穿过苏伊士运河便宜 0.30 美元至 0.80 美元每百万英热单位，比绕过非洲最南端便宜 0.20 美元至 0.70 美元每百万英热单位。通过巴拿马运河降低了到亚洲北部国家，如日本、韩国、台湾和中国的运输成本，或许可以减少更多的到东南亚国家（马来西亚、泰国、印尼和新加坡）的成本，这取决于运输时间。美国

出口到印度、巴基斯坦和中东的液化天然气并不期望通过巴拿马运河运输，因为有可以选择的路线，无论是苏伊士运河还是绕过非洲的南端，运输成本都更低。

目前，美国每天约 92 亿立方英尺（9.2Bcf/d）的天然气液化储罐在运输中或装配中。到 2020 年，美国将成为世界第三大液化天然气生产国，即澳大利亚和卡塔尔之后。在亚洲市场上有超过 40 亿立方英尺每天的美天然气液化储罐长期合约（20 年），其中有 32 亿立方英尺每天的合约客户是日本、韩国和印度尼西亚。



资料来源：美国能源信息署基于 HIS 和其他资源的计算

注：穿过巴拿马运河的船只数量计算假设最大的液化天然气邮轮尺寸能穿过扩建后的运河（约计液化天然气邮轮承载能力为 39 亿立方英尺）。

美国额外 29 亿立方英尺每天的液化容量，目前正在建设中，已经与多国签订了长期的合约。灵活的目的地航线允许世界上任何的美国液化天然气市场满足这些合同的签约数量。假设所有合同签约的液化天然气都通过巴拿马运河，EIA 估计，通过运河的美国液化天然气邮轮在 2021 年将超过 550 船每年，或者每天 1-2 船。

Minerals (矿产)

Rio Tinto says commodities rout far from over

The new chief executive of Rio Tinto has warned there is no end in sight to the commodities downturn, saying a supply glut will continue to put pressure on prices for the mining company and its rivals.

Jean-Sébastien Jacques, who became chief executive of the Anglo-Australian company this weekend, said in an interview with the Financial Times that supply was still outstripping demand for most major raw materials that Rio mines.

“Oversupply is there in all commodities, let’s be clear,” said Mr Jacques. “The first one that may come out of the oversupply is copper. If you look at the others — iron ore, coal and so on — there is a long way to go. Our view is that prices will remain under pressure with lots of volatility.”

During the boom years of the commodities supercycle of the previous decade, mining companies ploughed

hundreds of billions of dollars into new projects as China's rapid economic growth sucked in ever increasing amounts of raw materials. Much of the fresh supply hit the market as China's economy started to slow, triggering the worst price rout in a generation last year for Rio and its rivals.

Although commodities prices have rebounded somewhat this year, they are far from the highs of five years ago.

Rio's profits depend hugely on the market for iron ore, the steelmaking ingredient. The iron ore price of \$54 per tonne now compares to \$184 in January 2011, before the slump set in.

Many analysts predict commodities prices will soften later this year because mining companies have large stockpiles of raw materials.

Mr Jacques said Rio, the lowest-cost iron ore producer, would not chase market share by adding more tonnes of the steelmaking ingredient to the market. "It's about value over volume and market share," he added.

力拓：大宗商品价格跌势远未结束

英澳矿业集团力拓新任 CEO 雅克在接受 FT 采访时表示，供过于求的局面将继续对力拓及其竞争对手造成价格压力。

力拓(Rio Tinto)新任首席执行官警告称，目前还看不到大宗商品价格跌势的结束，并表示，供过于求的局面将继续对力拓及其竞争对手造成价格压力。

周末刚担任这家英澳矿业集团首席执行官的让-塞巴斯蒂安·雅克(Jean-Sébastien Jacques)，在接受英国《金融时报》采访时表示，对于力拓开采的大多数主要原材料而言，供应仍超过需求。

“我们应该清楚，所有大宗商品都出现了供应过剩，”雅克表示，“首个可能走出过剩的是铜。如果你看看其他大宗商品——铁矿石、煤炭等——还有很长的路要走。我们的观点是，价格将继续承压，并伴随很多波动。”

在过去十年大宗商品超级周期的繁荣时期，中国快速的经济增长吸纳越来越多的原材料供应，矿业公司投资数千亿美元开发新项目。但大量新增供应投入市场之际，正值中国经济开始放缓，并在去年引发了力拓及其竞争对手遭遇的二三十年来最严重的价格暴跌。

虽然今年大宗商品价格有所反弹，但距离五年前的高点还很远。

力拓的利润很大程度上依赖炼钢原料——铁矿石的市场。现在铁矿石价格为每吨 54 美元，而暴跌之前的 2011 年 1 月，每吨价格为 184 美元。

许多分析师预计，大宗商品价格将在今年晚些时候下跌，因为矿业公司还拥有大量的原材料库存。

雅克表示，作为成本最低的铁矿石生产商，力拓不会通过向市场增加更多铁矿石供应来追逐市场份额，“价值比数量和市场份额更重要，”他补充道。

MMG seeks further acquisitions to diversify

Mining Correspondent MMG's chief executive said the Chinese-controlled miner was looking at further potential acquisitions as it finishes a \$10bn investment in one of the world's largest copper mines.

Andrew Michelmoresaid MMG was "not in a rush" but suggested that the miner's largest shareholder, China Minmetals, had been pleased with initial results from the purchase of Las Bambas in Peru and would look at using MMG as a vehicle to expand. "China sees MMG as having delivered," said Mr Michelmore. "We are earning the right to look at opportunities."

He said MMG, which has focused on base metals including nickel and zinc as well as copper, could also look "a little bit wider" as part of any Minmetals diversification. MMG — which is 74 per cent owned by Minmetals, a Chinese state miner — and other Chinese partners bought Las Bambas from Glencore in a \$7bn deal in 2014, one

of the largest transactions completed during what has been a multiyear commodity downturn.

The transaction was seen as a sign of China's desire to secure control of strategic sources of minerals. Glencore was required to divest Las Bambas to win Chinese approval for its takeover of rival Xstrata in 2012.

MMG and its partners have since spent about \$3bn to get the mine into production. Las Bambas delivered its first copper this year and is expected to reach a commercial level of production by the end of the year.

“We are setting ourselves an aggressive ramp-up,” said Mr Michelmore, saying other nearby copper mines had been able to accelerate operations quickly.

The start of mining at Las Bambas — which MMG says will be the world's fourth-largest copper mine by output — has coincided with some of the most severe weakness in the copper market since the financial crisis, with the price of the metal falling 25 per cent in 2015. However, most analysts think long-term prospects for copper are positive, with falling output at many older mines.

MMG, which is listed in Hong Kong and Australia, is also investing in a new zinc mine in Australia. Dugald River, in Queensland, is set to go into production in 2018. The company said last month that it was able to cut its investment budget for the \$1.2bn project, where about \$600m remains to be spent. MMG's large Century zinc mine in Australia closed last year.

五矿资源继续寻觅全球并购机会

这家由中国五矿集团公司控股的矿企称，已完成对秘鲁一座大型铜矿 100 亿美元投资，初步结果让中方非常满意。

五矿资源(MMG)首席执行官米安卓(Andrew Michelmore)表示，随着这家由中资控股的矿企完成了一座大型铜矿 100 亿美元的投资，该公司正在寻找进一步潜在收购机会。

米安卓表示，五矿资源“并不急于一时”，但暗示该矿企第一大股东中国五矿集团公司(China Minmetals)对收购秘鲁拉斯邦巴斯(Las Bambas)铜矿的初步结果感到非常满意，并寻求利用五矿资源作为扩张工具。米安卓说：“中方认为五矿资源拿出了理想成果。我们赢得了寻找机会的权利。”

五矿资源专注于包括镍、锌以及铜在内的基本金属，米安卓表示该公司的视线还可以“拓宽一点”，作为五矿集团业务多样化的一部分。中国国有的五矿集团持有五矿资源 74% 的股份，2014 年五矿资源与其他中国合作伙伴以 70 亿美元从嘉能可(Glencore)收购了拉斯邦巴斯铜矿，这是大宗商品多年低迷中完成的最大交易之一。

这笔交易被认为是一个迹象，显露了中国想确保控制矿物战略资源的愿望。嘉能可被要求剥离拉斯邦巴斯铜矿，以赢得中国批准其 2012 年收购竞争对手斯特拉塔(Xstrata)的交易。

五矿资源及其合作伙伴随后投入约 30 亿美元让该铜矿投产。拉斯邦巴斯铜矿今年交付了第一批铜，预计在今年底达到商业生产水平。

米安卓说：“我们给自己设定了积极的产能提升目标。”他表示附近其他铜矿实现了迅速增产。

五矿资源表示，拉斯邦巴斯铜矿将成为以产量计全球第四大铜矿，其投产时机恰逢金融危机以来铜市场陷入最严重的疲软期，2015 年铜价下降了 25%。但大多数分析师认为随着许多老矿储量枯竭，铜的长期前景是积极的。

五矿资源在香港和澳大利亚两地上市，该公司还在澳大利亚投资了一座新的锌矿，昆士兰州 Dugald River 锌矿项目计划于 2018 年投产。该公司上个月表示能削减这个 12 亿美元项目的预算，其中约有 6 亿美元仍待支出。五矿资源在澳大利亚的 Century 大型锌矿于去年关闭。

China agrees EU deal to assuage steel dumping

concerns

China and the EU have agreed to set up a bilateral steel “platform” to address European concerns over Chinese steel dumping, smoothing the way for Europe to grant China its coveted market economy status.

A jump in steel shipments from China had stiffened political and industry opposition to Brussels granting China market economy status under the terms of its accession to the World Trade Organisation, 15 years ago. Granting the status would make it harder for major economies to bring anti-dumping cases against Beijing.

Jean-Claude Juncker, European Commission president, said the agreement would allow the “verification and monitoring” of steel shipments from China, enabling confirmations of Chinese pledges to trim the excess capacity that is swamping world steel markets.

“Our Chinese friends and partners know there is a link between market economy status and the platform,” Mr Juncker said. “Although you could separate the two, the general mood in Europe is that they should be considered together.”

The EU commission will discuss MES status on July 20, he added. “I don’t want to overdramatise this decision but it is a dramatic one and there is a clear link between steel and MES.”

Impromptu negotiations over the steel “platform” on Wednesday between Mr Juncker, Chinese premier Li Keqiang and European Council president Donald Tusk could result in a diplomatic victory for Beijing, after it suffered an international court’s rejection of its claims in the South China Sea.

Mr Li, smiling broadly after the meeting, teased Mr Juncker about his choice to address a Beijing audience in French rather than English. “Next time he might use German!” he laughed.

But Mr Li turned serious as he reiterated China’s position that it expected the EU to honour a clause in its accession agreement that read: “in any event”, provisions allowing Chinese goods to be compared with those of third countries “shall expire 15 years after the date of accession”.

He noted that “90 per cent” of China’s steel output is consumed domestically, and denied that China subsidised its steel exports.

Global excess capacity in steel “needs everyone to co-operate. It’s not a problem for any one country to solve,” he said.

中国与欧盟同意建立双边钢铁“平台”

欧委会主席容克表示，这将可以对中国钢铁出货量进行“核查和监测”，并将与欧盟给予中国市场经济地位挂钩。

中国和欧盟同意建立一个双边钢材“平台”以解决欧方对中国倾销钢材的担忧，从而为欧洲给予中国市场经济地位铺平道路。

来自中国的钢铁出货量跃升，使政界和行业反对布鲁塞尔给予中国市场经济地位的情绪升级；授予市场经济地位本来是 15 年前中国加入世界贸易组织(WTO)时约定的。中国获得这一地位后，各大经济体将更难对北京方面提起反倾销案件。

欧盟委员会(European Commission)主席让-克洛德·容克(Jean-Claude Juncker)表示，该协议将允许对来自中国的钢铁出货量进行“核查和监测”，从而能够确认中方是否落实有关削减过剩产能的承诺。中国的过剩产能正在淹没世界钢铁市场。

“我们的中国朋友和合作伙伴知道，市场经济地位和这个平台之间是有联系的，”容克表示。“虽然你可以将二者分开，但欧洲的总体情绪是应该把它们放在一起考虑。”

他补充说，欧盟委员会将在7月20日讨论是否给予中国市场经济地位的问题。“我不想过分夸大这个决定，但它将是一个引人注目的决定，而且在钢材和市场经济地位之间存在明显关联。”

围绕钢材“平台”的即兴谈判周三在容克、中国总理李克强以及欧洲理事会(European Council)主席唐纳德·图斯克(Donald Tusk)之间进行。这场谈判有望给北京方面带来一个外交胜利，此前中国在南中国海的主权主张刚刚被一个仲裁庭裁决无效。

李克强在会后满面笑容，调侃容克选择用法语（而不是英语）对北京的观众发表讲话。“下一次他也许会用德语！”他笑着说道。

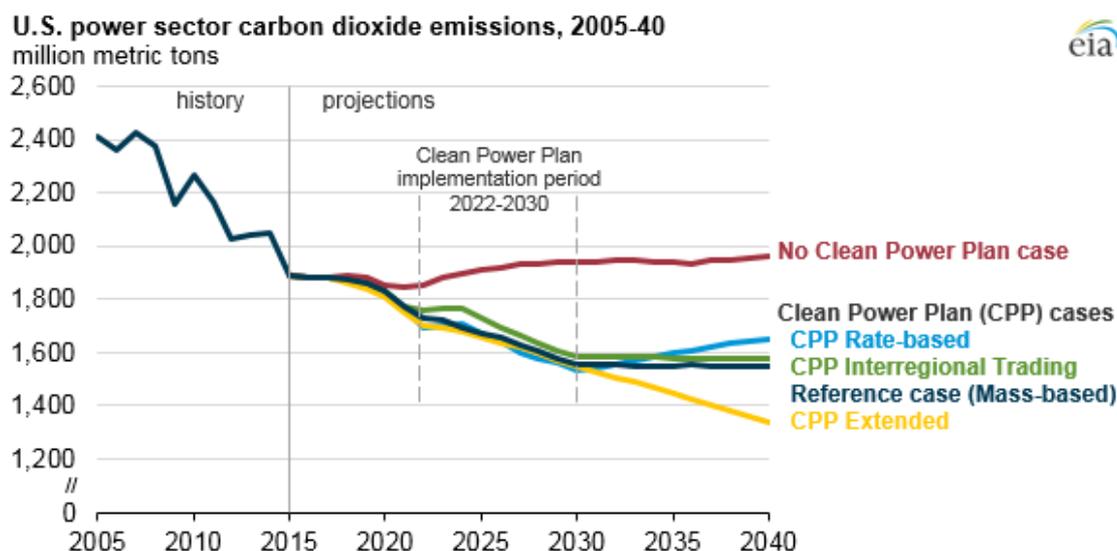
但李克强在重申中国的立场时变得严肃起来，称中国期望欧盟信守中国入世协议中的条款，该条规定：“在任何情况下”，允许把中国商品的价格与第三国进行比较的规定“将从加入之日起15年后失效”。

他指出中国钢铁产量的“90%以上”用于国内消费，并否认中国补贴钢材出口。

他表示，全球钢铁产能过剩需要各方携手共同应对，它不是任何一个国家要解决的问题。

Clean Energy (清洁能源)

Clean Power Plan implementation decisions affect CO2 emissions and electricity prices



Source: U.S. Energy Information Administration, Annual Energy Outlook 2016

The U.S. Environmental Protection Agency's (EPA) Clean Power Plan (CPP) regulates carbon dioxide (CO₂) emissions at existing fossil-fueled electric power plants, but the ultimate energy-related emissions effect depends to an important extent on how the rule will be implemented by states. Because the CPP provides the flexibility to choose different compliance options for reducing CO₂ emissions, EIA has produced an Issues in Focus analysis that considers several compliance paths.

One of the most significant options is the compliance metric itself. States may choose between mass-based standards, which impose an absolute cap on the amount of CO₂ allowances, or rate-based standards, which limit the amount of CO₂ per unit of electricity generated. Each state's choice may have implications for other states, as

the CPP provides the flexibility for states choosing the same compliance option to cooperate. For example, for two states complying with mass-based standards, a state with relatively low compliance costs could reduce CO₂ emissions below its target level and sell the excess allowances to another state with comparatively high compliance costs.

Instead of modeling each state individually, EIA's analysis considers 22 electricity market regions, which reflect electricity markets better than state borders.

In terms of CPP compliance, the AEO2016 Reference case assumes that the CPP is implemented according to schedule and that states comply with a mass-based standard.

The CPP Rate case assumes all regions choose rate-based standards instead of mass-based standards.

The CPP Interregional Trading case uses mass-based standards as in the Reference case but allows allowance trading within the Eastern Interconnection and within the Western Interconnection, the two largest interconnections of the North American electric grid, covering essentially all of the United States except much of Texas.

The CPP Allocation to Generators case assumes that the mass-based allowances are allocated to the generators that produce the power instead of to load-serving entities that sell the power to the end-use customers. The Reference case assumes that the allowances are allocated to the load-serving entities, and these revenues provide a rebate on consumers' bills. Allowances allocated to generators may result in the cost of the allowance flowing through to consumer prices.

The CPP Extended case further reduces mass-based targets after 2030 instead of maintaining a constant level as specified in the CPP. In this case, power-sector CO₂ emissions are required to be 45% below 2005 levels in 2040, compared to 35% in 2030.

The No CPP case assumes the CPP, which is currently on hold pending judicial review, is permanently voided.

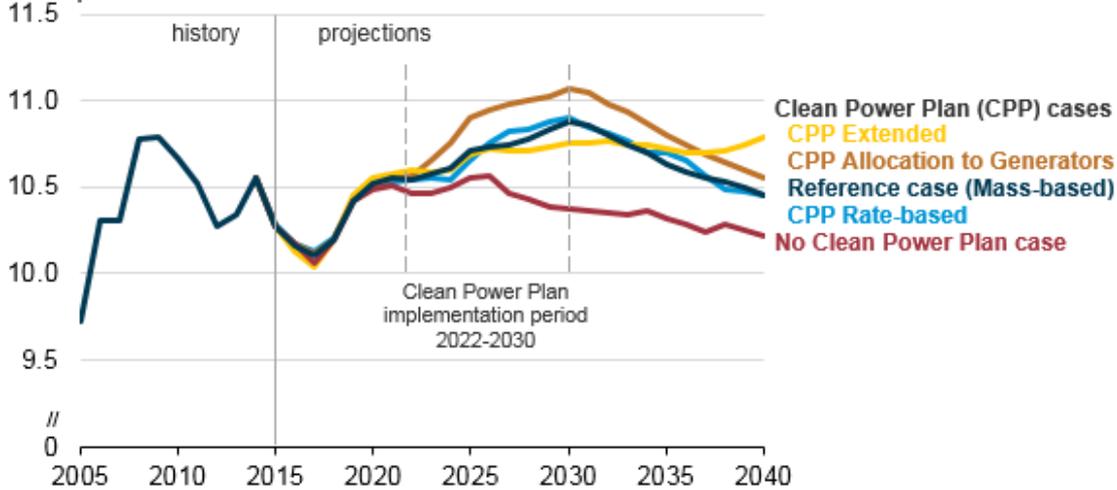
In general, power-sector CO₂ emissions are highest in the No CPP case and lowest in the CPP Extended case, at 19% and 45% below 2005 emissions levels in 2040, respectively. From an emissions savings perspective, all other scenarios are similar to the Reference case through 2030, where power-sector CO₂ emissions are about 35% below 2005 levels. In the CPP rate case, CO₂ emissions begin to rise after 2030 as both electricity generation and resulting emissions increase. In the CPP Interregional Trading case, CO₂ emissions are slightly higher than in the Reference case as a few regions have more stringent existing programs resulting in excess CPP allowances that can be sold to other markets.

Because the compliance paths have implications for compliance costs, the various CPP cases result in slightly different retail electricity prices. EIA projects higher retail electricity prices in the CPP cases primarily because of increases in fuel costs associated with shifting to natural gas-fired generation and capital costs associated with renewable capacity additions. Price effects are similar in the Reference and CPP rate cases where the average electricity price from 2022 through 2030 in both cases is 2% higher than in the No CPP case, and 3% higher on average from 2030 through 2040.

In the CPP Extended case, further reductions in CO₂ emissions after 2030 beyond the levels specified by the CPP require more renewable and natural gas-fired generation. The resulting electricity price in this case in 2040 is 3% higher than in the Reference case and 6% higher than in the No CPP case. In the CPP Allocation to Generators case, the allowances are distributed to generators instead of to load-serving entities and the cost of allowances is included in marginal production costs instead of rebated to consumers. As a result, the average electricity price from 2022 through 2040 in the CPP Allocation to Generators case is 1% higher than in the Reference case and 4% higher than in the No CPP case.

More analysis about the Clean Power Plan and detailed results for all of the CPP cases are included in the Annual Energy Outlook 2016 Issues in Focus article.

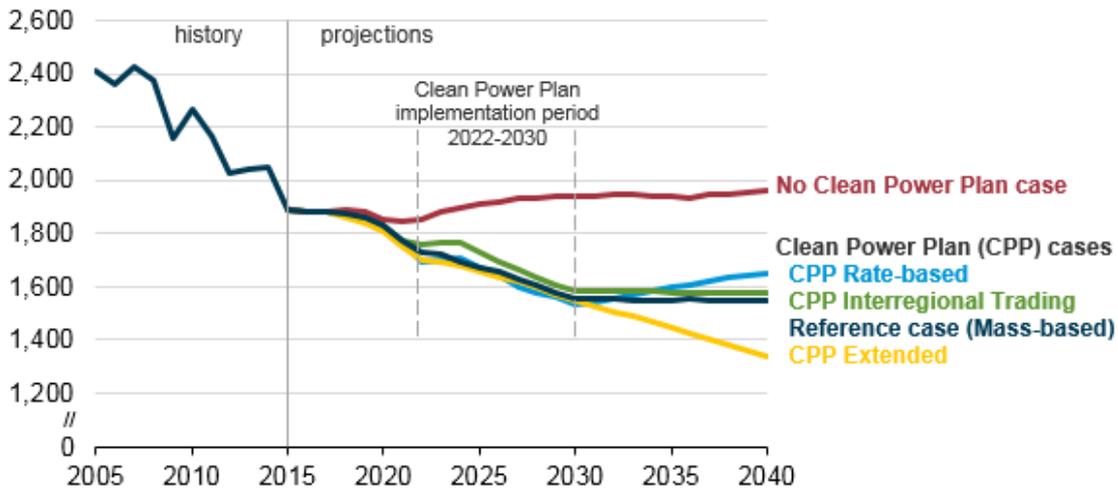
U.S. average retail electricity prices, 2005-40
cents per kilowatthour



Source: U.S. Energy Information Administration, Annual Energy Outlook 2016

清洁能源计划执行决定影响二氧化碳排放和电价

U.S. power sector carbon dioxide emissions, 2005-40
million metric tons



资料来源：2016 年美国能源信息管理局年度能源展望

美国环境保护署（EPA）清洁能源计划（CPP）规定了现有的化石燃料发电厂的二氧化碳（CO₂）排放量，但最终的能源消耗物的排放影响，在相当重要的程度上取决于州政府怎样执行该规定。由于 CPP 提供可灵活地选择减少二氧化碳排放量的不同种规定的方案，EIA 提出了一个焦点问题——综合考虑多方面的合规方案分析。

其中最重要的一点是规定标准本身。州政府可以选择以大众为基础的标准，即对超过 CO₂ 排放量的部分进行征税，也可以选择基于速率的标准，即限制每个单位发电量的 CO₂ 排放量。每个州的选择可能会对其他州政府产生影响，由于 CPP 给州政府提供了选择相同的规定标准以实现合作的灵活性。例如，两个州政府都采用以大众为基础的标准，达到规定标准的成本小的州会降低 CO₂ 排放量至标准值以下，并把多余的津贴卖给另一个成本较高的州。

替代单独对每一个州建模，EIA 的分析考虑了 22 个电力市场地区，比单个州之前的模型更能反映电

力市场。

就 CPP 规定而言，2016 年的 AEO 参考案例，假设 CPP 按照日程表执行，州政府采用以大众为基础的标准。

CPP 率案例假设所有政府选择基于速率的标准，而不是基于大众的标准。

CPP 的区域间贸易情况，在参考案例中使用基于大众的标准，但允许与东部互联和西部互联进行碳排放许可交易，北美电网两个最大的互联，业务基本上涵盖了所有美洲，除了大部分的德克萨斯州。

发电机的 CPP 分配情况假设基于大众的津贴被分配给产生能源的发电机，而不是将能源卖给终端消费者的负载体。参考案例假设津贴分配给负载体，而这些收入给消费者的账单提供了折扣。分配给发电机的津贴成本会流向消费者的购买费用。

在 2030 年以后，CPP 的不断执行进一步降低了使用基于大众标准的目标，而不是在 CPP 指定的允许排放量上保持恒定水平。在这种情况下，2040 年，电力部门的二氧化碳排放量必须比 2005 年的水平低 45%，相比之下，2030 年较 2005 年低 35%。

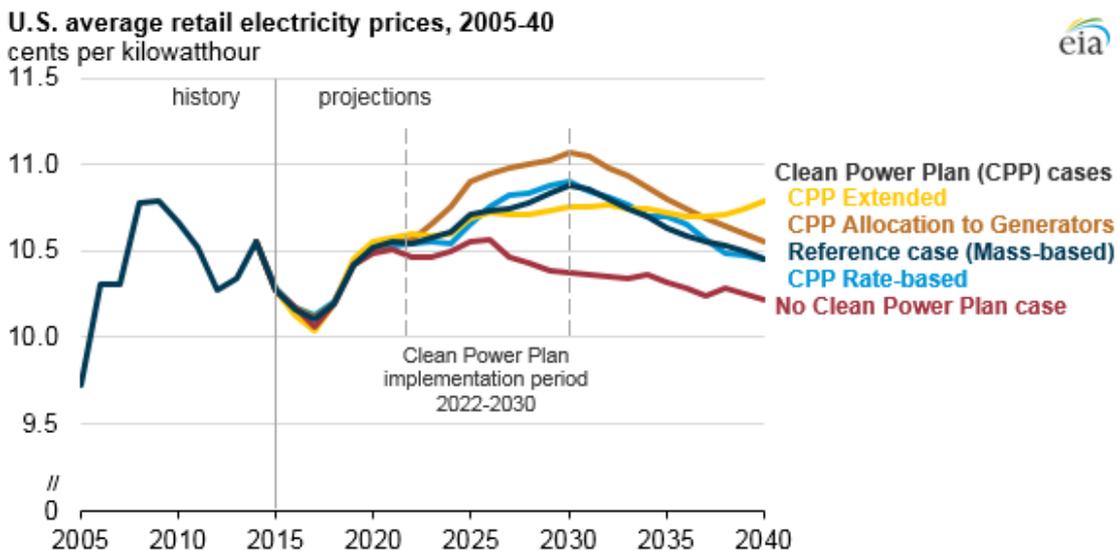
无 CPP 的情况假设 CPP（目前等待司法审查）永久失效。

在一般情况下，电力部门的二氧化碳排放量在没有 CPP 情况下是最高的，在衍生情况下是最低的，在 2040 年排放水平分别低于 2005 年的 19% 和 45%。从节约排放的角度来看，所有其他情况直到 2030 年斗鱼参考案例相似，电力行业的二氧化碳排放比 2005 年下降约 35%。在 CPP 速率的情况下，二氧化碳的排放量在 2030 年后开始上升，同样的发电量和排放产物都将增加。由于少数地区对于超额 CPP 补贴与其他市场的交易有严格的执行规划，在 CPP 区间贸易案例中，二氧化碳排放量稍微比参考案例的排放量高。

由于规则标准对规则成本的影响，不同的 CPP 的情况下导致稍有不同的零售电价。在 CPP 的情况下 EIA 项目表现较高的零售电价，主要是因为转变为天然气发电导致的燃油费增加和增加可再生能源资本的投资费用的增加。价格效应在参考情况和 CPP 速率情况下类似，在这两种情况下，平均电价从 2022 到 2030 年都比没有 CPP 情况下的高 2%，比 2030 年至 2040 年的平均水平高 3%。

在 CPP 衍射情况下，2030 后，二氧化碳排放量进一步降低，低于 CPP 规定要求的更多可再生能源和天然气燃煤发电的水平。这种情况下的电价，在 2040 年比参考情况下的电价高出 3%，比无 CPP 情况下的定价高出 6%。在 CPP 分配到发电机的情况下，津贴分配到发电机，而不是负载体，补贴成本包含在边际生产成本，而不是消费者的回扣中。其结果是，在 CPP 分配到发电机的情况下，平均电价从 2022 年到 2040 年比参考情况下的电价高出 1%，比在无 CPP 情况下的电价高 4%。

更多关于清洁能源计划的分析和所有的 CPP 案例的详细结果，参见《2016 年能源年度展望》的焦点文章中。



资料来源：2016年美国能源信息管理局年度能源展望

China's green revolution goes global

Smart investors are recognising that China intends to lead the US and other countries in the race to develop green technologies as part of its ambitious new strategy for economic growth.

China's 13th Five-Year Plan, for the period from 2016 to 2020, is guided by five principles: innovation, coordination, greening, opening up and sharing. When Zhang Gaoli, vice-premier, described these principles this year to a group of overseas business and academic leaders at the China Development Forum, he spent longest on 'greening', providing a clear indication of the importance being placed on green development for China's future growth.

In a conversation that followed, Li Keqiang, China's premier, told Mark Fields, chief executive of the Ford Motor Company, that sales of gasoline-powered cars are likely to be overtaken within the next two decades in China by those of "new energy vehicles". Both the emphasis and the exchange are indicative of China's plans for a clean economy, shifting away from carbon-intensive industries like iron and steel towards services, while seeking to maintain a robust 6.5 per cent GDP growth rate – the envy of many developed countries.

The old growth model based on manufacturing exports lifted millions of Chinese out of poverty and made China an economic superpower. But it also brought challenges including a coal-dominated energy mix that was damaging to people's health. Some recent estimates put the cost of damage to health from poor air quality, much of which is associated with burning fossil fuels, at around 10 per cent of China's GDP.

Now, however, China's policymakers are going to show the world decisively that climate action and economic growth go hand-in-hand. The 13th plan intends to move the country up the economic value chain towards consumption patterns that are less resource-intensive. The plan also makes explicit reference to managing the structural transition for workers in sectors such as coal, steel and iron, where production will be reduced to eliminate over-capacity.

So what does a green China mean for its own economic growth and for the world?

First, the climate agenda has taken firm root, with major positive shifts already underway. China will likely over-deliver on its commitments for 2020, which were made at the United Nations climate change summit in Cancún, Mexico, in December 2010. Researchers estimate that China is already on track to exceed its target of a 40-45 per cent reduction in carbon intensity from 2005 levels by 2020 and the reduction could be as high as 50 per cent. Next year will also see the world's largest emissions trading scheme being implemented across China, when the seven pilot trading systems currently in place expand to a national level. And recent research suggests that China's overall emissions will peak well before the year 2030 as indicated as part of its national pledge in the run-up to the United Nations climate change summit in Paris last December.

Second, reaching the renewable energy targets that China declared in the run-up to Paris translates into a rapid increase in clean energy investment. China's renewable energy investment in 2015 was \$110bn: a 17 per cent increase from the year before and nearly double the US renewable investment level. China has installed more wind capacity – 145 GW – than that in the US, Germany, and India combined. Utilisation is also rising: as part of the total primary energy consumption, the share of non-fossil fuels has also increased from roughly 8 per cent in 2010 to 12 per cent in 2015. Recent data suggest that these investments, as well as successful efforts to reduce coal use, may have helped carbon dioxide emissions slow, or even fall, last year. Indeed, China's coal consumption seems to have reached its peak in 2014.

And third, China is developing new and innovative financing mechanisms to drive the low-carbon transition and help reach its new development goals. Worldwide, the adoption of fossil fuel alternatives, even when cost-competitive, is often hindered by the larger up-front investments they require and by high costs of financing, particularly in emerging and developing economies. But China has been overcoming some of these challenges by

using well-structured, low-cost debt to finance renewable energy projects. These have been built by state-owned enterprises and financed by the China Development Bank.

There is still a long way to go and the private sector could – and should – play a key role. More private finance will need to be attracted to support green investments – financing that delivers energy savings, builds clean transportation or reduces pollution – with a potentially important role for a national green bonds market.

The necessary market framework is already being built. In December, the People's Bank established a green bond market, making China the first country to publish guidelines on the issuance of green bonds. The market opened to strong private interest in January 2016. The Shanghai Pudong Development Bank Company raised \$3.1bn, with the bank paying 3 per cent annual interest on its three-year bonds, a lower rate than the central bank benchmark for similarly-structured commercial bonds.

China's green bonds market is expected to grow to \$230bn within the next five years. That is already an impressive total but short of the \$450bn annually of clean energy investment needed for the next five years. The good news is that interest in green bonds is spreading beyond Chinese financial firms. Chinese carmaker BAIC Motor Corporation has reportedly applied for a \$740m green bond this year to fund production lines for energy-saving cars. Dirty production is now perceived as risky as the world moves towards low-carbon growth, making green bonds an especially attractive option.

Growth from green investing could also prove a boon for China. Ma Jun, chief economist at the People's Bank of China, estimates that with sufficient financing, demand for green investments could grow 10-15 per cent per year. Realising that potential could mean that 2016 shapes up to be a bellwether year for financing better growth.

China has already made green growth and its financing a key element for its ongoing presidency of the G20. The first meeting of the G20's Green Finance Study Group was held in Beijing in January this year; in April, at meeting of G20 finance ministers and central bank governors, the group was commissioned to come up with specific options for developing green banking and scaling-up the green bond market among other actions.

China is driving for sustainable growth, increases in living standards and reductions in poverty that can last, both at home and as a global leader. And where China goes today, many other countries can quickly and successfully follow.

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中国绿色革命走向全球

斯特恩：中国在推动绿色发展，把它作为新经济增长战略的一部分。它的成功经验可能很快被其他许多国家效仿。

聪明的投资者意识到，中国希望在发展绿色技术的竞赛中领先于美国和其他国家，把它作为新的经济增长战略的一部分。

中国的“十三五”规划（2016年至2020年）有5个指导原则：创新、协调、绿色、开放、共享。当中国副总理张高丽今年在中国发展高层论坛(China Development Forum)上向一众海外商界和学术界领导人描述这些原则的时候，他讲得最多的是“绿色”，明显表明中国未来的增长侧重于绿色发展。

在随后的一场谈话中，中国总理李克强告诉福特(Ford)首席执行官马克·菲尔茨(Mark Fields)，汽油动力车在中国市场的销售可能在今后二十年被那些“新能源汽车”超过。无论是张高丽的强调还是李克强的谈话都表明，中国计划发展清洁经济，从钢铁等碳排放密集型行业转向服务业，同时寻求保持让许多发达国家感到羡慕的6.5%的强劲GDP增长率。

基于制造业出口的旧增长模式让中国数百万人摆脱了贫困，使得中国成为一个超级经济大国。但它也带来了挑战，包括以煤炭为主导、对人体健康有害的能源构成。最近一些研究报告估计，因空气质量糟糕

——很大程度上与化石燃料燃烧有关——损害健康而造成的损失大约相当于中国 GDP 的 10%。

然而，现在中国的政策制定者打算果断向全世界表明，气候举措和经济增长是并行不悖的。“十三五”规划旨在提升中国在经济价值链上的位置，转向不太依赖资源的消费模式。该规划也明确提及管理煤炭和钢铁等行业工人的结构性转型——中国将会削减这些行业的生产以消除过剩产能。

那么绿色中国对其自身的经济增长和世界意味着什么？

首先，气候议程获得了坚实基础，现在已经发生了积极的重大变化。2010 年 12 月，中国在墨西哥坎昆举行的联合国气候变化峰会上承诺，到 2020 年碳强度较 2005 年水平下降 40%-45%，而届时中国的减排成果很可能比承诺的还要好——研究人员估计，中国已经有望超过承诺的目标，到 2020 年减排幅度可能高达 50%。中国明年还将实施全球最大的碳排放交易项目，当前的 7 个试点交易系统届时将会扩大至全国范围。中国在去年 12 月的巴黎联合国气候变化大会前夕承诺，将让整体排放水平在 2030 年前后达到峰值，但最近的研究表明，这一时间将会大大提前。

其次，实现中国在巴黎气候大会前夕宣布的可再生能源目标，落实为清洁能源投资的快速增加。2015 年，中国的可再生能源投资是 1100 亿美元，同比增长 17%，几乎是美国可再生能源投资水平的两倍。中国的风力发电产能（145 吉瓦）比美国、德国和印度的总和还要多。利用率也有所提高：非化石燃料占一次能源消费总量的份额，从 2010 年的约 8% 升至 2015 年的 12%。最近的数据表明，这些投资以及煤炭使用的成功削减，可能有助于去年的二氧化碳排放减缓增长乃至下降。实际上，中国的煤炭消费似乎在 2014 年就达到了峰值。

第三，中国正在发展新的创新性融资机制来推动低碳化转型，并帮助实现新的发展目标。就全世界范围而言，化石燃料替代物的使用，即便在成本上具有竞争力，也往往因所需的较大规模的先期投资和巨额融资成本而受阻，在新兴和发展中经济体当中尤其如此。但中国通过使用结构合理的低成本债务为可再生能源项目融资，克服了其中的一些挑战。这些项目由国有企业建设，由中国国家开发银行(CDB)提供资金。

但中国仍有很长的路要走，私营部门可以、也应当扮演关键角色。中国将需要吸引更多的私人资金支持绿色投资（节约能源、建设清洁交通或减少污染的投资），同时全国性绿色债券市场很可能扮演重要角色。

中国已经在建设必要的市场框架。去年 12 月，中国人民银行(People's Bank of China)建立了绿色债券市场，这让中国成为首个发布绿色债券发行指引的国家。绿色债券市场在 2016 年 1 月开放，吸引了私人资本的强烈兴趣。上海浦东发展银行(Shanghai Pudong Development Bank)通过发行 3 年期绿色债券筹集了 31 亿美元资金，年利率 3%，低于央行为类似结构的商业债券制定的基准利率。

中国的绿色债券市场规模有望在未来 5 年增长至 2300 亿美元。这种规模令人印象深刻，但考虑到今后 5 年所需的每年 4500 亿美元的清洁能源投资，这种规模还不够用。好消息是，不仅仅只有中国金融企业对绿色债券感兴趣。有报道称，中国汽车制造商北京汽车股份有限公司(BAIC Motor Corporation)今年申请发行 7.4 亿美元的绿色债券，为节能汽车生产线提供融资。随着世界转向低碳增长，“肮脏生产”现在被视为风险非常大，这让绿色债券成为一个具有特别吸引力的选项。

来自绿色投资的增长还可能被证明是中国的一个福音。中国人民银行首席经济学家马骏估计，如果有足够的融资，绿色投资需求可能每年增长 10%-15%。实现这种潜力可能意味着，2016 年很有可能成为开创性的一年，中国将从这一年开始，走上为更优质的增长提供融资的道路。

中国已经让绿色增长及其融资成为 20 国集团(G20)会议的主要议题（中国担任今年的 G20 轮值主席国）。G20 的绿色金融研究小组(Green Finance Study Group)今年 1 月在北京举行了首次会议；今年 4 月，在 G20 成员国财长和央行行长会议上，绿色金融研究小组受托拿出具体措施，发展绿色银行业、扩大绿色债券市场以及实施其他举措。

无论是在国内还是作为全球领军者，中国正在努力实现可持续增长，实现持久的生活水平提高和脱贫。中国今天的成功经验，可能很快被其他许多国家效仿。

The potential implications of the Federal Election for clean energy

There are three ways you can evaluate how the plight of the various major parties in this forthcoming election – Greens, Labor, Liberal or the Nick Xenophon Team – could impact on the clean energy sector:

1. The simple way – look at their emission reduction and energy policies purely on face value and in isolation from history and other statements and policies the parties might have committed to.
2. The complicated way – Evaluate the policies not just on what they offer but also on their credibility.
3. The extra complicated approach – Evaluate how the election result might influence the policy direction of all the various parties and whether it will lead to a supportive investment environment for clean energy that will be durable over multiple election cycles.

If you like things simple and don't have the time or interest in reading war gaming scenarios of political contests then you could just read Section 1 below.

If you are wary and mistrustful of politicians (probably everyone) but also have a bit of time up your sleeve, then go ahead and read Section 2 looking at the credibility of each party's clean energy promises.

And if you're a politics junkie with a deep interest in how politics could impact the clean energy sector then section 3 may be of interest.

1. The simple approach – evaluate the parties on the face value of their headline policies

If we evaluate the parties on the basis of number 1 then it's unambiguous that the Greens offer the best outcome for renewable energy and energy efficiency. On a headline basis they have a target for 90% renewable energy by 2030 and also a 60% to 80% reduction in Australia's overall emissions relative to year 2000 levels.

If such a target were to be achieved, irrespective of the policies employed, it would deliver a boom to businesses involved in renewable energy and energy efficiency. The Greens have also proposed a series of policies that could help expand the market for solar by supporting its installation on rental properties.

The Nick Xenophon Team's high level commitment to targets would also seem to usher in a boom, although not quite to the same scale as the Greens. Their policy platform indicates a commitment to reducing Australia's emissions by 40%-60% by 2030 and an increase in renewable energy's share of electricity demand to 50%.

Labor matches Xenophon with a 50% renewable energy target but its emissions reduction target is less ambitious, aiming for a 40% reduction on 2000 levels (45% on 2005 levels).

While the Coalition trails them all with no commitment to expand the level of renewable energy beyond the existing target for 2020 (which delivers something close to 23% market share of electricity) and an overall emission reduction target of about 19% to 21% below 2000 levels.

2. The complicated approach – are their promises credible?

But, of course, these are headline figures, and it's wise to also think about such commitments are credible.

Are they actually capable of implementing these targets? Can we believe they'll actually follow through on their commitments if given the opportunity or can they even create such an opportunity?

And if they do manage to follow through on their commitments, can we rely on them to remain in place over an extended period and not be unwound or undermined at a later period, perhaps when someone else wins government?

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Asking such questions tends to mark everyone down.

The Greens Party's main problem is that they are unable to persuade a large enough proportion of the electorate to elect them in numbers that they can form Government. Xenophon has exactly the same problem. They can have all the ambition in the world, but for their goals to become a reality they have to persuade either Labor or the Liberal-National party (LNP) to implement them.

Realistically, it seems unlikely the Greens could get either side close to agreeing to 90% renewables or a 60% to 80% reductions. The issue then becomes whether the Greens or Xenophon can at least use their numbers in the Senate (and possibly the House of Representatives in the event of neither Labor or the LNP holding a majority) to at the very least ensure the main parties honour their own commitments or upgrade them somewhat.

But there's also a risk that the Greens or Xenophon are too obstinate and in demanding a better deal for clean energy they reject policies that could have at least been an improvement on what is currently in place.

It is difficult at this stage to know how this might pan out.

The Greens

Nonetheless, it seems hard to believe that the Greens would reject say a Labor commitment to increase renewable energy to 50% share because they think 90% is required. But it is conceivable that the Greens might hold up another Labor initiative until Labor also followed through on implementing policies to deliver 50% renewables. This means the Greens could be handy as an insurance policy in at least ensuring they keep Labor honest on its commitments.

But they may find it more difficult to compromise with a Liberal-National Government in order to achieve incremental gains for clean energy. Even if the Liberal National party are offering improvements on the status quo, the Greens have been wary of co-operating on measures that might be seen as "locking-in failure" as they put it. This was the case when the Greens rejected the original Rudd Government legislation for an Emissions Trading Scheme (ETS).

The Nick Xenophon Team

Nick Xenophon is a quite different proposition. Xenophon has a range of other priorities outside of clean energy that he is passionate about and likely to favour in negotiations over other legislation. These include restrictions on gambling, reducing upstream water use in the Murray-Darling basin and support for South Australian manufacturing.

Xenophon has also illustrated a willingness to consider assisting the Liberal-National party in undermining some emission reduction initiatives where he felt this would be popular. For example he supported the Coalition's repeal of the carbon price without replacing it with something remotely equivalent in effectiveness (although was absent from the actual Senate vote).

In addition he has been keen to talk about co-operating with the Coalition on changes to the Renewable Energy Target aimed at disadvantaging wind power, which create risks for reducing the effectiveness of the scheme as a whole. Furthermore, the major lack of underlying policy detail about how the Xenophon Team would wish to deliver on renewable energy and emission reduction targets is suggestive of a party that isn't all that strongly committed to these targets.

Where Xenophon could be helpful is negotiating with a Coalition Government to deliver incremental gains for clean energy, which the Greens and Labor refuse to consider. Xenophon's decision to pass the Emission Reduction Fund (ERF) legislation in return for introduction of regulations that form the framework for a future pseudo ETS (the safeguard mechanism) is an example of him playing such a role.

While Xenophon supported the repeal of the carbon price and the introduction of the Emission Reduction Fund, he has also made it clear that he believes the budget-funded ERF is an inadequate response to reducing emissions.

He has said he thinks it ultimately needs to be replaced by an emissions trading scheme known as 'baseline and

credit' which would involve tightening the emission caps applied under the government's Safeguard Mechanism. This has the potential, if designed appropriately, to push out coal and replace it with renewable energy.

Labor

In terms of Labor their policy platform is actually incredibly ambitious relative to where we find ourselves at present.

Achieving 50% renewable energy by 2030 would lead to a large and sustained increase in the level of renewable energy installation activity. The 40% emission reduction target likewise is very ambitious relative to what Australia has achieved to date. But it's ultimate benefit to Australian clean energy businesses is hard to judge because Labor has said they would allow the use of international carbon credits in seeking to achieve such a target.

There is a very large and very cheap pool of these credits available. Given their low price they would act to deter significant emission reductions activity occurring domestically for several years if their use was unconstrained. Although supplementing this emission reduction target is also a commitment to double Australia's energy productivity which requires a substantial uplift in energy efficiency activity.

Overall, Labor's platform, if followed through would provide a dramatic stimulus to the clean energy sector. Yet there is a lack of detail about how Labor would seek to drive the doubling in energy productivity. Labor has also been vague about how it would underpin 50% renewable energy stating that this would not necessarily entail an expansion of the targets within the existing Renewable Energy Target (RET) scheme.

Also, some Labor MPs have suggested the target is "aspirational" – not a good sign at all. These two aspects of their platform raise red flags. Without policy mechanisms locked down, there is room for delays and lobbying by opponents that can lead to policies that politicians can claim to honour election commitment but are ultimately unable to deliver on targets.

Liberal-National Coalition

The Liberal National coalition are characterised by a similar problem as Labor, although with significantly weaker targets. While they have no renewable energy target and their emission reduction target is far less ambitious than the other parties it should still require some significant changes in our use and supply of energy. To achieve the 19-21% emission reduction one would expect both a major substitution of coal with renewables beyond the existing 2020 RET scheme target, and also a significant uplift in energy efficiency policy efforts.

However, the problem at this stage is the Coalition have so far refused to detail a credible policy pathway for achieving the 2030 target.

Most of the funding for their Emission Reduction Fund has now been committed and the additional funding that was announced when the 2030 target was unveiled at \$100m per annum would not make meaningful inroads into Australia's expected emissions given the track record of past ERF auctions.

The regulations surrounding the safeguard mechanism – which places a cap on large emitter's emissions – are set at levels too weak to drive noticeable reductions in emissions and also contain a series of glaring loopholes.

Lastly, their Energy Productivity Plan will make little difference to Australia's emissions unless the government removes one of its so called anti-red tape measures which has frozen efforts to introduce more advanced regulatory standards on the energy efficiency of appliances and equipment. In addition, the Energy Productivity Plan does not involve any initiative to expand the existing NSW and Victorian energy efficiency target schemes to a national level.

To have faith that the Liberal-National Party will deliver on their targets requires one to believe they will make a substantial change in policy direction. This to a large extent depends on the degree to which you believe Malcolm Turnbull will take his Government in a different direction to that led by Tony Abbott.

3. The extra complicated approach – Thinking beyond this election and onto the next

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If you were to assume that the only thing that matters is what happens in the next 3 year term of government then Labor being elected to government, with the Greens holding the balance of power in the Senate, would appear to hold the best prospects for the Clean Energy Sector.

Even if Labor were to go a little weak in the knees about following through on their commitments, the Greens would presumably wield their numbers in the Senate to ensure Labor followed through.

However, it's also worth thinking about how a Labor victory might affect the Liberal-National Coalition, because it's not just what happens in the next 3 years, but also what happens beyond it.

A loss by the Liberal-National Party after just one term of government could conceivably take them in two very different directions. One way could be incredibly favourable to clean energy and another that would be incredibly damaging, effectively undermining any policy progress delivered by a Labor government.

Under one scenario an election loss for the Coalition might be taken as a lesson that under Tony Abbott they lurched too far to the right of the political spectrum and need to adopt a more moderate approach, closer to that of Labor.

While they may have lost the election, the odds are it would be only very narrow, and a vast improvement over where polling suggested they'd be while Abbott was leader. In essence the loss is seen not as a failure of Turnbull, but instead a case of making a change in direction from Abbott that was too little, too late.

This could herald a more supportive attitude towards renewable energy and a greater acceptance of regulatory measures to reduce emissions. This would of course be great news for the clean energy sector, restoring a degree of bipartisanship to the area, reducing regulatory uncertainty and enhancing investment confidence.

But it is also conceivable that things could move in the opposite direction. While Turnbull may have achieved a remarkable turnaround in the polls, conservative sections in the party may see the election loss as affirmation that a switch to Turnbull was the wrong decision.

History also suggests that if Turnbull were to lose this election then he would lose the leadership of the party. This would likely mean a new leader closer in outlook to the conservative segment of the Liberal National Party.

Given Abbott's negative scare campaign on the carbon price while in opposition was incredibly effective, the new leadership may be very tempted to recycle this approach in opposing Labor's emission reduction policies as an "electricity tax". This could land the clean energy sector back where it was in 2012. While there might be a range of supportive policies legislated, the extent to which they could support clean energy investment would be undermined because they might be repealed in the next term of government.

The potential for this horror scenario to play out after a Labor victory, and the fact that Malcolm Turnbull is known to be incredibly passionate about addressing climate change, means that assessing the implications of this election are not straightforward. Indeed one needs to also consider the possibility that the Greens' and Xenophon's hold on the balance of power in the Senate could empower Turnbull to overcome resistance within his own party.

Turnbull and his allies will undoubtedly face resistance from conservative elements within his own party to enacting more meaningful emission reduction policies. But if they are clever they may be able to use Xenophon and the Greens as an excuse to enact these policies in order to get assistance passing other non-climate related legislation.

Over time this might move the Liberal-National Party more towards the centre as they find themselves defending emission reduction policies they previously would have opposed in opposition. This then makes it easier for Labor to maintain their own reasonably ambitious targets and solidifies the long-term investment environment for clean energy.

So there you go, it's about as clear as mud. The election could go either way and be potentially wonderful or horrible for the clean energy sector.

Still, compared to where we were in the 2013 election the prospects for clean energy on balance look vastly better than 3 years earlier. That is surely a good thing.

澳大利亚选择清洁能源的潜在影响

你可以通过三个方面评价即将到来的选举中众多主流派别的困境—格林党，劳工党，自由党或是独立参议员色诺芬团队—将会在清洁能源板块产生影响：

1.简单的方法—单从表面价值来看起减排和能源政策，不管这些派别提出的以前的问题，其他的言论和政策等等。

2.复杂的方法—不仅从政策的内容来评价，还要看政策的可信度

3.另一种复杂的方法—评价选举结果会对各派别的政策方向造成怎样的影响，它是否会制造一个有利于清洁能源发展的投资环境，这比一轮投票作用更持久。

如果你喜欢事情简单，并且没有时间或者兴趣参与政治竞争的斗争游戏，你可以阅读下文中的第一部分。

如果你行事谨慎，并且对政客们（也可能是所有政客们）并不绝对相信，但是有时间去理清其中的思绪，那么继续前进吧，阅读第二部分，其中阐述了每一个党派关于清洁能源誓约的可信度。

如果你痴迷政治，对政策如何影响清洁能源板块十分感兴趣，那么第三部分应该合你的胃口。

1.简单的方法-从其头条政策的表面价值上评价党派

如果我们基于第一条的要求评价党派们，毫无疑问的格林派在可再生能源和能源使用效率方面成绩卓越。在头条政策的基础上，他们的目标是到 2030 年可再生能源达到 90%，同时相比 2000 年水平，澳大利亚的整体排放将减少 60%-80%。

如果这个目标达成，不管雇佣政策是如何，这都将给可再生能源和能源使用效率相关的产业带来爆炸性的改变。格林派也出台了一系列的政策，这些政策能够通过给出租物业安装太阳能来帮助扩大太阳能市场。

独立参议员色诺芬团队对达成目标的坚定承诺看起来也会带了一场风波，虽然规模不如格林派。他们的政策平台揭示了他们承诺到 2030 年澳大利亚排放减少 40%-60%，可再生能源作为燃料发电的比例上升至 50%。

劳工党和独立参议员色诺芬在 50% 可再生能源目标上一致，但是劳工党的减排目标没有那么贪心，只要求在 2000 年的水平上减少 40%（2005 年水平上减少 45%）。

然而联盟指责他们没有承诺扩大可再生能源水平，并没有超越 2020 年的目标（发电能源中可再生能源占 23%）并且总排量只比 2000 年的水平低 19%-21%。

2.复杂的办法-他们的承诺可信吗？

但是当然了，这些都是头条上写的东西，我们也需要仔细考虑这些承诺是否可信。

他们确实有能力执行这些目标吗？我们可以相信他们确实有机会或者可以自己创造机会去履行他们的承诺吗？

如果我们跟踪管理他们所做的承诺，一段时间之后我们还能相信他们一直在努力吗？如果未来政权更迭，政府易主，他们是否还会坚守承诺？

这些问题一经提出恐怕每一个人都有些失望。

格林派最主要的问题是他们没有能力说服大部分选民给他们投票，使得他们的票数够高可以组建政府。独立参议员色诺芬也面临同样的问题。他们可以有世界一般大的抱负，但是要实现他们的目标他们就必须说服劳工党或者自由党去贯彻执行。

实际上，格林派不可能说服其他人支持它的 90% 可再生能源和 60%-80% 的减排目标。随后问题就变成了格林派或者色诺芬在参议院中至少能利用他们本身的人数（如果众议院中劳工党和自由党人数都不太多的话，也可能是众议院）确保主要的派别能够支持他们自己的承诺。

但是仍旧存在一项风险，那就是格林派和色诺芬都太固执，他们为了在清洁能源方面达成更好的效果，拒绝了一些最少能对现阶段清洁能源状况有所帮助的政策。

现阶段很难知道是否能够成功。

格林派

尽管如此，很难相信格林派会反对劳工党关于提高清洁能源比例到 50% 的承诺，因为他们认为 90% 才能达到要求。但是可想而知，格林派会破坏劳工党的积极性直到劳工党愿意执行 50% 清洁能源的政策。这表明格林派的做法可以作为一项保险政策，至少保证劳工党能够坚守承诺。

但是他们发现，为了实现清洁能源增量得利的目标，很难和自由党达成妥协。即使自由党能在维持现状的基础上有所提升，格林派对发布可能会“锁定失败”的合作措施持谨慎态度。格林派在拒绝原来陆克文政府商业排放条例（ETS）时就是这种情况。

色诺芬团队

色诺芬团队情况很不一样。色诺芬团队除清洁能源以外有一系列其他优先事项，他更热衷于其他立法上的谈判。这包括赌博的限制，减少墨累达令盆地的上游用水，支持南澳制造业发展。

色诺芬也在考虑帮助自由党暗中破坏减排积极性，他认为这可能会很流行。比方说，他支持联盟撤销碳价格，而不是用一些效益上等值的东西取而代之（虽然在实际的参议院投票中他并没有出席）。

另外，他热衷于谈论与联盟在改变可再生能源目标的合作，针对条件不利的风能，利用风能会面临总体总体效益下降的风险。更甚的是，具体描述色诺芬团队希望使用什么样的清洁能源和减排目标的内在政策的缺乏暗示这个派别没有足够的力量承诺达成这些目标。

在与联盟政府谈判关于清洁能源增量得利目标时色诺芬会很有帮助，这个目标格林派和劳工党是拒绝的。色诺芬决定通过减排基金（ERF）的立法取代形成未来伪 ETS（保险机制）框架，这种做法就是他所扮演的角色的一个典例。

色诺芬支持撤销碳价格，成立减排基金，他也明确表示他相信预算基金 ERF 是对减排的不适当反应。

他说过他认为这最终还是会被商业排放计划所取代，这个计划我们称为“底线和可信度”，这包括在政府保障机制作用下坚持排放目标。如果计划得当，是有这个潜力用清洁能源取代煤的。

劳工党

劳工党方面，他们的政策平台相对于我们目前所处境地而言确实野心勃勃。

实现到 2030 年 50% 可再生能源的目标，会导致清洁能源安装水平有一个很大并且持久的提升。相比较澳大利亚过去实现的目标而言，40% 的减排目标同样野心勃勃。但是很难判断这最终是否会有利于澳大利亚清洁能源产业的发展，因为劳工党说过他们允许使用国际碳信贷。

这些信贷可使用的范围很大，代价也很低。鉴于其低廉的价格，如果他们的行为不受约束，他们将会采取行动组织国内进行多年的意义重大的减排行动。虽然执行减排目标也是承诺澳大利亚的能源生产率翻番，这样才能为提高能源效益提供持久动力。

总的来说，如果坚持劳工党的平台，会对清洁能源领域产生一个戏剧化的刺激。然而现在缺乏对劳工党如何使能源生产率翻番的具体计划。

同样的，一些劳工党参议员认为这个目标是“梦寐以求的”-这不是个好现象。他们平台中的这两个方面举了红旗。没有政策机制锁定，就给反对者提供了通道，导致政策进程拖延，政客们在选举中信誓旦旦但是最后却完成不了目标。

自由国家联盟

自由国家联盟和劳工党存在类似问题，虽然目标较弱。他们没有可再生能源目标，他们的减排目标比其他派别小得多，它应该要求在我们的能源使用和供应方面做出一些意义重大的改变。为了实现 19%-21% 的减排目标，用可再生能源取代煤的使用，其规模必须超出 2020RET 计划目标，在能源效益政策效果上也必须有大的提升。

然而，现阶段主要的问题是联盟一致拒绝制定一条为实现 2030 目标的可靠的政策道路。

减排基金中的发部分基金都做了承诺，其他的一些基金也发布声明称每年 1 亿美金不会使得澳大利亚预期的减排目标取得进展。

围绕保险机制的那些规章-给主要排放方的排放量扣了帽子-减排的水平太低并且包含一系列漏洞。

最后，他们的能源生产计划会对澳大利亚的排放产生影响，除非政府除掉其所谓的反红措施，这些措施阻碍了引进更科学的管理应用和设备的能源效能的条例。另外，能源生产计划没有计划扩大现存的 NSW，也没有计划将 Victorian 能源效能目标计划提升一个层次。

要对自由党能够完成目标保持信心就需要我们相信他们会在政策方向上做出重大改变。这在很大程度上取决于 Malcolm Turnbull 将会在 Tony Abbott 的领导下引导他的政府走向一个不同的方向。

3.另一种复杂的方式-想得长远一些，不要拘泥于眼下的选举

如果你假设唯一有影响的事就在于后三年新政府会做什么，那么劳工党会赢得大选，格林派在参议院把控票数，似乎已经掌握了清洁能源板块的良好前景。

即时劳工党在实现承诺方面能力稍弱，格林派想必也会运用她们在参议院中的票数保证劳工党能坚持到底。

然而，劳工党的胜利会对自由国家联盟造成什么影响也是值得思考的，因为这不仅仅是未来三年可能有什么影响，影响的时间远远不止这未来三年。

自由国家联盟只在一个政府任期后就失败显然会将它们分成两个完全不同的方向。一个显然会偏好清洁能源，而另一边则毫无疑问会搞破坏，暗中破坏劳工党政府出台政策的进程。

联盟大选失败的画面是一个教训，在 Tony Abbott 的带领下，他们严重偏离了政治图谱，需要找到一个更适中的方式，与劳工党的相近。

虽然他们可能失了选举，但是几率很小，在 Abbott 担任领袖期间投票会产生很大的进步。实质上，这个失败并不看作是 Turnbull 个人的失败，而作为改变 Abbott 方向的事件来说力量太小，作用太晚。

这预示着对可再生能源的积极态度，以及对减排出台更好的政策措施。这些对能源板块来说毫无疑问是利好消息，恢复这一领域上某种程度的两党合作，减少不必要的管控，加强投资信心。

但是事情也可能朝着相反的方向发展。Turnbull 可能在选举中出现票数大逆转，党内保守派认为支持 Turnbull 是个错误的决定，会失了大选。

历史也表明如果 Turnbull 大选失败，那么他就会失掉党内领导权。这说明新任领导人可能更亲近自由国家派内的保守派。

鉴于 Abbott 对于碳价格的危言耸听，新任领导人会重走老路，将劳工党的减排政策作为一项“电力税”。这将会使能源板块的状况回到 2012 年。那时候出台了一系列支持性的政策，某种程度上支持了地下的清洁能源投资，因为下一届政府可能会发对。

在劳工党胜利后，这个恐怖场景的潜能就会爆发，事实上 Malcolm Turnbull 热衷于改变气候，表明这次选举的意义不简单。确实需要考虑格林派和色诺芬在参议院维持票数平衡的可能性，这将会帮助 Turnbull 克服党内阻力。

Turnbull 和他的支持者将必须直面党内保守派的阻碍，他们希望他制定一个更有意义的减排政策。但是他们如果够聪明就应该利用色诺芬和格林派作为借口颁布这些政策去组织其他气候有关的立法。

一段时间以后，这将会把自由国家派推向风口浪尖。这使得劳工党更容易维持他们自己的合理的野心勃勃的目标，并且稳固长期的清洁能源环境投资。

就是这样。大选可能以任一方式进行，对清洁能源板块的发展可能好也可能坏。

然而，相比 2013 年大选时,我们对维持清洁能源的前景来看，比三年前好太多。这确实是件好事。

Brexit result prompts renewed calls for low-carbon investment certainty

Mcanxixun Information

Confirmation that the UK has voted to leave the European Union has prompted fresh calls for the low-carbon sector to be granted more investment certainty.

The 'Brexit' referendum, in which 52% of voters decided that the UK should leave the EU, has sparked early turmoil in financial markets and has hit banking and investment sectors particularly hard.

The FTSE fell more than 500 points in early trading - the worst decline on record - while the value of the GBP slumped to a 31-year low in the immediate aftermath.

Those repercussions stand only to further dampen an appetite for investment in the UK's clean energy sector which the energy and climate change select committee warned earlier this year had been significantly impacted by the UK government's approach to subsidies and other support frameworks.

Nick Molho, executive director at Aldersgate Group, warned that it would be imperative for the UK to continue to engage in the financing of a transition to a low-carbon economy.

"Environmental and low carbon economy issues were largely overlooked during the EU referendum campaign... Today, its [the UK's] low carbon and renewable energy economy has a turnover in excess of £46 billion, employs over 238,000 full time workers directly and British businesses are leading exporters of clean technologies such as ultra-low emission cars.

"With serious environmental issues facing the world and with low carbon investment rapidly growing globally, it is in the UK's economic and environmental interest to engage positively in international negotiations on climate change and other environmental and support the growth of its low carbon economy through national policy," he said.

Molho concluded by arguing that a "robust carbon plan" must now be among the "essential priorities" for the government, echoing similar calls from UK Renewable Energy Association chief executive Nina Skorupska CBE.

"This result raises serious questions for investor certainty, energy security and much needed investment in the UK energy infrastructure," Skorupska said.

The immediate effect on investor confidence in the UK remains unclear but according to Dustin Benson, head of energy and resources at the Green Alliance, the investment community will need reassurance.

Speaking to Solar Power Portal earlier today, he said: "I don't think there's any investor that's looking at the UK and smiling today. This is obviously a major upset, it wasn't expected by the investment community and it raises a whole host of new policy questions and uncertainties.

"The upside is that we have the opportunity to reassure investors and commit to continuing our decarbonisation journey. We have our own domestic climate change act which gives us the legal framework and direction to do that whether we're in the EU or not so certainly all of the formal mechanisms are there to carry on."

"It is in the UK's economic and environmental interest to engage positively in international negotiations on climate change and other environmental and support the growth of its low carbon economy through national policy." - Nick Molho, executive director, Aldersgate Group.

David Wadham, utilities partner at international law firm Ashurst, said that it was vital the government moved to put investors minds at ease.

"The outcome raises so many questions for the UK power industry, and in particular the renewables sector, that it is vital that the government takes swift action to ensure there is sufficient certainty to allow power companies to make investment decisions. In particular developers need clarity on any impact on the next CfD allocation round scheduled for later this year," he added.

Meanwhile Richard Black, director at the Energy and Climate Change Intelligence Unit, warned that a failure to allay investor concerns would risk an increase in consumer bills.

“Leaving the EU is likely to put an upwards pressure on energy bills, partly due to the direct financial costs of Brexit and also the impact of reduced investor confidence. So an immediate challenge for the government following this vote will be to prevent bills rising.

“Affordability and security of supply have been enhanced by our increasing gas and electricity connections with the EU. A choice for the government now is whether it wants to continue expanding those connections and hence the benefits to hard-working British families, or to shut up shop.

The issue looks certain to be referenced during a surprise ECC select committee - a parliamentary working group established to scrutinise government policy - evidence session focusing on investment certainty which was announced prior to the referendum result yesterday afternoon.

Energy minister Andrea Leadsom - herself a prominent figure for the Leave campaign - will face questions from the select committee next Wednesday at 9:30am.

英国脱欧结果引发对低碳投资确定性的再次呼吁

确认英国已投票离开欧盟，引发了授予低碳部门更多投资确定性的最新呼吁。

在“英国脱欧”公投中，52%的选民决定英国应该离开欧盟，引发了金融市场的动荡，对于银行业和投资领域的打击尤为严重。

富时指数(FTSE)在早盘交易中下跌超过五百点——是有史以来最大跌幅——而英镑价值随后立即暴跌至三十一年以来最低。

这些影响进一步抑制了投资英国清洁能源领域的欲望，能源和气候变化特别委员会今年早些时候警告，投资欲望受到英国政府的补贴及其他支持框架的极大影响。

Aldersgate Group 的执行董事 Nick Molho 警告，当务之急是英国继续从事向低碳经济过渡的融资。

“环保和低碳经济问题在欧盟公投运动期间被极大忽视.....今天，英国的低碳和可再生能源经济营业额超过四百六十亿英镑，直接聘用超过 23.8 万名全职员工，英国企业是超低排放汽车等清洁技术的主要出口商。”

他表示：“鉴于世界面临严重的环境问题，以及全球低碳投资正在迅速增加，积极参与关于气候变化和其他环保国际协商，以及通过国家政策支持低碳经济的发展，符合英国的经济和环境利益。”

Molho 认为，“强有力的碳计划”现在必须成为政府的“基本优先事项”，这一理念得到英国可再生能源协会首席执行官 Nina Skorupska 爵士的类似呼应。

Skorupska 表示：“公投结果引起关于投资者确定性、能源安全以及英国能源基础设施急需投资的严重问题。”

对于英国投资者信心的直接影响仍不清楚，但是根据 Green Alliance 的能源和资源负责人达斯汀·班森(Dustin Benson)，投资界需要得到保证。

早些时候接受 Solar Power Portal 采访时，他表示：“我认为今天着眼于英国的任何投资者都不会微笑。这显然是一项巨大的颠覆，投资界此前没有预期到这一点，这带来了大量新的政策问题以及不确定性。”

“好的一面是，我们有机会安抚投资者，并承诺继续我们的低碳之旅。我们拥有自己的国内气候变化法案，为我们提供法律框架及方向，无论是否我们在欧盟，所有的正式机制都在进行。”

国际律师事务所 Ashurst 的公共事业合作伙伴大卫·沃德姆(David Wadham)表示，政府使投资者安心是至关重要的。

他补充道：“该结果对于英国电力行业提出许多问题，特别是在可再生能源领域，至关重要的是，政府采取迅速行动，确保使电力公司能够作出投资决定的充足的确定性。特别是开发商需要明确对定于今年晚些时候的下一轮差价合约分配的任何影响。”

与此同时，能源和气候变化信息部总监理查德·布莱克(Richard Black)警告，这不能消除投资者的担忧或引发消费账单提高的风险。

Mcanxixun Information

“一定程度上由于英国脱欧的直接经济成本，离开欧盟可能增加对于能源账单的压力，同时还降低投资者的信心。因此，在此次投票后，对于政府的直接挑战是阻止账单提升。”

“通过我们与欧盟扩大天然气和电力联系，支付能力及供应安全得以增强。英国政府现在的选择是希望继续扩大这些联系，因此惠及勤劳的英国家庭，还是关闭。”

在令人惊讶的能源和气候变化特别委员会期间必然提及该问题——建立一个议会工作组来审议政府政策——在公投结果之前，宣布专注于投资确定性的会议。

能源部长 Andrea Leadsom——本身是该离开运动的突出人物——本周三上午九点三十分将面临特别委员会的提问。

US, Canada & Mexico joint pledge to source 50% of electricity from clean energy by 2025

The US, Canada and Mexico are set to announce that 50% of North America’s electricity will come from clean power sources by 2025, at the ‘Three Amigos’ summit in Ottawa tomorrow.

The White House has announced that Barack Obama, Justin Trudeau and Enrique Peña Nieto will commit to an “aggressive but achievable goal” to jump from the current collective clean power levels of about 37% to meet the new target. Wind, solar, hydropower, nuclear plants, carbon capture and storage, as well as energy efficiency measures are on the cards to catapult North America into a new regime of clean electricity.

The commitment is to be a joint one, rather than an individual target to be met by each nation. The initiative will require the most work in the US, who despite leading the pack in terms of solar installations – with a total installed capacity of 27.4GW – in comparison to Canada’s 2.5GW and Mexico’s 104MW, only derives around a third of its power from clean energy sources. Similarly, Mexico produces less than 20% of its power from clean energy – but officials in the country are building upon a pre-existing pledge to reach 35% by 2024. Mexico is also pledging to reduce methane emissions by 40%-45% by 2025; joining in on a pledge already made earlier this year by its North American counterparts.

Canada, home to a flourishing hydroelectric industry, currently produces 81% of its electricity from clean sources, according to statistics by the Canadian Broadcasting Corporation.

In addition to the new target, summit leaders are also expected to announce new agreements to make it easier and cheaper to both trade and transmit clean energy across North America, to give greater value to integration across the continent.

Alignment across the continent

White House senior adviser Brian Deese said in widely reported statements that the alignment across the continent “is stronger than it has been in decades...In all three countries, there is a significant move toward a clean energy economy”.

A new report by environmental experts from the three nations published last week urged the countries to coordinate more on their climate goals in the wake of ambitions outlined in Paris during COP21.

“For the first time in recent memory, the national governments of the United States, Mexico, and Canada are politically aligned on climate change,” the report stated. “The three countries should take this opportunity to explore and launch coordinated climate initiatives that could propel the shift to clean energy across the continent and – through international leadership – accelerate the reduction of greenhouse gas pollution globally.”

This will be the first trilateral summit between the nations in more than two and a half years. Last year’s summit was stalled over the Canada-US dispute over the Keystone XL oil pipeline, and a dispute between Canada and

Mexico over visa requirements.

美国、加拿大和墨西哥联合承诺到 2025 年 50% 的电力来自清洁能源

美国、加拿大和墨西哥将在明天的渥太华“三友”峰会宣布，到 2025 年北美 50% 的电力将来自清洁能源。

白宫日前宣布，巴拉克·奥巴马(Barack Obama)、贾斯汀·特鲁多(Justin Trudeau)和恩里克·培尼亚·涅托(Enrique Peña Nieto)将致力于一个“积极但可以实现的目标”，从目前共同 37% 左右的清洁能源水平跃居到满足新的目标。风能、太阳能、水电、核电站、碳捕获和储存，以及能源效率措施，可能使北美实现新的清洁电力机制。

该承诺是联合的，而非单个国家满足个体目标。该计划将要求大部分工作在美国，尽管美国在太阳能安装方面领先群雄——总安装量为 27.4GW——而加拿大为 2.5GW、墨西哥为 104MW，但是仅三分之一左右的电力来自清洁能源。同样，墨西哥不足 20% 的电力来自清洁能源——但是该国官员正立足于已存在的承诺，到 2024 年实现 35%。墨西哥还承诺到 2025 年将甲烷排放减少 40%-45%，加入今年早些时候其美国同行已作出的承诺。

根据加拿大广播公司的统计数据，加拿大水电行业蓬勃发展，目前其电力的 81% 来自清洁能源。

除了新的目标，预计峰会领导人还将宣布新的协议，使北美交易和传输清洁能源更容易且更便宜，给予整个大陆一体化更大的价值。

大陆结盟

白宫高级顾问布莱·恩迪斯(Brian Deese)在广泛报道的声明中表示，整个大陆结盟“比十年间任何时候都要强劲……这三个国家，为实现清洁能源经济做出重大举措”。

上周公布的三国环保专家的一份新报告敦促，在巴黎 COP21 期间概述雄心后，三国应就其气候目标取得进一步合作。

该报告表示：“最近的记忆中首次，美国、墨西哥和加拿大国家政府就气候变化取得政治上的一致。三国应该抓住这次机会，探索并推出协调气候倡议，可以推进整个大陆向清洁能源的转变——通过国际领导力——加速全球温室气体污染的减少。”

这将是三国间在超过两年半的时间里首次三边峰会。去年的峰会由于加拿大美国就 Keystone XL 石油管道的争议，以及加拿大和墨西哥就签证要求的争议而搁置。

Global energy sector accounts for 19% of green bonds in 2016, says report

The latest report from the Climate Bonds Initiative, an investor-focused non-profit organisation, found that of the US\$694 billion of climate bonds outstanding in 2016, energy accounted for 19% at US\$130 billion, exemplifying a push in investment for renewable energy projects.

The overall US\$694 is an increase of US\$96 billion (16%) on last year's figures. These bonds are being used to finance low-carbon and climate resilient infrastructure – a prevalent theme in today's global energy economy.

This includes what are known as labelled green bonds, as well as bonds financing climate-aligned assets that do not carry a green label. The former are primarily issued by non-pureplay companies. The labelling of green bonds is therefore essential, according to the CBI, to divert fixed income investment towards climate change solutions.

As has been seen, practical work on the pledges made last year at the COP21 summit in Paris needs to be mobilised by investment; and will require a mix of public and private sector capital.

Mcanxixun Information

The report states that while the US\$694 billion is an encouraging start, is nowhere near sufficient to remain within a 2°C scenario. According to the International Energy Agency (IEA), cumulative investment of US\$53 trillion is required by 2035 in the energy sector alone.

However, 78% of the total climate bonds in the market are investment grade, with the majority of bonds having tenors of 10 years or more, according to the report, signifying how long and dated the market lifetime is. Furthermore, the majority of bonds are also government-backed.

Energy-themed climate bonds

Transport is the largest theme for these bonds, accounting for 67% of the market, with energy being the next biggest segment at 19% and US\$130 billion outstanding. The majority of labelled green bonds have been linked to renewable energy projects. In fact, CBI state that the green bond market first developed with renewable energy and energy efficiency projects, and they remain well understood in the investor community.

Solar specific bonds account for 18% of the overall issuance in 2016, with wind at 11% and hydropower utilising bonds for financing for decades.

According to the report, the solar sector is dominated by large pureplays such as SolarCity, Sunpower and Solarworld. The segment also consists of large project bonds issued for the Solar Star (US\$1.3 billion) and Topaz Solar (US\$1 billion) developments. SolarCity was the largest solar issuer and also a labelled green bond issuer.

Overall, 60% of energy bonds qualified at investment grade, with 32% of those falling into the A ratings category. The report also states that 36% of outstanding solar bonds and 60% of wind bonds have a tenor of 10 years or more.

Country specific findings: China & the USA

China

China heads the top 10 countries for climate-aligned bonds with US\$246 billion of total issuance, constituting 36%, closely followed by the US with US\$136 billion and 16%. The majority of unlabelled issuance falls into the transport category and is led by China Railway Corporation with US\$149 billion.

USA

Burlington North Santa Fe, the parent company of the railway corporation of the same name, is the largest issuer from within the USA, making up 17% of the country's issuance alone. While issuers in the energy market tend to be much smaller, there are more than 200 separate energy issuers making up a total of US\$28 billion issuance.

40% of the entire water-themed bond sector is made up of US issuers, primarily municipal bonds which have been labelled as green bonds. USA-based issuers continue to drive the green labelled bond market, the USA being the largest single issuing country to date of labelled green bonds.

“Bridging the climate finance gap doesn't require complex new investment models,” said Sean Kidney, CEO of Climate Bonds Initiative. “The re-alignment of bond market activity with climate change and low emission goals will deliver a stable long term source of green investment. This report shows that the large scale harnessing of bonds and other forms of debt based capital towards climate and carbon goals is within reach.

“Green bond based capital to fund infrastructure projects are now an established model. As countries look to turn their INDC commitments into climate plans the report shows that green and climate resilient transport, urban development, water and energy projects are already being financed by green bonds and can be scaled up. The biggest challenge now is for policy makers and investors to develop models that simply accelerate the flow of investment.”

2016 年全球能源领域占绿色债券的 19%

一家关注投资者的非盈利组织气候债券倡议(Climate Bonds Initiative)的最新报告显示, 2016年在六千九百四十亿美元流通在外的气候债券中, 能源占 19%, 达一千三百亿美元, 体现了推动对可再生能源项目的投资。

总计六千九百四十亿美元较去年的数字提高九百六十亿美元(16%)。这些债券正用于资助低碳和气候弹性基础设施——当今全球能源经济一个流行的主题。

这其中包括贴标绿色债券, 以及没有携带绿色标签、资助气候资产的债券。前者主要由非单一业务公司发行。因此根据 CBI, 绿色债券标识对于将固定收益投资向气候变化解决方案转移, 是必不可少的。

正如已经看到的, 去年在巴黎 COP21 峰会作出的承诺的实践工作, 需要由投资来调动, 并将需要结合公共和私营部门资金。

该报告指出, 尽管六千九百四十亿美元是一个令人鼓舞的开端, 但远不足以维持在 2°C 以内。根据国际能源署(IEA), 到 2035 年仅能源行业就需要累计投资五十三万亿美元。

然而, 根据该报告, 市场上总气候债券的 78% 是投资级别, 大多数债券期限为十年或以上, 标志着市场寿命的长短及日期。此外, 大多数债券也是政府支持的。

以能源为主题的气候债券

运输是这些债券中最大的主题, 占市场的 67%, 能源是第二大部分, 占 19%, 流通在外的债券为一千三百亿美元。大多数贴标绿色债券与可再生能源项目有联系。事实上, CBI 表示, 绿色债券市场首先开发可再生能源和能源效率项目, 投资界对此有着很好的理解。

2016 年太阳能债券占总发行的 18%, 风能占 11%, 水电利用债券融资已数十年。

根据该报告, 太阳能行业由大型单一业务公司主导, 如 SolarCity、Sunpower 和 Solarworld。该部门还包括针对 Solar Star(十三亿美元)和 Topaz Solar(十亿美元)开发的大型项目债券。SolarCity 是最大的太阳能发行人, 也是贴标绿色债券发行人。

总之, 60% 的能源债券属于投资级别, 其中 32% 为 A 级。该报告还指出, 36% 流通在外的太阳能债券以及 60% 的风能债券为期十年或更久。

国家具体调查结果: 中国和美国

中国

中国领衔气候债券十强国家, 总计发行两千四百六十亿美元, 占 36%, 紧随其后的是美国, 一千三百六十亿美元债券, 占 16%。大多数未贴标发行的为运输类, 由中国铁路总公司主导, 总计一千四百九十亿美元。

美国

Burlington North Santa Fe 是美国最大的发行商, 占全球发行的 17%。尽管能源市场的发行人往往要小得多, 但是两百余家独立能源发行商总计发行两百八十亿美元。

以水为主题的债券领域, 40% 由美国发行商组成, 主要是市政债券, 被贴标为绿色债券。美国发行商继续推动绿色贴标债券市场, 美国是迄今贴标绿色债券的最大单一发行国。

气候债券倡议的首席执行官 Sean Kidney 表示: “弥合气候融资缺口并不需要复杂的新投资模式。债券市场活动与气候变化和低排放目标的重新调整, 将提供稳定的长期绿色投资。这一报告显示, 大规模利用债券及其他形式以债券为基础的资金, 实现气候和碳目标指日可待。”

“立足于资助基础设施项目的资金的绿色债券, 目前成为一个成熟的模式。随着各国寻求将其 INDC 承诺转变为气候计划, 该报告显示, 绿色和气候弹性运输、城市开发、水和能源项目已经由绿色债券融资, 并且可以扩大规模。目前最大的挑战是, 决策者和投资者开发能够简单加速投资流的模式。”

Coal (煤炭)

Sweden backs sale of German coal mines to Czech group

Sweden's Social Democratic government says it is supporting the sale of state-owned Vattenfall AB's four coal mines, considered a major source of greenhouse gases, and its mining assets in Germany to Czech investors.

COPENHAGEN, Denmark (AP) — Sweden's Social Democratic government said Saturday it is endorsing the sale of state-owned Vattenfall AB's four coal mines and mining assets in Germany to Czech investors, sparking harsh reactions from environmentalists.

"The deal is of strategic importance for the company and that it is financially best option," Enterprise and Innovation Minister Mikael Damberg said. "The value of selling is higher than to keep and continue operating the business."

He didn't disclose details about the price.

Climate minister Isabella Lovin of Sweden's Environment Party told a joint news conference the government "had thoroughly investigated the deal but didn't find any formal reasons to reject it."

In April, Czech energy company Energeticky a prumyslovy holding, or EPH, signed an agreement to acquire the Swedish state-owned utility's loss-making assets in Germany. EPH made the bid together with PPF Investments, a private equity group.

The Swedish company seeks to shift its energy strategy. Vattenfall had made large write-downs on its operations in Germany.

Environmentalists have called on Sweden's government to stop the sale and dismantle the coal assets to prevent climate-warming CO2 emissions.

Jan Kowalzig, a climate change adviser at Oxfam Germany, said the Swedish government "is spurning the landmark treaty on climate change adopted last year in Paris," calling the sale "a failed attempt to clean up Vattenfall's dirty environmental record."

"It fosters the continued digging up and burning of dirty coal in the region," he said in a statement.

Greenpeace spokeswoman Annika Jacobson said it "implies a direct subversion of the Paris Agreement."

Four environmental activists were briefly detained last month after climbing on top of the entrance of the Swedish government headquarters disguised as construction workers to protest the sale. In May, an environmental activist was arrested for squirting a red liquid from the spectators' gallery during a debate on the issue in Parliament.

Last year, 195 countries reached a deal on curbing global warming. The so-called Paris agreement aims to keep the global temperature rise below 2 degrees Celsius (3.6 degrees Fahrenheit) compared with preindustrial times. It enters into force once 55 countries representing at least 55 percent of global emissions have joined it.

"Europe needs to phase out coal as soon as possible to stand a chance of meeting the Paris Agreement," said Johan Rockstrom, a professor of Global Sustainability at Stockholm University. "This decision is disgraceful and unacceptable."

瑞典支持德国出售煤矿给捷克

瑞典的社会民主党政府说，支持国有瑞典瀑布能源公司出售在德国的四个被认为是温室气体主要来源的煤矿，以及矿业资产给捷克投资者。

丹麦，哥本哈根（AP）—瑞典社会民主党政府说其周六将会签署协议出售国有瑞典瀑布能源公司在德国的四个煤矿以及煤矿资产给捷克投资者，引起了环保主义者的强烈反响。

“这一交易对公司具有重要战略意义，也是经济上最好的选择，”企业创新部长 Mikael Damberg 说，“出售的价值高于维系运作的价值。”

他并没有透露价格细节。

瑞典环境党气候部长 Isabella Lovin 在一次新闻会议上讲述政府已经彻底研究过这一交易，却找不到正当理由拒绝。

四月，捷克能源公司 Energetický průmyslový (EPH) 签署了一个协议，获得了瑞典在德国的国有实用损失资产。EPH 与一家私人股本集团 PPF 投资一道做了这一交易。

瑞典公司寻求能源策略的转变。瑞典瀑布能源公司已经在德国进行了大的投资减值。

环保主义者号召瑞典政府停止这一出售，取消煤炭资产，预防气候变暖气体 CO2 的释放。

Jan Kowalzig，德国乐施会气候变化顾问，说瑞典政府正在“摒弃去年巴黎采用的气候变化方面的重要协议”。将这一出售形容为“清理瑞典瀑布能源公司肮脏环境记录的一次失败尝试。”

“这加快了该地区煤炭的挖掘与燃烧。”他在声明中说道。

绿色和平组织发言人 Annika Jacobson 说这“表明了对《巴黎协定》的直接颠覆。”

上个月，四个环保活动家伪装成建筑工人，爬上瑞典政府总部的大门顶部，反对这一出售，之后被拘留了。五月，一名环保活动家因议会期间在观众席喷射红色液体而被逮捕。

去年，195 个国家就控制全球变暖达成协议。所说的《巴黎协定》旨在把全球平均气温较工业化前水平升高控制在 2 摄氏度（3.6 华氏度）内。该协定的缔约国数量达到 55 个，且其累加排放量达到全球总排放量 55% 时，该协定即正式生效。

“欧洲需要尽快逐步停止使用煤炭，以满足《巴黎协定》要求，”斯德哥尔摩大学全球可持续性教授 Johan Rockstrom 说道，“这一决定是可耻的，不被接受的。”

Stop spreading misinformation on coal demand

Politicians are misrepresenting International Energy Agency's projections in their election campaigns. Fossil fuels aren't benign, they will wreck the planet

In their book *Climate Change, Capitalism and Corporations*, published prior to the Paris climate change meeting last December, Chris Wright and Daniel Nyberg highlighted how the dominance of neoliberalism in recent decades has locked the global economy on to a path of “creative self-destruction”, built around the oxymoron of “green capitalism”. Events since Paris have confirmed their thesis.

Just before Paris, the New York state attorney general, via the US Securities and Exchange Commission, secured undertakings from the world's largest coal company, Peabody Energy, for violating state laws prohibiting false and misleading conduct in regard to Peabody's public statements on risks posed by climate change. In part by misrepresenting the projections of the International Energy Agency (IEA).

For the past two decades, major companies, industry bodies, media and governments have been guilty of similar disinformation in Australia, a practice which is again evident in this election campaign.

Long ago, the IEA recognised the risks posed by human-induced climate change. It accepted that climate and energy were inextricably linked and dangerous climate change could only be avoided with fundamental change to the global energy system. Specifically by rapidly weaning ourselves off fossil fuels and transitioning to low-carbon energy supply.

The IEA has become a leading authority exploring this transition, regularly quoted by governments and business alike. It is subjected to great pressure by them to lean in suitably accommodating directions.

Mcanxixun Information

It handles this pressure by publishing, in its annual World Energy Outlooks (WEOs), its perspectives on the energy sector over the next 25 years. These explore the implications of taking alternative climate and energy pathways. Key scenarios are: current policies (CP) which assumes business-as-usual, new policies (NP) which extends CP with policy governments have committed to but not yet implemented, and the 450 scenario which is the pathway to keep global average temperature increase below 2C.

These scenarios are highly influential in justifying investment decisions. For Australia, global coal demand is one of the factors of greatest interest. In the WEO 2015 released last November, under CP assumptions demand would increase by 43% by 2040 compared to current levels, under NP by 12%, but under 450 scenario it declines by 36%.

The IEA takes NP as their central scenario as this is where we are headed if governments implement their commitments. However the IEA make it clear that NP is not a sustainable future. In its report, executive director Fatih Birol says: “We look to the negotiators in Paris to destroy our projections in our central scenario, which we show to be unsustainable, in order to create a new world in which energy needs are met without dangerously overheating the planet.” The Paris meeting agreed to keep global average temperature below 2C and pursue efforts to limit to 1.5C.

Warming would see global population and economic growth in steep decline or stalled. Poverty would massively increase as poorer countries are disproportionately hit by climate extremes. This is already happening.

As with Peabody, Australian organisations, through the Minerals Council, regularly misrepresent the IEA’s position. Typically they publicise the CP or NP outcomes and ignore the 450 scenario despite the fact that they publicly support the 2C limit. These inflated coal demand figures are then claimed to be IEA “forecasts”, justifying further coal investment and government support.

These organisations participate in IEA advisory committees and should be aware that scenarios are not forecasts. Scenarios demonstrate the outcome of certain choices and the IEA make it clear that CP and NP are choices we must not make. To suggest otherwise is blatant disinformation of the worst kind given the potentially catastrophic implications of distorting the IEA’s advice.

The Minerals Council of Australia has been one of the worst offenders, even in the current election campaign inconsistently using NP outcomes while claiming to support the 2C limit. The Minerals Council represents companies like BHP Billiton and Rio Tinto, who vehemently proclaim leadership on climate change and the urgent need to follow a 2C path, yet this disinformation is allowed to continue from the Minerals Council.

This propaganda is parroted by ill-informed politicians, such as energy minister Josh Frydenberg, claiming that, “The IEA tells us that 40% of today’s electricity demand is met by coal and by 2040 it will still be 30%”, and trade minister Steve Ciobo: “Global demand for coal is still going through the roof”. NP figures again, which imply an absolute increase in coal use of 23%. However the 450 scenario, to which the government supposedly committed to in Paris, shows coal’s share of electricity demand falling from 40% to 12% by 2040, an absolute reduction in coal use of 57%, which certainly requires no new coal mines.

Parts of media also to be blamed. The Australian has been an offender but even the more balanced Fairfax press falls into the same trap. Not surprisingly, it still features prominently on coal company websites.

The government and opposition, who accept donations from fossil fuel interests which Wright and Nyberg refer to, both sing the praises of the Adani Carmichael mine in the Galilee Basin, Shenhua’s Watermark Mine on the Liverpool Plains, Kepco’s Bylong Valley adventure and Hume Coal in the Southern Highlands. All based on ill-informed premises and substantially contributing to increasing global temperatures well above 2C.

The cost to Australia, if this irresponsible misallocation of resources proceeds, would be enormous. Among other things, stranded assets as these mines are forced to shut down as climate impact intensifies; the lost opportunity of not investing in low-carbon future; the loss of agricultural productivity as mining disrupts prime farming land and water supply; and the social disruption caused to regional communities from abandoned operations. Plus, the full impact of potentially catastrophic climate change in a country more at risk than any other.

In the national interest, Australian regulators, including federal and state attorney generals, ASIC, the ASX and the Press Council urgently need to stamp out this misinformation as their overseas counterparts are doing. Particularly if we are serious about promoting “innovation, jobs and growth”.

停止对煤炭需求虚假消息传播

政客们在竞选中曲解了国际能源署的预测。化石燃料没有那么好，它们也会破坏地球。

Chris Wright 和 Daniel Nyberg 在他们去年十二月巴黎气候变化峰会之前出版的《气候变化，资本主义，企业》一书中强调了在最近的几十年中，新资本主义的主导地位是怎样锁住全球经济，使其走上“富有创意的自我毁灭”的道路，这是建立在“绿色资本主义”这一矛盾的说法之上的。巴黎峰会之后，他们的论点得到了证实。

在巴黎峰会之前，纽约州司法部长，通过美国证交会，对世界上最大的煤炭公司---博地能源公司---的事业做出了担保，该公司违反国家法律，禁止有关博地能源公司对气候变化带来的风险所作出的公开声明方面的虚假和误导信息的传播。其中部分是对国际能源署（IEA）预测的错误报道。

在过去的 20 年里，在澳大利亚，大企业、行业机构、媒体和政府都勿信了类似的虚假消息，这种行为再次在这次竞选中显现出来。

很久以前，国际能源机构意识到了由人类引起的气候变化所带来的威胁。IEA 承认，气候和能源紧密相连，要避免危险的气候变化，只能通过在全球能源系统的根本改变，特别是通过快速摆脱掉化石燃料，从而过渡到低碳能源供应。

IEA 已经成为这一转型的权威，政府和企业都在借鉴这种做法。让他们找到合适的调节方向，IEA 受到很大的压力。

IEA 通过在其年度报告《世界能源展望》中发布其对能源部门未来 25 年的展望来解决这种压力。这些深入研究了采取气候和能源交替途径的真正含义。主要的情况是：当前政策（CP）一切如常，通过政府政策对当前政策进行拓展的新政策（NP）就已经开始出现，只是还没有切实执行，并且 450ppm 情境也是保证全球平均温度上升不超过 2°C 的一个途径。

这些情境在证明投资决策是否合理上有很大的影响。对于澳大利亚，全球煤炭需求是其最感兴趣的原因之一。在去年十一月出版的《世界能源展望 2015》中，相比起当前水平，到 2040 年，在 CP 设想情况下，需求将增加 43%，而在 NP 设想情况下将增加 12%，但是在 450ppm 情境情况下，需求将减少 36%。

IEA 将 NP 作为他们的中心情境，因为如果政府兑现他们的承诺，这将是他们努力的方向。然而 IEA 清楚的知道 NP 并不是可持续未来。在 IEA 的报告中，署长 Fatih Birol 说：“我们期待在巴黎的谈判代表推翻我们对中心情境的规划，因为我们已经证明了其不可持续性，从而建立一个新的世界，能量需求得以满足，同时也不会致使星球过热，带来危险。”巴黎峰会同意将全球平均温度的上升控制在 2°C 以内，并努力使其控制在 1.5°C。

气候变暖将会使全球人口和经济增长大幅下滑，或是陷于停滞状态。由于极端气候会使贫穷国家受到不同程度的影响，因此贫困程度将大幅增加。这种情况目前已经出现了。

和博地能源公司一样，澳大利亚的组织，透过矿物委员会，也经常会上曲解 IEA 的定位。即使他们公开承认他们支持将温度的上升控制在 2°C 以内，他们也通常会宣传 CP 或是 NP 的成果而忽略 450ppm 情境。这些夸大的煤炭需求数字之后被认为是 IEA “预测”，进一步证明煤炭投资和政府支持的正确性。

这些组织参与了 IEA 咨询委员会，他们应该能意识到情境并不是预测。情境说明了特定选择的成果，IEA 明确知道我们不能选择 CP 和 NP。相反，最糟糕的公然造谣可能会给曲解 IEA 建议带来巨大的影响。

澳大利亚矿物委员会是最可恶的造谣者，即使在日前的竞选中，依然自相矛盾的使用 NP 成果却还声称支持温度的上升控制在 2°C 以内。像必和必拓公司和力拓公司这样的矿物委员会代表公司，他们极力宣传气候变化的影响力以及将温度上升控制在 2°C 以内途径的迫切需要，但是矿物委员会却允许这种虚假消息的继续传播。

这种宣传运动被无知的政客模仿，如能源部长 Josh Frydenberg，他声称：“IEA 告诉我们如今 40% 的电力需求都是由煤炭来满足的，到 2040 年，仍会有 30%”，又如贸易部长 Steve Ciobo，他说：“全球对煤炭的需求还将持续上升。”再次提到 NP 数据，因为这意味着煤炭的使用肯定会增长 23%。然而，据称政府在巴黎峰会上推崇的 450ppm 情境显示，煤炭的电力需求份额在 2040 年将从 40% 下降到 12%，这使得煤炭的使用量绝对减少 57%，当然就不会需要新的煤矿。

部分媒体也受到指责。澳大利亚是造谣者，但是即使是最公平的费尔法克斯新闻也陷入了同样的窘境。不奇怪，在煤炭公司网站上，费尔法克斯新闻仍然起着重要的作用。

Wright and Nyberg 所说的接受过化石燃料投资的捐赠的政府及其反对党都对加利里盆地的 Adani Carmichael 煤矿、利物浦平原上的 Shenhua's Watermark 煤矿、Kepco's Bylong 山谷探险以及南部高地的 Hume 煤矿做出了评价。这些都在不知情的情况下，致使全球温度上升超过 2°C。

如果这种不负责任的资源收益出现分配不当，澳大利亚的将付出巨大的代价。除此之外，由于气候影响的加剧，这些煤矿被迫关闭，资产也处于搁浅状态；由于没有投资低碳未来而失去了机会；由于采矿破坏了农地和水源供应而造成的农业生产力的丧失；以及废弃的工厂给地区区域带来了社会破坏。另外，潜在的灾难性气候变化给这个带来的巨大影响比其他认可宇哥国家都要多。

为了国家的利益，澳大利亚监管机构，包括联邦和州级司法部长，澳大利亚证券和投资委员会，澳大利亚股票交易所和报业评论会都迫切的需要阻止这种虚假信息的传播，正如他们的国外同行所做的那样，特别是在如果我们要认真推行“创新、就业和增长”的时候。

Anglo American closing in on Australian coal mines sale

Anglo American is hopeful of concluding the sale of its Australian coal mines within weeks with BHP Billiton among the leading bidders, said people who have been close to the sales process.

A sale of the Moranbah and Grosvenor mines would be a key component of Anglo's debt reduction plans as it tries to persuade investors that it can stave off the consequences of lower commodity prices.

The efforts by Anglo to sell the mines come in spite of global pressure on coal producers because of weak prices and concerns over the fuel's role in increasing carbon emissions.

The two mines produce coking coal for use in steelmaking, which is seen by many analysts as a more robust part of the market compared with demand for thermal coal for power stations.

Anglo stepped up its asset sale plans in February. It has sold a trio of smaller Australian coal mines in recent months, while it also sold niobium and phosphate deposits in Brazil for \$1.5bn in April, as part of plans for between \$3bn and \$4bn of asset disposals this year.

Glencore, the commodities group, was among the groups to consider a bid for the Anglo coal assets but people aware of the sale plans said the Switzerland-based group was no longer in the process.

Apollo, the private equity group, has also been considering a bid for the assets.

英美资源集团接近完成澳大利亚煤矿出售

出售位于澳大利亚的两座煤矿是该集团债务削减计划的关键组成部分。知情人士表示，主要竞购者包括必和必拓。

英美资源集团(Anglo American)有望在未来几周内完成对其位于澳大利亚的煤矿的出售，接近出售进程

的知情人士表示，主要竞购者包括必和必拓(BHP Billiton)。

出售莫兰巴(Moranbah)与格罗夫纳(Grosvenor)煤矿是英美资源集团债务削减计划的关键组成部分，该集团正试图说服投资者相信其能够抵御大宗商品价格下跌的不利影响。

尽管价格疲软以及围绕煤炭增加碳排放的担忧对煤炭生产商造成全球压力，英美资源集团还是在努力出售旗下的煤矿。

这两座煤矿生产的是用于炼钢的炼焦煤，许多分析师认为，与发电厂使用的动力煤相比，炼焦煤的市场需求更强劲。

今年2月，英美资源集团加快了资产出售计划。最近几个月，该集团已出售了三家较小的澳大利亚煤矿，同时还在4月以15亿美元的价格出售了位于巴西的铌和磷酸盐矿，该集团计划今年处置30亿至40亿美元的资产。

大宗商品集团嘉能可(Glencore)也曾考虑参与英美资源集团煤炭资产的竞购，但知情人士表示，这家总部位于瑞士的集团已经退出。

私人股本集团阿波罗(Apollo)也在考虑竞购这些资产。

Seven-year-old sues Pakistan government over climate change

Girl claims plans to develop dirty coal deposits will deprive future generations of the right to healthy life, writes Zofeen Ebrahim

In a landmark case, seven-year old Rabab Ali has sued the government for violating her rights, and the rights of her generation, to a healthy life.

“I want the government to give me and my friends a safe environment to grow up in. I want it to help me conserve it for future generations,” she said.

Rabab and her father, who is also the environmental lawyer representing her in the Pakistan supreme court, were heartened when the chief justice overruled the rejection of her appeal by the apex court’s registrar, stating that minors can file a legal petition in the interest of the public at large through an attorney.

“The fact that the higher court has established this right of a minor is a pioneering and landmark judgement in the country, setting a precedent for the lower courts to follow,” said Ali Tauqeer Sheikh, Asia director of Climate and Development Knowledge Network (CDKN).

“It gives me much hope,” said her father, Qazi Ali Athar.

Ali is pleading that the exploitation of particularly dirty lignite coal, in Sindh province’s Tharparkar district, will drastically increase Pakistan’s carbon dioxide emissions, polluting the air and be catastrophic for future generations, as well as and contributing to global warming.

The petition states that it “infringes” upon the constitutionally guaranteed “right to life” and the inalienable “fundamental rights” of young Ali and Pakistan’s future generations; and violates the “Doctrine of Public Trust”, the principle that the government must preserve certain natural and cultural resources for public use.

This is the first time that a minor has filed a public interest litigation case in Pakistan. It is also the latest in a global string of lawsuits geared at forcing governments to do more on climate change.

Last year, a farmer brought a public interest case against the Pakistan government for failing to implement its own climate laws.

It is also the first time that a court will decide whether or not that state has a legal obligation towards its citizens

Mcanxixun Information

and to future generations with respect to the environment.

This case comes at a time when the port city of Karachi is witnessing daily riots because of long power outages. Pakistan's electricity crisis has reached a tipping point. Although 70% of households are connected to the national grid, few get uninterrupted power supply. People have blocked roads and burnt tyres, while law enforcers have resorted to firing bullets into the air to disperse angry crowds.

The country has an installed electricity capacity of 22,797 megawatts (MW) but peak production only reached a dismal 16,548 MW, largely because no one pays their energy bills, including the government. This leaves the country struggling with a deficit of nearly 5,000 MW, against a demand that can reach up to 21,200 MW.

As daily life becomes unbearable, especially during the summer when temperatures soar and natural gas resources dwindle, the government hopes to exploit the nearly 175 billion tonnes of untapped coal resources in Sindh's remote Tharparkar district in the lower Indus basin.

The Sindh Mines Department says that Pakistan's coal reserves have the potential to provide 100,000 MW of power – enough for the next 200 years – and jobs for nearly 4,400 people from the community. China's state council has approved an investment of US\$1.2 billion (8 billion yuan) in the Thar coal projects and signed memorandum of understandings for eight coal projects under the China Pakistan Economic Corridor (CPEC).

But there are people like Rabab Ali, who are pleading to rethink its decision and to let coal remain in the ground while looking for alternatives to meet the energy crunch. Among other issues, her petition states that the people living in the region, the Thari, are Dalits, a caste known earlier as “untouchables”, who already face caste-based discrimination. The opening of the coal reserve would displace their homes and destroy local livelihoods.

chindialogue's sister site, thethirdpole.net, spoke to her father and environment lawyer Qazi Ali Athar:

thethirdpole.net (TTP): You are facing a powerful adversary, do you feel overwhelmed? How good are your chances of making a dent?

Qazi Ali Athar (QA): I don't give up easily. I have been putting the state in the dock since 2003 and I have met with various degrees of success. To name a few, I have taken government-run and private hospitals in Karachi to court for their non-compliance in adhering to hospital waste management rules and failure to set up sufficient number of incinerators. I have taken the local government to court to force them to minimise traffic pollution.

Recently I was appointed by the court to act as amicus curiae [an impartial adviser to a court of law in a particular case] in a hearing on nuclear power plants. We were able to insist upon the government carrying out an environment assessment study and public hearing as well as a change in the design of the power plant to make it safer.

TTP: But your daughter Rabab Ali has filed a petition at a time when the entire country is facing acute power shortages. Few people are going to be sympathetic to her?

QA: The government is already a signatory to many international environment treaties in which it has promised to save the planet. I am just reminding it of its legal obligations. I got an analysis about Pakistan's climate vulnerability from renowned climate scientist James Hansen.

Besides, the Prime Minister himself noted at the UN Paris climate conference that Pakistan was one of the most vulnerable nations. We ourselves are already experiencing the vagaries of climate change in the form of floods, droughts and heatwaves.

I am invoking the ancient Public Trust Doctrine passed from the Romans into English common law. It's very simple and states that things like water, air and the seas, which belong to every citizen, have to be protected. The government, as the custodian of our natural resources, cannot exploit it.

TTP: But the state also has a responsibility to provide for basic needs, including energy to its citizens?

QA: It needs to invest in renewables to overcome the power shortage. We are endowed with plenty of sun and

wind.

TTP: But scientists today say there is clean technology available to extract coal?

QA: I do not believe that there is such a thing as green technology that can reduce coal emissions. If we start exploiting the Thar coal fields, we would elevate Pakistan's emissions 1,000 times the present level, so it would be better to keep the coal in the ground.

7 岁女孩就气候变化问题起诉巴基斯坦政府

女孩认为，政府开发高灰煤（也称“脏煤”）的计划将会加剧气候变化，进而剥夺未来几代人拥有健康生活的权利。

在一桩具有里程碑意义的案件中，7 岁的拉巴巴·阿里控诉政府侵犯了她以及未来几代人拥有健康生活的权利。

“我希望政府能够给我和我的朋友们一个安全的成长环境，能和我一起保护环境，造福未来的人类，”她告诉第三极网站。

拉巴巴的父亲是一名环保律师，此次代表她向最高院起诉了巴基斯坦政府。此前，拉巴巴的上诉曾被高院司法常务官拒绝，但高院首席法官认为未成年人有权通过代理律师就广大公众的利益呈交法律诉状，因而推翻了司法常务官的决定。对此，父女二人备受鼓舞。

“高等法院能够认可未成年人在这方面的权利，在巴基斯坦这实属一项首开先河、具有里程碑意义的裁定，为下级法院受理类似案件开创了先例，”气候与发展知识网络（CDKN）亚洲主管阿里·托克尔·沙伊赫表示。

“这个决定给了我很大的希望，”拉巴巴的父亲卡齐·阿里·阿塔尔说。

阿里认为，脏褐煤的开采，尤其是信德省塔帕卡县的脏煤开采将会导致巴基斯坦二氧化碳排量大幅增加，对空气造成污染，给未来几代人的生活带来灾难性的打击，同时助涨全球变暖的势头。诉状中写道，脏煤开采“侵犯”了宪法赋予女孩阿里和未来几代巴基斯坦人的“生存权”以及他们不可剥夺的“基本权利”，并且违反了“公共信托原则”，即政府必须保留一定的自然和文化资源供民众使用。

此次案件是巴基斯坦法院首次受理由未成年人提交的公益诉讼，同时也是全球因为气候变化问题起诉政府的系列案件中最新的一起。去年，一名农场主也对巴基斯坦政府提起了公益诉讼，控诉政府未能执行本国的气候法案。

该案件也是巴基斯坦高院首次确定，国家对其公民以及后世子孙都负有法律责任。

拉巴巴上诉之际，正值巴基斯坦港口城市卡拉奇由于长时间断电而天天发生暴乱，当地民众封锁道路、焚烧轮胎，执法机构不得不对天鸣枪来驱散愤怒的人群。巴基斯坦的电力危机已经一触即发。该国虽然有 70% 的家庭通了电，但鲜少有人能够获得持续的电力供应。

巴基斯坦的总发电装机容量为 2279.7 万千瓦，但最高发电量却只有 1654.8 万千瓦。出现这一情况的原因主要在于，这里没有人付电费，政府也不例外。巴基斯坦全国的用电需求高达 2120 万千瓦，因而供电缺口高达 500 万千瓦。

人们的日常生活变得无法忍受，尤其是在夏季，气温暴涨，天然气供应减少，生活更是苦不堪言。为了解决这一问题，政府寄希望于印度河下游流域信德省偏远地区塔帕卡县储量高达 1750 亿吨的未开发的煤炭资源。

信德省矿业部表示，巴基斯坦煤炭储量的发电潜力约为 1 亿千瓦，可满足国内未来 200 年的用电需求，并为当地居民提供近 4400 个就业岗位。中国国务院已经批准投资 12 亿美元，开发塔尔煤炭项目，并在中巴经济走廊（CPEC）项目之下签署了八个煤炭项目的谅解备忘录。

但也有像人和拉巴巴·阿里一样，呼吁政府重新考虑自己的决定，希望政府能够寻找替代方法解决此

次能源危机，让煤炭长埋地下。除此之外，拉巴巴在诉状中还写道，居住在塔里（Thari）地区的都是曾经被认为是“贱民”的达利人，他们已经因为种姓遭到了歧视，而开发这里的煤炭矿藏只会破坏当地的生计，让这些人流离失所。

第三极网站采访了女孩的父亲、环保律师卡齐·阿里·阿塔尔：

第三极网站（以下简称“第三极”）：面对这么强大的对手，会感觉压力很大吗？你觉得自己取得成功的可能性有多大？

卡齐·阿里·阿塔尔（以下简称“卡齐”）：我不会轻易放弃。2003年以来，我就一直在和政府抗争，也取得了不同程度的胜利。举几个例子，我曾经将卡拉奇的几家公立医院和民营医院告上法庭，因为他们都没有按照医院垃圾管理规定，建立足够数量的焚烧炉。为了促使政府采取行动减少交通污染，我还起诉了当地政府。最近，在一桩核电站相关的案件中，法院任命我为法庭之友（在某一特定案件中为法院提供公正建议的顾问）。在这起案件中，我们坚持要求政府进行环境评估研究，举行听证会，并改变电站的原有设计以提高安全性。

第三极：但你女儿拉巴巴·阿里提交诉状的时候，全国正在面临严重的电力短缺，很少有人会支持她吧？

卡齐：一旦牵扯到环境问题，我向来只能单打独斗。很少有人理解这件事的后果，我们法律界人士能理解的就更少了。保护环境也不会带来金钱上的收益。

巴基斯坦政府已经签署了许多国际环境条约，承诺要拯救这个星球。我只是在提醒它不要忘了自己的法律义务。我手上有一份著名气候科学家詹姆斯·汉森对巴基斯坦气候脆弱性进行的分析。

除此之外，总理本人也在巴黎气候大会上提过，说巴基斯坦是全球气候脆弱性最高的国家之一。洪水、旱灾、热浪，这些都让我们感受到了气候变化带来的不确定性。

这里引用一下古老的公共信托原则，这一原则从罗马开始一直流传到英国普通法，内容十分简单，就是说类似水、空气和海洋这类的东西，属于每一位公民，理应受到保护。作为自然资源的托管人，政府不得开采以上这类资源。

第三极：但国家也有义务满足公民的基本需求，包括保障居民用电不是么？

卡齐：国家应该投资开发可再生能源来解决电力短缺问题，自然赋予了我们足够的太阳能和风能。

第三极：但现在科学家说可以采用清洁技术来开采煤炭？

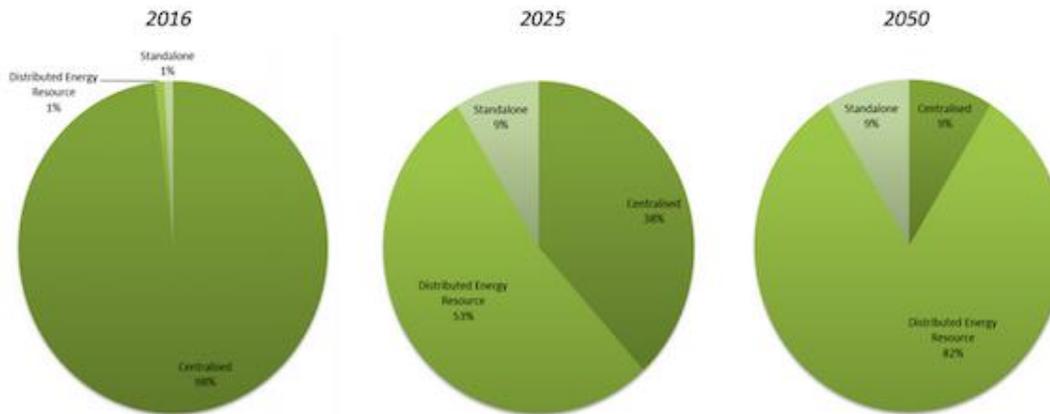
卡齐：我不相信会有这样的绿色技术能够减少燃煤排放。塔尔煤田的开采一旦启动，巴基斯坦的排放量就会是当前水平的1000倍。所以更好的选择还是不要开采这些煤炭，让它们长埋地下。

Electricity (电力)

WA utility to lead big switch to local generation, because it's cheaper

The shift from traditional centralised fossil fuel power generation to distributed renewable energy powered grids is widely accepted as a foregone conclusion by players in the global energy market. How quickly this will happen, however, is not.

For energy networks like Western Australia's Horizon Power, for example, which averages one customer every 53 square kilometres and already operates 37 microgrids ranging from 30MW peak load to 100-150kW, this future will arrive sooner, rather than later.



Graphs: Breakdown of Horizon Power systems per most economic business future including a 25% reduction in LCOE for DER systems.

“We believe that the future will be distributed energy, particularly in these small micro grids,” said Laurie Curro, Horizon’s general manager of power system services, in a presentation at Australian Energy Week 2016 in Melbourne last week.

“Centralised energy will be there in some form or other, but distributed energy will be the way to go.” And it will be the way to go, he added, because of cost – as the Horizon charts above illustrate.

This is in stark contrast with the Northern Territory’s state-owned power generator which, as we reported here on Monday, has been exemplifying the “old way of thinking” about energy generation that has underpinned the gold-plating in Australia’s grid in recent years.

First it responded to a major black-out by announcing \$75 million in new gas-fired generation and nothing in renewables – a decision state treasurer Dave Tollner sought to justify by claiming that when the sun shines, “or the wind starts to blow, and suddenly the cables are overloaded, they heat up, melt, collide and fail.”

And then it claimed that it would cost up to \$2 billion to power the city of Alice Springs with nothing but solar power, and would require enough solar and storage capacity to be built to provide electricity for seven days with no sun.

Next door in WA, however, a different picture is emerging.

“Because we run small micro grids we see (the shift to distributed generation) accelerating at a fast rate,” Curro says. And the graph above illustrates his point. The company estimates that distributed energy – rooftop solar and battery storage and other local generation – will leap from 1 per cent now to more than 50 per cent by 2025.

And that is based on the most economic outcome. By 2050, it suggests, centralised generation will be reduced from 98 per cent now to just 9 per cent.

And because the economics for the transition are so much more powerful in the remote and isolated grids that Horizon operates, Curro says Horizon’s experience will provide “a bit of a test bed” for the larger grid, and some of the solutions the still government-owned network is looking at may turn out to be a solution for the larger grid as well.

“We are looking at what other benefits we can get from this (shift to renewables),” he told the conference.

“So whether the distributed energy is owned by us or by somebody else, it doesn’t really matter, where the social demographic is such that people can’t afford to put their own systems in, we will probably put our own systems somewhere down the end of the street, batteries, etc. So we’ll approach a distributed energy future as much as we

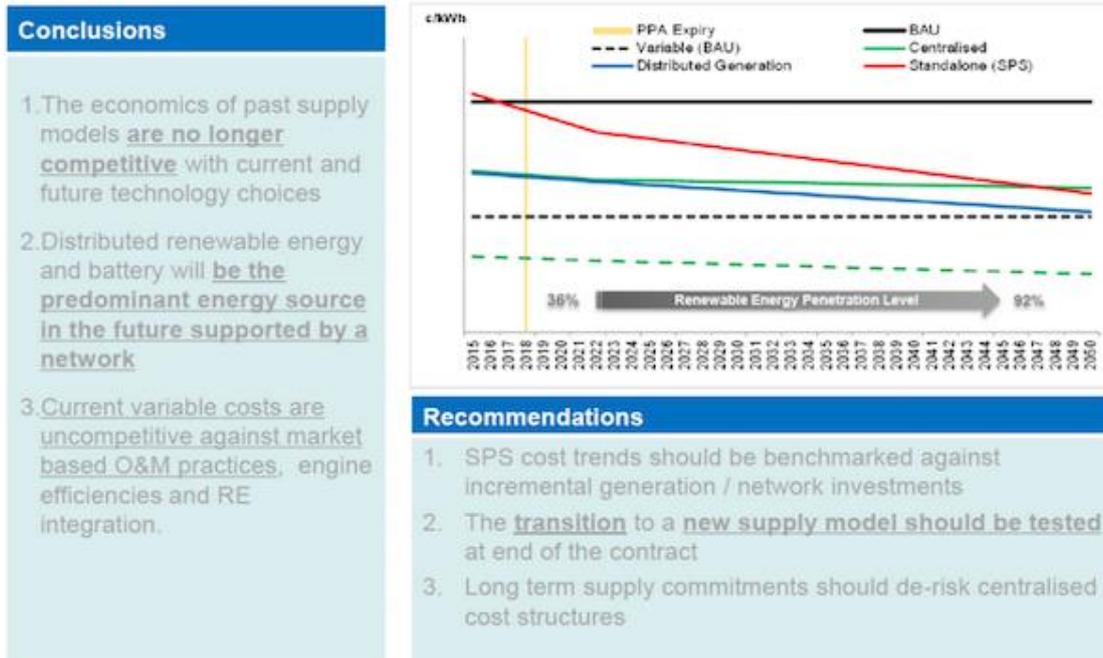
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can, mainly because it is cost effective.

“Can we use the system for other things? Can we use the batteries for other things? Can we install the batteries ourselves and have other people maybe buy into it – a community type situation?”

“Our challenge is not so much load, it’s more around making sure our customers can get some sort of supply. ... We operate 38 grids within WA. One is the interconnected grid and the rest are microgrids.

“Storage will be a game changer and control, the ability to manage these systems, will also be the key to it,” he said.



This graph above further illustrates the economic argument. The thick black line is business as usual, while other options – going stand-alone, focusing on distributed generation, are clearly much cheaper. “The economics of past supply models are no longer competitive with current and future technology choices,” it says.

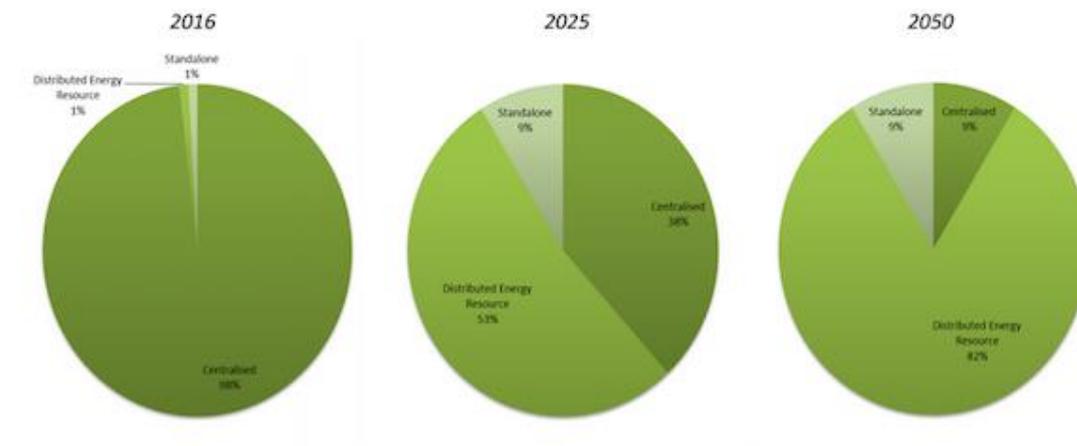
Curro said Horizon was working on a project called Blueprints, which was looking at the cost of supply for all its towns and “seeing what triggers we have and what opportunities we have.”

“Solar and storage is the key to this,” he said. “In about 30 of those 38 systems we don’t actually own that generation, the generation is provided by a third party. So as those contracts come of age, we look for the opportunity to basically do something else.”

西澳大利亚公共设施受到广大人民的欢迎，是因为它很便宜

从传统的集中式化石燃料到分散式可再生能源动力网络的转型，作为一个不可避免的结论已经广泛地被全球能源市场参与者所接受。然而，这种转型发生之快，大家并没有预料到。

对于能源网络，以西澳大利亚州的地平线动力为例，平均每 53 平方公里就有一个客户，已经营 37 加分散式电网，从最高负荷 30 兆瓦特到 100~150 千瓦，未来会到来得更早，而不会是更晚。



Graphs: Breakdown of Horizon Power systems per most economic business future including a 25% reduction in LCOE for DER systems.

“我们相信未来将是分散式的能源，特别是这些小微的动力网络，”地平线的动力系统业务部总经理 Laurie Curro 上周在墨尔本举行的 2016 澳大利亚能源周上说道。

“集中式能源将以某种形式或其他方式存在着，但分散式能源将是能源发展的道路”。这将是能源未来的路，他补充说，原因是成本问题——正如上面地平线的图表所说明的。

这与北部地区国立能源企业的说法形成鲜明对比，正如我们礼拜一在这篇期刊上发表的那样，北部地区国立能源企业被举例说明能源机构的“旧式思想”近年来仍然支撑着澳大利亚的镀金电网。

首先，回应了宣布扶持新成立的燃气企业 7.5 千万美元，而可再生能源企业一无所获——国家财务会计 Dave Tollner 试图辩护，声称“当太阳开始发光或风开始刮起的时候，电缆突然过载，导致电缆开始升温、熔化、碰撞，最后损坏。”

然后宣称，这将花费高达 20 亿美元仅仅去维持艾丽斯斯普林斯城市的太阳能供电系统，并且需要足够的太阳能和存储容量以满足 7 天无光照下所需的电能。

然而西澳大利亚的临近地区确出现了不同的景象。

“因为我们经营小微电网，我们看到（转向分散式电网）正以很快的速度在推进，” Curro 说。上面的图表证明了他的观点。该公司预测了分散式能源——屋顶太阳能、蓄电池等其他当地能源机构——到 2025 年，将要从 1% 飞跃到 50%。

并且这是基于大多数的经济结果预测的。到 2050 年，它表明，集中式能源将从目前的 98% 下降到仅有的 9%。

而且因为该转型将会在遥远的、分离的电网中带来非常强大的经济效益，地平线总经理 Curro 说，地平线的经验将为大型电网公司提供“小型试验台”，以及国有电网一直在寻找的某些解决方案也许同样会是大型电网公司的解决方法。

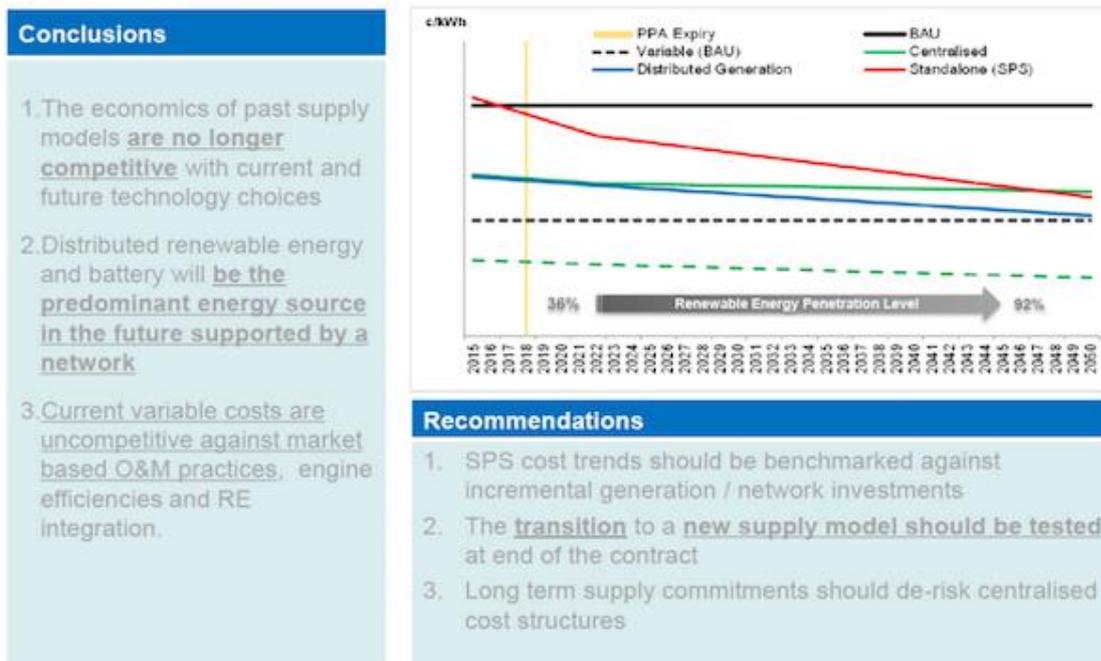
“我们正在研究该转型（转型为可再生能源）能给我们带来的附加利益，”他在会议上说。

“所以，分散式能源是由我们自己还是其他人所拥有，这其实并不重要，社会人口学认为人们不能让他们自己的电网系统进入的地方，我们就可能会把我们自己的电网系统放入那个地方的街道，电池等某个角落。我们将尽我们所能建立未来的分散式能源，主要是因为它的成本效益。

“我们可以将该系统用于其他事吗？我们可以用这个电池做其他的事情吗？我们可以自己安装电池吗？我们可以允许其他人购买使用电池的权利吗？——就像一个社区里的情况？”

“我们的挑战是电网没有那么大的负荷，更多需要确保的是我们的客户能够得到一些能源供应。……我们在西澳大利亚建立了 38 个电网。一个是互联电网，其余的是小微电网。”

“储存将是会改变和控制游戏规则，控制这些系统的能力也将会是其关键因素，”他说。



上图进一步说明了经济上的论证。粗黑线是正常营业，而其它曲线——相互独立，聚焦到分散式电网上，你会发现它显然要便宜得多。“过去的供应链模式经济对当前和未来的技术发展来说不再具有竞争力，”他说。

Curro 说。地平线正在致力于一个名为蓝图的项目，该项目一直在研究对所有城镇的供应成本，“寻找我们有什么出发点，我们有什么机会。”

“太阳能和储存是分散式电网的关键，”他说。“这 38 个系统中的大约 30 个系统，我们实际上并不掌握这些电网系统器械的绝对所有权，是由第三方提供的。因此，随着这些合同有效期的逼近，我们在寻找做一些其他基础业务的机会。”

Greenpeace warns over China's excess power capacity

China stands to waste Rmb900bn (\$134.6bn) of capital expenditure on power plants that have been given the green light despite adding to over-capacity, Greenpeace warned in its latest report tracking the country's coal fired plants.

An economic slowdown combined with intensive investment in coal, hydro wind and solar power capacity in the past few years has depressed utilisation rates in China, especially for coal-fired power plants and wind farms.

New targets for renewable energy and nuclear power as well as plans for further development of large coal deposits in the north and northwest mean that power generators face even greater competition in the future.

According to Greenpeace, the environmental activists, plants either approved or already under construction suggest an additional coal-fired power plant per week will come on stream for at least the next four years.

Overcapacity is dogging swathes of Chinese industry, including steel and petrochemicals, stifling profitability and damaging the environment. “That's going the wrong direction in terms of economic and financial reform,” said Lauri Myllyvirta, Beijing-based coal campaigner for Greenpeace.

The glut will likely worsen competition between provinces, which will all fight to keep their own plants running.

Many of China's plans for expanded power generation are in Xinjiang and southwestern China, designed to serve industrial centres and cities along the more prosperous coast.

Some of their generation capacity is expected to be retired to meet air quality standards as well as China's commitments on reining in its emissions of carbon dioxide and other greenhouse gases. Local media have also reported that Beijing could halt all new power plant approvals.

Unusually public lobbying by China's wind industry has already succeeded in a rare victory in the form of higher mandated use of wind power a development that could further stress thermal generators and lead to new, behind-the-scenes struggles for preferential policies.

In addition to power generators competing with each other, China's growing excess of power could lead to water strains and ultimately, more tensions with ethnic groups along the frontier.

In Inner Mongolia, where large coal developments are planned for the Ordos and Xilingol basins, there has been a marked rise in protests and other disputes with displaced Mongolian herders.

Xinjiang, targeted for extensive coal development, is also home to the Uighur people, a Muslim ethnic group that already chafes under Chinese rule. Water use there is dominated by Han Chinese paramilitary settlements dating to the 1950s.

"The western coal bases are also among the most water-stressed areas in the country," Greenpeace wrote in its report.

绿色和平就中国发电能力过剩发出警告

该环保组织在其最新报告中指出，鉴于发电能力已然过剩，中国在已获批建设的发电厂上浪费的资本开支将达 9000 亿元。

绿色和平(Greenpeace)在其跟踪研究中国燃煤电厂的最新报告中警告称，中国在虽会加剧发电能力过剩但已获批建设的发电厂上浪费的资本开支将达 9000 亿元人民币（合 1346 亿美元）。

经济放缓，再加上过去几年对煤电、水电、风电和太阳能发电能力的密集投资，压低了中国发电厂的利用率，尤其是燃煤电厂和风电场的利用率。

开发可再生能源和核电的新目标，再加上进一步开发中国北部和西北部巨大煤炭储量的计划，意味着今后发电企业要面临更激烈的竞争。

环保活动组织绿色和平称，有关获批或已在建的发电厂的数据显示，在未来六年里，新增装机将以相当于每周一座燃煤电厂的速度投产。

包括钢铁和石化在内的中国多个产业正饱受产能过剩困扰。产能过剩不仅抑制了盈利能力，还破坏了环境。绿色和平驻北京的煤炭行业活动家柳力(Lauri Myllyvirta)表示：“就经济和财政改革而言，这么做是南辕北辙。”

产能过剩很可能会加剧各省之间的竞争，各省会竭力确保本省发电厂继续运营。中国许多新增电力的项目规划都位于新疆和中国的西南，这些项目旨在服务于更繁荣的沿海地区的工业中心和城市。

为了符合空气质量标准，另外也出于中国限制二氧化碳及其他温室气体排放的承诺，预计中国会退役部分发电能力。中国国内媒体也报道称，中国政府或暂停一切新电厂的审批。

中国风电产业不同寻常的公开游说取得了罕见的胜利，在强制要求下对风电的使用增多了，这一进展可能会进一步抑制火力发电，并导致争取优惠政策的新的幕后斗争。

除了彼此竞争的发电厂外，中国装机量日益过剩还可能导致水资源紧张，最终会导致边疆地区各民族之间出现更多紧张局面。

内蒙古计划在鄂尔多斯盆地和锡林郭勒盆地建设大型煤炭开发项目，该自治区的抗议活动和与失去栖息地的蒙古牧民之间的其他争端已显著增多。

计划大举开发煤电的新疆则是维吾尔人的家乡，而信奉伊斯兰教的维吾尔人原本已对中国的统治心怀不满。新疆的水资源利用由汉族的生产建设兵团主导，这些兵团的历史可追溯到上世纪 50 年代。

绿色和平在其报告中表示：“西部煤炭基地位于中国水资源压力最大的区域。”

China on Track to Add Coal Plants Despite Pledge for Curbs, Greenpeace Says

BEIJING — The Chinese government is trying to slow down the approval of new coal-fired power plants because of overcapacity, but projects already in the pipeline, as well as loopholes in policy, mean China is on track to add an average of one new coal-fired plant a week until 2020, according to a report released on Wednesday by Greenpeace East Asia.

The construction boom would result in about 400 gigawatts of excess capacity and would waste more than one trillion renminbi, or \$150 billion, on building unneeded plants, the report said.

China now has 910 gigawatts of coal-fired capacity and is expected to retire 70 gigawatts of that. The new construction means the country would increase capacity at a time when additional coal-fired power is not needed, Greenpeace said.

As part of its broad climate change policy, China — the world’s biggest emitter of greenhouse gases — has promised that it would try to make 20 percent of its energy renewable by 2030. But given the planned growth in coal power capacity, some environmentalists question that goal.

“China’s worsening coal overcapacity crisis is acting as a dead weight on the country’s ongoing energy transition,” said Lauri Myllyvirta, who wrote the report with Shen Xinyi.

Representatives of China’s hydropower and wind power industries have complained of the glut of coal power plants. The addition of a large number of such plants would make it harder for companies specializing in non-fossil-fuel energy to be profitable because coal-fired plants can more easily secure contracts with the major state-owned electrical grid companies.

Mr. Myllyvirta and other Greenpeace researchers have been trying to calculate the amount of overcapacity of coal-fired power plants in China. Greenpeace East Asia released its first report on the topic in November, noting that 155 projects had received a permit in 2015, equal to 40 percent of operational coal power plants in the United States.

In March, Greenpeace revised that number upward, saying 210 new or proposed plants, with a total capacity of 165 gigawatts, had received environmental permits last year. Greenpeace tracked China’s proposed capacity by examining provincial websites for permit approvals.

There are already too many coal-fired power plants in China, as shown by a steady decline in the plants’ average operating hours since 2013, according to official statistics. China also used less coal in 2015 compared with 2014, and coal-producing companies across China have complained of a deepening slump in the industry.

The boom in approval of coal-fired power plants began in early 2015, after the central government said provincial governments could approve projects.

But the central government has tried to rein in the approvals, and it announced a policy in April to limit capacity and retire some plants. Under that policy, about 110 gigawatts of proposed capacity would be suspended and 70 gigawatts would be retired by 2020, according to the Greenpeace report on Wednesday.

But plants that would add 200 gigawatts are already under construction, and projects adding 165 gigawatts could get permits despite the new limits, Greenpeace said.

Mr. Myllyvirta said that he and his colleagues estimated there would be 600 new coal-fired units, or boilers, at 290 plant sites.

Greenpeace said that northern and northwestern provinces and regions that are designated new “coal bases” have been trying to approve or build plants as quickly as possible. These include the provinces of Shanxi and Shaanxi and the region of Inner Mongolia, all of which have large coal reserves and whose economies depend on coal.

The industrial burning of coal is the biggest source of carbon dioxide, the main greenhouse gas responsible for climate change. It is also the main contributor to the air pollution in many Chinese cities.

报告称中国未来每周新增一座燃煤电厂

北京——据绿色和平组织东亚分部周三公布的一份报告称，由于产能过剩，中国政府正在努力放缓新燃煤电厂的审批，但是已经批准的项目与政策中的漏洞，意味着中国在 2020 年到来前，仍在以平均每周一个的速度建设新的燃煤电厂。

报告称，这个建设热潮将在不必要的燃煤电厂上浪费超过 1 万亿元人民币的投资，并导致约 400 千兆瓦的过剩产能。

中国目前的燃煤发电能力是 910 千兆瓦，其中有 70 千兆瓦的产能预计将被淘汰。绿色和平组织表示，新的建设项目意味着，在不需要更多燃煤电厂的时候，中国仍在增加产能。

中国是世界上最大的温室气体排放国，作为其应对气候变化的全面政策的一部分，中国已经承诺争取在 2030 年前将能源组合中的 20% 变为可再生能源。但考虑到计划中的燃煤发电能力的增长，一些环保人士对这个目标的实现表示怀疑。

“中国日益严重的燃煤电厂产能过剩的危机，是中国目前能源转型的沉重负担，”柳力(Lauri Myllyvirta)说，他与沈昕一一起撰写了这份报告。

中国的水电、风电等行业的代表已经在抱怨燃煤电厂产能过剩的问题。燃煤电厂的大量增长将让致力于非化石燃料的公司更难盈利，因为燃煤电厂更容易从国有的电网公司获得入网合同。

柳力及绿色和平组织的其他研究人员一直在试图计算中国燃煤发电的过剩产能。绿色和平组织东亚分部在去年 11 月份首次发布有关报告指出，共有 155 个燃煤电厂项目在 2015 年获得了许可，相当于美国目前运营的燃煤电厂总数的 40%。

今年 3 月，绿色和平组织调高了这个数字，称去年有 210 座新建或拟建燃煤电厂获得了环境许可，总装机容量达 165 千兆瓦。绿色和平组织通过在省政府的网站上查找许可证的审批信息，来跟踪中国拟建的煤电产能。

据官方统计，中国目前已经拥有过多的燃煤电厂，而产能过剩表现在，自 2013 年以来，燃煤电厂平均运行的小时数在持续下降。中国 2015 年的煤炭使用量与 2014 年相比有所减少，中国各地的煤炭生产企业也在抱怨煤炭行业日益深化的衰退。

燃煤电厂的审批热潮始于 2015 年初，那之前，中央政府曾表示，省级政府可批准这类项目。

但是，中央政府后来试图严格控制审批，并在今年 4 月宣布了一项限制产能和淘汰一些燃煤电厂的政策。绿色和平组织周三的报告称，按照这一政策，大约 110 千兆瓦的拟建产能将暂停，现有产能中的 70 千兆瓦将在 2020 年前被淘汰。

但是，绿色和平组织表示，已经开工的燃煤电厂将增添 200 千兆瓦的产能，尽管出台了新的限制，仍有许多燃煤电厂有望拿到许可证，这些电厂将进一步增添 165 千兆瓦的产能。

柳力说，他和他的同事们估计，将有 600 个新的燃煤机组分布在各地的 290 个燃煤电厂中。

绿色和平组织说，北部和西北省份、以及那些被指定为新“煤炭基地”的地区正在试图尽快地批准或建设煤电项目。其中包括山西省、陕西省以及内蒙古，都是拥有巨大煤炭储量、经济依赖煤炭的地方。

工业燃煤是二氧化碳的最大来源，二氧化碳是导致气候变化的主要温室气体。燃煤也是中国许多城市

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空气污染的主要原因。