



Gas 2021 – Analysis and forecast to 2024

天然气分析及展望2021-2024

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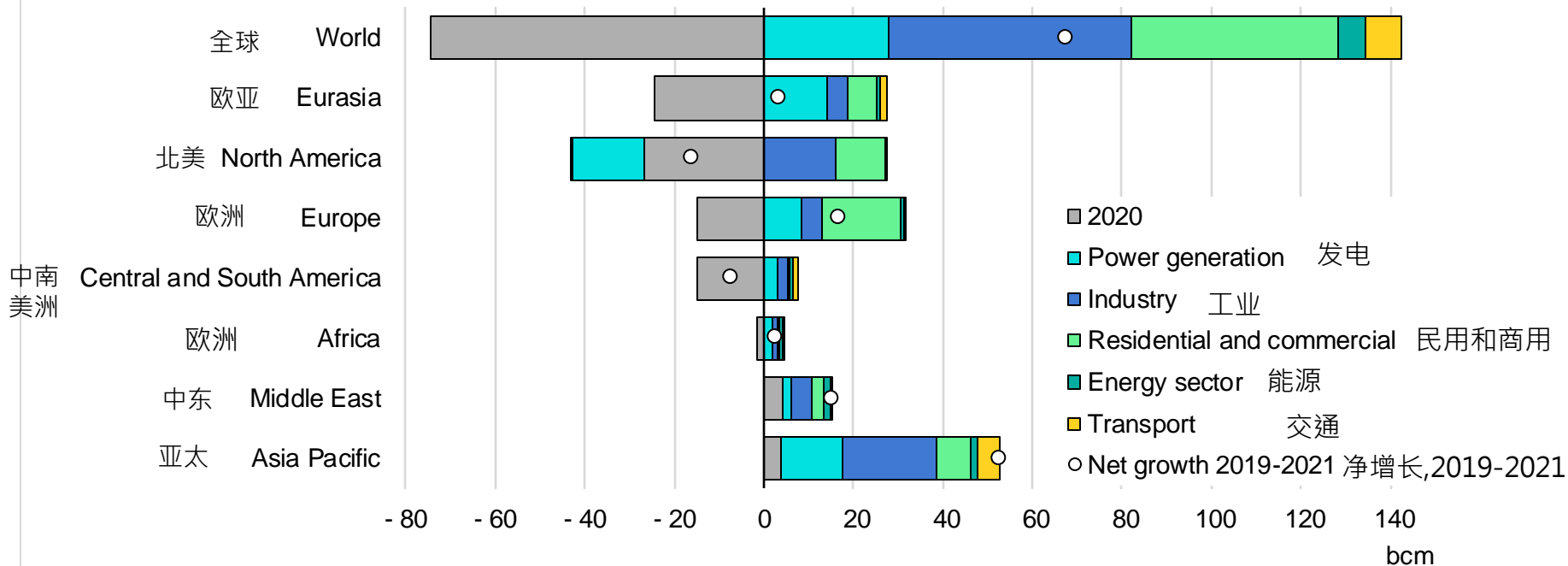
Peking University, 北京大学

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Gas growth in 2021 offsets 2020 losses globally

2021年天然气的增长量抵消了2020年的减少量

Change in gas demand by region, 2019-2021 各地区的天然气需求变化 · 2019-2021



Global rebound is supported by economic recovery and a colder than average first quarter.

Some mature markets are not fully recovering their 2020 losses.

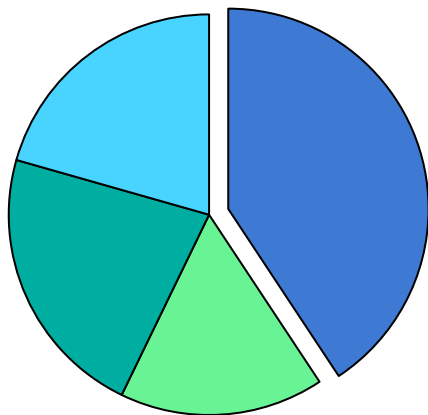
由于经济复苏和比以往更冷的第一季度，全球需求反弹。在一些成熟市场，还没有完全与减少量追平。

Global gas demand growth slows down after 2021

2021年后全球天然气需求增长放缓

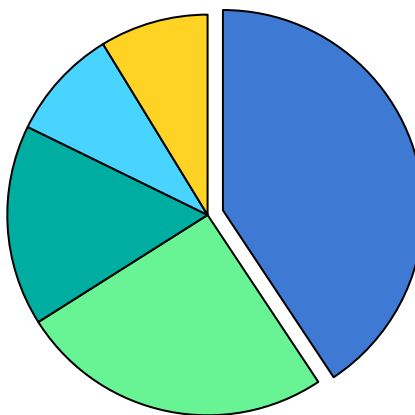
Breakdown of forecast growth in global natural gas demand, 2020-2024 全球天然气需求分项增长预测 · 2020-2024

By year 按年份



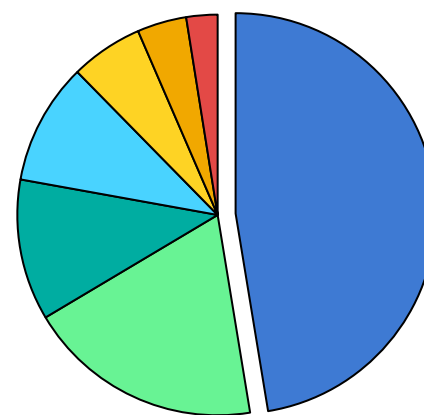
■ 2021
■ 2022
■ 2023
■ 2024

By sector 按行业



■ Industry 工业
■ Power generation 发电
■ Residential and commercial 民用和商用
■ Energy sector 能源行业
■ Transport 交通

By region 按地区



■ Asia Pacific 亚太
■ Middle East 中东
■ North America 北美
■ Eurasia 欧亚
■ Africa 非洲
■ Central and South America 中南美洲

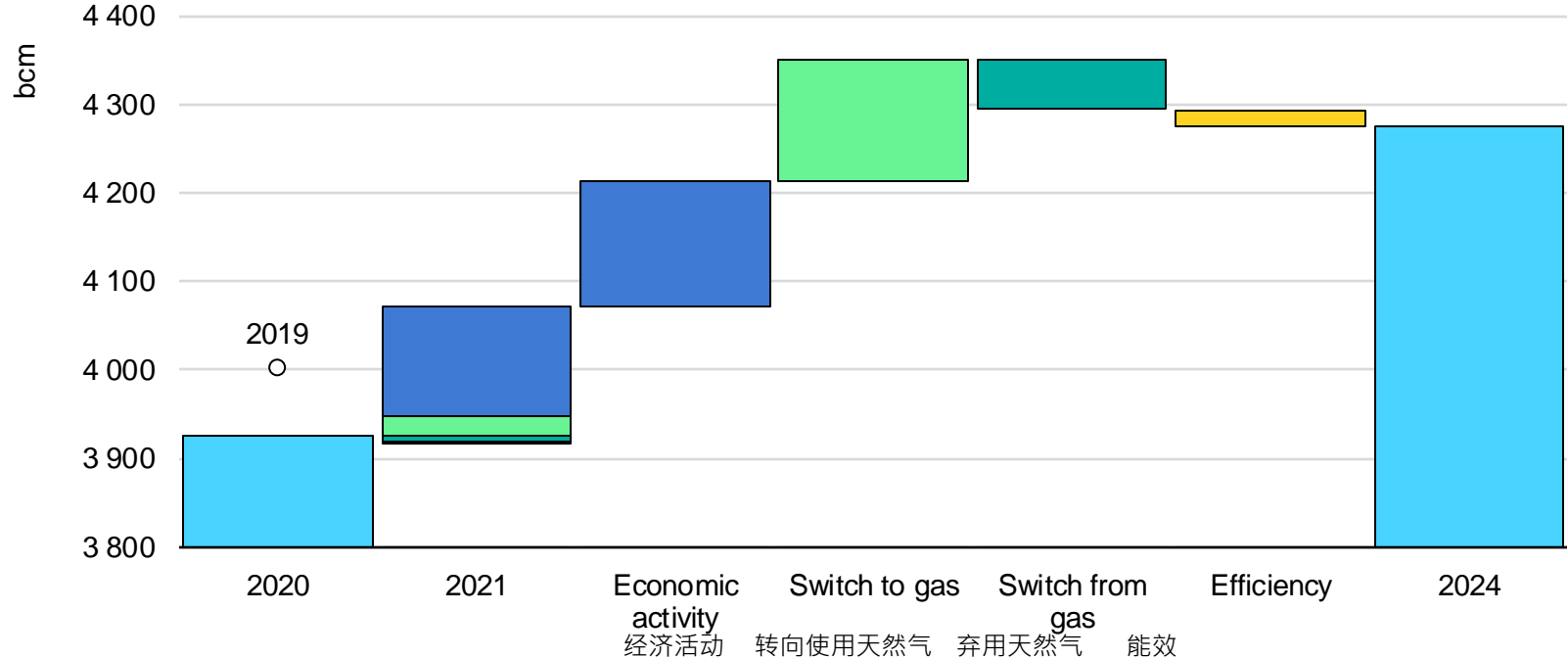
Recovery in 2021, the industrial sector and Asia region lead gas demand growth in 2020-24.

2021年复苏，工业部门和亚洲地区在2020-24年引领天然气需求增长。

Growth slows down. Switching to gas is a strong contributor to growth

增长放缓---转而使用天然气是对增长作出重大贡献

Evolution of global gas demand by driver, 2020-2024 按驱动因素划分的全球天然气需求变化 · 2020-2024



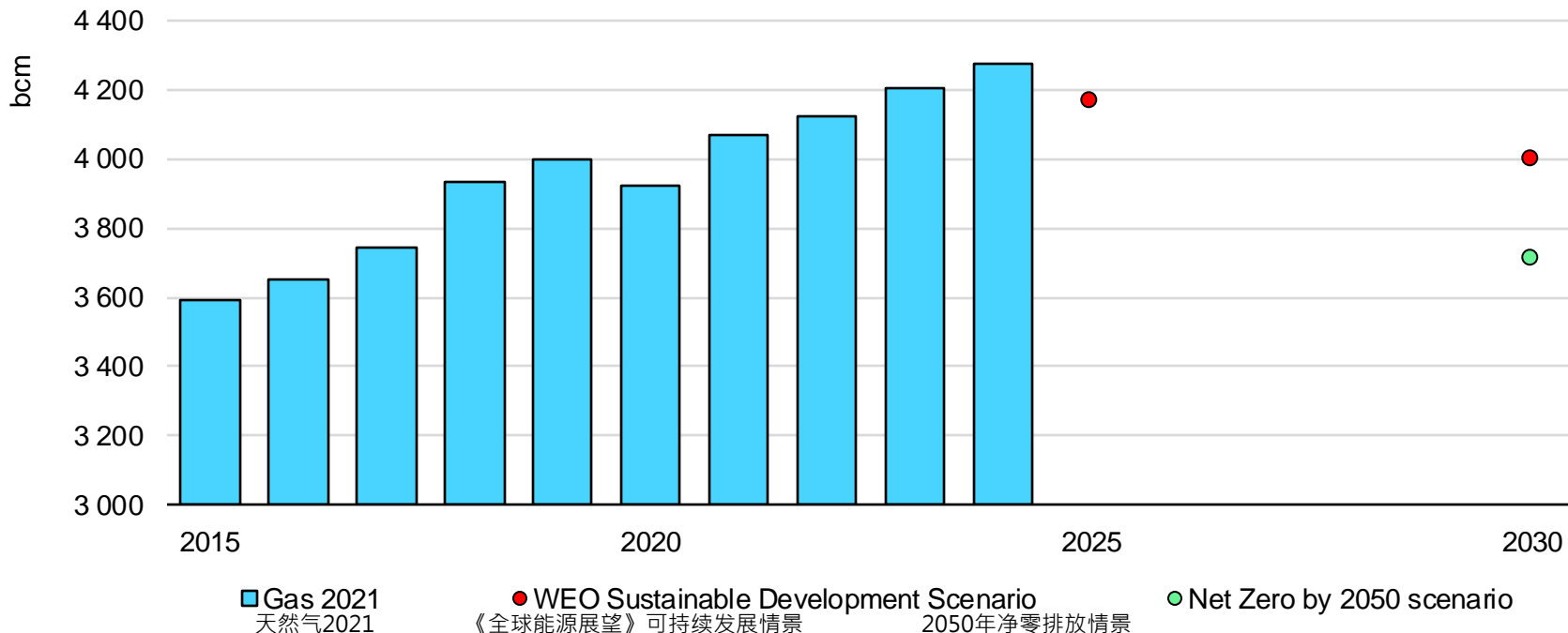
After the growth in 2021 driven by economic recovery, growth in 2022-2024 is driven equally by economic activity and fuel substitution.

在2021年由经济复苏驱动的增长之后，2022-2024年的增长将受经济活动和燃料替代等同的驱动。

Stronger policies are needed to match a net-zero path

需要更强有力的政策来匹配净零路径

Evolution of global gas demand compared to the WEO Sustainable Development Scenario and Net Zero by 2050 scenario
与《全球能源展望》的可持续发展情景和2050年净零排放情景相比，全球天然气需求的变化情况



Global gas demand by 2024 would already be 2% above the 2025 level in the SDS.

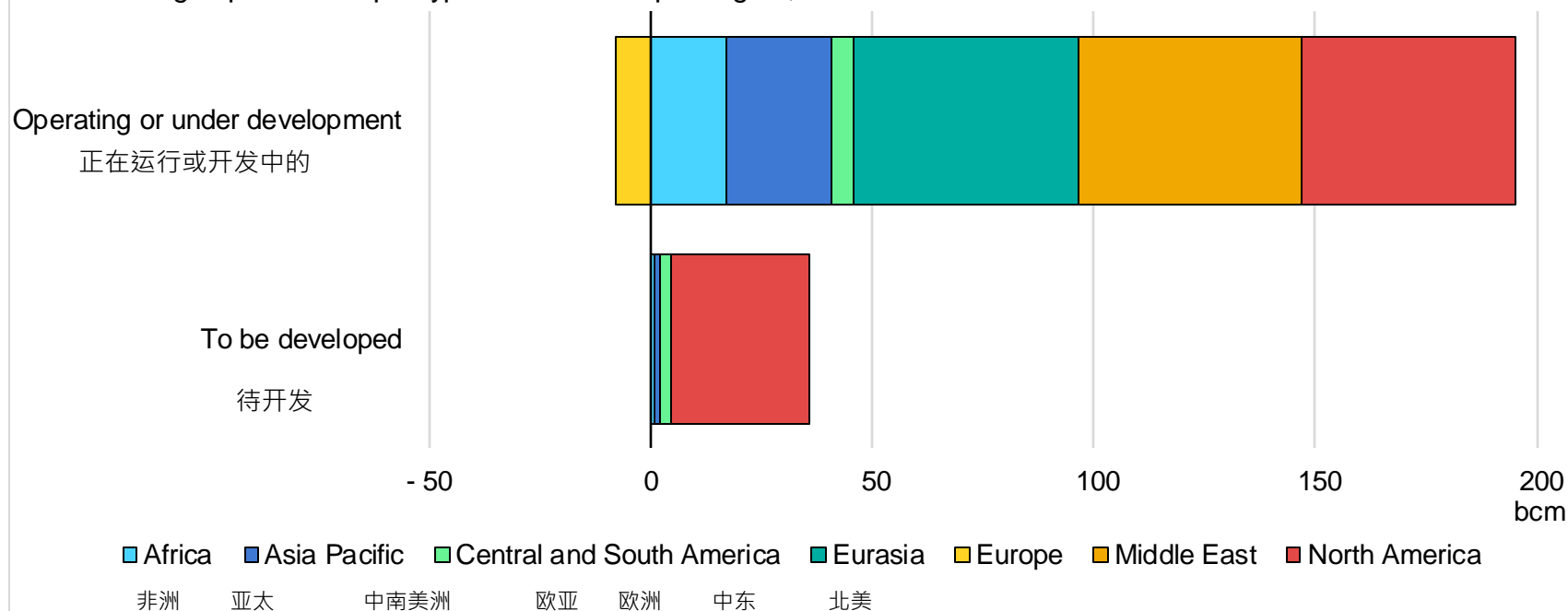
More substitution and efficiency are needed to curb demand to a net-zero trajectory.

到2024年，全球天然气需求将比可持续发展情景中2025年的水平高出2%。需要更多的替代品和能效应用来遏制需求，使之达到净零的轨迹。

Existing and under-development supply meets most needs to 2024

现有的和正在开发的供应满足了2024年的大部分需求

Evolution of gas production per type of asset and per region, 2021-2024 各类资产和各地区的天然气产量变化情况 · 2021-2024



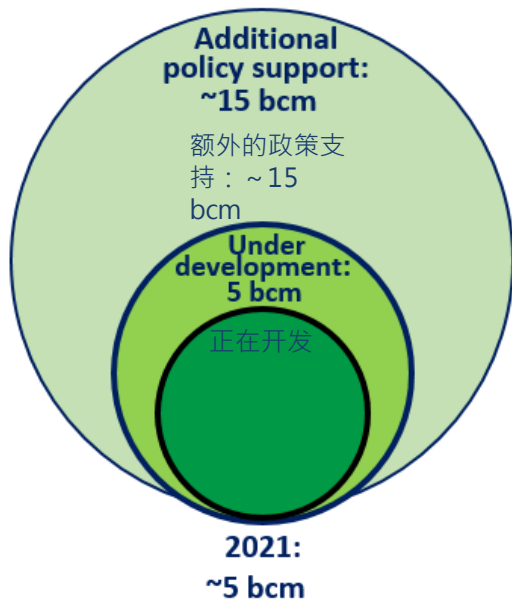
Thanks to the investments decided before 2020, projects already under-development meet most needs to 2024. Most of additional upstream capacity is associated to US LNG projects under construction. 由于在2020年之前决定的投资，已经在开发的项目可以满足到2024年的大部分需求。大部分新增的上游产能与美国在建的液化天然气项目有关。

Green gases are taking off

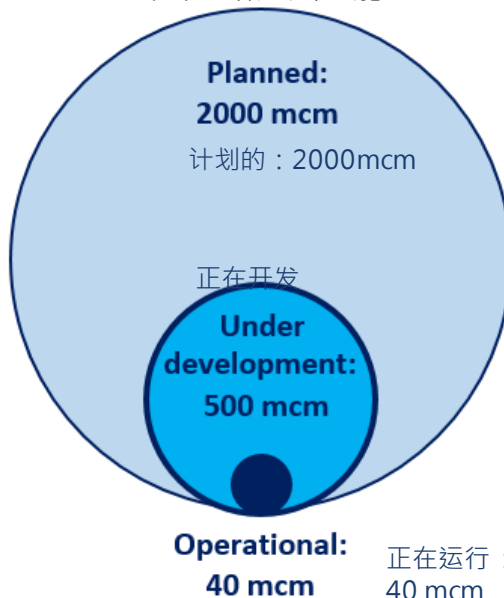
绿色天然气正在兴起

Estimated low-carbon gas supply and forecast (2020-2024) 低碳天然气供应估计和预测 (2020-2024)

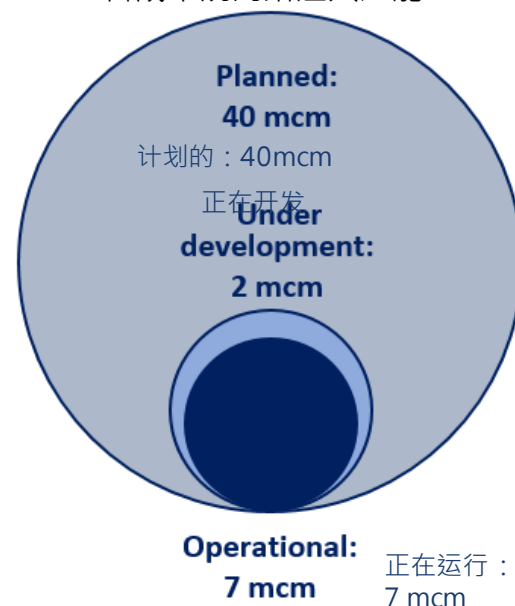
Biomethane 生物甲烷



Hydrogen grid injection capacity
氢气网络注入产能



Synthetic methane grid injection capacity
合成甲烷网络注入产能



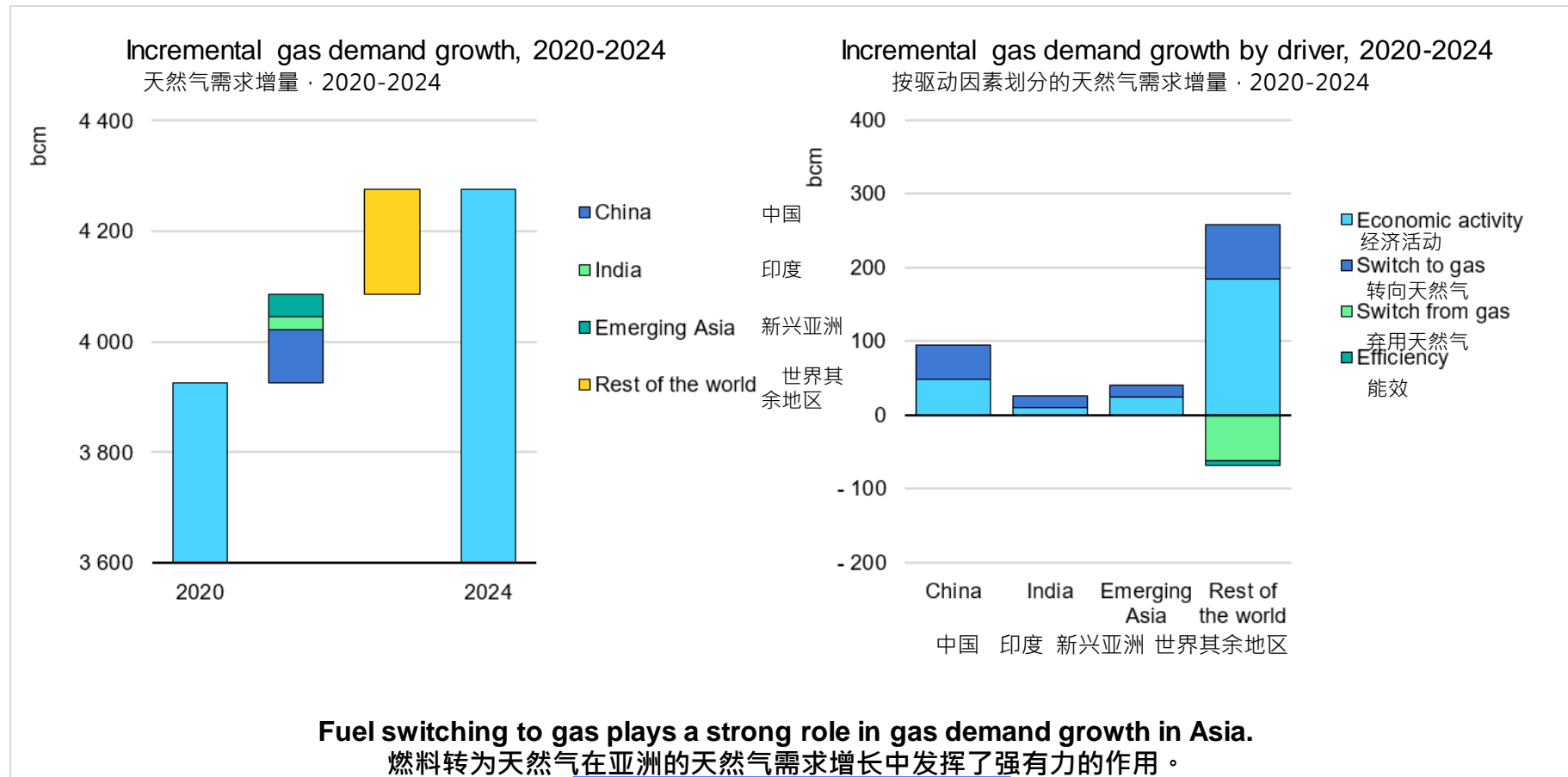
Low-carbon gases will expand rapidly through the medium-term, albeit from a low basis.

The right set of policies could provide additional upside potential for their development.

低碳天然气将在中期内迅速扩张，尽管基数较低。一套正确的适配政策可以为其发展提供额外的上升潜力。

China, India, emerging Asia account for half of global demand growth

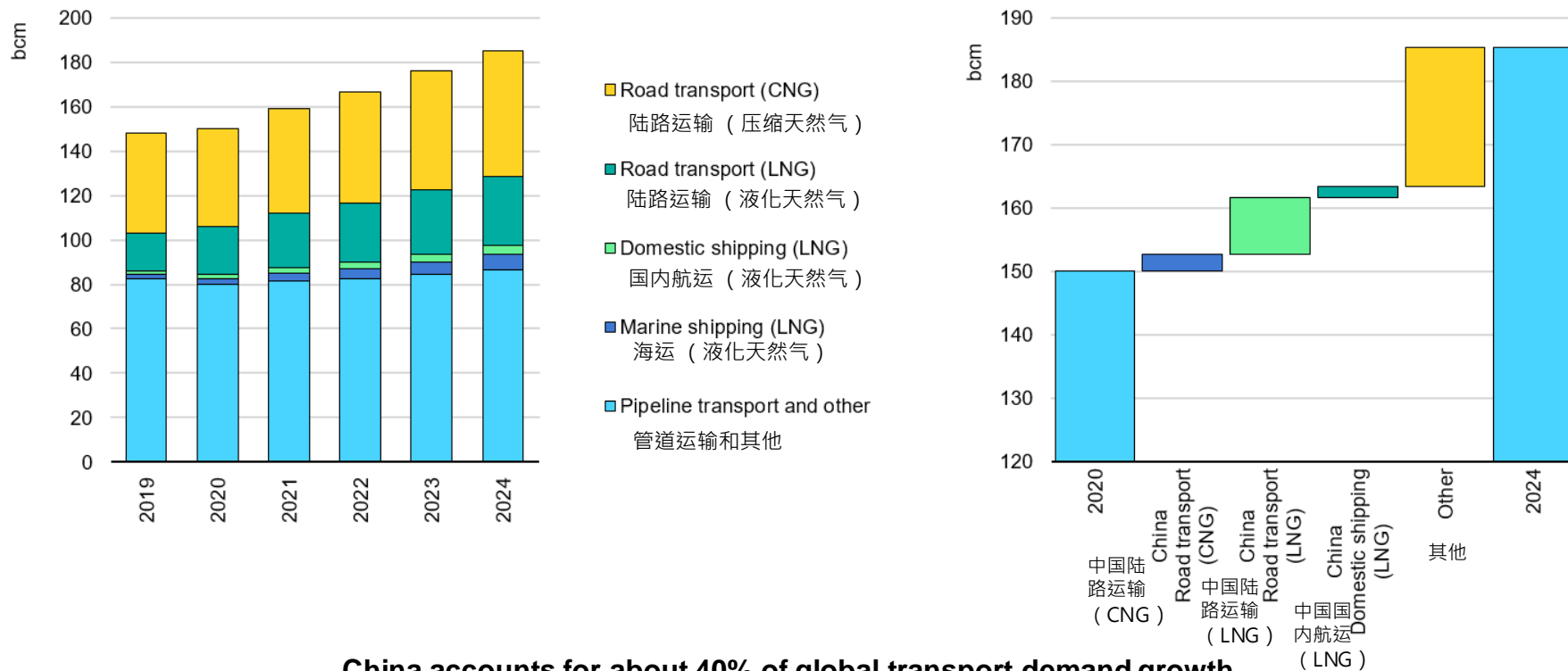
中国、印度、新兴亚洲占全球需求增长的一半



Transport sector gas demand set to grow rapidly from a low base

运输部门的天然气需求将在低基数上迅速增长

Transport sector gas demand, 2019-2024 运输部门的天然气需求 · 2019-2024

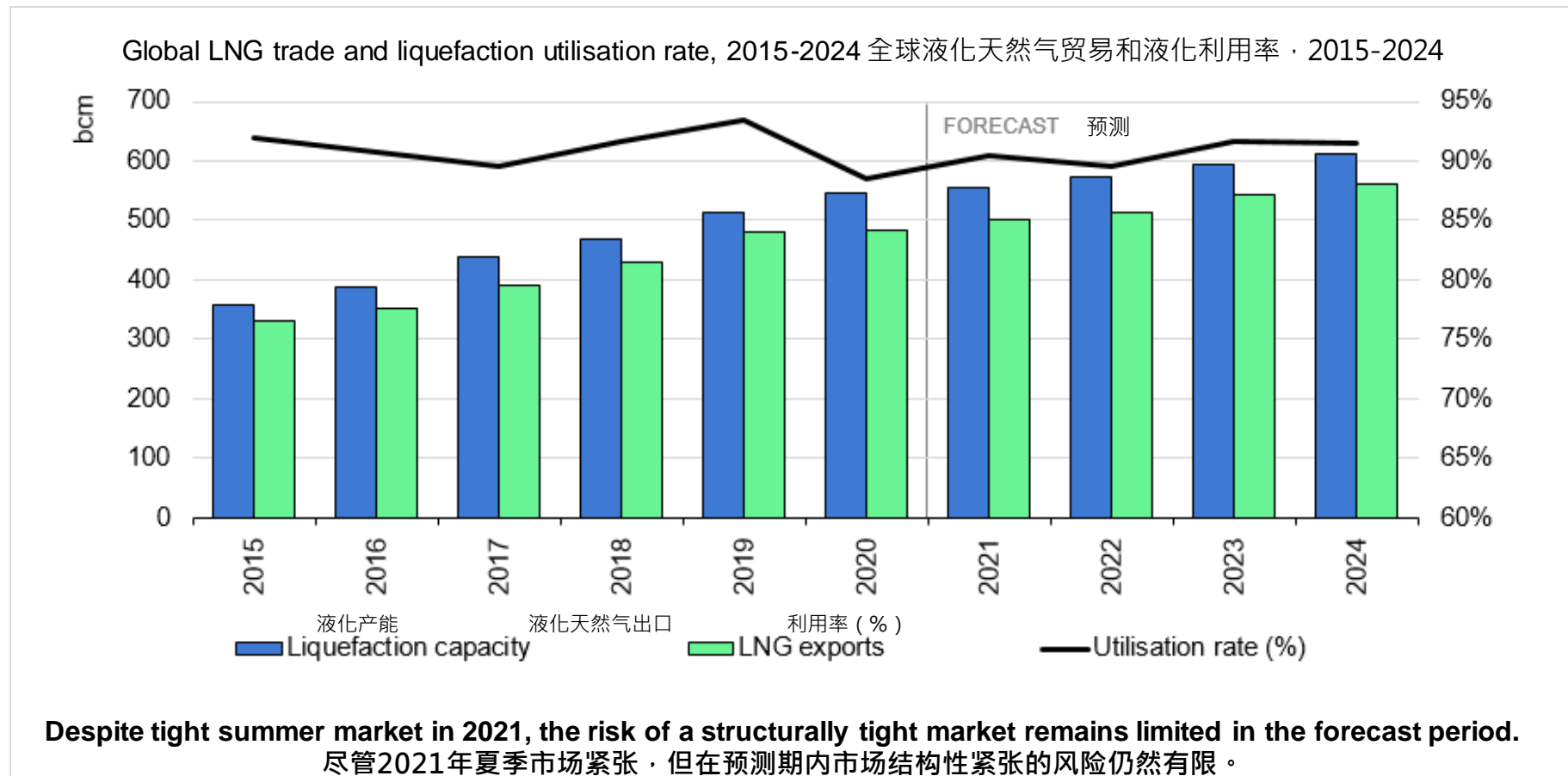


China accounts for about 40% of global transport demand growth.

中国占了全球运输需求增长的大约40%。

Liquefaction utilisation set to recover gradually from 2020 low point

液化利用率将从2020年的低点逐步恢复



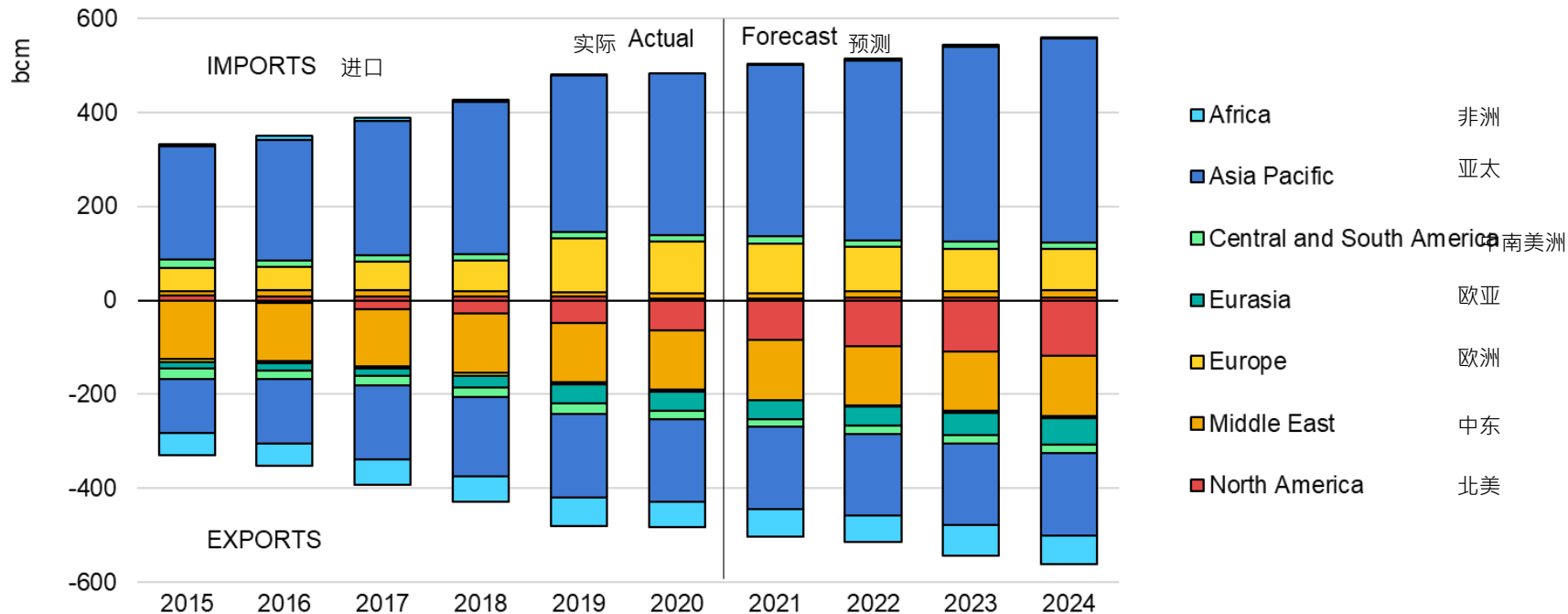
Despite tight summer market in 2021, the risk of a structurally tight market remains limited in the forecast period.

尽管2021年夏季市场紧张，但在预测期内市场结构性紧张的风险仍然有限。

Global LNG trade set to reach more than 560 bcm by 2024

到2024年全球液化天然气贸易将达到5600亿立方米以上

World LNG imports and exports by region, 2015-2024 按地区划分的世界液化天然气进口和出口量 · 2015-2024



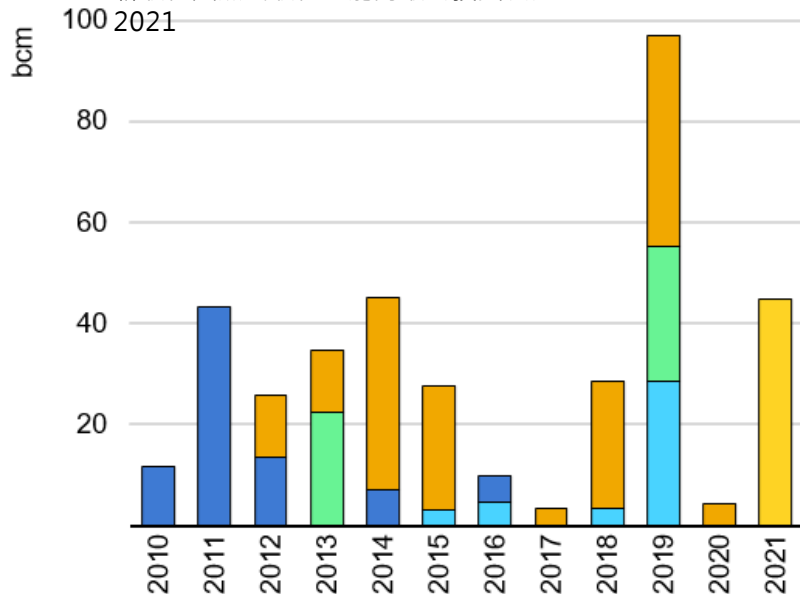
LNG import growth is dominated by Asia, LNG supply growth is led by North America and Russia.
LNG进口增长由亚洲主导，LNG供应增长则由北美和俄罗斯主导。

LNG investment: A tentative post-Covid recovery is underway

液化天然气投资：新冠疫情后的暂时性复苏正在进行中

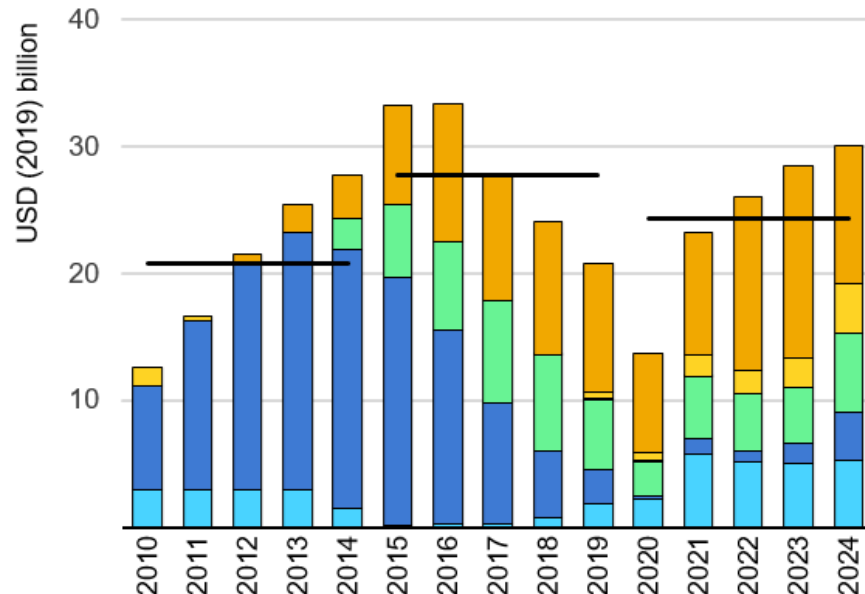
FIDs for new LNG liquefaction capacity, 2010-2021

新液化天然气液化产能的最终投资决定 · 2010-



Investment in new LNG liquefaction capacity, 2010-2024

新液化天然气液化产能的投资 · 2010-2021



■ Africa
 ■ Asia Pacific
 ■ Eurasia
 ■ Europe
 ■ Middle East
 ■ North America
 — 5-year average
 非洲 亚太 欧亚 欧洲 中东 北美 五年平均

The 2018-2019 investment wave and the 2021 recovery drives sustained annual capex growth to 2024.

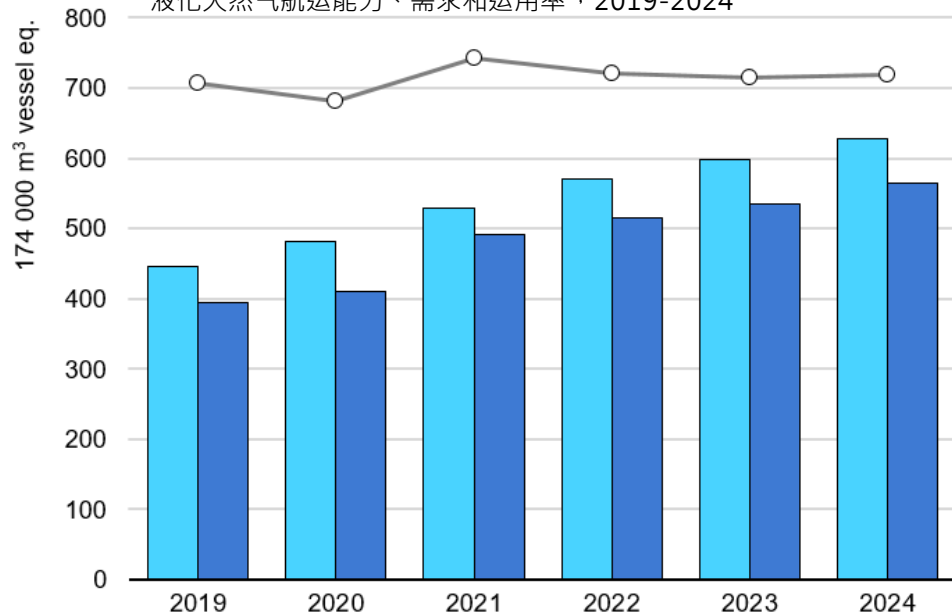
2018-2019年的投资浪潮和2021年的复苏推动年度资本支出持续增长至2024年。

LNG shipping: Capacity growth helps keep the market in balance

液化天然气运输：运力增长有助于保持市场的平衡

LNG shipping capacity, demand and fleet utilisation, 2019-2024

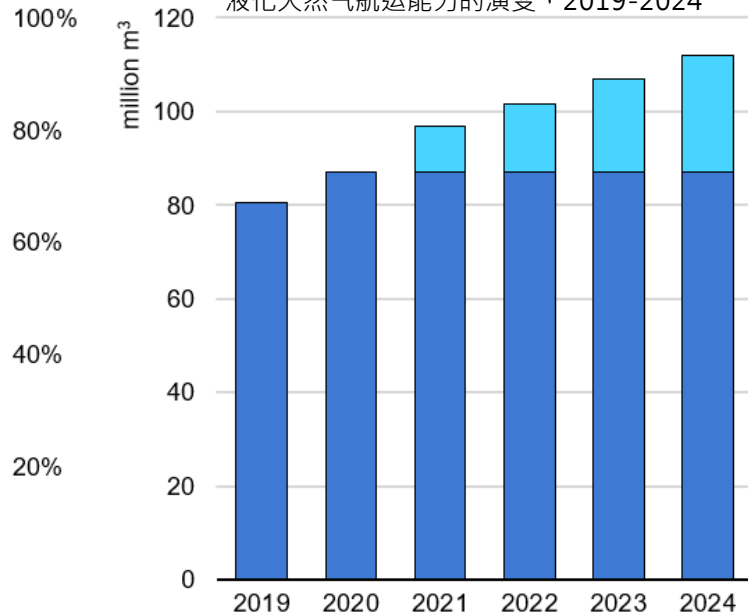
液化天然气航运能力、需求和运用率，2019-2024



■ Shipping capacity ■ Shipping demand —○— Fleet utilisation %
 航运能力 航运需求 运用率 订购 运行中

Evolution of LNG shipping capacity, 2019-2024

液化天然气航运能力的演变，2019-2024



■ On order ■ In operation

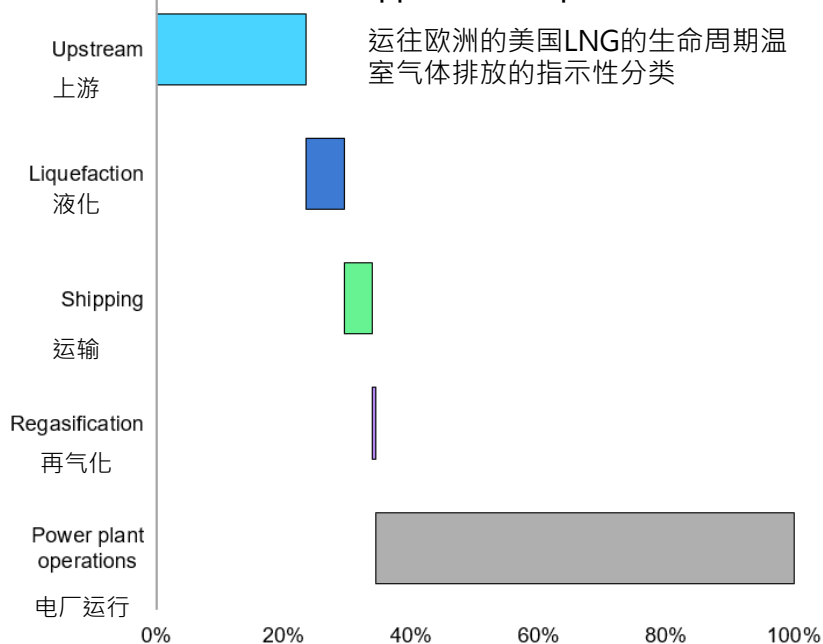
Robust order book for new LNG carriers is expected to mitigate the risk of capacity shortfall in the medium term.

新液化天然气载运船的强劲订单有望在中期内缓解产能不足的风险。

Reducing LNG-related emissions requires effort along the value chain

减少LNG相关的排放需要在价值链上做出努力

Indicative breakdown of life-cycle GHG emissions for US LNG shipped to Europe
 运往欧洲的美国LNG的生命周期温室气体排放的指示性分类



List of carbon-offset LNG cargoes to date 迄今为止的碳抵消LNG货物清单

Date	Seller	Buyer	Source	Destination	Volume
July 2019	Shell	Tokyo Gas	QCLNG Australia	Japan	1 cargo
July 2019	Shell	GS Energy	QCLNG Australia	Korea	1 cargo
July 2019	JERA	-	Das Island UAE	India	1 cargo
March 2020	Shell	CPC	Sakhalin Russia	Yung-An Taiwan	1 cargo
June 2020 (announced)	Shell	CNOOC	-	China	2 cargoes
October 2020	Total	CNOOC	Ichthys Australia	Dapeng China	1 cargo
November 2020	Shell	CPC	Bonny Island Nigeria	Yung-An Taiwan	1 cargo
March 2021	Mitsui	Hokkaido Gas	Sakhalin-II Russia	Ishikari Japan	1 cargo
March 2021	Gazprom	Shell	YAMAL LNG Russia	Dragon United Kingdom	1 cargo
March 2021	RWE	Posco	Pluto LNG Australia	Gwangyang Korea	1 cargo
April 2021	Diamond Gas	Toho Gas	Cameron LNG United States	Chita Japan	1 cargo
April 2021		Pavilion Energy	Corpus Christi United States	Jurong Singapore	1 cargo
April 2021	Cheniere	Shell	Sabine Pass United States	United Kingdom	1 cargo
June 2021	Oman LNG	Shell	Qalhat Oman	-	1 cargo

Interest in GHG mitigation and offsetting measures is on the rise.
 对温室气体减排和抵消措施的兴趣正在上升。

- Gas demand grows 3.6% in 2021, supported by economic recovery and a colder-than-average first quarter. Some mature markets are not fully recovering their 2020 losses. 由于经济复苏和比以往更冷的第一季度，2021年天然气需求增长3.6%。在一些成熟市场，还没有完全追平2020的减少量。
- Post-2021 growth is slower. Industrial buyers and Asian markets lead growth. Growth in 2022-2024 is driven equally by economic activity and fuel substitution. 2021年后增长较慢。工业领域的买家和亚洲市场引领增长。2022-2024年的增长受到经济活动和燃料替代等同的驱动。
- In spite of limited medium-term gas demand growth, stronger policies are required to underpin further fuel substitution and efficiency gains and get on track for a net-zero trajectory. 尽管中期的天然气需求增长有限，但需要更强有力的政策来支持进一步的燃料替代和能效提高，并走上净零排放的轨道。
- Thanks to the investments decided before 2020, projects already under development meet most supply needs to 2024. 由于在2020年之前决定的投资，已经在开发的项目可以满足到2024年的大部分供应需求。
- The focus on cleaner gas supply – low carbon gases, carbon management solutions and methane emission reduction - is growing. 对清洁天然气供应的关注，包括低碳天然气、碳管理解决方案和甲烷减排正在增长。
- LNG trade growth resumes in parallel with capacity expansion. Global liquefaction utilisation rate will return progressively to its pre-2020 level by 2024. 液化天然气贸易增长与产能扩张同步恢复。到2024年，全球液化利用率将逐步恢复到2020年之前的水平。

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