cippe 振威石油展

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AT THE SHOW

cippe 2021

China powers up for renewables

Solar panels and a wind generator at an integrated power station in Yancheng city
Photo: AFP/SCANPIX

China has unveiled ambitious domestic renewable energy initiatives to curb greenhouse gas emissions and make progress on its carbon neutrality pledges. Pages 2&3

中国提出一系列可再生能源宏伟发展计划，推动以二氧化碳为主的温室气体减排，二氧化碳排放力争2030年前达到峰值，力争2060年前碳中和目标。为此，国家石油公司纷纷开启绿色低碳转型新征程。
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Transition spurs switch in focus to natural gas
天然气在能源转型过程中将起重要作用 Page 4

China digs deep for shale gas
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CNOOC Ltd explores domestic opportunities
中海油着重开发国内海上油气资源 Pages 10&11

CNOOC Ltd sets sights on unconventional gas
中海油着眼陆上非常规天然气开发 Page 12

RENEWABLE ENERGY

China's climate drive puts renewable energy at the forefront

Ambitious emissions-reduction targets will come with steep price tag — and natural gas will still have major role in transition

XU YIHE
Singapore

CHINA has unveiled ambitious domestic renewable energy initiatives to curb greenhouse gas emissions and make progress on its carbon neutrality pledges.

Natural gas will remain key in the energy mix of the world's second-largest energy consumer, however, before new renewables will play a significant role.

China is now planning for long-term structural change in its energy system, with diverse energy sources to help mitigate the effects of climate change.

He Jiankun, deputy director of the National Expert Committee on Climate Change, says that to reshape the system, China will curb the expansion of energy-intensive industries such as iron, steel and petrochemicals, while promoting energy conservation and reducing energy intensity.

He adds that China has outlined a plan that will allow renewable energy to supply 25% of its total energy consumption by 2030.

Demand for coal, which constitutes more than 50% of China's energy consumption mix, is expected to peak by 2025, while demand for oil is expected to peak five years later, He Jiankun says.

Carbon dioxide emissions from coal are also expected to peak in 2025, after which coal will increasingly be used as feedstock to convert into syngas and methanol, he says.

Wang Zhongying, director of the Energy Research Institute of the National Development & Reform Commission, an economic planning body, told a recent energy forum in Beijing that renewable energy would see significant advances during the 2021-2025 five-year economic development period.

To build up a modern energy system, China will need to invert the current energy pyramid, now supported by a strong but unsustainable fossil-fuel base.

"Our goal is to invert the pyramid, with a strong renewable energy base and shrinking fossil fuel structure," said Wang. Wang described that energy development strategy over the next five years as cutting coal and "controlling" oil consumption, increasing the use of gas and ramping up renewable energy capacity.

China National Petroleum Corporation chairman Dai Houliang has echoed Wang's view, saying that the national drive for carbon neutrality will lower the demand for fossil fuels.

All these initiatives and plans are being made in response to China's pledge to curb emissions announced by Chinese President Xi Jinping last year.

Ding Zhimin, former deputy director of the Policy & Law Department at the National Energy Administration (NEA), says China needs to slash coal consumption to a fraction of its current level if it is to have a chance of achieving carbon neutrality by 2060.

Up to $20 trillion of investment will be needed and the amount of coal in China's energy mix will have to drop from the current 56.7% to just 5%, she says.

China holds some of the world's largest coal reserves and is the world's top coal producer, with domestic production last year rising 0.9% year-on-year to 3.84 billion tonnes.

Ding says coal will be replaced

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Heavy lift: workers near a crane lifting offshore wind energy equipment at a port in Nanjing, in China's Jiangsu province
Photo: REUTERS/SCANPIX

by renewable energy — led by wind and solar — which will eventually account for more than 85% of China's total energy mix by 2060, up from about 15% last year.

This carbon-neutrality drive, Ding says, will require China to invest 100 trillion to 130 trillion yuan ($15.4 trillion to $20 trillion), which accounts for 1.5% to 2% of the country's total gross domestic product — much higher than the more than $5 trillion earlier predicted by energy consultancy Wood Mackenzie.

A recent report from the International Energy Agency suggests the task will be even more challenging as the nation's economy grows.

While global emissions were down significantly in 2020 due to the Covid-19 pandemic, China was the only country to register an overall increase in CO_2 emissions last year, putting out 75 million tonnes more CO_2 than it did in 2019, the IEA said.

Based on a government plan laid out by the State Council in October last year, China aims to boost the sale of new energy vehicles — mostly battery electric vehicles — to account for 25% of total car sales in 2025.

By 2035, it is hoped the country will run all of its public transportation on electricity.

The drive to use more clean energy will boost the share of electricity generated from non-fossil fuels to 43.5% in 2035 and to 60% by 2050. The country is already the world leader in renewable-energy project development. The NEA said that by the end of last year China had installed renewable energy capacity of 934 gigawatts, up by 17.5% from 2019.

Hydropower accounts for 45% of the total, and wind 27%. Solar energy capacity is 204GW and the rest is from biofuels.

Electricity generated by renewables reached 2214.8 billion kilowatt hours, rising 8.4% from 2018.

The country has also launched a carbon-trading system for power plants, allowing plants that undershoot their CO_2-emission targets to sell their excess credits to other generators.

China is currently responsible for 10 billion tonnes per annum of CO_2 emissions, representing about 30% of the world's total.

CHINA'S EMISSIONS TARGETS

- **Reach peak carbon dioxide emissions before 2030**
- **Achieve carbon neutrality before 2060**
- **Increase the share of non-fossil fuels in the primary energy consumption mix to around 25% by 2030**
- **Lower CO2 emissions per unit of gross domestic product by over 65% from the 2005 level by2030**
- **Increase forest stock volume by 6 billion cubic metres from the 2005 level by 2030**
- **Bring total installed capacity of wind and solar power to over 1.2 billion kilowatts by 2030**

受气候变化驱动，中国能源政策将可再生能源放在首位

中国公布了雄心勃勃的可再生能源发展计划，以遏制温室气体排放，并在碳中和承诺方面取得进展。

然而，在可再生能源发挥重要作用之前，天然气仍将在中国这个全球第二大能源消费国能源结构中起重要作用。

中国目前正在规划能源体系的长期结构性改革，利用多样化能源来帮助缓解气候变化带来的影响。

国家气候变化专家委员会副主任何建坤表示，要重塑气候变化体系，中国将抑制钢铁、石化等能源密集型产业的扩张，同时促进节能降耗。

他补充说，中国已经制定了一个计划，到2030年可再生能源将占中国能源消费总量的25%。

何建坤继续补充说，中国煤炭需求预计将在2025年达峰，而石油需求预计将在五年后达峰。煤炭目前占中国能源消费结构的50%以上。

他说，煤炭产生的二氧化碳排放量预计也将在2025年达到峰值，此后煤炭将越来越多地被用作原料，转化为合成气和甲醇。

中国经济规划机构——国家发展和改革委员会能源研究所所长王仲颖最近在北京的一个能源论坛上表示，在2021–2025年的五年经济发展期间，可再生能源将取得重大进展。

为了建立一个现代能源体系，中国需要颠覆目前的能源金字塔，目前的能源金字塔由一个强大但不可持续的化石燃料基础支撑。

王仲颖说："我们的目标是利用强大的可再生能源基础和不断缩小的化石燃料结构，使金字塔倒转。未来五年能源发展战略是削减煤炭和"控制"石油消费，并增加天然气使用，提高可再生能源生产能力。"

ENERGY TRANSITION

Facilitating change: China is increasingly focusing on natural gas Photo: AP/SCANPIX

Transition spurs switch in focus to natural gas

Domestic oil production plateau to be maintained to 2030 as gas output rises

XU YIHE
Singapore

NATURAL gas is playing an increasingly key role in China's energy transition as the country scales up its renewables drive.

As part of its transition to low-carbon development, the country's onshore focus is switching from expanding oil developments to maintaining its current crude output and increasing natural gas throughput.

This will see the country's crude production peak soon at around 200 million tonnes (1.47 billion barrels) per year, with onshore natural gas output increasing to 250 billion cubic metres by 2030 from last year's 189 Bcm, according to China State Oil & Gas Strategy Research Centre official Zhang Guosheng.

China will look to halt the decline in crude production from fields in eastern basins such as Songliao and Bohai Bay through enhanced oil recovery, while accelerating development in the western Ordos and Tarim basins. Last year, the country produced 3.9 million barrels per day of crude, a 1.6% increase on 2019 but still 200,000 bpd short of the government's 4 million bpd target, according to the National Bureau of Statistics.

In 2020, China's crude imports hit a record high of 11 million bpd, according to Chinese customs records — an increase of 8.8% from 2019, largely boosted by volumes imported in the second and third quarters when low international oil prices spurred buying interest from Chinese traders.

China National Petroleum Corporation (CNPC) last year posted a steep rise in domestic crude production to about 2.45 million bpd from 2.035 million bpd in 2019, contributing to more than half of the country's total oil output.

Company chairman Dai Houliang says future domestic onshore exploration and development will focus on seven basins — Songliao, Bohai Bay, Ordos, Jungar and Tarim for oil, and Ordos, Sichuan and Tarim for gas.

While onshore oil and gas production in eastern China continues to decline, the north and west are primed for a robust increase, particularly at the Changqing field in the Ordos basin, the Sichuan basin's Southwest field and the Tarim basin Tarim field.

CNPC's Changqing has emerged as the country's largest oil and gas field, with production last year reaching 441 million barrels of oil equivalent. Production is expected to increase to 500 million boe by 2025 and 514 million boe in 2030.

The company plans to boost Tarim's production this year by 1.3% to 229 million boe, up from last year's 226.4 million boe.

A more ambitious plan calls for CNPC to boost Tarim's output to 294 million boe by 2025 and further to 367.5 million boe by 2035. The Southwest field is CNPC's major battleground for an increase in natural gas production.

The company is targeting production of 35.5 Bcm this year, up 11.6% on last year. It is also targeting an increase to 50 Bcm by 2025 and further to 80 Bcm by 2030.

The Ministry of Natural Resources (MNR) has licensed 1735 conventional hydrocarbon blocks covering over 4 million square kilometres to the three national oil companies — CNPC, Sinopec and China National Offshore Oil Corporation — free of charge.

The trio now hold 97% of the 924 onshore blocks licensed for development and 99% of the 811 blocks for exploration.

In 2019, 118,100 square kilometres of acreage held by the trio was relinquished to the MNR.

Since 2011, MNR has auctioned off 20 conventional hydrocarbon blocks, 22 shale gas blocks and 10 coalbed methane blocks

能源刺激政策重点转向天然气

尽管中国正在大力发展可再生能源，天然气在中国能源转型中正在扮演着越来越重要的角色。

作为向低碳发展转型的一部分，中国陆地油气开发重点正从扩大石油开发转向保持目前原油产量并增加天然气生产消费量。

中国国家石油天然气战略研究中心官员张国生表示，中国原油产量很快将达到每年约2亿吨（14.7亿桶）的峰值，到2030年，陆地天然气产量将从去年的189亿立方米增加到250亿立方米。

中国将寻求通过提高石油采收率来阻止松辽和渤海湾等东部盆地油田原油产量下降，同时加快鄂尔多斯和塔里木盆地西部的开发。

国家统计局数据显示，去年，中国原油日产量为390万桶，较2019年增长1.6%，但距离政府的400万桶/日目标仍有10万桶差距。

据中国海关记录，2020年中国原油进口量创下1100万桶/日的历史新高——较2019年增长8.8%，主要受第二和第三季度进口量增加推动，当时低迷的国际油价刺激了中国贸易商的购买兴趣。

中国石油天然气集团公司（CNPC）去年公布，国内原油产量从2019年的203.5万桶/日大幅上升至约245万桶/日，占中国石油总产量的一半以上。

公司董事长戴厚良表示，未来国内陆地勘探开发将集中在松辽、渤海湾、鄂尔多斯、准噶尔和塔里木等7个盆地。鄂尔多斯、四川和塔里木盆地将集中进行天然气勘探。

在中国东部陆地油气产量持续下降的同时，北部和西部地区的油气产量有望强劲增长，特别是鄂尔多斯盆地的长庆油田、四川盆地的西南油田和塔里木盆地的塔里木油田。

中石油长庆油田已经成为中国第一大天然气气田，去年年产量达4.41亿桶油当量。产量到2025年可增加到5亿桶油当量。

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Tuesday 8 June 2021

The editorial content of this section, pages 5 to 8, is the sole responsibility of cippe's organisers

Curtain rises for grand opening of cippe2021 in Beijing

The World's leading annual event for the oil and gas industry — The 21st China International Petroleum & Petrochemical Technology and Equipment Exhibition (cippe2021), launches today at Beijing's New China International Exhibition Center. The show runs unitil 10 June.

With a total exhibition area of 90,000 square metres, cippe2021 focuses on the entire oil and gas industry chain.

Also being held concurrently with cippe2021 are relevant exhibitions on natural gas, pipelines, marine engineering, offshore oil & gas, city gas, hydrogen energy, shale gas, trenchless technology, explosion-proof electric technology, safety protection and automation & instrumentation.

About 1800 exhibitors from 65 countries and regions are gathering here to showcase the world's leading equipment and technology.

Showing new exhibits and technology are well-known domestic and international enterprises including Rosneft, Caterpillar, NOV, Schlumberger, Baker Hughes, ABB, Philips, Emerson, CNPC, Sinopec, COSL, PipeChina, Sinochem, CSSC, CASC, CRRC, Yanchang Petroleum, Honghua, Jereh, Kerui, SANY Group, RG PETRO-MACHINERY Group, HABO, Dongying Economic and Technological Development Zone, CITIC Heavy Industries, SUNWARD, Hilong Group, Weichai, ZPEC, Anton, Dong Fang Xian Ke, Shanghai Shenkai, BESTEBIT, PetroKH, Haimo Technologies, Petro-king, West Petro, Daye Special Steel, Guoxing Huijin, THpetro and Tong Petrotech.

More than 100 forums and seminars will be held concurrently during cippe2021, which will gather academicians and experts, representatives from industrial enterprises to discuss the development trends and investment opportunities of the oil, gas and energy industry.

Meanwhile, cippe2021 will launch Business Matchmaking Meeting to provide a one-to-one matching platform for suppliers and purchasers, and to facilitate accurate matchmaking between enterprises.

Welcome to cippe2021 to explore more opportunities from 8 to 10 June.

cippe2021 is building on the success of previous events Photo: cippe

cippe2021北京石油展今日盛大开幕

6月8日，一年一度的世界石油天然气大会——第二十一届中国国际石油石化技术装备展览会（cippe2021）在北京·中国国际展览中心（新馆）开幕。

本次展会聚焦油气全产业链，总展览面积近9万平方米，同期举办天然气、油气管道、燃气、氢能、非开挖、海工装备、海洋石油、页岩气、防爆电气、安全防护、自动化仪器仪表等行业相关展会。来自全球65个国家和地区的1800家企业齐聚盛会，现场展示领先全球的先进装备与技术。

展会现场，俄油、卡特彼勒、国民油井、斯伦贝谢、贝克休斯、ABB、飞利浦、艾默生、中石油、中石化、中海油服、国家管网、中国中化、中国船舶集团、中国航天、中国中车、延长石油、宏华、杰瑞、科瑞、三一集团、南阳二机、浩铂智能、东营经济开发区、中信重工、山河智能、海隆石油、潍柴、中曼石油、安东石油、东方先科、上海神开、百施特、中油科昊、海默科技、百勤油服、西部石油、大冶特钢、国兴汇金、通石装备、通源石油等国内外知名企业重磅亮相，新产品新技术同台竞技。

今年展会同期将举办近百场活动，院士专家、企业领袖、行业代表云集，热议海内外石油天然气及能源行业发展趋势和投资机遇。同时，还为参展商与采购商搭建"一对一"供需合作平台，促进企业间精准对接。

6月8–10日，欢迎参展参观cippe2021，探寻更多合作机遇。

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同期展会

CING
第十一届北京国际天然气技术装备展览会

CIPE
第二十一届北京国际石油天然气管道与储运技术装备展览会

北京海工展
第十一届北京国际海洋工程技术与装备展览会

ciooe
第二十一届北京国际海洋石油天然气展览会

cisge
第十一届北京国际页岩气技术与装备展览会

GAS
2021北京国际燃气应用与技术装备展览会

HEIE
北京国际氢能技术装备展览会

CITTE
2021北京国际地下工程建设及非开挖技术装备展览会

Expec
第二十一届北京国际防爆电气技术设备展览会

cieca
北京国际石油和化工自动化技术装备及仪器仪表展览会

cipse
北京国际石油和化工安全防护技术及设备展览会

cippe2021
Concurrent Events Schedule

	时间 TIME	会议室 MEETING ROOM	主题 EVENT TOPICS	主讲公司及主讲人 SPEAKERS
8 June	09:00-16:30	W-201会议室 Conference Room W201	第十三届国际石油天然气产业高峰论坛暨展会开幕式—加快数字化转型 打造高质量发展“新引擎” The 13th International Petroleum & Natural Gas Summit — Accelerating Digital Transformation to Embrace Quality Development	中国国际石油石化技术装备展览会(cippe) 组委会 China International Petroleum & Petrochemical Technology and Equipment Exhibition (cippe Organizing Committee)
	10:00-12:10	W-105会议室 Conference Room W105	cippe2021 国际油气管道高峰论坛 cippe2021 International Oil & Gas Pipeline Summit Forum	北京振威展览有限公司 Zhenwei Exhibitions
	10:00-11:00	W-102会议室 Conference Room W102	利用油气藏边/底水资源开采油气方法及设备 Method and Equipment of Exploiting Oil and Gas by Using Edge or Bottom Water Resources of Oil and Gas Reservoir	北京红蓝黑能源科技有限公司 Beijing HONGLANHEI Energy Technology Co., Ltd
	10:00-16:30	Panda区 Panda Zone	cippe2021 驻华使馆（油气）推介会 cippe2021 Embassy (Oil & Gas) Promotion Conference	中国国际石油石化技术装备展览会 (cippe) 组委会 北京振威展览有限公司 China International Petroleum & Petrochemical Technology and Equipment Exhibition (cippe) Organizing Committee Zhenwei Exhibitions
	10:00-16:30	Matching区 Matching Zone	cippe2021 采购对接会 cippe2021 Business Matchmaking Meeting	
	10:00-16:30	Lucky区 Lucky Zone	天降好“鲤” 就只宠你 To be A Fancy Carp of cippe2021	
	11:00-16:30	活动区 Activity Zone	cippe2021 企业新产品新技术推介会 cippe2021 Enterprise New Product and New Technology Promotion Conference	
	13:00-17:00	W-202会议室 Conference Room W202	2021 海上风电产业发展高峰论坛 Offshore Wind Power Industry Development Forum 2021	中国船舶工业行业协会 China Shipbuilding Industry Association 中国船级社 China Classification Society 北京振威展览有限公司 Beijing Zhenwei Exhibition Co., Ltd
	13:00-14:00	W-101会议室 Conference Room W101	创新技术在高性能钻机上的应用 Innovative Technology Applied in High Performance Drilling Rig	北京捷杰西石油设备有限公司 Beijing JJC Petroleum Equipment Co., Ltd.
	13:00-14:00	W-102会议室 Conference Room W-102	多孔介质燃烧技术及热工装备项目介绍 Introduction of Porous Medium Combustion (PMC) Technology and PMC Heat Equipment	松山湖材料实验室 Songshan Lake Materials Laboratory
	13:00-14:00	W-104会议室 Conference Room W104	防爆安全及承压设备安全与认证的全球化解读 The Global Safety Requirement of Explosion-Proof and Pressure Equipment	德国莱茵 TÜV TÜV Rheinland
	13:00-16:20	W-105会议室 Conference Room W105	API 标准与认证更新研讨会 API Standards and Certification Updates	美国石油学会 (API) American Petroleum Institute (API)
	13:00-16:20	W-201会议室 Conference Room W201	防爆产品 CCC 认证及新技术交流研讨会 Explosion Protection Products CCC Certification and New Technology Exchange Seminar	国家防爆产品质量监督检验中心（天津） National Ex-product Quality Supervision and Inspection Center (Tianjin) 中创新海（天津）认证服务有限公司 PCEC (Tianjin) Certification Services Co., Ltd. 中海油天津化工研究设计院有限公司 CNOOC Tianjin Chemical Research & Design Institute Ltd
	13:00-16:20	E-203会议室 Conference Room E203	ECF 第六届页岩油气技术装备研讨会 2021 ECF 6th Shale Oil & Gas Technology and Equipment Symposium 2021	ECF 国际页岩气论坛 Energy China Forum
	13:00-16:20	E-206/207/208/209/210 会议室 Conference Room E-206/207/208/209/210	2021 国际石油石化技术会议 International Petroleum and Petrochemical Technology Conference 2021	西安石油大学 Xi'an Shiyou University 陕西省石油学会 Shaanxi Petroleum Society 北京振威展览有限公司 Beijing Zhenwei Exhibition Co., Ltd.
	14:10-16:20	W-101会议室 Conference Room W101	1 高导流通道压裂新技术 High Conductivity Channel Fracturing Technology 2 新型非放射性示踪监测技术及应用 Nonradioactive Tracer Monitoring Technology and Its Field Application 3 大地新能源压裂增产技术及产品 Fracturing Technologies and Products of DaDi New Energy	青岛大地新能源技术研究院 Qingdao DaDi Institute of New Energy Technologies
	14:10-15:20	W-102会议室 Conference Room W102	中国非开挖行业创业者联盟—迅通（北京）迅通非开挖建设集团有限公司招募事业部 Recruitment Division of Xuntong Non-excavation Entrepreneur Alliance	迅通（北京）非开挖建设工程有限公司 Xuntong Beijing Trenchless Construction Engineering Co., Ltd
	14:10-16:20	W-103会议室 Conference Room W103	欧美油气田数字孪生发展及现状 Development and Status of Digital Twinning in Oil and Gas Fields in Europe and America	挪威康士伯公司 Kongsberg

cippe2021
Concurrent Events Schedule

	时间 TIME	会议室 MEETING ROOM	主题 EVENT TOPICS	主讲公司及主讲人 SPEAKERS
9 June	09:30-12:00	W-201会议室 Conference Room W201	第十三届国际石油天然气产业高峰论坛——加快数字化转型 打造高质量发展“新引擎” The 13th International Petroleum & Natural Gas Summit — Accelerating Digital Transformation to Embrace Quality Development	中国国际石油石化技术装备展览会(cippe)组委会 China International Petroleum & Petrochemical Technology and Equipment Exhibition (cippe Organizing Committee)
	09:00-16:20	W-105会议室 Conference Room W105	2021 国际天然气和城市燃气高峰论坛 2021 International Natural Gas and City Gas Summit	北京振威展览有限公司 Zhenwei Exhibitions
	09:00-16:20	E-206/207/208/209/210 会议室 Conference Room E-206/207/208/209/210	2021 国际石油石化技术会议 International Petroleum and Petrochemical Technology Conference 2021	西安石油大学 Xi'an Shiyou University 陕西省石油学会 Shaanxi Petroleum Society 北京振威展览有限公司 Beijing Zhenwei Exhibition Co., Ltd.
	09:30-16:30	Panda区 Panda Zone	cippe2021 石油院校技术成果交流会 cippe2021 Universities Exchange Conference on Oil & Gas Research Achievements	中国国际石油石化技术装备展览会(cippe)组委会 China International Petroleum & Petrochemical Technology and Equipment Exhibition (cippe Organizing Committee)
	09:30-16:30	Activity区 Activity Zone	cippe2021 企业新产品新技术推介会 cippe2021 Enterprise New Product and New Technology Promotion Conference	
	10:30-16:30	Matching区 Matching Zone	cippe2021 采购对接会 cippe2021 Business Matchmaking Meeting	
	10:30-16:00	Lucky区 Lucky Zone	天降好“鲤” 就只宠你 To be A Fancy Carp of cippe2021	
10 June	13:00-15:10	W-101会议室 Conference Room W101	油气勘探开发与绿色发展论坛暨全球石油公司能源转型方向及重要举措 Forum on Exploration, Development, and Green Development of Petroleum Industry & Energy Transition Strategies of Global Oil Companies	穆点市场咨询（北京）有限公司 Mudian Market Consulting (Beijing) Co., Ltd.
	09:00-12:20	E-206/207/208/209/210 会议室 Conference Room E-206/207/208/209/210	2021 国际石油石化技术会议 International Petroleum and Petrochemical Technology Conference 2021	西安石油大学 Xi'an Shiyou University 陕西省石油学会 Shaanxi Petroleum Society 北京振威展览有限公司 Beijing Zhenwei Exhibition Co., Ltd.
	09:30-12:00	Panda区 Panda Zone	能源企业法务与投资论坛 Energy Enterprises Legal Affairs and Investment Forum	中国民营科技实业家协会投融资服务工作委员会 China Non-Governmental Science & Technology Entrepreneurs Association

注：以上活动日程或有调整，以展会现场公布为准。 Note: The final agenda will be announced by the Organizing Committee on-site

Why Allison? You're what drives us

Allison Transmission is the world's largest manufacturer of fully automatic transmissions for medium- and heavy-duty commercial vehicles and medium- and heavy-tactical US defense vehicles, as well as a supplier of commercial vehicle propulsion solutions, including electric hybrid and fully electric propulsion systems.

Allison products are used in a wide variety of applications, including on-highway trucks (distribution, refuse, construction, fire and emergency), buses (school, transit and coach), motorhomes, off-highway vehicles and equipment (energy, mining and construction applications) and defense vehicles (wheeled and tracked). **Booth: W1410**

艾里逊变速箱参展cippe2021

艾里逊变速箱公司（展位号：W1410）是全球最大的中重型商用车全自动变速箱生产商，同时也是中重型战术美国国防车辆全自动变速箱制造商和商用车驱动解决方案供应商，包括混合动力和纯电动驱动系统。艾里逊变速箱为多种车型配套，包括公路用车（配送车、垃圾车、建筑车辆、消防和应急车辆）、客车（校车、城市公交车和长途客车）、房车、非公路车辆和设备（能源、采矿和建筑应用）及国防车辆（轮式和履带）。

艾里逊公司成立于1915年，总部设立于美国印第安纳州首府印第安纳波利斯市。艾里逊变速箱公司产品远销80多个国家，区域总部分别设于荷兰、中国和巴西，并在美国、匈牙利和印度设有工厂，在全球拥有近1,500家独立分销商和代理商。

THpetro—specialized oilfield equipment manufacturer

THpetro is an oilfield equipment manufacturer based in China, with over 50 years of professional experience.

So far, it has built over 30,000 sets of equipment for customers worldwide, and established sales and service bases in North America, South America and Africa.

Its main product portfolio includes mobile drilling rig and workover rigs; oil bailing units; and well flushing and dewaxing units.

THpetro integrates the concept of energy conservation and environment protection in the invention of live well workover rigs, no-guyline workover rigs, flushing fluid trucks, sand washing trucks, water well drilling rigs, core drilling machines and CBM workover rigs.

THpetro has obtained ISO9001, ISO10012, ISO14401, OHSMS 28001-2001 and API Spec 4F, 7K, 8C certifications. **Booth: E2161**

通石公司——专业石油钻采设备制造商

通石公司坐落于中国东北部，是中国最早生产石油钻采设备的专业厂家，成立于1958年，是中国石油和中国石化的顶级供应商。已为世界各地的客户制造了三万多套设备，并在北美洲、南美洲，非洲建立了销售和服务基地。主要产品包括车载钻、修井机系列，油田环保系列、各类采油车、洗井清蜡设备、自主研制开发油田环保节能作业设备带压作业机系列、无绷绳修井机系列、洗井液处理车、冲砂液处理车、水井钻机、岩心钻机、煤层气修井机等覆盖多种能源开采的设备。欢迎您莅临E2161展位！

Stäubli—a leading manufacturer of connector systems

At cippe2021, Stäubli will stage an Asia premiere of the safety breakaways couplings, which are used to prevent pull away accidents when tanker trucks or rail tank wagons move or drift during the loading and unloading process, without being first disconnected from the terminal.

It will also show large diameter dry disconnect couplings, which are for applications in fluid transfer and distribution, loading and unloading of rails cars, tank trucks, vessels, containers, tanks and drums.

With quick connection and disconnection by operating the hand wheel, it is an essential component for tanks to improve efficiency.

As a long-standing partner of the chemical industry, Stäubli develops connection solutions to meet this sector's stringent requirements in terms of safety, prevention of contamination risks and productivity. **Booth: W1525**

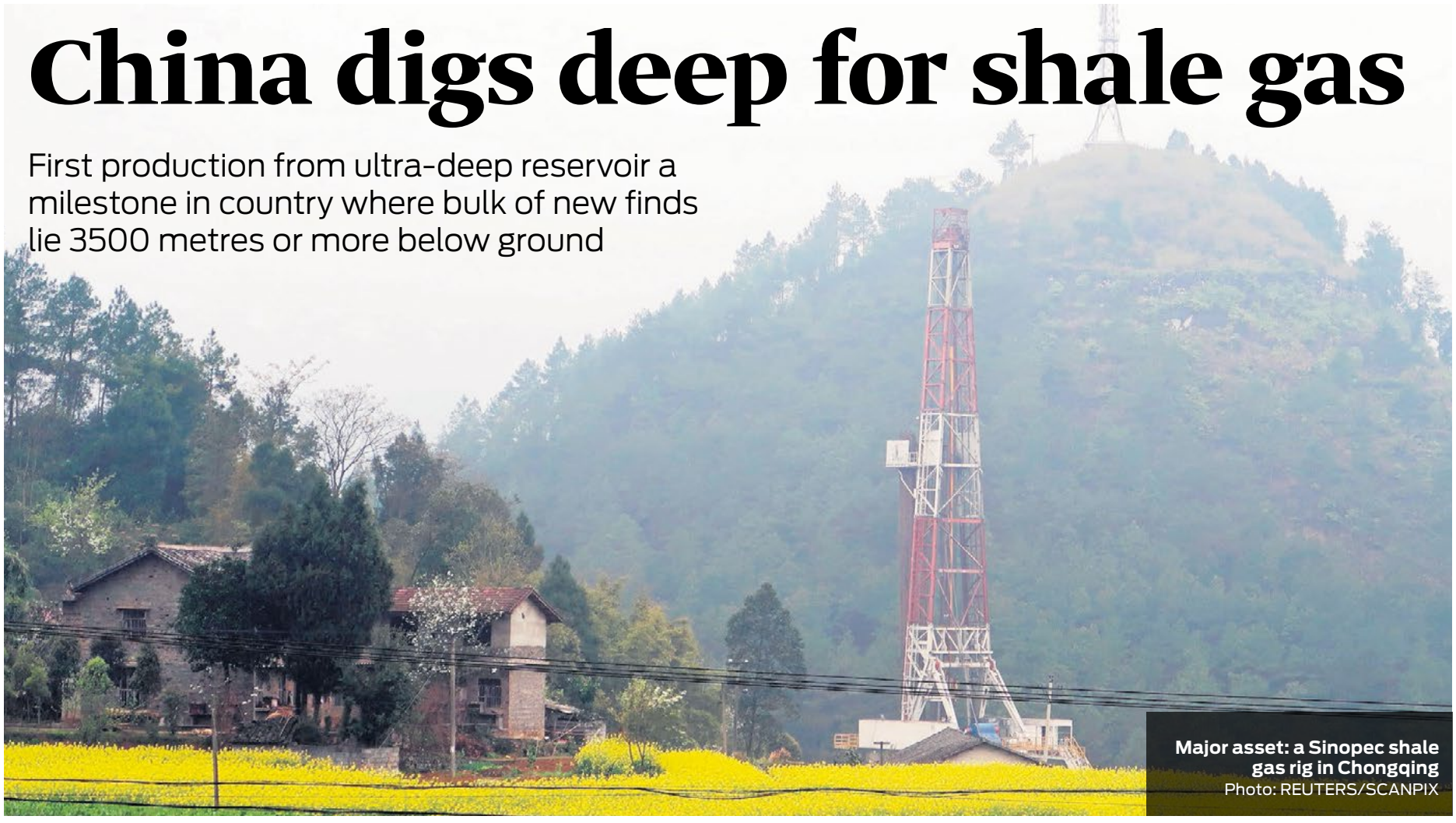
史陶比尔——全球快速连接系统的领先制造商

作为全球快速连接系统的领先制造商之一，史陶比尔集团的产品满足各类流体、气体、电力和数据连接的需求。这次展会史陶比尔将展出在亚洲首次展示的安全拉断阀系列，产品设计结合了两种功能，可以避免输送管路意外断开产生的风险。此外，史陶比尔还将展示大口径干式连接器系列。诚挚邀请您莅临W1525展位！

SHALE

China digs deep for shale gas

First production from ultra-deep reservoir a milestone in country where bulk of new finds lie 3500 metres or more below ground



Major asset: a Sinopec shale gas rig in Chongqing
Photo: REUTERS/SCANPIX

XU YIHE
Singapore

CHINA is linking an ambitious natural gas throughput increase to successful exploration and production in the nation's challenging shale gas plays over the next five years.

The country's energy watchdog, the National Energy Administration, urged national oil companies in a recent meeting to prioritise shale gas development by tapping reservoirs below 3500 metres.

The latest survey released by China's Ministry of Natural Resources (MNR) shows the country now boasts 21.8 trillion cubic metres of technically recoverable shale gas resources, which could help underpin a production capacity of 50 billion cubic metres per annum.

However, about 80% of the new discoveries are trapped in reservoirs deeper than 3500 metres, posing serious development challenges given the technical constraints.

The shale reservoirs are more fractured than those elsewhere, which can lead to well integrity issues while drilling — and also helps explain why international oil and gas majors exited China's shale sector after poor results.

China's largest shale gas producer, Sinopec, has achieved first gas at its latest discovery in the southwestern Sichuan basin — the first shale gas production in the country from a reservoir below 3500 metres.

It has established an annual shale gas production capacity of 1 Bcm at the Weirong field, with current production of 3.5 million cubic metres per day from reservoirs averaging 3750 metres in depth.

Located in Neijiang and Zigong cities in Sichuan province, the Weirong field holds 124.7 Bcm of proven reserves, which could support annual production of 1 Bcm, according to Sinopec.

CNPC has confirmed 1.2 trillion cubic metres of shale reserves in reservoirs between 2500 and 3500 metres below ground in an area covering 2500 square kilometres in the southern part of Sichuan basin.

It plans to drill 3600 horizontal wells in this part of the basin for annual production of 2 Bcm for 10 years.

Currently, CNPC has earmarked four areas in the southern part of Sichuan basin for shale gas development and is planning to build 24 well pads for drilling 75 wells. Of the total, 26 wells have been completed and nine have been put into production.

Due in part to the challenges of producing shale gas from deeper reservoirs, China only produced 20 Bcm of shale gas last year, falling far short of its 2020 target of 30 Bcm.

Nevertheless, industry officials remain upbeat and have set an even more aggressive production target for 2025.

MNR official Zhang Dawei told the recent 10th Asia Pacific Shale Gas & Oil Summit, held by Energy China Forum in Shanghai, that the country is looking to boost shale gas output to between 50 Bcm and 80 Bcm per year by 2025.

The production increase is part of China's 14th five-year economic development plan, which starts this year.

China is also looking to increase its proven in-place shale gas reserves to 6.5 Tcm by 2025, targeting the southern and eastern parts of Sichuan province, the northwest of Yunnan province and the Ordos basin.

CNPC hopes to boost shale gas production from its Southwest field to 40 Bcm by 2025, up from 10 Bcm last year, which will require some 300 new wells.

CNPC will drill 385 shale gas wells in Sichuan this year, of which 237 will be put into production.

The new wells will help CNPC boost shale gas production to 12 Bcm this year.

Sinopec's largest shale gas field — Fuling, in Chongqing — last year produced 6.7 Bcm of shale gas, the highest throughput since operations began in 2012.

The company built 32 gas-gathering centres in 2020 and brought 104 new wells into production.

中国深挖页岩气资源

中国雄心勃勃的天然气产量增长计划从很大程度上将取决于未来五年中国富有挑战性的页岩气区块的成功勘探和生产。

中国国家能源监督机构——国家能源局在最近的一次会议上敦促国家石油公司优先开发3500米以下的页岩气。

中国自然资源部（MNR）发布的最新调查显示，中国目前拥有21.8万亿立方米的技术可采页岩气资源，这将有助于支撑每年500亿立方米的生产能力。

然而，大约80%的新发现被困在3500米以下的储层中，由于技术限制，开发存在严峻挑战。

页岩储层比其他储层更具裂缝性，可能导致钻井过程中出现井身完整性问题，这也解释了为何国际油气巨头在业绩不佳后退出中国页岩行业。

中国最大的页岩气生产商中石化最近在四川盆地西南部深层有了发现，开创了中国第一次从3500米以下的储层开采页岩气。

该公司已在威荣油田建立了10亿立方米的页岩气年生产能力，目前从平均3750米深的储层每天生产350万立方米。

中石化称，位于四川省内江市和自贡市的威荣气田拥有1247亿立方米的天然气探明储量，可支持10亿立方米的年产量。

中国石油天然气集团公司证实，在四川盆地南部2500平方公里的地区，在地下2500米至3500米的储层中，页岩气储量达1.2万亿立方米。

该公司计划在该盆地的这部分地区钻3600口水平井，10年期间年产20亿立方米。

目前，中国石油天然气集团公司已在四川盆地南部划定4个地区进行页岩气开发，并计划建设24个井场，钻井75口，其中完井26口，投产9口。

中国去年页岩气产量只有200亿立方米，远远低于十三五规划中制定的300亿立方米目标，部分原因是深层页岩气开发所面临的挑战。

然而，业内官员对中国页岩气开发的前景仍保持乐观，为2025年确定更为冒进的目标。自然资源部的张大伟在一次页岩气和页岩油会议上透露，中国到2025年页岩气产量在500–800亿立方米之间。提高页岩气产量是中国从今年开始的十四五发展计划的一部分。

在此期间，中国可望增加6.5万亿立方米的页岩气地质储量。

OFFSHORE

CNOOC Ltd explores domestic priorities

State-controlled offshore operator plans to bring 19 projects on stream this year, including 17 in China

XU YIHE
Singapore

CHINA'S CNOOC Ltd is poised to continue its push for higher investment in offshore exploration and development, assuming the global oil price remains robust this year.

The state-controlled company is prepared to spend up to $15.5 billion on exploration and production this year — a 27% increase over 2020 — as it sets its sights on increasing oil and gas output.

Exploration spending this year represents only 17% of its total expenditure, down from last year's 20%, while investment in development is up to 61% of the total from last year's 58%. The budget for production remains unchanged at 20%. The 2021 budget is based on an assumption that the Brent crude price remains at $50 per barrel. Company chief executive Xu Keqiang says the smaller exploration budget does not mean fewer exploration activities — the number of exploration wells will triple from last year to 217, and 3D seismic acquisition will reach 17,000 square kilometres.

CNOOC Ltd says it will give equal priority to both oil and gas, but exploration will slightly tip to gas-prone basins.

This year, CNOOC Ltd will drill 34 exploration wells at Bohai Bay and 55 at the northern slope of Lingshui play in the South China Sea's Qiongdongnan basin. The company will also drill 111 exploration wells in 29 frontier areas, including the north slope of Baiyun Sag in the South China Sea's Pearl River Mouth basin.

CNOOC Ltd has not said where it will drill the remaining 17 exploration wells, though sources suggest they could be drilled in the East China Sea and overseas.

The exploration in middle-shallow layers will form a larger part of CNOOC Ltd's workscope this year, although the company says it will strengthen exploration in middle-deep layers and actively prepare for exploration in deep layers.

Of the total $15.6 billion E&P spending in 2021, 72% will go to domestic projects, up from last year's 62%, and 28% to overseas projects — down from 38% in 2020 — focusing on what it calls "strategic core areas" and operating and non-operating projects.

The company expects large-scale vaccination efforts against Covid-19 will help the global economy recover, triggering a rebound in oil prices.

CNOOC Ltd looks to further boost the record net output of around 528 million barrels of oil equivalent it achieved in 2020 to between 545 million and 555 million boe this year, with 68% set to be domestic production and 32% from its international portfolio.

Net production is expected to rise further to between 590 million and 600 million boe next year and between 640 million and 650 million boe in 2023.

Of the total production this year, 80% will be oil and 20% gas, but gas production next year will reach 22% of CNOOC Ltd's total hydrocarbon production, reflecting its strategy to favour development of gas projects.

The expected increase in production activities is part of the company's seven-year action plan to raise its production portfolio by 2025, when it aims to

In action: an oil and gas operation in China's Bohai Bay
Photo: REUTERS/SCANPIX

boost its gas output at the western part of the South China Sea to 20 million cubic metres, oil production in the eastern part of the South China Sea to 20 million tonnes (147 million barrels), and oil production to 40 million tonnes (294 million barrels) in Bohai Bay.

The company will optimise its infill drilling programme to improve oilfield recovery, increase single-well production and reduce the decline rate.

A total of 19 new projects are expected on stream this year, including 17 in China and two overseas projects.

These include the Lingshui 17-2 gas field, Liuhua 21-2 oilfield and Caofeidian 6-4 oilfield offshore China, as well as the second phase of the Buzzard oilfield in the UK and the Mero 1 oil development offshore Brazil.

CNOOC Ltd's offshore contractor Offshore Oil Engineering Company (COOEC) has just delivered Lingshui's deep-water semi-submersible production platform, which has liquids storage capacity of 30,000 cubic metres.

When on stream in late June this year, Lingshui 17-2 will be able to produce 25 Bcm per annum of gas and 1400 cubic metres per day of condensate from an 11-well subsea production system.

CNOOC Ltd pegs Lingshui 17-2's reserves at about 136 Bcm of recoverable gas.

The Liuhua 21-2 field is part of the Liuhua oil complex which also includes Liuhua 16-2 and Liuhua 20-2.

Liuhua 16-2 lies 33 kilometres north-east of Liuhua 20-2, while Liuhua 21-2 is about 15 kilometres south-east of Liuhua 20-2.

The company started first oil at Liuhua 16-2 and Liuhua 20-2 last year. Liuhua 21-2 will be linked by three 2.8-kilometre flexible risers and flowlines, one umbilical and two subsea electrical submersible pump cables to the FPSO.

Liuhua 21-2's production is expected to peak at 42,600 barrels of oil equivalent per day from a subsea production system accommodating 35 wells.

By the end of 2019, CNOOC Ltd had discovered 5.4 billion tonnes (37 billion barrels) of crude reserves and 150 billion cubic metres of gas reserves worldwide.

Offshore China holds 91 troughs, 18 of them rich in hydrocarbons, but the discovery rate to date only stands at 22% for oil and 6% for natural gas, according CNOOC Ltd chief geologist Xie Yuhong.

Xie says that over the next five years, CNOOC Ltd will focus more on near-shore reservoirs, tapping the revenue from production to support an acceleration of deep-water exploration.

石油巨头中海油聚焦国内勘探

假设今年全球油价继续强劲上涨，中海油有限公司（CNOOC）准备继续增加勘探开发投资。

这家国有控股公司准备今年在勘探和生产上投入高达155亿美元，比2020年增长27%，将目光投向提高石油和天然气产量。

在2021年155亿美元的勘探与生产支出总额中，72%将用于国内项目，高于去年的62%；28%将用于海外项目，低于2020年的38%，主要集中在所谓的“战略核心领域”以及运营和非运营项目。

今年勘探支出仅占其总支出的17%，低于去年的20%，而开发投资占总支出的61%，高于去年的58%。生产预算保持在20%不变。

155亿美元的勘探开发支出中，72%将用于国内项目，比去年高62%，而海外项目占28%，低于去年的38%。海外投资将集中于战略核心区域。

2021年的预算是基于布伦特原油价格保持在每桶50美元的假设。

公司首席执行官徐可强表示，勘探预算减少并不意味着勘探活动减少——探井数量将比去年增加三倍，达到217口，三维地震采集面积将达到17000平方公里。

公司表示，它将对石油和天然气给予同等的优先开发考虑，但勘探将略微向天然气倾斜。

今年，中海油将在渤海湾钻探34口探井，在南海琼东南盆地陵水区块北坡钻探55口探井。

该公司还将在包括南海珠江口盆地白云凹陷北坡在内的29个前沿地区钻探111口探井。

中海油尚未透露将在何处钻探其余17口探井，不过有消息称，这些探井可能在东海和海外。

虽然中海油表示将加强中深层勘探，积极做好深层勘探准备，中浅层勘探将成为中海油今年工作范围的较大组成部分。

ONSHORE

Focus: Beijing-headquartered CNOOC Ltd goes onshore Photo: REUTERS/SCANPIX

CNOOC Ltd sets sights on unconventional gas

Chinese giant soon to launch large-scale campaign to explore and develop tight gas in Shanxi

XU YIHE
Singapore

CHINESE offshore operator CNOOC Ltd is making a move into onshore unconventional gas exploration and development as part of its plan to boost gas production to help China achieve its ambitious target of carbon neutrality by 2060.

"CNOOC will aggressively develop unconventional gas by boosting tight gas operation, maintaining coalbed methane production, making initiatives to explore shale gas," chairman Wang Dongjin said at a recent internal meeting.

CNOOC Ltd has won licences from the Ministry of Natural Resources to explore 36 onshore blocks in 10 provinces, including Shanxi, Shaanxi, Jiangxi and Anhui, according to its chief geologist, Xie Yuhong.

In 2019, the state-controlled player completed the acquisition of 100% equity in China United Coalbed Methane (CUCBM), which largely focuses on CBM production in the Qinshui basin and the eastern edge of the Ordos basin.

At the end of last year, CNOOC Ltd's onshore reserves represented 0.2% of its total reserves of 5.2 billion barrels of oil equivalent, while onshore production represented 0.9% of 506.5 million boe it produced in 2020.

Xie said that CNOOC Ltd has made headway in the past five years in unconventional gas exploration — particularly tight gas — having added 100 billion cubic metres of gas reserves to its portfolio.

However, it has only just started exploration for shale gas.

The company also faces challenges in raising the efficiency of CBM development, Xie added.

CNOOC Ltd has already made a commitment to supply about 2 Bcm of gas to Shanxi in 2022, out of the northern province's master plan to produce 22 Bcm of gas in that year.

It is licensed to explore Shanxi's Linxing block. The licence, issued in 2012, was extended for two years from last February to February 2022.

The 774 square-kilometre Linxing block holds an estimated 100 Bcm of tight gas in place, with potential for annual production capacity of 1 Bcm.

CNOOC Ltd has rolled out an overall development plan for the block focusing on a gas-prone area covering 674 square kilometres, where 72.5 Bcm of gas reserves have been confirmed as recoverable.

Under the plan, it will tap 40.2 Bcm of tight gas reserves in the area to establish an annual production capacity of 1.36 Bcm over seven years at a cost of 7.5 billion yuan ($1.15 billion).

Plans call for the building of 191 well pads, including 49 already built, to drill 706 wells. Of these wells, 45 have already drilled.

Offsite facilities will include five gas-gathering centres — one of which has been built — and 331 kilometres of pipelines to link well pads and gas-gathering centres, in addition to an export pipeline spanning 46.9 kilometres, of which 15.8 kilometres is already built.

Gas will initially be piped for consumption in Shanxi. It will later be sent to markets in neighbouring Hebei province.

CNOOC Ltd, via CUCBM, is already producing CMB in Shanxi at a rate of 10 million cubic metres per day.

中海油看好中国陆地非常规天然气潜力

中国海洋油气运营商中海油有限公司（CNOOC Ltd）正在向陆地非常规天然气勘探和开发领域进军，旨在提高天然气产量，帮助中国在2060年前实现碳中和的宏伟目标。

中海油董事长汪东进日前在一次内部会议上表示："中海油将大力发展非常规天然气，通过推进致密气作业，保持煤层气产量，主动开发页岩气。"

据中海油总地质师谢玉洪介绍，中海油已获得自然资源部的许可，在山西、陕西、江西、安徽等10个省勘探36个陆地区块。

2019年，这家国有控股公司完成了对中国联合煤层气公司（CUCBM）100%股权的收购，该公司主要专注于沁水盆地和鄂尔多斯盆地东部边缘的煤层气生产。

去年底，中海油陆地储量占其52亿桶油当量总储量的0.2%，而陆地产量占其2020年产量5.065亿桶油当量的0.9%。

谢玉洪说，中海油在过去五年中在非常规天然气勘探方面取得了进展，特别是在致密气勘探方面，为其投资组合增加了1000亿立方米的天然气储量。然而，中国对页岩气的勘探才刚刚开始。

谢玉洪补充说，该公司在提高煤层气开发效率方面也面临挑战。

中海油已承诺在2022年向山西供应约20亿立方米的天然气，该省当年天然气产量总体规划量为220亿立方米。

中海油获得了勘探山西临兴区块的许可证。该许可证于2012年颁发，有效期从去年2月延长至2022年2月。

774平方公里的临兴区块估计有1000亿立方米的致密气储量，年产能潜力为10亿立方米。