

# Inevitable fragments of a carbonneutral society: Natural gas coupled with CCUS, renewables, and hydrogen



As global society keeps pursuing a zero-carbon energy system, hydrogen's role is becoming more notable. Updates and progress around the topic are now being broadcasted at an increasing pace, extending to areas that promise a significant role for hydrogen. Just a couple of years ago, everyone had agreed that hydrogen would gain a meaningful share by around 2050. However, these days, due to sanctioned projects and the advancement of the related technologies with a set of adopted strategies, it is believed that the hydrogen era will

materialise much earlier.

Hydrogen is not the only piece of the puzzle to achieve carbon neutrality, but it is the one that promises a feasible pathway towards net zero-emission through complementing other routes such as electrification and natural gas coupled with CCUS (carbon capture, utilisation and storage). The supremacy of hydrogen is based on the possibility that it can be employed to decarbonise the so-called hard-to-abate sectors or in sectors in which other decarbonisation pathways, such as electrification, are challenged. These sectors include but are not limited to steel, iron and cement, as well as heavy long-haul vehicles, aviation, and maritime and railways transportation. The GECF Hydrogen Scenario encompasses some of these recent developments in its latest update, which was published in February 2021. The Scenario has taken into consideration the latest updates and strategies adopted by countries and groups and assessed their impacts.

Currently, several countries have officially published their hydrogen strategies or hydrogen roadmaps. In some of the roadmaps and strategies such as the EU Hydrogen Strategy, the main priority has been attached to renewable hydrogen. While in some others, such as for Japan, Russia, and South Korea, blue hydrogen is envisaged to take a meaningful role. In certain strategies, definite and clear targets are set, like for the EU Hydrogen Strategy that considers a minimum of 40 GW installed renewable hydrogen electrolyser or 10mn tonnes (mt) of renewable hydrogen by 2030. Within the EU Hydrogen Strategy, another 40 GW is also defined as a target to install in the neighbouring countries and import to the EU. According to the latest results from the updated GECF Hydrogen Scenario which assumes a practical penetration of hydrogen into the future of the energy system, the demand for hydrogen by 2050 will increase by more than four times. However, the carbon saving through this hydrogen penetration is forecasted to be less than six (6) GtCO<sub>2</sub> – far below the amount needed to

achieve the Paris Agreement goals.

This result emphasises that, firstly, the hydrogen production supply chain needs to advance in all parts, and the cost should be reduced to gain more share in the future of the energy system. Secondly, the result highlights that hydrogen could not be the only solution in the carbon neutrality pathway, and other clean and decarbonised options, such as the application of natural gas coupled with CCUS has to be seriously taken into consideration by all stakeholders. Henceforth, let's take a look at some results and forecasts from the Reference Case Scenario (RCS) of the latest GECF Global Gas Outlook 2050 (GGO 2050), as it will enable a clear view of the potential needs to fully decarbonise the hard-to-abate energy sectors when hydrogen is hypothetically assumed to take a sole role. According to the RCS results, the total EU transport demand in so-called hard-to-abate sectors will be reduced from 217mn tonnes of oil equivalent (mtoe); in 2019 and pre-Covid-19 pandemic situation, to around 150 mtoe by 2050. This reduction is primarily due to the energy efficiency enhancement of the fleets. In order to produce 150 mtoe of energy, around 52mt of hydrogen is needed, requiring more than 500 GW of electrolyser. This should be added to the demand from the iron, steel, and cement industry (other assumed hard-to-abate sectors.) The fossil fuel demand (coal, natural gas and oil products) from these sectors in the EU is forecasted to stand at 24 mtoe by 2050. To meet this level of demand only with green hydrogen, around 70 GW of the electrolyser must be installed. Based on the forecasted demand levels, the EU will need around 570 GW of electrolyser capacity to decarbonise the aforementioned hard-to-abate sectors in case that the green hydrogen is assumed to be the only solution. Based on technical circumstances and the policy, in the EU Hydrogen Strategy, the target was set to 2 x 40 GW renewable hydrogen by 2030. Therefore, the needed electrolyser capacity for 2050 seems to be challenging but feasible in the EU. However, we still need to bear in mind some other salient points. The

first point is that these results are based on assuming a successful effort in enhancing energy efficiency, and the level is subject to uncertainty. The second is that this is the volume needed only to decarbonise the referenced hard-to-abate sectors. Several other consuming sectors are supposed to be decarbonised through other pathways such as electrification.

They also create a massive volume of renewable electricity demand. A big question mark here is to gauge if there is a sufficient potential of renewable energies within the EU to accommodate all renewable electricity demand in the sectors and meet the electricity demand of electrolysers to produce green hydrogen. By looking into this subject from a global perspective, it can be observed that much more hydrogen is needed to decarbonise even these so-called hard-to-abate sectors. According to the latest modelling results published in GGO 2050, the global energy demand from hard-to-abate subsectors within transportation will stand at around 1800 mtoe per annum by 2050. In a hypothetical assumption, to provide this amount of energy only through green hydrogen production, more than 6,000 GW of electrolyser will be needed. This level is around five times more than the total current wind and solar installed capacity.

With similar calculations again on the imaginary only-green hydrogen assumption, 1,500 GW of electrolyser should be installed for the decarbonisation of iron, steel, and cement sectors. While numerous sectors are still not included in these calculations, other measures are assumed for the purpose of decarbonisation as well. In conclusion, the undeniable fact is that there is no sole solution for carbon neutrality. Indeed, a combination of measures needs to be applied to achieve a net-zero emission. Apart from the energy conservation and energy efficiency enhancement that results in a reduction in final energy demand, clean energy supply should be diversely sourced from all clean available potentials.

Renewables, natural gas, and CCUS will take greater roles in their original form, and all of them should contribute to the hydrogen production. In closing, renewables, natural gas, CCUS, and hydrogen are inevitable parts of a fully decarbonised energy system.

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## **OPEC+ to ease oil curbs from May after U.S. calls Saudi**



OPEC+ agreed on Thursday to gradually ease its oil output cuts from May, after the new U.S. administration called on Saudi Arabia to keep energy affordable, mirroring Donald Trump's practice of calling OPEC's leader over oil policy.

The group, which has implemented deep cuts since a pandemic-induced oil price collapse in 2020, agreed to ease production curbs by 350,000 barrels per day (bpd) in May, another 350,000

bpd in June and further 400,000 bpd or so in July.

Iran's oil minister, Bijan Zanganeh, confirmed the group would have boosted output by a total of 1.1 million bpd by July.

Under Thursday's deal, cuts implemented by the Organization of the Petroleum Exporting Countries, Russia and their allies, a group known as OPEC+, would be just above 6.5 million bpd from May, compared with slightly below 7 million bpd in April.

"What we did today is, I think, a very conservative measure," Saudi Energy Minister Prince Abdulaziz Bin Salman told a news conference after the OPEC+ meeting, adding that output levels could still be adjusted at the next meeting on April 28.

He said Thursday's decision had not been influenced by any talks with U.S. officials or any other consuming nations.

The Saudi minister also said the kingdom would gradually phase out its additional voluntary cut that have been running at 1 million bpd, by adding 250,000 bpd to production in May, another 350,000 bpd in June and then 400,000 bpd in July.

## CHANGING MOOD

Brent crude was trading around \$64 a barrel, more than 20% up on the start of the year and not far from this year's high of around \$71.

"We reaffirmed the importance of international cooperation to ensure affordable and reliable sources of energy for consumers," Jennifer Granholm, the new energy secretary appointed by U.S. President Joe Biden, said on Twitter after her call with the Saudi energy minister.

News of the call coincided with signs of a changing mood in informal discussions between OPEC+ members. A few days before Thursday's talks, delegates had said the group would likely keep most existing cuts in place, given uncertainty about the demand outlook amid a new wave of coronavirus lockdowns.

But in the 24 hours before the meeting started, sources said discussions had shifted to the possibility of output increases.

In the past, Trump had used his influence to force Saudi Arabia to adjust policy. When prices spiked, he insisted OPEC raise production. When oil prices collapsed last year, hurting U.S. shale producers, he called on the group to cut output.

Until this week, Biden's administration had refrained from such an approach, keep a distance from Riyadh and imposing sanctions on some Saudi citizens over the 2018 murder of Jamal Khashoggi.

Even when OPEC+ decided on March 4 to keep steady output, triggering a price rise, the White House had made no direct comment.

Source: Reuters (Reporting by Alex Lawler and Ahmad Ghaddar in London, Rania El Gamal in Dubai, Olesya Astakhova and Vladimir Soldatkin in Moscow; Writing by Dmitry Zhdannikov; Editing by Edmund Blair)

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## **China leads global green-bond sales boom, but faces headwinds**



China overtook the US to lead a boom in global green-bond issuance in the first quarter, but analysts said it needs to do more to draw investors to help fund President Xi Jinping's estimated \$21tn carbon neutrality pledge.

Pending tasks include raising investor awareness of the environment, harmonising fragmented rules and tackling 'greenwashing', or issuers' efforts to inflate their green credentials, they said.

At stake is Beijing's goal of net zero carbon emissions by 2060.

Chinese issuers including banks, property developers, power generators and railway operators sold \$15.7bn of bonds during January-March period to fund 'green' projects such as clean and renewable energy, according to Refinitiv data.

The volume of such bonds, mostly yuan-denominated, almost quadrupled from a year earlier, the data showed.

That exceeds the roughly \$15bn of such bonds sold by US issuers in the first quarter, and helped drive a tripling of green bond issuance globally.

Green bonds blossomed "largely thanks to China's recovery from the coronavirus," said Nathan Chow, strategist at DBS. "In



addition, the Chinese government is going all out to develop this market this year.”

China, the world’s biggest emitter of carbon dioxide, needs 140tn yuan (\$21.33tn) of debt financing over the next 40 years to meet its net-zero emissions target, investment bank China International Capital Corp (CICC) estimates.

With roughly 800bn yuan of green bonds outstanding, China is already the world’s second-biggest green bond market after the US.

However, green bonds account for less than 1% of China’s \$18tn bond market.

At this stage, “companies have no cost advantages issuing green bonds...and there’s not enough market support for many green projects which take a long time to complete and are seen as risky,” said CICC economist Zhou Zipeng.

Highlighting such headwinds, China’s first batch of “carbon neutral” bonds, launched in February, met tepid demand.

Several fund managers said green bonds are not yet on their investment radar.

“The only thing Chinese investors currently look at is yield. So obviously if green bonds cannot offer the extra returns, they ask the government, ‘what can you do to help me?’,” said Ricco Zhang, Asia-Pacific director of the International Capital Market Association (ICMA).

A brokerage source said state-owned companies were motivated to issue green bonds to align with government priorities, but investors lacked incentives to buy them.

Authorities are aware of the problems.

Earlier this month, Chinese central bank governor Yi Gang called for incentives to boost private participation in meeting Beijing’s carbon goals.

Moving closer to international standards by excluding coal from the green market would widen the potential foreign investor base, Chow of DBS said.

ICMA’s Zhang said regulators also need to harmonise different domestic standards.

Currently, China’s central bank, securities regulator and the

state planner have separate rules for green bonds issued under their supervision.

“Sometimes it’s hard for international investors to have a granular understanding of different (Chinese) green bonds. This brings challenges for green investors to identify the right target for investment,” he said.

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## QP in deal with Shell to become partner in two offshore exploration blocks in



Qatar Petroleum has entered into an agreement with Shell to become a partner in two exploration blocks offshore, the Republic of Namibia.

Under the terms of the agreement, which is subject to

customary approvals, QP will hold a 45% participating interest in the PEL 39 exploration licence pertaining to Block 2913A and Block 2914B, while Shell (the Operator) will hold a 45% interest, and the National Petroleum Corporation of Namibia (NAMCOR) will hold the remaining 10% interest.

Commenting on the agreement, HE the Minister of State for Energy Affairs Saad bin Sherida al-Kaabi, also the President and CEO of QP, said, "With this second exploration and production sharing agreement in Namibia, we are pleased to expand our exploration footprint in the country, and to further strengthen our presence in the southern Africa region. "Working on these promising and prospective blocks with our valued long-term partner, Shell, is another step in our stride towards achieving our international growth strategy. We look forward to working together with the Namibian Government, NAMCOR and Shell on these blocks."

This is QP's second exploration licence in Namibia. In August 2019, QP entered into agreements for participating in blocks 2913B and 2912 offshore Namibia.

The PEL 39 blocks are located offshore Namibia in ultra-deep-water depths of about 2,500m, covering an area of approximately 12,300km<sup>2</sup>.

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## **Sea-level rise: New study sheds light on responsible ice sheets**



Though it is well known that climate-induced sea level rise is a major threat, new research has found that previous ice loss events could have caused sea-level rise at rates of around 3.6m per century. This offers vital clues as to what lies ahead should climate change continue unabated. A team of scientists, led by researchers from Durham University, used geological records of past sea levels to shed light on the ice sheets responsible for a rapid pulse of sea-level rise in Earth's recent past. At the end of the last ice age, around 14,600 years ago, sea levels rose at ten times the current rate due to Meltwater Pulse 1A (MWP-1A); a 500 year, ~18m sea-level rise event.

Until now, the scientific community has not been able to agree about which ice sheet was responsible for this rapid rise, with the massive Antarctic Ice Sheet being a likely suspect, but some evidence pointing towards ice sheets in the Northern Hemisphere. The new study uses detailed geological sea-level data and state-of-the-art modelling techniques to reveal the sources of MWP-1A. Interestingly, most of the meltwater appears to have originated from the former North American and Eurasian ice sheets, with minimal contribution from Antarctica, reconciling formerly disparate views.

In addition to flooding vast areas of low-lying land, this unparalleled discharge of freshwater into the ocean –

comparable to melting an ice sheet twice the size of Greenland in only 500 years – will have disrupted ocean circulation, with knock-on effects for global climate. Knowing the source of the meltwater will improve the accuracy of climate models that are used to replicate the past and predict changes in the future.

The results are important for our understanding of ice-ocean-climate interactions which play a significant role in shaping terrestrial weather patterns. The findings are particularly timely with the Greenland ice sheet rapidly melting, contributing to a rise in sea levels and changes to global ocean circulation. Of the findings, lead author Yucheng Lin, in the Department of Geography at Durham University, notes: “Despite being identified over 30 years ago, it has been surprisingly challenging to determine which ice sheet was the major contributor to this dramatic rise in sea levels.

“Previously, scientists tried to work out the source of the sea-level rise based on sea-level data from the tropics, but the majority of those studies disagreed with geological records of ice sheet change. Our study includes novel information from lakes around the coast of Scotland that were isolated from the ocean due to land uplift following the retreat of the British Ice Sheet, allowing us to confidently identify the meltwater sources.”

Co-author Dr Pippa Whitehouse, in the Department of Geography at Durham University, said: “The technique we have used allows us to really dig into the error bars on the data and explore which ice-melt scenarios were most likely. “We found that most of the rapid sea-level rise was due to ice sheet melt across North America and Scandinavia, with a surprisingly small contribution from Antarctica.

“The next big question is to work out what triggered the ice melt, and what impact the massive influx of meltwater had on ocean currents in the North Atlantic. This is very much on our minds today – any disruption to the Gulf Stream, for example due to melting of the Greenland Ice Sheet, will have significant consequences for the UK climate.”

Rising sea levels due to warming climate pose a great risk to society, improving our understanding of why and how fast change could happen; thus helping us plan for the impacts.

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# The Powerful New Financial Argument for Fossil-Fuel Divestment



In a few months, a small British financial think tank will mark the tenth anniversary of the publication of a landmark research report that helped launch the global fossil-fuel-divestment movement. As that celebration takes place, another seminal report—this one obtained under the Freedom of Information Act from the world's largest investment house—closes the loop on one of the key arguments of that

decade-long fight. It definitively shows that the firms that joined that divestment effort have profited not only morally but also financially.

The original report, from the London-based Carbon Tracker Initiative, found something stark: the world's fossil-fuel companies had five times more carbon in their reserves than scientists thought we could burn and stay within any sane temperature target. The numbers meant that, if those companies carried out their business plans, the planet would overheat. At the time, I discussed the report with Naomi Klein, who, like me, had been a college student when divestment campaigns helped undercut corporate support for apartheid, and to us this seemed a similar fight; indeed, efforts were already under way at a few scattered places like Swarthmore College, in Pennsylvania. In July, 2012, I published an article in *Rolling Stone* calling for a broader, large-scale campaign, and, over the next few years, helped organize roadshows here and abroad. Today, portfolios and endowments have committed to divest nearly fifteen trillion dollars; the most recent converts, the University of Michigan and Amherst College, made the pledge in the last week.

No one really pushed back against the core idea behind the campaign—the numbers were clear—but two reasonable questions were asked. One was, would divestment achieve tangible results? The idea was that, at the least, it would tarnish the fossil-fuel industry, and would, eventually, help constrain its ability to raise investment money. That's been borne out over time: as the stock picker Jim Cramer put it on CNBC a year ago, "I'm done with fossil fuels. . . . They're just done." He continued, "You're seeing divestiture by a lot of different funds. It's going to be a parade. It's going to be a parade that says, 'Look, these are tobacco, and we're not going to own them.' "

The second question was: Would investors lose money? Early proponents such as the investor Tom Steyer argued that,

because fossil fuel threatened the planet, it would come under increased regulatory pressure, even as a new generation of engineers would be devising ways to provide cleaner and cheaper energy using wind and sun and batteries. The fossil-fuel industry fought back—the Independent Petroleum Association of America, for instance, set up a Web site crowded with research papers from a few academics arguing that divestment would be a costly financial mistake. One report claimed that “the loss from divestment is due to the simple fact that a divested portfolio is suboptimally diversified, as it excludes one of the most important sectors of the economy.”

As the decade wore on, and more investors took the divestment plunge, that argument faltered: the philanthropic Rockefeller Brothers Fund said that divestment had not adversely affected their returns, and the investment-fund guru Jeremy Grantham published data showing that excluding any single sector of the economy had no real effect on long-term financial returns. But the Rockefeller Brothers and Grantham were active participants in the fight against global warming, so perhaps, the fossil-fuel industry suggested, motivated reasoning was influencing their conclusions.

The latest findings are making that charge difficult to sustain. For one thing, they come from the research arm of BlackRock, a company that has been under fire from activists for its longtime refusal to do much about climate. (The company’s stance has slowly begun to shift. Last January, Larry Fink, its C.E.O., released a letter to clients saying that climate risk would lead them to “reassess core assumptions about modern finance.”) BlackRock carried out the research over the past year for two major clients, the New York City teachers’ and public employees’ retirement funds, which were considering divestment and wanted to know the financial risk involved. Bernard Tuchman, a retiree in New York City and a member of Divest NY, a nonprofit advocacy group, used public-records requests to obtain BlackRock’s findings from the city late last month. Tuchman then shared



them with the Institute for Energy Economics and Financial Analysis, a nonprofit that studies the energy transition.

In places, BlackRock's findings are redacted, so as not to show the size of particular holdings, but the conclusions are clear: after examining "divestment actions by hundreds of funds worldwide," the BlackRock analysts concluded that the portfolios "experienced no negative financial impacts from divesting from fossil fuels. In fact, they found evidence of modest improvement in fund return." The report's executive summary states that "no investors found negative performance from divestment; rather, neutral to positive results." In the conclusion to the report, the BlackRock team used a phrase beloved by investors: divested portfolios "outperformed their benchmarks."

In a statement, the investment firm downplayed that language, saying, "BlackRock did not make a recommendation for TRS to divest from fossil fuel reserves. The research was meant to help TRS determine a path forward to meet their stated divestment goals." But Tom Sanzillo—I.E.E.F.A.'s director of financial analysis, and a former New York State first deputy comptroller who oversaw a hundred-and-fifty-billion-dollar pension fund—said in an interview that BlackRock's findings were clear. "Any investment fund looking to protect itself against losses from coal, oil, and gas companies now has the largest investment house in the world showing them why, how, and when to protect themselves, the economy, and the planet." In short, the financial debate about divestment is as settled as the ethical one—you shouldn't try to profit off the end of the world and, in any event, you won't.

These findings will gradually filter out into the world's markets, doubtless pushing more investors to divest. But its impact will be more immediate if its author—BlackRock—takes its own findings seriously and acts on them. BlackRock handles more money than any firm in the world, mostly in the form of passive investments—it basically buys some of everything on

the index. But, given the climate emergency, it would be awfully useful if, over a few years, BlackRock eliminated the big fossil-fuel companies from those indexes, something they could certainly do. And, given its own research findings, doing so would make more money for their clients—the pensioners whose money they invest.

BlackRock could accomplish even more than that. It is the biggest asset manager on earth, with about eight trillion dollars in its digital vaults. It also leases its Aladdin software system to other big financial organizations; last year, the *Financial Times* called Aladdin the “technology hub of modern finance.” BlackRock stopped revealing how much money sat on its system in 2017, when the figure topped twenty trillion dollars. Now, with stock prices soaring, the *Financial Times* reported that public documents from just a third of Aladdin’s clients show assets topping twenty-one trillion. Casey Harrell, who works with Australia’s Sunrise Project, an N.G.O. that urges asset managers to divest, believes that the BlackRock system likely directs at least twenty-five trillion in assets. “BlackRock’s own research explains the financial rationale for divestment,” Harrell told me. “BlackRock should be bold and proactively offer this as a core piece of its financial advice.”

What would happen if the world’s largest investment firm issued that advice and its clients followed it? Fifteen trillion dollars plus twenty-five trillion is a lot of money. It’s roughly twice the size of the current U.S. economy. It’s almost half the size of the total world economy. It would show that a report issued by a small London think tank a decade ago had turned the financial world’s view of climate upside down.

*A previous version of this post incorrectly described some aspects of Tuchman’s public-records request.*

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# OPEC oil output rises in March, led by Iran: Reuters survey



The 13-member Organization of the Petroleum Exporting Countries pumped 25.07 million barrels per day (bpd) in March, the survey found, up 180,000 bpd from February. Output has risen every month since June 2020 with the exception of February.

The rise in Iranian supply comes as OPEC and allies, known as OPEC+, have delayed unwinding more of their output cuts as the impact of the pandemic persists.

OPEC+ meets on Thursday and delegates expect most cuts will be kept.

“I can feel the cautious momentum,” one OPEC source said of Thursday’s meeting.

Oil topped \$71 a barrel this month, the highest since before the pandemic, but has since fallen to about \$64. A slow recovery in demand and rising Iranian exports have weighed on prices, analysts said.

OPEC+ decided to keep supply mostly steady for March while Saudi Arabia made an extra cut out of concern about the slow demand recovery. Iran, plus fellow OPEC members Libya and Venezuela, are exempt from making cuts.

The Saudi move means OPEC still pumped much less than called for under the OPEC+ deal, despite the Iranian increase. Compliance with pledged cuts in March was 124%, the survey found, up from 121% in February.

## **IRAN PUMPS MORE**

Iran has managed to raise exports since the fourth quarter despite U.S. sanctions, according to various assessments.

There is no definitive figure for the exports. Iran has said documents are forged to hide the origin of its cargoes. Tankers have satellite tracking but this can be switched off and the use of ship-to-ship transfers makes it harder to spot the shipments.

The Reuters survey puts Iranian supply in March at 2.3 million bpd, up 210,000 bpd from February and the biggest rise in OPEC.

OPEC's second-largest increase, of 40,000 bpd, came from Iraq, the survey found. There were also small increases by the other two exempt producers, Libya and Venezuela.

Top exporter Saudi Arabia pledged an additional 1 million bpd output cut for February and March. Riyadh achieved virtually all of this in March, the survey found, more than in February.

Output was steady in other large producers United Arab

Emirates, Kuwait and Nigeria, the survey found.

The Reuters survey aims to track supply to the market and is based on shipping data provided by external sources, Refinitiv Eikon flows data, information from tanker trackers such as Petro-Logistics and Kpler, and information provided by sources at oil companies, OPEC and consultants.

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## **OPEC+ panel revises down oil demand estimate before key meeting**



(March 31): A panel of OPEC+ technical experts agreed to revise down oil-demand estimates for 2021, signaling a more negative view of the market just days before the group decides

on production policy.

The OPEC+ Joint Technical Committee now estimates that global oil demand will expand by 5.6 million barrels a day this year, down from 5.9 million previously, according to delegates and documents seen by Bloomberg.

The revision, which mainly affects the next few months, follows a recommendation from OPEC Secretary-General Mohammad Barkindo earlier on Tuesday that the coalition should remain very cautious.

At the previous meeting, that sense of caution led to a surprise decision to maintain almost all of the cartel's output curbs, instead of boosting production in anticipation of the economic recovery from the coronavirus pandemic. The Organization of Petroleum Exporting Countries and its allies believe that decision has since been vindicated and the group is widely expected to take a similar stance this week.

The panel "noted with concern that despite the accelerated rate of vaccination roll-outs across the world, there are a rising number of confirmed Covid-19 infections globally, with lockdown measures and travel restrictions being reimposed in many regions," according to the documents.

The reduction is most pronounced from April to June, when on average consumption is now seen 1 million barrels a day lower than prior projections.

That implies that the cartel's primary goal for the coming months – running down excess fuel inventories built up during the pandemic – would only happen slowly unless its production cuts are maintained close to current levels.

While fuel demand in the U.S. has shown strong signs of a rebound, a resurgence of the virus has undermined the recovery elsewhere. That has convinced the cartel it made the right call at its last meeting.

“While last month saw many positive developments, it also witnessed reminders of the ongoing uncertainties and fragility caused by the COVID-19 pandemic,” Barkindo said at the start of the videoconference of the OPEC+ Joint Technical Committee on Tuesday, according to a statement from the group.

In the days after the March 4 meeting, when OPEC+ shocked the market by maintaining most of its production cuts, Brent soared to US\$70 a barrel.

Yet the rally soon dissolved as parts of Europe reimposed lockdowns to contain a virulent strain of the coronavirus, while India and Brazil contended with worsening outbreaks. Crude purchases in Asia slowed as a lackluster tourist season failed to stimulate fuel demand. Meanwhile, oil supplies swelled as Iran ramped up exports to China in defiance of U.S. sanctions.

Within a week of hitting a one-year high, oil futures had surrendered almost US\$10. Brent crude, the international benchmark, closed at US\$64.05 a barrel on Tuesday.

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**Russia has multi-pronged strategy to confront climate change: Official**



Russia has a multi-pronged strategy to confront climate change, by further developing its human capital, natural gas, hydrogen, and renewable assets, a senior national energy policymaker said yesterday.

Speaking at the 51st edition of the GECF Gas Lecture Series, entitled 'The Russian Federation's climate policy in the energy sector', Alexey Kulapin, director general, Russian Energy Agency, noted that Russia's energy system is underpinned by the vision of a greener energy system on one hand and stability and security on the other.

"Russia's energy policy is based on the need to strike a balance between solving climate problems and the need to further provide the economy and population with affordable energy resources," explained Kulapin.

Calling access to affordable energy a fundamental right, in line with the UN Sustainable Development Goal No. 7, the GECF secretary general commended the steps being taken by many of the forum's 19 member countries to achieve net-zero emissions.

"We heard a lot about Russia today but our other Member Countries are also leading the way in transforming their business model. Qatar, for example, is playing a greater role in the area of environmental, social, and governance (ESG) investments. Yet another member, Egypt, has blanket banned



issuing of all new vehicle licences unless they run on the cleaner natural gas," said Yury Sentyurin.

"Being a world-leading coalition representing more than 70% of an important natural resource (natural gas) brings with it a remarkable weight. We strive to achieve actions that put nature, people, and planet at the heart of value creation." Echoing these sentiments, Kulapin noted that Russia, as one of the largest players in the international energy markets, fully supports the efforts of the world community to combat climate change.

He highlighted that in November 2020, the Russian President signed a decree to reduce the country's greenhouse gas emissions (GHGs) as part of Russia's implementation of the Paris Agreement.

However, according to him, until new sources of energy are able to provide uninterrupted energy supply, natural gas, including liquefied natural gas (LNG), will remain the cleanest energy resource and will even serve as a transitional fuel to a low-carbon economy. In this regards, projects such as the Power of Siberia 1 and 2, Turkish Stream, and Nord Stream 2 were highlighted.

Currently, Russia enjoys a total LNG production of nearly 30mn tonnes per year (mtpy), which is set to increase by 2 to 2.5 times to 80-140mn by 2035, in line with the newly-adopted 'Energy Strategy 2035'.

Work is also underway to increase the use of gas in the transport sector. In the period 2018-20, a total of 250 refuelling stations offering compressed natural gas came alive, an increase of 60% on previous capacity.

In the area of electricity, Kulapin asserted that Russian already has one of the cleanest electricity structures, as 80% of generation comes from nuclear, hydroelectric, steam gas, and thermal cogeneration sources. This compares to United States (65%), Germany (57%) and China (below 30%) in terms of low-emission energy sources for electricity generation, he said.

"Despite this, the country has a deliberate policy aimed at

improving the efficiency of energy production and consumption, which allows reducing greenhouse gas emissions in the energy sector.”

On hydrogen, the official noted his optimism on its potential in various fields, as the ‘Energy Strategy 2035’ envisions competitively priced hydrogen exports of up to 7mtpy by 2035 and 33mtpy by 2050.

“Russia can provide competitive hydrogen both in the European and Asia-Pacific markets. The cost of producing low-carbon hydrogen from natural gas in Russia is at \$1-1.5/kg, whilst the cost of producing hydrogen electrolysis is \$3.5-4/kg. We are ready for mutually-beneficial cooperation with partners overseas,” he said.

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## **The Oil Industry’s Biggest Spending Driller Is Now in China**



(Bloomberg) – China’s fear of dependence on foreign suppliers means its biggest oil company plans to be the world’s top-spending driller this year, even as it says the nation’s demand for crude is plateauing.

PetroChina Co. plans 239 billion yuan (\$37 billion) in annual capital expenditure, the company said Thursday in its annual results. That’s more than global majors including Saudi Arabian Oil Co., Exxon Mobil Corp. and Royal Dutch Shell Plc, who’re trimming spending as they handle the fallout of the coronavirus pandemic on oil prices and fuel demand.

China’s quick recovery from Covid-19 means that its demand for oil and gas has fully recovered from the pandemic-induced swoon of early 2020, and President Xi Jinping continues to make energy security a top priority. The government earlier this month called for increased domestic production of coal, oil and gas over the next five years, an effort that’s ostensibly at odds with Xi’s long-term plan to decarbonize the economy.

The nation's demand for crude oil has already reached a plateau, and refined product consumption will peak and begin to decline in the next decade, Duan Liangwei, PetroChina's outgoing president, said on a conference call Thursday.

Demand for natural gas, one of the cleaner fossil fuels, is still expected to grow, and PetroChina is focusing its upstream operations there.

CNOOC Ltd., the country's biggest offshore driller, is budgeting 90 billion to 100 billion yuan in spending for this year, compared with a bit less than 80 billion in 2019, although the figure could still be adjusted, Chairman Wang Dongjin said Thursday during the company's annual earnings call.

Still, PetroChina's world-leading capex plan doesn't compare to pre-pandemic levels. The firm had intended to spend 295 billion yuan last year, before lockdowns beginning in January crippled the economy. It ended up shelling out about 246 billion yuan.

PetroChina and CNOOC, along with China's third oil major Sinopec, were forced to cut spending as oil prices cratered on the impact of the pandemic in 2020. Crude has rebounded this year amid production cuts and optimism that vaccines will help revive demand. Sinopec reports its earnings on Sunday.

Green Energy Their focus on fossil fuels aside, China's oil giants are still expected to help the country meet its ambitious goal of reaching net-zero emissions by 2060. PetroChina didn't identify spending targets on green energy on Thursday, although it did say it planned to incrementally increase such spending every year going forward.

The company is looking to peak its carbon emissions by 2025, and achieve "near-zero" emissions by around 2050, although it didn't specify whether that relates only to its own operations, or whether it includes the much vaster challenge

of accounting for the emissions from the fuel it sells.

Chairman Dai Houliang said the company plans to utilize wind, solar and geothermal resources and boost industrial use of hydrogen. For its part, Cnooc said it will increase its proportion of natural gas production to 30% by 2025, and expand its offshore wind power business in coming years.