



# **Cutting Back on Coal After COP26**



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# **INTRODUCTION**

Global LNG prices surged to never-beforewitnessed heights in 2022, as market tightness and concern over supply gripped the market. The interconnectedness of gas markets in Europe and Asia-Pacific through LNG trade has resulted in the European benchmark, Dutch TTF, topping US\$ 60 / MMBtu in 4Q 2021 while the spot Asian LNG benchmark, JKM, hit nearly US\$ 60 / MMBtu in March 2022.

What is the short-term outlook for LNG markets across the Asia-Pacific region, and what are the key uncertainties?

# ENERGY REPORT

This research paper is part of a 12-month series published by the Al-Attiyah Foundation every year. Each in-depth research paper focuses on a current energy topic that is of interest to the Foundation's members and partners. The 12 technical papers are distributed to members, partners, and universities, as well as made available on the Foundation's website.



 The two most significant components of the Glasgow Climate Pact concluded at COP26 were the Global Coal to Clean Power Transition and the International Public Support for the Clean Energy Transition statement. The former is an agreement to accelerate efforts to phasedown global unabated coal consumption, and the latter is an agreement to end public financing for fossil fuel projects by the end of 2022 and phase-out 'inefficient' fossil fuel subsidies.

# Global Coal to Clean Power Transition Statement:

- In the Global Coal to Clean Power Transition Statement, most OECD countries committed to phasing-out coal generation in the 2030s, whereas non-OECD countries pledged a timeline stretching into the 2040s.
- The world's top four coal consumers

   China, the United States, Japan, and
   India which collectively account for
   73% of global demand, stayed out of the
   Global Coal to Clean Power Transition
   Statement, although they made adjacent
   commitments to move away from coal.
- The United States, United Kingdom, European Union, and South Africa announced the Just Energy Transition Partnership at COP26 to support South Africa's decarbonisation efforts.

# Implications of the Global Coal to Clean Power Transition Statement:

 In the short-term, rising natural gas prices following Russia's invasion of Ukraine have reversed natural gas-to-coal switching in many countries, despite a slowing global economy and COVID-19 related mobility restrictions in China. This trend will have to end quickly to meet the objectives of the Glasgow Climate Pact.

- In the long-term, the effectiveness of COP26's initiative will be determined by Asian coal-to-gas switching policies, the deployment of utility-scale renewables, and their use of carbon capture, use and storage (CCUS) to cut emissions.
- A phased decline in long-term coal demand will have major implications for the mining sector across major coal exporters, notably Indonesia, Australia, and Russia.
- For mining companies, the decline in coal demand could be partly offset by an increase in mining of critical metals and minerals, particularly those that are vital to many clean energy technologies, such as copper, lithium, and nickel.

### Commitment to End Fossil Fuel Subsidies:

- At COP26, more than 20 countries and global institutions committed to ending direct international public finance for unabated coal, oil, and natural gas by the end of 2022 and to prioritise clean energy finance.
- The Glasgow Climate Pact was the firsttime fossil fuel subsidies were mentioned in an agreement and was introduced to encourage countries to "accelerate efforts towards the ... phase-out of inefficient fossil fuel subsidies."

# Implications of the Commitment to End Fossil Fuel Subsidies:

- Global subsidies for fossil fuel consumption decreased from US\$ 450 billion in 2010 to about US\$ 180 billion in 2020. However, these subsidies increased again in 2021 and 2022 as global fossil fuel prices and energy consumption increased.
- Phasing-out fossil fuel subsidies could generate legitimate and populist concerns across segments of the population, particularly in developing and economically vulnerable countries that fear high energy prices.
- Yet, reforming or ending fossil fuel subsidies will yield significant benefits in the short and long-term, by reducing the cost of negative externalities on the environment and air pollution, freeing up fiscal expenditure for governments, and providing public support for other environmental tax reforms and mechanisms.



**Research Series** 

## 05 BACKGROUND

Addressing climate change is a global endeavour. The world's top three emitters of greenhouse gas emissions (GHG) are China, the United States, and Russia. However, some smaller countries also rank high on per-capita emissions, while long-time industrialised countries have a higher historic responsibility for emissions.

The United Nations Climate Change Conference was established in 1995 to negotiate and establish legally binding obligations for the developed world to reduce their GHG footprint. In the current format, it is a global platform held under the framework of the United Nations Framework Convention on Climate Change (UNFCCC) and serves as an annual formal meeting of the 198 UNFCCC parties and its supreme decision-making body, the Conference of Parties (COP) to assess the global progress on tackling climate change<sup>i</sup>.

The 1997 Kyoto Protocol was the first implementation of the UNFCC and was superseded by the legally binding international treaty on climate change, also known as the Paris Climate Agreement, which was adopted by 196 parties at COP21 in Paris, France and entered into force in 2016. The goal of agreement was to limit global warming to well below 2°C (preferably 1.5°C) compared to preindustrial levels.

The main elements of the recently held United Nations Conference of the Parties (COP26) in Glasgow, United Kingdom, included: 1) new net-zero pledges that would limit

1-The phrase 'phase-out coal' was changed to 'phase-down coal' in the latter stages of the negotiations at the request of officials from China and India, and other coal-dependent countries. global warming to 1.8°C, in line with the Paris Agreement target, 2) urging developed countries to collectively expand international public finance for climate change mitigation across developing countries, and 3) establishing a Paris Climate Agreement Rulebook that outlines transparency and reporting guidelines for signatories and sets the rules for operating carbon markets.

The Glasgow Climate Pact was concluded at COP26 as a non-official session document<sup>ii</sup>. The most significant components of the Glasgow Climate Pact are the Global Coal to Clean Power Transition and the International Public Support for the Clean Energy Transition statement. The former is an agreement to accelerate efforts to phase-down1 global unabated coal consumption, and the latter is an agreement to end financing for fossil fuel projects by the end of 2022 and phase-out inefficient fossil fuel subsidies.



# Other significant COP26 announcements

- The Beyond Oil and Gas Alliance, led by Costa Rica and Denmark, includes France, Greenland, Ireland, Quebec, Sweden, and Wales, and pledged to end new licensing rounds for oil & gas exploration and production with an end date that is aligned with the Paris Agreement objective.
- The Solar Investment Action Agenda by World Resources Institute, the International Solar Alliance (ISA) and Bloomberg Philanthropies, announced they will collectively identify high-impact opportunities to speed up investment and reach ISA's goal of mobilising US\$ 1 trillion of investments in solar by 2030.
- Over 2,000 companies committed to developing science-based targets in order to reduce their GHG emissions. New guidance for companies to set credible net-zero targets were also released just ahead of COP26.
- More than 400 financial institutions with asset under management of US\$ 130 trillion committed to aligning their portfolios to net-zero by 2030. The new alliance fully recognises the financial case for climate action and the significant risks of investing in high-carbon assets.
- And almost 1,000 cities and local governments joined the Cities Race to Zero to raise climate action and limit global temperature rise to 1.5°C. Around 41 cities, 34 countries and 11 major automakers agreed to work towards selling only zero-emission vehicles globally by 2040.



# 07 GLOBAL COAL TO CLEAN POWER TRANSITION STATEMENT



Coal is the largest source of electricity generation and the biggest contributor of energy-related  $CO_2$  emissions. It accounts for 36% of the global electricity mix and 40% of total energy-related and industrial emissions<sup>iii</sup>. China and India are the largest consumers of coal, accounting between them for 66% of global demand<sup>iv</sup>.

In the Global Coal to Clean Power Transition Statement, most OECD countries committed to phasing-down unabated coal generation in the 2030s, whereas non-OECD countries pledged to a timeline stretching into the 2040s<sup>v</sup>. The joint statement involved 77 signatories, including 46 from national governments, of which 23 governments pledged for the first time: notably Poland, Ukraine, Indonesia, and Vietnam. Poland's power sector is Europe's largest coal consumer with generation of 84 TWh, accounting for 72% of its electricity mix<sup>vi</sup>. Despite Poland being an OECD member, it did not present itself as one at COP26, in order to continue with the Polish government's current target of phasing-out coal generation by 2049<sup>vii</sup>.

Currently, Poland produces 108 million tonnes (Mt) / year of coal domestically and imports 6 Mt / year mostly from Russia<sup>viii</sup>. The power sector's transition away from coal is likely to slow down in the medium-term, especially after Gazprom's unilateral halt of natural gas deliveries to the country. Ukraine, despite not being an OECD member, pledged to close its coal generation fleet by 2035 at COP26 (a timeline agreed by most OECD countries). Ukraine's power sector is the third largest coal consumer in Europe, with a generation capacity of 1.1 GW, which accounts for 3% of its electricity mix<sup>ix</sup>. Its aggressive coal phase-down target is also encouraged by its plans of diversifying its coal supplies from Russia, which supplies 70% of its coal imports<sup>x</sup>.

Southeast Asia's two large coal consumers, Indonesia and Vietnam, also support the global coal phase-down pledge. The latter committed to phase-down coal generation by 2049, in line with its 2050 net-zero target. Vietnam is the sixth largest coal consumer in Asia, accounting for 47% of its electricity mix<sup>xi</sup>. The Vietnamese government's pledge comes after it introduced the revised 2021 PDP8 Policy Draft, which targeted an increase of 21 GW of coal generation capacity to 41 GW in 2030<sup>xii</sup>.

Vietnam's course correction at COP26 has not only put it on an accelerated energy transition pathway but has also exposed its current coal generation fleet to a lack of financing and risk of becoming stranded.

Like its ASEAN peer, Indonesia also pledged to phase-down coal generation at some point in the 2040s. The country is the third-largest coal producer and the fifth-largest consumer in Asia. Indonesia operates a coal generation capacity of 35 GW, which at full utilisation emits ~192 Mt / year of GHGs<sup>xiii</sup>.

To materialise its pledge, the Indonesian government plans to decommission 5.5 GW in the early 2030s and replace an additional 3.7 GW with renewables by late 2030s, which will also support its goal of net-zero emission by 2060<sup>xiv</sup>. While Indonesia has outlined a rough timeline of phasing-down coal generation, the Indonesian government has agreed to accelerate its efforts, if it is supported by financial and technical assistance from international financial and developmental institutions. Indonesia is estimated to require US\$ 48 billion to retire its coal generation projects by 2030 and another US\$ 23 billion to subsidise the development of renewable projects<sup>xv</sup>.

However, the world's top four coal consumers – China, the United States, Japan, and India – which collectively account for 73% of global demand, stayed out of the Global Coal to Clean Power Transition Statement, although they have made adjacent commitments to move away from coal<sup>xvi</sup>.



China's position to abstain from the joint statement came as a surprise after President Xi Jinping announced at the United Nations General Assembly two months earlier that China would stop building new overseas coal power projects.

The Chinese government's position is to control domestic coal consumption growth during the 14<sup>th</sup> Five Year Plan of 2021 – 2025 with gradual reductions over the next five-year plan. Since 2013, China's coal consumption has plateaued at ~1.9 billion tonnes / year and the current five-year plan intends to maintain demand-levels, despite electricity shortages across several Chinese provinces in the winter season of 2020 / 2021 leading to a spike in electricity demand<sup>\*vii</sup>.

The United States' decision to abstain from the joint statement was attributed to its domestic political environment. The pledge came at a time, when representatives from the coal and natural gas-abundant state of West Virginia opposed sections of the Clean Energy Performance Program, which President Joe Biden was looking to ratify through the United States Congress<sup>xviii</sup>.

However, the economic contribution of the United States' coal sector has been declining over the last decade. United States' coal production peaked in 2008 and has declined by 5% / year to 524 Mt / year in 2021<sup>xix</sup>. Similarly, the power sector's transition from coal generation has also been accelerating with coal power producers such as Excel Energy, Duke Energy, Dominion Energy, Vistra Energy, and Entergy announcing plans to achieve net-zero emissions between 2025 – 2050<sup>xx</sup>. In August 2022, the Biden administration passed the Inflation Reduction Act (IRA), which includes numerous provisions supportive of clean energy and CCUS. Overall, this is expected to be negative for coal demand. Modelling suggested that US coal power capacity of 203 GW today would fall to 93 GW in 2030 without the IRA, and to 66 GW with the IRA<sup>\*\*i</sup>.

Despite the United States' and China's absence from the Global Coal to Clean Power Transition Statement, both countries reiterated a previous pledge called the United States and China's Joint Glasgow Declaration on Enhancing Climate Action in the 2020s, which limits international support for unabated coal power projects and expanded combined efforts to accelerate the transition to a global net-zero economy<sup>xxii</sup>.



Japan was also reluctant to announce a phase-down of its coal generation capacity. At COP26, Prime Minister Fumio Kishida refused to mention coal. Instead, he laid out plans to develop technologies to use hydrogen and ammonia for electricity generation both at home and abroad. Coal accounts for 30% of Japan's electricity mix and is mostly imported from Australia and Russia<sup>xxiii</sup>. It is an important component of Japan's energy security given its lack of domestic energy resources, the high cost of imported LNG, and the problems with its nuclear power fleet.

Two months prior to COP26, at the Leaders' Summit on Climate, the Japanese government announced a revised GHG reduction target of 46%, compared to 2013 levels, with coal accounting for 19% of the primary energy mix in 2030<sup>xxiv</sup>.

In contrast to Japan, India's resistance to announcing a phase-down of its coal generation capacity was driven by its rising demand for cheap energy to power its economic growth and materialise its poverty alleviation targets. Over the last decade, India's coal consumption has nearly doubled to 4.7 billion tonnes, with coal accounting for 70% of the country's electricity mix<sup>xxv</sup>.

Instead at COP26, Prime Minister Narendran Modi announced that India would increase its renewables capacity by an additional 400 GW by 2030. The 'Panchamrit' programme was presented at COP26 and foresees<sup>xxvi</sup>:

 500 GW of renewables by 2030, providing 50% of final energy consumption (this goal was dropped in India's updated NDC of August 2022)

- a reduction in projected CO<sub>2</sub> emissions of 1 Gt (this goal was also dropped in the updated NDC)
- a cut in the economy's carbon intensity of 45% below 2005 levels by 2030
- net-zero emissions by 2070
- the introduction of a carbon market



Progress towards these goals should limit India's coal dependence; nevertheless, coal generation capacity, according to modelling by its Central Electricity Authority, would still rise from 204 GW today to 271 GW by 2030, far from a 'phase-down'xxvii.

Furthermore, the United States, United Kingdom, European Union, and South Africa announced the Just Energy Transition Partnership at COP26 to support South Africa's decarbonisation efforts.

The partnership focusses on decarbonising South Africa's power sector, to help it achieve its ambitious Nationally Determined Contribution goals.

South Africa is one of the world's most coaldependent countries with 87% of its electricity generated from the fuel<sup>xxviii</sup>.  $CO_2$  emissions stand at 452 Mt / year of which 87% are from its coal sector<sup>xxix</sup>. South Africa's power sector is its largest source of GHG emissions with 290  $CO_2$ eq Mt / year<sup>xxx</sup>, but the Secunda coal-toliquids plant is the world's largest single-site emitter at 56.5 Mt/year.

The Just Energy Transition Partnership will mobilise an initial commitment of US\$ 8.5 billion for the first phase of financing, through various financial mechanisms including grants, concessional loans and investments, and risk sharing instruments, which is expected to mitigate ~1 gigatonnes (Gt) of GHG emissions over the next 20 years, whilst also supporting South Africa to move away from coal and accelerate its transition to a low-carbon economy. The partnership is one of the first concrete commitments from a set of developed countries to help a developing country undertake a just low-carbon transition<sup>xxxi</sup>.



## IMPLICATIONS OF THE GLOBAL COAL TO CLEAN POWER TRANSITION STATEMENT

Despite a slowing global economy and COVID-19 related mobility restrictions in China, rising natural gas prices following Russia's invasion of Ukraine have reversed natural gas-to-coal switching in many countries in the short-term. This trend will have to stop soon to meet the objectives of the Glasgow Climate Pact.

In 2022, global coal consumption is projected to increase by 1% year-over-year (YOY) to 8 billion tonnes, driven by increasing demand across the European Union, China, and India<sup>xxxii</sup>. The annual increase will match the record set in 2013, and global demand will likely rise next year to a new all-time high, even though Chinese consumption is expected to drop slightly<sup>xxxii</sup>.

# Figure 1: Change in Global Coal Consumption, 2021 – 2023 xxxiv

Change in Global Coal Consumption, 2021 – 2023 Units: thousands of tonnes



In the European Union, coal demand is estimated to increase by 7% YOY in 2022, after a 14% YOY increase in 2021\*\*\*. This is driven by natural gas-to-coal switching in power generation, due to shortages in gas supply following Russia's invasion of Ukraine. Countries such as Austria, France, and the Netherlands, along with Spain, Italy, Greece, Czech Republic, and Hungary, have announced plans either to 1) extend the life of their coal power projects that were previously scheduled for closure, 2) re-open closed plants, or 3) increase their operating hours to reduce gas consumption<sup>xxxvi</sup>.

Since the end of 2021, demand for coal has been strong in India and is expected further increase by 7% YOY in 2022 as the economy grows and the use of electricity expands<sup>xxxvii</sup>. In China, demand for coal is estimated to decline by 3% in 1H 2022 as renewed COVID-19 related mobility restrictions across several cities dampen the country's short-term economic growth<sup>xxxviii</sup>. However, a rebound in 2H 2022 will likely bring coal consumption to the same levels as last year.

### Figure 2: Newcastle Coal Futures xxxix





Furthermore, rising natural gas prices in 2021 – 2022 have made coal more competitive across many markets. Global coal prices increased to three all-time peaks between October 2021 – May 2022, as economic sanctions on Russia and bans on Russian coal supplies disrupted markets. The current coal futures markets indicates that tight market conditions are expected to continue in 2023 and beyond, as coal producers face capacityrelated constraints to replacing Russian supplies.

In the long-term, the effectiveness of COP26's initiative to limit coal use will be determined by the effectiveness of Asian coal-to-gas switching policies, the deployment of utility-scale renewables, and their use of carbon capture, use, and storage (CCUS) to cut emissions from coal power.

These considerations in turn will depend on the current share of coal in the electricity mix, the growth of electricity demand, reserve margin in the grid, availability of alternative sources of power generation, the reliability of supporting network infrastructure, and how much of the coal is supplied through domestic production.

Selected regulatory policies and developments across Asia-Pacific that will underpin coal-tonatural gas switching in the medium-term and

#### Figure 3: Dependence on Coal across Selected Countries

promote long-term natural gas demand include:

- the Energy Law in China, through which natural gas is expected to account for 15% of the energy mix by 2030
- the Indian government's plan to develop a natural gas-based economy, which supports the expansion of domestic production and LNG imports
- various government policy orientations across Southeast Asia, which promote the use of natural gas as an affordable and sustainable supply of energy
- the South Korean government's Green New Deal, which aims to achieve carbon neutrality by 2050 through fuel switching from coal and scaling up of renewables
- the Japanese Government's revised Nationally Determined Contribution to the Paris Agreement, which reaffirms its ambition to achieve carbon neutrality by 2050.



The phase-down of coal consumption across the Asia-Pacific region will also be encouraged through regulatory and fiscal support schemes that incentivise the utility-scale deployment of renewables, notably low-cost solar PV and wind.

Asia-Pacific's renewables output stood at 1,690 TWh in 2021 and increased by 27% from the year before<sup>xI</sup>. The International Renewable Energy Agency (IRENA) estimates that 163 GW or two-thirds of the newly installed renewables capacity (both solar and wind) had lower costs than the world's cheapest coal power in 2021<sup>xII</sup>.

Retrofitting coal power projects with CCUS could preserve existing coal power projects and ensure a reasonable compromise to avoid the full depreciation of new coal power projects with a long lifespan. If the retrofitted capture system in CCUS technologies allows energy to be stored (e.g., by adapting oxygen production to the required power output), then it can supplement the flexibility of the power project and facilitate the integration of variable renewable energy. The continuing use of coal also limits the requirement for expensive LNG. However, it would make coal power rather expensive and likely require policy support via emissions standards, a carbon price or tax, or other mechanisms.

A phased decline in long-term coal demand will have major implications for the mining sector across the world's leading coal exporters, Indonesia, Australia and Russia.

Global advanced coal mining projects amount to an expected production capacity of 95 Mt / year of which 70% are metallurgical coal projects (even though metallurgical coal accounts for less than 20% of global coal demand) and 30% are thermal coal projects<sup>xIIII</sup>. 70% of the advanced coal mining projects are in Australia, followed by Russia with 22%, and South Africa with 13%<sup>xIIV</sup>.

Less-advanced coal mining projects represent a total production capacity of 770 Mt / year<sup>xlv</sup>.



#### Figure 4: Capacity of Hard Coal Export Mining Projects by Country and Grade<sup>xlii</sup>

While official data indicate that ~64% of these projects are in Australia, this information should be treated with caution as Australia is more transparent in reporting proposed coal projects than other countries such as Indonesia, which has the highest number of new coal mining projects among major exporting countries<sup>xlvi</sup>.

In addition to the initiative at COP26, public opposition and net-zero goals has increased the pressure to reduce thermal coal mining and forced financial investors to push coal miners to reduce their carbon and GHG emissions footprint. Companies such as BHP, Rio Tinto, Anglo American, and Glencore have announced net-zero emissions strategies and are either selling their mines or demerging their coal operations.

Rio Tinto sold its last coal mine in 2018, BHP has embarked on a business strategy to divest its thermal coal portfolio, and Anglo American recently spun-off its thermal coal unit in South Africa into a new company, Thungela Resources.



### Figure 5: Mining Companies that Produce Selected Critical Metals and Minerals<sup>xIviii</sup>



### Production Share of Mining Companies that Produce Selected Transition Metals Units: percentage, %

For mining companies, the decline in coal demand could be partly offset by an increase in mined production of critical metals and minerals, including those vital to clean energy technologies, such as copper, lithium, and nickel.

Demand for lithium used in batteries is estimated to increase by 30x between 2020 – 2030; while demand for rare earth elements, particularly those used in electric vehicles and wind turbines, is projected to increase by 10x over the same period<sup>xlvii</sup>. From the major coal miners, Glencore stands out for its exposure to copper, nickel and especially cobalt. However, with the exception of copper, the volume and value of the market for these minerals is still much less than of coal.

Critical mineral resources are not always located in the same locations or countries as existing coal mines, but the expertise and experience of mining companies will be essential to ensure that the supply of critical metals and minerals is able to match demand at reasonable prices.



Through the International Public Support for the Clean Energy Transition statement, more than 20 countries and global institutions committed to ending direct international public finance for unabated coal, oil, and natural gas projects by the end of 2022 and to prioritise clean energy finance.

The joint statement united some of the largest providers of public finance for fossil fuels projects, notably Canada, the United States, United Kingdom, and the EU (via the European Investment Bank). The statement came at a time when international public finance institutions along with multilateral development banks (MDBs) provided US\$ 188 billion in public financing to fossil fuel projects abroad between 2018 – 2020, 2.5x more than the financing they provided for the renewable energy industry, averaging US\$ 26 billion / year over the same period<sup>xlix</sup>.

If the statement is implemented effectively, it could directly shift ~US\$ 15 billion / year of preferential and government-backed financing from the fossil fuel industry to clean energy; and possibly even more if initial signatories are successful in convincing others to join<sup>1</sup>.

Figure 6: G20 Countries by Share of Public Finance for Fossil Fuel Projects at Home and Abroad<sup>Iv</sup>

### G20 Share of Public Finance in Fossil Fuel Projects in 2020



### <u>Units</u>: percentage, %

The Canadian government led the way by committing to assist low and middle income countries' transition away from coal generation by providing up to US\$ 1 billion in climate finance to expand their clean energy deployment, and to support a fair and inclusive transition for coal workers and affected communities<sup>II</sup>. Since 2015, the Canadian government has invested over US\$ 100 billion in clean growth<sup>III</sup>. Two months prior to COP26, the Canadian export credit agency, Export Development Canada (EDC), committed to achieving net-zero emissions by 2050 across all its business lines and global portfolio.

The French and German governments also committed to ending bilateral public spending and export finance for fossil fuel projects, which meant that that the French export credit agency, Bpifrance Assurance Export, which is responsible for EUR 9.3 billion in public finance for fossil fuel projects between 2009 and 2019; and the German export credit agency Hermes Cover along with Kiwi and DEG, jointly responsible for US\$ 2.8 billion investments in oil & gas projects between 2018 – 2020, will be ending their financing for fossil fuel projects by the end of 2022<sup>liii</sup>.

However, missing from the joint statement were Japan, South Korea, and China, which are the largest providers of international public finance to the fossil fuel industry among the G20 countries, collectively accounting for 46% of the G20 and MDB finance for fossil fuel projects<sup>liv</sup>.





Although the European Investment Bank has signed the statement, other MDBs including the World Bank Group, the African Development Bank, the European Bank for Reconstruction and Development, the Asian Development Bank, and the Asian Infrastructure Investment Bank are yet to join. These institutions collectively provided US\$ 6.3 billion / year to fossil fuel projects between 2018 – 2020<sup>IVI</sup>.

The pledges to phase out fossil fuel financing bring three other main problems:

- They discourage or prevent fossil fuel-based projects with a positive environmental impact, e.g., flared gas capture or coal-to-gas switching
- They discriminate against poorer countries since fossil fuel projects in wealthier countries have access to alternative finance. The amount of green finance available to countries such as Mozambique, for example, is far less than that which would be provided for the development of its LNG industry
- They reduce the diversity of fossil fuel supply without necessarily affecting its quantity very much, leading to dangerous over-dependence on a few suppliers, a problem made apparent by the reliance of Europe on Russian gas imports

Moreover, the Glasgow Climate Pact was also the first-time fossil fuel subsidies were mentioned in an agreement and was introduced to encourage countries to "accelerate efforts towards the ... phase-out of inefficient fossil fuel subsidies."

The announcement to accelerate the phase-out of 'inefficient' fossil fuel subsidies came at a

time when global policymakers are redoubling their efforts to cut negative externalities from wasteful and fossil fuel consumption. The International Energy Agency (IEA) has highlighted that that all governments need to eliminate fossil fuel subsidies and investment in new fossil fuel projects in the next few years, to meet the global net zero emissions target by 2050<sup>Ivii</sup>.

The term 'inefficient', first raised at the G20 summit in Pittsburgh in 2009, is itself somewhat unclear and contentious. The intention is presumably to shield subsidies deemed socially or environmentally beneficial or essential. Some countries only count direct budgetary transfers as subsidies; others include tax breaks.

Most global energy subsidies are for petroleum (Figure 7), and little is for coal. Therefore, removal of subsidies will not have much direct impact on coal consumption; it could even increase it if natural gas were to become more expensive. Despite efforts at reform, the total subsidy bill since 2010 has fluctuated in line with oil prices, rather than reducing systematically.





### Figure 7: Value of Fossil Fuel Subsidies by fuel and year<sup>lviii</sup>

Fossil fuel subsidies generally fall into one of two categories: consumer or producer subsidies. The former reduces the cost of consuming fossil fuels, sometimes with the stated intention of reducing average household expenditure and addressing energy poverty. The latter are targeted at companies and reduce the cost of fossil fuel exploration, transport, and related processing / infrastructure. These subsidies distort local energy markets by sending the wrong price signal to consumers or producers, which not only burdens fiscal budgets, but also discourages their transition to cleaner fuels.

In 2020 global fossil fuel subsidies declined by 40% YOY to US\$ 180 billion, driven by a fall in fossil fuel prices and overall energy consumption<sup>lix</sup>. As prices and demand recovered over the next two years, regulators continue to be hesitant in reforming their subsidy schemes in an uncertain economic and high inflationary environment.

Iran, China, and India are the largest providers of fossil fuel consumption subsidies; and oil is

the most subsidised fuel, followed by natural gas and electricity. The biggest providers of subsidies are nearly all leading producers of coal, oil and/or gas, but even in China and India, coal subsidies are a small part of the total.

# Figure 8: Value of Fossil Fuel Subsidies across the Top 25 ${\rm Countries}^{\rm Ix}$

### Value of Subsidies in the Top 15 Countries, 2020 Units: billions of US\$



High fossil fuel prices, rising costs and inflation, economic uncertainty, energy security concerns, and climate initiatives will continue to drive investments in fossil fuel projects and consumption subsidies in the short-term.

The Russian invasion of Ukraine has upended the fossil fuel investment landscape and intensified the commodity price shock. At the same time, there is immense pressure on Europe to close one of the main supply routes of the international energy trade – that is Russian oil, natural gas, and coal deliveries to Europe, which amounted to US\$ 150 billion in 2021 and ~US\$ 500 million / day till now in 2022<sup>wi</sup>. From mid-August 2022, the EU banned the import of Russian coal, likely to hit output substantially since Russia's exports of coal to Europe are 35% of its total exports, and 23% of its production. If this coal cannot be diverted to other markets, it would reduce world output by about 1.3%.

### Figure 9: Global Energy Investments between 2017 – 2022<sup>Ixii</sup>



In 2022, investments in the energy sector are estimated to increase by 8% YOY, against the backdrop of the global energy crisis<sup>1xiii</sup>. 40% of the capital will be deployed in the power sector, mainly in renewables, electricity grid infrastructure, and improvements in end-use efficiency<sup>1xiv</sup>. 35% will be directed towards fossil fuel projects and low-carbon fuel supplies, which will be driven by fossil fuel producer economies and will generate an unprecedented US\$ 4 trillion in net income for them in 2022<sup>1xv</sup>.

# Figure 10: Change in Investments by Oil & Gas Companies between $2019 - 2022^{Ixvi}$



Almost 50% of the increase in capital expenditure will be linked to inflation-related higher costs<sup>Ixvii</sup>. These costs are rising due to multiple supply chain pressures, tight markets for specialised labour and services, and the effect of higher energy prices on essential construction materials like steel and cement. These cost pressures are not only visible in fossil fuel projects, but also renewable energy projects. After years of decline, costs of solar PV panels have increased by 15% and wind turbines by 20% in 2021, compared to price levels in 2020<sup>Ixviii</sup>.

Change in Investment by Oil & Gas Companies, 2019 vs 2022 Units: billions of US\$



For many policymakers, easing the cost of energy consumption will be a top priority in 2022. The total energy bill paid by the world's consumers is estimated to be US\$ 10 trillion for the first time in 2022, and will hit low-income and developing economies the hardest, effectively putting pressure on governments to cushion the price increase through consumption subsidies, price interventions, and / or fiscal interventions<sup>lxix</sup>.

The long-term effect of the global pledge to end international public finance for fossil fuel projects will be an increase in investments relating to renewables, energy efficiency, electrification of the mobility, and new energy technologies and fuels such as battery storage, CCUS, and low-carbon hydrogen.

Renewable projects will be the target of most investments, despite an increase in costs over the recent months. Clean energy technologies such as solar PV and wind are expected to be the cheapest option for new electricity generation projects across many countries<sup>Ixx</sup>. Solar PV is likely to make up 50% of the new investment in the renewable industry in 2022, with spending equally divided between utility-scale projects and distributed solar PV systems<sup>Ixxi</sup>.

Investments in energy efficiency improvements will be another major growth area in 2022, mainly driven by higher fossil fuel prices and government incentives. However, these investments face headwinds from higher borrowing costs, unchanged household incomes, and lower consumer and business confidence. The effectiveness of these investments depends on continued government support.

The electrification of mobility will be another key contributor to an increase in clean end-use by consumers. In 2021, electric vehicle sales more than doubled to 6.5 million units with most of the growth in Europe and China<sup>Ixxii</sup>. These sales are likely to increase to 10.5 million units in 2022, despite automakers facing headwind pressures from supply chain issues relating to critical minerals and semiconductor shortages<sup>Ixxiii</sup>. There are also positive signs that investments in new energy technologies and fuels such as battery storage, CCUS, and low-carbon hydrogen will increase in the long-term.

Investments in battery storage is expected to more than double from the previous year to US\$ 20 billion in 2022, mainly led by grid-scale deployment, which accounted for 70% of total spending in 2021<sup>Ixxiv</sup>. Currently, China is targeting 30 GW of non-hydro energy storage capacity by 2025 and the United States has more than 20 GW of grid-scale storage projects either planned or under construction<sup>Ixxv</sup>.

Investments in CCUS projects have increased to US\$ 1.8 billion in 2021, though this remains small compared to the amounts required and to the spending on renewables. In addition to this, significant amount of private capital is being directed to new CCUS companies with technologies that remove  $CO_2$  from the air<sup>Ixxvi</sup>.

The Russian invasion of Ukraine has also enforced the momentum behind low-emissions hydrogen uptake, mainly through policy support across Europe. Currently, annual investment in low-carbon hydrogen stands at around US\$ 0.5 billion<sup>Ixxvii</sup>. However, to produce an extra 15 Mt of hydrogen as targeted in the REPowerEU plan, it is estimated that a US\$ 600 billion would be needed by 2030, with 60% directed towards infrastructure development outside the European Union<sup>Ixxviii</sup>.

However, the aim to phase out fossil fuel subsidies in the Glasgow Climate Pact could generate legitimate and populist concerns across segments of the population, particularly in developing and economically vulnerable countries that fear high energy prices. Reforming or ending fossil fuel subsidies will yield significant benefits in the short and long-term, by reducing the cost of negative externalities from fossil fuel consumption, freeing up fiscal expenditure for governments, and providing public support for other environmental tax reforms and mechanisms.

Notable negative externalities associated with fossil fuel consumption subsidies include local pollution related cardiovascular and respiratory diseases, and reduced traffic congestion and accidents. The International Monetary Fund (IMF) estimates that underpriced local air pollution accounts for about 42% of global fossil fuel subsidies, whereas traffic congestion and accidents account for 15%<sup>Ixxix</sup>.

Therefore, phasing-out fossil fuel subsidies would free up fiscal expenditure and allow for redistribution of expenditure to segments of the population that are most affected by the reform, ideally low-income households. For example, Iran, the Philippines, and Indonesia have implemented cash transfers as part of their fossil fuel subsidy reforms.

At the same time, policymakers can implement innovative policy mechanisms to improve public support for reforms and the removal of fossil fuel subsidies. For instance, policymakers could distribute revenues from an environmental tax reform through visible and frozen bank accounts that are unfrozen only after the reform has passed<sup>Ixxx</sup>.

This policy mechanism not only helps demonstrate the benefits of the environmental tax reform to cash recipients, but also increases public trust that cash transfers will be distributed, which is a key factor across most developing countries where citizens lack faith in government reforms. This scheme was initially elaborated to implement carbon taxes but could equally be applied to fossil fuel subsidies reforms, as both measures free up fiscal expenditure, whilst also increasing energy prices.

## IMPLICATIONS

The UAE's recent decision to move away from its planned Hassyan Clean Coal Project is a sign that the GCC is increasingly transitioning to cheaper and cleaner energy sources. The plant was originally attended to reach full capacity of 3.6 GW, operated by the state-owned utility DEWA, but is currently being converted to a 2.4 GW gas-based plant.

The decision to convert the Hassyan Clean Coal Project came at a time when energy priorities in the Middle East are gravitating towards cleaner sources of electricity. The Emirate of Dubai's 2050 Clean Energy Strategy aims to diversify its energy mix with 25% solar, 7% nuclear, and 67% natural gas by 2030. At the same time, the UAE has been an environmental leader in the region by announcing its 2050 net-zero goal and is the confirmed host for COP28.

Similarly, Oman has also scrapped its plans of developing 3 GW of coal capacity by 2030 at the Port of Duqm, under the Omani government's fuel diversification strategy. Instead, the country's utility OPWP is developing a solar CSP project at the same site with a capacity of 1.2 GW.

Egypt and Morocco, along with Saudi electricity and water developer ACWA Power, were the only MENA-based entities that are signatories to the Global Coal to Clean Power Transition Statement. Coal accounts for less 1% of Egypt's primary energy mix, with consumption mainly limited to its cement industry<sup>Ixxxi</sup>. Whereas, the Moroccan power sector is the largest consumer of coal in the MENA region accounting for 32% of its electricity mix<sup>Ixxxii</sup>.

In 2018, Morocco commissioned the 1.4 GW Safi Coal Project, and in 2020 extended the operating period of the Jorf Lasfar Thermal Power Project until 2044. However, Morocco's pledge at COP26 will support its 2050 GHG Emission Strategy that aims to increase the share of renewables in the country's electricity mix to 52% by 2030, 70% by 2040, and 80% by 2050<sup>Ixxxiii</sup>.



The impact of Egypt's commitment to the coal phase-down pledge is minimal, as the country's announcement comes at a time when coal generation plans have been abandoned by the Egyptian government due to surplus electricity supply, higher investment requirements for coal power projects, and the government's plans to increase its renewable capacity to 42% of the electricity mix by 2030. In addition to this, the Egyptian government has also scrapped two coal power projects, the 2.6 GW Al Nowais Project and 6.6 GW Hamrawein Coal Project.

Moreover, except for Jordan, none of the MENA countries were signatories to the International Public Support for the Clean Energy Transition Statement. Although the region is perceived as a key contributor to fossil fuels financing and subsidies, there are clear commitments and serious steps that could be taken to advance a low-carbon economic transition in the coming decades.

Middle Eastern NOCs repeatedly point to the current high fossil fuel prices as a reminder of the robust global demand for oil. Their argument is supported by the contradictory position of the United States, the European Union, and the United Kingdom, that are calling for fossil fuel use to ramp-down in the long term but also plead for more oil & gas supplies in the short-term to calm inflationary pressure.

Despite COP26's efforts to end public financing for international fossil fuel projects, the increase in investments by Middle Eastern NOCs has been a well-established trend since 2020 and will continue in the near short-term. Saudi Aramco and ADNOC have announced plans to increase investment spending by about 15% - 30% y-o-y in 2022<sup>Ixxxiv</sup>. Aramco's spending is split equally between its twin goals of increasing oil production capacity and domestic natural gas supply. ADNOC is spending US\$ 127 billion between 2022-2026 on growth projects, including plans to raise its oil production capacity to 5 Mbbl / d by 2030 from current levels of 4 Mbbl / d<sup>Ixxxv</sup>.

In addition to this, QatarGas is spending US\$ 30bn in expanding its North Field to increase annual LNG production capacity from 77 Mt to 110 Mt by 2025, and 126 Mt by 2027<sup>IXXXVI</sup>.

Moreover, subsidies for fossil fuel consumption will continue in the short-term, despite global efforts to accelerate the phase-out fossil fuel subsidies at COP26. It is estimated that MENA countries accounted for almost half of the global energy subsidies of US\$ 180 billion in 2020<sup>Ixxxvii</sup>.

Fossil-fuel subsidies are frequently justified on the basis that they provide an inflationary hedge to households by lowering direct and indirect energy costs. Another justification for fossil-fuel subsidies is their impact on other sectors. Removing fossil-fuel consumption subsidies through reform may have a negative short-term impact on the competitiveness of their materials and industrial sector, and their contribution to their economy.

However, in the longer term, the MENA region could phase-out fossil fuel subsidies as a means of better allocation of resources across the energy system, revealing incentives for energy savings, and for investments in more efficient and cleaner technologies. The financial resources saved can be used to pursue other public policy objectives, including targeted support to ensure continued access to energy among the poorer sections of society. Nonetheless, in the near short-term, MENA fossil fuel subsidies are likely to be much higher than estimated government support to renewable energy generation.

## CONCLUSIONS

Ultimately, the impact of the two joint statements in the Glasgow Climate Pact at COP26 will depend on what measures policymakers take to reduce global GHG emissions and avert the most catastrophic outcomes of climate change.

Going forward, it is important to focus on two major themes. Firstly, there is no single formula to phase-down coal generation. While halting new projects from being built is a good starting point, it will not be enough unless countries such as China, India, and Japan commit to the pledge.

Secondly, squeezing existing coal generation capacities, ending public financing for fossil fuel projects, and accelerating the phase-out of fossil fuel subsidies can be important to some countries – but no country will jeopardise its energy security and reliability of energy supply by removing critical capacity from its system for the sake of a cleaner energy system.

In combination with the coal phase-down pledge, there needs to be heavy investment in additional low-carbon energy. Nuclear, CCUS and firm renewable resources (biomass, geothermal, hydro), and electricity storage (batteries, pumped hydro, thermal storage, hydrogen) have important roles in replacing coal as a source of reliable, dispatchable power. While both statements are a quest for an efficient and effective energy transition, at the next COP event in Egypt (COP27), it is likely there will be a continued push to materialise their objectives. There might be a scale up of global efforts through new renewed efforts and / or additional signatories.

At the same time, policymakers will be not single-minded in their effort to achieve a global net-zero energy system, at the cost of vulnerable communities that survive on the fossil fuels industry, limiting global inflationary pressure, and improving their energy security.



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# 31 PAST ISSUES

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### June – 2022

### LNG Market Outlook in the Asia-Pacific Region

Global LNG prices surged to never-beforewitnessed heights in 2022, as market tightness and concern over supply gripped the market. The interconnectedness of gas markets in Europe and Asia-Pacific through LNG trade has resulted in the European benchmark, Dutch TTF, topping US\$ 60 / MMBtu in 4Q 2021 while the spot Asian LNG benchmark, JKM, hit nearly US\$ 60 / MMBtu in March 2022.



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### May - 2022

### Advanced Batteries: Outlook & Impact

Advanced batteries are intended to reduce cost, weight and charging time, while increasing lifetime and safety. How do new technologies such as flow batteries, sodium ion and solid-state meet these criteria? Where are the key applications of different types? What are the main areas of future improvement and how would this advance the deployment of batteries?



### April – 2022 The World of Hydrogen

Hydrogen has emerged as an important fuel and energy carrier in the global race to tackle climate change and to reach net-zero emissions by mid-century. Global regulatory policies, technological developments, affordability, and scalability are converging to create an unprecedented drive for the expansion of the low carbon hydrogen economy.



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# **OUR PARTNERS**

Our partners collaborate with The Al-Attiyah Foundation on various projects and research within the themes of energy and sustainable development.







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