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Global

FX Insight

Energy and FX – Intertwined Fates

Why Are **Energy Prices Through the Roof**

A structural recovery in demand on global reopening dynamics, weather-induced disruptions to supplies, as well as frictions in transiting towards greener energy models in Europe and China, have contributed to the 2021 rally in energy prices. The first section of this report involves a deep dive into these contributive factors.

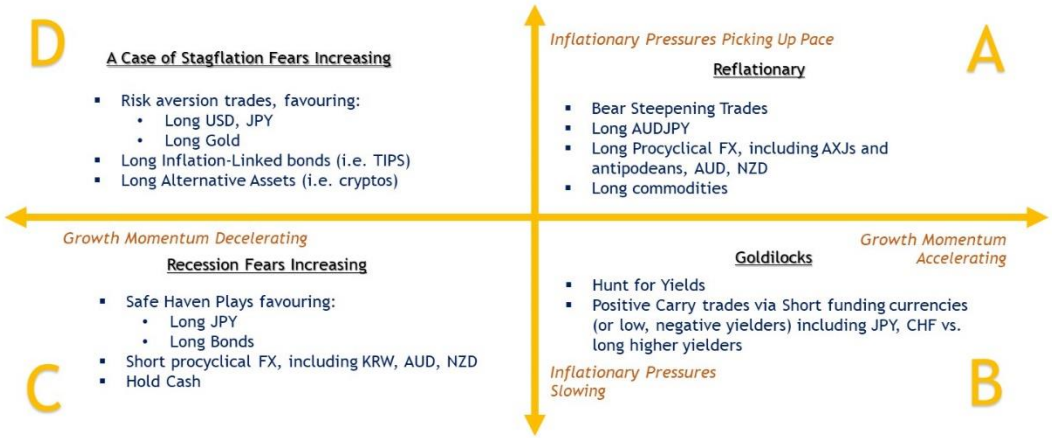
We note too, that **during recent period of bullish energy prices (late Aug to late Oct), relative size of energy import bills or export receipts remains pertinent as a key determinant of FX moves**. Amongst the majors, hard commodity-linked FX, including CAD and AUD saw significant gains. **Among AxJ FX, IDR and MYR benefitted. All four countries are net energy exporters. Meanwhile, FX of net energy importers, such as INR, PHP, JPY, EUR appears to be weighed somewhat amid the global energy supply crunch.**

Will Prices Remain Elevated?

On a forward-looking basis, expectations are for (i) **slightly harsher-than-usual European winter conditions** and (ii) **a more disciplined OPEC+** (an early supply shock could worsen oil fundamentals; some operational constraints in ramping up supplies given earlier under-investment).

While our PCA-derived gauge of underlying energy demand conditions suggests that the recovery has become more hesitant in recent weeks, our baseline view remains that (iii) **broad demand conditions are likely to remain resilient.** Aggregated stringency data highlights that each bout of tightening in global Covid-19 restrictions has been less strict than the last, which is key to a normalization of global macro conditions over time.

Our base case is a potentially reflationary one (quad-A) where growth gains traction on vaccine availability, pace of inoculation picking up pace and economies reopening, notwithstanding lingering supply-side constraints. This supports the bias for long AUDJPY and procyclical AXJs including KRW, AUD, NZD. Into the intermediate term, we are mindful that higher energy prices is in essence a tax for consumers as household budget, disposable income are constraint and spending could be limited. These can have negative bearing on global economic recovery. To some extent, higher inflationary prices and slowing growth could fan fears of stagflation (quad-D).



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Energy Crunch – Both a Boon and Bane for Currency Markets

"While energy prices 'will be elevated' for the next couple of months, we expect that to come back down by the end of the first quarter next year and into the second quarter."

Gita Gopinath, Outgoing IMF Chief Economist
12 Oct 2021

Broadly, higher commodity prices lead to an increased supply of foreign exchange in the markets of commodity exporters, as a result of increased export revenues, causing an appreciation of the domestic currency. In the medium to long run, this effect might then be compounded by ensuing foreign direct investment, given more attractive investment prospects in the local commodity sectors. A BIS paper found that commodity prices can help predict exchange rate movements of 11 commodity-exporting countries in an in-sample panel setting for horizons of up to two months.

In this report, we first embark on a deep dive to look at some of the factors that have contributed to the significant rally in energy prices globally, including key developments across Europe and China. We then examine typical energy dependencies of selected economies and their recent FX moves to check implications for key currencies in the near-term.

Subsequently, we adopt a forward-looking lens and explore certain key drivers which are likely to dominate the global energy market outlook into winter and early 2022. Lastly, we attempt to assess potential currency biases based on different plausible macro environments.

With recent surge in energy prices coinciding with UN's COP26 global climate summit in Glasgow (31 Oct – 12 Nov 2021), we thought it may be useful to outline what is at stake at the COP26 and provide an introductory brief to carbon markets, via two ***Box*** features.

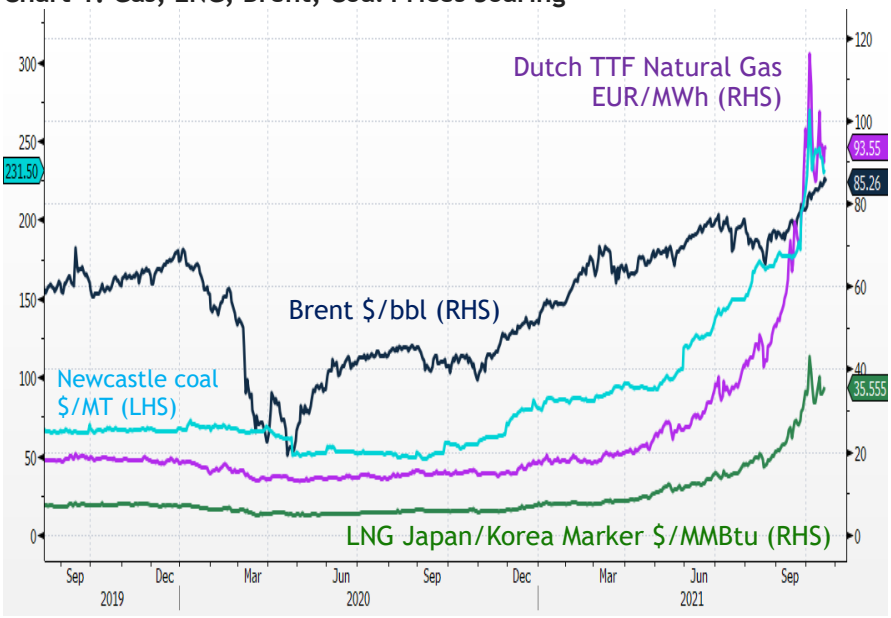
Energy Prices Through the Roof …

Energy prices have been on the rise globally. Natural gas prices have seen the biggest increases to all-time highs (before easing lower over the last 2 weeks). YTD, European natural gas futures (Dutch TTF) have risen 400%, Asian Liquefied natural gas (Japan/Korea Marker) prices have surged 360%. At time of writing (26 Oct), European gas prices are around EUR89/MWh while Asian LNG prices are trading around $33/MMBtu, way above its long-term average of EUR20/MWh and $8/MMBtu, respectively.

Elsewhere in the energy complex, international coal and oil prices have also risen. Newcastle coal (XW futures) and brent prices rose ~180% and >70%, respectively YTD. In terms of levels, coal is trading near all-time high of $230/MT while brent prices are near 3-year high of above $80/bbl.

Even carbon prices were up nearly 100% at one point this year (on YTD % change) as sharp rise in natural gas prices prompted the switch to coal to generate electricity and the increased use in coal drove up CO2 emissions. We look at carbon market dynamics in **Box 2**.

Chart 1: Gas, LNG, Brent, Coal Prices Soaring



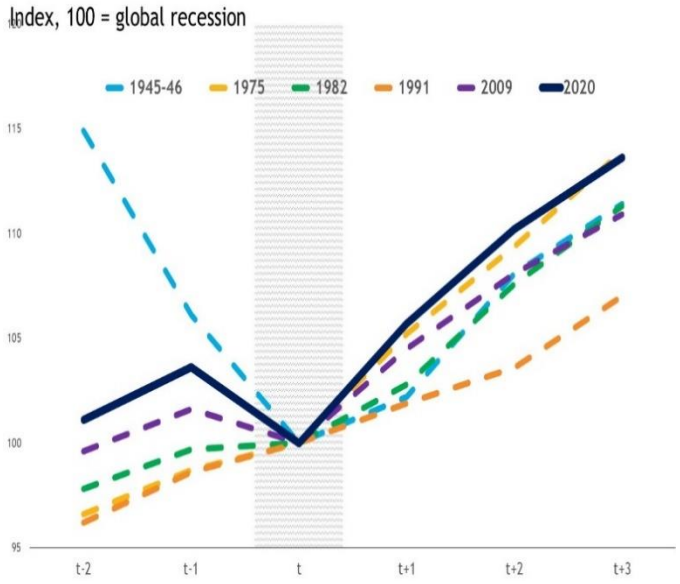
Source: Bloomberg, Maybank FX Research & Strategy

… Driven by a Combination of Demand and Supply Side Factors

There are both supply-side and demand-side factors behind the rise in energy prices over 2021. On one hand, there was sharper than expected recovery in demand as more countries emerge from Covid lockdowns and relax border restrictions. China made known its ultimatum to secure energy supplies at all cost in anticipation for colder winter in Northern hemisphere this year. Most meteorological agencies in Northern hemisphere are seeing higher probability of La Nina and have issued warnings of winter storm.

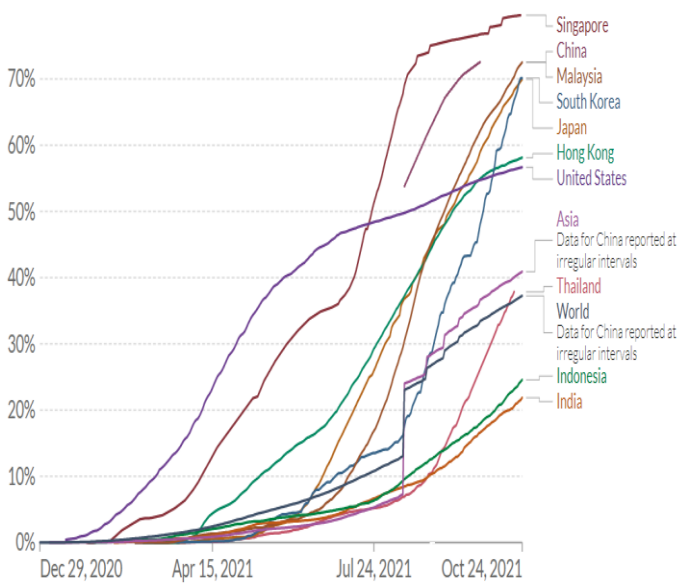
On the other hand, the world is faced with an energy supply crunch and to some extent, acceleration of climate change policies ahead of UN's COP 26 (refer to **Box 1**). In the next section we look at some geographic-centric drivers behind the rise in energy prices in Europe and China.

Chart 2: Strongest Pace of Post-Recession Recovery in 80 Years



Source: Bolt et al. (2018); Kose, Sugawara, and Terrones (2020); World Bank, Maybank FX Research & Strategy

Chart 3: Asia's Pace of Inoculation Accelerated from 3Q 2021

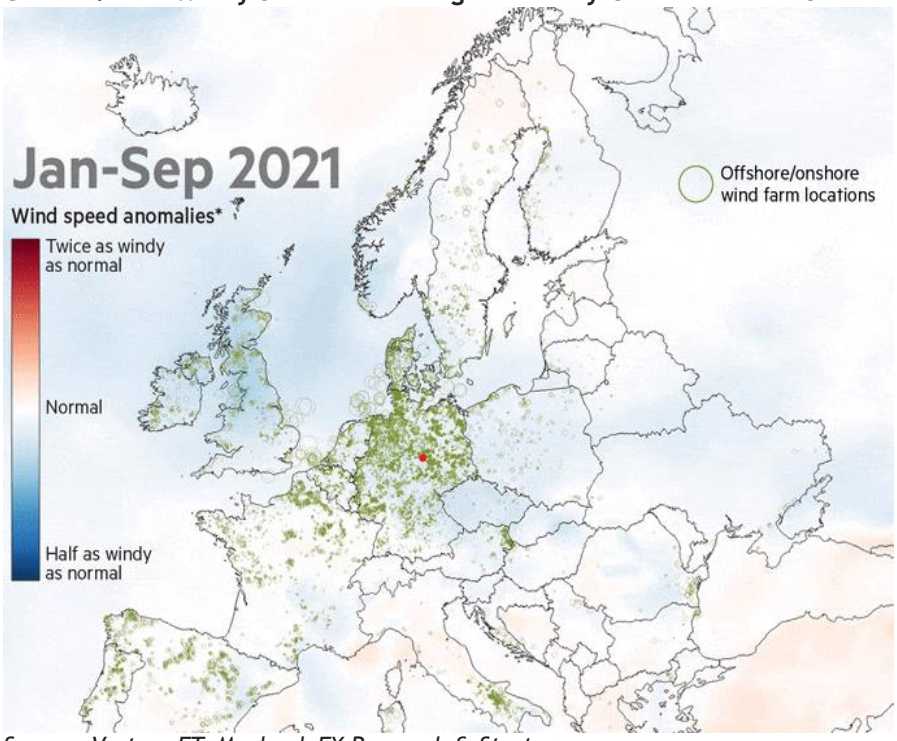


Source: OurWorldinData.org as of 25 Oct 2021, Maybank FX Research & Strategy

Europe's Energy Crunch Amid Pursuit of Ambitious Climate Goals May Well Keep Prices Supported for Longer

For Europe, gas prices surged due to strong LNG demand from Asian countries, low European gas supplies and weather-related factors, such as lower than usual availability of wind energy and colder temperatures. According to windeurope.org, wind meets 16% of Europe's electricity demand and much more in some European countries such as Denmark (48%) and Germany (27%). The EU Commission sees wind being half of Europe's electricity by 2050. But according to data from Vortex, an independent weather modelling group, the strength of wind blowing across northern Europe has fallen by as much as 15% on average. Less wind directly impacts the amount of electricity that can be generated by wind farms in Europe. This adds to energy supply woes.

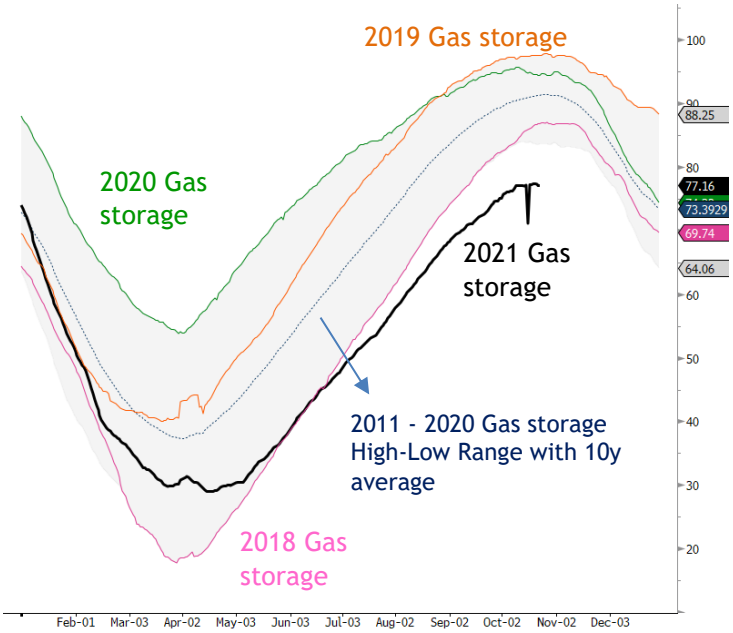
Chart 4: Less Windy Season Affecting Electricity Generation in EU



Source: Vortex, FT, Maybank FX Research & Strategy

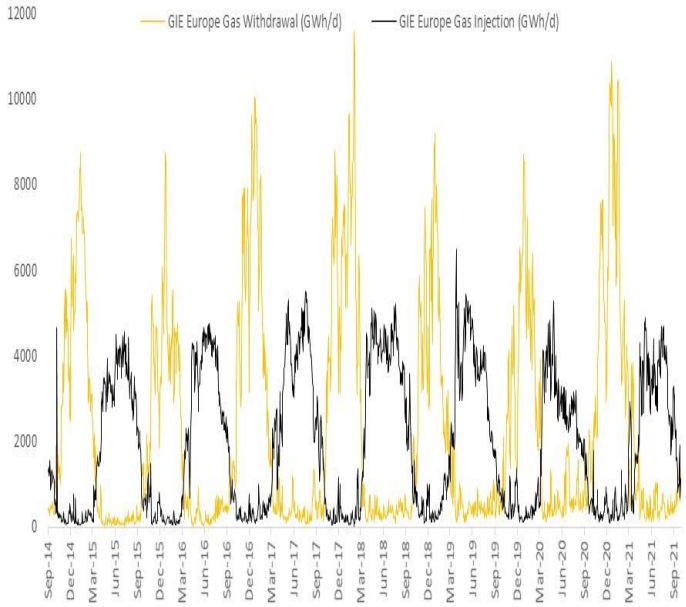
Europe entered the winter season with gas storage at 75% of full capacity. This is about 15% below its 10-year average (as of end-Sep) and the storage level is even outside its lowest range in the last 10 years. European gas withdrawal is also exceeding injection and this comes earlier by about 2 weeks, relative to historical seasonality.

Chart 5: European Gas Storage Well Below Historical



Source: Bloomberg, Maybank FX Research & Strategy

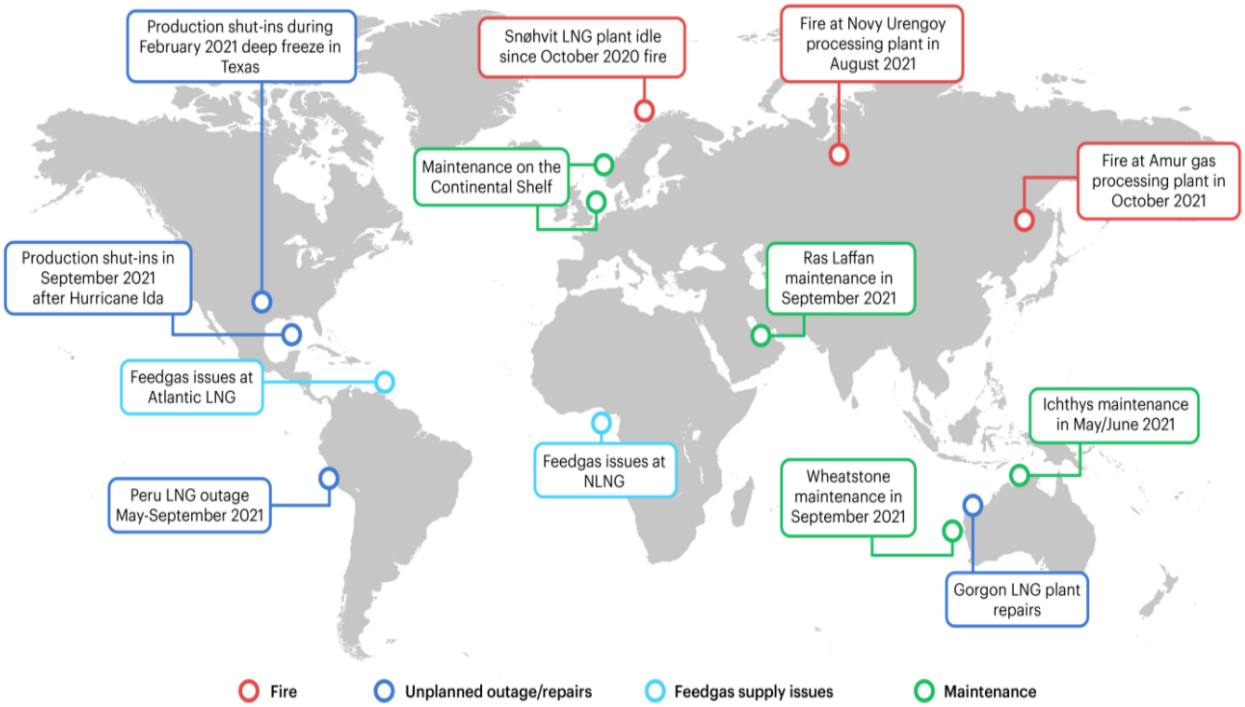
Chart 6: European Gas Withdrawals Exceeded Injections



Source: Bloomberg, Maybank FX Research & Strategy

Elsewhere, heavy maintenance amongst Norwegian gas producers and unplanned outages further reduce gas flow to Europe. Anecdotal evidences and weather projections somewhat suggest that energy supply woes in EU are not likely to abate anytime soon.

Chart 7: Key Maintenance Work and Unplanned Outages

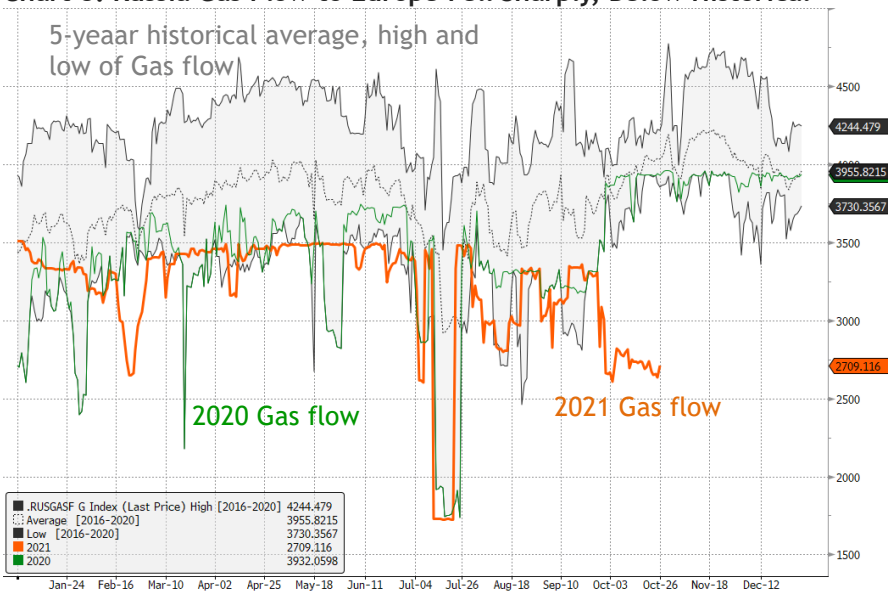


Source: IEA, Maybank FX Research & Strategy

To make matters worse, gas supply from Russia (which provides for around 43% of EU's gas imports) came in lower than expected as domestic demand in Russia absorbed most of production gains and Russia decided not to raise gas supplies to Europe. However, Russian President Putin did say that additional gas supplies to Europe can occur as soon as Germany approves

the new Nord Stream 2 pipeline. Now this gave the impression that Russia has excess gas supply to be delivered out to Europe but is withholding its decision as it wants the Nord Stream 2 pipeline (that bypasses Ukraine) to be approved. This way, it can increase EU's dependence of Russia for energy while at the same time, Ukraine stands to lose from transit revenues via traditional supply routes.

Chart 8: Russia Gas Flow to Europe Fell Sharply, Below Historical



Note: Russia gas flow to EU estimated by adding Russia's main gas pipelines: Mallnow, Velke Kapusany, Greifswald Nordstream NEL and OPAL.
Source: Bloomberg, Maybank FX Research & Strategy

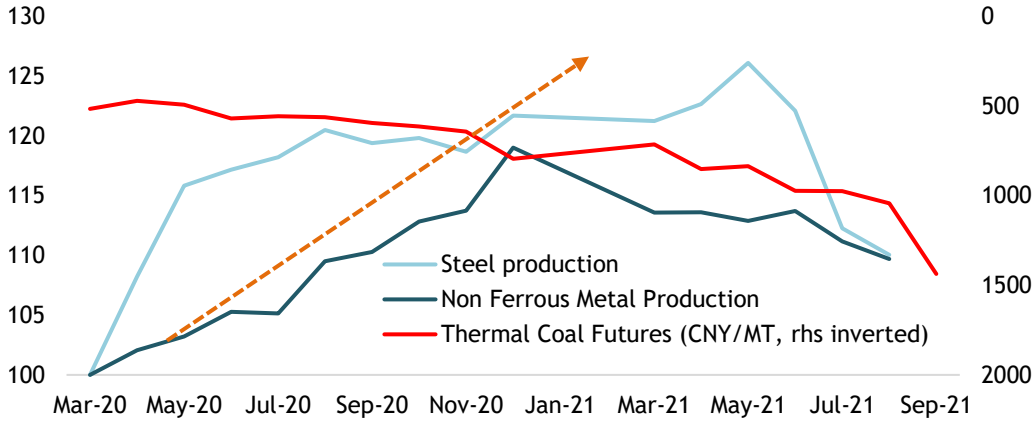
China's Energy Conundrum That Fans Global Energy Prices Higher

Slower-to-adjust Tariff Renders Coal-Powered Power Producers in Red

While the energy crunch in Europe was mainly caused by supply-side disruptions, the power shortage in China was triggered at first by strong demand conditions. In China, Strong industrial demand in 1H 2021 spurred a surge in coal prices but slower-to-adjust electricity tariff resulted in losses for coal-fired electricity producers. These power producers are thus, reluctant to react to demand, resulting in power outage in 3Q.

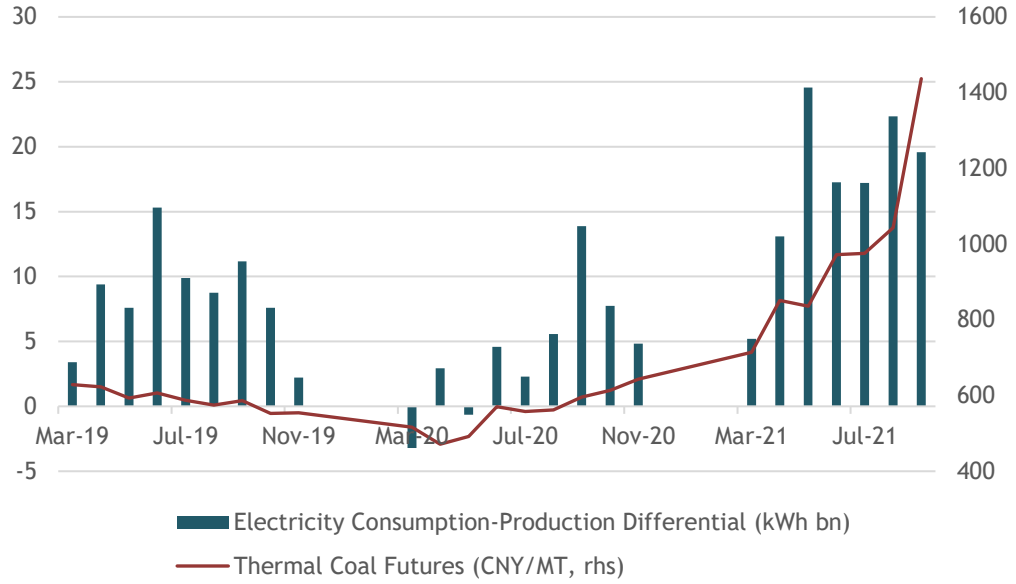
Chart 9: Strong Industrial Production in 1H Ramped Up Coal Demand and Price

Steel, Non Ferrous Metal Production Indices (Mar 2020 =100)



Source: China Nonferrous Metals Industry Association, China Iron and Steel Association, Maybank FX Research & Strategy

Chart 10: Power Shortage Worsens, Driving Thermal Coal 100% Higher at one point from Feb 2021



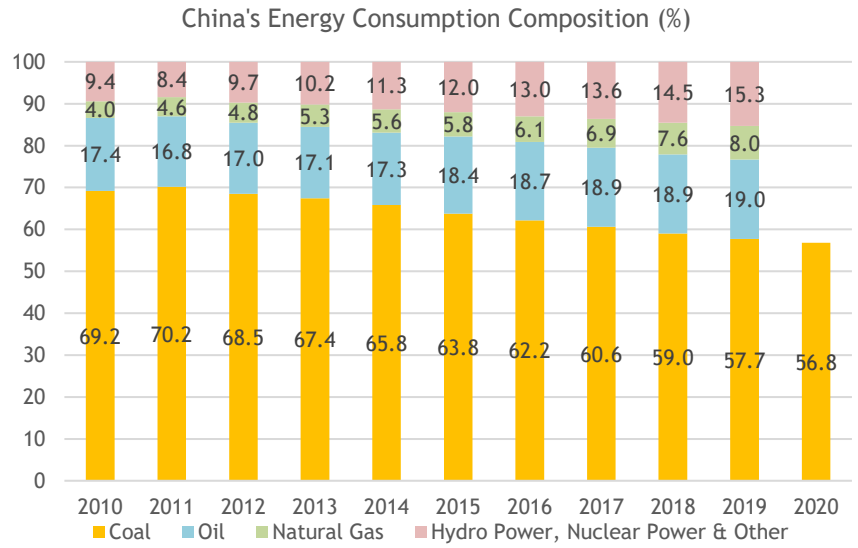
Source: National Bureau of Statistics, Maybank FX Research & Strategy

The situation of energy shortage was made worse by China's dual control targets. Earlier this year, China set environment goals known as the dual control to reduce energy intensity and energy consumption. Energy intensity, also known as the energy use per unit of GDP, needs to reduce by -3%y/y this year while energy consumption target was not specified. These led to coal production curbs and energy rationing in order to meet these targets. Nine provinces were issued warnings for failing to meet the targets between Jan-Jun 2021. **This shortage of coal has led to greater usage of diesel, driving the substitution effect towards crude oil prices.** Coal production limits were eased more recently to ensure power continuity for households as winter approaches.

Energy rationing has happened before in China. In fact, sporadic episodes of energy rationing in the past helped shift China towards crude oil, natural gas and other cleaner energy sources (hydro/nuclear power/others) in recent decades. **As of 2019, natural gas accounts for 8% of China's energy-mix, doubled what was seen in 2010 (4.0%). According to the next chart, non-fossil fuel energy sources make up 15.3% share of total energy consumption in 2019 and President Xi had pledged to raise the ratio to 25% by 2030.** The recent energy crisis has likely increased the urgency for China to build more of these renewable energy sources. President Xi declared on 12 Oct that the country started building the first phase of a massive renewable energy project that would add 100GW of wind and solar energy capacity. This will be in line with its commitment to install 1200GW of solar and wind capacity by 2030 from around 500GW as of end-2020.

However, Rome was not built in a day and so isn't the process to wean an industrial economy off its fossil fuel dependency. Coal accounts for more than half of China's energy consumption (56%) even though this proportion declines steadily since 2011 (70%). The intent to accelerate the conversion towards non-fossil fuel consumption is clear but the upcoming investment and infrastructure cannot solve the immediate issue of power shortage. Hence, China had to plug the power gap with imports of not just oil but also natural gas.

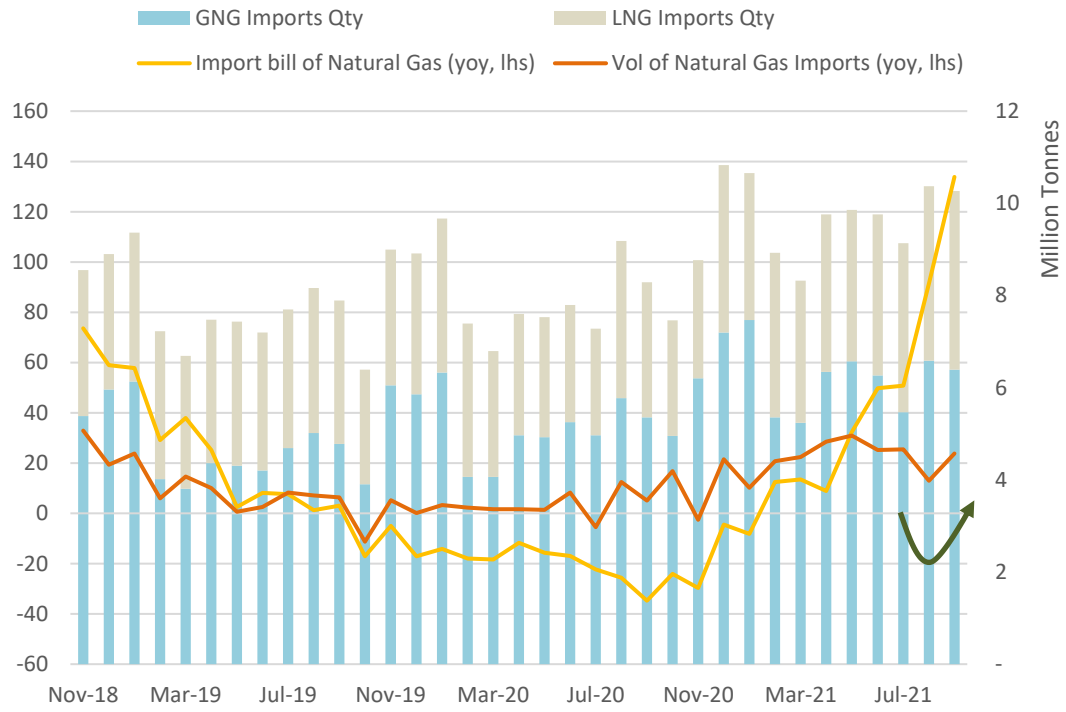
Chart 11: China has been Trying to Wean off Dependency on Coal for a While



Source: National Bureau of Statistics, Maybank FX Research & Strategy

China's total natural gas imports was up 133%y/y in Sep (amplified by the surge in NG prices) and overtakes Japan to become the world's top buyer of liquefied natural gas this year, albeit partially attributed to Japan restarting nuclear plants. **China's thirst for alternative energy sources might continue to keep natural gas price elevated in the near-term.**

Chart 12: Natural Gas Imports Surge in Recent Months



Note: LNG stands for Liquefied Natural Gas; GNG stands for Gaseous Natural Gas
Source: General Administration of Customs, Maybank FX Research & Strategy

President Xi will not attend the UN Climate Change Conference (COP26) in person. Special climate envoy, Xie Zhenhua would represent China instead. He is a familiar face in UN and reappointed to this role this year. In our view, **President Xi's absence at the COP26 underscores the challenge of**

China meeting its sustainability goals given the supply side constraints.

However, ahead of the event, the Chinese authorities showed commitment for the long-term. The government just revealed (24 Oct) a guiding document to achieve peak of carbon dioxide emissions by 2030 and to become carbon neutral by 2060. Within the document, guidelines were comprehensive ranging from the promotion of economic and social development in a green and low-carbon way, deep industrial restructure to optimize industrial structures or to curb energy-intensive projects, development of clean, low-carbon efficient energy system, transportation and trade amongst others.

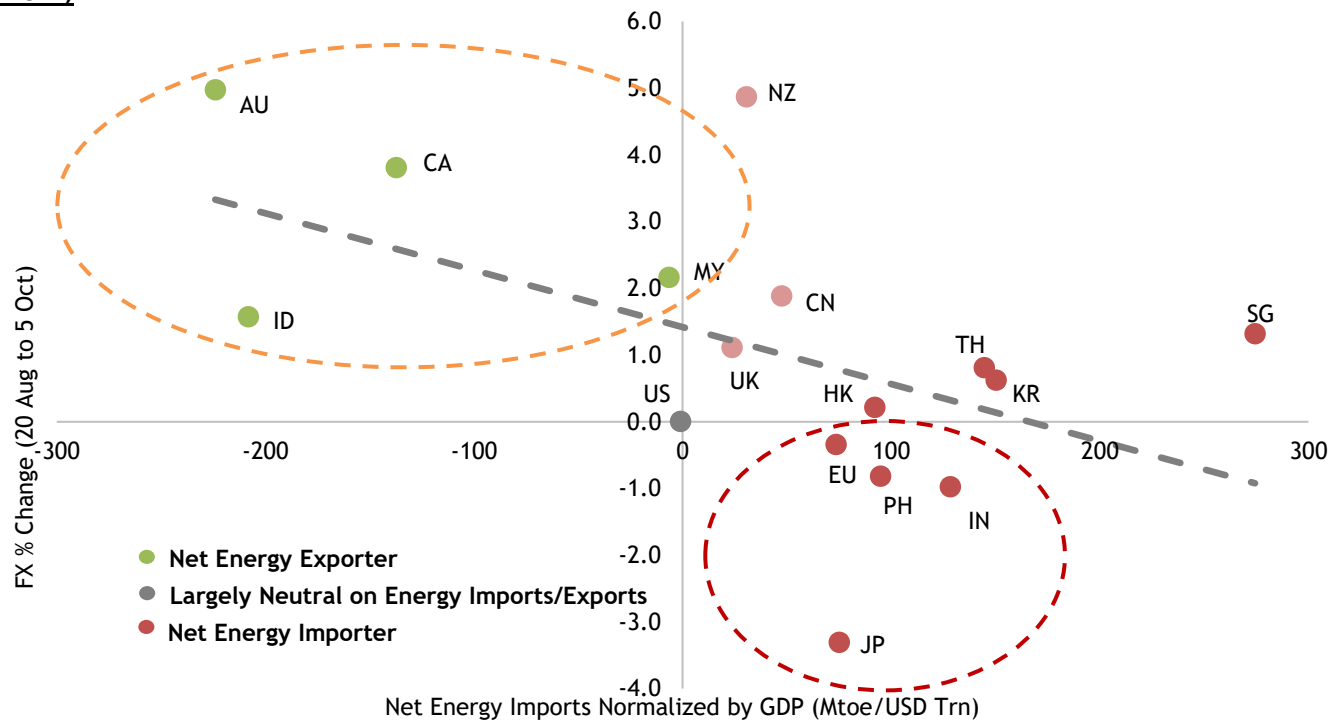
China reiterated their pledge to increase the share of non-fossil energy consumption to around 20% by 2025 and 25% by 2030 from 15.3% as of end 2019. Previously, it took six years for China to ramp up the share from around 10%. With coal and oil still making up around 70% of the energy consumption for the country. China is likely to pivot more towards natural gas imports to achieve its interim emission goals while it builds up its non-fossil fuel capacity.

Surge in Energy Prices Benefits Net Energy Exporters, Punishes Net Importers

During recent period of bullish or elevated energy prices, **relative size of energy import bills or export receipts appears to be pertinent as a key determinant of FX moves.**

Brent rose from US$65 to US$86 (interim trough to peak) from 20 Aug to 25 Oct. Utilizing this as a reference period, we note that amongst the majors, hard commodity-linked FX, including CAD and AUD saw significant gains. Among AxJ FX, IDR likely benefitted from robust CPO prices. All three countries are net energy exporters.

Chart 13: Energy Import/Export Dependencies Vs. FX % Chg (20 Aug to 25 Oct)



Note: Net energy import readings from IEA are as of 2018/2019.
Source: IEA, Bloomberg, Maybank FX Research & Strategy

Meanwhile, FX of net energy importers, such as EUR, INR, PHP, JPY appears to be weighed somewhat amid the global energy supply crunch. In particular, drags on JPY were probably exacerbated by widening UST-JGB yield differentials, with global inflation concerns triggering treasury yield rallies concurrently.

While Thailand and Korea are also net energy importers, idiosyncratic factors such as reopening efforts in Thailand (supportive of THB) as well as the recent risk-on recovery in US and Asian equities (supportive of risk-sensitive KRW) likely helped offset drags from higher energy import bills.

Meanwhile, SGD's performance might be somewhat decoupled from its net energy importer status given its role as the fifth largest refinery and export hub in the world. Its refineries reportedly have a combined crude refining capacity of 1.3mn barrels per day, and most of the refined petroleum and petrochemical exports are then exported to Asian neighbors. Higher crude import bills could be offset to some extent by potentially larger refined products export receipts.

Box 1 - COP26: A Gamechanger or Another Lame Duck Seating

What, When? The Conference of the Parties (or COP) is an annual meeting that brings parties together to accelerate action towards the goals of the Paris Convention and the UN Framework Convention on Climate Change (UNFCCC). The upcoming summit is the 26th one and is hosted by UK and its partners, Italy in Glasgow between 31 Oct and 12 Nov 2021.

Revisiting past COPs. The previous one, COP25 held in Madrid, Spain (where Greta Thunberg gave a big speech) was the longest climate conference on record but had ended with many big issues unresolved. As per the statement made by UN Secretary-General António Guterres, the results of COP25 were disappointing as the international community lost an important opportunity to show increased ambition on mitigation, adaptation and finance to tackle the climate crisis. **Specifically, nations were not able to agree on the rules for setting up an international carbon market**. This relates to the Article 6 of the Paris Agreement, which contains 3 separate mechanisms for "voluntary cooperation" towards climate goals. 2 are market-based approaches and the 3rd is a non-market approach:

- Article 6.2: Allows countries to strike bilateral and voluntary agreements to trade carbon credits to achieve climate pledges
- Article 6.4: Establish a centralised governance system for public and private sectors to trade emissions reduction globally
- Article 6.8: A non-market approach to enhance public and private sector participation in the implementation of their nationally determined contributions (or NDCs - actions the nations will take to reduce their GHG emissions to reach the goals of the Paris Agreement (net zero emissions by 2030 and to keep 1.5c within reach).

In summary, article 6 of the Paris Agreement aims to assist governments in implementing their NDCs through voluntary international cooperation as well as laying the groundwork for international emissions trading to put a price on carbon.

Under this mechanism, carbon emissions avoided or saved can be sold to others (or large emitters) to meet their own targets. Allowing market supply and demand to put a price on carbon will mean that nations exceeding their NDCs would have to bear the costs of global warming.

According to the International Emission Trading Association (IETA), *Article 6 has the potential to reduce the total cost of implementing NDCs by more than half (~$250 billion/ year in 2030), or alternatively facilitate the removal of 50 percent more emissions (~5 gigatonnes of carbon dioxide per year [GtCO2/year] in 2030), at no additional cost*.

Member countries then could not reach agreement on Article 6 due to a few sticking points of how it will work in practice. For instance, on the issue of double accounting, Brazil argued that countries selling offset projects overseas should not be required to make a corresponding adjustment to their own NDCs.

On the issue of Kyoto carryover credits, countries like Australia, Brazil, India want to be able to use old, unspent emission reduction credits (under Clean Development Mechanism, established under 1997 Kyoto Protocol) to meet its emission reduction goals. But many countries are concerned that allowing for carryover credits could flood market with cheap credits that do not represent real emissions reduction.

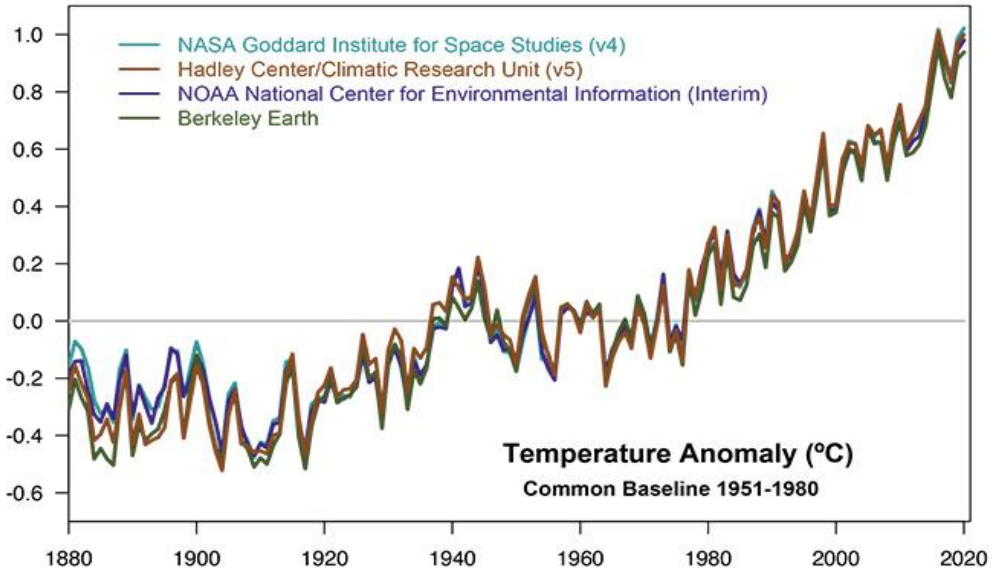
Amongst the recent COPs, the Paris Agreement at COP21 was widely hailed as a landmark one as it is a legally binding international treaty on climate change, adopted by 196 parties in Paris in 2015. The main highlight is to limit global warming to well below 2c, preferably to 1.5c, compared to pre-industrial levels.

The Paris Agreement works on a 5-year cycle of increasingly ambitious climate action carried out by countries. Nations will need to submit their plans for climate action, known as NDCs – actions they will take to reduce their GHG emissions to reach the goals of the Paris Agreement (net zero emissions by 2030 and to keep 1.5c within reach).

Fast forward, what to look out for in COP26. The upcoming summit is the supposed 5-year mark, when countries update their pledges (NDCs) for reducing emissions. (COP26 was originally scheduled to be held in 2020 but was postponed to 2021 due to covid pandemic). The big focus will be on carbon market and whether nations agree to Article 6. Other raised priorities for COP26 include:

- Rules for the transparent reporting of action and support
- Common timeframes for emission reduction commitments
- Enabling enhanced adaptation action
- Averting, minimising and addressing loss and damage
- Means of implementation, including the initiation of deliberations on a new goal for global climate finance after 2025
- Responding to the latest science and the ambition of current emission reduction targets
- Promoting fair, inclusive climate action

Rapid Warming of Earth's Temperature



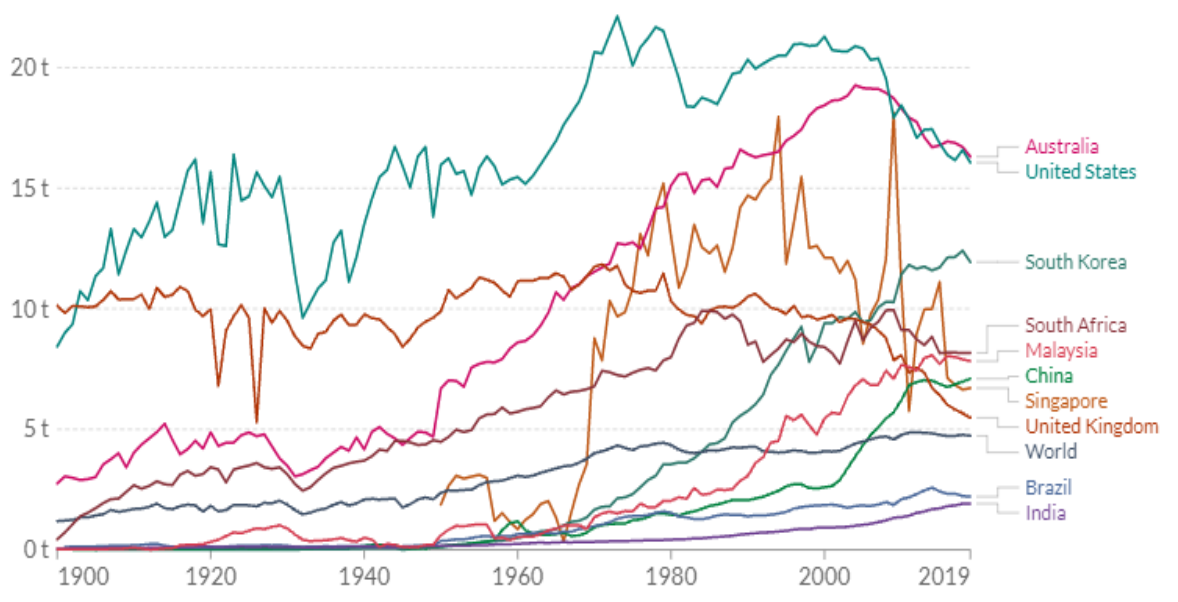
Note: Temperature data showing rapid warming in the past few decades, the latest data going up to 2020. According to NASA, 2016 and 2020 are tied for the warmest year since 1880, continuing a long-term trend of rising global temperatures. The 10 warmest years in the 141-year record have occurred since 2005, with the seven most recent years being the warmest.
Source: NASA's Goddard Institute for Space Studies, Maybank FX Research & Strategy

What is At Stake? Climate change is real and there is strong evidence that significant global warming is occurring. The most recent estimate from UNFCCC showed that world is on track for 2.7c degrees of heating based on current pledges to cut emissions. A vast majority - 97% of actively publishing climate scientists agreed that human activities are the primary cause of climate warming trends over the past century.

To combat against climate change requires urgent action today and all parties have a part to play to reduce their emissions. Importantly COP26 is the first time the Paris Agreement is revisited and nations will need to show how they have met their targets and to demonstrate their commitment towards limiting warming to 1.5c. On carbon markets, the Taskforce on Scaling Voluntary Carbon Market (TSVCM), a private sector-led initiative was launched by former BoE Governor Mark Carney (whom is also the UN Special Envoy for Climate Action and Finance Advisor to UK PM Boris Johnson for COP26) with Institute of International Finance (IIF) as sponsor to scale an effective and efficient voluntary carbon market to help meet the goals of the Paris Agreement. Last week (21 Oct), local financial newspaper *Valor Economico* reported that Brazil's chief negotiator at COP26 signaled that Brazil will be more flexible to make the agreement viable. Hence, hopes are high for this summit to yield material progress via pledges and concrete action plans without compromising on timeline. **A successful COP26 can see an acceleration of climate change policies aimed at reducing emissions.**

That said, **it remains to be seen if high expectations can be met or will disappoint**. Climate change policies of wealthy nations (G20 nations account for 80% of global emissions) and big carbon emitters also matter (i.e. China, US, EU, Russia, India are amongst the top 5 carbon emitters in 2018). China aims to achieve carbon neutrality by 2060 but it was understood that near-term challenges left China with little choices but to order coal miners in the country to increase production urgently to meet power demand amid energy woes. This is in contrast to COP President Alok Sharma's goal to "consign coal to history". At point of writing, President Xi confirmed he is not attending COP26 but Beijing did publish the 1+N on 24 Oct to reiterate the government's climate goals for 2025 and 2030, including its vow to accelerate a decline in coal usage). Russia President Putin has confirmed he will not attend the summit. Australia PM Morrison earlier said he was not attending but was heavily criticized and has since committed to attend. Separately the document leak as reported by BBC revealed that Saudi Arabia, Japan and Australia among some countries lobbying the UN to play down the need to move rapidly away from fossil fuels while the leaked papers also showed some wealthy nations questioning paying more to poorer states to move to greener technologies. Such lobbying raises questions if nations are ready to step forth to announce significant commitments to their NDCs.

Carbon Emissions Per Capita: China is Not the Largest Emitter



Source: OurWorldinData, Maybank FX Research & Strategy

Winter Conditions, OPEC+ Stance & Capacity, Underlying Demand Recovery Momentum as Key Drivers of Energy Markets

At this point, several factors have surfaced as dominant drivers in influencing near-term demand-supply dynamics in global energy markets. We have fleshed out the circumstances leading up to this point earlier in this report, and in this section, we assess these key drivers on a more forward-looking basis.

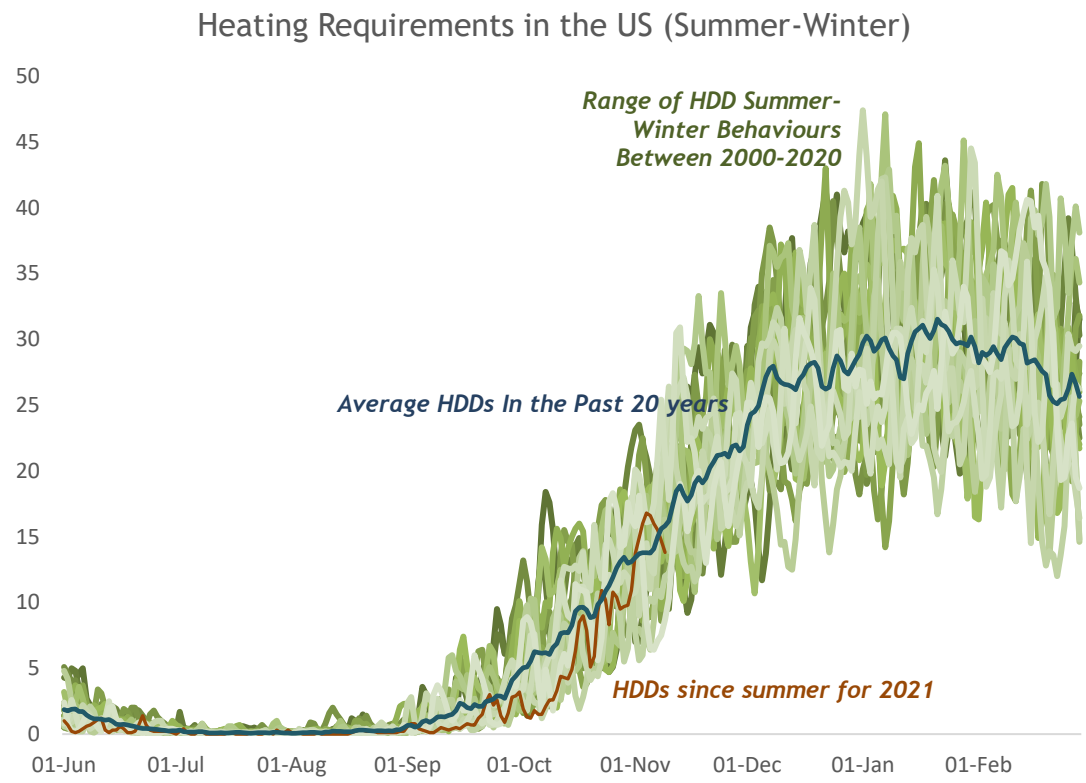
A Longer, Harsher Winter Could Exacerbate Supply-Demand Deficits

Meteorological centers around the world forecast a colder winter for 2021 in the northern hemisphere.

China's National Climate Centre expects La Nina conditions to begin in Oct due to a persistent fall in the temperatures of the equatorial mid-eastern Pacific Ocean. Such La Nina events could increase the probability of lower-than-normal temperatures and thus exacerbating winter conditions and possible heating requirements.

Elsewhere, the US government had warned that heating bills could rise as much as 54% compared to last winter. For now, heating requirements remain roughly in line with the 20y average as shown in the chart below.

Chart 14: Heating Degree Days in 74 US Cities Between Summer to Winter For the Past 20 Years

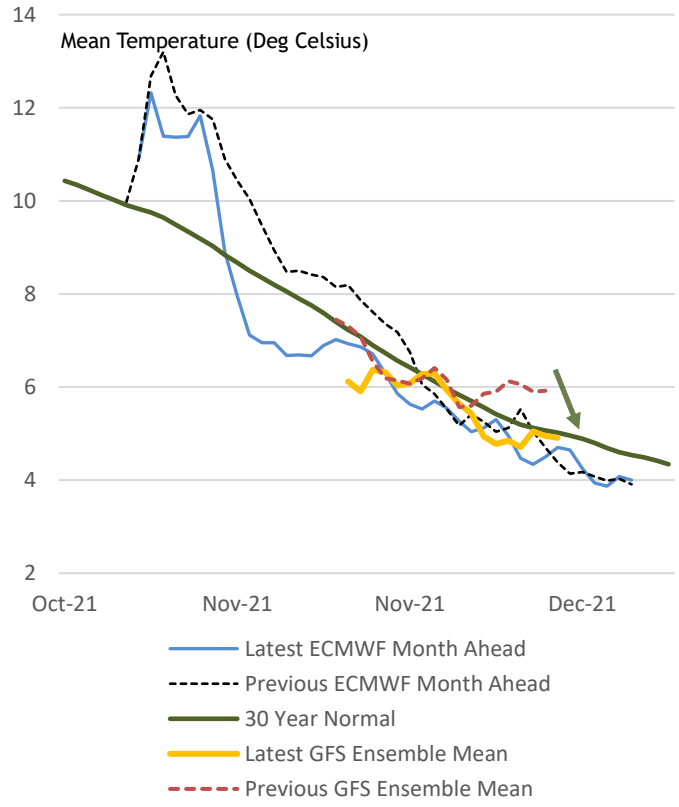


Note: Rotational degree days are calculated from a proprietary BloombergNEF model to illustrate the intensity of the weather on heating and cooling needs in the US. The weights from the model are applied to the time series of heating degree days (HDD) and cooling degree days (CDD) of 74 US cities. HDD = max {65-temperature, 0}. *The higher the HDDs, the more natural gas and heating oil consumed in the winter.*
Source: Bloomberg, Maybank FX Research & Strategy

Winter is Projected to Be Slightly Harsher For Europe

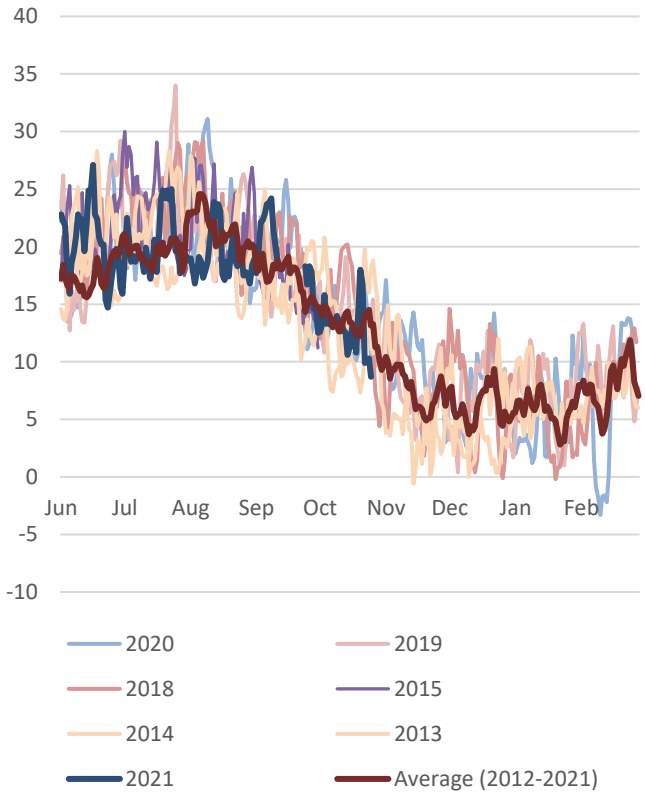
Over in the UK, weather forecasters have projected snowfall in parts of the north in Oct instead of Nov due to a freezing polar vortex that could blast from the northwest of Scotland. Forecasts for other European nations seem to be for lower average temperature as well. The near-term GFS ensemble mean temperature forecast (generated by dozens of atmospheric and land-soil variables) for North West Europe had fallen from the previous forecast (green arrow). However, the European Centre for Medium-range Weather Forecasts had projected mean temperature to be below its 30y normal in the month ahead. Meanwhile, temperature monitors by GRTgaz (an operator of the natural gas transmission system) also show temperatures to be below the 2012-2021 mean.

Chart 15: Mean Temp. for North-Western Europe Is Under 30Y Normal; Projected to be Lower Into Nov



Source: Bloomberg, National Centres for Environmental Prediction, European Centre for Medium-range Weather Forecasts

Chart 16: Summer-Winter Temperatures (Deg Celsius) in Europe



Note: Average temperature measured at Paris for the North balancing zone, Lille for the NorthB balancing zone and Lyon for the South balancing zone. *We take the months of Summer to be the meteorological months that starts from Jun to Aug. Winter months are denoted to be Dec-Feb. Some data (for year 2012, 2013, 2015) were not available.*
Source: France Smart Grtgaz, Bloomberg, Maybank FX Research & Strategy

Mild La Nino Event Could Have Some Positives for ASEAN

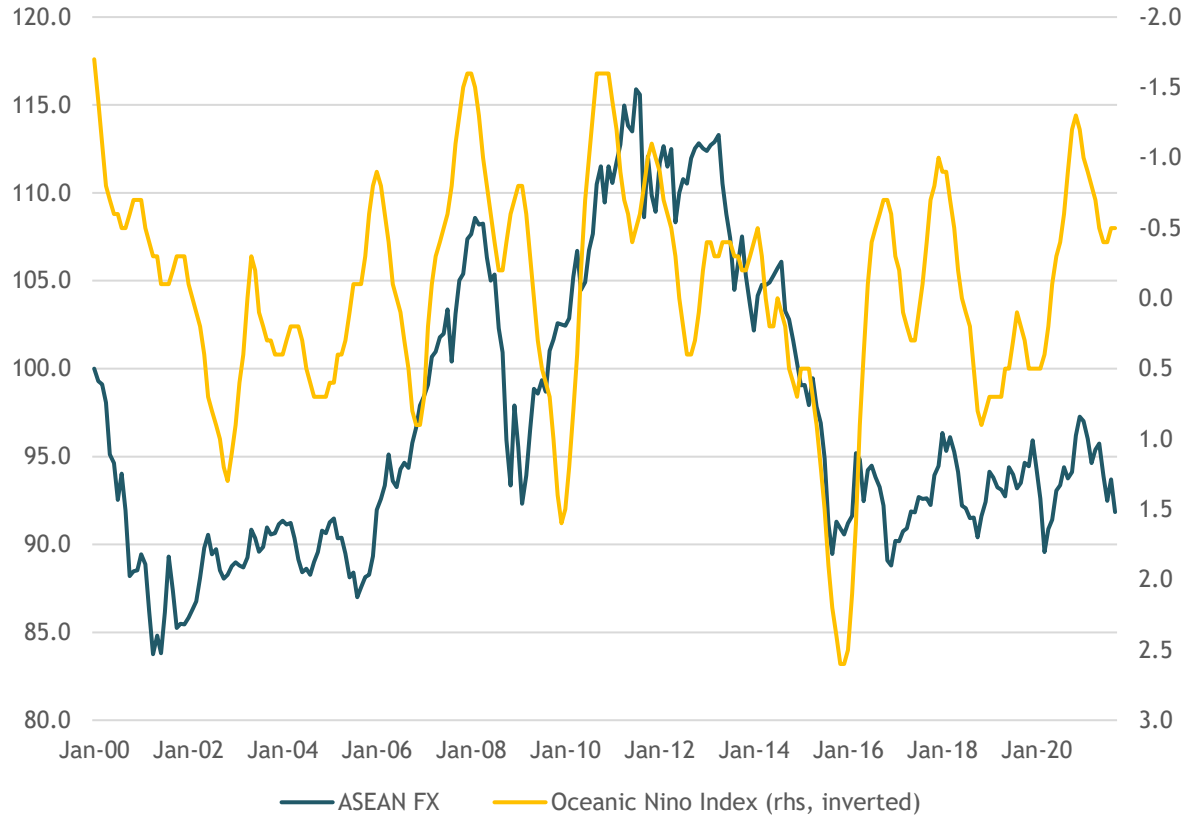
In Sep, the world meteorological organization had published a forecast for a weak La Nina event later in 2021 and that seems to be unfolding.

While the current environment of elevated energy prices could threaten Asia's inflation and purchasing power, mild La Nina conditions in the past two decades are typically positive for ASEAN FX. Abundance of rainwater could be benign for agriculturally reliant ASEAN countries such as the

Philippines. La Nina crop yield gains were said to offset crop losses in El Nino cycles. According to the findings of Atsamon Limsakul in his study on the impact of ENSO on rice production in Thailand, slightly higher than normal rice production and yield could be seen during the La Nina years.

For Malaysia, mild-moderate La Nina phases are typically net boosters for palm oil harvests. There are also observations of La Nina phases hurting yields of soybean oil seeds in South America (due to potential for dryer weather conditions there), thereby supporting soybean oil prices and by extension, a substitution effect that is positive for palm oil prices as well.

Chart 17: La Nina Conditions Tend to Be Supportive of ASEAN FX



Note: ASEAN FX is an equally weighted index consisting IDRUSD, MYRUSD, THBUSD, SGDUSD, PHPUSD with Jan 2000 = 100.

Source: Bloomberg, Maybank FX Research & Strategy

A More Disciplined OPEC+?

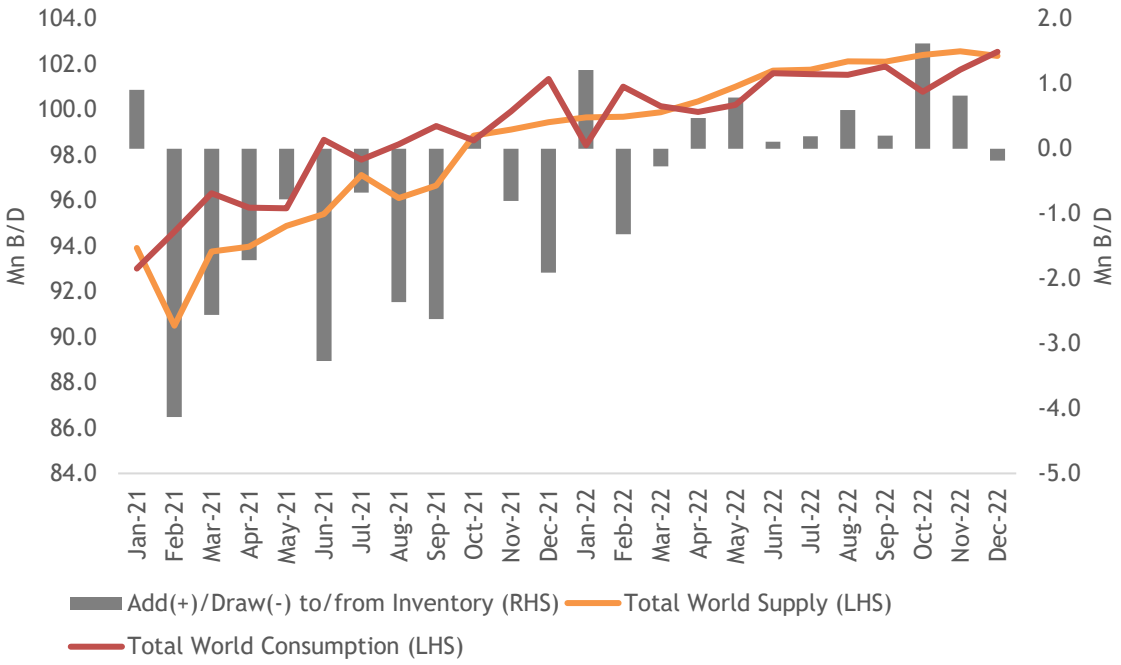
Recent decisions by OPEC+ to stick to planned increments despite signs of output shortages and calls (including by Biden) for increased production are a clear display of output discipline.

The case for a continued "disciplined" OPEC+, in terms of supplies, is likely tied to two key factors.

First, OPEC+ may be wary that the current trend of global oil inventory drawdowns may turn into a case of positive inventory restocking by 1H 2022, before improving demand conditions lead to more balanced demand-supply dynamics in 2H 2022.

In such a scenario, increasing supplies by more than the planned 400,000 a barrels could (i) dampen current oil prices though the initial supply shock and (ii) further worsen oil fundamentals if the shift from drawdown to restocking emerges earlier than expected.

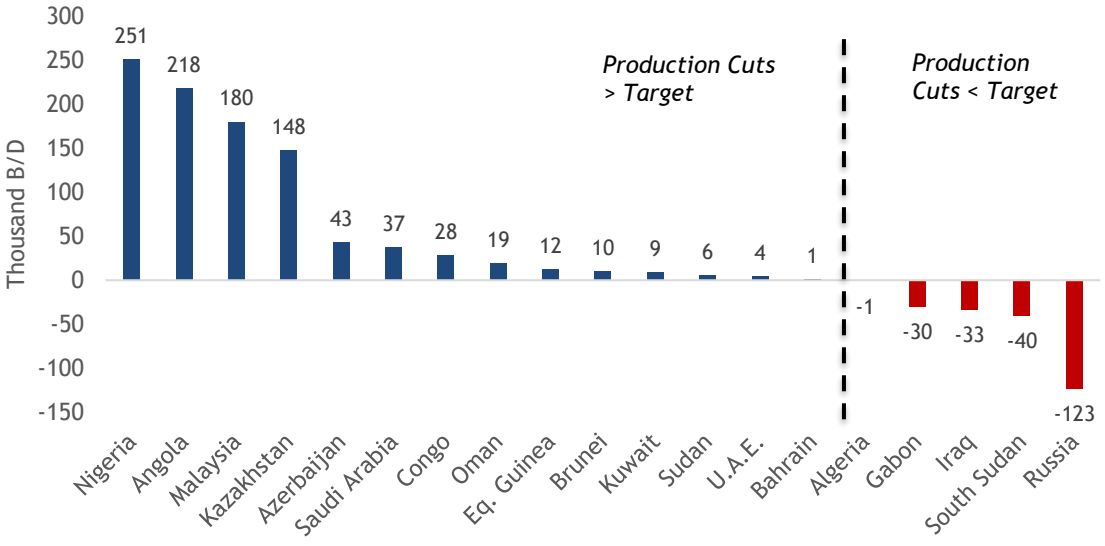
Chart 18: EIA Outlook on World Supply/Demand of Crude & Liquid Fuels



Source: Bloomberg, EIA Outlook, Maybank FX Research & Strategy

Second, there are signs that some OPEC+ members may find it challenging to increase supplies as readily despite increased quotas. In the month of Sep, the 19 countries participating in the OPEC+ production cut deal saw their overall compliance reach 115% (i.e., cutting production by more than target). 15 of countries had compliance over 100% of which 7 were over 110%, during a period when one would expect revenue maximization. On net, despite easing quotas, the group continued to underproduce by around 740k b/d versus allowed quotas.

Chart 19: OPEC+ Members' Production Cuts Vs. Targets in Sep



Source: BloombergNEF

We note that Aug-Sep was also the period when a new wave of Covid cases had hit countries such a Nigeria, Angola, Malaysia and Kazakhstan. Associated Covid concerns or restrictions could have weighed on production during this period for these countries as well.

But besides risks of intermittent Covid waves, potential infrastructure constraints could be weighing on output capacity to some extent. In particular, our O&G analysts team highlights (see here for full note) that tighter supplies could come about as a result of "*OPEC+ inability to accelerate output effectively following the austere under-investment since 2014.*" Energy Aspects estimates that OPEC+ production capacity dropped 1.7mb/d between 2018-2021 due to reduced investment in new wells/infrastructure.

The team also assesses that interim Shale production will likely be modest, at around 11mn b/d in 2021 and 11.7mn b/d in 2022, with producers likely to exercise caution in capex as financing options recede.

To some extent, the abovementioned factors underpin our house view of US$75-80/bbl Brent in 2022 (raised from US$65 previously).

Signs of Softer Demand Conditions, But Jitters could be Transient

Energy consumption has been on a steady recovery since 2Q 2020, when sudden lockdowns across the world led to a >20% drop (versus end 2019) in crude oil and liquid fuel consumption.

We attempt to tease out how underlying demand-side conditions for global energy have evolved in 2022 via a simple approach:

(i) Selecting various data series depicting various aspects of energy demand. We acknowledge that the data selected may over-represent US conditions due to a focus on high frequency, but this is a natural constraint due to data availability. List of utilized series are as shown in Table 1.

(ii) Normalize the series used and extract proxy for energy demand conditions via a Principal Components Analysis (PCA) approach. This approach "summarizes" (reduces dimensions in) the data while retaining as much of the data's variation as possible.

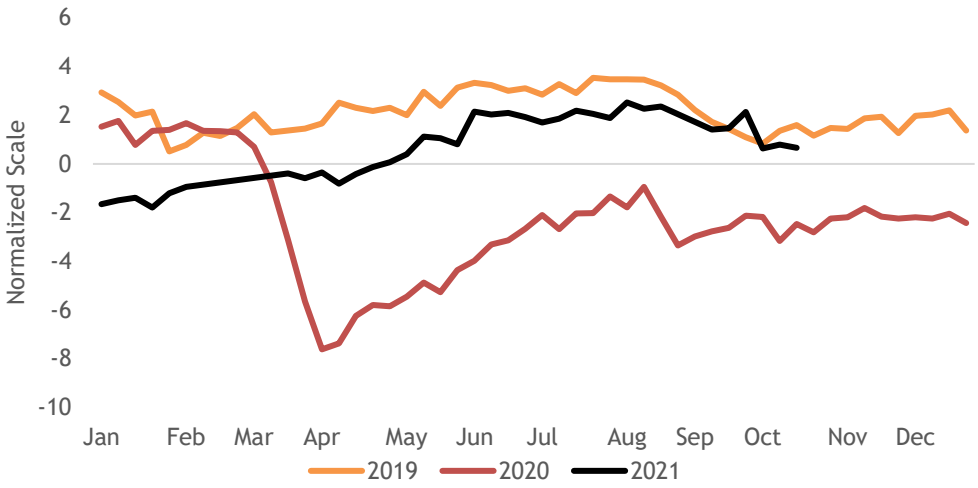
(iii) Due to nature of series used, disruptions via weather anomalies, such as the plunge in temperatures and power outages in Feb 2021, or Hurricane Ida in end-Aug to early Sep, can skew interpretations of underlying demand conditions. These are smoothed out by interpolating nearby data points.

Table 1: Indicators of Global Energy Demand

Series	Location	Frequency
Gasoline Demand	US	Weekly
Distillates Demand	US	Weekly
Jet Fuel Demand	US	Weekly
Air Passenger Throughout	US	Daily
Refinery Crude Intake	US	Weekly
Refinery Utilization	US Gulf	Weekly
Refinery Utilization	US East	Weekly
Refinery Utilization	US Midwest	Weekly
Indep. Refinery Run Rate	Shandong, China	Fortnightly
State Refinery Run Rate	East China	Fortnightly
State Refinery Run Rate	South China	Fortnightly
US Heating Degree Days	US	Daily
Europe Avg. Temp	Europe	Daily

Note: PCA is ran on weekly series. Daily series are averaged into weekly forms. Fortnightly data are interpolated into weekly forms.
Source: Bloomberg Oil Demand Monitor, EIA, TSA, SCI99

Chart 20: PCA-Derived Proxy for Energy Demand Conditions



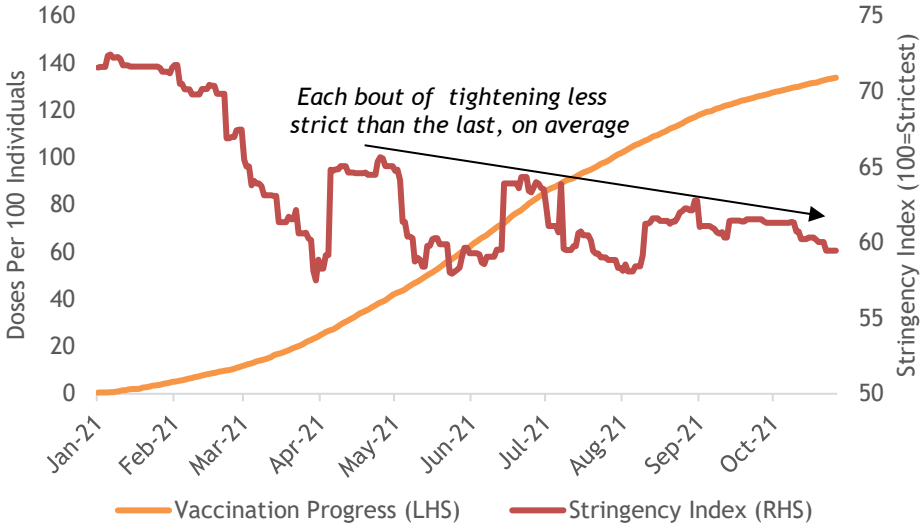
Source: Bloomberg Oil Demand Monitor, Bloomberg, EIA, TSA, SCI99, Maybank FX Research & Strategy Estimates

We note two key points from the proxy index for energy demand.

- After facing multiple start-stops in 2020 (red line), underlying energy demand conditions have recovered to near pre-pandemic levels by mid-2021 (black line).
- Subsequently, the recovery in energy demand has become more hesitant in recent weeks. Higher energy prices, supply chain disruptions and a slight re-tightening of Covid restrictions (Aug-Sep) in key economies are likely contributive factors.

Notwithstanding the interim loss of demand recovery momentum, our baseline view is that broad energy demand is likely to remain resilient. Weather-induced shocks aside, any intermittent pullback could be modest, with the recovery likely to extend well into 2022.

Chart 21: Major Economies' Vaccination Progress & Covid Stringency



Note: The stringency index is a composite measure based on 9 response indicators including school closures, workplace closures, and travel bans, rescaled to a value from 0-100 (100=strictest). Vaccination progress, stringency index series shown are GDP-weighted averages for the 12 largest economies by GDP, including US, China, Japan, Germany, UK, India, France, Italy, Canada, South Korea, Russia and Australia.
Source: Ourworldindata.org, Maybank FX Research & Strategy Estimates

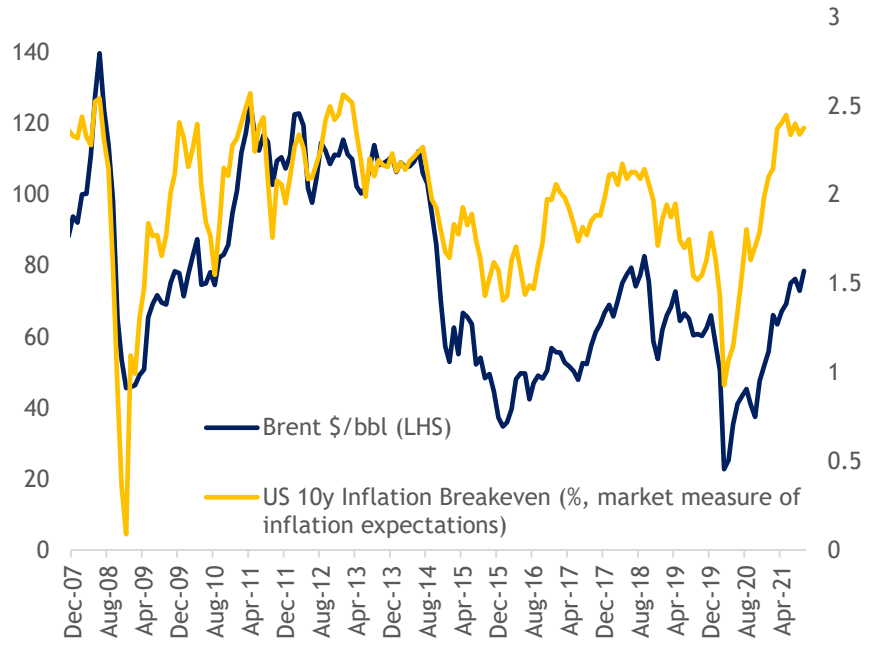
This view is anchored by stronger commitments by major economies (with the notable exception of China) to adapt to an approach treating Covid-19 as endemic. Average (GDP-weighted) number of vaccine doses per 100 individuals have reached >130 in early Oct, or equivalent to two-thirds of the populace in major economies having received two doses, with booster programmes potentially on the way.

This has given most authorities the confidence to avoid returning to stricter restrictions. After another tilt towards tightening in Aug on the latest Covid-19 wave, we note that the world is broadly on an easing/reopening trajectory again. **More importantly, the aggregated stringency data shows us that each bout of tightening in restrictions has been less strict than the last, on average, which is key to a normalization of global macro conditions over time.**

Scenarios and FX Implications

Early this month, IMF warned that the global economy is entering a phase of inflation risk as it called on central banks to be "very, very vigilant" and to take early actions to tighten monetary policy should price pressure persist. IMF's baseline forecast is that inflation will rise sharply towards end-2021 and moderate in mid-2022 before easing to pre-pandemic levels but it also added that inflation risks are skewed to the upside. IMF's World Economic Outlook report cautioned central banks to look out for second-round effects of higher energy prices feeding into wages and then into core inflation.

Chart 22: Higher Inflation Expectations Imply More Upside on Yields



Source: Bloomberg, Maybank FX Research & Strategy

Higher energy prices feeding to higher inflation expectations could imply more upside for yields on expectations central banks could move to tighten rates/ normalize monetary policies. Rising yields and energy prices can hurt net energy importers and yield-sensitive FX proxy such as EUR, JPY, INR while on the flipside, USD, CAD may be more resilient (on a relative basis) as they benefit from rising energy prices and respective central banks are on policy normalization path.

Table 2: Market Expectations for Monetary Policy Tightening

	Current Policy Rate (%)	Implied Policy Rate Change (Cumulative in bps)			
		3 months	6 months	1-year	2-year
US	0.125	0	9	46	112
Canada	0.25	19	51	130	170
EU	-0.50	0	3	11	38
UK	0.10	47	50	114	115
Japan	-0.03	0	0	1	2
Australia	0.10	16	23	96	183
New Zealand	0.50	37	97	189	233
S. Korea	0.75	48	64	116	120
China	2.20	0	-10	5	22

Source: Bloomberg, Maybank FX Research & Strategy

Table 3: Snapshot of FX Beneficiaries, Laggards Under Different Thematics

Thematics	FX Beneficiaries	FX Laggards
Higher Energy Prices	**USD, CAD**, AUD IDR, MYR	EUR, JPY, KRW, TWD, THB, GBP, INR, PHP
Monetary Policy Space to Tighten/ On Tightening Path (Buffer against Higher Yields)	**USD, CAD**, GBP, NZD SGD, KRW	EUR, JPY INR, IDR, PHP, THB

However, if the backdrop of rising yields and energy prices comes amid global growth momentum/economic optimism, then risk assets/FX proxys including most AXJs could still benefit on net. To add, in current episode, some Asian central banks such as BoK, MAS have already kickstarted their monetary tightening cycles and as such may provide for additional support for SGD and KRW.

Beware of Shifting Market Conditions

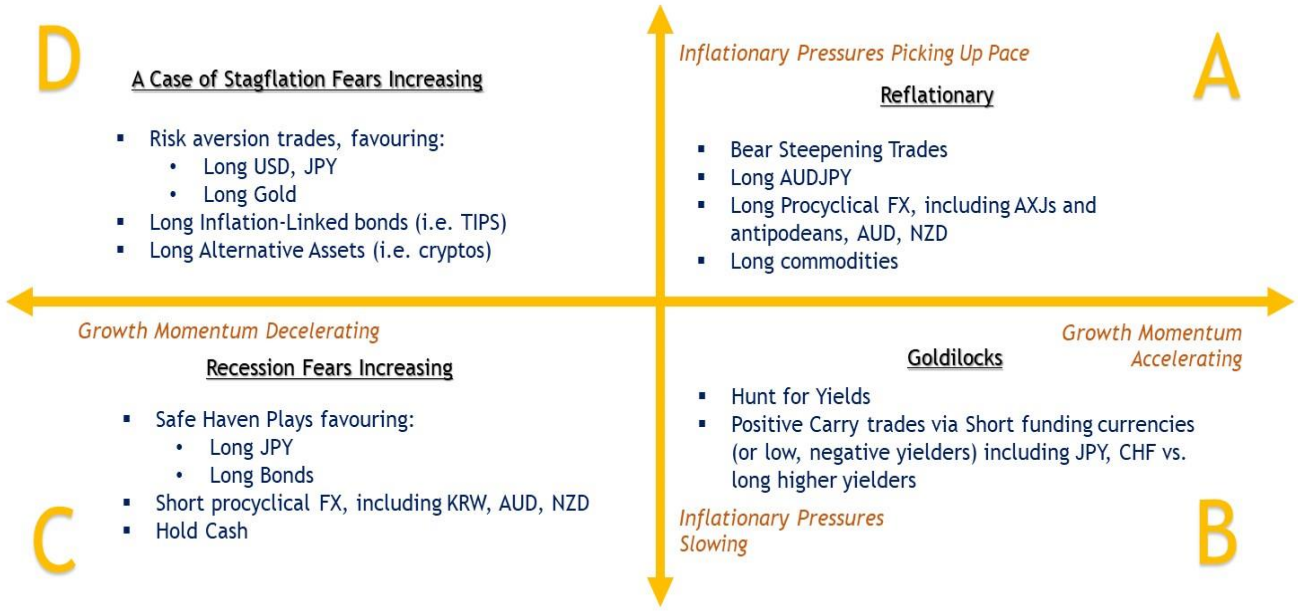
We caution that supply-demand landscape could still shift. Recent news (27 Oct) EU-Iran on oil, and Russia on gas supplies, suggest that developments can be fluid. On the former, Iran and EU have agreed to restart negotiations to revive the 2015 nuclear deal before end-Nov. Hopes of Iranian crude returning to international markets could ease shortage concerns and bring about a corrective pullback in brent prices. However, details remain unclear - there appears to be no exact date or venue set and attendees are also not revealed. On the latter, Russian President Putin ordered Gazprom to start refilling European gas storage facilities in Germany and Austria starting 8 Nov. The immediate response saw European gas prices easing off its highs as gas shortage concerns found a breather. Meanwhile in China, there are talks of limits for coal prices in the making. This comes after the Chinese government ordered miners to deliver 100MT more coal in Oct-Dec for winter. This could alleviate input price pressure for loss-making coal-powered electricity producers and possibly ease electricity bills for downstream manufacturers. Thermal coal futures have plunged 45% from its peak on 19 Oct. Basically, these fluid developments suggest that energy volatility could still linger for longer and FX proxies could see 2-way trades ahead.

Our Macro-FX Quadrants

For the past several months, the world is faced with persistent supply side disruptions (semiconductor chips, supply chains, energy) that cast doubts on the transitory narrative of inflation and even raise concerns on the recovery trajectory.

We attempt to classify dominant driving macro factors (via growth-inflation acceleration-deceleration) into quadrants namely (1) reflationary; (2) Goldilocks; (3) Recession Fears; (4) Stagflation Fears that denote the possible environments that we envisage in the coming months and possibly FX plays.

Chart 23: Base Case - Reflationary with Intermittent Risks of Stagflation and Goldilocks



Source: Maybank FX Research & Strategy

Our base case is a potentially reflationary one (quad-A) into 2022, where inflationary pressures are largely driven by healthy demand conditions on vaccine availability, pace of inoculation picking up pace and economies reopening. This supports the bias for long AUDJPY and procyclical AXJs including KRW, AUD, NZD.

We are mindful that current phase of higher energy prices is in essence a tax for consumers as household budget, disposable income are constrained and spending could be limited. These can have negative bearings on global economic recovery. To some extent, higher inflationary prices and intermittent growth jitters could fan fears of stagflation (quad-B). A whiff of market fear for stagflation is sometimes sufficient to generate risk aversion trades in favor of USD, JPY while procyclical FX including KRW are more vulnerable, but such bouts are likely to be intermittent and contained, rather than sustained and gripping.

We also see the probability of quad-B (akin to goldilocks thematic) occurring at some point next year (possibly around 2Q) especially when transitory inflationary pressures abate, alongside energy prices while growth momentum remains intact. This scenario may perhaps unwind some market expectations re policy tightening as slowing inflation provides a breather. This temporary breather could allow for carry plays favoring the likes of higher yielders such as INR, IDR funded by JPY shorts.

To a lesser extent, quad-C may not feature in the near term as inflationary pressures show no signs of abating while growth momentum remains intact for now. There may be slight risks of quad-C coming into play towards the turn of 2023 or thereafter when growth momentum further fizzles out and inflation pressures fade (on central bank tightening and base effects). Such a scenario should see risk aversion trades (long USD, JPY) coming into play while risk-sensitive FX such as KRW, AUD and NZD come under pressure.

Concluding Remarks…

To summarise, global energy prices have been on the rise this year, driven by both demand and supply side factors. For Europe, shortage of natural gas, wind availability and weather-related concerns compounded the issue while the power shortage in China was triggered at first by strong demand conditions. Energy price increase raises concerns of pass-through to domestic inflation. While central banks had said that inflationary pressures were largely transitory, developments shown that this transition is lasting longer than expected.

On a forward-looking basis, we believe elevated energy prices could linger. Commodity prices, including energy, have an undeniable relationship with proxy FX. In the near term, higher energy prices can benefit net energy exporters' FX, including CAD, AUD, NZD, IDR, MYR and to some extent, USD (also a net energy exporter).

On yields, higher global energy prices can affect domestic energy prices and potentially shift inflation expectations. Market expectations for tighter or faster pace of monetary policies normalisation can fuel higher yields. USD can find support as Fed is on policy normalisation path.

Typically, some FX, including JPY, EUR, INR, IDR can be more sensitive and vulnerable to higher yields. A combination of higher energy prices and yields would undermine EUR, JPY, in particular while CAD, USD are better favoured for now.

That said, we also argued there could still be room for procyclical FX, including AXJs to appreciate even in the current environment of higher yield and energy prices, provided that global growth momentum/ economic optimism are intact. And this relates to our quad-A.

Last but not least as a note of caution, sharp spikes in energy prices persisting for too long may not be desirable as high energy prices is a tax on consumers, eating into disposable income and thus risk hurting growth and risk appetite. On this risk, USD could find some support.

The focus next is on COP26 summit, where we keep a look out on (1) how aggressive or committed nations are in updating their NDCs on reducing emissions; (2) whether nations can agree on technicalities of carbon markets, in particular pertaining to Article 6; and (3) discussions of new post-2025 finance goal.

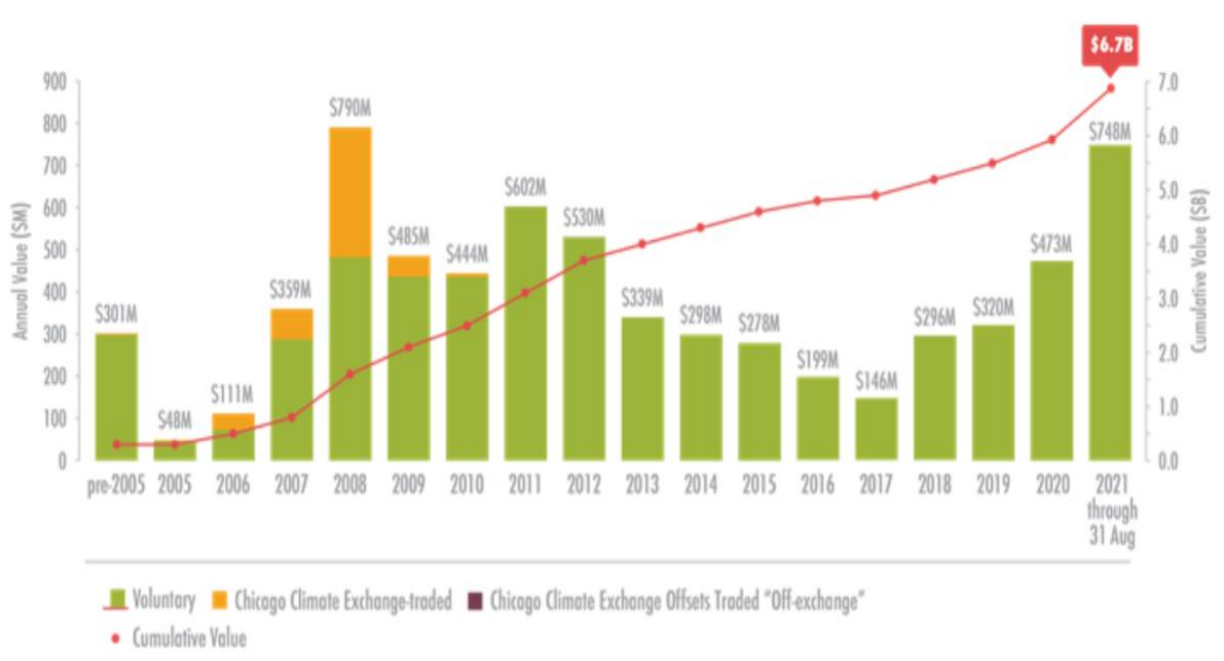
Box 2: Carbon Markets: An Introduction and Why It Matters

The shift towards net-zero GHG emission reduction target is accelerating. The number of companies with net-zero pledges more than tripled from 500 in 2019 to more than 1,500#. To meet these targets, companies will need to reduce their own emissions but in some instances for some industries/companies, emissions cannot be eliminated overnight (i.e. cement, steel production, utilities sector). Hence these companies can rely on purchasing carbon "offsets" or "credits" to offset their hard-to-abate emissions. Essentially, carbon markets allow for companies to buy and sell (i.e. trading) carbon credits, which are tradable certificates that represent the reduction, avoidance or sequestration of certain amount of emissions from the atmosphere. On net, carbon market mechanism direct resources to the most efficient and cost-effective procedures for reducing carbon emissions.

There are 2 broad types of carbon market: (1) compliance (or mandatory) markets and (2) voluntary markets. In the compliance market, the cap-and-trade model is the most common, where the upper limit or cap is set on total emissions permitted. This cap is reduced over time so emissions fall. The regulating body will allocate or sells tradable allowance up to the cap. Entities whose emissions exceed their allocations can either cut emissions or purchase excess allowance while entities that produce less emission can sell their allowances or credit. The EU Emissions Trading System (ETS), California ETS are some examples of the cap-and-trade model. It is also the largest ETS for GHGs, covering 2GtCO2e. An alternative model for the compliance market is the baseline-and credit model, used by China's national ETS and Australia's Safeguard Mechanism. Instead of an upper limit on emissions, the regulatory body sets a baseline for each emitter based on emissions intensity (per unit of production). They will need to buy credits if emission exceed their emissions intensity target.

On the other hand, voluntary carbon markets which are not tied to regulatory requirements is gaining prominence. Demand for voluntary carbon credits is driven by corporates, fund managers and consumers that voluntarily want to reduce/offset their own carbon footprint. Voluntary markets can co-exist with compliance markets. Emitters which are already covered in the ETS space can further tap on the voluntary space to accelerate the reduction of their carbon emissions. Ecosystem Marketplace noted that market transaction for voluntary carbon markets had already exceeded $748mio as of 31 Aug 2021. Even before the year concludes, the year so far for 2021 is already the best on records for voluntary carbon markets and transaction is expected to cross the $1bn mark this year. That said we note that the current size of voluntary carbon market remains a dwarf relative to mandatory market ($282bn).

Transaction in Voluntary Carbon Market (by Traded Value) Likely to Have Surge to Record High

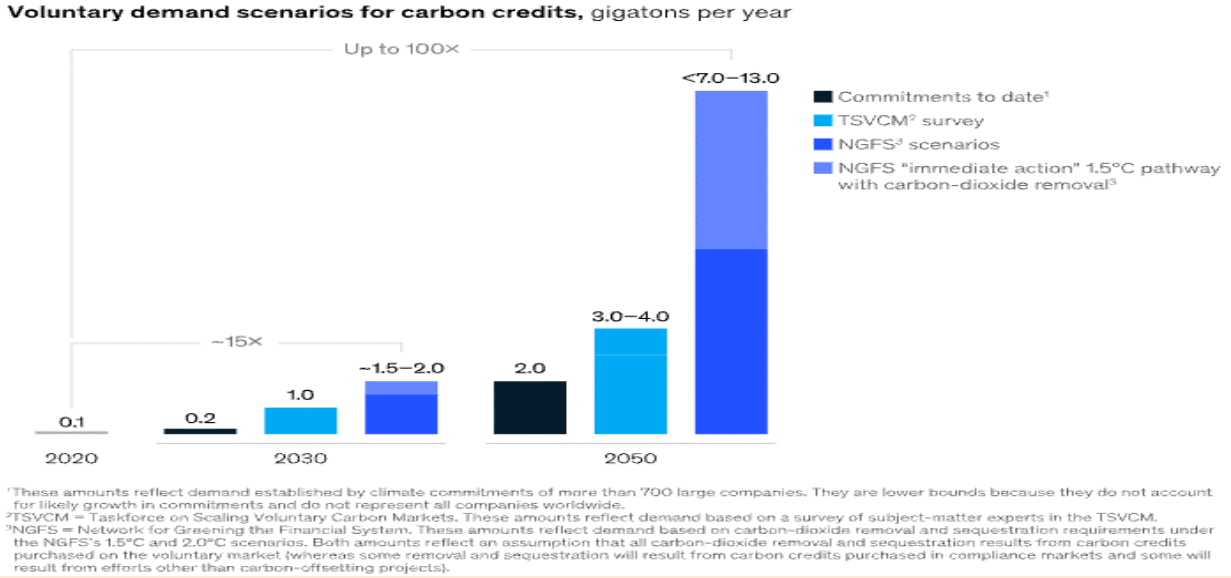


Source: Ecosystem Marketplace

Data-Driven EnviroLab & NewClimate Institute. (2020). Accelerating Net Zero: Exploring Cities, Regions, and Companies' Pledges to Decarbonise. Research report prepared by the team of: Angel Hsu et. Al.,

According to Mckinsey estimates, *the annual global demand for carbon credits could reach up to 1.5 to 2.0 gigatons of carbon dioxide (GtCO2) by 2030 and up to 7 to 13 GtCO2 by 2050. Depending on different price scenarios and their underlying drivers, the market size in 2030 could be between $5 billion and $30 billion at the low end and more than $50 billion at the high end.*

Global Demand for Voluntary Carbon Credits Can Increase by Factor of 15 by 2030

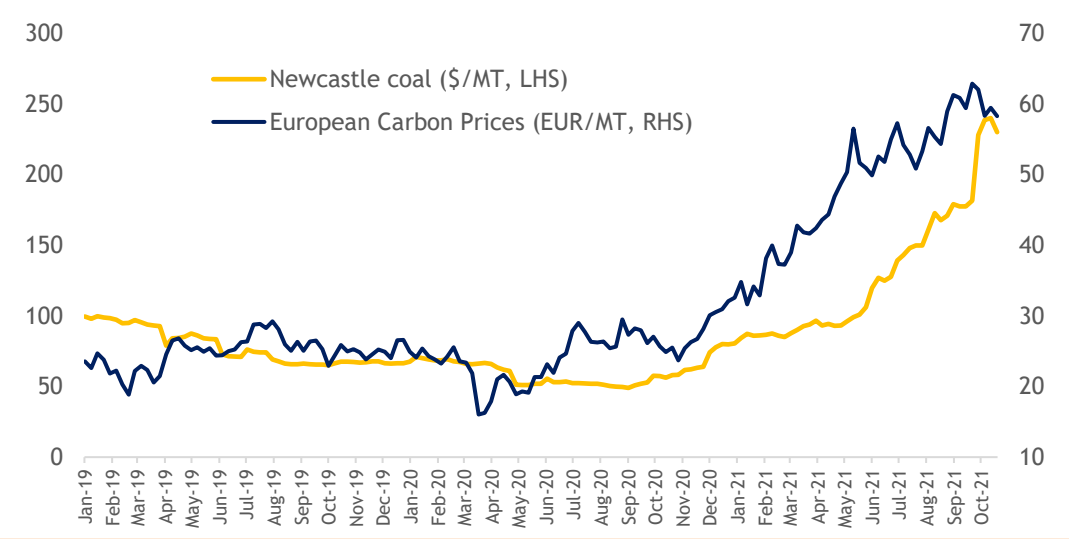


Source: McKinsey Estimates; Maybank FX Research & Strategy

Global Carbon prices rose sharply this year as power generators needed to buy more carbon allowances after exceeding emission levels amid the switch to coal-fired power on natural gas shortages. (recall that coal emits twice as much carbon as natural gas per megawatt of power produced). Furthermore for EU, the rise in carbon prices was also partly due to measures aimed at progressively reducing carbon allowances to emitters. YTD, European carbon prices have surged 100% while Australia's carbon prices have jumped 75% to a record high in Sep. We opined that carbon prices are expected to rise further as markets start to price in (1) EU's ambitious climate goals (Fit-for-55) to increase its emissions reduction targets to 55%, from 40% (and to meet these targets, corporates may need to demand for carbon credits in the interim) and (2) EU officials seemed comfortable with rising carbon prices as this could deem green hydrogen competitive.

However in the very near term, there may be a buy on rumor, sell on fact re carbon prices post COP26 if ambitions are watered down or emissions reduction technology advance faster than expected.

Carbon and Fossil Prices Move in Tandem



Source: Bloomberg, Maybank FX Research & Strategy

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