

China – The Role of Gas

An online panel event held on 3rd and 4th February 2021



A DATE WITH CHINA

“CHINA - Carbon Neutral by 2060: The Role of Gas”

Date: FEBRUARY 3 and 4, 2021
Time: 09.00-12.15 CET (both days)
4 online sessions...

- 1: Security of Supply**
- 2: Coal Phase-out**
- 3: Market Design**
- 4: Renewable Gases**

Co-Organiser:  **EU-CHINA ENERGY**
Cooperation Platform

 **energy post.eu**
THE BEST THINKERS ON ENERGY

the business opportunities for EU energy solutions providers

Session One: Security of Supply

Participants

Mike Fulwood, Senior Research Fellow, OIES

Matteo Tanteri, Chairman and CEO, SNAM CHINA

Rudolf Huber, President, LNG EUROPE

Giuseppe Spotti, Chief Commercial Officer, ELENGY

Moderator: Guido D. Giacconi, Chairman, Energy Working Group, EU CHAMBER of COMMERCE, CHINA

Highlights

China, like Europe, has a strong diversity of supply, with LNG and pipeline imports and domestic production. Unlike Europe, however, China is lacking in gas storage and in market competition - which are both key to balancing the market and ensuring flexibility.

The Chinese market is essentially where Europe's market was 20 years ago, in the early stages of developing a liquid, open and competitive market. Third-party access is crucial to stimulating gas trade in China, lowering prices and adding flexibility, and Europe could help by sharing its experience in

getting to where it is now. However, China's geology makes it unlikely to develop gas storage capacity to the extent of Europe's, even if the business model improves.

There is scope for Europe and China to cooperate in the LNG market. China could invest in more import capacity in Europe, and take the cargoes when it needs and leave them there when it doesn't.

These changes will all take place against the backdrop of China's goal for carbon neutrality by 2060, which will likely drive trillions of dollars of investment in clean technologies and infrastructure, including gas, biomass, hydrogen and carbon capture.

European market and how it compares to China's

- Both have a diversity of gas supply, with LNG, pipeline imports and domestic production.
- Europe's production is declining, China's demand is rising rapidly and production is growing more slowly, widening the supply gap.
- A fundamental difference is gas storage capacity. Europe's covers 20% of annual gas demand, China's only 3%.
- Another is market liberalisation. Europe's market has third-party access, China's is about 20 years behind, with no real gas trade market.
- China turns to coal for energy security, because it doesn't have enough gas storage and relies on gas imports.
- Europe has transparency through published access terms and tariffs and available capacity. That is key to liquidity.

China's market liberalisation

- In the very early stages. Very few companies in the market and no real trade other than some bilateral deals.
- The Asian price spike during a cold snap in January highlights how thin the market is.
- China has launched a large plan to build new pipelines and storage capacity.
- In 2020, China created Pipe China as part of an ambitious reform plan, integrating infrastructure, storage and regasification assets from three state-owned companies in an \$80 billion deal.
- Getting more storage in place will dampen prices and sharpen flexibility.
- There is government pressure on state-owned companies to increase storage capacity, but the business model needs to change because it's still loss-making.

Scope for Europe-China cooperation

- China and Pipe China must now accelerate the implementation of rules for non-discriminatory access, define a new business model and improve investments. Europe can share its experience and lessons learned.

- China could build additional LNG import capacity in Europe, where the market is very liquid, and take the cargoes when they're needed and leave them in Europe when not.
- In the absence of enough storage capacity in China, one option is to over-contract for LNG and leave unneeded cargoes to the international market, like Japan does.
- Europe's well-functioning market sets an example for China. When Asia suffered a cold spell, cargoes were directed from Europe to Asia - helping to balance Asia's market.
- Europe and China are unlikely to compete for gas because their markets are at different stages.

Geopolitical risks

- Despite the US-China tariff war, the decision of where US LNG goes is up to the offtaker and most are not US companies. China just wants the LNG at a good price, it doesn't mind where it comes from.

China's decarbonisation

- Biomass is an alternative to gasifying coal. There are estimates it could grow to 5-15% of primary energy sources.
- Gas can help decarbonise, the way it has in the US.
- China's net-zero path could require \$16 trillion of clean infrastructure investment by 2060 - with \$1 trillion for CCUS, \$1.4 trillion for pipeline infrastructure, \$0.4 for hydrogen plants.

Session One Summary

This is a summary, not a verbatim transcript, of the key points made during the online panel event.



Guido D. Giacconi (Moderator)

Chairman, Energy Working Group, EU CHAMBER of COMMERCE, CHINA

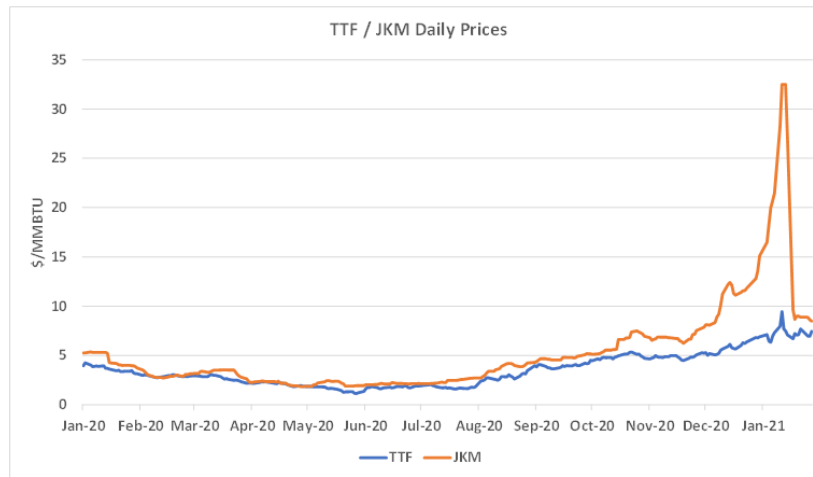
GG: Natural gas is going to play a crucial role in Europe and China in supporting the transition to a greener economy and decarbonised world. Nevertheless it's going to play a different role in Europe and China because of the different development stages and policies. Energy security is a critical aspect. Energy and natural gas security have to be tackled holistically.



Mike Fulwood
Senior Research Fellow, OIES



Europe and Asia Prices



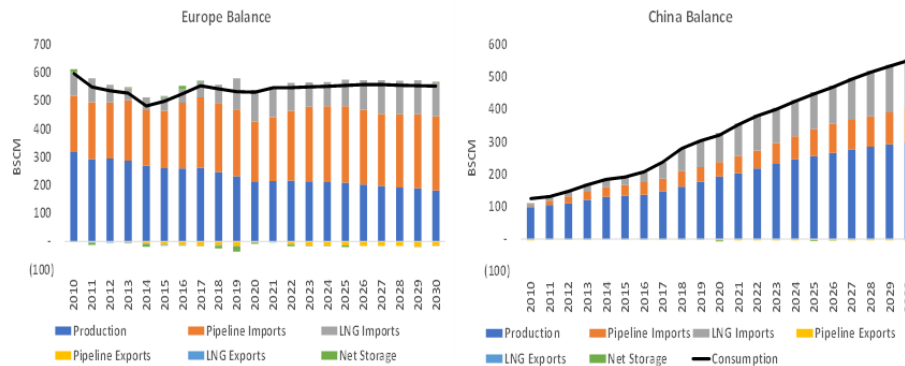
- Daily JKM price peaked at \$32.50 in mid-January (February contract)
- Only a slight jump in TTF (February contract)

Sources:
Argus, Platts

MF: There was a price spike in Asian LNG prices in mid-January, which was for the February contract. There was only a slight jump on TTF. The very cold weather in Asia, especially in Japan and China, was part of the cause. So what you see is a big shift of energy away from Europe towards Asia. There was a real demand pull to meet cold weather demand in Asia.



Europe and China – Supply and Demand Balance



- Similarities between markets – diversity of supply between indigenous production, pipeline imports and LNG imports
- Europe more dependent on pipeline imports with static demand and declining production
- China has rising demand and production and widening supply gap

Sources:
Historic - IEA
Projections – OIES,
Nexant WGM

GAS SECURITY OF SUPPLY ISSUES

NATURAL GAS PROGRAMME

This is showing the supply-demand balance for Europe and China. You can see both countries have similarities in terms of diversity of supply in LNG, pipeline imports and domestic production. Europe has declining production, China has rapidly rising demand and production is growing, widening the supply gap.



Europe and China – Market Differences

- Gas storage infrastructure
 - Europe has over 100 bcm of gas storage (excluding access to Ukraine) which is 20 percent of annual gas demand
 - China has 10 bcm of gas storage which is 3 percent of annual gas demand
- Regas Plant Capacity
 - Europe has around 230 bcm of regas capacity, with imports of 113 bcm in 2020
 - China has around 110 bcm of regas capacity, with imports of 90 bcm on 2020 – very high winter utilisation
- Market Structure
 - Most of Europe is a liberalised competitive gas market with multiple participants and buyers and sellers able to freely trade gas and full access to infrastructure
 - China is a long way behind with many fewer market players and no real trading of gas and in the early days of liberalisation
- Liquid Physical Trading Market
 - Europe has some of the world's most liquid trading hubs in TTF and NBP which allows market players to balance their portfolios and hedge their positions
 - The Asian LNG market does have some bilateral trades of LNG cargoes but it is very far from being a liquid physical trading market – the very high prices in mid-January reflected a very thin market – *JKM futures is a paper market not involving physical trades to any great extent.*

GAS SECURITY OF SUPPLY ISSUES

NATURAL GAS PROGRAMME

But there are a number of market differences. Gas infrastructure in Europe has over 100bcm of gas storage, which is 20% of annual gas demand. China has 10bcm which is 3% of annual gas demand.

There's a lack of storage there. Europe has well over 200bcm of regas capacity, with imports of 113bcm, which is very high relative to recent history. China has around 110bcm of regas capacity, with imports of 90bcm and very high winter utilisation.

As for market structure, Europe is a liberalised, competitive market, and very importantly, has full access to infrastructure. China is a long way behind, with few companies, no real trade in gas to speak of and very early liberalisation.

Euro has some of the most liquid trading hubs in the world, and that very much allows market players to balance their portfolios. The Asian market does have some bilateral trade, but the very high prices in January reflected the very thin market. The JKM is a paper market, without physical trading.



Matteo Tanteri
CHAIRMAN and CEO, SNAM CHINA

MT: Snam is one of the largest gas infrastructure players globally. I will focus on the role of gas infrastructure. We need to acknowledge that China and Europe are in a very different stage of the gas market evolution - China is where Europe was maybe 20 years ago, when there was the start of the Third Directive and everything that contributed to reshape the gas market in Europe as we know it today.

China has launched a large plan to build new pipelines and storage capacity. There are targets to develop storage capacity compared to demand, there is a plan to multiply by three or four the regasification capacity.

And China has also started reforming the gas market, because as we know it's not just a matter of assets but how we use the assets. Until 2020, in China there were three major state energy companies and no third party access. Small energy players and utilities had to build their own LNG import infrastructure. Then the Chinese government started a very serious and ambitious plan of reform and created Pipe China. In 2020 Pipe China was able to integrate the assets of infrastructure, storage and regasification plants from the three state owned companies. It was the largest energy deal in the world in 2020 - \$80 billion. We can see this was a sign of how strongly China believes in gas and its role in decarbonisation.

Where I see potential cooperation between Europe and China is - China and Pipe China will have to accelerate the implementation of rules for non discriminatory access and they will define a new business model that will enhance and make investment clearer and more profitable. There is still a big question mark on storage, in Europe it's an important part of the security of supply. The Chinese government will have to decide the future of storage, considering it's very difficult to make money from storage. It will require a new business model.



Rudolf Huber
President, LNG Europe

RH: Storage is the defining issue in China, and the whole of Asia. Asia is geographically not well suited to underground storage. There is a possibility there will be more, but it's going to be pretty tiny when comparing it to the potential size of the future Chinese market. One way to counteract this is something the Japanese have been doing for the last few years - over contracting and trying to dump excess volumes of LNG into the international market.

We all know there is no real international market for LNG like for oil. The only region that is physically and financially capable of doing that is northwestern Europe. Here comes into play a possible area of cooperation between China and Europe. Northwestern Europe has deep pipeline networks, storage, many LNG terminals and overcapacity for LNG, so for Asia it would make a lot of sense to build additional import capacity in northwest Europe and play around with it commercially. So when there's a cold snap they take all the cargoes, but when they don't need the cargoes they have Europe as a sinking option. This covers your over-commitment.

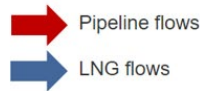
Yes, the potential for China's market is enormous, but the security of supply issue is different. In Europe it's a money play, whereas China is fundamentally afraid it will be cut off from gas supply if there's a conflict. And since it doesn't have much gas storage capacity it turns to coal. It will take a long time before we see China's gas really grow compared to coal.



Giuseppe Spotti
Chief Commercial Officer, ELENGY

European gas system

- 525 BCM gas demand:
 - 20% domestic production
 - 60% pipeline import
 - 20% LNG import



- European gas system:
 - Large gas market
 - Well interconnected network
 - Large regasification capacity
 - Large storage capacity
 - Transparent access rules to infrastructures
 - Liquid gas trading hubs



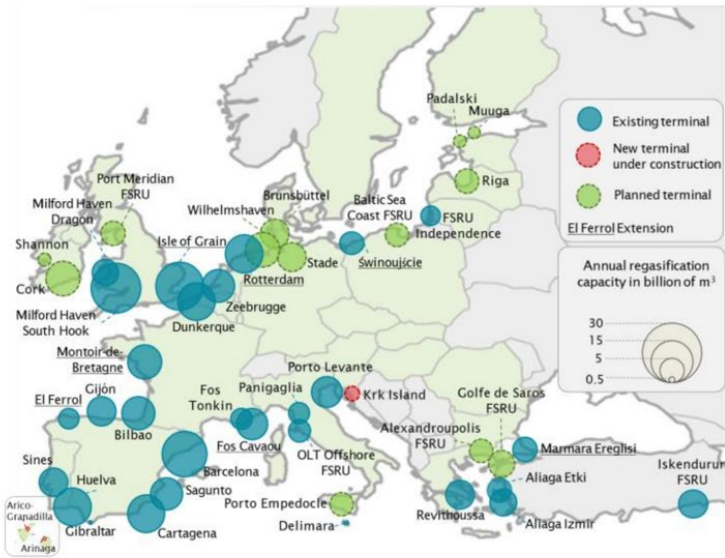
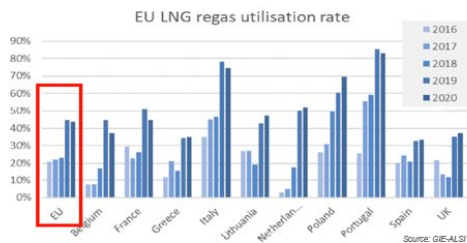
Role of LNG terminals for gas security of supply

GS: The European gas market has about 500bcm, and it's highly dependent on imports as only 20% of its needs are covered by production, and that's declining. The major role for European gas needs are covered by pipeline imports and the balance with LNG.

The infrastructure network is fairly well connected in Europe. Europe has a large regas capacity and large storage capacity, which players can access through third-party access and transparent rules, which help make a quite competitive gas market.

LNG terminals in Europe

- 24 regasification terminals in operation
- 212 BCM total regasification capacity (40% of gas demand)
- Utilization rate responsive to markets, reaching 45% in 2019 - 2020



Sources: GIIGNL, GLE (2019)

Role of LNG terminals for gas security of supply

As of 2019, Europe had 24 regas terminals in operations, and a few still in the planning phase. Operating terminals cover 40% of demand, which is a lot. The average use is fairly low, at 40-45% in 2019 and 2020, but there are remarkable differences historically and locally. LNG terminals are responding to the supply-demand balance.

LNG contribution to gas security of supply

- LNG play a major role for the **diversification of supply**, key building block for gas SoS:
 - **LNG trade has nearly doubled within ten years:** 355 MT (2019) vs. 182 MT (2009).
 - **21 exporting countries**, 42 importing countries (2019).
 - **Increasing liquidity:** 34% of total trade (2019) imported on a short-term basis.
- LNG terminals are **flexible tools** capable to contribute matching demand at all time, another key building block for gas SoS.
- **Open access** to LNG terminals is a cornerstone of the European gas market:
 - **Regulated Third Party Access (TPA)** is the **mandatory regime** : transparency via published access terms and tariffs and available capacity.
 - **Exemptions** to regulated TPA **allowed** under certain conditions.
 - Open access to market **improves competitive landscape**.

Role of LNG terminals for gas security of supply

The global energy markets provide the resources needed to diversify Europe's gas supply. LNG trade has nearly doubled in the last 10 years, with 21 exporting countries and 42 importing. LNG terminals are flexible tools, they can go from zero sendout to 100% capacity quickly.

One important element for security of supply is removing entry barriers for new players. In Europe, the regulated third-party access is a cornerstone of the gas market. There is transparency through published access terms and tariffs and available capacity. The liquid LNG market, with LNG terminals having transparent access rules, are key to security of supply.

Panel discussion

GG: Gas will play a geopolitical role in the Far East, South China Sea, Gulf and Europe. Europe has a lot of supplies, in Asia and China things are a bit different. What is the role of natural gas and LNG in geopolitical games between the US and China and others?

MF: The US-China tariff war dried up LNG for about a year. A lot of people talk about US LNG as if the decision of where it goes comes from US companies, when actually the offtakers are largely not US companies. A lot of it is in the hands of the offtakers.

A lot of the geopolitical issues are noise in the background, but decisions on where the gas goes are taken by companies. China generally doesn't mind where its LNG comes from, it just wants the LNG at a good price. Yes, there are geopolitical overtones but they are more likely to be shocks to the system as opposed to significant shocks to the trade.

GG: In China there's the perception that the tensions with the US have influenced China's energy transition policy. We saw a surge in coal in 2019 and 2020. China is also pushing for coal-to-gas technologies, but we at the European Chamber are against it, because China could also deploy biomass for biogas and biomethane. What could be the role of biomass in China?

MT: On geopolitics, first - gas can even play a positive role in geopolitics as part of the solution to the problems China is having with the West.

On biomass, China will have to use all options to get to the 2060 carbon neutrality target, and gas will play a part in that. Biomass will play a role too, we are developing a China study to understand the value and impacts of biomass and biomethane in terms of pollution.

There are two main drivers for biomass. One is the sorting of waste, which has started in Shanghai and Beijing, and we can assume some utilities will start looking at that. The other is biomass from agricultural feedstock, which will be a key activity in the north of China where there is an agricultural economy.

GG: There are estimates that biomass could explode and represent 5-15% of primary energy sources. Today the share of gas is below 10%, so that's a big role and can help to avoid gasifying coal, which does not contribute to decarbonisation.

On the lack of storage geology in China: China does have a lot of stranded oil and gas fields and it has already projected that the only way to decarbonise by 2060 is to exploit CCS to at least 20%. How do you think China should plan the exploitation of stranded wells and fields? What is the role of CCS in the decarbonisation of China and Europe?

RH: The storage problem is not going to go away. Carbon capture is essentially the same thing as gas storage - instead of gas you put CO₂ in the ground. The need for the modulation of gas imports is not going to go away. There are efforts in China to build new storage and improve the ability to withstand outside shocks, but gas storage isn't built overnight and not every oil or gas field lends itself to storage. China would do better to try to build international cooperation to modulate its import streams. This will have a price, Asia has been a price-taker for as long as LNG exists.

Decarbonisation is a big word and we have seen, especially in North America - which is the most successful country - natural gas has decarbonised the country more than anywhere else. That means increased use of natural gas usually brings a lowering of the carbon count.

It will be a long time before China makes a serious dent in coal use. They're trying to build hydro, but that has limits as well. The only thing you can do right now in China is play on LNG imports. It will become the largest LNG importer.

GG: China is far behind Europe in third-party access, but it could learn from Europe's path and the benefits of opening the market and making it more flexible. How can Europe cooperate with China to support the acceleration of third-party access? How can the flexibility of the system guarantee energy security and natural gas security?

GS: If we think envisage an energy system where renewable sources will need to be featured there will be even more need for flexibility. So modulation is a key question here. How to cope with those needs is an issue for Europe and for China, and for security of supply.

Europe's market looks well connected and competitive now, but we're not done yet - locally there are important differences. But the fact that it has a well-functioning market already helps China. If we see what happened in 2019 and 2020 on the global LNG market, when Asia was hit by the cold spell cargoes were directed from Europe to Asia - so Europe's well functioning market is already helping supply cargoes to Asia when they're needed.

Q&A

Cristina Sendin asks: Following the price rally we just experienced, do you think Asian players will rush to sign more long-term contracts? Could this boost the liquefaction investment we expect this year? And how could pricing be affected and influenced by the increase of storage capacity in China?

MF: I don't think there will be a rush to enter long-term contracts. A lot of the reasons for the price spike were around the Japanese market, not the Chinese. The real rush to buy came from Japanese buyers caught in a short squeeze. Players will look at their long-term contracting strategy, but actually they may turn to short-term contracts and pull back on the use of JKM contracts. The idea they could cooperate more with European players could be fruitful as well.

On the storage side, more storage is a good thing. Because Europe has a lot of storage it can cope with dramatic swings. Notwithstanding geological differences, the strategy of getting more storage in place is going to dampen prices in China and increase flexibility.

Francois Issard asks: There is a lack of data for studies of CO₂ injection capacity, because it's in the hands of state-owned companies. Geological and engineering data is still owned by these companies and even a state secret. The question is, have we progressed in China over the last few years, and with the energy transition opportunity, to develop access to data?

MT: This will not change. Storage is a very sensitive business everywhere. In China we're working with big state-owned companies to improve the performance and efficiency of some fields. I can confirm that some data is still secret, but there is now strong pressure on these companies to develop more storage because targets have been missed.

So on one side there is a stronger focus on doing that, but the question is that, apart from a strong push from the government, these companies have no real incentive to do it because the business model for storage today is loss-making. You can't make money from the summer-winter spread. The price of gas in China is defined by the government.

The importance of storage is now really clear to Chinese institutions, so I expect some kind of redefinition of the business model. Storage capacity today is 4-5% of total gas demand, so you can imagine how complex it is to balance a market that's so geographically wide.

I also see a gradual opening of state-owned companies in the process of sharing this data with foreigners, but it's still very secret information. Don't expect foreign companies to be able to manage this independently.

Wei Wei asks: What happens in the next 30 years if China doesn't match its optimistic natural gas capacity projections?

MF: A lot of forecasts about the Chinese market show everything going up. Some think that shale and tight gas might not perform as well as others expect. But they do seem well prepared to invest in pipeline and LNG infrastructure and increase the share of imports. The question is, if there was a plateauing and declining production, would they turn away from natural gas? They are prepared to increase import dependency, but is there a limit?

Zuzanna Nowak asks: How can Asian countries cooperate to get better flexibility and better conditions on the market?

MF: There are some signs of cooperation from Japanese buyers looking to invest in regasification in other countries, but I think it happens at the company level. In Japan, Chubu and Tokyo Electric combined their portfolios. Whether you see cross-border cooperation like that remains to be seen, but increased cooperation is the way forward.

There's scope for Europe and Asian cooperation more along those lines.

RH: Intra-Asian cooperation is going to be difficult, very simply because most Asian buyers have essentially the same needs. I could see some cooperation if there are two countries that have different needs, like seasonal swing. There is too much competitive zeal between players in Asia for real cooperation to be effective.

There certainly is scope for cooperation between producers and Asian players. But everyone is going to need a place where they can dump LNG when they don't need it, and the times when it's not needed are generally longer than when it is. So I don't see a lot of scope for cooperation among Asian players.

"Anonymous" asks: Given the need for natural gas - 600bcm between China and Europe together - are they going to be competitors for supply? How could China and Europe cooperate upstream?

MF: European players or the IOCs have always been keen to get into LNG facilities around the world. That will increasingly be the way forward. If you take LNG Canada for example, in effect there is no real long-term contract for that plant, the equity participants have agreed to lift their share of that plant. That's going to be more of a model for LNG.

MT: I don't see the risk of competition for gas. Europe and China are at different stages of gas market evolution. I think the bulk of supply for Europe is still pipeline gas, and that can hardly be diverted elsewhere. Of course there will be some limited competition for LNG, but I don't expect Europe to compete with other countries for the supply of gas. There is plenty of gas in the world.

GS: Europe is committed to carbon neutrality in 2050, so it's going in a different direction. Solutions need to be found to match the target. The story that Europe and China will go through are probably quite different.

GG summarises a question: Hydrogen is a hot topic in Europe and is becoming one in China. Is natural gas going to play a significant role in hydrogen and the transition, or will hydrogen remain in oil and gas and chemicals?

GS: I think it bears down to one point we already covered: whatever solution we find for the energy system in the future there will be a need for modulation. It's a key issue today and will be tomorrow. Whether it's natural gas or methane or biomethane, the fundamental question is how to solve the need for modulation and what kind of solution for what kind of usage. I see a future where different energy vectors coexist.

MF: The prospects for blue hydrogen are very different around the world. China may not have the geology for CCS, it varies depending on what you can do with CO2. It will be quite patchy.

MT: The answer is in the starting point. In a country with more than 50% of the energy mix covered by coal, everything will be needed. Chinese institutions estimate that China's net zero path implies \$16 trillion of clean infrastructure investment by 2060. \$1 trillion for CCUS, \$1.4 trillion for pipeline infrastructure, \$0.4 trillion for hydrogen plants. The numbers are so huge in china that everything will be needed. For sure they'll take a look at blue and grey hydrogen.

GG: The complexity of China is such that it will not be able to decarbonise by 2060 without a different economic model. Significant changes will come. China cannot afford to remain dependent on a single source like coal.

Summary compiled by [Sara Stefanini](#)

Produced by [Energy Post](#)