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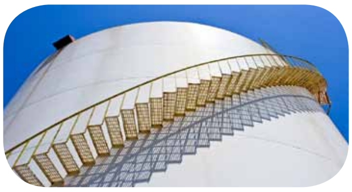
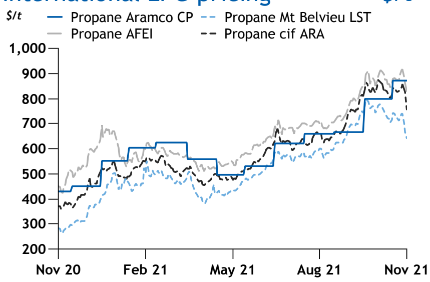


Volume XXVII, 22, 16 November 2021

The White House is 'not considering' a shutdown of the pipeline as a protracted legal process between operator Enbridge and the US state of Michigan continues

International LPG pricing $/t



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US does not plan to shut down Line 5 NGL pipeline

US president Joe Biden's administration says it is not considering shutting down Canadian midstream company Enbridge's 540,000 b/d Line 5 crude and natural gas liquids (NGL) pipeline system.

The White House said on 8 November that it was studying the effects of a possible shutdown of the pipeline, before announcing on 9 November that it was not planning such an action. The government has been holding high-level talks with Canada after Ottawa last month invoked a 1977 treaty in an attempt to stop a state-ordered closure of the pipeline system. Michigan state in November 2020 revoked a 1953 easement right and ordered the line's closure by 12 May over fears of a leak into the environmentally sensitive Straits of Mackinac.

"These negotiations and discussions between the two countries should not be viewed as anything more than that, and certainly not an indicator that the US government is considering the shutdown," the White House said. "That is something we are not going to do."

Line 5 offers a key source of propane to the US upper midcontinent, including swing states such as Michigan, where rising energy prices have become a growing concern for the White House. The pipeline system stretches from Superior, Wisconsin, to Sarnia, Ontario, including under the Straits of Mackinac that separates Lake Michigan and Lake Huron.

Michigan governor Gretchen Whitmer has spearheaded the campaign to close the pipeline, but Enbridge has kept it operational, saying it would not close it unless ordered to do so by a federal court, while also citing the 1977 treaty. Enbridge says the pipeline system is operating safely and delivering fuel to millions of people and businesses in the US and Canada. The company has committed to building a tunnel to house the pipeline under the strait to protect it from anchor strikes and possible leaks. This would reduce the risk of a spill to as "near zero as humanly possible," chief executive Al Monaco said on 5 November. But the project is entangled in a drawn out environmental licensing process.

Appease treaty

The White House earlier this year tried to distance itself from the court fight between Michigan and Enbridge. But Canada's decision to invoke the 1977 treaty has forced the Biden administration to wade into the dispute while also investigating the environmental impacts of the Line 5 tunnel project. Republican lawmakers from the upper midcontinent have cautioned the administration against a potential shutdown of Line 5, which they say would cause propane shortages this winter.

"Line 5 is essential to the lifeblood of the [US midcontinent]," representative Robert Latta and 12 other Republicans lawmakers said in a letter to Biden on 4 November. "Should this pipeline be shut down, tens of thousands of jobs would be lost across Ohio, Michigan, Wisconsin and the region."

EDITORIAL

Promises made at the conference — if carried out — mean huge changes are coming, and the impact on LPG will be significant

Pledge your bets

This month's UN Cop 26 climate conference in Glasgow has delivered a series of landmark pledges on deforestation, methane cuts, coal, finance and zero-emission vehicles. But while they appear bold, a number of eleventh-hour compromises and a history of broken promises have left those demanding a pivot point on climate action decidedly unimpressed.

In his opening speech, UK prime minister Boris Johnson said the anger would be "uncontainable" unless world leaders made this the "moment we get real on climate change". But the non-attendance of heads of state from China and Russia — despite their countries' status among the world's biggest emitters of greenhouse gases — and the failure to get key countries and organisations to put their names to specific additional pledges outside the formal Glasgow Climate Pact make such fury more likely. The IEA was quick to note in the first week that even if signatories delivered on all of these stated goals, the world would still fall some way short of capping global warming at 1.5°C under the Paris climate agreement.

That is not to say the promises made in Glasgow do not encompass huge change, of which the LPG industry should take note. These include more than 100 countries committing to cutting methane emissions by 30pc by 2030, and phasing out the use of coal-fired power generation by 2030 for major economies and 2040 for the rest of the world. Financial institutions that control a combined $130 trillion also committed to backing "clean" technology and directing finance away from fossil fuels. A smaller group of nations has backed ending overseas funding of fossil fuels by 2022. Depending on the minutiae of these plans and whether the groups can keep their word, the impacts on the LPG industry could be significant. But it was arguably the pledge to end deforestation by 2030, signed by more than 100 countries, that will have the most immediate effect on the sector.

LPG's importance as an alternative to firewood in developing countries is well understood by many who attended the conference, according to the World LPG Association's chief advocacy officer Michael Kelly, who gave *LPG World* his views on Cop 26 (*see pp3-4*). Firewood and charcoal harvesting is a major contributor to deforestation in many developing economies, and its elimination will pave the way for faster switching to LPG over the coming 10 years. One possible obstacle could come from a pledge by more than 25 countries to end overseas funding of fossil fuel projects by the end of 2022, which would make securing finance for such programmes problematic, Kelly says. But it is hard to imagine this pledge being adopted more universally any time soon.

The second week of the conference saw another pledge — like the one on deforestation, a non-binding commitment made outside the main Cop 26 negotiations — under which 23 nations agreed to work towards all sales of new cars and vans being zero emissions by 2040, and by 2035 in leading markets. Signatories included Turkey, Poland and Mexico, all of which have major autogas markets.

Down, not out

As for the main agreement itself, the Glasgow Climate Pact finally signed off late on the evening of 13 November, most headlines have focused on the last-minute dilution of language around phasing out coal insisted upon by China and India — a particular disappointment given the bilateral deal agreed only days earlier by China and the US on working together to accelerate climate action this decade.

But even the toughest detractors would find it hard to argue that change is not coming at a faster pace. For the LPG industry, some opportunities will arise from this new trajectory, particularly in emerging economies. But without a viable clean or low-carbon alternative, the writing is on the wall for LPG's future. And being among the first to take action may not be imprudent when the stakes are so high.

COP 26

Q&A: WLPGA gives industry take on Cop talks

The World LPG Association (WLPGA) went to the UN Cop 26 climate conference in Glasgow this month with the aim of ensuring the LPG industry is not left behind in the climate change negotiations. Argus spoke with WLPGA chief advocacy officer Michael Kelly during the conference to ask how the event was unfolding:

Why is Cop 26 so important for the LPG industry?
Climate change fell off the industry's radar after Copenhagen [Cop 15] in 2009, when attention in terms of developmental issues pivoted towards clean cooking. Because after the 2008–09 financial crisis and the failure of the Copenhagen talks, there appeared to be limited political will to address climate change. For the LPG industry, we were quite happy to monitor the issue largely through the activities of other organisations and industries. But this year and going forward, the WLPGA realises it has to be involved. To defend our industry from the outcomes of these meetings, and the increasingly aggressive regulatory positions being taking by countries particularly in Europe and the western part of the US, we need to be engaged.

How does this Cop conference compare with previous ones you have attended?
This is my 11th Cop. It is I think the biggest one ever held, and it is by far the most chaotic. Each Cop has its own flow, and this has one has been extremely disjointed. The preparations were very opaque because of Covid-19. Cops are usually formulaic — the first week is negotiations and the second week is what is called the "high-level segment", when heads of state and ministers come in, come to their final positions and make agreements. This year, because you had the G20 meeting preceding Cop 26, you had the high-level segment at the start, which has thrown everything off. More security and Covid-19 resulted in queues of two hours to get in on the first day. All of this has an impact on the overall mood of the negotiations.

'Possibly the most encouraging thing to emerge is the pledge to end deforestation by 2030… I think it is going to have an immediate impact for our industry'

Have you held any fruitful meetings at the conference?
Yes. Cop conferences are an excellent place to network, because it is the one time of year that all of these organisations and governments come together, and this one has been particularly well attended. I have met with industry associations, non-profits, NGOs, governments and companies. This variety is why the LPG industry, through the WLPGA or national associations, has to be involved in these talks.

What are the most encouraging outcomes from Cop 26 for the LPG industry?
LPG is widely recognised at Cop 26 as an alternative to biomass for cooking. This is really how the industry is viewed at a global level — a cleaner alternative to solid biomass fuels. So possibly the most promising thing to emerge has been the pledge to end deforestation by 2030. Over 100 countries have signed this, and I think it is going to have an immediate impact for our industry. There is also a plan to reduce the dependence on coal in South Africa, which will have a big impact on its LPG industry. South Africa's energy ministry has already said it wants to double LPG consumption, and given the problems [local utility] Eskom has had with its coal-fired power plants, there could be an opportunity not only for clean cooking but also power generation, and probably in a lot of other developing countries. A harder one to gauge is the 30pc methane cut agreement by 2030, signed by 100-plus countries. This will have an impact on our industry, but it will take more analysis and understanding of the details before we know what the impact will be.

Has energy access in developing countries been a core component of the talks?
It is a huge element of this discussion — how to move to low-carbon energy from more polluting fuels so it does not have a negative impact on the economically

COP 26

disadvantaged, whether they are in developing or developed countries. It is a vital problem, and one Cop 26 is very focused on, because often the solution in developing countries is to cut down trees for people to use as a cooking fuel.

Some countries have agreed to end overseas fossil fuel investment by the end of 2022. Could this impact funding for LPG clean cooking schemes?
It could. The UK had a blanket ban on overseas fossil fuel investments, but the Johnson government has since walked that back. So now they can fund LPG for cooking projects. But there is a risk that more ideological development agencies and governments will simply ban investments of any kind on fossil fuels. This is why it is important that we are there making the argument at Cop 26 — that it is nonsensical to try and stop deforestation at the same time as ending funding on LPG, as it is one of the best ways to mitigate deforestation in developing countries.

"Article 6" talks are targeting a global carbon market. How would this affect LPG?
Clearly this would have an impact. As an industry, we have not been successful in getting carbon credits for LPG projects, although one of our members is active in trying to do this. If there is a global carbon trading scheme, I think ultimately it will benefit our industry. We will have to learn how to manage it and use it to our benefit, and I think that is something that, as a global association working with national associations, we would be able to provide guidance on.

What sort of timeframe is realistic for the LPG industry to transition from fossil fuels to a renewable future?
It depends, because the discussion is very different in developed countries than in the developing world. Bio-LPG and renewable LPG show a lot of promise, although there is scepticism that there will ever be enough to replace fossil LPG. But the impulse to do this in Europe is regulatory. In developing countries, moving from biomass to LPG is already decarbonising. Shifting to bio or renewable LPG further decarbonises and creates security of supply, infrastructure development and job creation — something every politician loves. But for our members in developing countries, bio and renewable LPG is something interesting for the future, not an existential concern in the same way it is in European markets.

'It is nonsensical to try and stop deforestation at the same time as ending overseas funding on LPG, as it is one of the best ways to mitigate the problem in developing countries'

The phasing out of coal has prompted Indonesia to invest in gasification projects with a view to producing dimethyl ether (DME) to replace LPG. Do you expect similar DME schemes to emerge in other coal-producing nations, such as India?
Possibly, although it is unlikely to be huge levels of displacement, particularly in India, where they have invested too much in LPG infrastructure to try and shift to DME completely. Indonesia announced during Cop 26 that it will be net zero by 2060, which will have an impact on what technologies and strategies it adopts. But we know that [state-owned oil firm] Pertamina is trying to pivot away from LPG to DME, and it will be interesting to see how they do it. Indonesia then may be a case study other countries will look at to see what lessons can be learnt. It demonstrated it can do a large switching programme when it moved consumers from kerosine to LPG in 2007-10. So they are capable of it, but it is not a small undertaking.

What is the plan for the WLPGA after Cop 26?
We will continue engaging with the Cop process. We are launching a task force to provide a roadmap to Cop 30, so that we are involved between now and the next four conferences. As I said before, as an industry, we stepped away from the climate change discussion, but now we are stepping back in and intend to be involved and proactive in representing the interests of the industry.

COP 26

Japan pledges extra $10bn for overseas climate fund

The country will provide $70bn for overseas climate funds, but this is unlikely to include support for renewable LPG distribution in Asia for decarbonisation, writes Nanami Oki

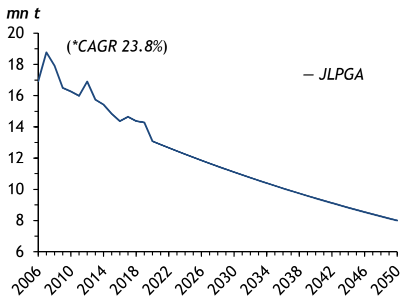
Japan has pledged an additional $10bn in climate financing over the next five years on top the $60bn it already earmarked to help countries in Asia-Pacific tackle climate change at the UN Cop 26 climate conference in Glasgow this month.

The funding will mainly be used to support the development of hydrogen and ammonia projects, with no mention of LPG nor synthetic renewable LPG, which Japan's LPG industry is in the process of establishing new supplies of in Asia. During his speech to the conference on 2 November, prime minister Fumio Kishida also mentioned the ¥2 trillion ($17.6bn) green innovation fund, which will help Japan achieve carbon neutrality by 2050 and could support the development of renewable LPG by providing financial support for research and development, pilot production and commercial operations. "By utilising our green innovation fund, Japan will develop next-generation batteries and motors, hydrogen, and synthetic fuels… while spreading the fruits of these innovations across Asia," Kishida said.

It is not yet clear if the government will support the Japanese LPG industry's plan to develop a renewable LPG supply chain in Asia-Pacific, the economy, trade and industry ministry (Meti) says. The country's main LPG importers and the Japan LPG association are accelerating development of "carbon-neutral" synthetic LPG made from CO_2, green hydrogen and renewable dimethyl ether (DME) through the Institute of Japan Green LPG Promotion. But they are targeting first commercial supplies by 2030 and covering entire domestic demand of around 8mn t/yr by 2050.

A study group of academic institutions led by Meti suggested suppliers could export renewable LPG to Asian markets, estimating industrial and commercial demand for renewable LPG in south and southeast Asia reaching 13.5mn t/yr by 2040. Conventional LPG prices in Asia-Pacific are expected to rise on falling crude and refining production and pressure to transition to cleaner fuels, especially in China and India, which could make renewable LPG profitable in the future, the study group finds.

Japan LPG demand forecast*



COP 26

India targets rural LPG growth despite climate goals

Firms have no plans to substitute LPG and instead aim to tailor refinery projects to produce more naphtha, LPG and gasoline, writes S Dinakar

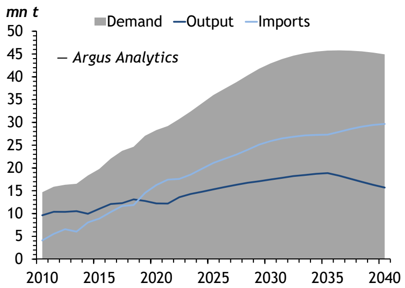
India's state-controlled refiners say they will continue to prioritise expanding LPG supply to the country's rural poor to wean them off cheap firewood, despite Delhi's pledge to be net zero by 2070 at the UN Cop 26 climate conference in Glasgow in early November. But the target could lead to India's reliance on LPG imports rising in future years as domestic refinery output slides.

Prime minister Narendra Modi on 1 November said India plans to reach net zero greenhouse gas emissions by 2070, with renewables to meet 50pc of energy needs by 2030. India's state-run refiners, which control the country's almost 30mn t/yr LPG market that is mostly for cooking in homes, responded by announcing plans to install 22,000 electric vehicle (EV) charging points at retail sites.

But refiners have no plans to substitute LPG, an official at state-controlled IOC says. They anticipate a loss in market share as natural gas grids are expanded in cities, but growth in rural areas will compensate for this decline. The firms also aim to tailor refinery projects — India plans to add around 1mn b/d by 2025 — to produce more gasoline, LPG and naphtha, as well as develop integrated petrochemical facilities, senior officials at the oil ministry say. Older refineries will be upgraded to produce more LPG and gasoline as their use grows at the expense of diesel.

Refiners hope to compensate for the erosion in urban market share by focusing on boosting refills from the rural poor, beneficiaries of subsidised access to the fuel under the Pradhan Mantri Ujjwala Yojana (PMUY) scheme. More than 81mn have benefited from PMUY with another 10mn households likely to be added by 2023.

India LPG fundamentals



COP 26

US midstream firms unfazed by Biden's climate push

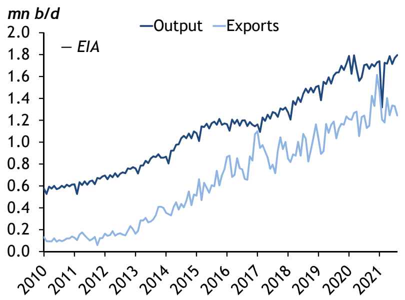
Pressure on firms to transition is building but drilling activity is increasing, writes Amy Strahan

The US' main LPG exporters remain unconcerned by the prospect of intensifying action on climate change under President Joe Biden.

The US' climate agenda has dramatically shifted since Biden took over from Donald Trump in January. The president's $3.5 trillion "build back better" plan partly aims to aid the US' economic recovery by supporting the energy transition away from fossil fuels. But details under the plan are still under negotiation.

Many of the country's largest midstream operators have invested billions in natural gas liquids (NGL) infrastructure to capitalise on the US shale boom. These include Enterprise Products Partners, Targa Resources and Energy Transfer — three of the country's main LPG exporters. But the companies appeared unruffled by the US' apparent strengthening climate agenda when releasing their third-quarter results during the UN Cop 26 climate conference in early November. "You guys in New York must have better visibility to [Washington] DC than from what we see… Right now, any comment [on pending US legislation] would be pure speculation," Enterprise Products chief executive Jim Teague told analysts on 2 November.

US propane



"Whatever comes out of these plans and legislation, we will deal with that when it comes out and once it gets voted on," Energy Transfer co-chief executive Mackie McCrea said on 3 November. "We are keeping our head down. We are in the fossil fuel business," he said. The surge in global demand for ethylene and propylene, both of which can be produced from LPG, are critical to global standards of living, McCrea said. Energy Transfer envisages a long-term future for the industry, and while it pays attention to politics and tax impact, it is not worried, he said.

US natural gas liquids (NGL) output continues to grow, albeit at a slower rate, with the majority of oil and gas production in the Permian basin now coming from the majors, Targa senior director Michael Stephens said earlier this month. Pressure on the majors to transition is building, yet drilling activity is still increasing, and recent high prices support further growth, he said.

COP 26

Autogas in threat from zero-emission vehicle pledge

The pledge states that all cars in developed countries must produce zero GHG emissions by 2040, writes Aidan Lea

Autogas demand could fall in the coming years after three of the world's major markets signed a declaration to transition to new zero-emission vehicles at the UN Cop 26 climate conference in Glasgow.

Among the signatories of the pledge were Turkey — the world's second-largest autogas market with demand of around 3.1mn t/yr — as well as Poland and Mexico, which consume about 1.7mn t/yr and 1.2mn t/yr, respectively. Under the declaration, all new cars in developed countries — including Poland — must produce zero greenhouse gas (GHG) emissions at the tailpipe by 2040, or by 2035 for leading markets. Developing nations, including Turkey and Mexico, must "work intensely towards adaptation of zero-emissions vehicles", but no timeframe is in place.

Leading autogas markets			mn t
Rank	Country	2020	±% 19/20
1	Russia	3.22	-0.9
2	Turkey	3.07	-8.6
3	South Korea	2.68	-12.2
4	Ukraine	1.86	3.6
5	Poland	1.74	-9.9
6	Italy	1.30	-21.6
7	Mexico	1.19	-9.5
8	Kazakhstan	1.02	-3.3
9	China	0.98	-15.0
10	Algeria	0.77	-10.0

The impact on the industry could be substantial if the countries honour the pledge, although seven other of the largest autogas markets did not sign up. These include South Korea, previously the world's largest autogas market with demand of around 2.7mn t/yr, Russia with 3.2mn t/yr, Ukraine with around 1.9mn t/yr and Italy with around 1.3mn t/yr.

The LPG industry has lobbied hard for autogas to be considered as an alternative transitional fuel to lower carbon and pollutant emissions, but governments have largely thrown their weight behind electric vehicles. This has not prevented autogas becoming an established fuel choice in several countries, and its use has grown recently in Ukraine and Tajikistan for example owing to its price competitiveness. Autogas is the third-largest sector for LPG consumption globally.

CHINA

CO2 emissions reduction plans raise PDH allure

The NDRC plans to cut oil refining and CTO production capacity and shift petrochemical feedstock supply to lighter hydrocarbons

China's plan to reach peak carbon emissions before 2030 could lead to even more investment in propane dehydrogenation (PDH) capacity in the short term because of its far higher energy efficiency compared with similar petrochemical plants. But the longer-term future for the sector is more uncertain.

China's main economic planning agency the NDRC published its action plan for achieving peak petrochemical CO_2 emissions before 2030 at the end of last month. "By 2025, the share of non-fossil fuels in total energy consumption will reach around 20pc, while energy consumption and CO_2 emissions per unit of GDP will drop by 13.5pc and 18pc, respectively, compared with 2020 levels, laying a solid foundation for CO_2 peaking."

To cut petrochemicals sector emissions, the NDRC will prevent new oil refining and coal-to-olefins (CTO) production capacity and shift petrochemical feedstock supply to lighter hydrocarbons such as natural gas liquids (NGL), as well as expand its NGL import sources. Because China's carbon emission calculations are fairly crude, plans to reduce emissions often simply mean cutting energy consumption. Ethylene and propylene are the core olefin feedstocks, and in China, these are produced from either naphtha-fed ethylene crackers, LPG or ethane-fed crackers, CTO plants, or methanol-to-olefins facilities. PDH plants have the lowest energy consumption of these pathways, at around 470-490 kg of coal equivalent/t (kgce/t), *Argus* estimates. Advanced steam crackers' energy consumption is around 844 kgce/t, the NDRC says, and CTO units are required to be less than 2,800 kgce/t.

China's PDH plants

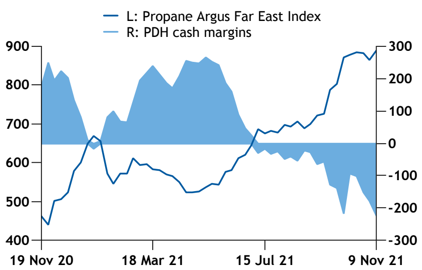
PDH projects have already attracted significant investment because of their better energy efficiency compared with other technologies. Some companies are also accelerating their PDH investment plans over concerns it will be harder to secure approval owing to provincial energy consumption targets, a source from a PDH plant says. Each Chinese province must lower its total energy consumption in the coming years, meaning new projects may need to wait for older facilities to shut down, at the same time as regulatory requirements become stricter.

Petchem plant energy use	*kgce/t*
Plant type	**Energy use**
PDH	470-490
Naphtha-fed cracker	844
CTO	<2,800

A pair of new PDH projects emerged in early November that are targeted to start up in 2023 — Quanzhou Grand's 660,000 t/yr unit in Putian, Fujian, and Satellite Chemical's 800,000/yr PDH in Lianyungang, Jiangsu. More may surface as firms look to rush through projects. *Argus* in July forecast total PDH capacity to reach 20.7mn t/yr by the end of 2023 from 10.5mn t/yr now, but newly announced projects are expected to make this significantly higher. Another five refinery-integrated ethylene crackers are due to start up next year and in 2023 with combined capacity of 5.9mn t/yr, and propylene capacity of 3.1mn t/yr, *Argus* estimates. But these were already in China's petrochemical industry plan, so will not be subject to the new emission proposals.

Carbon costs

PDH cash margins



The Chinese government's plan to include the petrochemical sector in its emissions trading system (ETS), possibly as soon as next year, could increase the desirability of PDH projects. The industry is expected to be covered by the ETS in 2022-23, an official from a carbon emissions registration and clearing agency affiliated with China's ETS said at the China international oil and gas trade congress on 8 November. The emissions are likely to be calculated by an intensity baseline method, similar to the power sector, which will be used as the base to allocate allowances. It could lead producers to upgrade existing facilities to cut emissions, as well as affect investment decisions. China's environment ministry, which oversees the ETS, is targeting all plants that emitted more than 26,000t of CO_2 equivalent to the ETS. China currently has 2,300 petrochemical plants above this threshold, according to China's petroleum and chemical industry federation.

US CORPORATE

Midstream profits rise on supply, export gains

Asia-Pacific demand is strong and US firms will make further capacity expansions next year

US LPG exporters' profits increased in the third quarter as a result of gains in global propane and butane prices and higher overseas shipments. And the companies expect further growth in US LPG output and exports next year, albeit at slightly lower rates than those seen before the pandemic.

Demand for US LPG is strong in Asia-Pacific given that the global economy "needs to restock virtually everything", according to Enterprise Products Partners. The midstream firm, which operates the 835,000 b/d (26mn t/yr) Houston LPG terminal — the country's largest — on the Gulf coast increased exports to 664,000 b/d in the third quarter from 643,000 b/d a year earlier. Its NGL pipeline shipments rose to 3.48mn b/d from 3.45mn b/d.

Energy Transfer, which operates the 700,000 b/d Nederland LPG and ethane export terminal on the Gulf coast, and the 300,000 b/d Marcus Hook terminal on the east coast, says higher natural gas liquids (NGL) output will allow it to make further capacity expansions next year. The company lifted the capacity of its Mariner East 2 pipeline, which carries NGLs from the Marcellus shale to Marcus Hook, to 260,000 b/d. And it hopes to finish the last leg of its 250,000 b/d Mariner East 2X NGL pipeline by March 2022, pending regulatory approvals. US production will continue to rise "as long as commodity prices stay where they are now. It sure looks like they will," Energy Transfer says.

Growth in NGL output spurred Energy Transfer to add 3mn bl of storage at Mont Belvieu in Texas, bringing its capacity at the hub to 53mn bl. It is holding off on completing its eighth fractionator at Mont Belvieu, but will start it up when capacity is needed, probably in 2022, the company says. US NGL production from gas processing rose by 243,000 b/d on the year to 5.57mn b/d in early November, data from US government agency the EIA show.

Targa Resources, which operates the 500,000 b/d Galena Park LPG export terminal on the Houston Ship Channel, exported less in the third quarter owing to maintenance at the terminal, which it expanded at the end of 2020. But the company's NGL fractionation throughput rose by 3pc on the quarter to 662,000 b/d as it continued to add gas processing capacity in the Permian basin. Targa says it expects to accommodate even higher NGL yields from the basin in the coming year, with another 250mn ft^3/d (2.58bn m^3/yr) of processing capacity due to come on line.

Stock shock

US propane prices more than doubled in the third quarter compared with a year earlier. Mont Belvieu LST front-month prices averaged 116.5¢/USG in July-September, up from 49.7¢/USG in the third quarter of 2020. Higher prices this year have stemmed in large part from the loss of production during the severe cold snap in Texas in February, which delayed the start of US stockbuilding. US propane inventory builds were also hindered during the summer off-season by atypically strong export demand, which only further intensified concerns that stocks would fail to build sufficiently before winter. Propane inventories consistently stood at around a quarter lower than a year earlier in July-September.

US midstream operators' results

	Profit *$bn*		NGL operating margin *$bn*		Fractionated NGL output *mn b/d*		NGL pipeline shipments *mn b/d*		NGL exports *mn b/d*	
	3Q21	±% 3Q20	3Q21	±% 3Q20	3Q21	±% 3Q20	3Q21	±% 3Q20	3Q21	±% 3Q20
Energy Transfer	0.91	na*	0.77	7	0.88	1	1.80	17	1.24	31
Enterprise	1.18	8	1.02	-1	1.25	-7	3.48	1	0.66	3
Targa	0.29	40	0.64	16	0.66	11	0.42	28	0.29	-5

RUSSIA

Gazpromneft gas projects to triple LPG output

The firm plans to sell the LPG domestically and is looking at potential export routes to northwest Europe, write Natalia Perevertaylo and Svetlana Novolodskaya

Russian state-controlled oil company Gazpromneft plans to develop gas processing facilities at its Kharasavey and Bovanenkovo gas fields in 2025-26, boosting its LPG output by 1.2mn t/yr by 2028.

The company will develop facilities to process natural gas and gas condensate from liquids-rich Neocomian-Jurassic deposits at the 3 trillion m^3 Bovanenkovo and 1.16 trillion m^3 Kharasavey fields, on the far north Yamal peninsula in west Sibera, under a long-term operator contract with parent company Gazprom. Production from both projects is scheduled to start in 2025-26, reaching a combined capacity of 38bn m^3/yr of gas and 5mn t/yr of natural gas liquids (NGL) by 2031. But the company will not develop NGL fractionation units at the fields as it was not considered economically feasible, Gazpromneft says.

The company plans to produce around 250,000t of LPG — of which 58pc will be propane — from the facilities in 2025, rising to 500,000 t/yr by 2026 and 1.2mn t/yr by 2028. The company's total LPG output stood at around 580,000t in 2020. The Bovanenko project includes a new rail LPG terminal at the nearby Karskaya station, while LPG from the Kharasavey site will be shipped to Bovanenkovo by pipeline. The rail terminal will have 8,000t of storage capacity and be able to load 62 railcars simultaneously.

Gazpromneft plans to sell LPG from the two fields on the domestic market and for export in roughly equal proportions. Given their more westerly location in Russia, the company is looking at potential export routes that include to northwest Europe from Russian LPG and petrochemical company Sibur's Ust-Luga terminal on the Baltic Sea, to Turkey and other Mediterranean countries from Black Sea ports, and overland to eastern Europe by rail. Gazpromneft also considered seaborne exports nearer the source, using the Arctic Ocean to ship LPG to northwest Europe and Asia, but found this to be too costly.

"We have been waiting a long time for the appearance of available LPG from Black Sea ports and expect Gazpromneft's product to appear on the market in the declared volumes," a source from Turkey's largest LPG importer, Aygaz, says.

'We have been waiting a long time for the appearance of available LPG from Black Sea ports and expect Gazpromneft's product to appear on the market in the declared volumes'

Gazpromneft increased its LPG production — including propane-propylene fractions — by 5.4pc on the year to 404,400t in January-August. This was mainly supported by output from its 240,000 b/d Moscow refinery rising by 16pc to 168,400t, offsetting declining LPG production from its 350,000 b/d Omsk refinery and Gazpromneft-Orenburg division. Output from the 360,000 b/d Yaroslavl refinery the firm co-owns with Russian oil firm Rosneft also rose, by 6,000t to 39,000t.

Almost all of Gazpromneft's LPG is sold on the domestic market. Around 3,000-6,000t of LPG was exported to Poland, Belarus and Latvia in January-August, market participants say. "Since April last year, LPG truck exports from the Moscow refinery fell sharply owing to weaker demand in export destinations during the pandemic, and higher prices in Russia," a Polish importer says. LPG from the Moscow plant is mainly bought by trading firms in central and northwest Russia, while Omsk refinery supply is mainly picked up by companies in Siberia and Russia's far east.

Keep your cool

Building the Karskaya rail terminal on the Yamal peninsula inside the Arctic circle — on permafrost — is not without its technical difficulties. A 2m layer of frozen soil and geotextile is laid on the ground during winter to ensure the permafrost does not thaw in summer, leading to subsidence. This layer is covered with a polystyrene foam plate filled with rocky soil and macadam. The rails are then placed on this foundation. The railway is further stabilised by pipes filled with refrigerant to ensure the ground below stays frozen. And each large structure built on the permafrost must have similar heat stabilisers.

LATIN AMERICA

Colombia to quadruple LPG imports in 2022

Bogota expects LPG imports to sharply rise as state-controlled Ecopetrol diverts domestic supply for use as a gasoline feedstock

Colombia is to quadruple its LPG imports next year to meet demand as state-controlled Ecopetrol prepares to divert its supply for use as diluent and gasoline feedstock, Colombian LPG distributors association Agremgas says.

The country is expected to import an average of 20,660 t/month in the first half of 2022, rising to 20,730 t/month in the second half, compared with 5,000-6,000 t/month this year. This would put total imports next year at 248,300t. Colombia's LPG demand stood at about 553,000t in 2020, of which it imported 56,000t, or 10pc, *Argus* data show. Next year, the share will rise to around 31pc, with demand expected to be 66,000-67,450 t/month, or 792,000-809,000t, Agremgas data show. Colombia was due to start importing 9,100 t/month in the second half of this year, but infrastructure delays and Covid-related problems delayed Ecopetrol's plans to start diverting LPG until January from an initial August deadline, Agremgas director Felipe Gomez says.

Ecopetrol's Apiay oil field will stop supplying about 1,000 t/month to the domestic market in January. And the 250,000 b/d Barrancabermeja refinery will gradually reduce LPG supply to about 6,230 t/month by the first of quarter 2023 from 9,660 t/month in the second quarter of 2021. Total domestic supply will eventually fall to around 500 t/month in 2025, Agremgas data show.

Colombia's import infrastructure will be insufficient to meet the growing needs to cover demand by 2024, according to Colombian LPG association Gasnova director Alejandro Martinez. The country's G5 consortium of LPG distributors — Almagas, Chilco, Inversiones del Nordeste, Montagas and Vidagas — is doubling import capacity at its Cartagena terminal to 16,000 t/month for use by the end of this year, which will boost Colombia's total import capacity to 24,000 t/month. The terminal will receive around 6,000 t/month in the second half of 2022, Agremgas says. Colombia can also import LPG at the Plexaport terminal near Cartagena. This is expected to take about 15,000 t/month in July-September 2022.

SOUTHEAST ASIA

Indonesia targets more coal gasification projects

The gasification plants would convert coal into derivatives such as methanol, which could be used to produce dimethyl ether for cooking, cutting LPG import costs, writes Antonio delos Reyes

Indonesia's investment ministry has agreed to partner with US company Air Products and Chemicals to develop coal gasification facilities in the country.

Air Products will work with state-owned Indonesian companies and large-scale industry participants to build gasification plants that will convert low-value, low-calorific coal into derivatives such as methanol. The methanol can be used to produce dimethyl ether (DME), which Jakarta is aiming to start using to displace LPG for cooking in order to cut its LPG import bill and exploit vast coal resources under threat from global commitments to phase out the use of coal.

A number of sites have been identified for an initial three new gasification projects, including Sumatra, Kalimantan, Maluku and Papua. The partnership will also investigate a natural gas-to-blue ammonia project alongside Butonas Petrochemical Indonesia.

Air Products plans to develop a coal-to-methanol plant with state-owned coal producer Bukit Asam, as well as DME projects with other producers including Indika Energy and Batulicin Six Cembilan. Bukit Asam in 2019 signed an agreement with Air Products to develop a coal gasification project in Indonesia, which is due to start up in 2024.

The latest projects have an estimated investment value of $15bn with feasibility studies expected to start in early 2022, the investment ministry says. The amount of coal consumed and methanol produced is not yet known, but the aim is to kick-start growth of the country's downstream coal sector.

RUSSIA

Russia LPG output falls as non-petchem use recovers

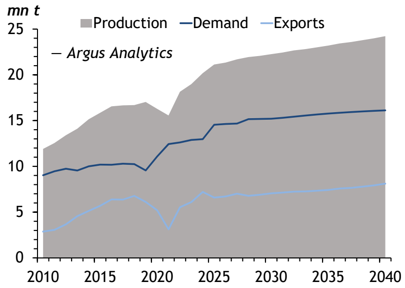
Higher petrochemicals use and a series of setbacks at downstream facilities drove the fall in LPG production for sale, writes Natalia Perevertaylo

Russian LPG production for sale fell in the first nine months of this year owing to fire-related and planned maintenance shutdowns, while demand excluding petrochemical use recovered from the pandemic-induced lows of 2020.

Commercial output dropped by 1.71mn t, or 17pc, on the year to 8.63mn t in January-September, according to CDU TEK — a branch of the Russian Energy Agency, Ministry of Energy of Russia © (https://www.cdu.ru/). But a large proportion of this drop was caused by production from petrochemical firm Sibur's Tobolsk processing complex being unclassified as commercial output as it diverted more supply to its Zapsibneftekhim petrochemical plant, which reached capacity in December 2020 having started up in June 2019.

The actual fall in commercial LPG output was closer to 650,000t, according to market participants — gross production fell by 630,000t to 10.43mn t, the CDU TEK data show. This was the result of a recent fire at state-controlled Gazprom's Urengoy condensate processing complex and a prolonged turnaround at its Astrakhan gas processing plant, as well as another fire at private-sector firm Lukoil's Yuzhno-Yagunskoye oil field in late 2020. These losses were partially offset by the launch of oil firm Rosneft's new Rospan gas processing complex in February.

Russia LPG fundamentals



Russian LPG consumption declined by around 100,000t, or 1.3pc, on the year to 7.7mn t, CDU TEK data show. This was driven by a fall in petrochemical feedstock demand by around 230,000t to 4.1mn t, and this in turn was because Sibur increased its intake of unfractionated natural gas liquids at Zapsibneftekhim at the expense of LPG. The amount this affected Russia's overall LPG demand is uncertain, but it is likely to have risen — excluding the Zapsibneftekhim figures as autogas, residential and industrial sector use all increased, by around 130,000t to 3.7mn t combined, owing to a recovery from slumps during the early stages of the pandemic in 2020. Meanwhile Russian LPG exports continued to decline, by around by 530,000t to 2.76mn t, according to rail forwarding data.

SHIPPING

BWEK profits in third quarter on firm Asian demand

The shipowner's time charter equivalent earnings rose as its deliveries to south Asia increased, helping it swing to a profit, writes Will Collins

Singapore-based pressurised shipowner BW Epic Kosan (BWEK) swung to profit in the third quarter owing to higher LPG imports to Bangladesh and Sri Lanka, northeast Asian port delays and demand for long-haul propylene exports from east Asia.

The firm made \$3.9mn in profit in July-September, up from a loss of \$2.5mn a year earlier. Time charter equivalent (TCE) earnings for its fleet of 77 small 3,000-12,000m^3 LPG carriers rose by 16pc on the year to \$11,346/d, although this was partly offset by a 13pc increase in operating costs. It was the second full quarter for the firm since pressurised owner Epic Gas took over peer Lauritzen Kosan in March. The shift in fleet composition to Lauritzen's semi-refrigerated and ethylene vessels, which are more expensive to run, has raised operating costs, BWEK says.

Vessel demand in the east of Suez region drove higher TCE earnings, with imports to Bangladesh and Sri Lanka up by 23pc and 28pc on the quarter, respectively, BWEK says. Delays in China owing to Covid-19 measures and power outages also supported rates, it says, while westbound petrochemical shipments — which made up 52pc of the firm's bookings in the third quarter — from east Asia "helped vessels to reposition and improve earnings with backhauls". A backhaul voyage is typically in the opposite direction to the original voyage, allowing the owner to boost earnings and position vessels back to typical supply spots.

BWEK expects supply in the pressurised LPG segment to remain balanced with a fleet growth forecast of 0.7pc for 2021, and 16 newbuild ships to arrive over the next three years and around 15 over 30 years old that could be scrapped.

SHIPPING

Panama Canal congestion eases but delays persist

Waiting times of up to 15 days are causing concern prior to the peak winter demand period, write Yaxiu Wang and Reza Amanat

Easing congestion at the Panama Canal by 11 November after delays reached 18 days earlier in the week have helped dampen sentiment on the US and Asia-Pacific LPG, and very large gas carrier (VLGC) spot markets.

But waits of 15 days for southbound transits and nine days northbound for Neopanamax vessels, according to the Panama Canal Authority, are still causing concern for the markets prior to peak winter demand. The congestion boosted VLGC rates on the Houston-Chiba route from the US Gulf coast to Japan to $109/t by 11 November, while the propane *Argus* Far East Index hit a new seven-year high of $918.25/t on 10 November. The US Gulf coast fob propane price also rose to its highest premium to Mont Belvieu hub prices in more than a year at 7.75¢/USG ($40.50/t) on 11 November, with the Mont Belvieu LST at 134.125¢/USG.

The canal is experiencing typical pre-Christmas congestion as more container vessels transit, while high LNG prices in Asia-Pacific and strong demand have also attracted more bookings for LNG tankers, which get priority over VLGCs. Bidding for prompt slots at the canal rose to as high as $1.1mn in early November, not including transit fees, which can exceed $200,000. Congestion has eased towards mid-November but lengthy delays for LPG vessels are unlikely to abate in the weeks ahead, with at least 38 VLGCs loading from US Gulf coast and east coast ports in October directed to the Panama Canal, and another 16 heading on longer Cape of Good Hope or Suez Canal routes, ship tracking data show.

The slight drop in delays will be welcomed by Asian petrochemical producers such as propane dehydrogenation (PDH) plants in China, which have faced thin margins since the end of June. Utilisation at Chinese PDH plants has remained high at 98-96pc this month, further eroding margins to minus $201/t over the week to 11 November, leading some PDH plants in Zhejiang and Shandong cutting runs.

SHIPPING

Helios charters boost Dorian’s 3Q profits

The shipowner’s Helios partnership with Phoenix helped lift profits, offsetting lower utilisation and freight rates, writes Jamie Aldridge

New York-listed shipowner Dorian LPG’s profits rose in the third quarter as more of its very large gas carriers (VLGC) were chartered in its Helios Pool partnership with Phoenix Tankers, helping to offset lower utilisation and spot freight rates.

The firm made $14.1mn in profit in July-September, compared with $500,000 a year earlier and $5.9mn in the second quarter. More charters in the Helios Pool helped Dorian to increase its time charter equivalent (TCE) rate for its fleet to $30,996/d from $26,015/d a year earlier, although slightly down on the quarter. Profits were also lifted by $3.5mn following the sale of the firm’s oldest VLGC, the 2006-built 82,000m³ *Captain Markos,* for $43mn in August, as well as dry docking expenses falling by about 13pc on the year.

The improved results came despite Dorian’s total fleet utilisation falling to 95.7pc from 97.4pc a year earlier, and spot VLGC freight rates declining. *Argus*’ Ras Tanura-Chiba assessment averaged $41.90t in July-September, down from $50.82/t in the third quarter of 2020 and $52.45/t in April-June. Bunker fuel prices were also significantly higher, averaging $531.60/t for 0.5pc sulphur 380cst fuel oil, compared with $323.99/t a year earlier. The third quarter was the first that all 12 of the firm’s exhaust scrubbers were in full operation, helping it to cut sulphur emissions by 50pc compared with ultra and very low sulphur fuel oil, Dorian says.

The firm has agreed to charter, with the option to purchase, three newbuild dual-fuel LPG VLGCs, due for delivery in April-September 2023, after receiving one on a one-year charter in October. Dorian expects 74 new VLGCs, equivalent to around 6.6mn m³ of capacity, to arrive before the end of 2024, with the current orderbook standing at about 24pc of the total global fleet.

IN BRIEF

Cop 26

Group to end overseas fossil fuel funding

Germany and the Netherlands are the latest two countries to join a group of over 25 nations and institutions that have pledged to end the public financing of overseas coal, oil and gas projects by the end of 2022. The initial pledge, signed at the UN Cop 26 climate conference in Glasgow on 4 November, seeks to prioritise financing of green projects, with many of the details yet to be agreed. The US, Canada and the UK are among the countries that have joined the pledge, along with Italy, Denmark, Finland, Mali, Costa Rica and South Sudan. The European Investment Bank is also party to the deal. Public investments to be shifted from fossil fuels to cleaner energy could now amount to $19bn/yr if signatories follow through with their pledges. The signatories will stop new direct support by 2022, "except in limited and clearly defined circumstances that are consistent with a 1.5 degree warming limit and the goals of the Paris agreement," UK climate change minister Greg Hands said on 4 November.

Asia-Pacific

China Gas partners with petchem firm

Hong Kong-listed China Gas' Fujian-based subsidiary has signed a 10-year deal to lease an LPG terminal, equipment and ancillary services to Quanzhou Grand Pacific Chemical. China Gas, which is one of the country's largest LPG importers and distributors, says the deal is the first step in supplying petrochemical feedstock and lays the foundation for the two firms to co-operate on other aspects of the LPG business, including expanding residential and commercial use in Fujian and Jiangxi provinces. Quanzhou Grand is expected to start up its 660,000 t/yr propane dehydrogenation (PDH) unit in Fujian in early 2023. Under the deal, Quanzhou Grand will have access to China Gas' new LPG terminal in Quanzhou, as well as storage units and pipelines for propane and propylene. The terminal is due to open in late 2022.

ExxonMobil FID on China petchem plant

ExxonMobil has taken a final investment decision (FID) to proceed with its petrochemical project in Huizhou in south China's Guangdong province. The project will include a 1.6mn t/yr flexible feed steam cracker and downstream polyethylene and polypropylene units. ExxonMobil is yet to disclose the cost of the project, only calling it a multi-billion dollar chemical complex. Preparatory construction began in April 2020 with a targeted start-up date of 2023. The project was first announced in November 2017. The plant will be 100pc owned by ExxonMobil — relatively unusual for a foreign investor in China.

Middle East

Yemen's Houthis close in on oil regions

Yemen's Houthi militant group is closing in on Marib city, a key oil producing region, and may soon turn its attention to Shabwa, the country's other main oil centre.

"The Houthis are making rapid gains in Marib and have made it clear they want to take control of the oil and gas resources, and the power plant," International Crisis Group senior analyst Peter Salisbury says.

The group has had Marib in its sights since March, capturing the Rahabah and Mahliyah districts west of the city from government forces in September and has since moved on to the outskirts by taking the Jabal Murad district and other areas. The Houthis have focused on the western boundaries of the city but may choose to target oil production facilities around 65km to the east, including a central processing complex connecting oil and gas fields in block 18. Prior to the outbreak of the civil war in 2014, state-owned Safer produced around 2.4bn ft^3/d (24.7bn m^3/yr) of natural gas, 40,000 b/d of crude and 28,000 b/d (880,000 t/yr) of LPG from the block.

Marib also hosts a 10,000 b/d refinery, a power plant and one of the country's few LPG bottling plants. If the Houthis are successful, it would be a major blow to the Saudi-led military coalition that has been fighting the group for more than six years. And it would open the way for the Houthis to take over the neighbouring Shabwa governorate, home to some of Yemen's most productive oil and gas sites and to the Yemen LNG terminal.

Europe

DCC LPG's sales rise as economies reopen

Dublin-based distributor DCC LPG's sales rose by just over a quarter on the year to 918,000t in the first half of 2021 as it benefited from a loosening of Covid-19-related restrictions in Europe, the US and Hong Kong, allowing economic activity to pick up. The increase in sales helped the firm raise profits by 6pc to £48.4mn ($65.8mn) in the period despite rising international LPG prices. Sales in the UK and Ireland also benefited from commercial and industrial consumers exploring oil-to-LPG conversions, DCC LPG says.

Italian LPG demand rises sharply

Italian LPG demand rose by 13pc on the month to 258,000t in September, data from the economic development ministry show, as increasing consumption for heating as colder weather emerged offset a dip in autogas sales. Heating sales rose by 17pc on the year to 124,000t as temperatures in many areas plunged below seasonal averages.

IN BRIEF

Latin America

Mexico retail LPG price

Mexico's average LPG retail price cap fell over the week to 13 November as international prices eased. The average maximum retail price for LPG fell by 4.3pc to 13.63 pesos/litre ($2.47/USG), based on energy regulator CRE's weekly limits. Prices had risen steadily since the programme began on 1 August before starting to decline in late October. The price cap average is slightly below the average retail price of close to Ps13.88/l on 31 July before the price regulation was imposed. The price limit has made some routes unprofitable for distributors, forcing them to stop serving them, and has cut investment, LPG association Amexgas says.

North America

EnLink to boost Permian gas processing

Dallas-based EnLink Midstream plans to expand a gas processing plant (GPP) in the Permian basin that it relocated from Oklahoma in the third quarter, and is considering moving another similar unit from the state to the Midland basin. The firm will increase the capacity of the Permian GPP War Horse by 15mn ft^3/d to 95mn ft^3/d (980mn m^3/yr) by the end of the fourth quarter. Following the completion of the "project War Horse" relocation, the company will not look into moving the Thunderbird GPP to the Midland basin, it says. This could be completed by the end of 2022 and would add 200mn ft^3/d of processing capacity at an estimated cost of $80mn. The company also plans to bring the 200mn ft^3 Tiger GPP on line in the Permian in early 2022. EnLink's third-quarter profit fell to $32.3mn from $39.2mn a year earlier.

DCP to lift Denver, Permian NGL output

Colorado-based DCP Midstream plans to expand its natural gas liquids (NGLs) production in the Denver-Julesburg and Permian basins in 2022, citing elevated prices as a factor. US propane and butane prices rising above $1/USG ($522/t and $453/t, respectively) helped offset lower production in the southern part of its system during the third quarter, the company says. US prices — which rose to nearly $1.68/USG for propane and $1.50 for butane on the Gulf coast in mid-October — will continue to offset inflation and higher production costs, DCP says. The company will focus on growth in the Denver-Julesburg basin of Colorado and the Permian basin of Texas and New Mexico. DCP's processing facilities in both basins are operating at near capacity and the firm plans to exploit underutilised capacity at other producers' plants to lift production in the coming year, it says. DCP expects third-party ethane rejection to continue with US natural gas prices remaining at multi-year highs.

US infrastructure bill to hike taxes

A $1 trillion infrastructure bill heading to the White House for final approval would raise taxes on dozens of petrochemicals such as ethylene, propylene and benzene, as well as on butane and methane.

The House of Representatives passed bill 228-206 on 5 November, reinstating and raising Superfund taxes that previously expired in the 1990s. The Hazardous Substance Superfund Trust Fund, established in 1980, aimed to help with the clean-up of abandoned hazardous waste sites across the US. The fund operated from 1987 to 1995.

The previous Superfund tax was $4.87/t. The new legislation doubles the tax on output and imports of butane and methane. Industry group the American Chemistry Council (ACC) says the bill could cost the US petrochemical industry $1.21bn/yr. The ACC says the tax puts 44 petrochemical plants, including 14 aromatics plants and seven olefins plants, at risk of shutdown. It estimates nearly 7,500 petrochemical industry jobs and 4.4mn t of production capacity are at risk.

But credit rating agency Moody's Investors Service says the tax will have limited financial impact on petrochemical producers. The tax "will largely be offset by higher demand for certain chemicals driven by the spending package's investments in transportation, water, power and broadband", it says.

Western Canada NGL output grows

Natural gas liquids (NGL) output in Alberta, Canada, rose in the third quarter as producers increase activity on higher commodity prices and recovering domestic and export demand. Most of Canada's NGL producers reported an increase in output in the third quarter and expect further growth in 2022. Tourmaline's NGL yield rose by 3,000 b/d on the year to 60,000 b/d, Ovinitiv's by 1,200 b/d to 85,000 b/d, and Cenovus' by 4,500 b/d to 22,800 b/d. Canadian Natural Resources and Imperial Oil made smaller gains, while ARC Resources' NGL output was steady at 50,000 b/d. The Alberta Energy Regulator forecasts the province's propane output to hit 228,000 b/d this year from 217,000 b/d in 2020, and to rise to 265,000 b/d by 2030.

Suburban expects US propane price rises

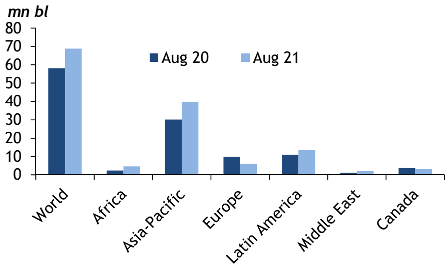
US LPG retailer Suburban Propane expects tight US supplies and a colder winter to boost decade-high propane prices further this heating season. The firm predicts a colder 2021-22 winter in the US, which is likely to boost prices further, Suburban chief executive Michael Stivala says. Concerns about supply and high prices as the US heating season begins "are real", he says. Suburban's propane sales rose by 1.8pc on the year to 1.48mn bl in the third quarter.

TRADE FLOWS: US EXPORTS

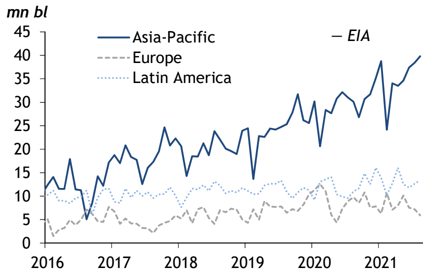
US LPG exports				*'000 bl*
Exports by country	**Aug**	**Jun-Aug**	**Jun-Aug 20**	**±%**
China	10,716	24,536	19,019	29.0
Japan	10,875	35,178	38,484	-8.6
Singapore	1,680	6,162	2,707	127.6
South Korea	5,992	20,831	11,675	78.4
Other Asia-Pacific	10,548	28,938	20,216	43.1
Total Asia-Pacific	**39,811**	**115,645**	**92,101**	**25.6**
Ghana	486	486	0	-
Morocco	1,205	3,174	2,218	43.1
Ivory Coast	230	230	1,449	-84.1
Other Africa	2,689	7,506	5,286	42.0
Total Africa	**4,610**	**11,396**	**8,953**	**27.3**
Belgium	505	1,912	1,629	17.4
France	0	0	1,092	-100.0
Netherlands	956	3,087	7,385	-58.2
Portugal	296	1,089	1,090	-0.1
Spain	0	1,146	2,239	-48.8
UK	549	3,974	7,112	-44.1
Other Europe	3,609	8,168	4,039	102.2
Total Europe	**5,915**	**19,376**	**24,586**	**-21.2**
Aruba	0	25	13	92.3
Brazil	1,597	5,429	2,788	94.7
Chile	1,362	4,790	3,530	35.7
Dominican Rep.	807	2,107	2,730	-22.8
Ecuador	1,152	3,841	3,227	19.0
Guatemala	412	827	825	0.2
Honduras	589	1,590	1,479	7.5
Mexico	6,146	15,314	13,594	12.7
Panama	38	181	183	-1.1
Peru	248	1,137	134	748.5
Other Latin America	1,080	2,651	1,993	33.0
Total Latin America	**13,431**	**37,892**	**30,496**	**24.3**
Turkey	1,857	3,935	3,231	21.8
Other Middle East	140	4,075	1	-
Total Middle East	1,997	8,010	3,232	147.8
Canada	3,107	9,494	10,300	-7.8
Total exports	**68,871**	**201,813**	**169,668**	**18.9**

— EIA

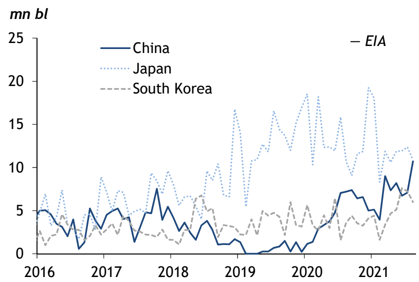
US exports: year-on-year change



US exports: key regions



US exports: key Asia-Pacific countries



US exports by region

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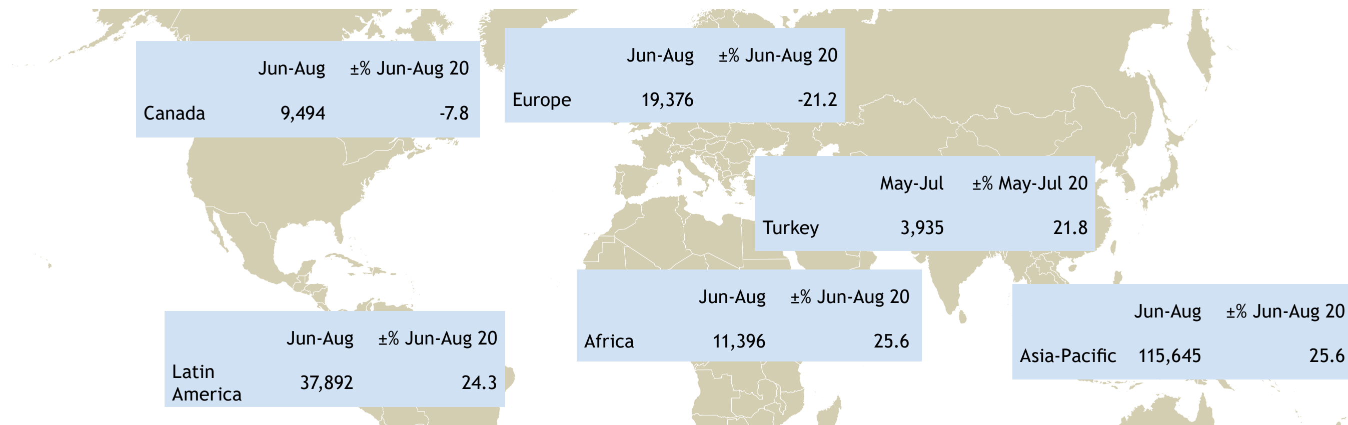
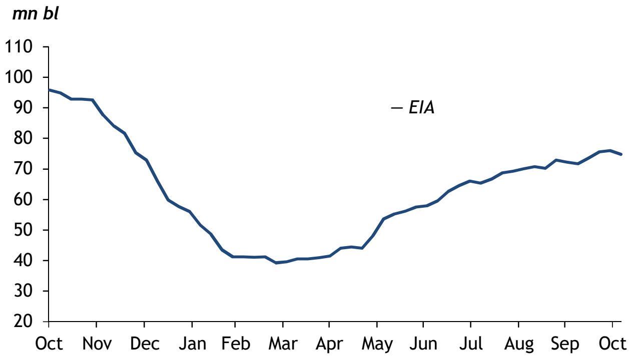
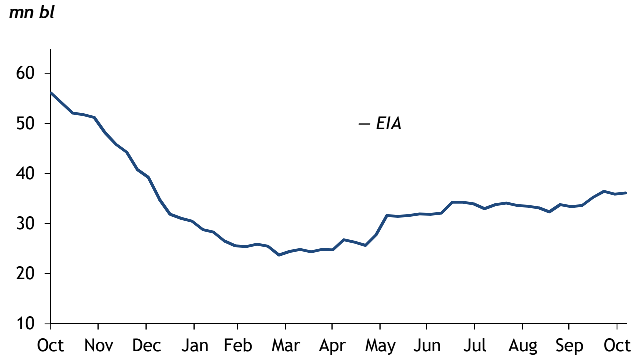


INVENTORIES: US

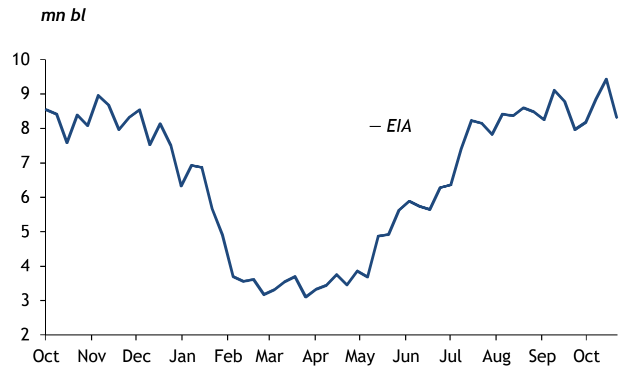
Total US weekly propane stocks



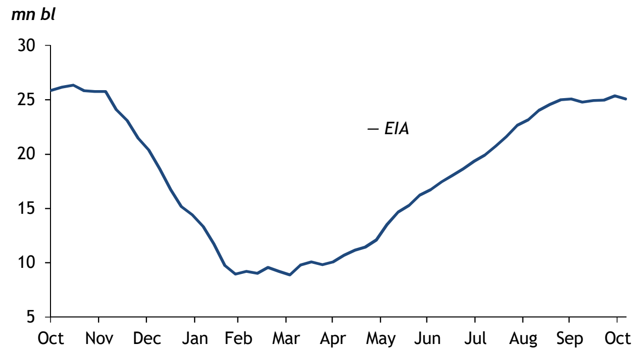
US Gulf coast stocks



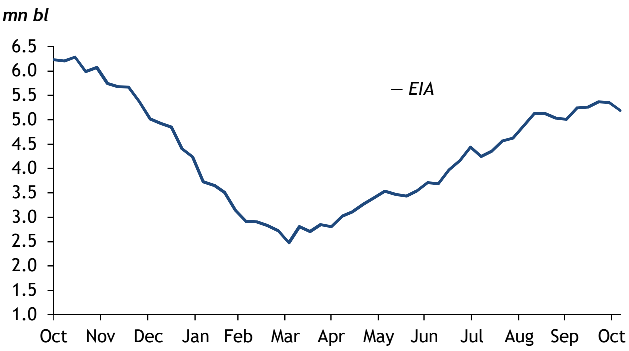
US east coast stocks



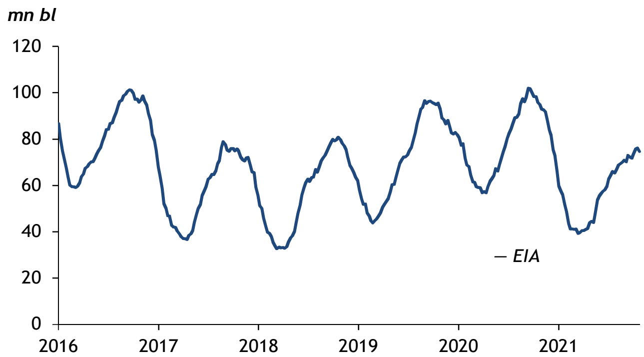
US midcontinent stocks



US west coast stocks



US stocks 5-year view



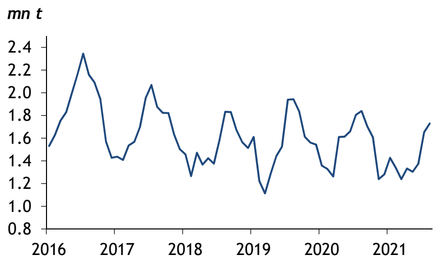
MARKET ANALYSIS

- US propane inventories fell by 1.3mn bl to 74.7mn bl (6.02mn t) over the week to 5 November, EIA data show, driven by declines on the east coast and rising exports.
- The fall, which was stronger than average market expectations of a 950,000 bl decline, put stocks 21pc below levels a year earlier as the heating season begins.
- US east coast propane stocks fell by 1.1mn bl to 8.3mn bl and in the midcontinent fell by 281,000 bl to 25.1mn bl. But Gulf coast stocks rose by 199,000 bl to 36.1mn bl.
- Propane exports rose to 1.58mn b/d from 1.08mn b/d a week earlier. Domestic sales fell to 1.1mn b/d from 1.3mn b/d, while output rose to 2.4mn b/d from 2.3mn b/d.

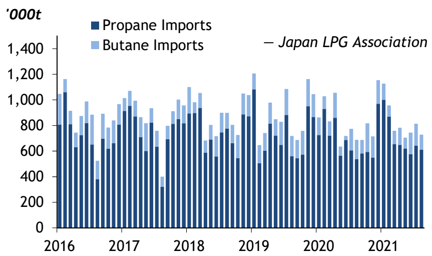
TRADE FLOWS: JAPAN, SOUTH KOREA

Japanese LPG imports							'000t
Imports by country	**Sep**	**Jul-Sep**	**Jul-Sep 20**	**21/20 ±%**	**Jul-Sep 19**	**21/19 ±%**	**2021**
Saudi Arabia	0.0	0.0	0.0	-	3.0	-100.0	91.3
Qatar	18.7	70.1	61.9	13.4	49.8	40.7	104.3
Kuwait	0.0	34.4	52.3	-34.2	12.1	183.5	414.8
UAE	0.0	30.6	85.8	-64.3	198.9	-84.6	30.6
Australia	83.0	114.1	195.2	-41.5	177.1	-35.6	436.5
US	420.2	1,378.8	1,502.0	-8.2	1,759.0	-21.6	5,183.9
Others	158.4	262.0	214.5	22.2	220.2	19.0	975.2
Total imports	**680.3**	**1,890.1**	**2,111.6**	**-10.5**	**2,420.2**	**-21.9**	**7,236.7**
Imports by product							
Propane	633.1	1,686.7	1,867.8	-9.7	2,096.7	-19.6	6,536.3
Butane	47.3	203.4	243.8	-16.6	323.5	-37.1	700.4

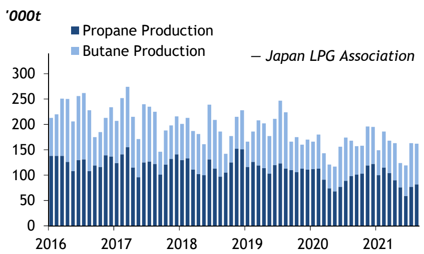
Japan: LPG stocks



Japan: LPG imports

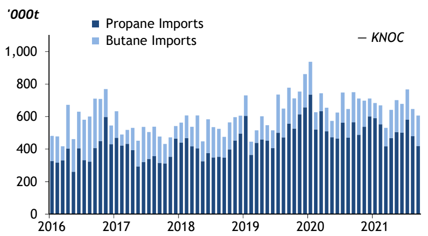


Japan: LPG production

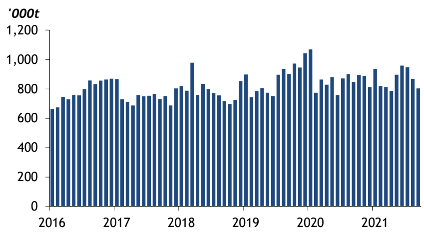


South Korean LPG imports							'000t
Imports by country	**Sep**	**Jul-Sep**	**Jul-Sep 20**	**21/20 ±%**	**Jul-Sep 19**	**21/19 ±%**	**2021**
US	592	1,906	1,775	7.4	1,602	19.0	5,460
UAE	0	0	21	-100.0	49	-100.0	71
Qatar	0	0	53	-100.0	0	-	77
Australia	0	0	0	-	23	-100.0	24
Nigeria	1	1	0	-	0	-	4
Kuwait	0	0	20	-	0	-	2
Saudi Arabia	0	0	36	-100.0	0	-	46
Others	12	104	89	16.9	98	6.1	153
Total imports	**605**	**2,011**	**1,994**	**0.9**	**1,772**	**13.5**	**5,837**
Imports by product							
Propane	0	1,056	1,592	-33.7	1,374	-23.1	4,080
Butane	0	349	402	-13.2	400	-12.8	1,152

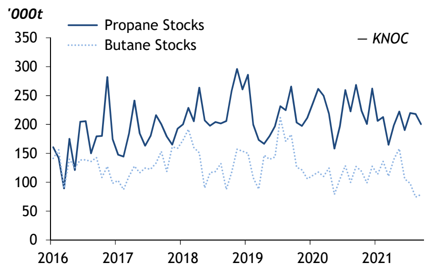
South Korea: LPG imports



South Korea: LPG consumption



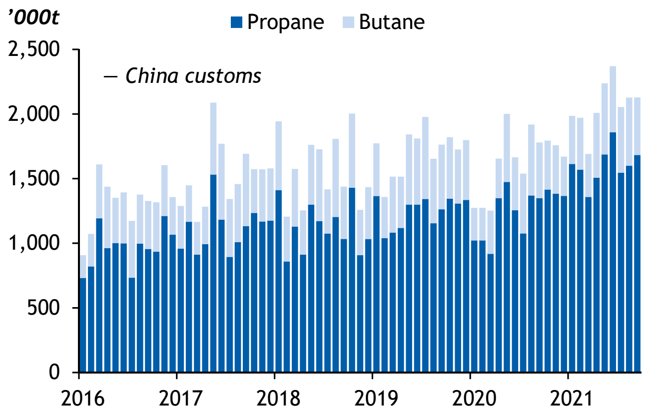
South Korea: LPG stocks



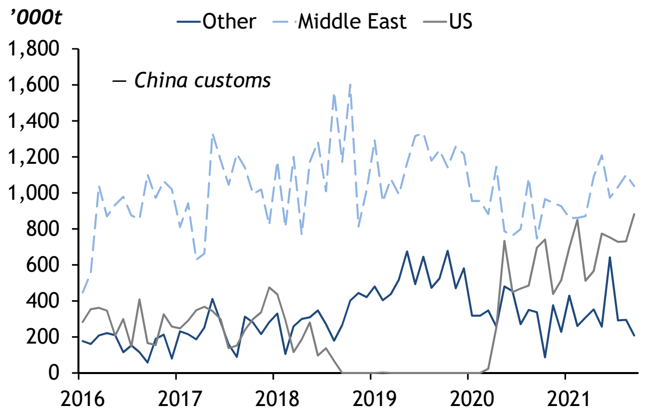
TRADE FLOWS: CHINA

China LPG imports							*'000t*
Imports by country	**Sep**	**Jul-Sep**	**Jul-Sep 20**	**21/20 ±%**	**Jul-Sep 19**	**21/19 ±%**	**2021**
US	882	2,341	1,650	41.9	0	-	6,491
UAE	263	1,074	659	63.0	1,184	-9.3	2,938
Qatar	229	708	827	-14.4	697	1.6	2,238
Saudi Arabia	62	191	229	-16.6	575	-66.8	418
Kuwait	187	383	283	35.3	646	-40.7	1,061
Australia	66	330	356	-7.3	354	-6.8	1,076
Others	439	1,280	1,232	3.9	1,935	-33.9	4,350
Total imports	**2,128**	**6,307**	**5,236**	**20.5**	**5,391**	**17.0**	**18,572**
Imports by product							
Propane	1,683	4,828	3,794	27.3	3,758	28.5	14,421
Butane	445	1,479	1,442	2.6	1,633	-9.4	4,151

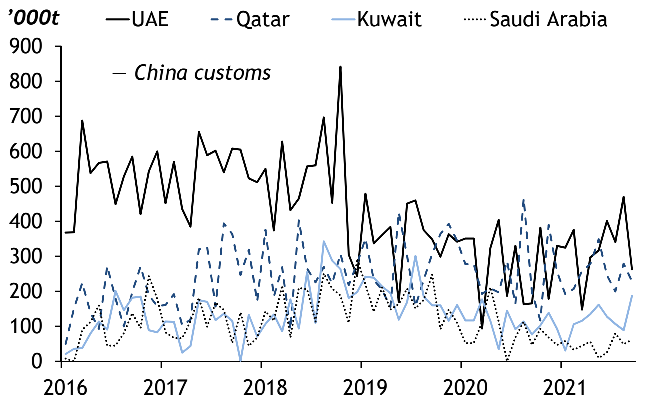
China LPG imports by product



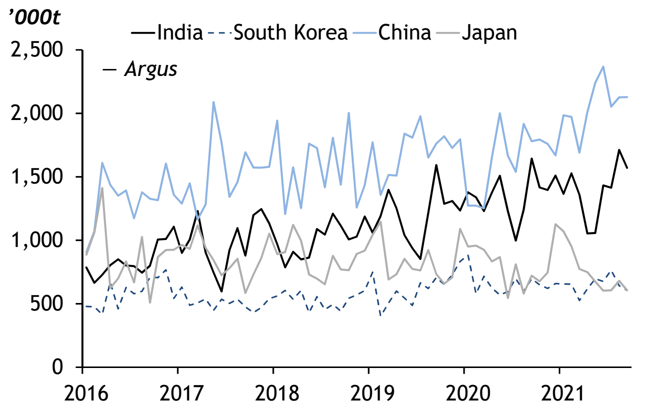
China LPG imports by origin



China LPG imports from Middle East

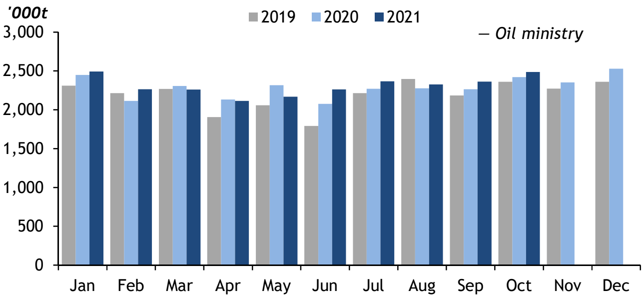


Key Asia-Pacific LPG importers

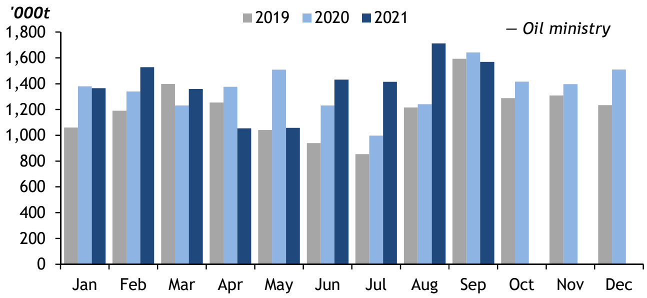


STATISTICS: ASIA

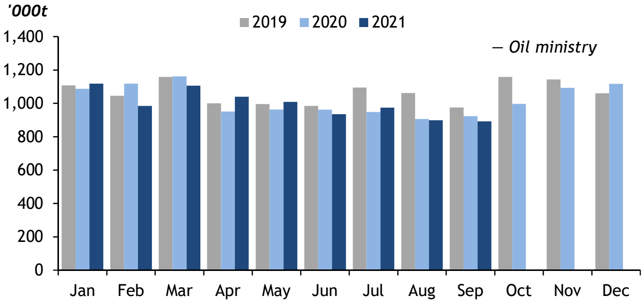
India: LPG demand



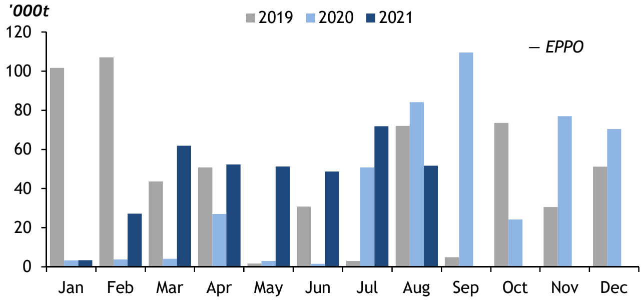
India: LPG imports



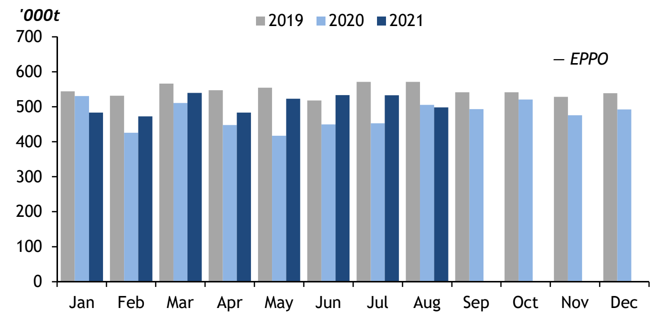
India: LPG production



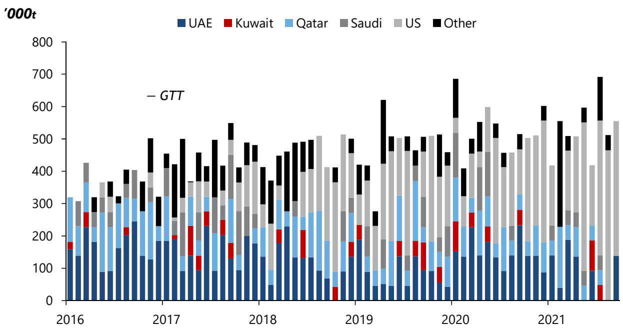
Thailand: LPG imports



Thailand: LPG consumption



Indonesia: LPG imports origin



MARKET ANALYSIS

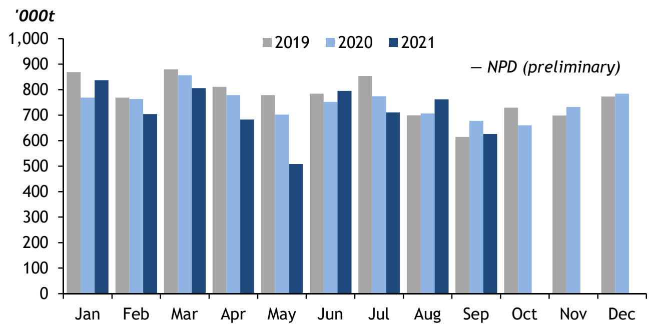
- India's LPG demand rose by 2.7pc on the year and 4.3pc on the month to 2.49mn t in October, provisional data from the oil ministry indicate.

- Indian consumption has continued to rise this year, albeit at a slower rate. Demand of 23.1mn t over January-October was up by 2.1pc from a year earlier.

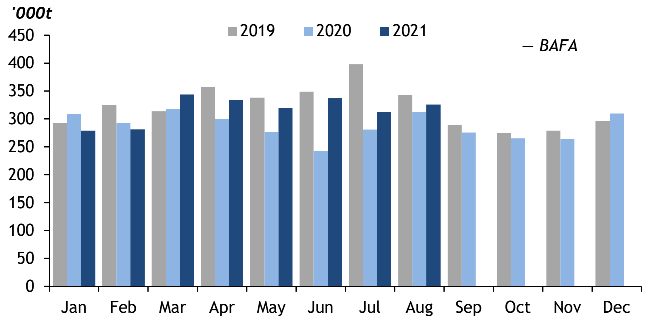
- Indian state-controlled refiners increased business LPG prices for 19kg cylinders by 15pc to 2,000 rupees ($27) in November compared with October. But they kept residential 14kg cylinders unchanged at Rs900, according to state-run IOC. Commercial LPG prices have increased by Rs651, or 48pc, this year. IOC has not indicated if it will increase prices for domestic household supplies later this month.

STATISTICS: EUROPE

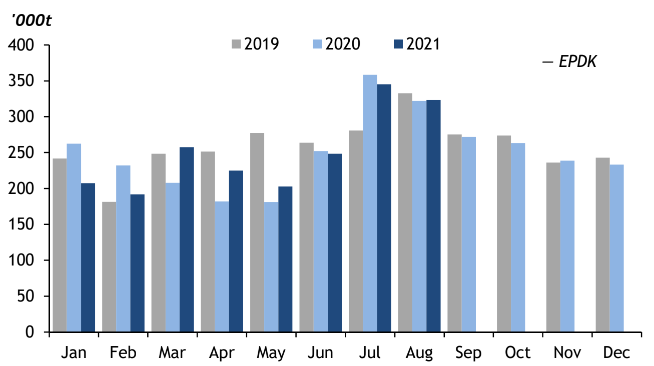
Norway: NGL production



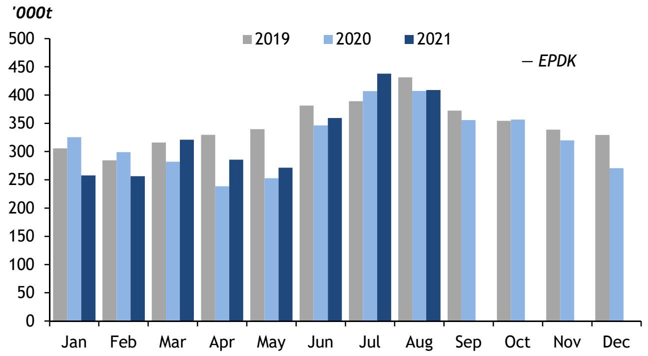
Germany: inland LPG deliveries



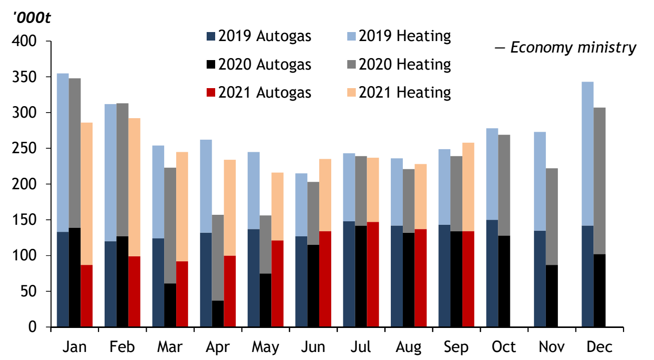
Turkey: LPG imports



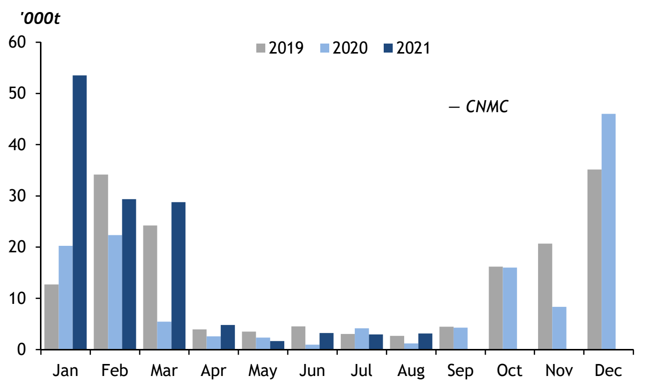
Turkey: LPG consumption



Italy: LPG transport and heating consumption



Spain: LPG imports



EUROPEAN PROPANE

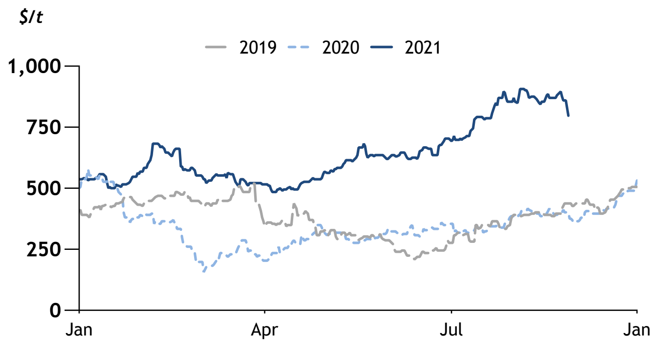
■ Large cargo propane prices rose by $22/t to $836/t cif Amsterdam-Rotterdam-Antwerp (ARA) between 29 October and 11 November, supported by limited imports from the US as they instead headed to Asia-Pacific.

■ Coaster prices increased by 2pc to $920/t cif ARA and $873/t fob northwest Europe. Only one open fob coaster deal was struck over the first 11 days of November despite firm demand.

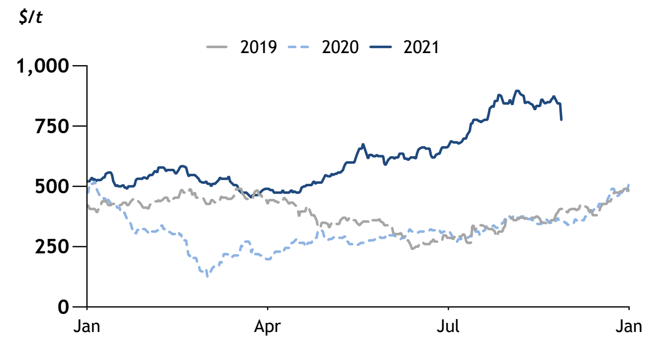
■ Demand in the Mediterranean region started to pick up early this month as autogas use in Turkey and Italy rose while availability tightened owing to lower Algerian supply. Erratic spot action was recorded in the first half of November, with some buying interest emerging periodically.

■ High natural gas prices limited refinery supplies of propane on the ARA railcar market, increasing the value of propane by $49/t to $1,034/t fca ARA by 4 November from $985/t on 29 October. Prices stabilised at the low end of the $1,030s/t over 4-10 November as a result of improving logistics, before jumping by $14/t on 11 November as a result of wider market gains and lower temperatures in northwest Europe.

Propane cif NWE cargoes small



Propane cif Mediterranean cargoes large



EUROPEAN BUTANE

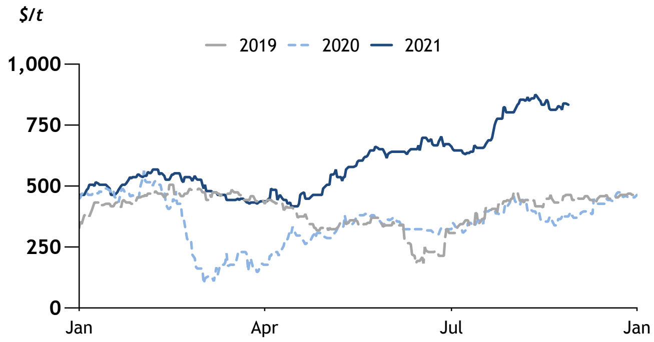
■ Large cargo butane prices fell by $1/t to $819.75/t cif Amsterdam-Rotterdam-Antwerp (ARA) between 29 October and 11 November. But the price relative to naphtha rose by around three percentage points to 109pc, supported by buyers seeking to break large cargo bulk and sell smaller cargoes into the gasoline blending sector.

■ Fob coaster prices were largely steady at 108pc of naphtha, but outright values lost $21/t to $811/t over the first 11 days of this month owing to weakening naphtha. Cif coasters rose by two percentage points to 109pc of naphtha on firm gasoline blending demand and tight supply. Outright cif prices fell by $2/t to $818.50/t on 11 November.

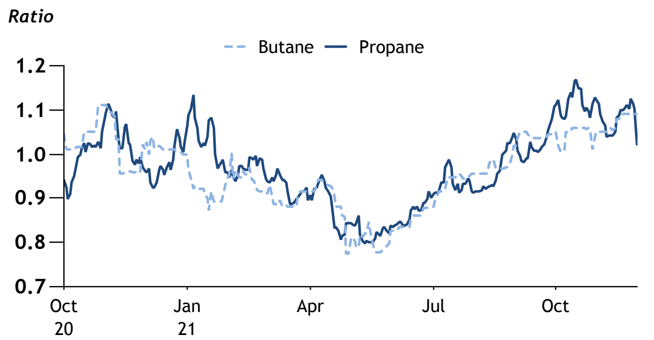
■ Fob Lavera prices in the Mediterranean region fell by $14.25/t to $896.75/t in thin trade. But seasonal demand from Morocco and Turkey was stable and US and northwest Europe arbitrages to the region remained open.

■ An increase in supply and weaker gasoline blending demand pulled barge prices down by $77/t to $790.25/t fob ARA by 5 November from the end of last month. But the price then rose as availability dwindled and higher gasoline prices boosted blending demand, with the price rising back to $803.50/t by 11 November.

Butane fob NWE cargoes small



Propane and butane ratios to naphtha NWE



FSU LPG

■ Russian LPG prices declined by 1,000-3,000 roubles/t ($14-42/t) in the first half of November owing to high stocks in many regions and weaker autogas demand. The corn drying season in Siberia is nearing an end.

■ Daf Brest propane-butane mix prices on the Poland-Belarus border increased by $32/t to $817.50/t by 11 November owing to lively demand on the Argus Open Markets (AOM) platform. Many storage units in eastern Poland were almost empty after recent holidays and needed replenishing. A total of 19,600t changed hands on the AOM between 29 October and 11 November compared with 21,150t over 15-28 October.

■ Railway exports from Russia to Poland rose to 34,870t over 1-11 November from 32,470t a month earlier.

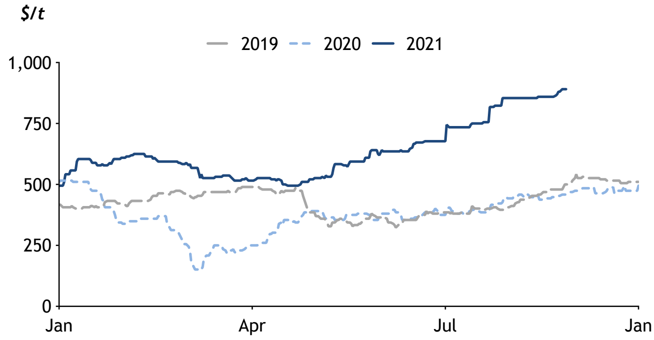
■ Daf Brest propane prices increased by $18/t to $878/t on strong demand for corn drying. Polish traders also expected stronger heating demand in the second half of November. No propane deals were concluded on the AOM platform in October or the first half of November.

■ Propane-butane mix prices at the Russia-Ukraine and Belarus-Ukraine borders rose to $800/t by 11 November from $772.50/t two weeks earlier following low supplies and after sellers raised their indications. There were no deals initiated on AOM daf Ukraine in the first half of November.

■ The price for propane-butane mix at the Uzbek-Tajik border increased by $30/t to $760/t over the first 11 days of November as a result of strengthening demand and limited availability from Kazakhstan.

■ Propane-butane mix prices on the Ukraine-Romania border increased by $17.50/t to $772.50/t in line with gains in international LPG prices.

Propane Argus daf Brest



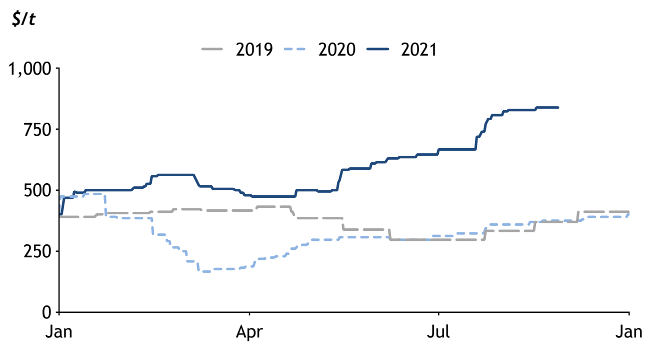
BLACK SEA LPG

■ Fob Black Sea prices for propane-butane mix, propane and butane increased in line with higher monthly prices for November from Algeria's state-owned Sonatrach.

■ Propane-butane prices increased by $48.50/t to $837.50/t, butane prices rose by $9.50/t to $837.50/t, while propane prices increased by $88/t to $840/t.

■ Total LPG loadings from Russian Black Sea and Sea of Azov ports declined to 26,400t between 28 October and 11 November, compared with 27,900t two weeks earlier.

Propane Argus fob Black Sea



ASIA PROPANE

■ Prices fell in tandem with US Gulf coast Mont Belvieu prices, although the US-Asia arbitrage remained open. The Argus Far East Index (AFEI) for propane fell by 2pc to $860/t over 1-12 November.

■ Buyers were covering prompt requirements but were hesitant to bid for December shipments given December paper's significant premium to January. December AFEI propane swaps stood at a $17 premium to January AFEI on 12 November, while December propane CP swaps were $29/t above the January CP.

■ A Ningbo-based propane dehydrogenation (PDH) plant issued a tender to buy up to 46,000t of propane for second-half December delivery but eventually accepted an offer for only half the volume at an $8/t premium to December AFEI paper. Another PDH plant in Dongguan cancelled a tender to buy 66,000t for December delivery owing to high offers.

ASIA BUTANE

■ Butane prices weakened sharply relative to propane, with the Argus Far East Index (AFEI) for butane falling by 3.2pc to $820/t over 1-12 November. Ample supplies of evenly-split propane-butane cargoes originating from the Mideast Gulf and the US were unable to find homes owing to muted spot demand from India and southeast Asia for December.

■ December AFEI's premium to the equivalent cif Japan naphtha price narrowed to $65/t by 12 November, compared with a premium of $76.50/t on 1 November.

■ Evenly-split propane-butane cargoes for delivery in December traded at discounts to propane cargoes as propane dehydrogenation demand remained the main driver for Asia-Pacific demand owing to a high price environment.

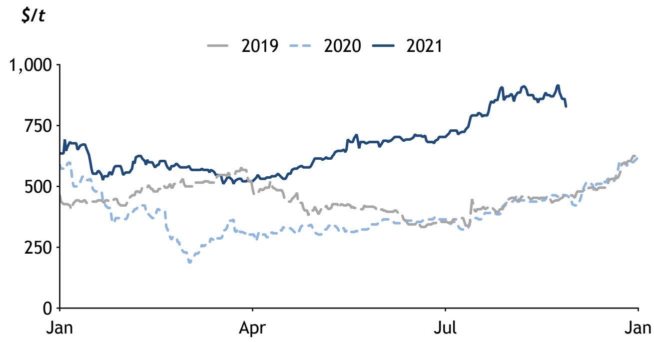
ASIA PRESSURISED

■ November-loading fob pressurised cargoes from south China were stable at $33/t premiums to November CP swaps. A wide November CP paper premium to December CP weighed on demand as buyers postponed purchases.

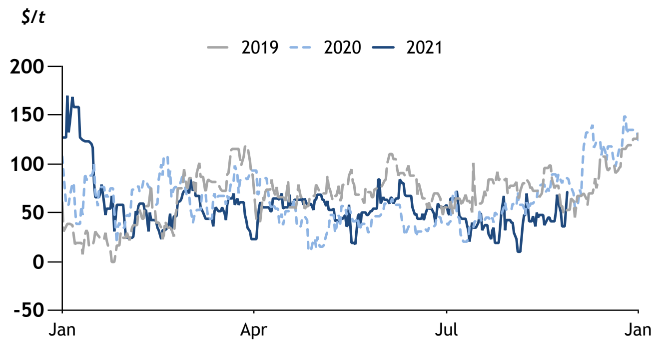
■ China's domestic prices were pressured by rising inventories. The Pearl River Delta (PRD) index fell by 1.5pc to 6,200 yuan/t ($970/t) over 1-12 November.

■ North Vietnam delivered cargoes for December were pegged at $83/t premiums to December CP paper.

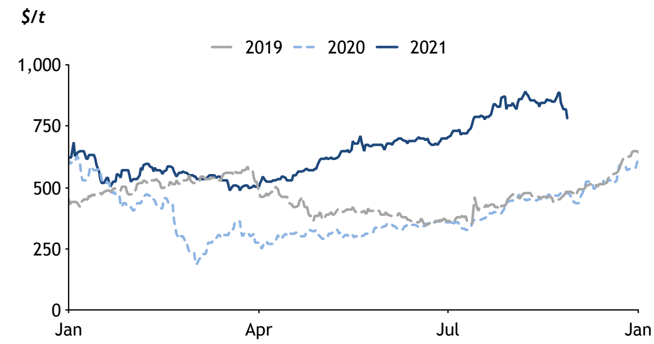
Propane Argus Far East index



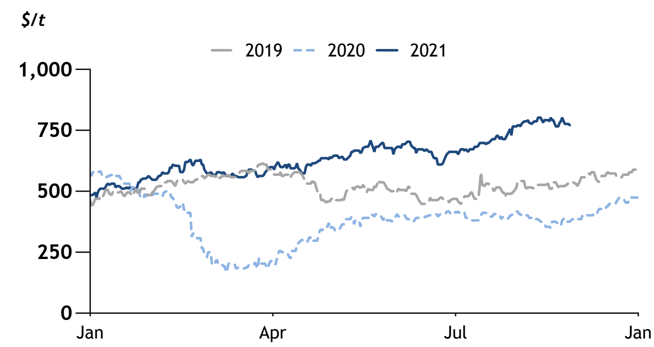
Propane Argus Far East Index differential to NWE



Butane Argus Far East Index



Naphtha c+f Japan



AMERICAS PROPANE

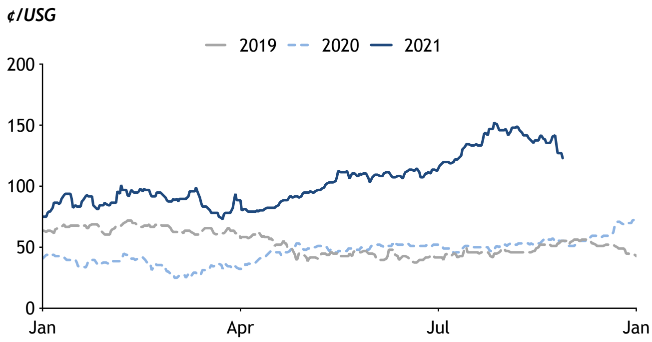
■ A wider US-Asia arbitrage bolstered prices for December-loading spot cargoes from the Gulf coast in early November, with fob cargoes sold at 7.5-8¢/USG premiums to Mont Belvieu front-month assessments, and offers discussed at prices well above these levels.

■ Mont Belvieu LST propane prices on the Gulf coast fell to 134.125¢/USG ($700.50/t) from 141.9375¢/USG over 1-11 November. LST propane's value relative to Nymex WTI crude declined to 69pc from 70.9pc. US propane inventories fell by 1.3mn bl over the week to 5 November, leaving stocks at 74.7mn bl (6.02mn t). The draw put inventories 21pc lower than a year earlier, data from US government agency the EIA show.

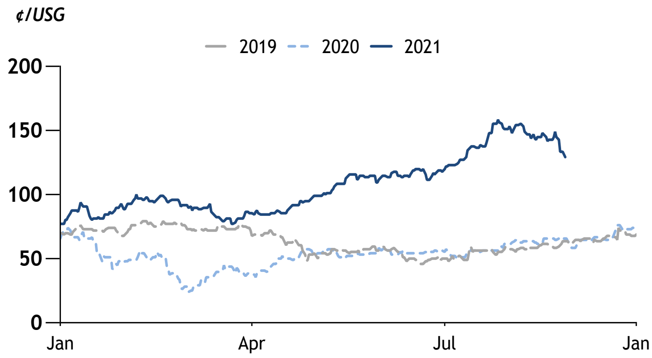
■ Conway prices in the US midcontinent fell by 13.5¢/USG to 128¢/USG during the first half of November following a large build in inventories and with demand still relatively low. Midcontinent propane was valued at parity to a 0.5¢/USG premium to the Mont Belvieu LST cavern.

■ Propane prices in western Canada held a 10-15¢/USG discount to Conway values as western Canada's propane supply remained tight and exports steady.

Propane Mont Belvieu non-LST



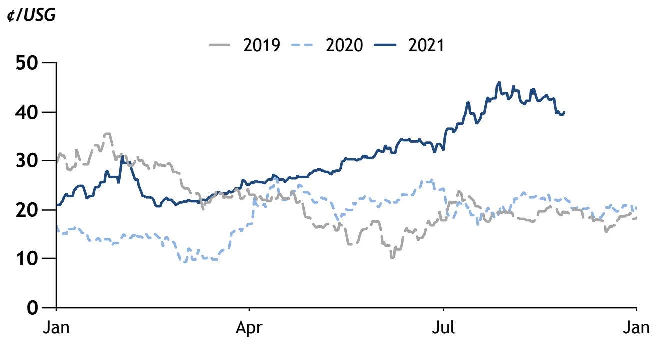
Propane US Gulf coast import



AMERICAS ETHANE

■ Mont Belvieu EPC ethane prices on the US Gulf coast fell to 40.125¢/USG ($299/t) from 42.8125¢/USG over 1-11 November. November EPC ethane remained heavily discounted to November LST propane, at 94.125¢/USG below propane in the first half of November compared with 99.125¢/USG below in late October.

Ethane Mont Belvieu



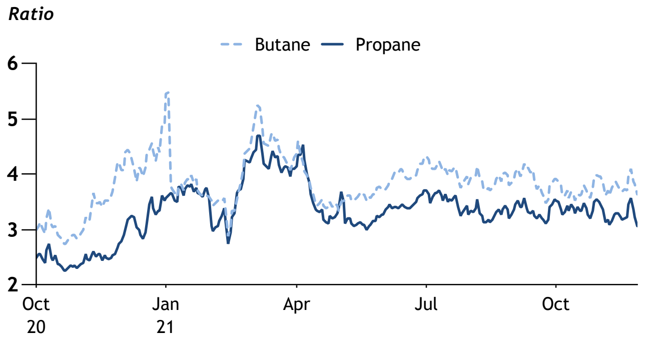
AMERICAS BUTANE

■ US Gulf coast Mont Belvieu EPC butane prices fell to 154.5¢/USG ($700/t) by 11 November from 161.5¢/USG at the end of October. EPC butane's value increased as a percentage of Nymex RBOB gasoline to 66.7pc by mid-November from 65.6pc at the end of last month.

■ Conway butane prices in the US midcontinent fell by 13.5¢/USG to 155¢/USG in the first half of November, following weakness on the US Gulf coast. Conway butane's premium to Mont Belvieu narrowed to 4¢/USG.

■ Canada's Edmonton butane prices fell to 87pc of the calendar month average of Nymex WTI crude owing to weakness in the US markets.

Propane and butane ratios to ethane



NGL ECONOMICS/SHIPPING

Ethylene plant total variable cash cost*					
	20 Oct	27 Oct	3 Nov	10 Nov	17 Nov
Purity ethane	17.26	18.27	17.73	16.33	16.48
Propane	45.70	39.63	38.23	43.05	34.06
N-Butane	42.33	38.72	35.88	41.05	33.10
Light naphtha	40.23	38.48	34.68	39.29	37.36
Gasoil	51.07	41.08	37.34	41.82	39.05

*at Mont Belvieu, Texas

— *Argus*

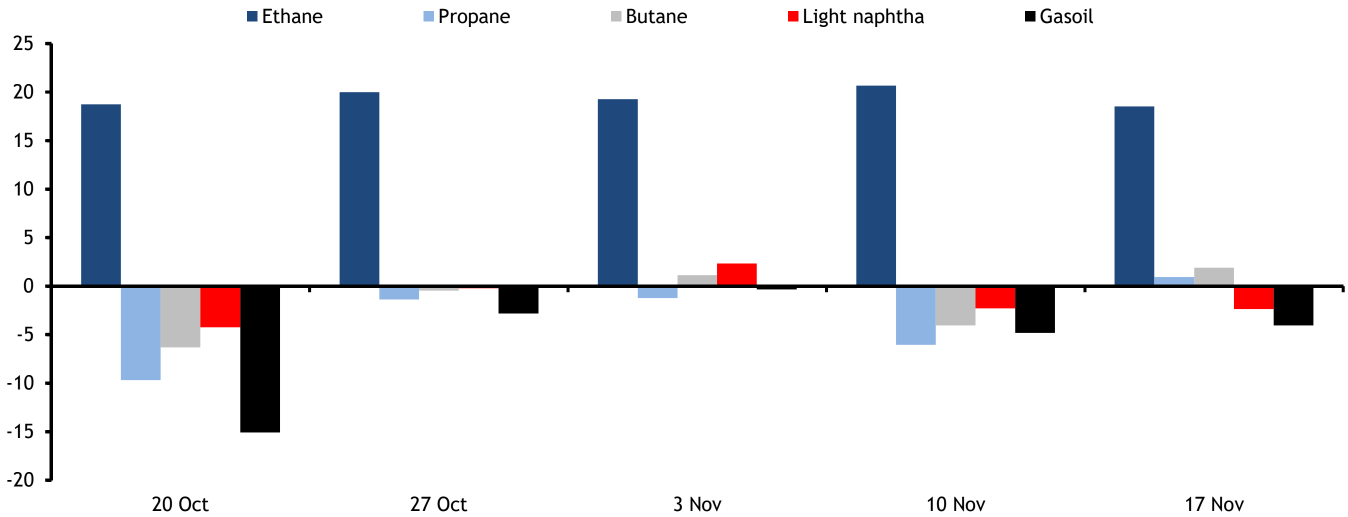
Ethylene plant gross margins* (see graph below)					
	20 Oct	27 Oct	3 Nov	10 Nov	17 Nov
Ethane	18.74	19.98	19.27	20.67	18.52
Propane	-9.70	-1.38	-1.23	-6.05	0.94
Butane	-6.33	-0.47	1.12	-4.05	1.90
Light naphtha	-4.23	-0.23	2.32	-2.29	-2.36
Gasoil	-15.07	-2.83	-0.34	-4.82	-4.05

*at Mont Belvieu, Texas

— *Argus*

US Ethylene plant gross margins (Mont Belvieu, Texas)

¢/lb of ethylene



Shipping

■ Belgian LPG shipowner Exmar posted a profit of $4.4mn from its shipping segment in the third quarter, up from $3.6mn a year earlier, while profits also rose to $22mn in January-September from $14.9mn a year earlier. New charter deals and higher time charter rates for midsize vessels supported the third-quarter gains, Exmar says. The firm received two dual-fuelled very large gas carrier newbuilds from Jiangnan Shipyard in the third quarter, both on time charter with Norway's Equinor.

Shipping rates

■ Very large gas carrier freight rates on the Ras Tanura-Chiba route climbed to $62/t by 12 November — the highest since 19 May. Firming US Gulf coast demand and Panama Canal delays added to tightness in the Mideast Gulf, as shipowners opted to send vessels to the US.

■ Coaster rates held relatively steady, with the Tees-ARA rate down by only $1/t to $49/t and the Tees-Mohammedia rate edging $2/t higher to $75/t.

Shipping rates			$/t
Spot			
44,000t	Ras Tanura-Chiba	▲	62.00
44,000t	Houston-Chiba	▲	110.00
44,000t	Houston-Flushing	▲	54.25
1,800t	Tees-ARA	▼	49.00
1,800t	Tees-Lisbon	▼	99.00
4,000t	Tees-Mohammadia	▲	75.00

— *Argus International LPG*

Shipping rates		$/calendar month
12-month time charter		
82,000m³+	◂ ▸	975,000
38,000m³	▲	820,000
35,000m³	▲	690,000
3,500m³ pressurised (west)	◂ ▸	245,000
3,500m³ pressurised (east)	▲	235,000

— *Gibsons*

PROPANE

	Nov 20	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Middle East *$/t*													
Saudi Arabia	430.00	450.00	550.00	605.00	625.00	560.00	495.00	530.00	620.00	660.00	665.00	800.00	870.00
Kuwait	430.00	450.00	550.00	605.00	625.00	560.00	495.00	530.00	620.00	660.00	665.00	800.00	870.00
Mediterranean *$/t*													
Algeria (Sonatrach)	360.00	375.00	485.00	495.00	545.00	500.00	465.00	495.00	595.00	620.00	640.00	808.00	820.00
Spot prices *$/t*													
Large cargo cif ARA*	382.00	462.50	493.50	558.00	488.00	469.50	497.50	605.00	621.50	639.75	757.25	828.00	na
Large cargo cif Lavera	354.90	441.67	520.31	548.13	538.55	485.90	482.12	556.73	625.68	637.58	742.89	855.10	na
Large cargo Japan cfr	463.18	554.49	622.34	584.63	581.32	534.77	545.53	614.76	684.32	696.75	767.49	878.30	na
Large cargo east China cfr	463.18	554.49	622.34	584.63	581.32	534.77	545.53	614.76	684.32	696.75	767.49	878.30	na
Large cargo south China cfr	463.18	554.49	622.34	584.63	581.32	534.77	545.53	614.76	684.32	696.75	767.49	878.30	na
Large cargo Far East index*	479.75	615.50	564.75	608.50	570.00	520.00	554.50	648.25	680.00	688.25	806.75	874.50	na
Asia spot premiums to CP *$/t*													
Mideast Gulf	-10.43	-25.00	-24.45	-24.42	-29.39	-11.33	-8.84	2.14	0.71	2.10	2.55	0.81	na
India cfr	na	na	na	na	na	na	na	na	na	na	na	35.82	na
South China (pressurised)	71.33	76.86	75.95	70.21	70.00	70.00	68.53	70.41	73.00	72.33	66.91	63.86	na
East China (refrigerated)	28.66	92.72	61.14	-22.00	-30.73	-9.51	44.95	67.81	56.56	34.70	80.81	69.16	na
South China (refrigerated)	28.66	92.72	61.14	-22.00	-30.73	-9.51	44.95	67.81	56.56	34.70	80.81	69.16	na
Taiwan	22.23	79.67	32.44	-20.63	-9.42	27.20	41.32	33.95	43.70	29.85	41.26	43.77	na
Japan	22.23	79.67	32.44	-20.63	-9.42	27.20	41.32	33.95	43.70	29.85	41.26	43.77	na
Mont Belvieu *¢/USG*													
LST	54.65	64.92	87.43	91.53	92.35	81.96	82.48	96.99	109.39	111.31	128.98	144.56	na
Non-LST	54.73	64.56	86.68	89.60	92.06	83.65	81.96	96.75	108.93	110.75	129.24	144.58	na
Europe *$/t*													
Coasters fob NWE	391.21	444.20	527.38	600.75	578.13	529.52	503.79	575.44	638.57	652.39	761.39	871.67	na
Barges fob NWE	411.19	458.55	550.10	591.30	644.17	579.50	551.47	575.68	618.48	620.55	763.99	956.31	na
Coasters fob Med	421.10	457.14	547.00	606.00	599.70	476.20	436.86	497.38	615.93	657.62	724.25	877.43	na

Ethane *¢/USG*

	Oct 20	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Mont Belvieu	21.55	21.62	19.98	23.59	26.55	21.68	23.74	26.11	27.78	31.37	33.56	38.99	43.46

Naphtha *$/t*

	Oct 20	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Cargoes cif NWE	375.35	370.06	432.63	500.98	556.31	574.28	559.29	594.26	635.18	673.84	648.65	680.73	763.76
Cargoes c+f Japan	391.19	384.32	448.98	513.53	564.81	593.32	571.20	602.19	643.90	684.10	653.48	689.58	770.62

BUTANE

	Nov 20	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Middle East *$/t*													
Saudi Arabia	440.00	460.00	530.00	585.00	595.00	530.00	475.00	525.00	620.00	655.00	665.00	795.00	830.00
Kuwait	440.00	460.00	530.00	585.00	595.00	530.00	475.00	525.00	620.00	655.00	665.00	795.00	830.00
Mediterranean *$/t*													
Algeria (Sonatrach)	400.00	420.00	490.00	510.00	535.00	510.00	460.00	492.00	605.00	650.00	670.00	742.00	825.00
Spot prices *$/t*													
Large cargo cif ARA*	403.00	449.50	451.75	553.50	492.00	430.00	490.50	594.25	648.00	683.00	709.00	836.50	na
Large cargo cif Lavera	390.45	454.80	458.95	521.06	513.34	468.91	457.83	529.98	617.73	630.55	686.13	784.23	na
Large cargo Japan cfr	473.32	549.62	591.14	564.21	553.40	513.73	539.11	613.45	678.80	691.18	763.89	852.49	na
Large cargo east China cfr	473.32	549.62	591.14	564.21	553.40	513.73	539.11	613.45	678.80	691.18	763.89	852.49	na
Large cargo south China cfr	473.32	549.62	591.14	564.21	553.40	513.73	539.11	613.45	678.80	691.18	763.89	852.49	na
Large cargo Far East index*	488.75	600.50	540.75	580.50	534.00	497.00	548.50	650.25	675.00	685.25	797.75	856.50	na
Asia spot premiums to CP *$/t*													
Mideast Gulf	-10.43	-25.00	-24.45	-24.42	-29.39	-11.33	-9.00	2.14	0.71	2.10	2.55	0.81	na
India west coast cfr	23.94	77.62	46.29	-26.11	-32.90	-7.85	50.63	65.40	46.94	28.52	73.86	na	na
India cfr	na	na	na	na	na	na	na	na	na	na	na	35.82	na
South China (pressurised)	71.29	76.86	75.95	70.21	70.00	70.00	68.53	70.41	73.00	72.33	66.45	61.00	na
East China (refrigerated)	28.94	82.62	51.29	-21.58	-27.90	-2.85	55.63	70.40	51.94	33.52	78.86	50.87	na
South China (refrigerated)	28.94	82.62	51.29	-21.58	-27.90	-2.85	55.63	70.40	51.94	33.52	78.86	50.87	na
Taiwan	21.66	78.31	31.19	-16.68	-7.34	30.54	44.90	33.40	42.75	29.71	42.08	35.58	na
Japan	21.66	78.31	31.19	-16.68	-7.34	30.54	44.90	33.40	42.75	29.71	42.08	35.58	na
Mont Belvieu *¢/USG*													
LST	66.26	64.62	87.64	97.78	101.74	82.13	87.38	105.59	123.06	129.63	146.35	164.83	na
Non-LST	76.70	88.33	88.24	95.17	98.91	85.61	94.46	112.29	125.43	130.64	147.26	161.74	na
Europe *$/t*													
Coasters fob NWE	374.49	445.33	491.71	543.48	517.35	440.43	447.20	522.93	633.22	669.11	668.70	834.20	na
Barges fob NWE	366.30	421.19	478.53	534.29	503.88	429.44	457.76	517.05	636.83	640.36	695.98	860.58	na
Coasters fob Med	416.64	531.76	510.50	554.00	581.19	475.40	433.86	552.23	621.32	659.00	688.57	873.00	na

**as of Apr 2019 spot price on 25th or nearest working day to 25th of the month*

— all prices from Argus International LPG

DATA

Chinese domestic prices													*Yuan/t*
	Oct 20	Nov	Dec	Jan 21	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
East China terminal													
Ningbo ex terminal	3,317	3,396	3,927	4,520	4,110	3,999	4,266	4,103	4,196	4,696	4,838	5,136	6,288
Wenzhou ex terminal	3,325	3,418	3,925	4,483	4,108	3,983	4,267	4,106	4,196	4,696	4,846	5,147	6,290
Taicang ex terminal	3,353	3,463	3,935	4,544	4,115	4,109	4,340	4,159	4,255	4,733	4,816	5,245	6,419
Shanghai ex terminal	3,262	3,361	3,851	4,468	4,005	3,909	4,206	4,099	4,112	4,592	4,814	5,100	6,286
Zhangjiagang ex terminal	3,352	3,463	3,925	4,539	4,112	4,109	4,340	4,159	4,255	4,733	4,820	5,245	6,419
Fujian ex terminal	3,513	3,468	3,897	4,431	4,122	4,140	4,286	4,120	4,222	4,766	4,857	5,198	6,360
East China refinery													
Shanghai ex refinery	3,170	3,151	3,564	4,118	3,502	3,613	4,040	3,985	3,947	4,327	4,580	4,855	6,038
Zhenhai ex refinery	3,211	3,216	3,686	4,241	3,827	3,767	4,186	4,058	4,096	4,401	4,763	4,970	6,100
Yangzi ex refinery	3,197	3,199	3,656	4,295	3,703	3,882	4,276	4,178	4,156	4,469	4,792	5,124	6,116
Fujian ex refinery	3,482	3,324	3,788	4,142	3,695	3,984	4,208	4,022	4,064	4,452	4,717	5,090	6,228
Gaoqiao ex refinery	3,192	3,132	3,561	4,116	3,486	3,575	4,010	3,956	3,946	4,320	4,580	4,855	6,036
South China terminal													
Zhuhai ex terminal	3,488	3,441	3,933	4,515	3,978	4,318	4,257	3,958	4,264	4,564	4,743	5,124	6,319
Shenzhen ex terminal	3,507	3,443	3,934	4,538	4,021	4,315	4,268	3,982	4,265	4,573	4,764	5,128	6,334
Raoping ex terminal	3,528	3,423	3,915	4,477	3,997	4,324	4,351	4,017	4,219	4,603	4,812	5,158	6,314
Nansha ex terminal	3,507	3,432	3,925	4,531	4,007	4,306	4,266	3,973	4,255	4,571	4,760	5,128	6,332
Shantou ex terminal	3,528	3,423	3,915	4,477	3,997	4,324	4,351	4,017	4,219	4,603	4,812	5,158	6,314
Yangjiang ex terminal	3,494	3,394	3,924	4,418	3,977	4,287	4,172	3,908	4,305	4,598	4,717	5,097	6,303
South China refinery													
Maoming ex refinery	3,366	3,350	3,742	4,364	3,840	4,254	4,010	3,773	4,161	4,521	4,596	4,973	6,109
Guangzhou ex refinery	3,419	3,394	3,834	4,464	3,908	4,231	4,156	3,838	4,049	4,449	4,685	5,025	6,168
Northeast China refinery													
Daqing ex refinery	3,100	3,132	3,616	4,130	3,652	3,855	4,208	4,181	3,920	4,201	4,668	4,818	6,438
Dalian ex refinery	2,748	2,775	3,289	3,630	3,235	3,658	4,070	3,980	3,734	4,116	4,581	4,785	6,247
Northwest China refinery													
Urumuqi ex refinery	2,531	2,546	2,611	2,915	2,468	2,849	3,565	3,625	3,232	3,196	3,573	3,735	4,575
Inland China refinery													
Lanzhou ex refinery	na	na	na	na	na	na	na	na	na	na	na	na	na
Yan-An ex refinery	2,961	3,048	3,371	3,817	3,517	3,697	4,199	4,179	3,986	4,196	4,646	4,848	6,038

— all prices from Argus International LPG

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