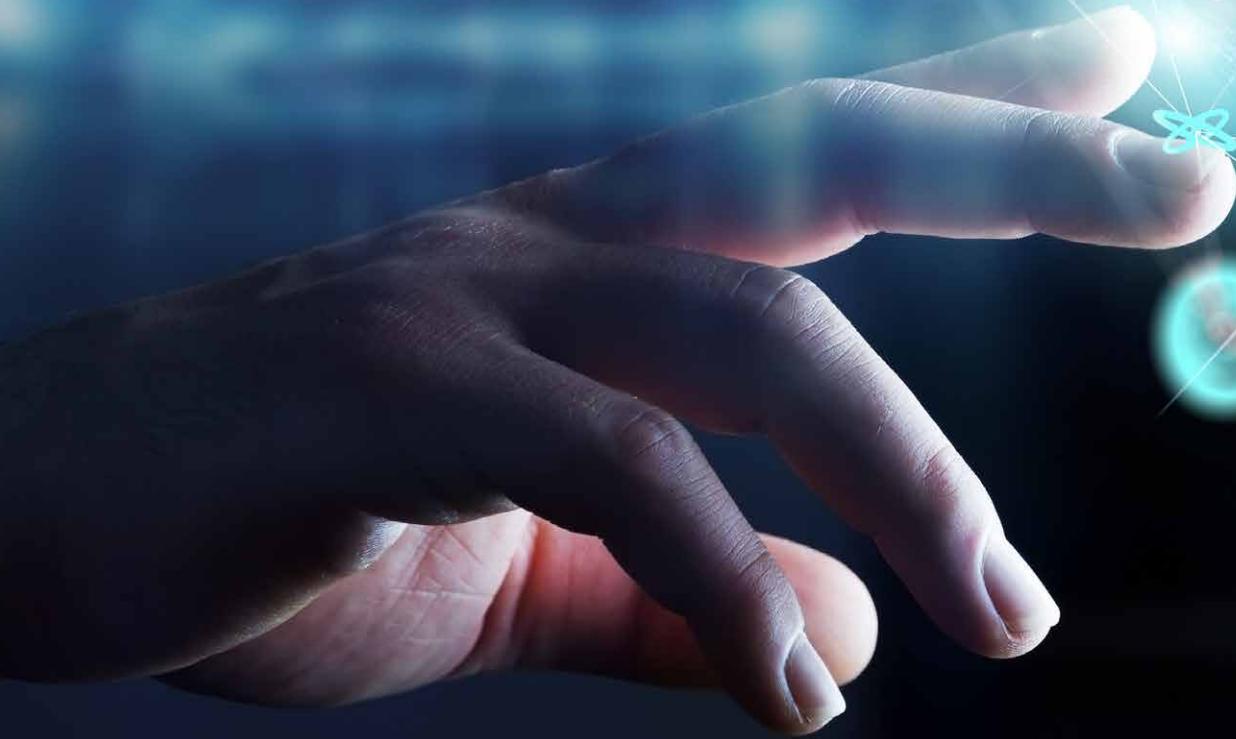


2024

STATISTICAL REVIEW OF GLOBAL LPG



www.worldliquidgas.org



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INTRODUCTION

The World Liquid Gas Association (WLGA) and Argus Media are delighted to present the Statistical Review of Global LPG 2024. In this report you will find fundamentals data for the LPG market in 2023, including supply, demand and trade. This could not have been achieved without the assistance of the WLGA members and others who gave their time and data to this project, and we offer our thanks for their help.

The market was still struggling with the aftermath of the outbreak of the Russia-Ukraine conflict at the end of 2022 when China announced the end of its zero-Covid policy. After a lacklustre year in 2022, the Chinese market roared back in 2023, with demand rising by almost 8mn t — over half of the global increase last year. The expansion of propane dehydrogenation (PDH) plants in China cannot be overstated, with capacity rising by almost 40pc in 2023, giving China more PDH capacity than the rest of the world combined. But by the end of last year we began to see these plants struggling to maintain high utilisation rates as demand failed to keep up with supply, a prescient warning of the difficulties the Chinese economy has faced in 2024.

The surge in Chinese LPG demand threatened to stretch global supplies. The crude oil production quotas that Opec implemented at the end of 2022 limited LPG production in the Middle East, with almost all the supply increase coming from quota-exempt Iran. But the US overcame a weak natural gas market to increase supply by 7.5mn t in 2023. This enabled the US to meet growing Asian demand while continuing to supply Europe, which has become increasingly dependent on transatlantic trade as a result of the Russia-Ukraine conflict.

Petrochemical and refinery use were the fastest growing LPG demand sectors, but consumption rose in all sectors compared with 2022 levels except for agriculture, demand from which declined by just 15,000t globally. Autogas increased by over 6pc year on year, driven by large increases in Turkey and Algeria. Overall residential growth was slow but varied greatly depending on region. Demand in North America and Europe declined slightly but we continued to see rapid growth from India and sub-Saharan Africa, at 4pc and 9pc, respectively.

Thank you to everyone choosing to read this report and we hope that you find all the information and insights contained within useful.



James Rockall,
Chief Executive and Managing Director, WLGA



Adrian Binks,
Chairman and Chief Executive, Argus Media group

KEY LPG GLOBAL STATISTICS

Top 10 LPG producers				'000t
Country	2022	2023	±% 23/22	
1 US	97,224	104,732	7.7	
2 China	48,192	51,658	7.2	
3 Saudi Arabia	27,396	25,538	-6.8	
4 Russia	16,454	17,344	5.4	
5 Canada	16,399	16,556	1.0	
6 India	12,821	12,777	-0.3	
7 UAE	11,789	12,019	2.0	
8 Iran	10,891	12,012	10.3	
9 Qatar	10,386	10,618	2.2	
10 Algeria	9,060	9,126	0.7	
Global total	345,896	359,412	3.91	

Top 10 LPG consumers				'000t
Country	2022	2023	±% 23/22	
1 China	73,920	81,647	10.5	
2 US	46,550	47,993	3.1	
3 India	30,139	31,317	3.9	
4 Saudi Arabia	18,686	17,560	-6.0	
5 Russia	13,071	13,627	4.3	
6 Japan	13,510	13,198	-2.3	
7 South Korea	10,390	11,161	7.4	
8 Canada	9,866	10,811	9.6	
9 Mexico	9,340	10,009	7.2	
10 Indonesia	8,627	8,777	1.7	
Global total	342,441	357,598	4.43	

EXECUTIVE SUMMARY

New highs

Having resisted the geopolitical and macroeconomic headwinds posed by the outbreak of the Russia-Ukraine conflict a year earlier, LPG market growth accelerated in 2023. Global demand firmed by just over 4pc to 357.6mn t/yr — the highest percentage increase since 2016 — again benefiting from the versatility of the fuel's applications. Petrochemical consumption showed no sign of slowing down, exceeding 100mn t/yr, as several new propane dehydrogenation (PDH) plants were launched in Asia-Pacific. Transport demand also went into higher gear, finishing just shy of pre-pandemic levels at 27mn t/yr, with autogas popularity booming in traditional markets. The refinery sector saw another year of sharp rises, mainly owing to surging use in Asia-Pacific and the US, while European consumption began to ease in line with natural gas prices plummeting from record highs, which had encouraged refineries to use LPG instead of gas in 2022. Residential demand, a traditional pillar of LPG consumption, rose by less than 1pc to 155.7mn t/yr, as above-average temperatures weighed on heating use in Europe and the US.

Global production did not lag far behind, rising by nearly 4pc to 359.4mn t/yr, driven largely by ever-increasing flows of natural gas liquids from upstream shale fields in the US and surging output from Iran. But growth was capped by the Opec+ group's crude production cuts, which weighed heavily on LPG output from Saudi Arabia — the key supplier for the Asia-Pacific market.

Growth champions back on track

Demand in Asia-Pacific reached new highs in 2023, increasing by 6.5pc to 169mn t/yr, with the growth rate rebounding after a slow post-pandemic economic recovery and weak petrochemical buying curbed China's thirst in 2022. The country remained the regional growth leader, with consumption up by over 10pc to 81.6mn t/yr, owing primarily to the opening of more PDH plants. Nine PDH facilities with a combined capacity of 5.4mn t/yr were launched in 2023, despite still weak olefins and polymer demand. China's PDH sector saw some recovery in production margins from a year earlier, although they remained negative at -\$99/t, *Argus* data show. But the residential and commercial sectors failed to receive the expected boost from the easing of Covid-19 restrictions. The strong petrochemical sector was also behind firming demand in South Korea and Taiwan, where consumption increased by 7pc to 11.1mn t/yr and by 10pc to almost 2mn t/yr, respectively. Japan proved an outlier among northeast Asian markets as warmer than average weather weighed on heating usage.

The world's third-largest market, India, went from strength to strength, reporting an almost 4pc rise in demand to 31.3mn t/yr on the back of the burgeoning residential sector. Household use, which makes up around 90pc of demand, benefited from a rise in subsidies as political leaders continued to use the fuel to win over voters in state and federal elections. But contrary to reports of surging manufacturing demand for LPG in place of costlier natural gas, sales for industrial purposes contracted by over 2pc to just under 1mn t/yr. The political boost to consumption is likely to have extended to 2024, given the general election that was held in the second quarter and the successful progress of the government's drive to reach an extra 7.5mn low-income households under the PMUY subsidy scheme by fiscal year 2025-26.

Bangladesh, another high-growth Asian LPG market, reported an even more robust 5pc increase to almost 1.5mn t/yr after slowing down in 2022. The country's LPG demand had expanded rapidly since 2010, when it was less than 100,000 t/yr, fuelled almost entirely by the switch to LPG for home cooking. But the pace of growth last year was constrained by inflation, which limited the ability of low-income households to switch to fuel from solid biomass, and made it more difficult for banks to issue letters of credit to importers. The poor economic situation and depreciating currency are also likely to have weighed on the market's growth in 2024, following widespread protests that resulted in the formation of an interim government.

But Asia-Pacific was far from the only region fuelling the global consumption boom, as Africa saw another year of expansion, with demand rising by 5pc to 17mn t/yr. South Africa claimed the spot as the fastest-growing market on the continent, with use for LPG increasing by 28pc year on year to 420,000 t/yr — above pre-pandemic levels. Gains have been motivated by the residential sector and burgeoning industrial demand, as the benefits of small LPG-fuelled backup generators have become increasingly apparent given the country's struggle to keep the lights on using its fleet of high-emitting coal-fired plants. Nigeria returned to growth after a brief contraction in 2022 but fell short of the double-digit increases seen before 2020, as the market still faces headwinds from the country's foreign exchange crisis.

The African market remains constrained by limited local production and infrastructure, with storage capacity estimated at 316,000t, compared with 12mn t in Asia-Pacific. But with growing interest in LPG, primarily as a source of clean

EXECUTIVE SUMMARY

cooking fuel, more international companies have increased their focus on infrastructure projects on the continent, which could see regional demand reach 20mn t/yr by 2030, according to *Argus* forecasts.

Changing places

Export growth from the Middle East, the key source of LPG supply for the Asia-Pacific market, slowed down significantly in 2023, edging up by 3.5pc to over 44mn t/yr, compared with a 16pc increase a year earlier. Deliveries from Saudi Arabia declined by 8pc to almost 8mn t/yr owing to the Opec+ group's crude production cuts and Riyadh's unilateral 1mn b/d reduction, which in turn reduced output and exports of LPG from the Mideast Gulf. Kuwait and Qatar bucked the trend, with deliveries expanding by 9pc to over 6mn t/yr and by 2pc to 10.3mn t/yr, respectively.

Iran accounted for over half of regional growth as its exports reached new highs in 2023, in line with expanding domestic production and stable domestic demand. The country's output was not bound by Opec+ restrictions, despite being an Opec member, because of US sanctions on the country's energy sector. Iranian consumption has been relatively steady over the past three years at around 3mn-3.3mn t/yr, where it is forecast to stay until 2030.

The growing surplus resulted in Iranian LPG exports climbing by 14.5pc to 9mn t/yr, with the country overtaking Saudi Arabia as the third-largest Middle East exporter, behind the UAE and Qatar. China, one of the few willing buyers of sanctioned Iranian supply, was the main beneficiary of the increase.

Borne from the USA

US supply growth more than offset the impact of Opec+ cuts, as rising upstream production of natural gas liquids in the Permian basin in Texas and New Mexico drove an almost 8pc increase in US LPG output to 105mn t/yr. With the domestic market again unable to absorb excess product given lacklustre heating and crop drying demand, as well as the stronger draw from Asia-Pacific, the country's LPG exports surged by over 17pc to 62.5mn t/yr — the fastest pace of growth since 2020. External deliveries additionally benefited from the debottlenecking of Targa Resources' 417,000 b/d Galena Park NGL terminal in the third quarter of 2023, effectively adding capacity of 1mn bl/month (972,000 t/yr). Investment in very large gas carriers (VLGCs) appears to have kept pace as well, with at least 40 ships delivered in 2023 and 22 due for arrival in 2024.

But trading did not come without challenges last year, as drought-related restrictions imposed at the Panama Canal upended normal US propane trade to Asia-Pacific, causing VLGC rates to surge as cargoes were forced to take longer journeys through the Suez Canal. The restrictions capped strong propane export growth from the US, adding to the delays caused by unplanned maintenance at the three main US Gulf coast terminals in October 2023 following extremely high temperatures. With rising output struggling to find an outlet, US propane inventories finished the year at 82.6mn bl (6.66mn t) — 13pc higher than the five-year average.

US export growth is expected to slow in 2024 as docks begin operating at capacity, leaving little room for more cargoes until expansions by midstream operators Energy Transfer and Enterprise Products come on line from 2025 onwards. The former is on track to complete its \$1.25bn Flexport expansion at Nederland that will add 250,000 b/d of LPG and ethane export capacity in the second half of 2025, while the latter plans to expand its 763,000 b/d terminal in Houston by 300,000 b/d in 2027, as well as bring on line the new Neches River terminal in 2026, which will have the capacity to export 180,000 b/d of ethane or 360,000 b/d of propane.

Glimmer of hope

While Asia-Pacific and Africa remained firmly on the growth path, the less dynamic consumption region of Europe at last began to find firmer ground. Petrochemical consumption made its first steps towards recovery after regional olefins production fell to a 29-year low in 2022. Underlying demand strengthened throughout the year, with output in the fourth quarter of 2023 17pc higher than at the end of 2022, although it remained weak compared with the majority of the period since the 2008 financial crash. LPG intake benefited from a three-digit discount to competing petrochemical feedstock naphtha, keeping flexible cracker demand consistently high. Belgium, the largest user of propane and butane for petrochemical processing in northwest Europe, posted a 17pc increase in demand to almost 2.5mn t/yr, only to be beaten by a 35pc surge in French consumption to almost 1.5mn t/yr. But the rebound was by no means universal across the continent's key petrochemical consumers, with demand from Germany and the UK sliding by 100,000-200,000 t/yr.

Having almost halved in 2022, the Ukrainian market posted 6.5pc growth in demand to 1.25mn t/yr in 2023, as the country completed its forced shift to western supply routes.

EXECUTIVE SUMMARY

In 2021, 90pc of Ukraine’s LPG imports came from Russia, Kazakhstan and Belarus, and three-quarters was supplied by rail. But since March 2022, the country’s LPG imports have all come from Europe or through Ukrainian ports, and trucks have become the primary mode of transport. Ukrainian importers still faced challenges from more stringent customs rules owing to the government’s attempts to prevent indirect imports of Russian LPG and a border blockade by Polish carriers, which resulted in prices surging to their highest since mid-2022.

Regional availability saw little improvement, with both refinery and gas processing output extending losses. Germany, the continent’s biggest refiner, reported a more than 10pc drop in output to 2.5mn t/yr, the lowest in over a decade. Meanwhile, the yield from gas processing stagnated as Norway’s small gains were offset by an 18pc fall in UK output. The deficit was covered by imports, with transatlantic flows providing the bulk of the product, as Panama Canal restrictions pushed more VLGCs to sail to Asia-Pacific, increasing voyage times significantly and making the far closer European market a more attractive destination. Slumping natural gas prices might have increased the local supply outlook in 2023, with upstream producers no longer encouraged to leave LPG in the gas stream nor refinery operators to use it as a fuel instead of gas, but European dependency on extra-regional product is still predicted to deepen.

Ticking clock

Russian LPG exports increased for the first time since 2018, rising by more than 8pc to 3.75mn t/yr, as domestic production strengthened and companies discovered new outlets for their product, with more supply heading to Turkey,

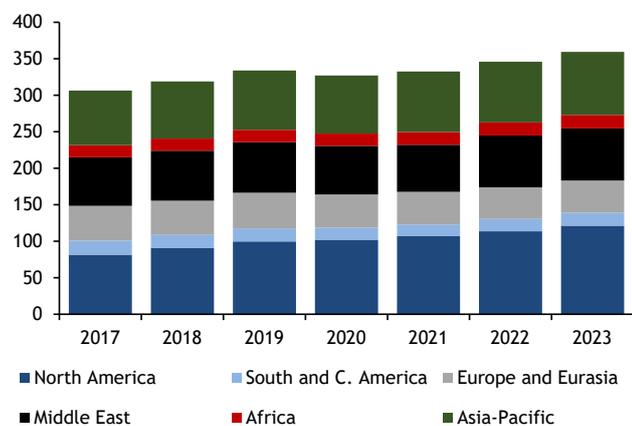
Afghanistan, China and central Asia. The continuing conflict with Ukraine initially disrupted the make-up of Russia’s LPG export destinations, as its deliveries to eastern Europe, at least directly, declined, and to northwest Europe and Ukraine stopped altogether. But a lack of official restrictions combined with competitive pricing kept Russian product flowing west in 2023, with Poland remaining the largest importer of Russian LPG last year.

Eastern European LPG buyers struggled to find alternatives to Russian product as Kazakhstan’s exports fell to their lowest in 16 years, in line with booming demand from the country’s autogas and petrochemical sectors. The former was driven by low “state regulated” retail prices, which encouraged motorists to convert their vehicles to LPG, while the latter was supported by the launch of the 550,000 t/yr Atyrau PDH plant.

But Russia’s export recovery is likely to have proved short-lived, given the EU’s decision to ban the import of Russian LPG in its 12th sanctions package in December 2023 — with a one-year transition — which will force Russian producers to find a new home for around 1.5mn-1.7mn t/yr of exports that previously headed to the bloc. One such destination is likely to be Turkey, which reported a 21.5pc surge in imports to a record high of almost 4mn t/yr in 2023. The country’s demand firmed by 12.5pc to over 4.5mn t, with autogas, its key consumption pillar, surpassing pre-pandemic levels. Industrial demand benefited from high natural gas prices, which have motivated consumers to switch to cheaper LPG where possible. Natural gas prices eased in the second half of last year, but the cost to industrial users remained high as the Turkish lira tumbled.

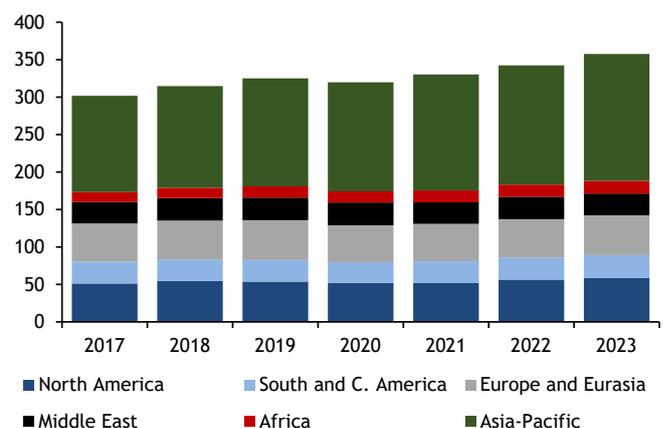
LPG production by region

mn t



LPG consumption by region

mn t



PETROCHEMICALS

Petrochemicals took centre stage on the demand side of LPG in 2023, growing by over 6mn t compared with 2022, the largest year-on-year increase on record. This was largely owing to a massive expansion of capacity in China, where demand rose by 21pc from the previous year to 4.3mn t.

China has traditionally depended on imports of chemicals and plastics for its manufacturing sector. But Beijing dislikes the economy being reliant on imports, particularly from its regional rivals in Asia-Pacific. As a result, industrial policy has increasingly focused on expanding domestic production of these downstream products. Steam cracker capacity grew to over 42mn t/yr by 2023 from 19mn t/yr in 2017 — and several more plants are still under construction — with propane dehydrogenation (PDH) capacity rising to just under 16mn t/yr from 5mn t/yr over the same period.

Both steam crackers and PDH plants are used to produce olefins, the building blocks for most petrochemicals, but do so in different ways. Steam crackers can take a variety of feedstocks and will produce a mixture of products depending on the feedstock, potentially including propylene, butylene, benzene and others. PDH plants only take propane, with propylene their sole product. There are far more steam crackers globally than there are PDH plants, but only 15-20pc of their combined feedstock is LPG. This means that new PDH capacity has a disproportionate effect on chemical demand for LPG compared with the addition of steam cracking capacity.

The increase in steam cracker capacity has had a significant impact on LPG demand, but new PDH plants have been the main driver, accounting for 27pc of global LPG chemical demand in 2023, up from just 9pc in 2014. The surge in PDH

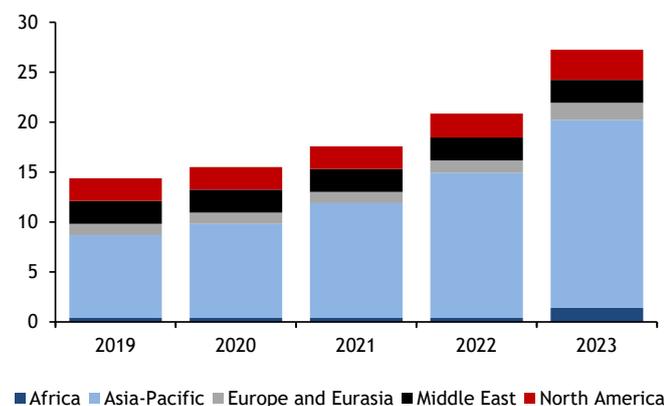
capacity has been a response to ethane’s growing role in steam crackers. Ethane produces few co-products through steam cracking, leaving a gap in propylene supply. This created an investment opportunity to build new PDH plants to produce propylene without disrupting the balance in the ethylene market.

But the pace of petrochemical capacity additions has been faster than the increase in downstream demand to absorb the new supply. Petrochemicals are highly sensitive to economic conditions, and the start of the Russia-Ukraine conflict in 2022 following on from the disruption caused by the pandemic contributed to a slowdown in the global economy, undermining demand growth for petrochemicals. Chinese PDH utilisation fell to 70pc in 2023 from 87pc in 2021 as new capacity struggled to find space in a crowded market. Operating margins at these plants are consistently negative and many believe that the smaller and older petrochemical facilities will be rationalised within the next few years.

In steam crackers, LPG competes as a feedstock with other hydrocarbons, with relative cost being the main deciding factor. In Europe, propane fell from 89pc of naphtha’s price in 2022 to 81pc in 2023, prompting crackers in the region to use a more LPG-heavy feedslate. This increase in petrochemical demand for LPG in Europe came despite the sector struggling in 2023 owing to rising competition from Asia-Pacific and high operating costs resulting from inflation and firm natural gas prices. Similarly in the US, LPG reclaimed a greater share of the market as the use of naphtha as a feedstock in steam crackers continued to decline. But US run rates performed much better than in countries in other regions as it is far more competitive on a global scale, allowing demand to rise significantly.

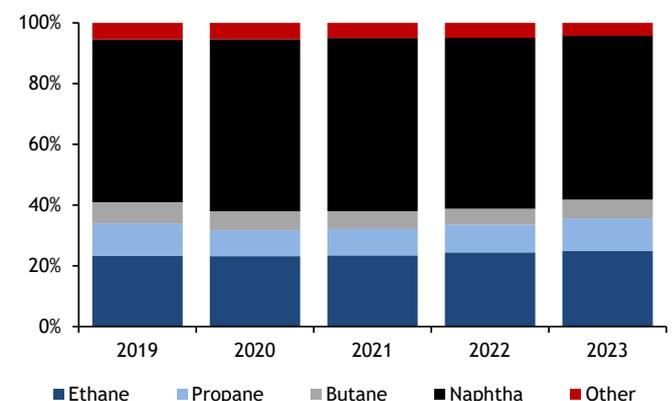
PDH capacity by region

mn t



Steam cracker feedstock

%



RENEWABLE LIQUID GAS (LPG AND DME)

Renewable LPG supply continues to grow at a rapid pace. Global production capacity increased by almost 20pc in 2023, including a near 60pc rise in Asia-Pacific. But growth in Europe and North America slowed as projects were delayed into 2024. The markets in these regions continued to develop, with spot sales becoming common in Europe, allowing Argus to begin publishing open price assessments for the product in late 2023.

Most renewable LPG continues to be produced as a by-product of the hydrotreated vegetable oil (HVO) or sustainable aviation fuel (SAF) production processes. Demand for HVO and SAF is increasing to meet regulatory requirements focused on decarbonising the transport sector — HVO can be used as a renewable diesel additive and SAF is one of the few options to decarbonise the aviation industry. The hydrotreating process produces many by-products, including LPG. Many of these by-products were initially consumed internally at plants to reduce their own carbon footprint. But over the past couple of years, operators have become increasingly interested in selling these products, at first on a term basis and more recently on spot markets.

Other routes have been experimented with to produce renewable LPG directly. Ekobenz’s Polish facility remains the largest example of this, opening in 2021. The plant converts ethanol to LPG and gasoline, but to date no other large projects using this technology have been announced. HIF’s Haru Oni project in Chile produces LPG from green hydrogen and carbon dioxide, with LPG supply beginning in October 2023. The use of this technology is being expanded and several other plants across the world are currently under construction, but how much LPG these plants will be able to produce remains uncertain.

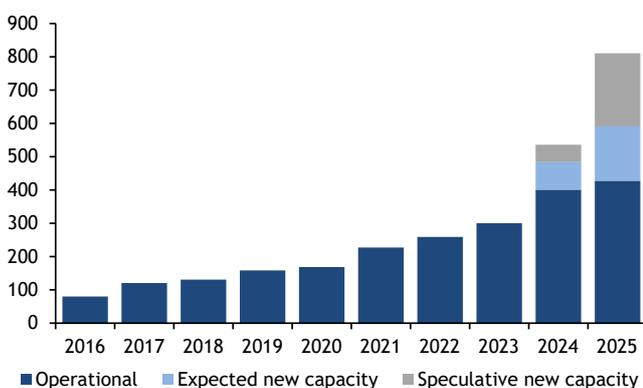
There has been a rapid turnaround in attitudes towards, renewable dimethyl ether (rDME), owing to the upcoming dissolution of Dimeta. DME can be blended into LPG at up to 20pc for energy use, and even higher with modifications to infrastructure. Dimeta planned to offer up to 300,000 t/yr of DME by 2027, roughly equivalent to the entire global supply of renewable LPG in 2023. The firm’s parent companies, UGI and SHV, are planning to review these assets and some may still continue.

HVO-based production is almost entirely from Europe and Asia-Pacific and is concentrated at some of the large biorefineries found in these regions, particularly in Singapore, the Netherlands, Italy, and Finland. Used cooking oil (UCO) is the largest feedstock used at these facilities, although vegetable oil, tall oil and a host of other feedstocks are also used in varying quantities. North American production started in significant volumes in 2019 from Kern’s Bakersfield plant in California, with an estimated LPG production capacity of 25,000 t/yr. This has been further supplemented by Chevron’s El Segundo plant in California, with others on the way. But the region still lags behind Europe and Asia-Pacific in terms of production.

The future for renewable LPG continues to look positive. We expect supply to grow exponentially in the next few years. At the time of writing, more than 100,000 t/yr of new renewable LPG capacity has already started up in 2024 — a 36pc year-on-year increase. Argus is also tracking more than 150,000 t/yr of planned capacity increases that we expect to begin in 2025. As renewable LPG continues to become more available we expect that the market will continue to develop and for new uses to emerge. It will be an exciting market to watch over the coming years.

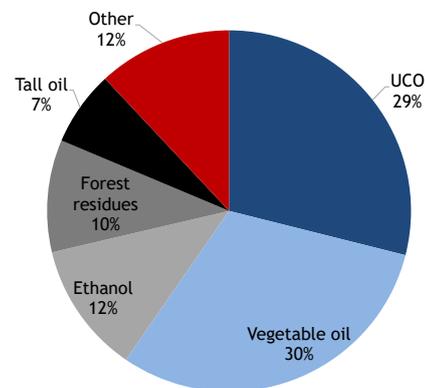
Renewable LPG capacity

’000t



Renewable LPG supply by source in 2023

%



PRODUCTION

LPG production 2013-23												'000t
Country	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	±%23/22
US	52,075	58,726	64,586	65,652	69,152	76,516	84,580	87,442	91,211	97,224	104,732	7.7
Canada	10,015	10,255	10,220	11,399	12,380	14,030	15,124	14,631	15,712	16,399	16,556	1.0
Total North America	62,090	68,981	74,806	77,051	81,532	90,546	99,704	102,073	106,923	113,623	121,288	6.7
Argentina	2,856	2,847	2,583	2,654	2,627	2,717	2,818	2,466	2,770	2,972	3,060	3.0
Bolivia	340	373	341	480	496	483	520	440	430	592	553	-6.6
Brazil	5,680	5,419	5,537	5,093	5,709	5,555	5,611	5,846	5,324	5,795	6,159	6.3
Chile	312	338	332	279	204	250	280	278	443	469	489	4.2
Colombia	642	603	615	555	551	625	625	699	757	856	886	3.5
Costa Rica	0	0	0	0	0	0	0	0	0	0	0	-
Cuba	73	72	69	48	16	48	48	47	44	41	39	-4.9
Dominican Republic	13	16	7	17	11	11	11	11	11	11	11	0.0
Ecuador	250	197	150	248	252	218	218	218	218	196	198	1.2
El Salvador	0	0	0	0	0	0	0	0	0	0	0	-
Jamaica	6	6	8	9	13	11	10	9	4	2	3	57.6
Mexico	6,487	6,464	5,490	4,987	4,586	3,839	3,372	3,209	2,837	2,902	3,432	18.3
Netherlands Antilles	24	51	59	45	37	37	37	37	37	40	44	10.8
Nicaragua	11	10	13	18	20	17	17	17	19	21	21	0.0
Panama	0	0	0	0	0	0	0	0	0	0	0	-
Paraguay	0	0	0	0	0	0	0	0	0	0	0	-
Peru	1,766	1,719	1,572	1,548	1,525	1,559	1,680	1,352	1,494	1,447	1,538	6.3
Trinidad & Tobago	703	668	607	490	537	450	469	365	301	301	270	-10.5
Uruguay	90	80	80	85	21	93	92	95	100	87	65	-25.9
US Virgin Islands	0	0	0	0	0	0	0	0	0	0	0	-
Venezuela	6,069	6,279	6,110	5,786	2,603	2,095	1,989	1,219	1,152	1,111	1,090	-1.9
Other	105	121	119	120	125	117	77	77	77	77	77	0.0
Total South & C. America	25,427	25,263	23,692	22,462	19,333	18,126	17,873	16,385	16,017	16,921	17,935	6.0
Austria	240	245	349	450	376	447	431	452	422	371	439	18.2
Azerbaijan	263	202	172	200	210	224	224	210	283	246	266	8.3
Belarus	637	682	649	458	546	525	552	512	516	534	526	-1.5
Belgium	576	707	671	697	739	829	984	1,036	1,060	693	778	12.3
Bulgaria	92	98	101	102	120	112	129	77	64	90	70	-22.2
Croatia	250	225	248	248	283	256	219	214	212	151	143	-5.3
Czech Republic	217	267	248	283	383	380	443	312	394	371	387	4.2
Denmark	103	118	124	94	106	0	122	112	87	74	67	-9.5
Finland	310	293	241	275	285	255	289	245	174	139	161	15.8
France	1,472	1,474	1,430	1,416	1,444	1,329	1,250	880	1,029	954	994	4.2
Germany	2,645	2,518	2,656	2,745	3,419	3,224	3,232	2,885	3,025	2,768	2,485	-10.2
Greece	671	735	703	825	838	848	801	780	862	845	915	8.3
Hungary	239	289	251	222	188	180	167	159	145	152	134	-11.8
Ireland	63	59	47	42	48	57	45	52	42	37	36	-2.9
Italy	1,684	1,327	1,499	1,507	1,758	1,630	1,432	1,237	1,437	1,390	1,380	-0.7

LPG production 2013-23												'000t
Country	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	±%23/22
Kazakhstan	2,448	2,464	2,536	2,680	2,902	3,115	3,196	3,178	3,170	3,061	3,121	2.0
Lithuania	253	218	265	288	310	315	350	294	288	214	201	-6.0
Macedonia	3	0	0	0	0	0	0	0	0	0	0	-
Malta	0	0	0	0	0	0	0	0	0	0	0	-
Moldova	0	0	0	0	0	0	0	0	0	0	0	-
Montenegro	0	0	0	0	0	0	0	0	0	0	0	-
Netherlands	1,507	1,632	1,735	1,790	1,719	1,690	1,690	1,489	1,736	1,389	1,448	4.2
Norway	5,625	5,833	5,512	5,160	5,548	4,883	5,240	5,100	4,806	3,604	3,851	6.9
Poland	340	405	375	440	430	485	495	530	500	490	490	0.0
Portugal	261	198	175	240	237	195	261	244	214	246	111	-55.1
Romania	523	560	567	590	617	624	592	522	463	550	500	-9.2
Russia	14,241	15,834	15,844	16,555	16,660	16,690	17,030	16,280	15,029	16,454	17,344	5.4
Serbia	193	158	176	166	127	83	83	100	134	138	112	-18.4
Slovakia	172	155	181	177	177	180	133	163	163	122	111	-8.6
Spain	1,335	1,241	1,087	1,541	1,401	1,824	1,698	1,474	1,623	1,519	1,578	3.9
Sweden	308	423	473	481	421	498	446	401	626	566	544	-4.0
Switzerland	193	173	106	116	107	133	110	97	70	77	69	-10.4
Turkey	804	769	899	1,138	1,180	1,082	1,247	1,135	1,014	1,100	1,080	-1.8
Turkmenistan	467	476	437	435	410	430	468	365	355	360	441	22.5
Ukraine	503	440	412	401	428	403	409	412	438	320	310	-3.1
UK	3,523	3,268	3,301	3,301	3,324	2,969	4,115	3,739	3,322	3,408	2,993	-12.2
Uzbekistan	361	366	470	610	660	740	730	715	795	694	695	0.1
Other	121	101	231	236	236	236	243	228	221	209	213	1.9
Total Europe & Eurasia	42,643	43,953	44,171	45,909	47,637	46,871	48,857	45,630	44,718	43,338	43,996	1.5
Bahrain	201	216	220	239	225	225	393	376	344	374	372	-0.5
Iran	7,717	7,778	8,024	9,409	9,244	7,734	8,062	7,808	8,976	10,891	12,012	10.3
Iraq	1,310	1,100	1,578	1,986	1,832	1,930	1,642	1,874	1,853	1,974	2,108	6.8
Israel	581	605	621	597	611	592	613	539	666	619	635	2.5
Jordan	78	91	80	81	78	80	80	76	51	62	62	0.0
Kuwait	4,843	4,760	4,804	4,925	4,914	6,099	6,287	5,769	5,580	6,214	6,618	6.5
Lebanon	0	0	0	0	0	0	0	0	0	0	0	-
Oman	557	573	549	530	530	768	980	843	1,007	859	880	2.4
Qatar	10,829	10,917	11,203	10,159	10,458	10,669	10,807	10,730	10,511	10,386	10,618	2.2
Saudi Arabia	26,273	27,325	26,445	30,324	27,239	28,891	27,687	26,420	24,494	27,396	25,538	-6.8
Syria	189	151	132	139	137	139	139	139	144	133	145	9.2
UAE	10,021	10,491	10,869	10,466	10,793	10,925	12,123	11,636	10,520	11,789	12,019	2.0
Yemen	690	605	610	516	417	407	405	397	371	323	323	0.0
Other	0	0	0	0	0	0	0	0	0	0	0	-
Total Middle East	63,289	64,612	65,135	69,371	66,478	68,460	69,219	66,606	64,518	71,020	71,330	0.4

LPG production, 2013-23												'000t
Country	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	±%23/22
Algeria	7,484	9,176	9,005	9,207	9,155	8,972	8,443	7,996	8,521	9,060	9,126	0.7
Angola	712	591	526	732	760	837	1,054	1,266	1,114	1,112	1,205	8.4
Cameroon	25	25	17	17	15	25	24	25	35	28	35	23.1
Chad	13	5	5	5	17	20	20	20	20	20	20	0.0
Congo	308	20	20	12	8	9	0	0	0	0	0	-
Egypt	2,312	2,342	2,448	2,533	2,480	2,513	2,502	2,376	2,546	2,776	3,016	8.6
Gabon	14	13	13	13	26	8	8	8	8	8	8	0.0
Ghana	26	7	92	114	205	222	70	85	95	116	99	-14.8
Ivory Coast	44	53	42	21	22	22	22	22	13	12	13	8.3
Kenya	12	13	13	0	0	0	0	0	0	0	0	-
Libya	374	343	316	349	321	304	315	590	588	550	558	1.5
Morocco	96	99	15	0	0	0	0	0	0	0	0	-
Nigeria	1,747	2,282	2,552	2,940	2,886	2,978	3,864	3,744	3,997	3,691	3,791	2.7
Senegal	1	3	5	3	3	3	3	3	3	3	5	66.7
South Africa	270	250	270	250	283	246	267	235	99	102	133	30.4
Sudan	298	310	300	310	320	320	320	320	320	320	320	0.0
Tunisia	189	163	147	235	142	128	105	86	101	90	114	26.6
Other	169	182	38	40	40	40	76	69	64	64	64	-0.2
Total Africa	14,094	15,877	15,824	16,781	16,683	16,647	17,093	16,845	17,524	17,953	18,507	3.1
Australia	2,454	2,553	2,174	2,325	2,068	2,175	3,359	3,647	3,363	2,989	3,040	1.7
Bangladesh	21	21	17	20	17	16	16	13	14	15	15	0.0
China	24,559	26,493	28,886	34,804	36,709	38,719	40,615	44,286	47,570	48,192	51,658	7.2
India	10,525	10,626	11,072	12,094	12,286	13,109	12,768	12,231	12,184	12,821	12,777	-0.3
Indonesia	2,299	2,437	2,752	2,241	2,241	2,026	1,977	1,936	1,917	2,002	1,990	-0.6
Japan	4,443	4,302	5,663	5,353	5,377	5,200	5,199	1,795	1,788	1,502	1,297	-13.6
Malaysia	2,388	2,162	1,797	3,075	2,621	2,734	3,057	3,050	2,820	2,806	2,962	5.6
New Zealand	177	206	193	168	177	187	162	161	148	152	140	-7.5
Pakistan	398	440	629	650	677	784	784	720	753	735	756	2.8
Philippines	321	301	464	450	448	508	292	152	96	267	284	6.5
Singapore	934	966	967	989	828	785	614	614	614	614	614	0.0
South Korea	2,466	2,703	3,216	3,028	3,432	3,759	3,434	2,988	3,054	3,054	2,971	-2.7
Sri Lanka	22	28	10	9	10	19	26	22	17	13	23	78.2
Taiwan	1,530	1,228	1,163	1,163	1,026	1,063	1,065	674	1,062	1,025	904	-11.8
Thailand	5,447	5,506	5,513	5,719	6,056	6,247	5,980	5,496	5,671	5,123	5,068	-1.1
Timor Leste	948	780	400	0	0	0	0	0	0	0	0	-
Vietnam	712	743	727	804	757	828	1,774	1,634	1,743	1,667	1,789	7.3
Other	105	121	119	120	125	117	77	77	77	77	77	4.7
Total Asia-Pacific	59,693	61,547	65,697	72,947	74,785	78,217	81,182	79,480	82,878	83,041	86,357	4.0
Total World	267,236	280,233	289,325	304,521	306,448	318,866	333,928	327,020	332,578	345,896	359,412	3.9

Availability to local market, 2023							'000t
	Production			Imports	Exports	Consumption	
	Refinery	Gas processing	Total				
US	10,534	94,198	104,732	4,595	62,520	47,993	
Canada	1,439	15,117	16,556	239	7,318	10,811	
Total North America	11,972	109,315	121,288	4,834	69,838	58,803	
Argentina	939	2,121	3,060	0	1,207	1,865	
Bolivia	63	490	553	0	99	424	
Brazil	4,403	1,756	6,159	1,483	0	7,619	
Chile	489	0	489	1,420	269	1,443	
Colombia	389	497	886	63	88	862	
Costa Rica	0	0	0	192	0	191	
Cuba	24	15	39	159	0	199	
Dominican Republic	11	0	11	1,035	0	1,046	
Ecuador	198	0	198	1,169	0	1,353	
El Salvador	0	0	0	335	0	335	
Guatemala	0	0	0	638	113	553	
Honduras	0	0	0	225	0	225	
Jamaica	3	0	3	78	0	81	
Mexico	563	2,869	3,432	6,665	0	10,009	
Netherlands Antilles	44	0	44	0	34	6	
Nicaragua	21	0	21	120	0	141	
Panama	0	0	0	188	0	210	
Paraguay	0	0	0	106	0	106	
Peru	151	1,387	1,538	428	0	2,040	
Puerto Rico	0	0	0	83	0	79	
Trinidad & Tobago	0	270	270	0	211	58	
Uruguay	65	0	65	49	0	110	
US Virgin Islands	0	0	0	292	0	299	
Venezuela	117	973	1,090	681	406	985	
Other	77	0	0	206	52	217	
Total South & C. America	7,558	10,376	17,935	15,433	2,427	30,480	
Austria	439	0	439	66	84	414	
Azerbaijan	236	30	266	22	10	278	
Belarus	231	295	526	766	892	400	
Belgium	778	0	778	2,805	837	2,676	
Bulgaria	70	0	70	458	21	507	
Croatia	116	27	143	65	119	91	
Cyprus	0	0	0	55	0	64	
Czech Republic	387	0	387	114	98	394	
Denmark	67	0	67	59	47	87	
Estonia	0	0	0	64	0	64	
Finland	161	0	161	554	0	737	
France	994	0	994	2,895	738	2,827	
Germany	2,485	0	2,485	1,164	241	3,124	
Greece	915	0	915	55	181	768	
Hungary	113	21	134	318	71	381	
Republic of Ireland	36	0	36	169	14	183	
Italy	1,380	0	1,380	2,556	351	3,641	

Availability to local market, 2023						'000t
	Production			Imports	Exports	Consumption
	Refinery	Gas processing	Total			
Kazakhstan	828	2,293	3,121	3	945	2,179
Latvia	0	0	0	358	246	103
Lithuania	201	0	201	143	185	158
Macedonia	0	0	0	65	1	64
Malta	0	0	0	24	0	24
Moldova	0	0	0	58	0	58
Montenegro	0	0	0	14	0	16
Netherlands	1,448	0	1,448	3,452	2,050	2,825
Norway	381	3,470	3,851	278	3,554	522
Poland	465	25	490	2,625	610	2,500
Portugal	111	0	111	531	88	520
Romania	500	0	500	353	340	530
Russia	3,781	13,563	17,344	33	3,750	13,627
Serbia	109	3	112	52	15	146
Slovakia	111	0	111	55	12	154
Slovenia	0	0	0	75	4	72
Spain	1,578	0	1,578	1,038	479	1,988
Sweden	544	0	544	1,413	1,027	928
Switzerland	69	0	69	97	4	166
Tajikistan	0	0	0	414	0	414
Turkey	1,080	0	1,080	3,894	416	4,572
Turkmenistan	290	151	441	0	280	161
Ukraine	25	285	310	962	0	1,250
UK	1,531	1,462	2,993	1,210	1,239	2,444
Uzbekistan	20	675	695	32	45	677
Other	87	126	213	51	60	195
Total Europe & Eurasia	21,569	22,426	43,996	29,415	19,055	52,930
Bahrain	141	231	372	0	295	77
Iran	2,511	9,501	12,012	0	8,938	3,074
Iraq	242	1,866	2,108	0	199	1,910
Israel	635	0	635	265	187	713
Jordan	62	0	62	423	0	485
Kuwait	1,036	5,582	6,618	0	6,110	508
Lebanon	0	0	0	235	0	235
Oman	678	203	880	86	439	527
Qatar	348	10,270	10,618	0	10,367	251
Saudi Arabia	1,986	23,552	25,538	0	7,979	17,560
Syria	65	80	145	396	0	540
UAE	557	11,462	12,019	0	9,619	2,400
Yemen	71	252	323	328	0	651
Other	0	0	0	262	0	193
Total Middle East	8,331	62,999	71,330	1,994	44,132	29,123
Algeria	710	8,416	9,126	0	5,901	3,225
Angola	36	1,169	1,205	70	863	426
Burkina Faso	0	0	0	126	0	123
Cameroon	0	35	35	122	0	157

Availability to local market, 2023							'000t
	Production			Imports	Exports	Consumption	
	Refinery	Gas processing	Total				
Chad	20	0	20	27	0	47	
Congo	0	0	0	16	0	16	
Egypt	1,130	1,886	3,016	1,620	318	4,318	
Ethiopia	0	0	0	12	0	12	
Gabon	8	0	8	48	0	56	
Ghana	8	91	99	298	0	317	
Ivory Coast	10	3	13	618	0	631	
Kenya	0	0	0	404	43	370	
Libya	35	523	558	0	201	357	
Mali	0	0	0	25	0	25	
Mauritius	0	0	0	93	0	91	
Morocco	0	0	0	3,034	0	3,034	
Nigeria	75	3,716	3,791	0	2,076	1,715	
Reunion	0	0	0	23	0	22	
Senegal	5	0	5	226	10	221	
South Africa	133	0	133	479	139	425	
Sudan	320	0	320	147	0	467	
Togo	0	0	0	0	0	0	
Tunisia	39	75	114	508	0	629	
Uganda	0	0	0	34	0	35	
Other	64	0	64	253	0	280	
Total Africa	2,592	15,915	18,507	8,182	9,551	17,000	
Australia	179	2,861	3,040	423	2,572	785	
Bangladesh	12	3	15	1,483	0	1,498	
China	51,658	0	51,658	30,895	906	81,647	
Hong Kong	0	0	0	287	0	249	
India	11,055	1,721	12,777	18,179	528	31,317	
Indonesia	965	1,025	1,990	7,004	0	8,777	
Japan	1,297	0	1,297	10,554	225	13,198	
Malaysia	1,383	1,579	2,962	1,045	1,364	2,643	
Nepal	0	0	0	587	0	586	
New Zealand	0	140	140	31	0	195	
Pakistan	205	551	756	581	0	1,288	
Philippines	284	0	284	1,651	0	1,935	
Singapore	614	0	614	471	97	934	
South Korea	2,971	0	2,971	8,885	58	11,161	
Sri Lanka	23	0	23	263	0	286	
Taiwan	904	0	904	1,018	0	1,937	
Thailand	2,092	2,976	5,068	1,637	156	6,545	
Timor Leste	0	0	0	0	0	0	
Vietnam	1,416	374	1,789	2,512	268	4,033	
Other	68	0	68	432	54	245	
Total Asia-Pacific	75,127	11,230	86,357	87,939	6,227	169,261	
Total World	127,150	232,262	359,412	147,797	151,230	357,598	

CONSUMPTION

LPG consumption, 2013-23												'000t
Country	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	±%23/22
US	46,368	42,726	42,035	41,493	43,256	46,223	47,250	43,649	43,455	46,550	47,993	3.1
Canada	6,876	6,857	6,671	7,681	7,989	8,520	6,552	8,427	8,396	9,866	10,811	9.6
Total North America	53,244	49,583	48,706	49,174	51,245	54,743	53,802	52,076	51,851	56,416	58,803	4.2
Argentina	2,026	1,988	1,750	1,775	1,672	1,577	1,559	1,407	1,756	1,848	1,865	0.9
Bolivia	374	387	395	401	377	389	398	380	418	430	424	-1.2
Brazil	7,410	7,428	7,308	7,400	7,390	7,300	7,539	7,688	7,657	7,595	7,619	0.3
Chile	1,268	1,412	1,324	1,237	1,294	1,317	1,326	1,353	1,448	1,444	1,443	-0.1
Colombia	553	600	598	630	630	700	672	728	775	847	862	1.8
Costa Rica	127	137	146	159	168	176	187	181	200	176	191	8.8
Cuba	113	121	123	124	145	161	169	171	192	175	199	13.8
Dominican Republic	773	828	922	913	987	1,017	1,027	988	1,037	1,057	1,046	-1.0
Ecuador	1,090	1,139	1,126	1,073	1,118	1,127	1,229	1,237	1,295	1,351	1,353	0.1
El Salvador	236	275	373	291	300	304	310	314	334	339	335	-1.2
Guatemala	274	285	331	355	373	391	409	415	505	535	553	3.3
Honduras	114	119	139	144	159	168	182	174	221	244	225	-7.6
Jamaica	78	73	79	89	92	87	89	84	90	87	81	-6.6
Mexico	8,988	9,070	8,800	8,947	8,976	8,753	9,010	9,100	9,111	9,340	10,009	7.2
Netherlands Antilles	7	7	6	6	6	6	6	6	6	6	6	2.4
Nicaragua	95	98	105	117	125	124	131	141	138	135	141	4.0
Panama	165	175	140	139	143	148	151	146	153	177	210	18.5
Paraguay	83	80	80	81	81	87	88	80	92	101	106	4.8
Peru	1,503	1,579	1,619	1,600	1,764	1,919	1,985	1,767	2,004	2,054	2,040	-0.7
Puerto Rico	102	102	98	91	83	79	76	75	76	77	79	2.5
Trinidad & Tobago	40	44	57	61	54	39	40	32	73	73	58	-20.5
Uruguay	133	124	118	120	111	112	116	131	119	119	110	-7.9
US Virgin Islands	20	20	25	50	88	104	303	274	289	289	299	3.3
Venezuela	4,105	4,385	4,649	4,529	2,723	2,324	1,500	499	911	974	985	1.1
Other	218	211	220	224	232	245	209	204	208	212	217	2.4
Total South & C. America	29,895	30,687	30,531	30,556	29,091	28,654	28,715	27,574	29,109	29,686	30,457	2.6
Austria	279	285	316	435	380	413	403	407	358	386	414	7.2
Azerbaijan	167	169	150	140	133	136	133	182	278	246	278	13.1
Belarus	418	426	424	410	410	376	445	406	396	395	400	1.3
Belgium	1,560	1,832	2,271	2,101	1,586	2,283	2,305	2,191	2,268	2,334	2,676	14.7
Bulgaria	387	411	432	441	447	437	427	438	433	458	507	10.7
Croatia	146	139	140	145	132	138	127	100	108	105	91	-13.3
Cyprus	51	47	54	55	57	54	61	65	65	68	64	-6.2
Czech Republic	222	273	213	327	396	422	445	388	433	430	394	-8.2
Denmark	48	48	50	54	58	57	54	59	60	78	87	11.7
Estonia	18	17	18	19	23	25	27	32	42	57	64	12.3
Finland	757	946	873	915	840	876	1,011	874	897	1,044	737	-29.4
France	3,680	3,986	3,826	3,566	3,438	3,465	3,839	3,124	3,110	2,504	2,827	12.9
Germany	3,384	2,846	2,956	3,083	4,478	3,625	3,889	3,493	3,740	3,367	3,124	-7.2
Greece	493	497	512	601	563	546	555	483	550	734	768	4.6
Hungary	409	444	458	481	521	568	555	530	568	446	381	-14.6

CONSUMPTION

LPG consumption, 2013-23												'000t
Country	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	±%23/22
Ireland	135	133	136	145	148	159	165	165	161	162	183	12.7
Italy	3,551	3,309	3,525	3,637	3,624	3,506	3,570	3,072	3,225	3,622	3,641	0.5
Kazakhstan	455	606	674	993	1,043	1,282	1,334	1,235	1,495	1,740	2,179	25.2
Latvia	85	93	97	91	92	86	75	74	73	76	103	35.5
Lithuania	183	180	162	154	151	142	143	127	121	128	158	23.4
Macedonia	58	63	71	78	76	79	82	67	68	66	64	-3.5
Malta	24	25	26	24	24	25	27	25	24	25	24	-3.6
Moldova	74	77	74	77	72	71	67	63	61	57	58	1.8
Montenegro	14	16	18	17	19	18	19	13	19	19	16	-14.7
Netherlands	4,192	4,927	3,970	3,626	3,108	3,381	2,950	3,032	2,579	2,557	2,825	10.5
Norway	872	776	715	722	692	413	459	485	477	481	522	8.6
Poland	2,117	2,160	2,245	2,355	2,495	2,415	2,520	2,340	2,435	2,495	2,500	0.2
Portugal	823	996	843	865	796	676	862	861	839	804	520	-35.3
Romania	555	541	529	541	540	475	511	493	518	484	530	9.5
Russia	9,548	10,007	9,657	10,175	10,290	10,255	11,015	11,003	10,867	13,071	13,627	4.3
Serbia	362	295	310	281	219	148	146	129	165	163	146	-10.5
Slovakia	156	124	160	158	166	163	123	112	131	165	154	-6.7
Slovenia	75	74	82	81	88	88	87	77	82	78	72	-7.1
Spain	2,174	2,333	2,578	2,865	2,538	2,623	2,434	1,960	1,668	1,892	1,988	5.1
Sweden	1,125	969	911	1,131	1,005	1,058	1,055	749	978	733	928	26.7
Switzerland	178	189	189	187	155	170	169	156	161	151	166	10.2
Tajikistan	225	296	336	349	360	381	431	448	413	396	414	4.5
Turkey	3,808	3,856	4,131	4,268	4,243	4,311	4,343	4,034	4,164	4,067	4,572	12.4
Turkmenistan	10	10	10	197	229	209	224	200	170	169	161	-4.7
Ukraine	949	1,055	1,140	1,488	1,603	1,828	2,020	2,022	1,978	1,175	1,250	6.4
UK	3,117	2,994	3,144	3,158	2,969	3,568	3,257	2,740	2,808	2,762	2,444	-11.5
Uzbekistan	272	277	449	590	640	650	678	662	704	661	677	2.4
Other	336	238	225	217	216	212	209	193	200	197	195	-0.8
Total Europe & Eurasia	47,492	48,985	49,100	51,243	51,063	51,813	53,247	49,309	49,889	51,048	52,930	3.7
Bahrain	55	58	60	64	69	73	77	74	68	75	77	2.3
Iran	3,281	3,116	3,243	3,135	3,165	3,265	3,030	2,985	3,198	3,089	3,074	-0.5
Iraq	1,825	1,668	1,700	1,610	1,720	1,750	1,476	1,710	1,715	1,837	1,910	3.9
Israel	651	644	675	693	733	714	724	697	651	634	713	12.4
Jordan	363	367	415	417	434	454	475	460	440	480	485	1.1
Kuwait	352	362	364	162	548	620	619	612	627	615	508	-17.4
Lebanon	270	247	258	267	261	233	257	245	233	248	235	-5.4
Oman	141	168	181	192	207	218	231	214	228	474	527	11.3
Qatar	867	926	971	937	217	234	245	246	265	249	251	0.8
Saudi Arabia	18,973	20,625	19,644	21,810	18,583	19,622	19,585	19,678	17,924	18,686	17,560	-6.0
Syria	516	471	456	456	400	471	510	517	484	568	540	-4.8
UAE	865	875	1,447	1,579	1,649	1,820	2,309	2,358	2,356	2,390	2,400	0.4
Yemen	669	590	595	506	455	405	405	397	402	354	651	84.1
Other	50	51	50	54	169	186	181	173	178	185	193	4.0
Total Middle East	28,878	30,168	30,059	31,882	28,610	30,065	30,124	30,366	28,769	29,885	29,123	-2.5

CONSUMPTION

LPG consumption, 2013-23												'000t
Country	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	±%23/22
Algeria	2,065	1,943	1,918	1,897	1,983	2,221	2,435	2,368	2,682	2,900	3,225	11.2
Angola	266	247	259	239	274	285	295	247	356	393	426	8.5
Burkina Faso	50	54	58	63	69	74	82	75	83	118	123	4.8
Cameroon	82	87	94	102	105	117	125	133	141	141	157	11.6
Chad	8	10	17	26	28	35	41	39	41	45	47	4.4
Congo	na	na	11	12	13	15	16	15	16	15	16	3.2
Egypt	4,433	4,510	4,488	4,444	4,369	4,267	4,226	4,018	4,292	4,398	4,318	-1.8
Ethiopia	6	7	9	8	9	10	11	10	10	10	12	20.0
Gabon	35	37	37	38	43	46	49	46	50	53	56	5.7
Ghana	243	241	280	267	356	394	340	359	373	305	317	4.1
Ivory Coast	213	245	271	280	319	332	356	346	514	574	631	10.0
Kenya	120	133	148	174	192	224	304	321	374	342	370	8.1
Libya	321	303	264	282	278	287	295	289	291	293	357	21.7
Mali	11	5	12	13	18	21	22	21	23	24	25	4.2
Mauritius	69	71	73	74	75	77	84	76	81	88	91	3.0
Morocco	2,186	2,277	2,380	2,494	2,500	2,599	2,740	2,829	2,796	3,012	3,034	0.7
Nigeria	193	201	350	450	650	780	1,525	1,651	1,715	1,627	1,715	5.4
Reunion	20	20	20	21	21	22	21	22	22	22	22	3.3
Senegal	103	106	127	139	143	152	161	199	199	179	221	23.8
South Africa	340	349	359	360	386	402	417	399	324	332	425	28.0
Sudan	453	472	475	478	507	537	569	554	575	458	467	1.9
Togo	na	na	15	17	18	0	0	0	0	0	0	0.0
Tunisia	511	509	529	528	559	573	604	603	616	623	629	1.0
Uganda	12	13	14	14	16	18	20	25	24	33	35	5.3
Other	269	215	227	250	250	265	276	259	269	269	280	4.0
Total Africa	12,009	12,055	12,435	12,670	13,181	13,753	15,013	14,904	15,867	16,254	17,000	4.6
Australia	1,768	1,645	1,573	1,500	1,290	1,326	1,297	1,103	1,043	795	785	-1.2
Bangladesh	83	108	148	343	518	764	960	1,232	1,395	1,427	1,498	5.0
China	27,884	32,594	39,312	48,411	52,316	56,115	59,729	62,939	71,079	73,920	81,647	10.5
Hong Kong	390	403	373	371	337	339	338	289	290	288	249	-13.6
India	16,527	18,343	19,780	22,041	23,762	24,642	27,046	28,309	29,036	30,139	31,317	3.9
Indonesia	5,608	6,094	6,400	6,667	7,192	7,564	7,825	8,230	8,620	8,627	8,777	1.7
Japan	16,368	15,930	16,450	16,046	15,576	15,934	15,836	14,269	13,892	13,510	13,198	-2.3
Malaysia	2,710	2,419	2,073	3,116	3,160	3,216	3,252	3,248	2,595	2,641	2,643	0.1
Nepal	207	232	252	287	332	369	392	404	509	567	586	3.4
New Zealand	144	152	163	167	179	180	190	185	193	194	195	1.0
Pakistan	522	566	868	1,124	1,179	1,187	1,156	1,141	1,210	1,219	1,288	5.7
Philippines	1,107	1,140	1,306	1,458	1,599	1,797	1,829	1,769	1,796	1,887	1,935	2.6
Singapore	777	764	762	875	721	873	902	990	968	970	934	-3.7
South Korea	8,338	8,176	7,794	9,386	8,986	9,381	10,361	10,242	10,390	10,390	11,161	7.4
Sri Lanka	220	243	291	346	424	422	471	401	380	260	286	9.9
Taiwan	2,890	2,991	2,621	3,111	2,504	2,679	2,775	1,723	1,581	1,766	1,937	9.7
Thailand	7,527	7,516	6,695	6,136	6,341	6,621	6,562	5,743	6,108	6,451	6,545	1.5
Vietnam	1,307	1,316	1,550	1,751	1,979	2,106	3,075	3,160	3,446	3,833	4,033	5.2
Other	165	176	213	210	220	234	245	238	246	244	245	0.4
Total Asia-Pacific	94,542	100,808	108,624	123,346	128,615	135,749	144,241	145,616	154,777	159,129	169,261	6.4
Total World	266,061	272,286	279,455	298,871	301,805	314,777	325,142	319,846	330,261	342,418	357,575	4.4

CONSUMPTION

LPG consumption for energy purposes only, 2013-23											'000t
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
US	19,054	18,698	17,749	17,910	17,811	19,995	20,992	19,340	18,444	18,889	17,904
Canada	2,788	2,580	2,520	2,618	2,743	2,824	2,978	2,702	2,779	2,864	3,420
Total North America	21,842	21,278	20,269	20,528	20,554	22,819	23,970	22,042	21,223	21,753	21,323
Argentina	1,980	1,940	1,701	1,725	1,622	1,527	1,509	1,357	1,706	1,798	1,815
Bolivia	374	387	395	401	377	389	398	380	418	430	424
Brazil	7,340	7,423	7,308	7,400	7,390	7,300	7,290	7,510	7,429	7,367	7,415
Chile	1,231	1,398	1,310	1,237	1,281	1,304	1,313	1,339	1,435	1,428	1,410
Colombia	553	600	598	581	578	571	533	561	691	759	762
Costa Rica	127	137	146	159	168	176	187	181	200	176	191
Cuba	113	121	123	124	145	161	169	171	192	175	199
Dominican Republic	773	828	922	913	987	1,017	1,027	988	1,037	1,057	1,046
Ecuador	1,067	1,110	1,096	1,060	1,104	1,113	1,214	1,222	1,281	1,327	1,328
El Salvador	236	275	373	291	300	304	310	314	334	339	335
Guatemala	274	285	331	355	373	391	409	415	505	535	553
Honduras	114	119	139	144	159	168	182	174	221	244	225
Jamaica	78	73	79	89	92	87	89	84	90	87	81
Mexico	8,988	9,070	8,800	8,947	8,908	8,682	8,942	9,034	9,048	9,276	9,940
Netherlands Antilles	7	6	6	6	6	6	6	6	6	6	6
Nicaragua	91	94	101	113	121	120	127	128	133	131	136
Panama	165	175	140	139	143	148	151	146	153	177	210
Paraguay	83	80	80	81	81	87	88	80	92	101	106
Peru	1,503	1,579	1,619	1,600	1,764	1,919	1,985	1,767	2,004	2,054	2,040
Puerto Rico	102	98	98	91	83	79	76	75	76	77	79
Trinidad & Tobago	40	44	57	61	54	39	40	32	73	73	58
Uruguay	133	124	118	120	111	112	116	131	119	119	110
US Virgin Islands	20	25	25	50	88	104	303	274	289	289	299
Venezuela	1,513	1,400	1,460	1,376	916	878	504	336	335	381	392
Other	198	218	211	220	220	224	232	245	209	204	208
Total South & C. America	27,103	27,609	27,236	27,283	27,071	26,907	27,203	26,950	28,078	28,611	29,369
Austria	99	101	90	80	84	71	68	66	69	64	74
Azerbaijan	63	55	42	47	14	26	23	3	25	26	26
Belarus	279	286	283	270	270	266	265	246	236	235	240
Belgium	335	375	217	216	184	195	183	209	212	189	188
Bulgaria	387	411	432	441	447	437	427	438	433	458	507
Croatia	144	139	140	145	132	138	127	100	108	105	91
Cyprus	51	47	54	55	57	54	61	65	65	68	64
Czech Republic	102	109	121	172	166	180	165	178	176	168	207
Denmark	48	48	50	54	58	57	54	59	60	78	87
Estonia	18	17	18	19	23	25	27	32	42	57	64
Finland	253	266	273	277	263	267	246	110	109	185	142
France	1,978	1,710	1,791	1,769	1,756	1,691	1,661	1,524	1,609	1,406	1,352
Germany	1,844	1,730	1,589	1,722	1,679	1,690	1,593	1,446	1,472	1,395	1,395
Greece	416	456	471	506	507	515	524	453	471	511	535
Hungary	151	169	161	170	173	166	167	140	169	125	140
Ireland	135	133	136	145	148	159	165	165	161	162	183
Italy	3,280	3,079	3,253	3,355	3,361	3,264	3,314	2,834	2,995	3,126	3,144

CONSUMPTION

LPG consumption for energy purposes only, 2013-23											'000t
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Kazakhstan	455	606	674	993	1,043	1,262	1,309	1,160	1,400	1,630	1,924
Latvia	85	93	97	91	92	86	75	74	73	76	103
Lithuania	183	180	162	154	151	142	143	127	121	128	158
Macedonia	58	63	71	78	76	79	82	67	68	66	64
Malta	24	25	26	24	24	25	27	25	24	25	24
Moldova	74	77	74	77	72	71	67	63	61	57	58
Montenegro	14	16	28	17	19	18	19	13	19	19	16
Netherlands	442	325	321	316	303	294	305	268	272	260	299
Norway	192	173	161	184	182	132	176	242	248	280	303
Poland	2,117	2,160	2,245	2,355	2,495	2,415	2,520	2,340	2,435	2,495	2,500
Portugal	557	542	518	512	473	402	466	462	463	428	405
Romania	515	499	487	499	500	475	469	451	475	444	485
Russia	3,967	4,114	4,600	4,385	4,490	4,530	4,595	4,440	4,350	4,820	5,035
Serbia	362	295	310	246	193	123	124	106	131	138	121
Slovakia	56	47	50	51	49	47	47	47	52	55	48
Slovenia	75	74	82	81	88	88	87	77	82	75	69
Spain	1,529	1,410	1,430	1,540	1,518	1,448	1,417	1,143	1,224	1,223	1,171
Sweden	352	347	338	346	356	339	346	288	340	285	323
Switzerland	86	77	76	80	74	76	74	64	66	57	62
Tajikistan	225	296	336	349	360	381	431	448	413	396	414
Turkey	3,737	3,785	3,966	4,103	4,078	4,146	4,178	3,869	3,999	3,918	4,412
Turkmenistan	10	10	10	11	12	12	12	10	10	6	6
Ukraine	949	1,055	1,140	1,488	1,603	1,725	1,909	1,970	1,901	1,160	1,205
UK	1,077	987	1,061	1,073	1,036	1,069	1,062	1,060	1,098	1,133	1,035
Uzbekistan	272	277	449	590	640	650	678	662	704	661	677
Other	347	336	238	225	225	217	216	212	209	193	200
Total Europe & Eurasia	27,343	27,000	28,071	29,311	29,474	29,452	29,903	27,755	28,648	28,388	29,557
Bahrain	55	58	60	64	69	73	77	74	68	75	77
Iran	2,227	2,059	2,020	1,954	1,942	1,999	1,734	1,742	1,777	1,798	1,769
Iraq	1,825	1,668	1,700	1,610	1,720	1,750	1,476	1,710	1,715	1,837	1,910
Israel	439	444	425	435	436	432	428	413	377	387	442
Jordan	363	367	415	417	434	454	475	460	440	480	485
Kuwait	141	141	141	162	165	205	211	198	215	195	200
Lebanon	270	247	258	267	261	233	257	245	233	248	235
Oman	141	168	181	192	207	218	231	214	228	260	274
Qatar	109	113	113	134	137	154	165	174	188	177	178
Saudi Arabia	1,315	1,309	1,390	1,544	1,450	1,290	1,339	1,457	1,490	1,580	1,561
Syria	516	471	456	456	400	471	510	517	484	568	540
United Arab Emirates	312	326	344	380	361	522	513	550	550	582	578
Yemen	669	590	595	506	455	405	405	397	402	354	651
Other	48	50	51	50	50	54	169	186	181	173	178
Total Middle East	8,430	8,011	8,149	8,171	8,087	8,260	7,989	8,338	8,347	8,714	9,077
Algeria	2,046	1,895	1,897	1,882	1,970	2,190	2,404	2,337	2,676	2,900	3,225
Angola	266	247	259	239	274	285	295	247	356	393	426
Burkina Faso	50	54	58	63	69	74	82	75	83	118	123
Cameroon	82	87	94	102	105	117	125	133	141	141	157

CONSUMPTION

LPG consumption for energy purposes only, 2013-23											'000t
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Chad	8	10	17	26	28	35	41	39	41	45	47
Congo	na	58	11	12	13	15	16	15	16	15	16
Egypt	3,936	3,922	3,913	3,787	3,666	3,537	3,413	3,133	3,393	3,489	3,435
Ethiopia	6	7	9	8	9	10	11	10	10	10	12
Gabon	35	37	37	38	43	46	49	46	50	53	56
Ghana	243	241	280	267	356	394	340	359	373	305	317
Ivory Coast	213	245	271	280	319	332	356	346	514	574	631
Kenya	120	133	148	174	192	224	304	321	374	342	370
Libya	321	303	264	282	278	287	295	289	291	293	357
Mali	11	5	12	13	18	21	22	21	23	24	25
Mauritius	69	71	73	74	75	77	84	76	81	88	91
Morocco	2,186	2,277	2,380	2,494	2,500	2,599	2,740	2,829	2,796	3,012	3,034
Nigeria	160	190	350	450	650	780	992	1,150	1,213	1,097	1,216
Reunion	20	20	20	21	21	22	21	22	22	22	22
Senegal	103	106	127	139	143	152	161	199	199	179	221
South Africa	340	349	359	360	386	402	417	399	324	332	425
Sudan and South Sudan	453	472	475	478	507	537	569	554	575	458	467
Togo	na	na	15	17	18	0	0	0	0	0	0
Tunisia	511	509	529	528	559	573	604	603	616	623	629
Uganda	12	13	14	14	16	18	20	25	24	33	35
Other	271	269	215	227	227	250	250	265	276	259	269
Total Africa	11,462	11,520	11,827	11,975	12,442	12,977	13,609	13,494	14,466	14,804	15,608
Australia	1,540	1,444	1,323	1,276	1,190	1,119	1,091	897	850	795	785
Bangladesh	83	108	148	343	518	764	960	1,232	1,395	1,427	1,498
China	23,344	26,583	29,816	33,311	34,870	37,532	39,202	35,398	37,554	35,420	34,590
Hong Kong	390	403	373	371	337	339	338	289	290	288	249
India	15,855	17,671	19,040	21,232	22,992	23,872	26,276	27,441	27,908	28,693	29,800
Indonesia	5,608	6,094	6,400	6,667	7,192	7,564	7,825	8,230	8,620	8,627	8,777
Japan	11,724	11,423	11,738	11,487	11,185	11,557	11,308	10,515	10,473	10,178	9,862
Malaysia	1,479	1,360	1,304	1,281	1,357	1,357	1,335	1,293	1,481	1,427	1,259
Nepal	207	232	252	287	332	369	392	404	509	567	586
New Zealand	144	152	163	167	179	180	190	185	193	194	195
Pakistan	522	566	868	1,124	1,179	1,187	1,156	1,141	1,210	1,219	1,288
Philippines	1,107	1,140	1,306	1,458	1,599	1,797	1,829	1,769	1,768	1,853	1,888
Singapore	128	115	113	106	106	104	102	101	98	100	97
South Korea	6,958	6,336	6,030	6,073	6,047	5,742	5,810	5,378	5,573	5,573	5,723
Sri Lanka	220	243	291	346	424	422	471	401	380	260	286
Taiwan	1,389	1,369	1,355	1,337	1,331	1,205	1,177	886	1,190	1,179	1,138
Thailand	4,788	4,739	4,418	4,188	4,123	4,023	3,810	3,400	3,384	3,633	3,653
Vietnam	1,307	1,316	1,550	1,751	1,979	2,106	2,275	2,360	2,529	2,595	2,753
Other	152	165	176	213	213	210	220	234	245	238	246
Total Asia-Pacific	76,945	81,459	86,664	93,018	97,153	101,449	105,768	101,554	105,649	104,266	104,675
-											
Total World	173,125	176,878	182,216	190,286	194,781	201,864	208,441	200,132	206,411	206,536	209,610

Note: Energy purposes includes domestic, agriculture, industrial, and transport sectors.

CONSUMPTION

LPG consumption by sector, 2023							'000t
	Domestic	Agriculture	Industry	Transport	Refinery	Chemical	Total
US	14,367	1,470	1,876	190	15,481	14,608	47,993
Canada	1,309	233	1,592	285	5,704	1,687	10,811
Total North America	15,676	1,704	3,468	476	21,185	16,295	58,803
Argentina	1,523	91	199	3	0	50	1,865
Bolivia	411	0	13	0	0	0	424
Brazil	6,029	0	1,386	0	0	204	7,619
Chile	1,089	0	287	34	34	0	1,443
Colombia	588	47	127	0	89	11	862
Costa Rica	101	0	72	18	0	0	191
Cuba	182	0	16	0	0	0	199
Dominican Republic	518	0	58	470	0	0	1,046
Ecuador	1,177	25	89	37	24	0	1,353
El Salvador	247	0	87	1	0	0	335
Guatemala	449	0	99	5	0	0	553
Honduras	87	0	56	83	0	0	225
Jamaica	81	0	0	0	0	0	81
Mexico	7,187	116	1,093	1,544	70	0	10,009
Netherlands Antilles	6	0	0	0	0	0	6
Nicaragua	121	1	14	0	5	0	141
Panama	157	0	52	0	0	0	210
Paraguay	83	0	1	21	0	0	106
Peru	1,183	0	265	592	0	0	2,040
Puerto Rico	72	0	7	0	0	0	79
Trinidad & Tobago	58	0	0	0	0	0	58
Uruguay	97	5	7	0	0	0	110
US Virgin Islands	10	0	288	0	0	0	299
Venezuela	334	0	58	0	593	0	985
Other	217	0	0	0	0	0	217
Total South & C. America	22,031	285	4,278	2,808	814	265	30,480
Austria	28	2	41	2	40	300	414
Azerbaijan	7	0	2	17	0	252	278
Belarus	70	8	7	155	0	160	400
Belgium	133	2	8	45	28	2,460	2,676
Bulgaria	38	5	24	440	0	0	507
Croatia	40	2	10	40	0	0	91
Cyprus	46	1	16	1	0	0	64
Czech Republic	70	9	44	85	0	187	394
Denmark	30	7	49	1	0	0	87
Estonia	7	7	30	20	0	0	64
Finland	4	4	134	0	17	577	737
France	708	331	211	102	0	1,475	2,827
Germany	504	0	609	204	167	1,639	3,124
Greece	123	22	182	209	233	0	768
Hungary	69	15	43	13	0	241	381

CONSUMPTION

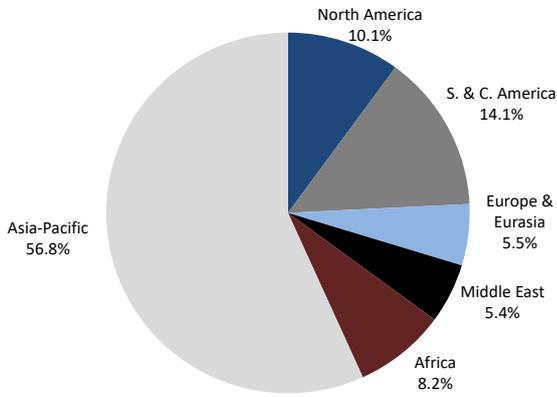
LPG consumption by sector, 2023							'000t
	Domestic	Agriculture	Industry	Transport	Refinery	Chemical	Total
Ireland	160	0	21	2	0	0	183
Italy	1,471	23	110	1,540	220	277	3,641
Kazakhstan	210	2	75	1,637	0	255	2,179
Latvia	20	6	46	30	0	0	103
Lithuania	48	4	20	86	0	0	158
Macedonia	8	0	15	41	0	0	64
Malta	20	0	4	1	0	0	24
Moldova	8	0	5	45	0	0	58
Montenegro	3	0	6	7	0	0	16
Netherlands	125	52	17	105	92	2,434	2,825
Norway	56	27	212	8	15	204	522
Poland	235	125	250	1,890	0	0	2,500
Portugal	333	3	26	43	2	113	520
Romania	151	12	22	300	45	0	530
Russia	900	165	300	3,670	0	8,592	13,627
Serbia	15	4	26	76	0	25	146
Slovakia	10	3	5	30	58	48	154
Slovenia	41	0	20	9	0	3	72
Spain	868	36	153	114	33	784	1,988
Sweden	13	1	308	0	12	593	928
Switzerland	13	4	43	1	1	104	166
Tajikistan	36	1	2	375	0	0	414
Turkey	806	0	87	3,519	0	160	4,572
Turkmenistan	6	0	0	0	150	5	161
Ukraine	55	80	20	1,050	45	0	1,250
United Kingdom	353	90	497	95	0	1,409	2,444
Uzbekistan	560	1	2	114	0	0	677
Other	151	1	33	10	0	0	195
Total Europe & Eurasia	8,551	1,057	3,736	16,132	1,158	22,298	52,930
Bahrain	77	0	0	0	0	0	77
Iran	1,736	0	28	5	0	1,305	3,074
Iraq	1,910	0	0	0	0	0	1,910
Israel	303	32	100	7	0	271	713
Jordan	473	0	12	0	0	0	485
Kuwait	200	0	0	0	0	308	508
Lebanon	206	0	29	0	0	0	235
Oman	222	0	53	0	0	253	527
Qatar	178	0	0	0	73	0	251
Saudi Arabia	1,203	0	358	0	0	15,998	17,560
Syria	540	0	0	0	0	0	540
UAE	552	0	26	0	0	1,822	2,400
Yemen	594	0	0	57	0	0	651
Other	181	0	12	0	0	0	193
Total Middle East	8,373	32	618	69	73	19,958	29,123

CONSUMPTION

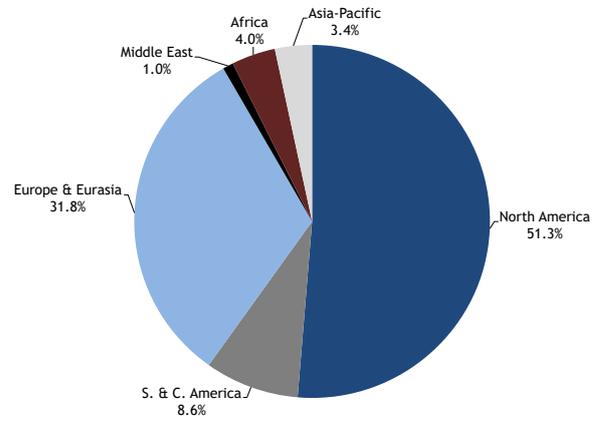
LPG consumption by sector, 2023							'000t
	Domestic	Agriculture	Industry	Transport	Refinery	Chemical	Total
Algeria	1,243	21	62	1,900	0	0	3,225
Angola	409	0	3	14	0	0	426
Burkina Faso	123	0	0	0	0	0	123
Cameroon	153	0	4	0	0	0	157
Chad	47	0	0	0	0	0	47
Congo	16	0	0	0	0	0	16
Egypt	3,417	0	18	0	0	883	4,318
Ethiopia	12	0	0	0	0	0	12
Gabon	50	0	6	0	0	0	56
Ghana	151	1	85	81	0	0	317
Ivory Coast	566	0	65	0	0	0	631
Kenya	320	0	41	9	0	0	370
Libya	357	0	0	0	0	0	357
Mali	25	0	0	0	0	0	25
Mauritius	81	0	7	3	0	0	91
Morocco	2,711	111	212	0	0	0	3,034
Nigeria	1,216	0	0	0	0	499	1,715
Reunion	20	0	2	0	0	0	22
Senegal	214	0	7	0	0	0	221
South Africa	217	0	208	0	0	0	425
Sudan	452	0	15	0	0	0	467
Togo	0	0	0	0	0	0	0
Tunisia	594	0	25	9	0	0	629
Uganda	35	0	0	0	0	0	35
Other	278	0	2	0	0	0	280
Total Africa	12,708	132	762	2,016	0	1,382	17,000
Australia	144	0	563	78	0	0	785
Bangladesh	1,175	0	179	144	0	0	1,498
China	30,537	98	3,116	839	21,926	25,131	81,647
Hong Kong	100	0	3	146	0	0	249
India	28,398	8	993	402	0	1,517	31,317
Indonesia	8,650	0	127	0	0	0	8,777
Japan	6,899	0	2,613	350	1,738	1,598	13,198
Malaysia	1,135	0	124	0	0	1,384	2,643
Nepal	586	0	0	0	0	0	586
New Zealand	114	2	76	3	0	0	195
Pakistan	1,096	0	120	72	0	0	1,288
Philippines	1,695	0	193	0	0	47	1,935
Singapore	83	0	14	0	0	837	934
South Korea	1,999	0	1,182	2,542	0	5,438	11,161
Sri Lanka	254	1	30	1	0	0	286
Taiwan	911	0	220	7	134	665	1,937
Thailand	2,058	3	691	901	88	2,804	6,545
Vietnam	2,321	0	432	0	0	1,280	4,033
Other	234	0	7	5	0	0	245
Total Asia-Pacific	88,390	112	10,683	5,489	23,886	40,701	169,261
Total World	155,729	3,322	23,545	26,989	47,115	100,900	357,598

LPG REGIONAL SHARE OF MARKET SUBSECTORS, 2023

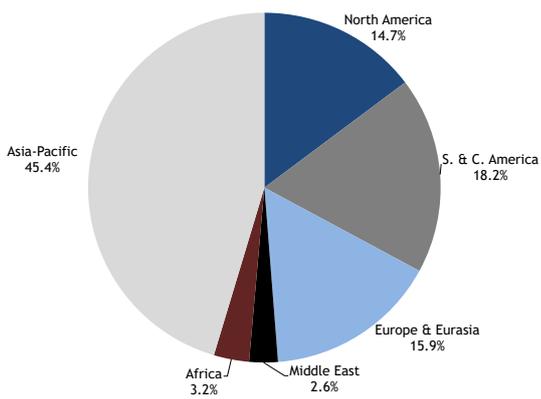
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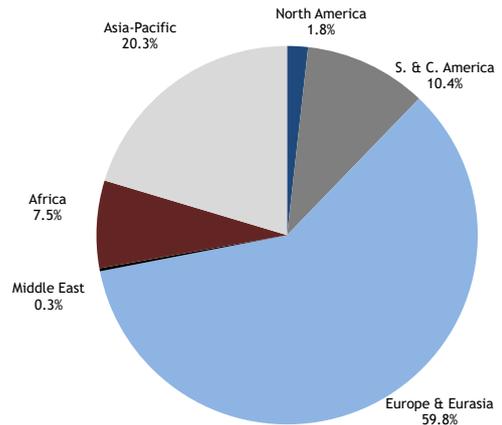
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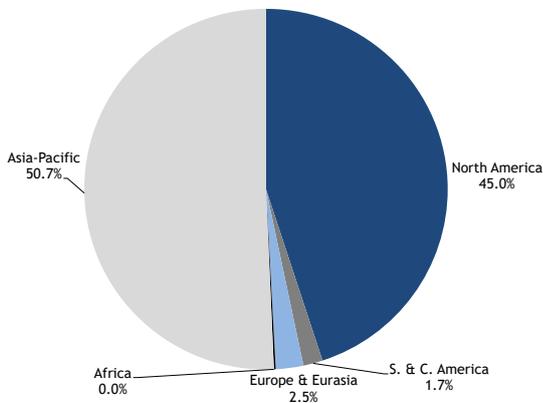
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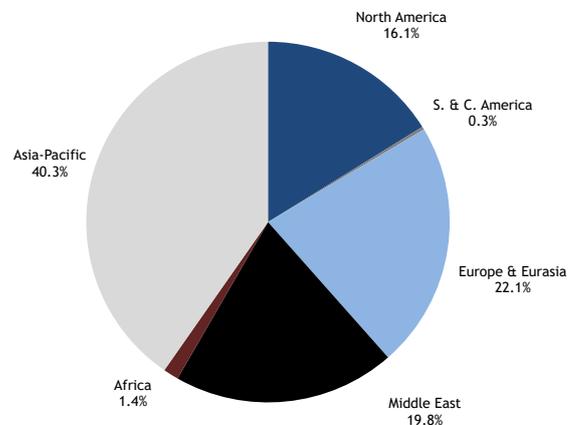
Transport



Refinery

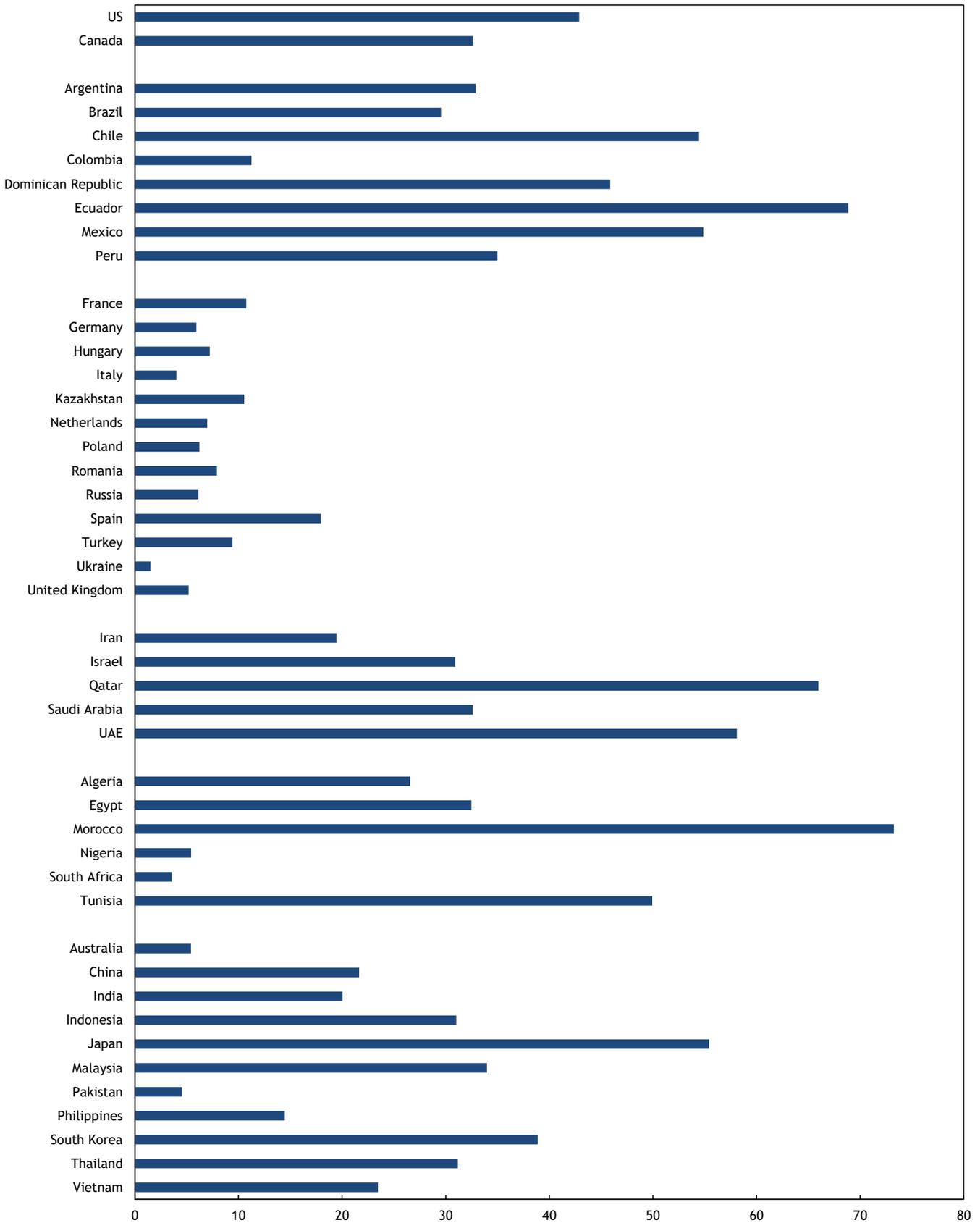


Chemical



Domestic LPG consumption per capita for selected countries

kg/capita



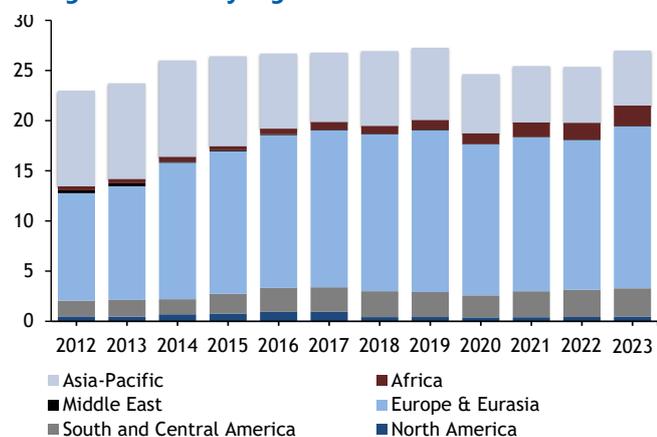
AUTOGAS

Autogas consumption, vehicles and dispensing sites							
	Consumption ('000t)			Vehicle fleet		Retail sites	
	2022	2023	±% 23/22	2022	2023	2022	2023
US	189	190	0.5	192,000	194,000	3,200	3,300
Canada	239	285	19.4	53,000	53,500	2,210	2,230
Total North America	428	476	11.1	245,000	247,500	5,410	5,530
Chile	34	34	1.1	23,000	23,000	200	200
Costa Rica	17	18	8.8	9,000	9,000	100	100
Dominican Republic	472	470	-0.4	230,000	230,000	1,550	1,550
Ecuador	27	37	38.3	10,000	14,000	35	50
Guatemala	5	5	2.5	5,500	5,500	23	23
Honduras	89	83	-7.6	68,000	68,000	240	240
Mexico	1,441	1,544	7.2	426,000	427,000	2,180	2,190
Paraguay	19	21	14.7	27,900	31,300	97	109
Peru	596	592	-0.7	532,000	650,000	1,320	1,500
Total South & C. America	2,703	2,808	3.9	1,336,400	1,456,800	5,752	5,969
Austria	2	2	0.0	4,964	5,009	35	41
Azerbaijan	22	17	-22.7	8,700	8,700	130	130
Belarus	150	155	3.5	92,400	93,800	300	300
Belgium	43	45	6.1	25,300	28,527	350	363
Bulgaria	400	440	10.0	490,000	490,000	2,700	2,600
Croatia	46	40	-13.3	72,900	72,500	550	573
Czech Republic	89	85	-4.4	153,500	104,064	900	898
Denmark	1	1	-20.7	20	20	5	5
Estonia	25	20	-20.0	15,000	15,000	95	95
France	83	102	23.4	220,156	249,786	1,554	1,566
Germany	227	204	-9.9	326,853	343,975	5,914	5,888
Greece	204	209	2.3	290,000	290,000	1,395	1,400
Hungary	17	13	-25.3	23,000	22,000	560	565
Ireland	1	2	9.7	3,500	3,400	45	42
Italy	1,535	1,540	0.3	2,900,799	3,032,796	4,500	4,583
Kazakhstan	1,338	1,637	22.3	550,000	580,000	2,195	2,580
Latvia	32	30	-6.2	22,531	37,091	281	233
Lithuania	84	86	2.3	98,000	98,000	340	340
Macedonia	42	41	-3.5	17,000	17,000	250	220
Malta	1	1	-3.6	1,800	1,867	9	11
Moldova	46	45	-1.3	52,400	52,300	547	464
Montenegro	9	7	-15.1	7,500	6,800	65	67
Netherlands	115	105	-8.9	127,695	126,016	1,095	1,101
Norway	6	8	33.3	1,500	1,501	73	74
Poland	1,880	1,890	0.5	3,415,000	3,452,000	7,486	7,370
Portugal	36	43	21.0	62,237	67,667	389	417
Romania	260	300	15.4	220,000	230,000	1,100	900
Russia	3,450	3,670	6.4	3,000,000	3,100,000	4,900	4,700
Serbia	82	76	-7.4	98,477	88,477	600	600
Slovakia	34	30	-13.1	16,400	16,750	370	399
Slovenia	10	9	-7.1	14,100	14,500	150	143
Spain	107	114	5.6	103,000	116,684	1,150	1,200
Sweden	0	0	-	80	81	25	26
Switzerland	2	1	-2.9	900	900	50	60
Tajikistan	358	375	4.7	210,000	210,000	1,548	1,500

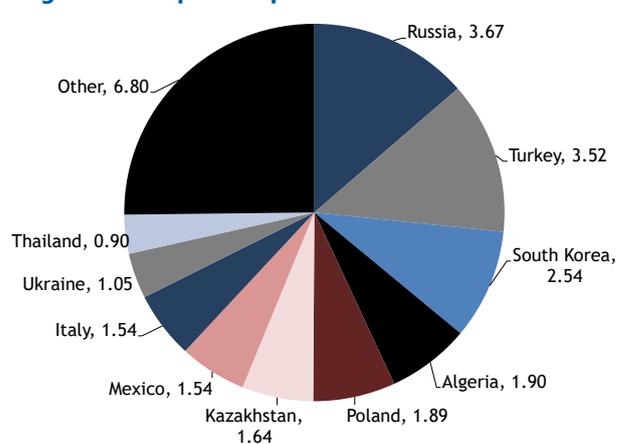
AUTOGAS

Autogas consumption, vehicles and dispensing sites							
	Consumption ('000t)			Vehicle fleet		Retail sites	
	2022	2023	±% 23/22	2022	2023	2022	2023
Turkey	3,098	3,519	13.6	4,883,888	4,883,889	10,059	10,060
Ukraine	930	1,050	12.9	1,600,000	1,810,000	3,700	3,200
United Kingdom	61	95	57.0	90,500	90,500	950	950
Uzbekistan	100	114	14.0	310,000	310,000	900	900
Other	9	10	8.0	0	0	0	0
Total Europe & Eurasia	14,935	16,132	8.0	19,530,349	20,070,850	57,273	56,475
Iran	5	5	2	4,800	4,801	70	71
Israel	6	7	22.6	19,000	18,000	90	85
Yemen	44	57	30.0	50,000	50,000	190	190
Total Middle East	55	69	26.7	73,800	72,801	350	346
Algeria	1,552	1,900	22.4	776,000	1,000,000	1,132	1,285
Mauritius	3	3	-8.6	7,000	7,000	6	6
Tunisia	9	9	3.3	10,500	10,500	22	22
Total Africa	1,663	2,016	21.2	799,000	1,023,000	1,198	1,351
Australia	124	78	-36.7	256,000	235,500	2,400	2,400
Bangladesh	100	144	43.4	70,000	100,000	650	800
China	883	839	-5.0	167,450	159,000	483	470
Hong Kong	178	146	-18.1	16,700	16,700	60	59
India	408	402	-1.4	2,704,000	2,665,000	1,470	1,460
Indonesia	0	0	-	1,000	1,000	28	28
Japan	370	350	-5.5	126,743	115,276	1,197	1,074
Nepal	0	0	-	5,500	5,500	38	38
New Zealand	3	3	1.0	2,400	2,400	150	150
Pakistan	63	72	13.4	3,700	3,750	270	270
Philippines	0	0	1.9	16,000	11,500	110	75
South Korea	2,563	2,542	-0.8	0	0	0	0
Sri Lanka	1	1	12.4	1,000	1,000	10	10
Taiwan	8	7	-11.2	8,000	8,000	35	35
Thailand	871	901	3.5	690,500	714,700	1,530	1,580
Vietnam	0	0	0.0	0	0	0	0
Other	5	5	-1.6	6,000	6,000	55	55
Total Asia-Pacific	5,576	5,489	-1.6	4,074,993	4,045,326	8,486	8,504
Total World	25,360	26,989	6.4	26,059,542	26,916,276	78,470	78,176

Autogas demand by region

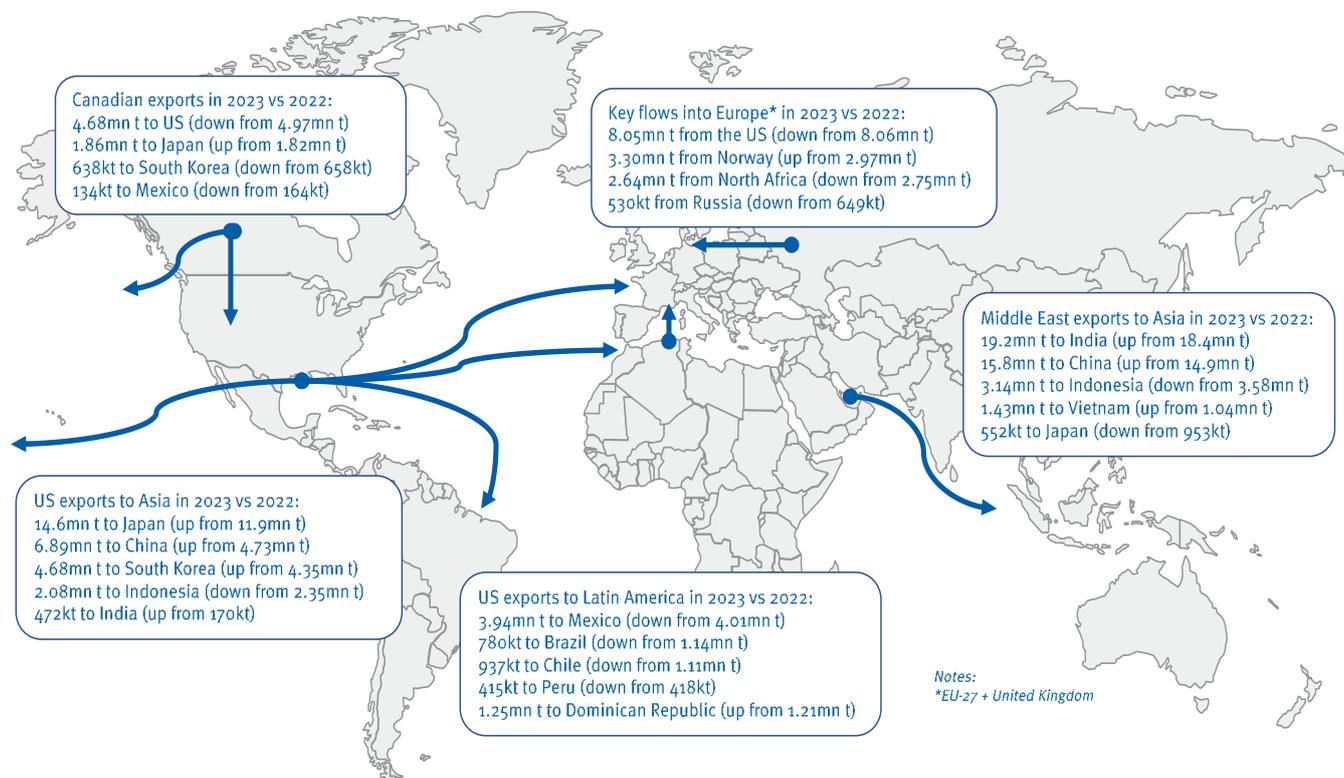


Autogas consumption top 10



TRADE, INFRASTRUCTURE AND SHIPPING

Global trade flows



Regional LPG exports and imports, 2013-23				
	2013		2023	
	Imports	Exports	Imports	Exports
North America	4,232	13,402	4,834	69,838
South and Central America	9,011	4,505	15,433	2,427
Europe and Eurasia	20,674	18,661	29,415	19,055
Middle East	1,547	35,975	1,994	44,132
Africa	6,042	9,475	8,182	9,551
Asia-Pacific	38,337	4,237	87,939	6,227
Total	79,843	86,254	147,797	151,230

LPG shipping

The very large gas carrier (VLGC) freight market experienced significant volatility in 2023, driven primarily by supply-demand imbalances and disruptions at the Panama Canal. Freight rates soared to all-time highs, with Houston-Chiba rates reaching \$250/t in November — a 23pc increase compared with a year earlier. Mideast Gulf-Chiba rates also hit a record high in 2023, at \$183/t in September, as a result of heightened demand and constrained supply.

The Panama Canal faced unprecedented congestion last year as a result of drought-induced restrictions, which dramatically reduced available transit slots for larger vessels such as VLGCs. Waiting times for transit extended to 21 days, severely impacting global LPG shipping schedules. This congestion forced many vessels to reroute around the Cape of Good Hope, adding weeks to journey times and exacerbating freight rate pressures.

US seaborne LPG exports remained resilient despite these challenges, rising by nearly 14pc compared with a year earlier to 59.8mn t in 2023. Europe and Asia-Pacific competed

Type	Number of vessels	Capacity
Semi-refrigerated	366	4,500
Fully refrigerated	554	38,135
Pressurised	749	4,473

– Clarksons

intensely for these cargoes. European demand remained high owing to geopolitical tensions — particularly the Russia-Ukraine conflict — which showed no sign of abating last year, tightening the market. LPG also continued to serve as a substitute for natural gas in the refining sector, reducing internal supply and adding to the overall market tightness. This dynamic kept US exports elevated, especially as cold weather in Europe further supported regional demand. Concurrently, robust Asian LPG consumption, supported by China's rising PDH capacity and growth in India's residential demand, combined with tighter Middle Eastern supplies resulting from Opec+ output cuts, further pressuring the VLGC market.

Spot freight rates	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Mideast Gulf-Japan	59	91	90	29	29	34	58	59	52	79	107
Assessed 12 Month Timecharter Rates											
84,000m ³	944	1575	1919	750	554	607	999	1062	1035	1071	1658
59,000m ³ (57,000-59,000m ³ until 2009)	976	1394	1887	747	509	546	801	886	887	934	1251
22,500m ³ (22,500-24,000m ³ until 2011)	774	844	862	643	374	423	483	567	593	662	769

– Clarksons

LOOKING TO THE FUTURE

- Tight availability of US supplies is likely to persist until the Nederland terminal expansion is completed in the second half of 2025. Subsequent increases in capacity from Enterprise's projects on the US Gulf coast will ensure that US volumes can be freely exported until the 2030s.
- The petrochemical sector in Asia-Pacific will remain the key driver of global demand. New PDH plants and steam crackers will continue to come on line until the end of the

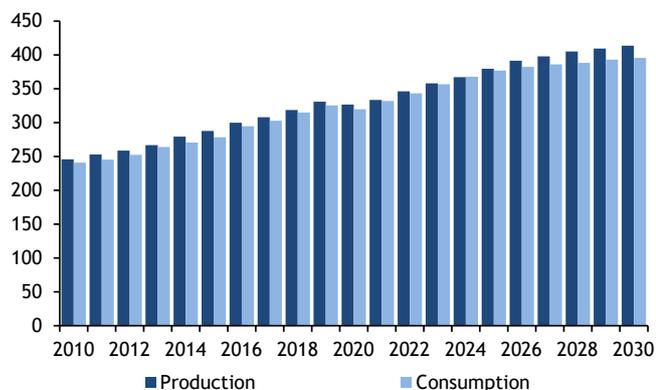
decade. We also expect that LPG will become increasingly prominent as a feedstock in steam crackers, with LPG's share in Asia rising to 14pc in 2028 from 11pc in 2023.

- But the underperformance of the broader Chinese economy is at risk of undermining LPG demand growth, as capacity outstrips downstream consumption. A raft of stimulus measures announced in September 2024 will help, but it is still too early to say if they will be enough.

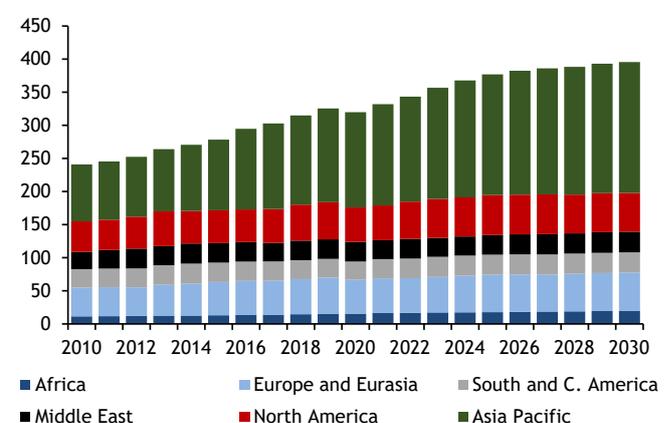
LOOKING TO THE FUTURE

- Globally, energy sector demand for LPG will continue to struggle. Chinese energy use demand will fall in the coming years as Beijing focuses on reducing LPG consumption in favour of natural gas. Industrial and commercial demand are also likely to weaken, as declines in developed economies outweigh growth in developing countries.
- But in some parts of the world, the energy sector will continue to perform strongly. Sub-Saharan African markets will continue to develop, as LPG replaces primary biomass use, while Indian domestic demand is likely to grow further.
- Autogas is also set to perform well. Demand remains concentrated in a select few markets, but many have shown strong growth in recent years. Electric vehicle market penetration has begun to slow in much of the world, creating more space for transport demand for LPG to thrive.
- It is safe to say that over the past year the global economy has recovered from inflation remarkably well. Many challenges remain, but we expect a much more supportive macroeconomic environment for demand than we did at this time last year.
- US LPG production will continue to grow, but at a slower rate than during the previous five years. A maturing market, the need for more new wells to replace ageing assets, corporate strategy focusing on profit over market share, and the most productive patches of the Permian basin being exhausted will make it harder for the sector to keep growing at its recent breakneck pace.
- After years of steady supplies, the Middle East is expected to grow rapidly over the rest of this decade. Several new natural gas projects are fuelling this expansion as part of a growing focus on the product in the region. This is both for replacing domestic crude consumption to free up more supply for exports and to provide feedgas to new LNG export facilities.
- The Jafurah shale gas field in Saudi Arabia and expansions to the North Field in Qatar are the two largest projects, and are expected to account for a considerable share of the supply increase. Each is expected to contribute close to 10mn t/yr of LPG supply once operating at full capacity. Efforts to reduce gas flaring in Iraq and Iran’s flourishing LPG trade with China will also be significant drivers of growing Middle East production.
- Strong non-Opec crude production growth will prevent oil prices from rising sharply above current levels, although if tensions in the Middle East escalate further we could see much stronger prices. Growing naphtha tightness as demand for petrochemicals grows faster than for transport fuels will help support LPG prices as the liquid gas faces less competition in the petrochemical sector.
- LPG markets will tighten in the short term, with 2024 forecast to show a net stockdraw globally. But as supplies from the Middle East and the US continue to increase and energy use demand stagnates, we expect a growing structural surplus, which could promote demand in a number of new and unexpected ways.

Global LPG supply and demand forecast *mn t*



Total consumption by region *mn t*



LPG STORAGE

Total LPG storage by country		'000t
Country	Total storage	
North America		
United States		25,458
Canada		3,750
South and Central America		
Argentina		374
Brazil		1,683
Chile		405
Colombia		13
Costa Rica		28
Dominican Republic		126
Ecuador		109
El Salvador		23
Jamaica		4
Mexico		1,298
Peru		121
Trinidad and Tobago		57
US Virgin Islands		6
Europe and Eurasia		
Austria		2
Belarus		10
Belgium		277
Bulgaria		17
Czech Republic		3
Denmark		10
Finland		315
France		558
Germany		153
Greece		10
Hungary		14
Ireland		21
Italy		85
Kazakhstan		61
Lithuania		10
Netherlands		194
Norway		400
Poland		72
Portugal		150
Romania		10
Russia		264
Serbia		11
Spain		204
Sweden		594
Switzerland		1
Turkey		361
Turkmenistan		9
Ukraine		53

Total LPG storage by country		'000t
Country	Total storage	
UK		740
Uzbekistan		9
Middle East		
Bahrain		40
Iran		327
Iraq		243
Israel		17
Jordan		89
Kuwait		1,280
Lebanon		20
Qatar		533
Saudi Arabia		1,222
UAE		708
Africa		
Algeria		418
Cameroon		6
Egypt		463
Ghana		27
Ivory Coast		6
Kenya		34
Libya		86
Morocco		244
Nigeria		242
Senegal		5
South Africa		34
Tunisia		20
Asia-Pacific		
Australia		556
Bangladesh		93
China		6,746
India		964
Indonesia*		1,758
Japan		4,163
Malaysia		202
New Zealand		11
Pakistan		15
Philippines		143
Singapore		50
South Korea		1,389
Sri Lanka		41
Taiwan		301
Thailand		160
Vietnam		371

Notes: LPG storage of over 1,000t is included but some volumes are unconfirmed and totals may not be comprehensive

* Indonesia - includes floating storage

– LPG Storage Survey from Argus LPG World

PRICES

Propane monthly contract prices, plus key regional spot prices, 2023												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Middle East \$/t												
Saudi Arabia	590.00	790.00	720.00	555.00	555.00	450.00	400.00	470.00	550.00	600.00	610.00	610.00
Kuwait	590.00	790.00	720.00	555.00	555.00	450.00	400.00	470.00	550.00	600.00	610.00	610.00
Mediterranean \$/t												
Algeria (Sonatrach)	560.00	720.00	640.00	495.00	485.00	405.00	400.00	470.00	530.00	560.00	560.00	520.00
Spot prices \$/t												
Large cargo cif ARA	623.20	651.45	543.64	506.17	427.40	416.06	461.54	519.73	571.81	549.54	494.25	500.51
Large cargo cif Lavera	632.06	646.45	534.32	500.67	421.70	409.31	454.98	513.23	565.31	543.06	487.60	492.51
Large cargo Japan CFR	717.45	729.44	595.98	583.88	521.90	494.14	539.79	629.32	694.85	663.81	697.50	641.00
Large cargo East China CFR	720.79	733.24	600.46	587.80	526.55	495.91	539.89	633.66	697.05	664.31	688.36	643.50
Large cargo South China CFR	722.38	737.29	607.39	592.09	531.60	491.23	538.14	634.09	707.80	673.33	683.17	637.35
Large cargo Far East Index	717.45	729.44	595.98	583.88	521.90	494.14	539.79	629.32	694.85	663.81	697.50	641.00
Asia spot premiums to CP \$/t												
Mideast Gulf	59.74	-89.55	-160.35	-18.21	-94.50	-54.75	45.67	83.18	54.25	6.27	2.57	-11.80
South China (pressurised)	127.32	46.30	-2.22	70.68	42.68	58.05	94.38	111.18	110.45	98.77	95.81	100.75
East China (refrigerated)	130.79	-56.76	-119.54	32.80	-28.45	45.91	139.89	163.66	147.05	64.31	78.36	33.50
South China (refrigerated)	132.38	-52.71	-112.61	37.09	-23.40	41.23	138.14	164.09	157.80	73.33	73.17	27.35
Vietnam	98.00	98.00	99.83	105.00	105.00	105.00	105.00	112.95	129.75	118.55	117.76	119.75
Japan	127.45	-60.56	-124.02	28.88	-33.10	44.14	139.79	159.32	144.85	63.81	87.50	31.00
Mont Belvieu ¢/USG												
LDH	84.04	81.69	79.47	80.95	65.01	57.25	64.26	68.23	74.11	68.57	64.01	67.35
Non-LDH	84.12	82.65	79.20	80.70	64.05	56.37	62.45	67.22	73.66	68.13	64.05	68.92
Europe \$/t												
Coasters fob NWE	644.48	675.06	628.00	594.40	466.24	441.08	480.65	550.53	608.55	607.46	585.11	559.09
Barges fob NWE	676.52	844.40	753.04	639.06	523.98	463.45	482.79	537.16	607.43	584.23	626.34	680.63
Coasters fob Med	637.31	708.25	661.18	625.39	510.00	463.00	489.06	553.09	585.38	556.86	531.52	512.05

PRICES

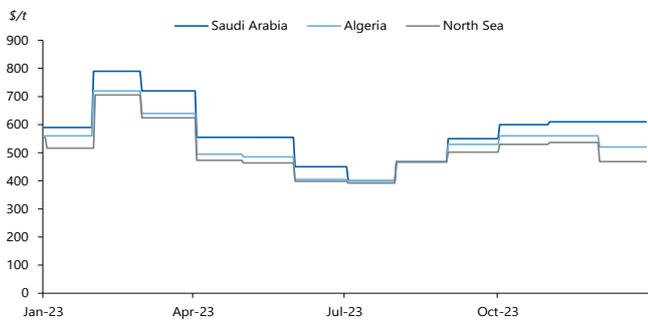
Butane monthly contract prices, plus key regional spot prices, 2023												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Middle East \$/t												
Saudi Arabia	605.00	790.00	740.00	545.00	555.00	440.00	375.00	460.00	560.00	615.00	620.00	620.00
Kuwait	605.00	790.00	740.00	545.00	555.00	440.00	375.00	460.00	560.00	615.00	620.00	620.00
Mediterranean \$/t												
Algeria (Sonatrach)	580.00	640.00	690.00	510.00	490.00	405.00	335.00	465.00	550.00	570.00	535.00	540.00
Spot prices \$/t												
Large cargo cif ARA	596.46	693.92	578.10	526.17	430.56	327.01	401.87	560.36	579.71	520.49	526.27	573.67
Large cargo cif Lavera	593.46	674.67	558.85	507.26	411.45	316.01	390.87	547.32	565.71	510.01	521.62	544.66
Large cargo Japan CFR	728.18	735.89	595.76	579.67	512.81	461.39	525.83	630.89	705.20	674.19	708.02	653.80
Large cargo East China CFR	731.53	739.69	600.24	583.59	517.45	463.16	525.94	635.23	707.40	674.69	698.88	656.30
Large cargo South China CFR	733.12	743.74	607.17	587.88	522.51	458.48	524.19	635.66	718.15	683.72	693.69	650.15
Large cargo Far East Index	728.18	735.89	595.76	579.67	512.81	461.39	525.83	630.89	705.20	674.19	708.02	653.80
Asia spot premiums to CP \$/t												
Mideast Gulf	53.68	-87.80	-182.57	-13.84	-101.23	-60.90	59.43	95.36	51.85	0.68	3.29	-9.00
India cfr	43.75	64.28	39.22	29.49	40.21	49.18	88.79	92.38	152.04	105.75	119.30	86.81
South China (pressurised)	43.00	43.00	42.13	39.37	40.00	41.00	43.00	51.77	69.75	70.00	69.43	67.00
East China (refrigerated)	126.53	-50.31	-139.76	38.59	-37.55	23.16	150.94	175.23	147.40	59.69	78.88	36.30
South China (refrigerated)	128.12	-46.26	-132.83	42.88	-32.49	18.48	149.19	175.66	158.15	68.72	73.69	30.15
Vietnam	98.00	98.00	99.83	105.00	105.00	105.00	105.00	112.95	129.75	118.55	117.76	119.75
Japan	123.18	-54.11	-144.24	34.67	-42.19	21.39	150.83	170.89	145.20	59.19	88.02	33.80
Mont Belvieu ¢/USG												
LDH	111.78	124.57	90.38	92.05	61.44	38.74	50.68	64.30	79.88	77.26	86.28	100.44
Non-LDH	111.46	124.77	96.20	95.62	74.28	64.19	75.89	84.59	89.40	80.20	86.50	105.18
Europe \$/t												
Coasters fob NWE	688.45	709.00	635.85	548.24	386.60	354.19	431.38	568.61	611.69	563.61	548.88	546.64
Barges fob NWE	666.14	696.14	605.42	505.07	383.26	303.51	320.06	491.35	630.82	611.29	627.65	640.07
Coasters fob Med	779.86	829.65	748.11	608.61	416.25	371.95	482.63	605.07	662.31	627.98	587.89	608.01

PRICES

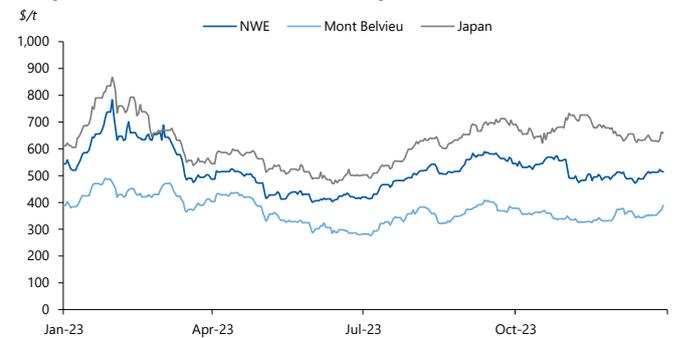
Naphtha prices 2023												\$/t
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cargoes cif NWE	689.85	718.70	675.48	677.89	586.27	550.12	573.00	642.07	699.43	645.40	628.14	636.42
Cargoes c+f Japan	680.62	714.92	671.48	673.03	592.29	539.30	584.48	657.01	701.77	665.68	646.10	665.85

Ethane prices 2023												¢/USG
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mont Belvieu	25.98	24.98	24.00	21.05	20.47	21.75	32.14	26.89	29.91	27.19	22.57	18.42

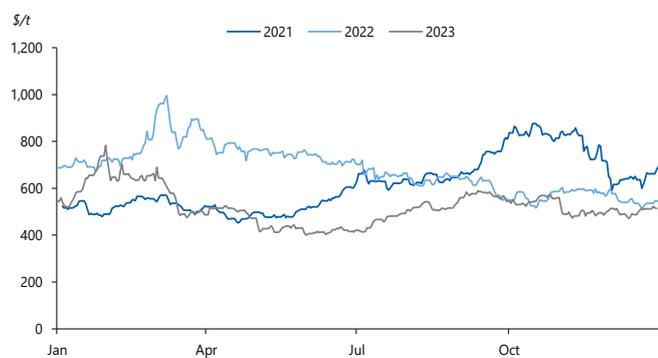
Propane export prices



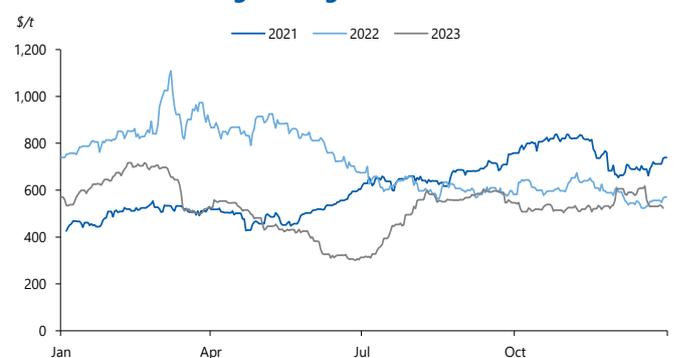
Propane NWE, Mont Belvieu, Japan



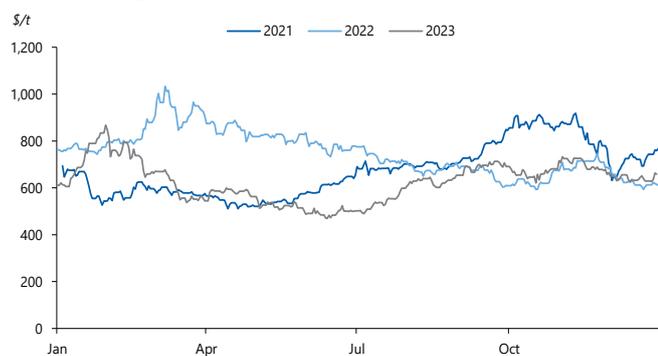
Propane cif NWE cargoes large



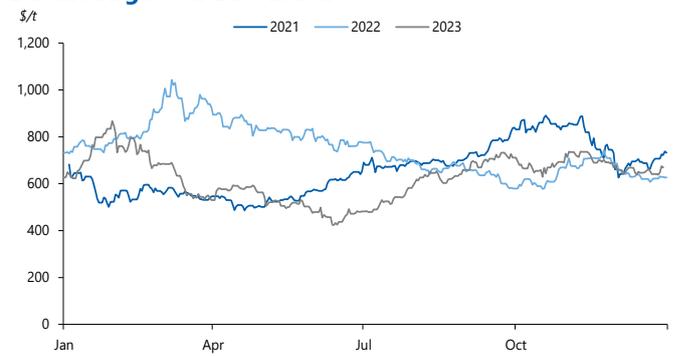
Butane cif NWE cargoes large



Propane Argus Far East Index

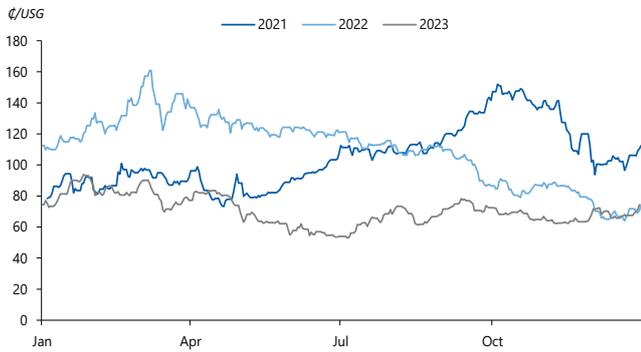


Butane Argus Far East Index

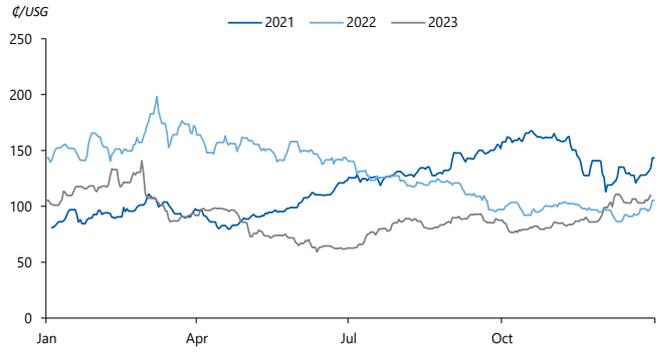


PRICES

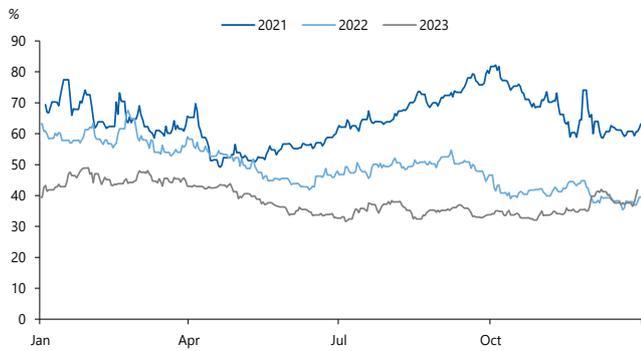
Propane Mont Belvieu non-LST



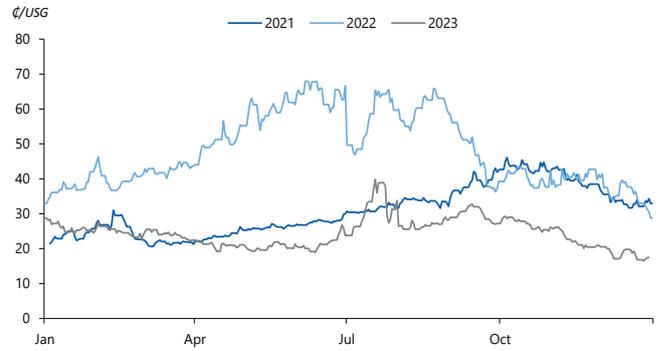
Butane Mont Belvieu non-LST



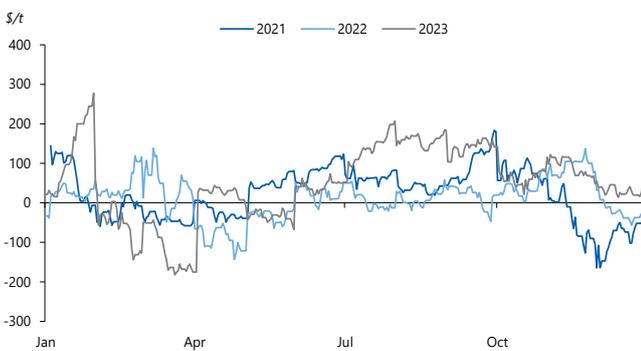
Propane Mont Belvieu LST vs Nymex WTI



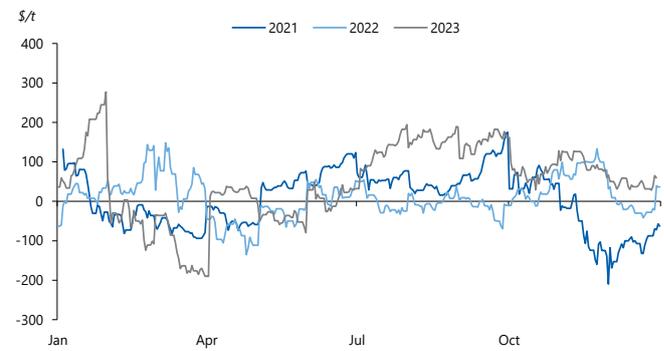
Ethane Mont Belvieu



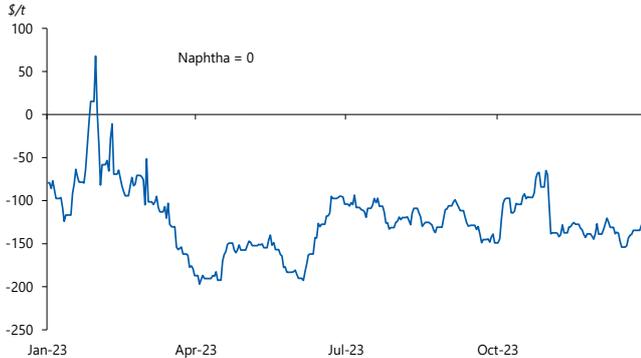
Propane CFR Japan differential to Saudi CP



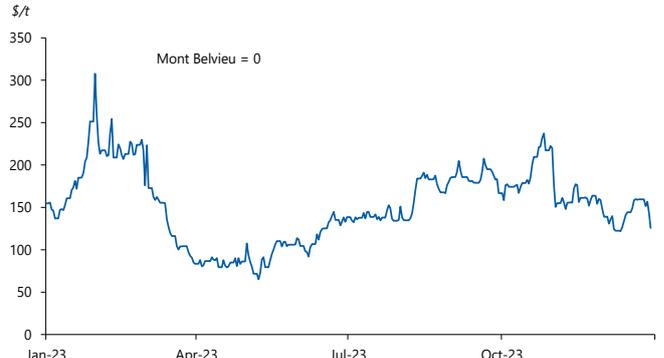
Butane CFR Japan differential to Saudi CP



NWE: Propane differential to naphtha



Propane: NWE differential to Mont Belvieu



BACKGROUND

Primary energy developments 2023

Global primary energy consumption increased by 1.3pc in 2023 compared with 2022 to 15.5bn t of oil equivalent (toe). The growth was primarily as a result of stronger Asia-Pacific demand, which increased by roughly 200mn toe during the period. Chinese energy consumption growth comprised the bulk of the global total, with the scrapping of the country's zero-Covid restrictions towards the end of 2022 supporting an economic recovery that drove the country's energy demand higher in 2023.

Energy use from fossil fuels — oil, coal and natural gas — accounted for nearly 80pc of total primary energy consumption in 2023, a small decline compared with 2022. The share of fossil fuels has been declining steadily over the past four years. The share of renewables in final energy consumption increased by one percentage point from 2022 to 14pc in 2023, or 2.1bn toe.

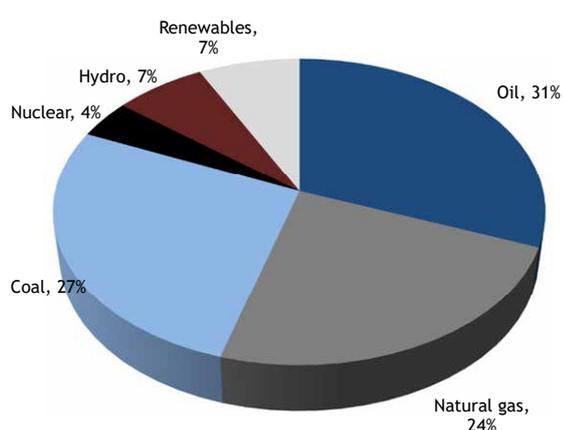
The recovery in economic activity in Asia-Pacific supported continued investment in energy-intensive industries such as petrochemicals. Regional steam cracker capacity additions peaked in 2023, while investments in propane dehydrogenation (PDH) plants continued to rise. Nine new PDH plants came on line in 2023, adding roughly 5.4mn t/yr of capacity.

Asia-Pacific consumed 7.3bn toe of primary energy in 2023, the most of any region and 47pc of total global consumption, rising slightly from a 46.1pc market share in 2022. China alone accounted for 28pc of global primary energy consumption at 4.34bn toe. Total growth in 2022-23 was 4pc, compared with less than 1pc in 2021-22. Demand for oil, natural gas, coal, nuclear, hydroelectric and renewables all increased in Asia-Pacific in 2023, with coal recording the largest increase, up by 240mn toe to 3.2bn toe.

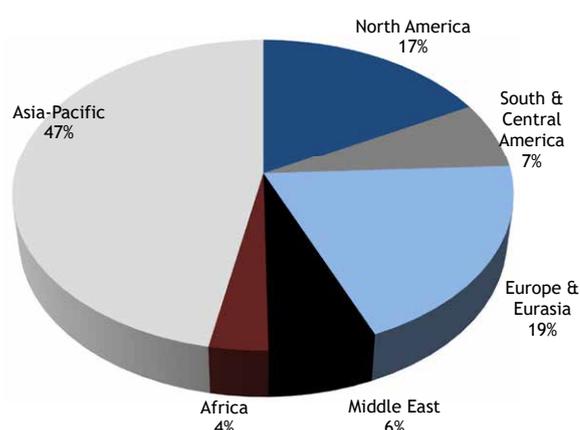
US energy consumption fell in 2023 from 2022. Total energy consumption was 2.3bn toe in 2023, down by almost 2pc from 2022. The biggest fall was in coal consumption, which dropped by 17pc, far outpacing the 2.5pc decline in global coal consumption over the same time period. This comes as coal continues to be displaced by increased power generation from natural gas and renewables.

Primary energy consumption in Europe and Eurasia fell by 2.6pc last year. The biggest decline was natural gas consumption, which was 57mn toe lower than a year earlier at 938mn toe in 2023. Prices rose following the start of the Russia-Ukraine conflict, which led to Europe searching for alternative cheaper fuels, and for natural gas consumption to

Primary energy consumption by fuel, 2023



Primary energy consumption by region, 2023



Primary energy consumption by fuel							<i>mn toe</i>
	Oil	Natural gas	Coal	Nuclear	Hydroelectric	Renewables	Total
Total World 2022	4,260	3,496	3,831	605	965	954	14,266
Total World 2023	4,395	3,388	3,856	576	971	1,079	14,424
Difference	3.2%	-3.1%	0.6%	-4.8%	0.7%	13.0%	1.1%

BACKGROUND

drop. Economic disruption resulting from the conflict caused industrial activity to contract, further reducing energy use. Renewable energy consumption fell by 2mn toe on the year to 450mn toe in 2023. A number of EU countries have cut their road fuel demand, putting pressure on biofuels blending.

In Africa, energy consumption was 0.2pc lower on the year at 523mn toe in 2022-23, reversing the 0.2pc gain achieved in 2021-22. Oil, natural gas and coal demand fell by 1.5pc, 3pc and 1pc, respectively, while, hydroelectricity and renewables increased by 3pc and 4pc, respectively. Only nuclear consumption remained steady compared with 2022. Many African countries have a primary target to transition people

away from traditional dirty cooking fuels and biomass towards cleaner fuels such as renewables and LPG.

In Latin America, total energy consumption was 1.1bn toe in 2023, edging up by 2pc compared with 2022. The increase was primarily the result of a 3pc rise in oil consumption to 388mn toe, and the largest share of any fuel. Latin America is following the global trend to increase domestic use of renewable fuels. Consumption of renewable energy increased by 4pc on the year to 281mn toe in 2023. But hydroelectric consumption — which is counted separately from other renewables — fell by 1pc for 2022-23, having achieved the largest growth of any energy source in the region in 2021-22.

Primary energy consumption, 2023							<i>mn toe</i>
	Oil	Natural gas	Coal	Nuclear	Hydroelectric	Renewables	Total
US	816	762	196	175	53	262	2,264
Canada	100	104	9	19	81	97	410
Total North America	915	866	205	194	134	360	2,674
Argentina	33	39	1	2	7	12	93
Brazil	118	26	14	3	96	167	423
Chile	19	6	4	0	5	13	48
Colombia	22	11	4	0	13	16	66
Ecuador	13	0	0	0	6	6	25
Mexico	90	84	6	3	5	17	204
Peru	12	9	1	0	6	8	35
Trinidad & Tobago	2	12	0	0	0	0	14
Venezuela	20	26	0	0	15	15	75
Other	59	8	4	0	20	28	119
Total South & C. America	388	221	34	8	172	281	1,104
Austria	11	6	2	0	9	13	41
Azerbaijan	6	13	0	0	0	0	20
Belarus	7	14	1	3	0	0	25
Belgium	26	12	2	7	0	7	54
Czech Republic	10	6	11	7	1	3	37
Finland	8	1	2	7	3	10	32
France	63	29	4	72	12	35	217
Germany	92	65	44	2	4	66	273
Greece	15	5	1	0	1	6	27
Hungary	8	7	1	3	0	2	21
Italy	57	50	5	0	9	27	149
Kazakhstan	16	18	33	0	2	3	72
Netherlands	39	22	4	1	0	15	80
Norway	9	3	1	0	30	34	77
Poland	32	17	36	0	1	12	98
Portugal	10	4	0	0	3	8	25
Romania	11	8	3	2	4	7	34
Russian Federation	165	390	92	47	45	47	785
Spain	60	25	3	12	6	34	139
Sweden	11	1	2	10	15	28	66

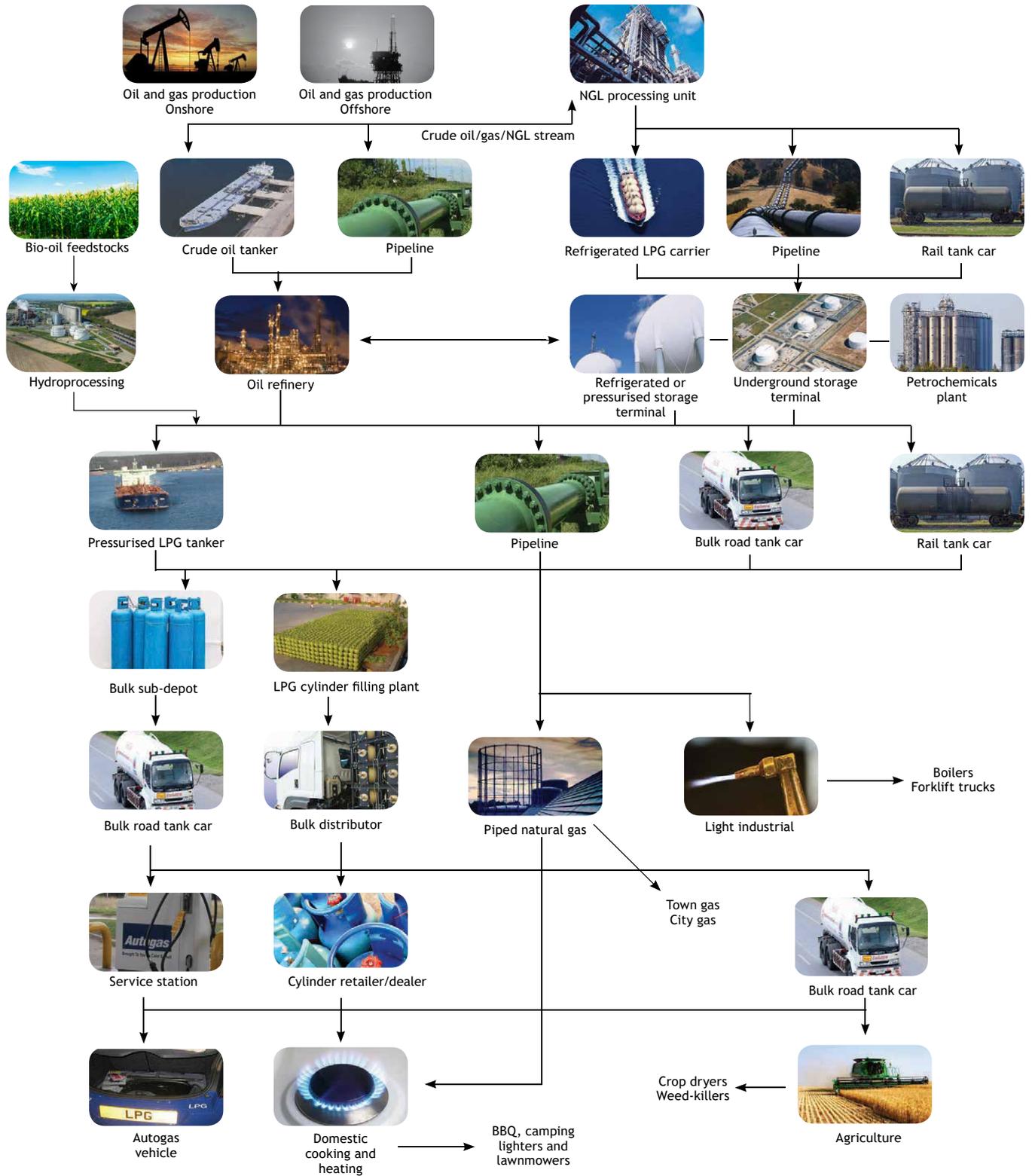
BACKGROUND

Primary energy consumption, 2023							mn toe
	Oil	Natural gas	Coal	Nuclear	Hydroelectric	Renewables	Total
Switzerland	9	2	0	5	8	10	35
Turkey	54	42	39	0	14	31	181
Turkmenistan	6	32	0	0	0	0	38
Ukraine	9	16	12	11	3	5	55
United Kingdom	62	55	4	9	1	34	165
Uzbekistan	5	40	3	0	2	2	52
Other Europe and Eurasia	68	55	65	11	9	10	219.0
Total Europe & Eurasia	867	938	370	209	182	450	3,017
Iran	80	211	2	1	5	6	305
Iraq	42	16	0	0	1	1	60
Israel	10	11	3	0	0	2	26
Kuwait	17	19	0	0	0	0	37
Oman	11	25	0	0	0	0	37
Qatar	14	38	0	0	0	0	52
Saudi Arabia	172	98	0	0	0	1	272
United Arab Emirates	51	58	2	7	0	3	121
Other Middle East	25	20	1	0	0	2	48
Total Middle East	421	497	9	8	6	15	957
Algeria	20	40	0	0	0	0	60
Egypt	34	52	1	0	3	6	96
Morocco	13	1	7	0	0	2	23
South Africa	25	4	79	2	0	5	115
Other	103	51	9	0	31	35	230
Total Africa	195	147	97	2	35	47	523
Australia	50	34	36	0	3	22	145
Bangladesh	12	24	7	0	0	0	44
China	769	348	2,195	93	274	659	4,338
China Hong Kong SAR	13	4	4	0	0	0	21
India	249	54	525	10	33	90	962
Indonesia	70	39	103	0	6	25	243
Japan	151	79	108	17	17	52	425
Malaysia	41	40	23	0	7	9	120
New Zealand	7	3	1	0	6	9	26
Pakistan	18	33	15	5	8	10	88
Philippines	21	3	21	0	2	6	54
Singapore	71	11	0	0	0	0	82
South Korea	121	52	64	39	1	14	291
Sri Lanka	5	0	1	0	1	2	9.6
Taiwan	37	24	36	4	1	6	107
Thailand	52	41	14	0	1	9	118
Vietnam	28	6	55	0	18	27	134
Other Asia Pacific	29	10	30	0	20	21	111
Total Asia-Pacific	1,744	804	3,240	167	399	962	7,318
Total World	4,532	3,473	3,955	589	929	2,116	15,593

^ Less than 0.5

– BP Statistical Review of World Energy - June 2023

LPG DISTRIBUTION CHAIN



METHODOLOGY

Definitions

LPG:

Liquefied petroleum gas including propane, n-butane, isobutane, butane mixtures and propane-butane mixtures only. In some markets a small amount of unsaturated product may be included.

rLPG:

Renewable LPG (rLPG) is a low-carbon energy source as its carbon footprint is up to 80pc lower than that of conventional LPG. It is identical in its chemical structure to conventional LPG. It is a flexible drop-in fuel, making it easy for a conventional LPG user to switch to a renewable alternative.

Consumption by sectors*

Domestic:

Includes residential and commercial use for LPG as a cooking and heating fuel primarily from cylinders and bulk tanks.

Agriculture:

LPG use in crop drying, weed and pest control, irrigation and non-highway agricultural vehicles.

Industry:

LPG consumed in manufacturing and light industrial applications, such as glass-blowing, ceramics manufacture, welding, food processing and heating for boilers. Some volumes in the commercial sector may be included.

Autogas:

Use as automotive vehicle fuel in passenger cars, taxi fleets, company vehicle fleets, buses and light trucks, but excluding forklift trucks.

Refinery:

LPG used as a feedstock for crude oil refining processes or as a fuel at refineries.

Chemical:

LPG used as a feedstock for olefins production and other chemical processes. Some feedstock use in refineries may be included.

*A comprehensive resource on the more than 1,000 applications of LPG can be found at the WLGA's global portal on LPG applications, at <http://www.lpg-apps.org>.

LPG properties and conversion factors

LPG properties		
Property	Propane (C ³ H ⁸)	Butane (C ⁴ H ¹⁰)
Liquid density	0.50-0.51	0.57-0.58
Gas density/Air	1.40-1.55	1.90-2.10
Ratio Gas/Liquid	274 Vols	233 Vols
Boiling Point	-45°C	-2°C
Latent Heat Vaporisation	358 KJ/kg	372 KJ/kg
Specific Heat Liquid	0.60 Btu/ft ³	0.57 Btu/ft ³
Sulphur Content	0-0.02%	0-0.02%
Flammability Limit	2.2-10.0%	1.8-9.0%
Calorific Values	2,500 Btu/ft ³	3,270 Btu/ft ³
	21,500 Btu/lb	21,200 Btu/lb
	11,900 kcal/kg	11,800 kcal/kg
	50.4 MJ/kg	49.5 MJ/kg
Minimum ignition temp.	460°C	410°C

Useful conversion factors		
	Propane (C ³ H ⁸)	Butane (C ⁴ H ¹⁰)
USG/t	521	458
Imperial gallons/t	433	381
Litres/t	1,968	1,732
Therms/t	474	465
bl/t	12	11
t/m ³	0.582	0.600
1t of LPG = 1.18t of oil equivalent		

1 nautical mile = 1.85km

WORLD LIQUID GAS ASSOCIATION AND ARGUS MEDIA

About the WLGA

The World LPG Association (WLGA) is the authoritative voice of the global LPG industry, representing all its sectors. The primary aim of the association is to add value to the sector through driving premium demand for LPG, while also promoting compliance with good business and safety practices. It brings together private and public companies involved in one, several or all activities of the industry. It develops partnerships with international organisations and implements projects on local and global scales. The association was established in 1987 and granted Special Consultative Status with the UN Economic and Social Council in 1989.

WLGA vision

The WLGA promotes the use of LPG worldwide to foster a safer, cleaner, healthier and more prosperous world.

WLGA mission statement

The WLGA mission statement forms the three principal goals of the association, namely advocacy, business improvement, and innovation and growth.

About Argus Media

Argus is an independent media organisation with more than 1,400 staff. It is headquartered in London and has 30 offices in the world's principal commodity trading and production centres. Argus is the leading independent provider of market intelligence to the global energy and commodity markets. We offer essential price assessments, news, analytics, consulting services, data science tools and industry conferences to illuminate complex and opaque commodity markets.

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Throughout this review, all references to tonnes (t) are to metric tonnes. All weights are given in tonnes, unless explicitly stated in the text. All references to dollars are to US dollars. Currency conversions have been made either at current or relevant historical exchange rates, as required by the context.

Numbers have been correctly rounded at the last point of calculations, with intermediate calculations preserving full accuracy. This means that table totals may differ slightly from the sum of individual figures, and percentages may sometimes appear not to total exactly 100pc.

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Note on data revisions

Each year *Argus* updates the previous year's figures in cases where new data have become available and revised data have been published — or statistical mismatches have been identified. In particular, we would like to highlight the following changes to figures in this edition of the *Statistical Review of Global LPG*:

- **Ireland:** The splits between consumption sectors have been revised as national statistics are now provided in greater detail, allowing for a more accurate breakdown of demand
- **Burkina Faso:** Consumption data now accounts for published trade data

