

2021

STATISTICAL REVIEW OF
GLOBAL LPG



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INTRODUCTION

The World LPG Association (WLPGA) and Argus Media are pleased to welcome you to the *Statistical Review of Global LPG 2021*, which provides data on supply, demand and trade in LPG for the calendar year 2020. As in previous years, we would like to note our appreciation of the efforts of WLPGA members and other organisations that have contributed to the data collection process, and offered insight into market developments across the world.

2020 was a tumultuous year — the Covid-19 pandemic wreaked havoc on the global economy and fuel industries, with LPG no exception. The collapse in demand for transport fuels, including autogas, was evident. But the diverse use of LPG across the energy and non-energy sectors contributed to its resilience during the crisis.

This year's review shows that consistent year-on-year growth throughout the past decade was interrupted last year. Total consumption in 2020 stood at 317.0mn t, a decline of almost 2.6pc from 2019. Supply was 329.4mn t, a marginal decline of 1.4pc compared with the previous year.

The important role of LPG as a cleaner cooking fuel and as a petrochemical feedstock was highlighted last year. Both these sectors experienced the smallest decline in consumption. Some large domestic markets, such as India and Indonesia, saw a continuation of upward trends as the use of LPG for cooking persisted during strict lockdown restrictions, which resulted in over 5pc growth in both those countries. Robust demand for petrochemical feedstock was driven by strong markets for packaging and medical equipment.

The longer-term impact of the Covid crisis is hard to gauge but as economies return to normality, the LPG industry is well placed to position itself as the supplier of a vital interim fuel in a world increasingly focused on decarbonisation. Efforts to achieve lower emissions from vehicles, and to provide access to cleaner cooking fuels in developing countries, are likely to intensify, and LPG is still an economically viable option. Although autogas volumes in 2020 declined by 10pc compared with 2019, the number of autogas vehicles on the road increased by 5.9pc to 29.2mn.

We hope that you find this review useful and that WLPGA members in particular continue to benefit from the insight it provides on global LPG markets.



James Rockall,
Chief Executive and Managing Director, WLPGA



Adrian Binks,
Chairman and Chief Executive, Argus Media group

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KEY LPG GLOBAL STATISTICS

Top 10 LPG Producers				'000t
Country	2019	2020	±% 20/19	
1 US	84,580	87,442	3.4	
2 China	40,615	44,286	9.0	
3 Saudi Arabia	27,687	26,420	-4.6	
4 Russia	17,030	16,280	-4.4	
5 Canada	15,124	14,618	-3.3	
6 India	12,768	12,231	-4.2	
7 UAE	12,123	11,553	-4.7	
8 Qatar	10,807	10,711	-0.9	
9 Algeria	8,443	7,996	-5.3	
10 Iran	8,062	7,808	-3.1	
Global total	333,928	329,389	-1.36	

Top 10 LPG Consumers				'000t
Country	2019	2020	±% 20/19	
1 China	59,729	62,939	5.4	
2 US	47,250	43,649	-7.6	
3 India	27,046	28,309	4.7	
4 Saudi Arabia	19,585	19,567	-0.1	
5 Japan	15,836	14,269	-9.9	
6 Russia	11,015	11,820	7.3	
7 South Korea	10,361	10,334	-0.3	
8 Mexico	9,010	9,100	1.0	
9 Indonesia	7,825	8,230	5.2	
10 Brazil	7,539	7,688	2.0	
Global total	325,142	316,884	-2.54	

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EXECUTIVE SUMMARY

2020: Black Swan

The coronavirus outbreak that originated in China turned into a global pandemic in 2020 — a black swan event that wreaked havoc on the global economy and human lives. Markets were in turmoil as movement restrictions, aimed to mitigate the spread of the virus, destroyed demand for transport fuels.

Global demand for jet fuel slumped by 42pc in 2020, compared with 2019. Gasoline and diesel consumption dropped by 12pc and 6pc, respectively.

LPG was no exception. On both sides of the balance, the industry’s decade-long period of uninterrupted growth was halted. Consumption saw a decline of 2.5pc — to 317mn t in 2020 from 325mn t in 2019. Global production in 2020 was estimated at 329mn t, a marginal drop compared with 334mn t in 2019.

On a sectoral level, the impact was varied — with the household sector experiencing the smallest decline of 2.3pc, demonstrating the essential nature of LPG as a cooking fuel. In terms of market share, it still dominates the picture — accounting for 44pc of global consumption — consumption stood at 140mn t, down by 3.4mn t compared with 2019. Lockdowns in many countries meant that people stayed at home, and demand for cooking fuels proved to be a mainstay in people’s daily lives.

Global petrochemical consumption declined by 3pc in 2020. This fast-growing sector, led by China, is rapidly taking over market share. Although demand for petrochemical feedstocks was buoyed by robust demand for packaging and medical equipment, LPG’s strength and consequential price premium against the main competing feedstock, naphtha, made it a less attractive choice for petrochemical operators with flexibility to switch feedstock. In northwest Europe, propane averaged 92pc of the naphtha price in 2020 compared with 76pc in 2019 — LPG’s higher price in 2020 manifested in around 6pc lower consumption in the petrochemical sector in Europe, compared with the previous year.

The transport sector, which accounted for 8pc of total consumption in 2020 experienced the sharpest decline — 24.4mn t was consumed compared with 27.3mn t in 2019, a 10pc reduction. Industrial sector use saw a similar decline — 8.2pc lower in 2020 against 2019. Limited economic activity

led to diminished industrial operations and lower consumption in commercial establishments.

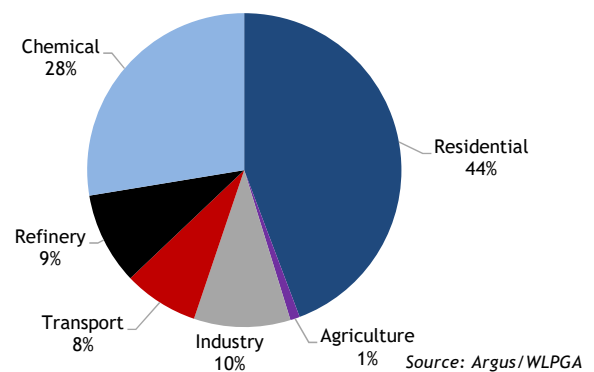
On the production side, with the exception of China, the refining sector was harder hit than gas processing. Total LPG output in 2020 from refineries declined by 3.4pc, while gas processing operations remained fairly stable. The collapse in demand for transport fuels led refiners to cut utilisation rates, curtailing LPG supply. In Europe, where two-thirds of local supply is sourced from refineries, supply from refineries declined by 8.9pc in 2020, compared with year-ago levels.

The US, the largest LPG producer, saw an increase in production from its gas processing sector as a result of astute asset management by producers. Overall production totalled 87.4mn t in 2020 — a 3.4pc increase from 2019 — albeit lower than the average growth rate in the past decade, which was 11pc/yr. But supply length persisted throughout the year. High US inventories in 2020 also provided a buffer for supplying the export market.

The Middle East — one of the key sources of LPG for the Asian export market — saw a decline in production as the region complied with Opec crude production cuts. But for countries such as the UAE, where the majority of LPG is produced from gas processing, the impact on output was much smaller.

Russia and Canada, although producing less in 2020, compared with the previous year, remain on the leaderboard — with production at around 17mn t/yr and 15mn t/yr, respectively. Canada’s production capacity has been increasing by around 10pc/yr since 2016 and export terminal developments — Altagas’ Ridley Island Export Terminal

LPG consumption by sector, 2020



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(Ripet) in 2019, and at the beginning of 2021, the Prince Rupert terminal — have increased export availability to the Asia-Pacific markets.

The very large gas carrier (VLGC) market made a breakthrough in 2019 after three years in the doldrums. In 2020, high freight rates were sustained — supported by strong tonne-mile demand, dry-docking schedules for scrubber retrofitting in line with the International Maritime Organisation (IMO) 2020 emissions regulations, transit delays and weather-related disruptions. VLGC operators continue to switch to LPG as a bunker fuel to meet the IMO regulations mandating lower sulphur levels.

Can cook, will cook

As the world stayed at home during lockdowns, demand for cooking was sustained. Global LPG consumption in the residential sector in 2020 stood at 140.2mn t — a marginal decline of around 2.3pc compared with year-earlier levels.

The Asia-Pacific region dominates residential use of LPG, accounting for 55.7pc of global demand in 2020. Total demand from the region was around 78mn t in 2020. Almost half the demand is met by imports from the main LPG producers, the US and Middle Eastern countries. In recent years, growth has been dominated by large energy users — China, India, South Korea, Indonesia, Thailand, Vietnam and the Philippines.

Some countries proved particularly resilient and 2020 highlighted the importance of LPG as an essential fuel for developing countries. Bangladesh broke the 1mn t/yr mark in 2020 — recording a consumption of 1.2mn t. The country has seen exponential growth in recent years, following government supportive policy and an enthusiastic industry, and this trend continued in 2020.

In China’s case, residential demand is on a structural decline — as substitutes, such as natural gas, take the place of LPG. But Chinese domestic consumption is still the highest in the world — estimated at around 28.2mn t in 2020. In 2019 demand stood higher at 31.0mn t. The decline in 2020 is owed to natural gas substitution, logistic restrictions to cylinder distribution during Covid-19 lockdowns and a reduction of disposable income.

India’s domestic demand remarkably grew by 5.7pc to 24.5mn t in 2020, compared with 23.2mn t in 2019. The growing trend

has remained uninterrupted since the beginning of the decade. Growth rates in recent years were higher at an average of 8pc/yr. India’s government continues to incentivise LPG use through its subsidy programme but a market saturation could slow the pace of growth in the coming years.

The African region saw an overall decline in the domestic sector of around 4pc. Consumption stood at 11.3mn t, from 11.7mn t in 2019. Historical trends in Africa’s largest domestic consumers prevailed in 2020. Egypt’s 3.4mn t/yr market fell by 8.2pc last year. The country’s rising use of natural gas is displacing LPG as a household fuel. Following a year-on-year increase, Morocco’s domestic market is growing and reached 2.5mn t in 2020, from 2.4mn t in 2019.

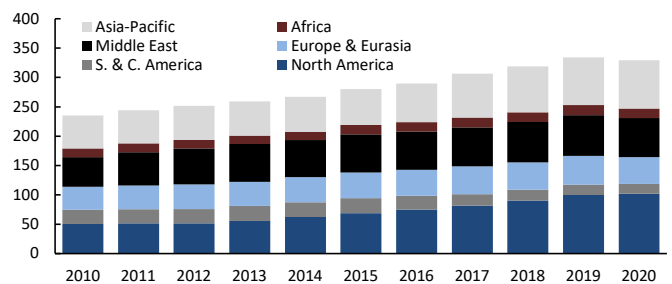
Countries in the sub-Saharan region remain growth potential markets, especially for the use of LPG as a cleaner cooking fuel. Drawing from the example of Delhi’s incentive scheme, a push from governments in the region could drive a significant uptake in LPG use. Total consumption in 2020 totalled 5.6mn t compared with 5.9mn t in 2019. Infrastructure investment such as the new LPG terminal in Richards Bay, South Africa, is expected to support growth in the region.

Petrochemical dependence

Petrochemical demand in 2020 was robust. In Asia-Pacific, led by China, PDH capacity expansion in recent years increased demand for propane as a feedstock. The Chinese market size for petrochemicals stood at 13.0mn t in 2020, compared with 11.6mn t in 2019. Further expansions are planned in the coming years, but uncertainty around economic recovery could impact start-up schedules.

High prices of propane and butane relative to the competing feedstock, naphtha, made LPG a less economical feedstock in 2020. Unfavourable economics led to European ethylene

LPG production by region mn t



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steam cracking operators, which have high flexibility, to switch feedstocks in favour of naphtha. Overall consumption in the European petrochemical sector fell by 6.0pc in 2020 compared with the previous year. Total volume consumed was 20.5mn t in 2020 compared with 21.8mn t in 2019.

The largest consumers — the Netherlands, Belgium, the UK, France, Germany and Spain — all posted declines in LPG consumption in the sector. Russia bucked the trend with rising year-on-year consumption, driven by government plans to focus growth in the petrochemical sector. Higher domestic consumption in Russia led to reduced volumes for exports to Europe — a trend likely to continue for the foreseeable future.

The share of petrochemicals in total LPG consumption in 2020 was 27.6pc. In the coming years, growing demand in the sector will see market share gradually transition from energy uses to the petrochemical sector unless the industry can find a better home for LPG with 3bn people still reliant on traditional fuels for their primary energy.

Autogas exposure

The autogas sector was fully exposed to the collapse in demand for transport fuels in 2020. Global consumption fell by 10.4pc in 2020 at 24.4mn t, compared with 27.3mn t in 2019. In 2019 we observed a stable market as developments in different markets varied. Markets already in structural decline may see an acceleration of decline rates.

The largest markets remain South Korea, Turkey and Russia, each with consumption of more than 3mn t in 2019. But in 2020 South Korea’s autogas market fell below the 3mn t mark to 2.7mn t — the first time in this decade for consumption to fall below this level. The drop is in line with the trend of structural decline. New legislation eliminating restrictions on LPG as a transport fuel, opening up ownership of autogas vehicles to the public, has not yet manifested in a rise in consumption and the coronavirus pandemic did little to help reverse the falling trajectory.

Turkey saw a decline of 8.6pc from 3.4mn t in 2019 to just over 3mn t in 2020, while Russia saw a marginal decline of around 1pc during the same period. Other large markets in eastern Europe — Kazakhstan and Poland — where the fuel continues to increase in popularity as an economically attractive option, also saw consumption decrease but Poland saw a steeper year-on-year decline of 9.9pc compared with 3.3pc

in Kazakhstan. Ukraine on the other hand, saw sustained strength with demand increasing by 3.6pc to 1.9mn t/yr. Steeper declines in consumption were seen in markets where a downward trend had already started in recent years. Thailand’s autogas market saw 2019’s 1mn t consumption drop by 26.5pc to 0.75mn t in 2020. Japan’s consumption fell by 29pc on the year to 0.57mn t in 2020 from 0.8mn t in 2019. In Italy autogas use was 21.6pc lower than in the previous year.

Transition camp: Bio-LPG

Over the past year there has been growing interest in LPG’s role in the global energy transition and efforts to meet increasing decarbonisation targets. Policies in Europe and North America continue to make progress in incentivising biofuels production. Policy in other regions lags behind, although this has yet to deter market sentiment surrounding bio-LPG.

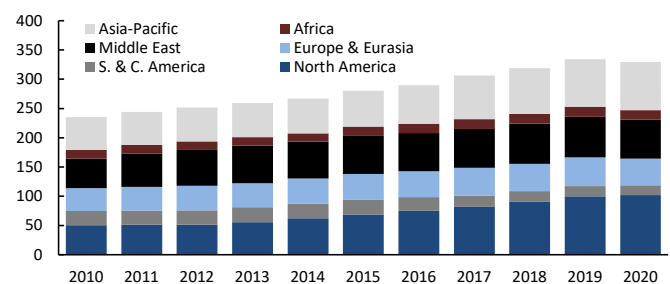
Bio-LPG is composed identically to the conventional form, offering a flexible and clean alternative with emissions reductions of up to 80pc. Importantly this allows for blending with fossil-based LPG, making the biofuel useful in smaller quantities and meaning existing infrastructure can be repurposed with little or no modification.

In a similar way to current LPG production, the major commercialised route to producing bio-LPG is as a by-product of hydrotreated vegetable oil (HVO). This opens up a wide range of feedstocks that are readily available and cost effective in bio-LPG production, many of which are also eligible for incentivising policies across Europe and North America.

Despite this, the market still has strides to make before reaching a significant proportion of total LPG supply and consumption. Currently output is estimated at around 200,000 t/yr, with a number of production technologies still in their infancy.

LPG consumption by region

mn t



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Market conditions

■ Demand destruction in transport fuels from the onset of the coronavirus pandemic saw prices across the wider energy market crash. Atlantic Basin crude benchmark North Sea Dated averaged \$42/bl in 2020, the lowest value in the past decade. This compares with a high of \$112/bl in 2012.

■ The Opec+ alliance’s management of production in 2020 to keep prices from falling further, amid the global oil demand crash, was a necessary action and one that played a key role in balancing the market. Global crude production fell by 6.8mn b/d in 2020, compared with 2019 levels — equivalent to a 6.8pc decline.

■ LPG prices fell on an outright basis as prices across the energy complex fell. Propane cfr Japan averaged \$386/t in 2020, compared with \$452/t in 2019. But prices of propane and butane found support in sustained demand in its diverse profile of consumers.

■ The price relationship between LPG and naphtha was upended in 2020. Propane and butane discounts to naphtha have become a feature of the market as global supply increased. In 2018 and 2019, the monthly average ratio of delivered Japan propane to naphtha did not exceed 0.97. But drastic measures to contain the coronavirus outbreak, shrunk demand for naphtha as a gasoline blending component, while LPG demand in the residential and petrochemical sectors remained firm.

■ During the second quarter of 2020 propane averaged 116pc of the naphtha price in the Japan delivered market — driven by high spot buying activity before lockdown restrictions came into effect, specifically in Asia-Pacific where LPG is widely used as a cooking fuel.

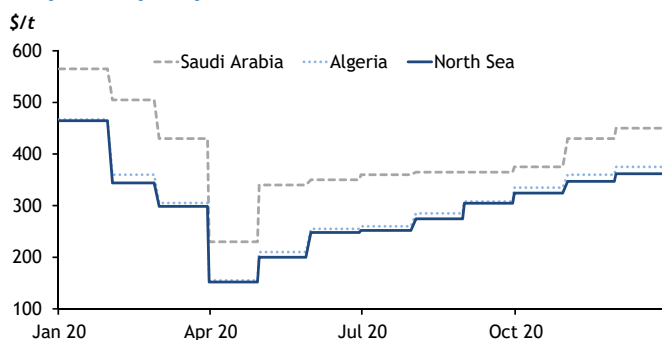
■ In northwest Europe, propane was valued at a premium to naphtha for five months in 2020 — reaching a high of 170pc in April and averaging 102pc in the fourth quarter. In comparison, consistent discounts in 2018 and 2019 allowed for propane and butane to be a preferred feedstock to naphtha in the region’s flexible ethylene steam crackers all year round. Overall petrochemical consumption in the region fell by 6pc in 2020, compared with the previous year.

■ US exports found homes mainly in Japan, Mexico and South Korea, and exports to China resumed in March 2020. Easing trade tensions between the US and China came with the new US administration of President Joe Biden. Japan and China delivered prices have since realigned after a two-tier pricing mechanism created by China’s tariffs on US imports widened the spread between the two markets. China reached as much as a \$77/t premium to the Japan price in 2019.

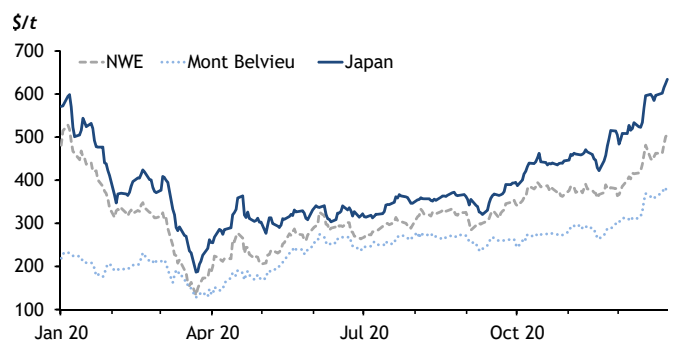
■ At the beginning of peak heating demand season in 2020, US propane inventories stood at 101.9mn bl, edging close to the historical high of 102.8mn bl seen in November 2015. High stock levels provided a healthy supply buffer and helped keep a lid on prices.

■ Russian exports have been declining since the start-up of the Zapsibneftekhim petrochemical complex in late 2019. LPG is being used to boost the country’s petrochemical sector and lower supplies are reflected in the propane daf Brest price. The second half of 2019 and 2020 saw an average of the daf Brest premium to northwest European values at \$73/t and \$68/t, respectively, compared with values close to parity or even discounts in previous years. The third quarter typically sees increased demand from large autogas markets in the region such as Ukraine and Poland, while heating demand picks up in the fourth quarter.

Propane export prices



Propane NWE, Mont Belvieu, Japan



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PRODUCTION

LPG Production, 2010-20												'000t
Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	±% 20/19
US	42,172	42,166	45,954	52,075	58,726	64,586	65,652	69,152	76,516	84,580	87,442	3.4
Canada	9,486	9,489	9,789	10,015	10,255	10,220	11,399	12,380	14,030	15,124	14,618	-3.3
Total North America	51,658	51,655	55,743	62,090	68,981	74,806	77,051	81,532	90,546	99,704	102,060	2.4
Argentina	2,907	2,305	2,775	2,856	2,847	2,583	2,654	2,627	2,717	2,818	2,708	-3.9
Bolivia	311	304	303	340	373	341	480	496	483	520	502	-3.4
Brazil	5,264	5,281	5,756	5,680	5,419	5,537	5,093	5,709	5,555	5,611	5,846	4.2
Chile	463	405	604	312	338	332	279	204	250	280	278	-0.7
Colombia	601	620	635	642	603	615	555	551	625	625	541	-13.4
Costa Rica	4	1	0	0	0	0	0	0	0	0	0	-
Cuba	60	50	42	73	72	69	48	16	48	48	47	-2.1
Dominican Republic	26	28	15	13	16	7	17	11	11	11	11	0.0
Ecuador	205	255	266	250	197	150	248	252	218	218	218	0.0
El Salvador	13	12	6	0	0	0	0	0	0	0	0	-
Jamaica	8	11	9	6	6	8	9	13	11	10	9	-16.3
Mexico	6,657	6,585	6,423	6,487	6,464	5,490	4,987	4,586	3,839	3,372	3,209	-4.8
Netherlands Antilles	30	30	30	24	51	59	45	37	37	37	37	0.0
Nicaragua	15	17	9	11	10	13	18	20	17	17	17	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	1,473	1,416	1,528	1,766	1,719	1,572	1,548	1,525	1,559	1,680	1,636	-2.6
Trinidad & Tobago	1,033	932	707	703	668	607	490	537	450	469	365	-22.1
Uruguay	70	57	75	90	80	80	85	21	93	92	95	4.0
US Virgin Islands	0	0	0	0	0	0	0	0	0	0	0	-
Venezuela	4,452	5,857	6,113	6,069	6,279	6,110	5,786	2,603	2,095	1,989	1,219	-38.7
Other	45	72	86	105	121	119	120	125	117	77	77	0.0
Total South & C. America	23,637	24,238	25,382	25,427	25,263	23,692	22,462	19,333	18,126	17,873	16,814	-5.9
Austria	247	270	257	240	245	349	450	376	447	431	452	5.0
Azerbaijan	240	250	215	263	202	172	200	210	224	224	220	-1.8
Belarus	558	558	640	637	682	649	458	546	525	552	512	-7.2
Belgium	517	570	580	576	707	671	697	739	829	984	919	-6.6
Bulgaria	121	119	118	92	98	101	102	120	112	129	77	-40.3
Croatia	302	266	281	250	225	248	248	283	256	219	214	-2.2
Czech Republic	242	227	240	217	267	248	283	383	380	443	337	-24.0
Denmark	153	132	168	103	118	124	94	106	0	122	112	-8.5
Finland	246	387	256	310	293	241	275	285	255	289	245	-15.2
France	2,100	1,877	1,466	1,472	1,474	1,430	1,416	1,444	1,329	1,250	818	-34.6
Germany	2,637	2,612	2,624	2,645	2,518	2,656	2,745	3,419	3,224	3,232	2,885	-10.7
Greece	682	559	631	671	735	703	825	838	848	801	780	-2.6
Hungary	230	212	208	239	289	251	222	188	180	167	156	-6.7
Ireland	57	66	72	63	59	47	42	48	57	45	52	16.4
Italy	1,864	2,105	1,541	1,684	1,327	1,499	1,507	1,758	1,630	1,432	1,237	-13.6

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LPG Production, 2010-20												'000t
Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	±% 20/19
Kazakhstan	2,100	2,147	2,215	2,448	2,464	2,536	2,680	2,902	3,115	3,196	3,178	-0.6
Lithuania	277	258	221	253	218	265	288	310	315	350	294	-15.9
Macedonia	24	20	10	3	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	1,426	1,544	1,551	1,507	1,632	1,735	1,790	1,719	1,690	1,690	1,489	-11.9
Norway	5,577	5,684	5,730	5,625	5,833	5,512	5,160	5,548	4,883	5,240	5,100	-2.7
Poland	320	290	358	340	405	375	440	430	485	495	530	7.1
Portugal	380	318	221	261	198	175	240	237	195	261	244	-6.6
Romania	570	582	527	523	560	567	590	617	624	592	522	-11.8
Russia	11,899	12,542	13,395	14,241	15,834	15,844	16,555	16,660	16,690	17,030	16,280	-4.4
Serbia	128	105	113	193	158	176	166	127	83	83	83	0.0
Slovakia	117	131	122	172	155	181	177	177	180	133	163	22.4
Spain	1,086	1,080	1,344	1,335	1,241	1,087	1,541	1,401	1,824	1,698	1,474	-13.2
Sweden	344	271	391	308	423	473	481	421	498	446	401	-10.1
Switzerland	170	184	119	193	173	106	116	107	133	110	97	-11.8
Turkey	721	809	844	804	769	899	1,138	1,180	1,082	1,247	1,135	-8.9
Turkmenistan	461	461	365	467	476	437	435	410	430	468	365	-22.0
Ukraine	679	665	563	503	440	412	401	428	403	409	412	0.6
UK	3,767	4,043	3,509	3,523	3,268	3,301	3,301	3,324	2,969	4,115	3,739	-9.1
Uzbekistan	271	256	274	361	366	470	610	660	740	730	715	-2.1
Other	191	133	127	121	101	231	236	236	236	243	228	-6.2
Total Europe & Eurasia	40,704	41,733	41,296	42,643	43,953	44,171	45,909	47,637	46,871	48,857	45,466	-6.9
Bahrain	216	226	216	201	216	220	239	225	225	393	376	-4.2
Iran	7,497	7,599	7,570	7,717	7,778	8,024	9,409	9,244	7,734	8,062	7,808	-3.1
Iraq	1,357	1,394	1,538	1,310	1,100	1,578	1,986	1,832	1,930	1,642	1,874	14.1
Israel	510	568	498	581	605	621	597	611	592	613	613	0.0
Jordan	85	84	102	78	91	80	81	78	80	80	66	-17.5
Kuwait	4,183	4,519	4,992	4,843	4,760	4,804	4,925	4,914	6,099	6,287	5,739	-8.7
Lebanon	0	0	0	0	0	0	0	0	0	0	0	-
Oman	531	626	586	557	573	549	530	530	768	980	912	-7.0
Qatar	8,736	10,268	10,479	10,829	10,917	11,203	10,159	10,458	10,669	10,807	10,711	-0.9
Saudi Arabia	24,774	26,006	27,798	26,273	27,325	26,445	30,324	27,239	28,891	27,687	26,420	-4.6
Syria	455	443	323	189	151	132	139	137	139	139	139	0.0
UAE	7,467	9,042	9,532	10,021	10,491	10,869	10,466	10,793	10,925	12,123	11,553	-4.7
Yemen	735	583	667	690	605	610	516	417	407	405	397	-2.0
Other	0	0	0	0	0	0	0	0	0	0	0	-
Total Middle East	56,546	61,358	64,301	63,289	64,612	65,135	69,371	66,478	68,460	69,219	66,608	-3.8

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LPG Production, 2010-20												'000t
Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	±% 20/19
Algeria	8,162	8,014	7,429	7,484	9,176	9,005	9,207	9,155	8,972	8,443	7,996	-5.3
Angola	567	596	542	712	591	526	732	760	837	1,054	1,202	14.0
Cameroon	20	23	30	25	25	17	17	15	25	24	24	0.0
Chad	0	5	5	13	5	5	5	17	20	20	20	0.0
Congo	240	258	287	308	20	20	12	8	9	0	0	-
Egypt	1,970	2,051	1,996	2,312	2,342	2,448	2,533	2,480	2,513	2,502	2,291	-8.4
Gabon	13	12	14	14	13	13	13	26	8	8	8	0.0
Ghana	32	45	27	26	7	92	114	205	222	70	65	-7.1
Ivory Coast	19	22	45	44	53	42	21	22	22	22	22	0.0
Kenya	29	28	17	12	13	13	0	0	0	0	0	-
Libya	504	331	446	374	343	316	349	321	304	315	328	4.1
Morocco	29	42	116	96	99	15	0	0	0	0	0	-
Nigeria	2,734	2,320	2,304	1,747	2,282	2,552	2,940	2,886	2,978	3,864	3,592	-7.0
Senegal	3	2	1	1	3	5	3	3	3	3	3	0.0
South Africa	334	378	360	270	250	270	250	283	246	267	235	-12.0
Sudan	300	298	306	298	310	300	310	320	320	320	320	0.0
Tunisia	74	114	148	189	163	147	235	142	128	105	194	84.6
Other	114	121	156	169	182	38	40	40	40	76	69	-9.0
Total Africa	15,144	14,660	14,229	14,094	15,877	15,824	16,781	16,683	16,647	17,093	16,369	-4.2
Australia	2,841	2,765	2,606	2,454	2,553	2,174	2,325	2,068	2,175	3,359	3,875	15.4
Bangladesh	19	20	21	21	21	17	20	17	16	16	13	-18.8
China	21,022	21,789	22,515	24,559	26,493	28,886	34,804	36,709	38,719	40,615	44,286	9.0
India	10,300	10,389	10,382	10,525	10,626	11,072	12,094	12,286	13,109	12,768	12,231	-4.2
Indonesia	2,144	2,260	2,415	2,299	2,437	2,752	2,241	2,241	2,026	1,977	1,936	-2.1
Japan	3,941	4,066	3,573	4,443	4,302	5,663	5,353	5,377	5,200	5,199	4,137	-20.4
Malaysia	3,169	3,045	2,725	2,388	2,162	1,797	3,075	2,621	2,734	3,057	3,050	-0.2
New Zealand	149	148	166	177	206	193	168	177	187	162	161	-0.8
Pakistan	431	386	423	398	440	629	650	677	784	784	720	-8.1
Philippines	292	286	318	321	301	464	450	448	508	292	173	-40.8
Singapore	881	951	1,043	934	966	967	989	828	785	614	614	0.0
South Korea	3,553	3,310	2,475	2,466	2,703	3,216	3,028	3,432	3,759	3,434	2,988	-13.0
Sri Lanka	32	22	17	22	28	10	9	10	19	26	22	-15.9
Taiwan	1,511	1,259	1,396	1,530	1,228	1,163	1,163	1,026	1,063	1,065	674	-36.7
Thailand	4,406	5,422	5,687	5,447	5,506	5,513	5,719	6,056	6,247	5,980	5,496	-8.1
Timor Leste	1,043	1,032	1,665	948	780	400	0	0	0	0	0	-
Vietnam	591	594	654	712	743	727	804	757	828	1,774	1,634	-7.9
Other	45	72	86	105	121	119	120	125	117	77	77	1.0
Total Asia-Pacific	56,389	57,793	58,131	59,693	61,547	65,697	72,947	74,785	78,217	81,182	82,071	1.1
Total World	244,078	251,437	259,082	267,236	280,233	289,325	304,521	306,448	318,866	333,928	329,389	-1.4

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Availability to Local Market, 2020							'000t
	Production			Imports	Exports	Consumption	
	Refinery	Gas processing	Total				
US	8,349	79,093	87,442	4,304	49,349	43,649	
Canada	1,432	13,186	14,618	476	5,712	5,216	
Total North America	9,781	92,279	102,060	4,780	55,061	48,865	
Argentina	761	1,947	2,708	0	1,133	1,407	
Bolivia	82	420	502	0	122	380	
Brazil	4,197	1,649	5,846	1,812	0	7,688	
Chile	278	0	278	1,399	223	1,353	
Colombia	248	293	541	56	0	553	
Costa Rica	0	0	0	184	0	184	
Cuba	24	23	47	124	0	171	
Dominican Republic	11	0	11	977	0	988	
Ecuador	218	0	218	1,033	0	1,251	
El Salvador	0	0	0	314	0	314	
Guatemala	0	0	0	586	120	415	
Honduras	0	0	0	174	0	174	
Jamaica	9	0	9	78	0	84	
Mexico	220	2,989	3,209	5,912	21	9,100	
Netherlands Antilles	37	0	37	0	31	6	
Nicaragua	17	0	17	115	0	132	
Panama	0	0	0	148	0	146	
Paraguay	0	0	0	82	3	80	
Peru	220	1,416	1,636	351	41	1,906	
Puerto Rico	0	0	0	75	0	75	
Trinidad & Tobago	0	365	365	0	333	32	
Uruguay	95	0	95	38	0	131	
US Virgin Islands	0	0	0	274	0	274	
Venezuela	83	1,136	1,219	0	406	813	
Other	77	0	77	186	58	204	
Total South & C. America	6,576	10,238	16,814	13,918	2,491	27,859	
Austria	452	0	452	64	92	407	
Azerbaijan	200	20	220	0	90	131	
Belarus	220	292	512	1,197	1,303	406	
Belgium	919	0	919	1,850	675	1,926	
Bulgaria	77	0	77	338	28	385	
Croatia	174	40	214	53	167	100	
Cyprus	0	0	0	55	0	55	
Czech Republic	312	25	337	192	131	389	
Denmark	112	0	112	12	66	59	
Estonia	0	0	0	37	4	32	
Finland	245	0	245	634	5	874	
France	818	0	818	3,197	805	3,188	
Germany	2,885	0	2,885	1,265	241	3,493	
Greece	780	0	780	61	322	483	
Hungary	121	35	156	452	85	524	
Republic of Ireland	52	0	52	127	21	165	
Italy	1,237	0	1,237	2,057	263	3,155	

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Availability to Local Market, 2020						'000t
	Production			Imports	Exports	Consumption
	Refinery	Gas processing	Total			
Kazakhstan	745	2,433	3,178	0	1,943	1,235
Latvia	0	0	0	142	71	70
Lithuania	294	0	294	52	220	127
Macedonia	0	0	0	79	2	78
Malta	0	0	0	23	0	23
Moldova	0	0	0	62	0	63
Montenegro	0	0	0	17	0	17
Netherlands	1,489	0	1,489	3,333	1,868	2,873
Norway	385	4,715	5,100	216	4,897	433
Poland	505	25	530	2,040	230	2,340
Portugal	244	0	244	802	34	861
Romania	522	0	522	145	156	493
Russia	4,680	11,600	16,280	0	4,350	11,820
Serbia	83	0	83	93	32	138
Slovakia	163	0	163	31	65	112
Slovenia	0	0	0	88	11	77
Spain	1,474	0	1,474	997	446	1,960
Sweden	401	0	401	1,200	747	802
Switzerland	97	0	97	69	10	156
Tajikistan	0	0	0	444	0	444
Turkey	1,135	0	1,135	3,005	118	4,034
Turkmenistan	250	115	365	0	165	200
Ukraine	105	306	412	1,610	0	2,022
UK	1,749	1,990	3,739	1,290	1,889	2,740
Uzbekistan	10	705	715	0	53	662
Other	93	135	228	48	69	194
Total Europe & Eurasia	23,030	22,436	45,466	27,377	21,673	49,745
Bahrain	51	325	376	0	297	79
Iran	1,764	6,045	7,808	0	4,824	2,985
Iraq	165	1,709	1,874	0	164	1,710
Israel	613	0	613	255	164	704
Jordan	66	0	66	411	0	477
Kuwait	609	5,130	5,739	0	5,110	629
Lebanon	0	0	0	245	0	245
Oman	528	384	912	0	674	238
Qatar	274	10,437	10,711	0	10,465	246
Saudi Arabia	1,471	24,949	26,420	0	6,853	19,567
Syria	63	76	139	378	0	517
UAE	417	11,136	11,553	0	9,226	2,327
Yemen	61	336	397	0	0	397
Other	0	0	0	203	0	174
Total Middle East	6,081	60,527	66,608	1,492	37,777	30,295
Algeria	643	7,353	7,996	0	5,628	2,368
Angola	20	1,182	1,202	64	997	269
Burkina Faso	0	0	0	79	4	75
Cameroon	18	6	24	117	0	141

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Availability to Local Market, 2020						'000t
	Production			Imports	Exports	Consumption
	Refinery	Gas processing	Total			
Chad	20	0	20	19	0	39
Congo	0	0	0	15	0	15
Egypt	1,180	1,111	2,291	1,962	235	4,018
Ethiopia	0	0	0	10	0	10
Gabon	8	0	8	38	0	46
Ghana	8	57	65	263	5	323
Ivory Coast	16	6	22	325	1	346
Kenya	0	0	0	403	34	317
Libya	35	293	328	0	39	289
Mali	0	0	0	21	0	21
Mauritius	0	0	0	167	91	76
Morocco	0	0	0	2,800	0	2,840
Nigeria	41	3,551	3,592	0	2,337	1,255
Reunion	0	0	0	22	0	21
Senegal	3	0	3	164	0	157
South Africa	235	0	235	241	77	399
Sudan	320	0	320	234	0	554
Togo	0	0	0	0	0	0
Tunisia	20	174	194	409	0	603
Uganda	0	0	0	25	0	25
Other	69	0	69	232	0	259
Total Africa	2,636	13,733	16,369	7,609	9,448	14,466
Australia	515	3,360	3,875	403	3,151	1,128
Bangladesh	10	3	13	1,219	0	1,232
China	44,286	0	44,286	19,600	947	62,939
Hong Kong	0	0	0	302	0	289
India	10,396	1,835	12,231	16,269	443	28,309
Indonesia	865	1,072	1,936	6,294	0	8,230
Japan	4,137	0	4,137	9,858	64	14,269
Malaysia	729	2,321	3,050	434	236	3,248
Nepal	0	0	0	404	0	404
New Zealand	0	161	161	16	0	185
Pakistan	196	524	720	421	0	1,141
Philippines	173	0	173	1,769	0	1,769
Singapore	614	0	614	548	172	990
South Korea	2,988	0	2,988	8,397	491	10,334
Sri Lanka	22	0	22	394	0	424
Taiwan	674	0	674	1,066	20	1,723
Thailand	2,112	3,384	5,496	535	233	5,743
Timor Leste	0	0	0	0	0	0
Vietnam	1,218	416	1,634	1,690	267	3,057
Other	61	0	61	344	59	239
Total Asia-Pacific	68,996	13,076	82,071	69,964	6,083	145,653
Total World	117,101	212,289	329,389	125,139	132,532	316,884

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CONSUMPTION

LPG Consumption, 2010-20												'000t
Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	±% 20/19
US	42,355	40,863	41,994	46,368	42,726	42,035	41,493	43,256	46,223	47,250	43,649	-7.6
Canada	6,667	7,327	7,716	6,876	6,857	6,671	7,681	7,989	8,520	6,552	5,216	-20.4
Total North America	49,022	48,190	49,710	53,244	49,583	48,706	49,174	51,245	54,743	53,802	48,865	-9.2
Argentina	1,643	1,561	1,778	2,026	1,988	1,750	1,775	1,672	1,577	1,559	1,407	-9.8
Bolivia	357	364	368	374	387	395	401	377	389	398	380	-4.5
Brazil	6,741	7,126	7,145	7,410	7,428	7,308	7,400	7,390	7,300	7,539	7,688	2.0
Chile	1,342	1,283	1,355	1,268	1,412	1,324	1,237	1,294	1,317	1,326	1,353	2.0
Colombia	621	602	567	553	600	598	630	630	700	672	553	-17.8
Costa Rica	115	117	120	127	137	146	159	168	176	187	184	-1.7
Cuba	114	109	106	113	121	123	124	145	161	169	171	1.1
Dominican Republic	789	734	744	773	828	922	913	987	1,017	1,027	988	-3.8
Ecuador	1,030	1,109	1,057	1,090	1,139	1,126	1,073	1,118	1,127	1,229	1,251	1.8
El Salvador	244	211	217	236	275	373	291	300	304	310	314	1.3
Guatemala	228	244	261	274	285	331	355	373	391	409	415	1.4
Honduras	75	81	104	114	119	139	144	159	168	182	174	-4.5
Jamaica	78	82	85	78	73	79	89	92	87	89	84	-5.9
Mexico	9,183	9,077	9,119	8,988	9,070	8,800	8,947	8,976	8,753	9,010	9,100	1.0
Netherlands Antilles	8	8	8	7	7	6	6	6	6	6	6	0.0
Nicaragua	75	75	83	95	98	105	117	125	124	131	132	0.3
Panama	145	152	159	165	175	140	139	143	148	151	146	-3.5
Paraguay	83	83	86	83	80	80	81	81	87	88	80	-9.7
Peru	1,236	1,252	1,341	1,503	1,579	1,619	1,600	1,764	1,919	1,985	1,906	-4.0
Puerto Rico	110	95	96	102	102	98	91	83	79	76	75	-1.3
Trinidad & Tobago	52	29	14	40	44	57	61	54	39	40	32	-20.0
Uruguay	113	116	122	133	124	118	120	111	112	116	131	12.7
US Virgin Islands	20	20	20	20	20	25	50	88	104	303	274	-9.7
Venezuela	3,022	3,715	3,813	4,105	4,385	4,649	4,529	2,723	2,324	1,500	813	-45.8
Other	182	194	198	218	211	220	224	232	245	209	204	-2.5
Total South & C. America	27,606	28,439	28,966	29,895	30,687	30,531	30,556	29,091	28,654	28,715	27,859	-3.0
Austria	349	333	316	279	285	316	435	380	413	403	407	1.1
Azerbaijan	86	135	123	167	169	150	140	133	136	133	131	-1.8
Belarus	415	415	419	418	426	424	410	410	376	445	406	-8.8
Belgium	1,210	1,456	1,479	1,560	1,832	2,271	2,101	1,586	2,283	2,305	1,926	-16.4
Bulgaria	314	335	339	387	411	432	441	447	437	427	385	-9.9
Croatia	163	150	147	146	139	140	145	132	138	127	100	-21.0
Cyprus	53	57	56	51	47	54	55	57	54	61	55	-8.8
Czech Republic	204	205	206	222	273	213	327	396	422	445	389	-12.6
Denmark	53	51	50	48	48	50	54	58	57	54	59	8.5
Estonia	18	20	18	18	17	18	19	23	25	27	32	17.8
Finland	725	718	720	757	946	873	915	840	876	1,011	874	-13.6
France	3,759	3,375	3,373	3,680	3,986	3,826	3,566	3,438	3,465	3,839	3,188	-16.9
Germany	3,258	3,141	3,289	3,384	2,846	2,956	3,083	4,478	3,625	3,889	3,493	-10.2
Greece	319	364	406	493	497	512	601	563	546	555	483	-12.9
Hungary	381	344	409	409	444	458	481	521	568	555	524	-5.5

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CONSUMPTION

LPG Consumption, 2010-20												'000t
Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	±% 20/19
Ireland	131	125	121	135	133	136	145	148	159	165	165	-0.0
Italy	3,621	3,539	3,446	3,551	3,309	3,525	3,637	3,624	3,506	3,570	3,155	-11.6
Kazakhstan	397	417	419	455	606	674	993	1,043	1,282	1,334	1,235	-7.4
Latvia	47	55	73	85	93	97	91	92	86	75	70	-6.2
Lithuania	205	201	193	183	180	162	154	151	142	143	127	-11.0
Macedonia	63	58	56	58	63	71	78	76	79	82	78	-5.0
Malta	24	23	24	24	25	26	24	24	25	27	23	-14.8
Moldova	62	58	63	74	77	74	77	72	71	67	63	-6.0
Montenegro	18	18	17	14	16	18	17	19	18	19	17	-12.5
Netherlands	2,551	2,779	2,284	4,192	4,927	3,970	3,626	3,108	3,381	2,950	2,873	-2.6
Norway	931	848	885	872	776	715	722	692	413	459	433	-5.7
Poland	2,236	2,152	2,145	2,117	2,160	2,245	2,355	2,495	2,415	2,520	2,340	-7.1
Portugal	735	700	589	823	996	843	865	796	676	862	861	-0.1
Romania	458	485	555	555	541	529	541	540	475	511	493	-3.5
Russia	9,028	9,463	9,738	9,548	10,007	9,657	10,175	10,290	10,255	11,015	11,820	7.3
Serbia	373	392	367	362	295	310	281	219	148	146	138	-5.7
Slovakia	159	173	153	156	124	160	158	166	163	123	112	-8.7
Slovenia	83	80	83	75	74	82	81	88	88	87	77	-11.0
Spain	2,519	2,394	2,267	2,174	2,333	2,578	2,865	2,538	2,623	2,434	1,960	-19.5
Sweden	830	953	819	1,125	969	911	1,131	1,005	1,058	1,055	802	-24.0
Switzerland	193	176	173	178	189	189	187	155	170	169	156	-7.4
Tajikistan	90	130	171	225	296	336	349	360	381	431	444	3.0
Turkey	3,741	3,747	3,826	3,808	3,856	4,131	4,268	4,243	4,311	4,343	4,034	-7.1
Turkmenistan	8	10	10	10	10	10	197	229	209	224	200	-10.8
Ukraine	798	839	837	949	1,055	1,140	1,488	1,603	1,828	2,020	2,022	0.1
UK	3,349	3,313	2,876	3,117	2,994	3,144	3,158	2,969	3,568	3,257	2,740	-15.9
Uzbekistan	235	246	246	272	277	449	590	640	650	678	662	-2.4
Other	363	348	347	336	238	225	217	216	212	209	194	-7.3
Total Europe & Eurasia	44,555	44,821	44,133	47,492	48,985	49,100	51,243	51,063	51,813	53,247	49,745	-6.6
Bahrain	48	49	55	55	58	60	64	69	73	77	79	2.0
Iran	3,536	3,300	3,262	3,281	3,116	3,243	3,135	3,165	3,265	3,030	2,985	-1.5
Iraq	1,479	1,605	1,704	1,825	1,668	1,700	1,610	1,720	1,750	1,476	1,710	15.9
Israel	604	659	689	651	644	675	693	733	714	724	704	-2.7
Jordan	312	378	378	363	367	415	417	434	454	475	477	0.5
Kuwait	335	350	340	352	362	364	162	548	620	619	629	1.7
Lebanon	164	197	244	270	247	258	267	261	233	257	245	-4.4
Oman	86	102	121	141	168	181	192	207	218	231	238	3.0
Qatar	584	668	817	867	926	971	937	217	234	245	246	0.1
Saudi Arabia	16,774	18,306	20,098	18,973	20,625	19,644	21,810	18,583	19,622	19,585	19,567	-0.1
Syria	876	837	600	516	471	456	456	400	471	510	517	1.3
UAE	721	775	753	865	875	1,447	1,579	1,649	1,820	2,309	2,327	0.8
Yemen	715	567	649	669	590	595	506	455	405	405	397	-1.9
Other	42	43	48	50	51	50	54	169	186	181	174	-4.1
Total Middle East	26,276	27,836	29,758	28,878	30,168	30,059	31,882	28,610	30,065	30,124	30,295	0.0

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CONSUMPTION

LPG Consumption, 2010-20												'000t
Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	±% 20/19
Algeria	1,972	1,998	2,112	2,065	1,943	1,918	1,897	1,983	2,221	2,435	2,368	-2.8
Angola	174	191	254	266	247	259	239	274	285	295	269	-8.9
Burkina Faso	29	36	43	50	54	58	63	69	74	82	75	-8.0
Cameroon	50	57	70	82	87	94	102	105	117	125	141	13.2
Chad	3	7	8	8	10	17	26	28	35	41	39	-5.0
Congo	na	na	na	na	na	11	12	13	15	16	15	-6.2
Egypt	4,375	4,324	4,246	4,433	4,510	4,488	4,444	4,369	4,267	4,226	4,018	-4.9
Ethiopia	5	5	6	6	7	9	8	9	10	11	10	-9.1
Gabon	29	31	33	35	37	37	38	43	46	49	46	-5.0
Ghana	176	215	262	243	241	280	267	356	394	340	323	-5.0
Ivory Coast	127	127	189	213	245	271	280	319	332	356	346	-2.7
Kenya	88	97	107	120	133	148	174	192	224	304	317	4.3
Libya	331	296	293	321	303	264	282	278	287	295	289	-2.3
Mali	5	6	8	11	5	12	13	18	21	22	21	-4.5
Mauritius	66	71	66	69	71	73	74	75	77	84	76	-9.2
Morocco	1,922	1,997	2,137	2,186	2,277	2,380	2,494	2,500	2,599	2,740	2,840	3.6
Nigeria	122	142	159	193	201	350	450	650	780	1,525	1,255	-17.7
Reunion	23	20	22	20	20	20	21	21	22	21	21	0.0
Senegal	115	107	101	103	106	127	139	143	152	161	157	-2.2
South Africa	335	380	350	340	349	359	360	386	402	417	399	-4.2
Sudan	301	380	410	453	472	475	478	507	537	569	554	-2.7
Togo	na	na	na	na	na	15	17	18	0	0	0	0.0
Tunisia	477	473	485	511	509	529	528	559	573	604	603	-0.1
Uganda	9	10	11	12	13	14	14	16	18	20	25	23.3
Other	261	254	271	269	215	227	250	250	265	276	259	-6.0
Total Africa	10,995	11,224	11,643	12,009	12,055	12,435	12,670	13,181	13,753	15,013	14,466	-3.6
Australia	2,350	2,062	1,973	1,768	1,645	1,573	1,500	1,290	1,326	1,297	1,128	-13.1
Bangladesh	70	77	79	83	108	148	343	518	764	960	1,232	28.4
China	23,469	24,256	24,842	27,884	32,594	39,312	48,411	52,316	56,115	59,729	62,939	5.4
Hong Kong	398	400	392	390	403	373	371	337	339	338	289	-14.5
India	14,681	15,881	16,317	16,527	18,343	19,780	22,041	23,762	24,642	27,046	28,309	4.7
Indonesia	3,761	4,347	5,032	5,608	6,094	6,400	6,667	7,192	7,564	7,825	8,230	5.2
Japan	16,412	16,656	16,781	16,368	15,930	16,450	16,046	15,576	15,934	15,836	14,269	-9.9
Malaysia	2,685	2,658	2,658	2,710	2,419	2,073	3,116	3,160	3,216	3,252	3,248	-0.1
Nepal	141	159	181	207	232	252	287	332	369	392	404	3.0
New Zealand	144	137	150	144	152	163	167	179	180	190	185	-2.7
Pakistan	491	476	487	522	566	868	1,124	1,179	1,187	1,156	1,141	-1.3
Philippines	1,090	1,113	1,091	1,107	1,140	1,306	1,458	1,599	1,797	1,829	1,769	-3.3
Singapore	790	787	781	777	764	762	875	721	873	902	990	9.8
South Korea	9,316	9,177	8,667	8,338	8,176	7,794	9,386	8,986	9,381	10,361	10,334	-0.3
Sri Lanka	185	205	211	220	243	291	346	424	422	471	424	-9.9
Taiwan	2,433	2,428	2,162	2,890	2,991	2,621	3,111	2,504	2,679	2,775	1,723	-37.9
Thailand	5,987	6,891	7,387	7,527	7,516	6,695	6,136	6,341	6,621	6,562	5,743	-12.5
Vietnam	1,310	1,258	1,212	1,307	1,316	1,550	1,751	1,979	2,106	3,075	3,057	-0.6
Other	164	152	152	165	176	213	210	220	234	245	239	-2.6
Total Asia-Pacific	85,877	89,120	90,555	94,542	100,808	108,624	123,346	128,615	135,749	144,241	145,653	1.0
Total World	244,331	249,630	254,765	266,061	272,286	279,455	298,871	301,805	314,777	325,142	316,884	-2.5

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CONSUMPTION

LPG Consumption for Energy Purposes Only, 2012-20									'000t
	2012	2013	2014	2015	2016	2017	2018	2019	2020
US	15,968	19,054	18,698	17,749	17,910	17,811	19,995	20,992	19,340
Canada	3,341	2,788	2,580	2,520	2,618	2,743	2,824	2,978	2,373
Total North America	19,309	21,842	21,278	20,269	20,528	20,554	22,819	23,970	21,713
Argentina	1,733	1,980	1,940	1,701	1,725	1,622	1,527	1,509	1,357
Bolivia	368	374	387	395	401	377	389	398	380
Brazil	7,145	7,340	7,423	7,308	7,400	7,390	7,300	7,290	7,510
Chile	1,344	1,231	1,398	1,310	1,237	1,281	1,304	1,313	1,339
Colombia	567	553	600	598	581	578	571	533	439
Costa Rica	120	127	137	146	159	168	176	187	184
Cuba	106	113	121	123	124	145	161	169	171
Dominican Republic	744	773	828	922	913	987	1,017	1,027	988
Ecuador	1,026	1,067	1,110	1,096	1,060	1,104	1,113	1,214	1,236
El Salvador	217	236	275	373	291	300	304	310	314
Guatemala	261	274	285	331	355	373	391	409	415
Honduras	104	114	119	139	144	159	168	182	174
Jamaica	85	78	73	79	89	92	87	89	84
Mexico	9,119	8,988	9,070	8,800	8,947	8,908	8,682	8,942	9,034
Netherlands Antilles	7	7	6	6	6	6	6	6	6
Nicaragua	81	91	94	101	113	121	120	127	128
Panama	159	165	175	140	139	143	148	151	146
Paraguay	86	83	80	80	81	81	87	88	80
Peru	1,341	1,503	1,579	1,619	1,600	1,764	1,919	1,985	1,906
Puerto Rico	102	102	98	98	91	83	79	76	75
Trinidad & Tobago	14	40	44	57	61	54	39	40	32
Uruguay	122	133	124	118	120	111	112	116	131
US Virgin Islands	20	20	25	25	50	88	104	303	274
Venezuela	1,605	1,513	1,400	1,460	1,376	916	878	504	336
Other	218	211	220	220	224	232	245	209	204
Total South & C. America	26,694	27,116	27,611	27,245	27,287	27,083	26,928	27,180	26,941
Austria	122	99	101	90	80	84	71	68	66
Azerbaijan	69	63	55	42	47	14	26	23	21
Belarus	280	279	286	283	270	270	266	265	246
Belgium	337	335	375	217	216	184	195	183	158
Bulgaria	339	387	411	432	441	447	437	427	385
Croatia	144	144	139	140	145	132	138	127	100
Cyprus	56	51	47	54	55	57	54	61	55
Czech Republic	104	102	109	121	172	166	180	165	134
Denmark	50	48	48	50	54	58	57	54	59
Estonia	18	18	17	18	19	23	25	27	32
Finland	212	253	266	273	277	263	267	246	110
France	2,007	1,978	1,710	1,791	1,769	1,756	1,691	1,661	1,524
Germany	1,783	1,844	1,730	1,589	1,722	1,679	1,690	1,622	1,458
Greece	370	416	456	471	506	507	515	524	453
Hungary	154	151	169	161	170	173	166	167	140
Ireland	121	135	133	136	145	148	159	165	165
Italy	3,138	3,280	3,079	3,253	3,355	3,361	3,264	3,314	2,917

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CONSUMPTION

LPG Consumption for Energy Purposes Only, 2012-20									'000t
	2012	2013	2014	2015	2016	2017	2018	2019	2020
Kazakhstan	419	455	606	674	993	1,043	1,262	1,309	1,220
Latvia	73	85	93	97	91	92	86	75	70
Lithuania	193	183	180	162	154	151	142	143	127
Macedonia	56	58	63	71	78	76	79	82	78
Malta	24	24	25	26	24	24	25	27	23
Moldova	63	74	77	74	77	72	71	67	63
Montenegro	17	14	16	28	17	19	18	19	17
Netherlands	454	442	325	321	316	303	294	305	267
Norway	184	192	173	161	184	182	132	176	159
Poland	2,145	2,117	2,160	2,245	2,355	2,495	2,415	2,520	2,340
Portugal	574	557	542	518	512	473	402	466	462
Romania	507	515	499	487	499	500	475	469	451
Russia	4,051	3,967	4,114	4,600	4,385	4,490	4,530	4,595	4,520
Serbia	361	362	295	310	246	193	123	124	115
Slovakia	57	56	47	50	51	49	47	47	47
Slovenia	83	75	74	82	81	88	88	87	77
Spain	1,575	1,529	1,410	1,430	1,540	1,518	1,448	1,417	1,143
Sweden	342	352	347	338	346	356	339	346	341
Switzerland	90	86	77	76	80	74	76	74	64
Tajikistan	171	225	296	336	349	360	381	431	444
Turkey	3,754	3,737	3,785	3,966	4,103	4,078	4,146	4,178	3,869
Turkmenistan	10	10	10	10	11	12	12	12	10
Ukraine	837	949	1,055	1,140	1,488	1,603	1,725	1,909	1,970
UK	1,107	1,077	987	1,061	1,073	1,036	1,069	1,062	1,060
Uzbekistan	246	272	277	449	590	640	650	678	662
Other	218	211	220	220	224	232	245	209	204
Total Europe & Eurasia	26,915	27,207	26,884	28,053	29,310	29,481	29,480	29,925	27,824
Bahrain	55	55	58	60	64	69	73	77	79
Iran	2,208	2,227	2,059	2,020	1,954	1,942	1,999	1,734	1,742
Iraq	1,704	1,825	1,668	1,700	1,610	1,720	1,750	1,476	1,710
Israel	449	439	444	425	435	436	432	428	420
Jordan	378	363	367	415	417	434	454	475	477
Kuwait	129	141	141	141	162	165	205	211	215
Lebanon	244	270	247	258	267	261	233	257	245
Oman	121	141	168	181	192	207	218	231	238
Qatar	105	109	113	113	134	137	154	165	174
Saudi Arabia	1,410	1,315	1,309	1,390	1,544	1,450	1,290	1,339	1,346
Syria	600	516	471	456	456	400	471	510	517
United Arab Emirates	203	312	326	344	380	361	522	513	519
Yemen	649	669	590	595	506	455	405	405	397
Other	218	211	220	220	224	232	245	209	204
Total Middle East	8,473	8,593	8,181	8,318	8,345	8,269	8,451	8,030	8,284
Algeria	2,112	2,046	1,895	1,897	1,882	1,970	2,190	2,404	2,337
Angola	254	266	247	259	239	274	285	295	269
Burkina Faso	43	50	54	58	63	69	74	82	75
Cameroon	70	82	87	94	102	105	117	125	141

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CONSUMPTION

LPG Consumption for Energy Purposes Only, 2012-20									'000t
	2012	2013	2014	2015	2016	2017	2018	2019	2020
Chad	8	8	10	17	26	28	35	41	39
Congo	na	na	58	11	12	13	15	16	15
Egypt	4,246	3,936	3,922	3,913	3,787	3,666	3,537	3,413	3,133
Ethiopia	6	6	7	9	8	9	10	11	10
Gabon	33	35	37	37	38	43	46	49	46
Ghana	262	243	241	280	267	356	394	340	323
Ivory Coast	189	213	245	271	280	319	332	356	346
Kenya	107	120	133	148	174	192	224	304	317
Libya	293	321	303	264	282	278	287	295	289
Mali	8	11	5	12	13	18	21	22	21
Mauritius	66	69	71	73	74	75	77	84	76
Morocco	2,137	2,186	2,277	2,380	2,494	2,500	2,599	2,740	2,840
Nigeria	140	160	190	350	450	650	780	992	754
Reunion	22	20	20	20	21	21	22	21	21
Senegal	101	103	106	127	139	143	152	161	157
South Africa	350	340	349	359	360	386	402	417	399
Sudan and South Sudan	410	453	472	475	478	507	537	569	554
Togo	na	na	na	15	17	18	0	0	0
Tunisia	485	511	509	529	528	559	573	604	603
Uganda	11	12	13	14	14	16	18	20	25
Other	218	211	220	220	224	232	245	209	204
Total Africa	11,571	11,402	11,471	11,832	11,972	12,447	12,972	13,568	12,995
Australia	1,710	1,540	1,444	1,323	1,276	1,190	1,119	1,091	922
Bangladesh	79	83	108	148	343	518	764	960	1,232
China	20,940	23,344	26,583	29,816	33,311	34,870	37,532	39,202	35,398
Hong Kong	392	390	403	373	371	337	339	338	289
India	15,645	15,855	17,671	19,040	21,232	22,992	23,872	26,276	27,441
Indonesia	5,032	5,608	6,094	6,400	6,667	7,192	7,564	7,825	8,230
Japan	12,661	11,724	11,423	11,738	11,487	11,185	11,557	11,308	10,515
Malaysia	1,353	1,479	1,360	1,304	1,281	1,357	1,357	1,335	1,293
Nepal	181	207	232	252	287	332	369	392	404
New Zealand	150	144	152	163	167	179	180	190	185
Pakistan	487	522	566	868	1,124	1,179	1,187	1,156	1,141
Philippines	1,091	1,107	1,140	1,306	1,458	1,599	1,797	1,829	1,769
Singapore	132	128	115	113	106	106	104	102	101
South Korea	7,064	6,958	6,336	6,030	6,073	6,047	5,742	5,810	5,457
Sri Lanka	211	220	243	291	346	424	422	471	424
Taiwan	1,412	1,389	1,369	1,355	1,337	1,331	1,205	1,177	886
Thailand	4,722	4,788	4,739	4,418	4,188	4,123	4,023	3,810	3,400
Vietnam	1,212	1,307	1,316	1,550	1,751	1,979	2,106	2,275	2,257
Other	218	211	220	220	224	232	245	209	204
Total Asia-Pacific	74,692	77,004	81,514	86,708	93,029	97,172	101,484	105,757	101,547
-									
Total World	167,654	173,164	176,939	182,425	190,471	195,006	202,134	208,428	199,304

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

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CONSUMPTION

LPG Consumption by sector, 2020							'000t
	Residential	Agriculture	Industry	Transport	Refinery	Chemical	Total
US	15,617	1,574	1,972	177	9,742	14,566	43,649
Canada	905	176	1,090	202	1,876	967	5,216
Total North America	16,523	1,750	3,062	378	11,618	15,533	48,865
Argentina	1,136	68	149	4	0	50	1,407
Bolivia	371	0	10	0	0	0	380
Brazil	5,520	0	1,990	0	0	178	7,688
Chile	1,032	0	276	31	13	0	1,353
Colombia	362	0	77	0	114	0	553
Costa Rica	97	0	73	14	0	0	184
Cuba	157	0	15	0	0	0	171
Dominican Republic	518	0	65	405	0	0	988
Ecuador	947	21	262	6	15	0	1,251
El Salvador	223	0	90	1	0	0	314
Guatemala	333	0	79	4	0	0	415
Honduras	82	0	17	75	0	0	174
Jamaica	84	0	0	0	0	0	84
Mexico	5,542	102	2,202	1,187	67	0	9,100
Netherlands Antilles	6	0	0	0	0	0	6
Nicaragua	54	1	72	0	4	0	132
Panama	115	0	31	0	0	0	146
Paraguay	71	0	1	7	0	0	80
Peru	1,114	0	248	545	0	0	1,906
Puerto Rico	68	0	7	0	0	0	75
Trinidad & Tobago	32	0	0	0	0	0	32
Uruguay	107	6	17	0	0	0	131
US Virgin Islands	10	0	264	0	0	0	274
Venezuela	272	0	64	0	477	0	813
Other	204	0	0	0	0	0	204
Total South & C. America	18,457	198	6,007	2,279	690	228	27,859
Austria	33	3	25	5	6	335	407
Azerbaijan	6	0	2	13	0	110	131
Belarus	70	9	7	160	0	160	406
Belgium	111	1	8	38	0	1,768	1,926
Bulgaria	22	2	22	339	0	0	385
Croatia	36	2	17	46	0	0	100
Cyprus	37	1	16	0	0	0	55
Czech Republic	38	4	16	75	0	255	389
Denmark	20	4	34	1	0	0	59
Estonia	13	2	6	11	0	0	32
Finland	7	0	103	0	0	763	874
France	909	327	251	38	0	1,665	3,188
Germany	588	665	636	234	38	1,997	4,158
Greece	90	19	139	205	30	0	483
Hungary	71	20	31	19	0	384	524

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CONSUMPTION

LPG Consumption by sector, 2020							'000t
	Domestic	Agriculture	Industry	Transport	Refinery	Chemical	Total
Ireland	42	0	121	2	0	0	165
Italy	1,434	18	163	1,302	19	219	3,155
Kazakhstan	200	1	2	1,017	0	15	1,235
Latvia	14	2	14	40	0	0	70
Lithuania	29	3	7	88	0	0	127
Macedonia	13	0	12	53	0	0	78
Malta	17	0	6	1	0	0	23
Moldova	5	0	1	57	0	0	63
Montenegro	4	0	6	6	0	0	17
Netherlands	32	39	75	121	15	2,591	2,873
Norway	2	16	138	3	10	264	433
Poland	255	115	235	1,735	0	0	2,340
Portugal	368	6	60	28	5	395	861
Romania	164	10	19	258	42	0	493
Russia	920	150	230	3,220	1,050	6,250	11,820
Serbia	41	1	14	58	0	23	138
Slovakia	12	1	3	31	0	65	112
Slovenia	41	0	27	9	0	0	77
Spain	913	31	132	66	0	817	1,960
Sweden	17	1	323	0	0	461	802
Switzerland	14	4	44	2	1	91	156
Tajikistan	40	2	2	400	0	0	444
Turkey	718	0	86	3,065	0	165	4,034
Turkmenistan	9	1	0	0	180	10	200
Ukraine	25	50	30	1,865	0	52	2,022
United Kingdom	261	81	660	58	0	1,680	2,740
Uzbekistan	446	1	2	214	0	0	662
Other	151	1	32	9	0	0	194
Total Europe & Eurasia	8,236	928	3,756	14,893	1,397	20,535	49,745
Bahrain	79	0	0	0	0	0	79
Iran	1,712	0	27	4	0	1,243	2,985
Iraq	1,710	0	0	0	0	0	1,710
Israel	228	13	172	7	0	284	704
Jordan	466	0	11	0	0	0	477
Kuwait	215	0	0	0	0	414	629
Lebanon	216	0	29	0	0	0	245
Oman	194	0	44	0	0	0	238
Qatar	174	0	0	0	72	0	246
Saudi Arabia	1,051	0	295	0	0	18,221	19,567
Syria	517	0	0	0	0	0	517
UAE	491	0	28	0	0	1,808	2,327
Yemen	352	0	0	45	0	0	397
Other	162	0	11	0	0	0	174
Total Middle East	7,568	13	617	56	72	21,970	30,295

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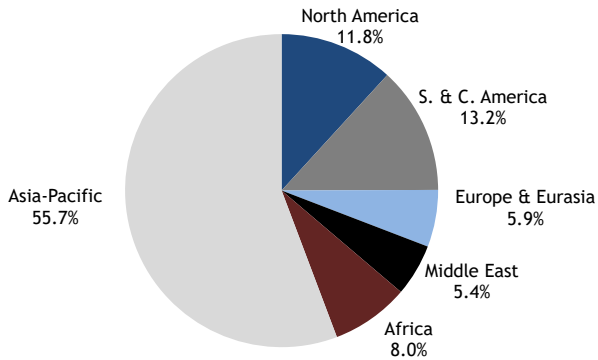
CONSUMPTION

LPG Consumption by sector, 2020							'000t
	Domestic	Agriculture	Industry	Transport	Refinery	Chemical	Total
Algeria	1,481	18	66	773	31	0	2,368
Angola	254	0	15	0	0	0	269
Burkina Faso	75	0	0	0	0	0	75
Cameroon	138	0	3	0	0	0	141
Chad	39	0	0	0	0	0	39
Congo	15	0	0	0	0	0	15
Egypt	3,115	0	18	0	0	885	4,018
Ethiopia	10	0	0	0	0	0	10
Gabon	46	0	0	0	0	0	46
Ghana	157	1	88	78	0	0	323
Ivory Coast	297	0	49	0	0	0	346
Kenya	285	0	32	0	0	0	317
Libya	262	0	27	0	0	0	289
Mali	21	0	0	0	0	0	21
Mauritius	52	0	22	2	0	0	76
Morocco	2,520	120	200	0	0	0	2,840
Nigeria	754	0	0	0	0	501	1,255
Reunion	18	1	2	0	0	0	21
Senegal	151	0	6	0	0	0	157
South Africa	203	0	197	0	0	0	399
Sudan	535	0	19	0	0	0	554
Togo	0	0	0	0	0	0	0
Tunisia	572	0	22	10	0	0	603
Uganda	22	0	3	0	0	0	25
Other	259	0	0	0	0	0	259
Total Africa	11,282	140	766	863	31	1,386	14,466
Australia	139	0	554	229	0	206	1,128
Bangladesh	1,052	0	160	20	0	0	1,232
China	28,227	106	6,086	978	14,510	13,032	62,939
Hong Kong	63	0	7	219	0	0	289
India	24,492	8	2,552	390	0	868	28,309
Indonesia	7,892	0	338	0	0	0	8,230
Japan	6,931	0	3,011	573	1,513	2,241	14,269
Malaysia	635	0	658	0	0	1,955	3,248
Nepal	404	0	0	0	0	0	404
New Zealand	73	2	107	3	0	0	185
Pakistan	539	0	536	66	0	0	1,141
Philippines	1,360	0	359	50	0	0	1,769
Singapore	23	0	78	0	0	889	990
South Korea	1,640	0	1,139	2,678	0	4,877	10,334
Sri Lanka	361	1	61	1	0	0	424
Taiwan	653	0	224	8	73	765	1,723
Thailand	2,033	3	612	752	113	2,230	5,743
Vietnam	1,431	0	826	0	0	800	3,057
Other	226	0	7	5	0	0	239
Total Asia-Pacific	78,173	120	17,316	5,973	16,208	27,863	145,653
Total World	140,239	3,149	31,524	24,441	30,016	87,514	316,884

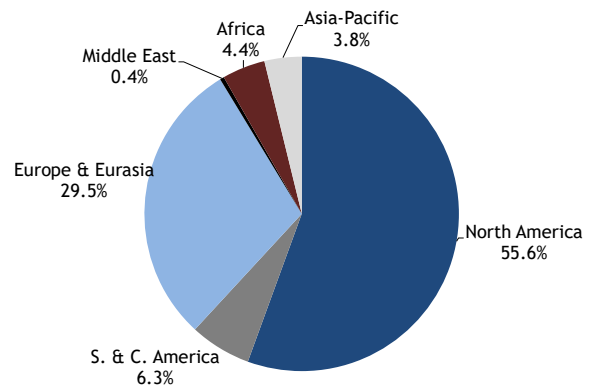
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LPG REGIONAL SHARE OF MARKET SUBSECTORS, 2020

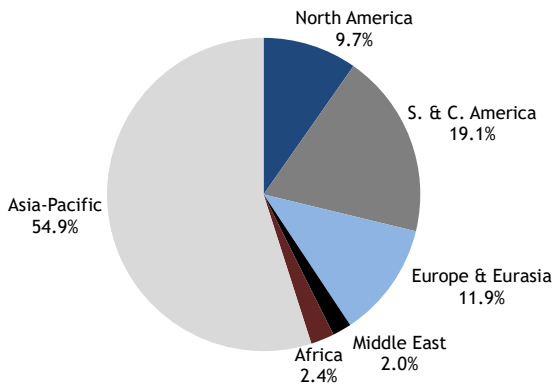
Domestic



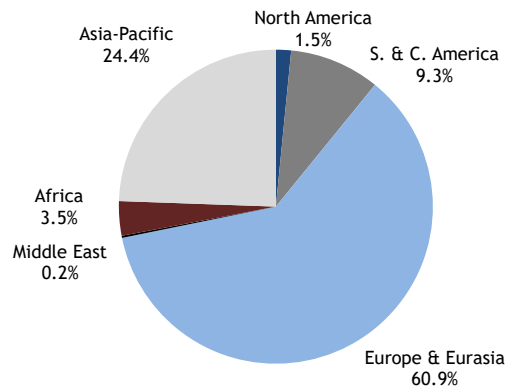
Agriculture



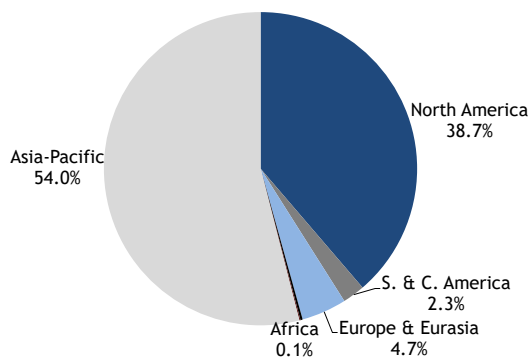
Industry



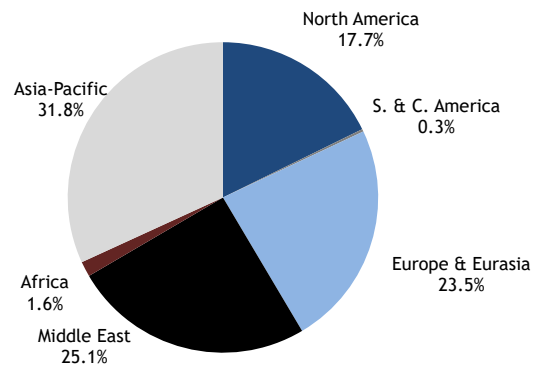
Transport



Refinery

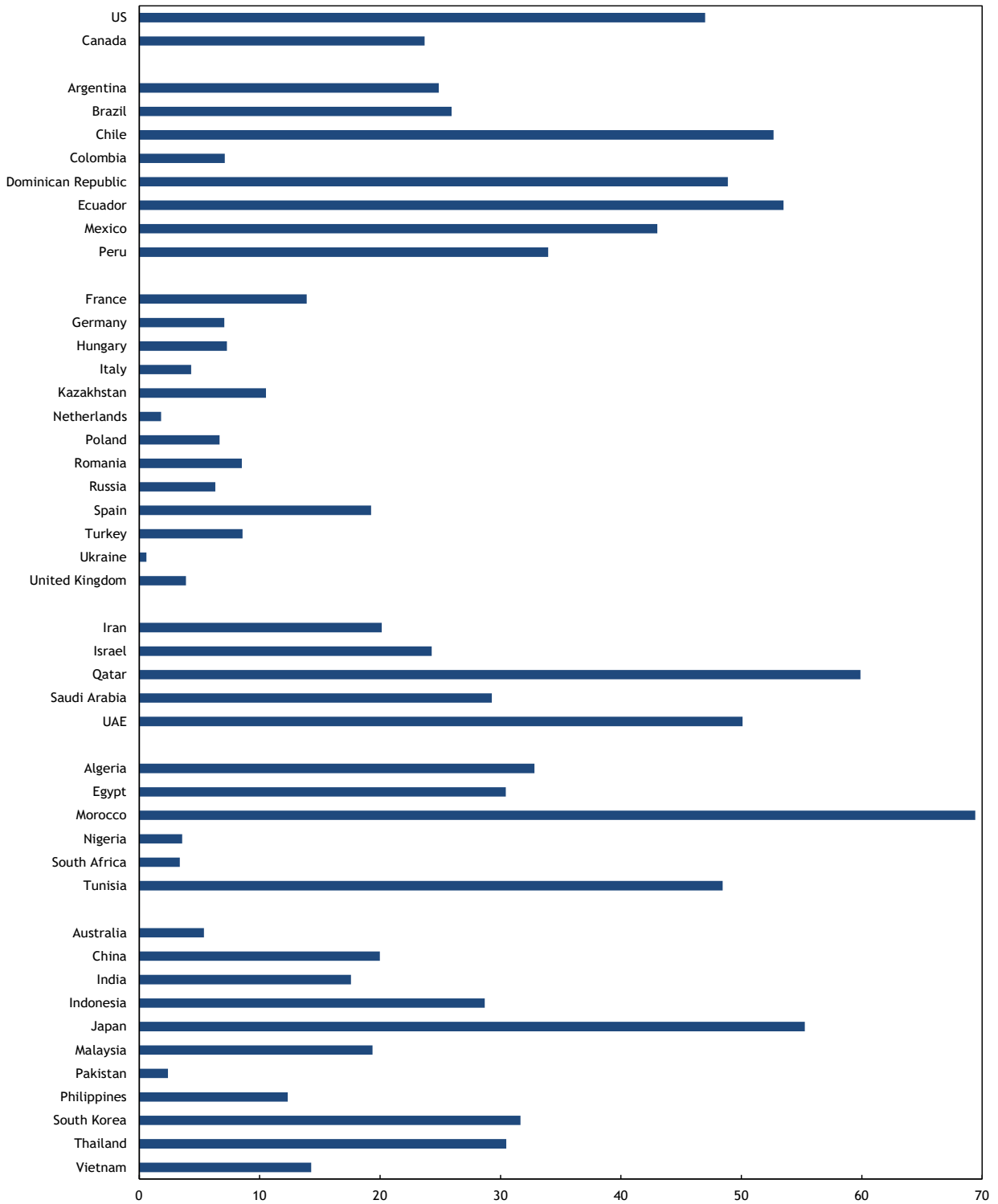


Chemical



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Domestic LPG consumption per person for selected countries, 2020 (kg/person)



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AUTOGAS

Autogas Consumption, Vehicles and Dispensing Sites							
	Consumption ('000t)			Vehicle fleet		Retail sites	
	2019	2020	±% 19/20	2019	2020	2019	2020
US	189	177	-6.4	185,061	184,000	3,000	3,000
Canada	233	202	-13.4	55,000	54,000	2,250	2,250
Total North America	422	378	-10.3	240,061	238,000	5,250	5,250
Chile	33	31	-8.0	23,491	23,000	205	200
Costa Rica	16	14	-10.0	9,200	9,000	110	100
Dominican Republic	450	405	-10.0	230,000	230,000	1,550	1,550
Ecuador	7	6	-10.0	4,800	4,500	20	20
Guatemala	4	4	-15.0	5,500	5,500	22	22
Honduras	83	75	-10.0	65,000	65,000	220	220
Mexico	1,312	1,187	-9.5	407,400	407,000	2,086	2,080
Paraguay	8	7	-9.7	11,000	11,000	25	35
Peru	567	545	-4.0	250,000	240,000	800	800
Total South & C. America	2,487	2,279	-8.4	1,011,391	1,000,000	5,078	5,067
Austria	5	5	-1.4	5,500	5,500	38	38
Azerbaijan	15	13	-13.3	9,000	8,800	130	120
Belarus	165	160	-3.0	98,000	96,040	310	300
Belgium	44	38	-13.9	25,900	25,000	424	350
Bulgaria	385	339	-12.0	480,200	470,000	2,700	2,650
Croatia	62	46	-25.0	77,000	70,000	500	450
Czech Republic	89	75	-15.0	169,750	165,000	908	880
Denmark	1	1	-10.0	20	20	4	3
Estonia	10	11	10.0	7,800	8,000	90	95
France	51	38	-25.9	186,675	1,780,000	1,579	1,400
Germany	390	234	-40.0	371,472	346,765	7,100	6,229
Greece	255	205	-19.4	300,000	285,000	1,200	1,300
Hungary	23	19	-20.0	24,000	23,000	561	550
Ireland	2	2	-10.0	3,500	3,500	45	45
Italy	1,660	1,302	-21.6	2,574,287	2,678,656	4,200	4,300
Kazakhstan	1,052	1,017	-3.3	420,000	425,000	1,900	1,900
Latvia	45	40	-11.7	49,681	47,000	240	230
Lithuania	96	88	-7.8	104,971	99,820	350	350
Macedonia	56	53	-5.0	19,400	19,400	225	225
Malta	1	1	-30.0	1,600	2,200	8	11
Moldova	64	57	-10.9	55,500	55,000	556	500
Montenegro	8	6	-20.0	7,000	7,000	49	49
Netherlands	127	121	-4.7	137,035	132,924	1,358	1,223
Norway	3	3	0.0	1,500	1,500	94	94
Poland	1,925	1,735	-9.9	3,282,000	3,327,000	7,558	7,409
Portugal	36	28	-22.7	56,878	58,310	396	396
Romania	277	258	-7.0	240,000	230,000	1,100	1,100
Russia	3,250	3,220	-0.9	3,000,000	3,000,000	4,950	4,900
Serbia	65	58	-10.0	120,000	110,000	570	500
Slovakia	32	31	-3.0	16,000	16,000	360	360
Slovenia	12	9	-22.0	14,000	14,000	136	136
Spain	86	66	-23.4	80,000	98,000	1,155	1,100
Sweden	0	0	-	80	80	25	25
Switzerland	2	2	-20.0	1,000	1,000	61	61
Tajikistan	388	400	3.1	240,000	240,000	250	250

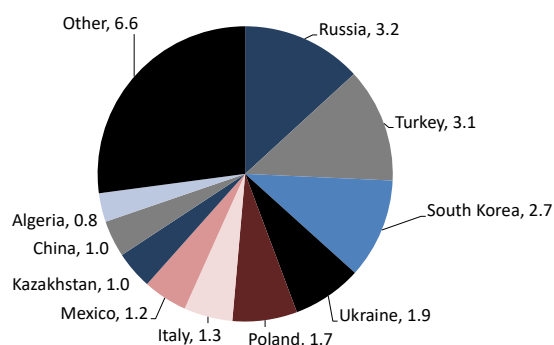
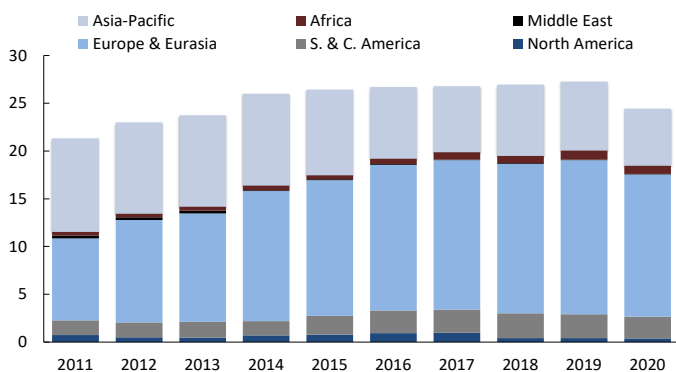
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AUTOGAS

Autogas Consumption, Vehicles and Dispensing Sites							
	Consumption ('000t)			Vehicle fleet		Retail sites	
	2019	2020	±% 19/20	2019	2020	2019	2020
Turkey	3,354	3,065	-8.6	4,661,707	4,650,000	10,841	10,800
Ukraine	1,800	1,865	3.6	2,600,000	2,660,000	5,200	5,500
United Kingdom	61	58	-5.5	105,000	105,000	1,100	1,100
Uzbekistan	225	214	-5.0	320,000	310,000	900	900
Other	10	9	-8.0	11,000	10,000	120	110
Total Europe & Eurasia	16,133	14,893	-7.7	19,877,706	21,579,765	59,298	57,847
Iran	4	4	-10	5,000	4,800	80	70
Israel	8	7	-10.0	20,000	19,000	100	90
Yemen	56	45	-20.0	55,000	50,000	200	200
Total Middle East	68	56	-18.2	80,000	73,800	380	360
Algeria	859	773	-10.0	355,500	355,500	800	800
Mauritius	3	2	-22.5	7,000	7,000	6	6
Tunisia	12	10	-20.0	10,500	10,500	22	22
Total Africa	960	863	-10.2	373,000	373,000	828	828
Australia	306	229	-25.3	347,000	330,000	2,600	2,500
Bangladesh	19	20	4.6	7,000	7,500	20	25
China	1,151	978	-15.0	185,000	180,000	560	550
Hong Kong	260	219	-15.7	18,000	17,000	67	60
India	429	390	-9.0	2,500,000	2,600,000	1,400	1,450
Indonesia	0	0	-	1,000	1,000	28	28
Japan	803	573	-28.6	0	0	0	0
Nepal	0	0	-	0	0	0	0
New Zealand	3	3	-2.8	2,500	2,400	160	150
Pakistan	68	66	-2.0	36,000	36,000	270	270
Philippines	59	50	-15.0	25,000	25,000	170	170
South Korea	3,051	2,678	-12.2	2,021,720	1,995,740	1,948	1,954
Sri Lanka	1	1	0.0	1,000	1,000	10	10
Taiwan	19	8	-57.1	11,700	10,000	45	40
Thailand	1,023	752	-26.4	854,384	744,955	1,894	1,651
Vietnam	0	0	0.0	12,000	12,000	65	65
Other	6	5	-17.0	6,000	6,000	55	55
Total Asia-Pacific	7,197	5,973	-17.0	6,028,304	5,968,595	9,292	8,978
Total World	27,266	24,441	-10.4	27,610,461	29,233,159	80,126	78,330

Autogas demand by region

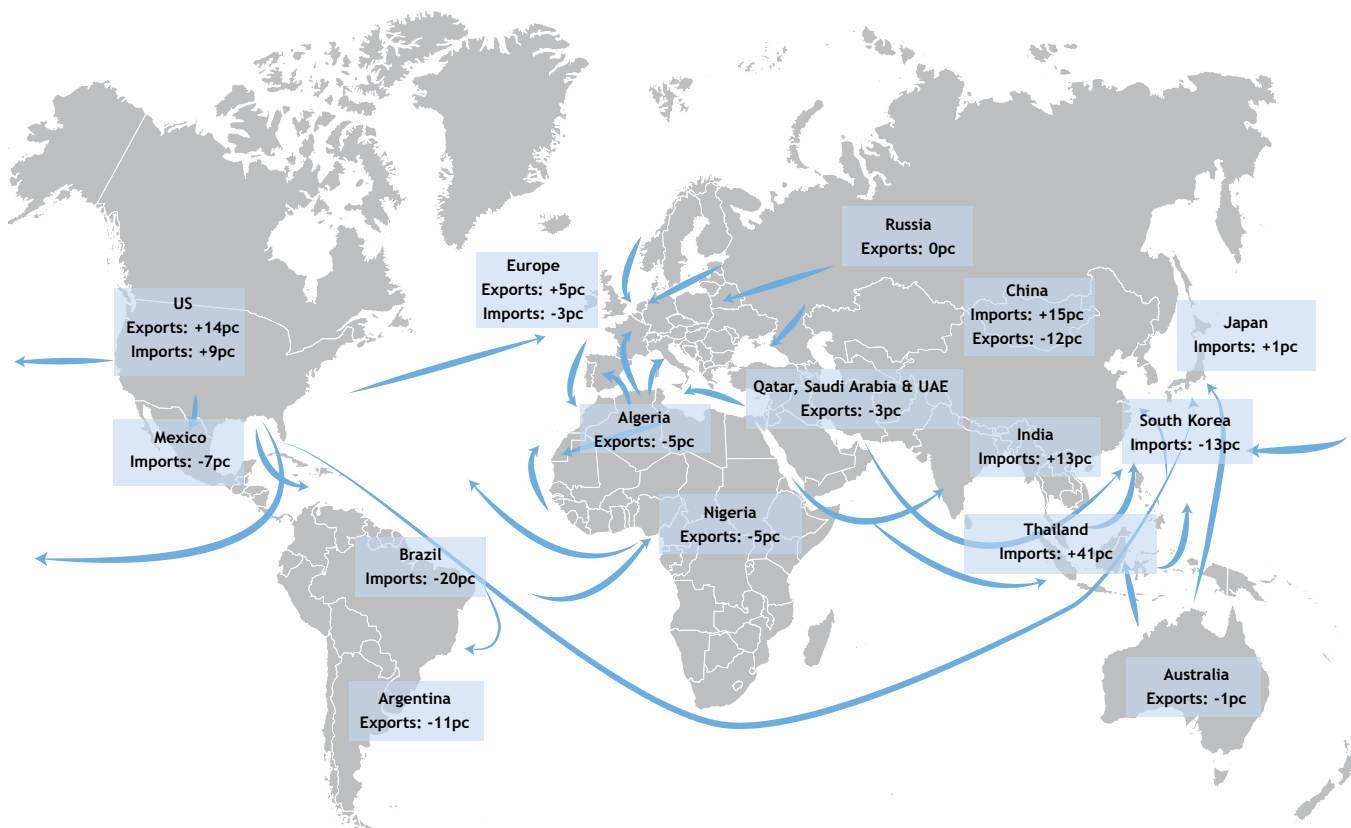
Autogas consumption top 10



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TRADE, INFRASTRUCTURE AND SHIPPING

Regional LPG Trade Flows



– Showing selected annual import/export changes in 2020 for trade

	2010		2020	
	Imports	Exports	Imports	Exports
North America	4,088	7,136	4,780	55,061
South and Central America	8,252	4,355	13,918	2,491
Europe and Eurasia	20,300	16,296	27,377	21,673
Middle East	1,230	31,356	1,492	37,777
Africa	5,482	9,205	7,609	9,448
Asia-Pacific	33,296	4,467	69,964	6,083
Total	72,647	72,814	125,139	132,532

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LPG shipping

Spot VLGC freight rates continued a bullish run in 2020. The Houston-Chiba route averaged \$99/t last year, similar to 2019 values. VLGC freight rates reach historical highs. The Houston-Chiba route averaged \$161/t in December. High demand for seaborne trade between the US and Asia, the longest trading route, lifted tonne-mile demand.

Weather-related disruptions and transit delays on the Panama Canal added to the bullishness in the past year. And the impact of the pandemic extended to the freight market — quarantine measures at ports aimed at mitigating the spread of the virus increased docking time. Staff shortages also contributed to discharge delays. Although there was minimal immediate impact at the beginning of the year from the International Maritime Organisation's (IMO) regulation on bunker fuels, which came into effect on 1 January 2020, scheduled scrubber retrofitting throughout the year contributed to lower vessel availability and supported freight rates as a result.

Time charter rates rose further in 2020. Capacities in all sectors were up on 2019. The fully refrigerated segment con-

LPG shipping fleet capacity by type 2020			'000m ³
Type	Number of vessels	Capacity	
Semi-refrigerated	363	4,369	
Fully refrigerated	448	30,217	
Pressurised	718	2,437	

– Clarksons

tinued its strong growth from previous years, reaching more than 30mn m³ in 2020. The vessel fleet size across all segments increased by 35 in 2020 compared with an additional 13 vessels in 2019 — but increased import requirements in Asia-Pacific just about balanced the market.

2021 began with extreme weather disruptions on the US Gulf coast, a strong dry-docking schedule in the second quarter and Panama Canal transit delays. A steady flow of exports from the main producers — the US and Middle East — continued to buoy freight rates.

Shipping freight rates 2010-20												\$/t
Spot freight rates	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
AG-Japan	35	55	55	59	91	90	29	29	34	58	59	
Assessed 12 Month Timecharter Rates												
84,000m ³	565	781	917	944	1,575	1,919	750	554	607	999	1,062	
59,000m ³ (57,000-59,000m ³ until 2009)	614	720	886	976	1,394	1,887	747	509	546	801	886	
22,500m ³ (22,500-24,000m ³ until 2011)	469	637	728	774	844	862	643	374	423	483	567	

– Clarksons

LOOKING TO THE FUTURE

- The fight against the coronavirus pandemic is far from over. Well over a year into the outbreak of Covid-19 in China, many countries are still reeling from rising infections and emerging new variants of the virus. A recovery in economic activity has been two-tiered this year — countries with high vaccination rates have started to open up, notably in Europe and the US. Other countries with lower inoculation rates are still forced to keep movement restrictions in place.
- Overall fuel demand remains below pre-Covid levels and the recovery is expected to be modest in 2021. Oil and gas firms, as well as refineries, lowered output in 2020 in response to falling demand. LPG supply has been impacted by lower crude and gas production as well as weaker refining runs.
- We forecast that it will be 2023 before global demand for refined products returns to pre-Covid levels, by which

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LOOKING TO THE FUTURE

point global peak demand could be as little as five years away. This will impact supply from the refining sector as well as from associated gas. There remains a high degree of uncertainty in the short-term period owing to the ongoing pandemic and a high likelihood of economic scarring.

■ Demand for LPG has remained resilient compared with other fuels because of its use in diverse applications. LPG's largest sectors — domestic and petrochemicals — have been well-supported in 2020. Requirements for heating and cooking was stable and petrochemical production is robust amid increased demand for derivatives such as medical equipment including PPE and packaging. But consumption of autogas fell and industrial demand slumped.

■ Argus forecasts the LPG market to be well-supplied over the medium term. Exploitation of conventional natural gas fields, further developments in shale gas and new LNG projects all result in incremental LPG availability. The US and Middle East will continue to dominate supply growth expansion.

■ On the demand side, growth is expected from the residential and petrochemicals sector. Asia is forecast to lead the way globally. China will drive propane demand growth from its PDH sector. Demand for cooking is also expected to grow from large markets such as India, Bangladesh, Indonesia, Malaysia and the Philippines.

■ The rising deficit in the Asian region will reinforce current trading patterns — flows from the Middle East and US are expected to continue. But other smaller producers are starting to export the Asian region, notably Canada and Russia.

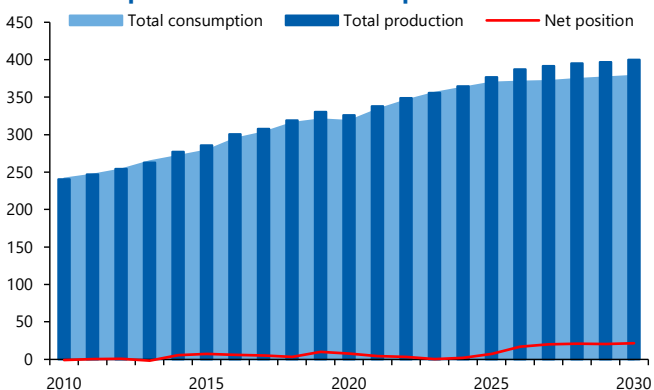
■ Europe's LPG supply is in decline. Refinery rationalisation — which have been accelerated by the global pandemic — will reduce output from this source. Refinery LPG production accounts for two-thirds of regional supply. Maturing gas fields in the North Sea will also weigh on LPG availability in the region. Europe will increasingly be reliant on seaborne trade — mainly from the US — and competition with Asia will be fierce. In addition, Russian exports are being diverted towards domestic markets, primarily for consumption in the petrochemical sector.

■ Demand in the Latin American markets is driven by the residential sector and there is still growth potential in some of the large markets. But having implemented subsidy programmes in previous decades, these are now at full or close to full market penetration, with some exceptions in parts of Central America and the Caribbean region. The US is likely to be the key source of imports.

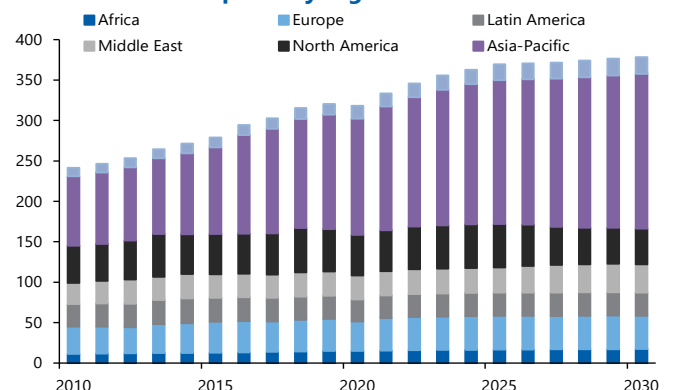
■ In Africa, the forecast is for continued growth, particularly given the relative importance of the residential sector. Given the low levels of per capita consumption across sub-Saharan Africa, there is significant scope for LPG to increase penetration. There are positive signals on further infrastructure investment to support market growth.

■ Over the longer term, growth in the petrochemical sector is forecast to outpace that of the cooking and heating markets. The traditional residential heating markets in the northern hemisphere are in structural decline, owing to the impact of natural gas grid expansion, rising energy efficiency and displacement by other fuels.

World LPG production and consumption 2010-30 *mn t*



World LPG consumption by region 2010-30 *mn t*



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PRICES

Propane monthly contract prices, plus key regional spot prices, 2020												
	Jan 20	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Middle East \$/t												
Saudi Arabia	565.00	505.00	430.00	230.00	340.00	350.00	360.00	365.00	365.00	375.00	430.00	450.00
Kuwait	565.00	505.00	430.00	230.00	340.00	350.00	360.00	365.00	365.00	375.00	430.00	450.00
Mediterranean \$/t												
Algeria (Sonatrach)	467.00	360.00	305.00	155.00	210.00	255.00	260.00	285.00	308.00	335.00	360.00	375.00
Spot Prices \$/t												
Large cargo cif ARA	438.70	327.13	212.52	231.38	251.41	291.61	291.53	324.98	318.36	373.63	377.87	431.33
Large cargo cif Lavera	428.75	316.33	203.57	224.13	243.42	283.47	282.02	313.69	304.70	359.34	354.90	441.67
Large cargo Japan CFR	512.91	385.48	286.02	304.61	309.60	325.84	339.23	361.05	358.21	432.89	463.18	554.49
Large cargo East China CFR	512.91	385.48	286.02	304.61	309.60	325.84	339.23	361.05	358.21	432.89	463.18	554.49
Large cargo South China CFR	512.91	385.48	286.02	304.61	309.60	325.84	339.23	361.05	358.21	432.89	463.18	554.49
Large cargo Far East Index	512.90	385.48	286.02	304.61	309.60	325.84	339.23	361.05	358.20	432.89	463.18	554.49
Asia spot premiums to CP\$/t												
Mideast Gulf	13.29	-1.25	-4.32	5.86	-12.17	-19.09	-33.86	-29.75	-15.64	-2.55	-10.43	-25.00
South China (pressurised)	103.95	92.75	83.91	85.95	85.00	75.41	69.76	67.30	69.14	68.48	71.33	76.86
East China (refrigerated)	-39.05	-102.88	-92.84	55.94	-29.46	-23.98	-21.73	-5.45	-7.71	45.07	28.66	92.72
South China (refrigerated)	-39.05	-102.88	-92.84	55.94	-29.46	-23.98	-21.73	-5.45	-7.71	45.07	28.66	92.72
Taiwan	0.67	-47.93	6.11	18.37	-12.07	-15.75	-25.58	-6.00	-6.34	23.39	22.23	79.67
Japan	0.67	-47.93	6.11	18.37	-12.07	-15.75	-25.58	-6.00	-6.34	23.39	22.23	79.67
Mont Belvieu €/USG												
LDH	42.85	39.41	29.34	32.65	41.13	49.71	49.20	50.59	49.35	52.02	54.65	64.92
Non-LDH	40.01	39.22	32.15	32.24	40.72	49.21	49.43	51.97	49.28	51.78	54.73	64.56
Europe \$/t												
Coasters fob NWE	515.27	375.04	248.21	237.05	257.16	310.65	304.82	334.16	330.65	385.06	391.21	444.20
Barges fob NWE	535.82	384.25	271.14	270.40	278.32	329.86	291.40	332.48	305.18	407.71	411.19	458.55
Coasters fob Med	578.32	471.40	303.11	271.20	284.16	339.31	335.51	338.08	362.77	432.32	421.10	457.14

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PRICES

Butane monthly contract prices, plus key regional spot prices, 2020												
	Jan 20	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Middle East \$/t												
Saudi Arabia	590.00	545.00	480.00	240.00	340.00	330.00	340.00	345.00	355.00	380.00	440.00	460.00
Kuwait	590.00	545.00	480.00	240.00	340.00	330.00	340.00	345.00	355.00	380.00	440.00	460.00
Mediterranean \$/t												
Algeria (Sonatrach)	470.00	480.00	405.00	145.00	195.00	245.00	340.00	310.00	340.00	380.00	400.00	420.00
Spot Prices \$/t												
Large cargo cif ARA	491.50	414.83	217.74	148.03	208.72	302.35	316.45	312.24	355.14	392.94	370.51	434.99
Large cargo cif Lavera	526.34	448.35	248.01	178.50	239.61	330.44	342.92	337.38	375.43	411.88	390.45	454.80
Large cargo Japan CFR	549.91	435.58	302.52	309.37	291.15	309.98	324.42	349.80	362.11	442.84	473.32	549.63
Large cargo East China CFR	549.91	435.58	302.52	309.37	291.15	309.98	324.42	349.80	362.11	442.84	473.32	549.63
Large cargo South China CFR	549.91	435.58	302.52	309.37	291.15	309.98	324.42	349.80	362.11	442.84	473.32	549.63
Large cargo Far East Index	549.90	435.58	302.52	309.37	291.15	309.98	324.42	349.80	362.11	442.84	473.32	549.63
Asia spot premiums to CP\$/t												
Mideast Gulf	13.29	-1.25	-4.32	5.86	-12.17	-19.09	-33.86	-29.75	-15.64	-2.55	-10.43	-25.00
India cfr	-34.91	-99.18	-121.02	47.76	-50.46	-24.71	-21.58	-4.35	-1.48	43.43	23.94	77.63
South China (pressurised)	103.95	92.75	83.91	84.05	85.00	75.41	71.19	67.40	69.14	68.32	71.29	76.86
East China (refrigerated)	-29.91	-94.18	-116.02	52.75	-45.46	-19.71	-16.58	0.65	3.52	48.43	28.94	82.63
South China (refrigerated)	-29.91	-94.18	-116.02	52.75	-45.46	-19.71	-16.58	0.65	3.52	48.43	28.94	82.63
Taiwan	2.81	-42.33	3.98	20.04	-19.29	-14.16	-23.87	-4.15	-2.48	24.21	21.66	78.31
Japan	2.81	-42.33	3.98	20.04	-19.29	-14.16	-23.87	-4.15	-2.48	24.21	21.66	78.31
Mont Belvieu €/USG												
LDH	72.29	56.42	31.41	31.26	38.88	50.06	46.89	50.34	55.77	61.36	66.26	64.62
Non-LDH	72.51	64.16	34.21	34.76	41.93	53.52	52.88	56.49	63.96	63.45	76.70	88.33
Europe \$/t												
Coasters fob NWE	471.73	484.36	257.47	185.85	257.20	317.59	362.05	320.08	354.88	406.02	374.49	445.33
Barges fob NWE	483.08	420.32	206.59	96.71	189.04	291.65	333.54	322.53	359.27	412.01	366.30	421.19
Coasters fob Med	524.08	566.53	308.32	233.60	275.26	325.93	345.83	289.23	377.96	451.16	416.64	531.76

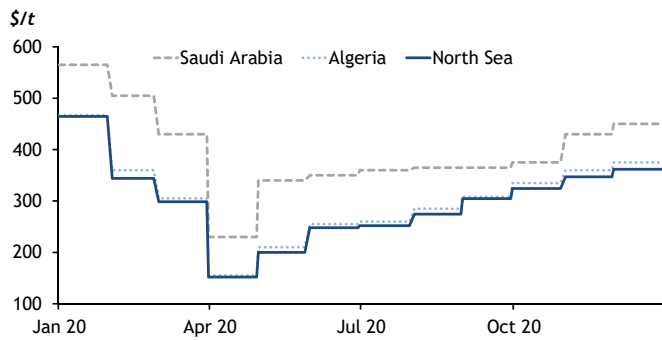
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PRICES

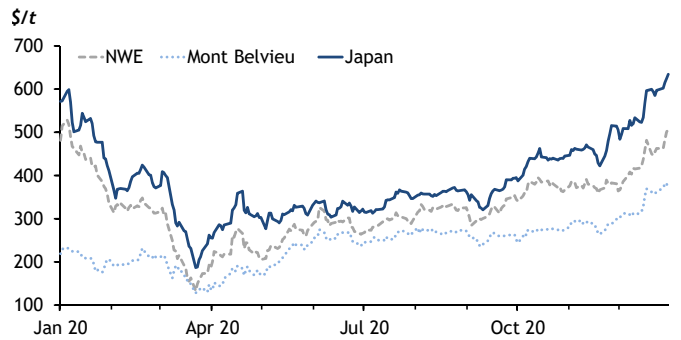
Naphtha													\$/t
	Jan 20	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Cargoes cif NWE	527.93	465.69	247.74	140.25	226.80	342.32	382.33	381.56	366.95	375.35	370.06	432.63	
Cargoes c+f Japan	551.58	478.42	290.29	193.50	267.24	360.08	392.68	400.47	397.09	391.19	384.32	448.98	

Ethane													¢/USG
	Jan 20	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Mont Belvieu	15.00	14.32	12.51	12.99	22.42	21.91	21.62	24.15	19.95	21.55	21.62	19.98	

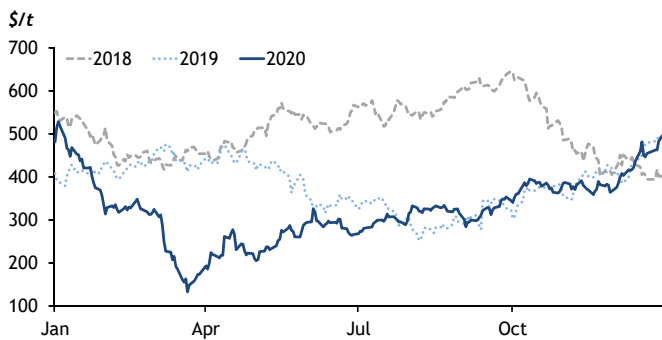
Propane export prices



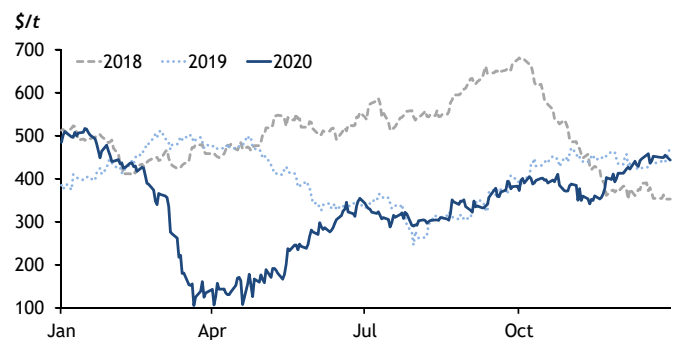
Propane NWE, Mont Belvieu, Japan



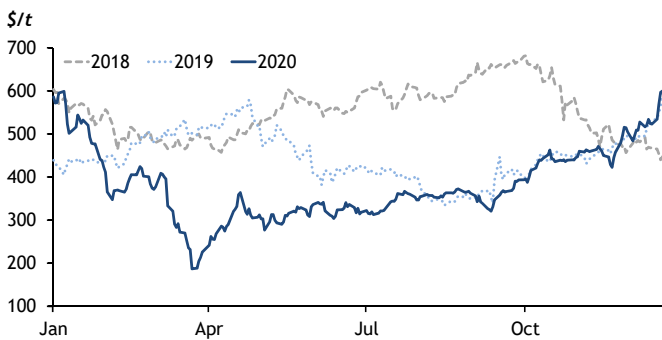
Propane cif NWE cargoes large



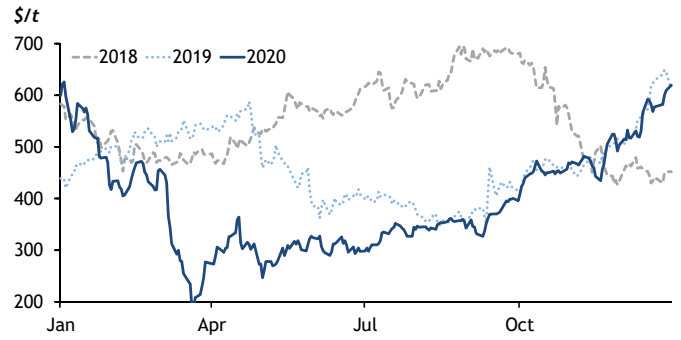
Butane cif NWE cargoes large



Propane Argus Far East Index



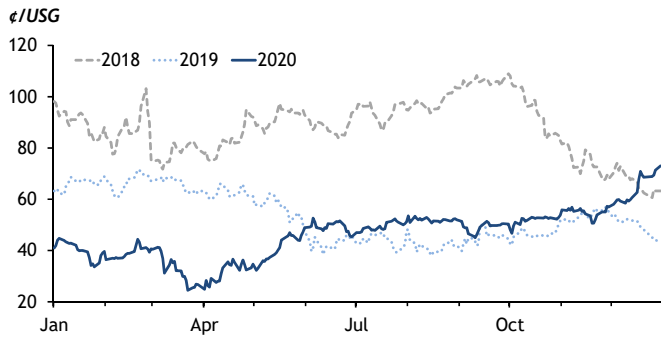
Butane Argus Far East Index



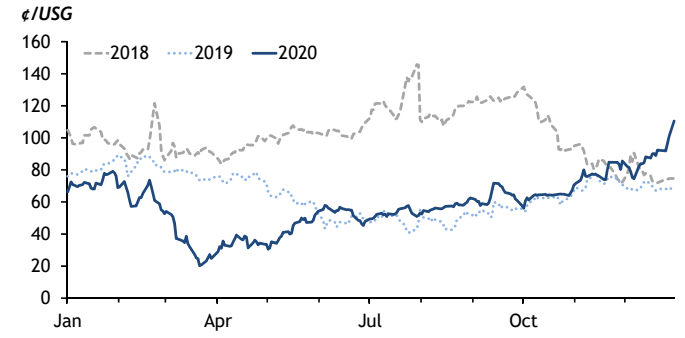
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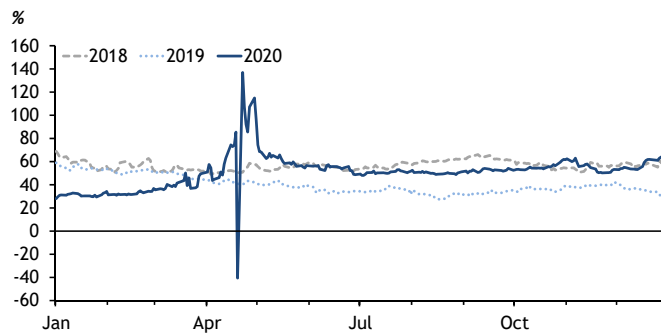
Propane Mont Belvieu non-LST



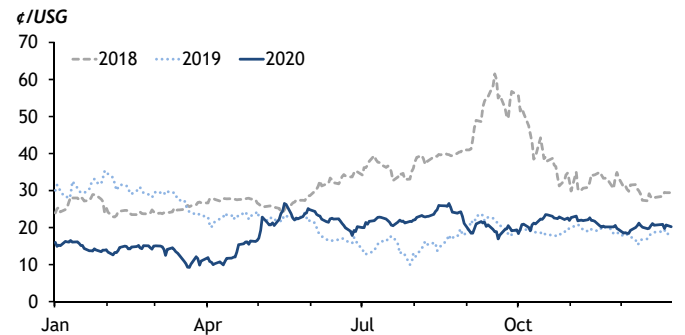
Butane Mont Belvieu non-LST



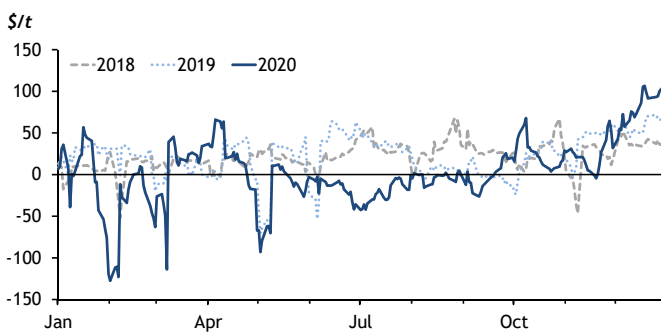
Propane Mont Belvieu LST vs Nymex WTI



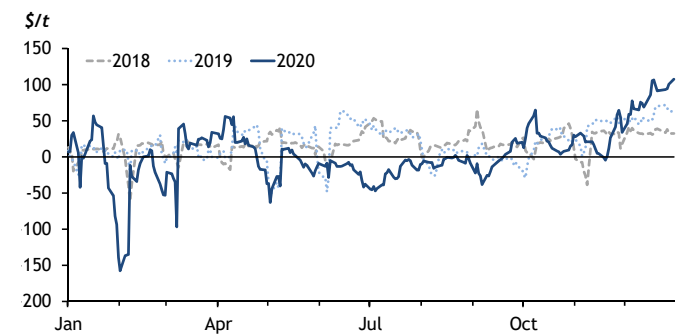
Ethane Mont Belvieu



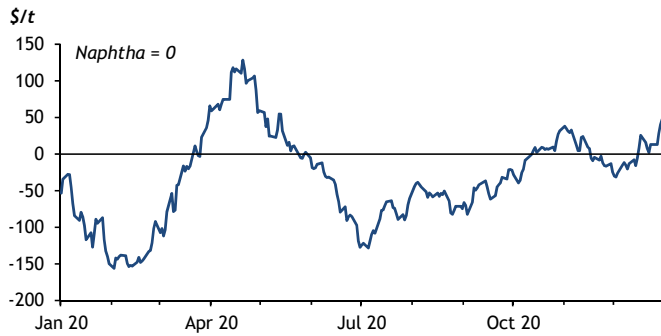
Propane CFR Japan differential to Saudi CP



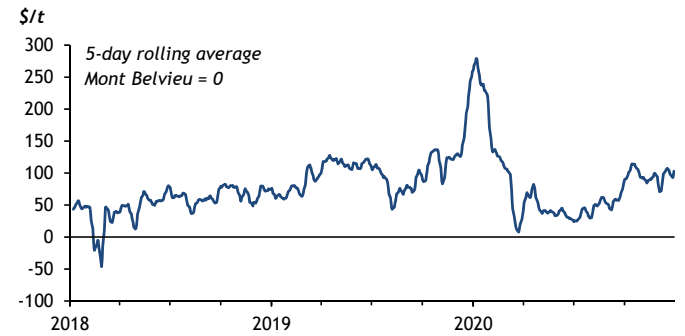
Butane CFR Japan differential to Saudi CP



NWE: Propane differential to naphtha



Propane: NWE differential to Mont Belvieu



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BACKGROUND

Primary energy developments 2020

Global primary energy consumption in 2020 fell by 4pc to a total of 13bn t of oil equivalent (toe), compared with 13.6bn toe in 2019 as the global economy weakened owing to the coronavirus pandemic.

Demand for the main fossil fuels — oil, natural gas, and coal — saw a year-on-year decline with oil experiencing the steepest fall at 9pc, followed by coal and natural gas at 4pc and 2pc, respectively. This segment made up 83pc of total primary energy demand in 2020, compared with 84pc in 2019. Nuclear energy consumption also declined. Renewable energy gained just over 10pc during the same period and the market share increased to 7pc in 2020 against 6pc in the previous year.

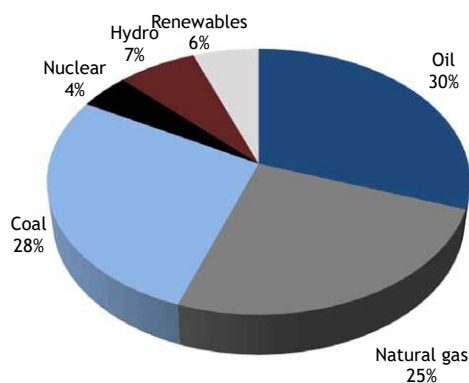
Energy demand in Asia-Pacific holds the largest share in global consumption at 46pc in 2020. China alone accounts for 26pc of total consumption. With 3.5bn toe of demand, it is the largest consumer of primary energy in the world. Coal is still the largest source of energy in the country, meeting 57pc of demand in 2020. Natural gas is an expanding sector, substituting coal in the residential and industrial sectors — consumption has seen strong growth in recent years and this trend prevailed in 2020 at 7pc growth compared with

2019, albeit lower than growth rates in the last decade of 13pc/yr. Renewable energy demand growth, especially for solar power, has been strong in the past decade and growth persisted in 2020.

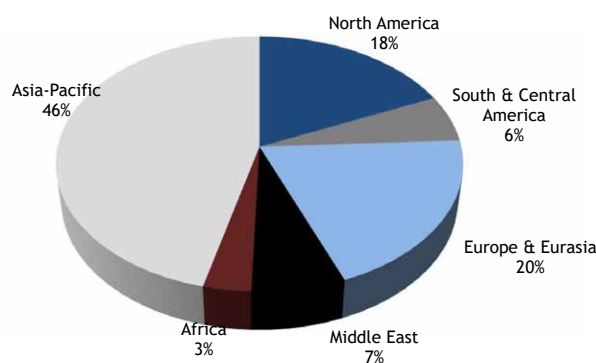
India’s primary energy demand was around 760mn toe in 2020, the second-largest in Asia-Pacific after China. Coal dominates the country’s energy source at 55pc in 2020, followed by oil at 28pc. Japan with demand at 400mn toe and South Korea at 275mn toe account for a significant share in regional demand. Japan’s energy is more or less split between oil, coal and natural gas. South Korean demand is dominated by oil. Growth in the renewable sector has been particularly strong in South Korea, averaging 27pc/yr in the past 10 years, while in Japan and India, renewable energy growth was around 16pc.

Energy demand in the US fell by 7pc on the year and stood at 2.1bn toe in 2020. The steepest decline was seen in the coal and oil sectors, while renewables gained 8pc. Renewable energy has grown at a rate of 9pc/yr between 2009 and 2019, which is below the global average of 13pc/yr. Year-on-year changes in the country’s energy mix favoured natural gas and renewables, while oil and coal use continue to decline in line with historical trends.

Primary energy consumption by fuel, 2020



Primary energy consumption by region, 2020



Primary Energy Consumption by Fuel							mn toe
	Oil	Natural gas	Coal	Nuclear	Hydroelectric	Renewables	Total
Total World 2019	4,353	3,330	3,748	587	885	675	13,579
Total World 2020	3,966	3,260	3,601	564	896	743	13,031
Difference	-8.9%	-2.1%	-3.9%	-3.9%	1.2%	10.2%	-4.0%

— BP Statistical Review of World Energy - July 2021

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BACKGROUND

Changes in Europe's 2020 demand profile are in line with global trends. Oil consumption declined by 12pc and renewables rose by 9pc year on year. The UK, France, Germany, Italy, Belgium, Greece, Spain and Portugal, among other smaller markets, posted double-digit falls in oil demand. For Russia, Turkey and the Netherlands, the reduction was more subdued. The share of renewables increased to 12pc in 2020 from 10pc in 2019. Renewable sources include wind and solar power as well as biomass.

In South America primary energy fell by 8pc in 2020 compared with 2019 levels. Venezuela in particular saw a slump of an average of 26pc across all fossil fuel sectors, including hydroelectric. Oil and natural gas are the primary energy sources in the region. Chile and Colombia's coal sector accounted for 19pc and 15pc of their country's demand profile in 2020, with Colombia seeing an increase from 11pc in 2020. Hydroelectric power is also dominant in Ecuador, Brazil and Peru, with an average of 30pc of demand in 2020.

Primary Energy Consumption, 2020							<i>mn toe</i>
	Oil	Natural gas	Coal	Nuclear	Hydroelectric	Renewables	Total
US	740	715	220	176	61	147	2,059
Canada	98	97	12	21	82	13	322
Total North America	838	812	232	197	143	160	2,381
Argentina	24	38	1	2	6	3	75
Brazil	107	28	14	3	84	48	284
Chile	16	5	7	0	4	5	38
Colombia	13	12	6	0	9	1	42
Ecuador	9	0	0	0	5	0	15
Mexico	56	74	5	2	6	8	152
Peru	9	6	1	0	6	1	23
Trinidad & Tobago	2	13	0	0	0	0	15
Venezuela	11	16	0	0	7	0	34
Other	55	7	7	0	17	7	93
Total South & C. America	302	199	40	8	146	74	770
Austria	11	7	2	0	9	3	33
Azerbaijan	4	10	0	0	0	0	15
Belarus	6	15	1	0	0	0	23
Belgium	21	15	3	7	0	6	51
Czech Republic	9	7	12	6	0	2	36
Finland	8	2	3	5	3	5	26
France	61	35	5	75	13	16	205
Germany	96	74	44	14	4	53	285
Greece	12	5	3	0	1	3	24
Hungary	8	9	2	3	0	1	23
Italy	49	58	5	0	10	16	138
Kazakhstan	17	14	39	0	2	1	74
Netherlands	35	31	4	1	0	8	80
Norway	9	4	1	0	30	3	46
Poland	29	19	40	0	0	6	95
Portugal	10	5	1	0	3	4	22
Romania	10	10	4	2	3	2	32
Russia	146	354	78	46	45	1	670
Spain	52	28	2	12	6	18	118
Sweden	13	1	2	11	16	10	52
Switzerland	8	3	0	5	8	1	25
Turkey	43	40	40	0	17	11	150

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BACKGROUND

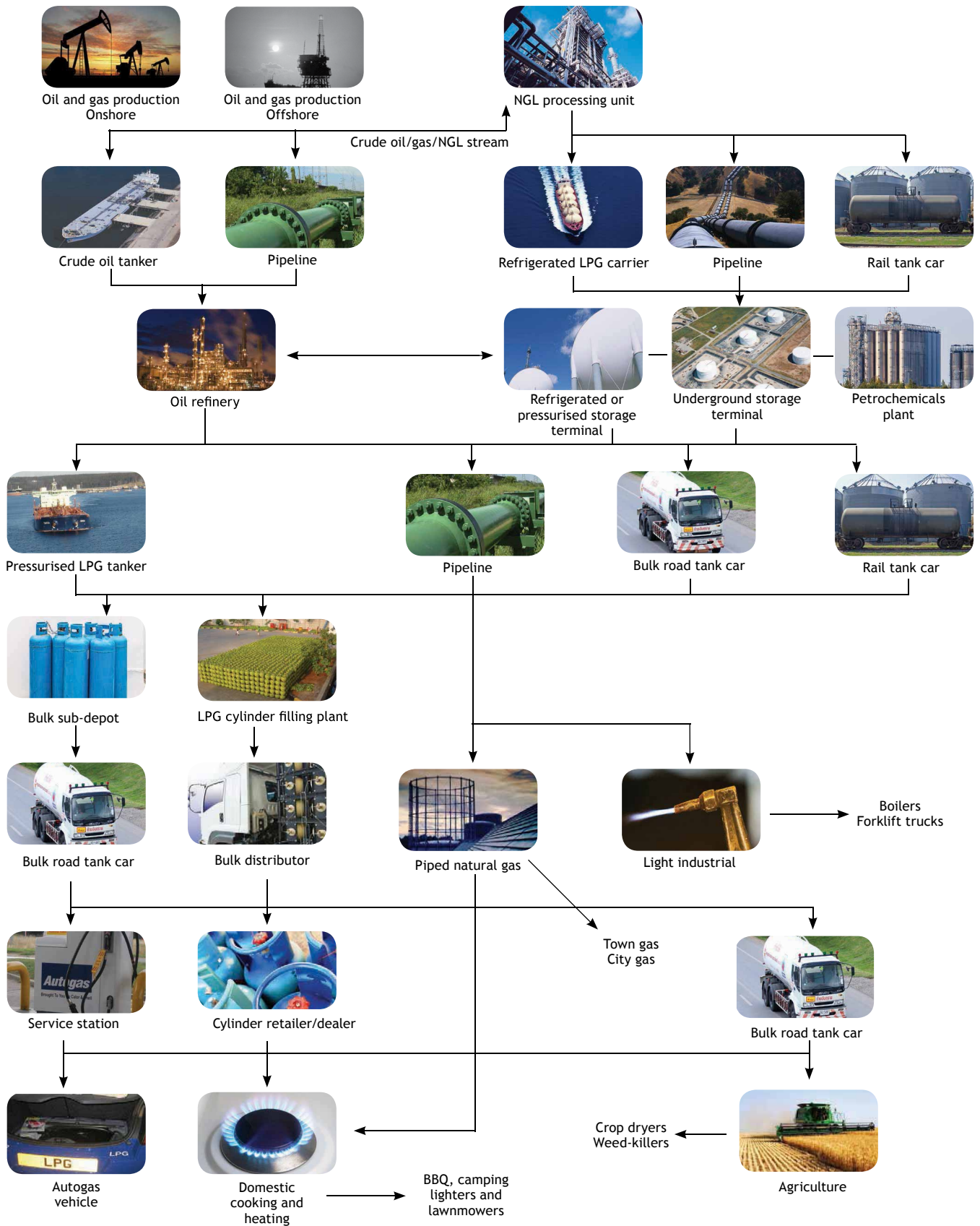
Primary Energy Consumption							mn toe
	Oil	Natural gas	Coal	Nuclear	Hydroelectric	Renewables	Total
Turkmenistan	6	27	0	0	0	0	33
Ukraine	10	25	23	16	1	2	79
UK	55	62	5	11	1	29	162
Uzbekistan	4	37	2	0	1	0	45
Other	16	5	14	0	6	1	40.8
Total Europe & Eurasia	750	902	333	215	180	202	2,581
Iran	75	200	2	1	4	0	284
Iraq	30	18	0	0	1	0	49
Israel	10	10	4	0	0	1	25
Kuwait	18	18	0	0	0	0	35
Oman	10	22	0	0	0	0	32
Qatar	10	30	0	0	0	0	40
Saudi Arabia	150	96	0	0	0	0	247
UAE	35	60	3	0	0	1	99
Other	24	21	0	0	0	1	46
Total Middle East	361	475	9	2	5	4	856
Algeria	17	37	0	0	0	0	54
Egypt	31	50	1	0	3	2	86
Morocco	12	1	7	0	0	1	21
South Africa	23	3	83	3	0	3	116
Other	83	41	7	0	27	3	160
Total Africa	165	132	98	3	30	9	437
Australia	42	35	40	0	3	11	131
Bangladesh	8	26	4	0	0	0	38
China	669	284	1,965	78	280	186	3,462
Hong Kong	14	4	3	0	0	0	22
India	213	51	419	9	35	34	761
Indonesia	53	36	78	0	4	9	180
Japan	149	90	109	9	16	27	401
Malaysia	31	33	27	0	4	1	96
New Zealand	7	4	1	0	5	2	20
Pakistan	20	35	15	2	9	1	82
Philippines	17	3	17	0	2	4	43
Singapore	70	11	0	0	0	0	81
South Korea	111	49	72	34	1	9	275
Sri Lanka	5	0	2	0	1	0	7.6
Taiwan	43	21	39	7	1	2	113
Thailand	54	40	17	0	1	7	119
Vietnam	22	7	50	0	15	2	97
Other	22	10	29	0	15	0	77
Total Asia-Pacific	1,549	741	2,889	139	392	295	6,005
Total World	3,966	3,260	3,601	564	896	743	13,031

^ Less than 0.5

– BP Statistical Review of World Energy - July 2021

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LPG DISTRIBUTION CHAIN



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METHODOLOGY

Definitions

LPG:

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

BioLPG:

BioLPG is a low-carbon energy source as its carbon footprint is up to 80pc lower than 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 over 1,000 applications of LPG can be found at the WLPGA's global portal on LPG Applications, found 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
b/t	12	11
t/m ³	0.582	0.600
1t of LPG = 1.18t of oil equivalent		
1 nautical mile = 1.85km		

VLGC: very large gas carrier.

LGC: large gas carrier.

NGLs: natural gas liquids

Common Units of Measurement

Barrels: bl

Cubic feet: ft³

Cubic metres: m³

Litres: l

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WORLD LPG ASSOCIATION AND ARGUS MEDIA

About the WLPGA

The World LPG Association (WLPGA) 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 to 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.

WLPGA Vision

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

WLPGA Mission Statement

The WLPGA mission statement forms the three principal goals of the WLPGA, namely Advocacy, Business Improvement, and Innovation and Growth.

About Argus Media

Argus is an independent media organisation with over 900 staff. It is headquartered in London and has 21 offices in the world's principal commodity trading and production centres. *Argus* produces price assessments and analysis of international energy and other commodity markets, and offers bespoke consulting services and industry-leading conferences.

Argus was founded in 1970 and is a privately held UK-registered company. It is owned by employee shareholders and global growth equity firm General Atlantic.

Argus Consulting Services, which prepares the annual *Statistical Review of Global LPG*, is a division of the *Argus Media* group and provides clients with tailored research, data, benchmarking, modelling, strategic analysis and decision-making support.

Argus pricing and fundamentals data give Consulting Services a unique perspective. The focus of *Argus Consulting Services* is firmly on markets — their structure, outlook, logistics and economics — where our understanding, knowledge and insight provide clients with a real competitive advantage.

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For further details visit www.argusmedia.com

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LPG Statistical Review editorial board: David Tyler (WLPGA), Kristen Mueller and Michelle Gantert (*Argus*)
LPG Statistics project editor: Michelle Gantert
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Argus aims to ensure that the information and data contained in this review are reliable and have been validated by the appropriate WLPGA members and other industry contacts, but inherent difficulties in obtaining information on often opaque and commercially sensitive markets should be noted by the reader. In addition, rounding errors, differing definitions and/or the use of multiple sources may have led to instances in which some data and/or information may appear to be inconsistent. Argus has tried to resolve these apparent inconsistencies, but some may remain.

For some markets where reliable production data have not been available, Argus uses a mathematical model to estimate both refinery and field production. Further information on this is available on request.

Any projected market or price developments, growth or future performance contained in this review merely reflect the reasonable judgment of Argus, developed using standard analytical and projection techniques, at the time of the preparation of this material.

Future projections of supply and demand are based on consideration of a wide range of factors including market, economic and political — many of which are inherently uncertain and potentially subject to unpredictable and unforeseeable events. Accordingly, Argus offers no assurance whatsoever regarding the consistency of any projections relative to actual outcome in the future.

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*:

- **Middle East Data:** Historical production figures from gas processing have been revised for a few countries in the Middle East as better sources became available.
- **Nigeria and Brazil:** Petrochemical consumption from steam crackers has been added to the balances.

