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Draft Report

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Competition Assessment Study of LPG Sector in Pakistan

COMPETITION COMMISSION OF PAKISTAN

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Acronyms

ACGR	Annual Compound Growth Rate
AG	Associated Group of companies
AJK	Azad Jammu & Kashmir
AOC	Attock Oil Company Limited
APLPGA	All Pakistan LPG Distributors Association
ARL	Attock Refinery Limited
BPPL	Byco Petroleum Pakistan Limited
C3	Propane
C4	Butane
CCA	Competition Commission of Albania
CCI	Competition Commission of India
CCP	Competition Commission of Pakistan
CNG	Compressed Natural Gas
CO_2	Carbon Dioxide
CP Aramco	Contract Price Aramco
DGLGs	Directorate General Liquefied Gases
E&P	Exploration and Production
EIPL	East India Petroleum Pvt. Ltd
EVTL	Engro Vopak Terminal Limited
FATA	Federally Administrated Tribal Areas
GHPL	Government Holding Private Limited
GMC's	Gas Marketing Companies (GMC's)
GOP	Government of Pakistan
GST	General Sales Tax
HDIP	Hydrocarbon Development Institute of Pakistan
HPCL	Hindustan Petroleum Corporation Ltd.
IAA	Italian Antitrust Authority
IOCL	Indian Oil Corporation Ltd.

JJVL	Jamshoro Joint Venture Ltd
KPK	Khyber Pakhtunkhwa
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
LPGAP	Liquefied Petroleum Gas Association of Pakistan
MCR	Mid Country Refinery
MOE (PD)	Ministry Of Energy (Petroleum Division)
MT	Metric Tons
NRL	National Refinery Limited
OGRA	Oil and Gas Regulatory Authority
OIEPC	Occidental International Exploration and Production Company
OMC	Oil Marketing Company
OPI	Orient Petroleum Inc
PARCO	Pak Arab Refinery Limited
PCA	Portuguese Competition Authority
POL	Pakistan Oil Fields Limited
PPL	Pakistan Petroleum Limited
PPRA	Public Procurement Regulatory Authority
PRL	Pakistan Refinery Limited
PSO	Pakistan State Oil
SALPG	South Asia LPG Company Ltd
SLL	SSGC LPG Pvt. Limited
SPA	Sale Purchase Agreement
SSGC	Sui Southern Gas Company limited
UEP	United Energy Group
UEPL	United Energy Pakistan Limited
VLGC	Very Large Gas Carrier
WLPGA	World LPG Association

Executive Summary

In Pakistan the main energy sources include, oil, natural gas, Liquefied Natural Gas (LNG), Liquefied Petroleum Gas (LPG) including both domestic and imported LPG, coal and electricity. LPG is most commonly known as the 'poor man's fuel'. It is used mainly in domestic and commercial sectors, however its use in the industrial sector is also growing.

LPG is a naturally occurring hydrocarbon in gas and oil fields, or extracted in oil refineries. Compared to other petroleum products, LPG is a lighter gas. In Pakistan 60 percent of the LPG is extracted from natural gas fields and the remaining from refining crude oil at the refineries. Furthermore in crude oil refining, 10 percent of crude is processed into LPG. LPG presently accounts for about 1.3 percent of the total energy supply in Pakistan. During 2017-18 the total LPG supplies stood at 1.19 million tonnes and the LPG consumption at 1.28 million tonnes. Furthermore LPG consumption during Fiscal Year 2017-18 stood at around 3,508 tons per day. The LPG demand is met by both domestic and imported sources whereby 66 percent of the local demand is met by the domestic sources and the rest by imported sources.

Punjab is by far the largest consumer of LPG followed by Sindh and Khyber Pakhtunkhwa (KPK). Within Punjab and Sindh, the largest LPG consumer is the commercial sector whereas in KPK domestic sector has the highest share in LPG consumption. LPG demand by both domestic and commercial sectors experienced high rate of growth since year 2013. The results are in congruence with other data available on energy sources consumption in Pakistan, according to which the LPG sector though small in size compared to other sources of energy yet LPG sector has shown significant growth in the past one decade.

The LPG industry although has a small share in comparison with other sources of energy, however data analysis suggest that in comparison to other energy sources, LPG in the last few years has shown notable growth and the energy source has great potential. It is a 'green fuel' and is environment friendly. Pakistan has been facing energy challenges for the last two decades as a result of higher energy demand in the country compared to supply. Energy sustainability is crucial for economic development and growth and thus the need to ensure availability of these resources through market friendly policies such as to enhance production, efficiency and investment. Likewise ensuring competition is crucial for development, efficiency and investment. The LPG sector can become a major energy source provided it gets due attention through favourable regulatory environment and by clearing the bottle necks created by the anti-competitive practices in the sector.

There are 12 LPG producers in Pakistan, including 6 exploration and production (E&P) companies, 5 refineries and 1 extraction plant. There are 184 LPG marketing companies and the total number of LPG distributors is 5,512, further the total number of LPG importers is 33. In order to handle the LPG imports at Port Qasim, Karachi there are two import terminals at which LPG is received and stored. These are Engro Vopak Terminal Limited (EVTL) and SSGC LPG.

The Oil and Gas Regulatory Authority (OGRA) is empowered to regulate the LPG sector under the OGRA Ordinance, 2002 and LPG (Production & Distribution) Rules, 2001. Further OGRA has been regulating the LPG sector in accordance with the policies of the Federal Government. Under the LPG (Production and Distribution) Policy, 2016, LPG price is regulated, and OGRA under the said policy sets and notifies the LPG price on monthly basis.

Competition assessment of the sector shows various barriers to entry and expansion that restrict/reduce and distort competition in the LPG sector at various levels. Natural barriers include high capital and financial requirement in the upstream LPG production/extraction, illiquid market, and seasonal fluctuation in LPG demand. Regulatory barriers arise due to certain clauses in the LPG Policy, 2016, these include contradictory clauses 3.4.3 and 3.5.1, no clear LPG disposal mechanism due to which uncertainty arises as how to dispose the LPG produced by the producers and procurement by the LPG marketing companies, no clear direction given w.r.to LPG supply (indigenous/imported) under clause 3.6.9, regulated pricing of indigenous LPG vs. deregulated imported LPG price. Barrier in LPG imports due to applicability of Public Procurement Rules, 2004 and mushroom growth of LPG marketing companies under licensing regime followed by OGRA. Strategic and other barriers include substandard LPG import through land route, under invoicing, use of hundi and hawala system in LPG import through land route, no LPG quality testing lab for land imports, issues of decanting and cross filling, use of substandard cylinders, illegal use of LPG in public service vehicles (PSVs) and anticompetitive and illegal business practices carried out by LPG dealers.

Based on the data analysis through questionnaires, industry reports, international best practices, and meetings with relevant stakeholders, the study proposes the following recommendations in order to enhance the competitive environment and competition in the LPG sector in Pakistan. These recommendations include removal of regulatory barrier created by contradictory clauses 3.4.3 and 3.5.1, amendment in section 3.6.9 in the LPG Policy, 2016, amendment in Public Procurement Rules, 2004 for ease in importing LPG by public sector companies. More competitive LPG pricing framework for both indigenous and imported LPG to create a level playing field. Monitoring of land imports to prohibit black economy and the import of substandard LPG. Establishment of quality lab for testing of LPG through the land route, stringent qualification criteria for awarding LPG marketing license, prohibition and strict penalty for illegal activities of cross filling and decanting, monitoring of LPG dealers by OGRA or any third party nominated by OGRA. Prohibition and check of substandard LPG cylinders manufacturing facilities and their use by LPG dealers and end consumers. The study also proposes an LPG subsidy program for the poor domestic households, as a measure to uplift them out of poverty and to improve their standard of living, coherent with the Sustainable Development Goals (SDGs) of the Government.

Chapter 1

Introduction and Background

1. The economic growth of a country depends upon energy availability. Where the availability of energy resources is scarce, the economic growth is constrained. The developed world through technological change has shifted from less efficient and productive energy sources such as coal to more productive sources such as electricity.[1] Nonetheless for sustainable economic growth, sufficient and continuous availability of energy is a prerequisite.[2]

2. Where consistent energy supply is significant for economic growth, energy affordability is equally important for all consumers regardless of being domestic, commercial or industrial. Energy security is defined as 'reliable and suitable energy source at reasonable price' (Belicki, 2002). The main concern of energy security is the availability of continuous and reliable energy sources at affordable prices such as to meet the energy demand.[3]

3. In Pakistan, oil and natural gas are the two main sources of energy and account for 31.2 percent and 34.6 percent respectively. The remaining sources include Liquefied Natural Gas (LNG) which is an imported fuel, Liquefied Petroleum Gas (LPG) including both domestic and imported LPG, coal and electricity. Table 1 below gives percentage share account of these sources. The same data is also represented by a pie-chart in Figure 1. In comparison to other energy supply sources, LPG has a small share due to higher LPG price in comparison with other competing fuels such as natural gas[4] and also its availability at the right price.

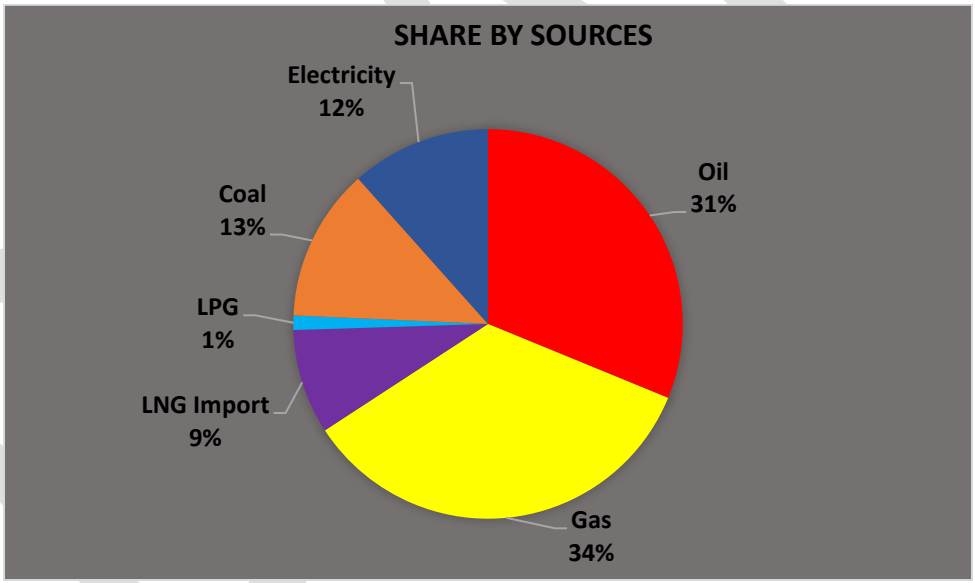
[1] Role of energy in economic growth, DI Stren, Crawford School, Australian National University
[2] Energy security and economic growth in Pakistan, Pakistan Journal of Applied Economics, 2018
[3] ibid
[4] Petroleum Industry Report, 2016-17, OGRA

Table 1: Share of Energy Sources

Sources	Percentage
Oil	31.2%
Gas	34.6%
LNG Import	8.7%
LPG	1.2%
Coal	12.7%
Electricity	11.6%

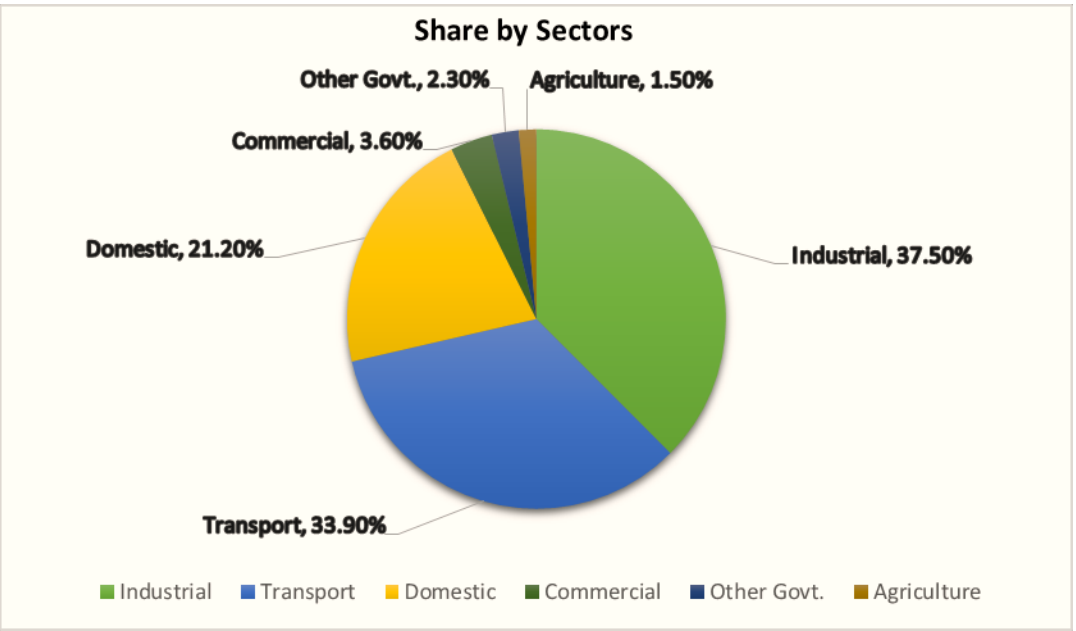
Source: Pakistan Energy Yearbook[5], 2018

Figure 1: Share of Energy Sources



[5] Hydrocarbon Development Institute of Pakistan (HDIP)

Figure 2: Sector-wise Share of Energy Consumption (HDIP, 2017-18)



Source: Pakistan Energy Yearbook, 2018

4. Figure 2 shows sector wise consumption of energy in Pakistan during Fiscal Year 2017-18. Industrial sector consumes the highest percentage of energy followed by transport and domestic sectors, whereas in the agriculture sector the energy share is the lowest i.e 1.50%. Furthermore within the industrial sector, power sector is the largest consumer of energy.

Table 2: Primary Energy Supplies by Source

Source	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	ACGR
Oil[1]	20,968,730 32.5%	23,006,510 34.4%	24,970,360 35.5%	25,280,073 34.2%	27,366,526 34.4%	26,903,431 31.2%	5.1%
Gas	31,144,006 48.2%	30,964,868 46.3%	29,977,755 42.7%	30,460,521 41.2%	30,163,334 37.9%	29,849,030 34.6%	-0.8%
LNG import[2]			472,503 0.7%	2,404,128 3.3%	4,455,734 5.6%	7,492,597 8.7%	
LPG[3]	309,524 0.5%	363,710 0.5%	457,197 0.7%	908,705 1.2%	1,008,673 1.3%	1,054,006 1.2%	27.8%
Coal	3,863,081 6.0%	3,590,386 5.4%	4,952,556 7.0%	5,066,935 6.9%	6,482,401 8.1%	10,925,200 12.7%	23.1%
Hydro Electricity[4]	7,126,623 11.0%	7,607,804 11.4%	7,751,133 11.0%	8,266,670 11.2%	7,681,699 9.7%	6,665,328 7.7%	-1.3%
Nuclear Electricity[5]	1,086,846 1.7%	1,215,042 1.8%	1,385,283 2.0%	1,099,261 1.5%	1,670,560 2.1%	2,358,200 2.7%	16.8%
Renewable Electricity			191,407 0.3%	369,731 0.5%	636,825 0.8%	920,580 1.1%	
Imported Electricity	89,542 0.1%	99,907 0.1%	105,632 0.2%	110,525 0.1%	118,480 0.1%	132,659 0.1%	8.2%
Total	**64,588,351 100%**	**66,848,227 100%**	**70,263,825 100%**	**73,966,548 100%**	**79,584,246 100%**	**86,301,031 100%**	**6.0%**
Annual growth rate	**-0.21%**	**3.50%**	**5.11%**	**5.27%**	**7.59%**	**8.4%**	

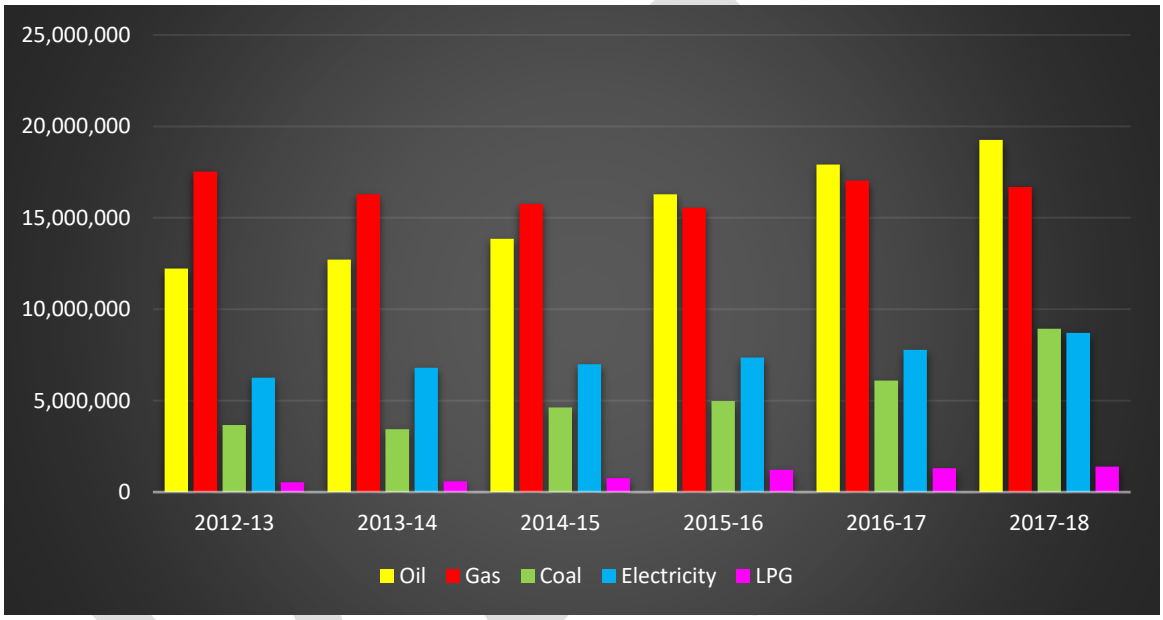
1. Excluding petroleum products exports and bunkering.
2. LNG Imports and Renewable generation reported for the first time in FY 2014-15.
3. Includes imports and production from field plants.
4. Converted @ 10,000 Btu/Kwh to represent primary energy equivalent of hydro and nuclear electricity as it was generated by using fossil fuels.
5. WAPDA has importing electricity from Iran since Oct 2002.

Source: Pakistan Energy Yearbook, 2018

5. Table 2 above shows the amount of energy (tonnes) supplied by each of the primary energy sources. The data shows that oil and gas are the two main primary energy sources in Pakistan. The demand for energy sources has increased over the past years owing to increased economic activity and thus the annual growth rate of the energy sources (in percentage) except for year 2012-13, continue to grow with each passing year. The data also gives the percentage share of each of the primary energy sources used in Pakistan, as a share in the total energy for the respective year. For instance during FY 2012-13, oil's share in the total energy was 32.5%, gas was 48.2%, LPG 0.5%, coal 6.0%, hydro electricity 11%, nuclear electricity 1.7% and imported electricity 0.1%. Comparing the

Annual Compound Growth Rate (ACGR)[6] of all the energy sources, LPG has the highest ACGR, which shows that LPG has shown highest growth as an energy source.

Figure 3: Energy Consumption by Source (tonnes)



Source: Pakistan Energy Yearbook, 2018

6. Figure 3 above graphically shows the share of the primary energy sources consumption. These energy sources include oil, gas, coal, electricity and LPG. It is evident from the bar graph that oil and gas are the chief energy sources of consumption in Pakistan, followed by electricity and coal. LPG has a small share in the energy consumption, however the rate of growth of LPG consumption calculated through annual compound growth rate (ACGR) is 21.3 percent over the period 2012-13 to 2017-18. [7]

7. It is pertinent to mention that Pakistan is facing an energy crisis for the past many years, where by the domestic sources of energy such as oil and gas have shrunk and the economy's dependence on imported fuels has continuously increased. The oil import alone has reached $12 billion resulting in a burden on the foreign reserves. Likewise during FY 2017-18, the LNG import bill was $2454 million.[8] Keeping a look out at the developing energy crises, the government has initiated energy reforms in order to

[6] Compound growth rate is a measure of growth over multiple time periods. It takes out volatility and smooth out data in order to interpret it easily. Formula to calculate compound growth rate is $\{[X_n/X_1]^{1/\text{no. of years}} - 1\}$

[7] In comparison the ACGR for oil is 9.5 percent, gas is -1.0 percent, coal is 19.5 percent and electricity is 6.8 percent for the time period 2012-13 to 2017-18.

[8] State Bank of Pakistan (SBP) report

enhance indigenous energy resources, improve energy security and reduce the dependence on imported fuels.[9]

1.2 Liquefied Petroleum Gas

8. Liquefied petroleum gas (LPG) is a clean burning fossil fuel, for cooking, LPG provides smoke free indoor cooking and can help reduce air pollution.[10] LPG produces less carbon dioxide (CO_2) than coal, petrol or heating oil and additionally emits virtually no black carbon/soot and is thus as clean as natural gas.[11] LPG also plays a significant role in deforestation and desertification, where piped gas network is not available such as the rural and remote areas and therefore leads to economic growth in such areas and thus fulfills the consumer demands.

9. LPG can be transported easily through ships, rail, and road transport network. It is also available in a wide variety of packaging and storage options such as underground tanks, bulk tanks and cylinders. LPG has a long shelf life and does not degrade. In Brazil 95 percent of households use LPG as cooking fuel. Due to its easy portability (islands, mountains and remote areas) LPG is also said to be the only sustainable energy option available.[12]

10. LPG is extracted in two ways, (a) approximately 60% is extracted from the earth during the extraction of natural gas and oil, and (b) 40% is produced during crude oil refining. Therefore LPG can be called a naturally occurring by-product of oil and natural gas. When gas is extracted from the earth it is a mixture of gases and liquids such as methane, butane and propane. While natural gas constitutes mainly of methane, LPG constituting of propane and butane, is separated out during the natural gas extraction.[13]

11. LPG is colourless, odourless and environmentally friendly mixture of hydrocarbons, mainly propane (C3) and butane (C4). It is gaseous at room temperature or at moderate pressure. Where LPG production is tied to production and extraction of oil and natural gas, nonetheless LPG has a distinct market of its own and performs just about all the functions which the primary energy sources perform.[14] It is used in domestic households for heating and cooking purposes, in commercial and industrial activities, agri business and in vehicles as auto gas.

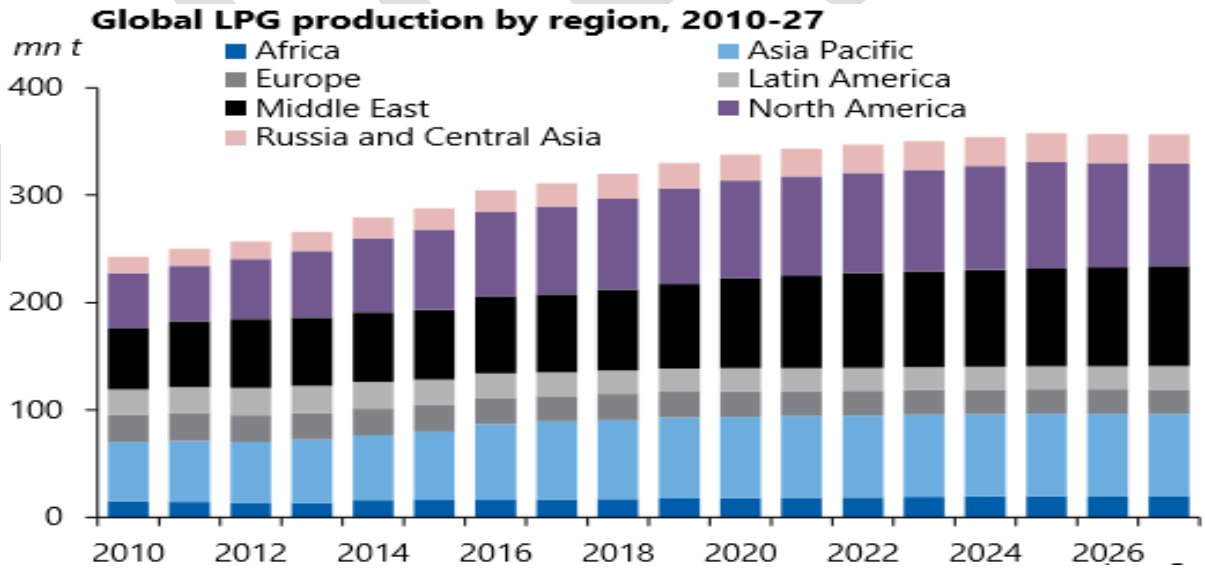
[9] Hydro Carbon Development Institute of Pakistan (HDIP), Ministry of Energy (Petroleum Division)
[10] Burning wood or coal produces 150 times more carbon monoxide than LPG per giga joule of energy -WLPGA
[11] The carbon footprint of LPG is 20 percent lower than that of heating oil and 50 percent lower than coal. In case of using auto gas in vehicles leads to 10-12 percent lower CO_2 emissions as compared to petrol.
[12] https://www.wlpga.org/publication/lpg-charter-benefits-2017/
[13] https://www.wlpga.org/about-lpg/production-distribution/
[14] Ibid

12. Methane, which is sold as "natural gas," constitutes about 90 percent of gas mixture extracted from gas fields. The remaining 10 percent, of which 5 percent is propane and the other 5 percent is gases such as butane and ethane. These slightly heavier gases than methane, the major component of natural gas are separated out before natural gas transportation. Depending on the "wetness" of a producing gas field, gas liquids generally contain 1%-3% of the unprocessed gas stream. Worldwide, gas processing is a source of approximately 60% of the LPG produced.

13. In crude oil refining, atmospheric distillation, reforming and cracking methods are used to extract petroleum products depending upon their boiling points.[15] The lighter gas is extracted first thus LPG is produced on the way to making the heavier fuels such as kerosene, diesel, jet fuel, and fuel oil. Around 1% to 4% of crude oil processed is refined into LPG. Worldwide, crude oil refining is the source for roughly 40% of LPG supplies, although the ratio between gas processing and refining varies among regions.[16]

14. LPG is known as 'liquid gas' because it is easily converted to a liquid state. LPG requires only slight pressure or refrigeration to transform it from its natural gaseous state into a liquid state. As a gas, LPG occupies 274 times its volume as a liquid, making the liquid state much preferred for transportation and storage.[17]

Figure 4: Global LPG Production (2010-27), Actual and Projected

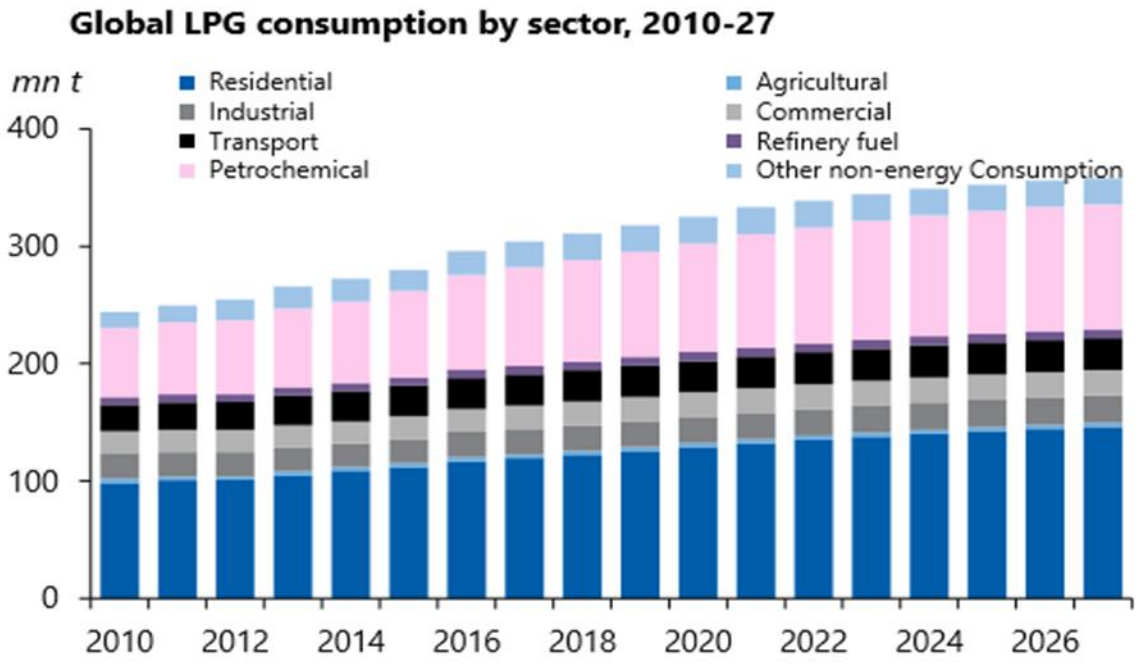


Source: Argus Media Ltd.[18]

[15] https://science.howstuffworks.com/gasoline2.htm
[16] https://www.wlpga.org/about-lpg/production-distribution/
[17] https://www.rigzone.com/training/insight.asp?insight_id=340&c_id=
[18] Argus media Ltd. is an independent provider of price information, consultancy services, conferences, market data, and business intelligence for the global petroleum, natural gas, electricity emissions, biofuels, biomass, LPG metals, petrochemicals, fertilizers, and coal industries.

15. According to the above graph Asia Pacific, Middle East and North America are the key LPG producing regions globally. Where the share of Asia Pacific and Middle East grows slowly during 2018-2027 period however the LPG production share of North America shows a higher growth rate during the same reference period.

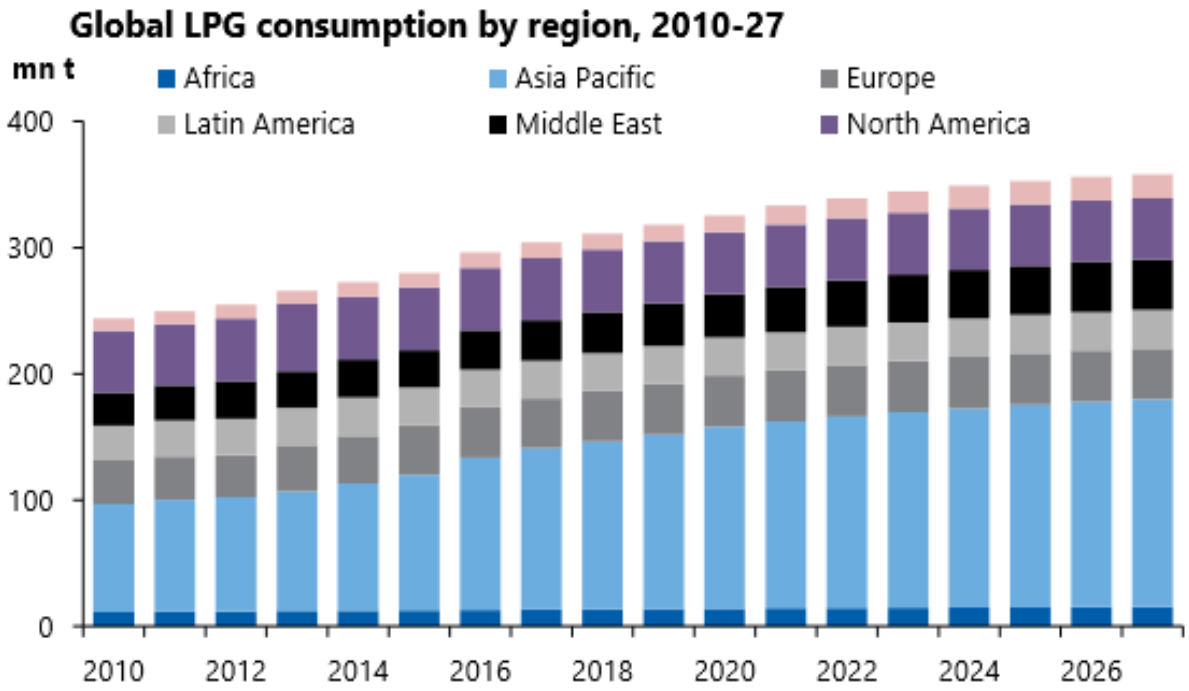
Figure 5: Global LPG Consumption (2010-2027) Actual and Projected



Source: Argus Media Ltd. (2010)

16. Figure 5 above gives a snapshot of LPG consumption in various sectors globally. It is evident from the graph that LPG consumption by the residential sector is by far the largest, followed by petrochemicals. Over the actual and projected data it is obvious that LPG use will continue to grow in the residential and petrochemical sectors, whereas LPG use in transport, industrial and commercial sectors remains by and large consistent.

Figure 6: Global LPG Consumption by Region (2010-2027), Actual and Projected



Source: Argus Media Ltd.

17. According to the graph presented above in Figure 6, Asia Pacific has been and will remain the largest consumer of LPG. Asia Pacific dominates the regional consumption of LPG and a closer look shows that LPG consumption in the region is more than thrice compared to all the other global regions including Africa, Latin America, Middle East, Europe and North America. The demand by China and India in the Asia Pacific region is the key driver of LPG demand in the region. Additionally, most of the world's seaborne LPG trade flow originates in the Middle East. Producing and exporting countries include Saudi Arabia, U.A.E, Kuwait, Bahrain, and Qatar.

18. In Pakistan gas producing fields, refineries and imports are the three main sources of LPG supply. LPG is gradually becoming popular domestic fuel among people who live in far-flung areas, and where the natural gas infrastructure does not exist. LPG is the most viable alternative in winters to cater for supply shortage of natural gas network. LPG is becoming a significant component of energy mix since it provides a cleaner alternative in comparison to biomass and dung, especially in locations where natural gas network is not available.

19. LPG presently accounts for about 1.3 percent of the total energy supply in Pakistan. During 2017-18 the total LPG supplies stood at 1.19 million tonnes and the LPG consumption at 1.28 million tonnes. Furthermore LPG consumption during Fiscal Year 2017-18 stood at around 3,508 tons per day. The LPG demand is met by both domestic

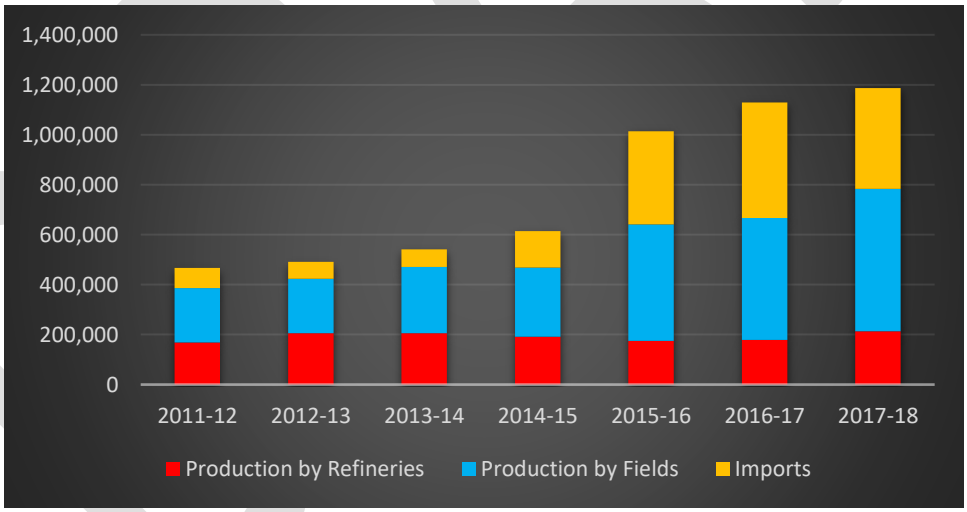
and imported sources whereby 66 percent of the local demand is met by the domestic sources and the rest by imported sources.

Table 3: LPG Production by Source (unit: tonnes)

Year	Production by Refineries	Production by Fields	Imports
2011-12	169,005	217,048	80,336
2012-13	205,262	218,031	68,408
2013-14	205,963	264,629	71,093
2014-15	191,664	276,891	145,634
2015-16	174,413	467,077	372,850
2016-17	178,333	488,874	461,426
2017-18	212,794	570,826	402,685
Total	**1,337,434**	**2,503,376**	**1,602,432**

Source: Pakistan Energy Yearbook 2018

Figure 7: LPG Supplies by Source Comparison (tonnes)



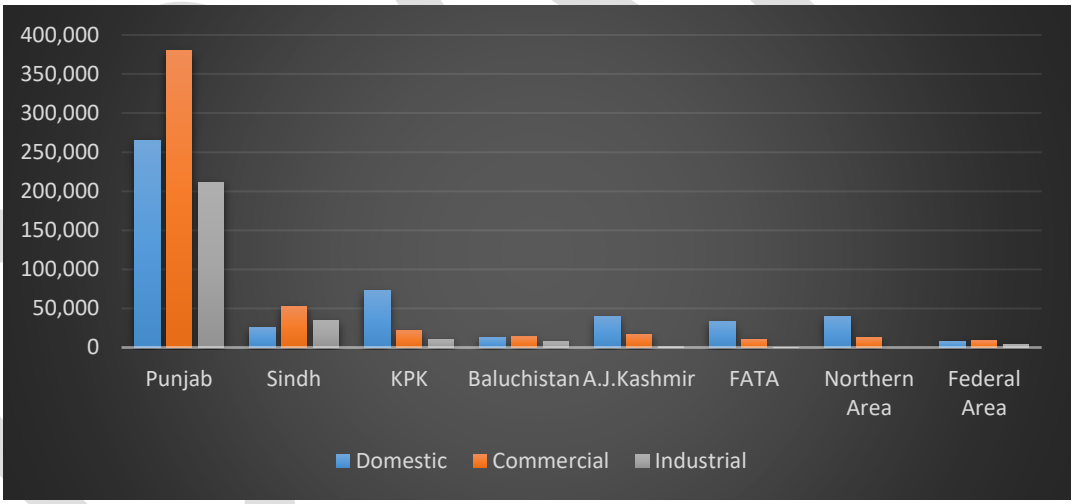
20. Table 3 above gives the breakup of the LPG supplies by source, including production by refineries, gas fields and imports. The data analysis shows that where LPG production by refineries shows more fluctuation, the LPG production by gas fields and through the imported sources continue to rise from year 2012- 2018. The share of LPG imports is less than the combined supply of LPG by gas fields and refineries, however the share of imports in LPG supply has overtaken the share of refineries in LPG supplies.

Table 4: LPG Consumption by Region and Sector (2017-18)

Province/Region	Domestic	Commercial	Industrial	Total
Punjab	265,315	379,675	211,365	856,355
Sindh	25,740	52,497	34,821	113,057
KPK	72,349	21,269	10,133	103,751
Baluchistan	12,708	13,438	7,170	33,316
A.J. Kashmir	39,616	17,150	714	57,477
FATA	32,751	10,657	390	43,798
Northern Area	39,735	12,339		52,074
Federal Area	7598	8755	4,369	20,723

Source: Pakistan Energy Yearbook 2018

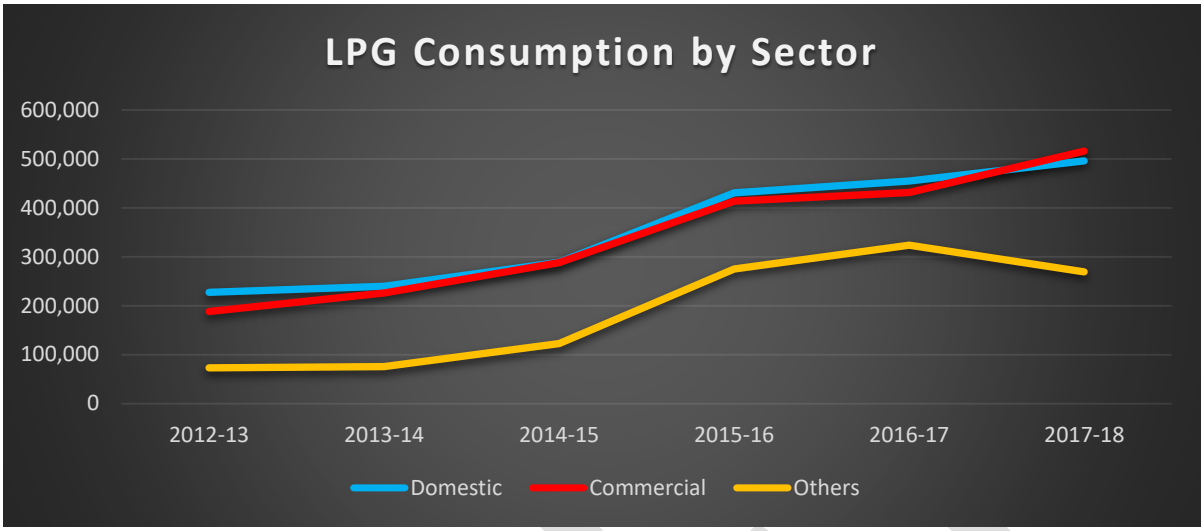
Figure 8: LPG Consumption by Province and Region (2017-18)



Source: Pakistan Energy Yearbook, 2018

21. Table 4 and figure 8 show LPG consumption break down by the provinces and also the amount consumed in domestic, commercial and industrial sectors in each of the provinces. It is evident from the data that Punjab is by far the largest consumer of LPG followed by Sindh and Khyber Pakhtunkhwa (KPK). Within Punjab and Sindh, the largest LPG consumers are the commercial sector whereas in KPK domestic sector has the highest share in LPG consumption.

Figure 9: LPG Consumption by Sector (Unit: Tonnes)



Source: Pakistan Energy Yearbook, 2018

22. Figure 9 above shows annual LPG consumption by the domestic, commercial and others from year 2012 to year 2018. Additionally the data shows that LPG demand by both domestic and commercial sectors experienced high rate of growth since 2013. The results are in congruence with other data available on energy sources consumption in Pakistan, according to which the LPG sector though small in size compared to other sources of energy yet LPG sector has shown significant growth in the past one decade.

23. There are 12 LPG producers in Pakistan, including 6 exploration and production (E&P) companies, 5 refineries and 1 extraction plant. There are 184 LPG marketing companies and the total number of LPG distributors is 5,512. Sixty six percent of the total domestic LPG demand is met through local sources and the rest is met through import and the total number of LPG importers is 33. In order to handle the LPG imports at Port Qasim, Karachi there are two import terminals at which LPG is received and stored. These are Engro Vopak Terminal Limited (EVTL) and SSGC LPG. The amount of indigenous LPG production is 2,430 MT/day and the LPG imports quantity is 690 MT/day.

1.3 Rationale of Study

8. Competition Commission of Pakistan (CCP) '*the Commission*' is mandated under Section 28(1)(b) of the Act to carry out '*market studies to promote competition in all spheres of commercial economic activity'*. The competition assessment of LPG sector is thus undertaken to analyze the state of competition in the sector from LPG domestic production and its import, sale of LPG to the marketing companies, LPG handling and sale by the distributors and ultimately LPG availability to the end consumers.

1.4 Objective of Study

9. The objective of the study is to examine and evaluate the LPG sector in Pakistan. To evaluate the regulatory framework, pricing mechanism, market structure (including producers, marketing companies and distributors, demand and supply analysis), level of competition in the sector at each level of the LPG value chain (from production/import to end consumer), and to assess the likelihood of any anticompetitive practices such as abuse of dominance, cartelization or bid rigging in the sector. It is also pertinent to establish whether there is a level playing field for all players at various levels in the sector, regardless of their status being state owned or privately owned. Moreover based on the competition assessment of the sector give recommendations for a more competitive and efficient sector.

1.5 Significance of Study

10. LPG has increasingly become an important source of energy since its import began in 2015 to meet the growing gas demand in the country. In this backdrop, *the Commission* through this study, aims to:

    - Assess the level of competition in this sector;
    - Highlight the areas for enforcement action (in case of anticompetitive practices);
    - Visualize the challenges of the sector
    - Provide recommendations to improve competition in the sector;
    - Issue policy notes in case of presence of any governmental policies that impede competition; and
    - For the general public to understand the dynamics of this sector.

1.6 Methodology

11. Both primary and secondary data has been collected from different sources to carry out the competition assessment of the LPG sector. The secondary data has been collected through the official websites of Pakistan State Oil (PSO), Oil and Gas Regulatory Authority (OGRA), Ministry of Energy (Petroleum Division), Pakistan Economic Survey 2018-19, Pakistan Energy Year Book 2018, Hydrocarbon Development Institute of Pakistan (HDIP), World LPG Association (WLPGA), internationally published research papers, articles on LPG sector. Primary data has been collected through detailed

questionnaires and extensive meetings held with public/private undertakings, the list of which is as under:

i. Ministry of Energy (Petroleum Division)
ii. Oil and Gas Regulatory Authority (OGRA)
iii. SSGC LPG Pvt. Limited (SLL)[19]
iv. Pakistan State Oil (PSO)[20]
v. Pakistan Petroleum Limited (PPL)
vi. Oil and Gas Development Company Limited (OGDCL)
vii. Orient Petroleum Inc.
viii. Pak Arab Refinery Limited (PARCO)
ix. Byco Petroleum Pakistan Limited
x. All Pakistan LPG Distributors Association (APLPGA)

[19] SSGC LPG Import Terminal
[20] PSO LPG storage and bottling plant, Pak Gas

Chapter 2

Enforcement Action in the LPG Sector & LPG Market in International Jurisdictions

2.1 CCP Enforcement Action in the LPG Sector

1. In 2008, the Competition Commission of Pakistan (CCP) took suo moto notice of the official report of Oil and Gas Regulatory Authority (OGRA) regarding LPG and a number of media reports, news items, along with a letter dated July 25, 2008, received from Progas Pakistan Limited (Progas) to verify as to whether Jamshoro Joint Venture Ltd (JJVL) and Liquefied Petroleum Gas Association of Pakistan (LPGAP) had engaged in actions that independently or jointly, violated Section 3 and Section 4 of the then Competition Ordinance, 2007 (Ordinance).

2. From all the information and evidence available the enquiry report dated 5th March, 2009 concluded that JJVL and LPGAP had abused their dominant position under *Section 3 (abuse of dominant position)*, and violated *Section 3(3)(g)* of the Ordinance by creating conditions which excluded Progas from competing in the relevant market. *Section 3(3)(g)* reads as follows:

   Boycotting or excluding any other undertaking from the production, distribution or sale of any goods or the provision of any service

3. JJVL, LPGAP and its members also violated *Section 3(3)(d) and (e)* of the Ordinance by charging premiums and third party commission from marketing companies without allocations. *Section 3(3)(d) and (e)* are reproduced below:

   (d) making conclusion of contracts subject to acceptance by the other parties of supplementary obligations which by their nature or according to commercial usage, have no connection with the subject of the contract;

   (e) applying dissimilar conditions to equivalent transactions on other parties, placing them at a competitive disadvantage.

4. Furthermore JJVL, its associated marketing companies, LPGAP and its members under *Section 4(1) (Prohibited Agreements)*, violated *Section 4(2)(a)* of the Ordinance by being part of, and leading a cartel engaged in price fixing and by ensuring the implementation of the price fixing decisions. *Section 4(2)(a)* reads as follows:

Fixing the purchase or selling price or imposing any other restrictive trading conditions with regard to the sale or distribution of any goods or the provision of any service.

5. In addition to the above, JJVL and LPGAP also violated *Section 4(2)(f) and (g)* of the Ordinance on basis of the same actions. *Section 4(2)(f) and (g)* are reproduced below:

   (f) applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a disadvantage; and

   (g) making the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts.

   6. Consequent to the findings of the enquiry report, Show Cause Notices were issued to LPGAP and JJVL respectively in March, 2009. The enquiry report concluded that LPGAP appeared to have entered into a vertical collusion/cartel with JJVL with the aim to fix prices and also to keep the LPG importers out from competing in the relevant market through its exclusionary conduct, thereby acting in contravention of Section 4(1) read with Section 4(2)(a), and Sections 3(1) read with 3(2) and 3(3)(g) of the Ordinance.

6. LPGAP was engaged in price fixing primarily through announcements and statements in the newspapers, which was also termed by OGRA as 'illegal' and tantamount to cartelization. Also, there were media reports wherein the LPGAP and JJVL expressed their desire to maintain a 'fair price mechanism' in the relevant market at times quoting the LPG price, thereby prima facie keeping the price within a targeted range.

7. The collusion and collaboration in price was also substantiated inter alia from the fact that many directors of JJVL and their relatives were directors or owners of marketing companies who were members of LPGAP. The chairman of LPGAP was also the chairman of JJVL. LPGAP operated from the office of JJVL in Lahore, which prima facie established a collusive nexus between LPGAP and JJVL. The concerted efforts on part of LPGAP and JJVL had resulted in the implementation of a pricing mechanism that priced LPG at such a level which made sale and distribution of imported LPG not viable and excluded importers as a competitor in the relevant market.

8. The exclusion of importers from competing in the relevant market on part of LPGAP and JJVL was not only detrimental to the consumers but also had adverse economic consequences. The hold of JJVL on the relevant market through collusion with LPGAP did not allow competitive prices to prevail therein, thus subjecting the consumer to suffer through LPG shortages, volatile supply and higher prices which otherwise would not have prevailed in a competitive environment. Moreover commissions/premiums were also charged from member marketing companies by LPGAP who were allottees of JJVL.

9. JJVL was prima facie found to hold a dominant position in terms of section 2(1)(c) of the Ordinance inter alia being the biggest producer of LPG coupled with its entitlement to access LPG sources at reduced costs and enjoyed control along with its subsidiaries, namely Mehran LPG (Private)Limited and Lub Gas (Private).

10. Furthermore LPGAP was the largest association of marketing entities and had almost 71 members, out of which approximately 30 members had market allocations as allottees with JJVL. JJVL prima facie appeared to have entered into vertical collusion/cartel with LPGAP with the aim to fix prices and also to keep the LPG importers out from competing in the relevant market through its exclusionary conduct, thereby acting in contravention of Section 4(1) read with Section 4(2)(a), and Section 3(1) read with 3(2) and 3(3)(g) of the Ordinance, respectively.

11. Subsequent to hearings, the Commission concluded that both JJVL and LPGAP were market leaders in many respects. LPGAP had hurt not only the potential competition by creating an artificial entry barrier but also the end users. JJVL abused its dominant position, in light of a skewed market structure. Further cartelization by LPGAP was the most pernicious of anticompetitive offences.

12. The Commission imposed a penalty amounting, 3.75% of last annual net turn-over on JJVL i.e. PKR 278,087,448 (based on annual accounting statements for the year ending 30 June 2008 which recorded net turnover as PKR 7,415,665,289). JJVL was directed to cease and desist from restricting competition through limit-pricing. LPGAP was fined PKR. 40 million due to the harmful effects of cartel formation. Additionally OGRA was recommended to review its policy and implementation regarding "reasonable consumer price" and was directed to take necessary measures to ensure a level playing field for all stakeholders and to ensure that no party including importers were excluded from the relevant market through anti-competitive behavior of incumbent firms.[21]

2.2 International Competition Cases in the LPG Sector

2.2.a India (Case I)

[21]Competition Commission of Pakistan had passed the order dated: 14-12-2009, against LPG Association of Pakistan and Jamshoro Joint Venture Limited. Rs. (PKR 40 Million fine was imposed on LPG Association of Pakistan and Rs. (PKR278 Million fine was imposed on Jamshoro Joint Venture Ltd. The Order of the Competition Commission of Pakistan was set aside after filing of the (Appeal No. 1/2010 titled "LPGAP Vs CCP etc") & (Appeal No.2/2010 titled "JJVL Vs CCP etc"). In addition, both the undertakings also filed Writ Petitions titled LPAG Vs FOP etc WP No. 9518/2009 and JJVL Vs CCP etc WP No. 15493/2009 challenging the vires of the Competition Ordinance (then was). All pending before Lahore High Court, Lahore. The Commission is rigorously following up the court proceedings/petitions.

13. In 2018, Competition Commission of India (CCI) imposed a penalty on South Asia LPG Company Ltd (SALPG), a joint venture between TOTAL, the French oil major and the Public Sector Oil Marketing Company (OMC), Hindustan Petroleum Corporation Ltd. (HPCL) for rejection of market entrance to a private terminal operator, East India Petroleum Pvt. Ltd (EIPL) at Visakhapatnam port (Port). CCI had decided to fine the SALPG for abusing the dominant position by denying the market access to EIPL in the upstream terminal services at Vishakhapatnam Port.
14. EIPL alleged unilateral conduct by SALPG amounting to contravention of the provisions of Competition Act of India. First, SALPG had imposed certain mandatory conditions on the OMCs that resulted in limiting and restricting the provision of services by EIPL as well as the market for such services. Second, the SALPG was charging excessive bypass charges, which limited the economic viability of EIPL's services for the users. Third, SALPG controlled the total volume of pre-mixed LPG that could be imported from Very Large Gas Carrier (VLGC) to be bypassed for tank-truck loading. This meant that the remaining gas had to be necessarily transported through the underground storage facility of SALPG, and the practice restricted the business volumes of EIPL.

15. CCI concluded that SALPG's efficiency claims were unfounded, and the denial of access had ensured that a significant capacity of LPG terminal at Visakhapatnam Port remained unutilized over the period of seven years. CCI also took note of SALPG's reluctance to undertake an independent study on safety concerns, which CCI construed as an attempt by SALPG to refuse sharing its terminal infrastructure.[22]

Case 2

16. In 2018, Competition Commission of India (CCI) found 48 LPG manufacturer involved in charging similar or identical rates, had bid collectively for particular territories, after reaching an agreement between themselves. The CCI took up the case and directed to conduct an investigation of bid rigging of tenders for the supply of LPG cylinders to the public sector gas marketing companies.

17. CCI determined that there were similarities in the price bids submitted by 50 bidders for a tender to supply LPG cylinders to Indian Oil Corporation Ltd. (IOCL) in 2010-11. It was observed that the bidders were part of a trade association which met at regular intervals, mainly before every bid for LPG cylinders from the public sector gas undertakings, indicating that the bidders knew and used to communicate with each other. The CCI also noted that the appointment of common agents by the bidders could have led to the possibility of matching the rates quoted in the price bids. After analyzing the state wise bids, the CCI accepted the finding that identical prices and similarity of patterns of price bids existed for different destinations despite varying costs of production and transportation.

[22] https://www.cci.gov.in/sites/default/files/Case%20No%2076%20of%202011.pdf

18. After the detailed and thorough investigation CCI concluded that 48 bidders were responsible in equal measure. In view of the seriousness of the breach, the CCI imposed a penalty on each of the infringing parties of 7% of their annual turnover, averaged over three, and in some cases, two years. The total penalty imposed on the 48 bidders was more than Rs. 1.6 billion (about euro 19.5 million).[23]

2.2.b Portugal

19. In 2015, the Portuguese Competition Authority (PCA) imposed fine of 9.29 million Euros on three organizations from Galp Energia Group (Petrogal, Galp Acores, and Galp Madeira) for utilizing absolute territorial restrictions in regards to its distributors of packaged LPG in Portugal and in Madeira and Azores islands. The distributors were banished from selling packaged LPG outside their allotted domains and passive sales were banned, consequently obstructing intra-brand competition.

20. Due to the involvement, Portuguese bottled LPG market was harmed artificially by Galp Energia. The practice had limited the competition in the LPG market to the loss of consumers. The territorial restrictions affected the consumers with the higher prices by allowing the distributors of bottled LPG to set their prices and commercial conditions without any competitive pressure from other distributors.

21. The PCA assembled substantial amount of evidence that included the distribution contracts agreed between Galp Energia and its distributors of bottled LPG in Portugal (mainland Portugal, Azores and Madeira). After the investigation, PCA found 199 contracts (out of 240) in mainland Portugal and all distribution contracts in Azores and Madeira did not permit passive sales outside the allocated territory of the distributor. Furthermore, a number of distributors also confessed, to being dictated by Galp Energia, not to sell outside from the allocated territory.[24]

2.2.c Italy

22. In 2010, The Italian Antitrust Authority (IAA) imposed fine of 22 million Euros on Butan Gas and Liquigas. For the determination of the fines, IAA considered the long length of cartel (10 years) and the gravity of the contravention (both EU and Italian law define price-fixing cartels as one of the most serious type of antitrust law infringement). The IAA decided not to fine third supplier, given its complete cooperation with the IAA.

[23] https://www.concurrences.com/en/bulletin/news-issues/february-2012/In-the-LPG-Cylinders-Case-the

[24] http://www.concorrencia.pt/vEN/News_Events/Comunicados/Pages/PressRelease_201501.aspx?lst=1&Cat=2015

23. The investigation was started due to few complaints made by customer of Sardinia city that the price of LPG in the city was higher than the rest of the country. The IAA determined that, during the period of 1995 to 2005, the three suppliers systematized the price of LPG in cylinders and in small tanks. As per the IAA, the proof it gathered demonstrated that the top officials of the three providers held successive private gatherings to examine their price fixing technique and observed the cartel. Moreover, IAA depended on parallel changes in the costs of LPG in cylinders and small tanks as showing coordination among the suppliers. Specifically, the IAA discovered that, during 1995 and 2005, 74-80% of the three suppliers' decisions to modify their price lists were coordinated.

24. The IAA alleged that the cartel affected the sale of LPG in small tanks, in addition to the market for the sale of LPG in cylinders, and all of Italy, not just Sardinia. The IAA found that the three suppliers had a combined market share of 40% in LPG in cylinders and 36% in LPG in small tanks, thus controlling a significant part of the Italian market for the sale of LPG for domestic use.[25]

2.2.d Albania

25. In 2012, Competition Commission of Albania (CCA) penalized the Romano Port, 2.35% of its total turnover for abusing its dominant position in 2010. Taking everything in to account, CCA identified that the Romano Port had a dominant position in the market of loading and unloading of LPG during the period under scrutiny. The operator had repeatedly refused to perform the unloading of LPG for the operators who had invested in storage capacities owned by them presenting illogical and unlawful reasons. The refusal related with the direct financials of the operator in the downstream market, as on depositing and wholesale trade of LPG, bringing competition restriction in these markets.

26. In 2011, Mare Oil logged a complaint in the premises of Competition Authority of Albania, the company asserted that Romano Port did not permit the unloading of ship in the deposits claimed by Mare Oil, alleging not all the required documents were submitted. At the same time, another undertaking Prima Gas Albania filed the complaint against Romano Port. Prima Gas Albania raised the same issue that Romano Port had not allowed the processing of LPG carried by it, and that Romano Port wanted to deposit the LPG in its own deposits and inquired for unnecessary documents.

27. In the investigation, it was found that Romano Port forced Mare Oil to sign a standard contract to enable unloading the LPG ship. Mare Oil specified they had several meetings with the Romano Port regarding the contents of the contract but Romano Port refused to take in to account the suggestion and in due course forced Mare Oil to sign the contract.

[25] http://ec.europa.eu/competition/ecn/brief/03_2010/it_butangas.pdf

After the extensive enquiry, Competition Commission of Albania assessed that the prohibition of discharge of the ship of Mare Oil by Romano Port committed a serious infringement of competition.

2.3 LPG Market in International Jurisdiction

2.3.1 India

28. The history of LPG in India dates back to the 1950's, when Burmah Shell and Stanvac marketed LPG in areas around the refineries. LPG consumption and growth as an energy source has shown a consistent growth of over 10% annually over the last 50 years. Over 70% of the population use LPG serviced by 19,000 distributors, 42% of which are in rural areas, it has consumed a record 24.9 million tonnes of LPG in the financial year 2018/19, 53 per cent higher than five years ago, and 6.9 per cent higher than the previous year. The boost in LPG consumption follows a social welfare programme, launched by the government in 2016 that has provided about 72 million new LPG connections to households.[26]

29. India is fourth largest LPG consuming country in the world, following USA, China and Japan. India is also the seventh largest LPG producing country in the world, following USA, China, Saudi Arabia, Russia, UAE and Qatar. However, because of its size and growth rate, India is forecasted to become the largest LPG importing country in Asia by 2021.

30. Indigenous LPG production comes from state owned refineries (52%) and fractionators (20%), refineries in the private sector (18%) and in the joint sector (10%) produce the balance. The domestic LPG demand is met by three state owned Oil Marketing Companies (OMCs), however the industrial and commercial markets are open for private marketers. About 50% of the country's LPG consumption is imported. Most of the imported product is sourced from the Middle East, Saudi Arabia and Qatar.[27]India has over 160 LPG cylinder manufacturers, 48 valve manufacturers and 44 regulator manufacturers. All these are in the private sector. The LPG market in India is described as having carved out a significant position in India's clean and inclusive energy ecosystem.[28]

[26] See online: https://www.reuters.com/article/india-lpg/indias-lpg-use-to-surge-from-record-as-govt-promotes-cleaner-fuel-idUSL3N22B0SM
[27] See online: https://www.wlpga.org/wp-content/uploads/2017/09/LPG-Policy-Document_2017-FINAL.pdf
[28] IBID

31. LPG for domestic use is regulated by the government, through the three state owned OMCs, Indian Oil Corp. Ltd (IOCL), Bharat Petroleum Corp. Ltd (BPCL), and Hindustan Petroleum Corp. Ltd (HPCL)), via the subsidy administration mechanism for domestic households where priority is given to households below the poverty line. Furthermore LPG for commercial, industrial and transport use, operates under a free market, subject to the safety, quality and quantity regulations.

32. Prior to September 2013, all valid household connections were eligible to access subsidized LPG (up to a certain cylinder limit) without any further conditions. In June 2013 the government launched Direct Benefit Transfer for LPG (DBTL), a scheme to change the method of providing LPG subsidies. The DBTL required households to provide a bank account and an identification number, "Aadhaar" card holder in order to receive the cylinder subsidy amount via electronic transfer. Additionally households unable or unwilling to provide their Aadhaar number or a bank account were automatically excluded from access to subsidized LPG. Under DBTL, the price differential between the market price and the subsidized price was transferred directly into the account of Aadhaar card holder. The scheme was later modified and re-launched in November, 2014.

The domestic LPG cylinders in India are currently available to the users at subsidized rates. Due to the high rates of LPG cylinders the central government is providing all the LPG cylinders which are meant for domestic use at subsidized prices. In this process, the customer will have to pay the price which has been mentioned in the cash memo of the voucher issued by the distributor along with the delivery charges at the time of delivery of the LPG cylinder at one's doorsteps. Post which the subsidy amount will be directly credited to the customer's bank account which has been linked with the gas connection. The domestic LPG cylinders are painted with red color for easy identification and to avoid its usage for non-domestic purpose. The subsidy amount on domestic cylinders depends on the city and it falls in the range between Rs 420 – Rs 465 for a 14.2 kg cylinder. If the consumers cross the set mark of 12 LPG cylinders per year, then they are charged at non-subsidized rates starting from the 13^{th} cylinder.

Chapter 3

3.1 Market Structure of LPG Sector

1. Market structure of any good/service is defined on the basis of the number of buyers and sellers in the market, nature of the good/service, availability of substitutes, pricing mechanism, level of non-price competition, market share of firms and barriers to entry and exit.

3.1.1 Relevant Market

2. In order to assess competition in the LPG sector of Pakistan, it is important to at first define the relevant market. The relevant market consists of (a) relevant product market, and (b) relevant geographic market. The relevant product market is defined as the market which comprises of all the goods/services that are regarded as substitutable by reason of their intended usage, characteristics and prices. The relevant geographic market is defined as the area where the firms are involved in supply and demand of goods/services where the conditions of competition are sufficiently homogenous and which can be differentiated from other areas on the basis of the conditions of competition being different.

3. In Pakistan although the LPG sector has a small market share[29] in comparison with oil and natural gas, which are the two main sources of energy consumed. Nonetheless LPG is one of the main sources of energy[30], used by domestic households since piped gas (natural gas) is only available to 22 percent of total population[31].

4. LPG has a distinct market due to its demand and supply mechanism, consumers intended use, infrastructure (cylinders) and its transportation, its composition (which is propane and butane) and pricing mechanism. The relevant product market is the LPG market in Pakistan, including both the domestic and the imported LPG available in Pakistan.

5. On LPG production the competitive constraint comes from the supply side comes from the LPG produced by E&P companies, refineries and the imports. On the demand side, however LPG has a distinct market as consumers who use LPG do not have access to natural gas or other sources of energy.

[29] 1.3 percent in the total energy supply, Pakistan Energy Yearbook, 2017-18
[30] 50 percent of the households use natural gas, LPG and biogas for cooking.
[31] https://energypedia.info/wiki/Pakistan_Energy_Situation

6. The LPG consumers can be however segregated into bulk consumers, consumers of bottled LPG (small cylinders for domestic use) and LPG autogas. Nonetheless the study assesses the nature of competition in the entire LPG value chain from, production to LPG handling by the marketing companies, to the LPG distributors and the end users and thus considers the relevant product market as the LPG market as a whole.

7. The *relevant product market* is the market for LPG in Pakistan including production, marketing and distribution of LPG on the supply side and on the demand side the LPG sold in all the various forms and methods of distribution and sale. The *relevant geographic market* is considered the LPG market as a whole at both national and sub-national levels.

3.1.2 LPG Supply (Upstream Market)

a. Exploration & Production (E&P) Companies & Extraction Plant

8. Given below is the detail of the 6 LPG production/extractions from fields by E&P companies and 1 extraction plant in Pakistan. These include :

   a. Oil and Gas Development Company Limited (OGDCL)
   b. Jamshoro Joint Venture Limited (JJVL)- Extraction Plant (on behalf of SSGC)
   c. Pakistan Petroleum Limited (PPL)
   d. Pakistan Oil Fields Limited (POL)
   e. MOL Pakistan
   f. Orient Petroleum Inc.(OPI, formerly Ocean Pakistan Limited)
   g. United Energy Pakistan Limited (UEPL).

9. OGDCL is a public limited company operating under Ministry of Energy (Petroleum Division). It is the largest E&P company in Pakistan, listed on Pakistan Stock Exchange and also on the London Stock Exchange. OGDCL was created under an ordinance in 1961 as a public sector corporation and later was converted into a Public Limited Company in 1997. Currently Government of Pakistan (GOP) holds 74.97 percent of total equity in the company.[32] The company's has 47 operated oil and gas producing fields which are geographically distributed all across the country.[33] It has 18 oil and gas

[32] https://fp.brecorder.com/2015/08/201508141217400/
[33] Out of 47 oil and gas producing fields, 15 are located in Punjab, 3 in KPK, 28 in Sindh and 3 in Balochistan.

processing plants[34] which include dehydration, LPG, Sulphur recovery, H2S removal, gas sweetening, condensate stabilization, refining and compression plants.[35]

10. OGDCL's major LPG producing fields include, Sinjhoro, KPD-TAY, Nashpa, Bobi, and Kunnar. The company produced (net) 690 tons/day of LPG during the fiscal Year 2017-18, which increased from 455 tons/day during 2016-17. Out of the total net sales of the company of Rs. 205.335 billion, 7 percent came from LPG sales during the fiscal year 2017-18. During the same period the LPG price per ton was Rs. 55,666. The Company contributed Rs. 117.1 billion to the National Exchequer.[36]

11. JJVL is an unlisted public limited company with its gas processing facilities at Jamshoro, Sindh. JJVL is Pakistan's largest private sector gas processor and is an energy company of Associated Group (AG). Its 200 mmscfd LPG extraction plant was commissioned in 2005, and 125 mmscfd plant in 2014, and a total processing capacity has now increased to 345 mmscfd, thus the largest investment in the LPG sector. JJVL's plant is operated and maintained by Exterran[37] (formerly the Hanover Company).[38]

12. LPG produced by JJVL meets the energy requirement of 2.5 million households across Pakistan. LPG is sold by Sui Southern Gas Company Limited (SSGC) to LPG marketing companies licensed by Oil and Gas Regulatory Authority (OGRA). During high demand, JJVL also imports LPG. Associated Group of companies (AG) besides its presence in E&P through JJVL, in LPG marketing it has prominence through LUB Gas and Mehran LPG, the two LPG marketing companies.

13. PPL is an oil and gas sector E&P company operating under the Ministry of Energy (Petroleum Division). PPL has been a front player in the energy sector since the mid 1950's. It is a major supplier of natural gas, which is 20 percent of Pakistan's total natural gas supply. Besides PPL also produces crude oil, LPG, and natural gas liquid. The company has three shareholding, the government holds 68 percent, PPL Employees Empowerment Trust holds 7 percent and the private investors hold 25 percent. PPL has 12 producing fields which are located in across the country at Sui, Adhi, Kandhkot, Chachar, Mazarani, Adam, Adam West, Shahdadpur, Shahdadpur West, Shahdadpur East, Zafir and Fazal. It also holds working interest in 18 partner-operated producing fields, Qadirpur[39] is one of them which is the second largest gas field in the country.[40]

[34] The company operates and maintains 15 major and 3 small gas processing plants at all major producing fields of OGDCL. Petroleum products namely natural gas, LPG, Sulphur and crude undergo multiple processing stages before they are cleared of various impurities and can be marketed to customers.
[35] https://ogdcl.com/operations/production
[36] OGDCL Annual Report, 2017-18
[37] JJVL LPG plant was engineered, procured, constructed and commissioned by Exterran.
[38] http://www.ag.com.pk/jjvl/
[39] However Qadirpur does not have LPG reserves
[40] Pakistan Petroleum Limited (PPL), ppl.com.pk

14. PPL's reserves on June 30, 2018 include 2,091 billion cubic feet (bcf) of natural gas, 17.2 million barrels of oil/natural gas liquids/condensate and 589 thousand tonnes of LPG. Out of the total 2200 Metric Tonnes (MT)/day of LPG produced during summer season, PPL contributes 330 MT/day, which is around 15 percent of the total local LPG produce. [41]Given below is the field wise production data, and PPL share in the total LPG production.

Fields (Operator)	Total Production (MT/Day)	PPL Share (MT/Day
Adhi (PPL)	260	102
Nashpa (OGDCL)	285	81
Makori (MOL)	500	140
Gambat (PPL)	14	9
Total	1059	332

Source: Pakistan Petroleum Limited (PPL)

15. POL is also a leading oil and gas E&P company in Pakistan, listed on Pakistan Stock Exchange. POL is a subsidiary of the Attock Oil Company Limited (AOC), incorporated November 25, 1950. POL E&P includes oil and gas, LPG, Solvent oil and Sulphur. POL also markets LPG under its brand POLGAS and through its subsidiary CAPGAS (Private) Limited. In 2005, POL also acquired 25 percent share in National Refinery Limited (NRL), the only refining complex in Pakistan which produces fuel products as well as lube base oils.[42]

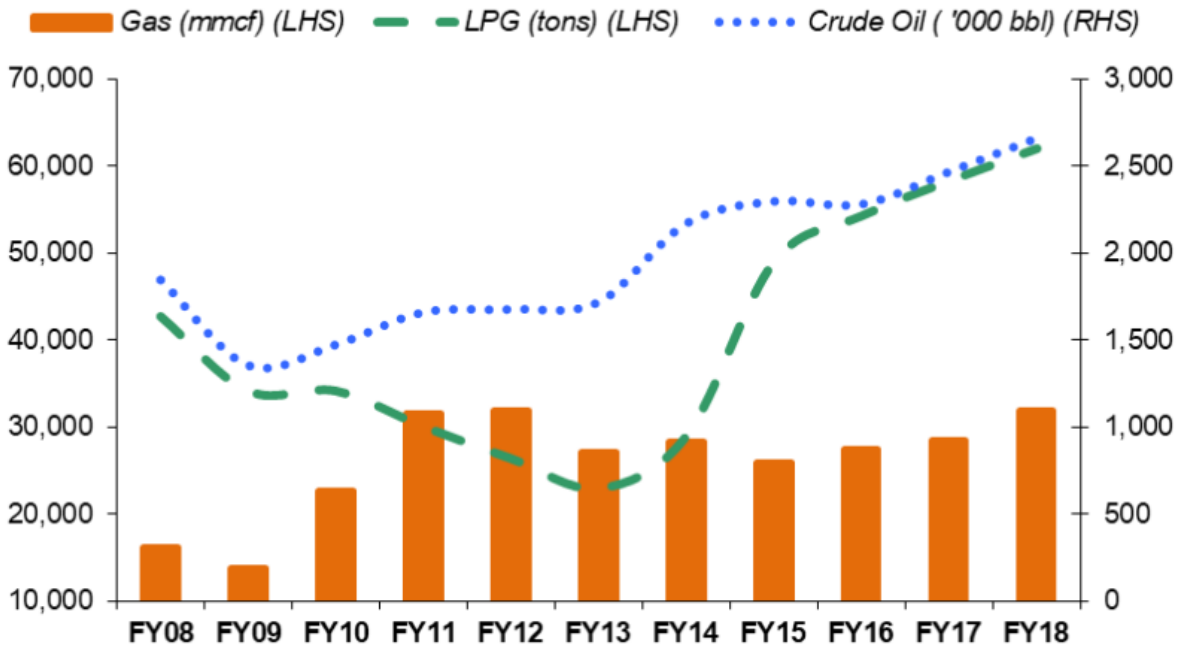
16. Attock Oil Company (AOC) holds more than 50 percent of POL shareholding, and State Life Insurance Corporation of Pakistan also has more than 5 percent share.[43] At present POL has 9 development and production leases, which include Pariwali, Meyal, Joyamair, Minwal, Dhulian, Khaur, Pindori, Turkwal and Balkassar. It produces LPG from Meyal and Pindori in Punjab. POL also produces LPG under various Joint Venture Agreements (JV's) with other E&P companies namely, OGDCL, Attock Oil Company Limited, PPL, MOL and Ocean Pakistan Limited.

17. During fiscal year 18, POL's revenues increased by 19.74 percent (year-on-year) and the earnings grew by 17.6 percent. Increase in revenue has been factored because of 7.83 percent higher crude oil production and 27.7 percent higher crude oil price, 12.33 percent higher gas production and 6.36 percent increase in LPG produced.[44] Figure 10 below gives a time series production data of crude oil, gas, and LPG produced by POL. The data on LPG production by the company shows a rising trend since 2014, however where

[41] Data shared by PPL
[42] http://www.pakoil.com.pk/companyinfo.html
[43] https://fp.brecorder.com/2019/01/20190122441379/
[44] ibid

production increased sharply during 2014-2016 period, since 2016 LPG production continues to increase but at a lower percentage rise.

Figure 10: Annual Production of Gas, LPG and Crude Oil



Source: https://fp.brecorder.com/2019/01/20190122441379/

18. MOL Pakistan is a fully owned subsidiary of MOL Group, operating in Pakistan since 1999. MOL Group is an integrated oil and gas group in Central and Eastern Europe. MOL Group has operations across three continents in more than 40 countries. MOL Pakistan is registered in Netherland, and is engaged in oil and gas E&P activities.[45] The company is operating in the E&P sector of Pakistan in an independent capacity as well as in JV's. The company has so far made 9 discoveries in the operated block of TAL, including Manzalai, Makori, Mamikhel, Maramzai, Makori East, Tolani, Mardankhel-1, Makori Deep-1, Tolani West, and 3 discoveries in the non-operated blocks namely Halini, Kalabagh and Halini Deep.[46]

19. MOL Pakistan was awarded petroleum exploration license in 1999 along with OGDCL, PPL and Government Holding Private Limited (GHPL). In 2001 the consortium was

[45] https://fp.brecorder.com/2009/11/20091112985827/
[46] https://molpakistan.pk/operations-activities/mol-pakistan-s-operations-in-pakistan

joined by POL. The TAL joint venture has made oil and gas discoveries namely Makori deep and Tolani West. TAL block contributes 511 MT/day of LPG.[47]

20. OPI is an oil and gas E&P company, registered under the laws of the Cayman Islands with limited liability. Prior to 31st March, 1995 OPI was a wholly owned subsidiary of Occidental International Exploration and Production Company (OIEPC). OIEPC sold its entire capital stock in OPI to the Hashoo Group of companies. To OPI's credit is the largest oil discovery in Pakistan at Dhurnal. The company holds 3 operating and 2 non-operating development and production leases, 3 exploration licenses, and also has JV participation in various E&P blocks in Pakistan.[48]

21. OPI has made JV agreements with other oil and gas E&P companies both national and international. These include OGDCL, Attock Oil Company Limited (AOC), POL, OMV Maurice Energy Limited, GHPL and Zaver Petroleum Corporation (Pvt.) Limited. OPI is the operator of Dhurnal oilfield (Punjab) with 70 percent, OGDCL 20, POL 5 and AOC 5 percent share. Dhurnal field has produced 393.28 million metric tons (M.MT) of LPG. At Ratana field (Punjab), OPI is the operator with 65.91 percent share and has produced 48.13 M.MT of LPG as of March 31, 2017.[49]

22. UEPL a subsidiary of United Energy Group (UEP) which is listed on the Hong Kong Stock Exchange[50], is the largest oil and gas E&P Company operating in Pakistan. The company's onshore concessions span across 19 districts in Sindh and Baluchistan. UEPL's Naimat LPG project (Sindh) started off in 2016 and aimed at upgrading the existing LPG production from 60 mmscfd to 100 mmscfd.[51]

b. Oil Refineries

23. LPG is also produced by oil refineries during the process of crude oil refining. There are 5 refineries which produce LPG in Pakistan. These are:

    a. Pak Arab Refinery Limited (PARCO)
    b. Pakistan Refinery Limited (PRL)
    c. National Refinery Limited (NRL)
    d. Attock Refinery Limited (ARL)

[47] ibid
[48] Orient Petroleum Inc., company profile and activities, available at: http://www.opl.com.pk/index.php
[49] ibid
[50] UEG company's headquarter is located in Hong Kong and has its subsidiaries in China, Pakistan, Dubai, Iraq and Egypt. The company acquired oil major BP's upstream assets in Pakistan in 2011, acquired 50 percent in Kotri North Block in 2017, in 2018 acquired the upstream assets of Asia Resource Oil Limited (AROL) in Pakistan. During 2018 also acquired Austrian company OMV's upstream assets.
[51] United Energy Group (UEP), available at: http://www.uegl.com.hk/en/develop

e. Byco Petroleum Pakistan Limited (BPPL)

24. Pak Arab Refinery Limited (PARCO) was incorporated as a public limited company in 1974, a joint venture between Government of Pakistan (GOP) and the Emirate of Abu Dhabi. GOP has 60 percent share and 40 percent is the shareholding of Emirate of Abu Dhabi. PARCO is a fully integrated energy company and is one of the largest companies in Pakistan's corporate sector. Its businesses include refining, transportation and marketing of petroleum products. PARCO's refinery represents 25 percent of Pakistan's refining capacity. It has a 2000 km of pipeline network for the transportation of fuel products from Karachi to Machhike near Lahore.[52]

25. PARCO's Mid Country Refinery (MCR) located at Mahmoodkot near Multan was commissioned in year 2000. The refinery produces LPG, along with other petroleum products. The products get delivered to the customers through gantry operations as well as through the pipeline infrastructure of PARCO. PARCO's pipeline infrastructure includes that of its subsidiaries and also joint ventures, these include Pak Arab Pipeline Company Limited (PAPCO), TOTAL PARCO (TPPL).[53]

26. Pakistan Refinery limited (PRL) was incorporated as a public limited company in 1960. Located in Karachi, it is designed to refine local and imported crude oil. The initial capacity of the refinery was 1 million tons of crude oil per annum which was later enhanced to 2.1 million tons per annum. 70 percent of PRL's shareholding is with Shell Pakistan, PSO and Hascol and 20 percent is held by general public including local and foreign shareholders.[54] PRL has been the prime manufacturer and supplier of refined fuels to the domestic consumers and the armed forces.[55]

27. PRL has a capacity of processing 50,000 barrels of crude oil/day. During 2015-16, PRL produced 14,202 million tons of LPG. The Korangi section of the PRL receives crude oil from Kemari, which is then processed, blended and converted to finished products. These finished products are then supplied to oil marketing companies.[56]

28. National Refinery Limited (NRL) is engaged in the production and sale of a range of petroleum products. NRL was incorporated in 1963 as a public limited company. GOP took over the management of NRL in 1972 under the Economic Reform Order. The GOP decided to privatize NRL under the privatization programme in 2003. In 2005, after

[52] Pak Arab Refinery Limited (PARCO), available at: https://www.parco.com.pk/our-business/transportation/pipeline-network/
[53] ibid
[54] Business Recorder, available at: https://fp.brecorder.com/2019/03/20190307452240/
[55] Pakistan Refinery Limited (PRL), company profile, available at: http://www.prl.com.pk/about-us/
[56] ibid

competitive bidding the company was privatized by selling 51 percent equity and transfer of management to Attock Group.[57]

29. NRL comprises of three refineries under its umbrella, consisting of two lube (lube base oils) refineries and one fuel (crude processing) refinery. NRL has enhanced the original capacity of these refineries over the years. The fuel products produced by NRL include motor gasoline, kerosene oil, LPG, jet fuel, furnace oil, high speed diesel (HSD) and Sulphur. After refining the petroleum products are pumped from NRL storage tanks to oil marketing companies (OMC) terminals or to Karachi airport through pipelines.[58]

30. Attock Refinery Limited (ARL) was incorporated as a private limited company in 1978 and took over the refining of crude oil and the supply of refined petroleum products from Attock Oil Company Limited (AOC). In 1979, ARL was converted into public limited company with shares traded on PSX. A pioneer in crude oil refining with its operations dating back to 1922. To remain competitive, ARL has been upgrading its refinery processes and operations.[59] ARL has been producing a range of petroleum products, which include LPG, HSD, Kerosene Oil, and jet fuel among others.

31. Byco Petroleum Pakistan Limited (BPPL) was formed in 1995 a public limited company by the Byco Group. The company installed its first oil refinery with a 30,000 barrels/day capacity located at Mouza Kund, Hub Balochistan. In 2008 a second refinery with a capacity of 120,000 barrels/day refinery was established and commissioned near the initial refinery, bringing the total installed capacity to 155,000 barrels/day. The company has the highest installed refining capacity in Pakistan.[60]

32. BPPL has storage tanks facilities at Kemari and Byco refineries complex with a total capacity of 140,000 million tons (MT). At Kemari the company has terminal facility for import and export of petroleum products (mainly jet fuel) as well. Additionally the company has a tank farm for storing crude oil at Mouza Kund of 130,000 MT capacity.[61]

c. LPG Import

33. The total LPG produced through the indigenous sources (including both fields and refineries) is 2500 Tonnes/day, which is sufficient to meet the LPG demand in summer season. However in winters as the LPG demand rises to 3500 Tonnes/day, this 1000

[57] National Refinery Limited (NRL), available at: http://www.nrlpak.com/introduction.aspx
[58] ibid
[59] Attock Refinery Limited (ARL), available at: http://www.arl.com.pk/profile.php
[60] Byco Petroleum Pakistan Limited, available at: http://www.byco.com.pk/index.php?option=com_content&view=article&id=184&Itemid=68
[61] ibid

Tonnes/day of additional demand is met by the LPG imports. Therefore in order to meet the domestic LPG demand, the LPG is also imported. There are two channels of the LPG import, a) through sea, and b) through land route. The E&P companies are not mandated to import LPG, however the refineries can import LPG. The total number of LPG importers is 33[62] and there are two import terminals Engro Vopak Terminal Limited (EVTL) and Sui Southern Gas Company LPG (SSGC LPG) Terminal. The total storage capacity of LPG import at Port Qasim, at the terminal is 11250 MT which includes 4500 MT handling capacity of EVTL and 6750 MT by SSGC LPG Terminal (SLL).[63] The SLL primarily uses the storage facility for imports however it also uses a portion of the storage for LPG base stock in order to cater any emergency need of consumers of Pakistan.

34. The import terminals operate through 'Standing Operating Procedure' that is also published on its website and communicated to all importers. SLL allows ships on first come first serve basis and subject to the receipt of advance payment from importer, the terminal operator and the importer sign a 'Terminal Service Agreement'. The LPG carriers (ships) dock at the terminal jetty for transfer of LPG to the storage tanks. The importers are given some free days to enable them offload and sale their product in reasonable time as per agreed terms, which are mutually agreed. SLL and EVTL are operating at 48% and 52% respectively, which is sufficient to handle the current LPG import demand of the country via sea imports. However both terminals can handle double volumes than existing volumes.[64]

35. Two public sector oil and gas companies Pakistan State Oil (PSO) and SSGC also import LPG. Furthermore Public Procurement Regulatory Authority (PPRA), Public Procurement Rules apply on these companies and competitive bidding is followed. In addition to LPG import via the sea channel, LPG is also imported through the land route from Iran through the border areas in Balochistan Province. It is pertinent to mention here that while greater volume of LPG is imported through the sea channel however since sanctions of Iran by various international agencies, the LPG import from Iran has increased considerably. Roughly 1/3rd of the LPG import is made through the land route.

[62] Data provided by MOE(PD)
[63] ibid
[64] Information provided by SSGC LPG

36. Given below is the LPG import data and the list of companies that imported LPG during the month of July, 2019.

Table 5: LPG Import, July 2019 (M.Tons)

Company	LPG Imports (M.tons)
M/s Pyramid Gas (Pvt) Ltd.	10235.51
M/s Ayan Energy Ltd.	7874.24
M/s Cress LPG (Pvt.) Ltd	1293.12
M/s Sangla Petro Gas Pvt. Ltd.	934.34
M/s Hazara Efficient Gas	918.9
M/s Petroleum Gas Pvt. Limited	191.28
M/s Baba Faried Gas (Pvt) Ltd.	145.28
M/s Ravi Gas (Pvt) Ltd.	122.73
M/s Chiltan Gas (Pvt.) Limited	30
Total	21,745.4

Source: OGRA

37. Given below in Table 6, is the break down of the LPG supply through all three sources i.e refineries, fields and imports. Where the data shows LPG supply by all 5 refineries from year 2012-13 to 2017-18, the LPG supply from E&P companies is depicted through the fields[65]. Also only prominent fields producing LPG, data is presented in table 6. Similarly the LPG extracted through the extraction plant of JJVL is also presented. The data shows that in refineries, PARCO has the largest share in LPG production and in E&P companies OGDCL is the largest producer of LPG in Pakistan.

[65] The E&P companies extract and produce LPG through the fields, where on a single field 3-4 E&P companies have the rights, and with 1 company as the main operator.

Table 6: LPG Supply Sources, 2012-13- 2017-18 (Unit: Tonnes, TOE)

Source	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	ACGR
Pak-Arab Refinery	145,027	147,661	139,064	136,064	135,169	142,277	-0.4%
Pakistan Refinery	34,137	37,110	21,034	14,766	17,413	19,802	-10.3%
Byco Refinery	10,701	8,129	19,196	14,763	14,439	40,804	30.7%
National Refinery	7,848	7,416	8,449	6,781	9,320	7,941	0.2%
Attock Refinery	7,549	5,647	2,999	2,039	1,992	1,970	-23.6%
Refineries Sub-Total	205,262	205,963	191,664	174,413	178,333	212,794	0.7%
JJVL	75,430	101,964	10,429	134,939	103,260	67,852	-2.1%
Adhi	41,694	50,739	51,345	58,385	76,933	94,388	17.8%
Kunnar/Pasaki Deep	19,217				14,882	39,018	15.2%
Nashpa						21,552	
Meyal	4,038	4,458	4,595	4,460	3,874	4,311	1.3%
Naimat Basal	3,690	2,720	1,678	766	440	320	-38.7%
Field Plants Sub-Total	218,031	264,629	276,891	467,077	488,874	570,826	21.2%
Imports Sub-Total	68,408	71,093	145,634	372,850	461,426	402,685	42.6%
Total	**491,702** ***531,972***	**541,685** ***586.049***	**614,189** ***664,491***	**1,014,340** ***1,097,415***	**1,128,633** ***1,221,068***	**1,186,305** ***1,283,463***	**19.3%**
Annual Growth Rate	5.43%	10.17%	13.38%	65.15%	11.27%	5.11%	

Source: Pakistan Energy Yearbook, 2018, HDIP

38. Additionally Table 7 displays the LPG production data for the year 2017-18. This includes LPG production by both the E&P companies, JJVL extraction plant and refineries. It is evident from the data that E&P companies are the major LPG producing companies in Pakistan. The share of OGDCL, MOL and PPL is the highest in E&P companies LPG production. In refineries PARCO and Byco are the major LPG producers. Additionally the LPG import data suggest that its share has also grown in the last few years and during 2017-18 the LPG import is 34% of the total LPG supply in Pakistan. furthermore the total storage capacity of LPG production facilities is 13127 M (Metric) tons whereas of storage and filling plants is 39558 Mtons.[66]

Table 7: LPG Production/Supply 2017-18

Sectors	Annual (Tonnes)	Daily (Tonnes)
Refineries		
Pak Arab Refinery	143,642	394
Byco Petroleum	40,423	111
Pakistan Refinery	19,803	54
National Refinery	6,758	19
Attock Refinery	1,976	5
Refineries Sub-Total	**212,602**	**582**
Fields		
OGDCL	192,385	527
MOL Pakistan	175,229	480
PPL	107,363	294
JJVL(On behalf of SSGCL)	67,852	186
POL (Mayal-Pindhori)	16,849	46
UEPL (Naimat Basal)	6,642	18
OPI (Ratna, Ex-Meyal)	3,216	9
Fields Sub-Total	**569,536**	**1,560**
Total Production	**782,139**	**2,143**
LPG Import	402,685	1,103
Total Supply (Production + Import)	**1,184,823**	**3,246**

Source: State of Petroleum Industry Report, 2017-18, OGRA

[66] Information provided by OGRA

3.1.3 LPG Marketing Companies (Mid-Stream)

39. After the LPG is produced by E&P companies, refineries, extracted by JJVL extraction plant and imported by the LPG importers (including LPG marketing companies/refineries), the LPG is stored at storage facilities of E&P companies, refineries and/or the two import terminals (EVTL and SSGC LPG). The LPG produced by the fields or refineries can be stored for 6-7 days and during this time the custody of LPG is handed over to the LPG marketing companies, in fact the custody transfer is at field gate.

40. There is different disposal mechanism adopted by E&P companies/refineries/importers of LPG. There is a Sale Purchase Agreement (SPA) signed between the LPG producer and the LPG marketing company. The agreement duration is 05 years which has provision of extension on mutually agreed terms. The most common disposal mechanism adopted by indigenous LPG producers are:
    a. Signature bonus bidding
    b. Fixed premium, and
    c. Profit sharing.[67]
41. In Signature Bonus Bidding for allotment of the LPG lot, the highest bidder (quoted) price for LPG is used as the LPG lot price. All bidders then have to match this price quoted by the highest bidder to purchase the lot. Signature bonus is a one time payment method adopted by the LPG producers to sell LPG to marketing companies. It is taken in advance at the time of contract between the LPG producer and the LPG marketing company for the next 5 year contract/SPA. In Pakistan Signature Bonus Bidding was adopted by the LPG producers in the past, however since the enactment of LPG Policy 2016, this method was declared unlawful by the sector regulator, OGRA[68].

42. All the LPG disposal methods listed in para 39 are long term contracts, finalized through competitive bidding process among licensed LPG marketing companies. However all three LPG disposal methods have been challenged in Pakistan since the enactment of LPG Policy, 2016 as the LPG price is regulated under this policy. The LPG producers now have to sell the LPG to the marketing companies at the producer price, notified by OGRA monthly as this price covers the producers cost and profit margin. The LPG producers thus now have to sell LPG of equal quantity to all LPG marketing companies who participate in the bidding process. Furthermore since the promulgation of LPG Policy 2016, whereby the LPG price is regulated and notified by OGRA, the indigenous LPG producers restrict the price to OGRA approved producer price.

43. In addition to the above there is also spot price method adopted by E&P companies, where once the LPG buyer is finalized through a competitive mechanism, delivery

[67] Information shared by PPL
[68] https://www.ogra.org.pk/download/3636

schedule is issued and LPG is provided to the successful bidder through bowzer or line pipe, provided the LPG price is deregulated and there is no price cap.

44. The LPG marketing companies have a transportation fleet which lifts LPG from site and transports to the marketing companies bottling plants or takes them directly to the industrial consumers. However it must be mentioned here that not all marketing companies have LPG transportation fleet. In this case the LPG marketing companies hire the services of the LPG transporters. the import based companies have large number of fleet at max 50-150 bowzers, on average every company has 10 bowzers in its fleet.[69]

45. The LPG marketing companies have bottling plants of various capacity which receive the LPG through LPG tankers. At the bottling plants the LPG is filled into the marketing company's brand name cylinders which are of various sizes depending upon the consumers such as commercial, domestic or bulk. Through the network of distributors this LPG is then transported in cylinders to various parts of the country, depending upon LPG demand. End consumers then buy the LPG from these distributors in the market.

46. In Pakistan there are 185 LPG marketing companies, which further have a network of distributors at multiple locations around the country, and the number of LPG storage and filling plants is 223. Out of the total 185[70] LPG licensed marketing companies, some are tier 1 companies based on their corporate structure and have a major share in the LPG sector midstream such as PARCO Pearl Gas, SuperGas, Life Gas and Uni Gas, Fongas a project of Fauji Foundation, CAPGAS and POL Gas of POL, JJVL's Lub Gas and Mehran Gas, SSGC LPG[71], PSO's Pak Gas (distributors and industrial consumers) and Smart Gas (auto gas stations).

47. The LPG marketing companies have the following contracts in different categories
    a. LPG supply agreements with producers
    b. LPG filling agreements with dealers
    c. MOUs (Memorandum of Understanding) with industrial clients for bulk supplies[72]

48. It is pertinent to mention here that since there is a large number of companies who have LPG marketing license given by OGRA, therefore the market structure is apparently competitive. Additionally none of the LPG marketing companies has a market share greater than 10%. Around 25-30 % of the market share is of the large players (tier 1

[69] Information provided by SSGC LPG
[70] Information provided by OGRA
[71] SSGC LPG is a 100% subsidiary of SSGCL and has a valid LPG marketing license and is operating country wide. It has three company operated LPG storage and filling plants located at Port Qasim, Hattar and Muridkay, Punjab.
[72] ibid

companies)[73] whose share is also not more than 10%, remaining 70% of the market is shared by small players having 1-2% market share.[74]

3.1.4 LPD Distributors/ Dealers & Retailers

49. Currently in Pakistan there are 5,512 registered LPG distributors operating in all provinces. The distributor of a marketing company can only keep the cylinders of the particular LPG marketing company at one place. However a particular distributor may have LPG distribution license of more than one marketing company. The distributors stock 200-300 cylinders to meet the demand and then take these empty cylinders to the bottling plants for refilling before the disposal in their designated areas.

50. In addition to where LPG cylinders reach the end consumer directly through the distributors, there are also LPG retailers operating across the country. These retailers buy the LPG from the distributors, and further sell them to the end consumers which are domestic households or small consumers.

51. The table below shows the list of the prominent and major LPG marketing companies, and the number of their authorized distributors across Pakistan.

Table 8: Major LPG Marketing Companies and their distributorship across Pakistan

[73] PARCO Pearl Gas has a market share of 7% (largest share)
[74] Meeting with PSO

	List of Marketing Companies	List of Authorized Distributors	Presence
1	Sam Gas (International Chain)	162	Punjab & AJK
2	PSO	143	Punjab, Sindh, KP & GB
3	Sun gas	128	Punjab, KP, & AJK
4	Foundation gas-Fongas (Fauji Foundation)	429	All Pakistan
5	Wak limited (Wak Group)	454	Punjab, KP, AJK, & FATA/GB
6	POL- POLGAS	377	All Pakistan except FATA
7	Lub gas (AG group)	434	All Pakistan
8	Mehran gas(AG group)	162	All Pakistan
9	SHV (PARCO) Pearl Gas	141	All Pakistan except Sindh
10	Chevron (PARCO) Pearl Gas	425	All Pakistan
11	Burshane	226	All Pakistan
12	OPI	194	All Pakistan except Sindh
12	Pyramid gas	180	Punjab & GB
14	SSGC LPG	175	All Pakistan
15	Al qasim Gas	367	Punjab & KP
16	Ayan energy ltd	159	Punjab, KP, & GB

Source: OGRA

52. In 1972 Government of Pakistan granted marketing and Distribution License to Fauji Foundation for marketing and distribution of LPG in the country to promote LPG as an alternate fuel to firewood and kerosene oil. In 1973 Foundation Gas was established as an LPG Marketing and Distribution Company with the brand name "Fongas". WAK GAS was transformed into a public limited company in May 1995. A flagship of WAK Group, WAK GAS is engaged in buying, filling, marketing and distribution of LPG. Pakistan Oilfields Limited (POL) markets LPG under its own brand name of POLGAS. JJVL a concern of AG also markets LPG under its brand names Lub Gas and Mehran Gas.

3.1.4 LPG Demand –Consumers (Down-stream)

53. On the demand side LPG consumers can be segregated on the basis of their LPG usage and demand. The total LPG demand is the cumulative demand in the economy including households/domestic, commercial and industrial consumers. The total demand of LPG in the country is between 3000- 3500 MT/day out of which 2,430 MT/day is met from indigenous sources and 690 MT/day from imports.

54. The domestic households use various LPG volume cylinders for heating and cooking purposes. These include 6 kg outdoor cylinder for affordable use, 11.8 kg cylinder (20 days to empty) which is the standard size for domestic use. Some marketing companies' distributors also offer home delivery facility to domestic consumers in certain areas.

55. The commercial entities such as restaurants, eateries use 45.4 kg PG cylinders. These are also suitable for households that have high LPG consumption. Additionally there are 200 kg cylinder which are designed for high off-take requirements such as that of large scale restaurants, small and medium enterprises.

56. For industrial consumers of LPG, Bulk tanks (which also include 200 kg tanks) are installed where by the LPG marketing companies provide the LPG bowzer directly to the industrial consumer. LPG tankers ensure the supply of LPG to the industrial consumers. The gas marketing companies (GMC's) may have direct contracts for the supply of LPG to the industrial/commercial consumers, where the LPG bulk cylinders are installed at the site and LPG bowzer fills the tanks on location.

57. In addition to the above three categories of consumers, LPG Air mix plants also are running on LPG. These air mix plants are a substitute to natural gas and where the natural gas infrastructure is not available, and cannot be transmitted and distributed. LPG is distributed through pipeline network to households. Currently the LPG-Air Mix Plants are operational in towns of Balochistan and Sindh, which include Gwadar (1 mmcfd capacity), Noshki and Surab (2 mmcfd capacity) and in Kot Ghulam Muhammad (2 mmcfd capacity) in Sindh. In addition to the above the LPG –Air Mix Plant of 1 mmcfd in Awaran is nearing completion. Furthermore, in 2016 the Economic Coordination Committee (ECC) approved the summary for the installation of additional 30 LPG Air Mix Plants in the far flung areas of Balochistan and Sindh.

58. LPG Auto gas, where LPG is used in vehicles as fuel, is also part of the total LPG demand in Pakistan. Although the use of LPG in public transport has been banned by government of Pakistan (GOP) due to safety concerns, however it is becoming very popular in the last few years due to being a cheaper substitute of petrol and diesel. Multiple LPG Auto gas stations are operational across the country where LPG is filled in vehicles and sold in kilo grams (kg).

59. Additionally, under Section 3.6.9 and 3,6,10 of the LPG (Production & Distribution) Policy, the indigenous LPG produced is to be supplied primarily to the domestic and the commercial sector. Other sectors such as automobile and industry are only allowed to use imported LPG. Where the indigenous LPG is not fully utilized by the domestic and commercial sector, the federal government can allow its use in other sectors.

3.2 LPG Pricing

60. Prior to the promulgation of the LPG (Production and Distribution) Policy, 2016, LPG producer and consumer prices were deregulated and the LPG price was determined by the market forces. Under the LPG Policy, 2016 it was decided to regulate LPG prices, a shift from deregulation to regulation. Since LPG is described as a poor man's fuel, it was priced much higher than natural gas and therefore the Ministry of Energy (petroleum Division) intervened to put in place a framework to regulate the LPG prices both at the producer and the consumer level, with the main objective to make LPG more accessible by domestic consumers at an affordable price and to avoid frequent price fluctuations.

61. On the directives of the Federal Government, and LPG policy, 2016, OGRA notifies the LPG price on monthly basis. The price is calculated and notified on the formula given by the Federal government. It is also pertinent to mention that the notified price of LPG is for indigenous LPG produced by E&P companies, extraction plant and refineries. The imported LPG price is not notified by OGRA since the imported LPG sector is deregulated.

62. Given below is the OGRA notified indigenous LPG maximum producer price, margins of the marketing and distribution companies and domestic consumer price of 11.8 kg domestic cylinder. Furthermore the given below price is the maximum price at all levels of the supply chain, the producers, marketing companies, and distributors may sell below the maximum price determined from time to time.

Table 9: LPG Price Notification for the Month of October, 2019

	Description	Rs/MT	Rs./11.8 kg Cylinder
A	Producer Price (including excise duty of Rs.85/M.Ton) Excluding Petroleum Levy) Propane 40% and Butane 60%	67,214.83	793.13
B	Marketing/Distribution Margin	35,000.00	413.00
C	Petroleum Levy	4,669	55.09
D	Consumer Price (Ex-GST) (A+B+C)	106,883.83	1261.22
E	17% GST of (D) (As per Actual)	18,170.25	214.41
	Final LPG Consumer price (D+E)	125,054.08	1,475.63

Source: OGRA

63. The Government of Saudi Arabia's state run 'Saudi Aramco'[75] contract price (CP Aramco) provides a benchmark price against which Middle East sales of LPG to Asia are priced. Aramco sets the price of propane and butane (LPG is a composition of the two) individually in U.S Dollars on a monthly basis. In Pakistan CP Aramco price is used to set the monthly price of LPG both at the whole sale and retail level for indigenous LPG produced.

64. Box 1, gives a detailed explanation of CP Aramco, its origin, basis and its use as a pricing benchmark in Asian LPG markets and contracts.

[75] Saudi Aramco is the national oil and gas company of Saudi Arabia. The company was initially formed in 1933 to facilitate oil exploration concessions with Standard Oil Company of California (Chevron now). Chevron duly discovered large volumes of oil and began to expand production. A wider venture was later formed by bringing in Esso, Mobil and Texaco, and in 1944, the company took the name Arabian American Oil Company (Aramco). In 1973 the Americans sold 20% of Aramco to the Saudi Government due to pressure mounting from the Saudi Government to nationalize the company. Further ownership was sold in the 1980s and by 1988, Saudi Aramco was fully owned by the Saudi Government.

Box 1: LPG Pricing Benchmark- Saudi Aramco Contract Price

The LPG production in Saudi Arabia is twice in size compared to their domestic demand. The excess supply is therefore exported, resultantly Saudi Arabia is the largest net exporter of LPG in the world. Saudi Arabia produces less than 10% of world LPG and 22% of combined Middle East and Asian production. It is the world's largest exporter of LPG. The combined LPG exports of Saudi Arabia, Kuwait, Iran, U.A.E and Qatar represent more than 40% of the total LPG world exports, and a greater share it has in the Asian LPG market. All sellers reflect the influence of the Saudi CP in their pricing.

Aramco shipped its first cargo of LPG to Japan in 1961. Initially Aramco priced LPG exports on a direct thermal parity link to crude oil, and the practice prevailed till 1990. The Middle Eastern LPG exporters also followed the same practice. Saudi Aramco then became aware of LPG price seasonality, and became aware of the profit margins on the product being accrued by traders/wholesalers. Saudi Aramco could see further demand for their product emerging from China by 1994, who wanted to purchase LPG on spot prices. The difference between the Saudi Aramco adjusted crude oil thermal parity formula and Far Eastern spot prices moved Saudi Aramco to establish a monthly spot market driven contract price for propane and butane.

The monthly Saudi Aramco contract price (CP) for propane and butane is the dominant price for LPG. The methodology adopted to determine the monthly price is not published, nor is it apparent. Nonetheless about 80% of Asian LPG is priced relative to, or influenced by prices set by Saudi Arabia. The Saudi Aramco engage in direct discussions with customers through their marketing offices in Singapore, Tokyo, Beijing, Houston, and London. Further, Aramco regularly briefs its term customers of LPG on the factors which are considered to set the monthly Saudi CP. In addition to the direct discussion about the market demand, Aramco also takes into consideration the market assessments made by Argus and, to a lesser extent, Platts.

Argus and *Platts* are the two LPG pricing quotation platforms/services where LPG price is quoted on a daily basis. Out of the two, Argus is more prominent w.r.to LPG pricing in Asia. Argus makes an assessment each business day for the market price of propane and butane that is delivered into Japan and Southern China. The price from each location is averaged to produce the *Cost and Freight, Far East Index* (CFR FEI) assessment. Around 15-20% of the LPG pricing is Asia is based on Argus CFR FEI. With appropriate lagging applied, the Argus CFR FEI and CP Aramco show close relationship.

The CP price set by Aramco each month is the dominant price for LPG buying and selling in Asia and internationally. The price is quoted *'Free on Board'* FOB Ras Tanura, where Ras Tanura is the prominent LPG loading port in Saudi Arabia.

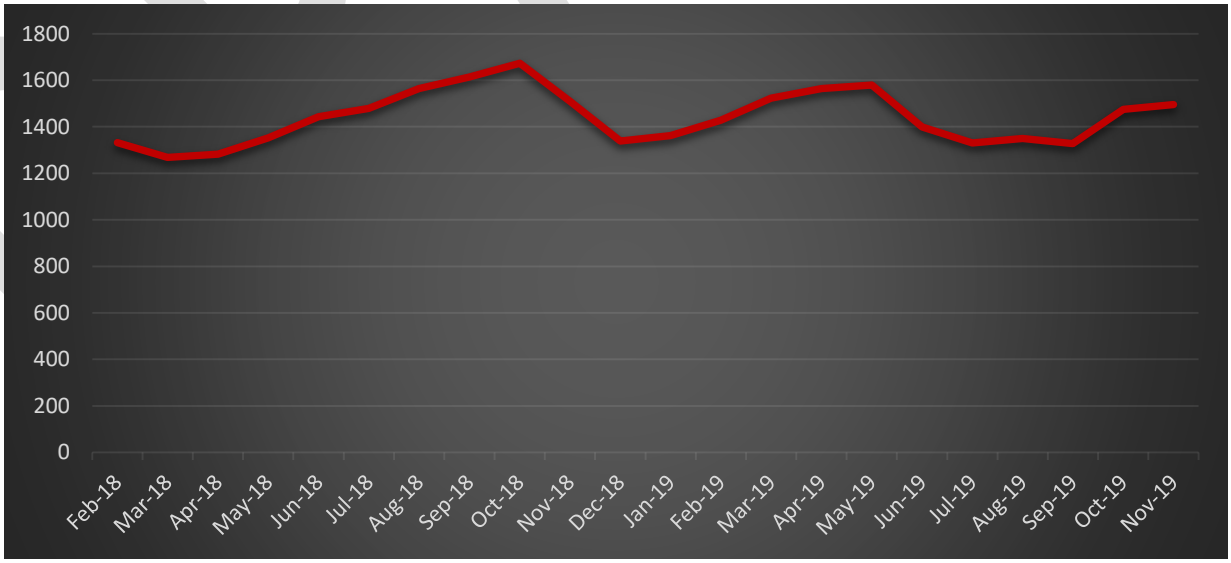
Source: *Review of the appropriateness of the current LPG international benchmark in setting of domestic prices*, The Allen Consulting Group.

65. In case of LPG imports in Asia, the term buyers are generally large and backward vertically integrated.[76] This allows them to price LPG at the wholesale and retail customers, at a margin above the CP Aramco plus freight plus incidental costs. The initial buyer/importer consequently bears little market, basis or cost risk.

66. OGRA notifies the monthly LPG price (Reference Table 8 above), where on the basis of Saudi Aramco CP monthly price it establishes the maximum producer price (both fields and refineries).[77] To this, a fixed amount of marketing/distribution margin is added which is Rs. 35,000. Petroleum Levy/regulatory duty of (fixed) amount Rs. 4,669 is applied, and finally the general sales tax (GST) of 17% is added to reach the end consumer price.

67. Figure 11 and 12 below give a comparison of LPG price variation in the regulated regime vs the deregulated regime. The price in both graphs is measured along the y-axis, it is the price in Rs/11.8 kg cylinder. Where under the regulated regime there is one price line, under the deregulated regime, since there was no price cap therefore each of the LPG marketing company established its own price, factoring in the cost of LPG and profit margins. Further the role of OGRA was to ensure that indigenous LPG price did not rise higher than Saudi Aramco CP. For analysis purposes LPG marketing companies sample was taken on the basis of their market share, availability across provinces and major cities.

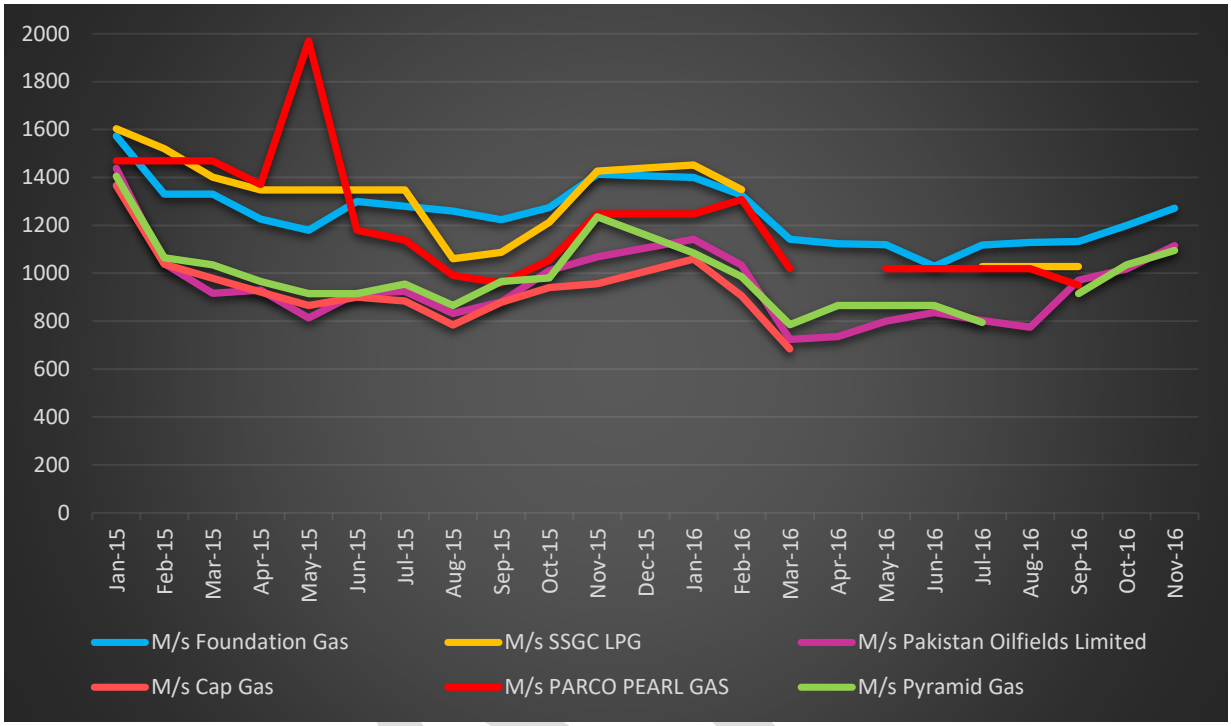
Figure 11: Regulated LPG Price Trend (Feb'18- Nov'19)



Source: OGRA

[76] Import, storage, delivery to end consumers
[77] Current exchange rate is applied to calculate the producer price

Figure 12: Deregulated LPG Price Trend (Jan'15- Nov'16)



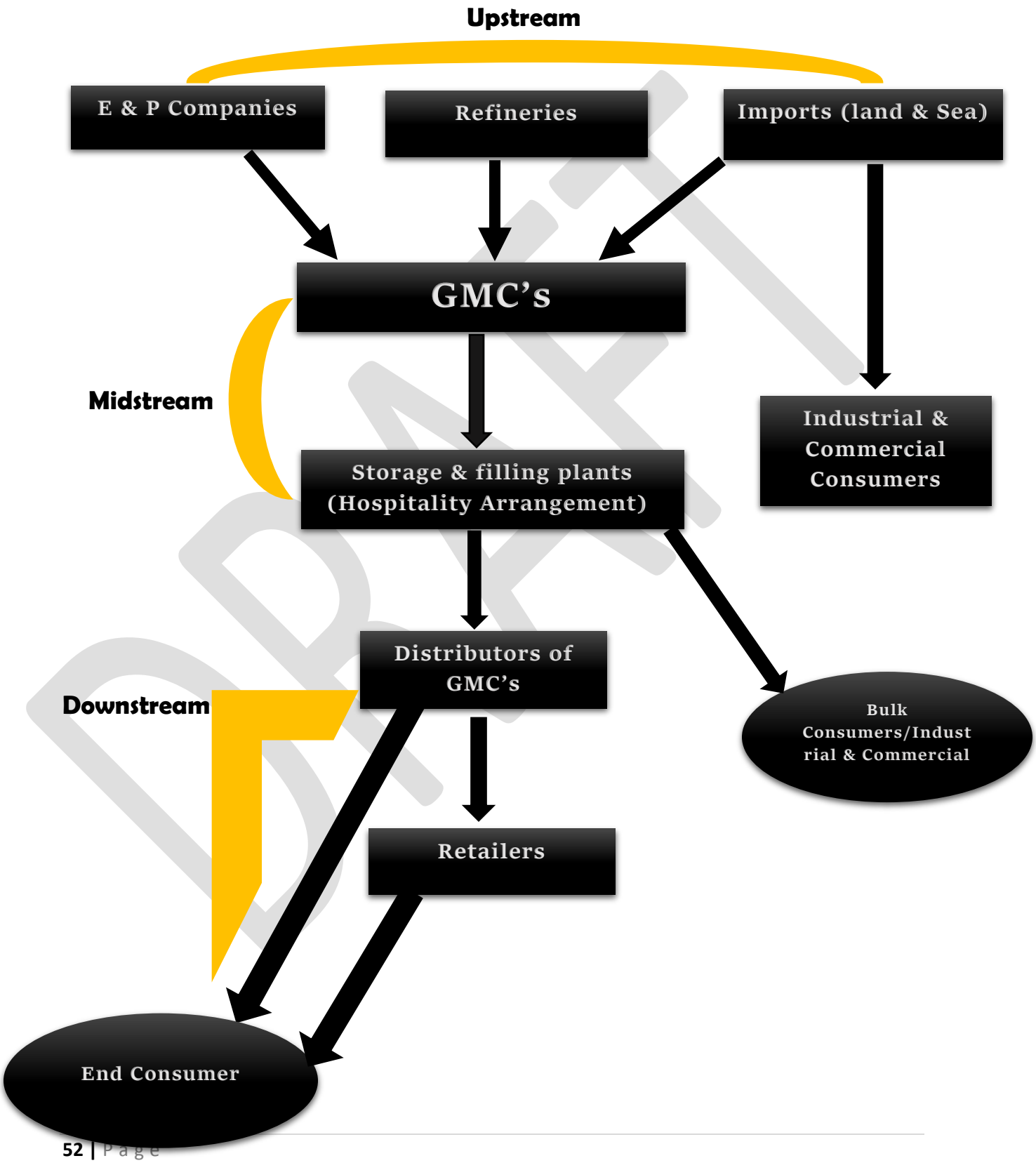
Source: OGRA

68. In Figure 12 above, a sample of 6 LPG marketing companies' price from January 2015 to November 2016 is taken for analysis. Out of these Pyramid Gas and PARCO PEARL GAS sold both imported and local LPG while the other players sold locally produced LPG. Further comparison between LPG price under deregulated regime vs the regulated regime shows that the price Rs/11.8 kg cylinder on average remained between the range of Rs.1200 - Rs.1400 under the deregulated regime between January 2015- November 2016. The LPG price under the regulated regime has remained between Rs. 1400- Rs. 1600 on average during February 2018 - November 2019.

69. The LPG import price is not regulated by OGRA, thus the import of LPG falls under de-regulated purview. Further the importer, having valid OGRA license can arrange LPG from any source. The Federal government in order to ensure supply of LPG to consumers has reduced the GST on imported LPG from 17% to 10%. Further the Petroleum Levy/regulatory duty of Rs. 4,669 is exempted on LPG import.

70. Given below is the LPG Sector value chain, from production and extraction upstream to handling by the marketing companies to the distributors' network and finally the end consumers.

LPG Sector Value Chain



Chapter 4

Regulatory Framework of LPG Sector in Pakistan

4.1 Ministry of Energy (Petroleum Division)- MOE (PD)

1. In Pakistan the LPG sector is governed under the policy directives and guidance/guidelines of Ministry of Energy (Petroleum Division). Within MOE(PD), Directorate General Liquefied Gases (DGLGs) is responsible for developing policies for LPG sector, forecasting future requirement of the sector. Additionally to assess the impact of existing policies, rules and regulations on the sector growth, development and impact on consumers.

2. Prior to the LPG (Production and Distribution) Policy 2016 (notified in July, 2017)[78] the LPG sector was deregulated, where the domestic LPG price was determined by market forces of demand and supply. The local LPG price was deregulated with a condition that the local price of the LPG marketing companies did not exceed Saudi Aramco Contract Price (Saudi CP). Further OGRA was to intervene in case there was unjustified increase in LPG price. The indigenous LPG price was determined by the local LPG producer depending on their cost and estimated profits. As a result different LPG prices were quoted by various producers. The marketing companies further added their own margins apart from the taxes, likewise the distributors before the product reached the end consumers.

3. Most local producers (refineries) are vertically integrated and own marketing companies either at the company or group level[79]. This consequently resulted in an opportunity to enhance margins/profitability. Thus due to multiple issues in the LPG sector such as demand/supply imbalance, cartelization[80], litigations and price distortions, the Petroleum Division concluded that the price deregulation policy had failed to achieve its intended objectives of the availability of the product at affordable price.[81]

4. To address higher LPG prices and to benefit the domestic/commercial consumers, Petroleum Division submitted a summary for the Council of Common Interests (CCI) on 25th August, 2015 to Inter Provincial Coordination Division. It was proposed in the said summary to deregulate the LPG prices. The CCI in February, 2016 approved the LPG (Production and Distribution) Policy, 2016.

[78] Previous LPG Policies include, LPG (Production and Distribution) Policy 2006, 2011 and 2013.
[79] PARCO's Pear Gas, SSGC's SSGC LPG, JJVL's Mehran Gas and Lub Gas, POL's Cap Gas etc.
[80] High producer price and over charging by the marketing companies.
[81] According to MOE (PD), LPG is considered a poor man's fuel, yet the same was being priced at over 20 times higher than natural gas for domestic consumers.

4.1.1 LPG (Production and Distribution) Policy, 2016

5. The main objective of this policy is to ensure LPG availability for domestic consumers at an affordable price, to avoid frequent price fluctuations and to ensure a sustained price level. The policy gives guidelines on the production and disposal of LPG by both public and private sector (E&P) companies and refineries (Section 3.1.1 and 3.1.2).

6. Section 3.1.1 of the said policy further gives policy guidelines as under

   "Public Sector E&P Companies and Refineries shall give preference in sale of LPG to Gas Utility Companies for supply to LPG Air-Mix Plants in pursuance of GOP's socio economic consideration for supply of fuel to domestic consumers. In case Gas Utility companies are unable to lift LPG, the LPG would be disposed of in a transparent manner through competitive bid process to the licensed LPG marketing companies on terms and conditions to be settled between the Buyer and Seller, subject to LPG Pricing as provided in Section 3.4 of this Policy".

7. LPG licensing is given under Section 3.2 of the LPG policy, under which OGRA is to issue a provisional license for an initial period of 2 years to LPG Marketing companies for the construction of works including adequate storage, cylinders and logistics infrastructure is constructed within the stipulated timeframe. OGRA is further to convert the marketing license for a period of 15 years on the completion of works to the satisfaction of OGRA.

8. Under Section 3.2.2, OGRA is responsible for issuing licenses construction and operation of Production/Extraction/LPG Air-Mix plants, LPG Storage and Filling plants, and LPG refueling stations for automobiles. Further the licensees require permission from Department of Explosives under applicable rules.[82]

9. The policy provides LPG safety standards that have to be ensured and maintained throughout the LPG supply chain, from LPG extraction to LPG storage tanks, to LPG transporters and distribution outlets (Section 3.3.1). Under Section 3.3.2, decanting of LPG from cylinder to cylinder is prohibited. Cross filling of other LPG marketing companies' cylinders is also prohibited except under hospitality arrangement with prior approval from OGRA. In case of violation of any provisions OGRA can cancel the license.

[82] LPG (Production and Distribution) Rules 2001

10. Under Section 3.4, OGRA is mandated to regulate and notify the LPG prices of indigenous LPG, including producer price, margin of marketing and distribution companies and consumer prices. Further the import of LPG is to be decided by the Federal Government in consultation with the relevant stakeholders, subject to the demand and supply situation in the country. Any party having a valid OGRA license can import LPG after paying applicable government duties and taxes.

11. Observance of all safety codes and standards remains the responsibility of the marketing companies including their distributors, as well as the implementation of the LPG sale price notified (Section 3.6.6)

12. The policy also directs that all local LPG producers in KPK and Punjab are to dedicate 10 percent of their production to LPG Air-Mix plants and the marketing companies to have exclusive distribution in those areas. Likewise all local LPG producers in Sindh and Balochistan are to dedicate 10 percent of their production to LPG Air-Mix plants and the marketing companies to have exclusive distribution in areas of rural Sindh and Balochistan (Section 3.6.7).

4.2 Oil and Gas Regulatory Authority (OGRA)

13. The Oil and Gas Regulatory Authority (OGRA) is mandated to regulate the LPG sector under the OGRA Ordinance, 2002 and LPG (Production and Distribution) Rules, 2001 with effect from 15th March, 2003. Since then OGRA has been regulating the sector in accordance with LPG (Production and Distribution) Rules, 2001 and the policies of the Federal Government.

14. The main functions of the authority include issuance of licenses to construct and operate LPG production, storage/filling facilities, LPG Air Mix Plants and auto refueling stations. Under the LPG (Production and Distribution) Policy, 2016, OGRA is to ensure effective compliance mechanism[83] for all LPG equipment including LPG refueling stations, conversion kits, fuel tanks, cylinders, storage tanks etc. Further the LPG equipment manufactured by OGRA authorized manufacturers is to be verified and monitored for compliance with international standards by quality assurance measures adopted by OGRA.

15. Under the LPG (Production and Distribution) Policy, 2016, OGRA notifies LPG price as per the formula of the Federal Government on monthly basis. However the price of imported LPG is not notified by OGRA, since it is deregulated. Additionally under the LPG Policy, 2016 OGRA notifies the maximum price at all levels of the supply chain,

[83] May use the services of Hydro Carbon Development Institute of Pakistan (HDIP) or any other third party authorized by OGRA.

i.e producers, marketing companies and distributors. However the same may sell at a price below the maximum price determined from time to time[84]. Further where the licensee intends to sell at a price lower than the notified price, it has to intimate OGRA and also publicize the prices in the media.

16. In case of any deviation from OGRA pricing mechanism may result in strict punitive action by OGRA against non-complying marketing and distribution companies, and may involve the support from the local administration.

4.2.1 LPG (Production and Distribution) Rules, 2001

17. Section 2 (a) of the said rules define "area of operation" as:

    Means the area within which a licensee is authorized to produce, separate, strip, liquefy, transmit, process, store, fill or distribute LPG base-stock or LPG;

    Further "LPG base stock", and "source of LPG base-stock" is defined in Section 2(o) and Section 2(s) as:

    Means that product which is produced, separated, stripped, liquefied or transmitted from a refinery or a unit located near or connected to a well-head or imported into Pakistan;

    Means any refinery or unit connected to well-head for the production, separation, stripping or liquefying of LPG base-stock by chemical or any other process, or any country from where LPG base-stock is imported into Pakistan;

18. Under Section 3 of the said rules, no company can undertake the construction, operation or any other works, LPG transportation or operations at the LPG refueling station before getting prior approval from OGRA. Further a producer of LPG base-stock can sell part or whole of the LPG product to a licensed LPG marketing company. However a licensee by OGRA shall not ensure the right of a party to allocation of LPG quota.

19. Where the licensees of the LPG base-stock make any agreement relating to supply, sale, storage, processing, filling and distribution have to intimate OGRA within 15 days of its execution. Additionally no licensee can shift or abandon his works or portion of his works without prior approval from OGRA.

20. Section 18 of the LPG Rules, 2001- Price of LPG base-stock and LPG:

[84] LPG (Production and Distribution) Policy, 2016

Subject to prevailing Policy Guidelines of the Federal Government, Oil and Gas Regulatory authority shall regulate and notify the prices of indigenous LPG including Producers' Price, Margins of Marketing and Distribution Companies and Consumer Prices as may be revised by Ministry of Petroleum & Natural Resources from time to time.

21. Under the LPG Rules, 2001, all licensees having filling plants, storage, transportation and distribution of LPG must have compulsory insurance against the loss and damage to public life and property. Further the licensee will be held responsible for any accident that takes place at his works, LPG outlets, distributors' premises or during transportation due to negligence, incompetence, substandard materials and equipment and the compensation will be decided by OGRA.

4.3 Other General Rules

22. Various other general rules are also applicable on the LPG sector, where the licensee of LPG base-stock/LPG operating at various levels of the LPG value chain has to comply with, these include:
    a. License granted by Chief Inspector of Explosives under the Petroleum rules, 1937
    b. Gas cylinder Rules, 1940.
    c. No Objection Certificate (NOC) from Environmental Protection Agency (LPG refueling/dispensing station).
    d. NOC from district authorities for public safety (LPG refueling/dispensing station).
    e. National Fire Protection Association, USA (NFPA-58) in case of LPG refueling/dispensing station
    f. Various safety and health international codes of practices that have to be maintained at the storage and cylinder filling plants, at distribution and retail outlets, transportation and distribution network, LPG users, LPG import terminal, LPG specifications, LPG conversion kits, and LPG dispensers.

Chapter 5

Competition Assessment of LPG Sector

5.1 Barriers to Competition

In order to undertake competition assessment of the LPG sector in Pakistan, the barriers to competition in the sector are essential to be analyzed in order to identify factors that distort or impede competition at various levels in the sector, i.e production/import, marketing, distribution and retail level. Furthermore to identify how sector competitiveness maybe enhanced and more competitive market is established. The barriers to competition can be broadly categorized as structural, regulatory and strategic barriers, to enter and expand in the LPG sector. All three are discussed in greater detail in this chapter.

5.1.1 Structural Barriers

Structural barriers to enter and expand arise due to the structure of an industry. Where some industries have very low, others have high structural barriers. These are also known as natural barriers as these arise due to industry characteristics such as financial/capital factors, nature and use of the product, technology use and advancement among others. Review of the overall LPG industry points certain factors that create a natural barrier to enter this industry, these are discussed below.

1. **High Capital and Financial requirement in Upstream LPG Production/Extraction:** These structural barriers in the LPG sector exist at all levels of LPG value chain. However at the upstream level i.e exploration and production/refinery, these exist in the form of high capital and financial requirements. There is oligopoly market at the upstream LPG production, only few firms exist.[85] Further the commissioning of refinery operations or extracting LPG from fields requires heavy investment in infrastructure and further to store the LPG, investment on storage facility is requisite. Therefore high capital requirements create an entry barriers in the E&P/refinery business. Only financially sound private and public companies can successfully operate in this sector at the upstream LPG market.

2. **LPG a Standard Finished Product:** When comparing Oil/crude with LPG, Oil is a 'non-standard' commodity which has many producers and consumers. Oil is a raw material which can be converted into many different products. In comparison with LPG

[85] 12 in total, 5 refineries, 1 extraction plant and 6 E&P companies.

which if being imported/exported requires specialized ships and storage infrastructure later, oil can be easily and cheaply transported and stored. The 'non-standard' nature of oil means that the product has many different buyers, and it encourages the role of intermediaries. These intermediaries take away some of the costs and risks associated with the entire value chain of activity, till the product reaches its final customers. On the other hand LPG is produced and sold as a 'standard' finished product with standard product specification. LPG is sold to the end consumers with little additional processing. LPG requires higher level of investment in LPG infrastructure including shipping, storage and delivery to end consumers. Further as LPG is a utility fuel, its supply security is high priority and a concern for both sellers and buyers regarding timely delivery of LPG. These factors create a natural barrier to enter the LPG industry at the upstream/import/marketing/transportation level.

3. **Illiquid Market:** The LPG market is illiquid in comparison with oil, which is a liquid market.[86] Its market is a vertically integrated from production/extraction to marketing companies till it reaches the end consumers, through retail sale of LPG. A vertically integrated market operates on a 'cost plus'[87] mechanism compared to a liquid market such as oil, with many participants operating at various segments of the market and where important roles are played by market makers such as producers, traders. The LPG market on the other hand has less intermediaries, is illiquid, creating a natural entry barrier for new prospective businesses.

4. **Seasonal Fluctuation in LPG Demand and Pricing Fluctuation:** The LPG demand faces seasonal fluctuations, growing in winters and plummeting in summers. This seasonal variations is an important factor contributing to its price fluctuation, LPG pricing is therefore strongly seasonal. Comparing with oil, the price of oil does not show any seasonality. The price seasonality and the lack of transparency in the Saudi Aramco CP price determination, in the LPG sector puts a competitive constraint to sector growth and expansion.

The methodology applied by Saudi Aramco for the monthly LPG price determination is not published, however it briefs its term customers (having term contracts) about the factors it takes into consideration in setting the monthly Saudi CP price. Keeping in mind that Saudi CP is the dominant price for LPG in Asia and internationally and is used as a benchmark to set domestic LPG prices.

[86] Crude oil is the world's most actively traded commodity, Oil is a financial asset which can be easily sold and is always in demand.

[87] Cost-plus mechanism is where a commodity is transferred to other affiliated bodies on the same price plus the additional cost.

5.1.2 Regulatory Barriers

These barriers are created due to government regulations, sector policies and other federal or provincial statutes. When the incumbent firms have to comply with certain regulations, certain behavior is expected of them in order to comply with a statute or regulation, resultantly creating barriers to entry and expansion.

1. **Contradictory Clauses in LPG (Production & Distribution) Policy, 2016:** Section 3.4.3 and 3.5.1 of the LPG Policy, 2016 contradict each other. Section 3.4.3 and 3.5.1 are reproduced below;

   3.4.3 The Federal Government will, from time to time in consultation with OGRA and relevant stakeholders, determine the quantity of LPG to be imported to meet any gap between demand and supply; this quantity will be imported by Public Sector companies, Petroleum Levy on LPG or Gas Infrastructure Development Cess (GIDC) may be utilized to subsidize the LPG imported by Public Sector companies for bringing the prices equal to local LPG prices for Domestic sector supplies.

   3.5.1 Any party having valid OGRA License can import LPG after paying applicable government duties and taxes.

   Section 3.4.3 and 3.5.1 are in contradiction to each other as clearly under Section 3.4.3 only public sector companies can import LPG. However under Section 3.5.1 LPG import is being carried out by private sector importers. This imported LPG is later sold to domestic, commercial and industrial/bulk consumers. This contradiction in the LPG Policy distorts the Pakistani LPG market as there is unplanned LPG imports carried out by LPG marketing companies, leading to ineffective management of demand and supply.

2. **Issues w.r.to Section 3.6.9 of LPG Policy, 2016:** the Section reads;

   The indigenous LPG production will primarily be supplied to Domestic and Commercial consumers. All other sectors such as auto mobile and industrial will only be allowed to use imported LPG.

The Policy does not state that in case the indigenous LPG produced is insufficient to meet the demand of domestic and commercial sectors, whether the imported LPG will be allowed to meet the demand of domestic/commercial sector and if so what price will be applicable to it, when the imports are expensive then the indigenous LPG. This regulatory issue w.r.to the LPG policy thus creates a barrier to sector growth, investment and competition in the LPG sector both at local production and also at the import level.

Where the policy does not state the case when indigenous sources are insufficient to meet the domestic and commercial LPG demand. It is also pertinent to mention that the LPG Policy, 2016 clearly states the case of over production of LPG by the indigenous sources. Under *Section 3.6.10, in case of over production by the indigenous sources over and above the demand of domestic and commercial sector, the extra LPG maybe allowed by the Federal Government to use in other sectors, giving due consideration to all relevant factors.*

3. **Barrier to entry due to Air-mix quota allocation under LPG Policy, 2016**: Section 3.6.7 reads;

   With a view to ensure adequate supplies of LPG and discourage deforestation in mountainous areas of KPK and Punjab, and in AJK, FATA and Northern Areas, all local LPG producers in KPK and Punjab will dedicate 10% of their production to LPG Air-Mix plants and Marketing Companies for exclusive distribution in these areas. Similarly, all local LPG producers in Sindh and Balochistan will dedicate 10% of their production to LPG Air-Mix plants and Marketing Companies for exclusive distribution in Balochistan and Rural Sindh.

   At present 10% of locally produced LPG far exceeds the quantities which can be utilized by the Air-Mix plants. The policy does not state whether in case of excess this amount maybe released to some other priority sectors by the federal government or by the gas marketing companies. Thus creating a barrier to sector competitiveness and growth.

4. **Discriminatory Pricing of Local vs. Imported LPG:** Under the LPG Policy, 2016 the local LPG price is regulated and notified by OGRA on a monthly basis. There is 17% GST and a regulatory duty/petroleum levy of Rs. 4,669/MT imposed on the local LPG which adds up in the monthly price notified. On the contrary the imported LPG does not come under the regulated regime i.e imported LPG price is not regulated and notified by OGRA. The GST on imported LPG is 10% and further it is exempted from regulatory duty/petroleum levy of Rs. 4,669/MT. This discriminatory pricing where encourages the import of LPG on the other hand it discourages the local producers to invest in capacity enhancement of LPG production. Furthermore the market is distorted due to this

discrimination as the importers import LPG by paying less in taxes and then match their LPG price with that of the local price, resultantly earning windfall gains. Where this price benefit should be reaped by the end consumers but in actuality the marketing companies/importers reap the extra profits. Further all petroleum products have same amount of petroleum levy applicable, only in LPG sector there is discrimination.

5. **Anti-Competitive effect due to the Fixed Margin of LPG Marketing/Distributor Companies:** Under the LPG Policy, 2016 where at the upstream LPG production (producer/refinery) the pricing is benchmarked to CP ARAMCO monthly price of propane and butane. However at the mid stream (LPG marketing companies/distribution margin) level it is fixed at Rs. 35,000/MT. Therefore in case of a rise or fall in international LPG price of CP ARAMCO, there is no effect on the profitability/margin of the marketing companies and therefore dis-incentive for larger LPG marketing companies having larger capital/financial stakes in the sector and higher cost to invest in the sector. The smaller marketing companies on the other hand may benefit from the fixed margin. This resultantly is a discrimination and creates a barrier for expansion by incumbent marketing companies in the sector.

6. **LPG Imports under Public Procurement (PP) Rules, 2004:** For the public sector companies having LPG marketing licenses, import of LPG falls under PP Rules, 2004. Section 13 (1) of the said rules is reproduced below:

   Response Time*: The procuring agency may decide the response time for receipt of bids or proposals (including proposals for pre-qualification) from the date of publication of an advertisement or notice, keeping in view the individual procurement's complexity, availability and urgency. However, under no circumstances the response time shall be less than fifteen days for national competitive bidding and thirty days for international competitive bidding and thirty days for international competitive bidding from the date of publication of advertisement or notice. All advertisements or notices shall expressly mention the response time allowed for that particular procurement along with the information for collection of bid documents which shall be issued till a given date, allowing sufficient time to complete and submit the bid by the closing date:*

   Under Section 13(1) of the PP Rules, the public sector LPG marketing companies require a minimum period of thirty days for international competitive bidding to procure LPG from international market. This clause restricts the procuring agencies from getting a good price of LPG in the international market, which fluctuates on daily basis. Where as the private marketing companies do not face any such restriction and therefore can lock a better price of LPG. This clause therefore restricts competition in the import market by the marketing companies and creates a barrier for the public sector marketing companies to participate in LPG import.

7. **Licensing of LPG marketing companies by OGRA:** In the last decade there has been a mushroom growth of LPG marketing companies in Pakistan. At present there are more than 184 LPG marketing companies operating across the country, concentrated more in Punjab, having valid OGRA license to market and distribute LPG. The marketing license awarded is for 15 years which can be further renewed at license expiration. Where there are prominent LPG marketing companies (25-30% of the total number of companies) however none of the marketing companies has a market share of more than 10%, remaining have a market share of 1-2%. Where the prominent/tier 1 marketing companies such as Pearl Gas of PARCO, Fongas (Foundation Gas) of Fauji Foundation, CapGas of Pakistan Oilfields Limited (POL), SSGC LPG, and Pak Gas of PSO among some others, have a corporate structure and follow standard codes and various safety standards, and have supply security i.e their LPG cylinders are available all year round through their distributors network. However the smaller marketing companies where they fulfill the OGRA licensing requirement, they do not have supply security. These smaller marketing companies are also engaged in the illegal practice of cross filling and decanting. Additionally due to the rapid growth of LPG marketing companies many international petroleum companies such as Shell, Chevron wound up their LPG businesses as a result of the malpractices and shrinking share in the LPG marketing business. This licensing regime which has led to rapid growth in the number of marketing companies, has further increased the malpractices of cross filling and decanting, selling and mixing substandard LPG coming into Pakistan through the border of Iran at Taftan, and shrinking share of the prominent marketing companies. The licensing regime therefore rather than enhancing the competitive environment of the LPG sector has led to anti-competitive practices where by these companies are selling substandard LPG to the end consumers which is a health hazard. Additionally cheaper LPG through the land route is purchased and sold at OGRA notified prices in the domestic market. Furthermore to check the safety standards and other codes of business is a cumbersome task assigned to OGRA, where it requires resources and man power to monitor more than 184 companies.

8. **Issue of Competitive Bidding (for LPG Quota) under the LPG Policy, 2016:** To dispose LPG produced by public sector E&P companies and refineries, competitive bidding process is undertaken. The most common method of disposal adopted by these producers has been 'Signature Bonus Bidding', where by the LPG producer sells the LPG to the highest bidder and the remaining bidders then have to match the bid. However since the promulgation of the LPG Policy, 2016 this method of LPG disposal has been challenged by the LPG marketing companies. There is no clear disposal mechanism given in the said policy which has therefore resulted in administrative difficulties for the producers in order to auction lots under a long term SPA. Regulated pricing has resulted in varying pricing mechanism for allotting the lots under the long term agreements. Resultantly some of these public sector LPG producers are continuing with 'Signature Bonus Bidding' method of disposal in the SPA that were inked either before LPG Policy, 2016 or around 2017-18. Other public sector LPG producers have resorted to selling the lot at the OGRA notified producer price. This ambiguity in the disposal method thus

creates a regulatory barrier as the producers are not clear about the disposal mechanism to adopt, further the marketing companies are also reluctant to ink long term SPA with the producers.

9. **Unstable Regulatory Environment:** Government policies, rules and regulations regarding business have a direct impact on the competitive environment of an economy. Where the regulatory environment can be conducive to investment and market competitiveness, it can also stifle them when it creates barrier to entry and expansion. The LPG sector in Pakistan has witnessed frequent policy change with regard to regulated and deregulated pricing mechanism, import subsidy in the form of lower tariffs, and marketing licensing conditions by the sector regulator, consequently due to this frequently changing and unstable environment in policy/regulation in the LPG sector, has adversely impacted the competitiveness of the sector. Due to the changing regulatory environment many foreign investors have pulled out their investment and capital due to non-profitability.

5.1.3 Strategic/Other Barriers to Competition

1. **Substandard LPG Import through Land Route:** LPG is imported through sea and land routes. The sea import is well structured with quality check at the port and proper storage facilities available. The land import is done through the Iran- Pakistan border at Taftan. Iran gives a discount on CP ARAMCO thus an incentive for the marketing companies to import LPG through the land route. However there is no proper monitoring mechanism in place for quality check as well as the quantity of LPG import at Taftan. This resultantly has led to substandard LPG quality import, having high Sulphur content, a health hazard for the end consumers. This imported LPG is cheaper compared to the indigenous LPG produced or the LPG imported through the sea route and therefore an incentive for the gas marketing companies to engage in this LPG import. However this LPG is more costly in terms of PKR/MMBTU[88] as unutilized quantities are left in the cylinders due to low pressure and higher Sulphur content. This gives unfair advantage to the importers importing LPG in the form of low price for LPG import which they later match with OGRA notified LPG prices. Additionally the use of this low quality LPG having high Sulphur content is a health hazard for the consumers.

2. **Under Invoicing, Hundi and Hawala system of Payments in LPG Import through Land Route:** Due to lack of proper monitoring mechanism in place at the point of entry on land imports through Taftan, the LPG traders/importers engage in under invoicing of the LPG quantity imported. Furthermore the importers use informal and illegal channels of payments such as hundi and hawala. These informal channels bypass the formal

[88] This LPG has low heating value i.e not good value for money

banking and financial system. Coupled with under invoicing, hundi and hawala results in loss to national exchequer and lower tax collection. In the information gathered it has been highlighted that the almost half of the LPG import through land route is not declared, in other words it is under invoiced to avoid taxes. This low quality import is further mixed with the indigenous LPG and sold to the end consumers, who are unaware of this and the marketing companies engaged in this illegal practice are making wind fall gains as they mix the cheaper LPG with the indigenous high quality LPG product.

3. **No LPG Quality testing Lab for Land Imports:** In addition to no proper monitoring mechanism in place for the land imports through Taftan, in contrast to the sea imports where LPG quality testing lab, PERAC Research & Development Foundation (PRD) Lab[89] is operating and tests the quality of imported LPG, there is no such lab operating in the border area through which the imported LPG is received. Resultantly inferior quality LPG is imported into the country, having serious health hazards for the end consumers.

4. **Issues of Decanting and Cross Filling:** Decanting is the process in which LPG is transferred from one cylinder to another, more specifically transfer of LPG into smaller cylinders. According to LPG Policy, 2016, decanting is prohibited under Section 3.3 of LPG Safety Standards. This is due to the hazardous nature of the fuel and potential dangers associated with the transfer of LPG from cylinder to cylinder. In particular the risk of fire and explosion when the cylinders are over filled or potential ignition sources such as static electricity are not controlled.[90] Likewise cross filling of cylinders, i.e the cross filling of other LPG marketing companies cylinders is also prohibited, unless allowed under hospitality arrangement subject to approval by OGRA. The data and information gathered shows that even these illegal activities are frequently carried out in the twin cities of Rawalpindi and Islamabad, where there are comparatively greater checks and monitoring in place by OGRA to control and penalize decanting and cross filling. Both decanting and cross filling create barriers to competition in the LPG business mid-stream and down-stream. Where established marketing companies following all prerequisite codes of conduct face these anti-competitive practices by smaller marketing companies, distributors and retailers which reduces the share of these established marketing companies in the LPG sales and also the incentive to invest in the LPG business. Furthermore the smaller marketing companies, their distributors/dealers and retailers engaged in these practices create a safety hazard as in case of any mishap can lead to loss of human lives.

5. **Sub Standard Cylinders Use:** The OGRA licensed LPG marketing companies are required to have the storage tanks/LPG bullets/LPG bowzers, cylinders and cylinder

[89] PRD was established with the combined efforts of GOP and UNIDO/UNDP for the research/development and testing of Petroleum Products (POL)

[90] https://www.safework.nsw.gov.au/__data/assets/pdf_file/0004/51907/SW08843-Decanting-of-liquified-petroleum-gas-LPG-into-cylinders.pdf

valves manufactured from the OGRA authorized LPG equipment manufacturers. However there are sub standard cylinders manufactured in the country (more specifically in Gujranwala) where low quality steel is used. These cylinders are cheaper thus an incentive for the marketing companies/distributors to cut down their cost, but these are illegally manufactured and bought by the marketing companies /distributors. These sub-standard low quality cylinders further pose serious safety hazard for not only the end consumers but also the handlers of these LPG cylinders at the designated storage/distribution/retail areas and while their movement. Where the larger marketing companies/tier 1 companies follow all codes of safety and cylinder/bowzer manufacturing, smaller companies marketing LPG in small cities, towns, remote areas do not follow these safety codes and are openly engaged in the use of substandard cylinders causing a safety hazard and disincentive for other marketing companies following all safety codes and guidelines. Furthermore anecdotal evidence also suggest that the distributors themselves are engaged in this illegal purchase of LPG substandard cylinders and after decanting selling it to the end consumers.

6. **Illegal Use of LPG in Public Service Vehicles (PSVs):** The Federal Government has banned the use of CNG and LPG in PSVs due to the safety issues. However LPG is sold illegally at a sizeable level in the Auto sector, which is illegal by law. Further these PSVs purchase substandard cylinders from LPG dealers, who are also engaged in the illegal practice of decanting. These commercial vehicles including Auto Rickshaw prefer LPG to use as fuel vs petrol. Almost 50% of the Auto Rickshaw are running on LPG rest on CNG and very few on petrol. Additionally these PSV's consume heavy LPG volumes when there is a hike in petrol/diesel prices, where they switch to LPG.[91] This chain of illegal activities distorts the LPG consumer market, raises the illegal demand of LPG and thus raises the LPG price above OGRA notified price. These illegal activities in the downstream LPG market are anticompetitive as these create barriers for investment in the sector, distort the market signals and the market price of LPG in the domestic economy. Where the demand for LPG in the auto sector persists at a substantial level, but being fed illegally through unregistered outlets selling LPG and in unregistered vessels, there is serious safety concern to end consumers and the general public at large in case of a mishap.
7. **Unchecked LPG Import:** Where incase of petrol/Diesel a committee (constituting all E&P companies, refineries, oil marketing companies, DG Oil, MOE- Petroleum Division and OGRA) meeting with all stakeholders is held to see the shortfall and then the import quantity is decided. However incase of LPG there is no check on the quantity of LPG import by the OGRA licensed LPG marketing companies. Anyone having a valid OGRA LPG marketing license can import LPG. These marketing companies, without proper demand assessment thus import LPG. Therefore this unchecked import creates a misbalance between demand and supply of LPG in the local market and further creates pricing issues.

[91] Meeting with Sui Southern Gas LPG Limited (SLL)

8. **Anti-Competitive Practices carried out by LPG Dealers:** In the downstream market, LPG is sold to end consumers by LPG dealers and retailers. Where under OGRA LPG Rules, the marketing companies have to provide the details of their dealers operating in the market, contrary to this the LPG dealers operating in the downstream market are engaged in various illegal activities such as decanting, cross filling, purchase of illegal/substandard LPG cylinders and selling them illegally to end consumers. Furthermore these dealers are also engaged in illegal import of LPG as they are not licensed to import or market LPG, through the land route-Taftan. They purchase undocumented LPG tankers/bowsers through hundi and hawala system and also smuggle in LPG tankers/bowsers. This activity is illegal, it is not only anti-competitive, discourages investment and operations by importers who are importing through the sea channel and follow all codes. It is also a threat to human safety as any unforeseen disaster can occur at the border where these vessels frequently move and also during the movement from Balochistan to Punjab, which is the final destination of this LPG. Further the quality of this LPG is very low, has a high Sulphur content which is a health hazard for end consumers.

Chapter 6

Conclusion and Recommendations

The current size of the LPG market in Pakistan is around 1,280,550 MT/Annum.[92] It is used primarily in the domestic sector especially where there is natural gas shortage or unavailability. LPG as a domestic fuel deters deforestation in hilly areas and also provides a healthier and safe alternative to public. GOP has also taken a policy decision to allow LPG in auto sector as auto fuel. Due to increased demand, the LPG imports have also increased and during FY 2017-18 402,685 MT of LPG has been imported.[93]

The LPG industry although has a small share in comparison with other sources of energy, however this energy source has great potential. It is a 'green fuel' and is environment friendly. Pakistan has been facing energy challenges for the last two decades as a result of higher energy demand in the country compared to supply. Energy sustainability is crucial for economic development and growth and thus the need to ensure availability of these resources through market friendly policies such as to enhance production, efficiency and investment. Likewise ensuring competition is crucial for development, efficiency and investment. The LPG sector known as 'the poor man's fuel', can become a major energy source provided it gets due attention through favourable regulatory environment and by clearing the bottle necks created by the anti-competitive practices in the sector.

The competition assessment of the LPG sector in Pakistan point out various barriers to effective competition in the sector at all stages, at the upstream indigenous production/import stage, midstream (the gas marketing companies handling of LPG, quota allotment and various business practices), and downstream through the network of distributors/retailers and ultimately the end consumers. Based on the data analysis through questionnaires, industry reports, international best practices, and meetings with relevant stakeholders, the study proposes the following recommendations in order to enhance the competitive environment and competition in the LPG sector in Pakistan.

6.1 Recommendations

1. **Removing the Regulatory Barriers Created by Contradictory Clauses 3.4.3 and 3.5.1 of LPG (Production & Distribution) Policy, 2016:** (a) Under Section 3.4.3, in order to meet the domestic demand of LPG, public sector companies will import LPG. This import quantity will be decided by the Federal Government in consultation with the relevant stakeholders and OGRA. However under Section 3.5.1 any party having valid OGRA marketing license can import LPG after paying applicable taxes and duties. These

[92] Petroleum Industry Report, 2017-18, OGRA
[93] ibid

two clauses contradict each other, further the LPG marketing companies are importing LPG without proper assessment of demand and there is no consultation with Federal Government and OGRA on the import. (b) Further since on LPG import there is no petroleum levy and lower GST, incentivizes the private sector to import LPG. Additionally the gains of the importer in the form of a better imported LPG price is not passed on to the end consumer, as the marketing companies match the indigenous LPG price. (c) It is therefore recommended to remove this contradiction and ambiguity in the LPG policy, the Federal Government must undertake proper assessment of demand and should determine the quantity of LPG import in consultation with the private sector and the sector regulator. There should be quarterly assessment of LPG demand, and further the GST and import duties on LPG import should be rationalized.

2. **Removal of Regulatory Barrier Created by Section 3.6.9 and 3.6.10 of LPG Policy, 2016:** As per Section 3.6.9 of the said policy, the indigenous LPG produced will be primarily supplied to the domestic and commercial consumers. All other sectors including auto, industrial will only be allowed to use imported LPG. Further Section 3.6.10 states that incase the indigenous LPG production is greater than the domestic and commercial LPG demand, the Federal Government may allow the use of this LPG in other sectors. The policy however does not state, in case of insufficient indigenous LPG supplies to cater to the domestic and commercial sectors, will the imported LPG be available to meet the demand of the domestic and commercial sectors and what will be the pricing mechanism in such a situation since OGRA under the regulated regime only notifies the indigenous LPG price. Amendment is therefore recommended in the LPG Policy, 2016, which will stream line the LPG industry, remove the competition constraint created by the ambiguity on the said issue in the LPG policy.

3. **More Competitive Pricing Framework for LPG, Indigenous and Imported:** As per the LPG Policy, 2016, LPG pricing for indigenous production is regulated and notified by OGRA on the directives of the Federal Government. However the imported LPG is not subject to regulated regime and its price is deregulated. Where on the indigenous LPG, petroleum levy of Rs. 4669/MT is imposed, the imported LPG is exempt from petroleum levy. Likewise the GST on indigenous LPG is 17% against 10% imposed on imports. The importers then match their product price to the indigenous LPG price. This discriminatory pricing hence encourages the import of LPG, bearing in mind that any LPG marketing company having a valid OGRA license can import LPG as per Section 3.5.1 of LPG Policy, 2016. Further the LPG pricing cap under the regulated regime is not adhered to. During times of peak demand, the LPG is not available at the cap price and the marketing companies/dealers make windfall gains, by selling LPG higher than the OGRA notified price. It is thus recommended that in order to have a more market based/competitive price, where the demand and supply are at play, there should be a level playing field for all LPG marketing companies whether procuring indigenous or imported LPG. There should be no discrimination between the pricing mechanism for the

indigenous and the imported LPG. This will increase competition in the market, discourage over import of LPG and a better price will be paid by the end consumer.

4. **Clear LPG Disposal Policy:** The public sector LPG producers are required to dispose of LPG through a competitive process. However under the LPG policy, 2016 no clear directive is given for LPG disposal. Under the regulated regime, LPG prices are regulated and notified by OGRA for all levels of the value chain. However price regulation under the said policy has led to administrative difficulties for the producers to dispose of LPG in a transparent manner. Under OGRA directives public sector LPG producers cannot adopt disposal mechanisms of 'Signature Bonus Bidding', furthermore the LPG producers are now allotting the LPG lot of equal quantity to all LPG marketing companies that bid. This where takes the incentive from the LPG producers to producer LPG but additionally may result in anti-competitive practices in the LPG sale, where the LPG producers may sell LPG to the preferred marketing companies. It is therefore recommended that an amendment in the LPG Policy, 2016 be made such that LPG sale to the LPG marketing companies is undertaken in a transparent manner. Furthermore the policy should encourage the domestic producers to invest in the LPG sector.

5. **Amendment in PPRA Rules for Ease in Importing LPG by Public Sector Organizations:** In order to import LPG, Public Procurement (PP) Rules, 2004 apply to public sector LPG marketing companies. The spot price of LPG fluctuates daily in the international LPG trading markets. When the LPG price dips, the importers keeping in view the demand, import LPG and get a good price for the product. As per Section 13(1) of the PP Rules, the public sector LPG marketing companies require a minimum period of thirty days for international competitive bidding to procure LPG from international market. This clause puts a constraint on the public sector LPG marketing companies and restricts them from getting a good price of LPG in the international market. However the private LPG marketing companies do not face any such constraint and hence can lock a better price of the product. This clause therefore restricts competition in the import market by the public sector marketing companies and creates a barrier for these marketing companies to participate in LPG import. It is recommended that PPRA considering the dynamics of the oil and gas sector and the LPG market in particular may relax the condition and reduce the minimum period of bidding.

6. **Monitoring Land Import of LPG to Prohibit Black Economy and Import of Sub Standard LPG:** LPG import is carried out through two routes, the sea route and the land route. Through the land route LPG is imported from Iran at the Pakistan-Iran border, Taftan. The LPG import from the land route has grave anti-competitive effects on the local LPG market in Pakistan as well as the import market, where the land route imports compete with the sea route imports. This imported LPG is of low quality (high Sulphur content) and therefore has a lower price. It is imported without any quality check at the border, the import quantity is under invoiced, smuggled, informal system of hundi and hawala are used for making payments, bypassing the legal and formal channels of

payments through banking channels and taxation mechanisms and therefore causing a loss to the national exchequer.[94] Furthermore LPG dealers are engaged in this import illegally, whereas by law they cannot import LPG. Where this import is a threat to the local LPG industry, simultaneously this LPG is a serious health hazard for the end consumers due to high Sulphur content in the gas. It is recommended to strictly monitor the LPG import, its quality and quantity imported as it is causing a loss to the economy and to the LPG industry.

7. **Establishment of Quality Lab for Testing of LPG through the Land Route:** In addition to issues of under invoicing, smuggling, bypassing of legal baking system, this imported LPG is of low quality. There is no quality check of the imported LPG through land route as there is for the LPG import through the sea channels. This low quality LPG, with high Sulphur content is not only hazardous for human use but is also energy inefficient. Unchecked for quality this LPG is brought into the country and reaches the commercial hubs where either it is sold to end consumers by filling into cylinders or by mixing it with the indigenous LPG and selling it to end consumers. This substandard LPG has lower import price and therefore an incentive for some marketing companies to increase their profits illegally, also LPG dealers are illegally engaged in the LPG import, where as they do not have the license to import. This substandard LPG can be curtailed from penetrating the local market and from generating anti-competitive effects if a quality testing lab is established at the land route, services of HDIP may be utilized. Further the issue requires serious attention from the Federal Government, Ministry of Energy (Petroleum Division) and OGRA.

8. **Stringent Qualification Criteria for Awarding Licenses and Check on the Mushroom growth of LPG Marketing Companies:** OGRA awards licenses to LPG marketing companies to market the LPG product. Currently there are more than 185 LPG marketing companies operating in Pakistan. Keeping in view the size of the LPG industry, it's over all share in the total energy mix, the number of marketing licenses issued is far greater. Where there are marketing companies following all industry codes and have a corporate structure, and a quality bottling and storage plant, many marketing companies lack the proper infrastructure. Many also do not have a consistent LPG quota and therefore a consistent LPG supply and use their bottling and storage facility for hospitality arrangement. Further in order to increase their profitability and market share these resort to anti-competitive activities such as importing low quality LPG through Taftan, under invoicing to avoid applicable taxes and duties, mixing of low quality LPG with indigenously produced LPG, and charging a price over the regulated LPG price. Where OGRA can monitor the LPG marketing companies through third party as well, however it's an uphill task due to the mushroom growth of these marketing companies and their activities. It is recommended that there should be a minimum LPG supply/quota

[94] There is fraudulent declaration of incorrect LPG import quantities in order to evade taxes and relevant duties. Transactions exercised with incorrect invoices, only 10% of the import is documented, rest 90% is not.

requirement for the marketing companies license validity in other words the marketing companies should be operational entities[95], additionally stringent criteria may be levied by OGRA to issue and renew LPG marketing license, keeping in view the decline in the LPG market size of marketing companies, dormant companies, multinational gas marketing companies exit, and the engagement of these marketing companies in illegal activities thus disturbing the entire LPG market.

9. **Prohibition of the Illegal Activities of Decanting and Cross Filling:** Under the LPG Policy, 2016 decanting and cross filling are both illegal. However both decanting and cross filling are carried out in the informal sector where the registered distributors and retailers are also engaged in these activities. These activities distort the LPG market and create barriers to invest and expand businesses in the sector. Furthermore these are unsafe operations and can have serious safety issues in LPG handling, transfer and cross filling. Where under the LPG Policy these are illegal activities and OGRA has the authority to cancel the license of LPG marketing companies or the distributors engaged in the illegal practice, however there is rampant decanting and cross filling activities being carried out informally and illegally across the country. Where OGRA is mandated to revoke the licenses of such marketing companies and their distributors, however firmer monitoring of such activities is the need of the hour in order for the LPG market to grow, expand, and the consumers have knowledge of the product they purchase and its quality.

10. **Monitoring of LPG Dealers:** Monitoring of LPG dealers, contrary to LPG marketing companies, the LPG distributors have very low stakes in the business as any person with minimum amount of investment and relevant experience can get dealership of LPG. This promotes opportunistic approach in LPG distribution business. Where OGRA is mandated under Section 3.6.4 to obtain a list of all existing LPG distributors from LPG marketing companies and register them, it must ask the LPG marketing companies to scrutinize dealership applications more strictly and award dealership only to the parties having sufficient relevant experience and sound financial background. There may also be a requirement of a minimum take or pay quantity by the dealers. Monitoring and awarding dealership to sound and experienced dealers will promote a more competitive business environment and encourage competition.

11. **Prohibition and Check of Substandard LPG Cylinder Manufacturing and Use:** Under the LPG Policy, 2016 Section 3.3.6, OGRA is mandated to monitor the LPG equipment manufactured by the authorized manufacturers, and to verify and monitor for conformity of these equipment to international standards through quality checks and measures. OGRA publishes a list of authorized manufacturers for all LPG equipment including cylinders, storage tanks, conversion kits etc. However substandard LPG

[95] According to the Information shared by PPL, in the latest bidding till the time this data was collected, the highest number of bidders (LPG marketing companies) was 29 and before that only 15 companies participated in competitive bidding for LPG quota allocation, keeping in view that the number of LPG marketing companies is more than 185.

cylinders and other LPG equipment is being manufactured and sold illegally at various locations across the country. These substandard cylinders in particular are sold to both the marketing companies and their distributors in the informal market. The distributors then use these cylinders for decanting and sell them to the end consumers. All this illegal activity is not only anti-competitive as it takes away the market share of LPG marketing companies complying with all codes of the business, but also a matter of safety. These substandard cylinders are dangerous for filling and use by end consumers and can cause loss to human life. It is recommended that OGRA should play a more proactive role under the given mandate and strictly deal with the manufacturers of these substandard LPG equipment and cancel licenses of LPG marketing companies engaged in the practice, further OGRA should also blacklist LPG distributors who are found using and selling these LPG cylinders in the market.

12. **Encouraging LPG as a friendly fuel for Auto Sector:** Currently in Pakistan more use of LPG is in the domestic and commercial sectors, however LPG is also used in PSV's illegally and has high demand due to being a cheaper fuel as compared to petrol and diesel. These PSVs use illegal auto gas sold in the market using also substandard LPG equipment. There are very few registered LPG auto outlets in the country, thus the number of vehicles are also very less who have legal access to legal auto outlets. The Federal Government has promoted auto gas as vehicular fuel, however the sector requires greater attention by the Federal Government, Ministry of Energy (Petroleum Division) such that this sector receives the requisite attention in the form of a Auto gas policy and guidelines. The future of auto gas in Pakistan can never be progressive unless it receives muscular support from GOP in policies to encourage LPG as a 'friendly fuel for auto'. This will resultantly lead to a sharp growth in LPG sector and also discourage the illegal use of LPG as auto fuel.

13. **LPG Subsidy Program for the Poor Domestic Households:**

a. The energy needs of an economy cannot be met by one fuel alone, it is like a puzzle, which depends on a range of coordinated policies, substitute fuels, technology and the government's will. In order to meet the growing demand of energy in the country, the Government of Pakistan (GOP) is importing various energy sources such as Oil, Liquefied Natural Gas (LNG) and Liquefied Petroleum Gas (LPG). At the same time, a key priority of the GOP is energy sustainability and access to clean energy sources.

b. Pakistan has an extensive and unique natural gas infrastructure, where piped natural gas is available to domestic consumers, and the number of domestic consumers continues to grow each year. Natural gas is available to 9.6 million consumers across the country and the total consumption of natural gas by the domestic consumers is 889 MMCFD[96] . To provide piped natural gas to domestic consumers is a big challenge for the two public

[96] Only lower than power sector use of natural gas, Pakistan Economic Survey, 2018-19.

sector natural gas transmission and distribution (T&D) companies, Sui Southern Gas Company Limited (SSGC) and Sui Northern Gas Pipelines Limited (SNGPL). Over the years, these companies have had growing transmission and distribution network losses. Many factors are responsible for these losses, such as network maintenance and upgradation, and theft, among others.

c. LPG is an energy source, which though has a small share in comparison with the two main energy sources available i.e. oil and natural gas, however LPG has great potential of growth in the country. More specifically, for the domestic and commercial consumers. In a situation where the pressure on the Sui companies by the domestic consumers to provide for the ever rising demand of piped natural gas has been continuously growing, compared to its supply, LPG is an alternate energy source, which requires government's attention.

d. Further the availability of piped natural gas is only available to 20 percent of domestic consumers, as natural gas is available in areas that have a transmission and distribution network. The rest of the domestic consumers including both urban and rural use other sources of energy for cooking and heating purposes such as LPG, fire wood, kerosene, and dung. However, where LPG is a clean energy source, other sources have health impact, increase pollution and deforestation[97].

e. The use of LPG must be encouraged for the domestic households both rural and urban in Pakistan, since the cost to provide natural gas to domestic consumers is high as compared to LPG, which is a clean, portable and a versatile energy product. Additionally, in comparison to fire wood, kerosene or dung which is commonly used in rural areas as an energy source and for cooking purposes, LPG is a clean energy fuel.

f. The study of the other jurisdictions on the LPG sector shows penetration of the product at the grass root level by domestic households[98]. The drive was undertaken by successive governments as a tool to achieve Sustainable Development Goals (SDGs), and environmental concerns because of rising pollution and deforestation. Under the LPG subsidy program, households in the bottom of the socio-economic pyramid are given LPG on subsidized rate. This subsidy amount is the difference between the international LPG market price and the subsidy price set by the government.

g. It is recommended that where the GOP is taking initiatives to improve the socio-economic conditions of the people living below the poverty line through programs such as Benazir Income Support Program (BISP) and the new Ehsaas Program[99] launched by

[97] In the hilly areas where access to wood is easy, people are routinely engaged in the activity of cutting trees for wood, for cooking and heating.

[98] Indian LPG model, penetration of LPG as a cooking fuel in both rural and urban areas.

[99] With the objective to reduce inequality, invest in people and lifting the socio-economic conditions of the poor districts.

the government, where there is monetary support to the poor households, subsidy on LPG to poor domestic households can also be made a part of such programs. Therefore initiation of an LPG subsidy program for the domestic households will not only improve the socio-economic condition of the poorest households, but will also have a positive impact on the environment.

h. The consumers' willingness to switch to LPG (inter fuel substitution) will depend on a number of factors such as, fuel affordability, logistic support, distribution network, and product availability. The LPG subsidy initiative can be undertaken by the government, where the terms and conditions would determine the eligibility criteria for accessing subsidized LPG. Further the unit value of subsidy on a given volume of LPG, and the volume of subsidized LPG accessible by each eligible household[100] under the program can be determined under the policy framework and regulations of the LPG subsidy program.

Proposed Mechanism of the LPG Subsidy Program

a. In order to improve the standard of living of poor domestic households both urban and rural, an LPG subsidy program can play a vital role. To initiate an LPG subsidy program for the poor and under privileged domestic households, the government requires to identify such households in each of the provinces who are poor. It is important as to what definition of poverty is taken for the LPG subsidy program. One way is to take the cost of basic needs (CBN) approach, which includes both food and non-food items and identify households living below the national poverty line.

b. CBN approach can be applied using Household Integrated Economic Survey (HIES) , and Household Integrated Income and Consumption Survey (HIICS). [101] According to the poverty statistics based on the CBN approach, 24 percent of the population lives below the national poverty line, further 31 percent in rural areas and 13 percent in urban areas[102] (poverty headcount). [103] The HIES 2018-19, shows that where the income and consumption expenditure of both urban and rural households has increased compared to 2015-16 survey, however the gap between the urban and rural income has increased indicating increase in income inequality in 2018-19 compared to 2015-16.[104]

c. Another method is to use the Multi- Dimensional Poverty Index (MPI), where MPI is measured at the national, provincial and district level. Further, MPI is calculated from

[100] Subsidy capping, where by the households could only avail a specific number of LPG cylinders/year.
[101] In 2015-16, a special survey 'Household Integrated Income and Consumption Survey' was conducted, and this survey also provided the information required by HIES.
[102] CBN approach used HIICS conducted in 2015-16.
[103] https://reliefweb.int/sites/reliefweb.int/files/resources/balochistan_drought_needs_assessment.pdf
[104] PSLM/HIES Survey 2018-19, Pakistan Bureau of Statistics.

Pakistan Social and Living Standards Measurement (PSLM)[105] Survey data of Pakistan Bureau of Statistics (PBS). According to the MPI, 38.8 percent of the population is poor, 54.6 percent in rural areas and 9.4 percent in urban areas, based on PSLM survey data of 2015-16. In April 2020, PBS released the PSLM survey data of 2018-19, conducted at both provincial and district level. One of the key MPI indicator 'access to clean fuels for cooking, lighting and heating', shows that 35% of population has access in Pakistan at provincial level. However, an insight also reveals that there is disproportionate access to the MPI indicator, comparing urban with rural areas. Where 74% of urban households have access, only 12% of rural households have access to a clean fuel. Punjab and Sindh remain better in performance, compared to Khyber Pakhtunkhwa and Balochistan.

d. Using the MPI has its advantages as it is based on three core deprivations, i.e. education, health and standard of living. The three indicators, each having a weight of 33.33%, further have 10 indicators to measure MPI. A person is defined as multi dimensionally poor if he is poor in 1/3rd of the core deprivations. The indicators of standard of living (one of the core deprivations) are electricity, improved sanitation, safe drinking water, flooring, cooking fuel and asset ownership. Further MPI is the product of MPI head count (H)[106] and intensity (A)[107].

e. Given the data on provincial and district level poverty w.r.to MPI approach or the CBN approach, using the PSLM/HIES 2018-19 survey data conducted at both provincial and district level, out of the total districts in Pakistan, the poorest districts can be identified for the initiation of the pilot project. Further within the districts there are rural and urban areas, according to the data available[108] 80 percent of the poor live in rural areas and Baluchistan has the highest level of poverty, i.e. 57 percent, and Sindh has the highest rural urban poverty gap. According to the World Bank study in 2018, the poverty headcount in rural Pakistan is 36 percent compared to 18 percent in urban areas. Further 40 poorest districts are in Baluchistan followed by Sindh and South Punjab. Within the well-off districts such as Karachi, Lahore and Faisalabad, there are pockets of poverty[109].

f. Poor households of the selected districts can be sold LPG cylinders of size 11.8 kg (which is the standard size of domestic LPG cylinder used in Pakistan) at subsidized prices. The amount of subsidy will be determined by the budgetary financing/expenditure government is willing to spend on the program.

[105] PSLM is the main survey data used for monitoring the development plans at district level, it also assesses programs initiated under poverty reduction strategy paper (PRSP), used for estimation of MPI, and also from cost based poverty where PSLM/HIES provincial level data is used.
[106] 'H' is the proportion of the total population which is multi dimensionally poor.
[107] 'A' is the average indicators in which the poor people are deprived, it is the degree of their deprivation
[108] World Bank Report, 2018, http://documents.worldbank.org/curated/en/649341541535842288/When-Water-Becomes-a-Hazard-A-Diagnostic-Report-on-The-State-of-Water-Supply-Sanitation-and-Poverty-in-Pakistan-and-Its-Impact-on-Child-Stunting
[109] https://www.dawn.com/news/1444874

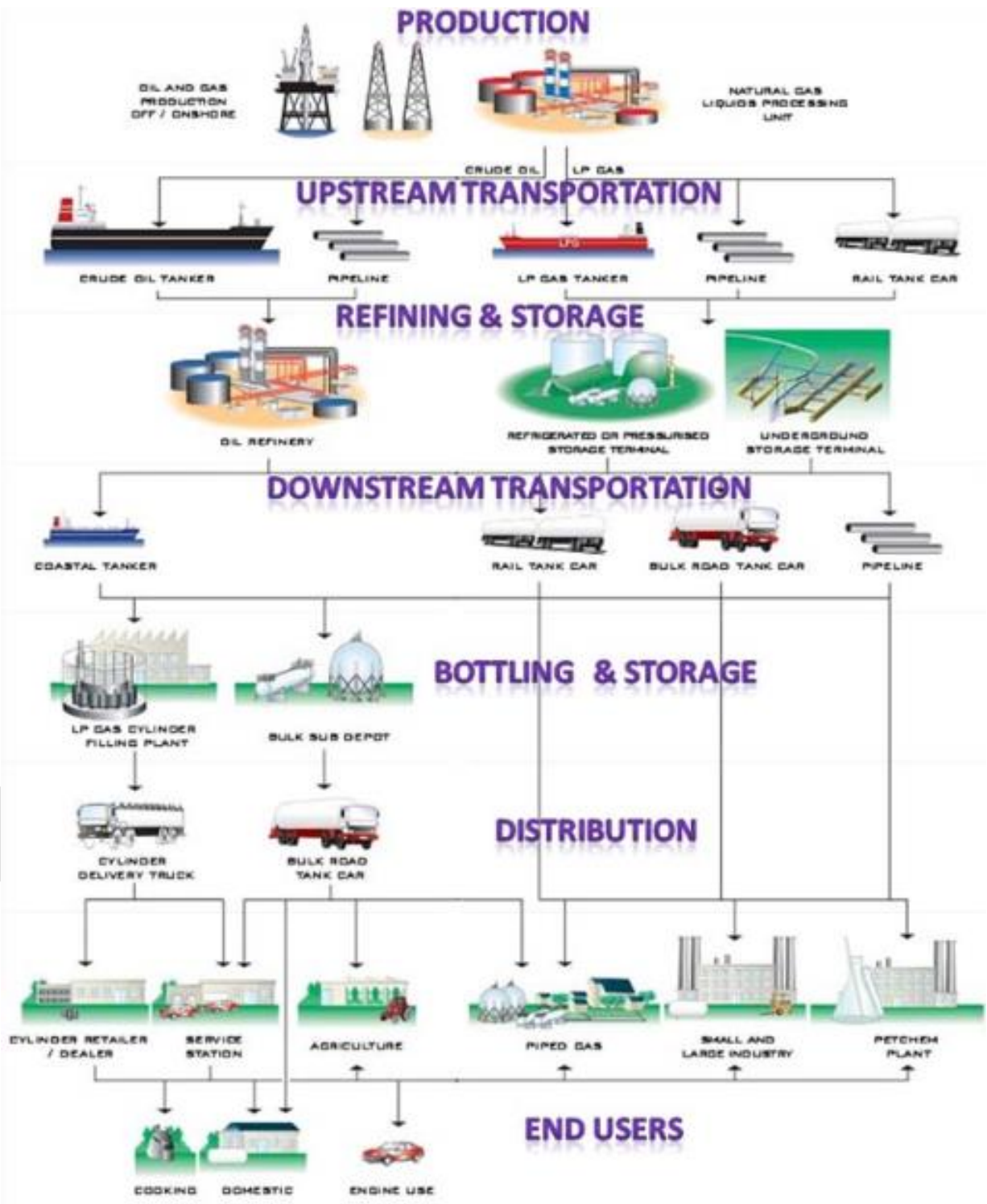
g. For the pilot project 9 cylinders per year of 11.8 kg maybe subsidized. After this cap of 9 cylinders, households may purchase additional cylinders as per their requirement on the prevalent market price. The identified poor households living below the determined national poverty line may be provided with LPG subsidy cards, and upon showing the subsidy card LPG cylinder is issued. Furthermore the subsidy cards may have a validity date.

h. In Pakistan, there are more than 184 LPG marketing companies, however for the success of this program, the public sector LPG marketing companies such as SSGC LPG, PSO LPG and PARCO Pearl Gas may be given the task or maybe through competitive bidding, 2-3 LPG marketing companies may be selected. Additionally, these selected marketing companies may have specific LPG brands under which the subsidized cylinders are to be sold. This will make the process more transparent and identifiable. Likewise cylinders that are to be sold under the subsidy program should be of a specific colour such that they are easily identified and the chances of misuse and exploitation are minimized.

i. The domestic households having valid LPG subsidy cards may purchase the LPG cylinders from the registered distributors of the selected LPG marketing companies at the fixed subsidy price upon showing the valid subsidy cards. The data on the sale of LPG cylinders under the program must be maintained by the registered distributors, as to the number of cylinders purchased by a domestic household for the success of this program.

j. Based on the success of the pilot project, the program may be launched nation-wide. Under the LPG subsidy program, the share of LPG sector which is currently 1.3 percent of the total energy mix will not only increase, but this will have multiple benefits for the economy. Where it will increase the production and investment in the LPG sector, at the same time the poorest households will benefit from the subsidized price as the program will enhance LPG affordability. Simultaneously where the program will address poverty it will also decrease the use of other fuels by domestic households such as firewood, which place a huge and unsustainable burden on the natural environment.

Appendix: LPG Supply Chain



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