MOTILAL OSWAL

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Thematic | Sector: Oil & Gas

Petronet LNG

Snowball effect

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Contents

Petronet LNG

BSE SENSEX	S&P CNX
34,714	10,618

CMP: INR230 TP: INR317(+38%) Buy

Snowball effect

Huge scope for small scale LNG in India

- **While there is little doubt on the near-term growth in LNG consumption, the medium-long term poses a risk, considering that domestic gas production is expected to rise amidst upcoming LNG terminals.**
- **Just as a small snowball keeps adding snow as it rolls down a snow surface, we identify small-scale LNG (ssLNG) opportunities in India, which would be able to absorb what seems like a flurry of upcoming LNG capacities.**
- **ssLNG is defined as direct sale of LNG in liquid state to the consumer rather than going through regasification. We believe ssLNG offers immense potential, with a market of 7-10mmt by 2025. This could help absorb possible LNG capacity addition, despite 10.5% growth in domestic gas production during FY18-22.**
- **We reiterate Buy, with a target price of INR317.**

Lack of infrastructure in India has held back natural gas consumption

- Lack of sufficient domestic gas production, import terminals, natural gas pipeline infrastructure and policy initiatives have been a big bottleneck, resulting in only 6.1% CAGR in gas consumption during FY90-18E.
- Comparatively, China has witnessed better infrastructure development. More importantly, focused policy initiatives have resulted in higher gas production, construction of cross-country gas pipelines as well as LNG import capacity rising ~6.5x during 2008-17 to 51.6mmtpa. India has grown only 2.2x.
- As a result of increased focus, China has seen gas consumption CAGR of 10.1% during FY90-FY18E, almost 1.7x that of India. It offers immense learning for India, which wants to triple market share of natural gas in its primary energy mix to 20% by 2025.

ssLNG offers immense long-term potential

- Though much better than in India, China still lacks sufficient natural gas pipeline infrastructure. To cover for the lack of pipelines, it uses ssLNG of ~17mmtpa, almost 70% of India's total LNG consumption in FY18E.
- Amid poor progress in development of pipeline infrastructure, we look into possible potential that ssLNG offers in India in the longer term through applications like LNG trucking, LNG as bunkering fuel for coastal as well as inland water transportation, and other industrial applications.
- Our research shows that in the longer term, we could see potential incremental demand of ~7mmtpa of ssLNG from trucking, off-grid applications and bunkering, ~35% of current LNG consumption.

Upcoming supply surge unlikely to be a concern

- At best, we expect India's domestic gas production to rise at a CAGR of 10.5% during FY17-22, led primarily by gas production growth in ONGC.
- Considering that GAIL completes construction of breakwater facility and Kochi-Mangalore pipeline is completed, we would have availability of incremental 20.5mmtpa (73.8mmscmd) of LNG import capacity.

Stock Info

Bloomberg	PLNG IN
Equity Shares (m)	1500
52-Week Range (INR)	275 / 198
1, 6, 12 Rel. Per (%)	-7/-15/-8
M.Cap. (INR b)	341.4
M.Cap. (USD b)	5.0
12M Avg Val (INR M)	1237.0
Free float (%)	50.0

Financials Snapshot (INR b)

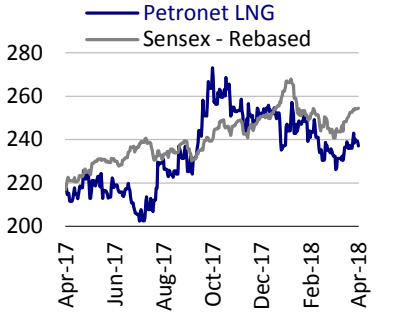
Y/E March	2018E	2019E	2020E
Net Sales	286.0	289.5	332.9
EBITDA	33.1	36.1	43.1
PAT	21.0	24.0	28.3
EPS (INR)	14.0	16.0	18.8
Gr. (%)	23.0	14.3	17.9
BV/Sh (INR)	64.0	75.5	89.1
RoE (%)	23.7	22.9	22.9
RoCE (%)	21.3	21.6	22.9
P/E (x)	16.4	14.4	12.2
P/BV (x)	3.6	3.0	2.6

Shareholding pattern (%)

As On	Mar-18	Dec-17	Mar-17
Promoter	50.0	50.0	50.0
DII	9.8	9.7	17.7
FII	25.1	25.6	19.4
Others	15.1	14.7	12.9

FII Includes depository receipts

Stock Performance (1-year)



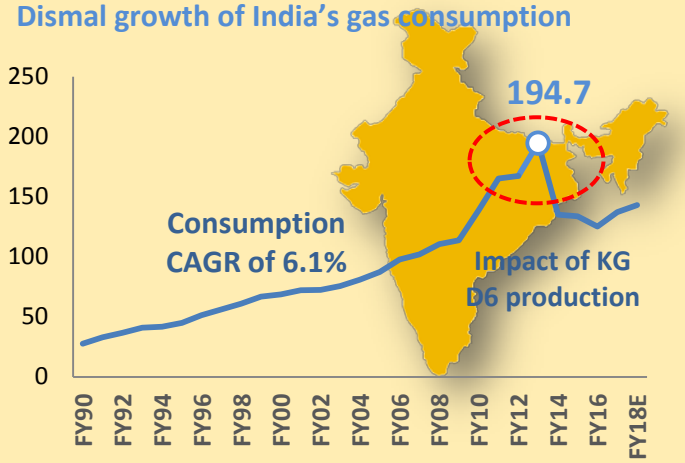
- Our research shows that with upcoming Jagdishpur-Haldia-Bokaro-Dhamra pipeline and sections on Mehsana-Bhatinda and Mallavaram-Bhilwara, we would be able to absorb all increase in gas availability.

Valuation and view

- Considering high demand potential, we do not expect any threat to PLNG's utilization or tariffs. With completion of Kochi-Mangalore pipeline and expansion of Dahej from 15-17.5mmtpa, we expect volume CAGR of 9% during FY17-20.
- We expect free cash flow generation of INR41/share over FY18-20. PLNG has planned two overseas LNG projects in Sri Lanka and in Bangladesh. If these do not materialize in the near term, one could expect higher dividend as well.
- The stock is trading at 12.2x FY20E EPS of INR18.8 and at an EV of 7.3x FY20E EBITDA. We value the stock using DCF (WACC of 11%, terminal growth of 3%). With a target price of INR317, we reiterate our **Buy** rating on the stock.

INDIA

Dismal growth of India's gas consumption



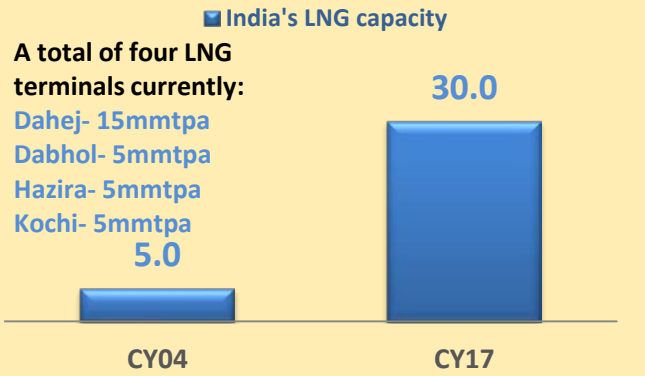
Source: BP Statistical Review, PPAC, MOSL

CHINA

China has witnessed far stronger growth

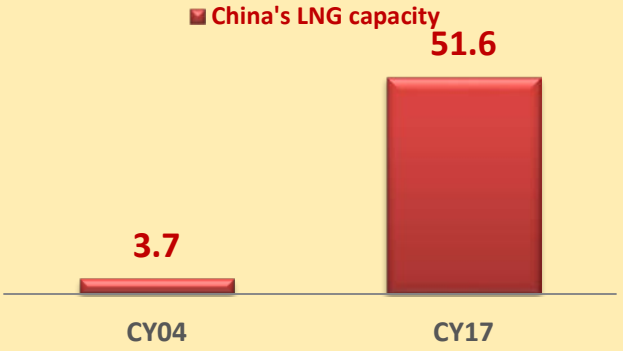
Source: BP Statistical Review, MOSL

LNG capacity growth in India (mmtpa)



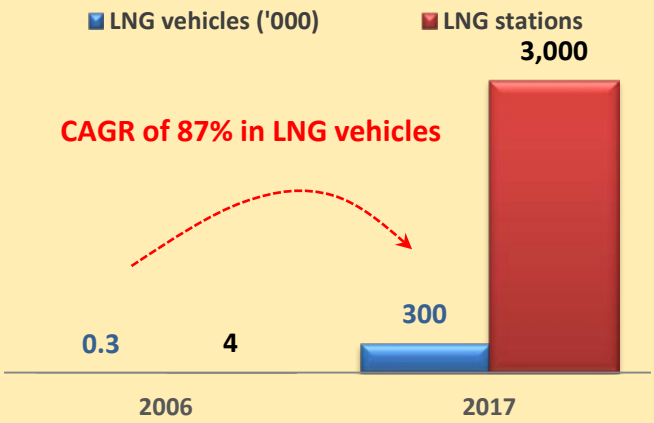
Source: Industry, MOSL

LNG capacity growth in China (mmtpa)

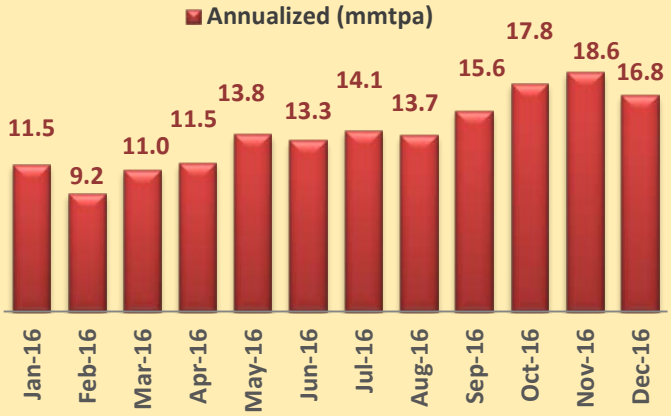


Source: Industry, MOSL

Growth in LNG vehicles in China



ssLNG consumption in China



Lack of infrastructure in India

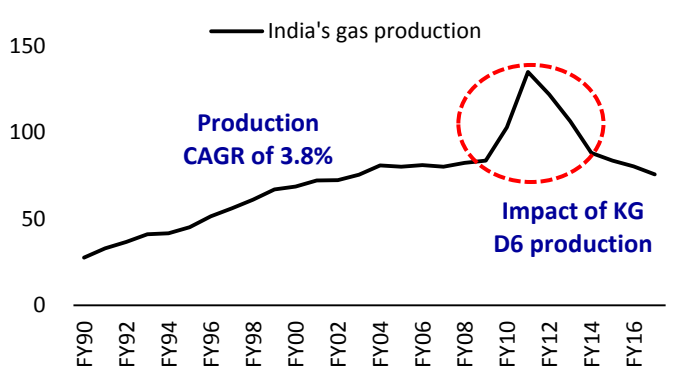
Poor natural gas consumption CAGR of 6.1% during FY90-18E

- **India's gas production has grown at a CAGR of 3.8% during FY90-17; addition of LNG import terminals has been slow and no cross-country pipeline has been completed.**
- **Construction of trunk gas pipeline has been poor, with only 4% growth in the past four years.**
- **Insufficient infrastructure development combined with poor availability has resulted in 6.1% CAGR in gas consumption during FY90-18E.**

Gas availability – a poor past

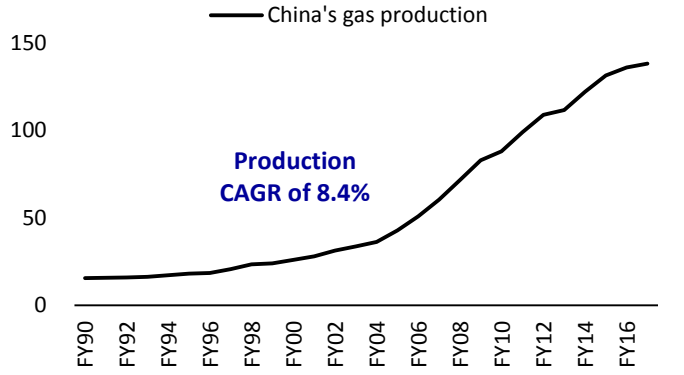
- India has a total of 26 sedimentary basins. However, only seven have been commercially exploited so far. This has resulted in a poor CAGR of 3.8% in India's domestic gas production during FY90-17. Compared with that, China's gas production has increased at a CAGR of 8.4%.
- India's LNG infrastructure has also grown at a very slow pace. Starting with the first LNG terminal of 5mmtpa at Dahej in 2004, the nominal capacity now is 30mmtpa. However, Dabhol does not operate during May-September due to lack of breakwater facility. Kochi can also operate only at 20% with ramp-up of BPCL and FACT in the absence of Kochi-Mangalore-Bangalore pipelines. Due to these infrastructure bottlenecks, available capacity is only 23.5mmtpa.
- Compared with that, China starting with its first LNG terminal of 3.7mmtpa at Dapeng in 2004 has grown to 51.6mmtpa; growth is 2.3x that in India.
- While no progress has been made in cross-country gas pipelines reaching India, China has constructed two pipelines – 1,800km Trans-Asia pipeline from Turkmenistan/Uzbekistan/Kazakhstan with a capacity of ~82mmscmd and 2,520km Myanmar-Yunnan pipeline with a capacity of ~35.6mmscmd, together accounting for ~18% of total consumption in China. It is also constructing ~4,000km Siberia-China pipeline, which could start delivering ~104mmscmd from 2020.
- As a result of poor availability, consumption in India has grown only at 6.1% CAGR during FY90-18E compared with 10.1% in China.

Exhibit 1: Domestic gas production (mmscmd)



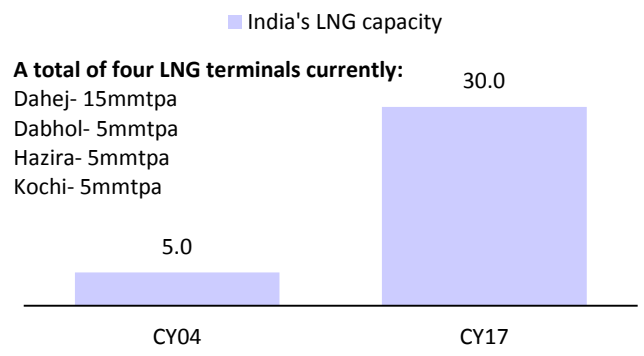
Source: BP Statistical Review, MOSL

Exhibit 2: China's gas production (mmscmd)



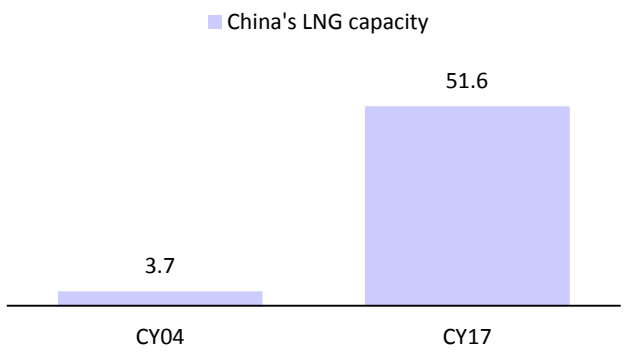
Source: BP Statistical Review, MOSL

Exhibit 3: LNG capacity growth in India (mmtpa)



Source: Industry, MOSL

Exhibit 4: LNG capacity growth in China (mmtpa)

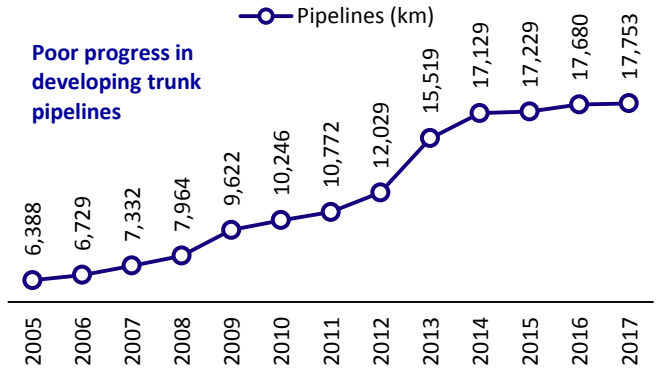


Source: Industry, MOSL

~4% increase in gas pipeline infrastructure in last four years

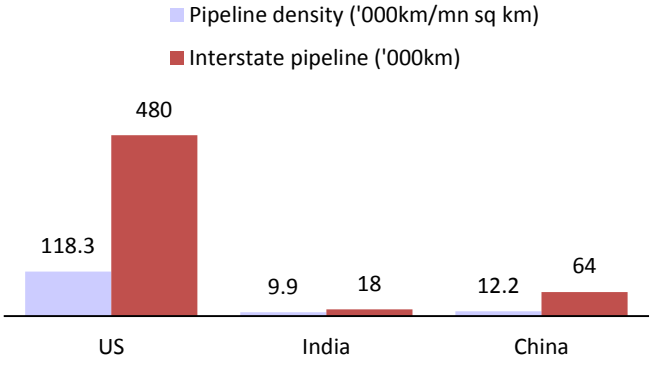
- Both India and China have fared poorly in development of gas infrastructure. Although not a strict comparison, but broadly, both stand much behind US in terms of pipeline density.
- In terms of trunk pipeline density per million square kilometers of habitable land, India and China stand at 9,900km and 12,200km, respectively against 118,300km for the US.
- In the last four years, India has added just 4% to its existing trunk pipeline network. Construction of ~450km Kochi-Mangalore pipeline, 2,539km Jagdishpur-Haldia-Bokaro-Dhamra pipeline, and small sections/spurs of Mehsana-Bhatinda and Mallavaram-Bhilwara pipelines are in progress.
- However, there is hardly any progress on ~10,000km additional pipelines already awarded by Petroleum and Natural Gas Regulatory Board (PNGRB). In fact, due to poor progress in Surat-Paradip pipeline, the right to construct this pipeline to GAIL has been revoked just weeks ago.
- Comparatively, China has set a target of almost doubling its trunk pipeline network from 64,000km to ~100,000km by 2020.

Exhibit 5: Dismal growth of India's trunk gas pipelines



Source: PNGSTAT, MOSL

Exhibit 6: Poor pipeline density in both India and China



Source: PPAC, World Bank, NEA, www.worldbymap.org, MOSL

Exhibit 7: Upcoming trunk gas pipelines in India

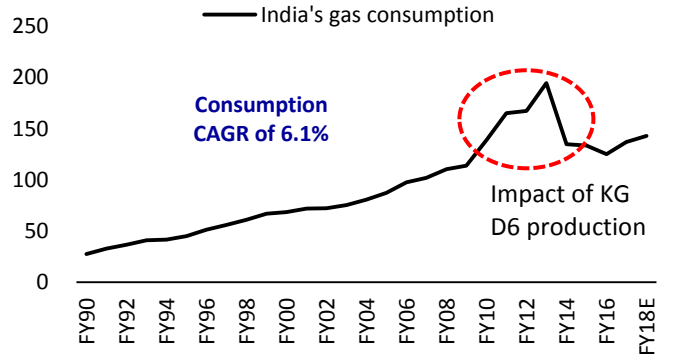
Pipeline	Entity	Length (Kms)	Capacity (mmscmd)	Remarks
Kochi-Kottanad-Bengaluru-Mangalore	GAIL	1,056	16	Work on ~450km Kochi-Mangalore ongoing
Dabhol-Bengaluru Spur Lines, Phase-2	GAIL	302	16	
Surat-Paradip	GAIL	2,112	74.81	Revoked
Jagdishpur-Haldia-Bokaro-Dhamra (Phase-I, 755 Km, 7.44 mmscmd Capacity)	GAIL	2,539	16	In progress
Mallavaram-Bhilwada	GSPC India Transco	2,042	78.25	Work ongoing in minor sections
Mehsana-Bathinda	GSPC India Gasnet	2,052	77.11	Work ongoing in minor sections
Bathinda-Jammu-Srinagar	GSPC India Gasnet	725	42.42	Work ongoing in minor sections
Kakinada-Vizag-Srikakulam	AP Gas Distribution Corporation	391	90	
Ennore- Nellore	Gas Transmission India Pvt. Ltd.	250	36	
Ennore- Tuticorin	IOCL	1,385	84.67	
Jaigarh-Mangalore	H-Energy	635	17	
Total		**13,489**		

Source: PPAC, MOSL

Insufficient gas availability + poor network = lack of market development

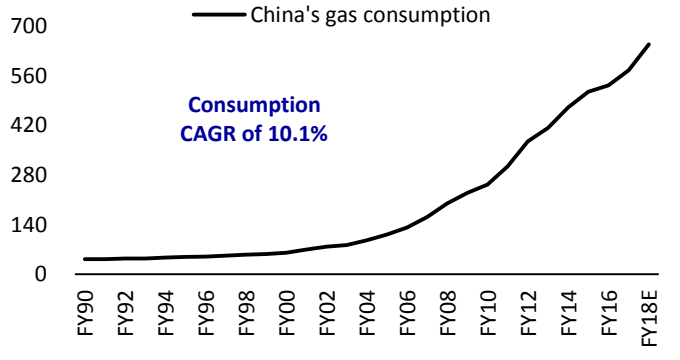
- India's gas consumption has grown at a CAGR of only 6.1% during FY90-18E. Lack of enabling policies and gas availability combined with poor access to gas in vast parts of the country are the key reasons.
- Compared with this, China, with a strong focus on battling pollution, has witnessed CAGR of 10.1%. In fact, apart from LNG import terminals, it has come up with several small liquefaction plants at onshore fields that do not have pipeline evacuation infrastructure. It has also been investing in development of its shale reserves.

Exhibit 8: Dismal growth of India's gas consumption



Source: BP Statistical Review, PPAC, MOSL

Exhibit 9: China has witnessed far stronger growth



Source: BP Statistical Review, MOSL

Expect both demand and supply to grow strongly in India

- On the supply front, we expect nameplate LNG import capacity to rise from 30mmtpa in FY17-end to 46.5mmtpa by FY22-end.
- Currently, two LNG terminals have been running sub-optimally due to infrastructure bottlenecks: (a) PLNG's 5mmtpa Kochi LNG terminal operating at ~14% due to lack of sufficient evacuation facilities, and (b) GAIL's 5mmtpa Dabhol LNG terminal operating at 40-50% due to lack of breakwater facility.
- Since there is no tender awarded for construction of breakwater facility at Dabhol yet, we believe that the terminal would continue to operate at 40-50%

utilization even in FY22. Additionally, the existing GSPL network needs to be augmented to allow upcoming Mundra terminal to operate at full utilization. The tender for this is also yet to be awarded. We expect utilization of Mundra LNG terminal also to be at ~50% in FY22. In initial 2-3 years, H-Energy's 4mmtpa FSRU is also likely to be 40-50% utilized. Kochi is likely to be utilized only 50%.

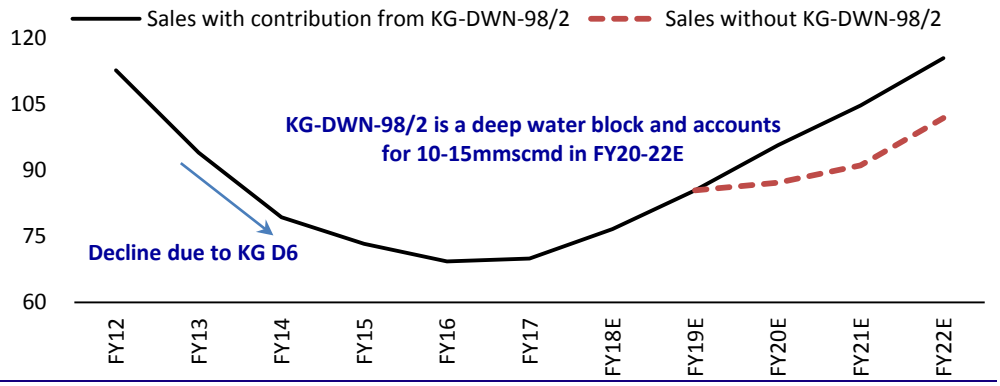
- Considering the above, we would have a supply of 37mmtpa (133mmscmd) of LNG in FY22. Even our assumption that Hazira and Ennore would operate at full utilization is playing devil's advocate.
- Domestic gas production is expected to grow at best at a CAGR of 10.5% during FY17-22, primarily due to production growth from ONGC. However, it may be noted that several of the larger projects like KG-DWN-98/2, Cluster-1 and Cluster-3 could face delays.
- Both LNG and domestic gas combined, we expect at best 11% CAGR in gas availability in India during FY17-22.
- On the demand front, we are adding a total of 5.3mmtpa of fertilizer capacity by FY22. A total of ~95mmtpa of refining capacity does not have access to natural gas. Both combined could consume 31.2mmscmd incrementally.
- City gas distribution (CGD) is also a promising space, offering 10-15% CAGR in consumption. Rising emphasis on usage of greener fuels would aid the growth of CGDs – expect incremental demand of 20mmscmd during FY17-22.
- The Power sector is also expected to improve its PLF. We believe that with doubling of PLF to 60%, Power could incrementally consume 34mmscmd. While this assumption could be challenged, it should be noted that we have assumed incremental supply of equal amount of domestic gas production, which is most likely to be delayed beyond the horizon considered.
- All in all, we expect demand to grow at a CAGR of 10.5% during FY17-22, which suggests possibility of underutilization at few plants.
- Additionally, a host of other companies have announced new LNG projects. If these projects do materialize, then it is a matter of concern if India would be able to absorb the surge of such large availability of gas.
- Higher availability of gas with non-commensurate increase in pipeline network may lead to poor utilization of LNG import terminals.
- In light of the above concerns, we present in the next section the bright prospects that ssLNG offers.

Exhibit 10: Main contributors of domestic gas production growth (mmscmd)

	FY19E	FY20E	FY21E	FY22E	Remarks
Daman	2.0	4.5			
Vashistha	2.0				
WO16	0.7				
KG-DWN-98/2		2-3	10-11		Expect delays
Bassein		3-4			
Deen Dayal			3.0		
Cluster 1			1-1.5		
Cluster 3				11.0	Expect delays
GK-28/42				3.0	Expect delays

Source: ONGC, MOSL

Exhibit 11: Growth in domestic gas sales (mmscmd)



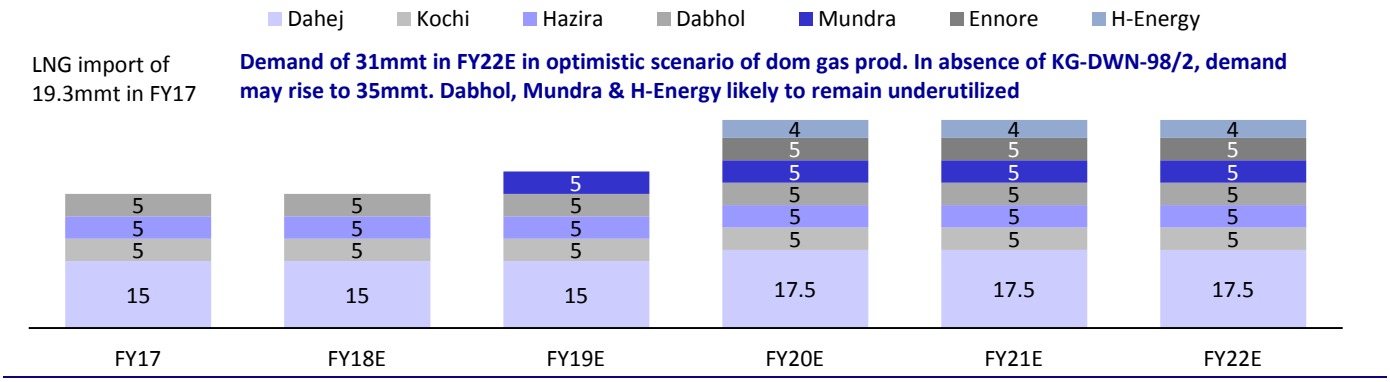
Source: PPAC, Industry, MOSL

Exhibit 12: Future LNG projects announced in India

Company	Location	Capacity (mmtpa)	Project type	Completion by	Remarks
Petronet LNG	Dahej	2.5	Brownfield	Early 2019	
GSPC/Adani	Mundra	5.0	Greenfield	Late 2018	❖ Delayed due to incomplete pipeline
IOCL	Ennore	5.0	Greenfield	2019	
H-Energy	Jaigarh	4.0	FSRU	Late 2018	
Swan Energy	Jafrabad	5.0	FSRU	Late 2019	❖ In partnership with Mitsui, GSPL, Gujarat Maritime Board
Adani	Dhamra	5.0	Greenfield	2020	
HPCL/Shapoorji	Chhara	5.0	Greenfield	NA	
H-Energy	Kolkata		Greenfield	NA	
AP/Shell/VGS	Kakinada	2.5	Greenfield	NA	
LNG Bharat	Krishnapatnam	2.5	Greenfield	NA	

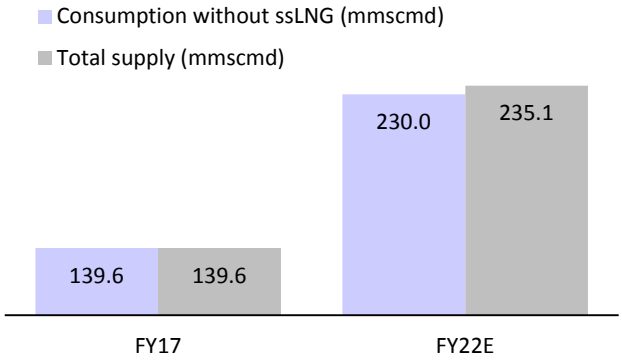
Source: Industry, MOSL

Exhibit 13: Growth in LNG capacity (mmtpa)



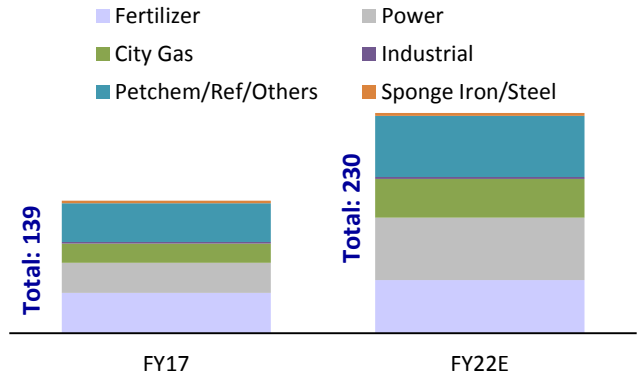
Source: PPAC, Industry, MOSL

Exhibit 14: Supply v/s demand



Source: MOSL

Exhibit 15: Consumption volume (mmscmd)



Source: MOSL

ssLNG – global potential of 100mmtpa by 2030

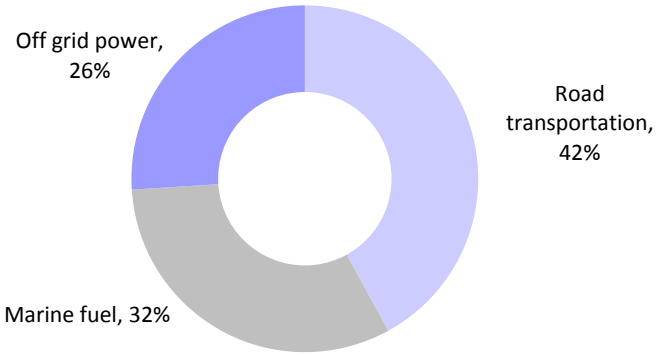
Applications in road transportation, bunkering, and off-grid

- **China, Indonesia and a few other countries have already been taking advantage of ssLNG applications.**
- **We estimate a potential of ~7mmtpa of consumption in India, which would tighten possible demand-supply gap of gas in the future.**
- **PLNG is well-positioned to take advantage of the potential.**

Global potential of 100mmtpa by 2030

- ssLNG finds uses primarily in road transportation, marine fuel and off-grid power applications. Engie expects the global ssLNG market to be as big as 100mmtpa (~36% of global LNG trade in 2017) by 2030 from 20-25mmtpa currently.
- Road transportation is expected to account for 42% of global ssLNG demand, followed by marine fuel at 32% and 26% for off-grid power applications.
- Usage of LNG in road transportation is most widely prevalent in China, with consumption of 8-10mmtpa across ~300,000 LNG trucks. Europe also appears to be building a Blue LNG Corridor.
- Usage of LNG for bunkering has seen good progress primarily in Europe. Off-grid power applications are mostly in countries like Indonesia and Japan because of geographical constraints.

Exhibit 16: Global outlook for ssLNG (100mmtpa by 2030)

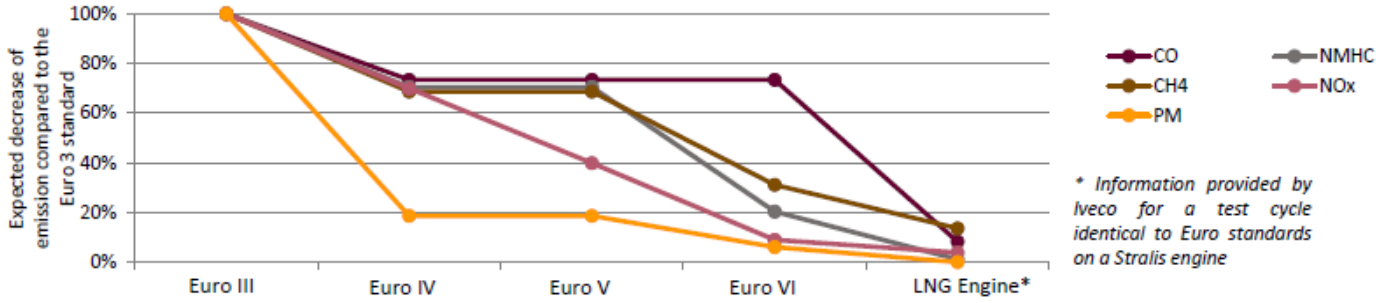


Source: Engie, MOSL

LNG usage for road transportation

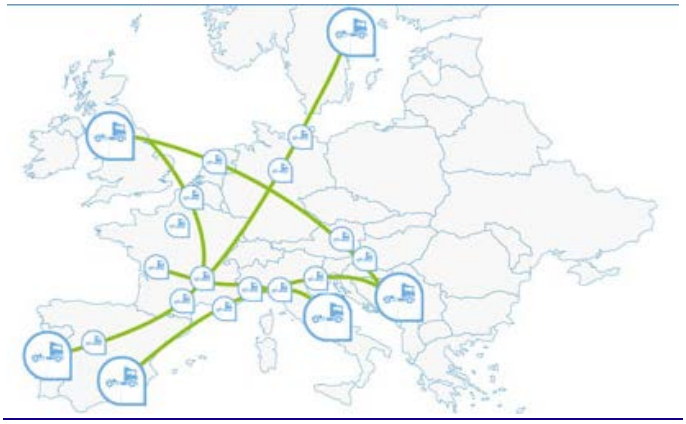
- LNG reportedly offers even better solution than Euro-VI auto fuels. As a result, Europe, which implemented Euro-VI in 2014, has been working on development of a Blue LNG Corridor since 2013. Our estimates suggest that LNG consumption on Blue Corridors could reach as much as 20mmtpa by 2030.
- China, with as many as 0.3m LNG trucks supported by ~3,000 LNG filling stations, already consumes 8-10mmtpa of LNG for road transportation.
- India also seems to be planning a big foray into LNG trucking (covered in detail in the report).

Exhibit 17: LNG offers much greener solution than even Euro-VI



Source: SIA Partners, MOSL

Exhibit 18: Blue LNG Corridors in Europe



Source: www.valves-community.com, MOSL

Exhibit 19: Estimated consumption by 2030

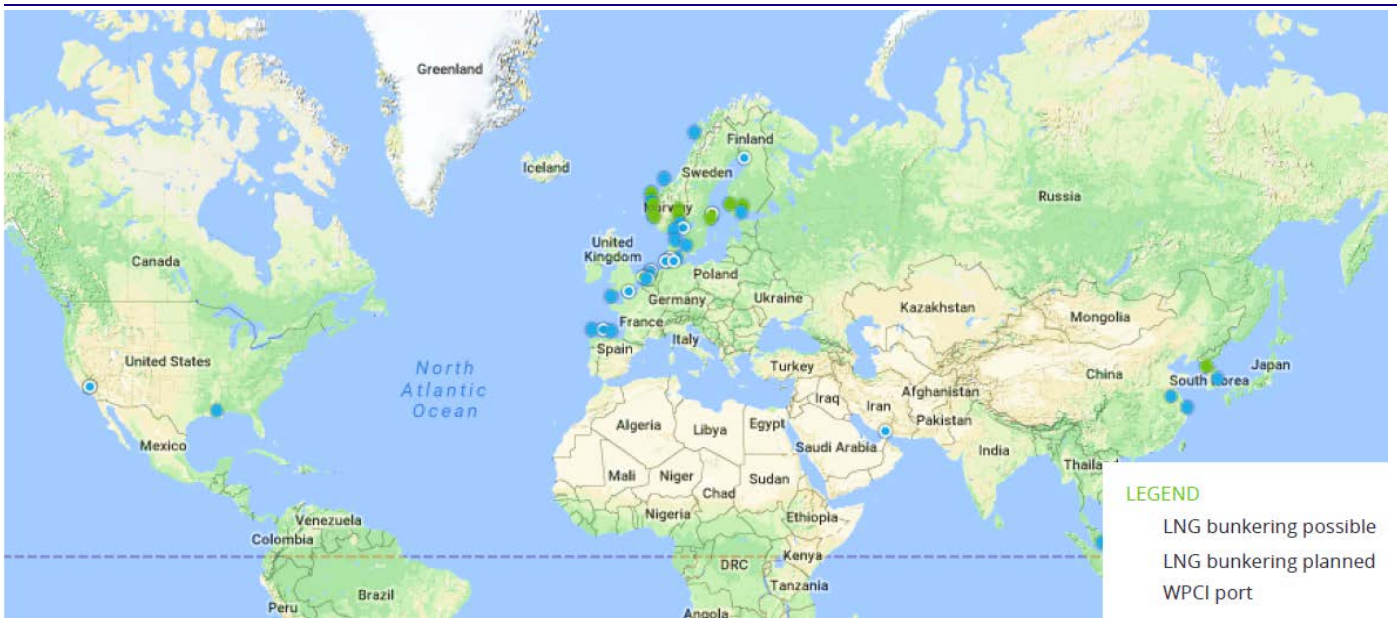
LNG trucks by 2030	400,000
Km run per day	500
Mileage per kg	3.6
Consumption per day per vehicle (kg)	140
Annual consumption (mmt)	20.44

Source: LNG World News, MOSL

Marine bunkering should gain pace by 2020

- The current global sulfur limit for bunker fuel is 3.5%. Vessels normally use fuel oil currently. International Maritime Organization (IMO) has set a marked reduction in sulfur limit globally to 0.5% from January 1, 2020.
- There are four Emission Control Areas identified by IMO – the Baltic Sea area, the North Sea area, the North American area and the United States Caribbean Sea area. These areas have already been following limit of 0.1% sulfur since January 1, 2015. This has already seen vessels either using fuel oil blended with diesel or scrubbed fuel oil.
- Stringent sulfur limits have already resulted in usage of LNG as bunkering fuel. Several ports like Antwerp, Amsterdam, Rotterdam, Zeebrudge and Stockholm have developed LNG bunkering facility. Several others are developing the same.
- China has 275 LNG-powered vessels. Singapore, the world's largest bunkering hub, is also investing heavily in building LNG bunkering capabilities.
- India also has stated its intent to use LNG bunkering for coastal as well as inland waterways (covered in detail in the report).

Exhibit 20: Progress in LNG bunkering worldwide

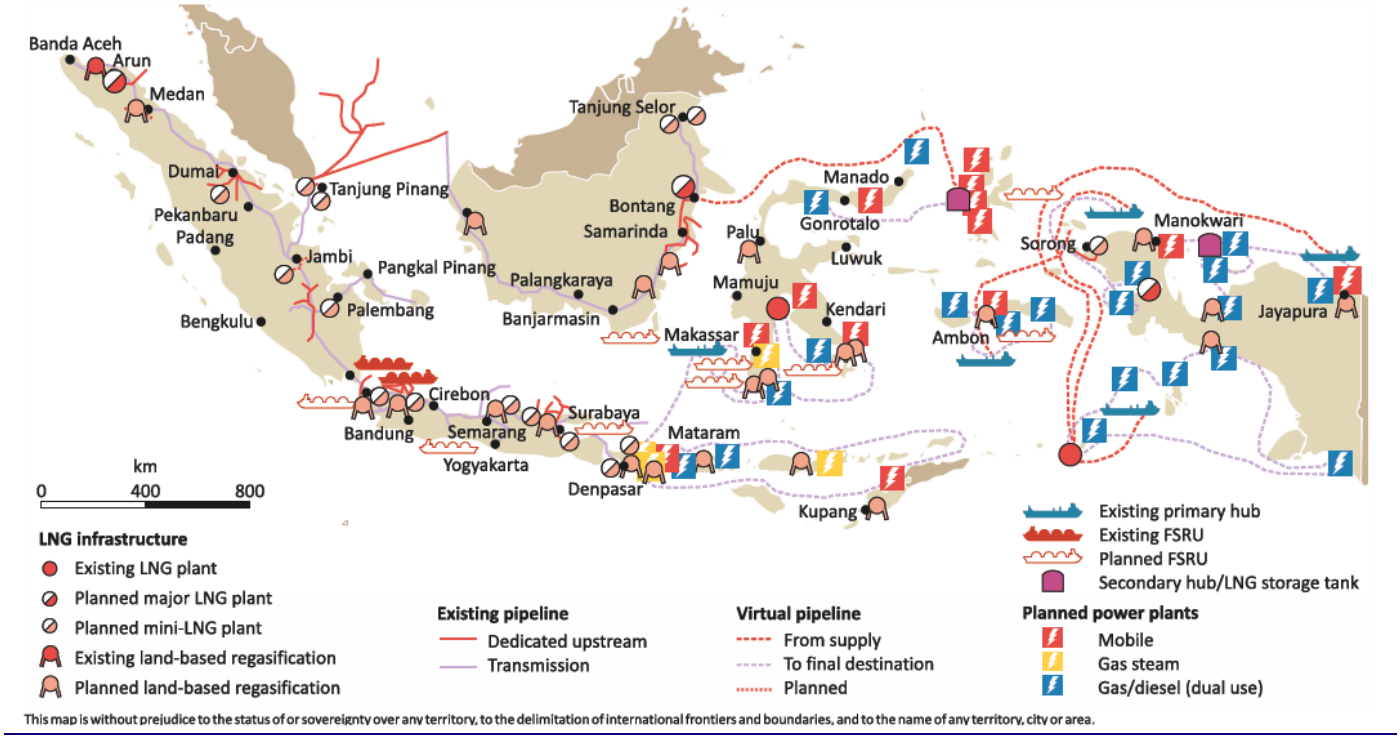


Source: www.lngbunkering.org, MOSL

Off-grid applications of LNG

- ssLNG can play an important role in places away from existing electricity or gas pipeline networks. ssLNG plays a crucial role in electrification in Indonesia.
- China, lacking a good natural gas pipeline network, uses ~8mmtpa of ssLNG for off grid power/industrial applications.
- In India, 4-5mmt of diesel is used by diesel gensets. Although small, this also is a possible area of future LNG consumption. Additionally, since large parts of the country do not have access to gas, need for usage of greener fuel may result in significant amount of off-grid industrial demand.

Exhibit 21: Indonesia plans large scale usage of ssLNG for off-grid power

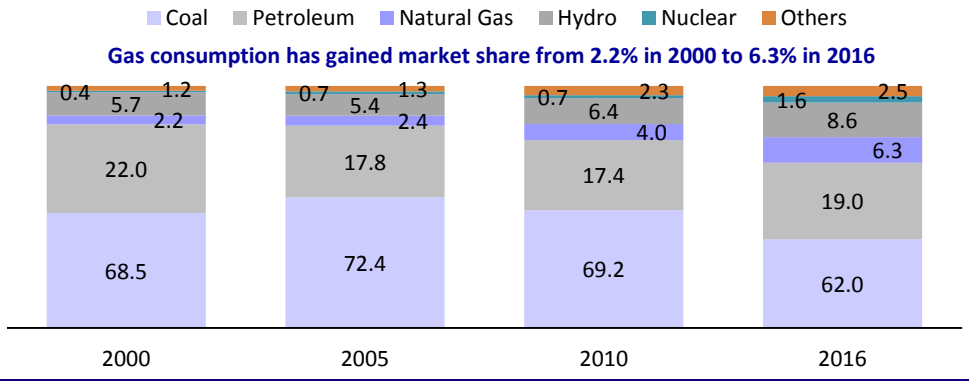


Source: IEA, MOSL

China has been leading in ssLNG applications

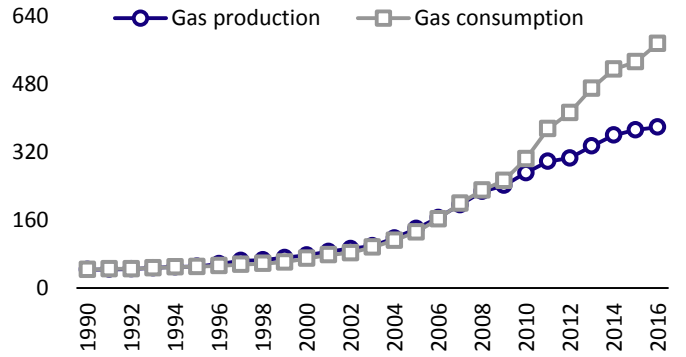
- China, facing a similar situation as India in terms of both pollution as well as lack of sufficient gas infrastructure, has seen large application of ssLNG. In fact, they have also been using small scale liquefaction for evacuation of gas from domestic fields that are not connected by gas pipelines.
- Consumption of ssLNG in China averaged ~17mmt in 2017, almost equally split between domestic and imported gas. Out of ~38mmt of LNG consumed in China in 2017, 8.5mmt (or 22%) was evacuated through trucks – either for consumption in transportation or for remote non-transportation consumption.
- Out of ~17mmt of ssLNG consumption in 2017, 8-10mmtpa is for LNG trucking and rest is for off-grid power as well as industrial applications. Bunkering is taking off, but is yet to be a significant consumer.
- In fact, despite increased focus on electric vehicles in China, the focus on higher penetration of natural gas has not softened a bit.
- India has also aimed to triple contribution of natural gas in its primary energy mix to 20% by 2025. Since we do not see much progress in laying of pipelines, we believe ssLNG is likely to see wider acceptance in India. Recent announcements by Shell India, PLNG and H-Energy seem to confirm this.

Exhibit 22: China on a greener path



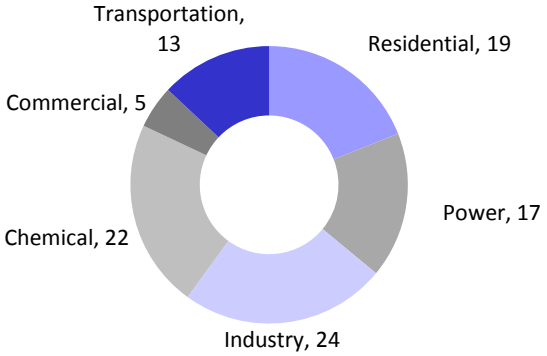
Source: Engie, MOSL

Exhibit 23: China's gas consumption and imports (mmscmd)



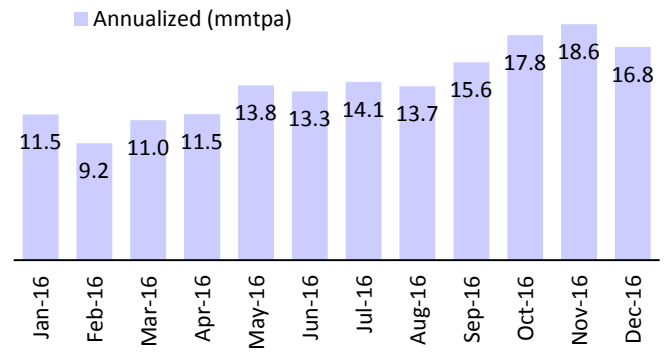
Source: BP Statistical Review, MOSL

Exhibit 24: Sector wise gas consumption (%, 2015)



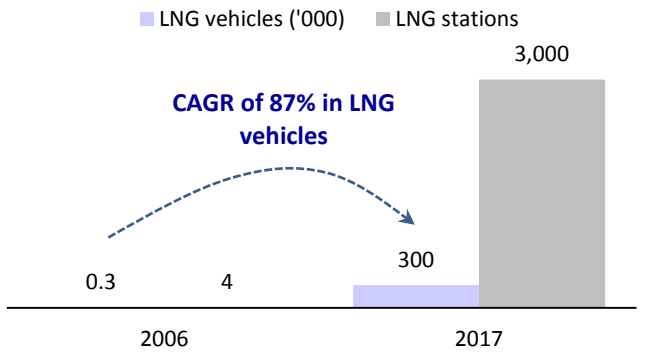
Source: Paulson Institute, MOSL

Exhibit 25: ssLNG consumption in China



Source: SIA Energy, MOSL

Exhibit 26: Growth in LNG vehicles in China



Source: Westport, CNBC, Industry, MOSL

ssLNG could be a 7-10mmtpa market

>30% of India's LNG consumption in FY18E

- **We estimate that LNG trucking could create demand of 4.5mmtpa within five years of implementation. Buses could add another 2mmtpa.**
- **Off-grid power and industrial applications could require additional 1.8mmtpa.**
- **Coastal as well as inland bunkering is likely to be a small player, with 0.3mmtpa of demand.**

LNG trucking – we estimate a market of 4.5mmtpa

- On the West Coast, we have existing LNG terminals at Dahej, Dabhol, Hazira and Kochi while H-Energy is expected to come up with an FSRU at Jaigarh and Swan Energy has announced FSRU at Jafrabad.
- On the East Coast as well, IOCL is coming up with an LNG terminal at Ennore and Adani has announced a terminal at Dhamra. Apart from these, there are a few more announcements that may take longer to come up.
- Our estimates suggest that an LNG truck could take ~4 years for breaking even, considering that diesel is priced at INR64.93/liter and FOB LNG at USD7/mmBtu. This is assuming a daily run of only 300km, much less than in developed countries. The management suggests a breakeven period of ~3 years.
- Considering that every year, LNG takes only 10% of new M&HCVs sales, in the fifth year, we could see a demand of as much as 4.5mmtpa of LNG for road transportation. If we were to extend this to include buses as well, the demand could rise to above 6mmtpa.
- PLNG has already identified ~4,000km of highways on the West Coast to set up 20 LNG refueling stations. H-Energy plans to invest INR10b to create LNG refueling infrastructure. Shell also plans to build a truck-loading station at Hazira to service fueling stations and sale to off-grid industrial consumers.
- PLNG is finalizing its plan with Tata Motors and Ashok Leyland for trucks and buses. In Phase-I, it aims to develop LNG trucking on Delhi-Mumbai and Kochi-Mangalore sections. In Phase-II, it aims to develop five corridors – Jammu-Delhi-Mumbai, Delhi-Chennai, Mumbai-Chennai, Delhi-Bangalore and Kandla-Mumbai-Kochi. In Phase-III, it plans to launch pan-India services.

Exhibit 27: Expect breakeven in four years (see Appendix-1 for LNG price buildup)

	Diesel	LNG
Distance travelled per day (km)	300	300
Additional cost for LNG vehicle (INRm)		2.5
Fuel consumed (km/lit, km/kg for LNG)	4.0	3.6
Fuel consumed per day (lit, kg for LNG)	75	84
Fuel cost (INR/lit, INR/kg for LNG)	64.93	37.5
Cost of fuel per day (INR)	4,870	3,153
Cost of fuel per year (INRm)	1.8	1.2
Saving per year (INRm)		0.6
Additional cost for LNG vehicle (INRm)		2.5
Breakeven period (years)		**4.0**

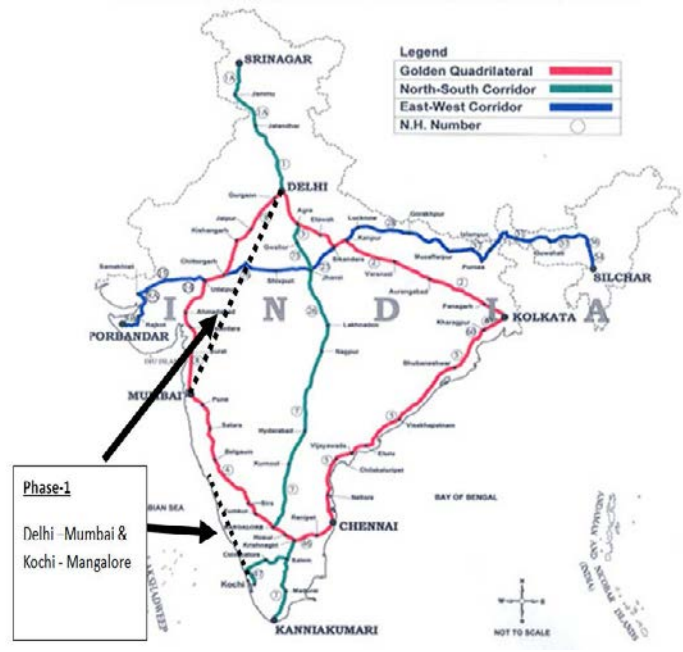
Source: Company, MOSL

Exhibit 28: India could see ssLNG demand potential of 4.5mmtpa from trucking

Major assumptions	Data	Remarks
M&HCV addition in year 1	263,080	Average addition in FY16-18E
Growth in addition every year	5%	
LNG mileage (km/kg)	3.6	
Average run per day (km)	300	Countries like US see much higher runs per day
LNG market share in new sales	10%	
Consumption in year 1 (mmt)	0.8	
Consumption in year 5 (mmt)	4.5	

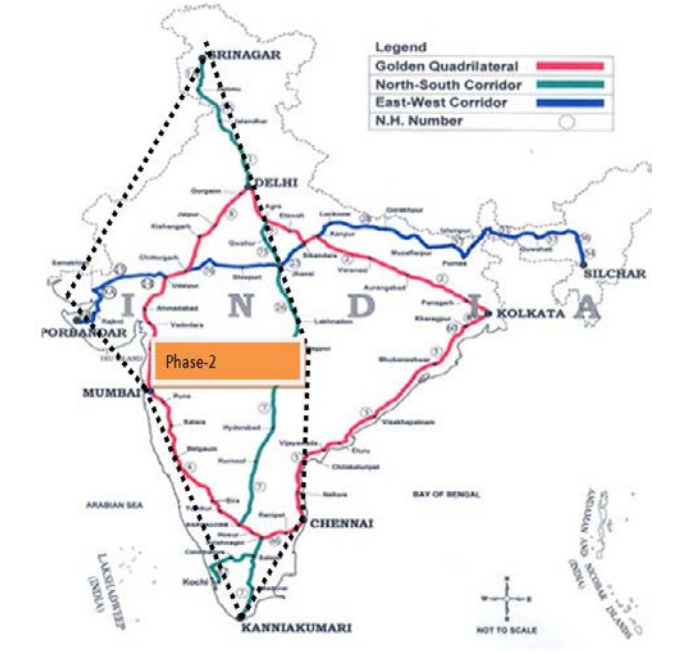
Source: ICRA, Platts, MOSL

Exhibit 29: Petronet's Phase-1 plan



Source: Company, MOSL

Exhibit 30: Petronet's Phase-II plan



Source: Company, MOSL

Off-grid power and industrial demand of 1.8mmtpa

- We estimate that diesel consumption by gensets in India stood at 4.5mmt in FY17. Assuming that 20% of these gensets convert to gas, this could create demand for ~1mmtpa with five years.
- We estimate that fuel oil (FO) consumption in India that could be replaced with LNG is 5.4mmt. If we assume that 20% of this gets converted into gas, then it would create demand of 0.8-1.1mmt in five years.
- The central government is mulling a ban on petcoke usage in the country. This would further add to growth in consumption of gas.
- Inox CVA has already been setting up some facilities for off-grid industrial applications. It is expected to come up with its four more installations soon.

Exhibit 31: Off-grid power could consume ~1mmtpa of LNG

Diesel consumption by gensets (FY13, mmt)	3.7	
Diesel consumption by gensets (FY18, mmt)	4.8	assuming 5% rise YoY
Diesel consumption by gensets (FY18, TBtu)	211.7	
Gas consumption by gensets (FY18, TBtu)	211.7	
Gas consumption by gensets (FY18, mmtpa)	4.2	
Assuming 20% conversion	0.8	
FY23 @20% penetration	**1.1**	considering 5% CAGR

Source: Shakti Foundation, MOSL

Exhibit 32: Fuel oil substitution could generate 0.8mmt of demand

Consumption which could be replaced (tmt)	5,338
Consumption which could be replaced (TBtu)	211
LNG demand considering 20% penetration (mmt)	**0.8**
Demand in 5 years (mmt)	**1.1**

Source: PNGSTAT, MOSL

Exhibit 33: Off-grid installations by INOX CVA

Company name	Location	Usage	Distance from source (km)*
General Motors	Gujarat	Paint shop (heating)	180
Vidushi Wires	Maharashtra	Furnace (heating)	450
Modern Insulators	Rajasthan	Kiln (heating)	470
Rama Cylinders	Gujarat	Furnace (heating)	600
Tetra Pak India	Maharashtra	Gas Engine (captive power)	600
HEG	Madhya Pradesh	Furnace (heating)	600
Linde India (BOC)	Maharashtra	Feedstock (hydrogen production)	700
Bedmutha Industries	Maharashtra	Furnace (heating)	400
Mahindra & Mahindra	Maharashtra	Paintshop (heating)	500
Sunita Hydrocolloids	Rajasthan	Furnace (heating)	700
Bhoruka Gases	Karnataka	Specialty gases (mixing)	600
Linde India (BOC)	Andhra Pradesh	Feedstock (hydrogen production)	1,000
Bharat Wire Ropes	Dhule, Maharashtra	Furnace (heating)	250

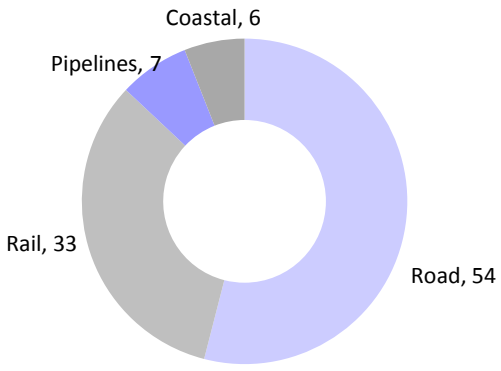
*At time of installation

Source: INOX, MOSL

Marine bunkering is not expected to be a significant market

- In FY16, only 6% of India's domestic cargo movement was coastal. India has not exploited inland waterways so far.
- With the Sagarmala project, the government aims to increase coastal/inland movement of domestic cargo from 80mmt in FY16 to 465mmt in FY25.
- We estimate that this would generate demand of 0.3mmt of LNG considering 20% penetration.

Exhibit 34: Mode of movement for domestic cargoes (%)



Source: www.business-standard.com, MOSL

Exhibit 35: Petronet's Phase-II plan

Coastal movement in FY16 (mmt)	**80**
Estimated coastal/inland movement in FY25	465
FO consumption for shipping in FY16 (tmt)	333
Estimated FO consumption in FY25 (tmt)	1,933
Assuming conversion	
20%	387
TBtu	15
mmt LNG	0.3

Source: Company, MOSL

7-10mmtpa from above applications could absorb new supplies

- As per Exhibit 15, India's consumption would be slightly ahead of available capacities in FY22. This assumes 50% utilization at Kochi, 40-50% utilization at H-Energy, 50% utilization at Mundra and 50% utilization at Dabhol.
- We also assume that Hazira runs at 100% utilization. ssLNG demand could broadly absorb full utilization of all assets that we have assumed would remain under-utilized due to infrastructure bottlenecks.
- Hence, we continue to believe that there is no threat of under-utilization for PLNG's Dahej facility even after expansion to 17.5mmtpa in early 2019.
- Due to brownfield expansion at fraction of a greenfield capacity, Dahej remains the cheapest alternative available to anyone who wants to import LNG. While we do not build any expansion in tariff at Kochi, we have not assumed expansion in Dahej regas tariff post FY22.

PLNG a clear long-term winner

Expect 9% volume CAGR over FY17-20

- **We expect PLNG to post volume CAGR of 9% during FY17-20.**
- **EBITDA and EPS CAGR over FY17-20 would be 18%.**
- **We expect free cash flow of INR41/share during FY18-20.**

Expect volume CAGR of 9% during FY17-20

- We expect utilization at Kochi terminal to ramp up to 20% once BPCL ramps up its Kochi expansion and FACT volumes pick up.
- Kochi-Mangalore pipeline is expected to be completed in 2HCY18; this would take utilization of Kochi to ~50%.
- Dahej LNG terminal expansion from 15mmtpa to 17.5mmtpa is expected to be completed by early 2019. All combined would result in volume CAGR of 9% during FY17-20.

Not building any tariff hike at Kochi after 2018, Dahej after FY22

- Due to higher initial capex, Kochi's regas tariff stands at ~INR75/mmBtu compared with INR47/mmBtu at Dahej.
- We do not expect any rise in regas tariff after 2018. Dahej remains the cheapest option for anyone who wants to import LNG into India. We believe PLNG would be able to take few more hikes till regas tariff reaches INR55/mmBtu in FY22E.
- Volume uptick and tariff increase would result in EBITDA and EPS CAGR of 18% during FY17-20.

Valuation and recommendation

- As we have mentioned, we do not see competition either from domestic production or from upcoming LNG terminals/FSRUs as a threat to PLNG's utilization or tariffs. In fact, over a longer period, pollution concerns may drive higher LNG usage aided by policy changes, as in China.
- We estimate free cash flow generation at INR41/share over FY18-20. Lack of clarity on cash deployment has been a concern. However, PLNG has not made any unrelated diversification so far. It has earmarked two overseas projects in Sri Lanka and Bangladesh. It is also contemplating investing in upcoming LNG expansion projects of Qatar Gas. This upstream diversification would be beneficial as it would gain by partnering with the largest seller of LNG globally.
- We value PLNG using DCF – WACC of 11% and terminal growth of 3%. We arrive at a target price of INR317, implying FY20E P/E of ~17x. The stock is currently trading at 12.2x FY20E EPS and provides an upside of 38%.

Exhibit 36: PLNG – Key assumptions

	FY15	FY16	FY17	FY18E	FY19E	FY20E	FY21E	FY22E
Capacity (mmt)	**15.0**	**15.0**	**16.3**	**20.0**	**20.6**	**22.5**	**22.5**	**22.5**
Dahej	10.0	10.0	11.3	15.0	15.6	17.5	17.5	17.5
Kochi	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Throughput (mmt)	**10.5**	**11.2**	**14.4**	**16.4**	**17.2**	**18.8**	**20.0**	**20.0**
Dahej	**10.4**	**10.9**	**14.1**	**16.0**	**16.0**	**16.8**	**17.5**	**17.5**
Kochi	**0.1**	**0.3**	**0.3**	**0.4**	**1.3**	**2.0**	**2.5**	**2.5**
Utilization rate (%)	**70%**	**75%**	**88%**	**82%**	**83%**	**84%**	**89%**	**89%**
Dahej	104%	109%	126%	107%	102%	96%	100%	100%
Kochi	2%	6%	5%	7%	25%	40%	50%	50%
Re-gasification charges (INR/mmbtu)								
Dahej	39.1	41.0	42.6	44.7	47.5	49.9	52.4	55.0
Kochi	65.9	69.2	72.7	75.4	80.5	80.5	80.5	80.5
Marketing margins on short-term/spot	9.3	-15.5	57.7	140.6	28.6	28.6	28.6	28.6

Source: Company, MOSL

Exhibit 37: We value PLNG on DCF methodology

	FY16	FY17	FY18	FY19	FY20	FY21	FY22
PAT incl. div/FBT	9,133	17,057	20,981	23,984	28,268	33,698	36,857
Depr	3,216	3,691	4,222	5,760	5,885	6,010	6,135
Change in net working capital	17,087	(25,979)	(4,231)	877	587	758	682
Capex	(9,931)	(4,796)	(10,000)	(10,000)	(5,000)	(5,000)	(5,000)
FCFF (INR m)	19,504	(10,028)	10,972	20,621	29,739	35,466	38,674

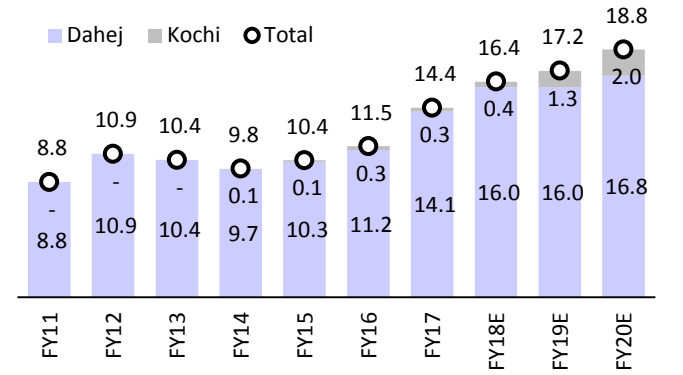
One year valuation	
NPV (INR m)	104,476
Terminal growth rate	3.0%
TV (INR m)	364,080
Enterprise value (INR m)	468,556
Net debt (INR m)	(7,677)
Equity value (INR m)	476,233
Target price (INR)	**317**

WACC (%)	11.0%

Source: Company

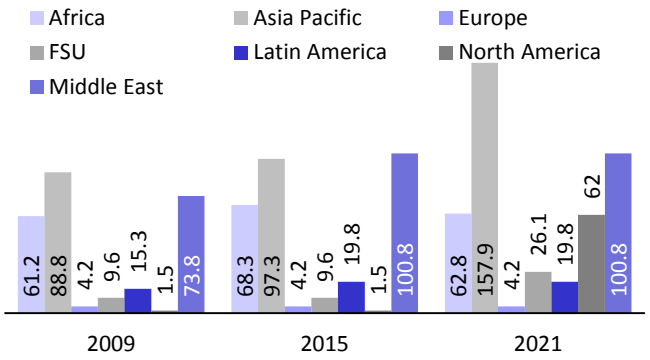
Story in charts

Exhibit 38: Volume growth led by capacity ramp-up



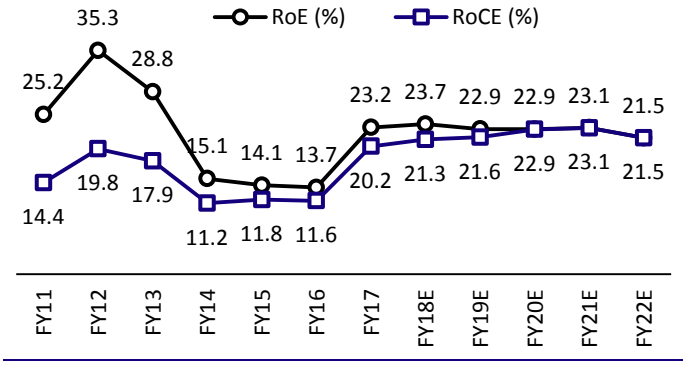
Source: Company, MOSL

Exhibit 39: 142mmtpa of liquefaction capacity under construction



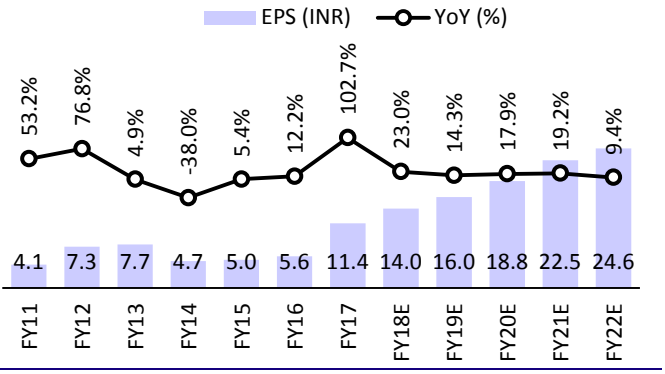
Source: IGU, MOSL

Exhibit 40: Stable return ratios



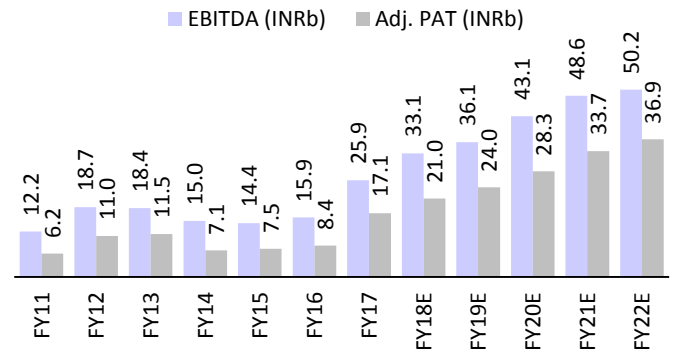
Source: Company, MOSL

Exhibit 41: Expect PLNG to report ~18% EPS CAGR over FY17-20



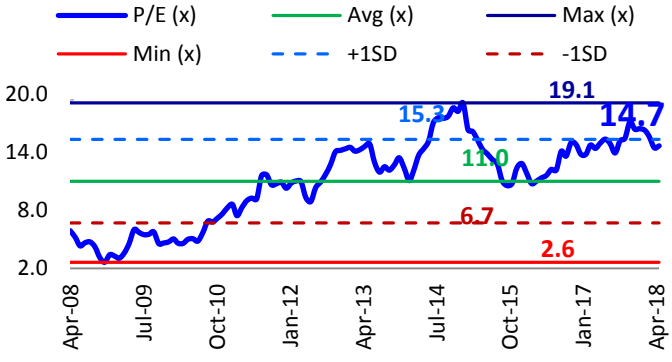
Source: Company, MOSL

Exhibit 42: EBITDA/PAT growing at 18% CAGR during FY17-20E



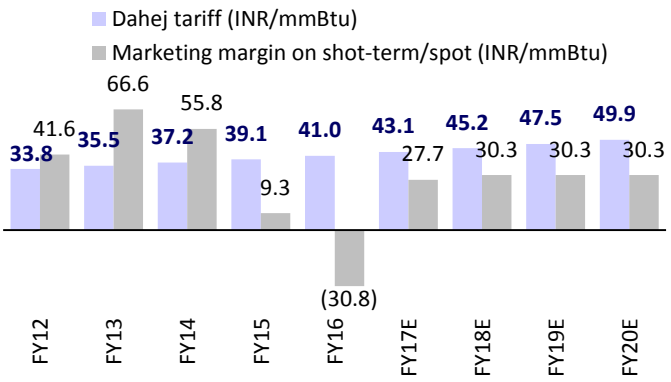
Source: Company, MOSL

Exhibit 43: One-year forward PE for Petronet LNG



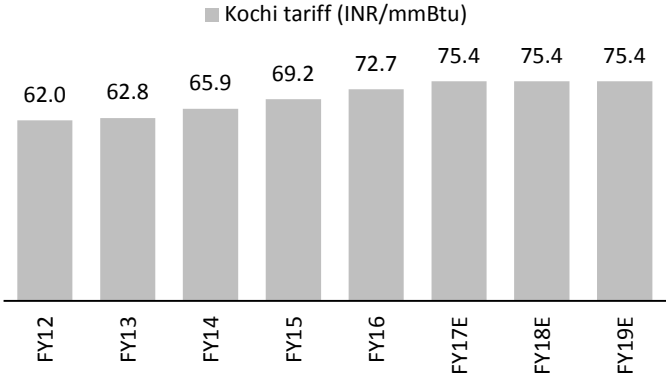
Source: Company, MOSL

Exhibit 44: Not building in tariff hike at Dahej from 2021



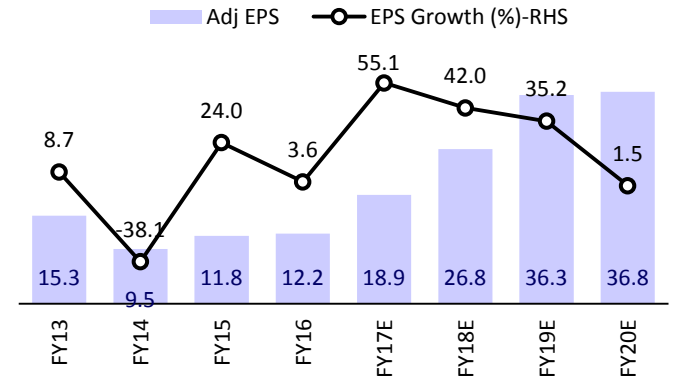
Source: Company, MOSL

Exhibit 45: Not building in any tariff hike at Kochi from 2018



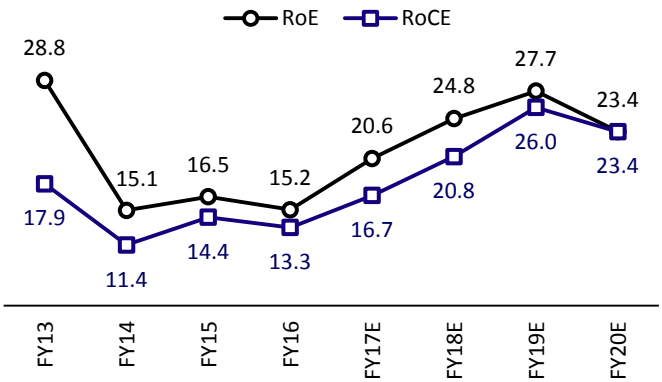
Source: Company, MOSL

Exhibit 46: EPS to grow 3x over FY16-19E



Source: Company, MOSL

Exhibit 47: Improving return ratios



Source: Company, MOSL

Appendix

LNG price build up (USD/mmBtu)	
FOB	7.0
Transport cost	1.0
Customs (%)	2.5
CIF	8.2
Pipeline transportation	1.0
At city gate	9.2
Excise (%)	14.5
VAT (%)	5.0
Price for consumer	11.1
Price for consumer (USD/kg)	0.6
Exchange rate (INR/USD)	65.0
Price for consumer (USD/kg)	37.5

Financials and Valuations

Standalone - Income Statement (INR m)

Y/E March	FY13	FY14	FY15	FY16	FY17	FY18E	FY19E	FY20E
Total Income from Operations	**314,672**	**377,476**	**395,010**	**271,334**	**246,160**	**285,973**	**289,511**	**332,912**
Change (%)	38.6	20.0	4.6	-31.3	-9.3	16.2	1.2	15.0
Raw Materials	293,050	358,424	376,109	250,757	214,169	247,043	246,879	282,121
Employees Cost	370	466	571	717	739	880	1,051	1,405
Other Expenses	2,819	3,601	3,940	3,958	5,330	4,910	5,445	6,309
Total Expenditure	**296,239**	**362,491**	**380,620**	**255,431**	**220,238**	**252,833**	**253,375**	**289,835**
% of Sales	94.1	96.0	96.4	94.1	89.5	88.4	87.5	87.1
EBITDA	**18,433**	**14,984**	**14,390**	**15,903**	**25,923**	**33,139**	**36,136**	**43,077**
Margin (%)	5.9	4.0	3.6	5.9	10.5	11.6	12.5	12.9
Depreciation	1,866	3,081	3,154	3,216	3,691	4,222	5,760	5,885
EBIT	**16,567**	**11,903**	**11,236**	**12,687**	**22,232**	**28,917**	**30,376**	**37,192**
Int. and Finance Charges	1,184	2,196	2,935	2,387	2,097	1,601	564	7
Other Income	1,817	838	1,548	1,704	3,466	3,084	4,450	5,638
PBT bef. EO Exp.	**17,200**	**10,545**	**9,849**	**12,004**	**23,602**	**30,400**	**34,263**	**42,823**
EO Items	0	0	1,323	724	0	0	0	0
PBT after EO Exp.	**17,200**	**10,545**	**11,172**	**12,728**	**23,602**	**30,400**	**34,263**	**42,823**
Total Tax	5,710	3,426	2,347	3,588	6,545	9,419	10,279	14,556
Tax Rate (%)	33.2	32.5	21.0	28.2	27.7	31.0	30.0	34.0
Reported PAT	**11,490**	**7,119**	**8,825**	**9,140**	**17,057**	**20,981**	**23,984**	**28,268**
Adjusted PAT	**11,490**	**7,119**	**7,502**	**8,416**	**17,057**	**20,981**	**23,984**	**28,268**
Change (%)	4.9	-38.0	5.4	12.2	102.7	23.0	14.3	17.9
Margin (%)	3.7	1.9	1.9	3.1	6.9	7.3	8.3	8.5

Standalone - Balance Sheet (INR m)

Y/E March	FY13	FY14	FY15	FY16	FY17	FY18E	FY19E	FY20E
Equity Share Capital	7,500	7,500	7,500	7,500	7,500	15,000	15,000	15,000
Total Reserves	36,997	42,361	49,386	58,640	73,439	81,029	98,278	118,609
Net Worth	**44,497**	**49,861**	**56,886**	**66,140**	**80,939**	**96,029**	**113,278**	**133,609**
Total Loans	27,182	31,965	32,738	22,329	14,500	16,000	100	100
Deferred Tax Liabilities	3,910	5,530	7,270	5,886	7,302	7,302	7,302	7,302
Capital Employed	**75,589**	**87,356**	**96,894**	**94,355**	**102,741**	**119,331**	**120,680**	**141,011**
Gross Block	35,796	77,946	87,869	90,214	110,507	113,946	116,446	118,946
Less: Accum. Deprn.	12,217	15,295	18,443	22,109	26,277	30,499	36,259	42,143
Net Fixed Assets	**23,579**	**62,650**	**69,426**	**68,105**	**84,230**	**83,447**	**80,187**	**76,802**
Capital WIP	43,305	8,799	7,469	15,505	486	7,047	14,547	17,047
Total Investments	**1,399**	**1,399**	**900**	**4,606**	**4,322**	**4,322**	**4,322**	**4,322**
Curr. Assets, Loans&Adv.	**42,546**	**46,278**	**33,392**	**36,046**	**49,253**	**60,976**	**58,882**	**83,687**
Inventory	10,366	9,557	8,826	2,461	5,405	6,927	6,942	7,941
Account Receivables	16,898	20,156	13,428	9,885	12,108	12,536	12,691	14,593
Cash and Bank Balance	12,685	12,327	3,641	21,767	3,210	9,791	7,777	29,579
Loans and Advances	2,596	4,237	7,497	1,932	28,530	31,723	31,473	31,574
Curr. Liability & Prov.	**35,239**	**31,771**	**14,292**	**29,907**	**35,550**	**36,462**	**37,258**	**40,847**
Account Payables	32,940	29,042	12,356	29,752	35,390	31,426	31,502	34,063
Provisions	2,299	2,729	1,936	155	160	5,035	5,756	6,784
Net Current Assets	**7,306**	**14,507**	**19,100**	**6,139**	**13,703**	**24,515**	**21,624**	**42,839**
Appl. of Funds	**75,589**	**87,355**	**96,894**	**94,354**	**102,741**	**119,331**	**120,680**	**141,011**

E: MOSL Estimates

Financials and Valuations

Ratios

Y/E March	FY13	FY14	FY15	FY16	FY17	FY18E	FY19E	FY20E
Basic (INR)								
EPS	**7.7**	**4.7**	**5.0**	**5.6**	**11.4**	**14.0**	**16.0**	**18.8**
Cash EPS	8.9	6.8	7.1	7.8	13.8	16.8	19.8	22.8
BV/Share	29.7	33.2	37.9	44.1	54.0	64.0	75.5	89.1
DPS	2.5	1.0	2.0	2.5	2.5	3.4	3.8	4.5
Payout (%)	38.2	24.7	39.8	48.0	25.7	28.1	28.1	28.1
Valuation (x)								
P/E					20.2	16.4	14.4	12.2
Cash P/E					16.6	13.7	11.6	10.1
P/BV					4.3	3.6	3.0	2.6
EV/Sales					1.4	1.2	1.2	0.9
EV/EBITDA					13.7	10.6	9.3	7.3
Dividend Yield (%)	1.1	0.4	0.9	1.1	1.1	1.5	1.7	2.0
FCF per share	5.5	-0.3	-1.4	15.4	-5.8	7.3	13.7	19.8
Return Ratios (%)								
RoE	28.8	15.1	14.1	13.7	23.2	23.7	22.9	22.9
RoCE	17.9	11.2	11.8	11.6	20.2	21.3	21.6	22.9
RoIC	51.2	19.4	11.9	13.3	21.8	20.7	22.1	26.7
Working Capital Ratios								
Asset Turnover (x)	4.2	4.3	4.1	2.9	2.4	2.4	2.4	2.4
Inventory (Days)	12	9	8	3	8	9	9	9
Debtor (Days)	20	19	12	13	18	16	16	16
Leverage Ratio (x)								
Net Debt/Equity	0.3	0.4	0.5	-0.1	0.1	0.0	-0.1	-0.3

Standalone - Cash Flow Statement (INR Million)

Y/E March	FY13	FY14	FY15	FY16	FY17	FY18E	FY19E	FY20E
OP/(Loss) before Tax	17,203	10,545	9,849	11,992	23,602	30,400	34,263	42,823
Depreciation	1,866	3,081	3,154	3,216	3,691	4,222	5,760	5,885
Direct Taxes Paid	-5,710	-3,426	-1,024	-2,860	-6,545	-9,419	-10,279	-14,556
(Inc)/Dec in WC	5,194	-7,559	-13,279	17,087	-25,979	-4,231	877	587
CF from Operations	**18,552**	**2,641**	**-1,300**	**29,435**	**-5,232**	**20,972**	**30,621**	**34,739**
Others	280	4,620	7,740	3,616	1,274	0	0	0
CF from Operating incl EO	**18,832**	**7,261**	**6,440**	**33,051**	**-3,958**	**20,972**	**30,621**	**34,739**
(Inc)/Dec in FA	-10,635	-7,647	-8,599	-9,931	-4,796	-10,000	-10,000	-5,000
Free Cash Flow	**8,197**	**-386**	**-2,159**	**23,120**	**-8,754**	**10,972**	**20,621**	**29,739**
(Pur)/Sale of Investments	0	0	499	-3,706	283	0	0	0
Others	0	0	0	0	0	0	0	0
CF from Investments	**-10,635**	**-7,647**	**-8,100**	**-13,637**	**-4,513**	**-10,000**	**-10,000**	**-5,000**
Issue of Shares	0	0	0	0	0	0	0	0
Inc/(Dec) in Debt	-3,158	1,782	-5,227	-1,409	-7,829	1,500	-15,900	0
Dividend Paid	-4,387	-1,755	-3,510	-4,387	-4,387	-5,891	-6,734	-7,937
Others	2,194	0	1,710	4,508	2,130	0	0	0
CF from Fin. Activity	-5,351	28	-7,027	-1,288	-10,086	-4,392	-22,634	-7,937
Inc/Dec of Cash	**2,846**	**-358**	**-8,686**	**18,126**	**-18,557**	**6,581**	**-2,014**	**21,802**
Opening Balance	9,839	12,685	12,327	3,641	21,767	3,210	9,791	7,777
Closing Balance	**12,685**	**12,327**	**3,641**	**21,767**	**3,210**	**9,791**	**7,777**	**29,579**

NOTES

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Investment Rating	Expected return (over 12-month)
BUY	>=15%
SELL	< - 10%
NEUTRAL	> - 10 % to 15%
UNDER REVIEW	Rating may undergo a change
NOT RATED	We have forward looking estimates for the stock but we refrain from assigning recommendation

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