



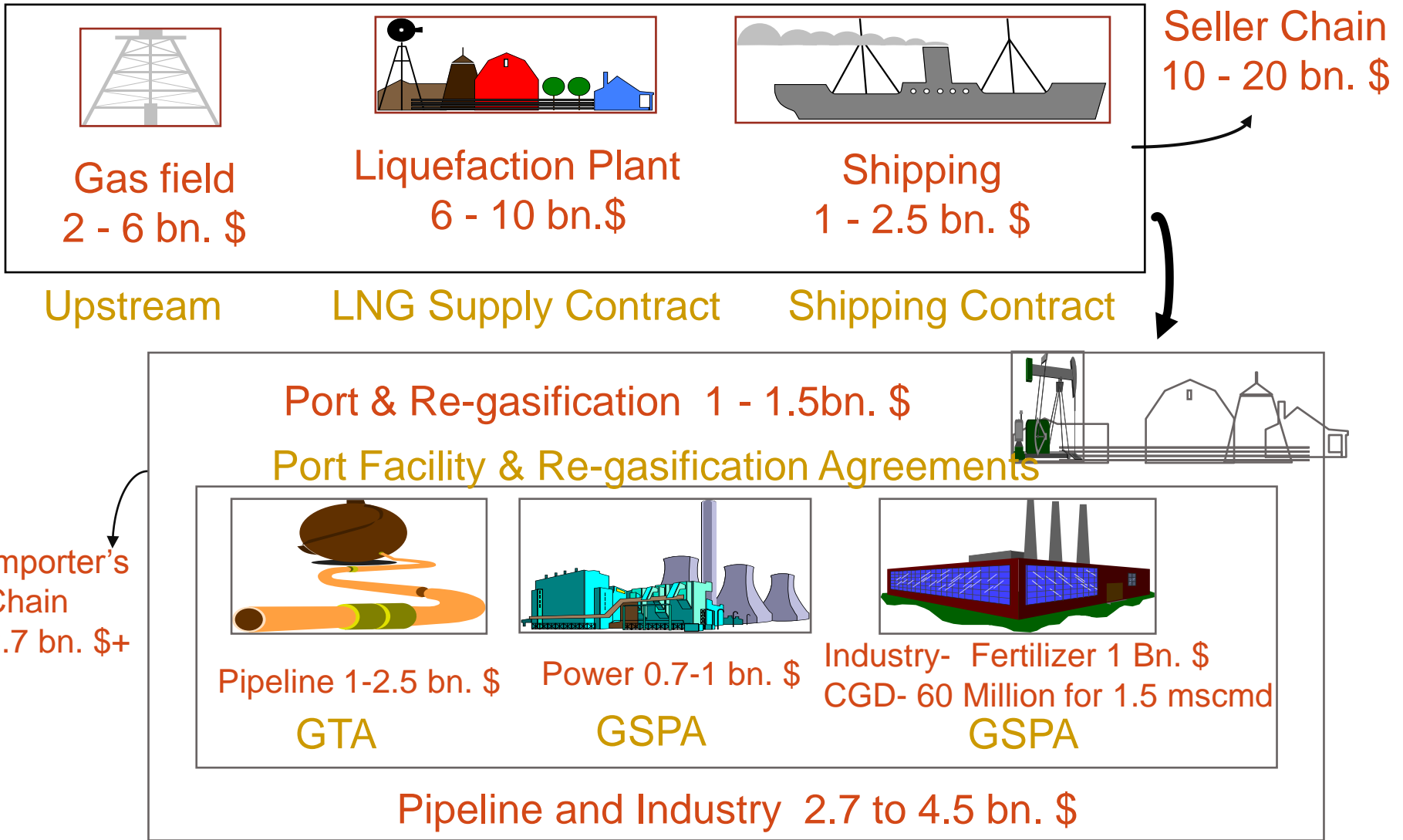
WORLD LNG SCENARIO AND LNG CHAIN

**Dahej, Gujarat
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LNG CHAIN: CAPITAL INTENSITY – 5 mmtpa



COSTS ACROSS LNG VALUE CHAIN



- Overall differential ranges from \$5.20 /MMBtu to \$9.80/MMBtu
- Variability in upstream costs due to variable exploration and production expenses
- Variability in shipping costs due to differential distance
- Wide variation in delivered prices on account of different margins, taxes and other obligations
- LNG is more economical over gas pipeline over 2500 Km

**Buyers and Sellers are Linked through
Contracts throughout the chain
&
the Chain is only as Strong as its Weakest
Link**

OVERVIEW 2014

Trade Data 2014 & 2013 (mmtpa)

	2014	2013	Increase
Total Traded	239.2	236.9	1%
Short Term	69.6	65	7%

Import/Export Capacities 2014 & 2013

Year	2014			2013		
	No. of Countries	No. of Plants	Total Capacity (MMTPA)	No of Countries	No. of Plants	Total Capacity (MMTPA)
Regas	30	110	751	29	104	721
Liquefaction	19	92	298	17	86	286



GLOBAL LNG TRADE - KEY FIGURES 2014

- 239.2 MT traded - a increase of 1% over 2013
- 69.6 MT traded under spot or short term contracts - a increase of 7% over 2013
- 32% of global LNG imports supplied from Qatar.
- 75% of global LNG demand in Asia
- At the end of 2014
 - 110 LNG Regasification Terminals
 - 30 Countries
 - 751 MTPA total capacity
- At the end of 2014
 - 92 Liquefaction facilities
 - 19 Countries
 - 298 MTPA total capacity

TOP 10 NATURAL GAS RESERVES COUNTRIES-2013

RANK	COUNTRY	QUANTITY (tcm)
1	Iran	33.8
2	Russia	31.3
3	Qatar	24.7
4	Turkmenistan	17.5
5	USA	9.3
6	Saudi Arabia	8.2
7	United Arab Emirates	6.1
8	Venezuela	5.6
9	Nigeria	5.1
10	Algeria	4.5
TOTAL		147.1

This can produce more than 6558 MMTPA of LNG for a period of 20 years.

Source : BP Statistical Review June, 2014

MAJOR NATURAL GAS CONSUMING COUNTRIES -2013

RANK	COUNTRY	CONSUMPTION (mtoe)	CONSUMPTION (mmtpa LNG)
1	US	671.0	544.2
2	Russian Federation	372.1	301.8
3	Iran	146.0	118.4
4	China	145.5	118.0
5	Japan	105.2	85.3
6	Canada	93.1	75.5
7	Saudi Arabia	92.7	75.2
8	Germany	75.3	61.1
9	Mexico	74.5	60.4
10	United Kingdom	65.8	53.4
11	United Arab Emirates	61.5	49.9
12	Italy	57.8	46.9
13	South Korea	47.3	38.3
14	Thailand	47.0	38.1
15	India	46.3	37.6

SOURCE : BP Statistical Review, June 2014

TOP 10 LNG IMPORTERS -2014

RANK	COUNTRY	QUANTITY (mmtpa)
1	Japan	89.20
2	South Korea	37.62
3	China	18.98
4	India	14.54
5	Taiwan	13.45
6	United Kingdom	8.40
7	Spain	7.90
8	Mexico	6.58
9	Turkey	5.45
10	Brazil	5.33
TOTAL		207.45

Source : GIIGNL The LNG Industry 2015

TOP 10 LNG EXPORTERS-2014

RANK	COUNTRY	QUANTITY (mmtpa)
1	Qatar	76.37
2	Malaysia	24.83
3	Australia	23.60
4	Nigeria	19.14
5	Indonesia	17.38
6	Trinidad & Tobago	13.09
7	Algeria	12.72
8	Russian Federation	10.58
9	Oman	7.73
10	Yemen	6.27
TOTAL		211.71

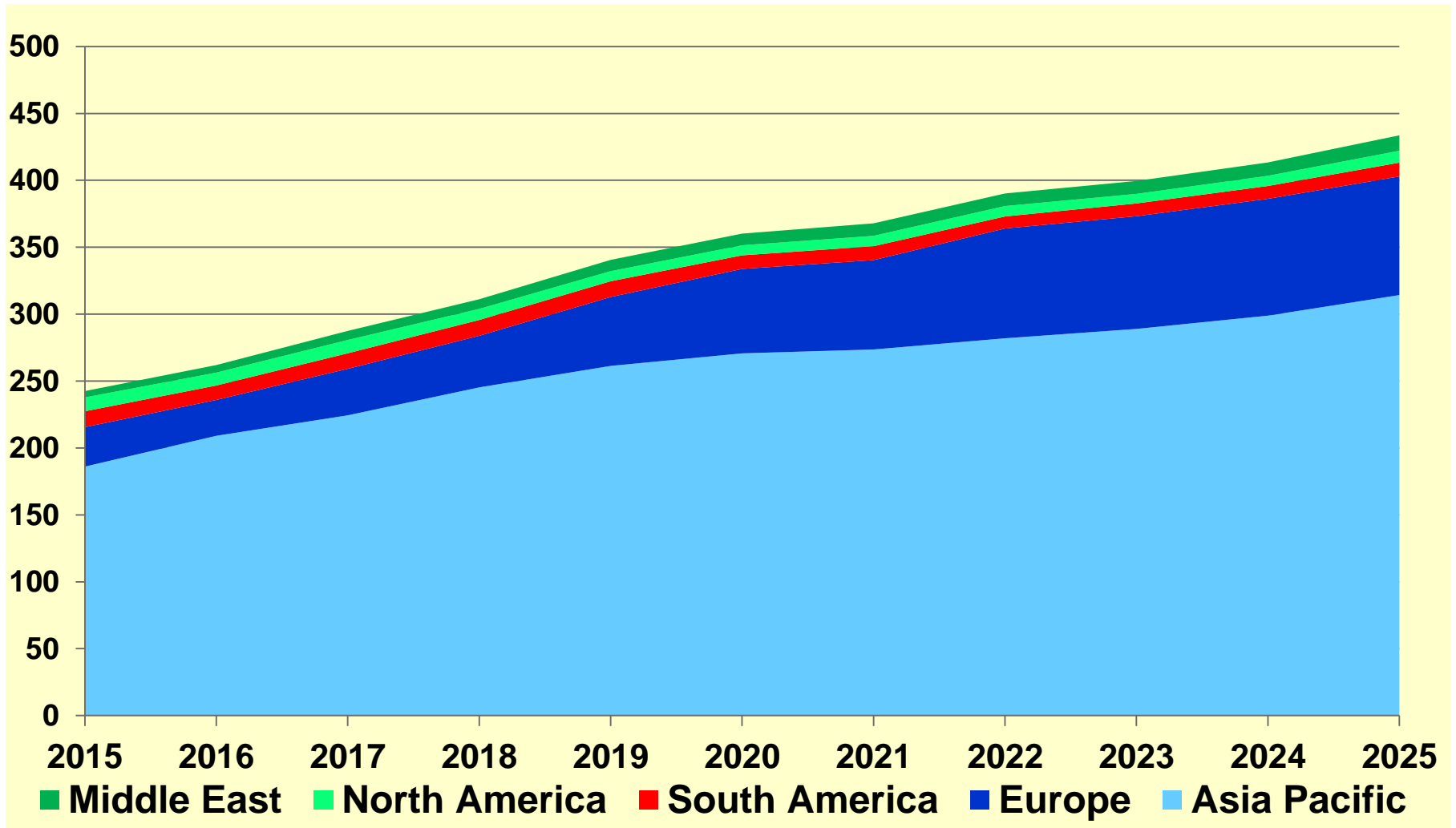
Source : GIIGNL The LNG Industry, 2015

GLOBAL SUPPLY SCENARIO

- The first cargo from QCLNG was delivered in January 2015. 55 mmtpa of LNG capacity still under construction at seven projects in Australia. The beginning of a three-year period during which another 13 LNG trains should be commissioned.
- The second wave of LNG from Australia will start in 2017 adding another 21 mmtpa to Australia's LNG exports.
- Shale Gas production in US has turned US into a LNG exporter and first LNG export is 2016. Total exports may reach up to 90 MMTPA in the long term
- Others like Mozambique and Tanzania will also export LNG in the long run from their huge gas finds.



GLOBAL LNG DEMAND (mmtpa) 2015-2025



Source: Wood Mac LNG Tool

GLOBAL DEMAND SCENARIO

- Uncertainties on the demand side include the rate of return of Japanese nuclear power-plants, some of which are expected back on-line in 2015.
- China & India fast emerging as major Buyers of LNG.
- New Markets like Lithuania, Chile and even exporters like Malaysia & Indonesia have started LNG Imports
- Expect six new markets emerge in 2015. Pakistan, Bangladesh, Columbia, Dominican Republic, Jordan and Bahrain
- European demands remains depressed.

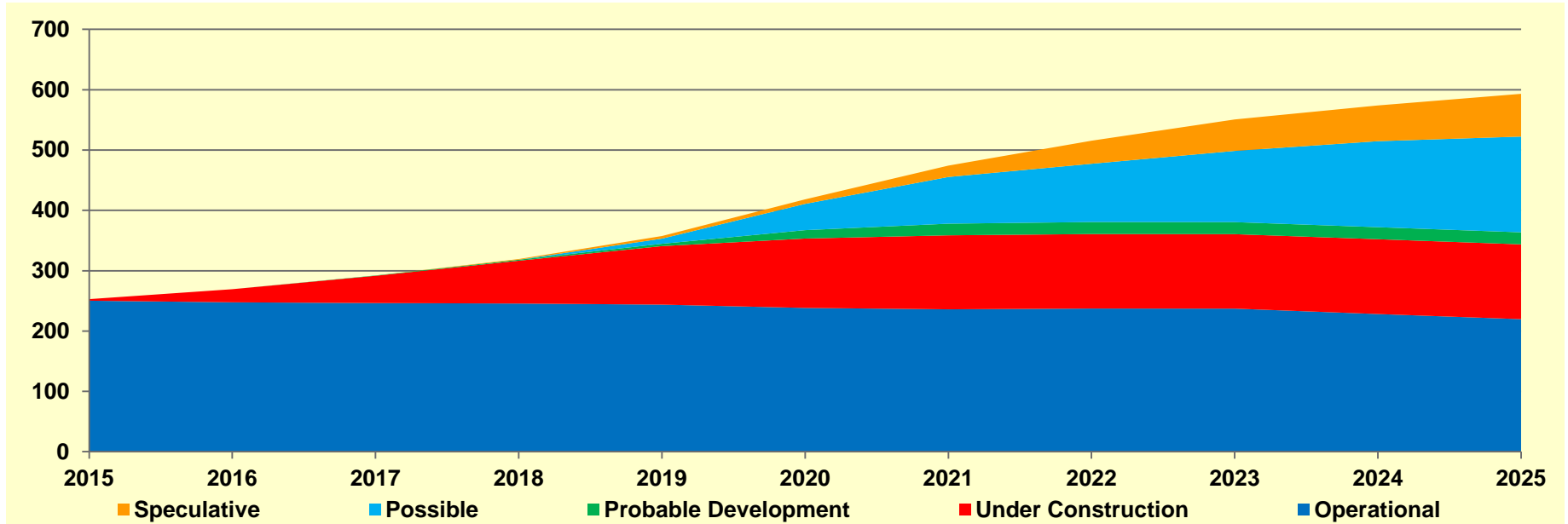


EVOLVING LNG PRICING SCENARIO

- Asian spot prices fell from record levels in FY 2014 Q1 to more than three-year lows by FY 2014 Q3
- Prompt spot-trade still has a limited market share. Most volumes in Asia are still under term contracts and indexed to crude oil, with a lag against oil movements of about three months.
- Spot LNG prices have hit record \$6 -\$7/mmbtu lows as well as crude price have dropped sharply. Projected crude price to stay between \$60 - \$80/bbl
- Long term FOB prices for Asia-Pacific stable at 14-15% of Crude.
- Oil linkage being challenged due to US LNG being linked to gas hub price (Henry Hub)



GLOBAL LNG SUPPLY SCENARIO TILL 2025



Liquefaction Status	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Operational	250.32	247.64	246.38	245.6	243.8	238.31	236.01	237.3	237.17	228.18	219.67
Under Construction	2.58	21.72	45.2	70.99	96.96	115.03	122.65	123.44	123.41	124.01	124.01
Probable Developmt			0.53	1.63	3.87	13.9	19.32	19.95	19.95	19.95	19.95
Possible					8.57	43.57	77.36	96.56	118.06	142.57	158.73
Speculative				1.1	4.29	7.45	18.82	38.22	52.1	59.18	70.83
Total	252.9	269.36	292.11	319.32	357.49	418.26	474.16	515.47	550.69	573.89	593.19

Source: Wood Mac LNG Tool

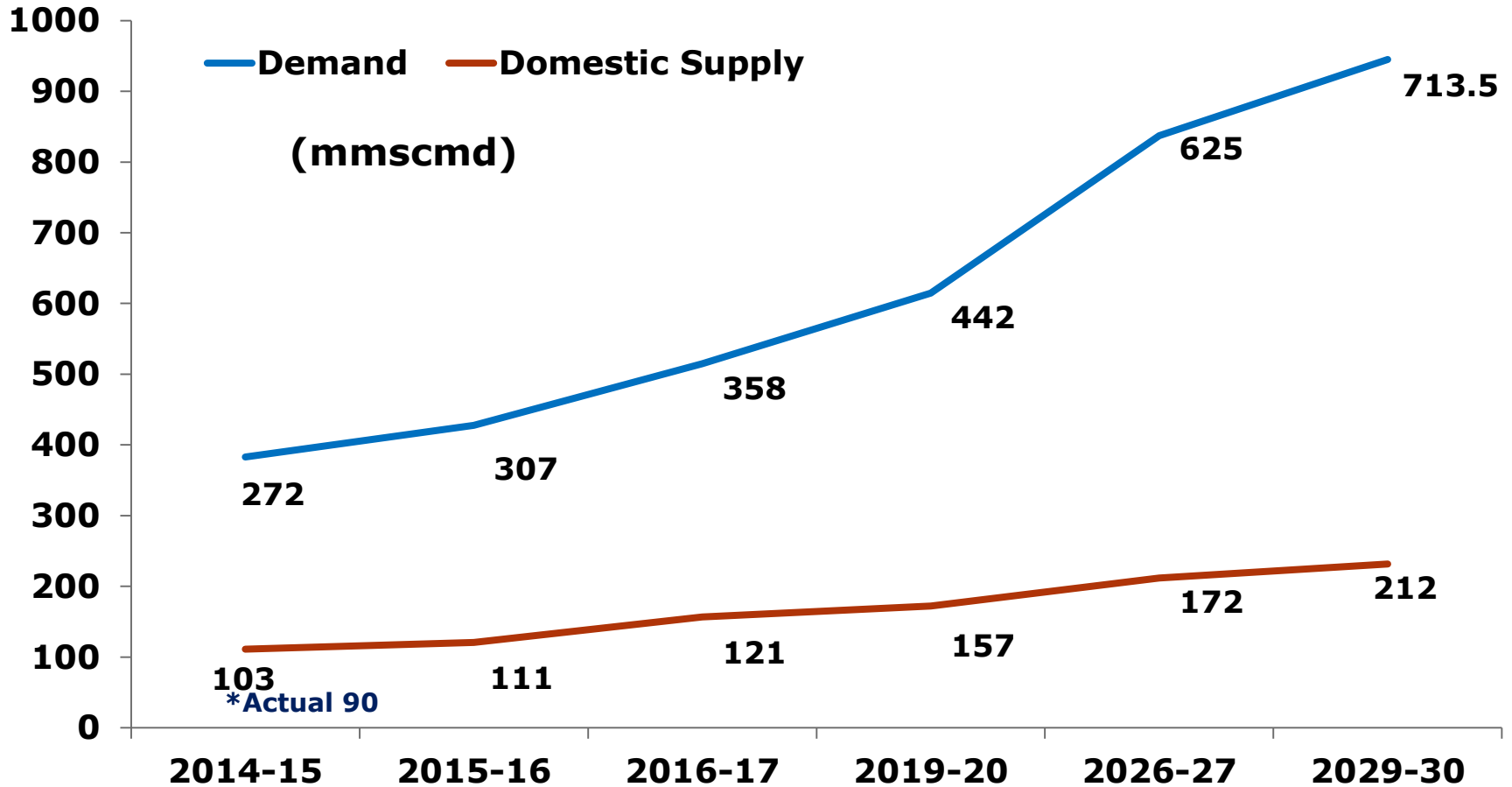


INDIA – A MAJOR GAS/LNG CONSUMER

- 15th largest gas consumer – 51 BCM (~141 MMSCMD)
- 4th largest LNG importer – 25 BCM (~67 MMSCMD)
- Long Term Economic growth rate projected to be strong with similar growth in Energy Consumption
- Share of Natural Gas in Indian Energy basket to increase from 8% to 20% by 2025
- Due decrease in domestic gas production- dependency on imported gas to increase substantially
- Pipeline network- developing into a national grid- needs to grow faster, connecting new markets



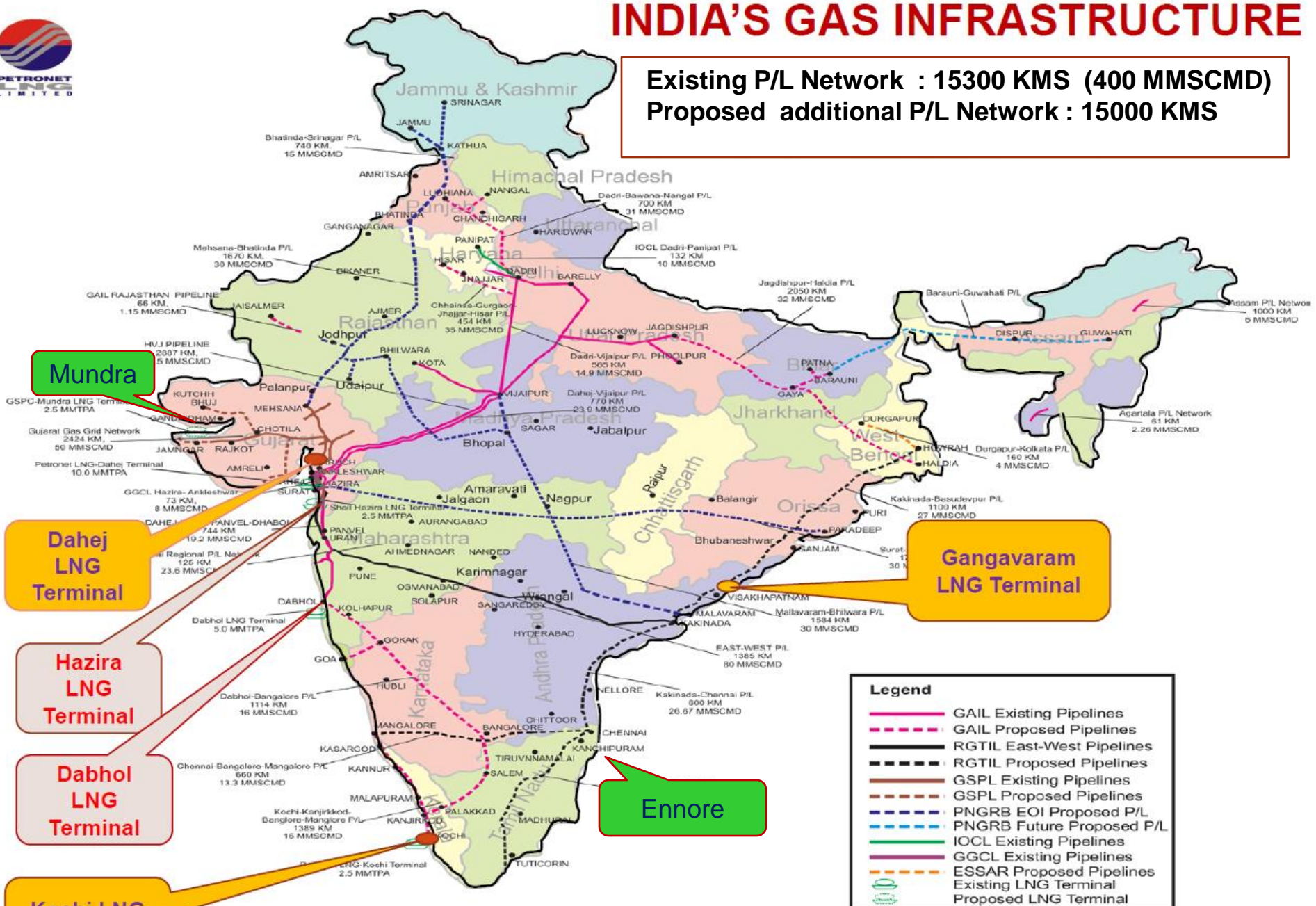
CURRENT GAS DEMAND & DOMESTIC SUPPLY SCENARIO



Large demand for gas – but extremely price sensitive

INDIA'S GAS INFRASTRUCTURE

Existing P/L Network : 15300 KMS (400 MMSCMD)
Proposed additional P/L Network : 15000 KMS



Legend

- GAIL Existing Pipelines
- - - GAIL Proposed Pipelines
- RGTIL East-West Pipelines
- - - RGTIL Proposed Pipelines
- GSPL Existing Pipelines
- - - GSPL Proposed Pipelines
- - - PNGRB EOI Proposed P/L
- - - PNGRB Future Proposed P/L
- IOCL Existing Pipelines
- GGCL Existing Pipelines
- - - ESSAR Proposed Pipelines
- Existing LNG Terminal
- Proposed LNG Terminal

- Not to the Scale
 - Pipelines Route are Indicative in Nature
 - Authenticity of indicated P/L may be ascertained from PNGRB

DEVELOPMENTS IN 2014

- LNG Industry completed 50 years 2014 was the year in which the long awaited wave of new Pacific supply started to arrive –PNG LNG, QCLNG
- Platts JKM Marker reached a record peak of \$20.20/mmbtu in Feb. 2014 and fell sharply below \$7/mmbtu Feb. 2015, due to warm Asian winter and over contracted LNG supplies by North East Asian buyers reduced demand for spot.
- Crude oil also declined from \$111/bbl in May 2014 to \$45/bbl in January 2015 due to shale oil production in the US reducing oil imports.
- US in 2nd half of 2014 saw many FIDs for various LNG export projects
- Prospect of huge volumes of US exports drove ship orders to record highs. 67 orders were placed, despite falling charter rates
- US shale gas boom continued and Henry Hub prices were between dropped from above \$5-\$6/mmbtu at the start of 2014 to \$2.60/mmbtu in April 2015

OUTLOOK FOR 2015

- New buyers emerging while new supplies to available from 2015 gradually, resulting in a tight market for years to come
- Expected nuclear reactor restarts by Japan should ease demand for LNG
- Initially no impact on LNG demand in Japan as liquid fuel will be phased out first
- 2015 will see a ramp-up in Australian volumes as the new projects currently under construction start coming online. In addition we may see the first cargo exported from the US Gulf of Mexico around the end of the year.
- Markets will continue to grow and diversify. We could see up to six new markets emerge in 2015 – while continued growth in Asian imports is expected.
- Gas markets remain fragmented- North American gas prices remain low vs international markets as gas supply is constrained and prices continue rising

OUTLOOK FOR THE FUTURE

- Natural gas is projected to be the fastest growing fossil fuel globally 2.1% p.a
- Non-OECD accounts for 80% of global gas demand growth, averaging 2.9% p.a. growth to 2030
- Demand grows fastest in non-OECD Asia (4.6% p.a.) and the Middle East (3.7% p.a.)
- Main contributors to gas supply growth are the Middle East (26% of global growth) and Former Soviet Union states (example Russia) (19%)
- Significant incremental supply (11-12% of global growth each) is expected from Australia, China, and the US
- Global LNG supply is projected to grow 4.5% p.a. to 2030, more than double total global gas production and faster than inter-regional pipeline trade 3.0% p.a.
- LNG contributes 25% of global supply growth 2010-30, compared to 19% for 1990-2010

THANK YOU



Kochi LNG Terminal