

# TransGraph

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commodity market mentors



# Polymers Medium term price outlook

Jul 2017



# Price Trends – Upstream RM

Month	Brent Crude	Naphtha	Ethylene	Propylene	PTA	MEG
<b>Jan-17</b>	55.45	515.12	1005.48	885.24	665.71	930.48
<b>Feb-17</b>	56.00	521.09	1112.25	958.00	707.25	913.00
<b>Mar-17</b>	52.54	470.41	1076.74	890.00	679.35	787.61
<b>Apr-17</b>	53.82	486.01	1050.00	808.00	660.00	724.00
<b>May-17</b>	51.39	448.56	1014.00	738.00	642.00	728.00
<b>Jun-17</b>	47.55	415.77	884.00	756.00	633.00	781.00

Crude oil prices are in USD/bbl (ICE futures. Naphtha prices in USD per ton C+F Tokyo basis.)

Other prices are in USD per ton CFR India basis

- ❖ Crude oil prices rebounded in April after a sharp fall in March supported by expectations of OPEC producers extending the output cuts. However, prices started to decline after the meeting as the market had already priced in the support measures and concerns regarding rising production levels in US, Libya and Nigeria. Further, weaker than expected gasoline demand at the US front also weighed on prices.
- ❖ Naphtha prices, at the global front, started declining from mid April in line with decline in upstream crude oil prices.
- ❖ Ethylene and propylene prices also witnessed decline in the previous quarter amid decline in upstream energy prices.
- ❖ However, feedstock PTA and MEG prices have seen a rise in AMJ due to the tighter product availability owing to plant shutdowns at domestic (JBF and IOCL) and at the international front.

# Price Trends – Polymers

TransGraph

Month	HDPE	PP	PET	BOPP	BOPET
Jan-17	85.17	79.54	85.35	148.00	123.00
Feb-17	86.12	82.86	89.10	153.00	127.00
Mar-17	86.17	84.41	90.30	155.00	129.00
Apr-17	86.17	81.01	84.55	151.00	127.00
May-17	86.17	79.54	80.30	149.00	125.00
Jun-17	86.17	81.03	82.48	148.00	124.00

All prices are producer prices (basic rate) in INR per Kg

- ❖ Despite weaker trend in crude oil prices polyethylene prices remain unchanged since Mar'17, owing to relatively stable trend in the international prices and delay in supplies coming back online. However, decline in feedstock prices led to weakness in PE product prices at the start of July.
- ❖ PET prices declined sharply in the past quarter amid lower demand in the market and increase in supplies due to higher margins. Further, rise in imports also pressurized PET prices.
- ❖ PP prices have witnessed decline in the past quarter amid lower demand in the market and weaker upstream feedstock propylene prices.
- ❖ At the laminates front, BOPP and BOPET prices declined in June following the decline in raw material prices along with weak demand owing to lower buying orders ahead of GST implementation in July.

# Market developments

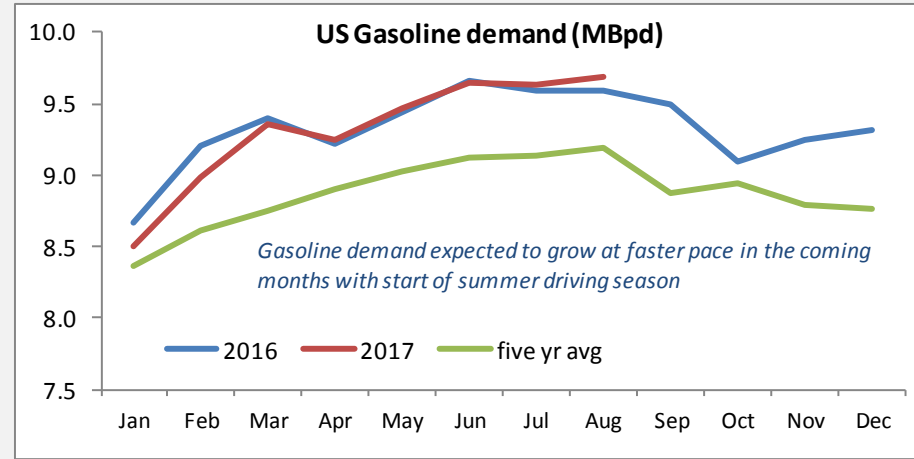
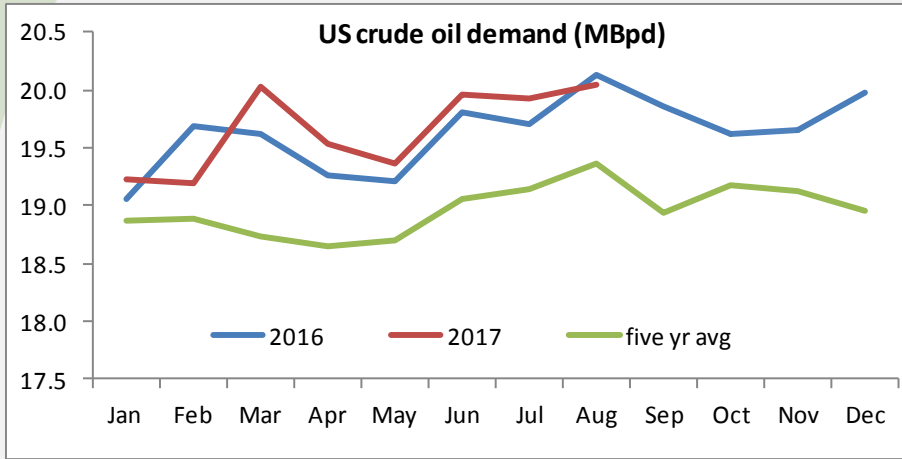
- ❖ At the upstream front, US crude oil inventories declined by 32.6 million barrels to 502.91 million by the end of June from the end of Mar'17 due to decline in imports and higher refinery activity in AMJ quarter.
- ❖ IOCL plants located at panipat has started maintenance turnaround in Mid July'17 for PP and HDPE products with 300 KTPA and 175 KTPA capacities respectively. Both plants mentioned above are likely to start in Mid Aug'17.
- ❖ Further, IOCL's MEG and PTA plants located at panipat have started maintenance turnaround early July'17 with production capacities of 300 KTPA and 550 KTPA respectively. Additionally, JBF plant located at Gujarat also has undergone maintenance turnaround from Mid June with MEG production capacity of 400 KTPA. The restart date is not ascertained. With JBF and IOCL planned maintenances supported MEG prices in the previous quarter.
- ❖ RIL started new MEG plant at the end of July with production capacity of 750 KTPA. The new plant at the start of JAS quarter is likely to pressurize MEG prices in the coming months.
- ❖ RIL ethylene plant located at Nagothane added capacity of 100KTPA early May'17 reaching 500KTPA.

# Upstream market analysis

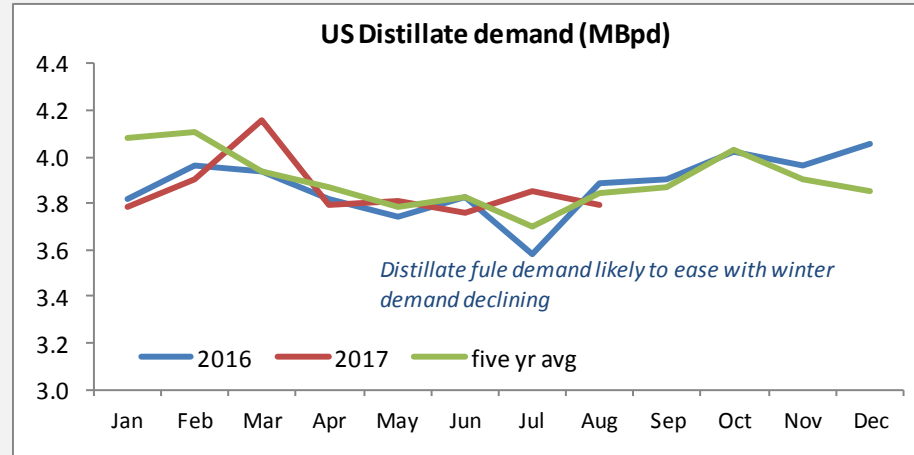


# US gasoline demand growth seen to be sluggish during first month of driving season; expected to improve in the coming months

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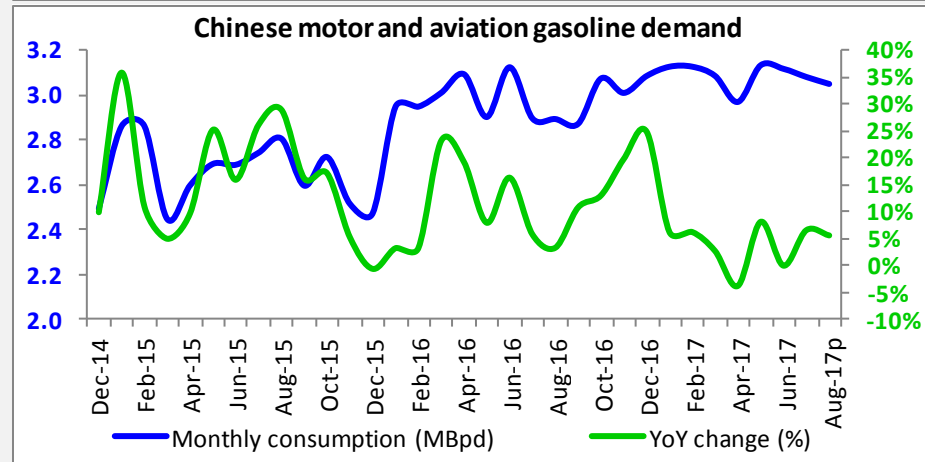
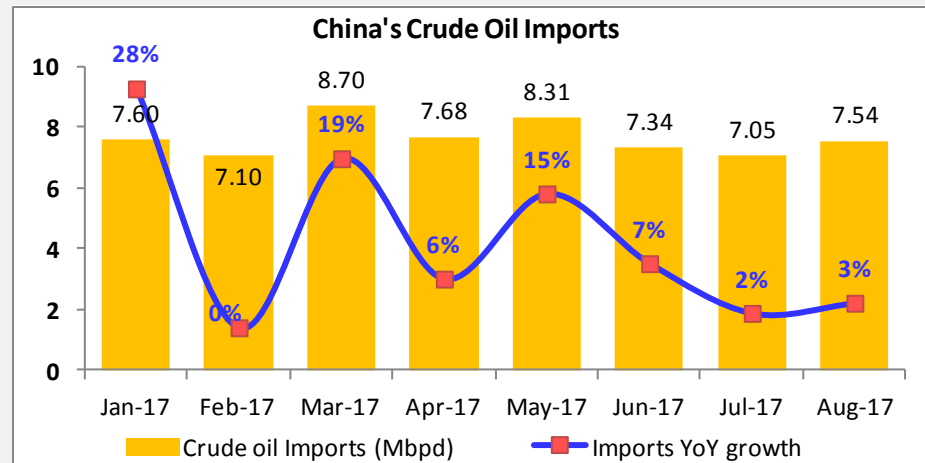


- ❖ US crude oil demand in the first five months is estimated to have increased by a moderate 0.5% despite strong distillate demand growth due to slower growth rate in gasoline and other products.
- ❖ Gasoline demand since the start of the summer driving season is seen to 1.73% lower on yearly basis owing to lower traffic volumes.



# China crude oil imports

- ❖ Permission to non-state owned refineries to import crude oil and focus on higher electricity generation by Chinese government has aided in higher imports in the past two quarters.
- ❖ China's four state run refiners and six independent refiners are expected to take up planned maintenance in the third quarter of 2017 along with Petro China and Sinopec looking to run at lower rates raising doubts over the China's demand sustenance in the medium term.
- ❖ However, despite the refinery maintenance by Chinese refiners, contrary to the seasonal peak activity period, during JAS, new import licenses to independent refiners is likely to keep crude oil imports growth stable in the coming months.

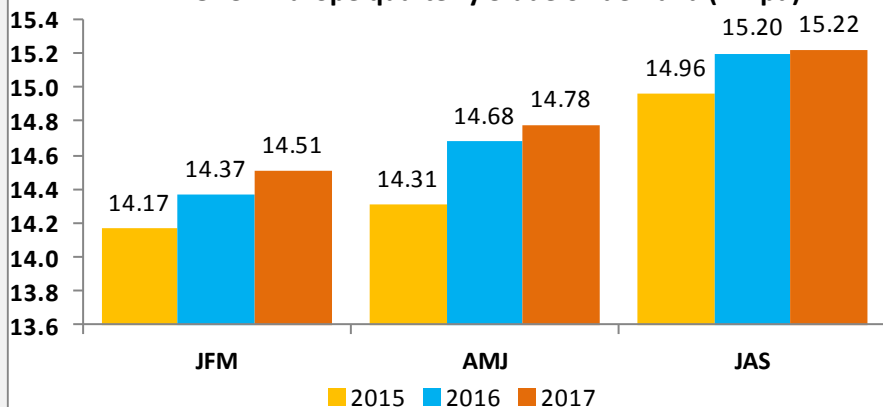




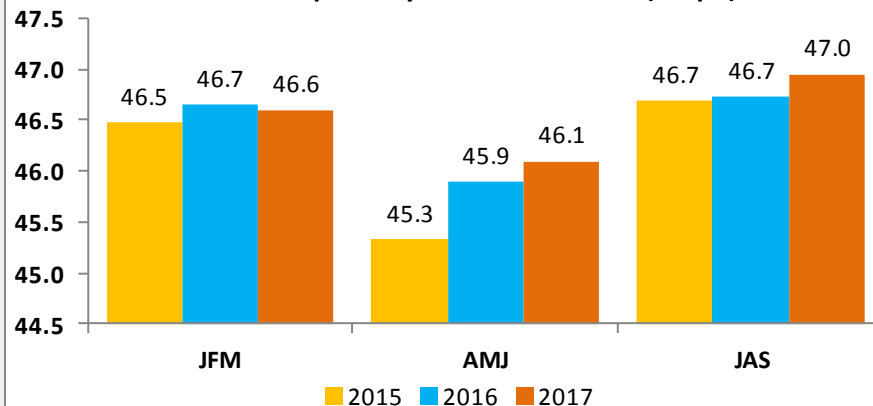
# OECD quarterly demand expectations

- ❖ Revival witnessed in OECD Europe demand in 2016 is expected to continue over the next two years owing to fiscal stimulus measures aiding the consumption growth, while sluggish growth at Japanese front is expected to continue
- ❖ Furthermore, in pick up in pace of economic activity during starting from H2 2017, OECD demand growth is expected to grow at a steady pace.

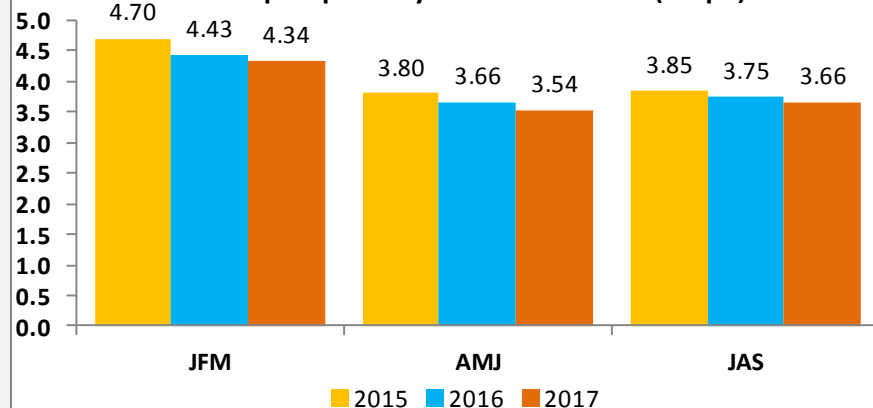
OECD-Europe quarterly Crude oil demand (MBpd)



OECD quarterly Crude oil demand (MBpd)

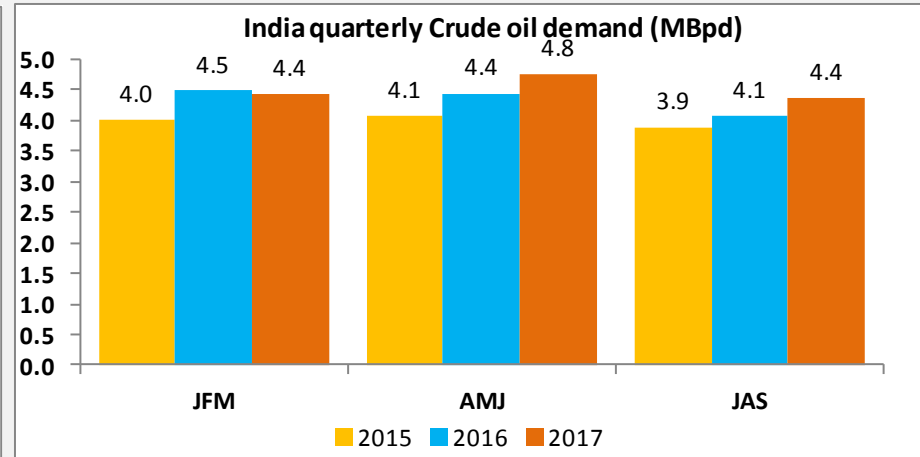
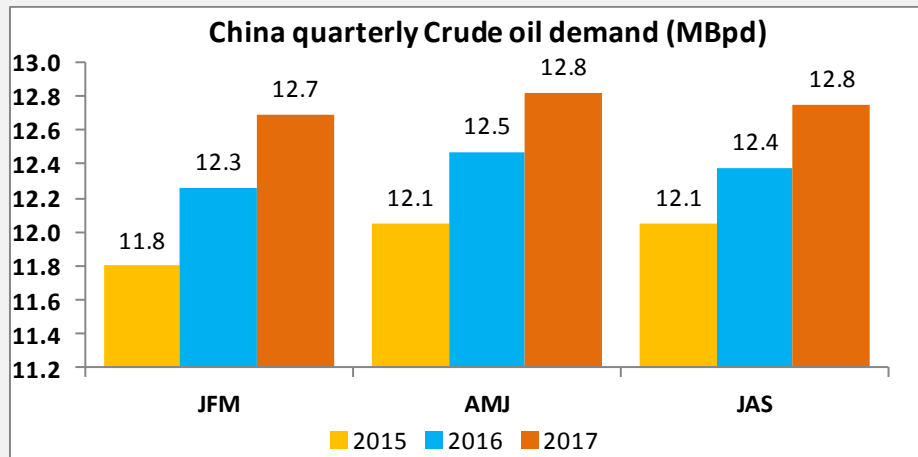
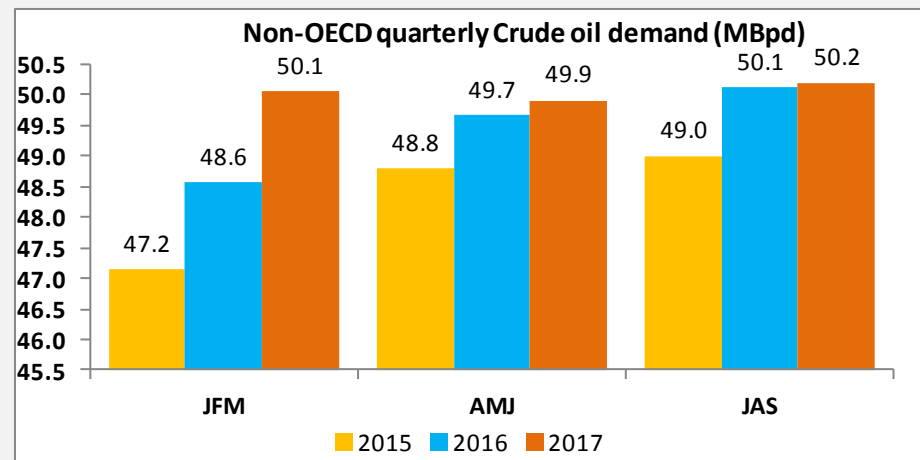


Japan quarterly Crude oil demand (MBpd)



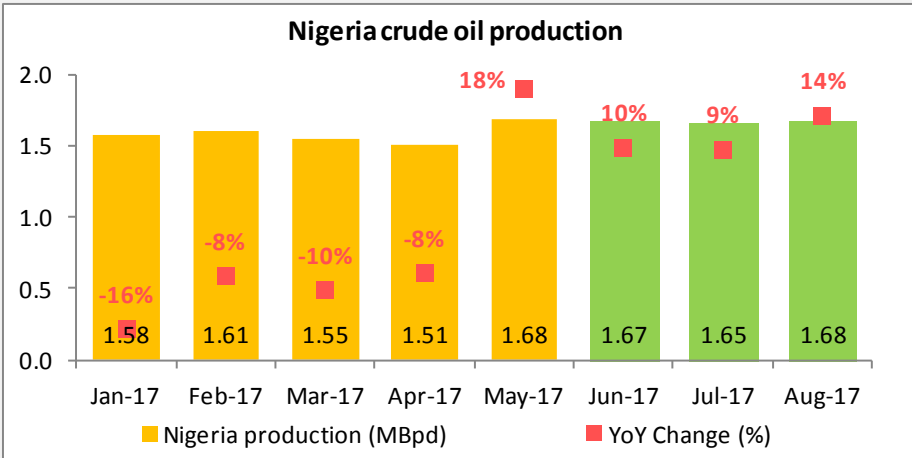
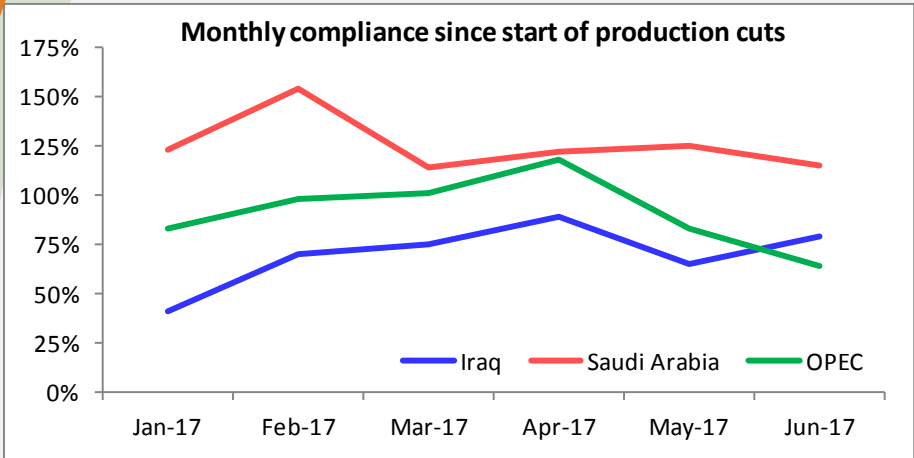
# Non – OECD quarterly demand expectations

- ❖ After the strong 3% YoY growth during JFM 2017, demand growth in non-OECD region is estimated to have grown at moderate pace of 0.5% YoY and is expected to grow at 0.2% YoY during JAS 2017.
- ❖ Stagnation in growth due to refinery maintenance in China despite the improvement in manufacturing activity is likely to keep growth rate low.

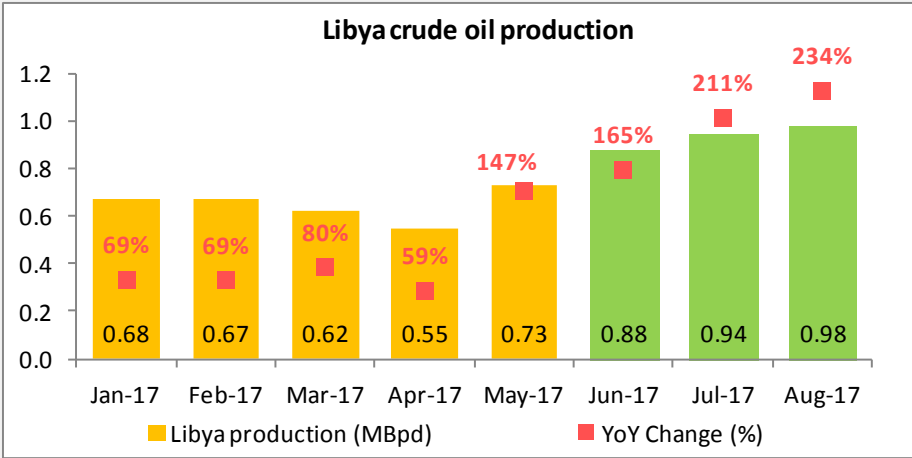


# OPEC group monthly compliance seen declining over the past two months while Libya and Nigeria's production seen improving

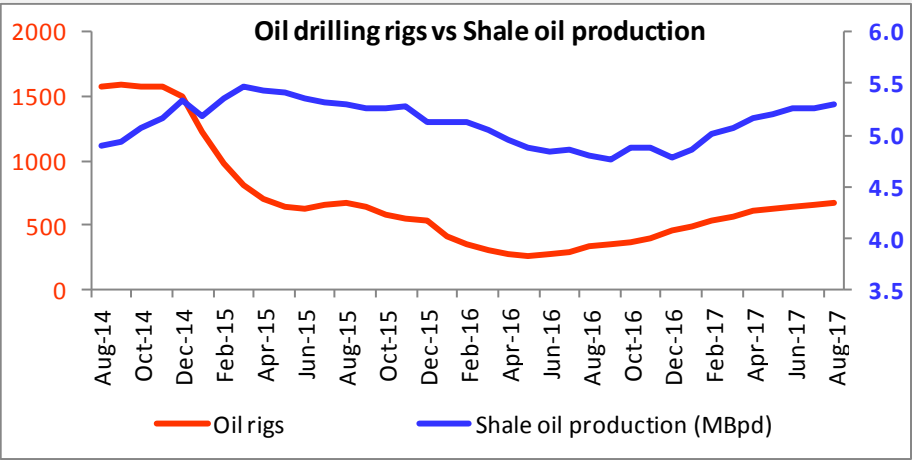
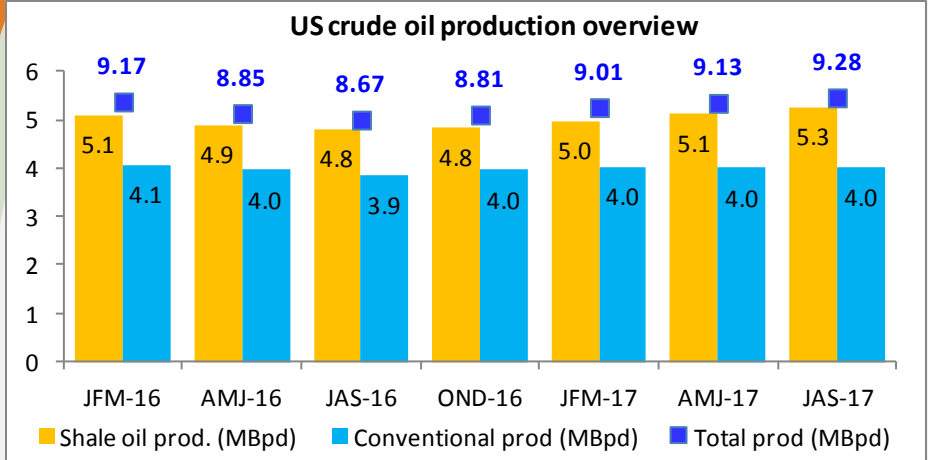
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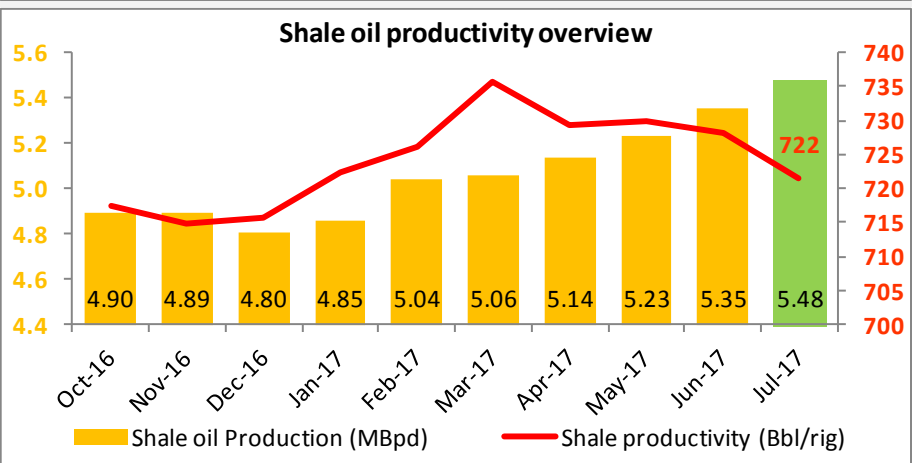
- ❖ Saudi Arabia has maintained the compliance higher than 100% (i.e. lowering output to less than production cut levels) aiding in group keeping the compliance higher despite the lower cuts by Iraq and supply growth from Libya and Nigeria
- ❖ Declining monthly compliance is likely to result in offsetting the positive impact of production cuts in the medium term.



# Rising US oil rigs supporting output growth



- ❖ Oil drilling rigs in US are seen consistently increasing in the past four months amid firm trend in prices, reaching up to highest levels since Nov 2015, when prices started to fall sharply.
- ❖ Further, improved productivity due to lowering the operating costs has aided in keeping production levels stable in the second half of 2016.



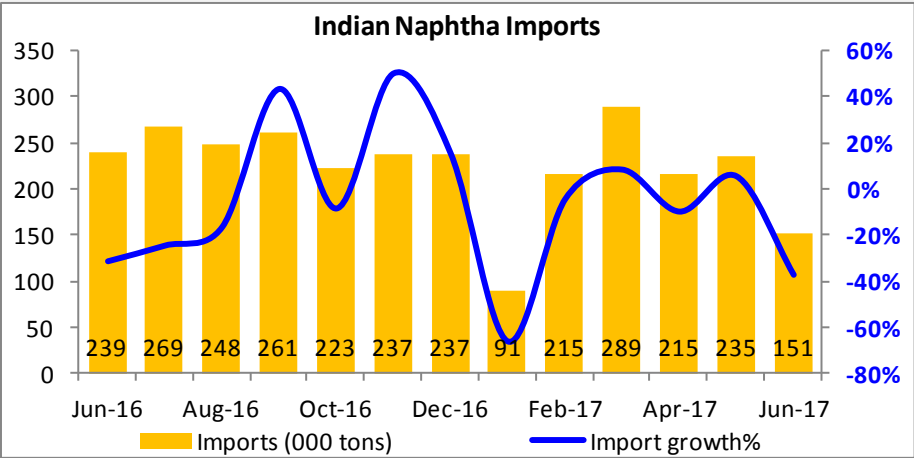
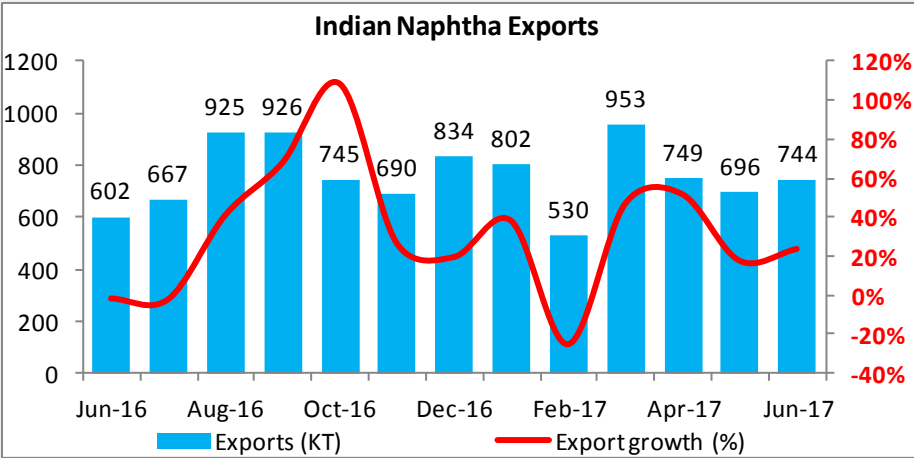
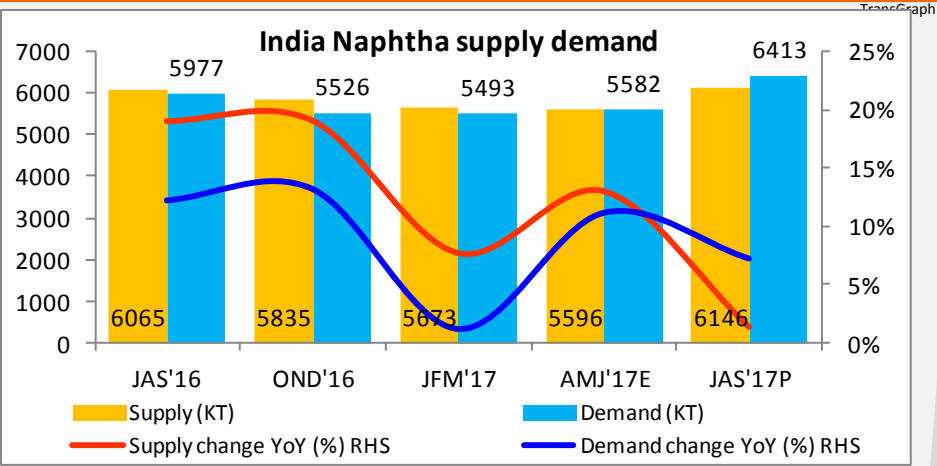
# US crude oil inventories expected to continue the declining trend

Month	Production (MBpd)	Demand (MBpd)	Imports (MBpd)	Prod-Cons gap (MBpd)	Supply-demand (MBpd)	Refinery Utilization (%)	Refinery inputs (MBpd)	US crude oil inventories (million Barrels)
Jan-17	8.86	19.234	8.44	-10.38	-1.94	90.22%	16392	494.76
Feb-17	9.08	19.188	7.89	-10.11	-2.22	85.84%	15572	520.89
Mar-17	9.11	20.033	8.05	-10.93	-2.88	88.15%	15982	535.54
Apr-17	9.08	19.527	8.08	-10.44	-2.36	92.82%	17024	527.77
May-17	9.12	19.36	8.08	-10.24	-2.16	93.33%	17168	509.91
Jun-17	9.19	19.96	7.84	-10.77	-2.93	93.58%	17110	502.91
Jul-17P	9.23	19.92	7.91	-10.69	-2.78	93.85%	17055	484.12
Aug-17P	9.30	20.04	7.74	-10.74	-3.00	93.65%	16759	475.43

- ❖ Going ahead, with the refinery activity ramp up expected starting from May amid gasoline inventories broadly remaining lower than last year levels and demand expected to improve in July and August shall aid in lowering crude oil inventory levels in the next two months.

# Indian Naphtha scenario – Demand expected to improve keeping the markets tight

- ❖ Indian Naphtha supply is expected to increase by 1.3% during JAS quarter compared to same quarter last year driven majorly capacity addition at IOCL paradip and seasonal factors.
- ❖ Going ahead, Naphtha consumption is expected to witness strong growth due to increase in domestic demand for higher packaging sector products ahead of festive season as well as fertilizer production.

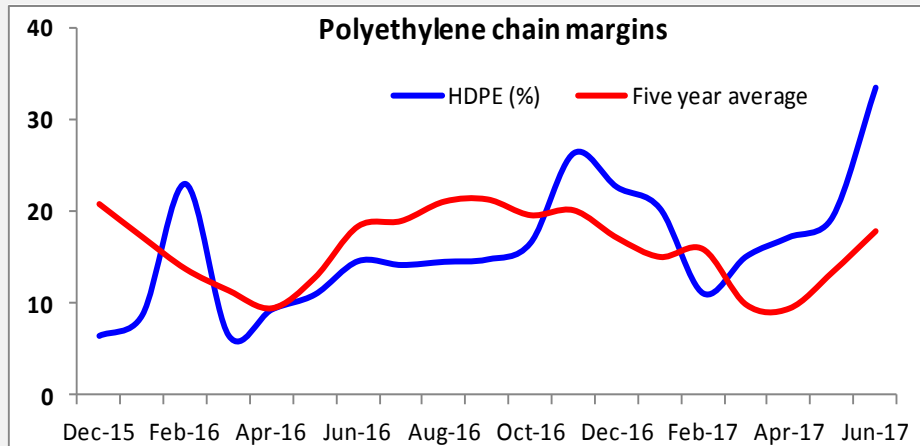
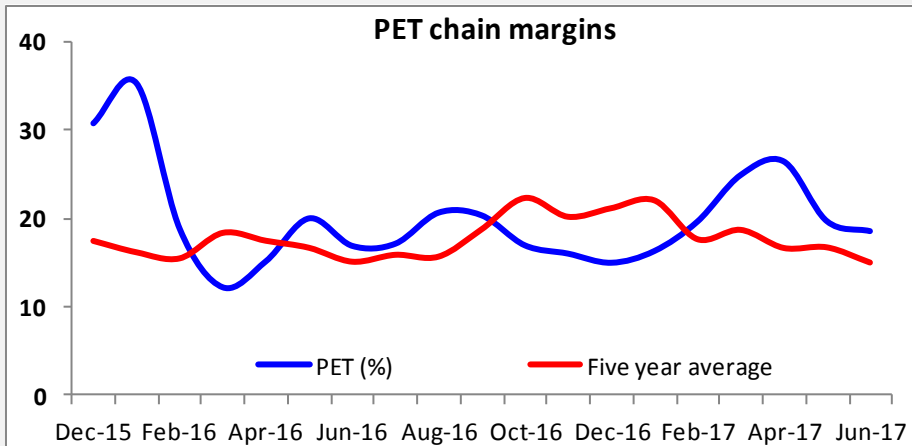
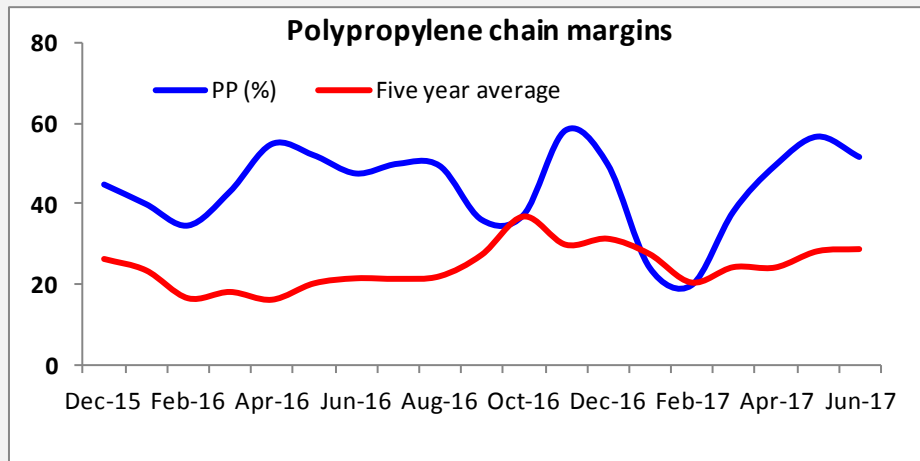


# Polymer market analysis



# Polymer margins

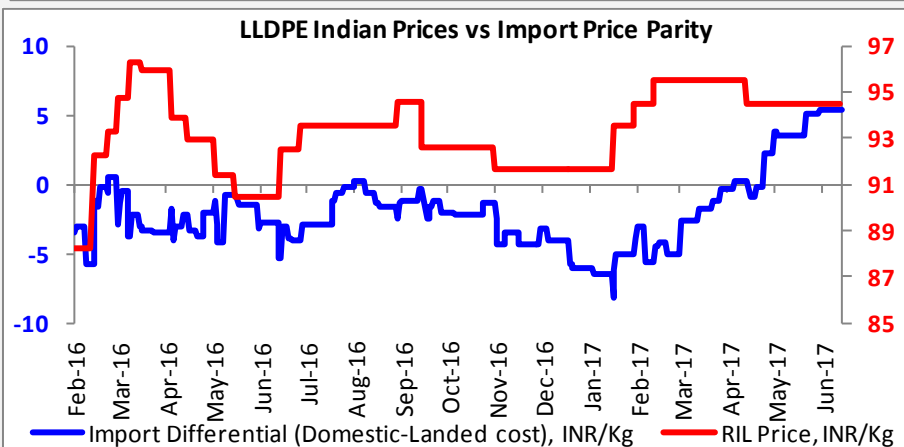
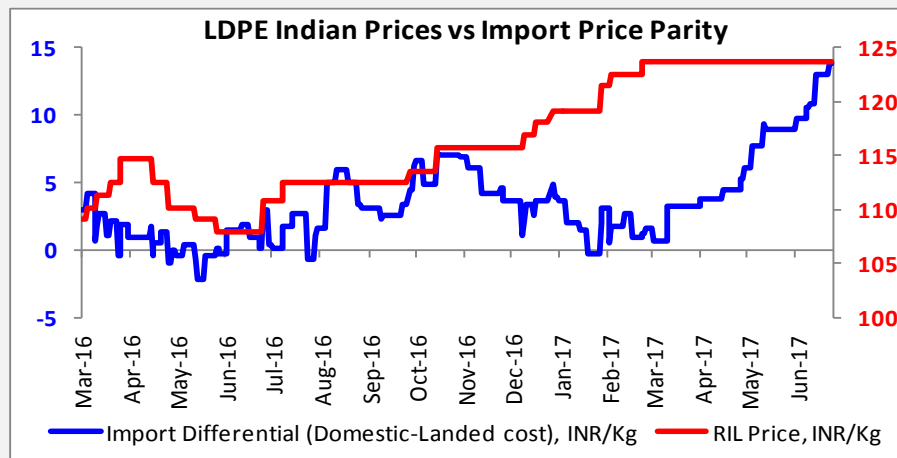
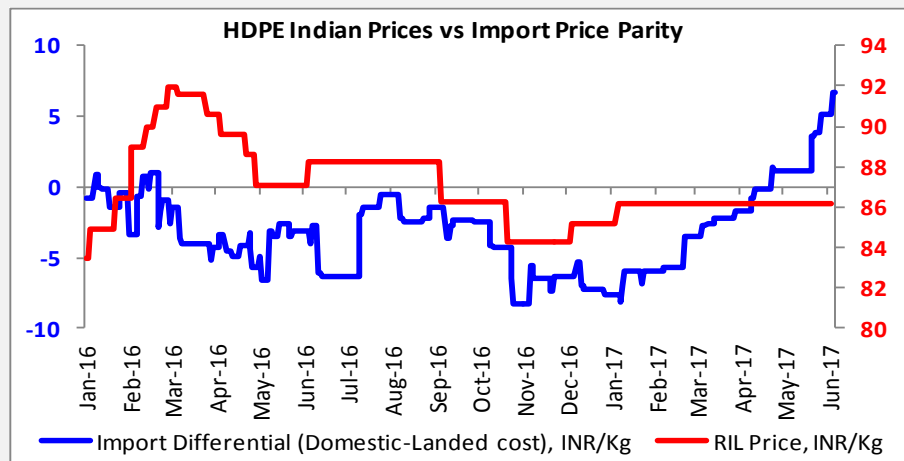
- ❖ PE and PP prices margins have increased sharply in the past few months and remain much higher above five year average levels. Continuous rise in product margins since Feb'17 is likely to keep supply higher and weigh on prices in the coming months.
- ❖ Meanwhile, PET margins have seen a decline in past three months due to stronger prices for upstream PTA and MEG. PET margins are currently near five year average margins which is likely to supply steady.





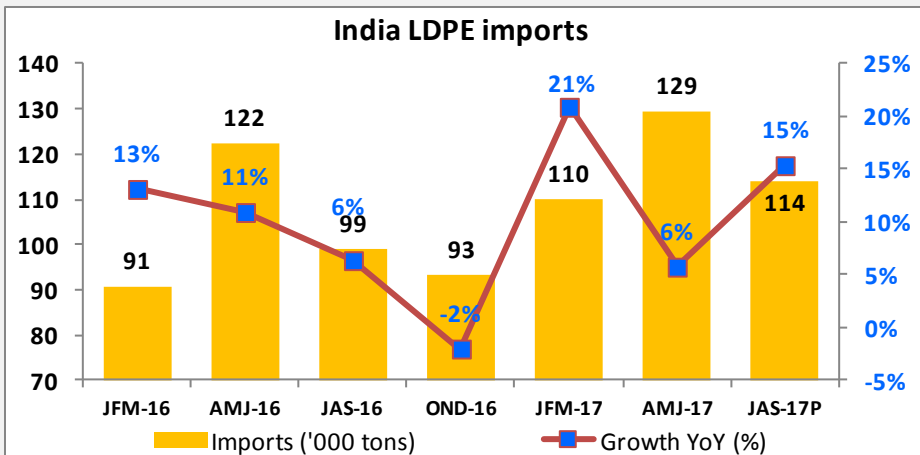
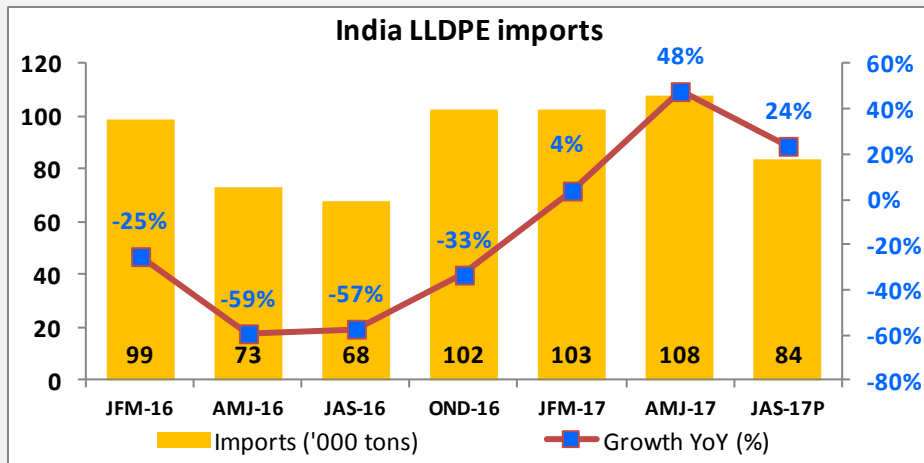
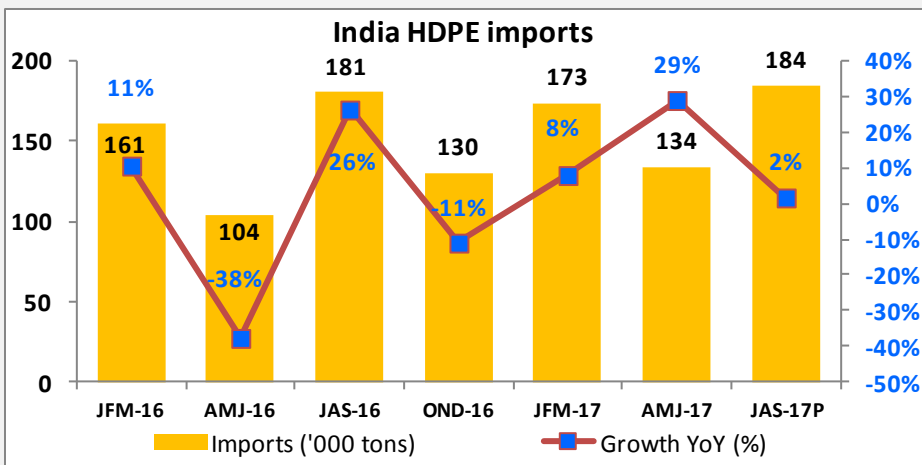
# Import price parity indicates higher imports for HDPE, LDPE and LLDPE

- ❖ Import differential for HDPE, LLDPE and LDPE had widened due to downward revision of international prices amid lower demand while the domestic prices remained comparatively on a steady note.
- ❖ Higher price parity (indicating domestic prices being in premium than international prices) is likely to result in higher imports.



# PE imports

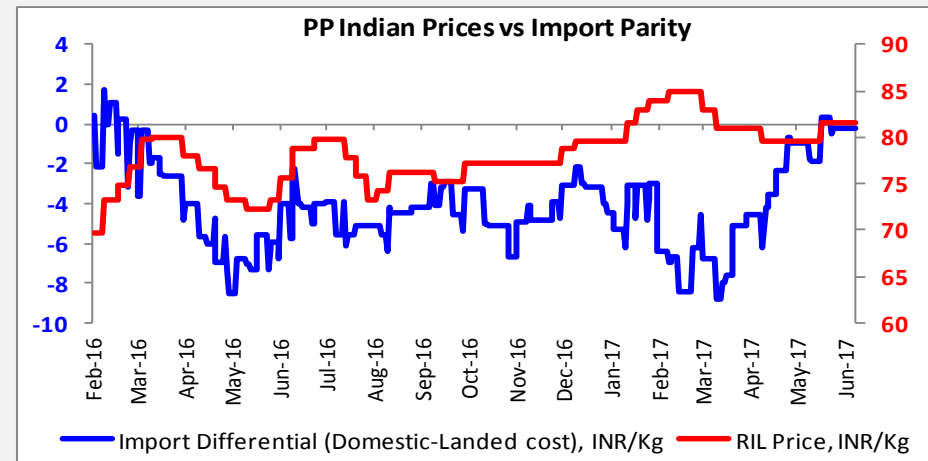
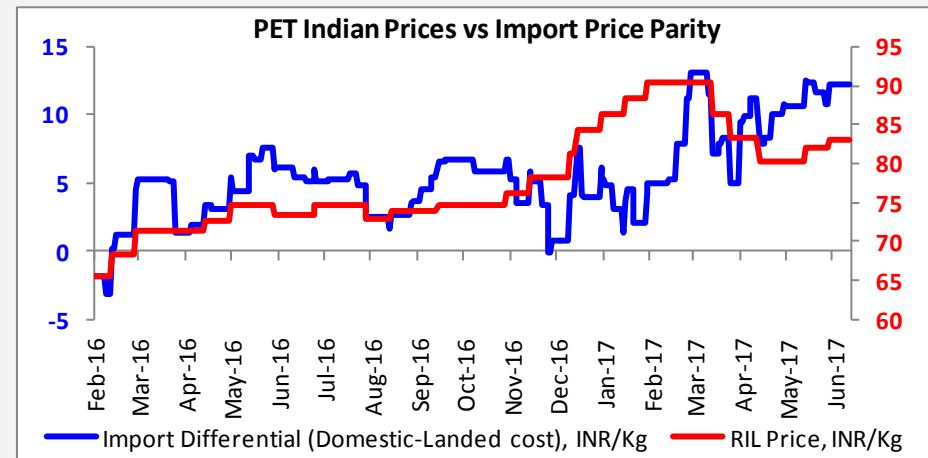
- During H1 2017, HDPE imports have declined by 47% compared to same period last year. Going ahead, HDPE imports are expected to increase owing to wider price parity to 184 thousand tons in JAS quarter about by 2% YoY growth from JAS 2016.
- Moving forward, LDPE imports are expected to increase in the coming quarter by 15% YoY to 114 thousand tons due to continuous rise in import parity from March'17. Further, LLDPE imports are likely to witness growth of 24% on yearly basis from 68 thousand tons to 84 thousand tons in JAS quarter.



# High disparity with international prices to keep PP revisions limited while PET prices are likely to be revised lower.

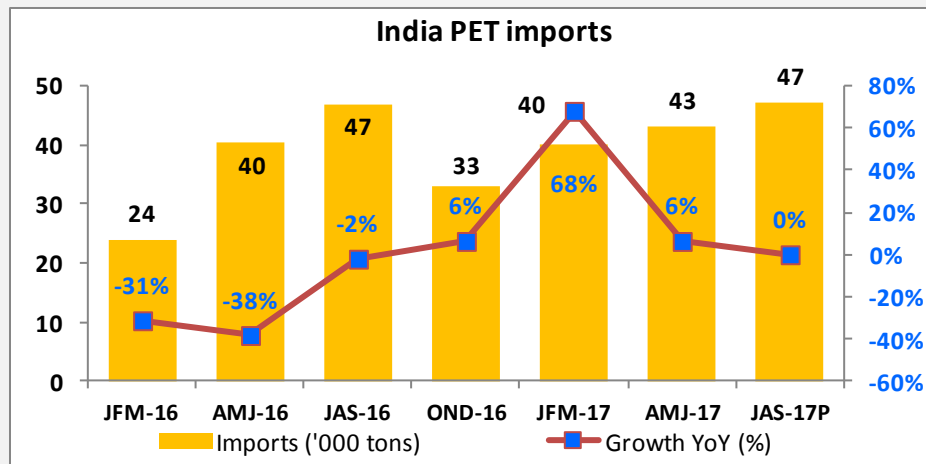
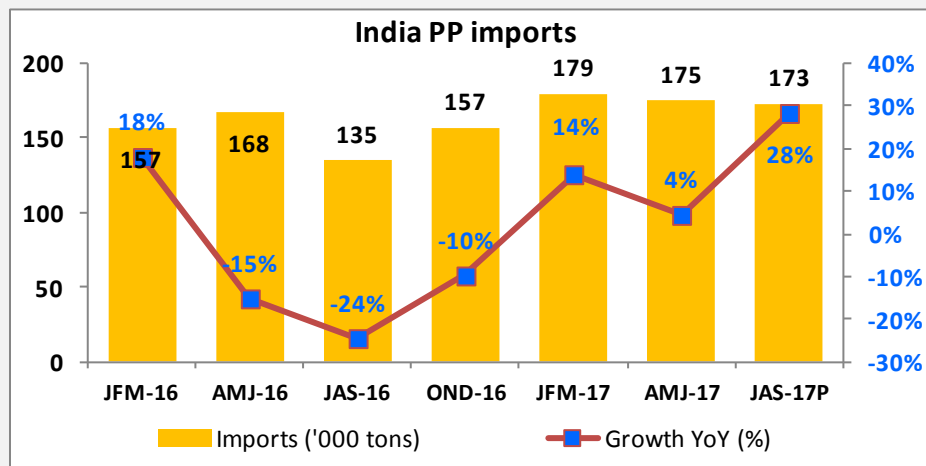
- ❖ Meanwhile, Polypropylene price disparity with international prices has narrowed from INR 8 per Kg (domestic being cheaper by INR 8) in March to near zero levels by the end of June majorly due to sharp downward revision of international prices while domestic price revisions were at a slower rate.
- ❖ With current domestic prices being cheaper by INR 2 per Kg compared to international prices and domestic demand expected to remain higher, comparatively cheaper import prices compared to previous quarters, PP imports are expected to remain high in coming months.
- ❖ PET import price parity in the past quarter has widened from INR 5 per Kg to INR 12 per Kg despite the downward revisions at the domestic front as the international prices fell at a more sharper rate.
- ❖ Near two year high price parity levels in PET is likely to spur higher imports despite the increase in domestic supplies due to capacity additions.

TransGraph



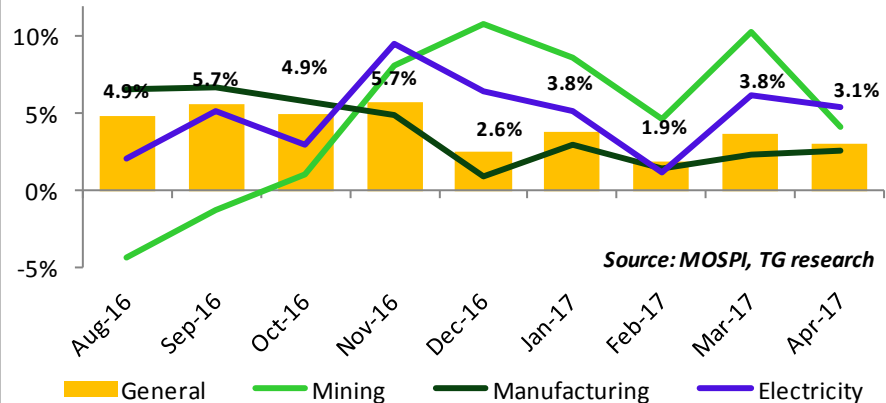
# PP and PET imports

- ❖ Indian PP imports declined by 8% from Jan'17 to Jun'17. Going ahead, PP imports are expected to have decrease marginally in JAS quarter compared to previous quarter and are likely to be increased by 28% YoY to 173 thousand tons in JAS quarter.
- ❖ Indian PET imports declined by 8% from Jan'17 to Jun'17 amid rise in domestic production levels. Moving forward, imports are anticipated to increase by 9% to 47 thousand tons in JAS quarter from AMJ quarter. However, on yearly basis PET imports are expected to remain at similar levels of 47 thousand tons during JAS 2016.

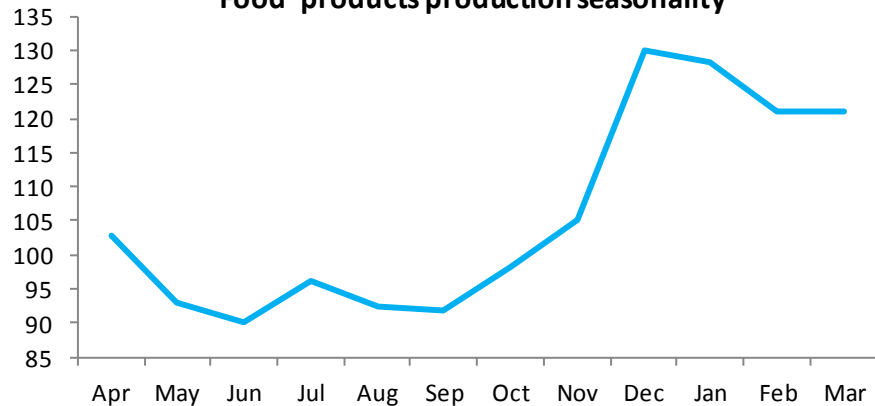


# Demand for packaging materials from FMCG sector is likely to be higher ahead of the festive season

## India Industrial Production Growth

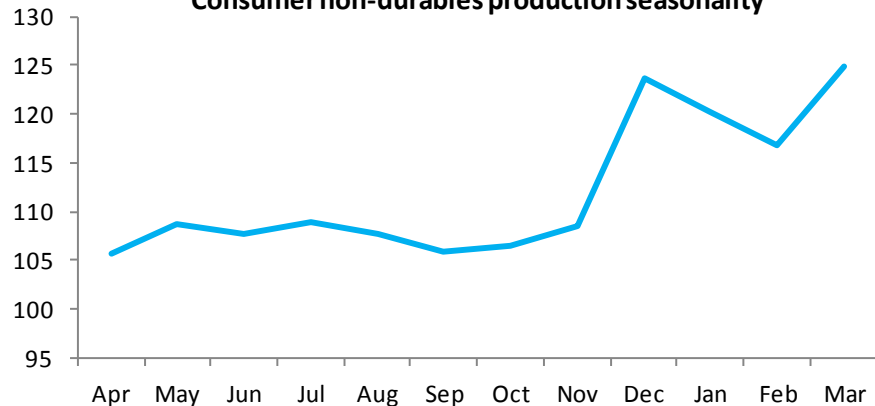


## Food products production seasonality

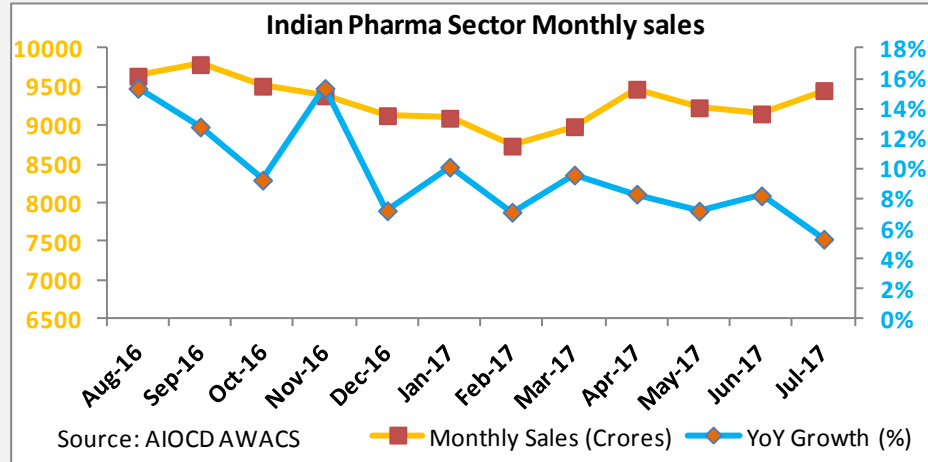


- ❖ India's industrial production has witnessed moderate recovery in the past two months supported by the stable growth trend in manufacturing sector.
- ❖ Going ahead, seasonal higher production season for the food products and other consumer non-durables starting from Sep – Oct period (ahead of the festive season is expected to demand higher for polymer packaging materials in the medium term. Further, higher economic activity and seasonal higher manufacturing growth period in JAS quarter is also expected to remain supportive.

## Consumer non-durables production seasonality



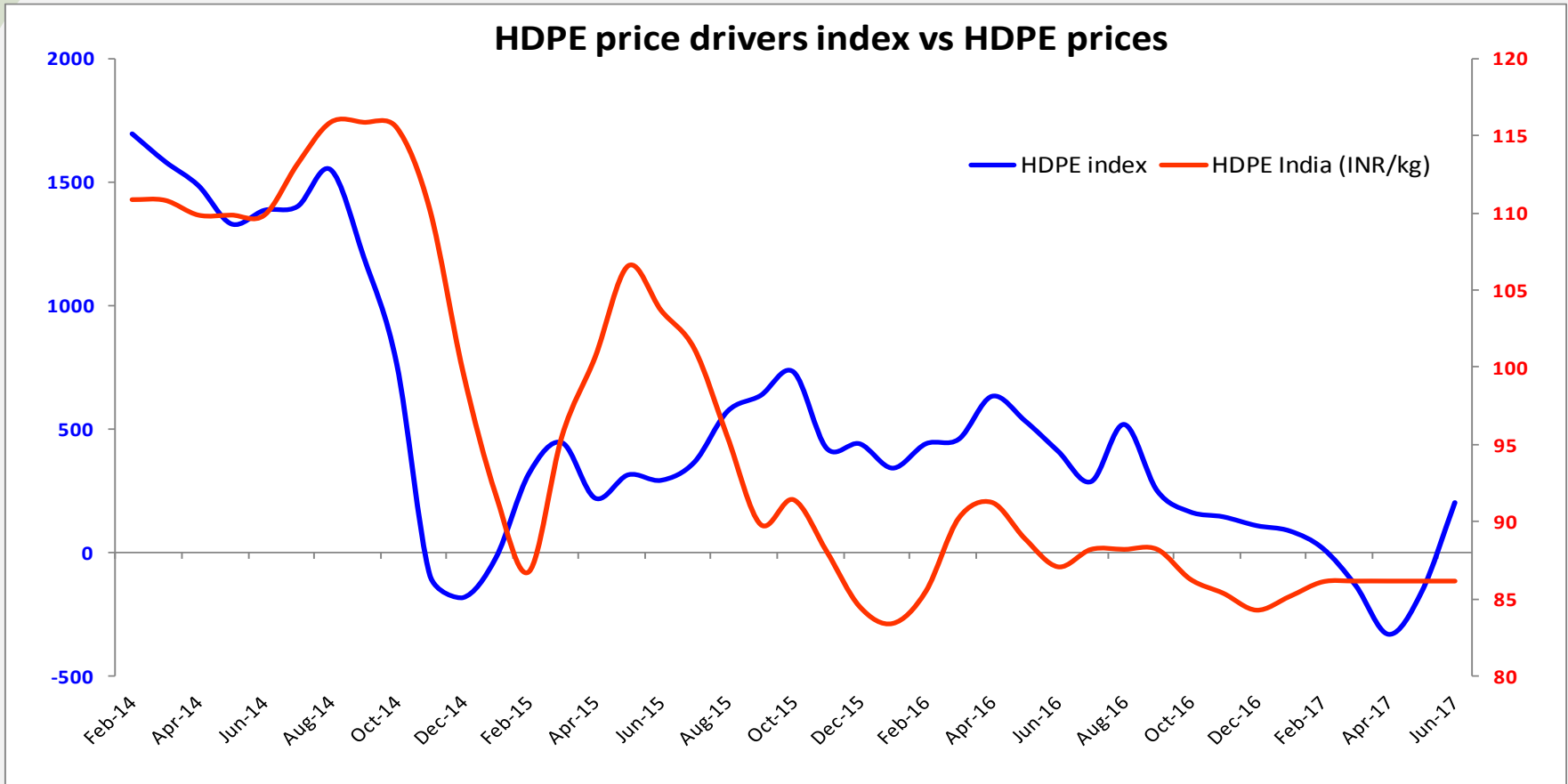
# Indian Pharma Sector Prospects



- ❖ Indian pharma sector sales growth is seen dipping in the past two months due to dealers and stockists apprehension about the tax credit returns with the implementation of GST. Earlier, the tax rate was about 9% while under GST it has been increased to 12%. AIOCD has reported that average inventory with distributors has come down to 17 days of supply by the end of June compared to 40 days of supply by the end of May.
- ❖ Going ahead, stock replenishment after the implementation of GST is expected to improve the sales gradually in the medium term. However, lower stock levels are expected to keep the sales on a sluggish note in the ease in the coming months.

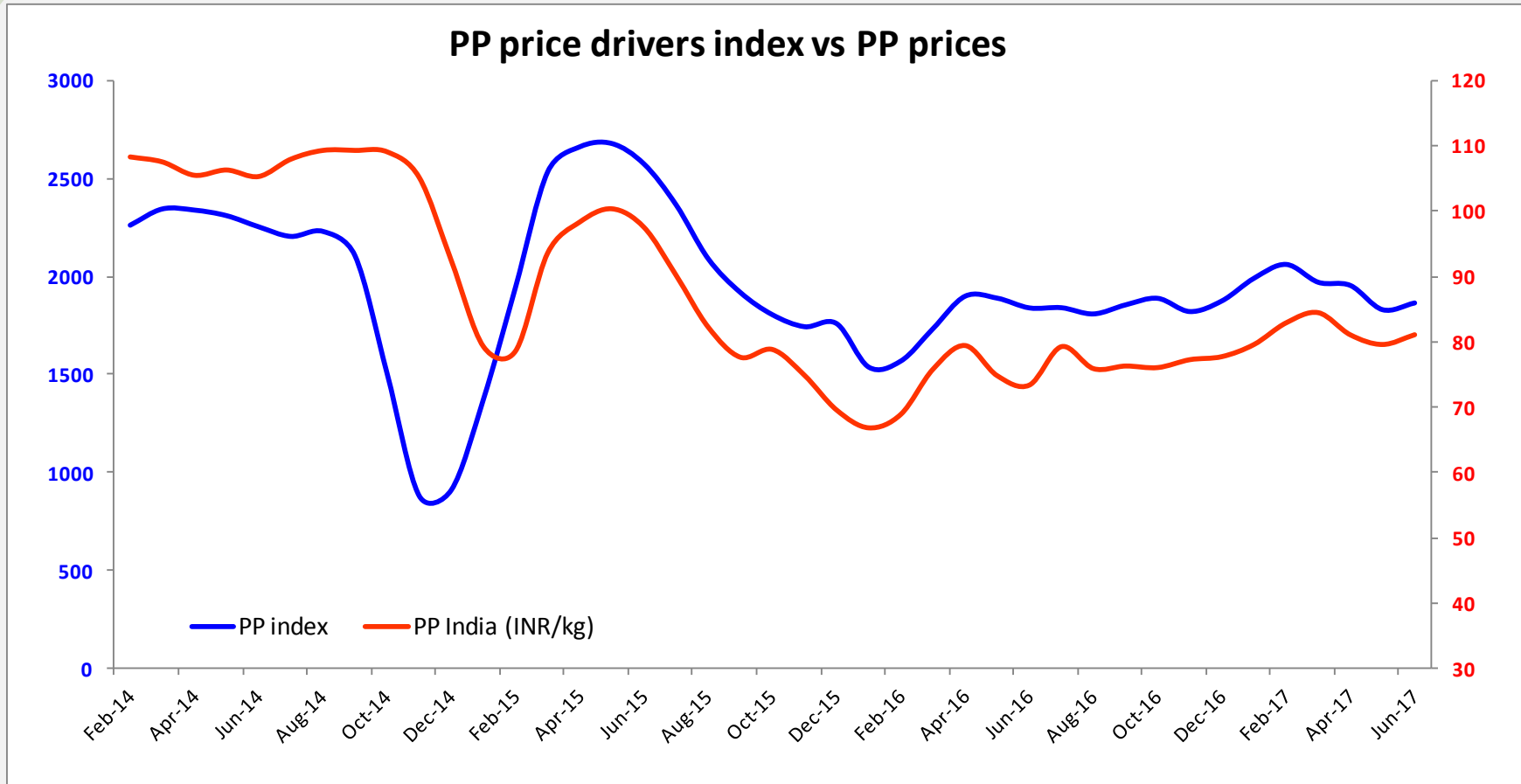
# Rebound in price drivers index levels suggesting possible upside revisions in coming months

TransGraph



# PP prices in line with the index movement – considering the demand drivers to rise in the coming months, PP prices likely to trade on a firm note

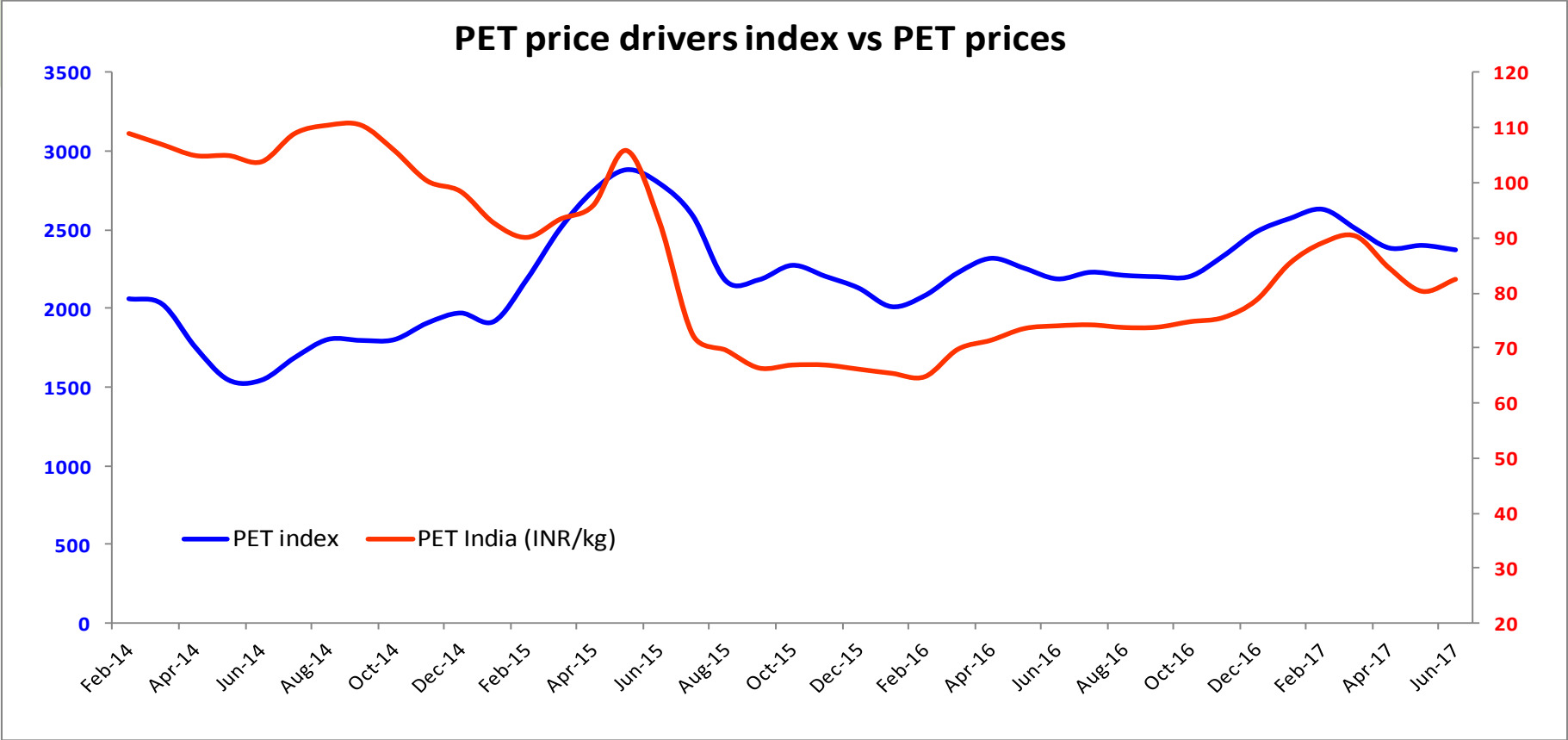
TransGraph





**PET price driver Index indicates that the prices inline with index – price are likely to move in mixed trend**

TransGraph



# Supply and Demand Balance - PE

**India PE Balance Sheet – Quarterly**

Attribute	OND-16	JFM-17	AMJ-17e	JAS-17P	OND-17P
Production (MT)	0.935	0.926	0.948	0.957	0.945
Imports (MT)	0.490	0.463	0.490	0.479	0.497
Exports (MT)	0.103	0.110	0.112	0.113	0.110
Apparent Consumption (MT)	1.321	1.272	1.313	1.314	1.329

**India PE Balance Sheet – Yearly**

Attribute	FY'15	FY'16	FY'17e	FY'18p
Capacity (MT)	3.02	4.67	4.84	5.45
Production (MT)	2.19	3.50	3.73	4.18
Imports (MT)	1.50	1.04	1.03	1.05
Exports (MT)	0.03	0.43	0.42	0.43
Apparent Consumption (MT)	3.66	4.11	4.34	4.80

# Supply and Demand Balance - PP

TransGraph

**India PP Balance Sheet – Quarterly**

Attribute	OND-16	JFM-17	AMJ-17e	JAS-17P	OND-17P
Production (MT)	1.222	1.214	1.331	1.382	1.358
Imports (MT)	0.180	0.190	0.180	0.200	0.200
Exports (MT)	0.156	0.152	0.162	0.169	0.157
Apparent Consumption (MT)	1.246	1.252	1.350	1.414	1.401

**India PP Balance Sheet – Yearly**

Attribute	FY'15	FY'16	FY'17e	FY'18p
Capacity (MT)	4.69	4.86	5.01	5.65
Production (MT)	4.58	4.80	4.88	5.42
Imports (MT)	0.53	0.71	0.89	0.98
Exports (MT)	0.72	0.64	0.62	0.64
Apparent Consumption (MT)	4.39	4.87	5.15	5.78

# Supply and Demand Balance - PET

India PET Balance Sheet – Quarterly					
Attribute	OND-16	JFM-17	AMJ-17e	JAS-17P	OND-17P
Production (KT)	500	497	505	524	515
Imports (KT)	41	57	58	53	43
Exports (KT)	174	169	176	184	171
Apparent Consumption (KT)	367	385	386	394	388

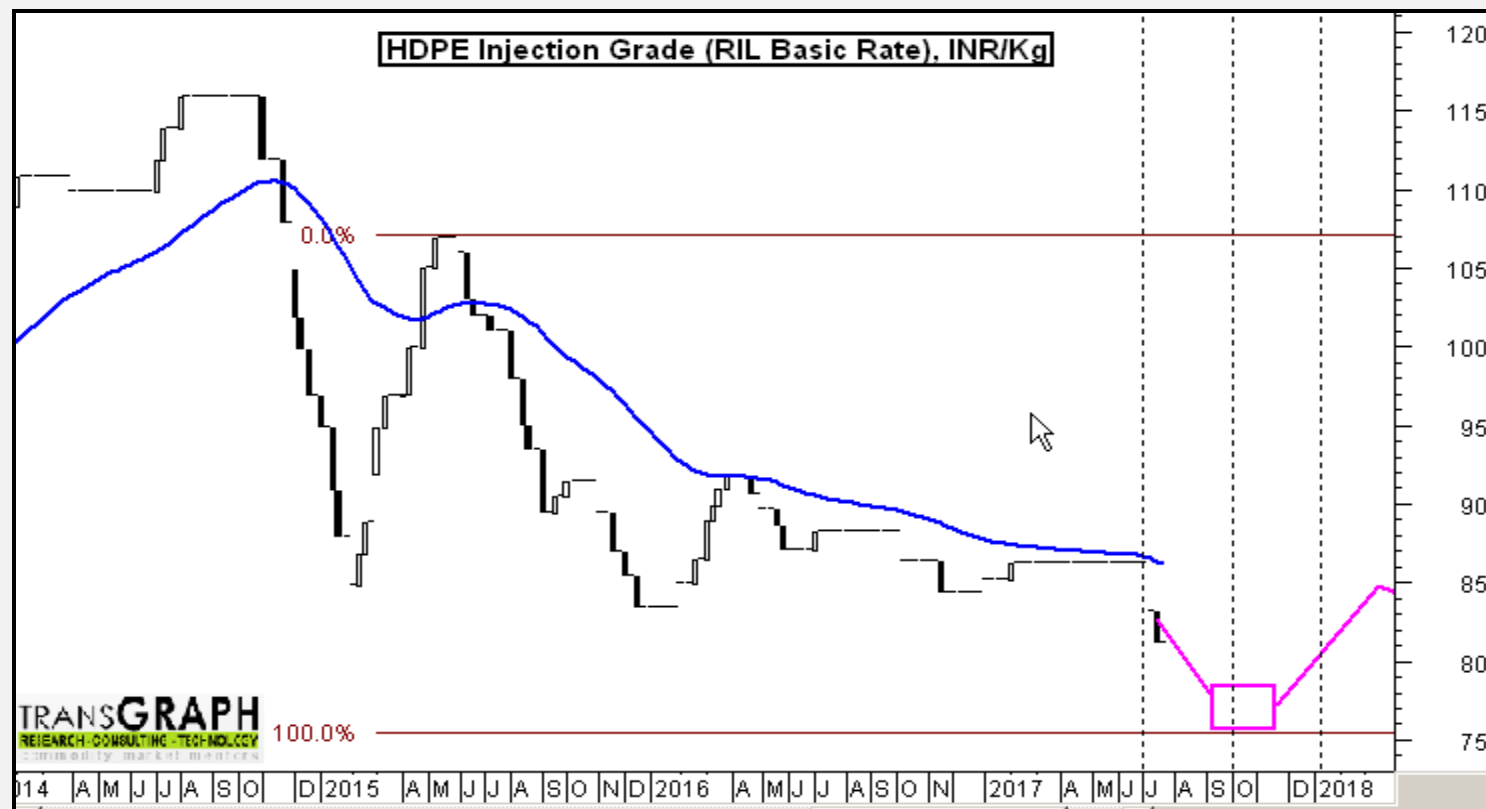
India PET Balance Sheet – Yearly				
Attribute	FY'15	FY'16	FY'17e	FY'18p
Capacity (KT)	1662	2310	2310	2380
Production (KT)	1611	1811	1996	2025
Imports (KT)	191	204	215	228
Exports (KT)	706	710	697	709
Apparent Consumption (KT)	1096	1305	1514	1544

# Technical analysis



# HDPE (Injection grade) RIL Basic Rate, INR/Kg

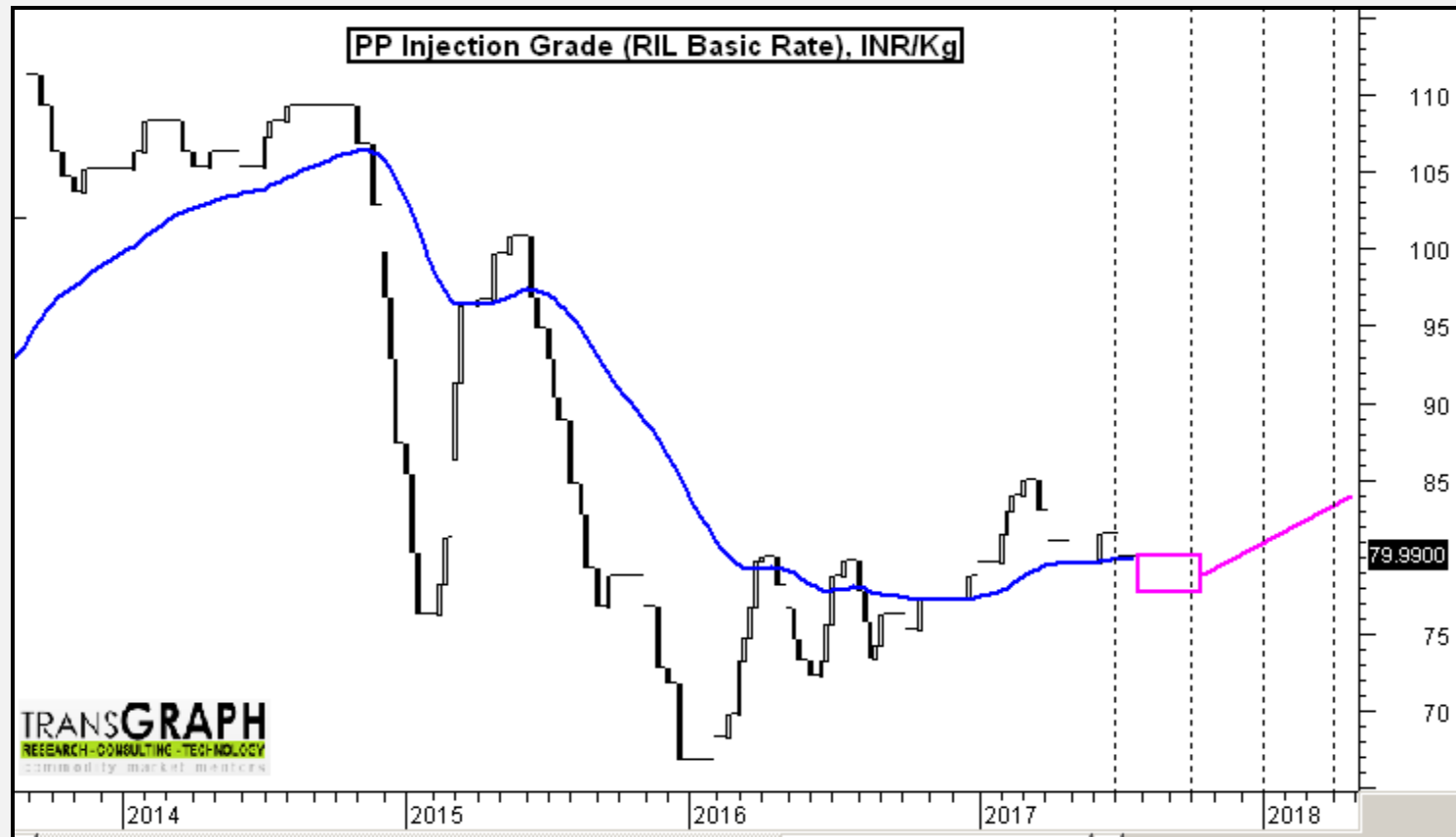
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- ❖ HDPE prices are likely to hold above INR 75 and gradually scale upward to INR 85 in the coming 3-5 months.

# Polypropylene (Injection grade) RIL Basic Rate, INR/Kg

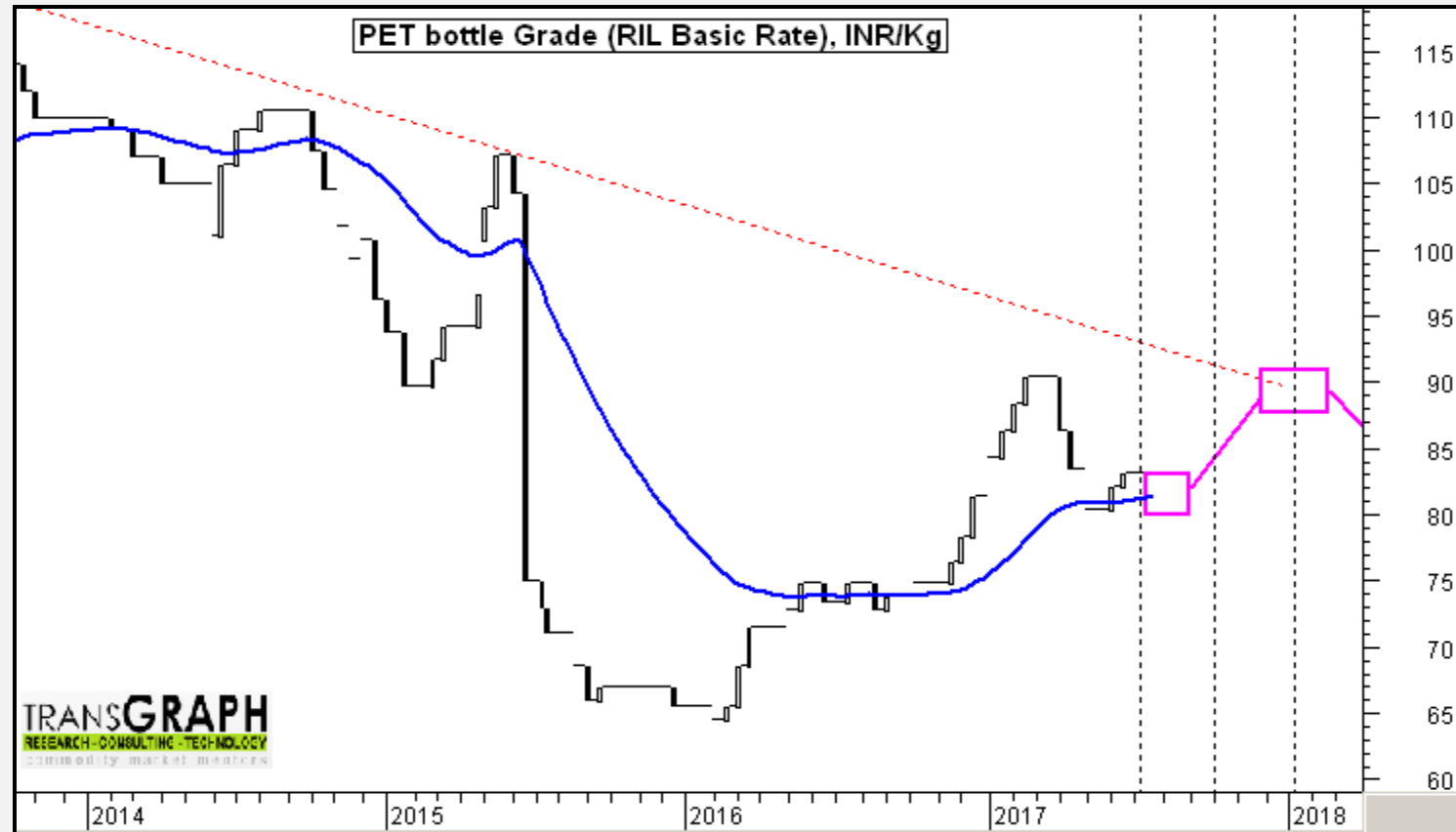
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❖ Polypropylene prices are likely to consolidate within INR 79 to 77 ahead of scaling upward to INR 85 in coming 3-5 months.

# PET ( bottle grade) RIL Basic Rate, INR/Kg, INR/Kg

TransGraph



**TRANSGRAPH**  
RESEARCH-CONSULTING-TECHNOLOGY  
commodity market monitors

- ❖ PET Bottle India , prices are likely to hold above INR 80 on any further dips and gradually scale upward to INR 90 in coming 3-5 months.



# Price outlook summary

TransGraph

Quarter	HDPE (Injection grade)			PP (Injection grade)			PET (Bottle grade)		
	High	Low	Average	High	Low	Average	High	Low	Average
CMP	81.17			79.99			83		
JFM 2017	86.17	85.17	85.80	84.92	79.54	82.20	90.30	84.30	88.27
AMJ 2017	86.17	86.17	86.17	82.96	79.54	80.55	86.30	80.30	82.37
JAS 2017	86.17	75.00	80.00	79.99	77.60	78.60	85.00	80.00	82.50
OND 2017	94.00	75.00	78.00	81.00	79.55	80.20	85.00	90.00	87.50

All prices are RIL basic rates in INR per Kg

# Annexure



# Polymer Price Driver Index

Factors taken in to consideration for the price drivers index	
USDINR	Naphtha
Chemical products production	Ethylene
Automobile production	Propylene
Industrial Production	PTA
Consumer durable production	MEG
Consumer non-durable production	International prices
Crude oil (Brent)	

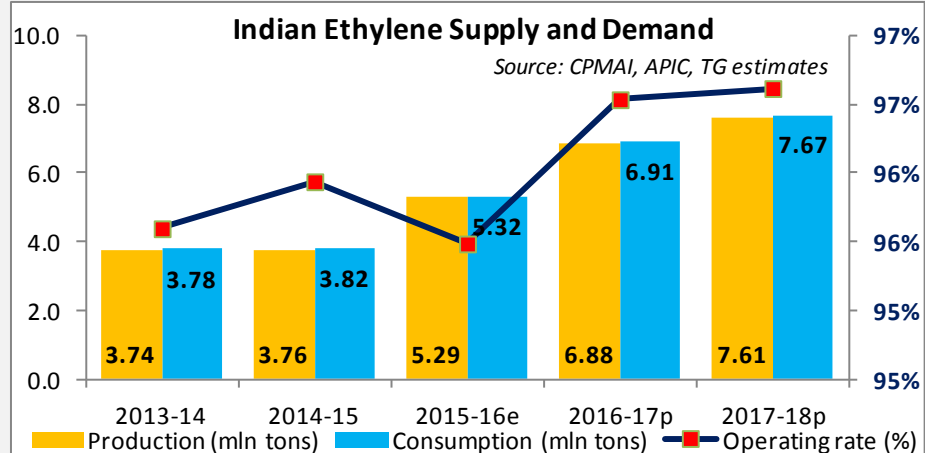
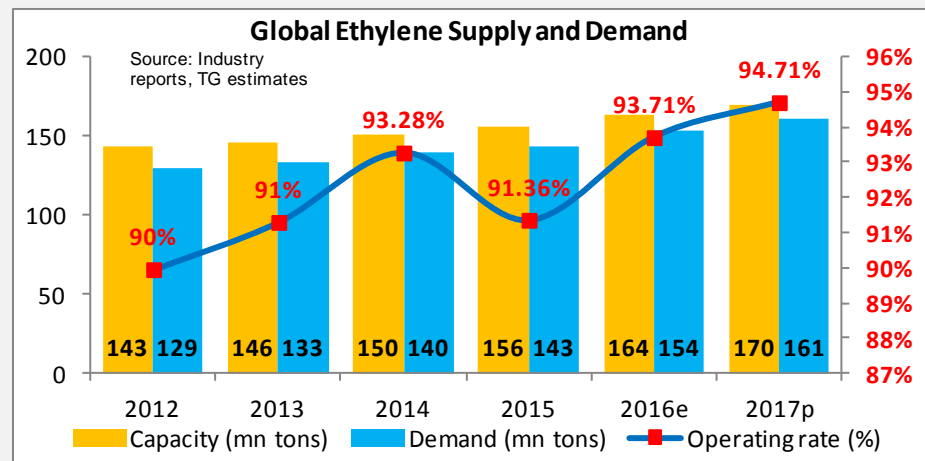
**Methodology:** Two year rolling correlation has been considered for the each individual factor to form an uniform index based on the supply as well as demand drivers.

# Ethylene supply and demand – Global and Indian

TransGraph

Global Ethylene SnD	2015	2016e	2017p
Capacity (mn tons)	156.30	163.80	170.00
Demand (mn tons)	142.80	153.50	161.00
Operating rate (%)	91.36%	93.71%	94.71%
Capacity-demand	2.13%	-2.69%	-1.10%
Capacity growth (%)	4.06%	4.80%	3.79%
Demand growth (%)	1.93%	7.49%	4.89%

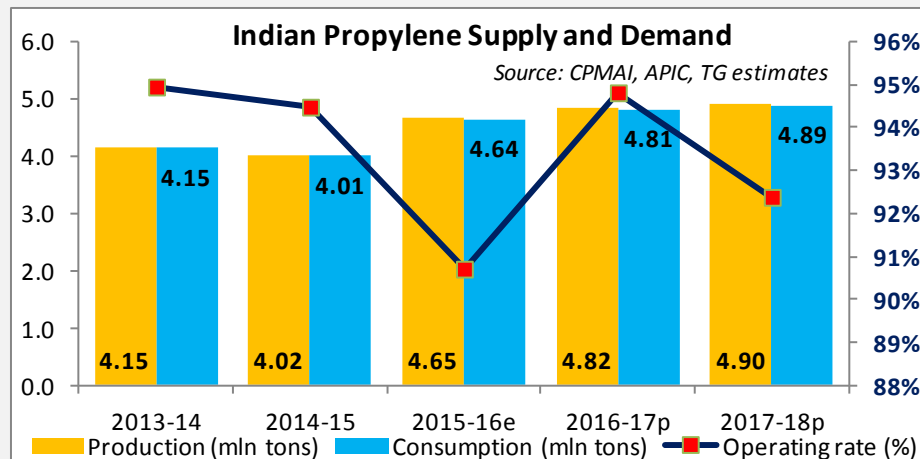
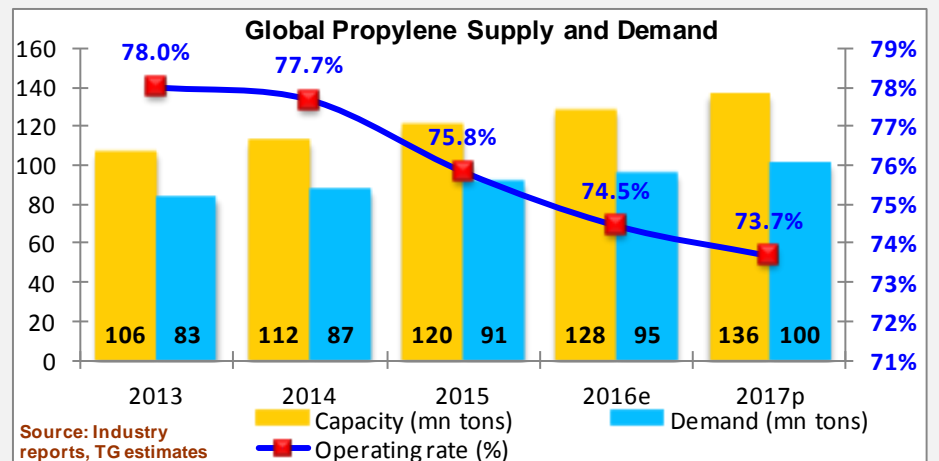
Indian Ethylene SnD	2015-16	2016-17e	2017-18p
Capacity	5.54	7.13	7.88
Production	5.29	6.88	7.61
Imports	0.03	0.03	0.06
Exports	0.00	0.00	0.00
Demand	5.32	6.91	7.67
Utilization rate	39.28%	29.92%	11.14%



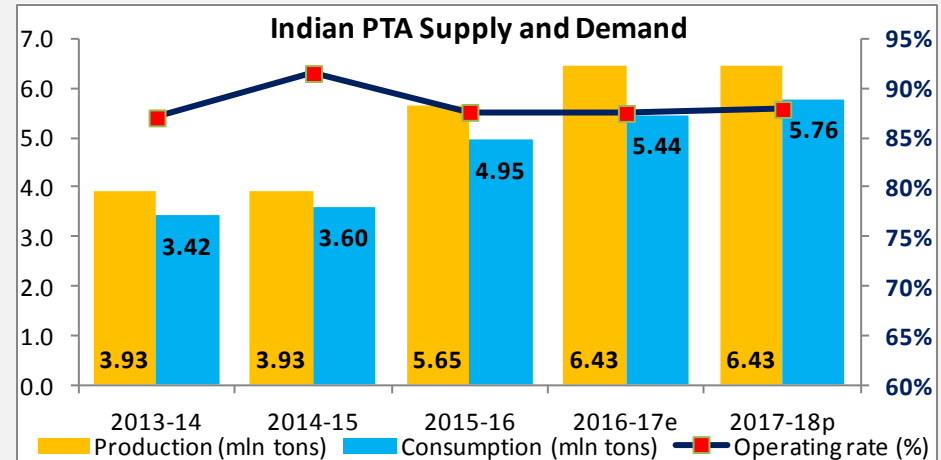
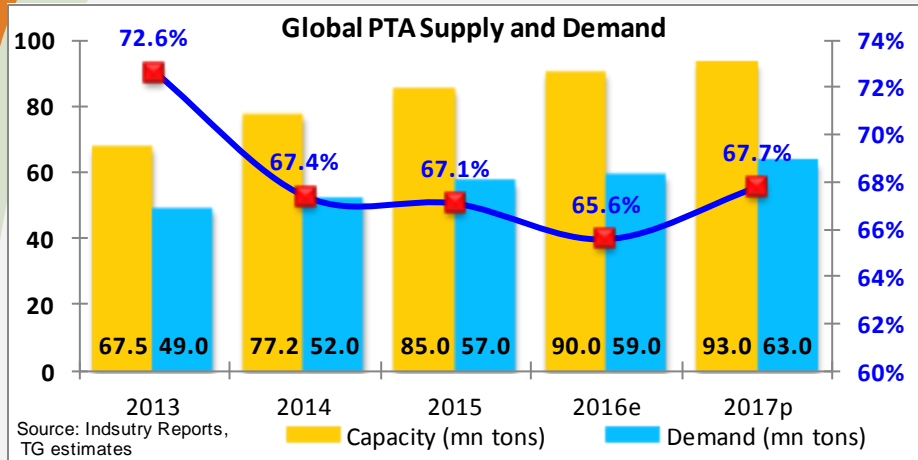
# Propylene supply and demand – Global and Indian

Global propylene SnD	2015	2016e	2017p
Capacity (mn tons)	120.00	128.00	136.00
Demand (mn tons)	91.00	95.30	100.20
Operating rate (%)	75.83%	74.45%	73.68%
Capacity-demand	2.55%	1.94%	1.11%
Capacity growth (%)	7.14%	6.67%	6.25%
Demand growth (%)	4.60%	4.73%	5.14%

Indian Propylene SnD	2015-16	2016-17e	2017-18p
Capacity	5.54	7.13	7.88
Production	5.29	6.88	7.61
Imports	0.03	0.03	0.06
Exports	0.00	0.00	0.00
Demand	5.32	6.91	7.67
Utilization rate	95.5%	96.5%	96.6%



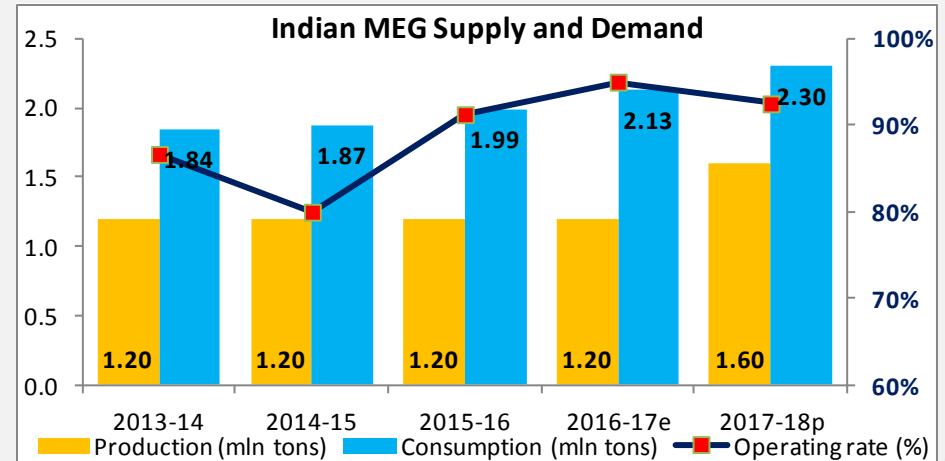
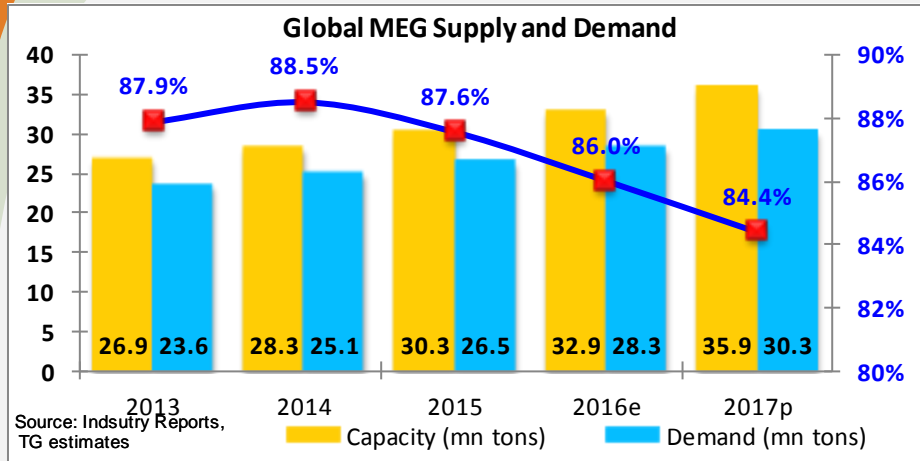
# PTA supply and demand – Indian & Global



Indian PTA SnD	2012-13	2013-14	2014-15	2015-16	2016-17p	2017-18p
Capacity (MTPA)	3.930	3.930	3.930	5.65	6.43	6.43
Production (MTPA)	3.462	3.420	3.700	4.95	5.63	5.65
Imports (MTPA)	0.648	0.978	1.015	0.69	0.12	0.45
Exports (MTPA)	0.004	0	0	0.15	0.30	0.34
Demand (MTPA)	4.106	4.398	4.715	4.95	5.44	5.76
Utilization rate (%)	6.60%	7.10%	7.20%	87.58%	87.47%	87.87%

Source: Industry reports, TG estimates

# MEG supply and demand – Indian & Global



Indian MEG SnD	2012-13	2013-14	2014-15	2015-16	2016-17p	2017-18p
Capacity (MTPA)	1.300	1.200	1.200	1.20	1.20	1.60
Production (MTPA)	1.057	1.040	0.960	1.10	1.14	1.48
Imports (MTPA)	0.656	0.864	0.955	0.96	1.06	0.95
Exports (MTPA)	0.069	0.064	0.060	0.07	0.08	0.13
Demand (MTPA)	1.644	1.840	1.855	1.99	2.13	2.30
Utilization rate (%)	3.70%	11.90%	0.80%	91.3%	95.0%	92.50%

Source: Industry reports, TG estimates



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