INDIAN PETROCHEMICAL INDUSTRY

Country Paper & Committee Presentations

CPMA

Chemical & Petrochemicals
Manufacturers' Association, India

APIC 2012

Asia Petrochemical Industry Conference
17 - 18 MAY 2012, Kualalumpur, Malaysia
Kualalumpur Convention Centre
Host: MALAYSIAN PETROCHEMICALS ASSOCIATION (MPA)

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SECTION 1

THE INDIAN ECONOMY

The Indian Economy: Review of 2011 & Outlook for 2012

The Indian Economy Snapshot

Managing growth and price stability were the major challenges of macroeconomic policymaking, in 2011-12. Inflation as measured by the wholesale price index (WPI) was high during most of the current fiscal year, though by the year's end there was a clear slowdown.

Monetary policy remained focused on controlling inflation and anchoring inflationary expectations, with 13 adjustments in policy rates since March 2010. This had a short-term slowing effect on growth, as was anticipated.

The slowing inflation reflects the lagged impact of actions taken by the RBI and the government. Reflecting the weak manufacturing activity and rising costs, revenues of the centre have remained less than anticipated resulting in higher fiscal deficit.

The global economic environment, which has been tenuous at best throughout the year, turned sharply adverse in September 2011 owing to the turmoil in the Eurozone, and questions about the outlook on the US economy provoked by rating agencies. However, for the Indian economy, the outlook for growth and price stability at this juncture looks more promising. There are signs from some high frequency indicators that the weakness in economic activity has bottomed out and a gradual upswing is imminent.

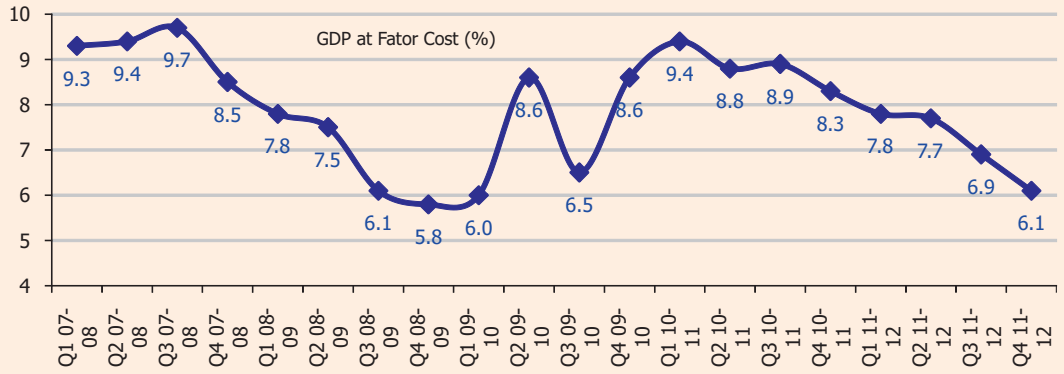
2011 – Broad Based Growth

The Indian economy is estimated to grow by 6.9% in 2011-12, after having grown at the rate of 8.4% in each of the two preceding years. This indicates a slowdown compared not just to the previous two years but 2003 to 2011 (except 2008-09). At the same time, sight must not be lost of the fact that, by any cross country comparison, India remains amongthe front-runners.The Economy of India is the 9thlargest in the world by nominal GDP and the 3rdlargest by purchasing power parity (PPP).The country is one of the G-20 major economies and a member of BRICS. In 2011, the country's GDP PPP per capita was $3,703 IMF, 127th in the world, thus making a lower-middle income economy. India's GDP is $1.843 trillion (nominal: 9th; 2011) & $4.469 trillion (PPP: 3rd; 2011).

The growth rate of Investment in the economy is estimated to have registered a significant decline during the current year. The year has been witnessing a sharp increase in interest rates that resulted in higher costs of borrowings; and other rising costs affecting profitability.Reduction in corporate investment could be attributed to global factors, with the global economy exhibiting signs of slowing down as well as to domestic factors, namely increased cost of borrowing following the raising of interest rates in order to control inflation.

Growth in Agricultureand Allied Sectorsremains an important objective and a 'necessary condition' for inclusive growth. Agriculture including allied activities accounted for 13.9% of GDP at 2004-5 prices in 2011-12 as compared to 14.5% in 2010- 11. Notwithstanding the declining trend in agriculture's share in GDP, the importance of the sector to the economy is best understood with reference to its share in employment and in terms of its criticality for macroeconomic stability. However, it is a matter of concern that agricultural growth is still, to a certain extent, characterized by fluctuations due to the vagaries of nature.

Figure 1: Quarterly GDP growth rate at constant 2004-05 prices



Source: Economic Survey 2011-12

Industrialgrowth, measured in terms of the index of industrial production (IIP), showed fluctuating trend. Growth had reached 15.5% in 2007-08 and then started decelerating. Initial deceleration in industrial growth was largely on account of the global economic meltdown. There was, however, a recovery from 2.5% in 2008-09 to 5.3% in 2009-10 and 8.2% in 2010-11. Fragile economic recovery in the US and Europe and moderately subdued expectations at home affected the growth of the industrial sector in the current year. Overall growth during April-December 2011 reached 3.6% compared to 8.3% the corresponding period of the previous year.The industrial sector performed poorly in 2011 and the share of industry in the GDP, which had peaked at 28.7%, has now retreated to 27%. Advance estimate by Government shows that Agriculture & Allied activities grew by 2.5%, Mining & Quarrying by -2.2%, Manufacturing by 3.9%, Electricity by 8.3%, Construction by 4.8%, Trade, Hotels, Transport & Communication by 11.2%, Finance, Insurance, Real Estate & Business Services by 9.1% &Community, Social & Personal Services by 5.9%.

The share of Servicesin India's GDP at factor cost (at current prices) increased from 33.5% in 1950-51 to 55.1% in 2010-11 and 56.3% in 2011-12 (Advance Estimates). The services sector is the principal source of employment in urban areas. As per the National Sample Survey Organization's (NSSO) report on the 'Employment and Unemployment Situation in India, 2009-10', for every 1,000 people employed, 679 and 75 people are employed in agriculture sector in rural and urban areas respectively (measured in terms of usually working persons in the principal status and subsidiary status). On the other hand, the services sector accounted for 147 and 582 of every 1,000 persons employed in rural and urban areas respectively.

Subdued Foreign Institutional Investor(FII) inflows into the country led to a decline in Indian markets and contributed to the sharp depreciation of the rupee in the forex market, though much of the depreciation was due to 'flight to safety' by foreign investors, given the meltdown in Europe and inflation in emerging market economies. Moderation in the growth rate of the economy has also affected market sentiments.

Table 1: Estimated Growth of the Indian Economy in 2010-11

Unit: Percentage	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
Year-on Year Growth Rates				**PE**	**QE**	**AE**
Agriculture & Allied Activities	4.2	5.8	0.1	1.0	7.0	2.5
Mining & Quarrying	7.5	3.7	2.1	6.3	5.0	-2.2
Manufacturing	14.3	10.3	4.3	9.7	7.6	3.9
Electricity, gas & water supply	9.3	8.3	4.6	6.3	3.0	8.3
Construction	10.3	10.8	5.3	7.0	8.0	4.8
Trade, Hotels, Transport & Communication	11.7	10.7	7.6	10.3	11.1	11.2
Finance, Insurance, Real Estate & Business Services	14.0	12.0	12.0	9.4	10.4	9.1
Community, Social & Personal Services	2.8	6.9	12.5	12.0	4.5	5.9
GDP at factor Cost	**9.6**	**9.3**	**6.7**	**8.4**	**8.4**	**6.9**
IIP	12.9	15.5	2.5	5.3	8.2	3.6
Inflation CPI	6.7	6.2	9.1	12.4	10.4	8.4
Foreign Exchange Reserves (US$ Billion)	199.2	309.7	252.0	279.1	304.8	292.8*
Exchange Rate ~ Rs/US$	45.25	40.26	45.99	47.44	45.56	47.70

Source: Economic Survey 2011-12, *: At end January, 2012.

India has followed a conscious path in response to the key environmental issues. Sustainable development in terms of environmental concerns has been a recurring theme in Indian policy and planning. The 2009 State of the Environment Report by the Ministry of Environment and Forests (MOEF) clubs the issues under five key challenges faced by India, which are climate change, food security, water security, energy security, and managing urbanization.

Trade and Balance of payment

No country in today's globalized world can be fully insulated from what happensin the global economy and India is no exception to the rule. As the country isincreasingly integrated into the world, it cannot remain impervious to developmentsabroad. The unfolding of the euro zone crisis and uncertainty surrounding the globaleconomy have impacted the Indian economy causing drop in growth, higher currentaccount deficit (CAD) and declining capital inflows. As in 2008, the transmissionof the crisis has been mainly through the balance-of-payments (BoP) channel. Exportgrowth has decelerated in the third quarter of fiscal 2011-12, while imports haveremained high, partly because of continued high international oil prices. At thesame time, foreign institutional investment flows have declined, straining the capitalaccount and the rupee exchange rate that touched an all-time low of 54.23 perUS dollar on 15 December 2011.

During H1 of 2011-12, Exportsincreased from US$ 107.3 billion during H1 of 2010-11 to US$ 150.9 billion, registering a growth of 40.6% as compared to 30% in H1 of 2010-11 over H1 of 2009-10. Exports in 2011-12 were driven mainly by buoyancy in items such as engineering goods and petroleum products. The resilience in export performance appeared to have resulted from a supportive government policy, focusing on diversification in terms of higher value-added products in the engineering and petroleum sectors and destinations across developing economies. Trade policy is supporting exports through schemes like the Focus Market Scheme (FMS), Focus Product Scheme (FPS), and Duty Entitlement Passbook Scheme (DEPB).

Table 2: Balance of Payments Summary

Unit: US$ billion	2006-07	2007-08	2008-09	2009-10	2010-11 (H1 -A-S)	2010-11 (H1-A-S)	2011-12
Exports	128.9	166.2	189.0	182.4	250.5	107.3	150.9
Imports	190.7	257.6	308.5	300.6	381.1	176.2	236.7
Trade Balance	-61.8	-91.5	-119.5	-118.2	-130.6	-68.9	-85.8
Net Invisibles	52.2	75.7	91.6	80.0	84.6	39.3	52.9
Current Account Balance	**-9.6**	**-15.7**	**-27.9**	**-38.2**	**-46.0**	**-29.6**	**-32.8**
Foreign Investment	14.8	43.3	8.3	50.4	39.7	30.8	13.7
FDI (net)	7.7	15.9	22.4	18.0	9.4	7.0	12.3
Portfolio (net)	7.1	27.4	-14.0	32.4	30.3	23.8	1.3
Capital Account Balance	**45.2**	**106.6**	**7.4**	**51.6**	**62.0**	**39.0**	**41.1**
Overall Balance	**36.6**	**92.2**	**-20.1**	**13.4**	**13.1**	**7.0**	**5.7**

Source: Economic Survey 2011-12. A-S → April to September

Imports of US$ 236.7 billion recorded anincrease of 34.3% during H1 of 2011-12 asagainst an increase of 27.3% in H1 of2010-11 over H1 of 2009-10. Rising crude oil prices,along with increase in gold and silver prices, havecontributed significantly to the burgeoning import billduring H1 of 2011-12.

The CAD increased to US$ 32.8 billion in H1 of 2011-12, as compared to US$ 29.6 billion during the corresponding period of 2010-11, mainly on account of higher trade deficit. As a proportion of GDP, it was marginally lower at 3.6%t during H1 of 2011-12 vis-à-vis 3.8% in H1 of the preceding year.

In 2011-12, the Foreign Exchange Reservesincreased by US$ 6.7 billion from US$ 304.8 billion at end March 2011 to US$ 311.5 billion at end September 2011. Out of this total increase, US$ 5.7 billion was on BoP basis and the balance US$ 1.0 billion was on account of valuation effect.

The size of foreign exchange reserves could be a constraining factor in checking depreciation of local currency in the event of external shock and reversal of capital. It is therefore imperative that during times of surge in capital flows, when currency is under pressure to appreciate, measures are taken to build up reserve levels.

During 2010-11, the average monthly Exchange Rateof the rupee against the US dollar appreciated by 1.2% from 45.50 per US dollar in March 2010 to 44.97 per US dollar in March 2011. On month-to-month basis the rupee depreciated by 14.6% from the level of 44.97 per US dollar in March 2011 to 52.68 per US dollar in December 2011.

The rupee has experienced high volatility in the last few years. Such volatility impairs investor confidence and has implications for corporate balance sheets and profitability in case of high exposure to ECBs when currency is depreciating. A more aggressive stance to check rupee volatility is therefore necessary.

A trade deficit of more than 8% of GDP and CAD of more than 3% is a sign of growingimbalance in the country's balance of payments. There is scope therefore to discourage unproductive imports like gold and consumer goods to restore balance. In this respect, some weakening of the rupee is a positive development, as it improves trade balance in the long run by increasing export competitiveness and lowering imports.

High trade and current account deficits, together with high share of volatile FII flows are making India's BoP vulnerable to external shocks. Greater attention therefore has to be given to improving the composition of capital flows towards FDI.

Performance of Core Industries

Aided by robust performance in coal, electricity and cement, the country's eight core industries' output expanded by 6.8% in February, higher than the 6.4% growth seen in the same month last year. During April-February FY12, the growth of core industries slowed down to 4.4% from 5.8% in the same quarter last year.

A. Electricity generation had an 8.0% growth in February 2012 compared to its 7.2% growth in February 2011. Electricity generation on the other hand had a cumulative growth of 8.6% during April-February 2011-12 as against its 5.4% growth during the same period of 2010-11.

B. Coal production registered a growth of 17.8% in February 2012 compared to its growth at (-)5.8% in February 2011. However, in cumulative terms Coal production had a growth of 0.4% during April-February 2011-12 compared to its growth at (-) 0.1% during the same period of 2010-11.

C. Steel production grew by 4.3% in February 2012 against its 18.5% in February 2011. Cumulatively Steel production had a 6.8% growth during April-February 2011-12 compared to its 9.2% growth during the same period of 2010-11.

D. Cement production registered a growth of 10.8% in February 2012 against its 6.5% growth in February 2011. The cumulative growth of Cement Production was 6.4% during April-February 2011-12 compared to its 4.3% growth during the same period of 2010-11.

E. Crude Oil production registered a growth of 0.4% in February 2012 compared to its growth at 12.2% in February 2011. Cumulatively Crude Oil production registered a growth of 1.4% during April-February 2011-12 compared to its growth at 11.9% during the same period of 2010-11.

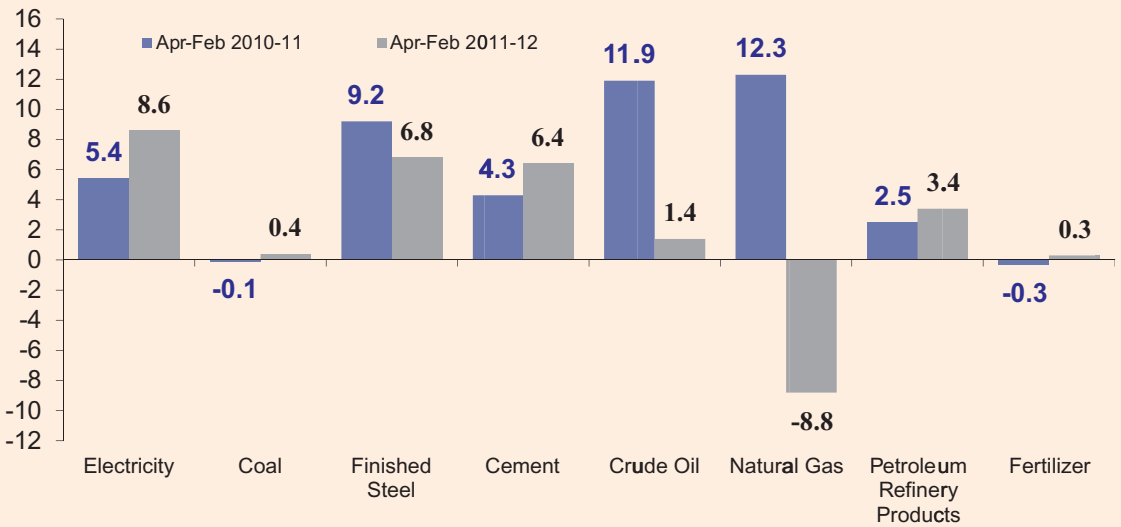
F. Natural Gas production registered a growth of (-) 7.6% in February 2012 compared to its growth at (-) 7.3% in February 2011. Natural Gas production registered a cumulative growth of (-) 8.8% during April-February 2011-12 compared to its growth at 12.3% during the same period of 2010-11

G. Petroleum refinery production had a growth of 6.2% in February 2012 compared to its growth at 3.2% in February 2011. In cumulative terms Petroleum refinery production registered a growth of 3.4% during April-February 2011-12 compared to its 2.5% growth during the same period of 2010-11.

H. Fertilizer production registered a growth of 4.1% in February 2012 against its growth at 4.8% in February 2011. Cumulatively Fertilizer production had a growth of 0.3% during April-February 2011-12 corresponding to (-) 0.3% growth during the same period of 2010-11

Source: Ministry of Statistics and Programme Implementation, Government of India.

Figure 2: Infrastructure Performance (% Growth)



Outlook for 2012: India & Globalization

The globalization of India has given rise to new opportunities but it has also brought with it new challenges and responsibilities. It means that the global economy can no longer be viewed from a spectator's standpoint. What happens there has large implications for India.Any improvement in the global environment should translate into a higher growth rate for the Indian economy in 2012-13.

Volatility in capital flows resulting from the spillover effects of monetary policy choices and other uncertainties in the advanced financial markets further impacted exchange rates and made the task of macroeconomic management difficult in many emerging economies. This has brought out a new dimension of globalization in the post financial crisis world, where easy monetary policy in one set of countries may result in inflation elsewhere due to cross-border capital flows.

India enjoys the unique advantage of having many economic indicators in its favour, particularly a large domestic market, robust investment-to-GDP ratio, and demographic advantage. According to global research firm Ipsos, India's economic confidence jumped by 9 points to 74% in the month of February compared to the previous month, becoming the second most economically confident country after Saudi Arabia which tops the chart with 90%.

With an $85.97 trillion economy, India will surpass China to become the world's largest economy by 2050, according to Wealth Report 2012 by Knight Frank & Citi Private Bank.

Table 3: India's GDP Growth Forecast- March 2012

Agencies	2012	2013
World Bank- GEP Jan 2012	6.5%	7.7%
IMF-WEO Apr 2012	6.9%	7.3%
ADB – ADO Apr 2012	7.0%	7.5%
Economic Survey (GOI) – 2011-12	7.6%	8.6%
PMEAC (Prime Minister's Economic Advisory Council)-Feb 2012	7.6%	
CRISIL – Feb 2012	7.0%	
Fitch (Rating Agency) – March 2012	7.5%	

SECTION 2

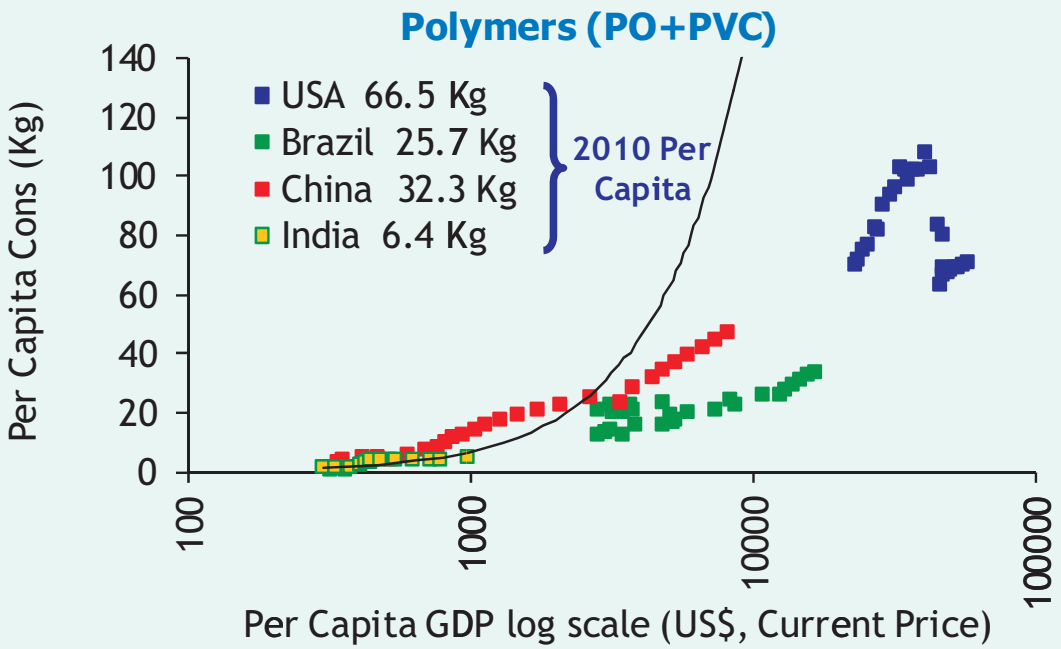
INDIAN PETROCHEMICAL INDUSTRY

Petrochemical Industry in India

Petrochemicals include Synthetic Fibres, Polymers, Elastomers, Synthetic Detergents, and Performance Plastics, apart from their intermediates such as synthetic fibre intermediates, synthetic detergent intermediates, olefins, and aromatics. The main sources of feedstock and fuel for petrochemicals are natural gas and naphtha. Petrochemical products cover the entire spectrum of daily use items ranging from clothing, housing, construction, furniture, automobiles, household items, toys, agriculture, horticulture, irrigation, and packaging to medical appliances.

Compared to per capita consumption of PO+PVC in US at 67 Kg, China at 32 Kgand Brazil at 26 Kg, India at6.4 Kg (based on 2010 data) is still in nascent stage. US consumption has reached saturation level, china's consumption above industry curve is basically export led. India has the advantage of high population and expected to maintain high economic growth. This should propel India's polymer consumption to new levels in coming year.

Figure 3: Per capita Polymer Consumption Vs per capita GDP ~ 2010



The domestic polymer industry (like global industry) is dominated by Polyolefin's(PE & PP), representing about 72% of all commodity resins consumed in 2010. Polymers registered demand growth of 4.6% in 2011 against growth of 12% in 2010. The demand for polymer is likely to grow by 12%& 8%approx. in 2012& 2013 and is expected to reach 8950 Kt &9672 Kt respectively.

Net trade deficit declined substantiallyfrom 1313 Kt in 2010 to 957 Kt in 2011 but is expected to increase to1172 Kt and 1344 Kt in 2012& 2013 respectively. Domestic demand is expected to outpace domestic production. New capacities of HMEL & MRPLare expected in 2012 & 2013 respectively.

Petrochemical Industry Review of 2011 & Outlook for 2012

Polymers

Polymers registered a subdued demand growth of 4.6% in 2011.Demand from every major end-use segment has been affected in 2011 as the economy slowed down due to monetary & fiscal tightening for controlling inflation. Raffia, the largest end-user, has been hit by a drop in cement dispatches. Cement dispatches serve as an important indicator of manufacturing activity in the country. Growth in cement dispatches (m-o-m SA) picked up in December 2011 and grew at 5.9% as compared to -16.9% in the previous month. It has been falling since then and stood at 1.8 per cent in March 2012.

Deceleration in commercial vehicles sales has hit PP copolymer sales. Commercial vehicles sales, another forward looking indicator of industrial activity, also paint a grim picture. Sales have remained more or less stagnant since October 2011 after a 22% growth in September 2011. Sales of commercial vehicles grew by just 0.8% in March 2012.

We expect the demand for polymers to grow at 8% - 12% in 2012& 2013. Recovery is likely to set in when interest rates, which have been raised 13 times since March 2010, are brought down and liquidity in the market increases. Polymer industry is expected to grow along with the economic growth of the country.

Table 4: Polymer Demand Supply

Polymers (Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
Capacity	6823	7941	8501	8941	9686
Production	5349	6358	7067	7778	8328
Op Rate (%)	**78%**	**80%**	**83%**	**87%**	**86%**
Import	2120	2104	2047	2200	2418
Exports	613	792	1090	1028	1074
Net Trade	-1507	-1313	-957	-1172	-1344
Demand	6857	7670	8024	8950	9672
Demand Growth %	**20%**	**12%**	**4.6%**	**12%**	**8.1%**

Source: Industry Estimates.A: Actual, E: Estimate

In 2011, there wastotal polymer capacity addition of 560 Kt. LLDPE ~108 Kt, HDPE – 278 Kt&175 Kt of PP by IOCL.

In 2011, GAIL debottlenecked its LLDPE capacity by 20 Kt and IOCL increased its LLDPE capacity from 88 Kt in 2010 to 175 Kt in 2011.

In 2011, GAIL debottlenecked its HDPE capacity by 40 Kt and IOCL is expected to increase its HDPE capacity from 238 Kt in 2010 to 475 Kt in 2011.

HPL debottlenecked its PP capacity by 65 Kt and RIL by 110 Kt in 2011.

HMEL is expected to commence its PP production of 440 Kt by 2012 end and MRPL is expected to commence its PP production of 440 Kt by 2013.

GAIL is expected to debottleneck its LLDPE capacity by 120 Kt & HDPE capacity by 100 Kt in 2013.

Operating rate is expected to increase from 83% in 2011 to87% in 2012 and expected to remain at same level with new startups taking place.

In 2011 there was net trade deficit of 957 Kt. Trade deficit is expected to be 1172 Kt in 2012 and1344 Kt in 2013.Trade deficit is expected to increase from 2011 levels as domestic demand is in excess of domestic production especially for PVC and LDPE.

Polyolefins

Comprising PE & PP, Polyolefins constituted 79% of the total polymer capacity andproduction in India in 2011.

All PE registered demand growth of 4.1%in 2011. It is expected that PE will grow at 7%approx. in 2012and 2013 respectively. There is no major capacity addition, only debottlenecking by GAIL & IOCL.

Table 5: Polyolefin Demand in India Actual & Projected

(Kt)	Actual		Projected		% Change year on year		
	2010	2011	2012	2013	2011	2012	2013
LDPE+EVA	439	499	532	571	14%	6.4%	7.3%
LLDPE	1076	1055	1130	1210	-2.0%	7.1%	7.1%
HDPE	1469	1552	1650	1760	5.7%	6.3%	6.7%
PP	2576	2682	3072	3304	4.1%	15%	7.6%
Total PO	**5560**	**5788**	**6384**	**6845**	**4.1%**	**10%**	**7.2%**

Source: Industry Estimates.A: Actual, E: Estimate

PP registered demand growth of 4.1% in 2011and is expected to rebound and grow at a healthy rate of 15%&7.6% in 2012& 2013. HMEL's 440 Kt PP capacity is expected to come on-stream by 2012 end and MRPL is expected to commence its production of 440 Kt PP by 2013.

Polyolefins registered demand growth of 4.1%in 2011. It is expected to grow at 10%&7.2% in 2012& 2013 respectively.

Vinyl's: PVC

The demand for PVC increased by 5.1% in 2011 and is expected to grow at 15%& 10% in 2012and 2013 to reach 2271 Kt &2498 Kt respectively. As the economy is expected to perform well with the easing of monetary policy (inflation under control) and various PVC end use sectors performance improving, PVC demand is expected to be robust in coming years.

Table 6: PVC Demand Supply

(Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
Capacity	1321	1321	1321	1321	1406
Production	1013	1216	1250	1295	1378
Imports	694	659	722	976	1120
Exports	0.0	0.0	0.0	0.0	0.0
Apparent Demand	1707	1875	1972	2271	2498
Demand Growth%	**26%**	**10%**	**5.1%**	**15%**	**10%**

Source: Industry Estimates.A: Actual, E: Estimate

There was no new capacity addition in 2011. PVC capacity is expected to remain at 1321 Kt level till 2012.PVC import was722 Kt in 2011 and is expected to increase further to 976 Kt in 2012&1120 Kt in 2013. India's import dependency on PVC is expected to increase in future as there is no new capacity coming up or planned but at the same time PVC consumption is expected to go up in construction, agriculture sector and other end use applications.

There is debottlenecking of 85 Kt of PVC in 2013 by RIL.

Styrenics

A.Polystyrene

In 2011, demand for PS increased by 12% to reach 264 Kt, as shown in table7. Demand for PS is expected to maintain the same rate in 2013 & 2013.

Table 7: Polystyrene Demand Supply

(Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
Capacity	452	452	452	452	452
Production	258	260	260	275	290
Imports	22	24	28	32	45
Exports	70	49	24	11	5
Apparent Demand	210	236	264	296	330
Demand Growth%	**12%**	**12%**	**12%**	**12%**	**12%**

Source: Industry Estimates.A: Actual, E: Estimate

PS import was28 Kt in 2011 and is likely to increase to 32Kt &45Kt in 2012& 2013 respectively. Export declined from 49 Kt in 2010 to 24 Kt in 2011 and is likely to further decrease to 11 Kt &5 Kt in 2012& 2013.

B.Acrylonitrile-Butadiene-Styrene (ABS)

The status of the ABS production in India is shown in table 8. Demand for ABS registered a growth of 8.2% in 2011. As shown in the table below, demand for ABS is expected to grow approx. at the rate of 9% ~ 10% in 2012& 2013. Industry capacity is likely to remain unaltered at 87 KT till 2013.

Table 8: ABS Demand Supply

(Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
Capacity	87	87	87	87	87
Production	83	85	85	85	85
Imports	27	35	44	56	69
Exports	1.8	1.0	0.5	0.0	0.0
Apparent Demand	108	119	129	141	154
Demand Growth%	**25%**	**10%**	**8.2%**	**9.3%**	**9.6%**

Source: Industry Estimates.A: Actual, E: Estimate

C.Styrene-Acrylonitrile (SAN)

Demand for SAN registered growth of 9.5% in 2011. It is expected to growat same rate in 2012 and 2013. There is no capacity addition till 2013.

Table 9: SAN Demand Supply

(Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
Capacity	96	96	96	96	96
Production	66	70	75	80	85
Imports	5.4	12	15	19	23
Exports	0.0	0.0	0.0	0.0	0.0
Apparent Demand	71	82	90	99	108
Demand Growth%	**15%**	**15%**	**9.5%**	**9.6%**	**9.5%**

Source: Industry Estimates.A: Actual, E: Estimate

Olefins (including Butadiene, Styrene, EDC & VCM)

A.Ethylene & Propylene

Ethylene Capacity increased from 3730 Kt in 2010 to 4030 Kt in 2011. There was debottlenecking of 260 Kt by IOCL,Haldia ~ 25 Kt and GAIL ~ 15 Kt in 2011.

Propylene capacity increased from 3833 Kt in 2010 to 3963 Kt in 2011, capacity debottlenecking by IOCL of 130 Kt. HMEL is expected to add 367 Kt by end of 2012 to reach 440 Kt by 2013. MRPL is expected to add 440 Kt of propylene capacity in 2013.

In 2011, production of ethylene and propylene was 3355 Kt and 3560 Kt respectivelyas shown in Table 10. Production is expected to increase as the operating rates improve.

Table 10: Ethylene & Propylene net availability

	2009 A	2010 A	2011 A	2012 E	2013 E
Ethylene (Kt)					
Capacity	2920	3730	4030	4030	4030
Production	2800	2827	3355	3744	3807
Imports	41.25	109.0	56.0	40.00	40.00
Exports	0.0	0.0	0.0	0.0	0.0
Net Availability	**2841**	**2936**	**3411**	**3784**	**3847**
Propylene (Kt)					
Capacity	2988	3833	3963	4380	4843
Production	2484	3276	3560	3589	3854
Imports	5.0	5.0	0.0	0.0	0.0
Exports	6.0	20.0	20.0	4.0	0.0
Net Availability	**2483**	**3261**	**3540**	**3585**	**3854**

B. Butadiene

The demand for butadiene registered a nominal growth of 0.8% in 2011. Demand is expected to grow at 2% in 2012. Demand for Butadiene is expected to jump by 50% by 2013 on back of new SBR & PBR plants coming up in 2013. There was an exportable surplus of 146 Kt in 2011, which is expected decline to 141 Kt in 2012&85 Kt in 2013 as the domestic demand for butadiene increases.

Table 11: Butadiene Demand Supply

Butadiene (Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
Capacity	279	295	295	295	295
Production	210	266	264	261	266
Imports	3.0	0.0	0.0	0.0	0.0
Exports	100	149	146	141	85
Apparent Demand	113	117	118	120	181
Demand Growth%	**11%**	**3.8%**	**0.8%**	**1.7%**	**50%**

Source: Industry Estimates.A: Actual, E: Estimate

C. Styrene

India does not have any capacity for styrene and is fully dependent upon imports as shown in Table 12. For 2011, India's total demand for Styrene was 525 Kt and growth in styrene demand was at 11%. In 2012& 2013, demand for Styrene is projected to grow at a rate of 11% to reach 585 Kt &650Kt respectively.

Table 12: Styrene Demand Supply

Styrene (Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
Imports	430	472	525	585	650
Exports	4.6	0.0	0.0	0.0	0.0
Apparent Demand	-425	-472	-525	-585	-650
Demand Growth%	**10%**	**11%**	**11%**	**11%**	**11%**

Source: Industry Estimates.A: Actual, E: Estimate

D. EDC & VCM

Almost the entire production of EDC and VCM in India are consumed captively by the polymer manufacturers for production of PVC and hence, PVC manufacturers who do not have facilities for captive production of EDC and VCM have to rely entirely on imports to meet their demand for PVC building blocks viz. EDC and VCM.

Table 13: EDC & VCM Import into India

	2009 A	2010 A	2011 A	2012 E	2013 E
EDC (Kt)					
Capacity	350	350	350	350	350
Production	331	361	360	360	360
Imports	290	345	350	400	430
Exports	0.1	0.0	0.0	0.0	0.0
Apparent Demand	621	706	710	760	790
Growth (%)		**14%**	**0.6%**	**7.0%**	**3.9%**
VCM (Kt)					
Capacity	866	866	866	866	966
Production	809	839	870	870	966
Imports	230	380	367	380	380
Exports	0.0	0.0	0.0	0.0	0.0
Apparent Demand	1039	1219	1237	1250	1346
Growth (%)		**17%**	**1.5%**	**1.1%**	**7.7%**

Source: Industry Estimates. A: Actual, E: Estimate

For the year 2011, while imports of EDC increased to 350 Kt, VCM imports increased to367 Kt, as shown in Table 13. EDC imports expected to increase to 400 Kt &430 Kt in 2012& 2013 respectively. VCM imports expected to reach 380 Kt by 2013.

Fibre Intermediates

In 2011, the combined production of fibre intermediates viz. ACN, Caprolactum, PTA and MEG reached 4614 Kt of which PTA and MEG constituted 76% and 21% respectively with ACN and Caprolactum together accounting for the remaining 4% as shown in Table 14.

PTA and MEG constituted 42% and 53% of the total 1579 Kt fibre intermediates imported in to India in 2011. Of the 70 Kt of fibre intermediates exported from India in 2011, the share of MEG was 85% and Caprolactumwas 13%.

Reliance Kurkumbh MEG capacity of 100 Kt has been mothballed in 2011.

Table 14 : Fibre Intermediate Demand Supply

(Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
ACN--->>					
Capacity	38	38	38	38	38
Production	38	38	38	38	38
Imports	85	87	81	85	90
Exports	3.0	0.0	1.5	0.0	0.0
Demand	120	125	118	123	128
Demand Growth (%)	**8.0%**	**3.8%**	**-6.0%**	**4.7%**	**4.1%**
Caprolactum--->>					
Capacity	120	120	120	120	120
Production	111	121	120	121	121
Imports	8.0	8	8	8	8
Exports	9.5	9.4	8.9	11.0	8.0
Demand	109	120	119	118	121
Demand Growth (%)	**10%**	**9.4%**	**-0.9%**	**-0.9%**	**2.6%**
PTA--->>					
Capacity	3050	3850	3850	3850	4990
Production	2965	3570	3497	3736	4021
Imports	300	369	656	749	913
Exports	0.0	30	0.0	0.0	0.0
Demand	3265	3909	4153	4485	4934
Demand Growth (%)	**18%**	**20%**	**6.2%**	**8.0%**	**10%**
MEG--->>					
Capacity	950	1275	1175	1175	1175
Production	725	848	959	1043	1075
Imports	685	796	834	870	980
Exports	10	30	60	60	60
Demand	1400	1614	1733	1853	1995
Demand Growth (%)	**23%**	**15%**	**7.4%**	**6.9%**	**7.7%**

Source: Industry Estimates.A: Actual, E: Estimate

However, among the fibre intermediates produced in India in 2011, India's import dependency was highest for ACN where the quantum of imports (81 Kt) was more than double the 38 Kt produced domestically.

RIL is expected to add PTA capacity of 1,140 KT in 2013.

The fibre intermediate sector registered a demand growth of 6% in 2011 and is expected to grow at 7.5% &9% in 2012& 2013 respectively. Acrylonitrile is expected to grow at 4%, PTA ~8%to 10% & MEG ~7% - 8% respectively in 2012& 2013.

Synthetic Fibres

In 2011, the combined production ofsynthetic fibre (PSF, ASF, PPSF, PFY, PPFY, VFY, VFS& NFY) reached 3755 Kt against demand of3367 Kt. The demand growth was at 13% in 2010which declined to 1.9% in 2011.

Table 15: Demand Supply Balance of Synthetic Fibre

(Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
PSF--->>					
Capacity	1250	1255	1255	1340	1480
Production	941	960	920	980	1100
Imports	14	30	44	45	46
Exports	199	204	211	223	264
Demand	756	786	753	802	882
Demand Growth (%)	**5.4%**	**4.0%**	**-4.2%**	**6.5%**	**10%**
ASF--->>					
Capacity	153	153	153	153	153
Production	88	82	76	79	81
Imports	11	19	27	28	28
Exports	4.7	20.4	34.0	44.0	44.0
Demand	94	81	68	63	65
Demand Growth (%)	**6.0%**	**-14%**	**-15%**	**-7.5%**	**2.8%**
PPSF--->>					
Capacity	8.7	8.7	8.7	8.7	8.7
Production	3.4	4.2	4.0	4.0	4.1
Imports	0.1	0.2	0.1	0.1	0.1
Exports	0.6	0.6	0.4	0.3	0.3
Demand	2.9	3.8	3.7	3.9	3.9
Demand Growth (%)	**-0.3%**	**30%**	**-1.6%**	**3.2%**	**2.1%**

PFY--->>					
Capacity	2529	2948	3200	3624	4300
Production	1950	2270	2343	2550	2870
Imports	10	2	3	2	2
Exports	210	220	218	258	350
Demand	1750	2052	2128	2294	2522
Demand Growth (%)	**11%**	**17%**	**3.7%**	**7.8%**	**9.9%**
PPFY--->>					
Capacity	18	18	18	18	18
Production	15	14	13	13	13
Imports	1.3	1.2	1.0	0.9	0.9
Exports	0.7	1.4	0.8	0.7	0.7
Demand	15	13	13	13	13
Demand Growth (%)	**18%**	**-13%**	**0.2%**	**0.1%**	**0.0%**
VSF--->>					
Capacity	419	419	419	419	419
Production	285	304	316	320	330
Imports	17	15	21	23	23
Exports	52	57	47	44	44
Demand	250	263	289	299	309
Demand Growth (%)	**10%**	**5.1%**	**10%**	**3.2%**	**3.3%**
VFY--->>					
Capacity	80	80	74	75	75
Production	43	44	42	43	43
Imports	10	10	15.0	15.6	15.6
Exports	4.9	6.2	5.4	5.4	5.4
Demand	48	48	52	53	53
Demand Growth (%)	**14%**	**0.0%**	**8.2%**	**2.0%**	**0.8%**
NFY--->>					
Capacity	54	54	63	63	71
Production	39	45	41	42	46
Imports	19	15	20	20	18
Exports	2.0	2.0	2.0	2.0	3.0
Demand	56	58	59	60	61
Demand Growth (%)		**3.6%**	**1.7%**	**1.7%**	**1.7%**

Source: Industry Estimates. A: Actual, E: Estimate

It is expected that the fibre demand growth will be approx. 7% & 9% in 2012& 2013. Expected import dependency of fibre is 3% - 4%.

There was 277 Kt of capacity addition/expansion/debottleneckingin Fibres in 2011. Further there is capacity increase of 510 Kt and 824 Kt in 2012& 2013 respectively. RIL is expected to add 400 KT of PFY in 2013.

Aromatics – Paraxylene

In 2011, PX demand increased by 3.5% and is expected to moderate at 2.1% in 2012 and then revive again to 8.7% in 2013.PX capacity was 2502 Kt in 2011.No new capacity is getting added in 2012& 2013.

Table 16: Paraxylene Demand Supply

(Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
Capacity	2397	2419	2502	2502	2502
Production	2173	2068	2300	2365	2365
Imports	255	350	429	429	429
Exports	516	421	662	684	501
Apparent Demand	1912	1997	2067	2110	2293
Demand Growth%	**3.9%**	**4.4%**	**3.5%**	**2.1%**	**8.7%**

Source: Industry Estimates.A: Actual, E: Estimate

PX import was at 429 Kt in 2011 it is expected to remain at same level in 2012 & 2013. PX export increasedfrom421Kt in 2010 to 662 Kt in 2011. Export is expected to increase significantly to 684 Kt in 2012 and 501 Kt in 2013.

Surfactants

Demand for key surfactants LAB and EO increased by 6.9% and 6.1% respectively in 2011. Demand growth for LAB is expected to be 6% in 2012& 2013 as shown in table 17. Demand growth for EO is expected to be at 9.4%& 7.1% in 2012& 2013.
LAB capacity is expected to remain unchanged till 2013. Imports expected to increase marginally to meet the increase in domestic consumption. LAB export is expected to decline marginally from 98 Kt in 2011 to 95 Kt in 2012&85 Kt in 2013, as domestic consumption increases.

Table 17: Demand & Supply of LAB & EO

(Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
LAB--->>					
Capacity	530	530	530	530	530
Production	432	446	448	465	480
Imports	79	93	112	120	125
Exports	103	107	98	95	85
Demand	408	432	462	490	520
Demand Growth (%)	**3.7%**	**5.9%**	**6.9%**	**6.1%**	**6.1%**
EO --->>					
Capacity	144	182	185	207	216
Production	138	151	164	177	185
Imports	25.0	30	28	33	40
Exports	0.0	0.0	0.0	0.0	0.0
Demand	163	181	192	210	225
Demand Growth (%)	**39%**	**11%**	**6.1%**	**9.4%**	**7.1%**

Source: Industry Estimates.A: Actual, E: Estimate

There is debottlenecking of EO capacity by RIL in 2012 & 2013.

Synthetic Rubber

In 2011, synthetic rubber demand grew at- PBR ~ 16%, SBR ~ 18% and EPDM ~ 42% as shown in Table 18. PBR demand is expected to grow at 6% in 2012& 2013.SBR demand is expected to grow at 9.5% in 2012 & 2013. EPDM demand is expected to grow at 15% - 17% in 2012 & 2013.

Table 18: Demand Supply Balance of PBR, SBR & EPDM

(Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
PBR--->>					
Capacity	74	74	74	74	114
Production	83	77	78	78	110
Imports	40	58	78	88	65
Exports	0.6	0.6	0.6	0.6	0.0
Demand	123	134	156	165	175
Demand Growth (%)	**21%**	**9.5%**	**16%**	**5.9%**	**5.8%**
SBR--->>					
Capacity	20	20	20	140	290
Production	18	18	18	18	240
Imports	129	146	175	193	10
Exports	0.5	0.5	0.5	0.5	20.0
Demand	147	163	192	210	230
Demand Growth (%)	**23%**	**11%**	**18%**	**9.4%**	**9.5%**
EPDM--->>					
Capacity	10	10	10	10	10
Production	0.0	0.0	0.0	0.0	0.0
Imports	18	21	30	35	40
Exports	0.0	0.0	0.0	0.0	0.0
Demand	18	21	30	35	40
Demand Growth (%)	**13%**	**16%**	**42%**	**17%**	**15%**

Source: Industry Estimates.A: Actual, E: Estimate

Public sector petroleum refining company Indian Oil Corporation (IOC) plans to set up a 120 Kt styrene butadiene rubber (SBR) manufacturing facility at Panipat in partnership with Taiwan's TSRC Corporation and Japan's Marubeni Corporation by end of 2012.Reliance is expected to add PBR capacity of 40 Kt and SBR capacity of 150 Kt in 2013.

This will help in meeting domestic consumption which was earlier dependent on imports, thus bringing down imports considerably from 193 Kt in 2012 to 10 Kt in 2013.

Carbon Black Feedstock & Carbon Black

Carbon black is used mainly as a reinforcing material in the rubber industry. Other user areas include inks, paints, plastic and paper. At present, there are 6 units manufacturing rubber grade oil furnace carbon black, in India.

CBFS registered a growth of 18% in 2011 and is expected to grow at 11% in 2012. CBFS demand is expected to increase from 1400 Kt in 2011 to 1558 Kt in 2012.

In 2010, Reliance doubled its CBFS capacity from 720 Kt to 1440 Kt. ESSAR is expected to add 100 Kt of CBFS capacity in 2012 and further expand it to 300 Kt by 2013.

Carbon black registered a demand growth of 8.3% in 2011 and is expected to grow at 7% ~9% in 2012& 2013 respectively.

Hi Tech Carbon added 90 Kt capacity in 2011.Phillips Carbon Black Ltdis expected to expand its capacity by 80 Kt in 2013. Himadri Chemicals & Industries Limitedacquired SNF plant at Vapi, commissioned production of Carbon Black (50 Kt) in 2009 and further added 40 Kt capacity in 2010. It is expected to further add 50 Kt capacity in 2013. Continental is expected to add 80 Kt capacity in 2012 & 2013, thus taking its total capacity from 65 Kt in 2011 to 225 Kt in 2013.

In line with the increase in capacity, domestic production is expected to increase from 752 Kt in 2011 to 900 Kt in 2013.

Table 19: Demand Supply Balance of CBFS & Carbon Black

(Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
CBFS →					
Capacity	775	1495	1495	1595	1795
Production	775	1495	1495	1595	1595
Imports	1018	988	1000	1058	1058
Exports	675	1295	1095	1095	1095
Demand	1118	1188	1400	1558	1558
Demand Growth (%)		**6.3%**	**18%**	**11%**	**0.0%**
Carbon Black (Kt)					
Capacity	783	858	948	1028	1238
Production	590	679	752	840	900
Imports	64	60	70	68	20
Exports	60	102	132	170	118
Demand	594	637	690	738	803
Demand Growth (%)		**7.2%**	**8.3%**	**6.9%**	**8.7%**

Source: Industry Estimates. A: Actual, E: Estimate

Other Key Petrochemicals

In 2011, other key petrochemicals registered positive growth in the range of 6%~13% except OX which declined from 8% in 2010 to -7% in 2011, as shown in Table 20.

Benzene demand grew at 13% in 2011 and is expected to grow at 4% in 2012& 2013. Benzene exportdeclined from 495 Kt in 2010 to 428 Kt in 2011. It is expected that Benzene export will increase in 2012 & 2013 to touch 521 Kt & 558 Kt respectively. Benzene import declined to 57 Kt in 2011and is expected to decline further.

IOCL debottlenecked its benzene capacityby 24 Kt in 2011. OPAL is expected to add Benzene capacity of 135 Kt in 2013. MRPL is expected to add further 275 Kt of Benzene in 2014.

Table 20: Demand Supply Balance of Benzene, Toluene, MX & OX

(Kt)	2009 A	2010 A	2011 A	2012 E	2013 E
Benzene--->>					
Capacity	1200	1310	1344	1344	1479
Production	815	962	989	1112	1173
Imports	83	82	57	50	50
Exports	400	495	428	521	558
Demand	498	549	618	641	665
Demand Growth (%)	**-17%**	**10%**	**13%**	**3.7%**	**3.7%**
Toluene--->>					
Capacity	290	290	290	290	290
Production	135	140	140	140	140
Imports	198	210	230	254	276
Exports	1.4	0.0	0.0	0.0	0.0
Demand	332	350	370	394	416
Demand Growth (%)	**17%**	**5.6%**	**5.7%**	**6.5%**	**5.6%**
MX--->>					
Capacity	90	90	110	110	110
Production	62	62	65	65	68
Imports	8.0	15	18	40	46
Exports	2.0	3.0	0.0	0.0	0.0
Demand	68	74	83	105	114
Demand Growth (%)	**28%**	**8.2%**	**12%**	**27%**	**8.6%**
OX--->>					
Capacity	474	474	474	474	474
Production	341	396	365	450	460
Imports	59	60	60	60	80
Exports	152	188	176	247	258
Demand	248	269	249	263	282
Demand Growth (%)	**15%**	**8.1%**	**-7.1%**	**5.4%**	**7.3%**

Source: Industry Estimates.A: Actual, E: Estimate

Toluene demand registered growth of 5.7% in 2011. Toluene demand is expected to grow at 6.5%& 5.6% in 2012& 2013. Toluene import was at 230 Kt in 2011 and is expected to increase to 254 Kt in 2012&276 Kt in 2013.

MX demand grew at 12% in 2011 and is expected to grow at 27% 2012 and at 9% in 2013. There is no new capacity addition and production is expected to fall short to meet domestic demand. The increase in domestic demand is expected to be met by imports. Imports expected to be 40 Kt &46 Kt in 2012& 2013.

OX demand registered a negative growth rate of -7% in 2011 after registering demand growth of 8% in 2010. There is no new capacity addition. Demand is expected to touch 263 Kt & 282 Kt in 2012& 2013.

Outlook for the Overall Indian Petrochemical Industry

India's aggregated demand for petrochemicals increased by6.9% in 2011 over 2010.Combining the demand for all the key segments in the petrochemical industry aggregate demand for the entire petrochemical sector in India is likely to increase from 32.3 MMT in 2011 to 35 MMT in 2012 and further to 37.4 MMT in 2013 as depicted in Figure 4. At the aggregate level, therefore, demand for petrochemicals in India is expected to grow at 7% -8% per annum in 2012 and 2013.

Figure 4: Aggregate Petrochemical Demand (All key segments – MMT)

Polymers are likely to register growth rate of 12% and8.1% and olefins at the rate of 6.5% and5.5% in 2012and 2013.

Fibre Intermediates are projected to grow at 7.5%&9% in 2012 and 2013. Synthetic fibre demand expected to grow at 7%- 9% in 2012& 2013.

Surfactants are projected to grow at 7% & 6.4% in 2012and 2013.

Carbon Black / CBFS to grow at 10% &3% in 2012& 2013.

Elastomers expected to grow at 8.5% in 2012& 2013.

Other Key petrochemicals expected to grow at 6% to 5% in 2012& 2013.

India's demand from the automobiles, packaging, agriculture and infrastructure sector is expected to grow at healthy rate with easing of governments monetary policy. This optimism is based on the expectation that India's GDP would again grow over 7% in 2012.

Segment-wise detail is given in Table 21.

Table 21: Segment-wise Demand for Petrochemicals (Kt)

		Actual		Projected		Growth (%)		
Segment	Products	2010	2011	2012	2013	2011	2012	2013
Polymers	LDPE, LLDPE, HDPE, PP, PVC, PS	7670	8024	8950	9672	4.6%	12%	8.1%
Olefins	Ethylene, Propylene, Butadiene, Styrene, EDC & VCM	7511	8311	8854	9342	11%	6.5%	5.5%
Fibre Intermediates	ACN, Caprolactum, PTA & MEG	5768	6122	6579	7178	6.1%	7.5%	9.1%
Synthetic Fibres	PSF,ASF,PPSF,PFY, PPFY, VSF,VFY & NFY	3304	3367	3588	3909	1.9%	6.6%	9.0%
Para-Xylene	PX	1997	2067	2110	2293	3.5%	2.1%	8.7%
Surfactants	LAB, EO	613	654	700	745	6.7%	7.0%	6.4%
Elastomers	SBR, PBR & EPDM	318	378	410	445	19%	8.5%	8.4%
CB & CBFS	CB & CBFS	1825	2090	2296	2360	15%	10%	2.8%
Other Key Petrochemicals	Benzene, Toluene, MX, OX	1241	1320	1403	1477	6.4%	6.3%	5.3%
Total Demand		**30248**	**32333**	**34889**	**37421**	**6.9%**	**7.9%**	**7.3%**

SECTION 3

STATISTICAL APPENDIX

Demand Supply Balance: Polymers (Kt)

	2009 A	2010 A	2011 A	2012 E	2013 E
LDPE					
Capacity	205	205	205	205	205
Production	193	178	203	205	205
Imports	164	147	175	195	225
Exports	0.9	0.0	0.0	0.0	0.0
Apparent Demand	356	325	378	400	430
Demand Growth%	**12%**	**-8.7%**	**16%**	**5.8%**	**7.5%**
EVA					
Capacity		12.5	12.5	12.5	12.5
Production		7.5	9.3	12	13
Imports	101	106	112	120	128
Exports	0	0	0	0	0
Apparent Demand	101	114	121	132	141
Demand Growth%		**12%**	**6.9%**	**8.4%**	**6.8%**
LLDPE					
Capacity	670	768	875	875	995
Production	643	698	725	800	880
Imports	289	385	353	340	350
Exports	3	7	23	10	20
Apparent Demand	929	1076	1055	1130	1210
Demand Growth%	**10%**	**16%**	**-2.0%**	**7.1%**	**7.1%**
HDPE					
HDPE Capacity	1200	1608	1885	1885	1985
LLD/HD Capacity	670	768	875	875	995
Total Capacity	1870	2375	2760	2760	2980
Production	960	1108	1462	1500	1600
Imports	416	449	332	320	340
Exports	35	88	242	170	180
Apparent Demand	1341	1469	1552	1650	1760
Demand Growth%	**7.9%**	**10%**	**5.7%**	**6.3%**	**6.7%**
All PE					
Capacity	2075	2593	2978	2978	3198
Production	1796	1992	2399	2517	2698
Imports	970	1087	972	975	1043
Exports	39	95	265	180	200
Apparent Demand	2727	2984	3106	3312	3541
Demand Growth%	**13%**	**9.4%**	**4.1%**	**6.6%**	**6.9%**

PP					
Capacity	2975	3575	3750	4190	4630
Production	2282	2890	3158	3692	3963
Imports	434	334	325	217	210
Exports	504	648	801	837	869
Apparent Demand	2212	2576	2682	3072	3304
Demand Growth%	**26%**	**16%**	**4.1%**	**15%**	**7.6%**
Polyolefins					
Capacity	5050	6168	6728	7168	7828
Production	4078	4882	5557	6209	6661
Imports	1404	1421	1297	1192	1253
Exports	543	743	1066	1017	1069
Apparent Demand	4939	5560	5788	6384	6845
Demand Growth%	**19%**	**13%**	**4.1%**	**10%**	**7.2%**
PVC					
Capacity	1321	1321	1321	1321	1406
Production	1013	1216	1250	1295	1378
Imports	694	659	722	976	1120
Exports	0.0	0.0	0.0	0.0	0.0
Apparent Demand	1707	1875	1972	2271	2498
Demand Growth%	**26%**	**10%**	**5.1%**	**15%**	**10%**
PS					
Capacity	452	452	452	452	452
Production	258	260	260	275	290
Imports	22	24	28	32	45
Exports	70	49	24	11	5
Apparent Demand	210	236	264	296	330
Demand Growth%	**12%**	**12%**	**12%**	**12%**	**12%**
Polymers					
Capacity	6823	7941	8501	8941	9686
Production	5349	6358	7067	7778	8328
OR ()%)	78%	80%	83%	87%	86%
Imports	2120	2104	2047	2200	2418
Exports	613	792	1090	1028	1074
Net Trade	-1507	-1313	-957	-1172	-1344
Apparent Demand	6857	7670	8024	8950	9672
Demand Growth%	**20%**	**12%**	**4.6%**	**12%**	**8.1%**

Source: Industry Estimates. A: Actual, E: Estimate

Demand Supply Balance: Olefins (Kt)

2009 A	2010 A	2011 A	2012 E	2013 E	
Ethylene					
Capacity	2920	3730	4030	4030	4030
Production	2800	2827	3355	3744	3807
Imports	41	109	56	40	40
Exports	0.0	0.0	0.0	0.0	0.0
Net Availability	**2841**	**2936**	**3411**	**3784**	**3847**
Propylene					
Capacity	2988	3833	3963	4380	4843
Production	2484	3276	3560	3589	3854
Imports	5.0	5.0	0.0	0.0	0.0
Exports	6.0	20.0	20.0	4.0	0.0
Net Availability	**2483**	**3261**	**3540**	**3585**	**3854**
Butadiene					
Capacity	279	295	295	295	295
Production	210	266	264	261	266
Imports	3.0	0.0	0.0	0.0	0.0
Exports	100	149	146	141	85
Apparent Demand	113	117	118	120	181
Demand Growth%	**11%**	**3.8%**	**0.8%**	**1.7%**	**50%**
Styrene					
Imports	430	472	525	585	650
Exports	4.6	0.0	0.0	0.0	0.0
Net Trade	-425	-472	-525	-585	-650
Demand Growth%	**10%**	**11%**	**11%**	**11%**	**11%**
EDC					
Capacity	350	350	350	350	350
Production	331	361	360	360	360
Imports	290	345	350	400	430
Exports	0.1	0.0	0.0	0.0	0.0
Apparent Demand	621	706	710	760	790
Demand Growth%		**14%**	**0.6%**	**7.0%**	**3.9%**
VCM					
Capacity	866	866	866	866	966
Production	809	839	870	870	966
Imports	230	380	367	380	380
Exports	0.0	0.0	0.0	0.0	0.0
Apparent Demand	1039	1219	1237	1250	1346
Demand Growth%		**17%**	**1.5%**	**1.1%**	**7.7%**

Source: Industry Estimates. A: Actual, E: Estimate

Demand Supply Balance: ABS, SAN, PX & Surfactants (Kt)

2009 A	2010 A	2011 A	2012 E	2013 E	
ABS					
Capacity	87	87	87	87	87
Production	83	85	85	85	85
Imports	27	35	44	56	69
Exports	1.8	1.0	0.5	0.0	0.0
Apparent Demand	108	119	129	141	154
Demand Growth%	**25%**	**10%**	**8.2%**	**9.3%**	**9.6%**
SAN					
Capacity	96	96	96	96	96
Production	66	70	75	80	85
Imports	5.4	12	15	19	23
Exports	0.0	0.0	0.0	0.0	0.0
Apparent Demand	71	82	90	99	108
Demand Growth%	**15%**	**15%**	**9.5%**	**9.6%**	**9.5%**
PX					
Capacity	2397	2419	2502	2502	2502
Production	2173	2068	2300	2365	2365
Imports	255	350	429	429	429
Exports	516	421	662	684	501
Apparent Demand	1912	1997	2067	2110	2293
Demand Growth%	**3.9%**	**4.4%**	**3.5%**	**2.1%**	**8.7%**
LAB					
Capacity	530	530	530	530	530
Production	432	446	448	465	480
Imports	79	93	112	120	125
Exports	103	107	98	95	85
Apparent Demand	408	432	462	490	520
Demand Growth%	**3.7%**	**5.9%**	**6.9%**	**6.1%**	**6.1%**
EO					
Capacity	144	182	185	207	216
Production	138	151	164	177	185
Imports	25.0	30	28	33	40
Exports	0.0	0.0	0.0	0.0	0.0
Apparent Demand	163	181	192	210	225
Demand Growth%	**39%**	**11%**	**6.1%**	**9.4%**	**7.1%**

Source: Industry Estimates.A: Actual, E: Estimate

Demand Supply Balance: Fibre Intermediates (Kt)

	2009 A	2010 A	2011 A	2012 E	2013 E
ACN					
Capacity	38	38	38	38	38
Production	38	38	38	38	38
Imports	85	87	81	85	90
Exports	3.0	0.0	1.5	0.0	0.0
Apparent Demand	120	125	118	123	128
Demand Growth%	**8.0%**	**3.8%**	**-6.0%**	**4.7%**	**4.1%**
Caprolactum					
Capacity	120	120	120	120	120
Production	111	121	120	121	121
Imports	8.0	8	8	8	8
Exports	9.5	9.4	8.9	11.0	8.0
Apparent Demand	109	120	119	118	121
Demand Growth%	**10%**	**9.4%**	**-0.9%**	**-0.9%**	**2.6%**
PTA					
Capacity	3050	3850	3850	3850	4990
Production	2965	3570	3497	3736	4021
Imports	300	369	656	749	913
Exports	0.0	30	0.0	0.0	0.0
Apparent Demand	3265	3909	4153	4485	4934
Demand Growth%	**18%**	**20%**	**6.2%**	**8.0%**	**10%**
MEG					
Capacity	950	1275	1175*	1175	1175
Production	725	848	959	1043	1075
Imports	685	796	834	870	980
Exports	10	30	60	60	60
Apparent Demand	1400	1614	1733	1853	1995
Demand Growth%	**23%**	**15%**	**7.4%**	**6.9%**	**7.7%**

RIL Kurkumbh MEG capacity of 100 kt has been mothball.

Source: Industry Estimates.A: Actual, E: Estimate

Demand Supply Balance: Synthetic Fibres (Kt)

2009 A	2010 A	2011 A	2012 E	2013 E	
PSF					
Capacity	1250	1255	1255	1340	1480
Production	941	960	920	980	1100
Imports	14	30	44	45	46
Exports	199	204	211	223	264
Apparent Demand	756	786	753	802	882
Demand Growth%	**5.4%**	**4.0%**	**-4.2%**	**6.5%**	**10%**
ASF					
Capacity	153	153	153	153	153
Production	88	82	76	79	81
Imports	11	19	27	28	28
Exports	4.7	20.4	34.0	44.0	44.0
Apparent Demand	94	81	68	63	65
Demand Growth%	**6.0%**	**-14%**	**-15%**	**-7.5%**	**2.8%**
PPSF					
Capacity	8.7	8.7	8.7	8.7	8.7
Production	3.4	4.2	4.0	4.0	4.1
Imports	0.1	0.2	0.1	0.1	0.1
Exports	0.6	0.6	0.4	0.3	0.3
Apparent Demand	2.9	3.8	3.7	3.9	3.9
Demand Growth%	**-0.3%**	**30%**	**-1.6%**	**3.2%**	**2.1%**
PFY					
Capacity	2529	2948	3200	3624	4300
Production	1950	2270	2343	2550	2870
Imports	10	2	3	2	2
Exports	210	220	218	258	350
Apparent Demand	1750	2052	2128	2294	2522
Demand Growth%	**11%**	**17%**	**3.7%**	**7.8%**	**9.9%**

PPFY					
Capacity	18	18	18	18	18
Production	15	14	13	13	13
Imports	1.3	1.2	1.0	0.9	0.9
Exports	0.7	1.4	0.8	0.7	0.7
Apparent Demand	15	13	13	13	13
Demand Growth%	**18%**	**-13%**	**0.2%**	**0.1%**	**0.0%**
VSF					
Capacity	419	419	419	419	419
Production	285	304	316	320	330
Imports	17	15	21	23	23
Exports	52	57	47	44	44
Apparent Demand	250	263	289	299	309
Demand Growth%	**10%**	**5.1%**	**10%**	**3.2%**	**3.3%**
VFY					
Capacity	80	80	74	75	75
Production	43	44	42	43	43
Imports	10	10	15.0	15.6	15.6
Exports	4.9	6.2	5.4	5.4	5.4
Apparent Demand	48	48	52	53	53
Demand Growth%	**14%**	**0.0%**	**8.2%**	**2.0%**	**0.8%**
NFY					
Capacity	54	54	63	63	71
Production	39	45	41	42	46
Imports	19.0	15.0	20.0	20.0	18.0
Exports	2.0	2.0	2.0	2.0	3.0
Apparent Demand	56	58	59	60	61
Demand Growth%		**3.6%**	**1.7%**	**1.7%**	**1.7%**

Source: Industry Estimates. A: Actual, E: Estimate

Demand Supply Balance: Elastomers (Kt)

	2009 A	2010 A	2011 A	2012 E	2013 E
PBR					
Capacity	74	74	74	74	114
Production	83	77	78	78	110
Imports	40	58	78	88	65
Exports	0.6	0.6	0.6	0.6	0.0
Apparent Demand	123	134	156	165	175
Demand Growth%	**21%**	**9.5%**	**16.2%**	**5.9%**	**5.8%**
SBR					
Capacity	20	20	20	140	290
Production	18	18	18	18	240
Imports	129	146	175	193	10
Exports	0.5	0.5	0.5	0.5	20.0
Apparent Demand	147	163	192	210	230
Demand Growth%	**23%**	**11%**	**18%**	**9.4%**	**9.5%**
EPDM					
Capacity	10	10	10	10	10
Production	0.0	0.0	0.0	0.0	0.0
Imports	18	21	30	35	40
Exports	0.0	0.0	0.0	0.0	0.0
Apparent Demand	18	21	30	35	40
Demand Growth%	**13%**	**16%**	**42%**	**17%**	**15%**

Industry Estimates.A: Actual, E: Estimate

Demand Supply Balance: Carbon Black & CBFS (Kt)

	2009 A	2010 A	2011 A	2012 E	2013 E
Carbon Black					
Capacity	783	858	948	1028	1238
Production	590	679	752	840	900
Imports	64.0	60	70	68	20
Exports	60	102	132	170	118
Apparent Demand	594	637	690	738	803
Demand Growth%	**6.6%**	**7.2%**	**8.3%**	**6.9%**	**8.7%**
CBFS					
Capacity	775	1495	1495	1595	1795
Production	775	1495	1495	1595	1595
Imports	1018	988	1000	1058	1058
Exports	675	1295	1095	1095	1095
Apparent Demand	1118	1188	1400	1558	1558
Demand Growth%	**8.5%**	**6.3%**	**18%**	**11%**	**0%**

Industry Estimates. A: Actual, E: Estimate

Demand Supply Balance: Other Key Petrochemicals (Kt)

	2009 A	2010 A	2011 A	2012 E	2013 E
Benzene					
Capacity	1200	1310	1344	1344	1479
Production	815	962	989	1112	1173
Imports	83	82	57	50	50
Exports	400	495	428	521	558
Apparent Demand	498	549	618	641	665
Demand Growth%	**-17%**	**10%**	**13%**	**3.7%**	**3.7%**
Toluene					
Capacity	290	290	290	290	290
Production	135	140	140	140	140
Imports	198	210	230	254	276
Exports	1.4	0.0	0.0	0.0	0.0
Apparent Demand	332	350	370	394	416
Demand Growth%	**17%**	**5.6%**	**5.7%**	**6.5%**	**5.6%**
MX					
Capacity	90	90	110	110	110
Production	62	62	65	65	68
Imports	8.0	15	18	40	46
Exports	2.0	3.0	0.0	0.0	0.0
Apparent Demand	68	74	83	105	114
Demand Growth%	**28%**	**8.2%**	**12%**	**27%**	**8.6%**
OX					
Capacity	474	474	474	474	474
Production	341	396	365	450	460
Imports	59	60	60	60	80
Exports	152	188	176	247	258
Apparent Demand	248	269	249	263	282
Demand Growth%	**15%**	**8.1%**	**-7.1%**	**5.4%**	**7.3%**

COMMITTEE MEETINGS

Presentations for Committee meetings APIC 2012

Indian Petrochemical Industry

Review & Future Prospects

May 2012

Review & Outlook of Indian Economy

CPMA

Chemicals & Petrochemicals Manufacturers' Association

Indian Economy : 2011-12

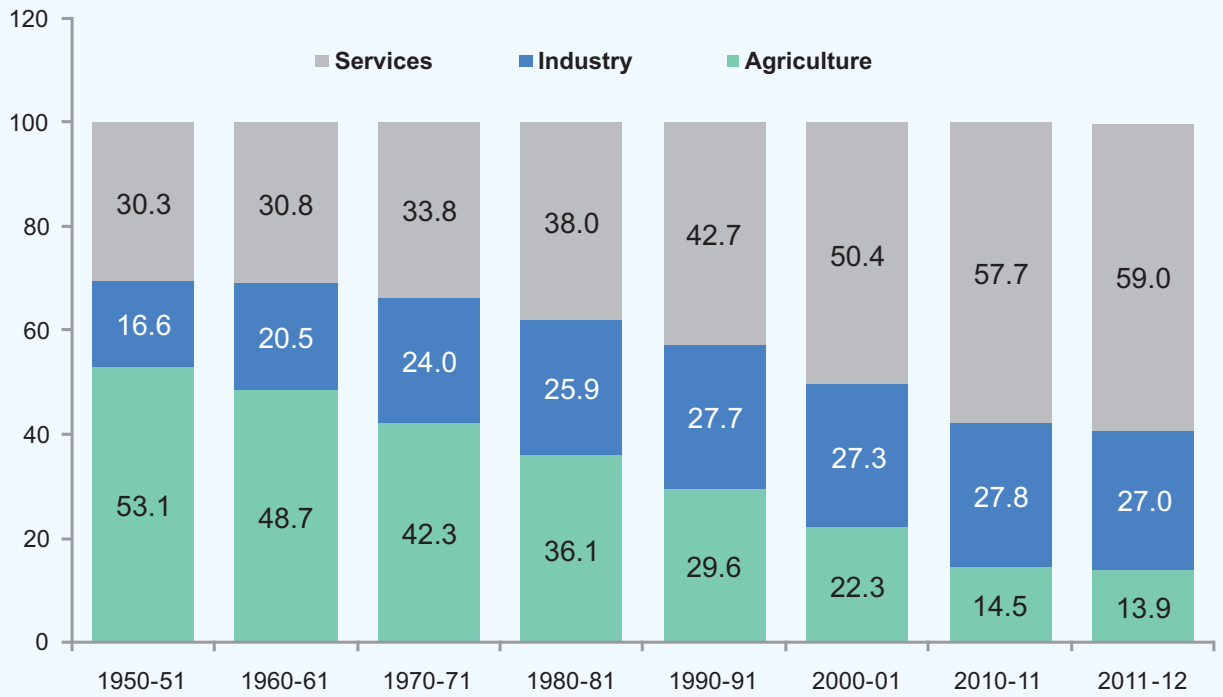
Unit: %	2006 -07	2007 -08	2008 -09	2009 -10	2010 -11	2011 -12
Y-O-Y Growth Rates				PE	QE	AE
Agriculture & Allied Activities	4.2	5.8	0.1	1.0	7.0	2.5
Mining & Quarrying	7.5	3.7	2.1	6.3	5.0	-2.2
Manufacturing	14.3	10.3	4.3	9.7	7.6	3.9
Electricity, gas & water supply	9.3	8.3	4.6	6.3	3.0	8.3
Construction	10.3	10.8	5.3	7.0	8.0	4.8
Trade, Hotels, Transport & Communication	11.7	10.7	7.6	10.3	11.1	11.2
Finance, Insurance, Real Estate & Business Services	14.0	12.0	12.0	9.4	10.4	9.1
Community, Social & Personal Services	2.8	6.9	12.5	12.0	4.5	5.9
GDP at factor Cost (%)	**9.6**	**9.3**	**6.7**	**8.4**	**8.4**	**6.9**
IIP	12.9	15.5	2.5	5.3	8.2	3.6
Inflation CPI	6.7	6.2	9.1	12.4	10.4	8.4
Foreign Exchange Reserves (US$)	199.2	309.7	252.0	279.1	304.8	292.8
Exchange Rate ~ Rs/US$	45.25	40.26	45.99	47.44	45.56	47.70

Note: QE refers to the Quick Estimates, AE refers to the Advance Estimates

Source: Economic Survey 2011-12

GDP growth slowed down to 6.9% in 201112 from 8.4% in 2010-11

Structural change in Indian Economy



Share of services in GDP has increased substantially in past decade

Balance of Payment Summary

Unit: US$ billion	2006 -07	2007 -08	2008 -09	2009 -10	2010 -11	2010 -11 (H1 -A-S)	2011 -12 (H1 - A-S)
Exports	128.9	166.2	189.0	182.4	250.5	107.3	**150.9**
Imports	190.7	257.6	308.5	300.6	381.1	176.2	**236.7**
Trade Balance	**-61.8**	**-91.5**	**-119.5**	**-118.2**	**-130.6**	**-68.9**	**-85.8**
Net Invisibles	52.2	75.7	91.6	80.0	84.6	39.3	**52.9**
Current Account Balance	**-9.6**	**-15.7**	**-27.9**	**-38.2**	**-46.0**	**-29.6**	**-32.8**
Foreign Investment	14.8	43.3	8.3	50.4	39.7	30.8	**13.7**
O/W FDI (net)	7.7	15.9	22.4	18.0	9.4	7.0	**12.3**
Portfolio (net)	7.1	27.4	-14.0	32.4	30.3	23.8	**1.3**
Capital Account Balance	**45.2**	**106.6**	**7.4**	**51.6**	**62.0**	**39.0**	**41.1**
Overall Balance	**36.6**	**92.2**	**-20.1**	**13.4**	**13.1**	**7.0**	**5.7**

Source: Economic Survey 2011-12

The Current Account Deficit increased to US$ 32.8 billion in H1 of 2011-12 mainly on account of higher trade deficit

India: Trends in Industrial Output

Unit: %	Mining	Manufacturing	Electricity	Basic Goods	Capital Goods	Intermediate Goods	Consumer Goods	General
Jan - 11	1.7	8.1	10.5	7.7	5.3	7.4	8.3	7.5
Feb - 11	1.2	7.5	6.8	5.5	-5.7	6.3	13.4	6.7
Mar - 11	0.4	11.0	7.2	6.4	14.5	3.0	13.2	9.4
Apr - 11	1.6	5.7	6.5	7.1	6.6	3.9	3.2	5.3
May - 11	1.8	6.3	10.3	7.5	6.2	0.1	7.2	6.2
Jun - 11	-1.4	11.1	8.0	7.8	38.7	1.6	3.1	9.5
Jul - 11	0.7	3.1	13.1	10.0	-13.7	-0.1	6.3	3.7
Aug - 11	-5.5	3.9	9.5	5.8	4.0	-1.0	2.1	3.4
Sep - 11	-7.5	3.1	9.0	5.3	-6.5	-1.4	5.7	2.5
Oct - 11	-5.9	-6.0	5.6	1.3	-26.5	-8.3	0.0	-5.0
Nov - 11	-4.1	6.6	14.6	6.4	-4.3	0.2	13.0	5.9
Dec - 11	-3.4	2.6	9.1	5.3	-16.3	-2.0	10.2	2.5
Jan - 12	**-2.7**	**8.5**	**3.2**	**1.6**	**-1.5**	**-3.2**	**20.2**	**6.8**

Improvement in Manufacturing & Consumer Goods

Direction of exports from India – % share

	Value (US$ billion) 2010	CAGR 2000-08	Growth rate% Annual 2009	2010	2011 (Jan-June)	Share in world exports (%) 2000	2009	2010	2011 (Jan-June)	change in shares 2010/2010
China	1578	24.4	-15.9	31.3	24.0	3.9	9.7	10.5	10.1	6.5
Korea	466	11.9	-14.3	29.0	24.2	2.7	2.9	3.1	3.2	0.4
Hong Kong	390	7.6	-12.2	22.5	15.3	3.2	2.6	2.6	2.4	-0.6
Russia	400	20.6	-35.7	32.0	31.5	1.7	2.5	2.7	2.9	1.0
Singapore	352	11.9	-20.2	30.4	21.9	2.2	2.2	2.3	2.3	0.2
Mexico	298	7.3	-21.3	29.8	21.3	2.6	1.9	2.0	2.0	-0.6
Taiwan	275	7.1	-20.1	34.8	NA	2.3	1.6	1.8	NA	-0.5
India	223	21.0	-15.2	35.1	55.0	0.7	1.3	1.5	1.9	0.8
Malaysia	199	9.9	-24.9	26.2	17.6	1.5	1.3	1.3	1.3	-0.2
Brazil	202	17.3	-22.7	32.0	32.6	0.9	1.2	1.3	1.4	0.5
Thailand	195	12.4	-13.6	28.6	17.3	1.1	1.2	1.3	1.3	0.2
Indonesia	158	9.9	-14.4	32.1	27.6	1.0	1.0	1.0	1.1	0.0
South Africa	82	13.9	-26.0	30.6	29.2	0.5	0.5	0.5	0.5	0.1
EDEs	5894	18.0	-24.4	28.4	29.2	25.4	37.1	39.1	39.8	13.6
World	**15087**	**12.2**	**-22.7**	**21.9**	**23.1**	**100.0**	**100.0**	**100.0**	**100.0**	**-**

Source : Computed from IMF, International Financial Statistics, November 2011.
Note : EDEs stand for emerging and developing economies.

India's exports witnessed a high growth of 40.6% in H1 2011-12. In H2 there has been a deceleration Due to the crisis in the euro zone

India's GDP growth forecast : 2010 & 2011

Agencies	2012	2013
World Bank-GEP Jan 2012	6.5%	7.7%
IMF-WEO Jan 2012	6.9%	7.3%
ADB–ADO Apr 2012	7.0%	7.5%
Economic Survey (GOI) - 2011-12	7.6%	8.6%
PMEAC (Prime Minister's Economic Advisory Council) - Feb 2012	7.6%	
CRISIL - 2012	7.0%	
Fitch (Rating Agency) – March 2012	7.5%	

India expected to grow in the range of 7% - 7.5% in 2012-13

India – in the new global economy

- large & systemically important economy on the global stage.
- 4th largest economy globally with a high growth rate.
- With over 1.2 billion people, India accounts for nearly 1/6 of global population.
- Dependency ratio will decline from an estimated 74.8 in 2001 to 55.6 in 2026.
- The process of globalization has been marked by a rising share of exports (as also imports) that reached 27.9% for the world as a whole in 2010.
- India's export (goods & services) to GDP ratio increased from 6.2% in 1990 to 21.5% in 2010.
- India enjoys the unique advantage of having multiple drivers of growth
  - Demographic,
  - Investment (backed by domestic savings),
  - Domestic consumption
  - Exports
  - Ample scope for FDI

all within a pluralistic and democratic system

India to engage with the world in terms of action & ideas

GDP Growth Comparison

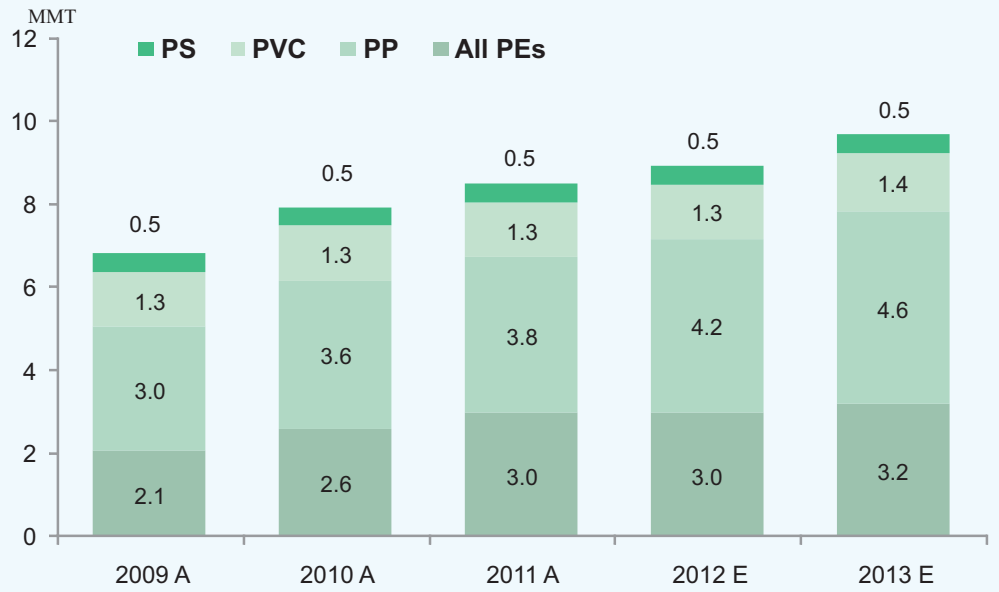
	World	Advanced economies	US	EU	UK	Eurozone	Germany	Japan	B	R	I#	C	S
2010	5.2	3.2	3.0	2.0	2.1	1.8	3.6	4.4	7.5	4.0	9.9	10.4	2.9
Q1			2.2	1.0	1.2	1.0	2.4	5.0	9.3	3.0	9.4	11.9	1.6
Q2			3.3	2.2	2.5	2.1	4.1	4.5	8.7	5.2	8.8	10.3	3.0
Q3			3.5	2.4	3.0	2.1	4.0	5.2	7.0	3.4	8.9	9.6	3.3
Q4			3.1	2.2	1.7	2.0	3.8	3.2	5.3	4.4	8.3	9.7	3.6
2011	3.8	1.6	1.8	1.6	0.9	1.5	3.0	-0.9	2.9	4.1	7.4	9.2	3.1
Q1			2.2	2.4	1.6	2.4	4.6	-0.1	4.2	3.8	7.8	9.7	3.7
Q2			1.6	1.7	0.5	1.6	2.9	-1.7	3.3	3.5	7.7	9.5	3.3
Q3			1.5	1.4	0.4	1.3	2.6	-0.6	2.2	4.9	6.9	9.1	2.9
Q4			1.6	0.9	0.7	0.7	2.0	-1.0	na	na	6.1	8.9	na
2012(P)	3.3	1.2	1.8	-0.1	0.6	-0.5	0.3	1.7	3.0	3.3	7.0	8.2	2.5

Source : Organization for Economic Cooperation and Development (OECD) Principal Global indicators and IMF WEO.

Notes: Projection from IMF World Economic outlook January 2012 update.
B, R, I, C, S stand for countries Brazil, Russia, India, China and South Africa.
India's GDP growth is in terms of factor cost whereas for other countries it is in terms of market prices.

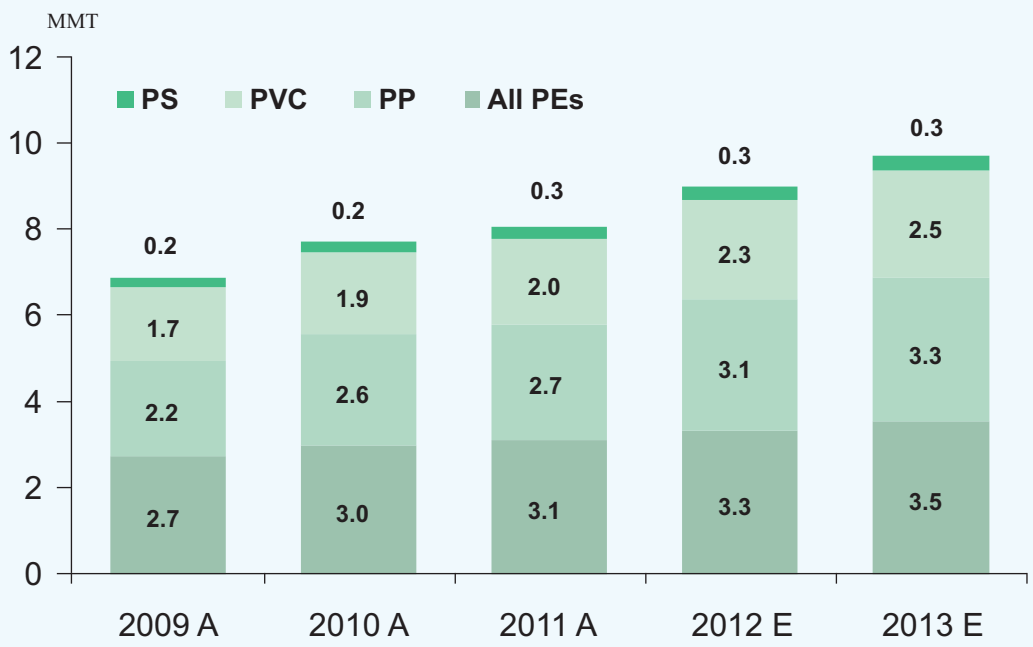
Review & Outlook of Petrochemical Industry

Capacity for polymers grew at 7.1% in 2011



Major capacity additions by HMEL & MRPL in 2012 & 2013

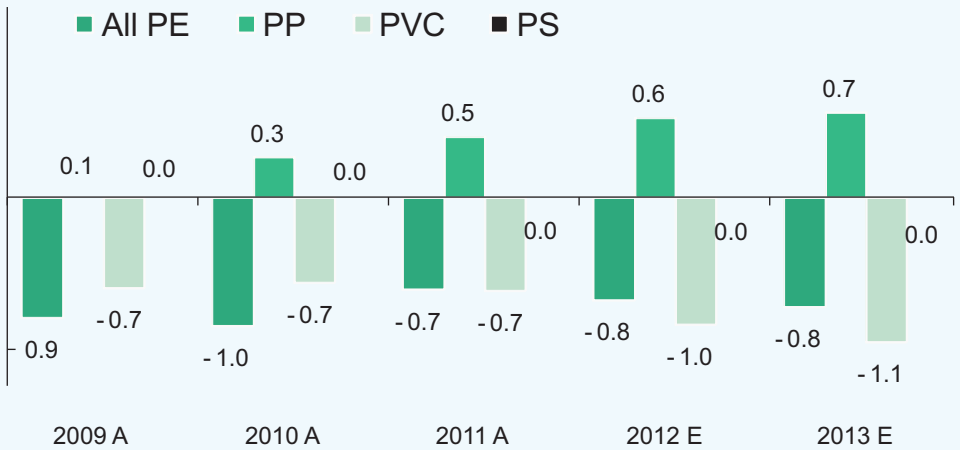
Polymer demand grew at 4.6% in 2011



Demand for PP & PVC is expected to register
a strong growth of 15% in 2012

Net exportable surplus in case of PP

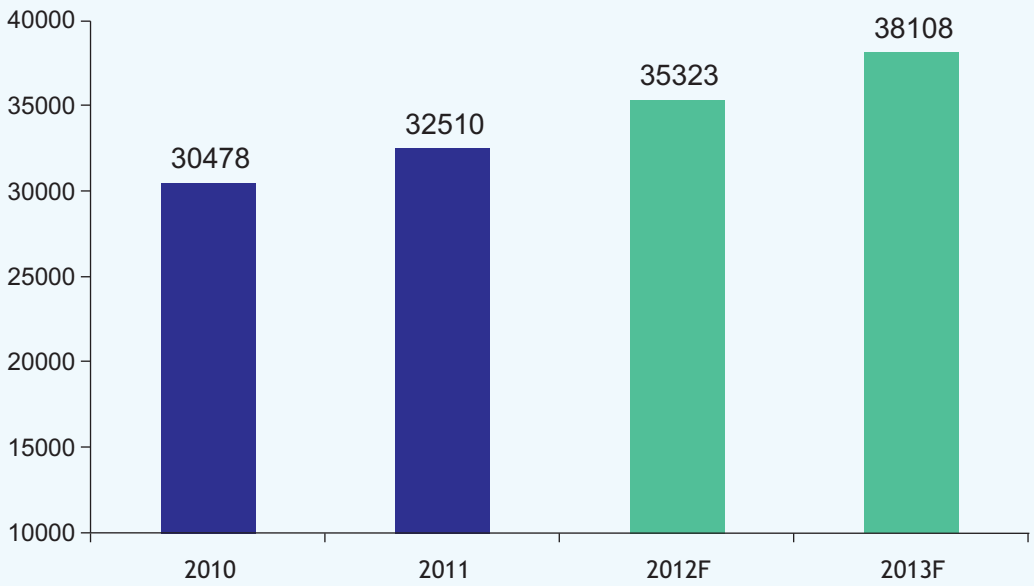
Trend in Polymers net trade (MMT)



Import dependency of PVC currently at 37% and expected to increase to 45% by 2013

Petrochemical demand was at 32.5 mmt in 2011

Aggregate petrochemicals demand combining all the key sector (kT)



….and is expected to reach 38.1 mmt in 2013

Petrochemicals demand increased at 6.7% in 2011

Segment	Products	Actual		Projected		Growth over previous year		
		2010	2011	2012	2013	2011	2012	2013
Polymers	LDPE+EVA, LLDPE, HDPE, PP, PVC, PS	7670	8024	8950	9672	4.6%	12%	8.1%
Olefins	Ethylene, Propylene, Butadiene, Styrene, EDC & VCM	7511	8311	8854	9342	11%	6.5%	5.5%
Fibre Intermediates	ACN, Caprolactum, PTA & MEG	5768	6122	6579	7178	6.1%	7.5%	9.1%
Synthetic Fibres	PSF,ASF,PPSF,PFY, PPFY, VSF,VFY & NFY	3534	3543	4022	4596	0.3%	14%	14%
Para-Xylene	PX	1997	2067	2110	2293	3.5%	2.1%	8.7%
Surfactants	LAB, EO	613	654	700	745	6.7%	7.0%	6.4%
Elastomers	SBR, PBR & EPDM	318	378	410	445	19%	8.5%	8.4%
Carbon Black & CBFS	CB & CBFS	1825	2090	2296	2360	15%	10%	2.8%
Other Key Petrochemicals	Benzene, Toluene, MX, OX	1241	1320	1403	1477	6.4%	6.3%	5.3%
	Total Demand	**30478**	**32510**	**35323**	**38108**	**6.7%**	**8.7%**	**7.9%**

….and is expected to grow at 8% - 9% in 2012 & 2013

Indian Polyolefins Industry

Review & Future Prospects

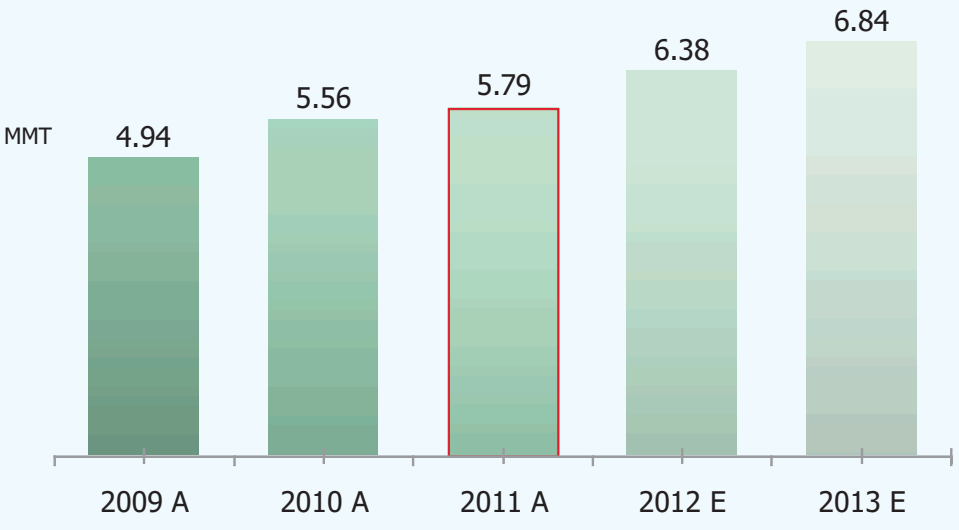
May 2012

Review of Polyolefins Sector

CPMA

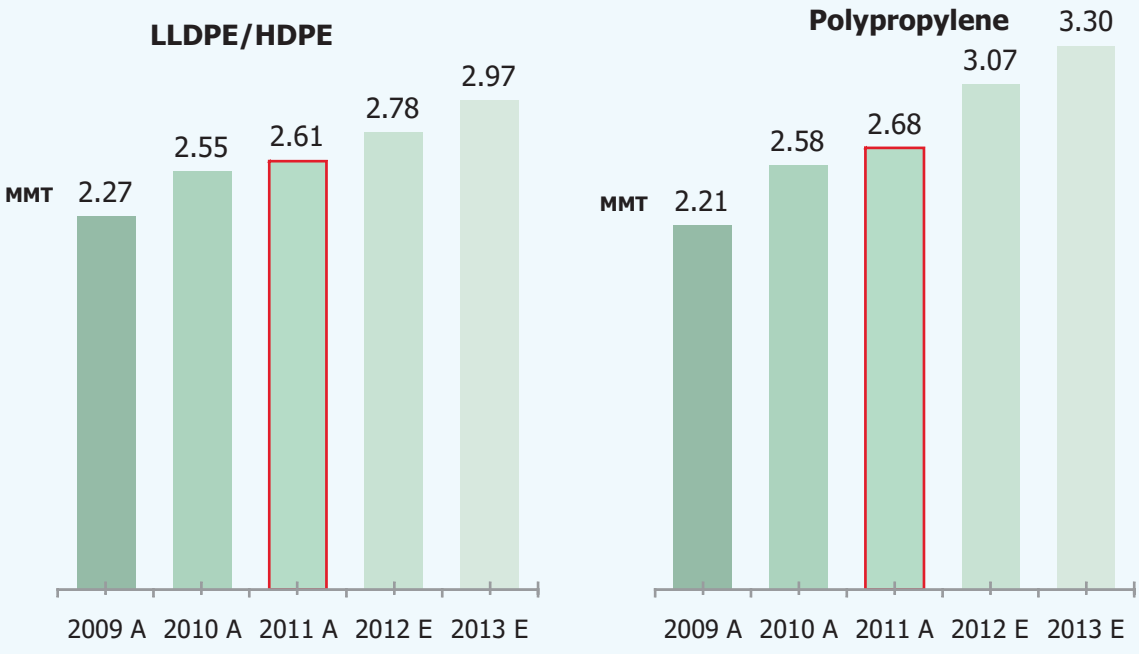
Chemicals & Petrochemicals Manufacturers' Association

PO demand grew at 4.1% in 2011



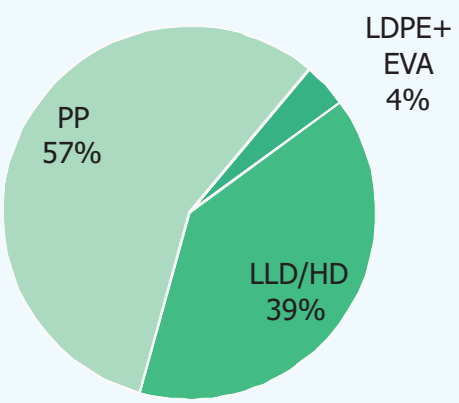
Expected to grow at 10% in 2012

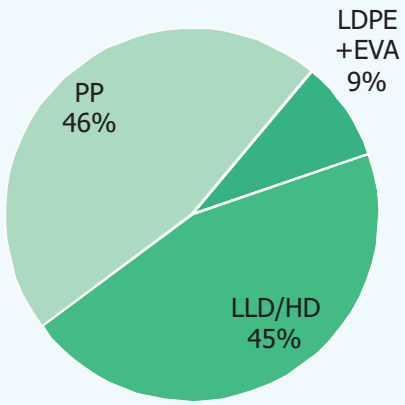
Subdued demand of Polyolefins in 2011



PE & PP demand grew at 4.1% in 2011, PP demand expected to grow at 15% in 2012

Polyolefin production increased by 14% in 2011



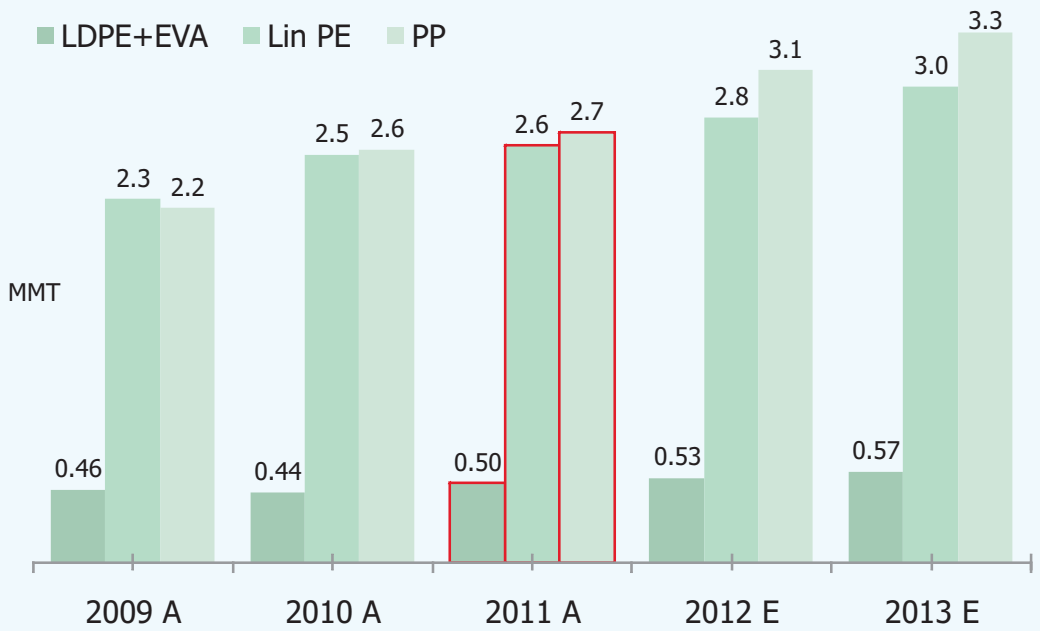


Polyolefin Production – 5.6 MMT

Polyolefin Demand – 5.8 MMT

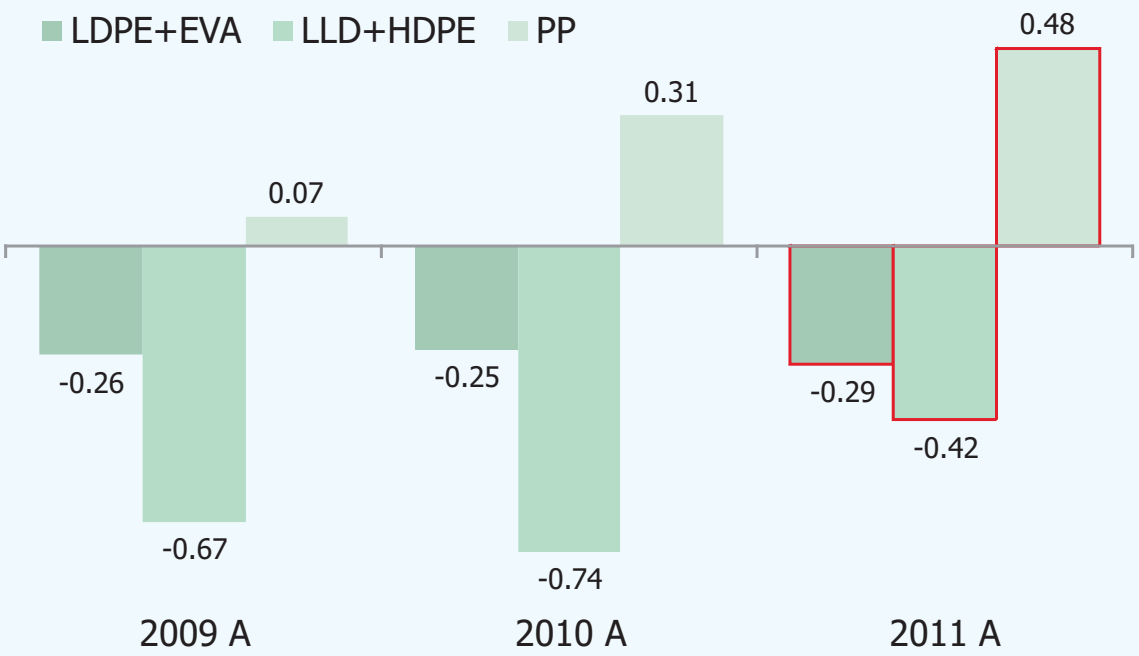
Polyolefin consumption is dominated by Lin PE & PP demand

PO demand grew by 4.1% in 2011



Expected to register growth rate of 10% in 2012

Polyolefins net trade deficit was 0.23 MMT in 2011



LLD + HDPE registered net trade deficit of 0.42 MMT and
PP registered trade surplus of 0.48 MMT in 2011

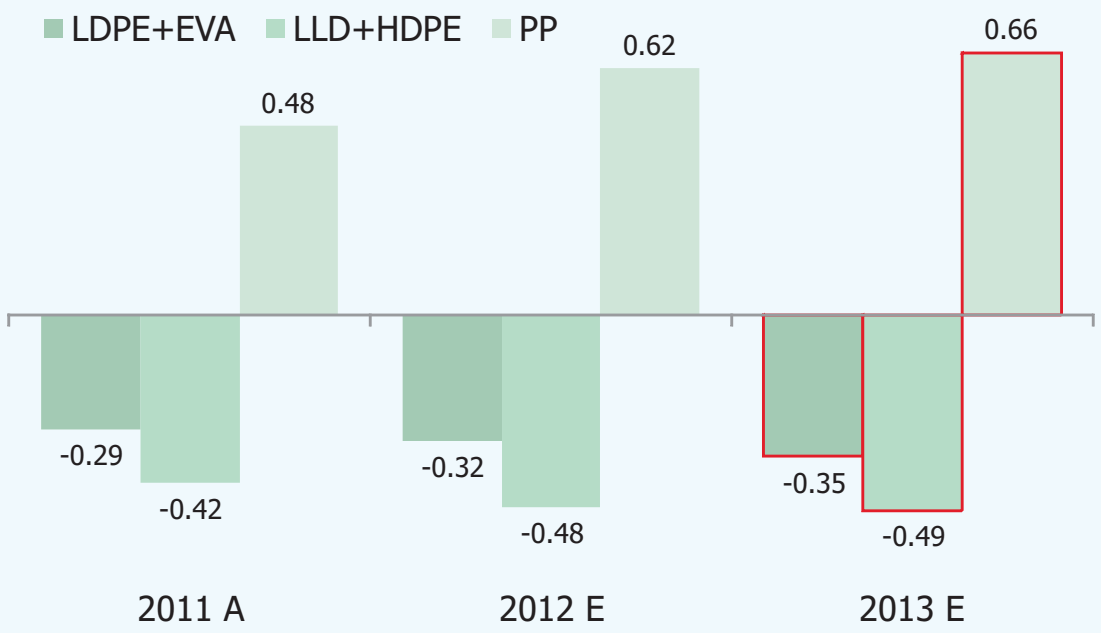
Outlook for Polyolefins Sector

Projected demand for Polyolefins in India

(KTA)	Actual		Projected		% change year on year		
	2010	2011	2012	2013	2011	2012	2013
LDPE+EVA	439	499	532	571	14%	6.4%	7.3%
LLDPE	1076	1055	1130	1210	-2.0%	7.1%	7.1%
HDPE	1469	1552	1650	1760	5.7%	6.3%	6.7%
PP	2576	2682	3072	3304	4.1%	15%	7.6%
Polyolefins	5560	5788	6384	6845	4.1%	10%	7.2%

Healthy demand growth expected for polyolefins in 2012

Lin PE import dependency to remain – 25%



Net exportable surplus for PP expected to increase with new capacities coming on stream in 2012 & 2013

Indian Styrenics Industry

Review & Future Prospects

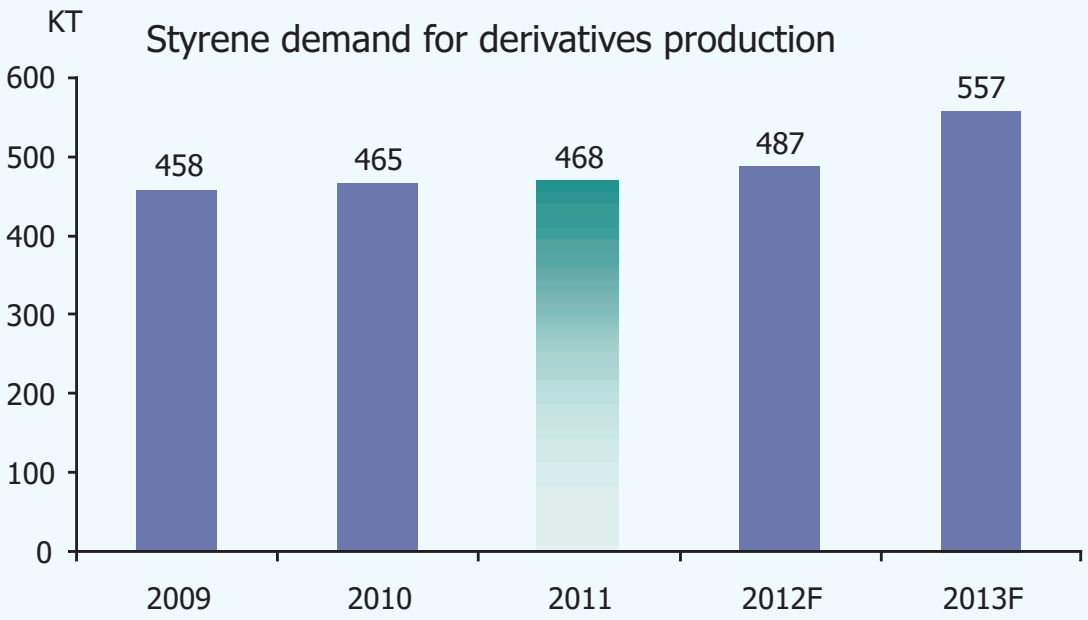
May 2012

Review of Styrenics Sector

CPMA

Chemicals & Petrochemicals Manufacturers' Association

Styrene Demand



Styrene derivative demand to register 14% growth in 2013

Consistent growth in Styrene derivatives...

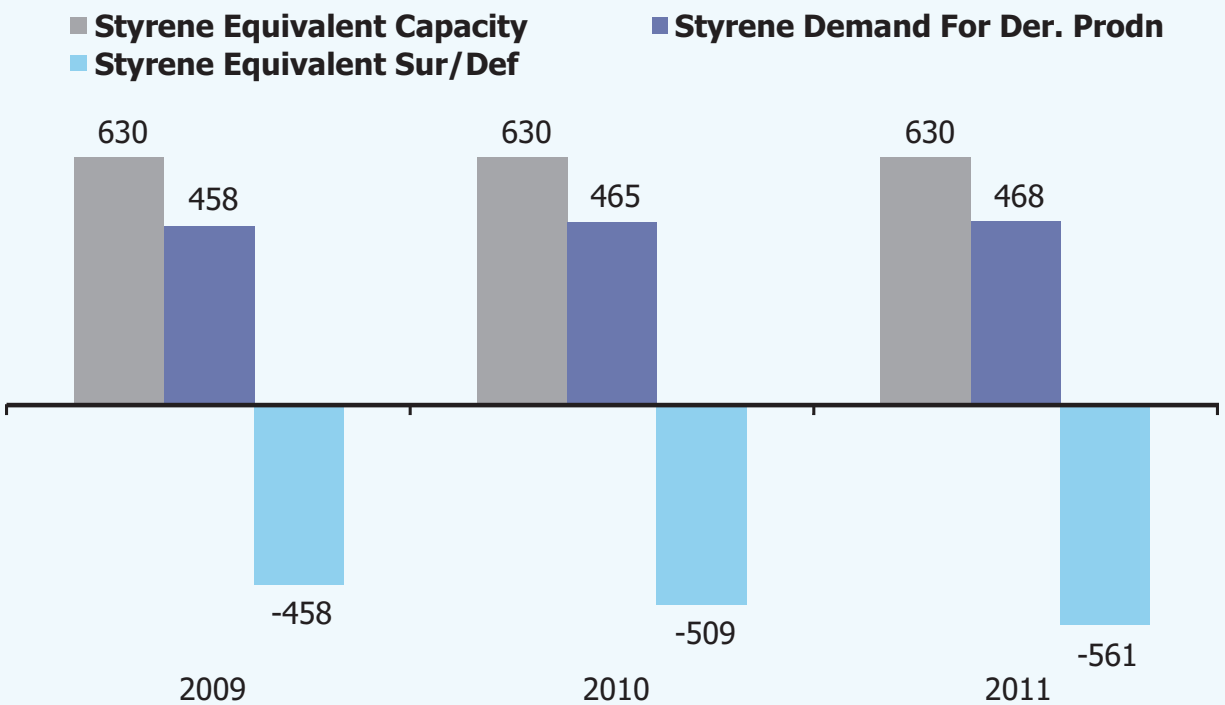
Demand for Styrenics in India

(Kt)	2009	2010	2011	CARG 2009-2011
PS	210	236	264	12%
EPS	61	70	77	12%
ABS	108	119	129	9%
SBR	147	163	192	15%
SAN	71	82	90	12%
Others	48	49	49	1.0%

Source:CPMA

…… with demand for PS, EPS, SBR & SAN expected to register healthy growth rates

Styrene demand supply balance in India



….. styrene deficit has increased from 509 kT in 2010 to 561 kT in 2011 due to increase in derivative demand

Outlook for Styrene Sector

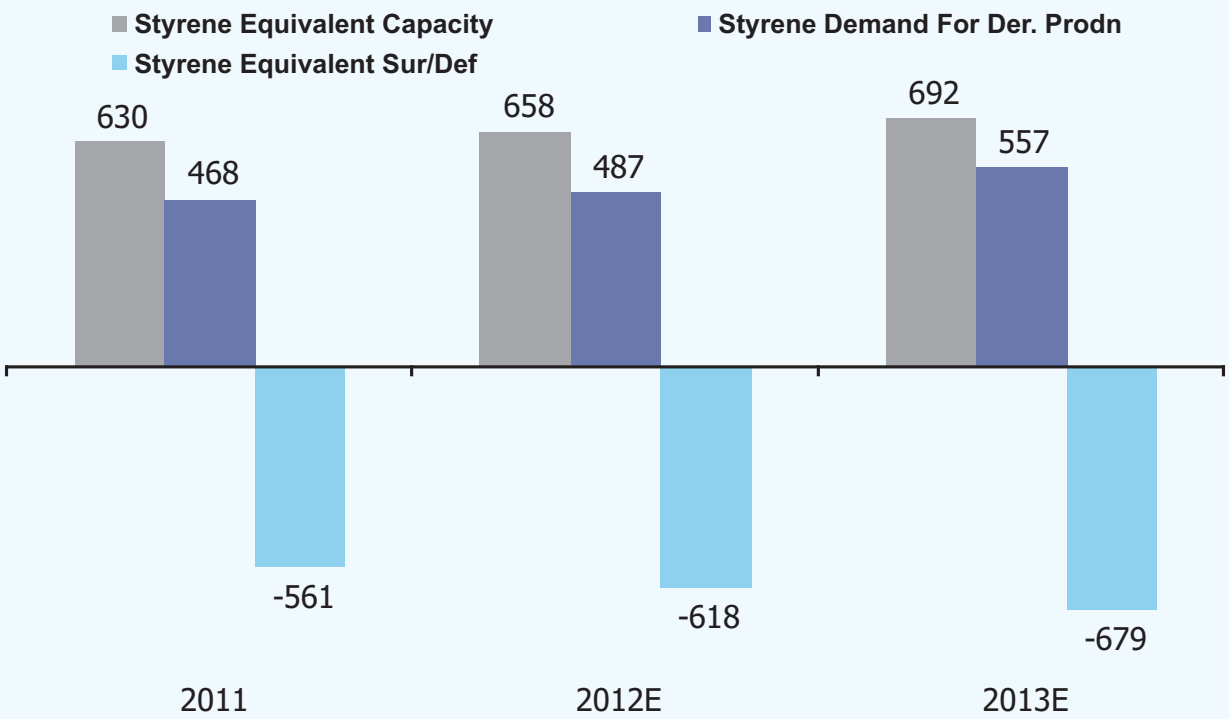
Demand for styrenics is expected to …

Projected demand for Styrenics in India							
(Kt)	Actual		Projected		% change year on year		
	2010	2011	2012	2013	2011	2012	2013
PS	236	264	296	330	12%	12%	12%
EPS	70	77	85	93	10%	10%	10%
ABS	119	129	141	154	8.2%	9.3%	9.6%
SBR	163	192	210	230	18%	9.4%	9.5%
SAN	82	90	99	108	9.5%	9.6%	9.5%
Others	49	49	50	50	0%	2%	0%

Source:CPMA

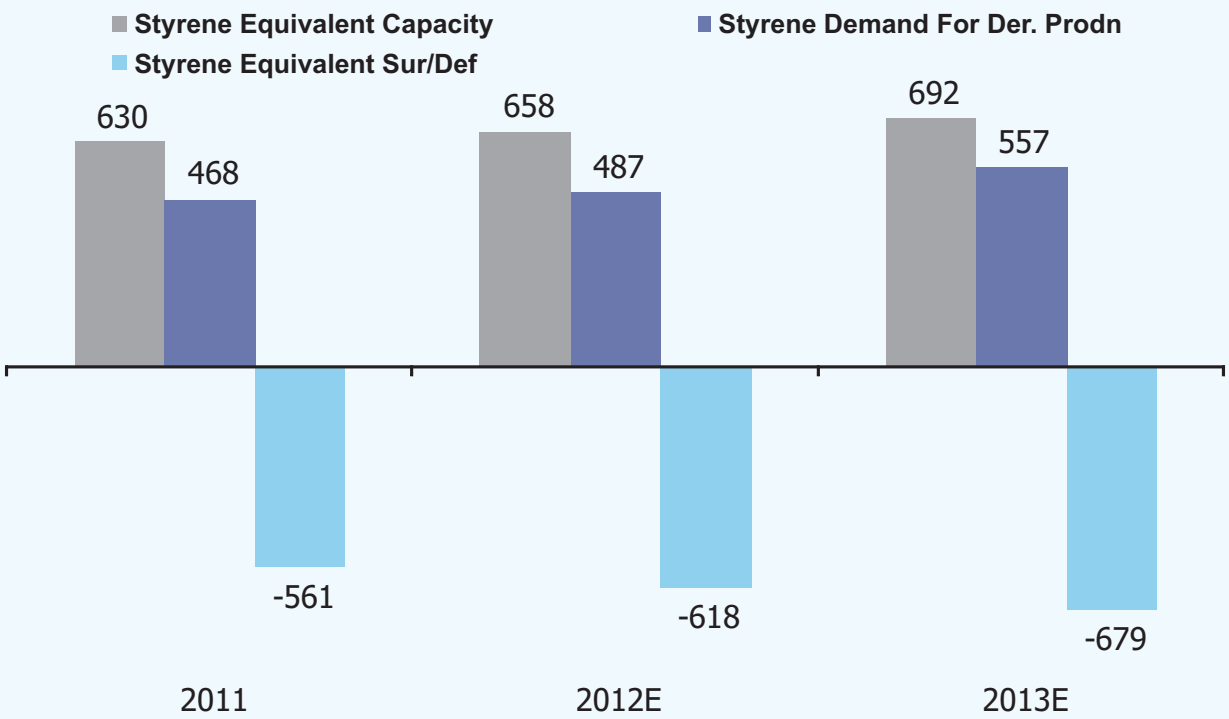
….. grow at 10% in 2012 & 2013

Styrene deficit is bound to rise



No new capacity addition and demand for derivatives increasing

Styrene deficit is bound to rise



No new capacity addition and demand for derivatives increasing

Vinyls in India

Review & Future Prospects

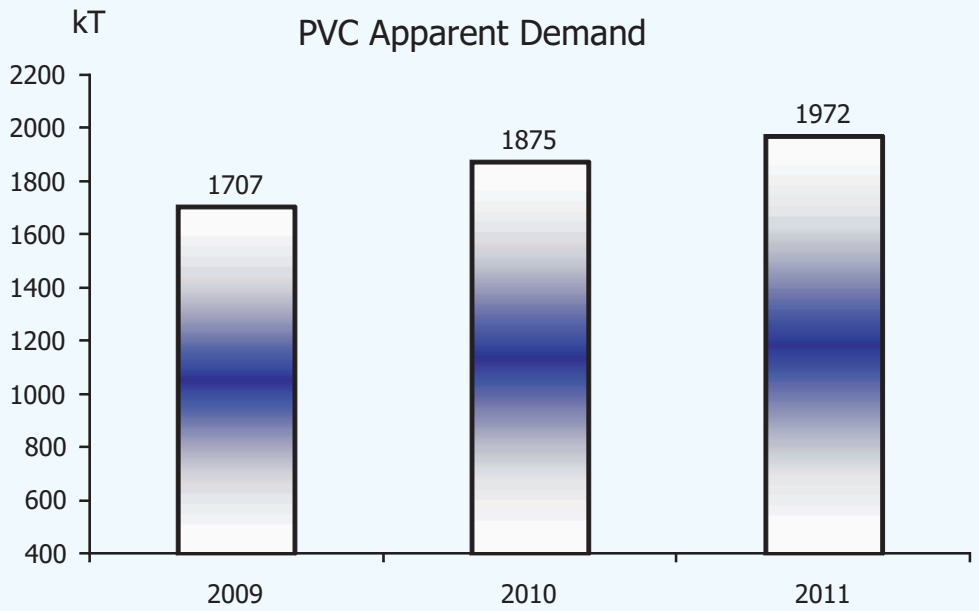
May 2012

Review of Vinyl Sector

CPMA

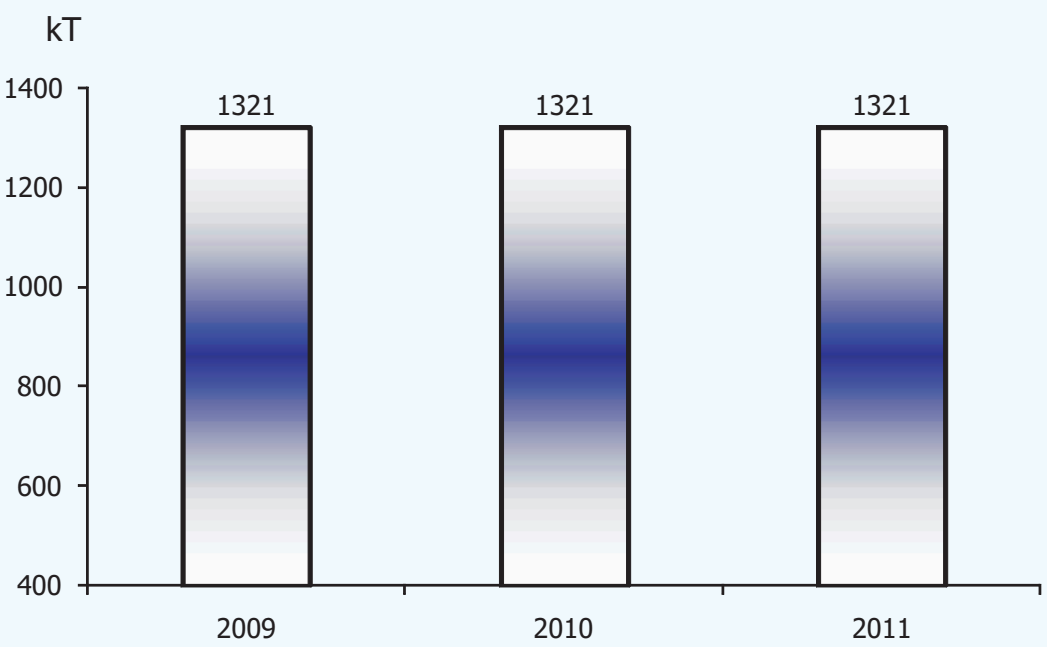
Chemicals & Petrochemicals Manufacturers' Association

Demand growth of 5% for PVC in 2011



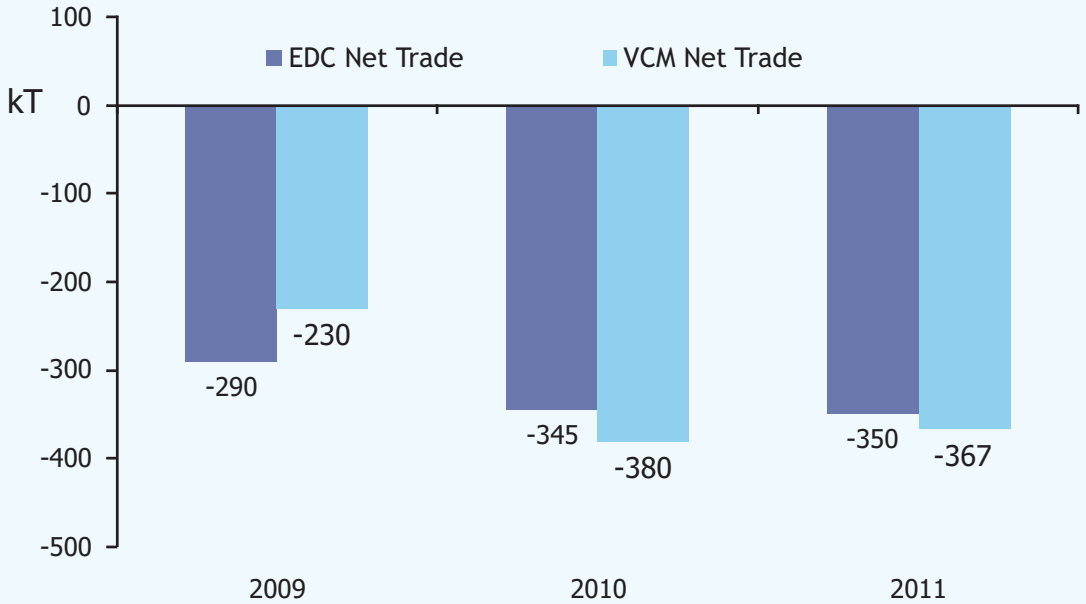
Demand has gone up from 1875 Kt in 2010 to 1972 Kt in 2011

PVC Capacity



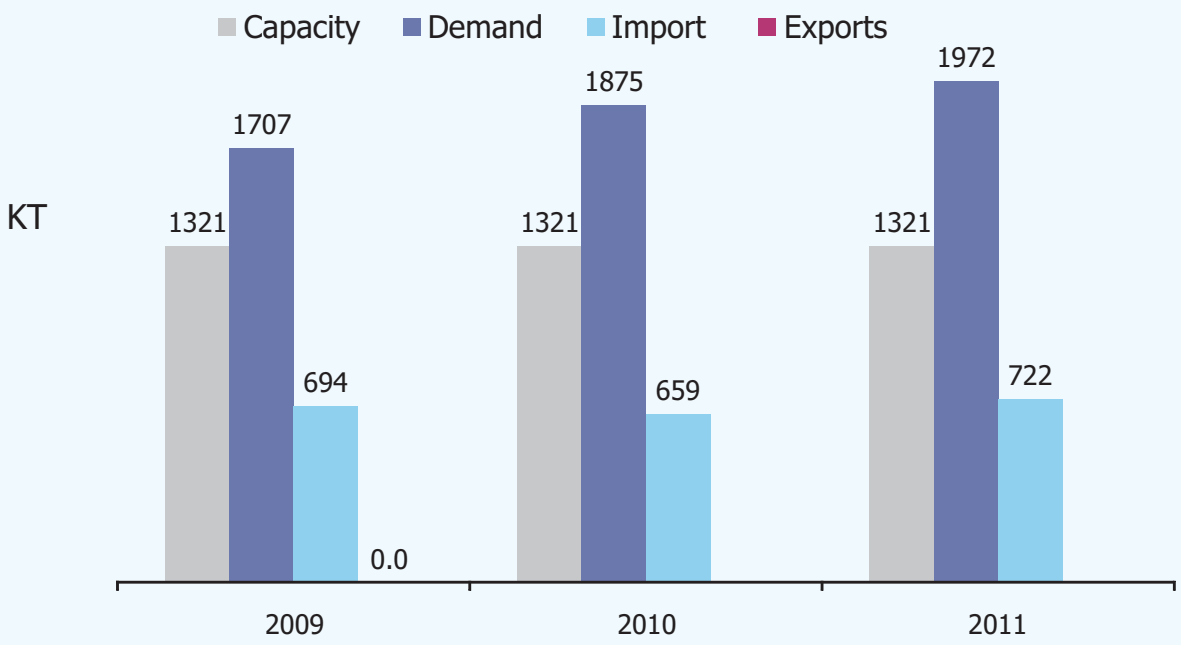
No PVC capacity addition

Net trade of EDC & VCM



Producers not having captive production, entirely dependent on imports

PVC demand supply balance in India



PVC deficit has increased from 659 Kt in 2010 to 722 Kt in 2011

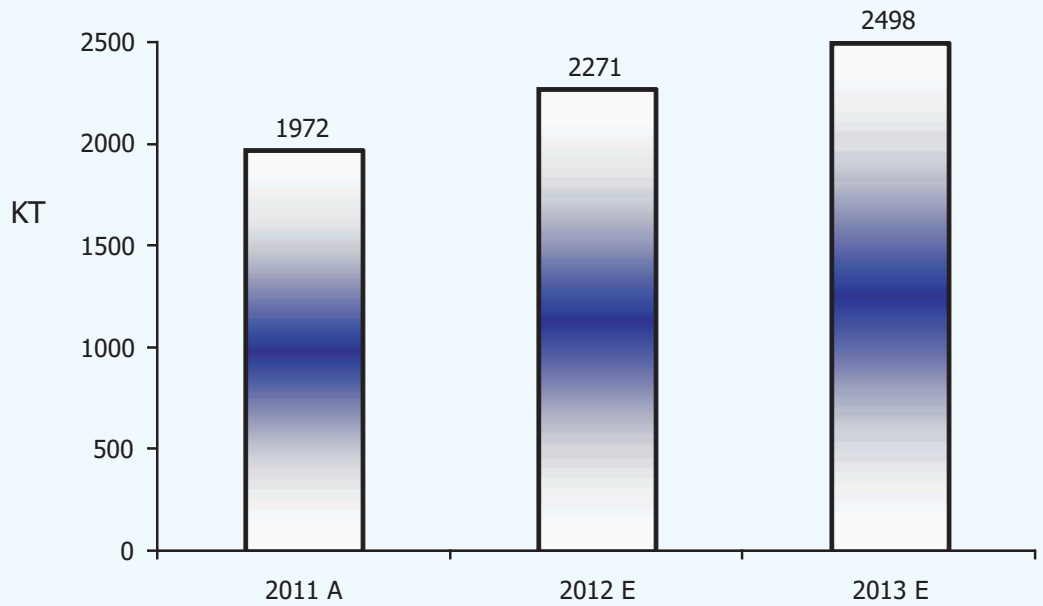
PVC Imports in India in 2011: Top 10 Countries

PVC Paste		PVCSusp	
Country of Origin	Quantity (Kt)	Country of Origin	Quantity (Kt)
Korea	**18.11**	**Taiwan**	**186.21**
Taiwan	**16.93**	**Korea**	**182.17**
USA	**14.05**	**USA**	**93.17**
Germany	9.12	Not available	53.54
China	5.01	Germany	29.99
S Africa	3.65	Mexico	28.74
Thailand	3.15	China	22.69
Belgium	2.39	Belgium	16.59
Mexico	1.56	S Africa	15.34
Netherlands	1.28	Vietnam	10.30
Others	4.13	Others	47.97

Major imports in India coming from Korea, Taiwan & USA

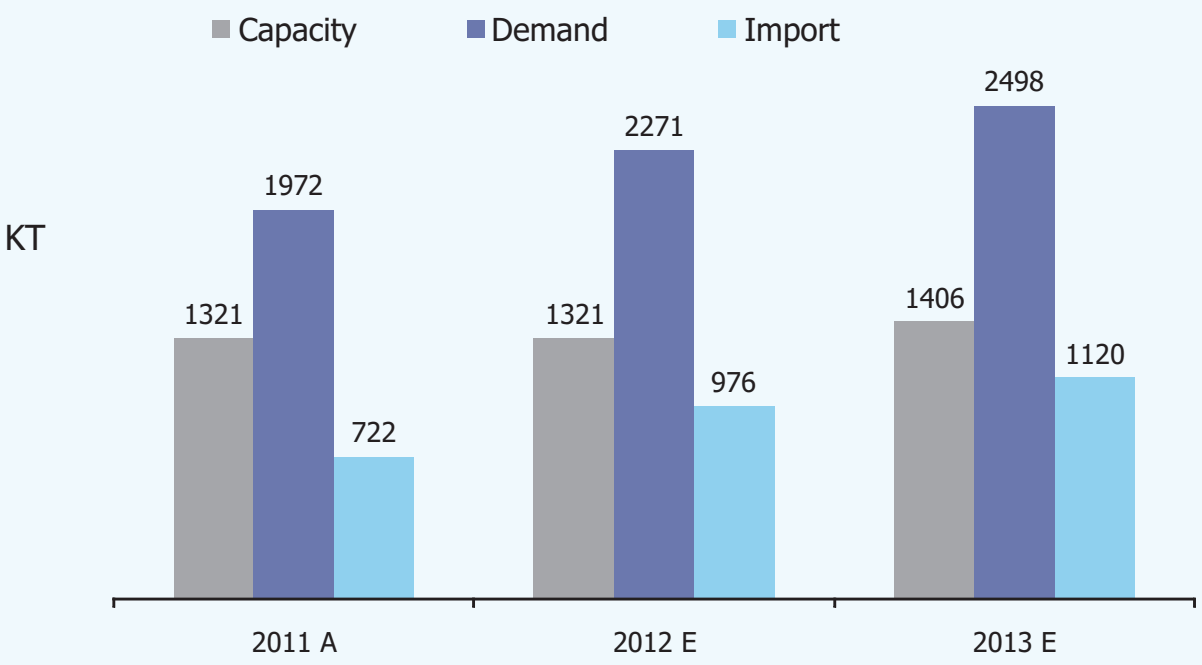
Outlook for Vinyl Sector

Demand for PVC is expected to register strong growth



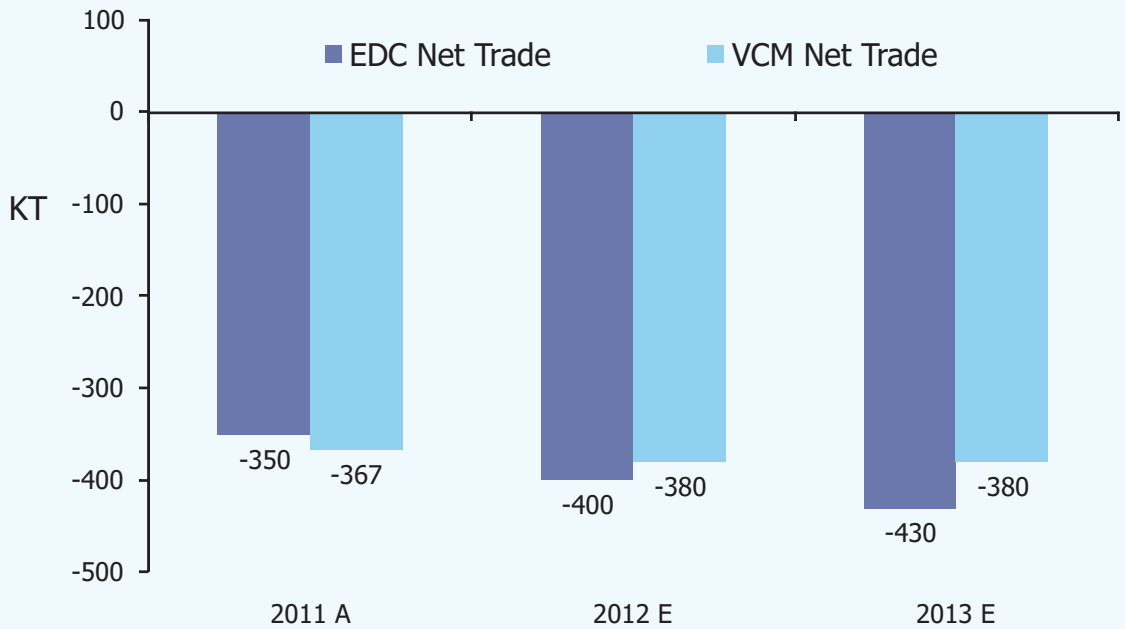
Touch 2498 Kt in 2013

Vinyl deficit to increase in future



No new capacity coming on-stream to meet the rising domestic consumption

EDC & VCM Net Trade



Import dependency to Increase!

Indian Elastomers Industry

Review & Future Prospects

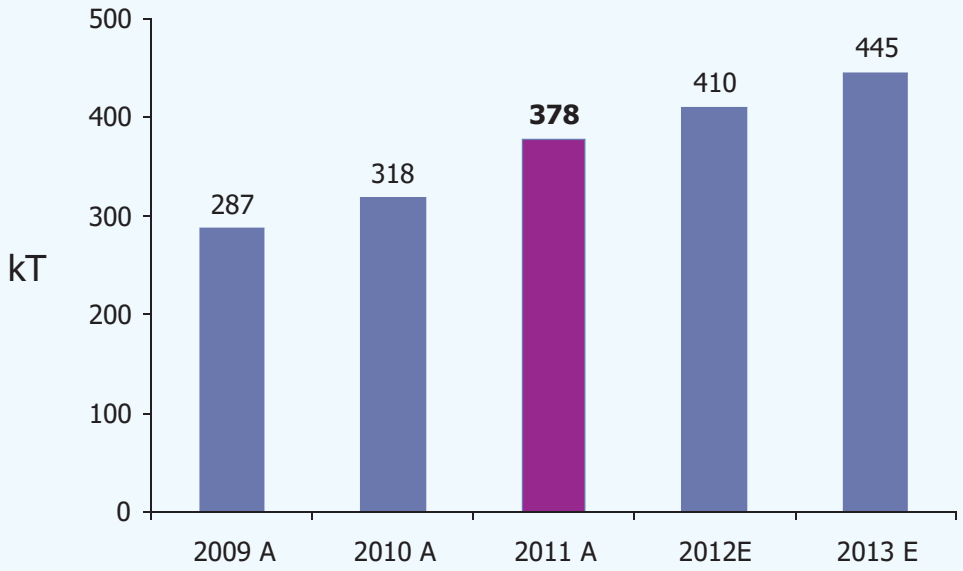
May 2012

Review of Elastomers

Chemicals & Petrochemicals Manufacturers' Association

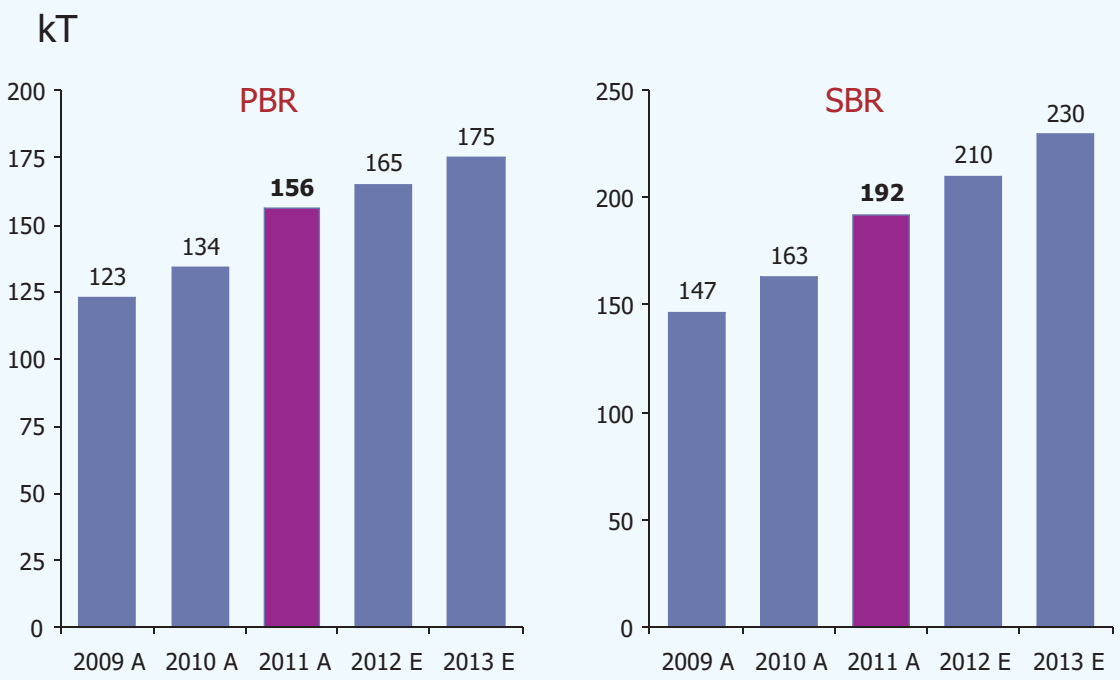
44D Himalaya House (4thFloor), 23, Kasturba Gandhi Marg,
New Delhi –110001, INDIA
Phone: 91-11-43598337, Fax: 91-11-43598338,
E-mail : cpmai@airtelmail.in

Elastomers demand increased by 19% in 2011



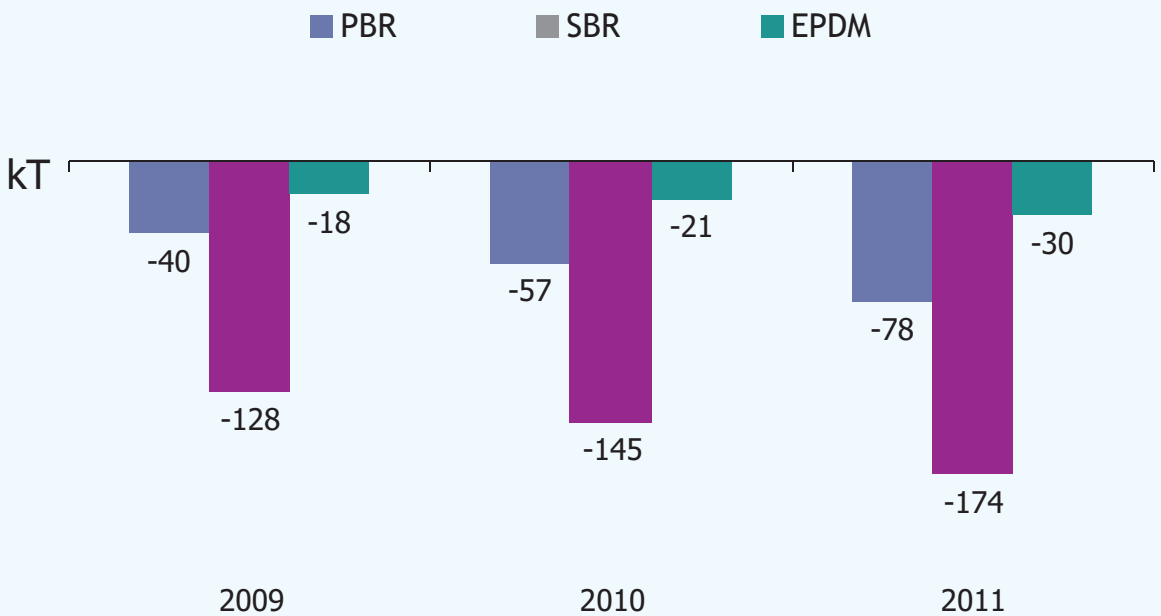
Demand is expected to grow at 8.5% in 2012 & 2013

PBR & SBR demand increased by 16% & 18% in 2011



Demand for PBR & SBR is expected to grow at 6%~10%

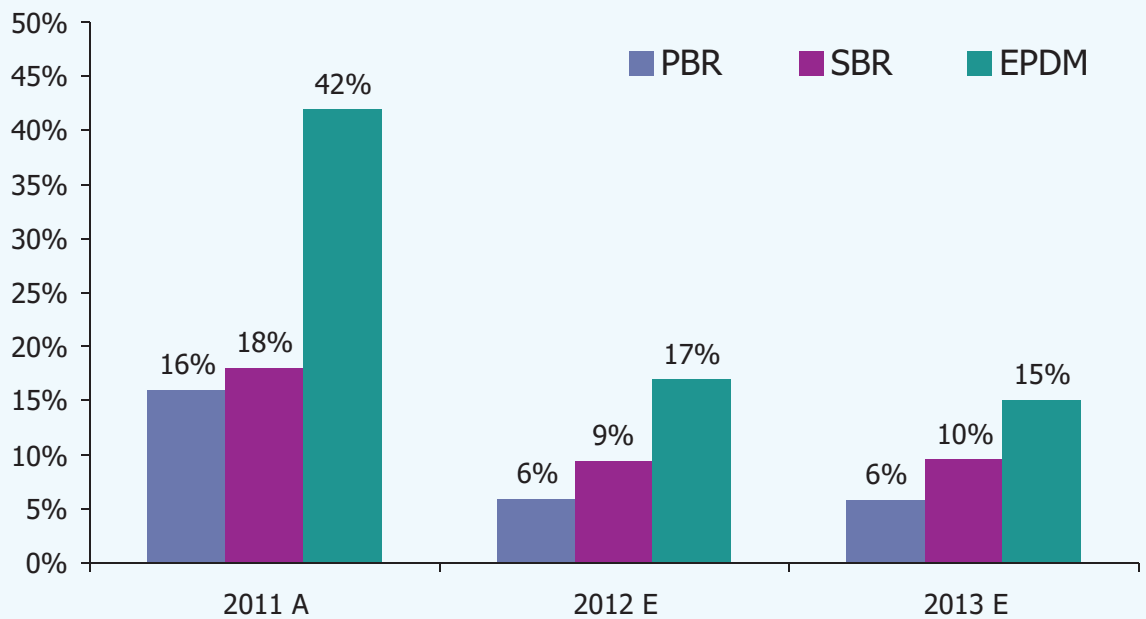
Elastomers deficit was 282 Kt in 2011



SBR deficit was at 174 Kt in 2011

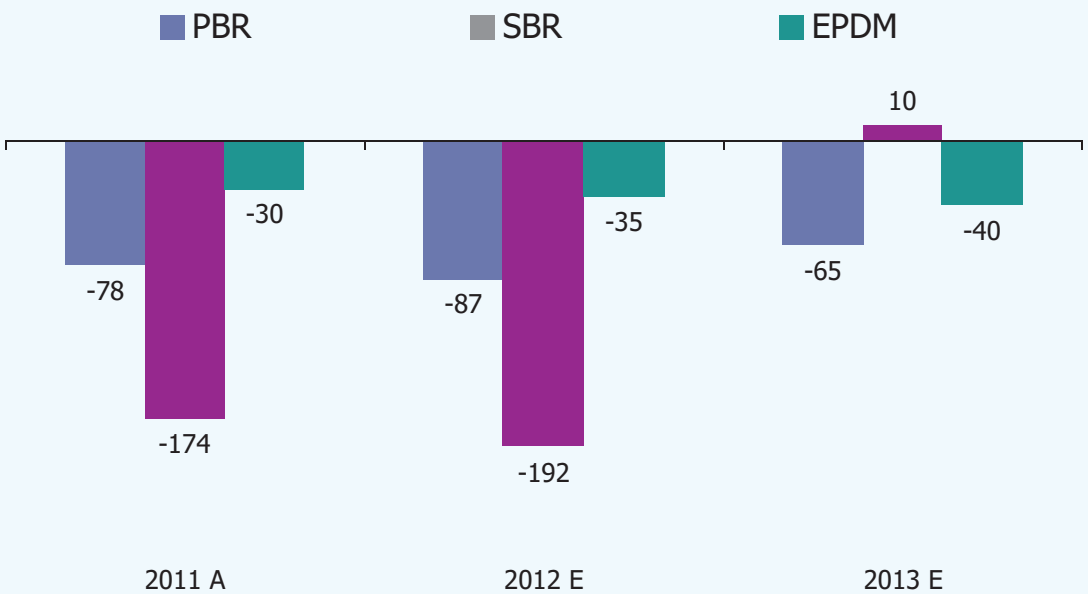
Outlook of Elastomers

Outlook for 2011 & 2012 is positive



Elastomers to register double digit growth

Elastomers import dependency to increase in 2012



New capacity being added in 2013 ➔ PBR – 40 Kt & SBR – 150 Kt
import dependency expected to declinea

Fibre Intermediate

Review & Future Prospects

May 2012

Review of Fibre Intermediate Sector

Chemicals & Petrochemicals Manufacturers' Association

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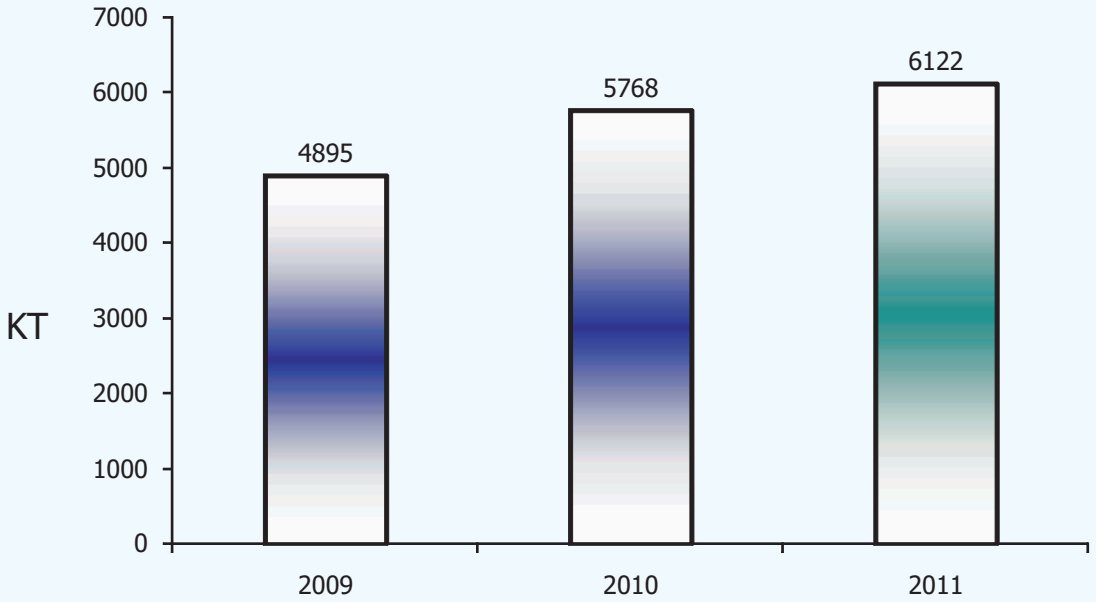
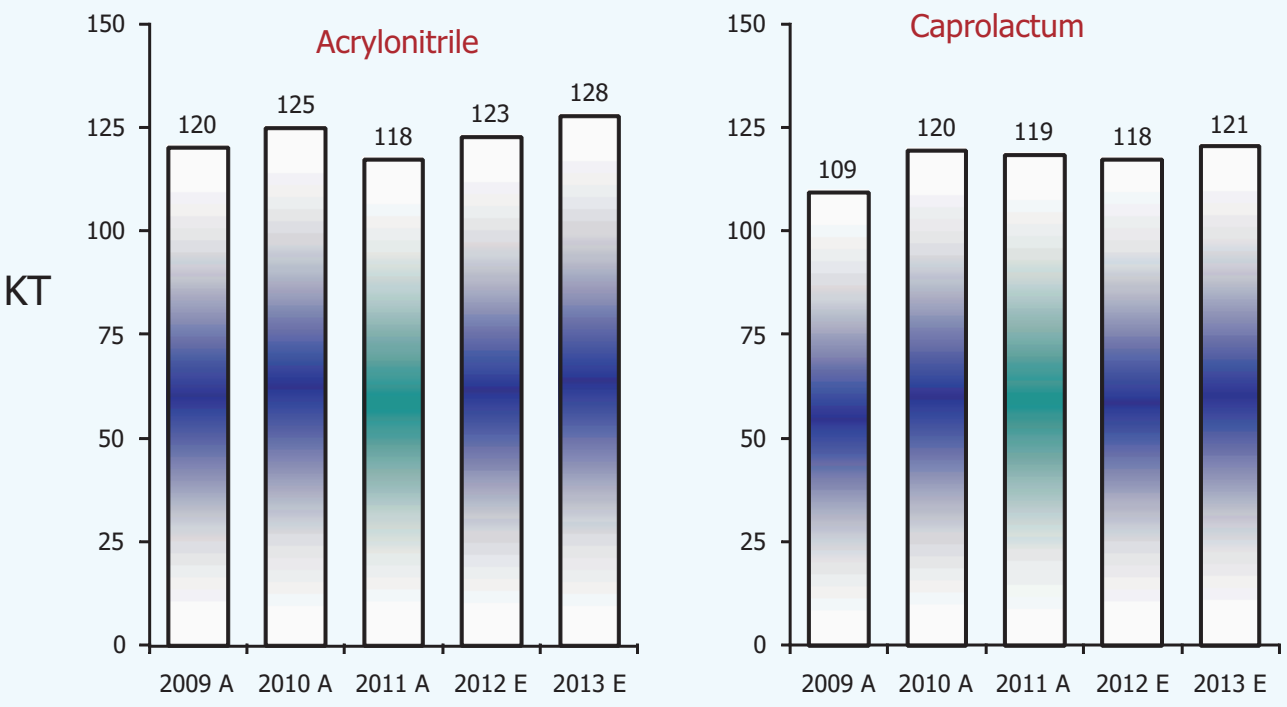
New Delhi –110001, INDIA
Phone: 91-11-43598337, Fax: 91-11-43598338,
E-mail : cpmai@airtelmail.in

Fibre Intermediate demand grew at 6% in 2011



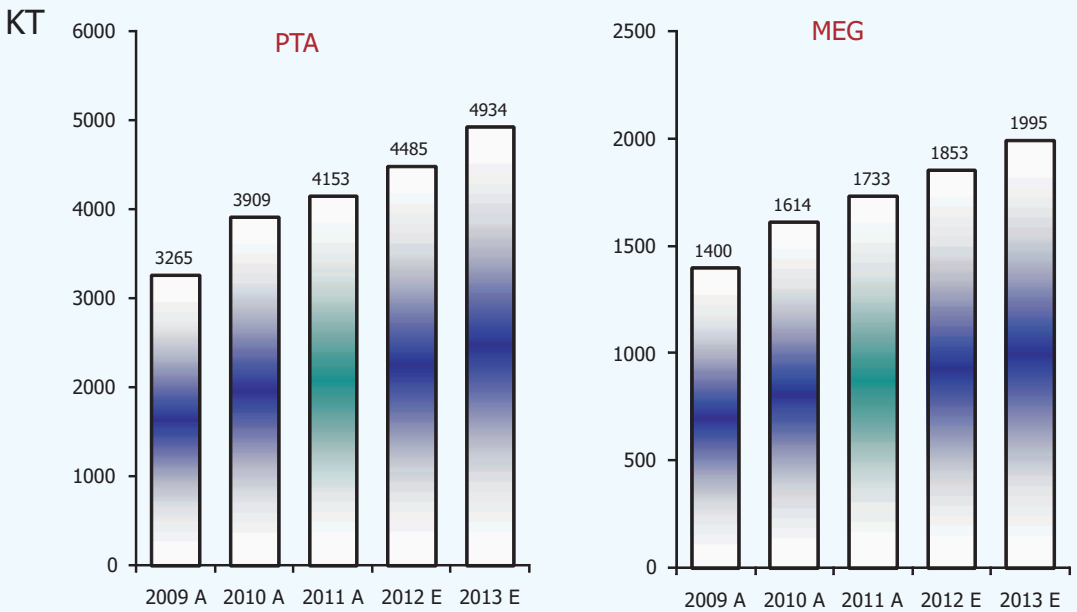
and is expected to grow at 7.5% - 9% in 2012 & 2013

Acrylonitrile demand declined by 6% in 2011



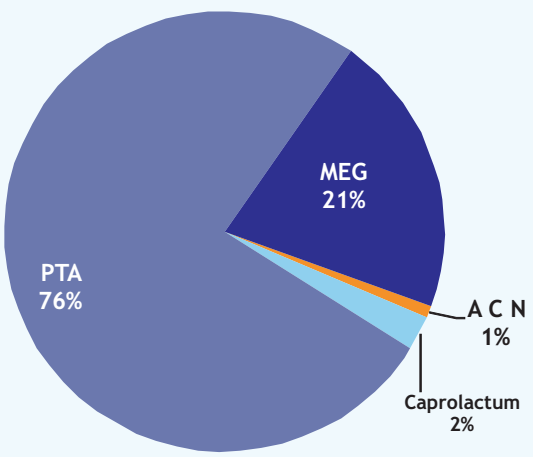
Demand for Acrylonitrile is expected to grow at
4% and Caprolactum demand to grow at 2.5% in 2013

Demand 2011: PTA ~ 6.2% & MEG ~ 7.4%

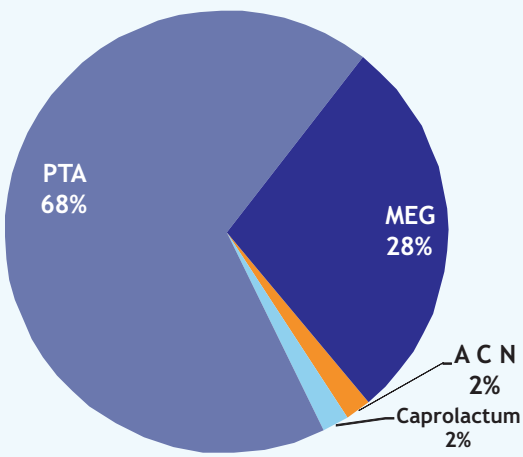


In 2012 & 2013, demand for PTA is expected to grow at 8% - 10% and MEG to grow at 7% - 8%

Fibre intermediate Demand supply : 2011



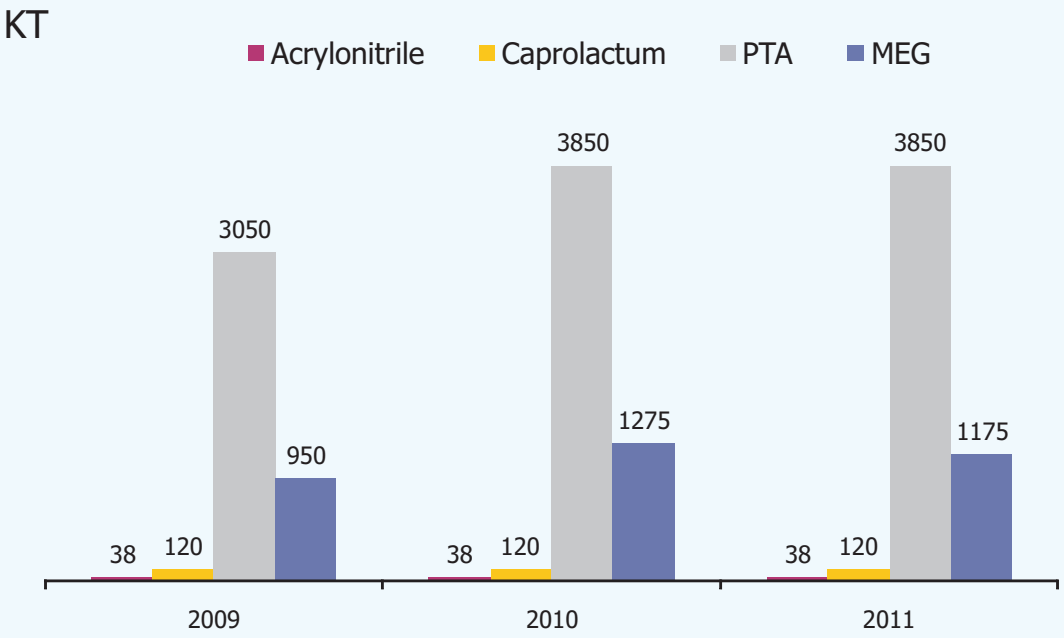
Fibre Intermediate Production
4614 KT



Fibre intermediate Demand
6122 KT

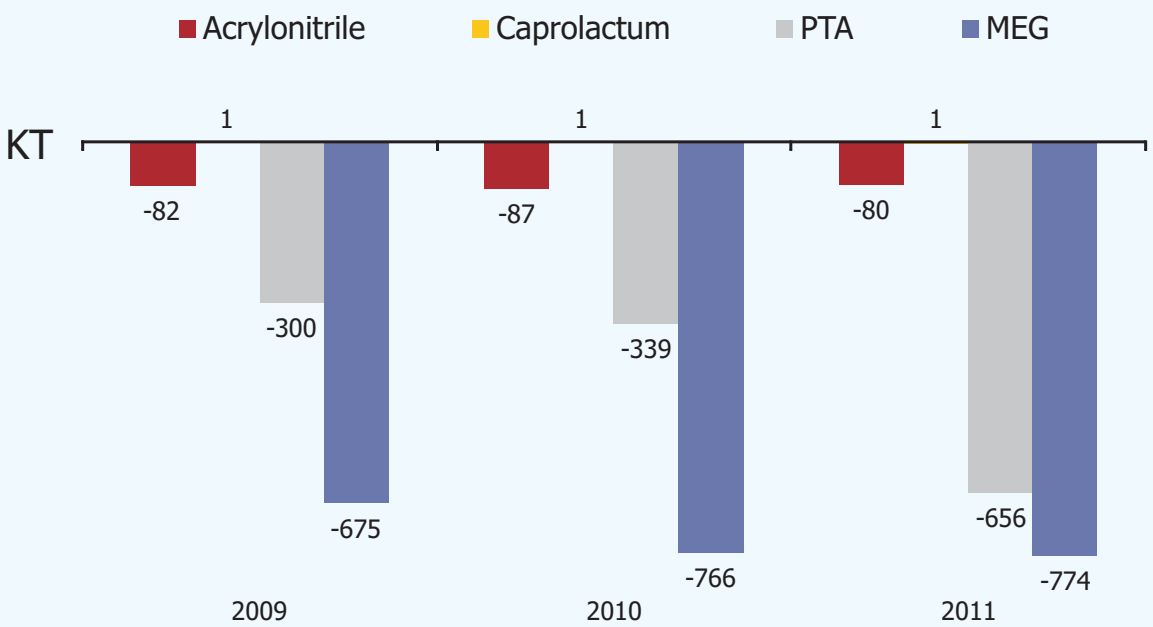
Fibre intermediate production is dominated by PTA & MEG, 97% share in total production in 2011

Fibre Intermediate Capacity ….



…..5183Kt total capacity in 2011

Fibre Intermediates deficit was 1509 Kt in 2011

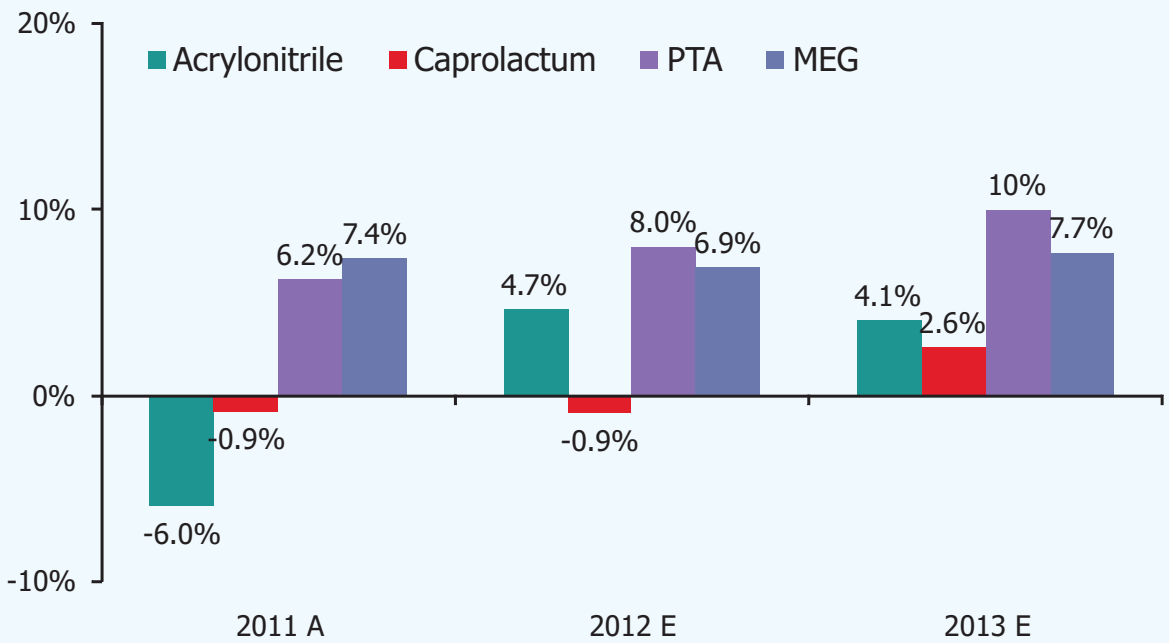


PTA and MEG constituted 42% & 53% of the total 1509 KT fibre intermediates imported in 2011

Outlook for Fibre Intermediate Sector

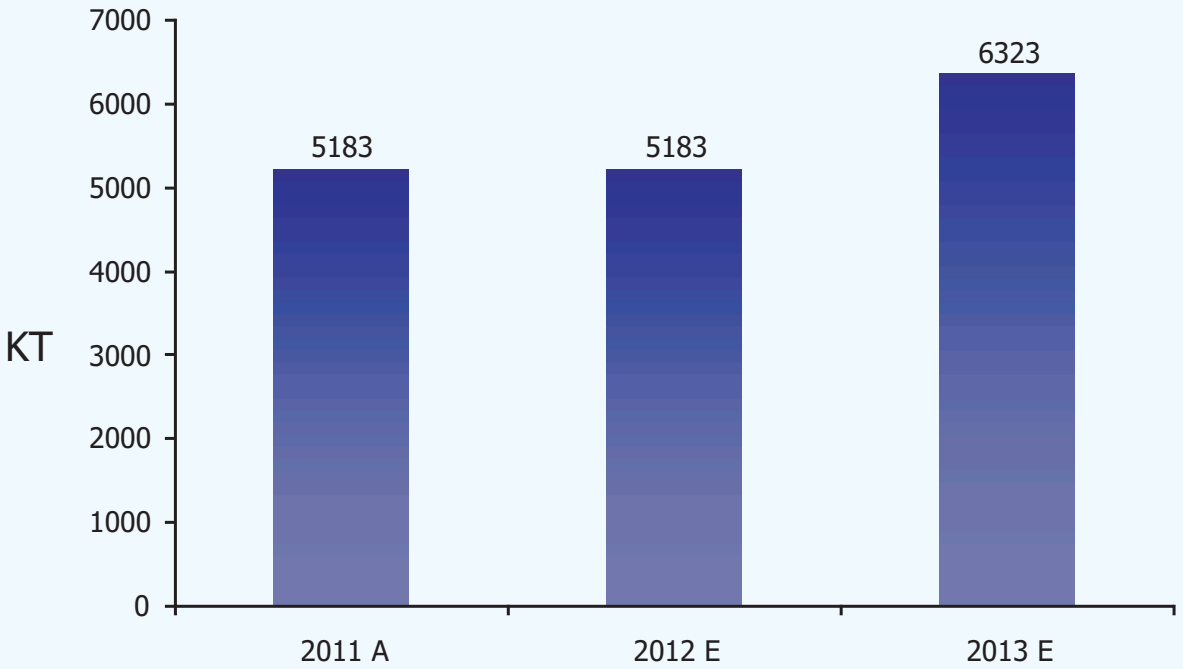

MAERSK
SEALAND
MAERSK
MAERSK
SEALAND
MAERSK
SEALAND
HANJIN
MAERSK
SEALAND
MAERSK
K LINE
K LINE
K LINE
COSCO
COSCO
COSCO
HANJIN
COSCO
K LINE
MAERSK
SEALAND
MAERSK
MAERSK
CAPITAL
CAPITAL
CAPITAL

Outlook for 2012 & 2013 ~ Subdued demand growth



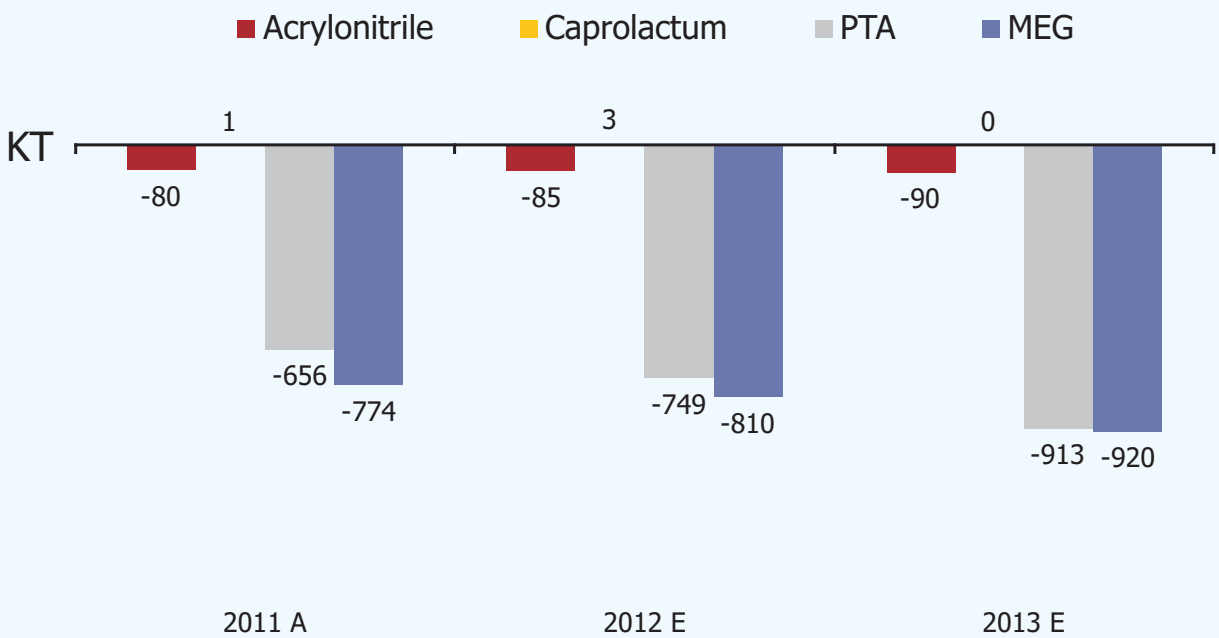
Fibre intermediate demand to grow in the range of 7.5% -9%, in 2012 & 2013

Fibre Intermediate Capacity Addition



Capacity addition of 1140 KT in case of PTA by RIL

Import dependency to increase in PTA & MEG



No exportable surplus till 2013!

CPMA

Chemicals & Petrochemicals
Manufactures' Association

CPMA is the apex forum representing the Indian Petrochemical industry, Established in 1993, the Association offers its members a podium to collectively present their ideas, voice their concerns and offer suggestions on relevant issues. It provides a linkage between the industry, the Government and society. It interacts with policy makers and industry associations to develop and maintain harmonious and conducive business conditions.

The Association, registered under the Indian Societies Act, is widely recognized as one of the national apex bodies of the Indian Petrochemical Industry by all Ministries and Departments of Government of India, apex Chambers of Commerce and Industry and other related Associations in India and abroad. CPMA is affiliated to the Confederation of Indian Industry (CII). The Association is also a Steering Committee Member of the Asia Petrochemical Industry Conference (APIC) and had successfully hostedthe annual APIC 2010 conference on May 13-14, 2010 in Mumbai.

CPMA comprises various sub-committees constituted to effectively focus on key areas within petrochemicals like Polyolefins, Vinyls, Styrenics, Glycols, Elastomers, Fibre Intermediates and Surfactants. CPMA has also taken the lead to set up and promote the Indian Centre for Plastics in the Environment (ICPE) to deal with all environmental issues connected with the usage of plastics.

CPMA Members:

1. BASF Styrenics (India) Ltd
2. DCM Shriram Consolidated Ltd
3. Engineers India Ltd.
4. Finolex Industries Ltd
5. Gujarat State Fertilizers& Chemicals Ltd
6. HPCL Mittal Energy Ltd
7. Indian Oil Corporation Ltd
8. LG Polymers (India) Private Ltd
9. Reliance Industries Ltd
10. Tamilnadu Petro Products Ltd
11. Chemplast Sanmar Ltd
12. DCW Ltd
13. GAIL (India) Ltd
14. Haldia Petrochemicals Ltd
15. India Glycols Ltd
16. INEOS ABS Ltd
17. ONGC Petro Additions Ltd
18. Supreme Petrochem Ltd

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