

Ethylene Outlook: Up to 2014

By: Fibre2fashion.com

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Petrochemicals are the chemical products which are derived from petroleum. Olefin is one of the divisions of petrochemical which includes Ethylene, Propylene and Butadiene. The product Ethylene is obtained by pyrolysis of Naphtha or other hydrocarbons such as Ethane and Propane. In Chemical industries, Ethylene is an important monomer feedstock, which is a raw material used as a manufacturer of polymers like polyethylene, polyvinyl Chloride and Polystyrene. It is also used for organic chemicals like ethylene oxide and ethylene glycols. These products are mainly used for packaging, transportation, electronic, textile and construction.

According to market expert, in the year 2011, the prices of Ethylene gradually increased, due crises seen in the production of supply. The prices of Ethylene are taking cues from crude oil prices, which is approximately US\$ 1000- US\$ 1100 per ton. In the month of November, 2011, supplies were much tensed as number of crackers were either shut or had reduced their operating rates as it was lower by 3% on Y-o-Y basis. End of 2011, the price of Ethylene increased in the month of December by 8 % to US\$ 1096/ton.

Yearly Naphtha and Ethylene Prices:

Month	FY'11-12		FY'10-11		FY'09- 10	
	Naphtha Price	Ethylene Price	Naphtha Price	Ethylene Price	Naphtha Price	Ethylene Price
Apr	1060	1345	765	1205	455	695
May	1000	1290	705	1240	490	710
Jun	940	1120	665	920	605	830
Jul	980	1090	635	835	580	995
Aug	950	1115	675	880	645	960
Sep	955	1055	685	1030	615	950
Oct	885	1005	760	1110	635	840
Nov	880	1015	795	975	695	995
Dec	910	1125	865	1130	720	1115
Jan	961	1153	875	1205	740	1275
Feb			900	1280	700	1275
Mar			990	1310	740	1135

The Ethylene prices rapidly increased during December, 2011, compare to Naphtha prices. In 2011, Naphtha prices gradually increased to 3% from US\$ 880 per ton in the month of November to US\$ 910 per ton by the end of the year 2011.

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Global Ethylene Production

Global petrochemical industry consumes huge amounts of energy in its production of vital petrochemicals such as ethylene. The petrochemical product Ethylene is one of the major sources chiefly used in many Asian countries like USA, China, Japan, India, Europe, etc.

(http://www.fibre2fashion.com/news/textile-news/newsdetails.aspx?news_id=107642)

According to sources informed to Fibre2fashion.com, India, the worldwide ethylene production plant capacities continue to increase and are continuing to develop large scale capacities with passage of time. The global average of an ethylene production plant is now around 540,000 tons per annum.

The average size of an ethylene production plant in Saudi Arabia is 892,000 tons per annum, in Netherlands it is 793,000 tons/ year, in Canada 790,000 tons/year and in the US it is 745,000 tons/year. 50 percent of worldwide ethylene is produced from naphtha; ethane accounts for around 28 percent and the rest of the raw materials are accounted for by liquefied petroleum gas, condensate and middle distillates.

Chinese ethylene producers too are in pursuit of building large-scale capacities, mainly in the coastal belt and also in the central and western regions. China has the ability of building million-ton ethylene capacity by adopting its own technology through innovation.

Top 10 Ethylene Complexes in 2011

Company	Location	Country	Capacity (ton/year)
Formosa Petrochemical Corp.	Mailio, Taiwan	China	2,935,000
Nova Chemicals Corp.	Joffre, Alta.	Canada	2,811,792
Arabian Petrochemical Corp.	Jubail	Saudi Arabia	2,250,000
ExxonMobil Chemical Corp.	Baytown, Texas	USA	2,197,000
Chevron Phillips Chemical Corp.	Sweeny, Texas	USA	1,865,000
Dow Chemical Corp.	Terneuzen	Netherlands	1,800,000
Ineos Olefins & Polymers	Chocolate Bayou, Texas	USA	1,752,000
Equistar Chemicals LP	Channelview, Texas	USA	1,750,000
Yanbu Petrochemical Corp.	Yanbu	Saudi Arabia	1,705,000
Equate Petrochemical Corp.	Shuaiba	Kuwait	1,650,000

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The top Producers of Ethylene are chiefly from China, USA, Saudi Arabia etc. where more of Ethylene is operated. The companies based in these countries such as Saudi

Basic Industries Corp., Dow Chemical Corp., Exxon Mobil Chemical Corp., consist of number of sites within the country.

Top 10 Ethylene Producers in 2011

Company	Sites	Capacity (ton/year)	
		Of Entire Complexes	With only Company Partial Interests
Saudi Basic Industries Corp.	15	13,392,245	10,273,759
Dow Chemical Corp.	21	12,011,841	10,529,421
ExxonMobil Chemical Corp.	19	12,515,000	8,550,550
Royal Dutch Shell PLC	13	9,358,385	5,946,693
Sinopec	13	7,575,000	7,275,000
Total AS	11	5,933,000	3,471,750
Chevorn Phillips Chemical Corp.	8	5,607,000	5,352,000
LyondellBasell	8	5,200,000	5,200,000
National Petrochemical Corp.	7	4,734,000	4,734,000
Ineos	6	4,656,000	4,286,000

Ethylene Production in USA:

The turnaround season for petrochemical plant in North American started from the beginning of the year 2012. Quite a number of Petrochem producers as well as companies like Shell chemical, ExxonMobil Chemical and LyondellBasell have for maintenance turnaround for large steam Cracker in the beginning of the year 2012. Due to this, there is less of demand for ethane and Ethylene's production Capacity.

The company Dow Chemical is noted as the largest ethylene producers in North America. Dow Chemicals, based in the company plans to build a world scale Ethylene plant on US Gulf Coast which will start up in 2017. The plant is a part of a plan to combine Dow's Petrochemical business with feedstock Opportunities from the US shale gas in Marcellus and Eagle Ford shale regions.

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Production capacity and its Condition in 2012

Companies	Country	Plant	Production Capacity	Condition
Shell	USA	Ethylene	240,000 mt/year	Shut Down
LyondellBasell	USA	Ethylene	770,000 mt/year	Shut Down
Westlake Chemical	Louisiana, USA	Ethylene	226,800 mt/year	Expansion
Chevron Phillips Chemical	USA	Cracker	900,000 mt/year	Shut Down
Chevron Phillips Chemical	USA	Cracker	952,000 mt/year	Shut Down
Shell Chemical	USA	Cracker	886,000 mt/year	Shut Down for 2-3 weeks
LyondellBasell	USA	Cracker	770,000 mt/year	Shut Down
BASF-Total	USA	Cracker	885,000 mt/year	Shut Down
BASF-Total	USA	Cracker	907,000 mt/year	Expansion

US based company Westlake Chemical, situated in Louisiana, has planned to start an expansion for Ethylene plant in order to provide ethylene for existing internal derivatives units and the commercial market. The expansion of the first cracker will increase the capacity by approximately 230 – 240 million pounds per year which has been projected that the production capacity will increase to 226,800 mt/ year by 2012 whereas feedstock flexibility will also increase. The second expansion is likely to conclude by the end of 2014.

Ethylene production in Asian Countries:

Ethylene is the world's most produced gaseous organic compound. According to the study done in the year 2011, the Middle East and Asia were all set to emerge as the world's largest ethylene producing regions. The geographical demand supply actives are expected to change on account of large capacity addition which is currently in progress in the Middle East and China. During next few years over 28 million tons of new capacities are planned to be added in Middle East and China, as stated by plastemart.com. The Ethylene capacity in Middle East has been doubled in the past 8 years and in the year 2015 it is likely to double again before reaching 20 million mt in 2017. Various manufactures of Ethylene in Middle East and Far East have under gone maintenance turnaround.

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Production capacity and its Condition in 2012

Companies	Country	Plant	Production Capacity	Condition
Indian Oil Corp.	India	Cracker	857,000 mt/year	Shutdown
PTT Chemical	Thailand	Cracker	400,000 mt/year	Shutdown for 35 days
Asahi Kasei	Japan	Propylene/ Ethylene	300 Kton/year; 470 Kton/year	Shutdown
Mitsubishi Chemical	Japan	Propylene	170 Kton/ year	Shutdown
JX Nippon Oil and Energy	Japan	Propylene	260 Kton/ year and 140 Kton/ year	Shutdown
Mitsui Chemicals	Japan	Propylene	280 Kton/ year	Shutdown
GS Caltex	South Korea	PP	180 Kton/year	Shutdown
SunAllomer Ltd.	Japan	PP	Line no1 & 2 : 140 Kton/ year	Shutdown in March 2012
Maruzen Petrochemical	Japan	Cracker	550 Kton/year	Shutdown for 2 months
SK Energy	South Korea	Cracker	200 Kton/year	Raised Operation Rates
Tosoh	Japan	Ethylene	527 Kton/year	Lower Operation Rates
Idemitsu Kosan	Japan	Ethylene	623 Kton/year	Restart
Haldia Petrochemicals	India	Ethylene	670 Kton/year	Restart
Showa Denka	Japan	Cracker	695 Kton/year	Shutdown for 2 weeks
YNCC	South Korea	Cracker	857 Kton/year	Shutdown for 1 month
Honam Petrochemical	South Korea	Ethylene	720 Kton/year	Shutdown for 45 days
Mitsubishi Chemical	Japan	Ethylene	375 Kton/year	Shutdown for 2 months
JX Nippon Oil and Energy	Japan	Cracker	404 Kton/year	Shutdown
Sinopec Shanghai Petrochemical	China	Cracker	150 Kton/year	Restart
PTT Global Chemical	Thailand	Cracker	515 Kton/year	Restart
Titan Chemicals	Malaysia	Cracker	Line No. 1: 260 Kton/year and Line No. 2: 407 Kton/year.	Restart

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The companies like, Maruzen Petrochemicals will be undergoing maintenance shutdown its Naphtha fed steam cracker with production capacity of 550,000 mt/year of Ethylene and 230,000 mt/year of Propylene at Chiba. Thailand based company Global Chemicals which had all of a sudden had shut its naphtha fed steam cracker. The Company had wished to start its naphtha fed steam cracker at its complex in Map Ta Phut by the end of the December after its shut down. Japanese firm, SunAllomer Ltd., located in Oita, will undertake maintenance of one of the lines of polypropylene (PP) in March 2012.

Outlook:

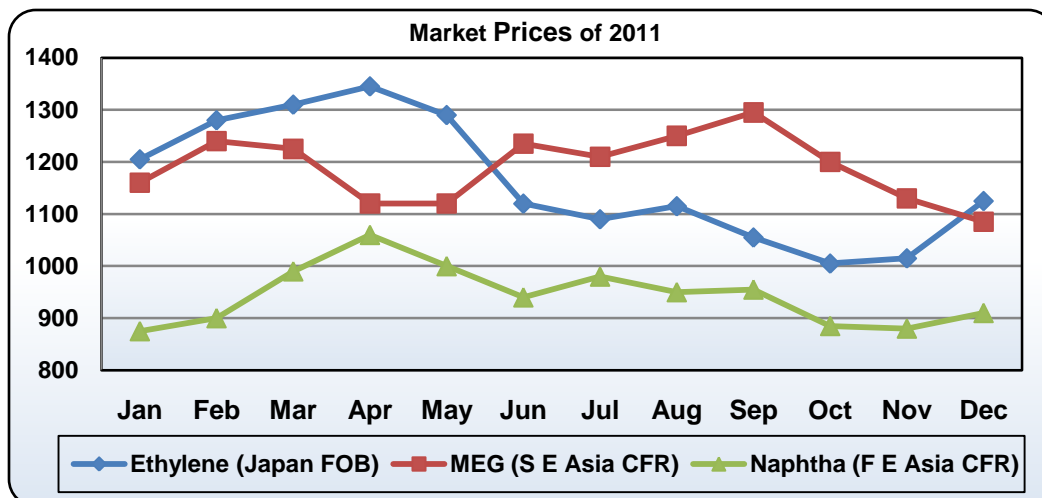
Market price trend from 2011: Ethylene margins over Naphtha had improved, as the prices of Naphtha showed optimistic cues from crude oil prices, but was not as strong as ethylene prices. In December 2011, the prices of Ethylene were up on sequential basis which had scheduled tight supplies in Asia, but yet the downstream industries of Ethylene were not much optimistic. Therefore, the demand for PE composite margins was clam as it was less indicating.

Market Prices of 2011

Year 2011	Naphtha (F E Asia CFR)	Ethylene (Japan FOB)	MEG (S E Asia CFR)
Jan	875	1205	1160
Feb	900	1280	1240
Mar	990	1310	1225
Apr	1060	1345	1120
May	1000	1290	1120
Jun	940	1120	1235
Jul	980	1090	1210
Aug	950	1115	1250
Sep	955	1055	1295
Oct	885	1005	1200
Nov	880	1015	1130
Dec	910	1125	1085

- Prices are in US\$/Ton

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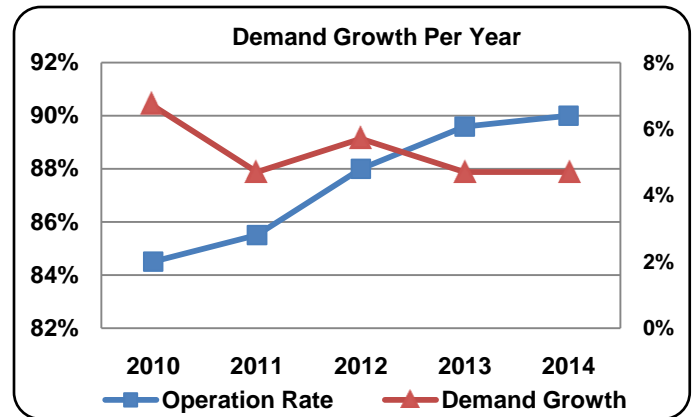
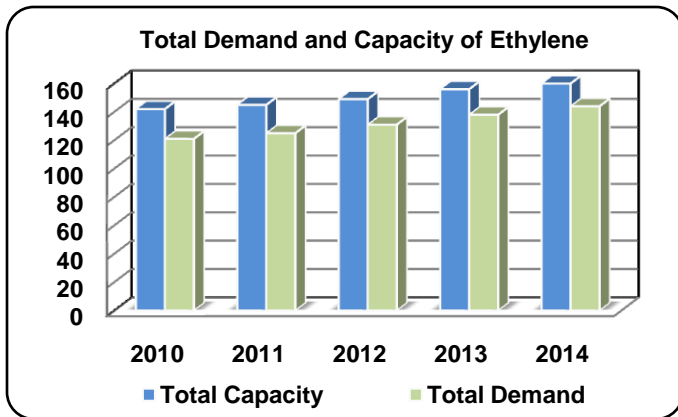


Forecast till 2012- 2014: This year 2012 is expected to have lot of maintenance turnaround, resulting with tight supplies in Ethylene market. According to Merchant Research & consulting, Ltd., Global Ethylene production is expected to reach 162 million tons due to new accommodation and schedule of new plants is likely to exceed the growth in demand. The prices of naphtha appear to be submissive as it takes an indication from the crude oil prices, while in the global economy the demand for downstream products remained stagnant. As a result, the current scenario of higher Ethylene margins and lower PE margins may continue in near future.

Total Demand and Capacity of Ethylene

Year	Total Capacity	Total Demand	Operation Rate	Demand Growth
2010	142	121	84.50%	7.00%
2011	145	125	85.50%	4.35%
2012	149	131	88.00%	5.00%
2013	156	138	89.59%	4.35%
2014	160	144	90.00%	4.35%

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Global Ethylene Production has an evaluation of global ethylene capacity from 2008 to 2014. According to market revenue, it is predicted that in near future the production capacity of ethylene is expected to surge up by 158 million ton in 2014 while in 2012 it is expected to increase by 162 million ton.

Global Ethylene Capacity

Year	Capacity (Million Ton)
2008	130
2009	133
2010	143
2011	148
2012E	162
2013E	155
2014E	158

In the year 2010, global ethylene production stood at 122 million ton, with an operating rate of 84.9 while in 2009 the operating rate of 84%. In the year 2011, there was no new start up for Cracker. It is estimated that in 2012 the global ethylene.

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