



**Key Takeaway:**

- A firm ethylene market has supported Asian petrochemical margins recently, despite rising naphtha costs. ESAI expects continued support for ethylene and propylene markets in the near-term, as a swathe of maintenance reduces regional supply. This trend will coincide with falling feedstocks costs, and support Asian petrochemical margins through May, after which the petrochemicals markets take a bearish turn.

**Table Of Contents:**

Petrochemical feedstocks forecasts . . . . . P.1  
 Ethylene & derivative market dynamics. . . . .P.2  
 Propylene & derivative market dynamics. . .P.2  
 Butadiene & derivative market dynamics. . .P.2  
 Olefins -naphtha spread forecasts. . . . . P.3  
 Benzene-naphtha spread forecast. . . . . P.3  
 ESAI Asia steam cracker margin forecast. . . P.3

**Petrochemical Feedstock Forecasts**

**NAPHTHA**

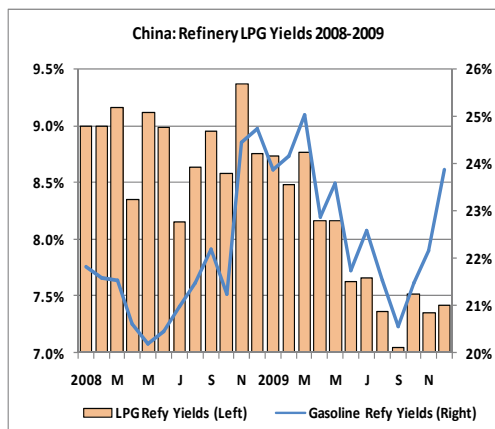
Naphtha (\$/t)	F-10	M-10	A-10	M-10	J-10	J-10	A-10
Japan C&F	\$695	\$660	\$650	\$650	\$700	\$750	\$810
Spread to Dubai (\$/bbl)	\$4.22	\$3.08	\$0.97	-\$1.08	\$0.38	\$2.13	\$2.00

- ESAI expects Asia's naphtha market to continue to be pulled by competing forces in coming months. On the one hand, a particularly heavy swathe of steam cracker turnarounds in Japan and Korea between February and June will be bearish for naphtha demand — ESAI expects demand in Japan to fall by roughly 65,000 b/d on average in these months, and by 40,000 b/d in S. Korea. On the other hand, however, the region will also see higher demand in China due to the startup of new ethylene capacity, chiefly Sinopec-SABIC's 1 mtpa cracker at Tianjin, Zhenhai Oil Refining's 1 mtpa cracker at Ningbo, and the expansions of the JV crackers of CNOOC-Shell (Huizhou) and BASF-YPC's cracker in Nanjing.
- These opposing trends will keep the Asian naphtha market volatile in coming months. Lower demand in Japan and South Korea will reduce Asia's naphtha deficit to roughly 690,000 b/d in Q2 2010, when ESAI forecasts naphtha-Dubai cracks to average \$1.20 per barrel. Beyond May, however, ESAI expects naphtha-Dubai cracks to strengthen again due to growing demand in China and as regional steam cracker maintenance ends, increasing the regional naphtha deficit to average 815,000 b/d between May-August.

**LPG**

LPG (\$/t)	F-10	M-10	A-10	M-10	J-10	J-10	A-10
Saudi Arabia (70%P:30%B)	\$735	\$726	\$670	\$593	\$600	\$650	\$705
Spread to Dubai (\$/bbl)	-\$9.64	-\$7.71	-\$13.49	-\$22.18	-\$25.68	-\$25.17	-\$27.22

- Spot butane costs in Asia remained strong at over 90 percent of prompt naphtha prices in January, reducing the incentive to substitute LPG as steam cracker feedstock. (Fig.6, p.3).
- ESAI expects LPG values to fall in coming months, as inventories in key demand centers South Korea and Japan remain sufficient to cover seasonal heating demand. Although China's stronger demand for LPG and recent increase in imports have supported LPG values in the region in recent months, this is primarily because China's refiners are responding to higher domestic gasoline demand by boosting refinery gasoline yields at the expense of LPG (See nearby chart). This could necessitate higher imports in coming months, although this situation should eventually ease both with the close of peak winter heating demand, and capacity-driven increases in refinery supply in the next six months.



**GASOIL**

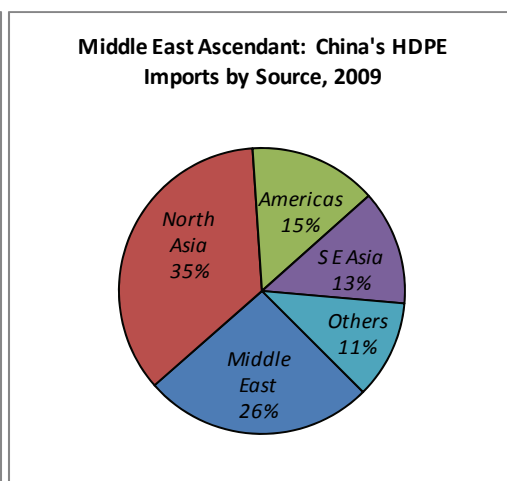
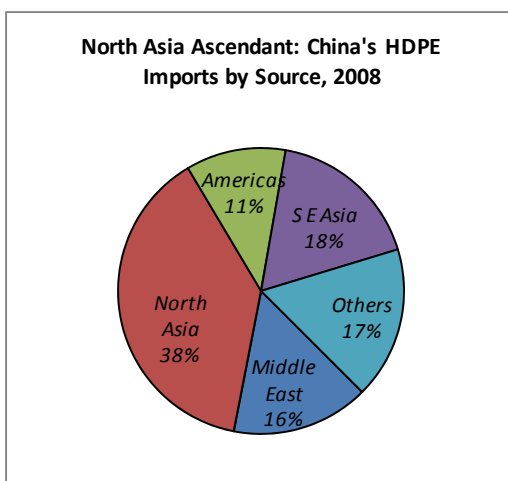
Gasoil (\$/t)	F-10	M-10	A-10	M-10	J-10	J-10	A-10
Singapore 0.5 S	\$614	\$585	\$594	\$609	\$640	\$662	\$712
Spread to Dubai (\$/bbl)	\$8.80	\$7.70	\$8.00	\$7.90	\$7.90	\$7.00	\$6.95

- Although the Asian gasoil market will remain oversupplied in the forecast period, a swathe of refinery turnarounds across the region should help trim the product overhang, and strengthen gasoil values early this year. ESAI forecasts Asian gasoil-Dubai cracks to average \$8 per barrel in the second quarter of 2010 before falling to the \$7 per barrel range towards the end of the forecast period.

## ETHYLENE AND DERIVATIVE MARKET DYNAMICS

- The ethylene-naphtha spread climbed to \$575 per ton in January, up \$165 per ton from December levels, underpinned by recovering regional demand, and relatively lower supply from the Middle East. South East Asian ethylene costs also soared over \$1400 per ton by February because of lower supply due to cracker shutdowns in Thailand.
- Going forward, regional ethylene prices will be pulled by competing forces. On the one hand, the region will see lower ethylene production as a particularly heavy schedule of cracker maintenance emerges. The bulk of the maintenance is being carried out in Japan, where ESAI expects shutdowns at Mitsubishi Chemical's Kashima plant and the crackers of Keiyo Ethylene, Tonen Chemical, Tosoh Corp., Osaka Petrochemical Industries, Sanyo Petrochemical and Showa Denko will lower regional supply by a total of 210,000 tons between February-April, and 170,000 tons between May-July.

- This strength, however will be restrained by weaker ethylene derivative markets after May, particularly as Middle Eastern crackers run at higher utilization rates and increase ethylene derivative exports to China and Asia as a whole. The nearby charts show how the Middle East has already begun to occupy a greater market share in China's HDPE imports, at the expense of north Asian exporters Japan, S. Korea and Taiwan. ESAI expects this trend to persist in coming months.



- Finally, with ethylene feedstock's gains, Asian polymer producers' profit margins remain under stress. The ethylene-HDPE spread fell to \$620 per metric ton by the second week of February (narrowing roughly \$100 per ton from a month before). Lower demand by these producers should put a ceiling on regional ethylene costs in the near term (forecast to stay range bound at \$890 in the second quarter of 2010), and this will coincide with rising supply from newer Middle East capacity in coming months. Overall, ESAI forecasts Asian ethylene-naphtha spreads to average \$230 per ton in the second quarter of 2010.

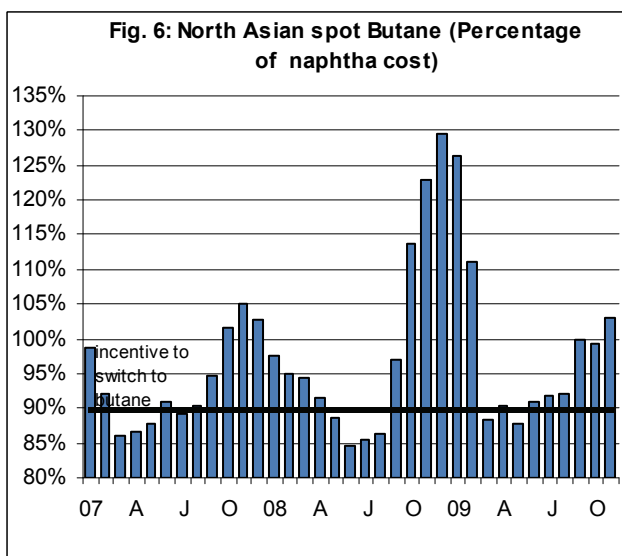
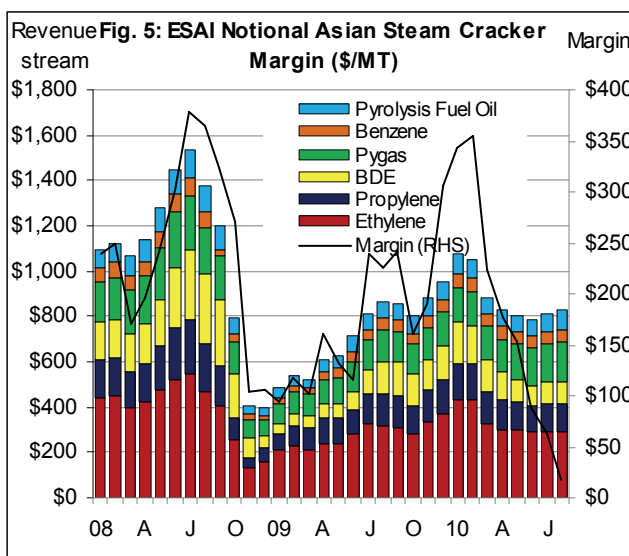
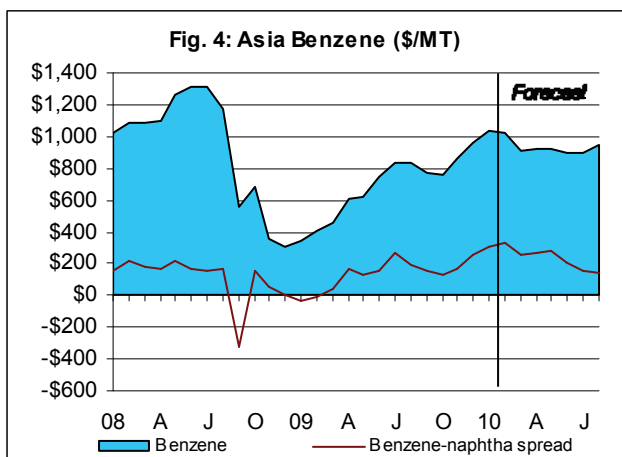
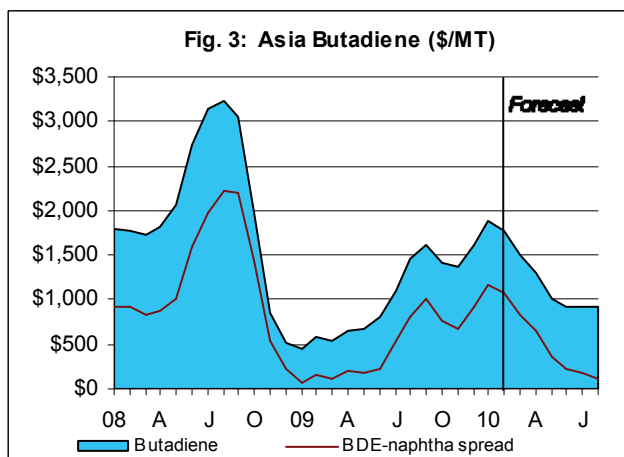
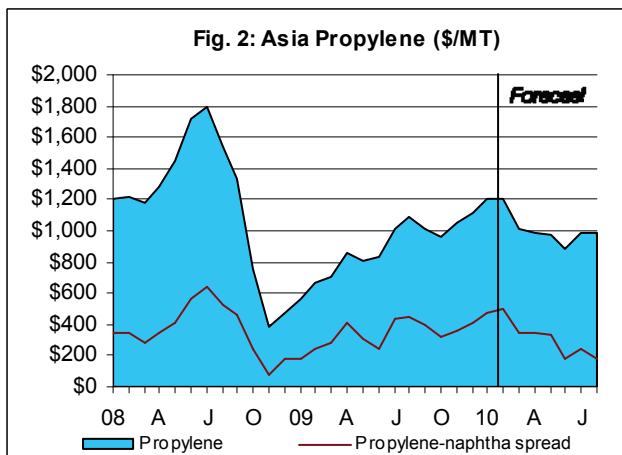
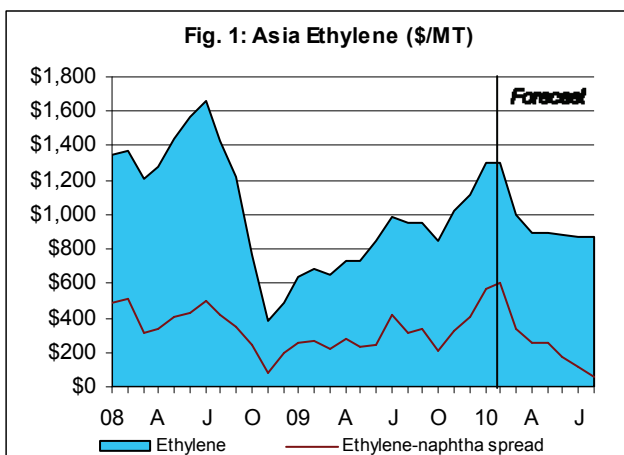
## PROPYLENE AND DERIVATIVE MARKET DYNAMICS

- Asian propylene-naphtha spreads averaged \$480 per ton in January, rising \$75 per ton from December levels. ESAI expects regional propylene values to continue to be supported in coming months, driven by steady demand and lower regional propylene supply in coming months.
- Regional steam cracker maintenance will also result in lower propylene production in coming months, particularly in Japan and South Korea. ESAI is currently forecasting a loss of roughly 153,000 tons of production between February-April, followed by the removal of at least 225,000 tons between May-June. While rising production in India and supply from the Middle East will still dampen prices going forward, ESAI does expect near-term support for propylene prices in Northeast Asia in coming months. Regional propylene-naphtha spreads should widen further in coming months as propylene derivative producers are build feedstock propylene inventories ahead of these shutdowns. Overall, Asian propylene-naphtha spreads are forecast to average \$285 per ton in the second quarter of 2010

## BUTADIENE AND DERIVATIVE MARKET DYNAMICS

- The butadiene-naphtha spread averaged \$1,058 per ton in January, rising \$248 per ton from December levels, and the spread remained over \$1,070 per ton by mid-February. This is in line with ESAI's belief that the BDE value chain is less prone to margins erosion in the downturn, and overall capacity growth in the ethylene and propylene chains. Despite the BDE chain's relative insularity, however, ESAI does expect BDE-naphtha margins to weaken in coming months as the start up of new capacity in China (Tianjin) limits its domestic import requirements in coming months. ESAI expects Asian BDE-naphtha spreads to average \$410 per ton in the second quarter of 2010.

# Petrochemical Margins



**Notes:**

1. Unless indicated otherwise, basis prices are Ethylene NEA, Propylene FOB Korea, BDE Taiwan, Benzene FOB Korea. 2. Naphtha prices are Japan C&F, Singapore gasoil 0.5 S, and LPG prices are based on Saudi contract prices in the ratio 70 % Propane, 30% Butane. 3. ESAI's notional steam cracker model is based on a generic plant in Asia based on naphtha feedstock. The model is not referenced to any individual operation, and the margin measure is purely indicative.