

## 1. News Summary (3 page)

2017년 9월 15일

News	
WTI comment	'수요 증가' 전망에 상승...WTI 1.2%↑
Headline	허리케인 하비 여진...LNG 값 7개월 고점 상승
News 1.	폴란드, 새 가스관...“러시아서 에너지 독립”
News 2.	롯데케미칼, 조 단위 첨단화학 시설 국내 신규투자 검토
News 3.	-
News 4.	-

Conclusion	
	하비 피해복구 진전되면 공급 정상화되며 가격 하락 압력 발생할 것
	전통의 러시아-유럽 PNG 루트에서 미국-유럽 LNG 루트로 변화중임
	화학제품 호황기 뒤에는 capex 투자가 뒤따르며 peakout 시작됨
	-
	-

## 2. Prices Summary (4~7 page)

Daily	Unit	Price	1D	1W	1M	3M	12M
<b>Refinery</b>			%	%	%	%	%
WTI	\$/bbl	49.9	1.2	1.6	5.9	12.2	13.6
Dubai	\$/bbl	53.6	1.3	1.1	10.1	18.1	27.4
Gasoline	\$/bbl	70.9	0.3	0.6	7.2	22.8	23.4
Diesel	\$/bbl	68.5	1.5	(0.4)	12.0	20.5	29.3
Complex margin	\$/bbl	9.9	0.1	(0.4)	1.1	2.5	2.6
1M lagging	\$/bbl	13.1	0.3	0.6	3.3	11.2	9.6
<b>Petrochemical</b>			%	%	%	%	%
Naphtha	\$/t	505	0.0	(0.8)	7.6	20.8	27.9
Butadiene	\$/t	1,470	0.0	8.1	39.9	69.9	27.8
HDPE	\$/t	1,190	0.0	(0.4)	7.2	9.2	4.4
MEG	\$/t	918	(1.1)	(5.7)	11.3	13.3	45.0
PX	\$/t	823	0.2	(0.3)	2.4	5.2	5.9
SM	\$/t	1,279	(4.6)	(7.5)	12.1	13.0	27.1
<b>Commodity</b>			%	%	%	%	%
Natural Gas	\$/mmbtu	3.07	0.4	3.0	3.5	(0.5)	(0.3)
Natural rubber	\$/t	1,650	(1.8)	(1.2)	8.6	15.4	26.0
Cotton	C/lbs	69.8	(0.3)	(7.0)	3.5	(3.0)	2.0

\*참고: 정제마진의 변동률은 %가 아닌 \$/bbl임

Weekly	Update	Unit	Price	1W	1M	3M	12M
<b>Petrochemical</b>				%	%	%	%
Ethylene	09/11	\$/t	1,225	2.9	8.9	43.3	12.9
Propylene	09/11	\$/t	870	8.7	12.3	20.0	10.1
Benzene	09/11	\$/t	823	0.6	6.5	7.9	23.7
Toluene	09/11	\$/t	685	3.8	4.6	5.4	7.5
Xylene	09/11	\$/t	635	0.0	0.0	1.6	4.1
PP	09/11	\$/t	1,148	1.8	4.6	9.5	14.2
PVC	09/11	\$/t	945	1.1	8.6	7.4	9.9
ABS	09/11	\$/t	2,030	1.0	9.7	23.8	45.5
SBR	09/11	\$/t	1,790	5.9	18.5	19.3	29.7
SM	09/11	\$/t	1,440	6.3	23.1	26.9	36.5
BPA	09/11	\$/t	1,888	(5.3)	18.9	32.2	26.0
Caustic	09/11	\$/t	477	1.3	1.0	9.0	49.1
2-EH	09/11	\$/t	990	0.0	3.1	5.3	26.9
Caprolactam	09/11	\$/t	1,720	(1.1)	(4.4)	7.5	22.0
<b>Solar</b>				%	%	%	%
Polysilicon	09/13	\$/kg	16.7	0.0	7.5	19.4	23.3
Module	09/13	\$/W	0.32	(0.3)	(0.3)	(3.3)	(21.7)

## 3. Global Peers Summary (8~9 page)

	Unit	Price	1D	1W	1M	3M	12M
<b>E&amp;P</b>			%	%	%	%	%
ExxonMobil	USD	80.1	0.4	1.3	2.4	(2.4)	(5.3)
Shell	EUR	2,144	(0.4)	(0.6)	0.4	2.0	18.1
Petrochina	CNY	8.03	0.0	(0.7)	1.0	4.8	10.3
Gazprom	RUB	123.3	(0.2)	4.6	5.1	6.9	(11.5)
Petrobras	BRL	15.0	0.1	0.1	15.0	19.2	14.7
<b>Refinery</b>							
Phillips66	USD	86.2	(0.1)	2.6	2.8	9.5	12.0
Valero	USD	69.9	(1.5)	1.6	4.7	8.0	28.2
JX	JPY	550.0	1.3	2.4	6.2	10.6	39.5
Neste Oil	EUR	36.1	(1.3)	(0.6)	2.6	3.5	(0.8)

	Unit	Price	1D	1W	1M	3M	12M
<b>Petrochemical</b>			%	%	%	%	%
BASF	EUR	86.0	(0.1)	2.5	6.0	(0.3)	20.9
DowDuPont	USD	70.0	0.7	8.3	10.4	8.5	33.7
SABIC	SAR	101.3	0.4	1.7	3.4	2.1	20.2
Formosa Pla.	TWD	94.6	(0.4)	(1.3)	2.5	4.6	24.6
Shin-Etsu	JPY	10,035	(0.8)	4.2	4.0	0.8	43.4
<b>Renewable</b>							
Wacker	EUR	112.3	(0.5)	0.0	9.1	19.2	48.6
First Solar	USD	48.43	3.4	2.1	(0.9)	33.8	38.3
GCL-Poly	HKD	1.03	14.4	18.4	18.4	39.2	(8.0)
Tesla Motors	USD	377.6	3.1	7.7	3.8	(0.8)	92.3

## 4. Coverage Summary

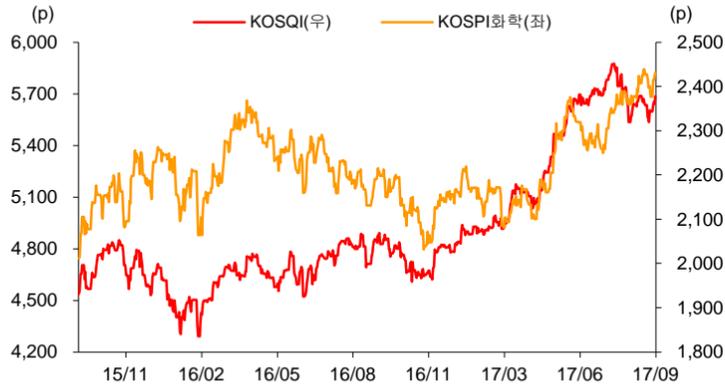
	09/14	1D	1W	1M	3M	6M	12M
KOSPI	2,378	0.7	1.3	1.9	0.7	11.5	18.9
KOSPI화학	5,824	0.5	1.4	2.4	7.3	16.3	15.3
LG화학	407,000	(0.1)	10.0	18.5	46.4	47.5	71.4
롯데케미칼	408,500	(1.3)	0.6	4.9	22.5	12.1	48.3
한화케미칼	37,050	(1.3)	3.8	4.4	28.2	53.7	58.0
금호석유화학	78,700	(2.7)	0.0	7.2	4.5	4.4	21.8
KCC	373,500	0.7	(1.7)	(6.2)	(5.9)	6.4	(4.4)
OCI	107,000	5.4	3.9	17.1	18.2	29.9	32.9
SKC	41,550	1.0	9.1	10.1	23.1	37.8	57.4
국도화학	51,000	(0.2)	(1.0)	(7.4)	(4.7)	5.9	(10.1)
SK이노베이션	196,000	1.0	4.8	12.6	23.3	21.7	29.4
S-Oil	121,000	(0.8)	(1.2)	3.4	26.2	29.1	62.4
GS	66,000	(1.5)	0.0	(6.5)	(1.2)	20.4	28.2
SK가스	105,500	1.0	(2.8)	(6.2)	(16.9)	(4.1)	4.5
포스코대우	20,750	(0.5)	(1.0)	(6.3)	(8.6)	(11.5)	(7.0)
LG상사	28,700	0.3	1.2	(0.2)	(8.5)	(4.5)	(18.1)
한국전력	41,050	0.5	(1.7)	(5.6)	(5.4)	(5.0)	(29.1)
한국가스공사	43,100	0.0	(2.4)	(10.1)	(15.2)	(8.0)	0.1

투자의견	TP	%	P/E	P/B
			* 추정치는 12M fwd 기준임	
			* 모든 coverage 업체의 실적은 연결기준임	
매수	330,000	(18.9)	16.20	2.18
매수	410,000	0.4	8.44	1.49
매수	33,000	(10.9)	8.84	1.10
매수	100,000	27.1	14.96	1.50
매수	450,000	20.5	21.24	0.60
매수	100,000	(6.5)	21.65	0.83
매수	40,000	(3.7)	15.66	1.11
매수	70,000	37.3	8.56	0.62
매수	180,000	(8.2)	8.81	1.07
매수	100,000	(17.4)	16.25	2.36
매수	80,000	21.2	5.49	0.97
매수	150,000	42.2	6.40	0.76
매수	27,000	30.1	7.21	0.86
매수	42,000	46.3	8.87	0.93
매수	60,000	46.2	7.09	0.32
매수	60,000	39.2	7.32	0.51

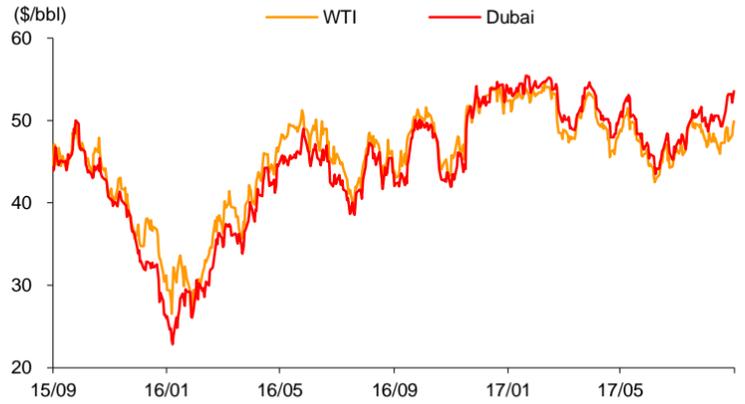
· 작성자(손지우)는 본 조사분석자료에 게재된 내용들이 본인의 의견을 정확하게 반영하고 있으며, 외부의 부당한 압력이나 간섭없이 신의성실하게 작성되었음을 확인합니다.  
· 본 보고서에 언급된 종목의 경우 당사 조사분석담당자는 본인의 담당종목을 보유하고 있지 않습니다.  
· 본 보고서는 기관투자자 또는 제 3자에게 사전 제공된 사실이 없습니다.  
· 당사는 본 보고서의 발간시점에 해당종목을 1% 이상 보유하고 있지 않습니다.

## Key Chart

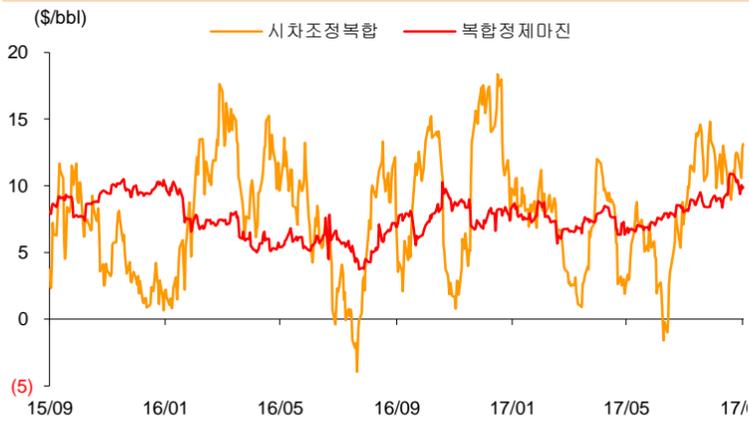
**KOSPI/KOSPI화학**



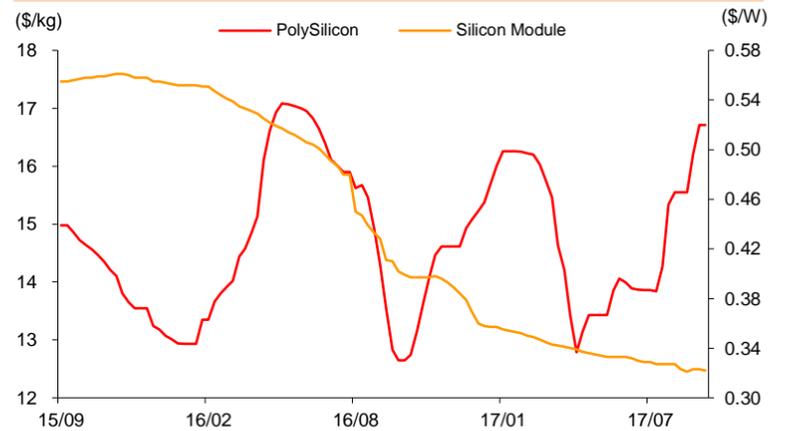
**WTI/Dubai**



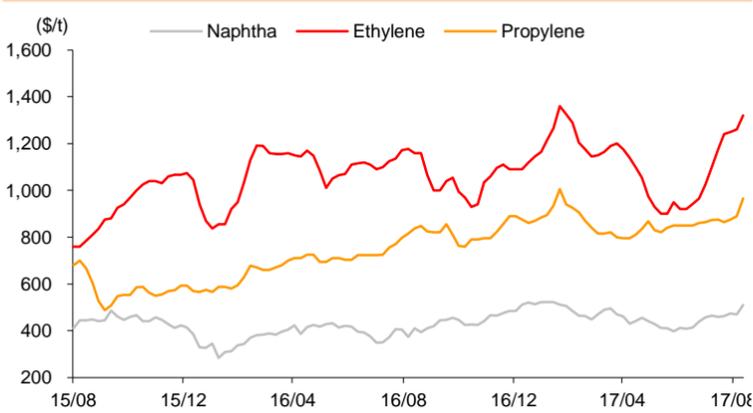
**Complex & 1M lagging margin**



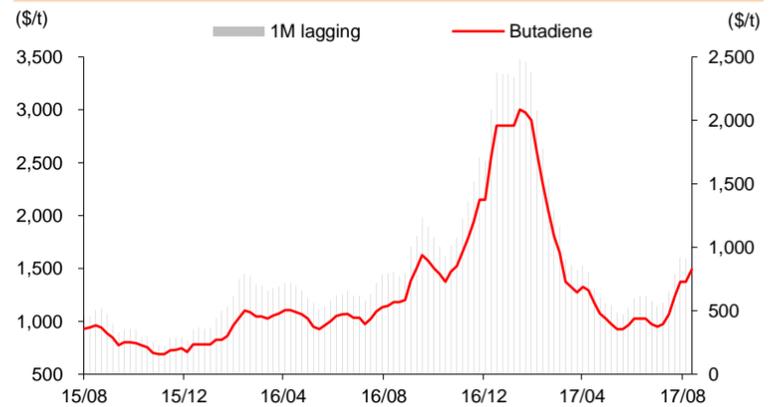
**Polysilicon & Module prices**



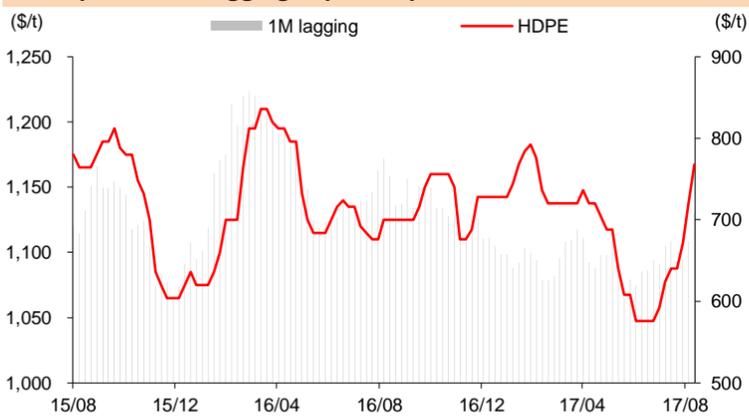
**Naphtha/Ethylene/Propylene prices**



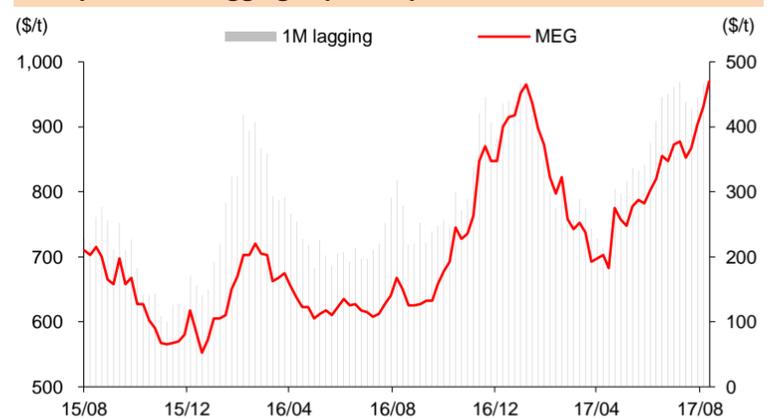
**Butadiene price & 1M lagging naphtha spread**



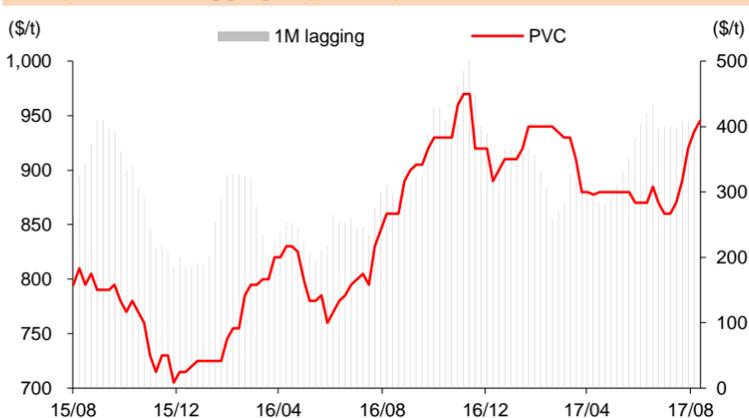
**HDPE price & 1M lagging naphtha spread**



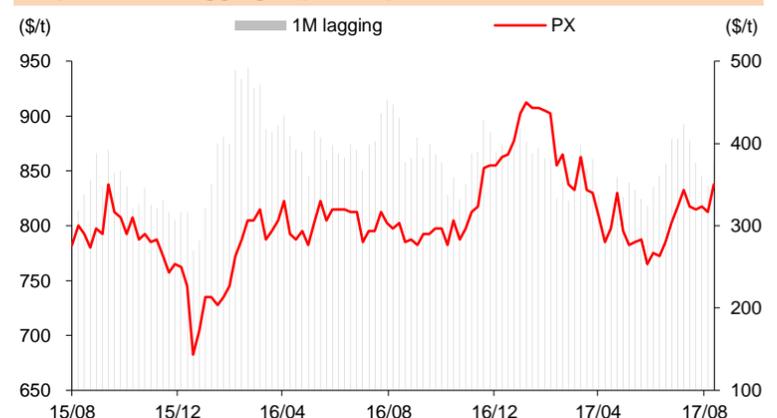
**MEG price & 1M lagging naphtha spread**



**PVC price & 1M lagging naphtha spread**



**PX price & 1M lagging naphtha spread**



자료: Bloomberg, Ciscem, Petronet, Platts, Pviewsights, SK증권  
참고: 상기 데이터는 일괄적으로 과거 2년치 적용

## News Comment

### Headline (출처: 머니투데이)

**제목** 허리케인 하비 여진...亞 LNG 값 7개월 고점 상승  
**결론** 하비 피해복구 진전되면 공급 정상화되며 가격 하락 압력 발생할 것  
**세부**

- 1) 파이낸셜타임스, "13일 이후 동아시아 LNG 현물 가격은 6.55\$/mmbtu"
- 2) 하비로 대아시아 LNG 수출량이 줄면서 LNG 가격이 오름
- 3) 올 초 계절 영향으로 가격 오르다 미국과 호주의 공급 증가로 하락해 옴
- 4) 중국 8월 천연가스 수입량은 YoY 26% 증가해 중국 수요가 변수일 것
- 5) 하비 피해복구 진전되면 공급 정상화되며 가격 하락 압력 발생할 것

### Issue 1 (출처: 경향신문)

**제목** 폴란드, 새 가스관...“러시아서 에너지 독립”  
**결론** 전통의 러시아-유럽 PNG 루트에서 미국-유럽 LNG 루트로 변화중임  
**세부**

- 1) 폴란드 가스시스템이 비에르츠호비체와 체소프를 잇는 가스관을 개통
- 2) 러시아산 천연가스 의존도를 줄이고 에너지 독립을 이루겠다는 야심
- 3) 2015년부터 카타르산 LNG에 이어 지난 6월에 미국산 LNG까지 수입
- 4) 2014년부터 LNG터미널 가동한 리투아니아도 지난달 미국산 LNG 선적
- 5) 전통의 러시아-유럽 PNG 루트에서 미국-유럽 LNG 루트로 변화중임

### Issue 3

**제목**  
**결론**  
**세부**

- 1)
- 2)
- 3)
- 4)
- 5)

### Issue 5

**제목**  
**결론**  
**세부**

- 1)
- 2)
- 3)
- 4)
- 5)

### WTI Comment (출처: 연합뉴스)

**제목** '수요 증가' 전망에 상승...WTI 1.2%↑  
**상승** IEA, "올해 글로벌 원유수요 전망치를 160만b/d로 상향함"  
**요인**

**하락**  
**요인**

### Issue 2 (출처: 머니투데이)

**제목** 롯데케미칼, 조 단위 첨단화학 시설 국내 신규투자 검토  
**결론** 화학제품 호황기 뒤에는 capex 투자가 뒤따르며 peakout 시작됨  
**세부**

- 1) 허수영 롯데그룹 화학BU장, "새로운 크래커 건설을 생각해볼 수 있다"
- 2) 관계자, "국내에서는 납사 수급이 쉬워 NCC일 가능성이 있음"
- 3) 롯데케미칼은 이미 대산 지역에 110만톤/년 규모 NCC 가동 중임
- 4) 또한 이미 국내외에 4.8조원을 투자해 capex를 올려놓은 상황임
- 5) 화학제품 호황기 뒤에는 capex 투자가 뒤따르며 peakout 시작됨

### Issue 4

**제목**  
**결론**  
**세부**

- 1)
- 2)
- 3)
- 4)
- 5)

### Issue 6

**제목**  
**결론**  
**세부**

- 1)
- 2)
- 3)
- 4)
- 5)

## Commodity Price Data

Daily Price		Today	1D	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.	
F/X	USD/EUR	0.839	0.841	0.832	0.849	0.891	0.943	0.889	0.951	0.901	0.904	0.903	
	Change, %		(0.3)	0.9	(1.2)	(5.9)	(11.0)	(5.6)	(11.7)	(6.9)	(7.2)	(7.1)	
	USD/JPY	110.2	110.5	108.5	109.6	109.6	114.8	102.4	117.0	121.1	108.8	111.9	
	Change, %		(0.2)	1.7	0.6	0.6	(3.9)	7.6	(5.7)	(8.9)	1.4	(1.5)	
	USD/KRW	1,132.6	1,128.4	1,129.6	1,139.8	1,123.9	1,148.8	1,125.6	1,205.8	1,131.2	1,160.5	1,139.2	
	Change, %		0.4	0.3	(0.6)	0.8	(1.4)	0.6	(6.1)	0.1	(2.4)	(0.6)	
	Agriculture	Corn	341.8	338.5	341.8	362.8	377.0	353.8	322.3	352.0	376.8	358.5	364.4
		Change, %		1.0	0.0	(5.8)	(9.4)	(3.4)	6.1	(2.9)	(9.3)	(4.7)	(6.2)
Soybean		967.3	953.0	963.3	925.5	931.8	987.3	972.0	996.5	945.4	987.5	975.7	
Change, %			1.5	0.4	4.5	3.8	(2.0)	(0.5)	(2.9)	2.3	(2.1)	(0.9)	
	Wheat	428.3	420.8	413.5	441.0	443.0	412.0	376.8	408.0	508.1	436.4	439.6	
	Change, %		1.8	3.6	(2.9)	(3.3)	3.9	13.7	5.0	(15.7)	(1.9)	(2.6)	
	Rice	12.5	12.6	12.4	12.3	11.0	9.6	9.6	9.4	11.1	10.3	10.7	
	Change, %		(0.9)	0.8	1.5	13.6	31.2	30.7	33.9	13.3	21.1	17.2	
	Oats	242.8	239.0	235.0	261.5	255.5	253.0	166.5	228.5	250.2	196.3	252.0	
	Change, %		1.6	3.3	(7.2)	(5.0)	(4.1)	45.8	6.2	(3.0)	23.7	(3.7)	
	MYR/mt	Palm Oil	2,885.0	2,892.0	2,768.0	2,668.0	2,675.0	2,985.0	2,833.0	3,218.0	2,190.3	2,653.8	2,852.8
		Change, %		(0.2)	4.2	8.1	7.9	(3.4)	1.8	(10.3)	31.7	8.7	1.1
Cocoa		2,021.0	2,038.0	1,945.0	1,923.0	2,040.0	2,091.0	2,849.0	2,126.0	3,091.6	2,854.0	1,994.2	
Change, %			(0.8)	3.9	5.1	(0.9)	(3.3)	(29.1)	(4.9)	(34.6)	(29.2)	1.3	
	Cotton	69.8	70.0	75.0	68.5	73.5	77.2	68.1	70.7	63.3	65.6	74.5	
	Change, %		(0.3)	(7.0)	1.9	(5.1)	(9.6)	2.5	(1.2)	10.3	6.4	(6.3)	
	Sugar	14.3	14.3	14.0	13.5	13.6	18.2	20.1	19.5	13.1	18.2	16.4	
	Change, %		(0.4)	1.7	5.7	4.8	(21.4)	(29.1)	(26.9)	8.6	(21.4)	(12.9)	
	Coffee	135.9	136.6	127.9	137.0	125.6	139.6	147.8	137.1	132.6	136.1	135.9	
	Change, %		(0.5)	6.2	(0.8)	8.2	(2.7)	(8.1)	(0.9)	2.4	(0.2)	(0.0)	
	Energy	WTI	49.9	49.3	49.1	47.6	44.7	47.7	43.6	53.7	48.8	43.4	49.4
		Change, %		1.2	1.6	4.8	11.5	4.5	14.5	(7.1)	2.1	15.0	1.1
Brent		55.3	55.2	54.5	50.7	47.0	50.9	45.9	56.8	53.7	45.1	52.3	
Change, %			0.2	1.4	9.0	17.6	8.6	20.6	(2.7)	3.0	22.6	5.6	
	Natural Gas	3.1	3.1	3.0	3.0	2.9	2.9	2.9	3.7	2.6	2.6	3.1	
	Change, %		0.4	3.0	3.8	4.7	4.5	6.3	(17.6)	16.8	20.3	0.2	
	Ethanol	1.5	1.6	1.5	1.6	1.5	1.5	1.5	1.6	1.5	1.5	1.5	
	Change, %		(1.2)	1.2	(2.2)	(0.3)	1.7	2.7	(3.8)	2.3	2.0	0.5	
	RBOB Gasoline	162.9	164.7	166.1	157.7	143.3	158.4	136.2	166.5	163.6	140.0	159.6	
	Change, %		(1.1)	(1.9)	3.3	13.7	2.9	19.6	(2.2)	(0.4)	16.4	2.1	
	Coal	100.0	100.3	97.7	95.5	80.5	80.9	70.2	88.4	59.0	65.5	84.2	
	Change, %		(0.3)	2.4	4.8	24.2	23.6	42.6	13.1	69.6	52.8	18.7	
Metal	Gold	1,329.7	1,323.2	1,349.3	1,282.1	1,260.8	1,199.0	1,322.9	1,152.3	1,160.6	1,248.5	1,249.6	
	Change, %		0.5	(1.5)	3.7	5.5	10.9	0.5	15.4	14.6	6.5	6.4	
	Silver	17.8	17.8	18.1	17.1	16.9	16.9	19.0	15.9	15.7	17.1	17.2	
	Change, %		0.1	(1.8)	4.2	5.3	5.5	(6.2)	11.8	13.2	4.0	3.5	
	Copper	6,498.0	6,555.0	6,898.5	6,397.0	5,699.0	5,820.0	4,771.5	5,535.5	5,503.1	4,872.0	5,945.8	
	Change, %		(0.9)	(5.8)	1.6	14.0	11.6	36.2	17.4	18.1	33.4	9.3	
	Nickel	717.3	730.9	778.7	667.4	569.4	672.8	659.0	682.0	759.5	646.4	653.4	
	Change, %		(1.9)	(7.9)	7.5	26.0	6.6	8.8	5.2	(5.6)	11.0	9.8	
	Zinc	3,006.0	3,023.5	3,129.0	2,917.0	2,494.0	2,749.5	2,274.0	2,576.0	1,941.9	2,097.5	2,764.8	
	Change, %		(0.6)	(3.9)	3.1	20.5	9.3	32.2	16.7	54.8	43.3	8.7	
	Lead	2,278.8	2,260.5	2,314.0	2,316.0	2,059.3	2,218.0	1,954.8	2,003.5	1,791.2	1,868.3	2,245.4	
	Change, %		0.8	(1.5)	(1.6)	10.7	2.7	16.6	13.7	27.2	22.0	1.5	
	Aluminum	16,340.0	16,450.0	16,130.0	15,730.0	13,580.0	13,685.0	12,565.0	12,765.0	12,184.0	12,373.5	14,174.2	
	Change, %		(0.7)	1.3	3.9	20.3	19.4	30.0	28.0	34.1	32.1	15.3	
	Cobalt	60,650.0	60,650.0	60,850.0	56,770.0	56,600.0	53,000.0	26,750.0	32,734.0	28,444.4	25,480.1	52,466.2	
	Change, %		0.0	(0.3)	6.8	7.2	14.4	126.7	85.3	113.2	138.0	15.6	
	HR Coil	625.0	627.0	638.0	621.0	590.0	625.0	550.0	633.0	461.5	519.3	621.6	
	Change, %		(0.3)	(2.0)	0.6	5.9	0.0	13.6	(1.3)	35.4	20.4	0.6	
	Scrap	373.0	373.0	380.0	360.0	350.0	335.0	240.0	302.0	252.9	275.7	345.3	
	Change, %		0.0	(1.8)	3.6	6.6	11.3	55.4	23.5	47.5	35.3	8.0	

자료: Bloomberg

참고) NYMEX, ICE, LME 중 대표지수를 사용

## Refining Price Data

Daily Price		09/14	1D	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
Crude Oil	<b>WTI</b>	49.9	49.3	49.1	47.1	44.5	48.8	43.9	53.7	48.8	43.4	49.3
	<i>Change, %</i>		1.2	1.6	5.9	12.2	2.3	13.6	(7.1)	2.3	15.1	1.2
	<b>Dubai</b>	53.6	52.9	53.0	48.7	45.4	50.6	42.0	53.8	50.8	41.3	50.8
	<i>Change, %</i>		1.3	1.1	10.1	18.1	5.8	27.4	(0.5)	5.5	29.7	5.4
Crude Oil Product	<b>Gasoline(휘발유)</b>	70.9	70.7	70.5	66.2	57.7	63.1	57.5	69.8	69.5	56.3	65.8
	<i>Change, %</i>		0.3	0.6	7.2	22.8	12.3	23.4	1.5	2.0	26.0	7.7
	<b>Kerosene(등유)</b>	67.6	66.5	67.7	61.0	56.4	61.1	53.0	66.4	64.7	52.9	62.4
	<i>Change, %</i>		1.7	(0.1)	10.8	19.8	10.7	27.5	1.8	4.4	27.8	8.4
	<b>Diesel(경유)</b>	68.5	67.5	68.8	61.2	56.8	62.3	53.0	65.5	64.8	52.1	63.0
	<i>Change, %</i>		1.5	(0.4)	12.0	20.5	9.9	29.3	4.6	5.8	31.4	8.7
	<b>Bunker-C</b>	51.4	50.1	50.5	45.9	44.5	46.0	37.8	52.1	45.3	35.5	47.6
	<i>Change, %</i>		2.7	1.9	12.0	15.4	11.8	35.9	(1.2)	13.6	44.7	8.0
	<b>Naphtha</b>	54.2	54.2	54.3	48.7	44.2	50.5	40.6	53.5	52.6	42.6	50.5
	<i>Change, %</i>		(0.0)	(0.2)	11.3	22.6	7.4	33.4	1.3	3.0	27.2	7.2
Dubai Spread	<b>Gasoline(휘발유)</b>	17.3	17.8	17.5	17.5	12.4	12.5	15.4	16.0	18.7	14.9	15.0
	<i>Change</i>		(0.5)	(0.2)	(0.2)	5.0	4.8	1.9	1.3	(1.4)	2.4	2.3
	<b>Kerosene(등유)</b>	14.0	13.6	14.7	12.4	11.1	10.5	11.0	12.6	14.0	11.6	11.6
	<i>Change</i>		0.4	(0.6)	1.7	3.0	3.6	3.1	1.4	0.1	2.5	2.4
	<b>Diesel(경유)</b>	14.9	14.6	15.8	12.5	11.5	11.7	11.0	11.7	14.0	10.8	12.2
	<i>Change</i>		0.3	(0.9)	2.4	3.5	3.3	4.0	3.2	0.9	4.1	2.7
Dubai Spread	<b>Bunker-C</b>	(2.2)	(2.8)	(2.5)	(2.7)	(0.8)	(4.7)	(4.2)	(1.8)	(5.5)	(5.8)	(3.2)
	<i>Change</i>		0.6	0.4	0.6	(1.3)	2.5	2.1	(0.4)	3.4	3.6	1.0
	<b>Naphtha</b>	0.6	1.3	1.3	0.0	(1.2)	(0.2)	(1.4)	(0.4)	1.8	1.3	(0.3)
	<i>Change</i>		(0.7)	(0.7)	0.6	1.8	0.8	2.0	1.0	(1.2)	(0.7)	0.9
Refining Margin	<b>Simple(단순)</b>	4.8	4.5	5.0	3.9	3.8	1.9	2.5	3.8	3.3	1.9	3.1
	<i>Change</i>		0.3	(0.2)	0.9	1.0	2.9	2.3	1.0	1.5	2.9	1.6
	<b>Complex(복합)</b>	9.9	9.8	10.3	8.8	7.4	6.6	7.3	8.3	9.3	7.0	7.9
	<i>Change</i>		0.1	(0.4)	1.1	2.5	3.3	2.6	1.6	0.6	2.9	2.0
Refining Margin	<b>Complex(lagging)</b>	13.1	12.8	12.5	9.8	1.9	2.5	3.6	18.0	7.3	8.5	7.8
	<i>Change</i>		0.3	0.6	3.3	11.2	10.6	9.6	(4.9)	5.9	4.6	5.4

자료 : Petronet, SK증권

참고 1) Crude Oil 가격은 현물(spot) 기준으로 선물(future) 가격과 다를 수 있음

참고 2) Gasoline은 95RON, 경유는 L/P 0.5%, Bunker-C는 380cst/4.0% 기준임

## Petrochemical Price Data

Daily Price			09/14	09/13	09/12	09/11	09/08	09/07	09/06	09/05	09/04	09/01
Spot Price	<b>Naphtha</b>	CFR Japan	504.5	504.5	501.0	500.8	511.5	508.8	501.0	487.0	487.3	473.3
	<b>Ethylene</b>	CFR SE Asia	1,200.0	1,200.0	1,200.0	1,200.0	1,185.0	1,175.0	1,165.0	1,165.0	1,165.0	1,155.0
	<b>Propylene</b>	FOB Korea	945.0	940.0	945.0	945.0	950.0	900.0	900.0	881.0	872.0	870.0
	<b>Butadiene</b>	FOB Korea	1,470.0	1,470.0	1,470.0	1,470.0	1,470.0	1,360.0	1,360.0	1,360.0	1,360.0	1,360.0
	<b>HDPE</b>	CFR FE Asia	1,190.0	1,190.0	1,190.0	1,190.0	1,195.0	1,195.0	1,190.0	1,180.0	1,175.0	1,170.0
	<b>LDPE</b>	CFR FE Asia	1,240.0	1,240.0	1,240.0	1,240.0	1,245.0	1,245.0	1,240.0	1,230.0	1,210.0	1,205.0
	<b>LLDPE</b>	CFR FE Asia	1,200.0	1,200.0	1,200.0	1,205.0	1,210.0	1,210.0	1,210.0	1,180.0	1,170.0	1,160.0
	<b>MEG</b>	CFR China	918.0	928.0	949.0	939.0	965.0	973.0	959.0	960.0	952.0	927.0
	<b>PP</b>	CFR FE Asia	1,130.0	1,135.0	1,135.0	1,125.0	1,130.0	1,130.0	1,140.0	1,140.0	1,140.0	1,110.0
	<b>PX</b>	CFR China	823.3	821.7	828.0	828.7	830.3	826.0	824.5	825.5	826.0	811.7
	<b>PTA</b>	CFR China	648.0	648.0	655.0	650.0	650.0	650.0	652.0	653.0	650.0	635.0
	<b>Benzene</b>	FOB Korea	774.0	778.0	783.0	794.0	801.0	804.0	810.0	824.0	830.0	805.0
	<b>Toluene</b>	FOB Korea	656.0	663.0	665.0	665.0	661.0	656.0	655.0	648.0	656.0	633.5
	<b>Xylene</b>	FOB Korea	665.5	663.0	663.0	671.0	674.5	664.5	669.0	662.0	669.0	658.0
	<b>SM</b>	FOB Korea	1,279.0	1,341.0	1,346.0	1,374.0	1,389.0	1,383.0	1,389.0	1,422.0	1,438.0	1,354.5

Weekly Price			Last Week	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
Spot Price	<b>Naphtha</b>	CFR Japan	510.0	470.0	459.0	411.5	441.5	410.0	484.5	493.0	399.5	466.1
	<i>Change, %</i>			8.5	11.1	23.9	15.5	24.4	5.3	3.4	27.7	9.4
	<b>Ethylene</b>	CFR SE Asia	1,225.0	1,190.0	1,125.0	855.0	1,045.0	1,085.0	990.0	1,103.7	1,040.9	1,040.3
	<i>Change, %</i>			2.9	8.9	43.3	17.2	12.9	23.7	11.0	17.7	17.8
	<b>Propylene</b>	CFR SE Asia	870.0	800.0	775.0	725.0	747.5	790.0	815.0	770.0	705.7	865.0
	<i>Change, %</i>			8.7	12.3	20.0	16.4	10.1	6.7	13.0	23.3	0.6
	<b>Butadiene</b>	CFR SE Asia	1,450.0	1,325.0	1,015.0	875.0	1,125.0	1,140.0	2,100.0	877.5	1,116.8	1,613.5
	<i>Change, %</i>			9.4	42.9	65.7	28.9	27.2	(31.0)	65.2	29.8	(10.1)
	<b>Benzene</b>	CFR SE Asia	822.5	817.5	772.5	762.5	732.5	665.0	822.5	690.0	646.7	837.0
	<i>Change, %</i>			0.6	6.5	7.9	12.3	23.7	0.0	19.2	27.2	(1.7)
	<b>Toluene</b>	CFR SE Asia	685.0	660.0	655.0	650.0	655.0	637.5	690.0	700.8	630.5	681.2
	<i>Change, %</i>			3.8	4.6	5.4	4.6	7.5	(0.7)	(2.3)	8.6	0.6
	<b>Xylene</b>	CFR SE Asia	635.0	635.0	635.0	625.0	630.0	610.0	675.0	699.3	627.7	665.7
	<i>Change, %</i>			0.0	0.0	1.6	0.8	4.1	(5.9)	(9.2)	1.2	(4.6)

Spread	<b>Ethylene</b>	-Naphtha	715.0	720.0	666.0	443.5	603.5	675.0	505.5	610.6	641.4	574.3
	<i>Change, %</i>			(0.7)	7.4	61.2	18.5	5.9	41.4	17.1	11.5	24.5
	<b>Propylene</b>	-Naphtha	360.0	330.0	316.0	313.5	306.0	380.0	330.5	277.0	306.2	398.9
	<i>Change, %</i>			9.1	13.9	14.8	17.6	(5.3)	8.9	30.0	17.6	(9.8)
	<b>Butadiene</b>	-Naphtha	940.0	855.0	556.0	463.5	683.5	730.0	1,615.5	384.5	717.3	1,147.5
	<i>Change, %</i>			9.9	69.1	102.8	37.5	28.8	(41.8)	144.5	31.0	(18.1)
	<b>Benzene</b>	-Naphtha	312.5	347.5	313.5	351.0	291.0	255.0	338.0	197.0	247.2	371.0
	<i>Change, %</i>			(10.1)	(0.3)	(11.0)	7.4	22.5	(7.5)	58.6	26.4	(15.8)
	<b>Toluene</b>	-Naphtha	175.0	190.0	196.0	238.5	213.5	227.5	205.5	207.8	231.0	215.2
	<i>Change, %</i>			(7.9)	(10.7)	(26.6)	(18.0)	(23.1)	(14.8)	(15.8)	(24.2)	(18.7)
	<b>Xylene</b>	-Naphtha	125.0	165.0	176.0	213.5	188.5	200.0	190.5	206.3	228.2	199.7
	<i>Change, %</i>			(24.2)	(29.0)	(41.5)	(33.7)	(37.5)	(34.4)	(39.4)	(45.2)	(37.4)

자료 : Cischem, Platts, Bloomberg, SK증권

참고 : Spread는 Polymer와 Naphtha의 가격차이임

Weekly Price		Last Week	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.	
Spot Price	HDPE	CFR SE Asia	1,167.5	1,137.5	1,087.5	1,087.5	1,137.5	1,125.0	1,142.5	1,230.1	1,134.6	1,120.5
	Change, %			2.6	7.4	7.4	2.6	3.8	2.2	(5.1)	2.9	4.2
	MEG	CFR SE Asia	970.0	930.0	852.5	777.5	682.5	650.0	847.5	780.8	660.8	828.0
	Change, %			4.3	13.8	24.8	42.1	49.2	14.5	24.2	46.8	17.1
	PVC	CFR SE Asia	945.0	935.0	870.0	880.0	880.0	860.0	920.0	820.8	823.4	900.7
	Change, %			1.1	8.6	7.4	7.4	9.9	2.7	15.1	14.8	4.9
	PP	CFR SE Asia	1,147.5	1,127.5	1,097.5	1,047.5	1,037.5	1,005.0	1,032.5	1,109.8	978.4	1,074.4
	Change, %			1.8	4.6	9.5	10.6	14.2	11.1	3.4	17.3	6.8
	2-EH	CFR Korea	990.0	990.0	960.0	940.0	850.0	780.0	865.0	930.1	772.4	952.5
	Change, %			0.0	3.1	5.3	16.5	26.9	14.5	6.4	28.2	3.9
	ABS	CFR SE Asia	2,030.0	2,010.0	1,850.0	1,640.0	1,620.0	1,395.0	1,635.0	1,431.1	1,347.1	1,781.2
	Change, %			1.0	9.7	23.8	25.3	45.5	24.2	41.9	50.7	14.0
	SBR	CFR SE Asia	1,790.0	1,690.0	1,510.0	1,500.0	1,750.0	1,380.0	2,000.0	1,332.1	1,483.0	2,098.5
	Change, %			5.9	18.5	19.3	2.3	29.7	(10.5)	34.4	20.7	(14.7)
	SM	CFR SE Asia	1,440.0	1,355.0	1,170.0	1,135.0	1,032.5	1,055.0	1,205.0	1,100.7	1,064.6	1,237.8
	Change, %			6.3	23.1	26.9	39.5	36.5	19.5	30.8	35.3	16.3
	Caustic	FOB NEA	477.0	471.0	472.5	437.5	437.5	320.0	422.5	296.8	316.6	444.7
	Change, %			1.3	1.0	9.0	9.0	49.1	12.9	60.7	50.7	7.3
	PX	CFR SE Asia	837.5	812.5	817.5	785.0	797.5	802.5	855.0	842.9	790.4	833.3
	Change, %			3.1	2.4	6.7	5.0	4.4	(2.0)	(0.6)	6.0	0.5
PO	CFR China	1,887.5	1,992.5	1,587.5	1,427.5	1,312.5	1,497.5	1,562.5	1,683.4	1,396.8	1,543.0	
Change, %			(5.3)	18.9	32.2	43.8	26.0	20.8	12.1	35.1	22.3	
Caprolactam	CFR SE Asia	1,720.0	1,740.0	1,800.0	1,600.0	1,700.0	1,410.0	1,850.0	1,581.5	1,344.9	1,900.9	
Change, %			(1.1)	(4.4)	7.5	1.2	22.0	(7.0)	8.8	27.9	(9.5)	
PTA	CFR SE Asia	667.5	657.5	657.5	635.0	632.5	622.5	642.5	648.0	613.7	657.7	
Change, %			1.5	1.5	5.1	5.5	7.2	3.9	3.0	8.8	1.5	
Spread	HDPE		657.5	667.5	628.5	676.0	696.0	715.0	658.0	737.1	735.1	654.4
	Change, %			(1.5)	4.6	(2.7)	(5.5)	(8.0)	(0.1)	(10.8)	(10.6)	0.5
	MEG		460.0	460.0	393.5	366.0	241.0	240.0	363.0	287.8	261.3	362.0
	Change, %			0.0	16.9	25.7	90.9	91.7	26.7	59.8	76.1	27.1
	PVC		435.0	465.0	411.0	468.5	438.5	450.0	435.5	327.8	423.9	434.7
	Change, %			(6.5)	5.8	(7.2)	(0.8)	(3.3)	(0.1)	32.7	2.6	0.1
	PP		637.5	657.5	638.5	636.0	596.0	595.0	548.0	616.8	578.9	608.3
	Change, %			(3.0)	(0.2)	0.2	7.0	7.1	16.3	3.4	10.1	4.8
	2-EH		480.0	520.0	501.0	528.5	408.5	370.0	380.5	437.0	372.9	486.4
	Change, %			(7.7)	(4.2)	(9.2)	17.5	29.7	26.1	9.8	28.7	(1.3)
	ABS		1,520.0	1,540.0	1,391.0	1,228.5	1,178.5	985.0	1,150.5	938.1	947.6	1,315.2
	Change, %			(1.3)	9.3	23.7	29.0	54.3	32.1	62.0	60.4	15.6
	SBR	BD spread	340.0	365.0	495.0	625.0	625.0	240.0	(100.0)	454.7	366.2	485.0
	Change, %			(6.8)	(31.3)	(45.6)	(45.6)	41.7	(440.0)	(25.2)	(7.2)	(29.9)
	SM		930.0	885.0	711.0	723.5	591.0	645.0	720.5	607.7	665.1	771.8
	Change, %			5.1	30.8	28.5	57.4	44.2	29.1	53.0	39.8	20.5
	Caustic											
	Change, %											
	PX		327.5	342.5	358.5	373.5	356.0	392.5	370.5	349.9	390.9	367.3
	Change, %			(4.4)	(8.6)	(12.3)	(8.0)	(16.6)	(11.6)	(6.4)	(16.2)	(10.8)
PO	propylene spread	1,017.5	1,192.5	812.5	702.5	565.0	707.5	747.5	913.4	691.1	678.0	
Change, %			(14.7)	25.2	44.8	80.1	43.8	36.1	11.4	47.2	50.1	
Caprolactam	benzene spread	897.5	922.5	1,027.5	837.5	967.5	745.0	1,027.5	891.6	698.2	1,063.9	
Change, %			(2.7)	(12.7)	7.2	(7.2)	20.5	(12.7)	0.7	28.5	(15.6)	
PTA	px spread	81.3	88.8	85.3	85.5	74.3	60.8	44.0	58.0	60.4	74.4	
Change, %			(8.5)	(4.7)	(5.0)	9.4	33.7	84.7	40.1	34.5	9.2	

자료 : Cischem, Platts, SK증권

참고 : Spread는 Naphtha spread로 일괄적용

## Global peers

	Currency	09/14	1D	1W	1M	3M	6M	12M	YTD	MKT CAP (mil USD)	PER		PBR		EV/EBITDA		
											17E	18E	17E	18E	17E	18E	
<b>Petrochemical</b>																	
DowDuPont	USD	70.0	0.7	8.3	10.4	8.5	10.0	33.7	22.4	163,565	21.2	17.4	2.4	2.9	11.1	9.6	
Eastman	USD	85.1	(0.6)	0.3	0.9	2.6	10.0	33.0	13.1	12,322	11.3	10.5	2.4	2.2	8.7	8.3	
BASF	EUR	86.0	(0.1)	2.5	6.0	(0.3)	(3.3)	20.9	(2.6)	93,909	14.7	14.5	2.3	2.2	8.1	7.9	
Akzo Nobel	EUR	77.8	(0.8)	(1.0)	2.0	0.7	3.1	29.7	31.0	23,519	18.2	17.6	3.1	3.0	10.1	9.7	
Arkema	EUR	97.5	1.7	4.1	2.8	2.0	8.5	18.3	4.9	8,787	14.3	13.2	1.8	1.7	6.4	6.1	
Lanxess	EUR	64.0	(0.0)	1.7	0.6	(7.5)	1.1	36.7	2.6	6,959	16.5	14.5	2.2	2.0	7.4	8.0	
Sumitomo Chemical	JPY	684	0.9	4.0	9.6	14.8	2.1	49.0	23.0	10,225	10.5	9.9	1.3	1.2	7.6	7.2	
Mitsubishi Chemical	JPY	1,053	1.3	5.5	12.3	22.1	17.1	75.3	38.9	14,323	9.5	9.4	1.3	1.1	6.4	6.2	
Shin-Etsu Chemical	JPY	10,035	(0.8)	4.2	4.0	0.8	3.8	43.4	10.7	39,156	20.1	18.0	1.9	1.7	8.6	7.6	
Asahi Kasei	JPY	1,368	1.7	7.6	7.4	21.7	25.2	70.3	34.2	17,327	15.8	15.1	1.5	1.4	7.7	7.4	
JSR	JPY	2,106	(0.8)	0.4	12.4	16.5	8.8	39.2	14.3	4,300	15.9	15.2	1.2	1.2	8.3	7.8	
Nitto Denko	JPY	9,474	(0.0)	(0.1)	(3.2)	5.6	4.8	43.8	5.6	14,865	18.6	17.1	2.2	2.0	8.3	7.7	
SABIC	SAR	101.3	0.4	1.7	3.4	2.1	6.2	20.2	10.7	81,002	15.1	14.7	1.8	1.8	7.6	7.5	
Yansab	SAR	57.0	0.6	1.0	4.2	2.7	(0.4)	26.3	4.6	8,548	14.6	13.8	2.4	2.3	9.0	8.6	
Formosa Plastics	TWD	94.6	(0.4)	(1.3)	2.5	4.6	6.2	24.6	6.1	19,988	14.4	14.8	1.8	1.8	18.7	19.2	
Formosa Fiber	TWD	94.1	(0.7)	(1.6)	2.7	3.9	2.0	16.9	(2.3)	18,306	12.7	13.0	1.7	1.6	10.2	10.6	
Nan Ya Plastics	TWD	75.5	0.0	0.0	1.9	4.4	8.3	27.1	6.0	19,874	15.3	16.0	1.8	1.7	16.3	15.8	
Sinopec Shanghai	CNY	6.29	(0.6)	(1.6)	(6.3)	(3.4)	(2.8)	5.7	(2.3)	9,170	11.9	11.4	2.4	2.1	6.7	6.6	
Sinopec Yizheng(Fiber)	CNY	3.20	0.0	0.0	0.0	(7.8)	(16.7)	(18.2)	(22.0)	6,242	#N/A	#N/A	47.1	6.9	7.2	38.3	17.8
Reliance	INR	844	(0.6)	3.1	7.3	24.3	30.9	61.5	55.9	85,475	18.8	15.4	2.0	1.7	12.2	9.9	
Industries Qatar	QAR	89.0	2.0	0.6	(3.4)	(7.8)	(21.9)	(16.8)	(24.3)	14,789	14.3	12.5	1.6	1.5	50.8	46.3	
PTT Chemical	THB	78.0	1.0	1.3	9.9	11.4	5.4	35.7	23.8	10,546	10.5	10.6	1.4	1.3	5.6	5.4	
Petronas	MYR	7.4	(0.7)	0.0	4.1	2.5	1.4	11.6	6.0	14,077	16.2	16.2	2.0	1.9	8.9	8.8	
LG화학	KRW	407,000	(0.1)	10.0	18.5	44.8	48.5	71.4	55.9	25,333	15.8	15.2	2.0	1.8	6.9	6.5	
롯데케미칼	KRW	408,500	(1.3)	0.6	4.9	18.9	12.7	48.3	10.7	12,346	6.3	6.3	1.2	1.0	4.2	3.8	
한화케미칼	KRW	37,050	(1.3)	3.8	4.4	28.4	51.8	58.0	50.0	5,384	6.3	6.6	1.0	0.9	7.8	7.3	
금호석유	KRW	78,700	(2.7)	0.0	7.2	3.4	5.6	21.8	(4.0)	2,114	15.0	13.2	1.5	1.3	10.0	8.7	
SKC	KRW	41,550	1.0	9.1	10.1	20.8	38.7	57.4	25.9	1,375	11.5	9.9	1.0	0.9	9.5	7.9	
국도화학	KRW	51,000	(0.2)	(1.0)	(7.4)	(5.0)	5.8	(10.1)	(7.1)	261	8.3	9.0	0.7	0.6	4.8	4.9	
효성	KRW	7,020	0.0	0.3	11.4	14.1	(10.7)	38.5	3.2	4,660	8.8	7.6	1.3	1.2	7.3	6.5	
<b>Average</b>			<b>(0.0)</b>	<b>2.1</b>	<b>4.7</b>	<b>8.3</b>	<b>8.7</b>	<b>32.4</b>	<b>13.2</b>								
<b>Refinery</b>																	
Valero	USD	69.9	(1.5)	1.6	4.7	8.0	3.7	28.2	2.4	30,890	16.1	12.6	1.6	1.6	6.7	5.8	
Conoco Phillips	USD	45.8	0.6	1.6	2.9	0.9	2.0	14.6	(8.6)	55,773	200.1	37.4	1.9	1.9	9.4	6.9	
Formosa Petrochemical	TWD	106.0	1.0	(0.9)	1.9	(0.5)	(0.5)	18.2	(5.4)	33,515	16.3	18.7	3.1	3.2	9.6	11.2	
Andeavor	USD	101.6	(1.6)	0.8	6.7	10.2	22.2	27.3	16.1	15,933	17.6	13.9	1.6	1.5	9.0	7.1	
Marathon Petroleum	USD	52.3	(1.6)	(0.6)	0.1	(1.9)	4.7	25.0	4.0	26,497	18.3	15.4	2.1	2.1	8.4	7.5	
Devon Energy	USD	33.9	1.2	4.7	9.1	5.3	(15.3)	(15.6)	(25.8)	17,818	19.8	16.5	2.5	2.2	8.5	7.7	
Hollyfrontier	USD	32.2	(1.8)	0.8	11.8	27.4	16.5	33.3	(1.9)	5,700	21.9	15.1	1.2	1.2	8.7	6.7	
Phillips 66	USD	86.2	(0.1)	2.6	2.8	9.5	9.8	12.0	(0.2)	44,113	20.0	15.2	2.0	2.0	9.9	8.4	
Murphy Oil	USD	25.5	0.7	3.0	1.2	2.6	(2.8)	1.6	(18.0)	4,406	#N/A	#N/A	274.5	1.0	1.0	4.7	4.5
JX Holdings	JPY	550.0	1.3	2.4	6.2	10.6	(1.3)	39.5	11.2	17,020	8.6	8.1	0.8	0.8	8.0	7.6	
Idemitsu	JPY	2,856.0	2.6	2.8	7.0	(12.3)	(28.3)	48.5	(8.0)	5,364	6.5	6.4	0.8	0.7	8.2	7.9	
Nesteoil	EUR	36.1	(1.3)	(0.6)	2.6	3.5	7.4	(0.8)	(1.2)	0	13.8	13.8	2.2	2.0	7.9	8.3	
Ashland	USD	63.5	(0.2)	3.6	3.8	(4.7)	6.6	10.3	18.8	3,965	16.2	19.5	1.1	1.0	8.6	9.5	
Fuchs Petrolub	EUR	48.9	0.5	2.1	2.8	(2.6)	12.8	22.3	22.5	7,548	25.1	23.7	5.0	4.5	14.5	13.7	
SK이노베이션	KRW	196,000	1.0	4.8	12.6	22.5	24.8	29.4	33.8	15,980	8.1	7.9	1.0	0.9	4.8	4.3	
S-Oil	KRW	121,000	(0.8)	(1.2)	3.4	26.3	29.4	62.4	42.9	12,011	12.8	9.8	2.1	1.9	9.8	7.2	
GS	KRW	66,000	(1.5)	0.0	(6.5)	(4.1)	20.9	28.2	22.0	5,407	6.2	5.9	0.8	0.7	7.2	6.8	
<b>Average</b>			<b>(0.1)</b>	<b>1.6</b>	<b>4.3</b>	<b>5.9</b>	<b>6.6</b>	<b>22.6</b>	<b>6.2</b>								

\* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임

\* 국내업체의 multiple은 Dataguidepro 기준임

## Global peers

	Currency	09/14	1D	1W	1M	3M	6M	12M	YTD	MKT CAP (mil USD)	PER		PBR		EV/EBITDA	
											17E	18E	17E	18E	17E	18E
<b>E&amp;P/Shale</b>																
Exxon Mobil	USD	80	0.4	1.3	2.4	(2.4)	(1.1)	(5.3)	(11.3)	339,350	23.4	20.7	1.9	1.9	9.8	9.5
BP	GBP	452	(0.1)	0.4	1.3	(2.1)	(1.2)	8.2	(11.4)	119,442	21.5	16.6	1.3	1.3	6.1	5.5
Shell	EUR	2,144	(0.4)	(0.6)	0.4	2.0	2.5	18.1	(4.4)	238,815	16.9	15.1	1.2	1.2	6.5	6.0
Chevron	USD	114	0.2	2.4	5.3	7.4	6.6	16.3	(2.8)	216,883	28.5	24.3	1.5	1.5	8.3	7.4
Total	EUR	45	0.5	1.4	4.9	0.5	(2.9)	8.4	(7.7)	133,683	13.4	12.4	1.2	1.2	6.3	5.6
Sinopec	CNY	6	(0.2)	(0.2)	(0.5)	(0.5)	7.2	22.4	10.0	106,151	13.9	13.0	1.0	0.9	4.4	4.3
Petrochina	CNY	8	0.0	(0.7)	1.0	4.8	0.5	10.3	1.0	211,886	59.5	34.2	1.2	1.2	6.7	6.5
CNOOC	CNY	11	1.7	0.7	3.8	0.4	(11.9)	(4.9)	(11.4)	52,807	12.3	10.8	0.9	0.8	3.7	3.5
Gazprom	RUB	123	(0.2)	4.6	5.1	6.9	(4.2)	(11.5)	(20.2)	50,742	4.4	3.9	0.2	0.2	3.8	3.4
Rosneft	RUB	319	1.4	4.3	4.7	4.9	1.2	(13.0)	(20.7)	58,812	9.9	7.0	0.9	0.8	5.1	4.3
Anadarko	USD	44	0.9	3.2	1.2	(7.9)	(29.6)	(21.7)	(37.6)	24,392	#N/A	#N/A	1.7	1.7	6.9	6.1
Petrobras	BRL	15	0.1	0.1	15.0	19.2	10.7	14.7	1.1	64,069	11.4	8.8	0.6	0.6	5.4	5.0
Lukoil	USD	2,970	1.1	3.3	3.0	8.8	(3.6)	(2.8)	(13.9)	43,804	6.1	5.6	0.7	0.6	N/A	N/A
Kinder	USD	19	(0.5)	1.0	1.6	2.0	(8.1)	(10.3)	(6.6)	47,497	29.8	27.4	1.2	1.2	11.5	11.1
Statoil	NOK	154	1.2	3.4	5.3	5.0	5.9	22.7	(2.7)	64,139	16.9	18.1	1.7	1.6	3.5	3.4
BHP	AUD	27	(1.8)	(1.6)	4.8	13.5	12.7	35.8	7.3	107,369	18.0	18.8	1.9	1.9	6.6	6.7
PTT E&P	THB	89	2.6	(1.4)	4.7	0.3	(0.3)	16.7	(7.3)	10,707	13.3	12.4	0.9	0.8	3.2	3.0
Petronas gas	MYR	19	(0.3)	2.2	(1.1)	(1.6)	(6.0)	(15.1)	(12.7)	8,751	20.8	19.4	2.9	2.8	11.8	11.0
Chesapeake	USD	4	4.1	5.9	0.7	(18.3)	(21.8)	(42.8)	(41.6)	3,724	5.9	5.2	#N/A	#N/A	21.0	7.3
Noble Energy	USD	26	(0.0)	3.2	5.7	(12.3)	(22.9)	(23.3)	(31.7)	12,640	#N/A	#N/A	1.3	1.4	9.4	7.1
<b>Average</b>		<b>0</b>	<b>0.5</b>	<b>1.7</b>	<b>3.5</b>	<b>1.5</b>	<b>(3.3)</b>	<b>1.1</b>	<b>(11.2)</b>							
<b>PV</b>																
WACKER	EUR	112.3	(0.5)	0.0	9.1	19.2	8.6	48.6	13.6	6,957	30.4	23.1	1.9	1.8	6.9	6.6
GCL-Poly	HKD	1.0	14.4	18.4	18.4	39.2	(1.0)	(8.0)	10.8	2,451	7.8	7.5	0.7	0.6	6.4	5.9
SunPower	USD	8.6	3.0	(9.0)	(9.7)	6.2	22.8	12.2	29.7	1,195	#N/A	#N/A	1.7	1.7	43.0	13.9
Canadian Solar	USD	17.3	4.7	5.8	4.0	33.6	27.4	42.7	42.0	1,003	10.9	7.1	1.0	0.9	9.6	8.6
JA Solar	USD	8.3	(1.4)	11.6	34.3	33.0	67.5	37.4	73.5	393	16.6	17.8	1.9	1.9	4.1	3.3
Yingli	USD	2.3	2.6	(1.3)	(0.4)	13.6	5.4	(34.8)	(10.0)	43	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
First Solar	USD	48.4	3.4	2.1	(0.9)	33.8	51.0	38.3	50.9	5,057	21.7	38.7	0.9	0.9	8.0	9.1
한화큐셀	USD	7.7	1.5	4.9	3.4	17.5	(2.9)	(27.9)	(6.1)	638	85.1	43.8	#N/A	#N/A	7.5	7.5
OCI	KRW	107,000	5.4	3.9	17.1	16.4	27.2	32.9	36.0	2,250	16.7	22.1	0.8	0.7	8.2	7.6
웅진에너지	KRW	9,290	2.0	(4.5)	15.4	46.8	87.5	30.8	96.2	204	N/A	0.8	0.7	8.2	7.6	8.8
신성솔라에너지	KRW	2,215	0.0	7.0	2.8	17.8	13.6	0.0	0.2	338	N/A	0.7	8.2	7.6	8.8	7.6
<b>Average</b>			<b>3.2</b>	<b>3.5</b>	<b>8.5</b>	<b>25.2</b>	<b>27.9</b>	<b>15.7</b>	<b>30.6</b>							
<b>Gas Company</b>																
Towngas China	HKD	5.2	0.2	0.8	(1.3)	7.7	11.8	23.8	27.5	1,843	12.1	11.0	1.0	0.9	11.5	10.6
Kulun	HKD	7.4	0.1	(2.2)	(1.2)	12.4	6.9	28.2	27.9	7,667	11.5	10.8	1.3	1.2	5.8	5.7
Beijing Enterprise	HKD	42.4	0.4	1.7	6.8	12.5	(0.1)	5.2	15.7	6,850	8.2	7.6	0.9	0.8	15.2	14.2
ENN Energy	HKD	52.0	(1.3)	(1.9)	0.4	23.8	17.4	31.7	62.9	7,193	13.6	12.1	2.6	2.2	8.6	7.8
China Resources Gas	HKD	26.8	0.4	(1.3)	(8.2)	11.2	(1.3)	1.5	22.7	7,615	15.3	13.6	2.9	2.5	9.1	8.3
China Gas Holdings	HKD	21.5	3.4	7.2	12.2	69.3	72.8	76.5	104.4	13,674	19.5	16.6	4.3	3.6	15.4	13.3
Shenzen Gas	HKD	14.6	(0.7)	1.7	5.8	5.8	28.6	16.1	28.8	3,773	11.9	11.5	1.4	1.3	9.4	8.9
Shann Xi	CNY	8.6	(0.6)	(1.3)	0.1	(1.5)	(9.7)	(15.4)	(10.2)	1,461	18.2	16.3	1.7	1.6	#N/A	#N/A
Suntien	HKD	2.0	1.0	10.8	15.4	37.3	28.3	77.3	95.0	927	7.5	6.4	0.7	0.6	9.8	8.4
China Oil & Gas	HKD	0.5	0.0	(3.6)	0.0	(1.8)	(8.5)	(3.6)	(11.5)	403	9.3	8.1	0.9	0.8	6.2	5.6
<b>Average</b>			<b>0.3</b>	<b>1.2</b>	<b>3.0</b>	<b>17.7</b>	<b>14.6</b>	<b>24.1</b>	<b>36.3</b>							
<b>EV</b>																
LG화학	KRW	407,000	(0.1)	10.0	18.5	44.8	48.5	71.4	55.9	25,333	15.0	14.7	2.0	1.8	7.1	6.8
삼성SDI	KRW	210,000	0.7	8.8	19.0	39.5	57.3	114.5	92.7	12,733	21.7	14.0	1.3	1.2	25.2	15.7
Panasonic	JPY	1611.0	0.3	8.7	11.0	9.1	26.7	57.8	35.4	35,686	20.9	16.1	2.2	2.0	6.8	5.9
GS Yuasa	JPY	575.0	(1.0)	7.1	5.7	13.2	5.7	37.9	18.3	2,147	17.4	16.0	1.4	1.3	7.7	7.1
NEC	JPY	294.0	0.3	1.7	(0.3)	2.1	1.4	15.3	(5.2)	6,915	18.2	16.5	0.9	0.9	6.9	6.2
BYD Auto	CNY	54.5	(0.7)	9.9	13.0	5.6	9.5	(2.7)	9.6	21,622	29.0	20.9	2.7	2.4	13.2	10.7
Tesla Motors	USD	377.6	3.1	7.7	3.8	(0.8)	46.4	92.3	76.7	63,023	#N/A	#N/A	12.6	11.0	79.6	27.8
Kandi Technologies	USD	4.7	(7.8)	19.0	27.0	16.0	16.0	(17.1)	(4.1)	226	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
<b>Average</b>			<b>(0.7)</b>	<b>9.1</b>	<b>12.2</b>	<b>16.2</b>	<b>26.4</b>	<b>46.2</b>	<b>34.9</b>							

\* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임