1. News Summary (3 page)

2018년 9월 12일

News	
WTI comment	초강력 허리케인에 급등…WTI 2.5%↑
Headline	푸틴, "러일 LNG 협력 강화" 천명
News 1.	-
News 2.	-
News 3.	-
News 4.	-

Conclusion
미국의 對 아시아 LNG 수출 증대 기조 속 러시아의 확장 쉽지 않을 것
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2. Prices Summary (4~7 page)

Daily	Unit	Price	1D	1W	1M	3M	12M
Refinery			%	%	%	%	%
WTI	$/bbl	69.3	2.5	(0.9)	3.1	4.4	43.6
Dubai	$/bbl	76.2	0.5	(0.9)	7.0	2.0	46.1
Gasoline	$/bbl	88.3	0.7	(1.5)	4.8	3.5	25.6
Diesel	$/bbl	91.7	(0.1)	(2.7)	5.9	3.7	36.5
Complex margin	$/bbl	7.3	(0.2)	(1.0)	(1.3)	0.8	(2.8)
1M lagging	$/bbl	10.2	0.2	(3.8)	5.2	3.7	(0.4)
Petrochemical			%	%	%	%	%
Naphtha	$/t	678	(0.4)	(2.4)	2.4	4.8	35.4
Butadiene	$/t	1,600	(0.9)	(5.3)	(7.2)	(7.0)	8.8
HDPE	$/t	1,270	0.0	(0.8)	(3.1)	(6.6)	6.7
MEG	$/t	915	(2.5)	(6.7)	(2.7)	1.7	(2.6)
PX	$/t	1,293	(1.2)	(3.1)	16.8	33.7	56.0
SM	$/t	1,387	(0.4)	(2.1)	(3.3)	(1.8)	0.9
Commodity			%	%	%	%	%
Natural Gas	$/mmbtu	2.83	0.9	0.2	(4.7)	(3.1)	(4.7)
Natural rubber	$/t	1,300	0.0	0.0	(3.0)	(6.5)	(21.2)
Cotton	C/lbs	83.0	(1.1)	0.3	(0.5)	(12.8)	17.4

*참고: 정제마진의 변동률은 %가 아닌 $/bbl임

Weekly	Update	Unit	Price	1W	1M	3M	12M
Petrochemical				%	%	%	%
Ethylene	09/10	$/t	1,138	(4.4)	(10.8)	(6.4)	(7.1)
Propylene	09/10	$/t	1,030	(0.5)	(0.7)	1.7	18.4
Benzene	09/10	$/t	870	(1.4)	(0.9)	1.8	5.8
Toluene	09/10	$/t	830	0.0	0.0	1.8	21.2
Xylene	09/10	$/t	870	0.0	3.6	3.6	37.0
PP	09/10	$/t	1,238	0.0	0.4	(3.5)	7.8
PVC	09/10	$/t	950	0.0	0.5	3.3	0.5
ABS	09/10	$/t	1,880	0.0	(4.1)	(8.7)	(7.4)
SBR	09/10	$/t	1,875	0.0	2.5	(1.3)	4.7
SM	09/10	$/t	1,448	(0.5)	(1.9)	(5.1)	0.5
BPA	09/10	$/t	1,960	0.6	8.0	4.4	3.8
Caustic	09/10	$/t	440	10.0	19.2	(20.0)	(7.8)
2-EH	09/10	$/t	1,130	1.3	0.9	2.7	14.1
Caprolactam	09/10	$/t	2,130	0.0	(1.2)	0.5	23.8
Solar				%	%	%	%
Polysilicon	09/05	$/kg	11.2	(0.9)	(1.1)	(14.7)	(33.2)
Module	09/05	$/W	0.25	(0.8)	(2.4)	(13.9)	(23.2)

3. Global Peers Summary (8~9 page)

	Unit	Price	1D	1W	1M	3M	12M
E&P			%	%	%	%	%
ExxonMobil	USD	82.9	1.4	3.2	4.3	(0.3)	4.6
Shell	EUR	2,459	1.3	(3.1)	(2.9)	(6.6)	14.6
Petrochina	CNY	8.24	0.7	0.0	2.6	6.0	2.0
Gazprom	RUB	152.4	1.1	3.4	5.2	7.1	25.9
Petrobras	BRL	18.5	(3.9)	(0.8)	(5.6)	20.1	23.4
Refinery							
Phillips66	USD	112.6	(1.2)	(5.4)	(8.2)	(3.8)	32.1
Valero	USD	115.1	(0.1)	(4.3)	(0.2)	(4.5)	64.9
JX	JPY	737.3	3.1	(3.4)	(8.1)	1.4	37.1
Neste Oil	EUR	72.9	2.1	(0.8)	(2.7)	3.2	101.3

	Unit	Price	1D	1W	1M	3M	12M
Petrochemical			%	%	%	%	%
BASF	EUR	76.3	(0.2)	(2.7)	(3.3)	(13.1)	(10.9)
DowDuPont	USD	70.1	0.0	0.5	3.5	0.8	4.8
SABIC	SAR	119.8	0.7	(5.1)	(5.5)	(5.1)	19.9
Formosa Pla.	TWD	111.0	(0.4)	(1.3)	0.5	1.8	15.7
Shin-Etsu	JPY	9,766	0.7	(3.5)	(9.9)	(12.1)	(0.2)
Renewable							
Wacker	EUR	118.0	0.0	(2.9)	(5.0)	(0.9)	5.2
First Solar	USD	48.45	0.6	(5.6)	(8.2)	(6.5)	2.7
GCL-Poly	HKD	0.53	(1.9)	(10.2)	(10.2)	(34.6)	(40.4)
Tesla Motors	USD	279.4	(2.1)	(3.3)	(21.4)	(15.9)	(23.2)

4. Coverage Summary

	09/11	1D	1W	1M	3M	6M	12M	투자의견	TP	%	P/E	P/B
KOSPI	2,283	(0.2)	(1.4)	0.0	(7.5)	(8.1)	(2.6)				* 추정치는 12M fwd 기준임	
KOSPI화학	5,465	(0.5)	(2.5)	(3.3)	(10.6)	(11.7)	(3.8)				* 모든 coverage 업체의 실적은 연결기준임	
LG화학	341,000	(1.7)	(7.2)	(9.1)	(10.4)	(16.9)	(8.5)	매수	400,000	17.3	13.47	1.52
롯데케미칼	287,500	(4.2)	(6.8)	(16.5)	(24.4)	(32.9)	(28.7)	매수	400,000	39.1	8.93	0.81
한화케미칼	18,800	(4.8)	(6.9)	(11.5)	(26.4)	(40.0)	(47.3)	매수	30,000	59.6	8.45	0.46
금호석유화학	101,500	1.5	5.3	(1.5)	0.0	8.6	29.0	매수	150,000	47.8	9.46	1.31
KCC	352,000	1.0	10.3	4.6	(0.4)	(0.6)	(7.1)	매수	400,000	13.6	30.52	0.54
OCI	112,500	(1.3)	(5.9)	4.7	(1.7)	(27.9)	11.4	매수	140,000	24.4	8.56	0.81
SKC	47,100	0.2	1.2	4.1	11.3	16.6	22.0	매수	50,000	6.2	12.84	1.12
SK이노베이션	202,500	1.5	4.9	5.5	(5.8)	(5.6)	8.6	매수	230,000	13.6	11.91	1.02
S-Oil	126,000	3.7	4.6	7.7	13.0	0.8	4.1	매수	140,000	11.1	14.38	2.10
GS	53,000	1.0	1.1	(1.3)	(11.1)	(20.8)	(20.5)	매수	80,000	50.9	4.91	0.60
SK가스	89,100	0.3	1.1	5.1	(6.5)	(8.0)	(16.3)	매수	130,000	45.9	8.42	0.60
포스코대우	18,950	(0.8)	3.8	3.6	(21.5)	(8.2)	(9.8)	매수	25,000	31.9	9.94	0.74
LG상사	21,800	0.9	3.6	(7.0)	(20.7)	(18.8)	(23.9)	매수	38,000	74.3	8.07	0.61
한국전력	30,350	0.3	1.3	(3.8)	(13.4)	(8.3)	(26.3)	매수	45,000	48.3	7.35	0.24
한국가스공사	56,300	(0.5)	4.8	2.2	(12.0)	14.2	28.4	매수	75,000	33.2	8.73	0.73

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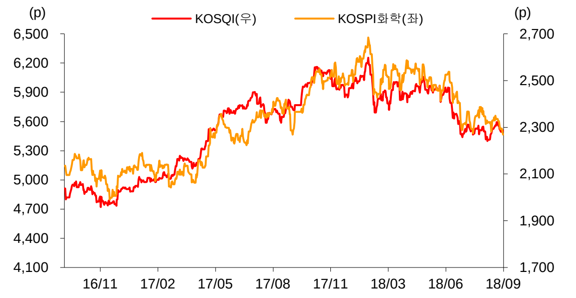
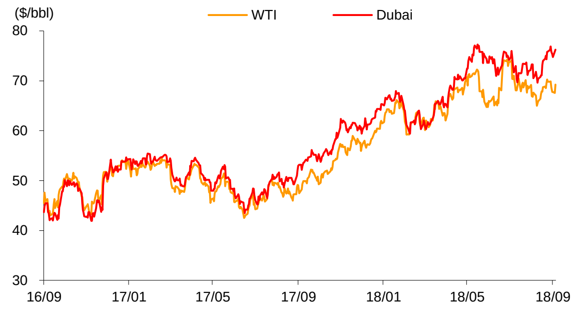
Key Chart

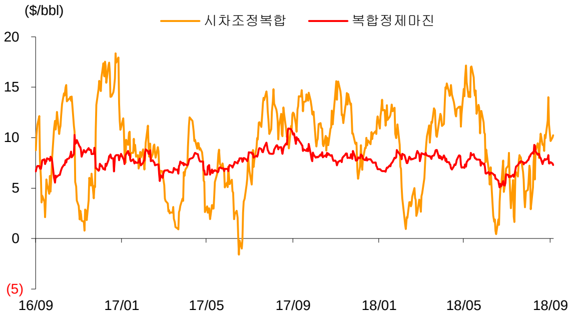
KOSPI/KOSPI화학



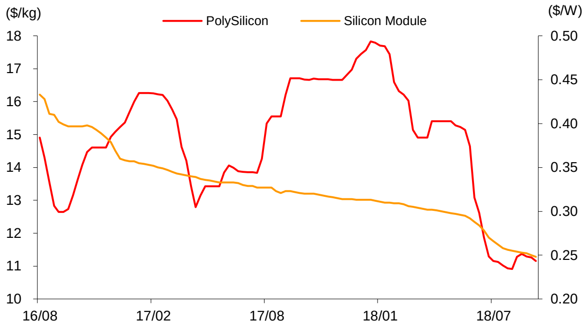
WTI/Dubai



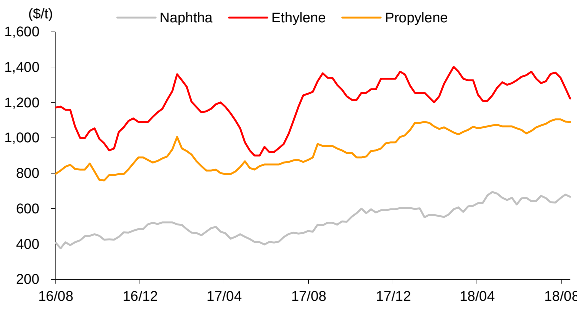
Complex & 1M lagging margin



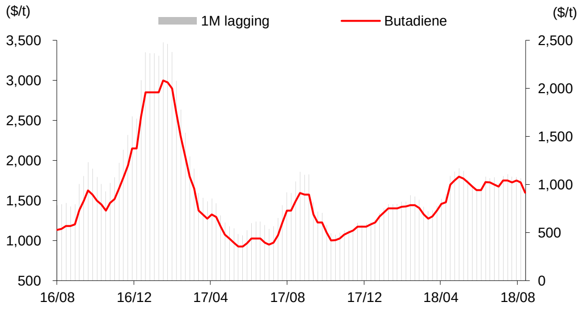
Polysilicon & Module prices



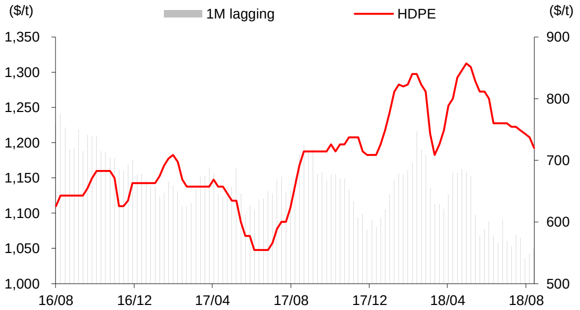
Naphtha/Ethylene/Propylene prices



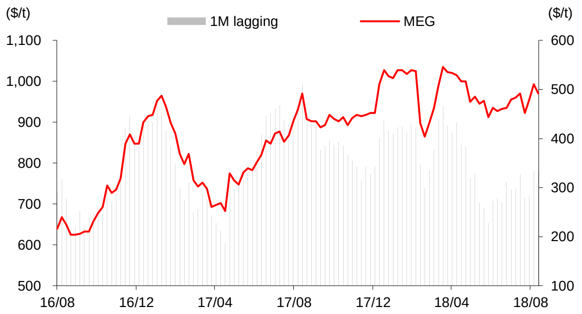
Butadiene price & 1M lagging naphtha spread



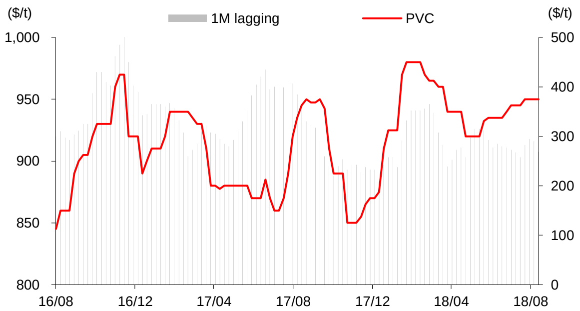
HDPE price & 1M lagging naphtha spread



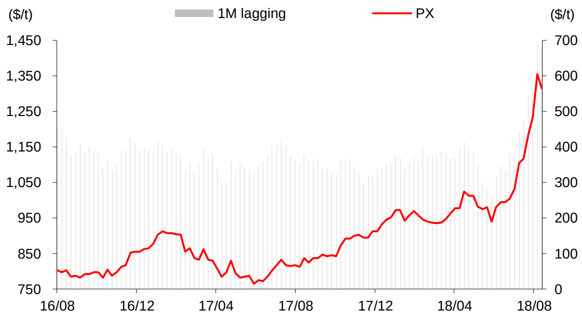
MEG price & 1M lagging naphtha spread



PVC price & 1M lagging naphtha spread



PX price & 1M lagging naphtha spread



자료: Bloomberg, Cischem, Petronet, Platts, Pvinsights, SK증권
참고: 상기 데이터는 일괄적으로 과거 2년치 적용

SK Energy Daily

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News Comment

Headline	(출처: 뉴데일리)
제목	푸틴, "러일 LNG 협력 강화" 천명
결론	미국의 對 아시아 LNG 수출 증대 기조 속 러시아의 확장 쉽지 않을 것
세부	
	1) 앞으로 일본 기업들은 '사할린-2', '북극 LNG-2' 등 프로젝트 참여 가능
	2) 노바텍은 일본 Jogmec과 MOU를 체결하며 북극 항로 함께 개척하게 됨
	3) 러시아는 일본과의 캄차카 반도 LNG 환적 터미널 사업으로 운송비 절감
	4) 이 경우 러시아산 LNG는 미국산 LNG 대비 가격 경쟁력이 부각될 것임
	5) 미국의 對 아시아 LNG 수출 증대 기조 속 러시아의 확장 쉽지 않을 것

WTI Comment	(출처: 연합뉴스)
제목	초강력 허리케인에 급등…WTI 2.5%↑
상승 요인	허리케인 '플로렌스'로 인한 원유 수급 우려
하락 요인	

Issue 1	
제목	
결론	
세부	
	1)
	2)
	3)
	4)
	5)

Issue 2	
제목	
결론	
세부	
	1)
	2)
	3)
	4)
	5)

Issue 3	
제목	
결론	
세부	
	1)
	2)
	3)
	4)
	5)

Issue 4	
제목	
결론	
세부	
	1)
	2)
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	5)

Issue 5	
제목	
결론	
세부	
	1)
	2)
	3)
	4)
	5)

Issue 6	
제목	
결론	
세부	
	1)
	2)
	3)
	4)
	5)

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Commodity Price Data

Daily Price		Today	1D	1W	1M	3M	6M	12M	YTD	2016avg.	2017avg.	2018acc.
F/X	**USD/EUR**	0.862	0.863	0.863	0.876	0.849	0.813	0.837	0.833	0.904	0.887	0.837
	Change, %		(0.1)	(0.2)	(1.7)	1.5	6.0	3.0	3.4	(4.7)	(2.8)	3.0
	USD/JPY	111.6	111.1	111.4	110.8	110.0	106.8	109.4	112.6	108.8	112.1	109.4
	Change, %		0.4	0.2	0.7	1.5	4.5	2.0	(0.9)	2.6	(0.5)	2.0
	USD/KRW	1,125.3	1,128.5	1,115.0	1,129.0	1,075.1	1,069.8	1,131.9	1,066.7	1,160.5	1,130.9	1,089.3
	Change, %		(0.3)	0.9	(0.3)	4.7	5.2	(0.6)	5.5	(3.0)	(0.5)	3.3
Agriculture	**Corn**	355.3	355.5	354.5	357.8	367.3	383.0	345.5	350.8	358.5	359.4	368.8
	Change, %		(0.1)	0.2	(0.7)	(3.3)	(7.2)	2.8	1.3	(0.9)	(1.1)	(3.7)
	Soybean	820.3	833.5	832.0	846.0	953.8	1,029.3	954.8	951.8	987.5	975.9	957.8
	Change, %		(1.6)	(1.4)	(3.0)	(14.0)	(20.3)	(14.1)	(13.8)	(16.9)	(15.9)	(14.4)
	Wheat	493.8	504.0	502.8	546.8	514.5	489.0	412.3	427.0	436.4	436.0	488.7
	Change, %		(2.0)	(1.8)	(9.7)	(4.0)	1.0	19.8	15.6	13.1	13.2	1.0
	Rice	10.6	10.8	10.9	10.6	11.6	12.2	12.4	11.7	10.3	11.1	12.0
	Change, %		(1.6)	(1.9)	0.9	(8.5)	(12.5)	(14.2)	(8.9)	2.9	(3.8)	(10.9)
	Oats	233.8	238.8	234.0	256.8	242.5	259.5	235.5	241.0	196.3	252.3	246.0
	Change, %		(2.1)	(0.1)	(9.0)	(3.6)	(9.9)	(0.7)	(3.0)	19.1	(7.3)	(5.0)
MYR/mt	**Palm Oil**	2,213.0	2,213.0	2,242.0	2,206.0	2,359.0	2,398.0	2,803.0	2,444.0	2,653.8	2,787.3	2,359.8
	Change, %		0.0	(1.3)	0.3	(6.2)	(7.7)	(21.0)	(9.5)	(16.6)	(20.6)	(6.2)
	Cocoa	2,283.0	2,329.0	2,335.0	2,086.0	2,372.0	2,478.0	1,973.0	1,892.0	2,854.0	2,005.2	2,360.4
	Change, %		(2.0)	(2.2)	9.4	(3.8)	(7.9)	15.7	20.7	(20.0)	13.9	(3.3)
	Cotton	83.0	83.9	82.8	85.9	94.8	84.5	73.7	78.6	65.6	73.5	84.1
	Change, %		(1.1)	0.3	(3.3)	(12.4)	(1.8)	12.6	5.6	26.6	12.9	(1.3)
	Sugar	11.2	11.2	10.6	10.5	12.4	12.8	14.3	15.2	18.2	15.8	12.1
	Change, %		(0.2)	5.1	6.1	(9.5)	(12.9)	(21.8)	(26.3)	(38.4)	(29.3)	(8.0)
	Coffee	96.2	97.5	97.8	107.0	117.1	118.9	130.6	126.2	136.1	133.0	115.0
	Change, %		(1.3)	(1.6)	(10.1)	(17.8)	(19.1)	(26.3)	(23.8)	(29.3)	(27.7)	(16.4)
Energy	**WTI**	69.3	67.5	69.9	67.6	66.1	62.0	48.1	60.4	43.4	51.0	66.5
	Change, %		2.5	(0.9)	2.4	4.8	11.6	44.1	14.6	59.6	35.9	4.1
	Brent	79.1	77.4	78.2	72.8	76.5	65.5	53.8	66.9	45.1	54.9	72.2
	Change, %		2.2	1.1	8.6	3.4	20.7	46.8	18.2	75.4	44.1	9.5
	Natural Gas	2.8	2.8	2.8	2.9	2.9	2.7	3.0	3.0	2.6	3.0	2.8
	Change, %		0.9	0.2	(3.9)	(4.1)	3.5	(4.1)	(4.2)	10.8	(6.4)	(0.5)
	Ethanol	1.3	1.3	1.3	1.3	1.4	1.5	1.5	1.3	1.5	1.5	1.4
	Change, %		0.2	(0.8)	(4.2)	(9.3)	(14.4)	(16.3)	(2.0)	(14.6)	(13.6)	(8.9)
	RBOB Gasoline	201.4	195.9	199.4	203.9	210.5	190.4	163.5	179.9	140.0	162.9	201.1
	Change, %		2.8	1.0	(1.2)	(4.3)	5.8	23.2	11.9	43.9	23.7	0.2
	Coal	115.7	115.3	115.4	116.7	114.4	99.4	99.6	100.8	65.5	88.2	107.3
	Change, %		0.3	0.3	(0.9)	1.1	16.3	16.2	14.7	76.7	31.1	7.7
Metal	**Gold**	1,198.6	1,195.9	1,191.6	1,211.7	1,300.5	1,323.3	1,327.5	1,302.6	1,248.5	1,258.6	1,288.6
	Change, %		0.2	0.6	(1.1)	(7.8)	(9.4)	(9.7)	(8.0)	(4.0)	(4.8)	(7.0)
	Silver	14.1	14.2	14.2	15.3	16.9	16.6	17.8	16.9	17.1	17.1	16.2
	Change, %		(0.3)	(0.1)	(7.7)	(16.5)	(14.8)	(20.5)	(16.6)	(17.3)	(17.2)	(12.8)
	Copper	5,859.0	5,910.0	5,815.0	6,190.0	7,255.0	6,962.0	6,748.0	7,247.0	4,872.0	6,199.4	6,709.7
	Change, %		(0.9)	0.8	(5.3)	(19.2)	(15.8)	(13.2)	(19.2)	20.3	(5.5)	(12.7)
	Nickel	887.4	900.8	891.9	952.5	1,028.6	896.7	753.3	809.1	646.4	680.2	920.5
	Change, %		(1.5)	(0.5)	(6.8)	(13.7)	(1.0)	17.8	9.7	37.3	30.5	(3.6)
	Zinc	2,311.0	2,381.0	2,415.5	2,547.0	3,201.0	3,277.0	3,083.0	3,319.0	2,097.5	2,888.5	3,041.0
	Change, %		(2.9)	(4.3)	(9.3)	(27.8)	(29.5)	(25.0)	(30.4)	10.2	(20.0)	(24.0)
	Lead	1,946.0	2,009.8	2,066.0	2,083.5	2,460.0	2,376.8	2,248.0	2,482.8	1,868.3	2,315.7	2,356.1
	Change, %		(3.2)	(5.8)	(6.6)	(20.9)	(18.1)	(13.4)	(21.6)	4.2	(16.0)	(17.4)
	Aluminum	14,655.0	14,605.0	14,715.0	14,520.0	14,740.0	14,035.0	15,925.0	15,020.0	12,373.5	14,556.6	14,372.5
	Change, %		0.3	(0.4)	0.9	(0.6)	4.4	(8.0)	(2.4)	18.4	0.7	2.0
	Cobalt	61,556.0	61,556.0	64,306.0	61,650.0	82,250.0	84,020.0	60,850.0	75,205.0	25,480.1	55,906.9	79,426.4
	Change, %		0.0	(4.3)	(0.2)	(25.2)	(26.7)	1.2	(18.1)	141.6	10.1	(22.5)
	HR Coil	863.0	867.0	860.0	901.0	910.0	820.0	638.0	662.0	519.3	620.1	838.7
	Change, %		(0.5)	0.3	(4.2)	(5.2)	5.2	35.3	30.4	66.2	39.2	2.9
	Scrap	377.0	373.0	379.0	392.0	393.0	400.0	375.0	367.0	275.7	344.7	388.3
	Change, %		1.1	(0.5)	(3.8)	(4.1)	(5.8)	0.5	2.7	36.8	9.4	(2.9)

자료: Bloomberg

참고) NYMEX, ICE, LME 중 대표지수를 사용

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Refining Price Data

Daily Price		09/11	1D	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
Crude Oil	**WTI**	69.3	67.5	69.9	67.2	66.4	60.7	48.2	53.7	43.4	50.9	66.5
	Change, %		*2.5*	*(0.9)*	*3.1*	*4.4*	*14.1*	*43.6*	*28.9*	*59.7*	*36.1*	*4.1*
	Dubai	76.2	75.8	76.9	71.3	74.8	61.3	52.2	53.8	41.3	53.1	69.6
	Change, %		*0.5*	*(0.9)*	*7.0*	*2.0*	*24.4*	*46.1*	*41.6*	*84.5*	*43.6*	*9.6*
Crude Oil Product	**Gasoline(휘발유)**	88.3	87.6	89.6	84.2	85.3	75.2	70.2	69.8	56.3	68.0	82.0
	Change, %		*0.7*	*(1.5)*	*4.8*	*3.5*	*17.4*	*25.6*	*26.4*	*56.9*	*29.8*	*7.6*
	Kerosene(등유)	90.6	90.7	92.6	86.3	88.5	76.7	66.0	66.4	52.9	65.2	84.9
	Change, %		*(0.1)*	*(2.1)*	*5.0*	*2.5*	*18.1*	*37.3*	*36.4*	*71.4*	*38.9*	*6.8*
	Diesel(경유)	91.7	91.8	94.2	86.6	88.5	76.0	67.2	65.5	52.1	65.6	84.1
	Change, %		*(0.1)*	*(2.7)*	*5.9*	*3.7*	*20.7*	*36.5*	*40.0*	*76.0*	*39.8*	*9.1*
	Bunker-C	69.7	69.2	70.1	68.8	69.8	56.8	49.2	52.1	35.5	49.7	64.1
	Change, %		*0.7*	*(0.6)*	*1.3*	*(0.1)*	*22.7*	*41.8*	*33.9*	*96.2*	*40.3*	*8.7*
	Naphtha	73.7	73.9	75.7	70.2	71.5	60.7	53.8	53.5	42.6	53.7	68.6
	Change, %		*(0.3)*	*(2.6)*	*5.1*	*3.1*	*21.5*	*37.0*	*37.9*	*73.1*	*37.2*	*7.5*
Dubai Spread	**Gasoline(휘발유)**	12.0	11.8	12.7	12.9	10.5	13.9	18.1	16.0	14.9	14.9	12.5
	Change		*0.2*	*(0.7)*	*(0.9)*	*1.5*	*(1.9)*	*(6.0)*	*(4.0)*	*(2.9)*	*(2.9)*	*(0.4)*
	Kerosene(등유)	14.4	14.9	15.7	15.0	13.7	15.5	13.9	12.6	11.6	12.1	15.3
	Change		*(0.5)*	*(1.3)*	*(0.6)*	*0.7*	*(1.1)*	*0.6*	*1.8*	*2.8*	*2.3*	*(0.9)*
	Diesel(경유)	15.5	16.0	17.4	15.4	13.7	14.8	15.0	11.7	10.8	12.5	14.5
	Change		*(0.5)*	*(1.8)*	*0.2*	*1.8*	*0.8*	*0.5*	*3.8*	*4.7*	*3.0*	*1.0*
	Bunker-C	(6.5)	(6.6)	(6.8)	(2.5)	(5.0)	(4.5)	(3.0)	(1.8)	(5.8)	(3.4)	(5.4)
	Change		*0.1*	*0.2*	*(4.1)*	*(1.6)*	*(2.1)*	*(3.5)*	*(4.8)*	*(0.7)*	*(3.1)*	*(1.1)*
	Naphtha	(2.5)	(1.9)	(1.2)	(1.1)	(3.3)	(0.6)	1.6	(0.4)	1.3	0.6	(1.0)
	Change		*(0.6)*	*(1.3)*	*(1.4)*	*0.8*	*(1.9)*	*(4.1)*	*(2.1)*	*(3.8)*	*(3.1)*	*(1.5)*
Refining Margin	**Simple(단순)**	1.6	1.7	2.2	3.8	1.6	3.2	4.6	3.8	1.9	3.2	2.3
	Change		*(0.1)*	*(0.6)*	*(2.2)*	*(0.0)*	*(1.6)*	*(3.0)*	*(2.2)*	*(0.3)*	*(1.6)*	*(0.7)*
	Complex(복합)	7.3	7.5	8.3	8.6	6.5	8.3	10.0	8.3	7.0	8.0	7.5
	Change		*(0.2)*	*(1.0)*	*(1.3)*	*0.8*	*(1.0)*	*(2.8)*	*(1.0)*	*0.3*	*(0.7)*	*(0.2)*
	Complex(lagging)	10.2	10.0	14.0	5.1	6.5	7.3	10.6	18.0	8.5	8.9	9.0
	Change		*0.2*	*(3.8)*	*5.2*	*3.7*	*2.9*	*(0.4)*	*(7.7)*	*1.7*	*1.3*	*1.2*

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

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SK 증권

Petrochemical Price Data

Daily Price			09/11	09/10	09/07	09/06	09/05	09/04	09/03	08/31	08/30	08/29
Spot Price	**Naphtha**	CFR Japan	678.3	681.0	670.1	672.4	681.0	695.0	680.1	680.1	679.6	666.5
	Ethylene	CFR SE Asia	1,215.0	1,215.0	1,215.0	1,225.0	1,230.0	1,230.0	1,230.0	1,230.0	1,240.0	1,270.0
	Propylene	FOB Korea	1,090.0	1,090.0	1,090.0	1,085.0	1,085.0	1,085.0	1,085.0	1,090.0	1,090.0	1,090.0
	Butadiene	FOB Korea	1,600.0	1,615.0	1,620.0	1,690.0	1,690.0	1,690.0	1,720.0	1,730.0	1,740.0	1,740.0
	HDPE	CFR FE Asia	1,270.0	1,270.0	1,270.0	1,275.0	1,275.0	1,280.0	1,285.0	1,290.0	1,290.0	1,290.0
	LDPE	CFR FE Asia	1,110.0	1,110.0	1,110.0	1,110.0	1,110.0	1,120.0	1,120.0	1,120.0	1,120.0	1,120.0
	LLDPE	CFR FE Asia	1,090.0	1,090.0	1,090.0	1,095.0	1,095.0	1,100.0	1,100.0	1,100.0	1,100.0	1,100.0
	MEG	CFR China	915.0	938.0	955.0	981.0	993.0	981.0	983.0	977.0	952.0	940.0
	PP	CFR FE Asia	1,220.0	1,220.0	1,215.0	1,215.0	1,215.0	1,205.0	1,205.0	1,210.0	1,210.0	1,220.0
	PX	CFR China	1,293.0	1,308.7	1,306.3	1,312.3	1,315.3	1,334.3	1,348.7	1,351.7	1,352.0	1,317.7
	PTA	CFR China	1,070.0	1,070.0	1,070.0	1,065.0	1,065.0	1,065.0	1,065.0	1,065.0	1,050.0	1,050.0
	Benzene	FOB Korea	839.3	844.3	854.0	867.7	868.7	869.7	875.0	877.7	881.7	881.0
	Toluene	FOB Korea	823.0	818.0	818.0	821.0	821.0	826.0	821.0	819.5	814.5	804.5
	Xylene	FOB Korea	893.0	889.0	890.0	904.0	908.0	908.0	908.0	911.5	930.5	930.5
	SM	FOB Korea	1,387.0	1,392.0	1,397.0	1,415.0	1,415.0	1,417.0	1,414.0	1,422.0	1,412.0	1,412.0

Weekly Price			Last Week	1W	1M	3M	6M	12M	YTD	2016avg.	2017avg.	2018acc.
Spot Price	**Naphtha**	CFR Japan	667.0	680.0	635.5	649.5	676.0	510.0	484.5	399.5	493.5	625.3
	Change, %			*(1.9)*	*5.0*	*2.7*	*(1.3)*	*30.8*	*37.7*	*67.0*	*35.2*	*6.7*
	Ethylene	CFR SE Asia	1,137.5	1,190.0	1,275.0	1,215.0	1,155.0	1,225.0	990.0	1,040.9	1,090.9	1,236.7
	Change, %			*(4.4)*	*(10.8)*	*(6.4)*	*(1.5)*	*(7.1)*	*14.9*	*9.3*	*4.3*	*(8.0)*
	Propylene	CFR SE Asia	1,030.0	1,035.0	1,037.5	1,012.5	1,015.0	870.0	815.0	705.7	823.6	1,061.3
	Change, %			*(0.5)*	*(0.7)*	*1.7*	*1.5*	*18.4*	*26.4*	*46.0*	*25.1*	*(2.9)*
	Butadiene	CFR SE Asia	1,550.0	1,675.0	1,700.0	1,675.0	1,650.0	1,450.0	2,100.0	1,116.8	1,481.1	1,489.9
	Change, %			*(7.5)*	*(8.8)*	*(7.5)*	*(6.1)*	*6.9*	*(26.2)*	*38.8*	*4.7*	*4.0*
	Benzene	CFR SE Asia	870.0	882.5	877.5	855.0	857.5	822.5	822.5	646.7	838.8	868.4
	Change, %			*(1.4)*	*(0.9)*	*1.8*	*1.5*	*5.8*	*5.8*	*34.5*	*3.7*	*0.2*
	Toluene	CFR SE Asia	830.0	830.0	830.0	815.0	815.0	685.0	690.0	630.5	689.5	778.6
	Change, %			*0.0*	*0.0*	*1.8*	*1.8*	*21.2*	*20.3*	*31.6*	*20.4*	*6.6*
	Xylene	CFR SE Asia	870.0	870.0	840.0	840.0	807.5	635.0	675.0	627.7	668.8	795.9
	Change, %			*0.0*	*3.6*	*3.6*	*7.7*	*37.0*	*28.9*	*38.6*	*30.1*	*9.3*
Spread	**Ethylene**	-Naphtha	470.5	510.0	639.5	565.5	479.0	715.0	505.5	641.4	597.4	611.4
	Change, %			*(7.7)*	*(26.4)*	*(16.8)*	*(1.8)*	*(34.2)*	*(6.9)*	*(26.6)*	*(21.2)*	*(23.0)*
	Propylene	-Naphtha	363.0	355.0	402.0	363.0	339.0	360.0	330.5	306.2	330.1	435.9
	Change, %			*2.3*	*(9.7)*	*0.0*	*7.1*	*0.8*	*9.8*	*18.6*	*10.0*	*(16.7)*
	Butadiene	-Naphtha	883.0	995.0	1,064.5	1,025.5	974.0	940.0	1,615.5	717.3	987.6	864.5
	Change, %			*(11.3)*	*(17.1)*	*(13.9)*	*(9.3)*	*(6.1)*	*(45.3)*	*23.1*	*(10.6)*	*2.1*
	Benzene	-Naphtha	203.0	202.5	242.0	205.5	181.5	312.5	338.0	247.2	345.3	243.1
	Change, %			*0.2*	*(16.1)*	*(1.2)*	*11.8*	*(35.0)*	*(39.9)*	*(17.9)*	*(41.2)*	*(16.5)*
	Toluene	-Naphtha	163.0	150.0	194.5	165.5	139.0	175.0	205.5	231.0	196.0	153.3
	Change, %			*8.7*	*(16.2)*	*(1.5)*	*17.3*	*(6.9)*	*(20.7)*	*(29.4)*	*(16.8)*	*6.3*
	Xylene	-Naphtha	203.0	190.0	204.5	190.5	131.5	125.0	190.5	228.2	175.3	170.6
	Change, %			*6.8*	*(0.7)*	*6.6*	*54.4*	*62.4*	*6.6*	*(11.1)*	*15.8*	*19.0*

자료 : Cischem, Platts, Bloomberg, SK증권
참고 : Spread는 Polymer와 Naphtha의 가격차이임

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Weekly Price			Last Week	1W	1M	3M	6M	12M	YTD	2016avg.	2017avg.	2018acc.
Spot Price	**HDPE**	CFR SE Asia	1,192.5	1,207.5	1,222.5	1,287.5	1,292.5	1,167.5	1,142.5	1,134.6	1,142.5	1,248.0
	Change, %			(1.2)	(2.5)	(7.4)	(7.7)	2.1	4.4	5.1	4.4	(4.4)
	MEG	CFR SE Asia	970.0	992.5	970.0	945.0	1,000.0	970.0	847.5	660.8	850.6	972.8
	Change, %			(2.3)	0.0	2.6	(3.0)	0.0	14.5	46.8	14.0	(0.3)
	PVC	CFR SE Asia	950.0	950.0	945.0	920.0	940.0	945.0	920.0	823.4	899.9	943.3
	Change, %			0.0	0.5	3.3	1.1	0.5	3.3	15.4	5.6	0.7
	PP	CFR SE Asia	1,237.5	1,237.5	1,232.5	1,282.5	1,262.5	1,147.5	1,032.5	978.4	1,099.6	1,255.2
	Change, %			0.0	0.4	(3.5)	(2.0)	7.8	19.9	26.5	12.5	(1.4)
	2-EH	CFR Korea	1,130.0	1,115.0	1,120.0	1,100.0	1,165.0	990.0	865.0	772.4	970.0	1,116.8
	Change, %			1.3	0.9	2.7	(3.0)	14.1	30.6	46.3	16.5	1.2
	ABS	CFR SE Asia	1,880.0	1,880.0	1,960.0	2,060.0	2,050.0	2,030.0	1,635.0	1,347.1	1,844.7	2,004.6
	Change, %			0.0	(4.1)	(8.7)	(8.3)	(7.4)	15.0	39.6	1.9	(6.2)
	SBR	CFR SE Asia	1,875.0	1,875.0	1,830.0	1,900.0	1,800.0	1,790.0	2,000.0	1,483.0	1,980.5	1,769.7
	Change, %			0.0	2.5	(1.3)	4.2	4.7	(6.3)	26.4	(5.3)	5.9
	SM	CFR SE Asia	1,447.5	1,455.0	1,475.0	1,525.0	1,407.5	1,440.0	1,205.0	1,064.6	1,253.8	1,409.9
	Change, %			(0.5)	(1.9)	(5.1)	2.8	0.5	20.1	36.0	15.5	2.7
	Caustic	FOB NEA	440.0	400.0	369.0	550.0	598.0	477.0	422.5	316.6	491.2	531.0
	Change, %			10.0	19.2	(20.0)	(26.4)	(7.8)	4.1	39.0	(10.4)	(17.1)
	PX	CFR SE Asia	1,315.0	1,355.0	1,117.5	975.0	1,025.0	837.5	855.0	790.4	844.4	1,011.4
	Change, %			(3.0)	17.7	34.9	28.3	57.0	53.8	66.4	55.7	30.0
	PO	CFR China	1,960.0	1,947.5	1,815.0	1,877.5	1,880.0	1,887.5	1,562.5	1,396.8	1,601.2	1,871.2
	Change, %			0.6	8.0	4.4	4.3	3.8	25.4	40.3	22.4	4.7
	Caprolactam	CFR SE Asia	2,130.0	2,130.0	2,155.0	2,120.0	2,100.0	1,720.0	1,850.0	1,344.9	1,936.4	2,127.4
	Change, %			0.0	(1.2)	0.5	1.4	23.8	15.1	58.4	10.0	0.1
	PTA	CFR SE Asia	1,080.0	1,075.0	920.0	860.0	825.0	667.5	642.5	613.7	667.8	839.1
	Change, %			0.5	17.4	25.6	30.9	61.8	68.1	76.0	61.7	28.7
Spread	**HDPE**		525.5	527.5	587.0	638.0	616.5	657.5	658.0	735.1	649.0	622.7
	Change, %			(0.4)	(10.5)	(17.6)	(14.8)	(20.1)	(20.1)	(28.5)	(19.0)	(15.6)
	MEG		303.0	312.5	334.5	295.5	324.0	460.0	363.0	261.3	357.1	347.5
	Change, %			(3.0)	(9.4)	2.5	(6.5)	(34.1)	(16.5)	16.0	(15.1)	(12.8)
	PVC		283.0	270.0	309.5	270.5	264.0	435.0	435.5	423.9	406.4	317.9
	Change, %			4.8	(8.6)	4.6	7.2	(34.9)	(35.0)	(33.2)	(30.4)	(11.0)
	PP		570.5	557.5	597.0	633.0	586.5	637.5	548.0	578.9	606.1	629.9
	Change, %			2.3	(4.4)	(9.9)	(2.7)	(10.5)	4.1	(1.5)	(5.9)	(9.4)
	2-EH		463.0	435.0	484.5	450.5	489.0	480.0	380.5	372.9	476.5	491.5
	Change, %			6.4	(4.4)	2.8	(5.3)	(3.5)	21.7	24.2	(2.8)	(5.8)
	ABS		1,213.0	1,200.0	1,324.5	1,410.5	1,374.0	1,520.0	1,150.5	947.6	1,351.2	1,379.3
	Change, %			1.1	(8.4)	(14.0)	(11.7)	(20.2)	5.4	28.0	(10.2)	(12.1)
	SBR	BD spread	325.0	200.0	130.0	225.0	150.0	340.0	(100.0)	366.2	499.4	279.9
	Change, %			62.5	150.0	44.4	116.7	(4.4)	(425.0)	(11.2)	(34.9)	16.1
	SM		780.5	775.0	839.5	875.5	731.5	930.0	720.5	665.1	760.3	784.6
	Change, %			0.7	(7.0)	(10.9)	6.7	(16.1)	8.3	17.4	2.7	(0.5)
	Caustic											
	Change, %											
	PX		648.0	675.0	482.0	325.5	349.0	327.5	370.5	390.9	351.0	386.1
	Change, %			(4.0)	34.4	99.1	85.7	97.9	74.9	65.8	84.6	67.8
	PO	propylene sprea	930.0	912.5	777.5	865.0	865.0	1,017.5	747.5	691.1	777.6	809.9
	Change, %			1.9	19.6	7.5	7.5	(8.6)	24.4	34.6	19.6	14.8
	Caprolactam	benzene spreac	1,260.0	1,247.5	1,277.5	1,265.0	1,242.5	897.5	1,027.5	698.2	1,097.6	1,259.0
	Change, %			1.0	(1.4)	(0.4)	1.4	40.4	22.6	80.5	14.8	0.1
	PTA	px spread	159.5	126.5	137.8	177.5	107.5	81.3	44.0	60.4	76.7	131.1
	Change, %			26.1	15.8	(10.1)	48.4	96.3	262.5	164.0	108.0	21.6

자료 : Cischem, Platts, SK증권

참고 : Spread는 Naphtha spread로 일괄적용

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SK 증권

Global peers

	Currency	09/11	1D	1W	1M	3M	6M	12M	YTD	MKT CAP (mil USD)	PER 18E	PER 19E	PBR 18E	PBR 19E	EV/EBITDA 18E	EV/EBITDA 19E
Petrochemical																
DowDuPont	USD	70.1	0.0	0.5	3.5	0.8	(3.0)	4.8	(1.6)	168,245	17.7	14.9	1.8	1.7	10.2	9.2
Eastman	USD	95.9	(1.1)	(0.8)	(4.0)	(12.4)	(12.3)	12.0	3.5	13,550	11.6	10.7	2.5	2.2	8.7	8.1
BASF	EUR	76.3	(0.2)	(2.7)	(3.3)	(13.1)	(10.3)	(10.9)	(16.8)	101,214	14.6	13.6	2.4	2.2	7.8	7.4
Akzo Nobel	EUR	80.7	0.0	0.9	(0.6)	5.2	0.1	3.3	10.5	22,073	17.0	15.8	3.0	2.8	9.3	8.8
Arkema	EUR	104.3	(0.2)	(1.2)	(1.2)	1.6	(4.1)	9.3	2.7	9,270	13.2	12.2	1.7	1.6	6.3	6.0
Lanxess	EUR	65.9	0.1	(1.0)	(4.7)	(7.2)	(4.4)	2.7	(0.6)	7,282	15.5	13.1	2.1	1.9	9.3	8.2
Sumitomo Chemical	JPY	606	0.5	(0.8)	(3.8)	(7.3)	(1.8)	(8.9)	(25.2)	11,911	10.1	10.5	1.3	1.2	7.4	8.0
Mitsubishi Chemical	JPY	953	(0.5)	(2.2)	(3.2)	(4.8)	(8.3)	(7.2)	(23.0)	16,544	9.2	8.7	1.3	1.2	6.3	6.1
Shin-Etsu Chemical	JPY	9,766	0.7	(3.5)	(9.9)	(12.1)	(11.1)	(0.2)	(14.7)	43,948	18.5	16.6	1.9	1.8	8.1	7.4
Asahi Kasei	JPY	1,573	(0.0)	(0.9)	0.4	3.8	15.9	19.2	8.2	18,109	14.4	13.6	1.5	1.4	7.4	7.0
JSR	JPY	1,993	(0.6)	(5.8)	(7.0)	(1.9)	(20.3)	(5.6)	(10.1)	4,455	14.5	13.4	1.2	1.1	7.7	7.2
Nitto Denko	JPY	8,021	0.2	(3.8)	(4.9)	(8.5)	(6.9)	(15.5)	(19.9)	15,450	15.7	14.6	2.1	1.9	7.3	7.0
SABIC	SAR	119.8	0.7	(5.1)	(5.5)	(5.1)	10.6	19.9	18.1	80,773	14.2	13.7	1.7	1.7	7.3	7.1
Yansab	SAR	71.5	0.4	(3.2)	(3.4)	(1.8)	3.8	25.7	21.2	8,861	13.7	13.9	2.2	1.9	9.0	8.9
Formosa Plastics	TWD	111.0	(0.4)	(1.3)	0.5	1.8	9.4	15.7	12.5	21,114	14.4	13.9	1.8	1.8	18.9	19.2
Formosa Fiber	TWD	118.5	0.0	(2.5)	(0.4)	2.2	12.3	24.0	15.0	20,511	13.7	13.4	1.7	1.7	11.6	11.5
Nan Ya Plastics	TWD	84.0	0.7	(0.6)	(0.7)	(1.2)	5.9	11.3	7.8	20,648	14.8	15.3	1.7	1.7	16.2	16.4
Sinopec Shanghai	CNY	5.55	(1.4)	(2.3)	3.5	(2.8)	(6.3)	(12.9)	(12.3)	9,462	12.0	12.6	2.2	2.0	6.8	7.3
Sinopec Yizheng(Fibe	CNY	1.97	2.6	(0.5)	0.5	(3.0)	(15.1)	(38.4)	(26.2)	5,394	50.4	66.3	5.3	5.0	13.9	10.3
Reliance	INR	1,238	(1.4)	(0.3)	2.8	26.0	35.5	51.3	36.0	93,404	14.4	12.9	1.7	1.5	9.4	8.7
Industries Qatar	QAR	126.9	0.2	2.3	2.3	14.8	36.5	45.0	30.8	16,144	14.5	13.9	1.6	1.5	46.4	27.2
PTT Chemical	THB	77.0	(2.5)	(4.0)	(6.1)	(12.3)	(18.9)	0.7	(9.4)	11,766	10.7	10.4	1.4	1.3	5.5	5.4
Petronas	MYR	9.4	0.0	(0.6)	2.4	12.5	18.2	26.2	22.5	15,624	16.1	15.5	2.0	1.9	9.2	8.9
LG화학	KRW	341,000	(1.7)	(7.2)	(9.1)	(9.5)	(16.1)	(13.0)	(15.8)	27,313	13.8	12.8	1.8	1.6	6.5	6.1
롯데케미칼	KRW	287,500	(4.2)	(6.8)	(16.5)	(24.5)	(33.1)	(31.0)	(21.9)	11,632	5.5	5.2	0.9	0.8	3.6	3.3
한화케미칼	KRW	18,800	(4.8)	(6.9)	(11.5)	(27.4)	(39.9)	(49.3)	(40.5)	5,050	5.7	5.5	0.8	0.7	6.7	6.5
금호석유	KRW	101,500	1.5	5.3	(1.5)	0.5	12.0	25.2	2.0	2,969	14.1	11.9	1.6	1.5	9.3	8.4
SKC	KRW	47,100	0.2	1.2	4.1	15.4	19.5	18.2	0.2	1,643	9.9	8.7	1.1	1.0	8.8	7.9
국도화학	KRW	54,800	(1.1)	(4.7)	(6.2)	(19.1)	(7.4)	9.4	(13.2)	359	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A
효성	KRW	6,630	(0.6)	(1.8)	4.7	(12.5)	(30.7)	(0.3)	(12.5)	4,595	8.2	7.3	1.1	1.0	7.2	6.8
Average			**(0.4)**	**(2.0)**	**(2.6)**	**(3.4)**	**(2.3)**	**4.4**	**(2.4)**							
Refinery																
Valero	USD	115.1	(0.1)	(4.3)	(0.2)	(4.5)	22.0	64.9	25.2	40,608	14.1	13.4	2.0	2.0	6.9	6.9
Conoco Phillips	USD	71.5	0.4	(2.2)	(0.7)	1.4	29.8	59.1	30.2	66,136	34.0	25.9	2.2	2.2	7.2	6.7
Formosa Petrochemic	TWD	125.5	0.8	(0.8)	4.1	1.6	10.6	18.4	8.7	37,040	18.2	18.7	3.2	3.2	11.7	12.1
Andeavor	USD	154.9	1.1	(0.6)	3.1	8.4	51.7	51.6	35.5	17,904	12.9	11.4	1.8	1.7	7.3	7.1
Marathon Petroleum	USD	83.5	1.3	(0.9)	3.2	7.4	18.9	55.4	26.6	32,812	15.0	12.8	2.6	2.7	7.7	7.5
Devon Energy	USD	41.5	2.4	(2.0)	(3.2)	(1.8)	26.8	30.4	0.2	22,192	17.5	14.0	2.7	2.3	8.4	7.4
Hollyfrontier	USD	71.8	0.8	(5.8)	4.0	(5.9)	54.2	119.4	40.1	9,094	16.8	15.2	1.8	1.8	8.0	8.0
Phillips 66	USD	112.6	(1.2)	(5.4)	(8.2)	(3.8)	17.3	32.1	11.3	51,561	15.6	14.5	2.3	2.2	9.0	8.8
Murphy Oil	USD	30.9	3.8	2.8	(0.5)	(10.4)	22.0	31.7	(0.5)	5,548	162.4	113.2	1.2	1.1	4.9	4.5
JX Holdings	JPY	737.3	3.1	(3.4)	(8.1)	1.4	14.2	37.1	1.4	22,130	8.8	8.0	0.9	0.9	7.0	6.6
Idemitsu	JPY	5,640.0	2.0	0.4	8.0	50.0	39.1	103.1	24.6	8,360	7.9	7.5	1.0	0.9	6.8	6.8
Nesteoil	EUR	72.9	2.1	(0.8)	(2.7)	3.2	22.4	101.3	36.6	16,473	16.7	16.7	2.9	2.7	10.2	10.3
Ashland	USD	84.3	0.9	0.6	(1.3)	5.9	16.1	32.7	18.5	4,550	21.6	18.7	1.3	1.3	10.2	9.6
Fuchs Petrolub	EUR	48.7	(0.2)	(2.0)	(1.4)	5.8	1.8	(0.3)	10.0	7,127	22.1	20.9	4.1	3.7	13.0	12.3
SK이노베이션	KRW	202,500	1.5	4.9	5.5	(5.6)	(1.0)	6.0	(1.0)	17,975	7.9	7.7	0.9	0.9	4.9	4.8
S-Oil	KRW	126,000	3.7	4.6	7.7	12.5	3.3	1.6	7.7	12,400	9.3	8.1	1.8	1.6	7.6	6.6
GS	KRW	53,000	1.0	1.1	(1.3)	(11.1)	(19.5)	(21.7)	(14.8)	5,467	6.0	5.5	0.7	0.6	6.9	6.3
Average			**1.4**	**(0.8)**	**0.5**	**3.2**	**19.4**	**42.5**	**15.3**							

* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임
* 국내업체의 multiple은 Dataguidepro 기준임

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SK증권

Global peers

	Currency	09/11	1D	1W	1M	3M	6M	12M	YTD	MKT CAP (mil USD)	PER 18E	PER 19E	PBR 18E	PBR 19E	EV/EBITDA 18E	EV/EBITDA 19E
E&P/Shale																
Exxon Mobil	USD	83	1.4	3.2	4.3	(0.3)	11.1	4.6	(0.9)	350,814	17.7	14.8	1.8	1.7	8.0	6.9
BP	GBP	544	1.0	(1.6)	(2.2)	(7.3)	13.8	21.1	4.1	141,329	12.8	11.4	1.4	1.3	5.0	4.5
Shell	EUR	2,459	1.3	(3.1)	(2.9)	(6.6)	8.7	14.6	(0.9)	267,380	11.8	10.0	1.3	1.3	5.6	5.1
Chevron	USD	115	0.5	(3.2)	(6.7)	(9.8)	(1.9)	2.2	(8.1)	220,395	14.5	12.7	1.4	1.4	6.0	5.4
Total	EUR	53	2.1	(1.2)	(1.8)	0.4	14.0	19.4	15.1	163,676	11.4	10.2	1.3	1.2	5.5	5.0
Sinopec	CNY	7	0.9	(1.6)	2.3	6.9	6.1	13.4	10.6	118,487	10.3	9.9	1.1	1.0	3.9	3.8
Petrochina	CNY	8	0.7	0.0	2.6	6.0	2.6	2.0	1.9	209,238	25.4	21.0	1.2	1.2	5.4	5.3
CNOOC	CNY	11	6.8	3.3	6.6	6.0	1.3	(2.1)	4.3	79,404	9.7	8.9	1.3	1.3	3.8	3.7
Gazprom	RUB	152	1.1	3.4	5.2	7.1	9.0	25.9	16.8	51,814	3.2	3.1	0.2	0.2	2.5	2.5
Rosneft	RUB	449	(0.1)	2.2	3.6	16.7	43.3	42.8	54.0	68,328	8.3	6.8	1.0	0.9	4.7	4.4
Anadarko	USD	63	(1.0)	(2.2)	(6.4)	(12.7)	7.8	52.5	16.6	32,041	21.6	15.3	2.6	2.2	6.3	5.4
Petrobras	BRL	19	(3.9)	(0.8)	(5.6)	20.1	(17.4)	23.4	14.9	63,574	6.7	5.5	0.6	0.6	4.4	4.0
Lukoil	USD	4,707	0.4	(0.2)	2.8	13.2	24.2	61.8	41.1	57,158	5.7	5.8	0.8	0.8	N/A	N/A
Kinder	USD	18	1.8	2.2	(0.9)	5.0	10.3	(7.4)	(0.3)	47,497	20.8	18.2	1.2	1.2	10.6	10.5
Equinor ASA	NOK	215	2.1	(0.5)	(0.2)	(1.7)	20.4	44.6	22.5	85,928	13.1	11.9	2.0	1.8	3.4	3.1
BHP	AUD	31	0.0	(5.7)	(7.5)	(8.4)	10.2	16.4	5.5	112,268	12.8	14.0	2.1	2.1	5.7	6.0
PTT E&P	THB	138	0.4	(3.2)	(0.4)	1.8	21.6	55.5	38.0	16,712	13.1	11.8	1.4	1.3	4.2	3.9
Petronas gas	MYR	19	0.0	(0.3)	(2.3)	4.6	6.7	2.5	6.2	8,846	19.3	19.3	2.8	2.7	10.6	10.6
Chesapeake	USD	4	(0.5)	(5.8)	(12.9)	(17.5)	31.0	11.8	2.5	3,704	5.2	5.3	#N/A N/A	6.6	6.4	6.3
Noble Energy	USD	29	1.6	0.7	(4.0)	(14.5)	(5.6)	17.2	0.7	14,180	28.8	22.1	1.3	1.3	7.0	6.1
Average		**0**	**0.8**	**(0.7)**	**(1.3)**	**0.4**	**10.9**	**21.1**	**12.2**							
PV																
WACKER	EUR	118.0	0.0	(2.9)	(5.0)	(0.9)	(14.1)	5.2	(27.3)	7,131	16.8	15.1	1.8	1.7	6.3	6.1
GCL-Poly	HKD	0.5	(1.9)	(10.2)	(10.2)	(34.6)	(56.9)	(40.4)	(62.1)	1,238	8.6	6.4	0.4	0.3	7.1	6.4
SunPower	USD	6.9	6.5	2.4	(4.2)	(7.9)	(3.9)	(17.7)	(18.4)	970	#N/A N/A	#N/A N/A	98.3	982.9	16.7	10.5
Canadian Solar	USD	14.7	0.2	1.4	3.1	20.7	(9.1)	(11.6)	(12.7)	862	10.3	10.3	0.8	0.8	6.8	7.6
JA Solar	USD	7.5	0.0	0.0	0.0	6.1	0.8	(6.1)	0.4	356	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A
Yingli	USD	0.3	8.0	8.0	(18.2)	(83.2)	(84.2)	(88.0)	(84.0)	5	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A
First Solar	USD	48.5	0.6	(5.6)	(8.2)	(6.5)	(28.6)	2.7	(28.2)	5,078	29.6	15.9	0.9	0.9	6.5	3.4
한화큐셀	USD	8.4	(0.3)	(0.1)	1.5	26.5	5.2	11.6	20.0	701	15.0	31.2	#N/A N/A	#N/A N/A	8.9	9.1
OCI	KRW	112,500	(1.3)	(5.9)	4.7	(4.7)	(27.7)	8.7	(17.3)	2,383	0.0	12.7	0.0	0.8	0.0	5.5
웅진에너지	KRW	2,750	(0.5)	(4.3)	(15.0)	(48.2)	(61.8)	(70.2)	(66.5)	73	N/A	0.0	0.8	0.0	5.5	0.0
신성솔라에너지	KRW	1,395	(0.7)	(0.4)	(0.4)	(17.0)	(22.3)	(31.8)	(27.2)	214	N/A	0.8	0.0	5.5	0.0	2.4
Average			**1.0**	**(1.6)**	**(4.7)**	**(13.6)**	**(27.5)**	**(21.6)**	**(29.4)**							
Gas Company																
Towngas China	HKD	7.1	0.0	(2.8)	(9.2)	(5.5)	14.0	36.0	12.6	2,531	13.7	12.2	1.2	1.1	12.4	11.3
Kulun	HKD	8.3	(0.8)	(0.2)	8.6	16.3	16.7	11.4	2.3	8,567	11.0	9.7	1.4	1.3	5.6	5.2
Beijing Enterprise	HKD	39.9	3.8	4.7	7.1	(6.6)	(9.1)	(6.5)	(14.1)	6,407	6.8	6.1	0.7	0.6	13.4	12.6
ENN Energy	HKD	73.7	1.3	(0.4)	(4.4)	(6.6)	20.1	36.6	32.2	10,566	16.7	14.3	3.5	3.0	10.4	9.0
China Resources Gas	HKD	37.0	(0.7)	(0.8)	3.9	24.4	41.3	36.6	30.3	10,469	18.1	16.1	3.2	2.8	10.0	9.0
China Gas Holdings	HKD	23.4	0.6	(7.7)	(23.2)	(32.5)	(1.7)	11.2	8.1	15,115	14.8	12.6	3.4	2.9	12.2	10.4
Shenzen Gas	HKD	13.9	0.4	(7.2)	(1.0)	(18.2)	(10.3)	(4.4)	(6.5)	3,746	9.1	7.5	1.1	1.0	7.0	6.2
Shann Xi	CNY	7.3	(2.3)	2.5	(8.1)	0.0	(2.4)	(16.0)	(13.5)	1,179	17.6	15.4	1.4	1.3	#N/A N/A	#N/A N/A
Suntien	HKD	2.0	(2.4)	(13.2)	(12.8)	(24.4)	3.6	12.1	(1.4)	966	5.4	4.7	0.7	0.6	8.2	7.1
China Oil & Gas	HKD	0.6	3.4	1.7	(7.7)	(6.3)	(10.4)	5.3	(29.4)	446	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A
Average			**0.3**	**(2.3)**	**(4.7)**	**(5.9)**	**6.2**	**12.2**	**2.1**							
EV																
LG화학	KRW	341,000	(1.7)	(7.2)	(9.1)	(9.5)	(16.1)	(13.0)	(15.8)	21,380	13.0	11.7	1.5	1.3	6.4	5.7
삼성SDI	KRW	249,500	2.3	1.8	16.9	11.4	27.0	23.2	22.0	15,238	23.0	16.1	1.4	1.3	14.4	11.2
Panasonic	JPY	1274.0	0.8	(2.5)	(10.4)	(19.1)	(22.1)	(14.0)	(22.8)	27,998	11.6	10.3	1.6	1.4	4.7	4.3
GS Yuasa	JPY	530.0	0.0	0.4	5.6	2.5	(7.8)	(2.4)	(5.5)	1,964	16.1	14.8	1.2	1.1	7.2	6.6
NEC	JPY	3020.0	0.0	(0.8)	0.2	(0.7)	(5.8)	4.5	(0.7)	7,047	22.3	12.4	0.9	0.8	7.5	5.5
BYD Auto	CNY	41.5	(0.5)	(6.7)	(0.4)	(16.0)	(36.7)	(19.9)	(36.2)	16,035	26.9	20.0	2.0	1.8	12.1	10.5
Tesla Motors	USD	279.4	(2.1)	(3.3)	(21.4)	(15.9)	(14.6)	(23.2)	(10.2)	47,671	#N/A N/A	86.8	8.5	8.0	36.8	16.5
Kandi Technologies	USD	3.8	(3.8)	(10.6)	(9.5)	(7.3)	(28.0)	(3.8)	(44.1)	196	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A	#N/A N/A
Average			**(0.6)**	**(3.6)**	**(3.5)**	**(6.8)**	**(13.0)**	**(6.1)**	**(14.2)**							

* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임