

## 1. News Summary (3 page)

2017년 2월 24일

| News               |                                  |
|--------------------|----------------------------------|
| <b>WTI comment</b> | 예상치 밑돈 美재고량에 상승...WTI 1.6%↑      |
| <b>Headline</b>    | 유럽에서 LNG와 PNG의 가격전쟁이 일어날 것       |
| <b>News 1.</b>     | Tesla, 현금이 바닥나는 모습 보이며 증자 필요성 대두 |
| <b>News 2.</b>     | 롯데케미칼, 범용 제품으로 승부                |
| <b>News 3.</b>     | -                                |
| <b>News 4.</b>     | -                                |

| Conclusion |  |
|------------|--|
|            | 에너지 수출국으로 전환한 미국의 LNG 수출 활성화는 필연적 증자로 재무 건전성을 유지해왔기에 충분히 가능성 있는 시나리오 |
|            | Capex 증가로 공급이 늘어나며 에틸렌 다운사이클 시작될 것                                   |
|            | -  |
|            | -  |

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

| Daily                | Unit     | Price | 1D    | 1W    | 1M     | 3M     | 12M   |
|----------------------|----------|-------|-------|-------|--------|--------|-------|
| <b>Refinery</b>      |          |       | %     | %     | %      | %      | %     |
| WTI                  | \$/bbl   | 54.5  | 1.6   | 2.0   | 3.2    | 18.2   | 64.7  |
| Dubai                | \$/bbl   | 54.8  | 0.1   | 1.5   | 2.4    | 19.9   | 85.8  |
| Gasoline             | \$/bbl   | 68.1  | (1.5) | (3.7) | (1.4)  | 11.3   | 50.1  |
| Diesel               | \$/bbl   | 67.5  | 0.5   | 1.2   | 4.5    | 16.2   | 71.7  |
| Complex margin       | \$/bbl   | 7.3   | (0.3) | (1.5) | (0.2)  | (1.5)  | 0.1   |
| 1M lagging           | \$/bbl   | 8.5   | (0.8) | (0.9) | (0.2)  | 3.2    | (3.3) |
| <b>Petrochemical</b> |          |       | %     | %     | %      | %      | %     |
| Naphtha              | \$/t     | 512   | 2.1   | (0.1) | (0.7)  | 16.5   | 60.9  |
| Butadiene            | \$/t     | 3,000 | 0.0   | 0.0   | 0.0    | 105.5  | 237.1 |
| HDPE                 | \$/t     | 1,190 | 0.0   | (0.4) | 3.9    | 4.4    | 6.3   |
| MEG                  | \$/t     | 860   | 0.0   | (3.7) | (9.5)  | 16.5   | 29.3  |
| PX                   | \$/t     | 888   | (1.0) | (0.8) | 0.8    | 13.4   | 21.9  |
| SM                   | \$/t     | 1,349 | (0.8) | (6.6) | 2.2    | 14.5   | 35.4  |
| <b>Commodity</b>     |          |       | %     | %     | %      | %      | %     |
| Natural Gas          | \$/mmbtu | 2.62  | 1.0   | (8.3) | (23.0) | (17.3) | 4.6   |
| Natural rubber       | \$/t     | 2,120 | (0.9) | (6.2) | (5.4)  | 17.1   | 87.6  |
| Cotton               | C/lbs    | 75.0  | 1.2   | 0.0   | 1.1    | 2.7    | 29.0  |

\*참고: 정제마진의 변동률은 %가 아닌 \$/bbl임

| Weekly               | Update | Unit  | Price | 1W    | 1M    | 3M     | 12M    |
|----------------------|--------|-------|-------|-------|-------|--------|--------|
| <b>Petrochemical</b> |        |       |       | %     | %     | %      | %      |
| Ethylene             | 02/20  | \$/t  | 1,185 | 5.3   | 14.5  | 36.6   | 25.4   |
| Propylene            | 02/20  | \$/t  | 1,030 | 3.0   | 7.9   | 48.2   | 59.7   |
| Benzene              | 02/20  | \$/t  | 1,055 | (1.9) | 7.7   | 50.2   | 90.1   |
| Toluene              | 02/20  | \$/t  | 765   | (1.3) | 5.5   | 17.7   | 30.8   |
| Xylene               | 02/20  | \$/t  | 725   | 0.7   | 1.4   | 10.7   | 25.0   |
| PP                   | 02/20  | \$/t  | 1,108 | 0.9   | 6.2   | 7.5    | 30.3   |
| PVC                  | 02/20  | \$/t  | 940   | 2.2   | 3.3   | 1.1    | 29.7   |
| ABS                  | 02/20  | \$/t  | 1,940 | 0.5   | 9.0   | 22.8   | 70.2   |
| SBR                  | 02/20  | \$/t  | 3,100 | (0.8) | 3.3   | 77.1   | 156.2  |
| SM                   | 02/20  | \$/t  | 1,495 | 0.7   | 12.2  | 27.2   | 50.3   |
| BPA                  | 02/20  | \$/t  | 1,558 | (5.9) | (6.3) | 15.2   | 26.9   |
| Caustic              | 02/20  | \$/t  | 428   | 1.2   | 2.4   | 12.5   | 48.7   |
| 2-EH                 | 02/20  | \$/t  | 990   | 4.2   | 10.0  | 20.7   | 43.5   |
| Caprolactam          | 02/20  | \$/t  | 2,275 | 4.6   | 11.0  | 58.0   | 105.0  |
| <b>Solar</b>         |        |       |       | %     | %     | %      | %      |
| Polysilicon          | 02/22  | \$/kg | 16.2  | (0.2) | (0.2) | 11.0   | 21.5   |
| Module               | 02/22  | \$/W  | 0.35  | (0.6) | (1.4) | (10.9) | (36.5) |

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

|                 | Unit | Price | 1D    | 1W    | 1M    | 3M    | 12M   |
|-----------------|------|-------|-------|-------|-------|-------|-------|
| <b>E&amp;P</b>  |      |       | %     | %     | %     | %     | %     |
| ExxonMobil      | USD  | 81.8  | 1.1   | (0.6) | (3.8) | (5.9) | 0.7   |
| Shell           | EUR  | 2,089 | 0.2   | (1.6) | (4.8) | 3.4   | 32.5  |
| Petrochina      | CNY  | 8.29  | (1.3) | (0.4) | (2.7) | 9.2   | 10.8  |
| Gazprom         | RUB  | 136.7 | 0.0   | (1.8) | (7.7) | (8.6) | (2.3) |
| Petrobras       | BRL  | 15.6  | (0.9) | (1.9) | (2.7) | (1.8) | 216.3 |
| <b>Refinery</b> |      |       |       |       |       |       |       |
| Phillips66      | USD  | 78.6  | 0.3   | 0.1   | (4.4) | (7.6) | 0.1   |
| Valero          | USD  | 67.0  | 1.5   | 0.6   | 1.2   | 3.6   | 16.6  |
| JX              | JPY  | 533.3 | 0.4   | (1.1) | 2.1   | 19.8  | 20.5  |
| Neste Oil       | EUR  | 34.5  | (0.5) | (0.1) | 2.0   | (9.3) | 20.9  |

|                      | Unit | Price | 1D    | 1W    | 1M    | 3M    | 12M    |
|----------------------|------|-------|-------|-------|-------|-------|--------|
| <b>Petrochemical</b> |      |       | %     | %     | %     | %     | %      |
| BASF                 | EUR  | 89.6  | (0.3) | 0.4   | 1.0   | 11.8  | 49.7   |
| Dow Chemical         | USD  | 63.4  | (0.5) | 3.2   | 10.9  | 17.2  | 34.9   |
| SABIC                | SAR  | 97.4  | (0.4) | (0.1) | 3.5   | 7.9   | 34.2   |
| Formosa Pla.         | TWD  | 92.5  | 0.0   | (1.6) | 3.1   | 4.4   | 19.5   |
| Shin-Etsu            | JPY  | 9,886 | 0.7   | 0.7   | 2.9   | 20.0  | 75.2   |
| <b>Renewable</b>     |      |       |       |       |       |       |        |
| Wacker               | EUR  | 105.3 | (1.7) | (2.8) | (4.5) | 29.1  | 51.9   |
| First Solar          | USD  | 37.19 | 10.8  | 9.0   | 10.5  | 24.9  | (39.8) |
| Trina Solar          | USD  | 10.2  | (0.3) | 0.2   | 3.7   | (1.2) | 2.8    |
| Tesla Motors         | USD  | 256.0 | (6.4) | (4.8) | 2.8   | 32.5  | 44.5   |

## 4. Coverage Summary

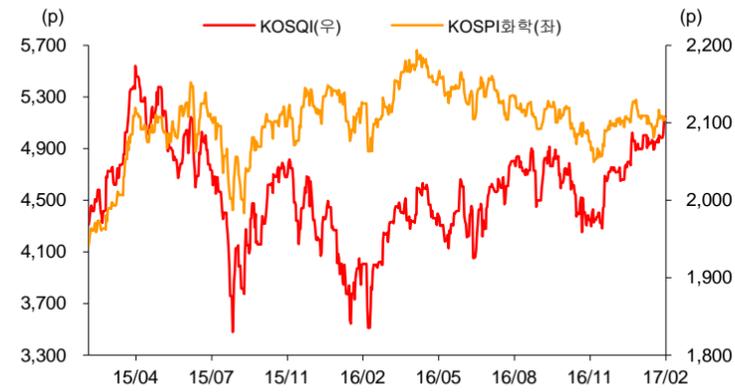
|         | 02/23   | 1D    | 1W    | 1M    | 3M    | 6M     | 12M    |
|---------|---------|-------|-------|-------|-------|--------|--------|
| KOSPI   | 2,108   | 0.0   | 1.2   | 2.0   | 6.7   | 3.1    | 10.1   |
| KOSPI화학 | 5,130   | 0.2   | (0.0) | (0.5) | 6.6   | (1.9)  | 0.3    |
| LG화학    | 284,000 | 1.6   | 3.3   | 8.0   | 27.6  | 6.4    | (5.2)  |
| 롯데케미칼   | 379,500 | 0.8   | (2.9) | (1.0) | 17.9  | 37.5   | 22.6   |
| 한화케미칼   | 26,000  | (1.1) | (4.2) | (5.3) | 8.6   | (3.5)  | 1.0    |
| 금호석유화학  | 78,500  | 0.0   | (4.5) | (4.8) | 3.4   | 9.9    | 28.9   |
| KCC     | 341,500 | (0.1) | 0.3   | (0.9) | (9.8) | (19.2) | (20.5) |
| OCI     | 92,800  | (2.8) | 1.0   | 1.9   | 21.0  | 1.3    | 6.3    |
| SKC     | 32,950  | 0.5   | 1.2   | 4.4   | 5.1   | 16.6   | 5.8    |
| 국도화학    | 51,800  | (0.6) | (0.2) | (4.6) | (2.8) | (9.6)  | (9.1)  |
| SK이노베이션 | 156,000 | 0.6   | (1.3) | (3.4) | 0.0   | 5.4    | 5.1    |
| S-Oil   | 84,500  | (1.4) | (2.9) | 2.3   | (1.1) | 16.6   | 4.1    |
| GS      | 53,900  | (0.6) | (2.0) | 3.7   | (2.9) | 8.9    | 2.1    |
| SK가스    | 104,000 | (0.5) | (4.1) | (8.0) | (6.3) | 5.1    | 39.6   |
| 포스코대우   | 25,250  | 0.4   | (4.0) | (8.2) | (2.5) | 5.2    | 31.2   |
| LG상사    | 32,600  | (0.6) | (5.6) | 1.1   | 6.2   | (4.1)  | (4.7)  |

| 투자의견 | TP      | %    | P/E                         | P/B  |
|------|---------|------|-----------------------------|------|
|      |         |      | * 추정치는 12M fwd 기준임          |      |
|      |         |      | * 모든 coverage 업체의 실적은 연결기준임 |      |
| 매수   | 350,000 | 23.2 | 10.65                       | 1.47 |
| 매수   | 410,000 | 8.0  | 9.63                        | 1.46 |
| 매수   | 28,000  | 7.7  | 9.38                        | 0.78 |
| 매수   | 100,000 | 27.4 | 13.02                       | 1.46 |
| 매수   | 500,000 | 46.4 | 13.42                       | 0.52 |
| 매수   | 100,000 | 7.8  | 17.13                       | 0.70 |
| 매수   | 40,000  | 21.4 | 10.49                       | 0.80 |
| 매수   | 70,000  | 35.1 | 10.89                       | 0.64 |
| 매수   | 180,000 | 15.4 | 8.52                        | 0.87 |
| 매수   | 100,000 | 18.3 | 10.89                       | 1.43 |
| 매수   | 65,000  | 20.6 | 8.51                        | 0.86 |
| 매수   | 130,000 | 25.0 | 8.31                        | 0.78 |
| 매수   | 29,000  | 14.9 | 10.22                       | 1.16 |
| 매수   | 42,000  | 28.8 | 11.20                       | 1.06 |

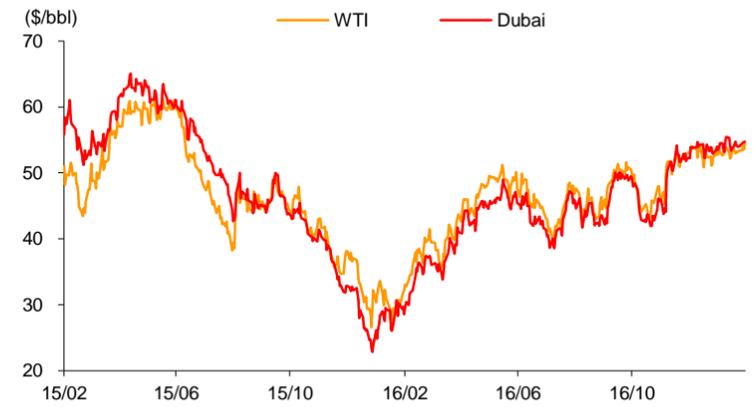
\* 작성자(손지우)는 본 조사분석자료에 게재된 내용들이 본인의 의견을 정확하게 반영하고 있으며, 외부의 부당한 압력이나 간섭없이 신의성실하게 작성되었음을 확인합니다.  
\* 본 보고서에 언급된 종목의 경우 당사 조사분석담당자는 본인의 담당종목을 보유하고 있지 않습니다.  
\* 본 보고서는 기관투자가 또는 제 3자에게 사전 제공된 사실이 없습니다.  
\* 당사는 본 보고서의 발간시점에 해당종목을 1% 이상 보유하고 있지 않습니다.

## Key Chart

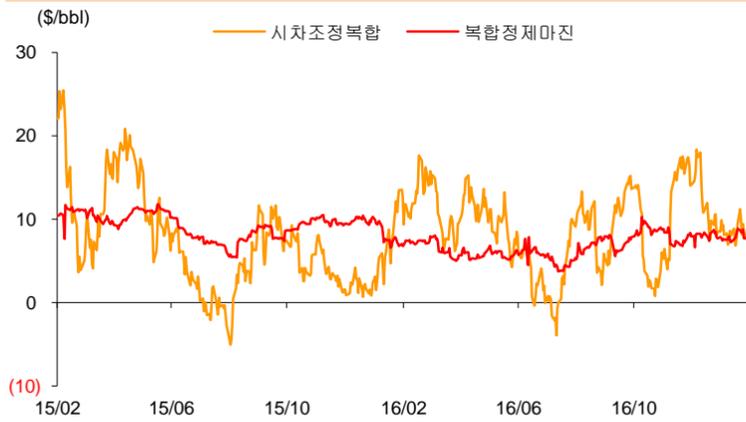
KOSPI/KOSPI화학



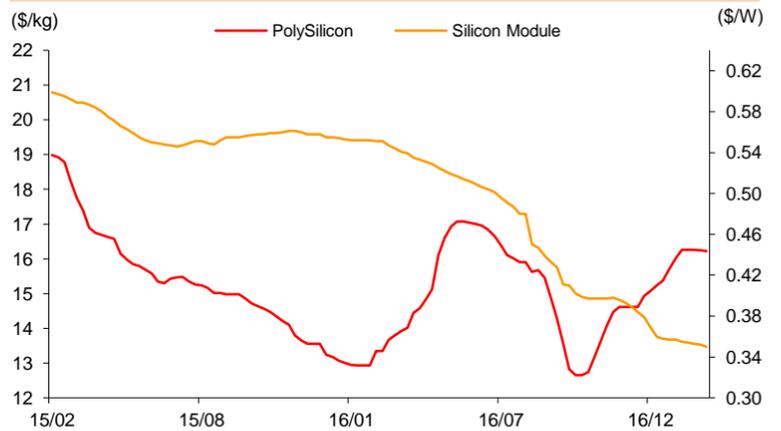
WTI/Dubai



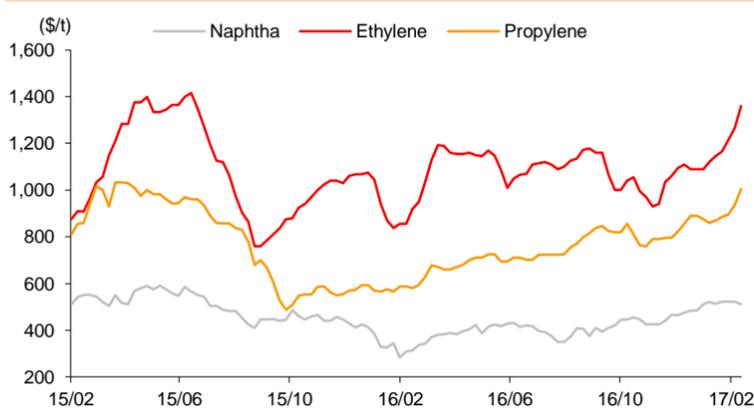
Complex & 1M lagging margin



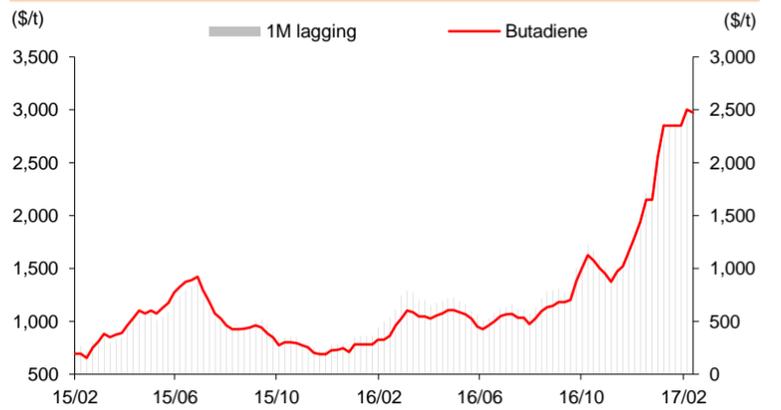
Polysilicon & Module prices



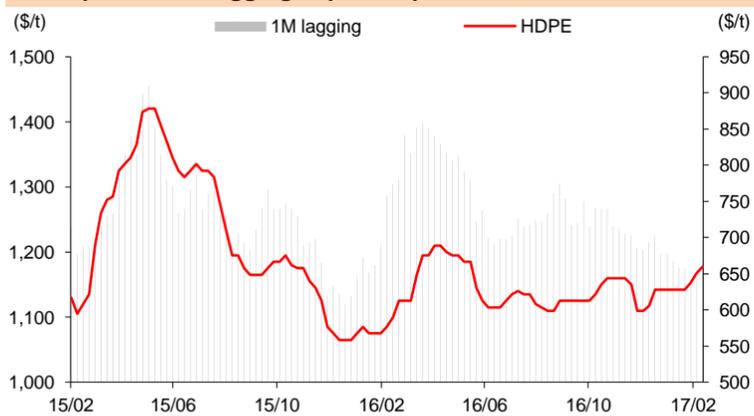
Naphtha/Ethylene/Propylene prices



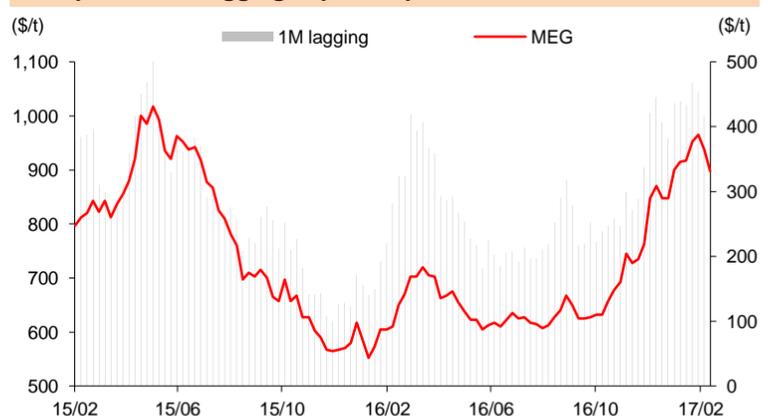
Butadiene price & 1M lagging naphtha spread



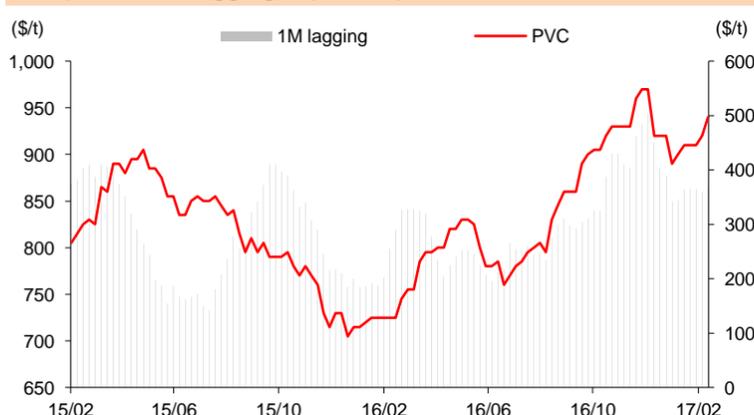
HDPE price & 1M lagging naphtha spread



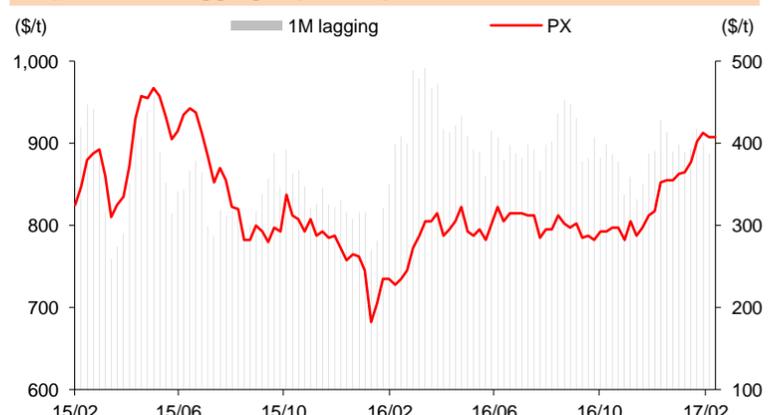
MEG price & 1M lagging naphtha spread



PVC price & 1M lagging naphtha spread



PX price & 1M lagging naphtha spread



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

## News Comment

### Headline (출처: Platts)

**제목** 유럽에서 LNG와 PNG의 가격전쟁이 일어날 것

**결론** 에너지 수출국으로 전환한 미국의 LNG 수출 활성화는 필연적

**세부**

- 1) 미국 헨리허브 가스 가격과 영국 NBP 가격이 수렴할 것
- 2) 북서유럽이 미국산 LNG를 연 30mil톤 정도 수입하게 될 것은 자명
- 3) 따라서 유럽 시장에서 러시아 png와 가격 경쟁할 가능성 농후
- 4) 관계자, "유럽을 넘어서 전 세계적 가스 가격이 수렴할 것"
- 5) 에너지 수출국으로 전환한 미국의 LNG 수출 활성화는 필연적

### Issue 1 (출처: Bloomberg)

**제목** Tesla, 현금이 바닥나는 모습 보이며 증자 필요성 대두

**결론** 증자로 재무 건전성을 유지해왔기에 충분히 가능성 있는 시나리오

**세부**

- 1) 양산모델인 모델3 생산을 위해서 테슬라는 현금을 늘려야 함
- 2) 7월 모델3 출시를 앞두고 2017년 상반기 동안 25억 달러 지출할 것
- 3) 2014년부터 반기마다 100억\$ 이상의 R&D 비용을 투하함
- 4) 일론 머스크, "현금은 모델 3 생산에 중요 요소 아냐"
- 5) 증자로 재무 건전성을 유지해왔기에 충분히 가능성 있는 시나리오

### Issue 3 (출처: Bloomberg)

**제목**

**결론**

**세부**

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

### Issue 5 (출처: 동아닷컴)

**제목**

**결론**

**세부**

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

### WTI Comment (출처: 연합뉴스)

**제목** 예상치 못한 미재고량에 상승...WTI 1.6%↑

**상승** 쿠싱의 재고량이 150만 이상 감소

**요인**

**하락** 미국의 지난주 원유재고는 56만4천 배럴 늘어남

**요인**

### Issue 2 (출처: 시사저널)

**제목** 롯데케미칼, 범용 제품으로 승부

**결론** Capex 증가로 공급이 늘어나며 에틸렌 다운사이클 시작될 것

**세부**

- 1) 사업다각화와 고부가가치화보다는 범용 제품에 승부를 걸고 있음
- 2) 에틸렌, 프로필렌 등 범용 제품의 스프레드 확대로 고수익 얻음
- 3) 납사 가격 하락과 수요 증가로 수급측면에서 이익을 봄
- 4) 여수, 말레이시아, 미국의 에틸렌 공장에 4조 3천억원 투자계획
- 5) Capex 증가로 공급이 늘어나며 에틸렌 다운사이클 시작될 것

### Issue 4 (출처: Platts)

**제목**

**결론**

**세부**

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

### Issue 6 (출처: 키뉴스)

**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     | 0.945     | 0.947   | 0.937   | 0.929   | 0.948   | 0.885   | 0.908   | 0.951   | 0.901    | 0.904    | 0.940    |       |
|               | Change, %   |           | (0.2)   | 0.9     | 1.8     | (0.3)   | 6.9     | 4.2     | (0.6)   | 4.9      | 4.6      | 0.6      |       |
|               | USD/JPY     | 112.7     | 113.3   | 113.2   | 112.7   | 112.5   | 100.2   | 112.1   | 117.0   | 121.1    | 108.8    | 114.2    |       |
|               | Change, %   |           | (0.6)   | (0.5)   | (0.0)   | 0.1     | 12.4    | 0.5     | (3.7)   | (6.9)    | 3.6      | (1.3)    |       |
|               | USD/KRW     | 1,137.5   | 1,142.4 | 1,141.6 | 1,165.6 | 1,176.3 | 1,115.5 | 1,231.3 | 1,205.8 | 1,131.2  | 1,160.5  | 1,165.7  |       |
|               | Change, %   |           | (0.4)   | (0.4)   | (2.4)   | (3.3)   | 2.0     | (7.6)   | (5.7)   | 0.6      | (2.0)    | (2.4)    |       |
|               | Agriculture | Corn      | 365.5   | 371.0   | 373.5   | 369.5   | 350.8   | 328.5   | 362.0   | 352.0    | 376.8    | 358.5    | 364.9 |
|               |             | Change, % |         | (1.5)   | (2.1)   | (1.1)   | 4.2     | 11.3    | 1.0     | 3.8      | (3.0)    | 2.0      | 0.2   |
| Soybean       |             | 1,011.5   | 1,022.8 | 1,043.8 | 1,057.8 | 1,034.3 | 1,034.3 | 869.3   | 996.5   | 945.4    | 987.5    | 1,034.8  |       |
| Change, %     |             |           | (1.1)   | (3.1)   | (4.4)   | (2.2)   | (2.2)   | 16.4    | 1.5     | 7.0      | 2.4      | (2.3)    |       |
| Wheat         |             | 438.0     | 441.3   | 447.8   | 433.3   | 401.5   | 407.8   | 448.0   | 408.0   | 508.1    | 436.4    | 430.5    |       |
| Change, %     |             |           | (0.7)   | (2.2)   | 1.1     | 9.1     | 7.4     | (2.2)   | 7.4     | (13.8)   | 0.4      | 1.7      |       |
| Rice          |             | 9.5       | 9.5     | 9.3     | 9.8     | 9.5     | 10.3    | 10.6    | 9.4     | 11.1     | 10.3     | 9.6      |       |
| Change, %     |             | 0.1       | 1.4     | (3.4)   | (0.7)   | (8.1)   | (10.6)  | 1.2     | (14.3)  | (8.4)    | (1.1)    |          |       |
| MYR/mt        | Oats        | 253.3     | 253.0   | 255.8   | 260.0   | 216.8   | 171.5   | 182.8   | 228.5   | 250.2    | 196.3    | 249.1    |       |
|               | Change, %   |           | 0.1     | (1.0)   | (2.6)   | 16.8    | 47.7    | 38.6    | 10.8    | 1.2      | 29.0     | 1.7      |       |
|               | Palm Oil    | 2,945.0   | 3,022.0 | 3,151.0 | 3,231.0 | 2,959.0 | 2,833.0 | 2,483.0 | 3,218.0 | 2,190.3  | 2,653.8  | 3,215.3  |       |
|               | Change, %   |           | (2.5)   | (6.5)   | (8.9)   | (0.5)   | 4.0     | 18.6    | (8.5)   | 34.5     | 11.0     | (8.4)    |       |
|               | Cocoa       | 2,067.0   | 2,028.0 | 2,072.0 | 2,165.0 | 2,438.0 | 3,039.0 | 2,872.0 | 2,126.0 | 3,091.6  | 2,854.0  | 2,109.0  |       |
|               | Change, %   |           | 1.9     | (0.2)   | (4.5)   | (15.2)  | (32.0)  | (28.0)  | (2.8)   | (33.1)   | (27.6)   | (2.0)    |       |
|               | Cotton      | 75.0      | 74.1    | 75.0    | 74.6    | 73.1    | 68.1    | 58.2    | 70.7    | 63.3     | 65.6     | 74.1     |       |
| Change, %     |             | 1.2       | 0.0     | 0.5     | 2.7     | 10.1    | 29.0    | 6.2     | 18.6    | 14.4     | 1.2      |          |       |
| Energy        | Sugar       | 20.2      | 20.7    | 20.4    | 20.6    | 19.6    | 20.7    | 14.0    | 19.5    | 13.1     | 18.2     | 20.5     |       |
|               | Change, %   |           | (2.7)   | (1.0)   | (2.3)   | 3.0     | (2.7)   | 44.0    | 3.3     | 53.4     | 11.1     | (1.7)    |       |
|               | Coffee      | 147.9     | 149.2   | 146.3   | 155.4   | 154.7   | 145.3   | 117.8   | 137.1   | 132.6    | 136.1    | 147.4    |       |
|               | Change, %   |           | (0.9)   | 1.1     | (4.9)   | (4.4)   | 1.8     | 25.5    | 7.9     | 11.5     | 8.7      | 0.3      |       |
|               | WTI         | 54.4      | 53.6    | 53.4    | 52.8    | 48.0    | 48.1    | 31.9    | 53.7    | 48.8     | 43.4     | 53.1     |       |
|               | Change, %   |           | 1.5     | 1.9     | 3.1     | 13.4    | 13.0    | 70.6    | 1.2     | 11.3     | 25.3     | 2.4      |       |
|               | Brent       | 56.5      | 55.8    | 55.7    | 55.2    | 49.0    | 50.0    | 33.3    | 56.8    | 53.7     | 45.1     | 55.9     |       |
| Change, %     |             | 1.1       | 1.5     | 2.2     | 15.4    | 13.0    | 69.7    | (0.6)   | 5.2     | 25.3     | 1.1      |          |       |
| Natural Gas   | 2.6         | 2.6       | 2.9     | 3.2     | 3.0     | 2.8     | 1.8     | 3.7     | 2.6     | 2.6      | 3.2      |          |       |
| Change, %     |             | 1.0       | (8.3)   | (19.3)  | (13.5)  | (5.2)   | 46.9    | (29.7)  | (0.5)   | 2.5      | (17.2)   |          |       |
| Ethanol       | 1.5         | 1.5       | 1.5     | 1.5     | 1.6     | 1.5     | 1.4     | 1.6     | 1.5     | 1.5      | 1.5      |          |       |
| Change, %     |             | 0.1       | (2.3)   | 0.9     | (6.7)   | 2.7     | 6.2     | (6.2)   | (0.2)   | (0.6)    | (0.7)    |          |       |
| RBOB Gasoline | 152.9       | 151.3     | 152.5   | 156.7   | 142.2   | 149.9   | 96.6    | 166.5   | 163.6   | 140.0    | 156.5    |          |       |
| Change, %     |             | 1.0       | 0.3     | (2.4)   | 7.5     | 2.0     | 58.2    | (8.2)   | (6.6)   | 9.2      | (2.3)    |          |       |
| Coal          | 40.0        | 40.0      | 40.0    | 40.0    | 40.0    | 39.5    | 43.2    | 40.0    | 45.2    | 41.3     | 40.0     |          |       |
| Change, %     |             | 0.0       | 0.0     | 0.0     | 0.0     | 1.3     | (7.3)   | 0.0     | (11.5)  | (3.2)    | 0.0      |          |       |
| Metal         | Gold        | 1,249.4   | 1,237.6 | 1,239.1 | 1,218.1 | 1,188.2 | 1,337.6 | 1,225.6 | 1,152.3 | 1,160.6  | 1,248.5  | 1,209.1  |       |
|               | Change, %   |           | 1.0     | 0.8     | 2.6     | 5.1     | (6.6)   | 1.9     | 8.4     | 7.7      | 0.1      | 3.3      |       |
|               | Silver      | 18.2      | 18.0    | 18.1    | 17.2    | 16.4    | 18.8    | 15.3    | 15.9    | 15.7     | 17.1     | 17.3     |       |
|               | Change, %   |           | 0.9     | 0.5     | 5.5     | 11.1    | (3.4)   | 18.9    | 14.2    | 15.7     | 6.3      | 5.3      |       |
|               | Platinum    | 1,009.7   | 1,003.7 | 1,012.7 | 982.3   | 932.0   | 1,104.3 | 944.4   | 903.5   | 1,055.7  | 988.4    | 986.8    |       |
|               | Change, %   |           | 0.6     | (0.3)   | 2.8     | 8.3     | (8.6)   | 6.9     | 11.8    | (4.4)    | 2.2      | 2.3      |       |
|               | Palladium   | 773.5     | 769.7   | 793.1   | 778.1   | 734.8   | 698.4   | 501.2   | 681.0   | 691.9    | 614.3    | 759.4    |       |
|               | Change, %   |           | 0.5     | (2.5)   | (0.6)   | 5.3     | 10.8    | 54.4    | 13.6    | 11.8     | 25.9     | 1.9      |       |
|               | Copper      | 5,859.0   | 6,040.0 | 6,000.0 | 5,795.0 | 5,740.0 | 4,710.0 | 4,645.0 | 5,535.5 | 5,503.1  | 4,872.0  | 5,842.7  |       |
|               | Change, %   |           | (3.0)   | (2.4)   | 1.1     | 2.1     | 24.4    | 26.1    | 5.8     | 6.5      | 20.3     | 0.3      |       |
|               | Uranium     | 24.0      | 24.2    | 25.0    | 22.9    | 18.5    | 25.9    | 33.4    | 20.4    | 36.9     | 26.4     | 24.0     |       |
|               | Change, %   |           | (0.6)   | (4.0)   | 4.8     | 29.7    | (7.3)   | (28.1)  | 17.6    | (34.9)   | (9.2)    | 0.2      |       |
|               | HR Coil     | 620.0     | 617.0   | 615.0   | 620.0   | 510.0   | 596.0   | 396.0   | 633.0   | 461.5    | 519.3    | 621.1    |       |
| Change, %     |             | 0.5       | 0.8     | 0.0     | 21.6    | 4.0     | 56.6    | (2.1)   | 34.4    | 19.4     | (0.2)    |          |       |
| Scrap         | 320.0       | 320.0     | 310.0   | 300.0   | 270.0   | 265.0   | 250.0   | 302.0   | 252.9   | 275.7    | 304.0    |          |       |
| Change, %     |             | 0.0       | 3.2     | 6.7     | 18.5    | 20.8    | 28.0    | 6.0     | 26.5    | 16.1     | 5.3      |          |       |
| Zinc          | 2,790.0     | 2,865.0   | 2,858.0 | 2,790.0 | 2,670.0 | 2,302.0 | 1,737.0 | 2,576.0 | 1,941.9 | 2,097.5  | 2,775.8  |          |       |
| Change, %     |             | (2.6)     | (2.4)   | 0.0     | 4.5     | 21.2    | 60.6    | 8.3     | 43.7    | 33.0     | 0.5      |          |       |

자료: Bloomberg

참고) NYMEX, ICE, LME 중 대표지수를 사용

## Refining Price Data

| Daily Price          |                         | 02/23 | 1D    | 1W    | 1M    | 3M    | 6M    | 12M   | YTD   | 2015avg. | 2016avg. | 2017acc. |
|----------------------|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|----------|----------|----------|
| Crude Oil            | <b>WTI</b>              | 54.5  | 53.6  | 53.4  | 52.8  | 46.1  | 47.3  | 33.1  | 53.7  | 48.8     | 43.4     | 53.0     |
|                      | <i>Change, %</i>        |       | 1.6   | 2.0   | 3.2   | 18.2  | 15.0  | 64.7  | 1.4   | 11.6     | 25.6     | 2.8      |
|                      | <b>Dubai</b>            | 54.8  | 54.7  | 54.0  | 53.5  | 45.7  | 45.6  | 29.5  | 53.8  | 50.8     | 41.3     | 54.0     |
|                      | <i>Change, %</i>        |       | 0.1   | 1.5   | 2.4   | 19.9  | 20.1  | 85.8  | 1.7   | 7.8      | 32.5     | 1.4      |
| Crude Oil<br>Product | <b>Gasoline(휘발유)</b>    | 68.1  | 69.2  | 70.7  | 69.1  | 61.2  | 57.8  | 45.4  | 69.8  | 69.5     | 56.3     | 69.9     |
|                      | <i>Change, %</i>        |       | (1.5) | (3.7) | (1.4) | 11.3  | 17.9  | 50.1  | (2.5) | (2.1)    | 21.0     | (2.6)    |
|                      | <b>Kerosene(등유)</b>     | 66.8  | 66.6  | 66.3  | 64.6  | 58.5  | 56.0  | 41.5  | 66.4  | 64.7     | 52.9     | 65.6     |
|                      | <i>Change, %</i>        |       | 0.2   | 0.7   | 3.4   | 14.2  | 19.2  | 61.0  | 0.5   | 3.1      | 26.2     | 1.7      |
|                      | <b>Diesel(경유)</b>       | 67.5  | 67.2  | 66.7  | 64.6  | 58.1  | 56.1  | 39.3  | 65.5  | 64.8     | 52.1     | 65.8     |
|                      | <i>Change, %</i>        |       | 0.5   | 1.2   | 4.5   | 16.2  | 20.4  | 71.7  | 3.0   | 4.2      | 29.5     | 2.6      |
|                      | <b>Bunker-C</b>         | 49.6  | 49.9  | 50.5  | 48.8  | 44.3  | 39.1  | 23.4  | 52.1  | 45.3     | 35.5     | 50.2     |
|                      | <i>Change, %</i>        |       | (0.4) | (1.6) | 1.7   | 12.0  | 27.0  | 112.0 | (4.6) | 9.7      | 39.7     | (1.2)    |
|                      | <b>Naphtha</b>          | 55.4  | 55.7  | 57.5  | 56.2  | 47.8  | 41.9  | 34.2  | 53.5  | 52.6     | 42.6     | 55.9     |
|                      | <i>Change, %</i>        |       | (0.5) | (3.5) | (1.3) | 16.1  | 32.2  | 61.9  | 3.7   | 5.4      | 30.1     | (0.8)    |
| Dubai<br>Spread      | <b>Gasoline(휘발유)</b>    | 13.3  | 14.5  | 16.8  | 15.6  | 15.5  | 12.2  | 15.9  | 16.0  | 18.7     | 14.9     | 15.9     |
|                      | <i>Change</i>           |       | (1.1) | (3.4) | (2.3) | (2.2) | 1.2   | (2.6) | (2.7) | (5.4)    | (1.6)    | (2.5)    |
|                      | <b>Kerosene(등유)</b>     | 12.0  | 11.9  | 12.4  | 11.1  | 12.8  | 10.4  | 12.0  | 12.6  | 14.0     | 11.6     | 11.6     |
|                      | <i>Change</i>           |       | 0.1   | (0.3) | 0.9   | (0.8) | 1.6   | 0.0   | (0.6) | (2.0)    | 0.4      | 0.4      |
|                      | <b>Diesel(경유)</b>       | 12.8  | 12.5  | 12.8  | 11.1  | 12.4  | 10.5  | 9.9   | 11.7  | 14.0     | 10.8     | 11.8     |
|                      | <i>Change</i>           |       | 0.2   | 0.0   | 1.6   | 0.3   | 2.3   | 2.9   | 1.1   | (1.2)    | 1.9      | 1.0      |
| Dubai<br>Spread      | <b>Bunker-C</b>         | (5.1) | (4.8) | (3.5) | (4.7) | (1.3) | (6.5) | (6.1) | (1.8) | (5.5)    | (5.8)    | (3.8)    |
|                      | <i>Change</i>           |       | (0.3) | (1.6) | (0.4) | (3.8) | 1.4   | 0.9   | (3.3) | 0.4      | 0.7      | (1.4)    |
|                      | <b>Naphtha</b>          | 0.7   | 1.0   | 3.5   | 2.7   | 2.1   | (3.7) | 4.8   | (0.4) | 1.8      | 1.3      | 1.9      |
|                      | <i>Change</i>           |       | (0.3) | (2.8) | (2.0) | (1.4) | 4.4   | (4.1) | 1.1   | (1.1)    | (0.6)    | (1.2)    |
| Refining<br>Margin   | <b>Simple(단순)</b>       | 2.2   | 2.4   | 3.6   | 2.3   | 4.5   | 0.7   | 2.2   | 3.8   | 3.3      | 1.9      | 2.9      |
|                      | <i>Change</i>           |       | (0.2) | (1.4) | (0.1) | (2.3) | 1.5   | (0.0) | (1.6) | (1.1)    | 0.3      | (0.7)    |
|                      | <b>Complex(복합)</b>      | 7.3   | 7.6   | 8.8   | 7.5   | 8.8   | 5.5   | 7.2   | 8.3   | 9.3      | 7.0      | 7.9      |
|                      | <i>Change</i>           |       | (0.3) | (1.5) | (0.2) | (1.5) | 1.8   | 0.1   | (1.0) | (2.0)    | 0.3      | (0.7)    |
| Refining<br>Margin   | <b>Complex(lagging)</b> | 8.5   | 9.3   | 9.4   | 8.7   | 5.3   | 10.7  | 11.8  | 18.0  | 7.3      | 8.5      | 9.4      |
|                      | <i>Change</i>           |       | (0.8) | (0.9) | (0.2) | 3.2   | (2.2) | (3.3) | (9.5) | 1.2      | 0.0      | (0.9)    |

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 |                  |             | 02/23   | 02/22   | 02/21   | 02/20   | 02/17   | 02/16   | 02/15   | 02/14   | 02/13   | 02/10   |         |
|-------------|------------------|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Spot Price  | <b>Naphtha</b>   | CFR Japan   | 512.0   | 501.4   | 510.0   | 511.0   | 512.8   | 525.3   | 523.8   | 528.9   | 522.0   | 520.5   |         |
|             | <b>Ethylene</b>  | CFR SE Asia | 1,145.0 | 1,150.0 | 1,150.0 | 1,150.0 | 1,150.0 | 1,110.0 | 1,110.0 | 1,110.0 | 1,110.0 | 1,110.0 |         |
|             | <b>Propylene</b> | FOB Korea   | 975.0   | 975.0   | 980.0   | 999.0   | 999.0   | 1,000.0 | 936.0   | 935.0   | 935.0   | 935.0   |         |
|             | <b>Butadiene</b> | FOB Korea   | 3,000.0 | 3,000.0 | 3,000.0 | 3,000.0 | 3,000.0 | 3,000.0 | 3,000.0 | 3,000.0 | 3,000.0 | 3,000.0 |         |
|             | <b>HDPE</b>      | CFR FE Asia | 1,190.0 | 1,190.0 | 1,195.0 | 1,195.0 | 1,195.0 | 1,195.0 | 1,195.0 | 1,195.0 | 1,195.0 | 1,185.0 |         |
|             | <b>LDPE</b>      | CFR FE Asia | 1,300.0 | 1,300.0 | 1,320.0 | 1,320.0 | 1,320.0 | 1,320.0 | 1,320.0 | 1,320.0 | 1,320.0 | 1,330.0 | 1,310.0 |
|             | <b>LLDPE</b>     | CFR FE Asia | 1,160.0 | 1,160.0 | 1,180.0 | 1,180.0 | 1,180.0 | 1,180.0 | 1,180.0 | 1,180.0 | 1,180.0 | 1,190.0 | 1,195.0 |
|             | <b>MEG</b>       | CFR China   | 860.0   | 860.0   | 855.0   | 870.0   | 893.0   | 898.0   | 890.0   | 890.0   | 915.0   | 938.0   | 933.0   |
|             | <b>PP</b>        | CFR FE Asia | 1,030.0 | 1,030.0 | 1,030.0 | 1,030.0 | 1,040.0 | 1,060.0 | 1,070.0 | 1,070.0 | 1,060.0 | 1,060.0 | 1,030.0 |
|             | <b>PX</b>        | CFR China   | 888.3   | 897.0   | 898.0   | 900.0   | 895.5   | 894.7   | 895.7   | 899.7   | 900.7   | 893.7   |         |
|             | <b>PTA</b>       | CFR China   | 684.0   | 690.0   | 692.0   | 692.0   | 688.0   | 688.0   | 690.0   | 698.0   | 695.0   | 685.0   |         |
|             | <b>Benzene</b>   | FOB Korea   | 926.5   | 948.5   | 968.5   | 996.5   | 1,005.5 | 1,024.0 | 1,043.0 | 1,051.0 | 1,053.0 | 1,036.0 |         |
|             | <b>Toluene</b>   | FOB Korea   | 692.5   | 706.5   | 719.5   | 721.5   | 728.5   | 731.5   | 726.0   | 730.0   | 741.0   | 732.0   |         |
|             | <b>Xylene</b>    | FOB Korea   | 677.0   | 693.0   | 707.0   | 704.0   | 704.0   | 704.0   | 715.0   | 715.0   | 715.0   | 715.0   |         |
|             | <b>SM</b>        | FOB Korea   | 1,348.5 | 1,359.5 | 1,394.5 | 1,429.5 | 1,444.0 | 1,492.5 | 1,495.0 | 1,495.0 | 1,496.0 | 1,485.0 |         |

| Weekly Price |                  |             | Last Week | 1W      | 1M      | 3M      | 6M      | 12M   | YTD     | 2015avg. | 2016avg. | 2017acc. |         |
|--------------|------------------|-------------|-----------|---------|---------|---------|---------|-------|---------|----------|----------|----------|---------|
| Spot Price   | <b>Naphtha</b>   | CFR Japan   | 511.5     | 522.0   | 512.5   | 424.5   | 455.5   | 313.0 | 484.5   | 493.0    | 399.5    | 513.4    |         |
|              | <i>Change, %</i> |             |           | (2.0)   | (0.2)   | 20.5    | 12.3    | 63.4  | 5.6     | 3.8      | 28.0     | (0.4)    |         |
|              | <b>Ethylene</b>  | CFR SE Asia | 1,185.0   | 1,125.0 | 1,035.0 | 867.5   | 1,025.0 | 945.0 | 990.0   | 990.0    | 1,103.7  | 1,040.9  | 1,065.6 |
|              | <i>Change, %</i> |             |           | 5.3     | 14.5    | 36.6    | 15.6    | 25.4  | 19.7    | 7.4      | 13.8     | 11.2     |         |
|              | <b>Propylene</b> | CFR SE Asia | 1,030.0   | 1,000.0 | 955.0   | 695.0   | 735.0   | 645.0 | 815.0   | 815.0    | 770.0    | 705.7    | 901.9   |
|              | <i>Change, %</i> |             |           | 3.0     | 7.9     | 48.2    | 40.1    | 59.7  | 26.4    | 33.8     | 46.0     | 14.2     |         |
|              | <b>Butadiene</b> | CFR SE Asia | 2,925.0   | 2,950.0 | 2,800.0 | 1,420.0 | 1,525.0 | 820.0 | 2,100.0 | 2,100.0  | 877.5    | 1,116.8  | 2,709.4 |
|              | <i>Change, %</i> |             |           | (0.8)   | 4.5     | 106.0   | 91.8    | 256.7 | 39.3    | 233.3    | 161.9    | 8.0      |         |
|              | <b>Benzene</b>   | CFR SE Asia | 1,055.0   | 1,075.0 | 980.0   | 702.5   | 640.0   | 555.0 | 822.5   | 822.5    | 690.0    | 646.7    | 973.4   |
|              | <i>Change, %</i> |             |           | (1.9)   | 7.7     | 50.2    | 64.8    | 90.1  | 28.3    | 52.9     | 63.1     | 8.4      |         |
|              | <b>Toluene</b>   | CFR SE Asia | 765.0     | 775.0   | 725.0   | 650.0   | 660.0   | 585.0 | 690.0   | 690.0    | 700.8    | 630.5    | 741.3   |
|              | <i>Change, %</i> |             |           | (1.3)   | 5.5     | 17.7    | 15.9    | 30.8  | 10.9    | 9.2      | 21.3     | 3.2      |         |
|              | <b>Xylene</b>    | CFR SE Asia | 725.0     | 720.0   | 715.0   | 655.0   | 650.0   | 580.0 | 675.0   | 675.0    | 699.3    | 627.7    | 708.1   |
|              | <i>Change, %</i> |             |           | 0.7     | 1.4     | 10.7    | 11.5    | 25.0  | 7.4     | 3.7      | 15.5     | 2.4      |         |

|        |                  |          |         |         |         |       |         |        |         |         |       |       |         |
|--------|------------------|----------|---------|---------|---------|-------|---------|--------|---------|---------|-------|-------|---------|
| Spread | <b>Ethylene</b>  | -Naphtha | 673.5   | 603.0   | 522.5   | 443.0 | 569.5   | 632.0  | 505.5   | 610.6   | 641.4 | 552.3 |         |
|        | <i>Change, %</i> |          |         | 11.7    | 28.9    | 52.0  | 18.3    | 6.6    | 33.2    | 10.3    | 5.0   | 22.0  |         |
|        | <b>Propylene</b> | -Naphtha | 518.5   | 478.0   | 442.5   | 270.5 | 279.5   | 332.0  | 330.5   | 330.5   | 277.0 | 306.2 | 388.5   |
|        | <i>Change, %</i> |          |         | 8.5     | 17.2    | 91.7  | 85.5    | 56.2   | 56.9    | 87.2    | 69.4  | 33.5  |         |
|        | <b>Butadiene</b> | -Naphtha | 2,413.5 | 2,428.0 | 2,287.5 | 995.5 | 1,069.5 | 507.0  | 1,615.5 | 1,615.5 | 384.5 | 717.3 | 2,196.0 |
|        | <i>Change, %</i> |          |         | (0.6)   | 5.5     | 142.4 | 125.7   | 376.0  | 49.4    | 527.8   | 236.5 | 9.9   |         |
|        | <b>Benzene</b>   | -Naphtha | 543.5   | 553.0   | 467.5   | 278.0 | 184.5   | 242.0  | 338.0   | 338.0   | 197.0 | 247.2 | 460.1   |
|        | <i>Change, %</i> |          |         | (1.7)   | 16.3    | 95.5  | 194.6   | 124.6  | 60.8    | 175.9   | 119.9 | 18.1  |         |
|        | <b>Toluene</b>   | -Naphtha | 253.5   | 253.0   | 212.5   | 225.5 | 204.5   | 272.0  | 205.5   | 205.5   | 207.8 | 231.0 | 227.9   |
|        | <i>Change, %</i> |          |         | 0.2     | 19.3    | 12.4  | 24.0    | (6.8)  | 23.4    | 22.0    | 9.7   | 11.2  |         |
|        | <b>Xylene</b>    | -Naphtha | 213.5   | 198.0   | 202.5   | 230.5 | 194.5   | 267.0  | 190.5   | 190.5   | 206.3 | 228.2 | 194.8   |
|        | <i>Change, %</i> |          |         | 7.8     | 5.4     | (7.4) | 9.8     | (20.0) | 12.1    | 3.5     | (6.4) | 9.6   |         |

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 | 1,177.5 | 1,167.5 | 1,142.5 | 1,160.0 | 1,150.0 | 1,100.0 | 1,142.5  | 1,230.1  | 1,134.6  | 1,151.3 |
|              | Change, %        |             |         | 0.9     | 3.1     | 1.5     | 2.4     | 7.0     | 3.1      | (4.3)    | 3.8      | 2.3     |
|              | MEG              | CFR SE Asia | 897.5   | 937.5   | 917.5   | 727.5   | 657.5   | 650.0   | 847.5    | 780.8    | 660.8    | 916.6   |
|              | Change, %        |             |         | (4.3)   | (2.2)   | 23.4    | 36.5    | 38.1    | 5.9      | 14.9     | 35.8     | (2.1)   |
|              | PVC              | CFR SE Asia | 940.0   | 920.0   | 910.0   | 930.0   | 920.0   | 725.0   | 920.0    | 820.8    | 823.4    | 912.5   |
|              | Change, %        |             |         | 2.2     | 3.3     | 1.1     | 2.2     | 29.7    | 2.2      | 14.5     | 14.2     | 3.0     |
|              | PP               | CFR SE Asia | 1,107.5 | 1,097.5 | 1,042.5 | 1,030.0 | 1,020.0 | 850.0   | 1,032.5  | 1,109.8  | 978.4    | 1,062.5 |
|              | Change, %        |             |         | 0.9     | 6.2     | 7.5     | 8.6     | 30.3    | 7.3      | (0.2)    | 13.2     | 4.2     |
|              | 2-EH             | CFR Korea   | 990.0   | 950.0   | 900.0   | 820.0   | 800.0   | 690.0   | 865.0    | 930.1    | 772.4    | 909.4   |
|              | Change, %        |             |         | 4.2     | 10.0    | 20.7    | 23.8    | 43.5    | 14.5     | 6.4      | 28.2     | 8.9     |
|              | ABS              | CFR SE Asia | 1,940.0 | 1,930.0 | 1,780.0 | 1,580.0 | 1,460.0 | 1,140.0 | 1,635.0  | 1,431.1  | 1,347.1  | 1,811.3 |
|              | Change, %        |             |         | 0.5     | 9.0     | 22.8    | 32.9    | 70.2    | 18.7     | 35.6     | 44.0     | 7.1     |
|              | SBR              | CFR SE Asia | 3,100.0 | 3,125.0 | 3,000.0 | 1,750.0 | 1,900.0 | 1,210.0 | 2,000.0  | 1,332.1  | 1,483.0  | 2,834.4 |
|              | Change, %        |             |         | (0.8)   | 3.3     | 77.1    | 63.2    | 156.2   | 55.0     | 132.7    | 109.0    | 9.4     |
|              | SM               | CFR SE Asia | 1,495.0 | 1,485.0 | 1,332.5 | 1,175.0 | 1,040.0 | 995.0   | 1,205.0  | 1,100.7  | 1,064.6  | 1,374.1 |
|              | Change, %        |             |         | 0.7     | 12.2    | 27.2    | 43.8    | 50.3    | 24.1     | 35.8     | 40.4     | 8.8     |
|              | Caustic          | FOB NEA     | 427.5   | 422.5   | 417.5   | 380.0   | 360.0   | 287.5   | 422.5    | 296.8    | 316.6    | 420.0   |
|              | Change, %        |             |         | 1.2     | 2.4     | 12.5    | 18.8    | 48.7    | 1.2      | 44.1     | 35.0     | 1.8     |
|              | PX               | CFR SE Asia | 907.5   | 907.5   | 877.5   | 787.5   | 797.5   | 735.0   | 855.0    | 842.9    | 790.4    | 886.3   |
|              | Change, %        |             |         | 0.0     | 3.4     | 15.2    | 13.8    | 23.5    | 6.1      | 7.7      | 14.8     | 2.4     |
| PO           | CFR China        | 1,557.5     | 1,655.0 | 1,662.5 | 1,352.5 | 1,607.5 | 1,227.5 | 1,562.5 | 1,683.4  | 1,396.8  | 1,605.6  |         |
| Change, %    |                  |             | (5.9)   | (6.3)   | 15.2    | (3.1)   | 26.9    | (0.3)   | (7.5)    | 11.5     | (3.0)    |         |
| Caprolactam  | CFR SE Asia      | 2,275.0     | 2,175.0 | 2,050.0 | 1,440.0 | 1,425.0 | 1,110.0 | 1,850.0 | 1,581.5  | 1,344.9  | 2,065.0  |         |
| Change, %    |                  |             | 4.6     | 11.0    | 58.0    | 59.6    | 105.0   | 23.0    | 43.8     | 69.2     | 10.2     |         |
| PTA          | CFR SE Asia      | 702.5       | 702.5   | 667.5   | 622.5   | 622.5   | 582.5   | 642.5   | 648.0    | 613.7    | 674.7    |         |
| Change, %    |                  |             | 0.0     | 5.2     | 12.9    | 12.9    | 20.6    | 9.3     | 8.4      | 14.5     | 4.1      |         |
| Spread       | HDPE             |             | 666.0   | 645.5   | 630.0   | 735.5   | 694.5   | 787.0   | 658.0    | 737.1    | 735.1    | 637.9   |
|              | Change, %        |             |         | 3.2     | 5.7     | (9.4)   | (4.1)   | (15.4)  | 1.2      | (9.6)    | (9.4)    | 4.4     |
|              | MEG              |             | 386.0   | 415.5   | 405.0   | 303.0   | 202.0   | 337.0   | 363.0    | 287.8    | 261.3    | 403.2   |
|              | Change, %        |             |         | (7.1)   | (4.7)   | 27.4    | 91.1    | 14.5    | 6.3      | 34.1     | 47.7     | (4.3)   |
|              | PVC              |             | 428.5   | 398.0   | 397.5   | 505.5   | 464.5   | 412.0   | 435.5    | 327.8    | 423.9    | 399.1   |
|              | Change, %        |             |         | 7.7     | 7.8     | (15.2)  | (7.8)   | 4.0     | (1.6)    | 30.7     | 1.1      | 7.4     |
|              | PP               |             | 596.0   | 575.5   | 530.0   | 605.5   | 564.5   | 537.0   | 548.0    | 616.8    | 578.9    | 549.1   |
|              | Change, %        |             |         | 3.6     | 12.5    | (1.6)   | 5.6     | 11.0    | 8.8      | (3.4)    | 2.9      | 8.5     |
|              | 2-EH             |             | 478.5   | 428.0   | 387.5   | 395.5   | 344.5   | 377.0   | 380.5    | 437.0    | 372.9    | 396.0   |
|              | Change, %        |             |         | 11.8    | 23.5    | 21.0    | 38.9    | 26.9    | 25.8     | 9.5      | 28.3     | 20.8    |
|              | ABS              |             | 1,428.5 | 1,408.0 | 1,267.5 | 1,155.5 | 1,004.5 | 827.0   | 1,150.5  | 938.1    | 947.6    | 1,297.9 |
|              | Change, %        |             |         | 1.5     | 12.7    | 23.6    | 42.2    | 72.7    | 24.2     | 52.3     | 50.7     | 10.1    |
|              | SBR              | BD spread   | 175.0   | 175.0   | 200.0   | 330.0   | 375.0   | 390.0   | (100.0)  | 454.7    | 366.2    | 125.0   |
|              | Change, %        |             |         | 0.0     | (12.5)  | (47.0)  | (53.3)  | (55.1)  | (275.0)  | (61.5)   | (52.2)   | 40.0    |
|              | SM               |             | 983.5   | 963.0   | 820.0   | 750.5   | 584.5   | 682.0   | 720.5    | 607.7    | 665.1    | 860.7   |
|              | Change, %        |             |         | 2.1     | 19.9    | 31.0    | 68.3    | 44.2    | 36.5     | 61.8     | 47.9     | 14.3    |
|              | Caustic          |             |         |         |         |         |         |         |          |          |          |         |
|              | Change, %        |             |         |         |         |         |         |         |          |          |          |         |
|              | PX               |             | 396.0   | 385.5   | 365.0   | 363.0   | 342.0   | 422.0   | 370.5    | 349.9    | 390.9    | 372.9   |
|              | Change, %        |             |         | 2.7     | 8.5     | 9.1     | 15.8    | (6.2)   | 6.9      | 13.2     | 1.3      | 6.2     |
| PO           | propylene spread | 527.5       | 655.0   | 707.5   | 657.5   | 872.5   | 582.5   | 747.5   | 913.4    | 691.1    | 703.8    |         |
| Change, %    |                  |             | (19.5)  | (25.4)  | (19.8)  | (39.5)  | (9.4)   | (29.4)  | (42.2)   | (23.7)   | (25.0)   |         |
| Caprolactam  | benzene spread   | 1,220.0     | 1,100.0 | 1,070.0 | 737.5   | 785.0   | 555.0   | 1,027.5 | 891.6    | 698.2    | 1,091.6  |         |
| Change, %    |                  |             | 10.9    | 14.0    | 65.4    | 55.4    | 119.8   | 18.7    | 36.8     | 74.7     | 11.8     |         |
| PTA          | px spread        | 67.3        | 67.3    | 53.3    | 71.3    | 64.3    | 68.0    | 44.0    | 58.0     | 60.4     | 54.3     |         |
| Change, %    |                  |             | 0.0     | 26.3    | (5.6)   | 4.7     | (1.1)   | 52.8    | 15.9     | 11.3     | 23.8     |         |

자료 : Cischem, Platts, SK증권

참고 : Spread는 Naphtha spread로 일괄적용

## Global peers

|                        | Currency | 02/23   | 1D           | 1W           | 1M         | 3M          | 6M          | 12M         | YTD        | MKT CAP<br>(mil USD) | PER  |      | PBR  |     | EV/EBITDA |      |
|------------------------|----------|---------|--------------|--------------|------------|-------------|-------------|-------------|------------|----------------------|------|------|------|-----|-----------|------|
|                        |          |         |              |              |            |             |             |             |            |                      | 16   | 17E  | 16   | 17E | 16        | 17E  |
| <b>Petrochemical</b>   |          |         |              |              |            |             |             |             |            |                      |      |      |      |     |           |      |
| Dow Chemical           | USD      | 63.4    | (0.5)        | 3.2          | 10.9       | 17.2        | 17.8        | 34.9        | 10.7       | 76,888               | 17.4 | 15.6 | 2.8  | 2.8 | 9.7       | 8.7  |
| Du Pont                | USD      | 79.6    | (0.3)        | 2.3          | 9.4        | 13.2        | 13.0        | 35.3        | 8.4        | 68,811               | 24.4 | 21.4 | 7.3  | 4.2 | 13.3      | 12.0 |
| Eastman                | USD      | 80.1    | (0.4)        | (0.6)        | 4.4        | 4.7         | 19.5        | 27.4        | 6.6        | 11,761               | 11.9 | 11.0 | 2.5  | 2.3 | 8.6       | 8.3  |
| BASF                   | EUR      | 89.6    | (0.3)        | 0.4          | 1.0        | 11.8        | 23.9        | 49.7        | 1.5        | 86,997               | 18.7 | 16.9 | 2.7  | 2.6 | 9.3       | 8.5  |
| Akzo Nobel             | EUR      | 63.1    | (0.1)        | 0.5          | 0.8        | 8.3         | 5.9         | 17.5        | 6.3        | 16,823               | 15.0 | 15.0 | 2.4  | 2.4 | 8.3       | 8.0  |
| Arkema                 | EUR      | 93.5    | (1.7)        | (1.4)        | 2.0        | 6.0         | 17.7        | 73.1        | 0.6        | 7,485                | 17.5 | 14.9 | 1.9  | 1.8 | 7.1       | 6.5  |
| Lanxess                | EUR      | 65.4    | (2.9)        | (3.1)        | (1.6)      | 12.3        | 35.3        | 76.0        | 5.0        | 6,329                | 26.2 | 21.0 | 2.3  | 2.2 | 7.4       | 6.4  |
| Sumitomo Chemical      | JPY      | 648     | 0.0          | 2.0          | 14.7       | 27.6        | 50.7        | 28.3        | 16.5       | 9,517                | 15.0 | 12.2 | 1.3  | 1.3 | 8.6       | 7.9  |
| Mitsubishi Chemical    | JPY      | 889     | 1.2          | 5.9          | 16.9       | 22.8        | 48.9        | 46.9        | 17.3       | 11,884               | 9.0  | 10.5 | 1.2  | 1.1 | 7.0       | 6.5  |
| Shin-Etsu Chemical     | JPY      | 9,886   | 0.7          | 0.7          | 2.9        | 20.0        | 35.2        | 75.2        | 9.0        | 37,898               | 24.6 | 20.9 | 2.0  | 1.9 | 10.5      | 9.1  |
| Asahi Kasei            | JPY      | 1,100   | (0.6)        | 0.2          | 4.3        | 13.1        | 30.4        | 68.6        | 7.8        | 13,681               | 14.9 | 14.2 | 1.4  | 1.3 | 7.2       | 6.7  |
| JSR                    | JPY      | 1,974   | (2.0)        | (6.2)        | (3.3)      | 23.8        | 36.8        | 25.6        | 7.1        | 3,959                | 18.6 | 16.7 | 1.2  | 1.2 | 8.7       | 7.2  |
| Nitto Denko            | JPY      | 9,591   | (0.7)        | (0.9)        | 9.1        | 21.1        | 40.3        | 58.5        | 6.9        | 14,785               | 27.0 | 21.8 | 2.4  | 2.3 | 11.0      | 9.4  |
| SABIC                  | SAR      | 97.4    | (0.4)        | (0.1)        | 3.5        | 7.9         | 16.0        | 34.2        | 6.4        | 77,890               | 17.5 | 15.9 | 1.8  | 1.7 | 8.2       | 7.7  |
| Yansab                 | SAR      | 57.0    | (1.3)        | (1.3)        | 1.4        | 14.1        | 28.2        | 74.6        | 4.7        | 8,549                | 14.9 | 14.9 | 2.0  | 1.9 | 8.8       | 9.0  |
| Formosa Plastics       | TWD      | 92.5    | 0.0          | (1.6)        | 3.1        | 4.4         | 16.6        | 19.5        | 3.7        | 19,233               | 17.6 | 15.8 | 2.0  | 1.9 | 28.5      | 25.6 |
| Formosa Fiber          | TWD      | 97.5    | (1.0)        | (1.0)        | 0.7        | (0.5)       | 15.9        | 34.7        | 1.2        | 18,666               | 14.5 | 14.0 | 1.9  | 1.8 | 12.7      | 12.4 |
| Nan Ya Plastics        | TWD      | 74.7    | 0.5          | (3.5)        | 1.6        | 12.3        | 22.3        | 21.9        | 4.9        | 19,351               | 16.4 | 17.5 | 1.8  | 1.7 | 20.0      | 16.9 |
| Sinopec Shanghai       | CNY      | 6.79    | (0.9)        | 1.0          | 0.7        | 11.1        | 8.6         | 17.3        | 5.4        | 9,416                | 13.4 | 12.3 | 3.0  | 2.6 | 7.1       | 7.8  |
| Sinopec Yizheng(Fiber) | CNY      | 3.95    | (1.0)        | 1.3          | 2.1        | (5.0)       | 0.8         | (40.2)      | (3.7)      | 7,379                | #N/A | N/A  | #N/A | N/A | #N/A      | N/A  |
| Reliance               | INR      | 1,183   | (2.0)        | 10.8         | 16.4       | 17.2        | 17.1        | 24.5        | 9.3        | 57,586               | 12.6 | 12.6 | 1.4  | 1.2 | 11.0      | 9.1  |
| Industries Qatar       | QAR      | 121.0   | (0.4)        | 2.5          | 1.1        | 15.3        | 6.1         | 10.5        | 3.0        | 20,104               | 19.8 | 18.5 | 2.2  | 2.1 | 47.7      | 62.2 |
| PTT Chemical           | THB      | 73.8    | 3.1          | 6.5          | 9.3        | 17.5        | 20.9        | 30.5        | 17.1       | 9,409                | 12.1 | 11.1 | 1.4  | 1.3 | 5.9       | 5.5  |
| Petronas               | MYR      | 7.4     | 0.0          | 1.0          | 3.4        | 6.8         | 10.7        | 4.2         | 5.6        | 13,252               | 21.2 | 17.8 | 2.3  | 2.1 | 10.9      | 9.3  |
| LG화학                   | KRW      | 284,000 | 1.6          | 3.3          | 7.0        | 21.1        | 5.6         | (5.2)       | 8.8        | 17,725               | 0.0  | 0.0  | 0.0  | 0.0 | 0.0       | 0.0  |
| 롯데케미칼                  | KRW      | 379,500 | 0.8          | (2.9)        | (1.6)      | 15.2        | 37.0        | 22.6        | 2.8        | 11,500               | 0.0  | 0.0  | 0.0  | 0.0 | 0.0       | 0.0  |
| 한화케미칼                  | KRW      | 26,000  | (1.1)        | (4.2)        | (4.8)      | 3.8         | (1.0)       | 1.0         | 5.3        | 3,789                | 0.0  | 0.0  | 0.0  | 0.0 | 0.0       | 0.0  |
| 금호석유                   | KRW      | 78,500  | 0.0          | (4.5)        | (5.2)      | 2.9         | 8.3         | 28.9        | (4.3)      | 2,115                | 0.0  | 0.0  | 0.0  | 0.0 | 0.0       | 0.0  |
| SKC                    | KRW      | 32,950  | 0.5          | 1.2          | 5.3        | 5.8         | 15.6        | 5.8         | (0.2)      | 1,093                | 0.0  | 0.0  | 0.0  | 0.0 | 0.0       | 0.0  |
| 국도화학                   | KRW      | 51,800  | (0.6)        | (0.2)        | (3.2)      | (3.2)       | (9.1)       | (9.1)       | (5.6)      | 266                  | 0.0  | 0.0  | 0.0  | 0.0 | 0.0       | 0.0  |
| 효성                     | KRW      | 8,350   | (1.6)        | 6.1          | 4.2        | 54.1        | 43.0        | 205.3       | 22.8       | 4,114                | 0.0  | 0.0  | 0.0  | 0.0 | 0.0       | 0.0  |
| <b>Average</b>         |          |         | <b>(0.4)</b> | <b>0.6</b>   | <b>3.8</b> | <b>13.0</b> | <b>20.6</b> | <b>35.4</b> | <b>6.2</b> |                      |      |      |      |     |           |      |
| <b>Refinery</b>        |          |         |              |              |            |             |             |             |            |                      |      |      |      |     |           |      |
| Valero                 | USD      | 67.0    | 1.5          | 0.6          | 1.2        | 3.6         | 21.4        | 16.6        | (1.9)      | 30,234               | 18.2 | 12.8 | 1.5  | 1.5 | 7.1       | 5.8  |
| Conoco Phillips        | USD      | 47.3    | 0.4          | (2.2)        | (5.3)      | 2.2         | 9.4         | 43.7        | (5.7)      | 58,455               | #N/A | N/A  | 66.6 | 1.7 | 1.7       | 16.1 |
| Formosa Petrochemical  | TWD      | 109.0   | 0.0          | 0.5          | 2.8        | 3.8         | 14.9        | 32.1        | (2.7)      | 33,916               | 17.1 | 17.7 | 3.6  | 3.4 | 11.5      | 12.1 |
| Tesoro                 | USD      | 88.9    | 1.0          | 1.9          | 10.5       | 3.3         | 18.2        | 17.7        | 1.6        | 10,395               | 21.7 | 14.5 | 1.9  | 1.6 | 8.5       | 6.0  |
| Marathon Petroleum     | USD      | 50.4    | 1.1          | 0.8          | 3.3        | 5.5         | 20.1        | 59.3        | 0.0        | 26,575               | 25.8 | 16.2 | 2.0  | 1.9 | 10.3      | 7.9  |
| Devon Energy           | USD      | 44.0    | 0.5          | (0.3)        | (3.6)      | (2.3)       | (2.7)       | 132.6       | (3.7)      | 23,077               | #N/A | N/A  | 23.2 | 3.8 | 3.4       | 14.3 |
| Hollyfrontier          | USD      | 29.4    | 1.7          | (2.0)        | 0.3        | 3.3         | 10.4        | (3.3)       | (10.3)     | 5,214                | 58.2 | 15.5 | 1.1  | 1.1 | 11.4      | 6.3  |
| Phillips 66            | USD      | 78.6    | 0.3          | 0.1          | (4.4)      | (7.6)       | 1.0         | 0.1         | (9.0)      | 40,706               | 25.6 | 16.6 | 1.8  | 1.8 | 12.1      | 8.9  |
| Murphy Oil             | USD      | 28.4    | 2.3          | 1.5          | (9.3)      | (9.2)       | (4.8)       | 75.6        | (8.8)      | 4,890                | #N/A | N/A  | 62.1 | 0.9 | 0.9       | 8.4  |
| JX Holdings            | JPY      | 533.3   | 0.4          | (1.1)        | 2.1        | 19.8        | 39.1        | 20.5        | 7.8        | 11,807               | 9.5  | 8.6  | 0.8  | 0.7 | 8.3       | 7.9  |
| Idemitsu               | JPY      | 3,560.0 | 0.1          | (2.9)        | 5.0        | 36.7        | 90.0        | 100.8       | 14.7       | 5,053                | 8.7  | 7.7  | 1.0  | 0.9 | 8.6       | 7.7  |
| Tonengeneral           | JPY      | 1,335.0 | 0.5          | (1.2)        | 2.7        | 22.3        | 49.8        | 48.7        | 8.4        | 4,335                | 12.0 | 10.8 | 1.9  | 1.8 | 6.7       | 6.0  |
| Nesteoil               | EUR      | 34.5    | (0.5)        | (0.1)        | 2.0        | (9.3)       | (10.5)      | 20.9        | (5.6)      | 0                    | 11.6 | 13.3 | 2.4  | 2.2 | 6.7       | 7.8  |
| Ashland                | USD      | 122.6   | (0.3)        | 1.5          | 10.4       | 6.8         | 5.9         | 32.7        | 12.1       | 7,625                | 17.9 | 28.1 | 2.8  | 2.2 | 8.9       | 12.0 |
| Fuchs Petrolub         | EUR      | 44.0    | (0.6)        | 0.9          | 3.2        | 16.8        | 8.9         | 19.1        | 10.3       | 6,212                | 24.1 | 23.1 | 5.1  | 4.6 | 14.2      | 13.7 |
| SK이노베이션                | KRW      | 156,000 | 0.6          | (1.3)        | (2.2)      | (1.3)       | 6.8         | 5.1         | 6.5        | 12,753               | 0.0  | 0.0  | 0.0  | 0.0 | 0.0       | 0.0  |
| S-Oil                  | KRW      | 84,500  | (1.4)        | (2.9)        | 2.4        | (0.8)       | 17.2        | 4.1         | (0.2)      | 8,411                | 0.0  | 0.0  | 0.0  | 0.0 | 0.0       | 0.0  |
| GS                     | KRW      | 53,900  | (0.6)        | (2.0)        | 3.9        | (3.6)       | 9.7         | 2.1         | (0.4)      | 4,428                | 0.0  | 0.0  | 0.0  | 0.0 | 0.0       | 0.0  |
| <b>Average</b>         |          |         | <b>0.4</b>   | <b>(0.4)</b> | <b>1.3</b> | <b>4.7</b>  | <b>16.0</b> | <b>33.1</b> | <b>0.7</b> |                      |      |      |      |     |           |      |

\* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임

\* 국내업체의 multiple은 Dataguidepro 기준임

## Global peers

|                      | Currency | 02/23    | 1D           | 1W           | 1M           | 3M          | 6M            | 12M           | YTD          | MKT CAP<br>(mil USD) | PER      |          | PBR      |          | EV/EBITDA |          |
|----------------------|----------|----------|--------------|--------------|--------------|-------------|---------------|---------------|--------------|----------------------|----------|----------|----------|----------|-----------|----------|
|                      |          |          |              |              |              |             |               |               |              |                      | 16       | 17E      | 16       | 17E      | 16        | 17E      |
| <b>E&amp;P/Shale</b> |          |          |              |              |              |             |               |               |              |                      |          |          |          |          |           |          |
| Exxon Mobil          | USD      | 82       | 1.1          | (0.6)        | (3.8)        | (5.9)       | (6.8)         | 0.7           | (9.4)        | 339,102              | 37.9     | 19.8     | 2.0      | 2.0      | 12.3      | 8.0      |
| BP                   | GBP      | 450      | 0.6          | 0.4          | (7.5)        | (1.7)       | 5.1           | 30.4          | (11.6)       | 110,033              | 30.9     | 15.4     | 1.2      | 1.2      | 7.2       | 5.3      |
| Shell                | EUR      | 2,089    | 0.2          | (1.6)        | (4.8)        | 3.4         | 10.3          | 32.5          | (6.9)        | 218,564              | 25.4     | 14.5     | 1.1      | 1.1      | 8.8       | 6.3      |
| Chevron              | USD      | 111      | 0.6          | 0.3          | (3.8)        | 0.0         | 9.2           | 30.8          | (5.7)        | 210,172              | 80.0     | 23.9     | 1.4      | 1.5      | 12.2      | 7.0      |
| Total                | EUR      | 48       | (0.0)        | 1.0          | 1.7          | 9.6         | 12.9          | 21.3          | (0.9)        | 125,206              | 15.2     | 12.2     | 1.3      | 1.2      | 7.5       | 5.9      |
| Sinopec              | CNY      | 6        | (1.5)        | 1.2          | 0.2          | 15.5        | 18.8          | 31.3          | 8.7          | 102,173              | 17.1     | 13.6     | 1.0      | 1.0      | 5.6       | 5.1      |
| Petrochina           | CNY      | 8        | (1.3)        | (0.4)        | (2.7)        | 9.2         | 11.7          | 10.8          | 4.3          | 212,083              | 188.4    | 31.8     | 1.3      | 1.2      | 7.8       | 6.7      |
| CNOOC                | CNY      | 13       | (1.6)        | (0.2)        | 4.9          | (1.3)       | 6.9           | 0.9           | 3.7          | 7,591                | #N/A N/A | 341.0    | 1.8      | 1.8      | #N/A N/A  | 17.3     |
| Gazprom              | RUB      | 137      | 0.0          | (1.8)        | (7.7)        | (8.6)       | (0.5)         | (2.3)         | (11.6)       | 55,793               | 3.3      | 3.7      | 0.3      | 0.3      | 4.1       | 3.6      |
| Rosneft              | RUB      | 347      | 0.0          | (4.1)        | (11.1)       | (0.1)       | (1.1)         | 21.8          | (13.9)       | 63,412               | 18.9     | 6.9      | 1.2      | 1.0      | 5.3       | 4.4      |
| Anadarko             | USD      | 66       | 0.2          | (0.9)        | (5.6)        | 1.5         | 17.7          | 86.9          | (5.4)        | 36,881               | #N/A N/A | 125.9    | 2.3      | 2.4      | 13.3      | 8.2      |
| Petrobras            | BRL      | 16       | (0.9)        | (1.9)        | (2.7)        | (1.8)       | 22.8          | 216.3         | 4.6          | 68,468               | #N/A N/A | 13.3     | 0.8      | 0.8      | 6.8       | 5.8      |
| Lukoil               | USD      | 3,176    | 0.0          | (1.7)        | (0.0)        | 0.0         | 5.4           | 21.7          | (7.9)        | 46,594               | 7.6      | 5.6      | 0.6      | 0.6      | N/A       | N/A      |
| Kinder               | USD      | 22       | 0.1          | (1.1)        | (2.7)        | (1.2)       | (2.5)         | 23.7          | 4.0          | 47,497               | 31.8     | 31.5     | 1.4      | 1.4      | 12.0      | 12.0     |
| Statoil              | NOK      | 149      | 0.5          | 0.1          | (6.0)        | 1.9         | 12.7          | 21.3          | (6.3)        | 57,725               | 126.3    | 17.1     | 1.4      | 1.5      | 5.1       | 3.3      |
| BHP                  | AUD      | 26       | (2.7)        | (4.1)        | (2.0)        | (0.3)       | 22.6          | 46.6          | 3.1          | 99,709               | 13.8     | 16.5     | 1.8      | 1.8      | 5.9       | 6.5      |
| PTT E&P              | THB      | 93       | (2.1)        | 0.0          | (3.6)        | 11.8        | 14.6          | 34.1          | (3.9)        | 10,503               | 22.8     | 15.6     | 0.9      | 0.9      | 3.4       | 3.1      |
| Petronas gas         | MYR      | 21       | (0.1)        | (0.3)        | 1.9          | (4.1)       | (7.3)         | (8.9)         | (3.4)        | 9,153                | 23.4     | 22.9     | 3.4      | 3.3      | 13.2      | 13.1     |
| Chesapeake           | USD      | 6        | (2.9)        | (5.4)        | (13.9)       | (13.4)      | (11.0)        | 162.6         | (18.1)       | 5,102                | #N/A N/A | 7.4      | #N/A N/A | #N/A N/A | 13.5      | 8.3      |
| Noble Energy         | USD      | 37       | 2.0          | 0.6          | (5.9)        | 3.3         | 4.8           | 25.2          | (1.7)        | 16,110               | #N/A N/A | #N/A N/A | 1.7      | 1.7      | 10.2      | 8.0      |
| <b>Average</b>       |          | <b>0</b> | <b>(0.4)</b> | <b>(1.0)</b> | <b>(3.8)</b> | <b>0.9</b>  | <b>7.3</b>    | <b>40.4</b>   | <b>(3.9)</b> |                      |          |          |          |          |           |          |
| <b>PV</b>            |          |          |              |              |              |             |               |               |              |                      |          |          |          |          |           |          |
| WACKER               | EUR      | 105.3    | (1.7)        | (2.8)        | (4.5)        | 29.1        | 25.4          | 51.9          | 6.5          | 5,803                | 32.1     | 20.1     | 2.4      | 2.2      | 6.1       | 5.5      |
| GCL-Poly             | HKD      | 1.1      | (1.8)        | 1.9          | 10.3         | 4.9         | (8.5)         | (10.1)        | 15.1         | 2,563                | 7.7      | 7.5      | 0.8      | 0.8      | 6.0       | 5.5      |
| SunPower             | USD      | 9.0      | 6.3          | 33.0         | 31.2         | 31.8        | (10.4)        | (56.3)        | 36.0         | 1,246                | #N/A N/A | #N/A N/A | 1.0      | 1.2      | 13.8      | 25.5     |
| Canadian Solar       | USD      | 14.7     | 4.4          | 9.6          | 16.4         | 35.7        | 9.2           | (28.0)        | 20.7         | 844                  | 9.2      | 7.4      | 0.8      | 0.7      | 10.7      | 8.1      |
| JA Solar             | USD      | 5.3      | 2.5          | 7.7          | 11.3         | (4.0)       | (30.3)        | (39.3)        | 12.0         | 254                  | 6.6      | #N/A N/A | 0.3      | 0.3      | 3.7       | 5.5      |
| Trina Solar          | USD      | 10.2     | (0.3)        | 0.2          | 3.7          | (1.2)       | (3.2)         | 2.8           | 9.7          | 943                  | 10.1     | 29.8     | 0.7      | 0.7      | 6.7       | 8.4      |
| Solar City           | USD      | 20.3     | 0.0          | 0.0          | 0.0          | (11.9)      | 13.3          | 0.0           | 0.0          | 2,049                | #N/A N/A  | #N/A N/A |
| Yingli               | USD      | 2.7      | 0.0          | (0.4)        | (0.4)        | (17.5)      | (32.8)        | (36.3)        | 5.4          | 50                   | #N/A N/A | #N/A N/A | #N/A N/A | #N/A N/A | 13.0      | 66.4     |
| First Solar          | USD      | 37.2     | 10.8         | 9.0          | 10.5         | 24.9        | (0.7)         | (39.8)        | 15.9         | 3,869                | 7.9      | 102.2    | 0.7      | 0.7      | 3.7       | 9.0      |
| 한화큐셀                 | USD      | 9.4      | (1.1)        | 5.9          | 15.1         | 1.7         | (31.5)        | (40.8)        | 15.2         | 790                  | 6.8      | 30.8     | #N/A N/A | #N/A N/A | 6.1       | 9.5      |
| OCI                  | KRW      | 92,800   | (2.8)        | 1.0          | 5.0          | 11.7        | 0.2           | 6.3           | 17.9         | 1,957                | 0.0      | 0.0      | 0.0      | 0.0      | 0.0       | 0.0      |
| 웅진에너지                | KRW      | 4,680    | 0.0          | (3.7)        | (9.7)        | 2.5         | (44.6)        | (63.1)        | (1.2)        | 95                   | N/A      | 0.0      | 0.0      | 0.0      | 0.0       | 0.0      |
| 신성솔라에너지              | KRW      | 1,935    | 0.3          | 0.5          | (8.1)        | (5.8)       | (16.4)        | 15.7          | (12.4)       | 296                  | N/A      | 0.0      | 0.0      | 0.0      | 0.0       | 0.0      |
| <b>Average</b>       |          |          | <b>1.2</b>   | <b>4.4</b>   | <b>5.8</b>   | <b>8.1</b>  | <b>(11.1)</b> | <b>(16.0)</b> | <b>10.1</b>  |                      |          |          |          |          |           |          |
| <b>Gas Company</b>   |          |          |              |              |              |             |               |               |              |                      |          |          |          |          |           |          |
| Towngas China        | HKD      | 4.3      | 0.9          | (2.3)        | 0.5          | 8.0         | (5.7)         | 8.8           | 5.9          | 1,510                | 9.4      | 9.1      | 0.8      | 0.8      | 10.8      | 10.3     |
| Kulun                | HKD      | 6.8      | (0.9)        | 2.6          | 10.9         | 18.4        | 16.4          | 21.6          | 17.4         | 7,084                | 13.0     | 12.2     | 1.1      | 1.0      | 5.0       | 5.1      |
| Beijing Enterprise   | HKD      | 41.1     | 0.7          | (0.1)        | 6.6          | 15.0        | (9.8)         | 13.7          | 12.0         | 6,677                | 8.3      | 7.7      | 0.8      | 0.8      | 16.0      | 14.5     |
| ENN Energy           | HKD      | 38.8     | (1.1)        | 2.9          | 5.4          | 12.6        | (5.9)         | 5.6           | 21.5         | 5,406                | 12.4     | 11.4     | 2.3      | 2.0      | 7.8       | 7.3      |
| China Resources Gas  | HKD      | 24.3     | 0.6          | 1.7          | 1.0          | 4.7         | (6.7)         | 23.0          | 11.5         | 6,964                | 15.0     | 13.6     | 2.7      | 2.3      | 10.1      | 9.2      |
| China Gas Holdings   | HKD      | 12.0     | 4.3          | 6.9          | 9.1          | 10.9        | (6.1)         | 17.6          | 14.4         | 7,737                | 14.7     | 13.0     | 2.8      | 2.4      | 12.2      | 10.9     |
| Shenzen Gas          | HKD      | 11.5     | 0.5          | (0.3)        | 2.5          | (0.3)       | (2.1)         | (6.4)         | 1.4          | 2,891                | 11.6     | 10.9     | 1.1      | 1.0      | 8.5       | 8.1      |
| Shann Xi             | CNY      | 9.8      | 0.5          | 1.1          | 3.6          | (4.6)       | (8.8)         | 5.1           | 1.7          | 1,579                | 19.3     | 17.4     | #N/A N/A | #N/A N/A | #N/A N/A  | #N/A N/A |
| Suntien              | HKD      | 1.3      | (1.5)        | (0.8)        | 8.2          | 23.4        | 12.8          | 46.7          | 32.0         | 632                  | 9.0      | 7.6      | 0.6      | 0.5      | 9.9       | 8.2      |
| China Oil & Gas      | HKD      | 0.6      | 1.6          | (4.5)        | 5.0          | 1.6         | 6.8           | 38.5          | 3.3          | 473                  | 9.3      | 9.0      | 1.1      | 1.0      | 5.9       | 5.3      |
| <b>Average</b>       |          |          | <b>0.6</b>   | <b>0.7</b>   | <b>5.3</b>   | <b>9.0</b>  | <b>(0.9)</b>  | <b>17.4</b>   | <b>12.1</b>  |                      |          |          |          |          |           |          |
| <b>EV</b>            |          |          |              |              |              |             |               |               |              |                      |          |          |          |          |           |          |
| LG화학                 | KRW      | 284,000  | 1.6          | 3.3          | 7.0          | 21.1        | 5.6           | (5.2)         | 8.8          | 17,725               | 14.8     | 12.5     | 1.5      | 1.4      | 6.3       | 5.5      |
| 삼성SDI                | KRW      | 125,500  | 2.0          | 2.0          | 17.8         | 33.7        | 2.9           | 29.8          | 15.1         | 7,630                | 53.2     | 18.1     | 0.8      | 0.8      | #N/A N/A  | 10.1     |
| Panasonic            | JPY      | 1261.5   | 0.2          | (0.3)        | 6.3          | 21.9        | 22.7          | 45.0          | 6.1          | 27,453               | 18.8     | 15.3     | 1.6      | 1.5      | 5.7       | 5.1      |
| GS Yuasa             | JPY      | 517.0    | 0.0          | 4.4          | 11.4         | 13.1        | 26.4          | 16.4          | 6.4          | 1,897                | 17.1     | 15.0     | 1.3      | 1.3      | 7.1       | 6.6      |
| NEC                  | JPY      | 281.0    | (1.4)        | 1.8          | (10.8)       | (6.0)       | 10.2          | 0.7           | (9.4)        | 6,493                | 15.0     | 13.9     | 0.9      | 0.9      | 8.4       | 6.9      |
| BYD Auto             | CNY      | 50.3     | 0.7          | 2.9          | 3.0          | (11.0)      | (14.6)        | (8.0)         | 1.3          | 18,648               | 27.0     | 23.4     | 2.6      | 2.5      | 13.0      | 11.7     |
| Tesla Motors         | USD      | 256.0    | (6.4)        | (4.8)        | 2.8          | 32.5        | 13.9          | 44.5          | 19.8         | 41,237               | #N/A N/A | #N/A N/A | 9.9      | 6.2      | 65.9      | 46.1     |
| Kandi Technologies   | USD      | 4.2      | (2.4)        | (2.4)        | (13.5)       | (3.5)       | (33.9)        | (44.1)        | (15.3)       | 198                  | #N/A N/A  | #N/A N/A |
| <b>Average</b>       |          |          | <b>(0.7)</b> | <b>0.9</b>   | <b>3.0</b>   | <b>12.7</b> | <b>4.1</b>    | <b>9.9</b>    | <b>4.1</b>   |                      |          |          |          |          |           |          |

\* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임