

## 1. News Summary (3 page)

2018년 2월 13일

| News        |                                 |
|-------------|---------------------------------|
| WTI comment | 급락세 진정...WTI 0.2% 반등            |
| Headline    | 사우디, 왕족속청으로 연말까지 14조5천억원 국고채물 댄 |
| News 1.     | 트럼프 "한중일에 아머아마한 돈 잃어...호혜세 부과"  |
| News 2.     | -                               |
| News 3.     | -                               |
| News 4.     | -                               |

| Conclusion |                                      |
|------------|--------------------------------------|
|            | 국고로 환수된 합의금은 NEOM 프로젝트의 일환으로 투입될 전망  |
|            | 미국산 에너지 수입을 늘려 대미 무역수지 흑자 폭을 줄이게 될 것 |
|            | -                                    |
|            | -                                    |
|            | -                                    |

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

| Daily                | Unit     | Price | 1D    | 1W    | 1M     | 3M     | 12M    |
|----------------------|----------|-------|-------|-------|--------|--------|--------|
| <b>Refinery</b>      |          |       | %     | %     | %      | %      | %      |
| WTI                  | \$/bbl   | 59.3  | 0.2   | (7.6) | (7.8)  | 4.5    | 12.0   |
| Dubai                | \$/bbl   | 60.3  | (1.4) | (7.3) | (9.1)  | (2.2)  | 10.1   |
| Gasoline             | \$/bbl   | 75.3  | (1.2) | (6.4) | (3.5)  | (2.4)  | 4.5    |
| Diesel               | \$/bbl   | 74.8  | (1.7) | (6.9) | (6.9)  | 2.5    | 10.8   |
| Complex margin       | \$/bbl   | 8.3   | (0.1) | (0.1) | 1.6    | 0.6    | (0.4)  |
| 1M lagging           | \$/bbl   | 2.0   | (2.0) | (7.3) | (10.7) | (12.6) | (9.2)  |
| <b>Petrochemical</b> |          |       | %     | %     | %      | %      | %      |
| Naphtha              | \$/t     | 543   | (1.6) | (6.8) | (10.1) | (10.1) | 4.4    |
| Butadiene            | \$/t     | 1,355 | 0.0   | 0.7   | 13.9   | 43.4   | (54.8) |
| HDPE                 | \$/t     | 1,350 | (0.7) | 0.0   | 4.7    | 8.0    | 13.9   |
| MEG                  | \$/t     | 1,015 | (1.0) | (1.5) | (1.0)  | 11.5   | 8.8    |
| PX                   | \$/t     | 929   | (0.3) | (3.2) | (0.8)  | 5.5    | 3.9    |
| SM                   | \$/t     | 1,392 | 0.0   | (1.3) | 2.1    | 11.2   | (6.3)  |
| <b>Commodity</b>     |          |       | %     | %     | %      | %      | %      |
| Natural Gas          | \$/mmbtu | 2.56  | (0.8) | (6.7) | (14.3) | (20.4) | (25.5) |
| Natural rubber       | \$/t     | 1,430 | 2.1   | (2.7) | (6.5)  | 0.7    | (37.6) |
| Cotton               | C/lbs    | 76.5  | (0.3) | (0.2) | (6.4)  | 11.0   | (0.2)  |

\*참고: 정제마진의 변동률은 %가 아닌 \$/bbl임

| Weekly               | Update | Unit  | Price | 1W    | 1M    | 3M     | 12M    |
|----------------------|--------|-------|-------|-------|-------|--------|--------|
| <b>Petrochemical</b> |        |       |       | %     | %     | %      | %      |
| Ethylene             | 02/12  | \$/t  | 1,210 | (1.6) | (8.5) | 2.5    | 7.6    |
| Propylene            | 02/12  | \$/t  | 1,025 | 1.0   | 7.6   | 28.1   | 2.5    |
| Benzene              | 02/12  | \$/t  | 910   | (4.0) | 0.3   | 5.2    | (15.3) |
| Toluene              | 02/12  | \$/t  | 760   | (0.7) | 2.0   | 5.9    | (1.9)  |
| Xylene               | 02/12  | \$/t  | 760   | (0.7) | 2.7   | 13.0   | 5.6    |
| PP                   | 02/12  | \$/t  | 1,278 | 0.8   | 6.7   | 11.3   | 16.4   |
| PVC                  | 02/12  | \$/t  | 970   | 4.9   | 6.6   | 9.0    | 5.4    |
| ABS                  | 02/12  | \$/t  | 2,060 | 0.0   | 3.0   | 7.3    | 6.7    |
| SBR                  | 02/12  | \$/t  | 1,755 | 0.0   | 6.4   | 5.1    | (43.8) |
| SM                   | 02/12  | \$/t  | 1,423 | (0.9) | 4.4   | 12.7   | (4.2)  |
| BPA                  | 02/12  | \$/t  | 1,893 | 0.0   | (2.1) | 6.5    | 14.4   |
| Caustic              | 02/12  | \$/t  | 549   | 0.0   | (9.9) | (18.5) | 29.9   |
| 2-EH                 | 02/12  | \$/t  | 1,100 | 3.8   | 4.8   | 12.2   | 15.8   |
| Caprolactam          | 02/12  | \$/t  | 2,070 | 0.0   | 2.5   | (1.0)  | (4.8)  |
| <b>Solar</b>         |        |       |       | %     | %     | %      | %      |
| Polysilicon          | 02/07  | \$/kg | 16.6  | (4.9) | (6.7) | (0.4)  | 2.0    |
| Module               | 02/07  | \$/W  | 0.31  | (0.3) | (1.0) | (2.2)  | (12.5) |

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

|                 | Unit | Price | 1D  | 1W     | 1M     | 3M    | 12M   |
|-----------------|------|-------|-----|--------|--------|-------|-------|
| <b>E&amp;P</b>  |      |       | %   | %      | %      | %     | %     |
| ExxonMobil      | USD  | 76.4  | 0.8 | (4.1)  | (12.7) | (7.9) | (7.4) |
| Shell           | EUR  | 2,285 | 1.9 | (3.4)  | (11.2) | (5.5) | 5.5   |
| Petrochina      | CNY  | 7.98  | 0.4 | (14.7) | (8.8)  | (4.9) | (5.5) |
| Gazprom         | RUB  | 137.3 | 1.3 | (5.0)  | (4.6)  | 3.6   | (2.3) |
| Petrobras       | BRL  | 18.8  | 0.0 | (1.4)  | 8.5    | 12.3  | 20.5  |
| <b>Refinery</b> |      |       |     |        |        |       |       |
| Phillips66      | USD  | 93.6  | 1.1 | (1.7)  | (10.8) | (0.1) | 17.2  |
| Valero          | USD  | 88.8  | 0.7 | (1.0)  | (8.2)  | 9.2   | 31.7  |
| JX              | JPY  | 656.5 | 0.0 | (7.6)  | (15.8) | 2.9   | 24.8  |
| Neste Oil       | EUR  | 58.9  | 2.0 | 6.6    | 5.0    | 22.7  | 70.2  |

|                      | Unit | Price  | 1D    | 1W     | 1M     | 3M     | 12M   |
|----------------------|------|--------|-------|--------|--------|--------|-------|
| <b>Petrochemical</b> |      |        | %     | %      | %      | %      | %     |
| BASF                 | EUR  | 86.4   | 1.0   | (0.6)  | (8.6)  | (8.2)  | (2.4) |
| DowDuPont            | USD  | 71.8   | 3.4   | 5.9    | (4.7)  | 2.7    | 17.4  |
| SABIC                | SAR  | 105.1  | 1.4   | (0.6)  | 3.5    | 5.2    | 9.0   |
| Formosa Pla.         | TWD  | 101.0  | 3.3   | 0.5    | (0.5)  | 9.7    | 9.2   |
| Shin-Etsu            | JPY  | 11,220 | 0.0   | (3.9)  | (6.1)  | (9.9)  | 14.3  |
| <b>Renewable</b>     |      |        |       |        |        |        |       |
| Wacker               | EUR  | 139.7  | 0.4   | (8.6)  | (18.9) | 3.5    | 25.6  |
| First Solar          | USD  | 62.52  | 2.1   | (1.5)  | (14.8) | 1.5    | 90.3  |
| GCL-Poly             | HKD  | 1.15   | (0.9) | (11.5) | (22.3) | (20.1) | 10.6  |
| Tesla Motors         | USD  | 315.7  | 1.7   | (5.2)  | (6.1)  | 4.2    | 17.3  |

## 4. Coverage Summary

|         | 02/12   | 1D    | 1W     | 1M     | 3M     | 6M     | 12M    |
|---------|---------|-------|--------|--------|--------|--------|--------|
| KOSPI   | 2,385   | 0.9   | (4.3)  | (4.4)  | (5.6)  | 2.8    | 15.0   |
| KOSPI화학 | 5,894   | (0.1) | (4.5)  | (5.1)  | (1.4)  | 4.5    | 16.2   |
| LG화학    | 372,000 | 1.6   | (4.6)  | (12.7) | (5.2)  | 9.6    | 32.4   |
| 롯데케미칼   | 431,000 | 3.0   | 3.6    | 9.3    | 20.6   | 14.0   | 5.9    |
| 한화케미칼   | 32,100  | (0.8) | (5.6)  | (1.4)  | 6.6    | (4.7)  | 20.9   |
| 금호석유화학  | 86,800  | (4.1) | (15.3) | (16.1) | 18.4   | 18.9   | 5.7    |
| KCC     | 363,000 | (0.8) | (9.9)  | (10.8) | (8.1)  | (8.6)  | 10.7   |
| OCI     | 156,000 | 1.6   | 3.0    | (12.6) | 22.8   | 74.3   | 69.9   |
| SKC     | 37,150  | 1.8   | (10.2) | (18.3) | (13.1) | 0.0    | 11.7   |
| SK이노베이션 | 185,500 | 0.3   | (6.5)  | (7.7)  | (8.6)  | 7.8    | 18.9   |
| S-Oil   | 115,000 | 1.3   | (5.3)  | 1.3    | (3.8)  | (0.4)  | 36.9   |
| GS      | 62,300  | (1.6) | (7.7)  | (3.9)  | (0.3)  | (14.2) | 15.8   |
| SK가스    | 91,100  | (2.0) | (10.7) | (4.4)  | (3.5)  | (20.4) | (16.0) |
| 포스코대우   | 20,900  | (1.9) | (12.9) | (2.8)  | 7.2    | (8.7)  | (19.3) |
| LG상사    | 27,800  | 0.7   | (5.0)  | (10.5) | (2.5)  | (5.4)  | (20.3) |
| 한국전력    | 34,050  | (1.0) | (5.7)  | (6.6)  | (10.3) | (22.3) | (17.6) |
| 한국가스공사  | 45,100  | (2.9) | (6.8)  | (5.9)  | 0.1    | (7.5)  | (5.5)  |

| 투자의견 | TP      | %     | P/E                         | P/B  |
|------|---------|-------|-----------------------------|------|
|      |         |       | * 추정치는 12M fwd 기준임          |      |
|      |         |       | * 모든 coverage 업체의 실적은 연결기준임 |      |
| 매수   | 450,000 | 21.0  | 12.42                       | 1.75 |
| 매수   | 410,000 | (4.9) | 11.77                       | 1.29 |
| 매수   | 39,000  | 21.5  | 12.25                       | 0.83 |
| 매수   | 150,000 | 72.8  | 10.59                       | 1.39 |
| 매수   | 450,000 | 24.0  | 13.44                       | 0.54 |
| 매수   | 180,000 | 15.4  | 14.66                       | 1.09 |
| 매수   | 55,000  | 48.0  | 9.34                        | 0.91 |
| 매수   | 230,000 | 24.0  | 9.82                        | 0.94 |
| 매수   | 140,000 | 21.7  | 13.15                       | 2.09 |
| 매수   | 80,000  | 28.4  | 6.09                        | 0.80 |
| 매수   | 130,000 | 42.7  | 7.89                        | 0.61 |
| 매수   | 25,000  | 19.6  | 9.53                        | 0.84 |
| 매수   | 38,000  | 36.7  | 9.37                        | 0.80 |
| 매수   | 50,000  | 46.8  | 7.31                        | 0.27 |
| 매수   | 60,000  | 33.0  | 8.52                        | 0.67 |

\* 작성자(손지우)는 본 조사분석자료에 게재된 내용들이 본인의 의견을 정확히 반영하고 있으며, 외부의 부당한 압력이나 간섭없이 신의성실하게 작성되었음을 확인합니다.

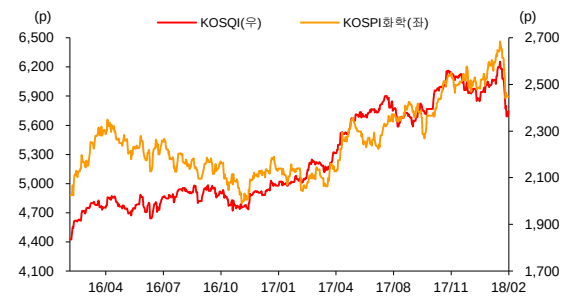
\* 본 보고서에 언급된 종목의 경우 당사 조사분석담당자는 본인의 담당종목을 보유하고 있지 않습니다.

\* 본 보고서는 기관투자자 또는 제 3자에게 사전 제공된 사실이 없습니다.

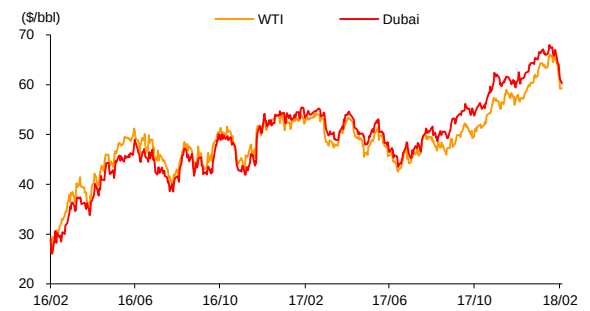
\* 당사는 본 보고서의 발간시점에 해당종목을 1% 이상 보유하고 있지 않습니다.

## Key Chart

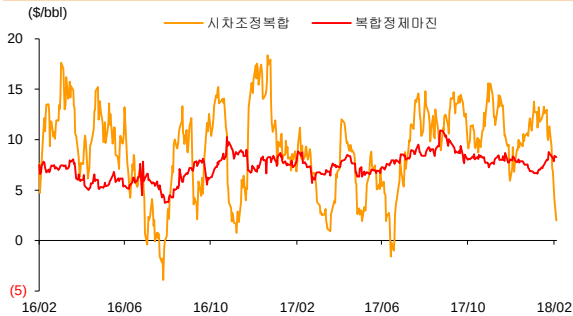
KOSPI/KOSPI화학



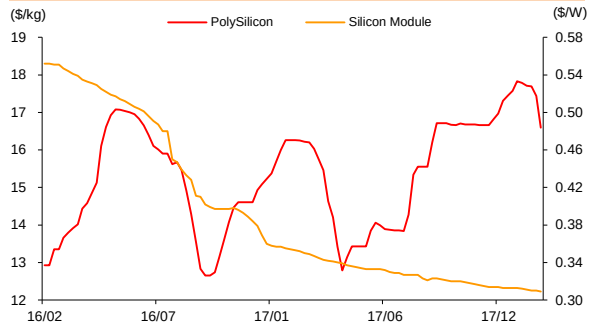
WTI/Dubai



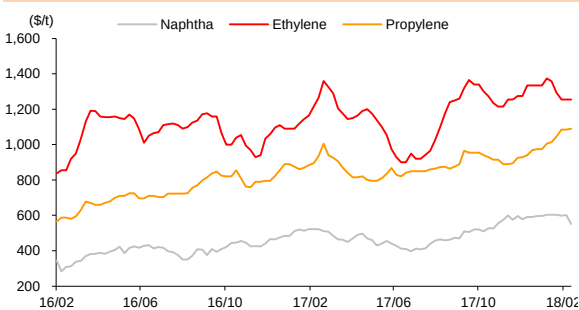
Complex & 1M lagging margin



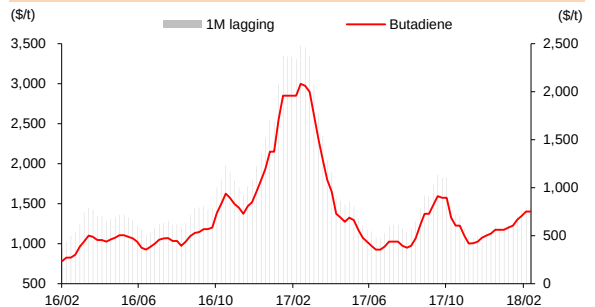
Polysilicon & Module prices



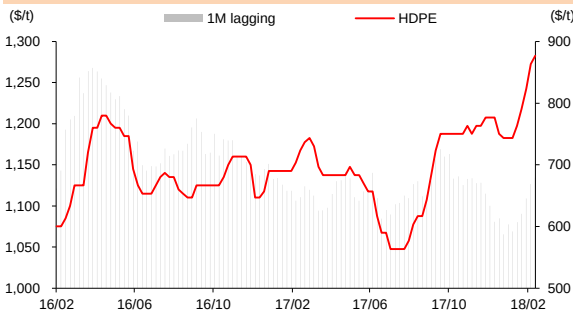
Naphtha/Ethylene/Propylene prices



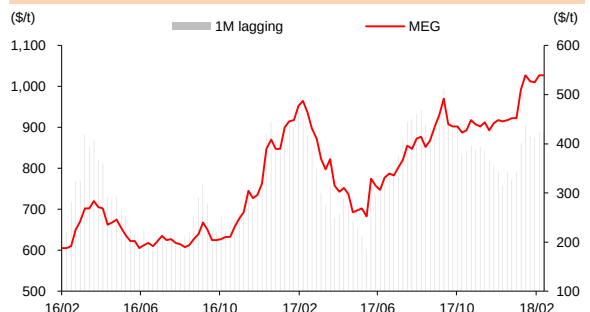
Butadiene price & 1M lagging naphtha spread



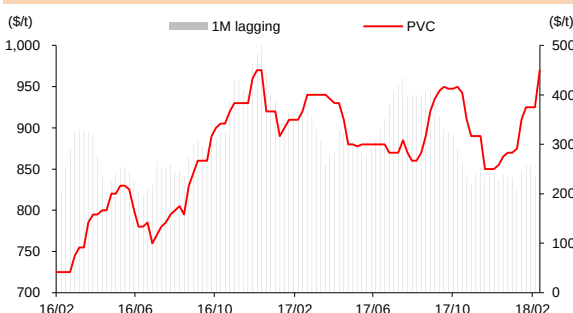
HDPE price & 1M lagging naphtha spread



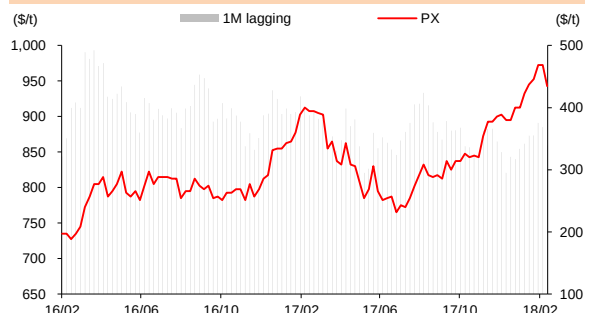
MEG price & 1M lagging naphtha spread



PVC price & 1M lagging naphtha spread



PX price & 1M lagging naphtha spread



자료: Bloomberg, Cismem, Petronet, Platts, Pvsights, SK증권  
참고: 상기 데이터는 일괄적으로 과거 2년치 적용

## News Comment

| Headline  | (출처: 연합뉴스)                                                                                                                                                                                                                                                                                             |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>제목</b> | 사우디, 왕족숙청으로 연말까지 14조5천억원 국고채울 듯                                                                                                                                                                                                                                                                        |
| <b>결론</b> | 국고로 환수된 합의금은 NEOM 프로젝트의 일환으로 투입될 전망                                                                                                                                                                                                                                                                    |
| <b>세부</b> | <ol style="list-style-type: none"> <li>1) FT, "사우디가 왕족숙청 작업을 통해 연말까지 14.5조원의 국고 확보"</li> <li>2) 왕족 석방 합의금은 예금과 부동산, 주식 등을 국가에 양도하는 방식</li> <li>3) 관계자, "정부 관리와 사모펀드 전문가들이 압수 자산 감독하고 있음"</li> <li>4) 관계자, "부동산을 포함한 국내외 자산은 시간을 보면서 매각할 필요"</li> <li>5) 국고로 환수된 합의금은 NEOM 프로젝트의 일환으로 투입될 전망</li> </ol> |

| Issue 1   | (출처: 연합뉴스)                                                                                                                                                                                                                                                                                  |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>제목</b> | 트럼프 "한중일에 어마어마한 돈 잃어...호혜세 부과"                                                                                                                                                                                                                                                              |
| <b>결론</b> | 미국산 에너지 수입을 늘려 대미 무역수지 흑자 폭을 줄이게 될 것                                                                                                                                                                                                                                                        |
| <b>세부</b> | <ol style="list-style-type: none"> <li>1) 트럼프, "무역 거래국들의 불공정한 대미 흑자를 바로잡아야 한다"</li> <li>2) 미국산 제품에 다른 국가들이 매기는 세금만큼 수입세를 매길 방침</li> <li>3) 지난달 셰이프가드 이후 한국, 일본을 겨냥한 무역전쟁 본격화된 것</li> <li>4) 트럼프, "우리는 중국, 일본, 한국에 어마어마한 돈을 잃었다"</li> <li>5) 미국산 에너지 수입을 늘려 대미 무역수지 흑자 폭을 줄이게 될 것</li> </ol> |

| Issue 3   |
|-----------|
| <b>제목</b> |
| <b>결론</b> |
| <b>세부</b> |
| 1)        |
| 2)        |
| 3)        |
| 4)        |
| 5)        |

| Issue 5   |
|-----------|
| <b>제목</b> |
| <b>결론</b> |
| <b>세부</b> |
| 1)        |
| 2)        |
| 3)        |
| 4)        |
| 5)        |

| WTI Comment | (출처: 연합뉴스)                |
|-------------|---------------------------|
| <b>제목</b>   | 급락세 진정...WTI 0.2% 반등      |
| <b>상승</b>   | 과도한 하락으로 저가매수세가 유입        |
| <b>요인</b>   | OPEC이 글로벌 원유수요 전망치를 상향 조정 |
| <b>하락</b>   |                           |
| <b>요인</b>   |                           |

| Issue 2   |
|-----------|
| <b>제목</b> |
| <b>결론</b> |
| <b>세부</b> |
| 1)        |
| 2)        |
| 3)        |
| 4)        |
| 5)        |

| Issue 4   |
|-----------|
| <b>제목</b> |
| <b>결론</b> |
| <b>세부</b> |
| 1)        |
| 2)        |
| 3)        |
| 4)        |
| 5)        |

| Issue 6   |
|-----------|
| <b>제목</b> |
| <b>결론</b> |
| <b>세부</b> |
| 1)        |
| 2)        |
| 3)        |
| 4)        |
| 5)        |

## Commodity Price Data

| Daily Price |               | Today    | 1D       | 1W       | 1M       | 3M       | 6M       | 12M      | YTD      | 2016avg. | 2017avg. | 2018acc. |
|-------------|---------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| F/X         | USD/EUR       | 0.814    | 0.816    | 0.809    | 0.820    | 0.857    | 0.846    | 0.940    | 0.833    | 0.904    | 0.887    | 0.817    |
|             | Change, %     |          | (0.3)    | 0.6      | (0.7)    | (5.1)    | (3.8)    | (13.4)   | (2.3)    | (10.0)   | (8.2)    | (0.4)    |
|             | USD/JPY       | 108.7    | 108.8    | 109.1    | 111.1    | 113.5    | 109.2    | 113.2    | 112.6    | 108.8    | 112.1    | 110.4    |
|             | Change, %     |          | (0.1)    | (0.4)    | (2.2)    | (4.3)    | (0.5)    | (4.0)    | (3.5)    | (0.1)    | (3.1)    | (1.6)    |
|             | USD/KRW       | 1,084.5  | 1,092.1  | 1,088.6  | 1,064.9  | 1,117.0  | 1,143.7  | 1,151.0  | 1,066.7  | 1,160.5  | 1,130.9  | 1,071.7  |
|             | Change, %     |          | (0.7)    | (0.4)    | 1.8      | (2.9)    | (5.2)    | (5.8)    | 1.7      | (6.6)    | (4.1)    | 1.2      |
| Agriculture | Corn          | 367.0    | 362.0    | 358.8    | 346.3    | 343.5    | 360.8    | 374.5    | 350.8    | 358.5    | 359.4    | 355.4    |
|             | Change, %     |          | 1.4      | 2.3      | 6.0      | 6.8      | 1.7      | (2.0)    | 4.6      | 2.4      | 2.1      | 3.3      |
|             | Soybean       | 1,001.8  | 983.0    | 969.8    | 944.0    | 977.3    | 935.5    | 1,059.0  | 951.8    | 987.5    | 975.9    | 973.4    |
|             | Change, %     |          | 1.9      | 3.3      | 6.1      | 2.5      | 7.1      | (5.4)    | 5.3      | 1.4      | 2.7      | 2.9      |
|             | Wheat         | 464.0    | 449.0    | 440.3    | 420.5    | 431.5    | 439.3    | 449.0    | 427.0    | 436.4    | 436.0    | 437.0    |
|             | Change, %     |          | 3.3      | 5.4      | 10.3     | 7.5      | 5.6      | 3.3      | 8.7      | 6.3      | 6.4      | 6.2      |
|             | Rice          | 12.4     | 12.3     | 12.5     | 11.6     | 11.2     | 12.5     | 9.6      | 11.7     | 10.3     | 11.1     | 12.1     |
|             | Change, %     |          | 0.5      | (1.1)    | 7.0      | 11.0     | (0.8)    | 29.5     | 6.1      | 19.8     | 12.0     | 2.6      |
|             | Oats          | 275.0    | 266.5    | 267.3    | 249.5    | 272.0    | 264.0    | 254.5    | 241.0    | 196.3    | 252.3    | 259.7    |
|             | Change, %     |          | 3.2      | 2.9      | 10.2     | 1.1      | 4.2      | 8.1      | 14.1     | 40.1     | 9.0      | 5.9      |
| MYR/mt      | Palm Oil      | 2,550.0  | 2,495.0  | 2,500.0  | 2,474.0  | 2,740.0  | 2,683.0  | 3,268.0  | 2,444.0  | 2,653.8  | 2,787.3  | 2,499.2  |
|             | Change, %     |          | 2.2      | 2.0      | 3.1      | (6.9)    | (5.0)    | (22.0)   | 4.3      | (3.9)    | (8.5)    | 2.0      |
|             | Cocoa         | 1,970.0  | 2,031.0  | 2,045.0  | 1,914.0  | 2,223.0  | 1,990.0  | 1,939.0  | 1,892.0  | 2,854.0  | 2,005.2  | 1,962.9  |
|             | Change, %     |          | (3.0)    | (3.7)    | 2.9      | (11.4)   | (1.0)    | 1.6      | 4.1      | (31.0)   | (1.8)    | 0.4      |
|             | Cotton        | 76.5     | 76.7     | 76.6     | 81.7     | 69.1     | 69.2     | 75.8     | 78.6     | 65.6     | 73.5     | 79.4     |
|             | Change, %     |          | (0.3)    | (0.2)    | (6.4)    | 10.7     | 10.4     | 0.8      | (2.8)    | 16.6     | 4.0      | (3.7)    |
|             | Sugar         | 13.7     | 13.7     | 13.9     | 14.2     | 15.0     | 13.2     | 20.4     | 15.2     | 18.2     | 15.8     | 13.9     |
|             | Change, %     |          | 0.4      | (1.2)    | (3.2)    | (8.2)    | 4.0      | (32.8)   | (9.4)    | (24.4)   | (13.2)   | (1.4)    |
|             | Coffee        | 121.4    | 121.9    | 119.8    | 122.3    | 127.6    | 140.3    | 145.8    | 126.2    | 136.1    | 133.0    | 123.4    |
|             | Change, %     |          | (0.4)    | 1.3      | (0.7)    | (4.8)    | (13.5)   | (16.7)   | (3.8)    | (10.8)   | (8.7)    | (1.6)    |
| Energy      | WTI           | 59.4     | 59.2     | 64.2     | 64.3     | 56.7     | 48.8     | 53.9     | 60.4     | 43.4     | 51.0     | 63.2     |
|             | Change, %     |          | 0.3      | (7.5)    | (7.7)    | 4.6      | 21.6     | 10.2     | (1.8)    | 36.8     | 16.5     | (6.1)    |
|             | Brent         | 62.7     | 62.8     | 67.6     | 69.9     | 63.5     | 52.1     | 56.7     | 66.9     | 45.1     | 54.9     | 68.0     |
|             | Change, %     |          | (0.2)    | (7.3)    | (10.3)   | (1.3)    | 20.3     | 10.5     | (6.3)    | 39.0     | 14.3     | (7.9)    |
|             | Natural Gas   | 2.6      | 2.6      | 2.7      | 3.2      | 3.2      | 3.0      | 3.0      | 3.0      | 2.6      | 3.0      | 3.0      |
|             | Change, %     |          | (0.8)    | (6.7)    | (19.9)   | (20.2)   | (14.0)   | (15.5)   | (13.2)   | 0.5      | (15.2)   | (15.2)   |
|             | Ethanol       | 1.4      | 1.4      | 1.5      | 1.4      | 1.5      | 1.6      | 1.6      | 1.3      | 1.5      | 1.5      | 1.4      |
|             | Change, %     |          | 1.2      | (2.9)    | 4.6      | (2.5)    | (9.8)    | (11.3)   | 7.6      | (6.3)    | (5.1)    | 3.8      |
|             | RBOB Gasoline | 167.9    | 170.0    | 184.7    | 185.0    | 181.2    | 161.3    | 159.0    | 179.9    | 140.0    | 162.9    | 183.4    |
|             | Change, %     |          | (1.2)    | (9.1)    | (9.2)    | (7.3)    | 4.1      | 5.6      | (6.7)    | 20.0     | 3.1      | (8.5)    |
|             | Coal          | 101.7    | 101.2    | 104.6    | 105.9    | 97.7     | 95.8     | 80.1     | 100.8    | 65.5     | 88.2     | 105.1    |
|             | Change, %     |          | 0.5      | (2.8)    | (4.0)    | 4.1      | 6.1      | 27.0     | 0.8      | 55.3     | 15.2     | (3.2)    |
| Metal       | Gold          | 1,322.8  | 1,316.2  | 1,339.7  | 1,338.0  | 1,275.5  | 1,289.4  | 1,233.7  | 1,302.6  | 1,248.5  | 1,258.6  | 1,330.1  |
|             | Change, %     |          | 0.5      | (1.3)    | (1.1)    | 3.7      | 2.6      | 7.2      | 1.6      | 5.9      | 5.1      | (0.6)    |
|             | Silver        | 16.5     | 16.4     | 16.7     | 17.2     | 16.9     | 17.1     | 18.0     | 16.9     | 17.1     | 17.1     | 17.0     |
|             | Change, %     |          | 1.2      | (1.1)    | (4.0)    | (2.0)    | (3.3)    | (7.8)    | (2.4)    | (3.3)    | (3.1)    | (2.6)    |
|             | Copper        | 6,831.0  | 6,755.0  | 7,169.0  | 7,110.0  | 6,786.0  | 6,411.0  | 6,090.0  | 7,247.0  | 4,872.0  | 6,199.4  | 7,055.9  |
|             | Change, %     |          | 1.1      | (4.7)    | (3.9)    | 0.7      | 6.6      | 12.2     | (5.7)    | 40.2     | 10.2     | (3.2)    |
|             | Nickel        | 841.2    | 834.0    | 877.8    | 803.7    | 789.5    | 681.4    | 710.8    | 809.1    | 646.4    | 680.2    | 829.9    |
|             | Change, %     |          | 0.9      | (4.2)    | 4.7      | 6.5      | 23.5     | 18.3     | 4.0      | 30.1     | 23.7     | 1.4      |
|             | Zinc          | 3,382.5  | 3,385.0  | 3,548.0  | 3,383.5  | 3,219.0  | 2,896.5  | 2,924.0  | 3,319.0  | 2,097.5  | 2,888.5  | 3,417.6  |
|             | Change, %     |          | (0.1)    | (4.7)    | (0.0)    | 5.1      | 16.8     | 15.7     | 1.9      | 61.3     | 17.1     | (1.0)    |
|             | Lead          | 2,519.0  | 2,538.0  | 2,660.8  | 2,538.8  | 2,514.8  | 2,305.8  | 2,419.0  | 2,482.8  | 1,868.3  | 2,315.7  | 2,584.5  |
|             | Change, %     |          | (0.7)    | (5.3)    | (0.8)    | 0.2      | 9.2      | 4.1      | 1.5      | 34.8     | 8.8      | (2.5)    |
|             | Aluminum      | 14,175.0 | 14,105.0 | 14,240.0 | 14,935.0 | 15,340.0 | 15,880.0 | 13,625.0 | 15,020.0 | 12,373.5 | 14,556.6 | 14,600.9 |
|             | Change, %     |          | 0.5      | (0.5)    | (5.1)    | (7.6)    | (10.7)   | 4.0      | (5.6)    | 14.6     | (2.6)    | (2.9)    |
|             | Cobalt        | 81,280.5 | 81,292.0 | 80,379.0 | 74,947.0 | 60,750.0 | 56,750.0 | 39,850.0 | 75,205.0 | 25,480.1 | 55,906.9 | 78,286.9 |
|             | Change, %     |          | (0.0)    | 1.1      | 8.5      | 33.8     | 43.2     | 104.0    | 8.1      | 219.0    | 45.4     | 3.8      |
|             | HR Coil       | 744.0    | 742.0    | 730.0    | 669.0    | 609.0    | 621.0    | 620.0    | 662.0    | 519.3    | 620.1    | 691.0    |
|             | Change, %     |          | 0.3      | 1.9      | 11.2     | 22.2     | 19.8     | 20.0     | 12.4     | 43.3     | 20.0     | 7.7      |
|             | Scrap         | 372.0    | 372.0    | 375.0    | 384.0    | 328.9    | 360.0    | 305.7    | 367.0    | 275.7    | 344.7    | 375.2    |
|             | Change, %     |          | 0.0      | (0.8)    | (3.1)    | 13.1     | 3.3      | 21.7     | 1.4      | 34.9     | 7.9      | (0.8)    |

자료: Bloomberg

참고) NYMEX, ICE, LME 중 대표지수를 사용

## Refining Price Data

| Daily Price |                  | 02/12 | 1D    | 1W    | 1M     | 3M     | 6M     | 12M   | YTD    | 2015avg. | 2016avg. | 2017acc. |
|-------------|------------------|-------|-------|-------|--------|--------|--------|-------|--------|----------|----------|----------|
| Crude Oil   | WTI              | 59.3  | 59.2  | 64.2  | 64.3   | 56.8   | 47.6   | 52.9  | 53.7   | 43.4     | 50.9     | 63.4     |
|             | Change, %        |       | 0.2   | (7.6) | (7.8)  | 4.5    | 24.6   | 12.0  | 10.4   | 36.7     | 16.5     | (6.5)    |
|             | Dubai            | 60.3  | 61.1  | 65.1  | 66.3   | 61.6   | 50.4   | 54.8  | 53.8   | 41.3     | 53.1     | 65.6     |
|             | Change, %        |       | (1.4) | (7.3) | (9.1)  | (2.2)  | 19.7   | 10.1  | 12.0   | 46.0     | 13.6     | (8.0)    |
| Crude Oil   | Gasoline(휘발유)    | 75.3  | 76.3  | 80.5  | 78.1   | 77.2   | 67.5   | 72.1  | 69.8   | 56.3     | 68.0     | 78.7     |
| Product     | Change, %        |       | (1.2) | (6.4) | (3.5)  | (2.4)  | 11.6   | 4.5   | 7.8    | 33.9     | 10.7     | (4.4)    |
|             | Kerosene(등유)     | 76.5  | 77.8  | 82.0  | 81.0   | 74.6   | 63.0   | 67.1  | 66.4   | 52.9     | 65.2     | 80.9     |
|             | Change, %        |       | (1.7) | (6.7) | (5.5)  | 2.6    | 21.5   | 14.0  | 15.2   | 44.7     | 17.3     | (5.4)    |
|             | Diesel(경유)       | 74.8  | 76.1  | 80.3  | 80.3   | 73.0   | 63.9   | 67.5  | 65.5   | 52.1     | 65.6     | 80.3     |
|             | Change, %        |       | (1.7) | (6.9) | (6.9)  | 2.5    | 17.1   | 10.8  | 14.2   | 43.5     | 14.0     | (6.8)    |
|             | Bunker-C         | 54.9  | 55.3  | 58.5  | 58.7   | 57.6   | 48.3   | 50.5  | 52.1   | 35.5     | 49.7     | 58.5     |
|             | Change, %        |       | (0.6) | (6.0) | (6.4)  | (4.6)  | 13.7   | 8.9   | 5.5    | 54.6     | 10.6     | (6.2)    |
|             | Naphtha          | 58.9  | 59.6  | 63.4  | 66.2   | 65.7   | 49.9   | 57.6  | 53.5   | 42.6     | 53.7     | 65.0     |
|             | Change, %        |       | (1.2) | (7.1) | (11.0) | (10.3) | 18.0   | 2.2   | 10.2   | 38.3     | 9.6      | (9.4)    |
| Dubai       | Gasoline(휘발유)    | 15.0  | 15.1  | 15.4  | 11.8   | 15.5   | 17.1   | 17.3  | 16.0   | 14.9     | 14.9     | 13.2     |
| Spread      | Change           |       | (0.1) | (0.4) | 3.2    | (0.5)  | (2.1)  | (2.3) | (1.0)  | 0.1      | 0.1      | 1.8      |
|             | Kerosene(등유)     | 16.2  | 16.7  | 17.0  | 14.7   | 12.9   | 12.6   | 12.4  | 12.6   | 11.6     | 12.1     | 15.3     |
|             | Change           |       | (0.5) | (0.7) | 1.5    | 3.3    | 3.6    | 3.9   | 3.6    | 4.7      | 4.1      | 0.9      |
|             | Diesel(경유)       | 14.5  | 15.0  | 15.3  | 14.0   | 11.3   | 13.5   | 12.7  | 11.7   | 10.8     | 12.5     | 14.7     |
|             | Change           |       | (0.5) | (0.8) | 0.5    | 3.2    | 1.0    | 1.8   | 2.8    | 3.7      | 2.0      | (0.2)    |
|             | Bunker-C         | (5.4) | (5.9) | (6.6) | (7.6)  | (4.1)  | (2.1)  | (4.3) | (1.8)  | (5.8)    | (3.4)    | (7.0)    |
|             | Change           |       | 0.5   | 1.3   | 2.3    | (1.3)  | (3.3)  | (1.1) | (3.6)  | 0.4      | (1.9)    | 1.7      |
|             | Naphtha          | (1.4) | (1.5) | (1.6) | (0.1)  | 4.0    | (0.4)  | 2.9   | (0.4)  | 1.3      | 0.6      | (0.5)    |
|             | Change           |       | 0.1   | 0.2   | (1.3)  | (5.4)  | (1.0)  | (4.3) | (1.0)  | (2.7)    | (2.0)    | (0.9)    |
| Refining    | Simple(단순)       | 2.9   | 2.8   | 2.5   | 1.1    | 2.7    | 4.3    | 3.2   | 3.8    | 1.9      | 3.2      | 1.8      |
| Margin      | Change           |       | 0.1   | 0.4   | 1.8    | 0.2    | (1.5)  | (0.3) | (0.9)  | 1.0      | (0.3)    | 1.1      |
|             | Complex(복합)      | 8.3   | 8.4   | 8.4   | 6.7    | 7.7    | 9.2    | 8.7   | 8.3    | 7.0      | 8.0      | 7.5      |
|             | Change           |       | (0.1) | (0.1) | 1.6    | 0.6    | (0.9)  | (0.4) | 0.0    | 1.3      | 0.3      | 0.8      |
|             | Complex(lagging) | 2.0   | 4.0   | 9.3   | 12.7   | 14.6   | 12.8   | 11.2  | 18.0   | 8.5      | 8.9      | 10.7     |
|             | Change           |       | (2.0) | (7.3) | (10.7) | (12.6) | (10.8) | (9.2) | (16.0) | (6.5)    | (7.0)    | (8.7)    |

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 |           |             | 02/12   | 02/09   | 02/08   | 02/07   | 02/06   | 02/05   | 02/02   | 02/01   | 01/31   | 01/30   |
|-------------|-----------|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Spot Price  | Naphtha   | CFR Japan   | 543.3   | 552.3   | 549.4   | 560.8   | 573.1   | 582.6   | 603.9   | 601.5   | 587.3   | 588.5   |
|             | Ethylene  | CFR SE Asia | 1,200.0 | 1,200.0 | 1,220.0 | 1,220.0 | 1,220.0 | 1,220.0 | 1,220.0 | 1,220.0 | 1,240.0 | 1,240.0 |
|             | Propylene | FOB Korea   | 1,060.0 | 1,060.0 | 1,080.0 | 1,065.0 | 1,065.0 | 1,065.0 | 1,065.0 | 1,080.0 | 1,080.0 | 1,080.0 |
|             | Butadiene | FOB Korea   | 1,355.0 | 1,355.0 | 1,345.0 | 1,345.0 | 1,345.0 | 1,345.0 | 1,345.0 | 1,350.0 | 1,350.0 | 1,350.0 |
|             | HDPE      | CFR FE Asia | 1,350.0 | 1,360.0 | 1,360.0 | 1,360.0 | 1,350.0 | 1,350.0 | 1,350.0 | 1,350.0 | 1,350.0 | 1,330.0 |
|             | LDPE      | CFR FE Asia | 1,240.0 | 1,250.0 | 1,250.0 | 1,250.0 | 1,245.0 | 1,255.0 | 1,250.0 | 1,250.0 | 1,250.0 | 1,230.0 |
|             | LLDPE     | CFR FE Asia | 1,210.0 | 1,220.0 | 1,220.0 | 1,220.0 | 1,220.0 | 1,225.0 | 1,220.0 | 1,220.0 | 1,220.0 | 1,210.0 |
|             | MEG       | CFR China   | 1,015.0 | 1,025.0 | 1,025.0 | 1,025.0 | 1,025.0 | 1,030.0 | 1,025.0 | 1,020.0 | 1,010.0 | 998.0   |
|             | PP        | CFR FE Asia | 1,210.0 | 1,220.0 | 1,220.0 | 1,230.0 | 1,220.0 | 1,220.0 | 1,220.0 | 1,220.0 | 1,230.0 | 1,240.0 |
|             | PX        | CFR China   | 928.7   | 931.2   | 943.0   | 948.0   | 946.0   | 959.0   | 963.2   | 959.0   | 961.3   | 961.7   |
|             | PTA       | CFR China   | 760.0   | 764.0   | 763.0   | 763.0   | 760.0   | 750.0   | 750.0   | 750.0   | 745.0   | 743.0   |
|             | Benzene   | FOB Korea   | 874.7   | 869.7   | 896.7   | 899.3   | 903.0   | 925.0   | 940.3   | 929.3   | 923.7   | 930.7   |
|             | Toluene   | FOB Korea   | 718.0   | 721.0   | 729.0   | 738.0   | 742.0   | 750.0   | 753.0   | 746.0   | 743.5   | 756.5   |
|             | Xylene    | FOB Korea   | 770.0   | 763.0   | 769.0   | 770.0   | 779.0   | 782.0   | 788.0   | 780.0   | 776.5   | 776.0   |
|             | SM        | FOB Korea   | 1,392.0 | 1,392.0 | 1,397.0 | 1,396.0 | 1,394.0 | 1,410.0 | 1,417.0 | 1,405.0 | 1,400.5 | 1,396.5 |

| Weekly Price |           |             | Last Week | 1W      | 1M      | 3M      | 6M      | 12M     | YTD     | 2016avg. | 2017avg. | 2018acc. |
|--------------|-----------|-------------|-----------|---------|---------|---------|---------|---------|---------|----------|----------|----------|
| Spot Price   | Naphtha   | CFR Japan   | 550.5     | 602.0   | 603.5   | 600.0   | 527.0   | 522.0   | 484.5   | 399.5    | 493.5    | 593.5    |
|              | Change, % |             |           | (8.6)   | (8.8)   | (8.3)   | 4.5     | 5.5     | 13.6    | 37.8     | 11.6     | (7.2)    |
|              | Ethylene  | CFR SE Asia | 1,210.0   | 1,230.0 | 1,322.5 | 1,180.0 | 1,207.5 | 1,125.0 | 990.0   | 1,040.9  | 1,090.9  | 1,273.8  |
|              | Change, % |             |           | (1.6)   | (8.5)   | 2.5     | 0.2     | 7.6     | 22.2    | 16.2     | 10.9     | (5.0)    |
|              | Propylene | CFR SE Asia | 1,025.0   | 1,015.0 | 952.5   | 800.0   | 810.0   | 1,000.0 | 815.0   | 705.7    | 823.6    | 1,054.2  |
|              | Change, % |             |           | 1.0     | 7.6     | 28.1    | 26.5    | 2.5     | 25.8    | 45.3     | 24.5     | (2.8)    |
|              | Butadiene | CFR SE Asia | 1,350.0   | 1,350.0 | 1,175.0 | 925.0   | 1,175.0 | 2,950.0 | 2,100.0 | 1,116.8  | 1,481.1  | 1,262.5  |
|              | Change, % |             |           | 0.0     | 14.9    | 45.9    | 14.9    | (54.2)  | (35.7)  | 20.9     | (8.8)    | 6.9      |
|              | Benzene   | CFR SE Asia | 910.0     | 947.5   | 907.5   | 865.0   | 785.0   | 1,075.0 | 822.5   | 646.7    | 838.8    | 929.2    |
|              | Change, % |             |           | (4.0)   | 0.3     | 5.2     | 15.9    | (15.3)  | 10.6    | 40.7     | 8.5      | (2.1)    |
| Spread       | Toluene   | CFR SE Asia | 760.0     | 765.0   | 745.0   | 717.5   | 700.0   | 775.0   | 690.0   | 630.5    | 689.5    | 754.2    |
|              | Change, % |             |           | (0.7)   | 2.0     | 5.9     | 8.6     | (1.9)   | 10.1    | 20.5     | 10.2     | 0.8      |
|              | Xylene    | CFR SE Asia | 760.0     | 765.0   | 740.0   | 672.5   | 652.5   | 720.0   | 675.0   | 627.7    | 668.8    | 748.3    |
|              | Change, % |             |           | (0.7)   | 2.7     | 13.0    | 16.5    | 5.6     | 12.6    | 21.1     | 13.6     | 1.6      |
| Spread       | Ethylene  | -Naphtha    | 659.5     | 628.0   | 719.0   | 580.0   | 680.5   | 603.0   | 505.5   | 641.4    | 597.4    | 680.3    |
|              | Change, % |             |           | 5.0     | (8.3)   | 13.7    | (3.1)   | 9.4     | 30.5    | 2.8      | 10.4     | (3.1)    |
|              | Propylene | -Naphtha    | 474.5     | 413.0   | 349.0   | 200.0   | 283.0   | 478.0   | 330.5   | 306.2    | 330.1    | 460.7    |
|              | Change, % |             |           | 14.9    | 36.0    | 137.3   | 67.7    | (0.7)   | 43.6    | 55.0     | 43.8     | 3.0      |
|              | Butadiene | -Naphtha    | 799.5     | 748.0   | 571.5   | 325.0   | 648.0   | 2,428.0 | 1,615.5 | 717.3    | 987.6    | 669.0    |
|              | Change, % |             |           | 6.9     | 39.9    | 146.0   | 23.4    | (67.1)  | (50.5)  | 11.5     | (19.0)   | 19.5     |
|              | Benzene   | -Naphtha    | 359.5     | 345.5   | 304.0   | 265.0   | 258.0   | 553.0   | 338.0   | 247.2    | 345.3    | 335.7    |
|              | Change, % |             |           | 4.1     | 18.3    | 35.7    | 39.3    | (35.0)  | 6.4     | 45.4     | 4.1      | 7.1      |
|              | Toluene   | -Naphtha    | 209.5     | 163.0   | 141.5   | 117.5   | 173.0   | 253.0   | 205.5   | 231.0    | 196.0    | 160.7    |
|              | Change, % |             |           | 28.5    | 48.1    | 78.3    | 21.1    | (17.2)  | 1.9     | (9.3)    | 6.9      | 30.4     |
|              | Xylene    | -Naphtha    | 209.5     | 163.0   | 136.5   | 72.5    | 125.5   | 198.0   | 190.5   | 228.2    | 175.3    | 154.8    |
|              | Change, % |             |           | 28.5    | 53.5    | 189.0   | 66.9    | 5.8     | 10.0    | (8.2)    | 19.5     | 35.3     |

자료 : Ciscem, Platts, Bloomberg, SK증권

참고 : Spread는 Polymer와 Naphtha의 가격차이임

| Weekly Price |             |                  | Last Week | 1W      | 1M      | 3M      | 6M      | 12M     | YTD     | 2016avg. | 2017avg. | 2018acc. |
|--------------|-------------|------------------|-----------|---------|---------|---------|---------|---------|---------|----------|----------|----------|
| Spot Price   | HDPE        | CFR SE Asia      | 1,282.5   | 1,272.5 | 1,197.5 | 1,197.5 | 1,187.5 | 1,167.5 | 1,142.5 | 1,134.6  | 1,142.5  | 1,232.5  |
|              | Change, %   |                  |           | 0.8     | 7.1     | 7.1     | 8.0     | 9.9     | 12.3    | 13.0     | 12.3     | 4.1      |
|              | MEG         | CFR SE Asia      | 1,027.5   | 1,027.5 | 1,027.5 | 912.5   | 892.5   | 937.5   | 847.5   | 660.8    | 850.6    | 1,016.3  |
|              | Change, %   |                  |           | 0.0     | 0.0     | 12.6    | 15.1    | 9.6     | 21.2    | 55.5     | 20.8     | 1.1      |
|              | PVC         | CFR SE Asia      | 970.0     | 925.0   | 910.0   | 890.0   | 942.5   | 920.0   | 920.0   | 823.4    | 899.9    | 921.7    |
|              | Change, %   |                  |           | 4.9     | 6.6     | 9.0     | 2.9     | 5.4     | 5.4     | 17.8     | 7.8      | 5.2      |
|              | PP          | CFR SE Asia      | 1,277.5   | 1,267.5 | 1,197.5 | 1,147.5 | 1,167.5 | 1,097.5 | 1,032.5 | 978.4    | 1,099.6  | 1,227.5  |
|              | Change, %   |                  |           | 0.8     | 6.7     | 11.3    | 9.4     | 16.4    | 23.7    | 30.6     | 16.2     | 4.1      |
|              | 2-EH        | CFR Korea        | 1,100.0   | 1,060.0 | 1,050.0 | 980.0   | 1,000.0 | 950.0   | 865.0   | 772.4    | 970.0    | 1,061.7  |
|              | Change, %   |                  |           | 3.8     | 4.8     | 12.2    | 10.0    | 15.8    | 27.2    | 42.4     | 13.4     | 3.6      |
|              | ABS         | CFR SE Asia      | 2,060.0   | 2,060.0 | 2,000.0 | 1,920.0 | 1,970.0 | 1,930.0 | 1,635.0 | 1,347.1  | 1,844.7  | 2,035.0  |
|              | Change, %   |                  |           | 0.0     | 3.0     | 7.3     | 4.6     | 6.7     | 26.0    | 52.9     | 11.7     | 1.2      |
|              | SBR         | CFR SE Asia      | 1,755.0   | 1,755.0 | 1,650.0 | 1,670.0 | 1,750.0 | 3,125.0 | 2,000.0 | 1,483.0  | 1,980.5  | 1,702.5  |
|              | Change, %   |                  |           | 0.0     | 6.4     | 5.1     | 0.3     | (43.8)  | (12.3)  | 18.3     | (11.4)   | 3.1      |
|              | SM          | CFR SE Asia      | 1,422.5   | 1,435.0 | 1,362.5 | 1,262.5 | 1,205.0 | 1,485.0 | 1,205.0 | 1,064.6  | 1,253.8  | 1,396.3  |
|              | Change, %   |                  |           | (0.9)   | 4.4     | 12.7    | 18.0    | (4.2)   | 18.0    | 33.6     | 13.5     | 1.9      |
|              | Caustic     | FOB NEA          | 549.0     | 549.0   | 609.0   | 674.0   | 503.0   | 422.5   | 422.5   | 316.6    | 491.2    | 578.7    |
|              | Change, %   |                  |           | 0.0     | (9.9)   | (18.5)  | 9.1     | 29.9    | 29.9    | 73.4     | 11.8     | (5.1)    |
|              | PX          | CFR SE Asia      | 942.5     | 972.5   | 945.0   | 892.5   | 842.5   | 907.5   | 855.0   | 790.4    | 844.4    | 952.9    |
|              | Change, %   |                  |           | (3.1)   | (0.3)   | 5.6     | 11.9    | 3.9     | 10.2    | 19.2     | 11.6     | (1.1)    |
|              | PO          | CFR China        | 1,892.5   | 1,892.5 | 1,932.5 | 1,777.5 | 1,685.0 | 1,655.0 | 1,562.5 | 1,396.8  | 1,601.2  | 1,949.2  |
|              | Change, %   |                  |           | 0.0     | (2.1)   | 6.5     | 12.3    | 14.4    | 21.1    | 35.5     | 18.2     | (2.9)    |
|              | Caprolactam | CFR SE Asia      | 2,070.0   | 2,070.0 | 2,020.0 | 2,090.0 | 1,970.0 | 2,175.0 | 1,850.0 | 1,344.9  | 1,936.4  | 2,038.3  |
|              | Change, %   |                  |           | 0.0     | 2.5     | (1.0)   | 5.1     | (4.8)   | 11.9    | 53.9     | 6.9      | 1.6      |
|              | PTA         | CFR SE Asia      | 782.5     | 765.0   | 750.0   | 700.0   | 667.5   | 702.5   | 642.5   | 613.7    | 667.8    | 757.1    |
|              | Change, %   |                  |           | 2.3     | 4.3     | 11.8    | 17.2    | 11.4    | 21.8    | 27.5     | 17.2     | 3.4      |
| Spread       | HDPE        |                  | 732.0     | 670.5   | 594.0   | 597.5   | 660.5   | 645.5   | 658.0   | 735.1    | 649.0    | 639.0    |
|              | Change, %   |                  |           | 9.2     | 23.2    | 22.5    | 10.8    | 13.4    | 11.2    | (0.4)    | 12.8     | 14.6     |
|              | MEG         |                  | 477.0     | 425.5   | 424.0   | 312.5   | 365.5   | 415.5   | 363.0   | 261.3    | 357.1    | 422.8    |
|              | Change, %   |                  |           | 12.1    | 12.5    | 52.6    | 30.5    | 14.8    | 31.4    | 82.6     | 33.6     | 12.8     |
|              | PVC         |                  | 419.5     | 323.0   | 306.5   | 290.0   | 415.5   | 398.0   | 435.5   | 423.9    | 406.4    | 328.2    |
|              | Change, %   |                  |           | 29.9    | 36.9    | 44.7    | 1.0     | 5.4     | (3.7)   | (1.0)    | 3.2      | 27.8     |
|              | PP          |                  | 727.0     | 665.5   | 594.0   | 547.5   | 640.5   | 575.5   | 548.0   | 578.9    | 606.1    | 634.0    |
|              | Change, %   |                  |           | 9.2     | 22.4    | 32.8    | 13.5    | 26.3    | 32.7    | 25.6     | 19.9     | 14.7     |
|              | 2-EH        |                  | 549.5     | 458.0   | 446.5   | 380.0   | 473.0   | 428.0   | 380.5   | 372.9    | 476.5    | 468.2    |
|              | Change, %   |                  |           | 20.0    | 23.1    | 44.6    | 16.2    | 28.4    | 44.4    | 47.4     | 15.3     | 17.4     |
|              | ABS         |                  | 1,509.5   | 1,458.0 | 1,396.5 | 1,320.0 | 1,443.0 | 1,408.0 | 1,150.5 | 947.6    | 1,351.2  | 1,441.5  |
|              | Change, %   |                  |           | 3.5     | 8.1     | 14.4    | 4.6     | 7.2     | 31.2    | 59.3     | 11.7     | 4.7      |
|              | SBR         | BD spread        | 405.0     | 405.0   | 475.0   | 745.0   | 575.0   | 175.0   | (100.0) | 366.2    | 499.4    | 440.0    |
|              | Change, %   |                  |           | 0.0     | (14.7)  | (45.6)  | (29.6)  | 131.4   | (505.0) | 10.6     | (18.9)   | (8.0)    |
|              | SM          |                  | 872.0     | 833.0   | 759.0   | 662.5   | 678.0   | 963.0   | 720.5   | 665.1    | 760.3    | 802.8    |
|              | Change, %   |                  |           | 4.7     | 14.9    | 31.6    | 28.6    | (9.4)   | 21.0    | 31.1     | 14.7     | 8.6      |
|              | Caustic     |                  |           |         |         |         |         |         |         |          |          |          |
|              | Change, %   |                  |           |         |         |         |         |         |         |          |          |          |
|              | PX          |                  | 392.0     | 370.5   | 341.5   | 292.5   | 315.5   | 385.5   | 370.5   | 390.9    | 351.0    | 359.4    |
|              | Change, %   |                  |           | 5.8     | 14.8    | 34.0    | 24.2    | 1.7     | 5.8     | 0.3      | 11.7     | 9.1      |
|              | PO          | propylene spread | 867.5     | 877.5   | 980.0   | 977.5   | 875.0   | 655.0   | 747.5   | 691.1    | 777.6    | 895.0    |
|              | Change, %   |                  |           | (1.1)   | (11.5)  | (11.3)  | (0.9)   | 32.4    | 16.1    | 25.5     | 11.6     | (3.1)    |
|              | Caprolactam | benzene spread   | 1,160.0   | 1,122.5 | 1,112.5 | 1,225.0 | 1,185.0 | 1,100.0 | 1,027.5 | 698.2    | 1,097.6  | 1,109.2  |
|              | Change, %   |                  |           | 3.3     | 4.3     | (5.3)   | (2.1)   | 5.5     | 12.9    | 66.1     | 5.7      | 4.6      |
|              | PTA         | px spread        | 122.8     | 84.3    | 88.5    | 75.3    | 77.8    | 67.3    | 44.0    | 60.4     | 76.7     | 90.0     |
|              | Change, %   |                  |           | 45.7    | 38.7    | 63.1    | 57.9    | 82.5    | 179.0   | 103.1    | 60.0     | 36.3     |

자료 : Ciscchem, Platts, SK증권

참고 : Spread는 Naphtha spread로 일괄적용

## Global peers

|                        | Currency | 02/12   | 1D    | 1W     | 1M     | 3M     | 6M     | 12M    | YTD    | MKT CAP<br>(mil USD) | PER   |       | PBR  |     | EV/EBITDA |      |
|------------------------|----------|---------|-------|--------|--------|--------|--------|--------|--------|----------------------|-------|-------|------|-----|-----------|------|
|                        |          |         |       |        |        |        |        |        |        |                      | 18E   | 19E   | 18E  | 19E | 18E       | 19E  |
| <b>Petrochemical</b>   |          |         |       |        |        |        |        |        |        |                      |       |       |      |     |           |      |
| DowDuPont              | USD      | 71.8    | 3.4   | 5.9    | (4.7)  | 2.7    | 13.6   | 17.4   | 0.9    | 168,245              | 17.7  | 14.9  | 1.8  | 1.7 | 10.2      | 9.2  |
| Eastman                | USD      | 97.5    | 2.9   | 0.4    | 0.1    | 7.5    | 17.2   | 22.9   | 5.3    | 13,550               | 11.6  | 10.7  | 2.5  | 2.2 | 8.7       | 8.1  |
| BASF                   | EUR      | 86.4    | 1.0   | (0.6)  | (8.6)  | (8.2)  | 8.1    | (2.4)  | (5.8)  | 101,214              | 14.6  | 13.6  | 2.4  | 2.2 | 7.8       | 7.4  |
| Akzo Nobel             | EUR      | 77.3    | 1.9   | 3.9    | 1.8    | (1.1)  | 1.8    | 19.8   | 5.9    | 22,073               | 17.0  | 15.8  | 3.0  | 2.8 | 9.3       | 8.8  |
| Arkema                 | EUR      | 97.9    | 1.1   | (1.8)  | (4.1)  | (8.0)  | 4.6    | 5.5    | (3.6)  | 9,270                | 13.2  | 12.2  | 1.7  | 1.6 | 6.3       | 6.0  |
| Lanxess                | EUR      | 66.3    | 0.4   | (2.5)  | (4.1)  | (1.2)  | 4.2    | (1.1)  | 0.0    | 7,282                | 15.5  | 13.1  | 2.1  | 1.9 | 9.3       | 8.2  |
| Sumitomo Chemical      | JPY      | 660     | 0.0   | (14.9) | (22.7) | (21.3) | 5.3    | 4.3    | (18.5) | 11,911               | 10.1  | 10.5  | 1.3  | 1.2 | 7.4       | 8.0  |
| Mitsubishi Chemical    | JPY      | 1,062   | 0.0   | (8.7)  | (17.9) | (11.6) | 14.0   | 28.6   | (14.1) | 16,544               | 9.2   | 8.7   | 1.3  | 1.2 | 6.3       | 6.1  |
| Shin-Etsu Chemical     | JPY      | 11,220  | 0.0   | (3.9)  | (6.1)  | (9.9)  | 17.6   | 14.3   | (2.0)  | 43,948               | 18.5  | 16.6  | 1.9  | 1.8 | 8.1       | 7.4  |
| Asahi Kasei            | JPY      | 1,311   | 0.0   | (4.8)  | (12.2) | (13.0) | 2.0    | 19.2   | (9.8)  | 18,109               | 14.4  | 13.6  | 1.5  | 1.4 | 7.4       | 7.0  |
| JSR                    | JPY      | 2,431   | 0.0   | (5.0)  | 6.9    | 7.0    | 26.9   | 19.6   | 9.6    | 4,455                | 14.5  | 13.4  | 1.2  | 1.1 | 7.7       | 7.2  |
| Nitto Denko            | JPY      | 8,453   | 0.0   | (8.4)  | (17.0) | (25.0) | (13.8) | (10.6) | (15.6) | 15,450               | 15.7  | 14.6  | 2.1  | 1.9 | 7.3       | 7.0  |
| SABIC                  | SAR      | 105.1   | 1.4   | (0.6)  | 3.5    | 5.2    | 7.0    | 9.0    | 3.6    | 80,773               | 14.2  | 13.7  | 1.7  | 1.7 | 7.3       | 7.1  |
| Yansab                 | SAR      | 64.1    | 1.8   | (3.0)  | 4.2    | 13.2   | 16.8   | 12.5   | 8.6    | 8,861                | 13.7  | 13.9  | 2.2  | 1.9 | 9.0       | 8.9  |
| Formosa Plastics       | TWD      | 101.0   | 3.3   | 0.5    | (0.5)  | 9.7    | 9.8    | 9.2    | 2.3    | 21,114               | 14.4  | 13.9  | 1.8  | 1.8 | 18.9      | 19.2 |
| Formosa Fiber          | TWD      | 105.5   | 0.0   | (1.9)  | (2.8)  | 13.0   | 15.3   | 6.6    | 2.4    | 20,511               | 13.7  | 13.4  | 1.7  | 1.7 | 11.6      | 11.5 |
| Nan Ya Plastics        | TWD      | 76.2    | 0.3   | (3.3)  | (6.0)  | 2.1    | 1.9    | (1.3)  | (2.2)  | 20,648               | 14.8  | 15.3  | 1.7  | 1.7 | 16.2      | 16.4 |
| Sinopec Shanghai       | CNY      | 5.92    | (2.8) | (11.2) | (14.7) | (8.1)  | (11.2) | (10.8) | (6.5)  | 9,462                | 12.0  | 12.6  | 2.2  | 2.0 | 6.8       | 7.3  |
| Sinopec Yizheng(Fiber) | CNY      | 2.26    | 2.3   | 0.0    | (22.6) | (26.1) | (29.4) | (41.5) | (15.4) | 5,394                | 50.4  | 66.3  | 5.3  | 5.0 | 13.9      | 10.3 |
| Reliance               | INR      | 916     | 2.0   | 1.5    | (3.5)  | 3.6    | 18.4   | 77.7   | 0.6    | 93,404               | 14.4  | 12.9  | 1.7  | 1.5 | 9.4       | 8.7  |
| Industries Qatar       | QAR      | 106.4   | 1.4   | 2.6    | 0.4    | 12.6   | 13.9   | (7.2)  | 9.7    | 16,144               | 14.5  | 13.9  | 1.6  | 1.5 | 46.4      | 27.2 |
| PTT Chemical           | THB      | 92.3    | 0.5   | (1.3)  | (0.3)  | 16.8   | 29.9   | 36.7   | 8.5    | 11,766               | 10.7  | 10.4  | 1.4  | 1.3 | 5.5       | 5.4  |
| Petronas               | MYR      | 8.0     | (0.2) | (0.5)  | (1.2)  | 7.3    | 13.7   | 10.7   | 3.6    | 15,624               | 16.1  | 15.5  | 2.0  | 1.9 | 9.2       | 8.9  |
| LG화학                   | KRW      | 372,000 | 1.6   | (4.6)  | (12.7) | (8.5)  | 9.6    | 32.4   | (8.1)  | 27,313               | 13.8  | 12.8  | 1.8  | 1.6 | 6.5       | 6.1  |
| 롯데케미칼                  | KRW      | 431,000 | 3.0   | 3.6    | 9.3    | 15.2   | 14.0   | 5.9    | 17.1   | 11,632               | 5.5   | 5.2   | 0.9  | 0.8 | 3.6       | 3.3  |
| 한화케미칼                  | KRW      | 32,100  | (0.8) | (5.6)  | (1.4)  | 4.6    | (4.7)  | 20.9   | 1.6    | 5,050                | 5.7   | 5.5   | 0.8  | 0.7 | 6.7       | 6.5  |
| 금호석유                   | KRW      | 86,800  | (4.1) | (15.3) | (16.1) | 19.6   | 18.9   | 5.7    | (12.8) | 2,969                | 14.1  | 11.9  | 1.6  | 1.5 | 9.3       | 8.4  |
| SKC                    | KRW      | 37,150  | 1.8   | (10.2) | (18.3) | (11.5) | 0.0    | 11.7   | (21.0) | 1,643                | 9.9   | 8.7   | 1.1  | 1.0 | 8.8       | 7.9  |
| 국도화학                   | KRW      | 58,700  | 0.3   | (2.7)  | (9.6)  | (0.2)  | 6.1    | 11.4   | (7.0)  | 359                  | #N/A  | N/A   | #N/A | N/A | #N/A      | N/A  |
| 효성                     | KRW      | 8,730   | (1.8) | (10.5) | 4.8    | 13.5   | 45.5   | 8.2    | 15.2   | 4,595                | 8.2   | 7.3   | 1.1  | 1.0 | 7.2       | 6.8  |
| Average                |          |         | 0.7   | (3.4)  | (5.9)  | (0.0)  | 9.2    | 11.2   | (1.6)  |                      |       |       |      |     |           |      |
| <b>Refinery</b>        |          |         |       |        |        |        |        |        |        |                      |       |       |      |     |           |      |
| Valero                 | USD      | 88.8    | 0.7   | (1.0)  | (8.2)  | 9.2    | 34.3   | 31.7   | (3.3)  | 40,608               | 14.1  | 13.4  | 2.0  | 2.0 | 6.9       | 6.9  |
| Conoco Phillips        | USD      | 53.4    | 2.7   | (4.5)  | (11.1) | 0.8    | 19.2   | 6.5    | (2.7)  | 66,136               | 34.0  | 25.9  | 2.2  | 2.2 | 7.2       | 6.7  |
| Formosa Petrochemical  | TWD      | 111.5   | (3.9) | (6.7)  | (7.1)  | 5.2    | 7.2    | 3.7    | (3.5)  | 37,040               | 18.2  | 18.7  | 3.2  | 3.2 | 11.7      | 12.1 |
| Andeavor               | USD      | 97.6    | 0.3   | (1.7)  | (18.0) | (8.9)  | 3.4    | 11.8   | (14.6) | 17,904               | 12.9  | 11.4  | 1.8  | 1.7 | 7.3       | 7.1  |
| Marathon Petroleum     | USD      | 64.8    | 1.5   | 0.3    | (9.3)  | 4.9    | 24.2   | 29.2   | (1.8)  | 32,812               | 15.0  | 12.8  | 2.6  | 2.7 | 7.7       | 7.5  |
| Devon Energy           | USD      | 35.8    | 3.2   | (7.4)  | (18.8) | (11.5) | 13.2   | (21.2) | (13.6) | 22,192               | 17.5  | 14.0  | 2.7  | 2.3 | 8.4       | 7.4  |
| Hollyfrontier          | USD      | 44.7    | 0.5   | (0.6)  | (14.8) | 6.4    | 56.6   | 48.4   | (12.7) | 9,094                | 16.8  | 15.2  | 1.8  | 1.8 | 8.0       | 8.0  |
| Phillips 66            | USD      | 93.6    | 1.1   | (1.7)  | (10.8) | (0.1)  | 12.2   | 17.2   | (7.5)  | 51,561               | 15.6  | 14.5  | 2.3  | 2.2 | 9.0       | 8.8  |
| Murphy Oil             | USD      | 27.3    | 3.6   | (3.6)  | (21.1) | (6.3)  | 6.8    | (4.1)  | (12.1) | 5,548                | 162.4 | 113.2 | 1.2  | 1.1 | 4.9       | 4.5  |
| JX Holdings            | JPY      | 656.5   | 0.0   | (7.6)  | (15.8) | 2.9    | 27.1   | 24.8   | (9.7)  | 22,130               | 8.8   | 8.0   | 0.9  | 0.9 | 7.0       | 6.6  |
| Idemitsu               | JPY      | 3,835.0 | 0.0   | (3.9)  | (14.2) | 7.6    | 45.3   | 12.8   | (15.2) | 8,360                | 7.9   | 7.5   | 1.0  | 0.9 | 6.8       | 6.8  |
| Nesteoil               | EUR      | 58.9    | 2.0   | 6.6    | 5.0    | 22.7   | 69.6   | 70.2   | 10.5   | 16,473               | 16.7  | 16.7  | 2.9  | 2.7 | 10.2      | 10.3 |
| Ashland                | USD      | 70.2    | 0.7   | (3.4)  | (5.2)  | 6.4    | 15.5   | 21.0   | (1.3)  | 4,550                | 21.6  | 18.7  | 1.3  | 1.3 | 10.2      | 9.6  |
| Fuchs Petrolub         | EUR      | 43.9    | 0.7   | 3.1    | (1.1)  | (6.2)  | (6.8)  | 0.9    | (0.9)  | 7,127                | 22.1  | 20.9  | 4.1  | 3.7 | 13.0      | 12.3 |
| SK이노베이션                | KRW      | 185,500 | 0.3   | (6.5)  | (7.7)  | (12.1) | 7.8    | 18.9   | (9.3)  | 17,975               | 7.9   | 7.7   | 0.9  | 0.9 | 4.9       | 4.8  |
| S-Oil                  | KRW      | 115,000 | 1.3   | (5.3)  | 1.3    | (8.7)  | (0.4)  | 36.9   | (1.7)  | 12,400               | 9.3   | 8.1   | 1.8  | 1.6 | 7.6       | 6.6  |
| GS                     | KRW      | 62,300  | (1.6) | (7.7)  | (3.9)  | (6.0)  | (14.2) | 15.8   | 0.2    | 5,467                | 6.0   | 5.5   | 0.7  | 0.6 | 6.9       | 6.3  |
| Average                |          |         | 0.8   | (3.0)  | (9.5)  | 0.4    | 18.9   | 19.1   | (5.8)  |                      |       |       |      |     |           |      |

\* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임

\* 국내업체의 multiple은 Dataguidepro 기준임



## Global peers

|                      | Currency | 02/12   | 1D    | 1W     | 1M     | 3M     | 6M     | 12M    | YTD    | MKT CAP<br>(mil USD) | PER  |      | PBR   |      | EV/EBITDA |      |
|----------------------|----------|---------|-------|--------|--------|--------|--------|--------|--------|----------------------|------|------|-------|------|-----------|------|
|                      |          |         |       |        |        |        |        |        |        |                      | 18E  | 19E  | 18E   | 19E  | 18E       | 19E  |
| <b>E&amp;P/Shale</b> |          |         |       |        |        |        |        |        |        |                      |      |      |       |      |           |      |
| Exxon Mobil          | USD      | 76      | 0.8   | (4.1)  | (12.7) | (7.9)  | (2.3)  | (7.4)  | (8.6)  | 323,800              | 15.8 | 16.4 | 1.7   | 1.7  | 7.6       | 7.7  |
| BP                   | GBP      | 479     | 1.9   | (0.7)  | (10.5) | (5.5)  | 6.9    | 4.2    | (8.4)  | 131,832              | 12.5 | 11.5 | 1.3   | 1.3  | 5.3       | 5.1  |
| Shell                | EUR      | 2,285   | 1.9   | (3.4)  | (11.2) | (5.5)  | 7.0    | 5.5    | (7.9)  | 264,505              | 13.5 | 12.6 | 1.3   | 1.3  | 5.9       | 5.6  |
| Chevron              | USD      | 114     | 0.4   | 1.2    | (14.7) | (2.7)  | 4.3    | 0.8    | (9.0)  | 216,491              | 18.0 | 18.3 | 1.5   | 1.5  | 6.3       | 6.2  |
| Total                | EUR      | 45      | 1.2   | (0.3)  | (6.9)  | (5.8)  | 5.8    | (5.6)  | (1.7)  | 140,855              | 11.9 | 11.6 | 1.2   | 1.2  | 5.1       | 4.9  |
| Sinopec              | CNY      | 6       | (1.3) | (17.4) | (11.9) | 3.4    | 5.0    | 7.3    | 2.8    | 114,911              | 12.0 | 11.3 | 1.0   | 0.9  | 4.3       | 4.2  |
| Petrochina           | CNY      | 8       | 0.4   | (14.7) | (8.8)  | (4.9)  | 0.1    | (5.5)  | (1.4)  | 218,479              | 27.2 | 15.1 | 1.2   | 1.1  | 5.8       | 5.1  |
| CNOOC                | CNY      | 11      | 0.6   | (16.0) | (10.3) | (10.2) | (2.6)  | (19.3) | 0.1    | 62,343               | 8.8  | 8.6  | 0.9   | 0.9  | 3.5       | 3.4  |
| Gazprom              | RUB      | 137     | 1.3   | (5.0)  | (4.6)  | 3.6    | 17.4   | (2.3)  | 5.2    | 56,242               | 3.8  | 4.0  | 0.3   | 0.2  | 3.5       | 3.5  |
| Rosneft              | RUB      | 325     | 0.2   | (3.8)  | 0.3    | (1.2)  | 7.0    | (13.9) | 11.6   | 59,655               | 7.7  | 6.7  | 0.8   | 0.8  | 4.7       | 4.3  |
| Anadarko             | USD      | 58      | 3.0   | 1.7    | (2.0)  | 13.1   | 32.8   | (16.6) | 7.8    | 31,637               | 50.2 | 38.9 | 2.2   | 2.1  | 6.6       | 5.9  |
| Petrobras            | BRL      | 19      | 0.0   | (1.4)  | 8.5    | 12.3   | 44.9   | 20.5   | 16.6   | 76,907               | 9.6  | 7.3  | 0.7   | 0.7  | 5.2       | 4.8  |
| Lukoil               | USD      | 3,657   | 1.1   | (2.5)  | (6.4)  | 9.3    | 27.8   | 12.7   | 9.7    | 53,807               | 6.5  | 6.2  | 0.7   | 0.7  | N/A       | N/A  |
| Kinder               | USD      | 17      | 0.3   | 2.9    | (11.4) | (2.1)  | (9.3)  | (23.0) | (4.3)  | 47,497               | 21.5 | 19.3 | 1.1   | 1.1  | 10.5      | 10.1 |
| Statoil              | NOK      | 174     | 0.9   | (2.0)  | (6.3)  | 2.9    | 19.7   | 15.6   | (0.6)  | 73,030               | 15.0 | 14.2 | 1.8   | 1.7  | 3.3       | 3.2  |
| BHP                  | AUD      | 30      | 1.5   | (2.0)  | (6.2)  | 5.3    | 15.7   | 14.2   | (0.0)  | 118,351              | 16.6 | 16.8 | 2.0   | 1.9  | 6.4       | 6.4  |
| PTT E&P              | THB      | 116     | 3.1   | (3.3)  | 4.1    | 23.2   | 35.5   | 23.5   | 15.5   | 14,481               | 13.4 | 12.8 | 1.1   | 1.1  | 3.8       | 3.6  |
| Petronas gas         | MYR      | 18      | 1.6   | (1.6)  | (6.5)  | (0.2)  | (5.4)  | (13.3) | 1.6    | 8,907                | 18.5 | 18.0 | 2.7   | 2.6  | 10.4      | 10.1 |
| Chesapeake           | USD      | 3       | 0.0   | (7.8)  | (33.4) | (31.2) | (31.2) | (55.3) | (28.0) | 2,590                | 3.5  | 3.2  | #N/A  | N/A  | 5.3       | 6.1  |
| Noble Energy         | USD      | 26      | 1.1   | (7.2)  | (19.4) | (7.6)  | 5.4    | (33.2) | (10.9) | 12,637               | 52.6 | 30.8 | 1.2   | 1.2  | 6.5       | 5.5  |
| Average              |          | 0       | 1.0   | (4.4)  | (8.5)  | (0.6)  | 9.2    | (4.5)  | (0.5)  |                      |      |      |       |      |           |      |
| <b>PV</b>            |          |         |       |        |        |        |        |        |        |                      |      |      |       |      |           |      |
| WACKER               | EUR      | 139.7   | 0.4   | (8.6)  | (18.9) | 3.5    | 38.7   | 25.6   | (13.9) | 8,940                | 20.0 | 17.5 | 2.1   | 2.0  | 6.9       | 6.6  |
| GCL-Poly             | HKD      | 1.2     | (0.9) | (11.5) | (22.3) | (20.1) | 32.2   | 10.6   | (17.9) | 2,734                | 6.6  | 5.8  | 0.7   | 0.6  | 5.6       | 5.1  |
| SunPower             | USD      | 6.9     | 0.6   | (4.3)  | (24.3) | (20.8) | (25.9) | (3.8)  | (18.3) | 962                  | #N/A | N/A  | 24.8  | 1.3  | 1.3       | 11.8 |
| Canadian Solar       | USD      | 15.5    | 4.2   | 1.1    | (6.3)  | (12.8) | (9.8)  | 24.4   | (8.0)  | 900                  | 8.4  | 8.9  | 0.9   | 0.8  | 9.1       | 9.2  |
| JA Solar             | USD      | 7.4     | (0.9) | (2.3)  | 0.0    | (6.9)  | 20.8   | 57.0   | (1.1)  | 351                  | 14.1 | 11.8 | 1.6   | 1.6  | 4.0       | 3.7  |
| Yingli               | USD      | 1.6     | 5.0   | (2.5)  | (22.8) | (30.7) | (31.3) | (44.3) | (7.7)  | 28                   | #N/A | N/A  | #N/A  | N/A  | #N/A      | N/A  |
| First Solar          | USD      | 62.5    | 2.1   | (1.5)  | (14.8) | 1.5    | 31.5   | 90.3   | (7.4)  | 6,529                | 40.9 | 19.4 | 1.2   | 1.1  | 11.6      | 7.0  |
| 한화큐셀                 | USD      | 7.5     | 6.2   | 3.6    | 2.2    | (10.3) | 2.0    | (6.3)  | 6.8    | 624                  | 34.1 | 24.2 | #N/A  | N/A  | 8.2       | 7.4  |
| OCI                  | KRW      | 156,000 | 1.6   | 3.0    | (12.6) | 26.3   | 74.3   | 69.9   | 14.7   | 3,431                | 0.0  | 15.2 | 0.0   | 1.0  | 0.0       | 7.2  |
| 웅진에너지                | KRW      | 7,250   | 0.7   | (9.3)  | (9.6)  | (7.3)  | (6.9)  | 51.0   | (11.8) | 199                  | N/A  | 0.0  | 1.0   | 0.0  | 7.2       | 0.0  |
| 신성솔라에너지              | KRW      | 1,800   | (0.3) | 0.3    | (10.9) | 1.7    | (15.5) | (2.7)  | (6.0)  | 287                  | N/A  | 1.0  | 0.0   | 7.2  | 0.0       | 7.7  |
| Average              |          |         | 1.7   | (2.9)  | (12.7) | (6.9)  | 10.0   | 24.7   | (6.4)  |                      |      |      |       |      |           |      |
| <b>Gas Company</b>   |          |         |       |        |        |        |        |        |        |                      |      |      |       |      |           |      |
| Towngas China        | HKD      | 6.1     | 2.2   | (5.7)  | 0.0    | (4.5)  | 17.0   | 42.8   | (2.7)  | 2,163                | 12.6 | 11.4 | 1.1   | 1.0  | 11.6      | 10.4 |
| Kulun                | HKD      | 6.9     | (2.0) | (10.1) | (13.4) | (2.5)  | (6.5)  | 5.8    | (14.7) | 7,164                | 9.3  | 8.3  | 1.1   | 1.0  | 5.3       | 5.0  |
| Beijing Enterprise   | HKD      | 41.4    | (1.1) | (11.3) | (9.3)  | (9.8)  | 5.1    | 3.0    | (10.8) | 6,681                | 7.2  | 6.4  | 0.8   | 0.7  | 13.4      | 12.6 |
| ENN Energy           | HKD      | 60.2    | (0.4) | 6.8    | 11.3   | 4.6    | 17.6   | 59.5   | 7.9    | 8,329                | 13.5 | 11.6 | 2.5   | 2.2  | 8.2       | 7.2  |
| China Resources Gas  | HKD      | 25.1    | 0.2   | (2.5)  | (0.6)  | (13.3) | (11.6) | 4.8    | (11.6) | 7,124                | 13.1 | 11.7 | 2.4   | 2.1  | 7.9       | 7.2  |
| China Gas Holdings   | HKD      | 22.8    | 0.0   | (5.0)  | 4.6    | (6.4)  | 20.9   | 99.6   | 5.3    | 14,454               | 15.6 | 13.2 | 3.8   | 3.1  | 12.4      | 10.7 |
| Shenzen Gas          | HKD      | 14.8    | 0.8   | (4.3)  | (6.1)  | 1.2    | 9.0    | 28.9   | (0.4)  | 3,851                | 10.2 | 9.1  | 1.3   | 1.1  | 7.4       | 6.9  |
| Shann Xi             | CNY      | 7.1     | 1.1   | (6.7)  | (15.7) | (13.6) | (16.3) | (25.5) | (15.6) | 1,251                | 12.4 | 15.8 | 1.3   | 1.2  | #N/A      | N/A  |
| Suntien              | HKD      | 1.8     | 2.3   | (7.4)  | (15.4) | (12.4) | 6.0    | 36.4   | (15.0) | 836                  | 5.3  | 4.6  | 0.6   | 0.5  | 8.0       | 7.0  |
| China Oil & Gas      | HKD      | 0.7     | 0.0   | (10.5) | (16.0) | 28.3   | 28.3   | 7.9    | (20.0) | 507                  | 10.5 | 9.1  | #N/A  | N/A  | #N/A      | N/A  |
| Average              |          |         | 0.3   | (5.7)  | (6.1)  | (2.8)  | 6.9    | 26.3   | (7.8)  |                      |      |      |       |      |           |      |
| <b>EV</b>            |          |         |       |        |        |        |        |        |        |                      |      |      |       |      |           |      |
| LG 화학                | KRW      | 372,000 | 1.6   | (4.6)  | (12.7) | (8.5)  | 9.6    | 32.4   | (8.1)  | 24,220               | 12.8 | 11.9 | 1.6   | 1.4  | 6.0       | 5.6  |
| 삼성SDI                | KRW      | 174,000 | 2.4   | (0.6)  | (19.3) | (21.3) | 3.0    | 39.2   | (14.9) | 11,036               | 11.8 | 9.8  | 1.0   | 0.9  | 11.2      | 9.0  |
| Panasonic            | JPY      | 1585.0  | 0.0   | (1.6)  | (7.2)  | (9.4)  | 7.4    | 30.1   | (3.9)  | 35,861               | 15.4 | 13.4 | 2.0   | 1.8  | 5.9       | 5.5  |
| GS Yuasa             | JPY      | 573.0   | 0.0   | (3.0)  | (0.5)  | 0.2    | 3.8    | 17.7   | 2.1    | 2,186                | 15.7 | 14.0 | 1.3   | 1.2  | 7.0       | 6.4  |
| NEC                  | JPY      | 3110.0  | 0.0   | (5.6)  | (0.3)  | 1.5    | 4.0    | 15.2   | 2.3    | 7,472                | 19.7 | 15.5 | 0.9   | 0.8  | 6.8       | 6.2  |
| BYD Auto             | CNY      | 59.6    | 5.2   | (3.0)  | (11.1) | (11.9) | 24.6   | 20.1   | (8.3)  | 25,128               | 25.7 | 20.1 | 2.6   | 2.4  | 12.3      | 10.6 |
| Tesla Motors         | USD      | 315.7   | 1.7   | (5.2)  | (6.1)  | 4.2    | (11.8) | 17.3   | 1.4    | 53,316               | #N/A | N/A  | 100.6 | 11.4 | 10.2      | 39.1 |
| Kandi Technologies   | USD      | 5.2     | 4.0   | (8.0)  | (28.5) | (27.5) | 42.1   | 26.4   | (24.3) | 247                  | #N/A | N/A  | #N/A  | N/A  | #N/A      | N/A  |
| Average              |          |         | 1.9   | (4.0)  | (10.7) | (9.1)  | 10.3   | 24.8   | (6.7)  |                      |      |      |       |      |           |      |

\* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임