

## Market Outlook

As the global economy is stuck in a low-growth trap and it has a negative impact on corporate business activities; the energy and chemical industry has also experienced various environmental changes. SK innovation strives to minimize any negative potential impact on our management activities by identifying and analyzing internal and external market trends swiftly and deal with each scenario flexibly.

### E&P Business

#### Oil Price Trends

Dubai crude oil decreased from USD 108 per barrel in June 2014, to USD 26 per barrel in January 2016. Prices thereafter showed some volatility, but posted a recovering trend to reach an average USD 52 per barrel in December 2016.

#### Energy Industry Trends

A surge in oil production from unconventional sources in the US and low international oil prices have led to many changes within the E&P sector. Most companies are scaling down or suspending their investments in high-cost projects, such as deep-water oil fields, LNG, and polar oil fields. Against this backdrop, SK innovation has aggressively restructured its asset portfolio focusing on profitability.

### Petrochemical Business

#### Basic Chemical Trends

Since 2009, the petrochemical market has recovered on the back of factors including economic stimulus measures in China. However, market volatility has increased, due to new capacity additions in China and the Middle East, the Eurozone debt crisis, and slow recovery from global economic crisis. In addition, we expect the rise of unconventional low-cost feedstock, such as shale gas and coal, to become a key factor driving market dynamics.

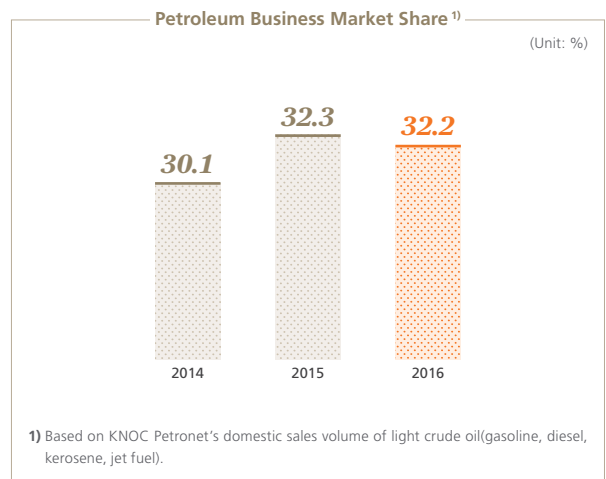
#### Chemical Material Trends

Though it started as a domestic-demand business, the chemical material business has transformed into an export-oriented business. The growth potential of this business is deeply related to global economic growth. In particular, Chinese demand is a main driver, which means there is a strong correlation to Chinese economic growth. Recently, we have been expanding our business in growing emerging markets, such as Latin America, Southeast Asia and India.

### Petroleum Business

#### Petroleum Products Consumption Trends

Based on accumulative figures as of December 2016, domestic demand for major petroleum products increased by 11.1% year-on-year. Demand for fuel used for transportation, such as gasoline, diesel and jet fuel is continuously increasing. Furthermore, demand for generation and industrial fuel, such as kerosene, middle distillates and LPG, also increased compared with previous year. SK innovation's domestic market share in Korea is 32.2%, representing a 0.1% decrease from the previous year.



## Lubricant Business

### Domestic and Overseas Market Trends

The key feed used in finished lubricant products is base oil, which is made by running unconverted oil(UCO), produced as a by-product of upgraded hydrocrackers during the oil refine process, through additional vacuum distillation and catalysts. As a result, entry-barriers are high, unless the provider is a refinery capable of making large-scale facility investments.

The lubricant base oil market is categorized into different groups, based on quality and properties, with each group showing different demand growth. Group I base oil, which has the weakest product performance and shortest life, has experienced a drop in demand, resulting in a smaller total market. The higher-end base oils(Group II and III) enjoy stronger growth, due to tighter environmental regulations and stronger demand. The domestic base oil market in Korea is dominated by the four major players, which all have refineries and upgrading facilities. The local market is in oversupply, which has pushed most companies to export their products overseas, including to Asia, Americas, and Europe.

### Domestic and International Competitive Dynamics

The lubricant market in Korea is a perfect competition with more than 200 market participants, including 19 suppliers registered as full-members of the Korea Lubricating Oil Industries Association, and numerous other non-registered companies. The main players are SK Lubricants, GS Caltex, Kukdong Oil & Chemicals Co., Ltd., Michang Oil Ind. Co., Ltd., Dongnam Petroleum Ind. Co., Ltd., Valvoline Korea, Changam CALS, STLC and Hyundai Oilbank. In the overseas market, major oil refining companies including Shell, ExxonMobil, BP, Chevron, TOTAL, PetroChina, SINOPEC, FUCHS and Ashland(Valvoline) dominate the global market, while regional players also exist in specific markets, creating a challenging environment for Korean companies.

## Battery and I/E Material Business

### Mid to Large-size Battery Business Trends

The mid- and large-size battery business produces and sells high-capacity lithium-ion batteries used in eco-friendly electric vehicles(EV) and energy storage systems(ESS)<sup>1)</sup>. Tougher environment regulations around the world are encouraging the development of EV technology with increasing emphasis on feasibility. Thus, we expect high growth in the EV market around the world. With an increasing emphasis on energy security<sup>2)</sup>, interest and demand for ESS have also increased.

1) An energy storage system(ESS) temporarily stores mass produced electricity to be used later when needed.

2) Energy security is a concept recognizing the importance of a stable and reasonable energy, as it is fundamental to all economic activity and deeply related to national security.

### Information & Electronic Material Business Trends

SK innovation's I/E materials business is mostly composed of battery material(LiBS) and circuit material(FCCL). As a core material for lithium-ion batteries, Lithium-ion Battery Separators(LiBS) prevents direct contact between the cathode and anode within the battery, while also providing a channel through which the lithium-ion can travel. The LiBS market is consistently growing in line with the secondary battery market. Flexible Copper Clad Laminate (FCCL), a combination of copper film and polyimide, is used in flexible printed circuit boards for smartphones or tablet PCs. The demand for FCCL is on the rise together with the growing number of smart devices, as well as the trend of IT devices becoming smaller with higher performance. Oversupply continues to create strong competition between producers, but this dynamic is expected to improve as FCCL is adopted in a wider range of areas.