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C o u n t r y R e p o r t

F r o m

K O R E A

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I . Country Report

Korea Petrochemical Current Status and Prospects

1. Korean Economy's Current Status and Prospects

- In 2015, Korea's gross domestic production (GDP) grew by 2.6%, a 1.4%p decrease from the previous year. Domestic demands made a rebound underpinned by favorable conditions in the construction industry despite negative consumer sentiment affected by the Middle East Respiratory Syndrome (MERS), but growth of exports blunted due to the slowdown of the Chinese economy and the downturn trend in oil prices.
- This year, the Korean economy is showing signs of moderate recovery, for example increases in employment and industrial production, with lower oil prices contributing to stable commodity prices. There are an increasing number of signs indicative of economic recovery include the rebound of housing and stock markets.
- However, external uncertainties still remain, for example possible further slowdown of the Chinese economy and financial risks in resource exporting countries suffering from poor exports. With unlikely skyrockets in domestic consumption and continued slowdown of exports, this year the Korean economy is expected to grow in the similar pace as the previous year, falling short of the government's forecast of 3.0%.

< Key indicators of the Korean economy and forecasts (Unit: %) >

	2015	2016		2017	
	Annual	1st half	2nd half	Annual	Annual
GDP	2.6	3.1	2.9	3.0	3.2
Private consumption	2.1	2.8	2.0	2.4	2.3
Equipment investment	5.1	3.0	4.7	3.8	4.2
Construction investment	4.1	4.8	2.4	3.5	2.8
Commodity exports	0.1	1.9	2.5	2.2	2.8

Source: Bank of Korea (January 2016).

2. Petrochemical Industry's Status and Prospects

[2015 Status]

- In 2015, productions and exports in the three key areas of the petrochemical industry (synthetic resin, synthetic fiber raw materials, and synthetic rubber) decreased, whereas demands marked an increase favored by its forward industries.
 - Despite the recovery of domestic demands and increased exports in synthetic resins, the production volume was 20,932 KT, a year on year (YoY) decrease of 0.3%, due to dull productions in synthetic fiber raw materials and synthetic rubber.
 - Exports were 11,450 KT, marking a 2.5% YoY decrease due to enhanced self-reliance in China that is the biggest export market and worsened global oversupply of synthetic rubber.
 - Demands increased to 10,465 KT, an 1.9% YoY increase, underpinned by strong increases in synthetic resin demands from some forward industries such as construction and automotive industries.
 - The rate of operation in the three industries decreased to 85.1%, a 1.3%p YoY decrease, affected by sluggishness in synthetic fiber raw materials and synthetic rubber.

The synthetic resin industry enjoyed higher profitability, and its operation rate remained high at 92.1%, a 1.9%p YoY increase. Synthetic fiber raw materials experienced a 5.4%p YoY decrease in the operation rate, 76.0%, due to decreased exports to the Chinese market, and the operation rate of the synthetic rubber industry was down to 73.5% affected by global oversupply and sluggish production in forward industries, marking a 6.4%p YoY decrease.

* Operation rate of the three key industries (%): 86.4 (2014) → 85.1 (2015) (1.3%p ↓)

<Supply and demand of major petrochemical products>

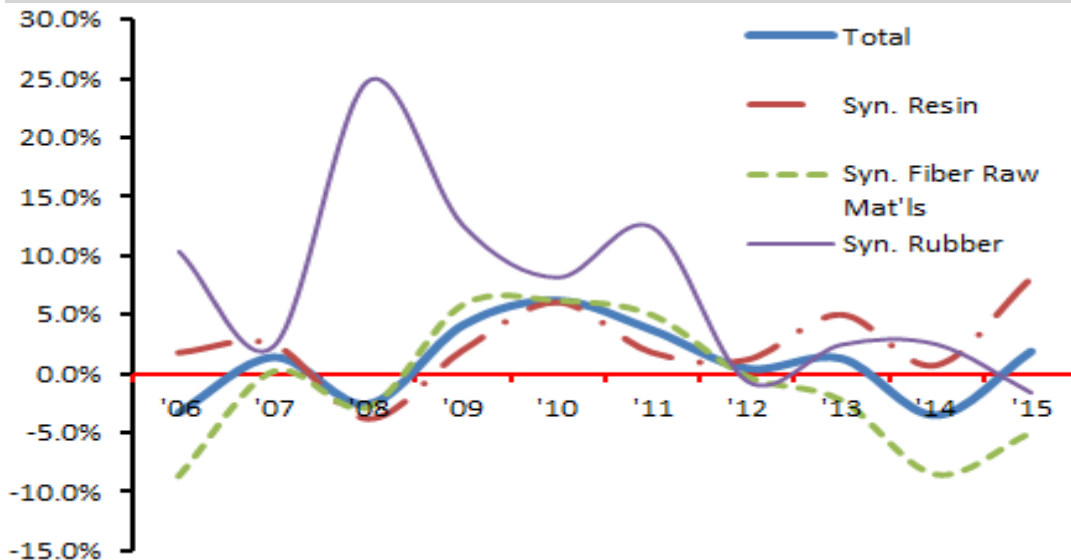
(Unit: 1,000 tons)

		2014						2015					
		1H		2H		Total		1H		2H		Total	
			G.R		G.R		G.R		G.R		G.R		G.R
Syn. Resin	Pro	6,278	0.1%	6,266	-0.5%	12,543	-0.2%	6,479	3.2%	6,545	4.5%	13,024	3.8%
	Exp	3,785	-0.4%	3,793	0.1%	7,578	-0.2%	3,795	0.3%	3,856	1.7%	7,651	1.0%
	Imp	179	11.9%	176	20.3%	354	15.9%	189	5.9%	182	3.7%	371	4.8%
	Dem	2,671	1.5%	2,648	-0.1%	5,320	0.7%	2,874	7.6%	2,871	8.4%	5,745	8.0%
Syn. Fiber Raw Mat'ls	Pro	3,845	-3.2%	3,592	-12.5%	7,437	-7.9%	3,581	-6.9%	3,359	-6.5%	6,941	-6.7%
	Exp	1,830	2.0%	1,680	-13.9%	3,510	-6.3%	1,680	-8.2%	1,491	-11.3%	3,170	-9.7%
	Imp	288	-2.7%	300	-1.7%	588	-2.2%	270	-6.3%	251	-16.3%	521	-11.4%
	Dem	2,303	-7.0%	2,212	-10.0%	4,515	-8.5%	2,172	-5.7%	2,120	-4.2%	4,291	-5.0%
Syn. Rubber	Pro	529	-2.0%	480	-3.5%	1,009	-2.7%	502	-5.1%	465	-3.1%	967	-4.2%
	Exp	351	-3.2%	306	-8.5%	657	-5.7%	322	-8.2%	307	0.4%	629	-4.2%
	Imp	43	-1.2%	40	-2.4%	83	-1.8%	45	4.6%	46	14.1%	90	9.2%
	Dem	221	0.3%	214	4.9%	435	2.5%	224	1.6%	203	-5.0%	428	-1.6%
Total	Pro	10,653	-1.3%	10,337	-5.1%	20,990	-3.2%	10,563	-0.8%	10,369	0.3%	20,932	-0.3%
	Exp	5,966	0.1%	5,779	-4.9%	11,745	-2.4%	5,797	-2.8%	5,653	-2.2%	11,450	-2.5%
	Imp	509	2.1%	516	4.7%	1,025	3.4%	504	-1.1%	479	-7.1%	983	-4.1%
	Dem	5,196	-2.5%	5,074	-4.5%	10,270	-3.5%	5,270	1.4%	5,195	2.4%	10,465	1.9%

Data: KPIA

Note: Production is based on sales

<Trend of Fluctuation Rate of Demand for Major Petrochemicals>



Data: KPIA

[Prospect of 2016]

- In 2016, the petrochemical industry is expected to enjoy increases in productions, exports, and demands underpinned by favorable conditions in its forward industries and improved export market conditions.
- **Productions** are expected to reach 21,470 KT, a 2.6% YoY increase, due to slight equipment increases and reduced NCC turn around (T/A) works. In particular, synthetic resin and rubber productions are expected to enjoy stronger growth, whereas the production of synthetic fiber raw materials is likely to continue declining.
- **Exports** are expected to reach 11,831 KT, a 3.3% YoY increase, due to positive factors such as the landing of China's economic slowdown and favorable conditions for the US economy.
- **Demands** are expected to reach 10,593 KT, a 1.2% YoY increase. Increased production and investment in the construction industry will lead to a boom in synthetic resin productions, which will in turn offset declines in synthetic rubber and synthetic fiber raw materials.

<Status and Prospect of Demand and Supply of Major Petrochemicals>

(Unit: 1,000 tons)

		08	'14	'15	G.R	'16 ^P	G.R	AAGR (^{'08-'16})
Syn. Resin	Product	10,722	12,543	13,024	3.8%	13,565	4.2%	3.0%
	Import	138	354	371	4.8%	376	1.3%	13.4%
	Sub-Total	10,860	12,898	13,396	3.9%	13,941	4.1%	3.2%
	Export	6,243	7,578	7,651	1.0%	8,002	4.6%	3.2%
	Local Dem	4,616	5,320	5,745	8.0%	5,939	3.4%	3.2%
	self-ffic. (%)	232	236	227		228		
Syn. Fiber Raw Mat'ls	Product	7,919	7,437	6,941	-6.7%	6,866	-1.1%	-1.8%
	Import	536	588	521	-11.4%	493	-5.4%	-1.0%
	Sub-Total	8,455	8,026	7,462	-7.0%	7,360	-1.4%	-1.7%
	Export	4,127	3,510	3,170	-9.7%	3,139	-1.0%	-3.4%
	Local Dem	4,328	4,515	4,291	-5.0%	4,221	-1.6%	-0.3%
	self-ffic. (%)	183	165	162		154		
Syn. Rubber	Product	749	1,009	967	-4.2%	1,039	7.4%	4.2%
	Import	55	83	90	9.2%	84	-7.0%	5.4%
	Sub-Total	804	1,092	1,057	-3.2%	1,123	6.2%	4.3%
	Export	477	657	629	-4.2%	690	9.6%	4.7%
	Local Dem	327	435	428	-1.6%	433	1.1%	3.6%
	self-ffic. (%)	229	232	226		240		
Total	Product	19,389	20,990	20,932	-0.3%	21,470	2.6%	1.3%
	Import	729	1,025	983	-4.1%	953	-3.0%	3.4%
	Sub-Total	20,118	22,015	21,915	-0.5%	22,423	2.3%	1.4%
	Export	10,847	11,745	11,450	-2.5%	11,831	3.3%	1.1%
	Local Dem	9,271	10,270	10,465	1.9%	10,593	1.2%	1.7%
	self-ffic. (%)	209	204	200		198		

Data: KPIA

□ Trend of Supply and Demand for Each Field

(1) Synthetic resin

[Status of 2015]

- In 2015, the synthetic resin industry in Korea marked overall increases in productions, demands, and exports, underpinned by improved profitability due to materials price reductions.
 - **Productions** were 13,024 KT, a 3.8% YoY increase, thanks to increased productions following LDPE equipment expansions, improved export market conditions, and favorable conditions in the construction and automotive industries.
In particular, LDPE enjoyed a high, 8.0% YoY increase underpinned by equipment expansions, whereas PP productions increased by only 0.2% compared to the previous year due to increased productions that resulted from equipment investment in Asia.
 - **Exports** increased to 7,651 KT, a 1.0% YoY increase. LDPE, PVC, and ABS marked significant increases, whereas PP and PS productions decreased by 2.4% and 4.9%, respectively, compared to the previous year. Synthetic resin exports to China accounted for 37% of the total exports, 2,823 KT with a 0.5% YoY decrease. Exports to Turkey made a sudden rise of 15.8%, reaching 436 KT. Exports to India and Vietnam were 541 KT (7.3% YoY increase) and 409 KT (8.8% YoY increase), respectively.
 - **Demands** reached 5,745 KT, a 8.0% YoY increase, favored by growth of construction material demands following the booming construction industry, amendments to the construction materials

management regulations, and increases in automobile productions triggered by reduced special excise tax.

<Status of Synthetic Resin Demands and Supply>

(Unit: 1,000 tons)

		2014		2015						2016	
		Total		1H		2H		Total		Total	
			G.R		G.R		G.R		G.R		G.R
Syn. Resin	Pro	12,543	-0.2%	6,479	3.2%	6,545	4.5%	13,024	3.8%	13,565	4.2%
	Exp	7,578	-0.2%	3,795	0.3%	3,856	1.7%	7,651	1.0%	8,002	4.6%
	Imp	354	15.9%	189	5.9%	182	3.7%	371	4.8%	376	1.3%
	Dem	5,320	0.7%	2,874	7.6%	2,871	8.4%	5,745	8.0%	5,939	3.4%

Data: KPIA

Note: Production is based on sales

[Prospect of 2016]

- In 2016, Korea's synthetic resin industry is expected to do well all in productions, demands and exports, favored by the landing of China's economic slowdown, growth led by advanced economies, and stronger cost competitiveness underpinned by low oil prices.
- **Productions** are expected to reach 13,565 KT, a 4.2% YoY increase, thanks to increases in small production facilities, reductions in NCC T/A, and an improved operation rate following predictions for the tight ethylene supply and demand in Asia.
- **Exports** are expected to reach 8,002 KT, a 4.6% YoY increase, led by increases in PE exports owing to stronger export competitiveness following declines in raw material prices (naphtha, etc.) affected by the tremendous oil price drop globally.
- **Demands** are expected to be 5,939 KT, a 3.45% YoY increase, thanks to the expected increases in construction materials demands following the continued upturn in the nation's construction market.

(2) Synthetic Fiber Raw Materials

[Status of 2015]

- In 2015, Korea's synthetic fiber raw material productions made a 6.7% YoY decrease to 6,941 KT, and the demands decreased by 5.0% compared to the previous year, 4,291 KT.
- **Productions** marked a 6.7% YoY decrease, 6,941 KT, due to a decline in the operation rate affected by China's stronger self-reliance in TPA, AN and CPLM. But EG and DMT productions increased owing to the completion of Korea Petrochemical Industry's 200 KT expansion project at the end of 2014 and growth of the local market, respectively.
- **Exports** decreased by 9.7% compared to the previous year, 3,170 KT. Continued declines were observed in the TPA, AN and CPLM fields that are suffering from oversupplies in China.
 - Exports of synthetic fiber raw materials to China decreased by 23.7% compared to the previous year, 1,075 KT. In particular, TPA exports experienced severe sluggishness including continued declines in the Chinese market, which surrendered its position as the biggest export market to Turkey.
 - Upon the anti-dumping regulation against TPA, exports to India were halved compared to the previous year, 229 KT.
- Demands decreased to 4,291 KT, a 5.0% YoY decrease affected by downturns in the forward industries. Korea's synthetic fiber production has been decreasing due to the global oversupply caused by China's supply expansion and economic recessions at home and abroad.

[Prospect of 2016]

- In 2016, the synthetic fiber raw material industry is expected to experience overall declines in productions, exports, and demands.
- Productions** are expected to decrease to 6,866 KT, marking a 1.1% YoY decrease, as worsened export conditions affected by TPA and CPLM oversupplies in China are likely to lead to reductions in production.
- Exports** are expected to be 3,139 KT, a 1.0% YoY decrease. There are increasing oversupplies in the Chinese market, which is also experiencing economic recessions. The second largest market, India, is becoming increasingly self-reliant underpinned by equipment expansion and import regulations.
- Demands** are expected to mark a 1.6% YoY decrease, 4,211 KT, affected by the remaining unfavorable conditions for exports despite expected production increases following the expansion of synthetic fiber equipment in Korea.

(3) Synthetic Rubber

[Status of 2015]

- In 2015, Korea's synthetic rubber industry experienced decreases all in productions, demands, and exports.
- Productions decreased to 967 KT, a 4.2% YoY decrease, affected by worsened profitability due to sluggishness in tire production and rises in raw material prices and the impact of T/A works.

- Exports decreased to 629 KT, a 4.2% YoY decrease, due to reduced export capabilities affected by T/A works.
- Demands decreased to 428 KT, a 1.6% YoY decrease, due to reductions in the tire industry that is the most important forward industry (affected by labor disputes, slump in demand, etc.)
- In 2015, the production of tires for passenger cars decreased to 1,237 KT, a 4.6% YoY decrease.

<Status and Prospect of Supply for Synthetic Rubber>

(Unit: 1,000 tons)

		2014		2015						2016	
		Total		1H		2H		Total		Total	
			G.R		G.R		G.R		G.R		G.R
Syn. Rubber	Pro	1,009	-2.7%	502	-5.1%	465	-3.1%	967	-4.2%	1,039	7.4%
	Exp	657	-5.7%	322	-8.2%	307	0.4%	629	-4.2%	690	9.6%
	Imp	83	-1.8%	45	4.6%	46	14.1%	90	9.2%	84	-7.0%
	Dem	435	2.5%	224	1.6%	203	-5.0%	428	-1.6%	433	1.1%

Data: KPIA,

Note: Production is based on sales

[Prospect of 2016]

- In 2016, the synthetic rubber industry is expected to enjoy a surge of productions, exports, and demands.
- **Productions** are expected to reach 1,039 KT, a 7.4% YoY increase, rebounding from the poor market conditions in the previous year and the impact of labor disputes in its forward industry (tire) by favor of external factors such as price caps for natural rubber.
- **Exports** are expected to be 690 KT, marking a 9.6% YoY increase, which reflects expectations for raw material exports upon the completion of overseas production sites of its forward industry (tire).