

China Olefins Market E-News

VOL.1 Issue 10, October,29, 2014



Headlines

10 Oct., 2014 – As the Catalogue for Encouraged Industries in Western China was implemented, the coal chemical industry is no longer supported by related preferential policies. Where will the industry go forward? Though the development of CTO projects presents practical and strategic significance, it also shows the trouble in technology. Therefore, all participants in the CTO projects are expected to rationally forward the development of CTO projects.

Mid-Oct. 2014 – The international futures prices of crude oil (mainly WTI and Brent) slumped, attracting great attention. Since June 2014, the WTI and Brent have declined by more than 20%, mainly because of the insufficient demand and fierce competition. China is the world's major oil importer. With the reduction in the import cost of crude oil, Chinese petrochemical enterprises are hopefully to cut the losses in their chemical business.

Due to the support of governmental policies, China's plastic industry continued to maintain steady and rapid development in H1 2014. Although the growth of China's overall economy has slowed, there is a strong demand for plastic from the automobile industry and urbanization. As a result, China's plastic industry will have long-term steady and rapid growth.

The amount of polyolefin raw materials consumed by Li-ion battery separators is very small. However, with the help of advanced technology, the value of polyolefins has the potential to multiply, which strongly contrasts with the depressed market of other chemical products. Furthermore, as the government encourages the development of alternative energy automobiles, the domestic demand for separators will go up rapidly. In the future, the Li-ion battery separator industry will witness strong development and will be lucrative.

In the first three quarters of 2014, many CTO plants were put into operation, and the production capacity of petro-based plants increased. As of Oct., the production capacity of the plants newly put into operation was 3.65 million t/a, which accounted for 12.05% of the total production capacity of polyolefins. Therefore, the polyolefins market in China became less profitable during the first three quarters. The major reason for this was the product structures of enterprises, which resulted in an oversupply of general-purpose products and an undersupply of high-end products. Enterprises should optimize their product structure in order to better survive.

Kingfa released its semi-annual financial report for H1 2014, in which there were clear increases in the revenue and sales volume, but a decrease in the profit. The declining profit, which was brought by the fluctuated prices, drove Kingfa towards new materials, including modified plastics for cars, biodegradable plastics, wood-plastic composites, high-temperature nylon, etc. Kingfa has taken over the lead in the new material market. This indicates that the development and production of new materials is the developmental tendency for China's plastic industry.

Sinopec Sales, a subordinate of Sinopec Corp., has sold its shares to enterprises at home and abroad.



This is the first step in a reform to introduce mixed ownership in state-owned enterprises. It is most noteworthy that Sinopec Sales will set up a diversified board of directors. This may be the beginning of the end of the absolute monopoly of state-owned enterprises. In the future, Sinopec Chemical Commercial Holding Company Limited may also allow external capital and establish market competition mechanisms to reverse its current deficit.

Recently, new plants especially many CTO plants, have been put into operation in China, resulting in the increase of supply and the stagnant price. Confronted with fierce competition, some domestic petrochemical enterprises began to exploit new PP products and made some achievements. This shows that petrochemical enterprises will not absolutely be disadvantaged in the future competition. It is noteworthy that the international crude oil futures dropped greatly recently. The price of naphtha, raw material for polyolefins, may drop subsequently. However, only through technologies improvement can enterprises sustain development in the market.

With the support of national policies, the price of coal slightly recovered and the cost of CTO stabilized. However, coal chemical projects, including CTO projects, were absent from the Catalogue for Encouraged Industries in Western China released by the NDRC recently. This adjustment has both advantages and disadvantages for the development of the CTO industry. At present, most of the coal chemical projects are still in progress despite the loss of government support.

Aug. 2014 – A series of anti-monopoly investigations have taken place in China's automobile industry. The anti-monopoly investigations will reduce the prices of China's automobiles. The anti-monopoly investigations may also be detrimental to Chinese automobile manufacturers. However, it will not become an obstacle for automobile sales. On the contrary, CCM estimates that the anti-monopoly investigations will compel domestic automobile manufacturers and chemical enterprises to strengthen their R&D on new materials when pursuing energy conservation. China's car plastic market may benefit from this because plastics are lightweight, which reduces the fuel consumption of cars. Therefore, the demand for plastics will increase.



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Market Dynamic

CTO projects should return to rational development

10 Oct., 2014 – As the Catalogue for Encouraged Industries in Western China was implemented, the coal chemical industry is no longer supported by related preferential policies. Where will the industry go forward? Though the development of CTO projects presents practical and strategic significance, it also shows the trouble in technology. Therefore, all participants in the CTO projects are expected to rationally forward the development of CTO projects.

On 1 Oct., 2014, the National Development and Reform Commission of the People's Republic of China (NDRC) announced to implement the Catalogue for Encouraged Industries in Western China (the Catalogue), from which the coal chemical projects such as coal-to-olefins (CTO) projects are removed. This indicated that the CTO projects in western China will no longer enjoy preferential tax rate. That is to say, the income tax rate from the CTO projects will be restored to 25% from 15%.

After years of development, China has become the country with the largest-scale coal chemical industry in the world. It is said that the past decade is a prime time for the development of China's coal chemical projects. Also, the CTO projects have started to develop since 2006. Until now, there are 7 plants under production in China.

However, many coal chemical projects have been launched simultaneously in Northwest China, which is of high possibility to bring crisis in water resources and carbon emissions to the local vulnerable environment. Regarding the implementation of the Catalogue, the NDRC stated that the removal of coal chemical projects mainly aimed to protect the ecological environment and promote the structural upgrade of the industry.

Reasons for overheated coal chemical industry

The Chinese government encouraged the development of coal chemical industry. This is mainly because the coal reserves account for 94.22% of the total primary energy in China, while the proportions of petroleum and natural gas are less than 6%. China is steadily raising its imports of petroleum and natural gas. Its energy security is being challenged seriously. As a result, developing coal chemicals is a good choice to cover the great shortages in petroleum and natural gas.

Most Chinese enterprises were driven by profits to develop coal chemical projects. In the past decade when the coal market was still booming, many enterprises launched coal chemical projects to take up the upstream coal resources.



Current situation of CTO projects

At present, altogether 7 CTO plants are under production, totaling a production capacity of 3.18 million t/a and 18 plants are under construction, amounting to a production capacity of 11.02 million t/a. Concerning the running 7 plants, they are always the objects of controversy, because their high energy and water consumption and high emissions hinder the development of enterprises. The fact that China Datang Corporation (CDT) and China National Offshore Oil Corp. successively withdrew from the coal chemical businesses in 2014 further aroused controversy in the industry. In fact, although CDT was engaged in the coal chemical industry for 10 years, it suffered a huge loss.

However, not all enterprises witnessed losses in CTO projects. For instance, China Shenhua (Baotou) Charcoal Chemical Industry Co., Ltd. performs well in the industry. In 2013, the enterprise sold 262,400 tonnes of polyethylene and 267,900 tonnes of polypropylene (both made from coal), totaling a revenue of nearly USD975.72 million (RMB6 billion) and a net profit of about USD155 million (RMB953 million).

Troubles in CTO technology

Several experts in the coal chemical industry told CCM that many domestic coal chemical projects including CTO project are actually just enlarged or copied from the laboratory models. In foreign countries, the US-based Universal Oil Products Company cooperated with the Norway-based Hydro Group plc and successfully developed the methanol-to-olefins (MTO) technology in 1995. However, China just had its own MTO technology in 2006. When our overseas counterparts were still carefully exploring the industrialized production of MTO technology, China set up large MTO projects immediately, leaving many technical problems unverified.

It is known to all that as the production process of coal chemicals is much longer than that of petrochemicals. It requires a long-term technical accumulation for facilities to fit each other. Thus, it is a irrational choice to put the experimental achievement into large-scale industrialized production in such a hurry, since latent problems are bound to surface as time went on. This will bring losses to enterprises, and even bring disastrous damage to the ecological environment in western China.

CTO projects should return to rational development

The fact that Chinese government tightens the policies for its coal chemical industry may propel the long-term development of the industry. The policy adjustment can cool off the overheated coal chemical industry and restructure the industry, which will ultimately benefit the enterprises with technical strength. CCM believed that the following three points will contribute to the rational development of CTO projects.

- It is right to develop CTO projects in China. The energy consumption structure in China decides



the essential utilization of coal resources. As a new coal chemical sector, CTO projects are still the direction for coal chemical industry to move towards in the future.

- CTO demonstration projects should be continued. China's immature technology is the key reason drawing back the flourishing coal chemical industry. Although all technical routes included in the coal chemical demonstration projects supported by the government have been opened, there is a long way to mature the technology. The Catalogue implemented in Oct. 2014 indicated that the Chinese government once again plans to bring the development of CTO projects back to the stage of demonstration. That is to say, the industry should keep on improving the technology in the ongoing plants before the expansion of CTO projects.

- Government should support CTO enterprises to make technical breakthroughs. At present, it is less feasible for CTO enterprises to unite their technologies in that it is common to repeat mistakes. Regarding the government level, related departments are only in charge of the examination and approval, not following up the project construction and the tackling of key technical problems. Consequently, the goal of zero emission is just a lip service. Therefore, it is urgent for the Chinese government to start to support the technical breakthroughs made by enterprises, so as to ensure the technological maturity and reliability of the demonstration projects.

Plunging price of crude oil can mitigate losses of Chinese olefin manufacturers

Mid-Oct. 2014 – The international futures prices of crude oil (mainly WTI and Brent) slumped, attracting great attention. Since June 2014, the WTI and Brent have declined by more than 20%, mainly because of the insufficient demand and fierce competition. China is the world's major oil importer. With the reduction in the import cost of crude oil, Chinese petrochemical enterprises are hopefully to cut the losses in their chemical business.

Crude oil (WTI) and crude oil (Brent) plummet by 23.75% and 27.15% respectively since June 2014

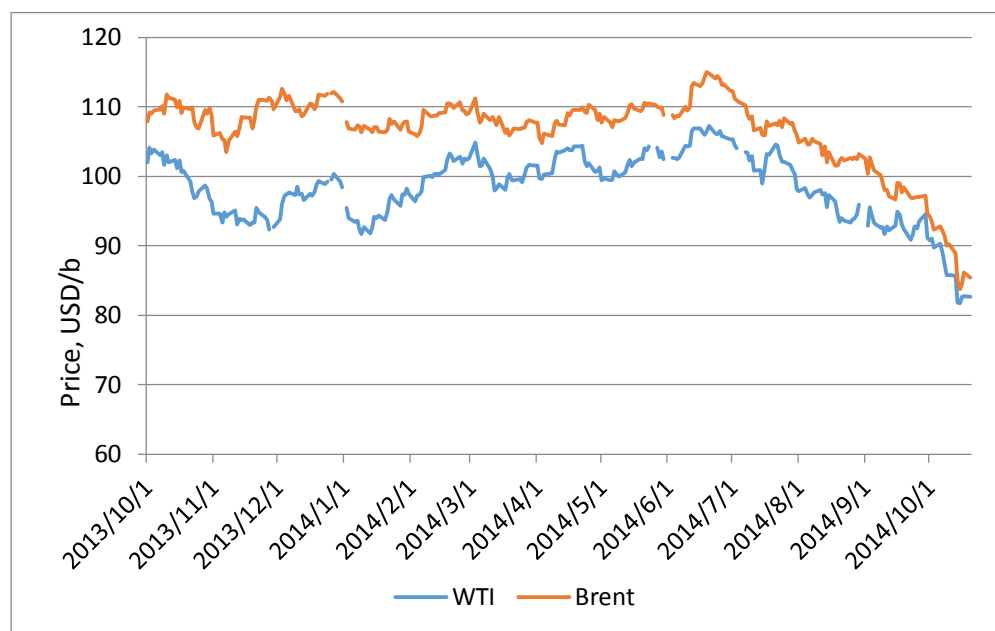
In mid-Oct. 2014, the international futures price of crude oil (mainly West Texas Intermediate - WTI and Brent Crude Oil Future - Brent) plummeted dramatically. The supply of crude oil increased and the economic growth slowed down, which went against the crude oil market. The International Energy Agency (IEA) down-regulated the global demand for crude oil in the prediction and estimated that the output of shale oil in the US would continue to rise. The Organization of Petroleum Exporting Countries (OPEC) can hardly limit the production to preserve price stability. The international price of crude oil kept sliding as before. From 13 Oct., 2014 to 17 Oct., 2014, the average WTI and Brent of crude oil were USD82.96/bbl and USD85.67/bbl, presenting a big drop



of 5.31% and 6.17% respectively compared with their average weekly prices in the previous week (from 6 Oct., 2014 to 10 Oct., 2014).

Compared with June 2014, the crude oil (WTI) declined from USD107.26/bbl on 20 June to USD82.75/bbl on 17 Oct., largely dropping by 23.75%. Meanwhile, the crude oil (Brent) declined from the peak of USD115.01/bbl on 19 June to USD86.16/bbl on 17 Oct, with a decrease of 27.15%.

Figure 1: International futures prices of crude oil (WTI & Brent), Oct. 2013–Oct. 2014



Source: CCM

International price of crude oil not falls to lowest level

The plunging international futures prices of crude oil (WTI and Brent) are different from the declines in the past. This time, both the supply and the demand encounter problems. What's worse, the economic status of the main consumers are also confronted with problems. Severe downward pressure appears on China's economy. Japanese economy becomes depressed. In the US, the economic recovery is below expectation. The economic recovery in Europe is even slower. China, the US, Europe and Japan, four world's largest crude oil consumer, show weak demand for crude oil. The price rebound of crude oil is hopeless in H2 2014.

Regarding the supply, according to data from the OPEC, the output of crude oil increased by 402,000 barrels in Sept. 2014, and the daily output was 30.47 million barrels on average, reaching the highest level since last summer. The revolution of shale gas in the US was successful long ago. Therefore, analysts at home and abroad predicted that the declining trend of the international price of crude oil can hardly change in the preceding half year as the price hasn't fallen to the lowest level yet.



Chinese olefin manufactures to benefit from plunging international price of crude oil

The crude oil is the basic resource in the globe. The plunging price of crude oil certainly influences the world's petrochemical industry. Chinese olefin manufacturers, in a downstream industry of crude oil, regard it as an opportunity. Although China is a large importer of crude oil, the price of crude oil is not decided by China. Before the decline, the international price had stayed at a high level for a long time, restricting the profits for olefin manufacturers. Once poor performance appeared in the downstream chemical market, it was very easy for the olefin manufacturers to suffer losses. Currently, the decrease in the price of crude oil enables olefin manufactures to reduce the costs from raw materials and even to improve their performance in chemical business.

Counting the import volume of crude oil in China in 2013 (282 million tonnes; 1 tonne is equal to 7.33 barrels), a decline of USD1/bbl in the price will save USD2.07 billion for China to import crude oil. In 2014, if the average price of the imported crude oil decreases by USD10/bbl, altogether USD20.7 billion can be saved for the the imports of crude oil in China. A great many Chinese olefin manufactures have refinery plants to achieve production integration. Thus, Chinese olefin manufactures can directly benefit from the declining price of crude oil.

In Aug. 2014, China Petroleum & Chemical Corporation released the semi-annual financial report. The report showed that there was a great deficit in chemical business, reaching USD648 million (RMB4 billion). The deficit was closely related to the high price of crude oil, because a large number of refinery plants extract naphtha from imported crude oil and only a small percentage of manufacturers directly imported naphtha to produce olefin. According to statistics from CCM, the average futures price of crude oil in H1 2014 was USD100.81/bbl (WTI) and USD108.8/bbl (Brent), staying at the same level of the average futures price of crude oil in 2013 (USD98.08/bbl for WTI and USD108.73/bbl for Brent).

In H1 2014, both WTI and Brent rose steadily. The cost for naphtha-to-olefins (NTO), which was calculated through CCM's cost model, was above USD1,350/t during H1 2014. However, in July, WTI and Brent began to drop. The cost for NTO also dropped to below USD1,350/t. If the declines of WTI and Brent continue in Q4 2014, the cost for NTO may decrease to USD1,200/t.

There may be doubts that the prices of chemical products will drop as the price of crude oil declines. However, CCM does not believe that the prices of chemical products would drop faster than the price of crude oil.

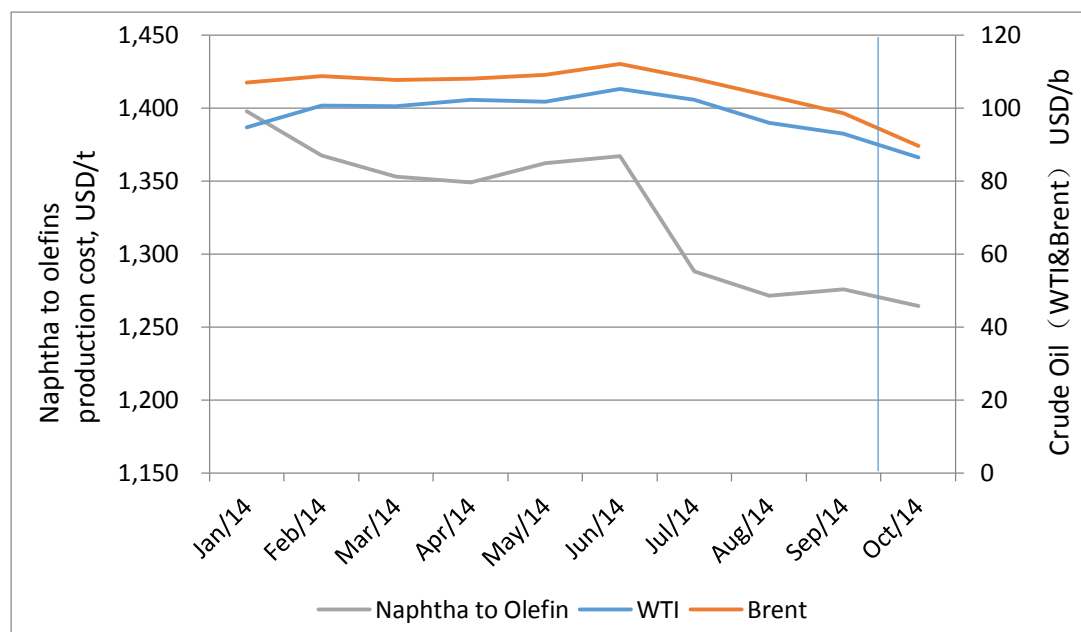
On the basis of the price trend of propylene, CCM estimated that the market price of propylene would be USD1,589/t (RMB9,586/t) in China in Oct. 2014. It would witness declines of 9.20% and 8.70% over Jan. 2014 and June 2014 respectively, much smaller than the price drops of crude oil at the same period.

Chinese petrochemical giants have large sales networks to greatly regulate the prices of chemical products. Since the costs for chemical products drop faster than the prices, Chinese petrochemical



enterprises will be able to improve their performance. Therefore, in H2 2014, Chinese traditional petrochemical enterprises are hopefully to reverse the deficit in chemical products in H1 2014.

Figure 2: Comparison between production cost for NTO and futures price of crude oil, Jan.–Oct. 2014F



Note: NTO stands for naphtha to olefins; Futures price of crude oil mainly includes WTI (West Texas Intermediate) and Brent (Brent Crude Oil Future).

Source: CCM

China's plastic industry to maintain steady and rapid development

Due to the support of governmental policies, China's plastic industry continued to maintain steady and rapid development in H1 2014. Although the growth of China's overall economy has slowed, there is a strong demand for plastic from the automobile industry and urbanization. As a result, China's plastic industry will have long-term steady and rapid growth.

China's plastic industry has developed a comprehensive range of products and has become a base material industry, alongside the steel, cement and wood industries. As a new material, its range of application surpasses well beyond that of the other aforementioned three materials.

The plastic industry is one of the pillar industries of the light industry. In recent years, the growth rate of China's plastic industry has remained at above 10%. In the plastic product industry, the total output value of over-scale enterprises [Over-scale enterprises refer to enterprises with revenue of \geq USD3.24 million (RMB20 million) from their main business] ranks third out of the 19 main

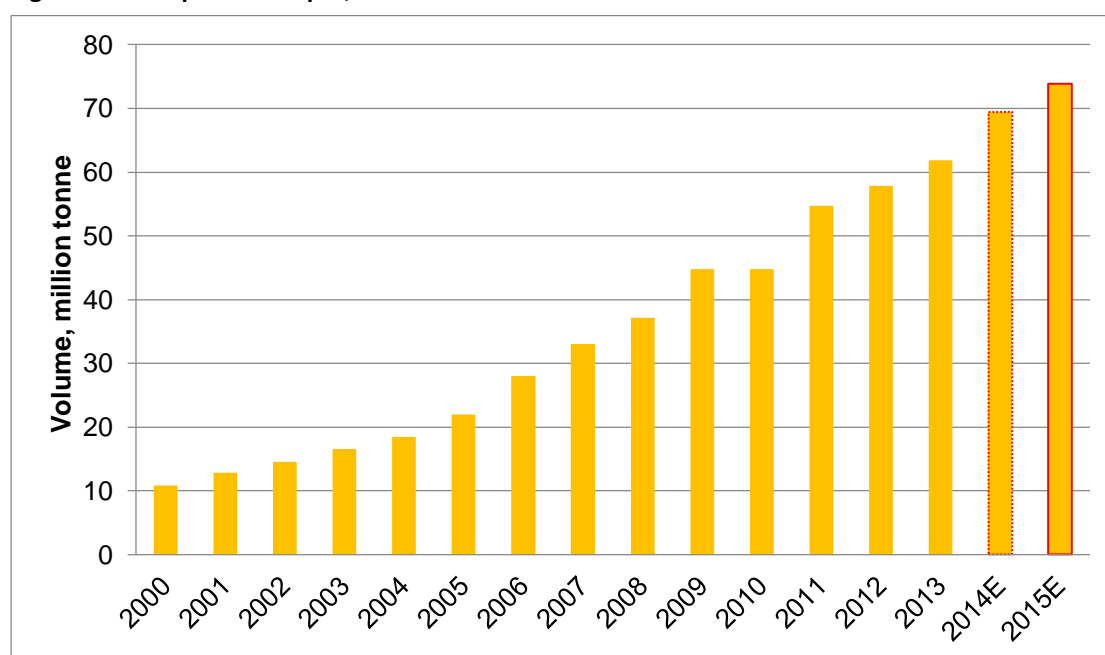
industries of the light industry, realizing a 97.8% sales rate, which is higher than the average sales rate of the light industry. Considering the production of synthetic resin, plastics machinery and plastic products, China's plastic industry is developing strongly.

Output of plastic products increased by 6.4% in H1 2014

According to data released by the National Bureau of Statistics of the People's Republic of China (NBS), from Jan. to June, the accumulative output of domestic plastic products was 34.72 million tonnes, with a 6.40% year-on-year growth rate. The output of domestic plastic products in June was 6.83 million tonnes, representing a year-on-year growth of 8.80%.

As for the economic benefit, from Jan. to June, the accumulative revenue of plastic product manufacturers was USD153.54 billion (RMB947.09 billion), with year-on-year growth of 11.50%. The total profit was USD8.09 billion (RMB49.93 billion), with 13.30% year-on-year growth. The total taxes was USD4 billion (RMB24.69 billion), with 16.30% year-on-year growth.

Figure 3: China plastics output, 2000-2015E



Source: CCM

Policy guidance

Similar to the petrochemical industry, the plastic industry is strongly affected by national policies. New policies for the plastic industry usually indicate the development direction of plastic enterprises.

Stricken by the global financial crisis, the China's plastic industry plummeted in Q1 2009. However, soon afterwards, with the fostering of a series of macro policies, such as the Light Industry



Adjustment and Revitalization Plan, the growth of the plastic industry recovered to the pre-crisis level in Q4 2009. Among those incentive policies, the Notice on Expanding Household Appliances to the Countryside Nationwide, which was put forward by the State Council of the People's Republic of China (State Council), played a very important role in promoting the recovery. The fact that the plastic industry recovered from the impact of the global financial crisis in only half a year shows that China has a strong domestic demand for plastics.

The goals for plastic products in the Twelfth Five-year Plan are as follows:

12% growth rate in annual average output,

15% growth rate in annual total industrial value,

18% growth rate in annual total profit,

9% growth rate of in annual import & export value,

ratio of output value of new products in total and the contribution rate of sci-tech progress rising to 10% and 40% respectively.

In terms of decision-making, the government has high expectations on the plastic industry. China's plastic industry is definitely developing rapidly, especially considering the development in the last three years.

Existing problems

In China's chemical industry, an overabundance of low value added products and insufficient high value added products is a common phenomenon among the different sectors of the industry. The plastic industry is no exception, and this phenomenon is a severe problem in the plastic industry. The supply of low end products such as plastic intertexture and window and door profiles greatly exceeds the demand. The homogenized competition of low end products is fierce. There is also a serious production overcapacity for pipe and agricultural films.

Currently the Chinese government is sparing no effort to advance economic reforms, and emphasizes the quality and efficiency of economic development. Nevertheless, the transformation of the economic development model still faces a lot of obstacles.

The rate of increase of gross domestic product (GDP) of H1 2014 released by the National Bureau of Statistics of China was 7.4%, indicating strong downward pressure on economic growth. Much of this downward pressure is due to the slowdown in the growth of the real estate. There are growing concerns over the excess supply of housing, which increases the possibility of a real estate bubble. The worsening real estate market will directly lead to a shrink in the demand for engineering plastics of the construction industry.

To deal with this problem, the State Council had been studying countermeasures in 2013, and passed the Guidance to Relieve Severe Overcapacity, which includes the guidance for the plastic industry. The China Plastics Processing Industry Association passed the Guidance to the Progress of Plastic Processing Technique in May 2013, in order to further promote the transformation of the development of the plastic processing industry, to optimize structural adjustment, to encourage



all-round improvement in the quality of the industry and its products, to achieve a complete industrial chain and to increase the range of products.

Potential opportunities

However, the automobile industry is growing strongly. There is a requirement for automobiles to be greener and more environmentally friendly. Thus, a larger number of metal parts of automobile will be replaced by engineering plastics, effectively counteracting the adverse effect from the construction industry. Furthermore, the overall situation of the world economy is better than that of 2013. This is positive for the plastic industry, which is highly export-oriented.

Also, there are several newly launched projects for coal-to-olefins (CTO) and propane dehydrogenation (PDH), which will supply more raw materials such as ethylene and propylene for the plastic industry. China Petrochemical Corporation and China National Petroleum Corporation have manipulated the pricing power of the upstream raw materials of plastic for a long time. Diversifying the upstream raw material benefits the supply of raw materials for the downstream plastic enterprises, and also increases the bargaining power of the downstream enterprises. The price of olefins, especially propylene, has dropped significantly since 2014. Traders have even underestimated the polyolefins market, which is good news for the plastic industry.

In the long term, the Country New-style Urbanization Plan from 2014 to 2020 (the Plan), released on 16 March, 2014, provides a great impetus for the rapid and sustainable development of the plastic industry. The Plan aims at raising the urbanization rate to around 60% by 2020, which means more than 100 million people will move into cities from rural areas. This will entail a greater demand for urban infrastructure construction. There will be a significant enlargement of urban mass transit systems, the water and power supply, natural gas pipe networks, urban sewerage systems, and communication networks, which will drive the development of the plastic industry.

Above all, the construction materials industry has a large overall energy consumption. Its energy consumption of production accounts for about 9% of the national energy consumption and approximately 15% of the industrial energy consumption. Therefore, new construction materials are being encouraged to reduce the energy consumption of the construction materials industry. Plastics are new materials that meet the environmental requirements of sustainable buildings. Plastics can meet the specific requirements of both residential and industrial buildings. Also, plastics are consistent with the goal to reduce energy consumption and to increase environmental protection, and have great support from governmental policies. Therefore, the plastic industry has very bright prospects because of China's aims for increased urbanization, environmental protection and sustainability.

The plastic industry faces multiple challenges, including the overcapacity for low end products, the insufficient production of high end products and the downturn of the real estate industry. But it is undeniable that there is a huge demand for plastic products in China. There is a huge demand from automobile manufacturers and the construction industry due to urbanization. Modified plastics



and new, high value added materials will drive the development of the plastic industry. In the coming six years, it is estimated that the plastic industry will keep developing rapidly with a 8% to 10% growth rate.

Polyolefins see high profits in Li-ion battery separators

The amount of polyolefin raw materials consumed by Li-ion battery separators is very small. However, with the help of advanced technology, the value of polyolefins has the potential to multiply, which strongly contrasts with the depressed market of other chemical products. Furthermore, as the government encourages the development of alternative energy automobiles, the domestic demand for separators will go up rapidly. In the future, the Li-ion battery separator industry will witness strong development and will be lucrative.

Coming into the 21st century, the global Li-ion battery industry has developed rapidly and there has been great market demand for Li-ion battery. Moreover, China's Li-ion battery industry has also developed at high speed. Opportunities for the development of the Li-ion battery material industry have been brought about by the development of electronic products and alternative energy automobiles.

Specifically, polymer separators, one of the three major raw materials for Li-ion battery (the other two are anode & cathode materials and electrolyte materials), have the largest profit margin among polyolefin derivatives. A few years ago, the gross profit margin of polymer separators even reached 70%. In 2014, the gross profit margin of separators by dry process goes down to around 25%, while the gross profit margin of separators by wet process is about 50%. According to the average price of linear low density polyethylene (LLDPE), which is USD1,878/t (RMB11,549/t), and the market price of Li-ion battery separators, which is between USD1.63/m² (RMB10/m²) and USD1.95/m² (RMB12/m²), the price for LLDPE-based processed separators is USD107,329/t (RMB660,000/t), with the value increasing by nearly 60 times. The increased value strongly contrasts with many chemical products, which are sold with very low margins.

Main reasons for the increased value

The key technology for producing Li-ion battery separators is monopolized by overseas companies. Early in 1970, the US-based Celanese Corporation applied for the patent of the separator dry-processing technique (the US Patent No. 3426754). Currently, the US-based Celgard LLC and the Japan-based UBE Industries Ltd. are the leaders in the field of Li-ion battery separators. Chinese companies did not obtain patents in this field until 2004. And separators have been produced domestically since 2008. In the last six years, many separator manufacturers have emerged in China, and have made great progress in their technologies. However, in terms of high-end separators, there is still a gap between the domestic products and the products manufactured abroad.



II Li-ion battery separator projects need large investment. There is no big difference between the appearance of Li-ion battery separators and the appearance of common white plastic film. But separators are the key materials for Li-ion battery, which directly affect the volume of the battery, the cycle performance and the safety performance. Separators are produced with advanced technology, accounting for 15%–20% of the total cost. Thus, the processing is very complicated during production and the production equipment have strict requirements. For example, about USD8.13 million (RMB50 million) of investment is required for a domestic project with a production capacity of 13 million m²/a.

Specifically, the cost of bidirectional pull machines and ventilation are very expensive. Furthermore, very few suppliers can supply a whole set of equipment. Most of the equipment is imported from foreign countries. Therefore, compared with common plastic products, Li-ion battery separator project requires large investment, which is a factor behind the high prices of its products.

III The production capacity for high-end products is insufficient. After the rapid development in the past six years, the domestic capacity for Li-ion battery separators has had significant growth. However, only a few enterprises that are large enterprises and have their core technological advantages can get recognition from mainstream battery manufacturers. Even though the comparatively advanced equipment of these enterprises are running at full capacity, the supply volume cannot meet the market demand. As a result, the price of separators is at a high level.

Gross profit of main domestic battery separator manufacturers

According to the H1 2014 financial reports released by major Chinese listed companies that mainly produce Li-ion battery separators, their gross profit margins fluctuated between 30% and 59%. Additionally, the major Chinese Li-ion battery separator manufacturers include FSPG Hi-Tech Co., Ltd., Zhejiang Great Southeast Co., Ltd. and Shenzhen Hifuture Electric Co., Ltd. These companies did not publish their gross profit margins from their Li-ion battery separator business in their 2014 semi-annual financial reports. However, insiders disclosed that their gross profit margins were between 25% and 50% in general.

Table 1: Financial data of major listed Li-ion battery separator enterprises in China, H1 2014

Enterprise	Revenue	Cost of sales	Gross profit margin
Cangzhou Mingzhu Plastic Co., Ltd.	USD7.85 million (RMB48.28 million)	USD3.15 million (RMB19.37 million)	59.89%
Yunnan Yuntianhua Co., Ltd.	USD5.10 million (RMB31.39 million)	USD3.55 million (RMB21.86 million)	30.37%

Source: Cangzhou Mingzhu Plastic Co., Ltd. & Yunnan Yuntianhua Co., Ltd.



Table 2: Major Li-ion battery separator projects under construction in China, 2014

Enterprise	Project	Investment	Progress
Yunnan Yuntianhua Co., Ltd.	Second-phase separator project (15 million m ² /a)	USD29.83 million (RMB183.41 million)	Trial operation
Sinoma Science & Technology Co., Ltd.	Separator production line (20 million m ² /a)	USD5.86 million (RMB35.98 million)	33.6% complete
Shenzhen Hifuture Electric Co., Ltd.	Polyimide fiber battery separator project (40 million m ² /a) of Jiangxi Xian Cai Nanofibers Technology Co., Ltd.	USD1.65 million (RMB10.12 million)	10.13% complete
Jiangsu Jiujiujiu Technology Co., Ltd.	Li-ion battery separator project (13.20 million m ² /a)	USD9.36 million (RMB57.55 million)	65.99% complete

Source: CCM

As the overall production capacity rises, a downward trend regarding the price of Li-ion battery separators has appeared. At present, the price of separators by dry process is about USD0.81/m²–USD1.14/m² (RMB5/ m²–RMB7/m²), while the price of separators by wet process is around USD1.63/m²–USD1.95/m² (RMB10/m²–RMB12/m²).

However, the demand is increasing, especially from alternative energy automobiles developed by the State Council of the People's Republic of China. Key development projects cover pure electric vehicles, plug-in hybrid vehicles and fuel cell electric vehicles, which will boost the market for Li-ion battery separators. Moreover, with the improving domestic technology, the gross profit margin for Li-ion battery separators is predicted to stay at a high level in the following years.

Currently, Li-ion battery separators for commercial application are made from polyethylene (PE) and polypropylene (PP), including monolayer PE, monolayer PP, and trilayer PP/PE/PP composite membrane. The annual consumption of raw materials (PE and PP) is below 1,000 tonnes for large Li-ion battery separator manufacturer. Although all the domestic facilities are operating at full capacity, the consumption of raw materials still accounts for a small percentage of polyolefin. However, it is the small volume of the aforementioned materials that has caused the value to increase by more than ten times. As the production capacity of Li-ion battery separator is growing, the overall gross profit margin is declining. However, compared with plastics manufacturers which are making small profits or are suffering losses, Li-ion battery separator manufacturers are in a much better position. This indicates that plastics manufacturers can only survive by processing high value-added products.



Oversupply risk existing in China's polyolefins market

In the first three quarters of 2014, many CTO plants were put into operation, and the production capacity of petro-based plants increased. As of Oct., the production capacity of the plants newly put into operation was 3.65 million t/a, which accounted for 12.05% of the total production capacity of polyolefins. Therefore, the polyolefins market in China became less profitable during the first three quarters. The major reason for this was the product structures of enterprises, which resulted in an oversupply of general-purpose products and an undersupply of high-end products. Enterprises should optimize their product structure in order to better survive.

Production capacity of polyolefins rises in first three quarters of 2014

Early in 2014, the National Development and Reform Commission of the People's Republic of China removed coal chemical projects, including the coal-to-olefins (CTO) projects, from the Catalogue for Encouraged Industries in Western China. However, this year, CTO plants are entering into commercial operation. As of Oct. 2014, the production capacity of the CTO plants newly put into operation was 3.65 million t/a, which accounted for 55% of the new production capacity and 12.05% of the total production capacity of polyolefins.

The original purpose for building numerous CTO and propane dehydrogenation (PDH) projects was to cater for the demand in China's polyolefins market. However, the added production capacity diluted the market. Since the polyolefins plants of China Coal Yulin Energy Chemical Co., Ltd. (China Coal Yulin) and Shaanxi Yanchang & China Coal Yulin Energy Chemical Co., Ltd. (Yanchang & China Coal Yulin) were put into operation in June 2014, the general-purpose polyolefins market has been slashed and the price of general-purpose polyolefins dropped significantly.

According to the research from CCM, the polyolefins market and its downstream products are rather negative and at some enterprises, the sales prices of polyolefins products are close to the production costs. According to the monitoring of CCM, on 9 Oct., the price of film grade low-density polyethylene (LDPE) was USD1,951/t (RMB12,000/t) and the price of filament grade LDPE was USD1,984/t (RMB12,200/t); the price of film grade linear low-density polyethylene (LLDPE) was USD1,716/t (RMB10,550/t); the price of filament grade polypropylene (PP) was USD1,773/t (RMB10,900/t) and the price of injection molding grade PP was USD1,813/t (RMB11,150/t).



Table 3: Commissioned polyolefins plants in first three quarters of 2014

Enterprise	Plant	Production capacity, t/a	Commencement of commercial operation	Remark
Shaanxi Yanchang & China Coal Yulin Energy Chemical Co., Ltd.	PE	600,000	June 2014	LLDPE and HDPE
	PP	600,000	July 2014	No.1 PP plant (300,000 t/a) incommercial operation; No.2 PP plant (300,000 t/a) not commissioned.
China Coal Yulin Energy Chemical Co., Ltd.	PE	300,000	July 2014	7042
	PP	300,000	July 2014	L5E89
CNPC Sichuan Petrochemical Company	PE	600,000	March 2014	LLDPE and HDPE
	PP	450,000	Feb. 2014	L5E89
Sinochem Quanzhou Petrochemical Co., Ltd.	PP	200,000	May 2014	N/A
SINOPEC Shijiazhuang Refining & Chemical Company	PP	200,000	Aug. 2014	T03
SINOPEC Maoming Company	PP	200,000	Aug. 2014	S1003, K7002 and K1012
Shenhua Ningxia Coal Industry Group	PP	500,000	Aug. 2014	1102K
Total	/	3,950,000	/	/

Note: LLDPE stands for linear low-density polyethylene;

HDPE stands for high-density polyethylene;

PP stands for polypropylene.

Source: CCM

Growing stress on polyolefins market due to commercial operation of new plants in Q4 2014

There is increasing pressure on the supply-side in the polyolefins market because of the new production capacity. The second-phase 500,000 t/a plant of Shenhua Ningxia Coal Industry Group



and 1.2 million t/a plant of Yanchang & China Coal Yulin and the plant of China Coal Yulin are in operation. It is predicted that another four sets of polyolefins plants will be put into operation, with a production capacity of 2.1 million t/a. These plants belong to Shandong Shenda Chemical Co., Ltd. and Shaanxi Pucheng Clean Energy Chemical. In addition, the PDH projects in East China will also enter into commercial operation. The PDH project and its supporting 400,000 t/a PP projects of Zhangjiagang Yangtze River Petrochemical Co., Ltd. is expected to be put into operation at the end of 2014.

In Oct., maintenance will be completed in the plants of China Shenhua (Baotou) Charcoal Chemical Industry Co., Ltd. and Datang Inner Mongolia Duolun Coal Chemical Co., Ltd. Moreover, the production capacity of these new plants will rise.

Since the beginning of 2014, the polyolefins market has embarked on a downward trend. The polyolefins market is rather dull compared with the polyolefins market of 2013. In spring, the peak period for agricultural films, the demand for polyolefins did not go up. Until the plastic consumption season in Sept., no significant upward trend appeared in the polyolefins market. The main reason was the remarkable increase in the supply. From Jan. to July in 2014, the output of domestic polyethylene (PE) and PP had increased by 19.10% and 8.30% respectively year on year. More plants will be put into operation in H2 2014. Therefore, it is hard to predict the price of polyolefins in Q4 2014.

Table 4: Production & sales situation for PE and PP, Jan.–July 2014

Product	Time	Output, '000 tonne	Import volume, '000 tonne	Export volume, '000 tonne	Apparent consumption, '000 tonne
PE	Jan.–July 2014	7,556	5,521	142	12,936
	Jan.–July 2013	6,344	4,818	124	11,037
	YoY change	19.10%	14.60%	14.40%	17.20%
PP	Jan.–July 2014	7,790	2,190	66	9,914
	Jan.–July 2013	7,196	1,981	86	9,095
	YoY change	8.30%	10.60%	-22.70%	9%

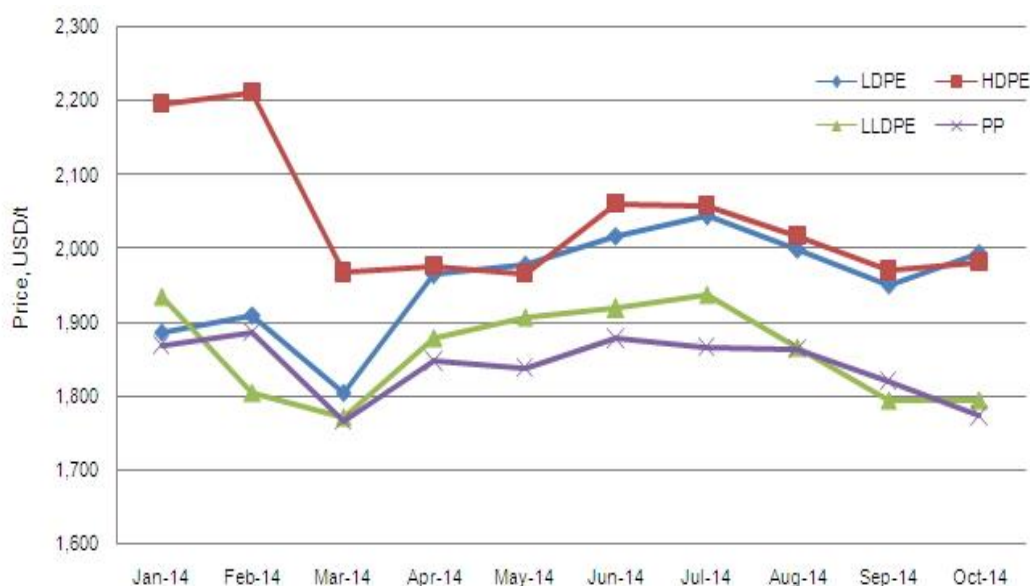
Note: PE stands for polyethylene;

PP stands for polypropylene.

Source: China Customs, National Bureau of Statistics & CCM



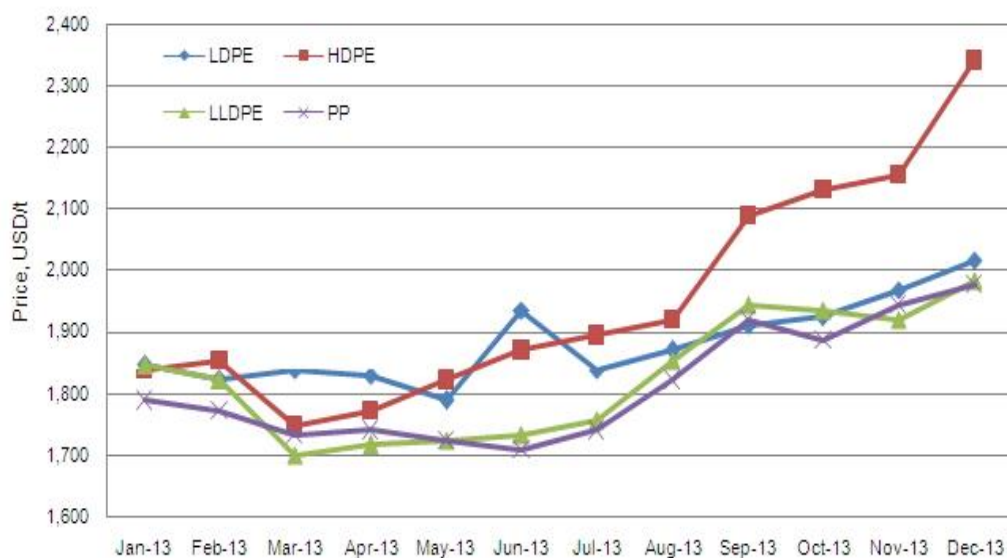
Figure 4: Price trend for polyolefins in China, Jan.–Oct. 2014



Note: LDPE stands for low-density polyethylen;
 LLDPE stands for linear low-density polyethylene;
 HDPE stands for high-density polyethylene;
 PP stands for polypropylene.

Source: CCM

Figure 5: Price trend for polyolefins in China, 2013



Note: LDPE stands for low-density polyethylen;
 LLDPE stands for linear low-density polyethylene;
 HDPE stands for high-density polyethylene;
 PP stands for polypropylene.

Source: CCM



Oversupply of general-purpose products, shortage of high-end product

Regarding the product structure, the concentrated production of general-purpose PE and PP resins by multiple enterprises in the same period is the main reason for the oversupply. Most of the PP plants that recently entered into operation produce filament grade PP. Also, most of the new PE plants produce linear membrane PP. These plants mostly produce raw materials for general-purpose plastics, which aggravated the oversupply of general-purpose materials in the polyolefins market. However, a shortage of high-end PE/PP resins still exists.

There is a surplus of general-purpose products, which are mostly filament grade materials and linear membrane materials. The number of enterprises producing general-purpose products, covering filament grade, low-melting copolymerization, linear membrane and low-pressure injection, occupies a large percentage of the number of polyolefins enterprises in China.

The domestic CTO industry is developing rapidly. At the early stage, domestic enterprises mostly produced filament grade products and linear membrane products. The competition among general-purpose materials became fiercer when many CTO projects began to enter into operation. Meanwhile, products from the Middle East with lower costs flocked into China's market. These products are primarily filament grade products and linear membrane products.

There is also a shortage for some products, mainly for special materials including high impact injection molding grade plastics, high-melting fibers, special materials for high-end biaxially oriented polypropylene (BOPP), cast polypropylene (CPP), tubular products, metallocene, coating materials, etc. China has a growing demand for high-end special materials. However, China's enterprises have limited ability to exploit and produce these special materials.

Producing high-end materials may be necessary to survive

At present, China still depends on imports for high-end materials. In order to solve the surpluses and shortages of different products in the polyolefins market, some enterprises have already taken the initiative to expand their investments into high-end materials. For example, BASF-YPC Company Limited developed high-end special materials for PE tubes with high value added, excellent performance and other characteristics that enable it to tolerate market risks. These special materials have achieved great economic benefits. The metallocene PE project of Shenyang Paraffin Chemical Industry Co., Ltd. was successfully launched. The price of its metallocene PE, a high added value product, is about 15% higher than the price of common LD PE. The quality of the membrane made from such metallocene PE is superior to the national standard and is comparable to Exxon Mobil Corporation's products that are made from metallocene PE.

Furthermore, not long ago, No.3 PP plant of Sinopec Maoming Company, which was recently put into operation, began to produce K7002 and K1012. K7002 and K1012 are new products and are mainly used for extrusion sheets and bellows. K7002 and K1012 fill the gap in the supply of high



impact products. The raw materials were supplied by the company itself. The two products are targeted at the high-end market in Guangdong Province, and are widely used in household appliances, construction materials, automobiles, etc. It is estimated that the annual revenue will reach USD325.24 million (RMB2 billion), with the resulting tax liability reaching USD17.89 million (RMB110 million).

In the long run, with the deepening market saturation of general-purpose materials, the profit margin from general-purpose materials will decrease gradually. Innovation, optimized product structure and investment into science and technology may be the only ways for enterprises to enhance their competitiveness and better survive.

Company Dynamic

Perspective on future of China's plastic market based on Kingfa's H1 2014 financial report

Kingfa released its semi-annual financial report for H1 2014, in which there were clear increases in the revenue and sales volume, but a decrease in the profit. The declining profit, which was brought by the fluctuated prices, drove Kingfa towards new materials, including modified plastics for cars, biodegradable plastics, wood-plastic composites, high-temperature nylon, etc. Kingfa has taken over the lead in the new material market. This indicates that the development and production of new materials is the developmental tendency for China's plastic industry.

Production of new materials

At the end of Aug. 2014, Guangzhou Kingfa Sci. & Tech. Co., Ltd. (Kingfa) released its semi-annual financial report for H1 2014. This report disclosed Kingfa's latest developments regarding the R&D and production of new materials. Kingfa, as a leader in the modified plastic industry, is a reference for exploring the developmental tendency of China's plastic industry.

In June 2014, Kingfa set up a wholly-owned subsidiary, Wuhan Kingfa Sci & Tech Co., Ltd., in Wuhan Economic & Technological Development Zone. At present, Kingfa has established its domestic production base, fully covering East China, South China, West China, North China and Central China. It has also established subsidiaries overseas, with subsidiaries located in Singapore and India.



Most of Kingfa's projects that are under construction aim to produce modified plastics for cars, and other new materials. During H1 2014, Kingfa continued to increase its investments into its projects at home and abroad. It is estimated that all of Kingfa's projects will be put into operation between 2015 and 2016. Most of its projects are over 50% complete.

Currently, the 13th Five-year Plan is being drafted. Based on the policy direction of the Third Plenary Session of the 18th Central Committee of the Communist Party of China held in November 2013, there is no doubt that China's plastic industry structure needs to be adjusted and upgraded. New chemical materials may gain support from the 13th Five-year Plan. Therefore, Kingfa will still be a leader in the plastics industry.

Table 5: Kingfa's projects under construction (invested with raised funds), H1 2014

Project	Investment, H1 2014 (million USD)	Accumulative investment (million USD)	Project progress
Production project for eco-friendly high-performance car plastics (800,000 t/a, Tianjin)	4.40	47.90	70%
Production project for eco-friendly high-performance car plastics (800,000 t/a, Kunshan City, Jiangsu Province)	4.42	83.87	67%
Production project for eco-friendly high-performance car plastics (800,000 t/a, Guangzhou City, Guangdong Province)	0.29	21.61	37%
Production project for eco-friendly high-performance car plastics (800,000 t/a, Mianyang City, Sichuan Province)	3.09	18.13	68%
Production project for the new spray-free and high-gloss ABS (100,000 t/a)	2.26	33.78	75%
Production project for eco-friendly high-performance PC and its alloy (100,000 t/a)	2.08	33.66	52%
Production project for high-strength nylon (80,000 t/a)	0.00	9.67	25%
Technological reconstruction project for high-performance reclaimed plastics	3.71	25.36	49%



(150,000 t/a)			
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Source: CCM

Kingfa's future product structure will be dominated by new materials. This is because of the current performance of the company and its prediction of the future market. Although traditional products accounted for the majority of its products in its semi-annual financial report of H1 2014 released at the end of Aug., Kingfa also developed new fields for profit growth because it was affected by external negative factors and the increasing risk of declining profits. CCM has analyzed the current performance of Kingfa on the basis of its semi-annual financial report.

Main indicators from Kingfa's semi-annual financial report

Kingfa's revenue in H1 2014 was USD1.21 billion (RMB7.49 billion), representing a year-on-year growth of 12.08%. The net profit was USD51.04 million (RMB315.84 million), with a year-on-year drop of 24.53%. The net profit excluding extraordinary items was USD40.72 million (RMB251.17 million), indicating a year-on-year reduction of 26.92%, and its earnings per share (EPS) was RMB0.12, which was below market expectation. From these three main indicators in Kingfa's semi-annual financial report, we can see that despite the revenue increasing, the profit slid dramatically.

Sales volume increasing rapidly but gross profit margin decreasing

The semi-annual financial report showed that the total sales volume of all types of modified plastics in H1 2014 (non tradables) was 430,600 tonnes, with a year-on-year increase of 26.17%. Specifically, the growth rate of modified plastics for cars was more than 25%. However, the prices of the products declined, and thus the growth rate of the revenue was only 12.08%.

The gross profit margin in H1 2014 was 14.64%, representing a year-on-year drop of 0.83 percentage points. The average rate of three main expenses (including distribution, administrative and financial expenses) was 9.89%, increasing by 0.41 percentage point compared with the same period last year. Judging from the data, the significant drop of the net profit was due to the decline in the gross profit margin and the increases in the three main expenses. However, to further analyze the underlying causes, the decreasing net profit was closely related to the overall economic environment:

First of all, the domestic economy was not in a good state and the prices of chemical products wilted.

Secondly, the lower demand for household appliances was detrimental for the plastic



industry. As the subsidy for energy savings ended, the demand for household appliances in rural areas went down. Meanwhile, the household appliance industry speeded up its transformation and upgrading, and new products came into the market one by one. Therefore, competition in the household appliance market became much fiercer. Plastics are widely used in the household appliance industry. Generally speaking, the proportion of plastics used in China's major household appliances varied from 10% to 60%. Four years ago (in 2010), household appliances that are completely made of plastics began to appear in the market. Therefore, the development of plastics is closely correlates with the demand from the household appliance industry.

Furthermore, the internet has caused profound changes. These changes include the growth in the volume and ease of cross-border trade, business models, product forms, the form of competition, and the structure and environment of the industry.

However, as a leading enterprise in China's modified plastic industry, Kingfa still dominates the competition by relying on its advantages in its technology and sales channels. Its product prices decreased and its market share grew. The decline in profit may be a short-term consequence of its strategy to increase its market share. It can be predicted that Kingfa's market share in sedans, household appliances and other products will continue to rise, and the sales volume of its modified plastics will increase steadily.

Kingfa's current main business

Regarding the revenue of Kingfa in H1 2014, although the revenue from plastic alloys was the lowest, the gross profit margin was the largest, reaching 23.37%. Plastic alloys are mostly new materials. Ten years ago, modified plastics were also new materials. With the number of new materials gradually increasing, modified plastics have become mainstream materials for cars. However, Kingfa keeps innovating and producing new materials.

Besides biodegradable plastics, Kingfa also proactively promotes the application of new materials, such as wood-plastic composites, and high-temperature nylon. The high-temperature nylon witnessed a growth of over 80% in output in H1 2014. Meanwhile, Kingfa has accumulated technologies to produce high-end new materials, such as carbon fiber. In the future, Kingfa will strengthen its research and development on new materials related to alternative energy cars. Other Chinese enterprises are likely to also pursue development through the exploration and application of new materials.

It is noteworthy that, early in Dec. 2013, Kingfa and Xinjiang Production and Construction Corps signed a cooperation agreement on the demonstration and promotion of biodegradable agricultural films, with an application area of over



466,667 ha (7 million mu) in the following three years. At present, their biodegradable plastic films have begun to become popular in several provinces, including Xinjiang Uyghur Autonomous Region, Shandong Province and Henan Province. If biodegradable plastic films become popular nationwide, it will be a key to profit growth in the future.

Table 6: Kingfa's revenue from main businesses, H1 2014

Product	Revenue, million USD	Cost of sales, million USD	Gross profit margin, %	YoY change for revenue, %	YoY change for cost of sales, %	YoY change for gross profit margin, percentage points
Flame retardant resin	252	206	18.25	11.23	9	1.67
Reinforced resin	193	160	16.69	20.09	24.35	-2.86
Toughened resin	301	259	13.92	45.83	58.10	-6.69
Plastic alloy	73	56	23.37	29.88	37.95	-4.48
Other plastic products	152	120	21.25	25.47	28.95	-2.12
Raw material trade	241	235	2.73	-22.04	-21.63	-0.50

Source: CCM

Currently, China's chemical material industry is in the stage of transformation, moving from low- and medium-end products to high-grade products. Technologies for staple general materials, such as polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC), emulsion polymerized styrene butadiene rubber (E-SBR), butadiene rubber (BR), polyester and polyester cotton, have been acquired by ordinary enterprises. The competition in these products is relatively fierce, which has slashed profit margins.

The development tendency will lie in synthetic materials, high-performance materials, super materials. These include:

Common resins of high-end products: PE, PP, acrylonitrile butadiene styrene copolymers (ABS), etc.;

Special synthetic resins: polycarbonate (PC), long-carbon-chain nylon, engineering plastic alloy (blending modified plastics);

Synthetic rubber: solution polymerized styrene-butadiene rubber (S-SBR), neodymium butadiene rubber (NdBR), high-strength polyester industrial filament, ultra high molecular weight polyethylene fiber [UHMWPE(f)], etc.



All the aforementioned materials are the highlights in the development of new chemical materials.

Attention paid to Sinopec Sales' mixed ownership reform

Sinopec Sales, a subordinate of Sinopec Corp., has sold its shares to enterprises at home and abroad. This is the first step in a reform to introduce mixed ownership in state-owned enterprises. It is most noteworthy that Sinopec Sales will set up a diversified board of directors. This may be the beginning of the end of the absolute monopoly of state-owned enterprises. In the future, Sinopec Chemical Commercial Holding Company Limited may also allow external capital and establish market competition mechanisms to reverse its current deficit.

On 14 Sept., 2014, China Petroleum & Chemical Corporation (Sinopec Corp.) released an announcement that Sinopec Chemical Sales Company (Sinopec Sales), its wholly-owned subsidiary, signed a capital raising agreement with 25 investors at home and abroad on 12 Sept. The investors would place orders for shares of Sinopec Sales valued at USD17.36 billion (RMB107.09 billion). After this capital raising, Sinopec Corp. will hold 70.01% of Sinopec Sales' shares, while the investors will hold 29.99% altogether. Sinopec Corp. claimed that the capital increment was not simply to raise capital. The development of Sinopec Sales in the future is worth looking forward to.

In Nov. 2013, the requirements to "enable the market to play a decisive role in the allocation of resources" and "to actively develop the mixed-ownership economy" were raised in the Decision of the Central Committee of the Communist Party of China on Some Major Issues Concerning Comprehensively Deepening the Reform, which was issued by the Third Plenary Session of the 18th Central Committee of the Communist Party of China. How state-owned enterprises reform soon became a major issue.

Sinopec Corp. sold Sinopec Sales' shares, which marked a substantial step towards mixed ownership reform in large state-owned enterprises. Since Sinopec Corp. is a leading state-owned enterprise, what it has done is significant. It remains to be seen whether Sinopec Corp.'s actions will pave the way for subsequent reforms. However, there has been much discussion on this announcement.

Change of decision-making level in Sinopec Sales

CCM believes that in the announcement, it is most noteworthy that the governance system of Sinopec Sales will be improved under the guidance of market-oriented principles, standardization and specialization.

According to the announcement, a diversified board of directors will be set up in Sinopec Sales.



The preliminary consideration is that the board of directors consists of 11 directors, specifically, 4 directors from Sinopec Corp., 3 directors from the investors, 3 independent directors and 1 director on behalf of employees. The president will be elected by the board of directors. Three special committees will be established under the leadership of the board of directors, namely, the Remuneration and Appraisal Committee, the Risk and Strategy Committee and the Audit Committee. Regarding the members of the board of directors, it was unimaginable in the past for the number of directors from the headquarters of Sinopec Corp. to only account for 36% of the board of Sinopec Sales. This indicates that private capital is expected to have a greater voice in the traditional monopoly industries in the future.

Secondly, the management framework will be optimized in Sinopec Sales. A performance assessment indicator system with clear performance indicators will be set up, to make the company more results-based, and contractual and vocational human resources management. A market-oriented salary system and a long-term incentives and restraints mechanism will be established.

At the beginning of Sept. 2014, the Political Bureau of the Communist Party of China Central Committee convened a meeting. The Proposal for the Reform in Remuneration System for Person Responsible for Central Enterprises was deliberated and adopted. According to this, the salaries of leaders dispatched from the State-owned Assets Supervision and Administration Commission of the State Council, the People's Republic of China, will under the salary standards for national public servants, while managers employed from the market will be paid according to the modern enterprise salary system.

It is the first time that Sinopec Sales has brought in the professional managers system and that Sinopec Sales has carried out contractual management and the market-oriented salary system in an all-round way, which reflects the new breakthrough in its reforms regarding its management, employment and distribution systems. Employees will be motivated to work harder and productiveness will be further improved.

Analysis on 25 cooperation enterprises

According to the number of investors and the percentage of shares that they will hold of Sinopec Sales, the equity value of Sinopec Sales is USD57.89 billion (RMB357.09 billion). Among 25 bidders, 9 of them are industrial capital, with an investment of USD5.30 billion (RMB32.69 billion), accounting for 30.50%; 12 of them are state-owned investors, with an investment of USD9.57 billion (RMB59 billion), accounting for 55.10%; 4 of them are investors involved in people's livelihood, with an investment of USD5.19 billion (RMB32 billion), accounting for 29.90%; and 11 of them are private capital, with an investment of USD6.21 billion (RMB38.29 billion), accounting for 35.80%.

What attracts our attention is that only one enterprise among these 25 bidders is an energy enterprise. The energy enterprise is ENN Energy Holdings Limited. Enterprises engaged in different areas appear in the name list of bidders, like Tencent, a science and technology enterprise, Huiyuan



Group Co., Ltd., a beverage enterprise, etc. This suggests that Sinopec Corp. will have prosperous development in non-petroleum businesses. Therefore, these changes in ownership will not have a great influence on the petroleum price.

Business in chemical industry may need further adjustment

The changes in the ownership of Sinopec Sales is only the beginning for the mixed ownership reform in state-owned enterprises. It is necessary to open more fields for attracting more private capital. Sinopec Sales mainly operates in the retail of refined oil. Its monopoly position enables it to occupy half of the profit of the headquarters.

Sinopec Chemical Commercial Holding Company Limited (Sinopec Chemical), a subordinate of Sinopec Corp., is responsible for selling chemical products. In 2013, its chemical product business covered more than 43 million tonnes. Its main products include synthetic resin, synthetic rubber, raw materials for synthetic fiber, synthetic fiber, polymer, organic chemical raw materials, chemical fertilizer, natural rubber, etc., which occupy large market shares in China.

The semi-annual financial report of H1 2014 released by Sinopec Corp. in Aug. shows that its chemical business suffered heavy losses. Sinopec Corp.'s overall net profit was USD5.09 billion (RMB31.40 billion). By contrast, the loss in its chemical business was USD648 million (RMB4 billion). Insiders from its refinery plants reveal that the actual deficit may be much worse.

The semi-annual financial report of H1 2014 also discloses that the revenue of the chemical business was USD34.59 billion (RMB213.40 billion) during this period, with a year-on-year growth of 0.90%. The sales volume of chemical products also presented an increase of 6.40% compared with the same period of last year. However, the competition in the domestic market was fierce. As the production capacity for chemical products in China rose and the number of imported chemical products increased, the price of chemical products decreased significantly. Furthermore, the prices of the major raw materials swung at a high level. Sinopec Corp. manufactured 5 million tonnes of ethylene, 7 million tonnes of synthetic resin, more than 4 million tonnes of monomer for synthetic fiber and polymer in H1 2014.

Most of the orders for Sinopec Sales' shares are from investment institutes. Placing orders is considered as financing behavior by most of the analysts. Furthermore, the huge deficit recorded in the chemical business of Sinopec Chemical perhaps should be solved by bringing in capital and introducing the market competition in Sinopec Chemical.



Table 7: Supply & demand of polyethylene in China in 2011–2013, million tonnes

Time	Output	Import	Export	Apparent consumption	Import dependence
2011	10.15	7.44	0.32	17.27	43.09%
2012	8.55	7.89	0.29	16.15	48.83%
2013	9.00	8.82	0.20	17.62	50.04%

Source: CCM

Table 8: Supply & demand of polypropylene in China in 2011–2013, million tonnes

Time	Output	Import	Export	Apparent consumption	Import dependence
2011	9.96	3.78	0.17	13.57	27.84%
2012	11.22	3.91	0.14	14.98	26.09%
2013	12.39	3.59	0.15	15.83	22.70%

Source: CCM

However, compared with Sinopec Corp.'s monopoly in the domestic petroleum market, Sinopec Corp.'s influence on chemical products is comparatively weak.

Based on the balance between the supply and demand of polyethylene resin and polypropylene resin in recent years in China, it can be concluded that the imported chemical products occupied a bigger market share, which provided the downstream plastic manufacturers with more choices for their upstream raw materials. On account of the current production of polyolefins in China, it is difficult to change the short-term situation, which is that common brands of polyolefins are sufficient in supply while most of the high-end brands of polyolefins are imported.

The high prices of China's major chemical raw materials that are imported could be the reason for the large deficits in the chemical industry. However, it is not an excuse, and changes can be made to change the situation. Advocating the slogan of "speeding up the technology development, eliminating the backward capacity, adjusting product structure, and adhering to the diversified channels for raw materials" is not a good solution. Instead, bringing in market competition and allowing market forces to dictate resource allocation work will have a better effect than attempting to improve chemical enterprises' self-regulation capabilities.

Chinese traditional petrochemical enterprises proactively developing high-end PP materials

Recently, new plants especially many CTO plants, have been put into operation in China, resulting in the increase of supply and the stagnant price. Confronted with fierce competition, some domestic petrochemical enterprises began to exploit new PP products and made some achievements. This

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shows that petrochemical enterprises will not absolutely be disadvantaged in the future competition. It is noteworthy that the international crude oil futures dropped greatly recently. The price of naphtha, raw material for polyolefins, may drop subsequently. However, only through technologies improvement can enterprises sustain development in the market.

Since Jan. 2014, three methanol-to-olefins (MTO) plants, two methanol-to-propylene (MTP) plants and one propane dehydrogenation (PDH) plant have been put into operation. Besides, another three PDH plants will be put into operation at the end of 2014. Due to the commercial operation of numerous plants, the supply insufficiency of polypropylene (PP) in China was eased rapidly and the competition became fiercer. The price of PP slumped concerning the following two reasons. On one hand, China's economic growth slowed constantly. On the other hand, the growth of demand for PP also slowed in China. As planned, a batch of plants will be put into operation in the future. China's PP market may be at risk regarding oversupply. However, traditional PP manufacturers have made some changes.

Table 9: New PP products developed by Chinese enterprises in 2014

Enterprise	Commencement of commercial operation	Product	Property or feature	Application	Remark
Sinopec Changling Company	Oct.	F03G	Stable quality, small ash content and fine film forming ability. Processed products present high strength.	Packaging	During the National Day holiday (7 days), 2,590 tonnes were produced.
CNPC Fushun Petrochemical Company	Sept.	L5D49, high-melting fiber resin	Low production costs, simple production process; Light weight and corrosion resistance	Pharmaceuticals, decoration and garment	/
Sinopec Maoming Company	Aug.	Various high-end materials	N/A	Household appliance, construction materials and vehicle	/



	May	PPB-M20-S	Fine resistance to high temperature	Packaging, auto interiors and food preservation boxes	/
	March	Speical PP material for cooking membrane	Not easy to reshape; no toxic substances relieved	Packaging for cooked food	/
CNPC Dushanzi Petrochemical Company	Aug.	K9930H	Strong bending property and high impact resistance	Auto bumpers and interiors	First production: 1,500 tonnes
	March	New S2040	Fine liquidity and narrow molecular weight distribution	Raw materials for staple fiber, non-woven fabrics	/
Sinopec Wuhan Company	June	K7227H	High melt index, high rigidity, high impact resistance and small shrinkage	Household appliance and vehicle	First production: 2,000 tonnes
	March	NAX9	High impact resistance and fine transparency	Used for film, sheet and blow molding	/
Sinopec Beijing Yanshan Company	Aug.	Terpolymer C5608	N/A	Composite membrane, packaging membrane for cigarette, metal plastic composite membrane	/

Note: PP stands for polypropylene.

Source: CCM

Confronted with the fierce market competition, traditional petrochemical enterprises must exploit more new products in order to dominate the market.



According to statistics from CCM, from Jan. to Aug. 2014, the average market price of PP was USD1,852/t (RMB11,387.50/t) in China. However, it is disclosed by several PP sales managers that the price of high-melting PP was between USD2,033/t (RMB12,500/t) and USD2,309/t (RMB14,200/t), USD180/t (RMB1,000/t) higher than the price of general-purpose PP.

Compared with the naphtha-to-olefins technology, the coal-to-olefins (CTO) technology presents a significant advantage in cost regarding coal, its raw material. What's more, new plants produce general-purpose PP mostly. Therefore, in the competition of general-purpose PP, petrochemical enterprises are certainly disadvantaged.

Recently the price of international crude oil declined and negative international public opinions were received regarding the price of crude oil in the future. This means that the price of naphtha, upstream raw material for polyolefins, may drop subsequently. However, enterprises can not control the price fluctuations in international market. Traditional petrochemical enterprises should improve their technologies, proactively explore high-end material market and reduce the production of low value added products, so as to effectively guarantee the development in the future.

Policy

Coal chemical industry absent from Catalogue for Encouraged Industries in Western China

With the support of national policies, the price of coal slightly recovered and the cost of CTO stabilized. However, coal chemical projects, including CTO projects, were absent from the Catalogue for Encouraged Industries in Western China released by the NDRC recently. This adjustment has both advantages and disadvantages for the development of the CTO industry. At present, most of the coal chemical projects are still in progress despite the loss of government support.

Coal chemical industry absent from the Catalogue for Encouraged Industries in Western China

In the middle of Sept. 2014, the news given greatest attention in the olefin market was the Catalogue for Encouraged Industries in Western China (the Catalogue), which was released by the National Development and Reform Commission of the People's Republic of China (NDRC). In the Catalogue, modern coal chemical projects, such as coal-to-olefins (CTO) projects, coal-to-methanol projects, were absent. The changes to the policy was disappointing for numerous coal chemical enterprises. Does this mean that the future of coal chemical projects including CTO projects is



gloomy?

Central enterprises have disbanded their coal chemical businesses one by one since the beginning of 2014, which gives rise to social reflection on coal chemical projects. Even after the development that has occurred in the coal industry in the last ten years, high water consumption and high emissions remain as major problems that hamper the development of coal chemical industry. In Sept., according to the information learnt by CCM, some coal chemical projects in Inner Mongolia Autonomous Region and Ningxia Hui Autonomous Region were suspended due to water shortage. The National Energy Administration also issued a notice to restrict the excessive water consumption in the coal chemical industry. At last, in mid-Sept., all of the coal chemical projects in western China were removed from the Catalogue.

Impact on CTO

The government has been cautious in its policies for the coal chemical industry for a long time. The NDRC exempted the CTO industry from the Catalogue, indicating that the government has adjusted the policy direction for the development of modern coal chemical industry. After this, CTO projects will have greater difficulties to get approval, which will strongly impact on the development of the CTO industry.

The CTO industry's development is reliant on policy support. Coal chemical projects have received strong support from the local government, despite the central government being cautious towards the coal chemical industry. The absence of coal chemical projects including CTO projects in the Catalogue means that the local government will not even dare to introduce coal chemical projects to the public. Furthermore, CTO projects need large investment, high water consumption and large areas of land. Coal chemical projects rely on water supply from local governments. Without a stable water supply, coal chemical projects can not operate or proceed as planned.

However, the policy adjustment has had very little influence on the approved and in-progress coal chemical projects. Furthermore, the CTO industry is merely absent from the Catalogue, and is not prohibited. The policy adjustment will help the development of the coal chemical industry to cool down. Therefore, weaker enterprises will be eliminated, but strong and productive enterprises will stay in the market and promote the healthy development of the coal chemical industry, which is good for the development of the coal chemical industry.

Suggestions on development of CTO industry

The coal chemical projects that have been completed will have a vital role. According to the analysis of CCM, before the policy adjustment, there were 7 approved CTO projects that had been completed and 18 approved CTO projects that were still under construction, with an investment of more than USD40 billion. The investment at the earlier stage of these projects is large and the capital-collection cycle is long. Most of these projects have not covered the cost of investment yet. It is therefore impossible to end these projects.



In addition, a coal chemical expert team has been established in China, to work together with enterprises to lower the energy consumption and pollution. The coal chemical industry has developed for almost 10 years in China. There are multiple exemplary projects that have been completed. Some experience has been accumulated in this industry. However, based on the observation of CCM, new entrants still repeatedly waste resources and cause severe pollution. Since it is hard for enterprises to mutually share their experiences, perhaps the government should consider providing technical support and provide a suitable platform for enterprises to share their experiences.

It is suggested that the construction of the coal chemical projects that have been approved but have not been started should be postponed. Enterprises should decide the construction time after mastering the existing technologies that have been used in the exemplary projects and for enhancing environmental protection. Local governments should also learn from the recent severe environmental protection incidents which have frequently happened in western China, and be cautious towards the development of the local coal chemical industry.

Operation status of CTO projects

Despite the absence of coal chemical projects from the Catalogue, projects that under construction are not impacted upon and will proceed as planned.

As of Sept. 2014, seven CTO projects have been put into operation in China. These are:

- 600,000 t/a methanol-to-olefins (MTO) project of China Shenhua (Baotou) Charcoal Chemical Industry Co., Ltd.,
- 500,000 t/a methanol-to-propylene (MTP) project of Shenhua Ningxia Coal Industry Group (Shenhua Ningxia),
- 460,000 t/a MTP project of Datang Energy Chemical Co., Ltd.,
- 300,000 t/a MTO project of Wison (Nanjing) Clean Energy Co., Ltd.,
- 600,000 t/a MTO project of Shaanxi Yanchang & China Coal Yulin Energy Chemical Co., Ltd. (Shaanxi Yanchang & China Coal),
- 600,000 t/a MTO project of SINOPEC Zhongyuan Petrochemical Corp. Ltd., and
- 600,000 t/a MTO project of Ningbo Fude Energy Co., Ltd.

CCM determines that the CTO projects that are in operation as of Sept. are operating stably. However, the northwest methanol market fluctuated due the unexpected cessation of the methanol production facilities of Shaanxi Yanchang & China Coal, which has a production capacity of 1.8 million t/a. Fortunately, the olefin devices are not seriously impacted.

At the end of Aug., the second phase 500,000 t/a MTP project of Shenhua Ningxia was put into operation in Ningdong County, covering an area of 56.55 ha and with a total investment of USD1.11 billion (RMB6.82 billion). This project has four major facilities for MTP, polypropylene, civil engineering, and a power station. Lurgi Inc.MTP technology and the vapor deposition polypropylene process of Lummus Corporation were adopted. The construction of this project began in March 2011, and required three and a half years for completion. At the moment,



propylene products and polypropylene products are produced, and the production capacity is increasing. It is estimated that the production capacity will meet the design specifications in Oct. Shandong Shenda Chemical Co., Ltd. has 36 projects under construction, including an 400,000 t/a MTO facility, a DMTO facility, an olefin separating unit, a system supporting device and civil engineering. Altogether 23 of these projects are gradually coming to the trial operation stage. It is anticipated that these units will be successfully put into operation at the end of 2014.

Tendency of cost of CTO

The news in the Catalogue means that there will be no government support for the CTO industry. Will the production costs rise under the stricter policy?

At present, the price of coal, the raw material for CTO, is rising very gradually. Judging from the overall economic environment, there are more negative factors for the coal market than there are positive factors. Hence, the cost of CTO will not soar significantly in the short term.

However, all coal chemical industries were removed from the Catalogue, which means that the enterprise income tax is 25% instead of 15%, which will be levied on coal chemical projects without any policy preferences. The increase in tax is much higher than the increase in the cost of raw materials. Consequently, the cost of CTO will sharply increase in the following two months.

Figure 6: Cost Production Model of Olefins in China, Sep. 2013-Nov. 2014F



Source: CCM



China's car plastic market may benefit from Anti-monopoly Law

Aug. 2014 – A series of anti-monopoly investigations have taken place in China's automobile industry. The anti-monopoly investigations will reduce the prices of China's automobiles. The anti-monopoly investigations may also be detrimental to Chinese automobile manufacturers. However, it will not become an obstacle for automobile sales. On the contrary, CCM estimates that the anti-monopoly investigations will compel domestic automobile manufacturers and chemical enterprises to strengthen their R&D on new materials when pursuing energy conservation. China's car plastic market may benefit from this because plastics are lightweight, which reduces the fuel consumption of cars. Therefore, the demand for plastics will increase.

Anti-monopoly storm strikes China's automobile market

On 20 Aug., 2014, the National Development and Reform Commission of the People's Republic of China (NDRC) imposed a fine of USD134.88 million (RMB831.96 million) on eight car parts enterprises including Japan-based Sumitomo Electric Industries, Ltd., and a fine of USD65.41 million (RMB403.44 million) on four bearing enterprises including Japan-based NSK Ltd. due to monopolistic acts. The total amount of the fine was USD200.29 million (RMB1.24 billion).

This is the biggest fine since the implementation of the Anti-monopoly Law of the People's Republic of China (Anti-monopoly Law), attracting the attention from the global media. It is said that thousands of automobile enterprises have been investigated. What impacts will this have on the automobile industry and car plastics manufacturers?

Prices of automobile and car parts drop

In order to deal with the anti-monopoly investigation from the NDRC, famous foreign car brands, such as Beijing Benz Automotive Co., Ltd., Guangqi Honda Automobile Co., Ltd., Lexus China, Jaguar Land Rover Automotive PLC, have reduced the prices of their cars and parts in succession.

Profit of domestic automobile brands being impacted

The direct consequence of the anti-monopoly investigation is that automobile enterprises have lowered the market prices of new cars.



However, if a large scale of price adjustment emerges in new cars and after sales fields, a reset in the market price system of China's automobile industry will occur.

At first, the prices of foreign premium cars will go down. Then, common brands will also reduce prices of their products because the premium cars will be cheaper. Finally, all other automobile companies will be forced to cut their prices.

However, in terms of brand image, joint ventures are more competitive than self-owned brands. Although joint ventures may have less revenue and profits due to the decrease in their prices, they can account for the reduced revenue and profits by occupying the market shares of self-owned brands to some extent.

Regarding China's self-owned automobile brands, their prices are at the bottom of the entire market. The prices of self-owned automobile brands are at a very low level and the prices of many products are merely equal to the production cost. If compelled to further reduce their market prices, self-owned automobile brands will have heightened market competition and losses. Will this situation have negative effects on the rapidly increasing demand for car plastics?

Demand for car plastics not interfered by anti-monopoly storm

Based on the observations of CCM, the anti-monopoly investigation initiated by the NDRC is also targeting other industries. Multinational enterprises in the telecommunication industry, such as Qualcomm Technologies Inc. (QTI) and Microsoft Inc., were also investigated by the NDRC and the State Administration for Industry & Commerce of the People's Republic of China (SAIC).

Although the purpose of the NDRC was questioned, CCM suggests that this large-scale anti-monopoly campaign is not just on a whim. Instead, it conforms to the Decision of the Central Committee of the Communist Party of China on Some Major Issues concerning Comprehensively Deepening the Reform (the Decision) approved by the Third Plenary Session of the 18th Central Committee of the Communist Party of China. Improving the market economy system was mentioned in the Decision.

The Anti-monopoly Law, which has been in operation for six years, is referred to as an "economic constitution" abroad. The current anti-monopoly investigations on multinational enterprises conducted by law-enforcing departments indicate that the Chinese government is working on



maintaining fair market competition and to allow market forces to have greater influence on the economy. If monopolies and price cartels can be stopped and a fair market environment is created, China's automobile industry will develop better in the future.

Decrease in profit may drive automobile enterprises to accelerate their R&D on car plastics

The decreases in the prices of cars and parts will lead to a drop in enterprises' profits in the short term. However, from another perspective, it may be the impetus for automobile enterprises to research and develop new materials, especially polypropylene (PP). PP is regarded as the best material for automobile manufacturing because of its characteristics of low cost, easy processing, being highly practical and being recyclable.

Foreign chemical companies and automobile manufacturers are more advanced in the research and development of new materials. The new-type Softell, which is a new PP copolymer developed by the Netherlands-based Lyondell Basell, has been applied in the interior rear door panels of the German vehicle Audi A1. Japan-based Mitsui Chemicals Inc. is enlarging the scale of manufacturing of PP in its factories in Japan, the US, Europe, Thailand, China and India, mainly to meet the demand from automotive materials. Austria-based Borealis AG (Borealis) has a long-term cooperation agreement with German-based Volkswagen Group and German-based Bayerische Motoren Werke AG on supplying PP products. Furthermore, Borealis has developed Xmod short glass fiber and Nepol long glass fiber, to strengthen the intensity of PP. Therefore, Borealis' PP products are of lower cost but better quality. France-based Total Corporate also considers that PP is the best plastic for transportation and automobile uses.

The amount of plastics applied in automobiles in China is comparatively small, and China's car plastics started to develop relatively late. The types of resins dedicated to car plastics are limited, and the processing technique is not advanced, with lower outputs. As a result, the application of engineering plastics and high-performance engineering plastics in China lags behind other countries, and resins dedicated to car plastics mainly rely on imports.

Guangzhou Kingfa Sci & Tech Co., Ltd. (Kingfa) is capable of researching and developing plastics used in household appliances and automobiles. Also, some of the domestic ethylene factories which possess comparatively advanced equipment, such as Wuhan Branch, China Petrochemical Corporation (Sinopec Wuhan), produced 2,000 tonnes of specific materials for medium- and top-



grade cars at the beginning of 2014. As the demand for car plastics increases, more enterprises will engage in the R&D on car plastics in the future.

Automobile industry becomes main impetus of growing demand for plastics

The technology for automobile materials around the world tends to be lightweight and environmental friendly. The weight reduction of automobiles is regarded as one of the most effective measures to reduce emission and raising combustion efficiency. For instance, as the weight of a sedan decreases by 10%, 6%–8% of fuel consumption can be saved and 4% of emissions can be reduced. It is widely believed that plastics is one of the most ideal materials for reducing the weight of automobiles.

In 2014, it is estimated that China's newly-added capacity of five major general-purpose plastics, polyethylene (PE), PP, polyvinyl chloride (PVC), polystyrene (PS), and acrylonitrile butadiene styrene copolymers (ABS), can reach 10.15 million t/a, with an annual average growth rate of 17%. The greatest growth will appear in ABS and PS resin, whose downstream industries mainly include the automobile industry and household appliance industry.

At present, the average consumption of plastics in each car can reach 150 kg. It is predicted that the average consumption of plastics in each car will be at about 500 kg by 2020. However, the average consumption of plastics in each car in China is only about 100 kg, which shows a significant growth potential. According to the 2012-2020 Development Plan for Energy Saving and New Energy Automobile Industry released by the State Council of the People's Republic of China, in the following years, the application of lightweight materials will be the technological focus in China's automobile industry, to achieve the goal of reducing fuel consumption. Accordingly, it is estimated that the proportion of plastics in China's automobile industry will further rise and the demand for injection molding with high precision and high stability will be greater in the next few years.

On the basis of data from the China Die & Mould Industry Association (CDMIA), in 2013, the domestic output of plastic products used in vehicles or vessels was approximately 2.15 million tonnes. Based on the average price in the market, the value of the aforementioned products reaches USD16.2 billion (RMB100 billion). Currently, 90% of China's car plastic parts are made through plastic moulds. The rapid development of the automobile industry helps related injection products and plastic moulds to increase their market shares.

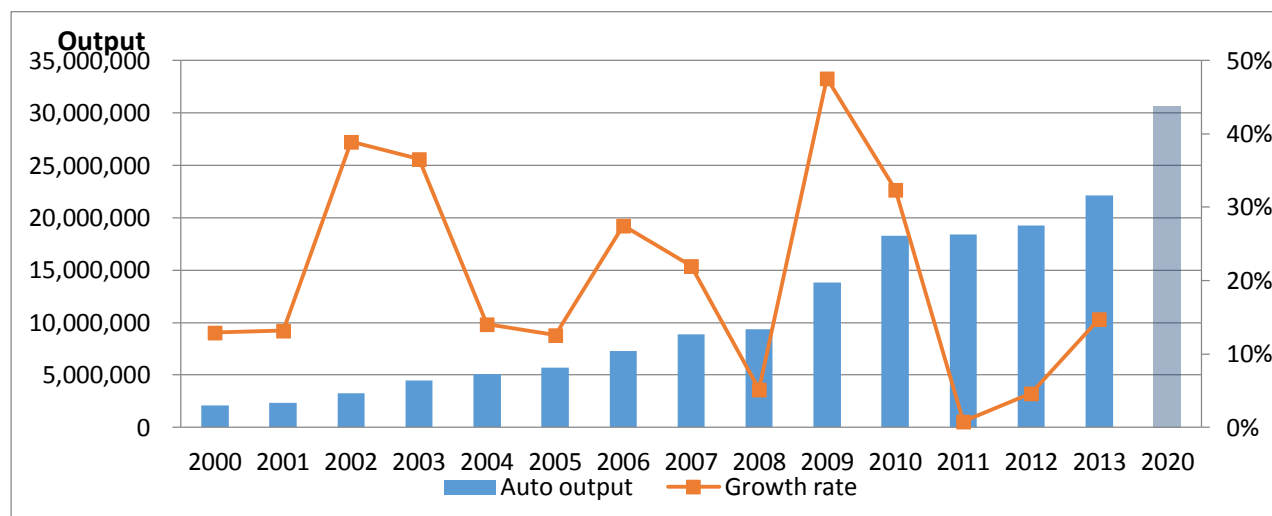


Foreign enterprises, especially manufacturers and importers of premium cars, are the first to be affected by the anti-monopoly investigations. Their adjustment of prices could result in large profit reductions for foreign automobile enterprises. However, these reduced profits can be offset by increasing the sales volume.

Besides, the average consumption of plastics in each car in China is only about 66% of cars produced in Europe and America, which indicates a great development potential.

Furthermore, the new Chinese government emphasizes on balanced regional development, and the domestic market, especially in underdeveloped areas, has great potential regarding the demand for automobiles. The Chinese macro economy has developed steadily, following policy adjustments that have been in operation for over a year. It is predicted that, during the Thirteenth Five-year Plan (2016–2020), the automobile industry will see an increase of 5% in sales volume, and that the growth rate of the demand for plastics will exceed the growth rate of automobiles.

Figure 7: China Auto Output of 2000-2020F



Source: CCM



Journalist: Duanxian Ye
Editor: Jenny Xing
Chief Editor: Alan Lu
Publisher: Guangzhou CCM Information Science & Technology Co.,Ltd

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17th Floor, Huihua Commercial & Trade Building, No.80 XianlieZhong Road Guangzhou, 510070, P.R.China

Tel: +86-20-37616606

Fax: +86-20-37616768

E-mail: econtact@cnchemicals.com

Website: www.cnchemicals.com