Fine Chemicals in China

Dr. Kai Pflug, Management Consulting – Chemicals

In a recent paper, Fu Xiangsheng, Vice Chairman of the China Petroleum and Chemical Industry Federation (CPCIF), characterized China`s chemical industry as having a "low-end surplus, high-end shortage", a surplus of basic chemicals and a shortage of functional chemicals. Indeed, the share of fine chemicals (which in the terminology used in the West might be better described as Specialty Chemicals) as a percentage of the total industry value is only about 45% compared to 60-70% in the US and in many European countries, and 90% in Switzerland. And while there are about 100 000 different fine chemicals produced globally, in China the number reaches only 20 000, according to the Xingyuan Chemical Park Research Institute.

This has several disadvantages for China. It means China is a net importer of chemicals, with the value of its chemical exports equal to only about 72% of its imports. Moreover, the self-sufficiency is particularly low in high-end segments such as new chemical materials, which in 2018 reached a self-sufficiency rate of only about 65%. For some chemical segments, China relies almost entirely on imports. According to statistics of the Ministry of Industry and Information Technology in 2018, for 32% of the more than 130 key basic chemical materials, China has

no local substantial local production while for 52%, China still depends on imports. This includes segments that are very important for modern economies, e.g., high-end electronic chemicals and high-end functional materials. In particular, high-end electronic chemicals are almost exclusively provided by foreign companies. And while the number of 20 000 locally produced fine chemicals sounds impressive, it is important to keep in mind that the number of chemicals used in the production of complex products is very high. According to one estimate, 16 000 different fine chemicals are needed by the electronics industry alone, and more than 7 000 for color TV sets.

China`s low share in fine chemicals is also a commercial disadvantage. Fine chemicals on average have higher profit margins than basic chemicals, as the number of competitors is smaller, the number of buyers is larger, the relative cost share for buyers of specialty chemicals is lower, and buyers often lack the knowledge to easily replace fine chemicals suppliers. Furthermore, fine chemicals markets on average grow faster than those for basic chemicals, a trend that will probably continue. Many fine chemicals segments are also less cyclical in demand than basic chemicals, which often heavily depend on the business cycle (e.g., the level of construction and infrastructure spending).

Another indication of China`s underrepresentation in the global fine chemicals market is that the top 10 global specialty chemicals producers are all foreign companies, compared to Sinopec`s number 2 position in the global ranking for the overall chemical segment.

It is thus not surprising that the Chinese government is interested in supporting the development of local fine chemicals production, having realized that they have become an indispensable supporting material for high-end manufacturing in promising areas such as light-weight cars, driverless cars, electric cars, medical devices etc. This support comes in the form of tax incentives, land grants and other forms and also applies to foreign companies, as outlined in the catalogue of areas for which foreign investment is encouraged.

However, establishing a strong fine chemicals industry in China is easier said than done. Main entry barriers for individual chemical companies include developing relevant R&D capabilities, establishing sufficient amounts of segment-specific application knowledge, gaining customers and a reputation for reliability and product quality among them.

Compared to setting up a production plant for basic chemicals, the investment is not necessarily larger, though it has increased in the past few years due to the tightened environmental regulation and the subsequent need for additional equipment to reduce pollution. But the investment outcome is much less certain, and the timeline required for a decent return may be much longer. Success depends more on the skill and knowledge of scientists than on the amount of capital available for investment. Some companies also state that the capability of local universities to support commercial R&D is limited.

What are the trends within the fine chemicals segment in China? As just mentioned, there is an ongoing consolidation process, mostly driven by tighter environmental regulation. Hundreds of fine chemical companies are closing down, mostly those focusing on the lower end of the market, utilizing older technology and being of small scale. In our consulting work, we have seen the number of suppliers of many fine chemicals shrink by half or more in the past 2-3 years, though these are mostly the players with the lowest capacities. And given that there is still a large number of small fine chemicals producers located outside of chemical parks, and that the government has indicated to push for further relocation or closing of these entities, thousands of fine chemicals producers more will close down in the next 1-2 years.

This also means that the quality level of fine chemicals production will increase. Those producers with the lowest quality

are the most likely to close down, and the quality requirements of fine chemicals buyers increase as the end products become more and more sophisticated. Business models are increasingly switching from the provision of individual molecules to the provision of solutions solving specific problems. For example, a company focusing on polymer additives may offer a mixture of additives to its customers which is defined by delivering a specific property (e.g., making a polymer more stable), rather than just a single additive. This will increase the overall share of value captured by the fine chemicals industry, as the bulk polymer producer outsources the issue of polymer stability to the fine chemicals supplier.

Fine chemicals production will become more localized, reducing the need of fine chemicals imports. This increased local production will come from two different market participants. On the one hand, domestic companies will increasingly shift towards specialties as the market for basic chemicals is too crowded, capacity utilization is too low, and margins are low due to the interchangeable nature of the products. On the other hand, foreign chemical players have continued to invest in specialty chemicals production in China as an area where they still benefit from their often superior technology. This investment comes both in the form of greenfield investment and in the form of acquisitions of local players followed by technology upgrades. Overall, fine chemicals thus are a good example of the trend towards the "In China for China" approach of foreign players, a trend that may be further enhanced if global political developments lead to a relative decline in global trade.

All these factors – the unsatisfactory margins and overcapacity in basic chemicals, the recent foreign investments and the emphasis on innovation rather than on capacity expansion – point to good prospects for China`s fine chemicals segment. In fact, the Fine Chemicals Professional Committee of the China Chemical Industry Society has provided its view on an upgrade route for the fine chemical industry. According to the Society, 2017-2020 is the 2.0 era of fine chemicals; 2021-2025 will be the 3.0 era with the share of fine chemicals reaching 55% by 2025, and in the period from 2025-2030, the 4.0 era will see China becoming a global power in fine chemicals. Several provinces have already recognized the growth potential of fine chemicals by establishing dedicated chemical parks. Currently there are about 35 such fine chemical parks nationwide, mainly in Hubei, Shanghai and Jiangsu.

This is encouraging and supports the government objective of preventing China from being stuck in the middle-income trap. The government should therefore promote chemicals that are related to innovation, i.e., primarily fine chemicals. It is to be hoped that this support will continue even some government units have become much more reluctant to permit chemical activities. ■