Chemical Parks in China: Status, Developments and Issues

Dr. Kai Pflug, Management Consulting – Chemicals (kai.pflug@mc-chemicals.com)

In 2004, a CPCIF study listed 17 chemical industry parks in China. By 2009, this number had increased to more than 200, and by the end of 2015, the CPCIF gave a number of 502 parks, of which 47 were state-level chemical industry parks, 262 provincial level and 193 city level parks. Other sources – possibly using slightly different definitions – speak of around 850 chemical industry parks at all levels and an industry's proportion of enterprises within the parks exceeding 50%.

While this may sound like substantial progress, the 13th Five-Year Plan (2016-2020) for the petrochemical industry is actually fairly critical of the current situation. One key criticism is that a large number of chemical enterprises – including some producing dangerous chemicals – have not entered chemical parks yet. Indeed in 2015 only about 45% of all Chinese chemical factories were located within chemical parks – in some provinces, the number is substantially lower, e.g., Shandong 33%. Another criticism targets the quality of many of the parks, quoting low management level and incomplete infrastructure, including that in the areas of security and environment. Finally, the Five-Year Plan is even critical of the high number of chemical parks – they are described as scattered and too numerous.

Recent visits of the author to a number of chemical parks support this critical view. Particularly in Central and Western China, planning and marketing of individual chemical parks often is lacking. When asked about the key advantage of a specific park in Sichuan province, the responsible manager quoted the long life expectancy of people living in that specific county – hardly an argument that will convince any professional chemical company to choose this site. Another typical mistake is to allow non-chemical companies to set up production within chemical parks – this gives the park a short-term boost in the early days, but acts as a deterrent to potential future chemical production as chemical companies strongly prefer dedicated sites.

The 13th Five-Year plan strongly emphasizes the need to relocate chemical production to chemical industry parks. Some provinces have specific targets, e.g., Hubei wants to have 95% of chemical production in chemical parks by 2020. The shift partly achieved by closure of factories. According to the Ministry of Environmental Protection (MEP), more than 150 heavily polluting companies have been shut down in Hubei since 2015 while in Hunan, about 1 200 polluting companies were closed along the Xiangjiang River in the period of 2011-2015. In Jiangsu province, about 7 000 chemical companies were reportedly closed within the same period. In Shandong, more than 1 000 plants were closed since 2015 while an additional 125 were forced to move to chemical parks. Thus, government authorities seem to also have industry consolidation in mind – while the smallest companies are closed, and larger ones may get support to move to chemical parks. To underline this point, the Shandong government has announced that chemical projects with investments below RMB100 million will be declined in the future. And a guidance by the MIIT requires an investment of at least RMB2 billion per square kilometer for chemical industry parks above provincial level, possibly also limiting the use of high-level chemical parks by smaller companies.

In addition, existing environmental regulation is implemented much more strictly than before. In January 2017, a court in China fined dye producer DyStar

US$3 million for environmental crimes and sent some of the company's managers to jail (3-5 years). Instead of disposing waste sulfuric acid properly (as before, when still under German ownership), the waste acid was taken on a ship and dumped in a river. This came after a similar fine imposed on Chuyuan Group in June 2016, another dye manufacturer, for discharging excess pollutants.

Possibly as a consequence of the somewhat unsatisfactory situation, the 13th Five-Year Plan calls for chemical parks that are professionally managed and provide professional infrastructure. This includes, e.g.,

* Utilization of synergies: the chemical park at Daxie Island, Ningbo (with Wanhua as key tenant) offers a number of examples. HCl from Wanhua is used as raw material by Hanwha, a PVC producer. Waste brine from Wanhua is used by the local chlor-alkaline producer. And carbon dioxide from Wanhua is purified and utilized for food applications

* Central supply: at Ningbo, Linde provides nitrogen and oxygen for all the chemical companies within the park. At other parks, competitors frequently take the same role

* Professional dangerous chemical treatment and fire stations specially educated to deal with chemical accidents – something that could probably have saved the lives of many firemen in Tianjin

* Combined water treatment, which due to the larger volumes and the larger variety of pollutants can increase efficiency and lower costs

* Standardization of chemical parks (to establish and utilize best practice)

According to the Plan, chemical industry parks that cannot meet these criteria are to be improved or closed down.

From the author's point of view, an additional point is to improve the marketing of chemical parks, particularly smaller ones further in the West of China. Management of these parks often seems to have very limited understanding of the needs of chemical investors, relying instead on personal relationships rather than on a solid investment rationale. At least with bigger and more professional chemical companies, this approach will surely fail.

For chemical companies producing outside of chemical parks – or even for those producing at smaller, less established parks – it will be worthwhile to plan ahead, as a forced move will become more and more likely. As chemical plants are longer-term investments, the long-term prospect of a specific site should be a major criterion. Unfortunately, these criteria seem to be still in the process of being defined, making long-term predictions difficult. For example, according to Greenpeace, about 18% of China's chemical plants are located in environmentally sensitive areas, particularly along major rivers and water sources. However, some of these chemical parks (such as the Nanjing chemical park, located right at the Yangtze river) are also among the most established and promoted ones. Recent statements by the MEP – such as one from March 9, 2017 which seems to prohibit building new petrochemical plants within one km of the Yangtze – indicate a toughening of the criteria for chemical parks and make giving a long-term outlook for sites such as Nanjing increasingly insecure.

Another aspect to choose early in a potential site search is the desired level of chemical parks – national, provincial, or even lower. Major chemical companies, particularly foreign ones, are probably well advised to restrict their search to national level parks. A guideline of the MIIT asks for only 80% of the provincial level parks to be equipped with an emergency rescue command center by 2020 – it is difficult to see a highly safety conscious company to select a park without such a center.

Further orientation may come from lists of chemical parks occasionally published by outfits such as the 2016 Chinese Chemical Industry Park and Industrial Development Forum. The May 2016 list gives the names of 20 chemical parks regarded as particularly strong as well as an additional list of 10 up-and-coming parks.

A potential contradiction is that the 13th Five-Year Plan seems to indicate a desire to consolidate the number of chemical parks – an understandable goal given the current number of underutilized parks with few or no chemical tenants. However, China has about 30 000 chemical companies with annual sales above RMB20 million. Even assuming that only one third or half of these companies are large enough to have a long-term future, the resulting more than 10 000 chemical companies will still require a large number of chemical parks. So, it is questionable whether the desired upgrading of the chemical park quality level via consolidation can be achieved at the same time that a large number of companies need to move production into parks for the first time. In any case, it will require a huge investment of resources to relocate the majority of chemical plants into chemical parks. ■