



Sustainability – Already a Topic for China’s Chemical Industry?

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Sustainability has become a big topic in the Western chemical industry, with companies strongly emphasizing their ambitions to be sustainability leaders – though it is not always clear whether the focus is more on actual sustainability or the perception of promoting sustainability. In contrast, for Chinese chemical companies sustainability is just beginning to emerge as a relevant topic.

What is meant with sustainability in this context? Essentially sustainability contains two important notions. One is that of not harming the environment, the other that of not having a time limit. The latter means that relying on non-renewable resources cannot truly be called sustainable.

The case for sustainability can be based on two major reasons. One is that in a world in which environmental issues increasingly are at the center of public discussion, it may simply be necessary for a chemical company to show commitment to sustainability in order to keep its brand name and its reputation intact. The other big reason is that as customers look for

sustainability, there may be a business case for offering more sustainable products.

Why is sustainability becoming more relevant for China’s chemical industry?

First of all, government policy related to environmental protection has tightened considerably in the last few years. This means that many unsustainable practices – such as the creation of large amounts of hazardous waste or air emissions – are now no longer legally permitted. This inherently makes these activities more sustainable. Second, companies can clearly see the trend towards further tightening of the regulation, giving them an incentive to proactively increase the sustainability of their businesses and thus giving them a potential competitive advantage if stricter legislation (e.g., mandatory recycling quotas, increases in environmental taxes etc.) is enacted.

Third, customers of chemical companies are increasingly evaluating their suppliers for their sustainability efforts. This is particularly true for some big global brands, such as Dell in electronics or Philips in electrical appliances. Supplying such companies

will require more and more proof of own sustainability efforts.

Fourth, the biggest Chinese chemical companies are starting to become active overseas, such as Wanhua with their activities in Europe and the US. As a consequence, they will have to adhere to the same public expectations regarding sustainability as their Western peers. Indeed, Chinese companies with extensive overseas businesses are among the local sustainability leaders.

What does it mean for a chemical company to focus on sustainability?

The first stage is a strong focus on health, safety and environment (HSE). Indeed, leading local chemical companies already strongly emphasize these aspects, presumably also because the local population does not always trust chemical companies in this regard after a number of past accidents and scandals. So in this case the quest for sustainability is well aligned with the need for support from the local government and population.

However, HSE should just be the



beginning of sustainability-related activities of Chinese chemical companies – at the moment, it mostly is both the beginning and the end. The next step to increase sustainability of chemical operations is to closely examine and optimize the production process. This relates to a variety of issues, with each of them typically providing improvement potential.

Raw materials: Are the raw materials coming from sustainable sources (e.g., bio based), or is there a strong reliance on fossil resources (which ultimately are not sustainable)? Are recycled materials being used, thus reducing the need for input of new raw materials? Are the raw materials coming from suppliers that themselves are focusing on sustainability or not?

Energy utilization: Are there permanent efforts being undertaken to reduce energy consumption? Is there some benchmarking being done comparing energy efficiency of production to that of competitors?

Greenhouse gas emissions: Are there targets to reduce these? In energy generation, is there a strong reliance on fuel with high greenhouse gas emissions (e.g., coal) or a shift towards lower-emission fuel (e.g., natural gas)? Is there a process by which carbon dioxide from production processes is captured and utilized, e.g., for

food use (as already done in some Chinese chemical parks)?

Production processes: For many basic chemicals, there are at least two different established processes, often with substantial differences in environmental friendliness. Unfortunately, compared to the rest of the world, China often uses the less environmentally friendly process to a larger extent than elsewhere, so there may be a substantial need to switch processes. Some examples are given in the table below.

The third step then is to include sustainability in the marketing of the company as a whole as well as of specific chemical products. Western but also Korean and Japanese chemical companies already to this to a large extent. Some examples include:

- BASF, “We create chemistry for a sustainable future”
- Covestro, “Sustainability is at the heart of Covestro’s thinking and acting”
- DSM, “Sustainability is the core value of the company”
- Evonik, “Sustainability is a core element in our corporate claim ‘Power to create’”

So far, Chinese chemical companies are relatively weak at demonstrating their commitment to sustainability. Western companies lead the way and utilize numerous approaches to emphasize their focus on

sustainability.

For example, most larger Western chemical companies now publish separate sustainability reports. These reports can be quite extensive, typically containing 50-100 pages and discussing company sustainability performance in detail. In contrast, even leading Chinese chemical companies only have individual web pages on their sustainability efforts. Many Western companies even utilize external third parties to verify their sustainability reports, giving them additional credibility.

Related to this is the issue of sustainability governance. Ideally there should be a clear internal responsibility for sustainability, which should be high enough in the hierarchy to be convincing. Several Western companies have for example created the role of “Chief Sustainability Officer” (CSO), and have this position report directly to the CEO.

Another way of adding credibility to the sustainability efforts of a company is to commit to specific targets, typically relating to measures such as energy utilization, waste emission or amount of landfill. Publishing such targets and tracking the progress provides an internal incentive and convinces outside parties that sustainability efforts are not just a public relations exercise.

| Product | More sustainable production technology | Less sustainable production technology |
|------------------|--|--|
| Methanol | From natural gas | From coal |
| PVC | Ethylene-based | Carbide based |
| Sulfuric acid | Smelting-based | Pyrite-based |
| Titanium dioxide | Chlorination process | Sulfuric acid process |



Related to this is certification according to specific standards, e.g., according to ISO 14001 (Environmental management system) or ISO 50001 (Energy efficiency certification). Stock-market listed companies may also consider to aim at becoming members of sustainability indices such as the Dow Jones Sustainability Indices, or to become signatories of the UN Global Compact.

Finally, a focus on sustainability should also be reflected in the R&D efforts of a company. R&D goals related to sustainability may include the use of bio based raw materials, the improvement of processes with regard to resource utilization and waste creation, or the development of new materials which bring overall environmental benefits (e.g., high-end plastics which can replace metals in electric vehicles and due to their lower weight

increase the range of such vehicles).

Once the internal aspect of sustainability has been covered, Chinese chemical companies can also learn from Western companies with regard to marketing their products as contributing to sustainability. For example, Dupont markets its range of biopolymers as its “Dupont Sustainable Plastics Portfolio”. Covestro describes its polycarbonate blends utilizing post-consumer recyclates as feedstock as “sustainable grades”. And Arkema offers “a sustainable, bio-based acrylic resin for use in transparent disposable medical devices”.

Focusing specifically on sustainability will often also mean adding additional grades with specific properties. For example, Ningbo Zhetie Daphoon currently offers two grades of polycarbonate (PC) with fairly undifferentiated properties. In contrast, some global PC producers offer more than 100 grades, with

properties tailored to specific applications and offering specific advantages related to sustainability, such as light weight, high surface hardness, recycled content or flame retardancy without halogen content.

One can argue that sustainability does not merit very high attention from Chinese chemical companies as long as they are successfully selling their current products without focusing on sustainability. However, this is probably a somewhat short-term perspective. Chinese chemical companies will increasingly be measured by global standards, not only overseas but also domestically. For the leading Western chemical companies, sustainability is already an aspect they are keen to highlight. And for Chinese companies, the extra effort of striving for sustainability will increase as Chinese environmental regulation gets stricter. ■

