

The Supply Chain Dilemma

Another “New Normal” that Will Have the Potential to Change the Chemical Industry Landscape

Since the middle of the 1980s, the supply chain of many chemicals has moved east. This was primarily driven by cheaper production costs in China or India, due to lower raw material prices, a cheaper asset base compared to plants in the West, and lower environmental and regulatory standards.



This trend increased over the last three to four decades. The initially lower quality that ended in lower prices in the beginning changed to “good-enough quality” in many industries (e.g., pigments, surfactants, intermediates, additives, and a wide range of plastics and intermediates). The consequences had been drastic for most operations, especially in the West. It changed the process chain of nearly all products and with them the value chain. Plants were shut down, know-how moved abroad, and major parts of the supply chain moved to the East. China and India became the operational backbone for many products in the specialty chemicals and the agrochemicals as well as in the pharmaceutical industry—the latter especially in India.

While that change of the supply chain was a shock in the beginning it became the new normal at the end of the 1990s and many companies moved their assets to the East as well. The industry became used to Chinese and Indian competition by the beginning of the 21st century and so the chemical world faced more global competition. Over time, a certain balance was established:

- Chinese products improved and were marketed via traders in the west,

- Western companies built plants in the East to serve their global market,
- many intermediates that were able to “travel” were dominated by Chinese and Indian producers.

The chemical industry adapted its processes and businesses and initially started to play and later efficiently experience the global game.

Changes in the Logistics Landscape

In the past five years, changes took place that had a slow but constant impact on the supply chain of chemicals.

- No. 1: Over many years, SHE standards and regulatory control in China were low. In 2018 the Chinese government launched the Blue Sky Initiative which led to a government-driven closure of many small to midsize plants. Some larger producers had to shut down too but were able to upgrade facilities or due to their size were tolerated by authorities as long as they show improvements in the SHE field.
- No. 2: The trade war between the US and China showed limitations in exports from China at least to the

US. Some of this supply was compensated by Western companies, but they suffered from the supply chain interruptions that took place due to the Blue Sky Initiative.

- No. 3: The significant increase in transportation costs primarily due to the lack of vessels and shipyards at the same time.
- No. 4: The rising costs in India and China due to regulatory and environmental changes as well as higher living standards (especially in China).
- No. 5: The change of many feedstocks toward renewables, driven by the visible climate changes that caused governmental initiatives and regulations to reduce the greenhouse gas emissions until 2030 by 40% in the EU.
- No. 6: The Covid reality that has impacted supply chains for two years.

All of those drivers are in place until today, might be partially mitigated—but at higher costs—but will not disappear!

The change in the logistics landscape and availability of ships has and will have a significant impact on freight rates—they will not return to prices seen five years ago. Even more, the global reliability schedule dropped from >70% in 2018 to <50% in 2020 and to 30% in 2021. This is not only caused by the pandemic crisis but more linked to the limited availability of vessels and overbooking of capacities—it lasted in supply chain interruptions. This will not be an episode as the number of new ships produced to fulfill demand dropped from 117 in 2011 to 23 in 2021 and as each year nearly 50% of ships >100 tons of capacity have been decommissioned. The shutdown of shipyards in the last two decades will restrict a fast recovery of capacities that are crucial for the chemical industry.

Today, there are 450 million tons of carbon-containing chemicals, 85% of them are fossil-fuel-based, the rest is biomass- and recycling based. It is estimated that until 2050 this number will rise to 1,000 million tons, or in other words, the renewable-based carbon production has to rise by a factor of 15. Furthermore, it is estimated that by 2026 the plant-based materials market will count for \$85 billion.



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There are numerous projects running and many technologies either find their revival or new technologies based on well-known principles are in an early stage to convert bio-based feedstock into chemicals. One example is castor oil as a substitute—with 55% it has the highest oil content per unit. The market for its application is enormous, e.g., it is estimated that the global market for bio-based plastics reaches \$28 billion at a CAGR of 26% by 2025. The problem is that it is only available from India and that the crop is very sensitive to climate changes. To use it on a broader scale for the chemical industry not only challenges like yield/unit have to be solved but also the availability in other regions. This will raise the need of easily accessible crop or side products which cannot be imported from far away but will be cultivated in the region in an efficient way to manage a changed supply chain for this kind of products to assure chemical products established in the markets.

Impact on M&A Activity

All of these supply chain implications and challenges will have an impact on companies and the market for transactions. The key changes will be:

- A change in worldwide operations—more companies will investigate alternatives to China and India.
- Distributors have to rethink their business models and need to diversify.
- Chemical companies have to revisit their supply chains regarding availability of renewables.
- Agricultural companies and farmers will have a different position in the future by becoming key suppliers and strategic partners.

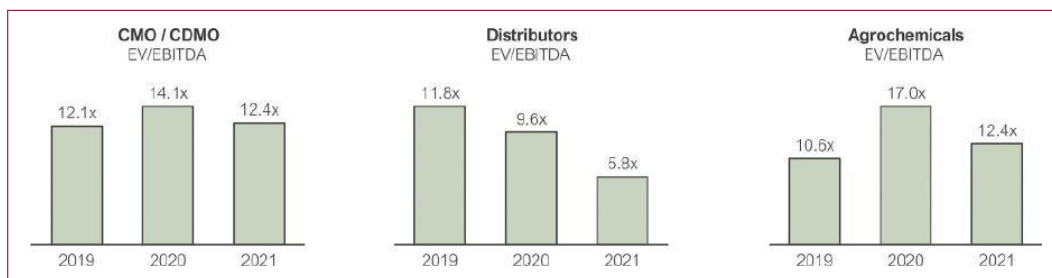


Fig.: Development of transaction multiples in relevant industries.

This will impact the whole of the chemical industry as well as the transportation and energy supply industry. In the chemical sector we will primarily experience consequences on the following players:

- Small to midsize companies, because they need to transform as fast as large companies but not having sufficient development resources or a diversified portfolio,
- CMOs/CDMOs as well as fine chemical and API producers, because

they are very much focused on intermediates and operations in Asia.

- Distributors, because parts of their suppliers will be no longer competitive to generate margins on top.
- Farmers and agricultural companies, because they are becoming game changers and will tackle more downstream opportunities.

These supply chain changes will not only trigger the growth of circular chemistry but also the need to be

more active in M&A especially for many sub sectors of the chemical industry. Furthermore, strategic partnerships of chemical companies to secure the supply with the limited volumes of renewables will be key to success and induce another transformation of the industry.

There have been a rising number of transactions in the last twelve to fourteen months in the relevant spaces. The multiples shown are only delivering a snapshot. We have ana-

lyzed these areas in more detail and the ranges are much broader than shown, especially in the area of chemical distributors where trading multiples for larger enterprises are above 10 times the enterprise value (EV)-to-EBITDA multiple. The acquisition of Caldic by Advent International, with a multiple of 15 paid, is still on the high side. Many companies are looking for opportunities through bolt-on acquisitions to move faster into the renewable space, and agricultural companies benefit from a growing demand due to a growing population and can further benefit due to the changed feedstock demand of the chemical industry.

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