

Box Article 2.1

PERFORMANCE AND OUTLOOK OF THE CHEMICALS CLUSTER IN SINGAPORE

The chemicals cluster is a major cluster within the manufacturing sector in Singapore, accounting for 15.9 per cent of the sector's nominal value-added (VA) and 3.3 per cent of Singapore's overall nominal VA in 2022.¹ This box article examines the composition of the chemicals cluster, its recent performance, as well as its short- and medium-term outlook.

Petroleum and petrochemicals are key segments in Singapore's chemicals cluster

The chemicals cluster in Singapore is made up of four segments, namely the petroleum, petrochemicals, specialty chemicals and other chemicals segments. The petroleum and petrochemicals segments, which comprise highly integrated facilities, account for the largest shares of the cluster's nominal VA, at 63.7 per cent collectively in 2022 (Exhibit 1).

Exhibit 1: Segments in the chemicals cluster

| Segment | Share of the chemicals cluster's nominal VA in 2022 | Description |
|---------------------|---|---|
| Petroleum | 33.9 per cent | This segment produces refined petroleum products from feedstock such as crude oil. Refined petroleum products include transportation fuels (e.g., jet fuel, gasoline, diesel, marine fuel), as well as feedstock for petrochemicals production (e.g., naphtha). |
| Petrochemicals | 29.8 per cent | This segment produces petrochemicals such as olefins (e.g., ethylene), aromatics (e.g., benzene), as well as primary petrochemical derivatives (e.g., polyethylene, ethylene oxide). |
| Specialty Chemicals | 22.5 per cent | This segment produces chemicals for specific uses such as additives (e.g., lubricant, fuel and food additives), industrial gases, electronic chemicals and biofuels. Products in this segment are generally closer to end-market consumers, and higher in VA content. |
| Other Chemicals | 13.9 per cent | This segment produces intermediate chemicals (e.g., fragrances) that go into a wide range of products, including consumer products such as personal care products, perfumes and cosmetics. |

¹ The latest available data on the nominal VA shares of the clusters within the manufacturing sector comes from the 2022 Census of Manufacturing Activities (CMA).

Singapore's chemicals cluster saw a period of downturn in 2022 and 2023, largely driven by the petrochemicals segment

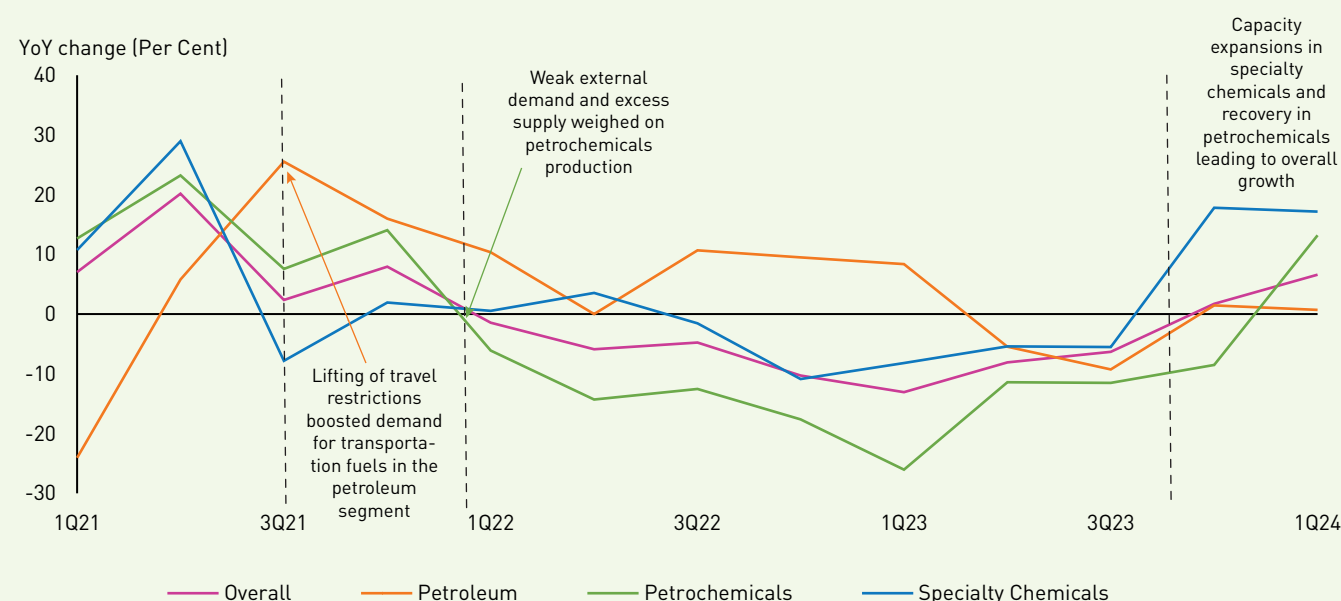
The chemicals cluster entered a downturn in 2022 and 2023, contracting by 5.6 per cent and 6.7 per cent, respectively. The main drivers of the performance of the cluster over this period were the petrochemicals and petroleum segments. Notably, even though these segments occupy adjacent positions in the chemicals value-chain, they faced divergent demand and supply dynamics during this period.

For the petrochemicals segment, production levels fell sharply in 2022 (-12.6 per cent) due to a combination of weak external demand, global petrochemical overcapacity, and poor supply conditions such as high feedstock costs (Exhibit 2). First, demand faced by Singapore's plants had weakened in 2022 on the back of a sharp moderation in industrial activities in major export markets following the strong growth clocked in 2021. For instance, China – a key export demand market – experienced a growth slowdown in 2022² (as a result of its adherence to a zero-COVID strategy and property market downturn), which limited its industrial activity and demand for petrochemicals. Second, the weak demand experienced by Singapore's plants was compounded by excess petrochemical capacity in the region, which led to an oversupply of petrochemical products in the market. This could be attributed in part to new petrochemical capacities that came on-stream in China. Finally, high feedstock prices during this period – a result of elevated crude oil prices following the Russia-Ukraine war – further eroded margins and hence dampened production in Singapore's plants. In 2023, production in the petrochemicals segment remained weak (-14.8 per cent), amidst continued unfavourable external demand and supply conditions, as well as major plant maintenance shutdowns.

By contrast, production in the petroleum segment started to pick up in mid-2021 due to a surge in demand for transportation fuels (e.g., jet fuel, gasoline, diesel) (Exhibit 2). The boost in demand for these fuels was supported by the lifting of travel restrictions in economies across the region following the easing of COVID-19 lockdowns. Consequently, production rates in refineries in Singapore's petroleum segment increased significantly and refining margins rose to historic double-digit levels by mid-2022. For the full year, the segment expanded by 7.5 per cent. In 2023, while refining margins remained supported by the continued recovery in travel demand, the petroleum segment contracted marginally (-1.5 per cent), weighed down by plant maintenance shutdowns.

In sum, the downturn in the chemicals cluster in 2022 was driven by the contraction in output in the petrochemicals segment, which outweighed growth in the petroleum segment, over the same period. The softening of petroleum production and persistent surplus conditions in the petrochemicals segment in the subsequent year led the cluster to contract further in 2023.

Exhibit 2: Performance of the chemicals cluster and selected segments, 1Q21 – 1Q24



² China's GDP grew by 3.0 per cent in 2022, moderating sharply from the 8.4 per cent growth in 2021. It is also substantially lower than the 7.7 per cent growth per annum (compound annual growth rate) from 2009 to 2019.

Singapore's chemicals cluster is expected to return to growth in 2024, partly due to capacity expansions in the specialty chemicals segment, as well as a gradual recovery in the petrochemicals segment

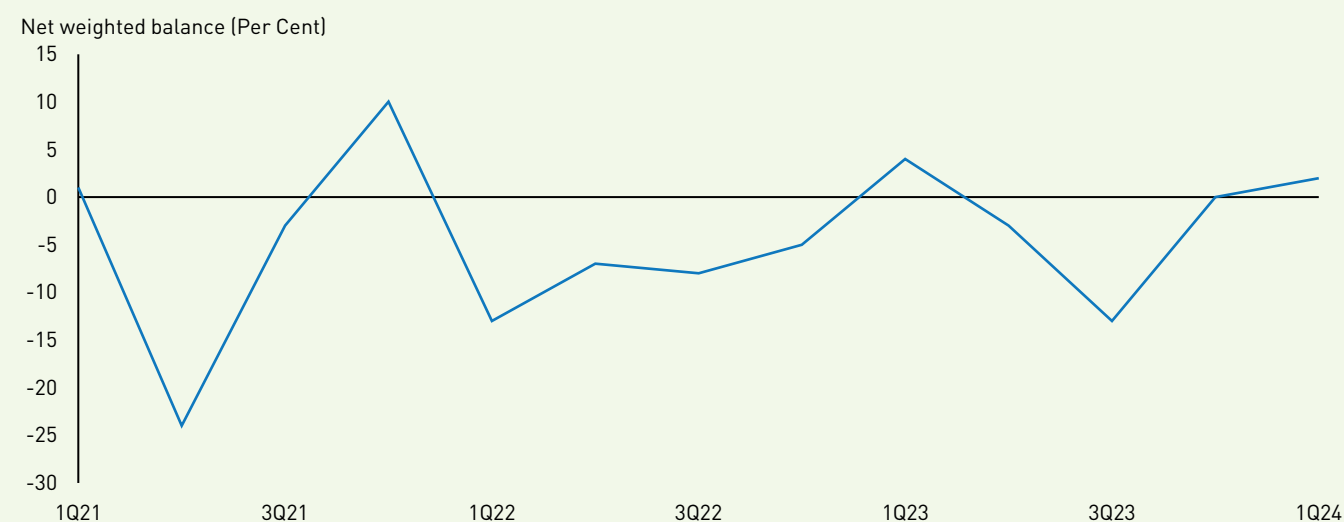
Since 4Q23, the chemicals cluster has posted two consecutive quarters of year-on-year (yoy) growth after seven consecutive quarters of decline (1Q22 – 3Q23) (Exhibit 2). This upturn in performance was largely attributable to positive outturns in the specialty chemicals segment, as well as an improvement in the output of the petrochemicals segment.

In the specialty chemicals segment, production growth was strong in 4Q23 and 1Q24, at 17.8 per cent and 17.2 per cent respectively. This reflected improved regional demand as well as the segment's shift towards catering to global demand for sustainability. For instance, there were large capacity expansions to support the production of sustainable aviation fuel in Singapore, which led to a ramp-up in output towards the end of 2023.³ The continued ramp-up in output from the new capacities that have come on-stream is expected to sustain growth in this segment for the rest of 2024.

As for the petrochemicals segment, the contraction in its output eased throughout 2Q23 to 4Q23 after reaching a trough in 1Q23. By 1Q24, output has turned expansionary (13.2 per cent yoy), although this was largely off the low base a year ago. While the segment is expected to continue to recover gradually over the course of the year, there remain headwinds to the segment's growth due to planned petrochemical capacity expansions in the region, including China. In particular, the International Energy Agency (IEA) has estimated that China's expansions will make up 51 per cent of all new olefin capacity between 2022 and 2028.

Reflecting domestic chemical manufacturers' cautiously optimistic sentiments in 2024, a net weighted balance⁴ of 2 per cent of firms in the chemicals cluster are projecting improved business conditions for the period of April to September 2024 relative to 1Q24, a slight improvement from the net weighted balance of 0 per cent recorded in the preceding quarter (Exhibit 3).

Exhibit 3: General business outlook in the next six months relative to the current quarter for the chemicals cluster, 1Q21-1Q24



Source: Economic Development Board

³ Neste, a chemicals company, reported the opening of expanded capacity for sustainable aviation fuel in Singapore in 2Q23.

⁴ Establishments were asked to indicate their expectations of general business conditions in terms of directional change (i.e., "up", "same" or "down"). Establishments' responses were then weighted by total output and aggregated to derive the weighted percentage for "up", "same" or "down" at the sub-cluster and cluster level. Net weighted balance was calculated by taking the difference between the weighted percentage of "up" responses and the weighted percentage of "down" responses. A positive number indicates a net positive balance or net upward movement, while a negative number denotes a net negative balance or net downward trend.

Singapore's chemicals cluster is poised for growth over the medium term

Over the medium term, while decarbonisation pressures will pose some headwinds, Singapore's chemicals cluster is expected to continue to grow, supported by petrochemicals demand from key export markets, as well as capacity expansions to cater to the rising demand for sustainable chemical products.

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