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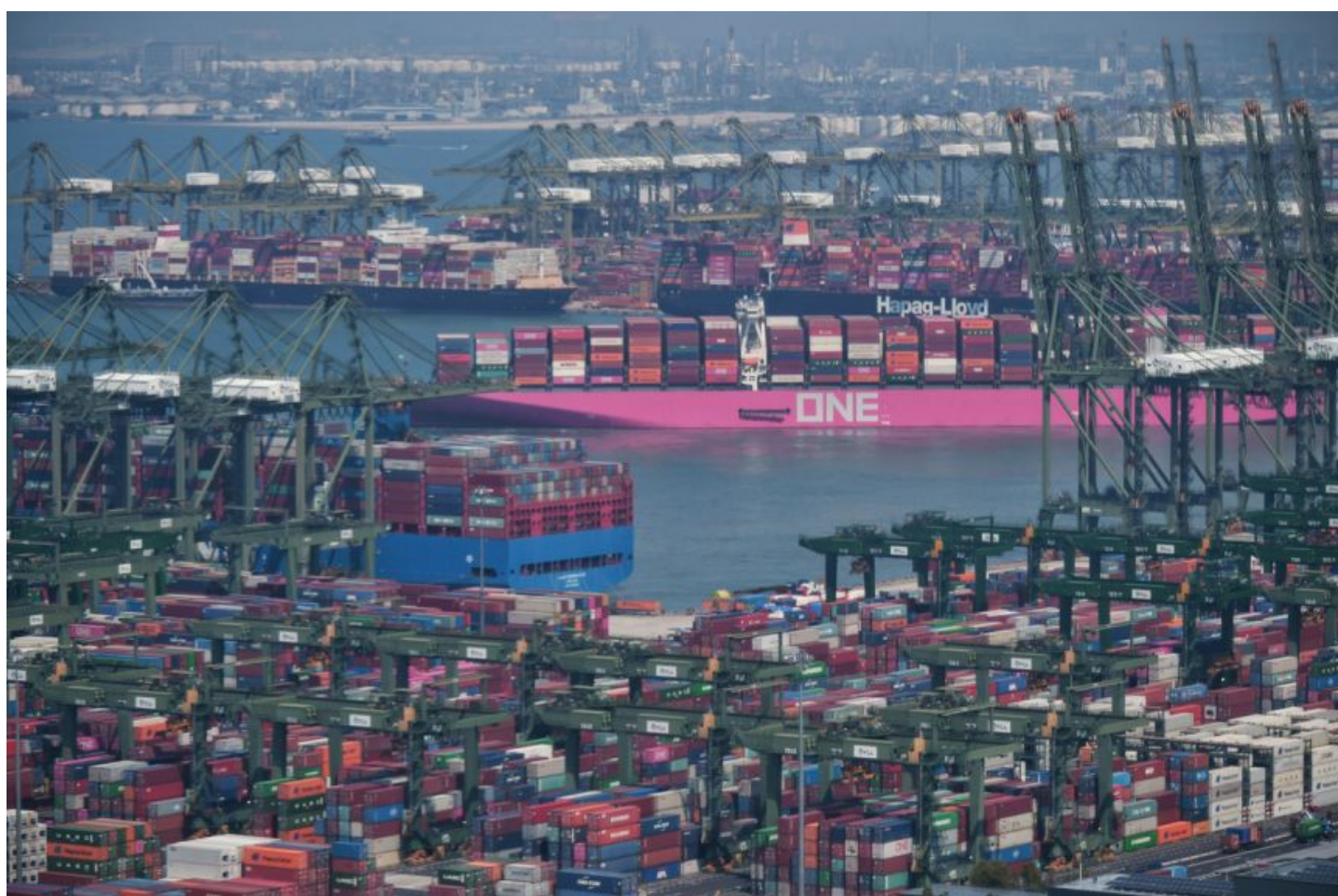


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Ship pollutant emissions in S'pore increased by 123% during Covid-19 pandemic: NTU study



Container ships and dry bulk carriers had the sharpest increase of all total emissions. PHOTO: ST FILE



Clara Chong

SINGAPORE - Pollutant emissions from the shipping sector have more than doubled during the pandemic in Singapore, with a similar increase seen in other major international seaports.

In Singapore, shipping emissions have increased by 123 per cent during the Covid-19 pandemic, according to analysis from modelling. Emissions doubled in Los Angeles, increased by almost two-thirds (65 per cent) in Long Beach, California, and rose by over a quarter (27 per cent) in Hamburg, Germany.

On average, emissions in all four ports have increased by 79 per cent.

These findings were announced by researchers from Nanyang Technological University (NTU) on Tuesday (Nov 16). The emissions were calculated using mathematical and analytical models invented by the NTU researchers.

The researchers compared the ship pollutant emissions from July 2020 to July 2021 during the Covid-19 pandemic with the whole of 2019 (Jan 1 to Dec 31, 2019).

These findings contradict the idea that the freeze in industrial processes and human activity arising from the pandemic resulted in generally lower air pollution.

One reason could be the prolonged turnaround times due to pandemic-related delays in operations, resulting in extended "hotelling" time at the berth and anchorage areas, Professor Adrian Law from NTU's School of Civil and Environmental Engineering, who led the study, said.

Hotelling of ships refers to the phase when ships are berthed at the terminals and anchorage areas but continue to emit exhaust gases while they await cargo loading or discharge or their next voyage.

"Lockdown measures and other Covid-19 restrictions have significantly affected the operating patterns of maritime trade, leading to the computed... significant increase in pollutant emissions in the seaports in our study," Prof Law said.

Container ships and dry bulk carriers had the sharpest increase of all total emissions, with an average increase of 94 per cent for container ships and 142 per cent for dry bulk carriers.

Dry bulk carriers are merchant ships designed to transport unpackaged bulk cargo, such as grains, coal, ore and cement.

Ms Liu Jiahui, a PhD student from NTU's School of Civil and Environmental Engineering, who was first author of the study, said: "Though dry bulk carriers typically spend less time at ports, they experienced the biggest increase in pollutant emissions due to heightened precautions at ports and the increased demand for raw materials in the second half of 2020 as industrial activity resumed."

This research could be applied to other sectors, such as aviation, but changes will need to be done so that the model is tailored to the specific industry.

Emissions in the year ahead

If port congestion due to Covid-19 is resolved, there would be a high likelihood of over 50 per cent that emissions from August 2021 to August 2022 would decrease by 34 per cent in all four seaports, said Prof Law.

If port congestion continues next year, Singapore would likely see a further emission increase of about 6 per cent. This translates to a cumulative increase of 137 per cent compared with 2019 levels. The ports of Hamburg, Long Beach and Los Angeles would also likely experience emissions increase from 2020 numbers, albeit marginally.

Prof Law said he hopes the adoption of cleaner energy options such as electric power will be accelerated, as it will help to substantially reduce ship emissions.

The earlier adoption of green energy, and updated technology at shore to cut down on the time a ship takes to come and go, will improve the situation in the long run, Prof Law said.

Congestion at ports due to Covid-19 could also help to accelerate automation of port clearance processes to reduce turnaround time, Ms Liu added.

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