

# ‘Ironic’: climate-driven sea level rise will overwhelm major oil ports, study shows

Ports including in Saudi Arabia and the US projected to be seriously damaged by a metre of sea level rise

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Saudi Aramco's Ras Tanura oil refinery and oil terminal. Photograph: Ahmed Jadallah/Reuters

Rising sea levels driven by the climate crisis will overwhelm many of the world's biggest oil ports, analysis indicates.

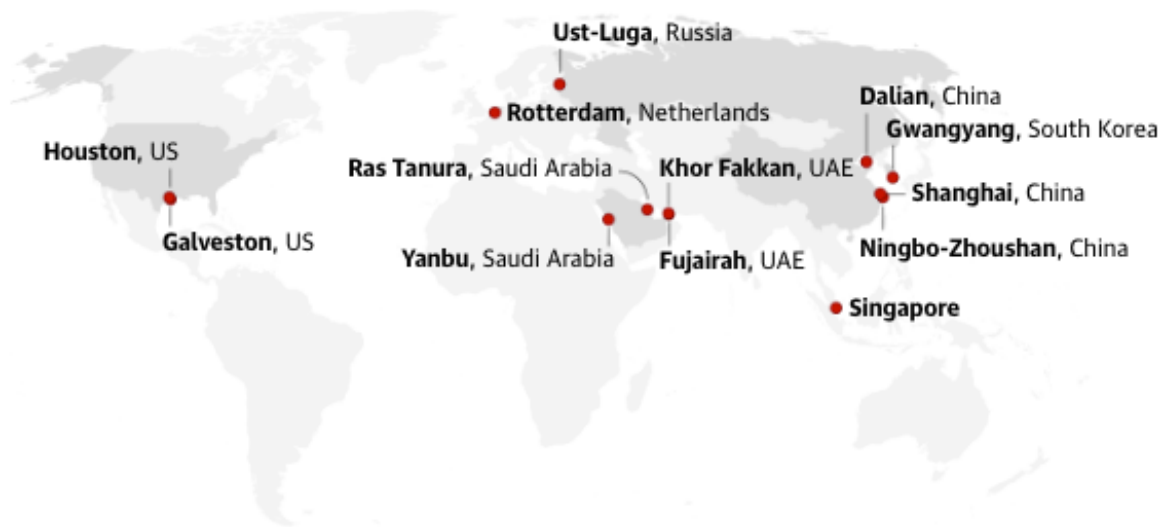
Scientists said the threat was ironic as fossil fuel burning causes global heating. They said reducing emissions by moving to renewable energy would halt global heating and deliver more reliable energy.

Thirteen of the ports with the highest supertanker traffic will be seriously damaged by just 1 metre of sea level rise, the analysis found. The researchers said two low-lying ports in Saudi Arabia – Ras Tanura and Yanbu – were

particularly vulnerable. Both are operated by Aramco, the Saudi state oil firm, and 98% of the country's oil exports leave via these ports.

The oil ports of Houston and Galveston in the US, the world's biggest oil producer, are also on the list, as are ports in the United Arab Emirates, China, Singapore and the Netherlands.

### Thirteen high-traffic supertanker ports at severe risk from a 1-metre sea level rise



Guardian graphic. Source: Zero carbon analytics

The latest science published by the International Cryosphere Climate Initiative (ICCI) shows 1 metre of sea level rise is now inevitable within a century or so and could come as early as 2070 if ice sheets collapse and emissions are not curbed. An even more catastrophic rise of 3 metres is probably inevitable in the next millennium or two and could arrive as soon as the early 2100s.

Sea level rise is already causing problems around the world even before it overtops coastline developments. The rise to date means storm surges are higher and significantly more likely to cause coastal flooding, while infiltration of saltwater into coastal land can corrode foundations, the researchers note. Cutting emissions sharply would not only slow the rate of sea level rise but also limit the ultimate rise.

## Port of Ras Tanura, Saudi Arabia

Modelled water level above high tide line with 1-metre sea level rise



Pam Pearson, the ICCI director, said: “It’s ironic these oil tanker ports are below 1 metre of sea level rise and need to have their eyes on these potentially higher rates of sea level rise, which themselves come from continued fossil fuel use.”

Sea level rise is the most profound long-term impact of the climate crisis, redrawing the map of the world and affecting many major cities from New York to Shanghai. But Pearson said government and corporate short-term interests meant it was being overlooked. “Basic information [from scientific assessments

of sea level rise] don't seem to have gotten into the consciousness of governments," she said.

James Kirkham, the chief science adviser at ICCI, said: "Refusing to turn off the oil taps means keeping the taps on for sea level rise. Accelerated ice melt and ocean expansion has already caused the rate of sea level rise to double in the last 30 years. Unless leaders double down on transitioning away from fossil fuels, the terrible impacts of sea level rise will only increase further – affecting every country with a coastline, including those who continue to obstruct increased decarbonisation efforts."

Aramco declined to comment.

Saudi Arabia has been accused of obstructionism at a series of recent global summits, including "wrecking ball" tactics at the Cop29 climate assembly, and of blocking progress at negotiations on a plastics treaty and on tackling drought and desertification. The latter talks were held in Riyadh and ended without agreement, with the Saudis refusing to include any reference to climate in the agreement.

The new analysis built on work from May in which researchers found that 12 of the 15 oil ports with the biggest oil tanker traffic were vulnerable to sea level rise. Maps of sea level rise from Climate Central and GoogleMaps were used to show that a 1-metre rise would damage jetties, oil storage facilities, refineries and other infrastructure.

The new analysis added the second Saudi port, Yanbu, which is also at high risk with a 1-metre rise. The team used Bloomberg oil export data to estimate the volume and value of the oil being imported and exported from the ports. Together, Ras Tanura and Yanbu exported \$214bn (£171bn) worth of oil in 2023. In total, the 13 ports accounted for about 20% of global oil exports in 2023.

Murray Worthy, of Zero Carbon Analytics, who is part of the team, said: "This analysis shows that relying on fossil fuels in a warming world is a path to disaster, not energy security. Countries face a choice: stick with fossil fuels and risk supply disruptions as rising seas flood ports and terminals, or transition to secure, sustainable domestic renewables."

Efforts could be made to build flood defences, which would be very costly, but Worthy said: "Ultimately it's a losing battle. You've got to keep building those sea walls higher over time."