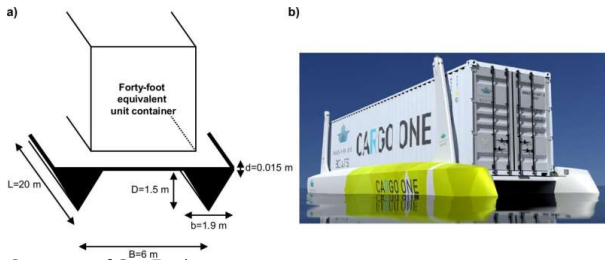


# Eco-Friendly Hydrogen Powered Boats Is The Newest In The Autonomous Realm

Posted by [Okachinepa](#) 03/21/2025



Courtesy of SynEvol  
Credit: Communications Engineering (2025)

Freight transportation contributes significantly to a large carbon footprint. From 2010 to 2018, the transportation industry produced roughly 14% of worldwide greenhouse gas emissions. To tackle this issue, specialists are seeking alternative, eco-friendly options—not just for road transport, but also for shipping, a field where powering cargo vessels with batteries has been particularly challenging.

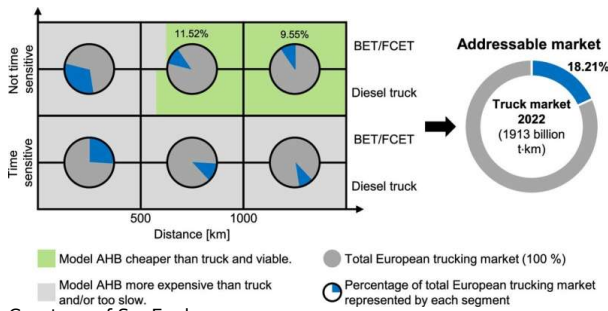
A promising yet insufficiently explored solution includes small, self-sufficient, hydrogen-fueled vessels that could somewhat substitute for long-distance trucking. A study published in Communications Engineering has now investigated this missing link by a research team headed by business chemist Prof Stephan von Delft from the University of Münster.

For the first time, the team has created a mathematical model of this type of boat and conducted a life cycle and cost analysis. "Our analysis indicates the situations where hydrogen-powered boats are not only more environmentally friendly but also more cost-effective than traditional transport options," explains von Delft. "As a result, they hold significance for policymakers and the industry."

Utilizing their mathematical model, the researchers determined the emissions and total expenses for each kilometer traveled. They distinguished between inexpensive "gray" hydrogen, created from fossil fuels through steam reforming, and the low-emission yet pricier "green" hydrogen, generated from renewable energy sources through water electrolysis. They contrasted these findings with the overall expenses of diesel-, hydrogen-, and battery-operated trucks.

The findings indicate that vessels fueled by green hydrogen have lower operating costs than diesel trucks for distances greater than 576 km and more affordable than battery- or hydrogen-fueled trucks for routes exceeding 624 km. Thus, this type of vessel may represent the most economical option for moving cargo over distances exceeding 624 km.

Projected across the whole road transport sector, self-driving, hydrogen-fueled vessels could seize 18% of the market (around. 350 billion ton kilometers) in a more cost-efficient manner than trucking.



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The examined vessels can carry precisely one standard container. This indicates that they are unable to substitute container vessels on the open ocean. Nonetheless, doctoral student Simon Schlehuber notes that they offer an intriguing option for inland transportation, particularly in comparison to trucks, which also carry precisely one container.

Moreover, the vessels could enlarge the navigable river system because of their shallow draft and uphold shipping activities, particularly during periods of low water. "According to Schlehuber, the latter represents a significant benefit in the context of climate change."