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## ŝH<sub>2</sub>Yṗ́S

Sustainable HYdrogen powered Shipping

## H2 logistic definition

## Discover more by reading the 6<sup>th</sup> issue of the sHYpS newsletter!

The maritime industry stands at a pivotal moment in its transition toward sustainable energy solutions. Over the past year, the **sHYpS project** has made notable progress in overcoming the logistical and operational challenges associated with delivering **liquid hydrogen** ( $LH_2$ ) to Viking vessels operating in Norway.

Under the leadership of **Plug Power** within **Work Package 4**, the consortium has conducted a comprehensive assessment of the LH<sub>2</sub> production landscape in the Nordic region. This included a review of ongoing project developments and an evaluation of the key challenges in establishing new LH<sub>2</sub> facilities. While hydrogen projects across Europe continue to face regulatory and financial headwinds, the Nordic region shows encouraging momentum, supported by emerging infrastructure and forward-looking port strategies.

The study also examined regulatory frameworks established by the **IMO** and national safety bodies. Although these provide an initial foundation, further harmonization is necessary to account for the specific properties and risks of liquid hydrogen.

The supply chain analysis expanded to include the role of key EU ports such as **Antwerp** (**Belgium**) and **Esbjerg (Denmark**), underlining their potential in supporting cross-border LH<sub>2</sub> logistics. Key recommendations were made to align regulatory frameworks across jurisdictions to facilitate streamlined hydrogen transport and operations.

A major milestone was reached through a detailed **feasibility study at the Port of Bergen**, which assessed the practicalities of **shore-to-ship container swap operations**. The study confirmed the technical viability of using shore-based mobile cranes for LH<sub>2</sub> container handling. Step-by-step procedures were developed for truck arrival, crane positioning, vessel mooring, and safe container operations. Safety was a central focus, with detailed ATEX zone classification and risk mitigation measures applied.



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To scale these operations toward commercial deployment, further progress is required in **HAZOP analysis, pilot testing, regulatory certification**, and the deployment of **integrated safety management systems**. Addressing these areas will be key to building a safe, efficient, and scalable LH<sub>2</sub> supply chain to support the maritime sector's decarbonization goals.

The groundwork laid in **WP4** paves the way for the next phase in **WP7**, which will focus on transitioning from the current loading/offloading approach to **full-scale bunkering operations** - a critical leap toward enabling hydrogen-powered shipping at a commercial level.

## PARTNERS



























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