

AMMONIA FUEL FOR SOUTH BALTIC PORT AUTHORITIES (2026)

FACTSHEET

QUICK REVIEW

- Ammonia is considered one of the leading zero-carbon fuel candidates for long-distance maritime transport.
- Green ammonia produced from renewable hydrogen offers strong long-term compliance potential under EU climate policy, but major safety, infrastructure and fuel availability challenges remain.
- Ports considering ammonia infrastructure must prioritize toxic risk management and emergency response capability alongside fuel handling infrastructure and integrated long-term renewable energy and hydrogen strategies.

TOPIC	AMMONIA STATUS
Technology maturity	Low–Medium
Infrastructure readiness in Europe	Early-stage
Compatibility with existing fuel systems	Limited
FuelEU Maritime compliance potential	Very high for green ammonia
Main environmental challenge	Toxicity and safety risks
Main investment advantage	Carbon-free fuel at point of use
Long-term decarbonisation potential	Very high

CORE INFRASTRUCTURE

- Refrigerated or pressurised ammonia storage tanks
- Dedicated bunkering systems
- Leak detection systems
- Toxic gas monitoring systems
- Emergency shutdown systems
- Spill containment systems
- Ventilation systems
- Fire protection systems
- Safety exclusion zones
- Specialized emergency response capability
- Personnel training for hazardous chemical handling

INFRASTRUCTURE DEVELOPMENT CHALLENGES

Ammonia infrastructure deployment may require:

- Dedicated hazardous chemical handling systems
- Advanced emergency response planning
- New bunkering infrastructure
- Strong regulatory oversight
- Coordination with industrial ammonia supply chains

INTERNATIONAL SAFETY STANDARDS

AREA	MAIN STANDARD
Low-flashpoint fuel ship safety	IMO IGF framework development
Dangerous chemical handling	IGC Code
Crew training	STCW Convention
Ship safety framework	SOLAS Convention
Hazardous chemicals transport	International chemical safety regulations

AMMONIA STORAGE PATHWAYS

STORAGE TYPE	CHARACTERISTICS
Refrigerated ammonia	Stored at approximately -33°C
Pressurised ammonia	Stored under pressure at ambient temperature

PRODUCTION PATHWAYS AND COST BENCHMARKS

FUEL	PRODUCTION	RELATIVE COST POSITION (2025-2026)	LIFECYCLE GHG REDUCTION POTENTIAL
Gray ammonia	The most widely produced conventional ammonia. It is manufactured from natural gas (methane) through the steam methane reforming (SMR) process, without carbon capture.	Lowest cost	Low
Blue ammonia	Produced from fossil fuels, primarily natural gas, but incorporates carbon capture, utilization, and storage (CCUS) technologies to significantly reduce CO ₂ emissions compared to gray ammonia.	Moderate	Moderate
Green ammonia	Produced using renewable energy sources such as wind, solar, or hydropower. Hydrogen is generated through water electrolysis and then combined with nitrogen to create ammonia, resulting in near-zero-carbon fuel.	High-cost renewable fuel	Very high / near-zero potential
Turquoise ammonia	Produced using hydrogen derived from methane pyrolysis, a process that generates solid carbon as a by-product. It is often considered a transitional option between blue and green ammonia.	Moderate to High	High (depending on methane source and process energy)

EXISTING AMMONIA INFRASTRUCTURE IN THE SOUTH BALTIC REGION

COUNTRY	MAJOR AMMONIA INFRASTRUCTURE	FUTURE AMMONIA DEVELOPMENTS
Lithuania	Existing ammonia handling expertise through fertilizer industry and bulk cargo operations in Klaipėda	Potential future ammonia import and export opportunities linked to hydrogen economy development
Poland	Existing ammonia production and chemical industry infrastructure	Interest in low-carbon ammonia production and maritime fuel applications
Germany	Planned ammonia import terminals supporting future hydrogen supply chains	Major ammonia import infrastructure and bunkering feasibility studies
Sweden	Industrial ammonia usage and chemical logistics infrastructure	Green ammonia production projects linked to renewable hydrogen
Finland	Existing industrial ammonia consumption	Emerging green ammonia projects and maritime decarbonisation initiatives
Denmark	Strong renewable energy sector and Power-to-X developments	Large-scale green ammonia production projects targeting shipping and export markets

Northern Europe is becoming a major centre for green ammonia project development.

Maritime ammonia bunkering infrastructure remains largely at pilot and planning stage.

Ammonia is increasingly considered for long-distance and deep-sea shipping applications.

Key Consideration

The climate performance of ammonia depends strongly on:

- Hydrogen production pathway
- Carbon capture efficiency
- Renewable electricity source
- Supply chain emissions



Contact the DeCoInter project to discuss your port's transition towards alternative fuels and sustainable energy solutions.

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