E-Fuels 101

In its second tender, **ZEMBA** will focus **exclusively** on aggregating demand for **e-fuel-powered shipping.**

But what does **"focusing on e-fuels"** mean to ZEMBA? Why is ZEMBA laser focused on catalyzing commercial e-fuel deployment in the maritime sector?

Why e-fuels?

E-fuels are widely considered to be highly **scalable** and **sustainable** solutions that are essential to achieving full industry decarbonization. While more costly than fossil fuels and most biofuels today, e-fuels will benefit from significant **economies of scale** and support **long term economic viability** of the maritime clean energy transition. But first, a market must be developed.

ZEMBA's e-fuels definition

ZEMBA's Fuel Eligibility requirements specifies that eligible fuels must be **e-fuels**. By e-fuels, we mean those fuels produced using:

- **Hydrogen** through electrolysis powered by renewable energy
- **Additional renewable energy** as primary feedstock with specific proof of **deliverability**, **incrementality,** and **time matching**
- If necessary, carbon sourced from **waste**

Fuel certification

E-fuels must carry a relevant **sustainability certificate** from an independent certification body accredited to one of the following sustainability standard holders. Acceptable bodies include:

- Roundtable of Sustainable Biomaterials **(RSB)**
- International Sustainability and Carbon Certification **(ISCC)**
- Another standard holder recognized by the European Commission

Relevant standards include **RSB Global** and **ISCC Plus.**

Scalability

Scalability will be inherently fulfilled by ZEMBA's e-fuel requirement. ZEMBA believes **e-fuels** will play a **key role** in the **long-term** decarbonization of the maritime sector.

Primary scalability concerns that will be probed in all e-fuel bids are the:

- Provision of adequate renewable energy
- If necessary, the source of carbon used as a feedstock

ZEMBA's Eligible Fuels Requirements provide **safeguards** to ensure scalable production of renewable energy for e-fuel production, and all bidders will be **required to demonstrate long-term scalability** of their carbon source feedstock, if applicable.

Maintaining high ambition emissions reduction threshold

In addition to mandating the use of e-fuels for **primary propulsion**, ZEMBA requires that e-fuels be capable of achieving **Well-to-Wake** (WtW) greenhouse gas (including CO2, CH4 and N2O) **emissions reductions** equal to or greater than **90%** when compared to the reference fuel - low sulfur fuel oil.

This **90%** emissions reduction threshold applies to the primary propulsion engine of the vessel. Additional guidelines for auxiliary engines and pilot fuel are available in ZEMBA's Eligible Fuel Requirements.