

# Urgent need to reduced the fuel consumption

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# Welcome on behalf of WASP

**WASP:** Wind Assisted Ship Propulsion.

Interreg North Sea Europe programme.

Project sum: Around 5.4 million euros.

Retrofit WASP on 5 larger ships.

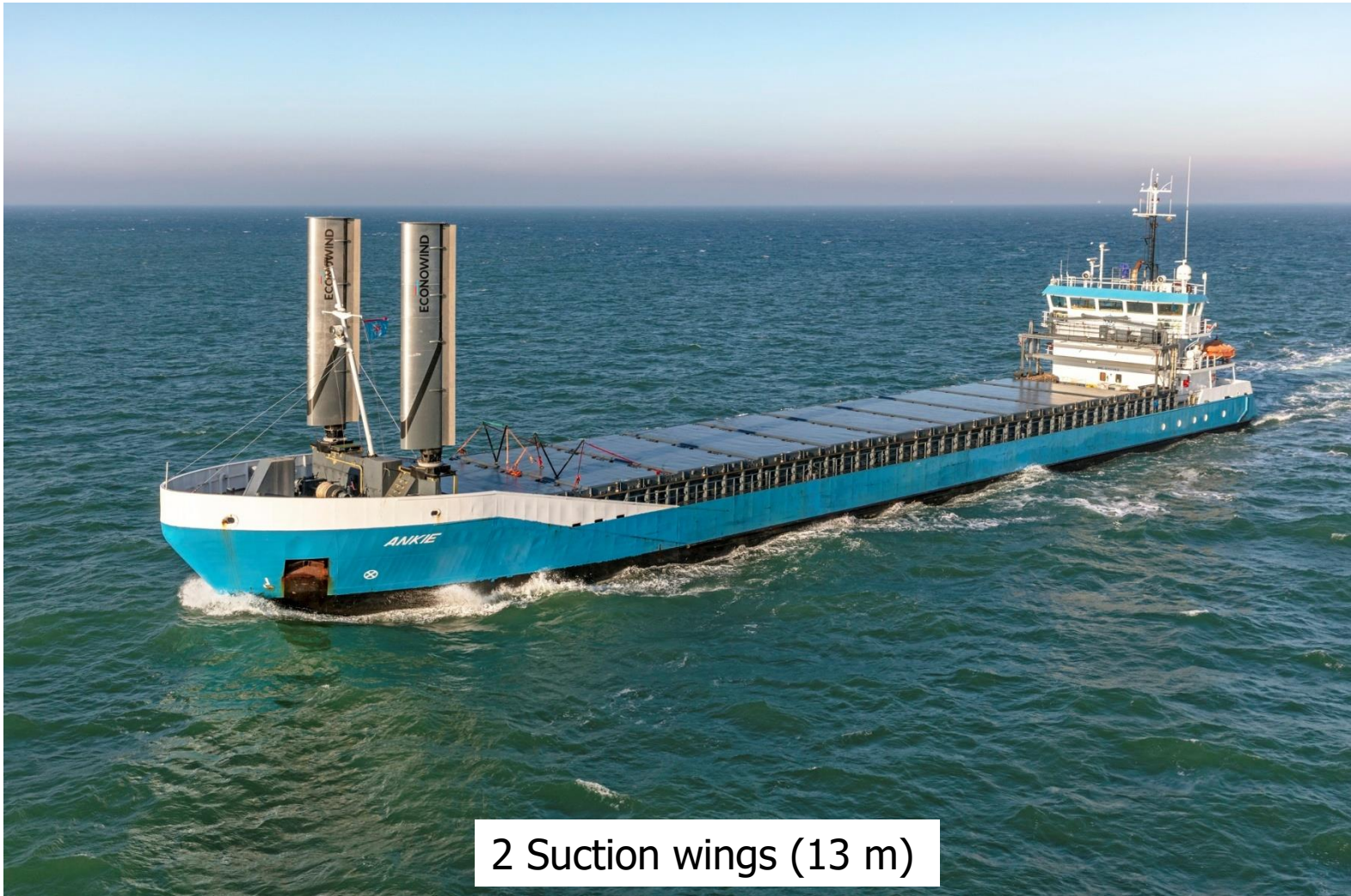
## **Key purpose**

Test wind propulsion technologies & validate fuel savings.

## **Project partners**

Universities, ship-owners, technology providers and NGOs.

# Project pictures



2 Suction wings (13 m)

# Why reduce fuel consumption

- When green ammonia (might) be just around the corner ...

## The small back-of-the-envelope calculation I:

- An average Maersk ship uses 15,500 tonne fuel oil per year.
- Denmark is world champion in wind energy – wind covers more than 55% of our annual electricity production.
- If we transformed all Danish wind energy to ammonia with 70% efficiency, we would get around 40 PJ of fuel energy.
- How many Maersk ships can we feed with this energy ? **60**
- Maersk has around 740 ships (own 340 / charter 400) ...
- What about electric cars, aviation, heat pumps and baseline ?

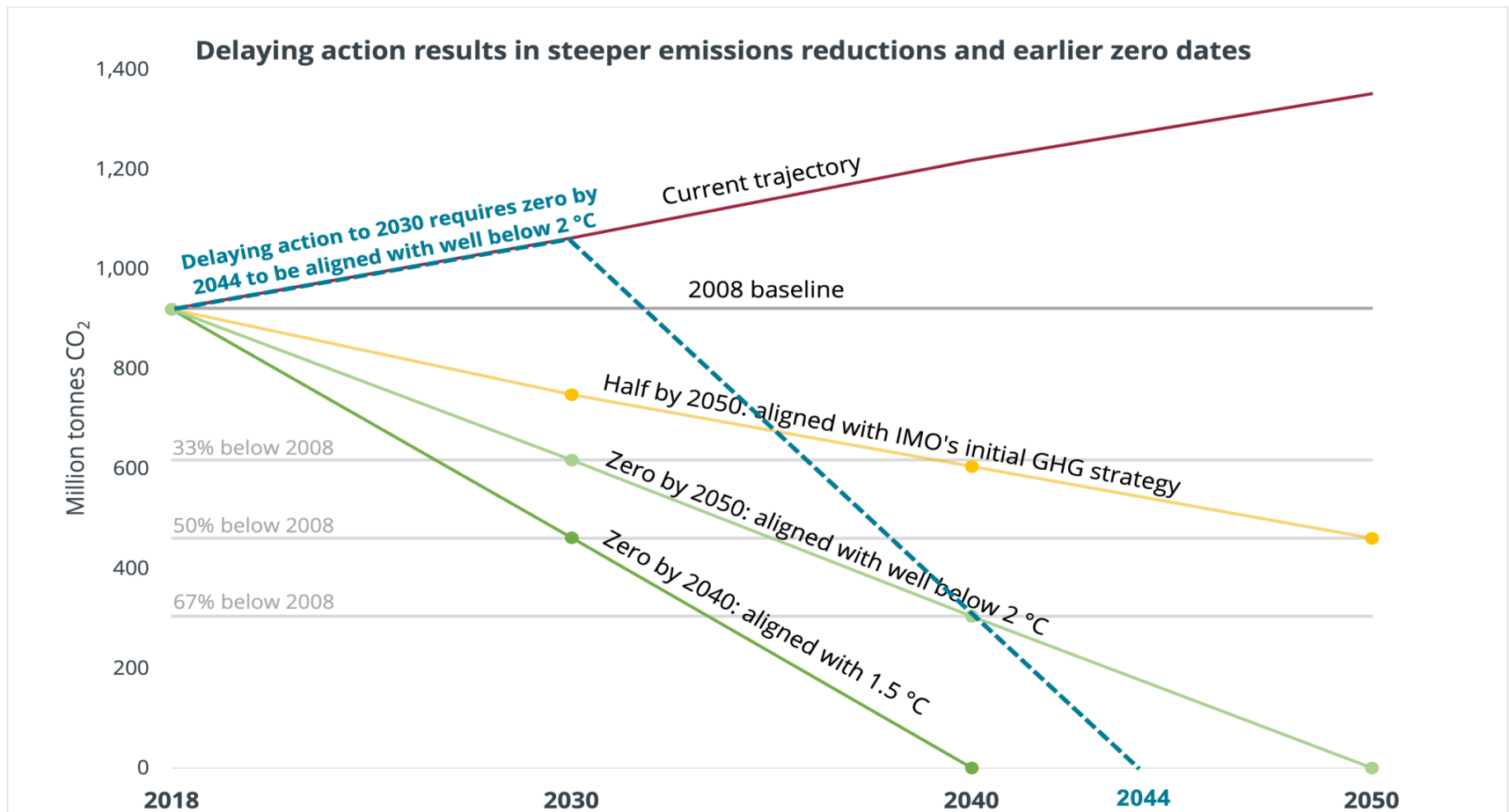
# Favorable investment for society

## The small back-of-the-envelope calculation II:

- Every time a ship uses one tonne of distillate (0.1% sulphur) in seas around Denmark, it emits 2kg SO<sub>2</sub>, 70kg NO<sub>x</sub> and 1kg PM<sub>2.5</sub> (and 3 tonne CO<sub>2</sub>, PAHs, heavy metals, etc.)
- According to Aarhus University, this pollution causes adverse health effects around USD 3,200 – just one ton of distillate !
- On top of this comes the distillate price USD 1,350 per tonne.
- And damage to climate, crops, constructions, etc.
- If we had the polluter pays principle WASP would probably be a very good investment and development would accelerate.

# We are obligated to do something ...

## The small back-of-the-envelope calculation III:



# Many questions to be answered

- What are the fuel savings by retrofitting with WASP ?
- What are the fuel savings by designing new ships for WASP ?
- What are the impacts of ship type, speed, weather, route, etc. ?
- What is the price per tonne fuel saved / per tonne CO<sub>2</sub> saved ?
- What about WASP for container ships ?
- What are the market barriers ... and non-market barriers ?
- What are the CO<sub>2</sub> emissions from WASP production/reuse ?
- What about insurances and guarantees ?
- What are the alternatives ?
- How do ship-owners decide if WASP is favourable ?

# Funders

EU Interreg project **WASP**: Wind Assisted Ship Propulsion: <https://northsearegion.eu/wasp/>

