Environmental Benefits of a Hull and Propeller Performance Standard

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Workshop Objective

- Lay the foundation for subsequent work on a reliable and transparent standard for measuring hull and propeller performance.

Expected outcomes:

- Working definition of hull and propeller performance
- List of relevant hull and propeller performance measures
- Overview of strengths and weaknesses of current measurement approaches
- Visibility on a way forward

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Clean Shipping Coalition

- Only global international environmental organisation that focuses exclusively on shipping issues. Observer to IMO.

- Promotes policies aimed at the protection and restoration of the marine and atmospheric environment that are consistent with the safe operation of ships, sustainable development, social and economic justice, and human health.

Members:

Air Pollution and Climate Secretariat (AirClim), Sweden
Bellona Foundation, Norway
Clean Air Task Force, USA
Environmental Defense Fund (EDF), USA
Transport and Environment (T&E), UK
Oceana, USA
Seas at Risk, Belgium
Stichtung Noordzee (North Sea Foundation), Netherlands

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Bellona Shipshape Programme:

Vision

- *Norwegian and International Maritime operations must be Carbon Neutral or Carbon Negative by 2050*

- *Other emissions to air and sea must be eliminated or within natural tolerance*

Identify win-win solutions

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Bellona Foundation Maritime Partners

NoxCare™

yarwil

Eidesvik
Your Partner in Shipping

Wilh. Wilhelmsen

Color Line

JOTUN

Hull and Propeller Performance Workshop, Oslo 2013

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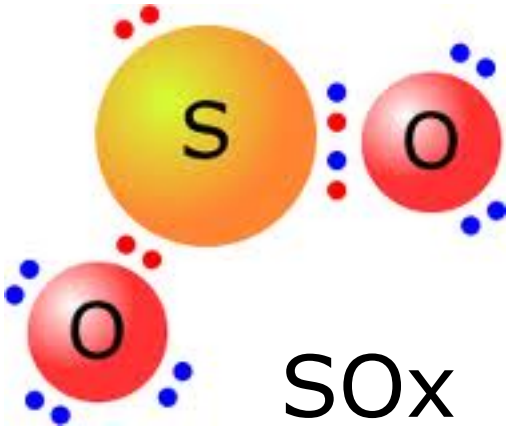
Greenhouse gas emissions

Black Carbon

Why Clean Shipping Coalition raised this issue?

NOx



SOx

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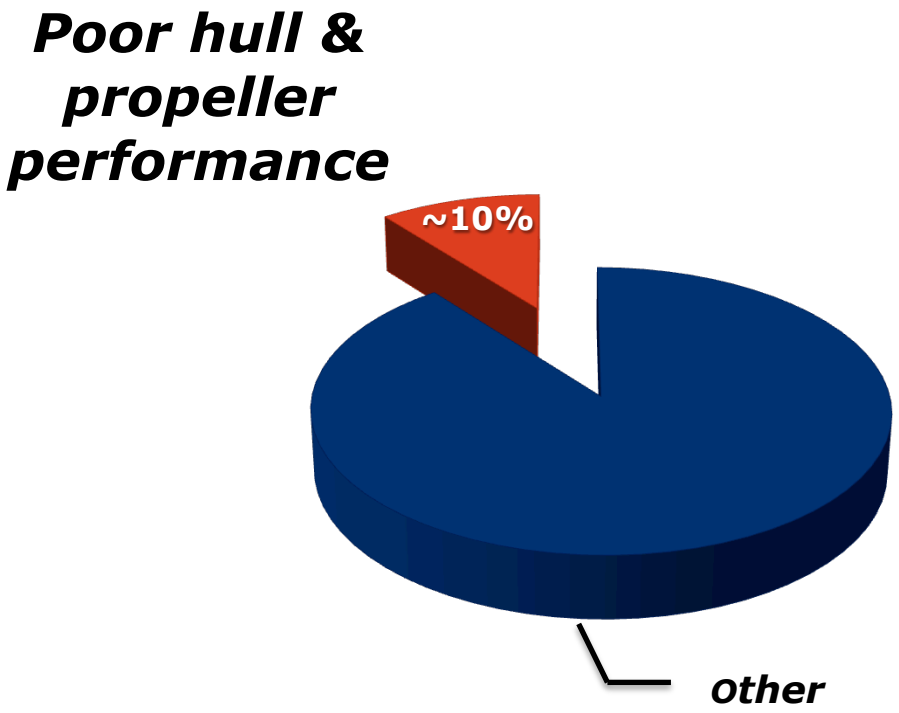
Hull and propeller performance – key to improving ship efficiency.

World-fleet energy cost & GHG emissions



- **Poor** hull & propeller performance accounts for around **1/10** of world-fleet energy cost and GHG emissions.

Implications:

- ~$30 billion increase in energy cost
- ~0.3% increase in man-made carbon emissions

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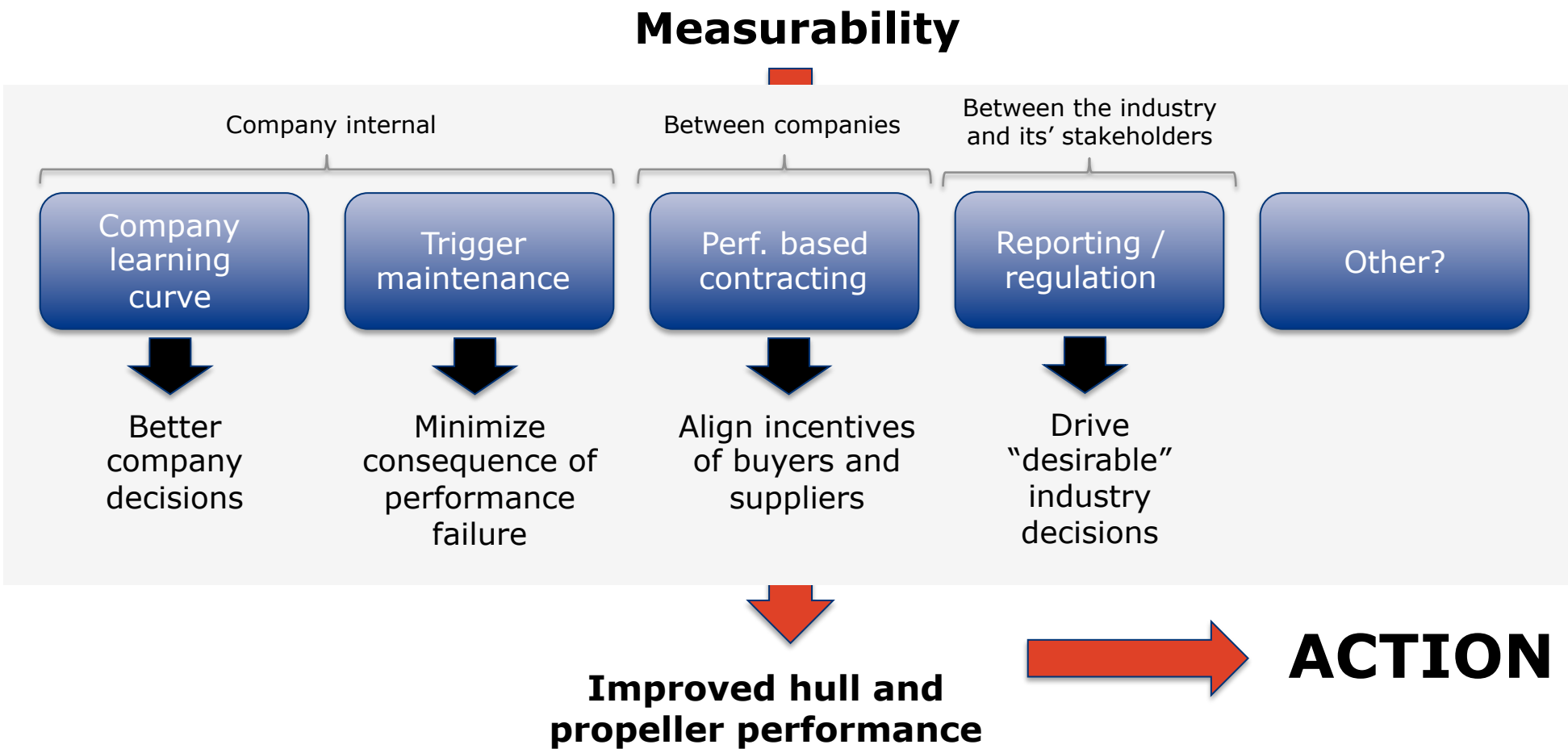
Needs dictates what and how we measure



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Why Standards?

One size fits all?

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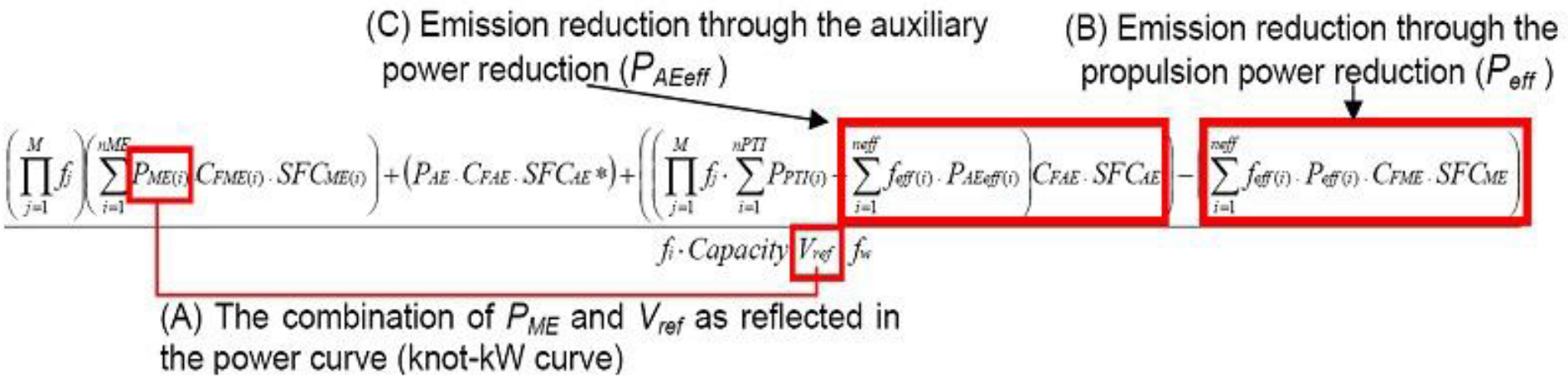
EEDI – it's complicated…

$$EEDI = \frac{CO_2\ emission}{transport\ work}$$



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Fouled hull and propellers - consequences

Loss of Power

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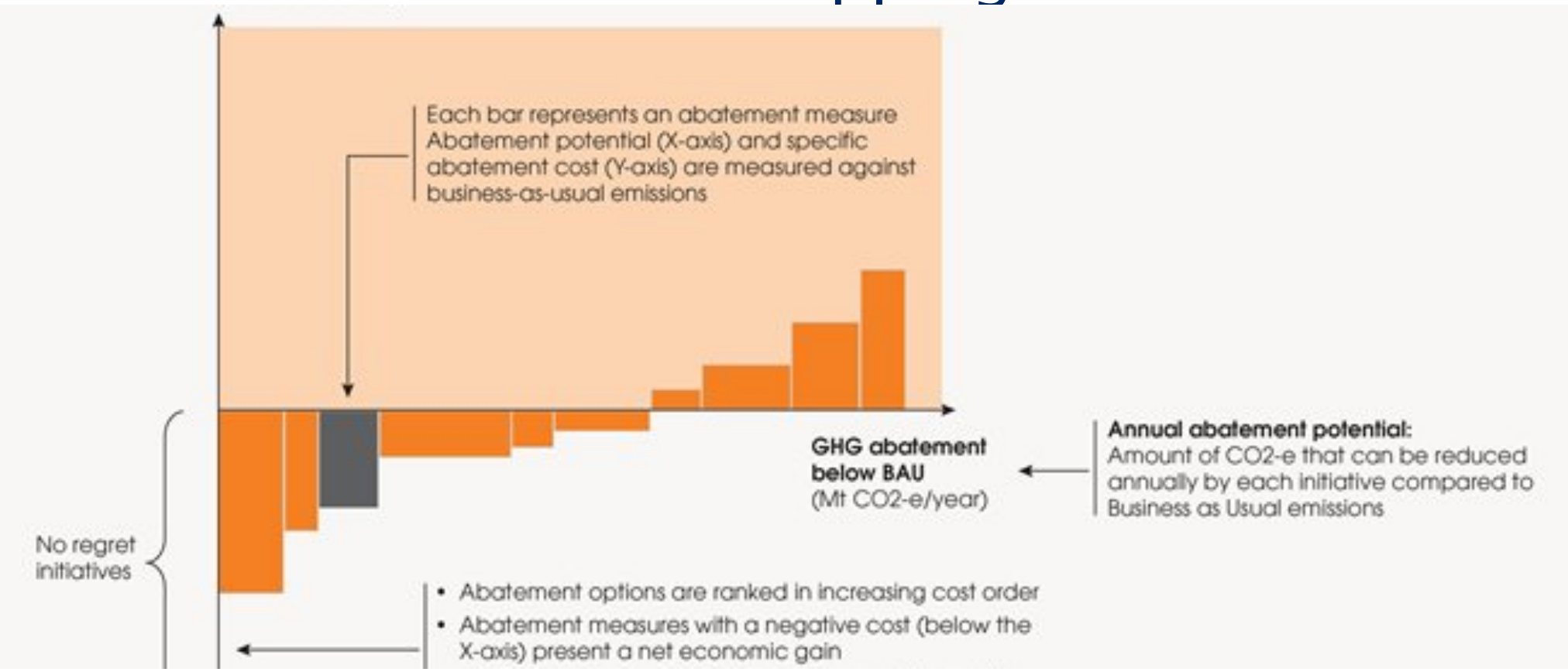
Abatement curve – shipping and emissions



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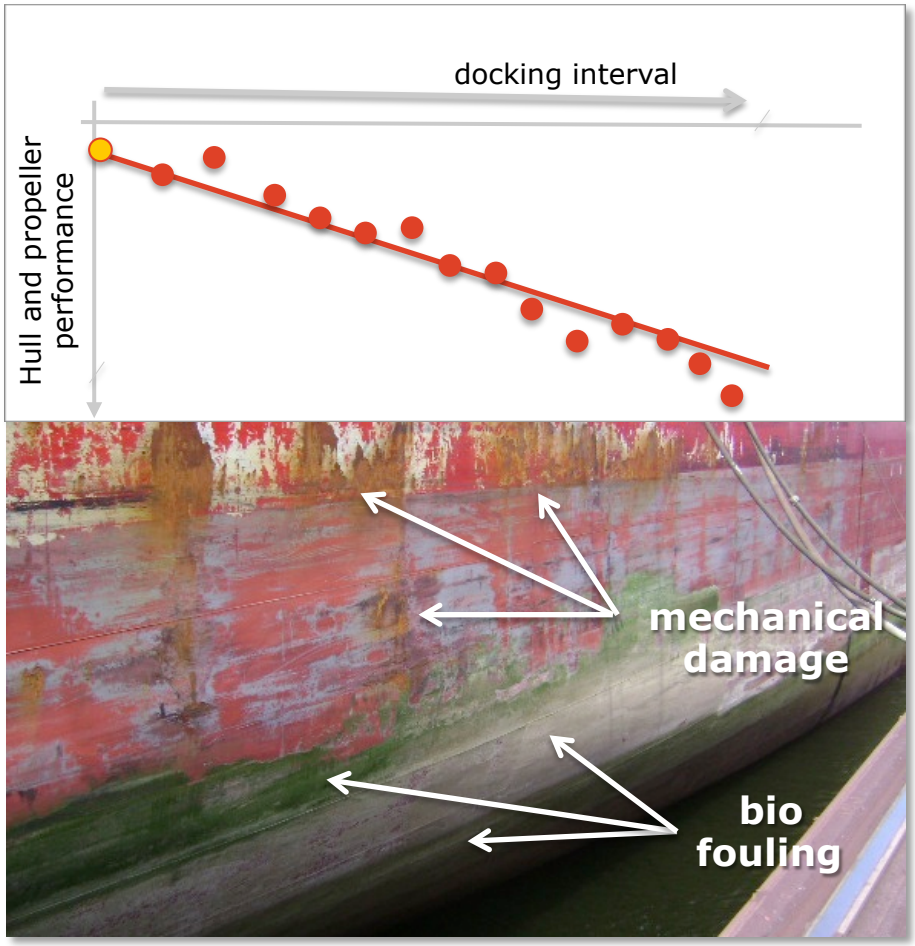
Performance drop: bio-fouling & mechanical damage.



- Average over period drop in propulsion efficiency caused by bio-fouling and mechanical damage:
  - Marintek[1]: **~ 15%**
  - Jotun (avg. over 60 months): **~18%**
  - Propulsion Dynamic (tankers)[2]: **~ 20%**

- **CSC in MEPC 63-4-8:**
- 15 to 20% loss in propulsion efficiency → **9 to 12%** increase in energy cost and GHG emissions.

1) In second IMO GHG study 2009, section A2.63
2) In Hellio & Yebara, Advances in marine antifouling coatings and technologies, 2009

Hull and Propeller Performance Workshop, Oslo 2013

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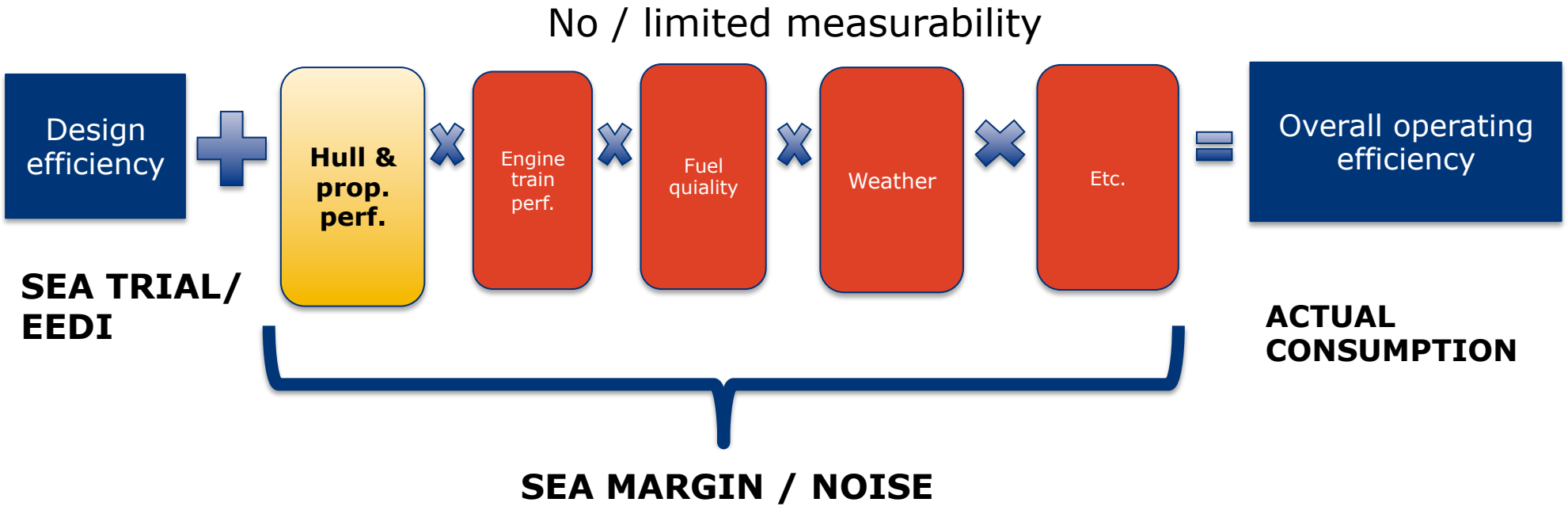
Performance enhancing technologies, products and solutions are available on the market.
- so why does performance remain poor?



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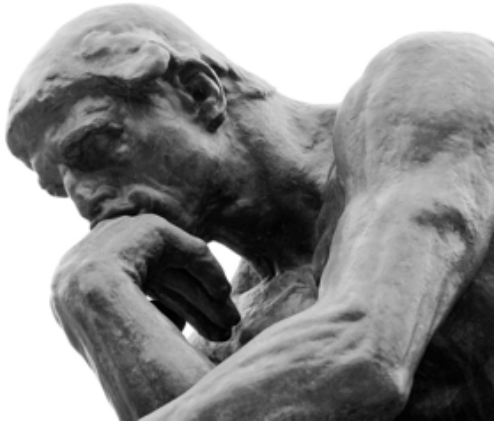
- **If I cannot measure it,**
- **I cannot do much about it.**



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