



CLIMATE ROADMAP

Helsinki November 22, 2016

CLIMATE ROADMAP

<http://www.sweship.se/fokusomraden/hallbarhet-och-miljo/>

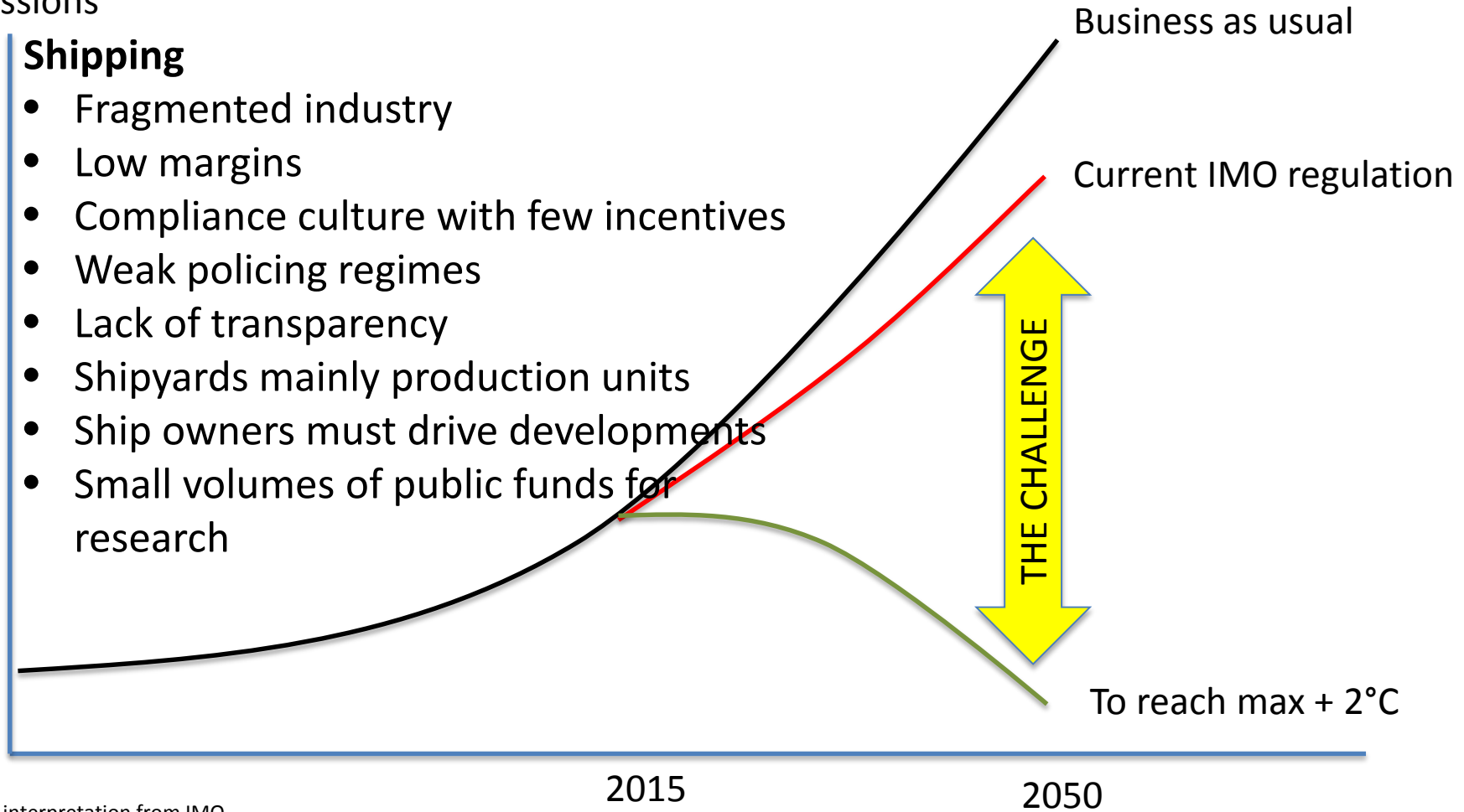
- Background of the roadmap
- Shipping and climate change
- The Zero Vision and the challenge
- How we structure the problem
- Collaboration platforms
- Scenarios for 2030 and 2050
- Financing of environmental technology
- The next step



Global fleet CO2 emissions

Shipping

- Fragmented industry
- Low margins
- Compliance culture with few incentives
- Weak policing regimes
- Lack of transparency
- Shipyards mainly production units
- Ship owners must drive developments
- Small volumes of public funds for research



Free interpretation from IMO

**INCREASED
GROWTH**

**INCREASED
PROSPERITY**

**INCREASED
MARITIME TRANSPORTS**



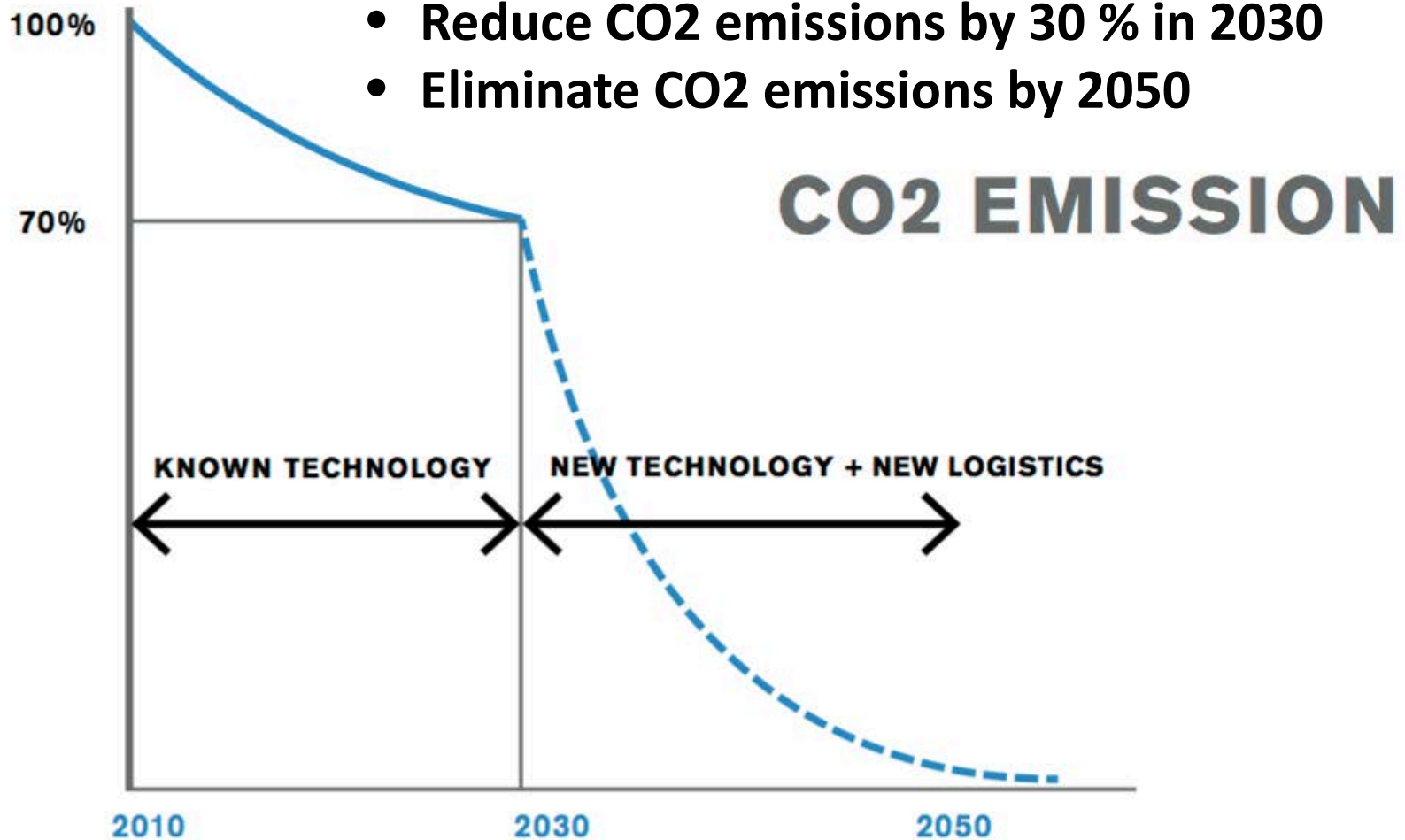
With growing world trade the number of accidents at sea and the environmental impact of shipping shall be minimized.

The Zero Vision

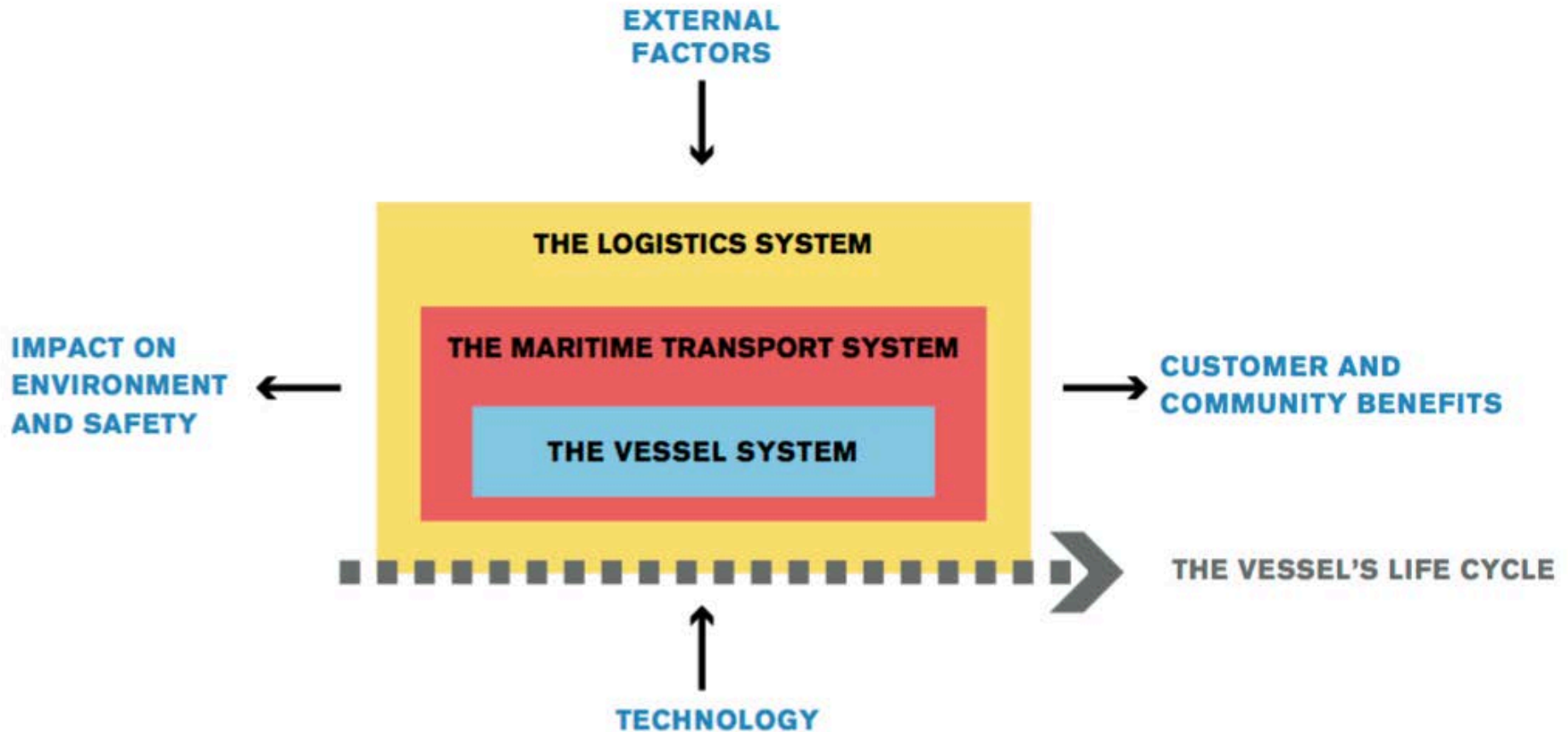


The Challenge

- Strengthen competitiveness of Swedish shipping
- Expand seaborne transportation
- Reduce CO2 emissions by 30 % in 2030
- Eliminate CO2 emissions by 2050



The Zero Vision requires a broad systems approach



Research Structure

- Institutional barriers
 - Barriers embedded in cultures, business models, values and standards
- Processes
 - What analyses, decision and management processes affect the life cycle of the vessel system
- Technology
 - What technical solutions and methods can we develop



Collaboration in three platforms

Research

Pilot projects

Energy efficient ship
operation



Scenarios

2030

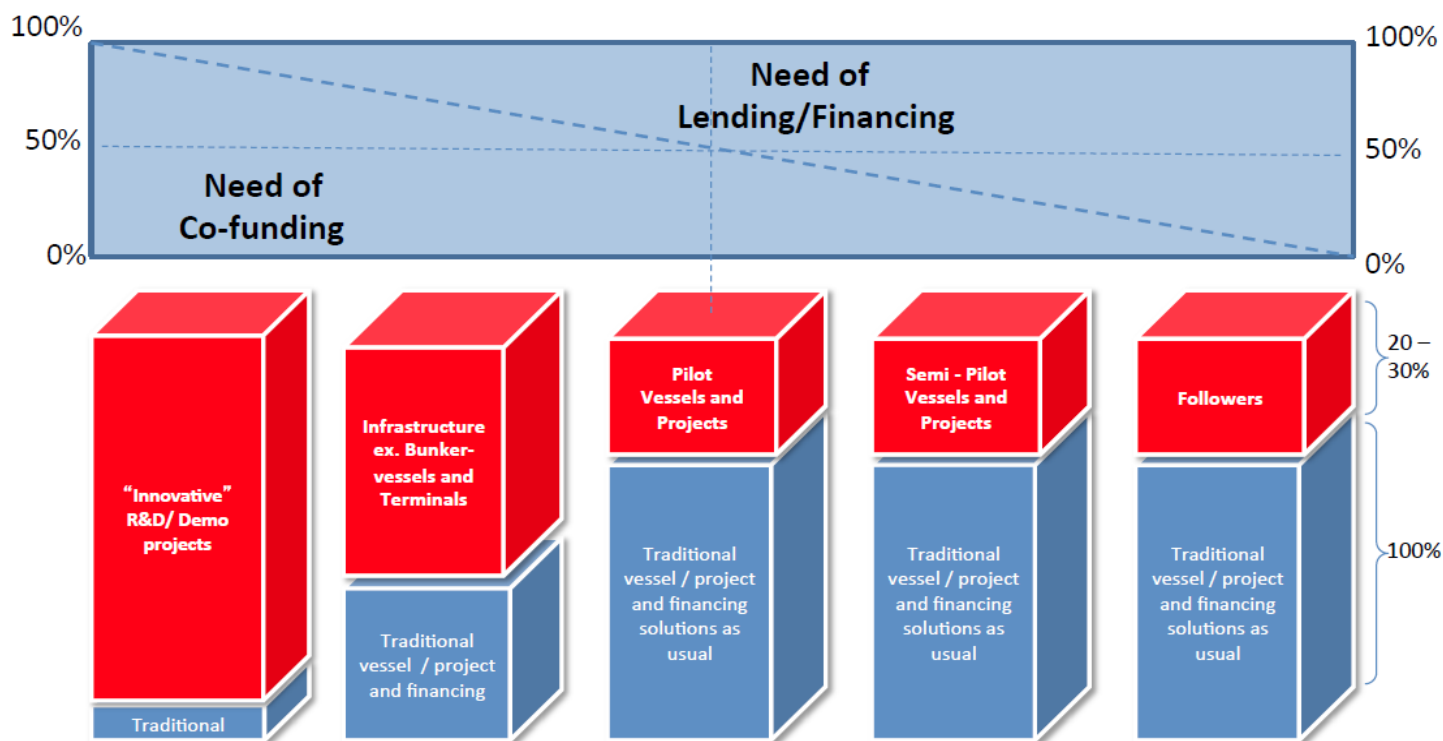
- Reduced emissions by 30 %
- Public funding of research, innovation and demonstration projects 300 million SEK leveraging to in total 1200 million SEK per year
- Competitive neutrality against other modes of transport
- -----

2050

- No major emissions
- Public funding of research, innovation and demonstration projects 500 million SEK leveraging to in total 2000 million SEK per year
- Environmental efficiency rewarded in transparency
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Financing of environmental technology



Next steps

- Update our roadmap and research strategy
- Where to find the research funding and how to use it
- Public benefit analysis of environmental initiatives
- Benchmarking of environmental performance
- Digitizing opportunities
 - Autonomous ships
 - New logistic solutions
 - New business models
 - Better evaluation of performance measurements
 - Environmental performance in real time



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