

Green Shipping Programme

- a public-private partnership programme

Narve Mjøs, VP DNV, Programme Director

Christoffer Bøhmer, DNV, Service Office



Green Shipping Program

- A paradigm shift in maritime
 - Emissions will be regulated and get a cost
 - Green demands from the market, investors, employees and the public
 - Climate change and new requirements - a significant business opportunity
- Establish the world's most efficient and environmentally friendly shipping
- Profitable emission reductions
- Sustainable logistics solutions
- Green jobs
- Increased competitive advantage
- Front runner in green shipping





Green Shipping Programme

The image displays a comprehensive list of logos for various stakeholders in the Green Shipping Programme. The logos are arranged in a grid-like fashion across the page. Key entities include:

- ABB**, **AFK**, **AKER BIOMARINE**, **AKER CLEAN HYDROGEN**, **altera INFRASTRUCTURE**, **AMMONIA**, **Arena Ocean Hyway Cluster**, **AIS|KIO** (vi forsyner Norge med mat), **Bergen Havn**, **BIOKRAFT**
- BREVIK engineering**, **BRUNVOLL**, **BUKSÉR OG BERGING**, **Carnival**, **Color Line**, **CORVUS energy**, **CLIA** (CRUISE LINES INTERNATIONAL ASSOCIATION), **CRUISE NORWAY**
- Danske Bank**, **DAPHNE TECHNOLOGY**, **DFDS**, **DNV**, **DNB**, **Eksfin** (EXPORT FINANCE NORWAY), **EnergiNorge**, **ENOVA**, **equinor**
- FK**, **Fjord1**, **FLOWCHANGE**, **Forskningsrådet**, **GASNOR**, **GRIEG**, **fiskebåt** (HAVFISKEFLÅTENS ORGANISASJON), **HEIDELBERGCEMENT**
- HEXAGON PURUS**, **HYDRO**, **Innovasjon Norge**, **KLIMA- OG MILJØDEPARTEMENTET**, **KM KLAVENESS MARINE**, **KLP**, **KONGSBERG**, **Kystrederiene**, **KYSTVERKET**, **massterly** (a Kongsberg Wilhelmsen joint venture)
- MENON ECONOMICS**, **MILJØ-DIREKTORATET**, **Møre og Romsdal fylkeskommune**, **MSC**, **NHO SJØFART**, **Norges Rederiforbund Norwegian Shipowners' Association**, **NORLED**, **Norske Havner**
- Norsk Industri**, **Norwegian Hydrogen** (Hølleys1st Hydrogen Hub), **NÆRINGS-LIVETS NOx-fond**, **DET KONGELIGE NÆRINGS- OG FISKERIDEPARTEMENT**, **OSM MARITIME**, **Royal Caribbean INTERNATIONAL**, **ROCKFJORD**, **SEAM**
- SEATRANS**, **Sjøfartsdirektoratet Norwegian Maritime Authority**, **SINTEF**, **SIEMENS energy**, **SKULD**, **Statens vegvesen**, **Statkraft**, **PORT OF STAVANGER NORWAY**, **STOVE SHIPPING**, **Swedbank**
- TECO 2030**, **THOME GROUP**, **TORGHATTEN**, **TotalEnergies**, **UM OE ADVANCED COMPOSITES**, **VARDA** (a Fincantieri company), **WÄRTSILÄ**, **Wilhelmsen**, **YARA**, and a logo for Østfold fylkeskommune.

In a nutshell



Green Shipping Programme

Studies

- Reduction potentials
- Economic analyses
- Barriers

Pilots

- Demonstration projects

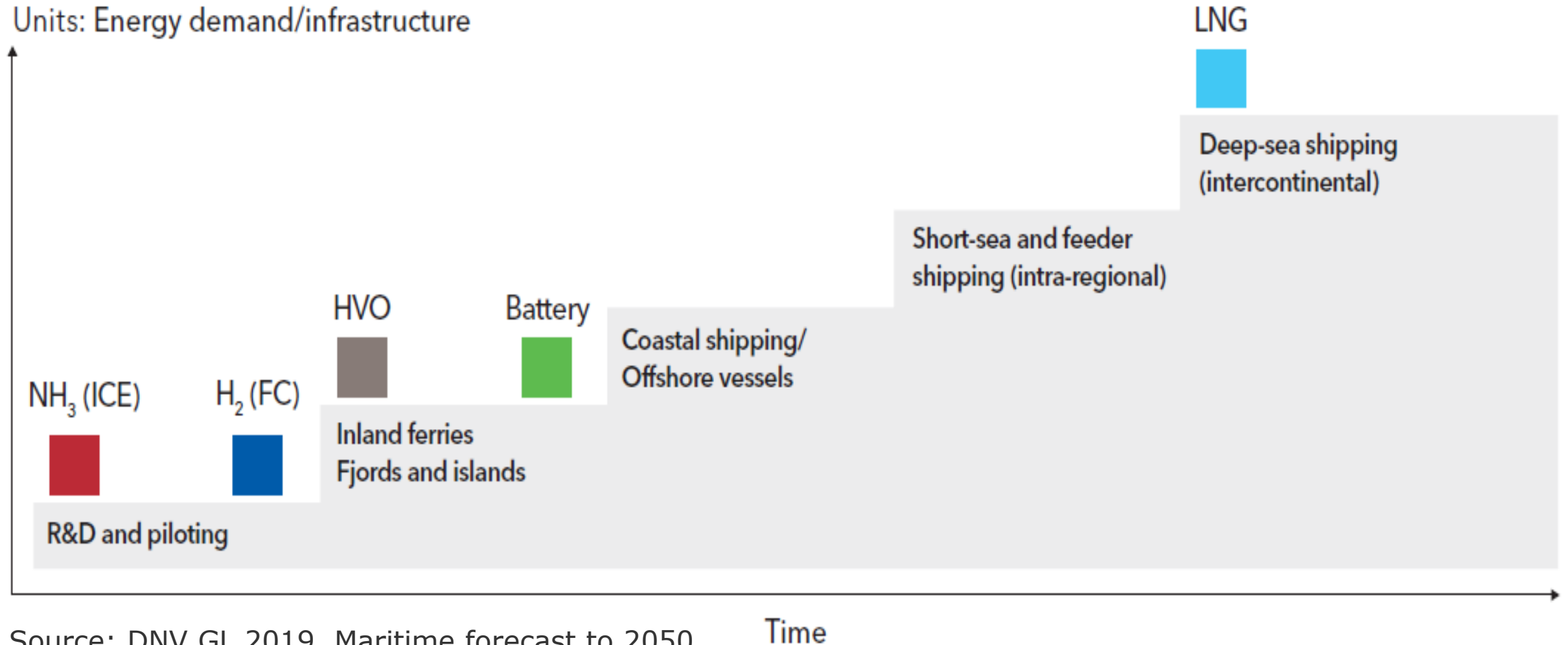
Scaling

Green Fleet Renewal

- Ship owner track
- Cargo owner track

Dialogue & Collaboration

From fjords to oceans - green technologies must take steps to make the voyage



Pilot overview – 35 pilots

Pilot Legend:

Realized

Maturing

In progress

Other activities:

Cargo owner forum

Tech. radar

Pilot owner

Cargo owner

Greenbulk

Logistics 2030

Circular economy

Shipping company

Yara Birkeland

LNG bunker vessel

Hydrogen cargo-ship

Shuttle tanker

Transport of fish

Sail in a box

Fishing vessels

Bio-gas

Public procurement

On board CCS

Smart ships

Autonomous drone

Battery HSLC

Hybrid fish-farm vessel

Cruise roadmap

Reuse of offshore vessels

Cargoferry

Hydrogen HSLC

Ammonia

Bio-diesel ferry

Autonomous ferry

Zero-emission high speed ferry

Infrastructure

Green port

Port Index

Hydrogen infrastructure

Port barometer

LOHC infrastructure

Finance

Financing 2^o shipping

Green finance

Transition financing

Green infrastructure

Other

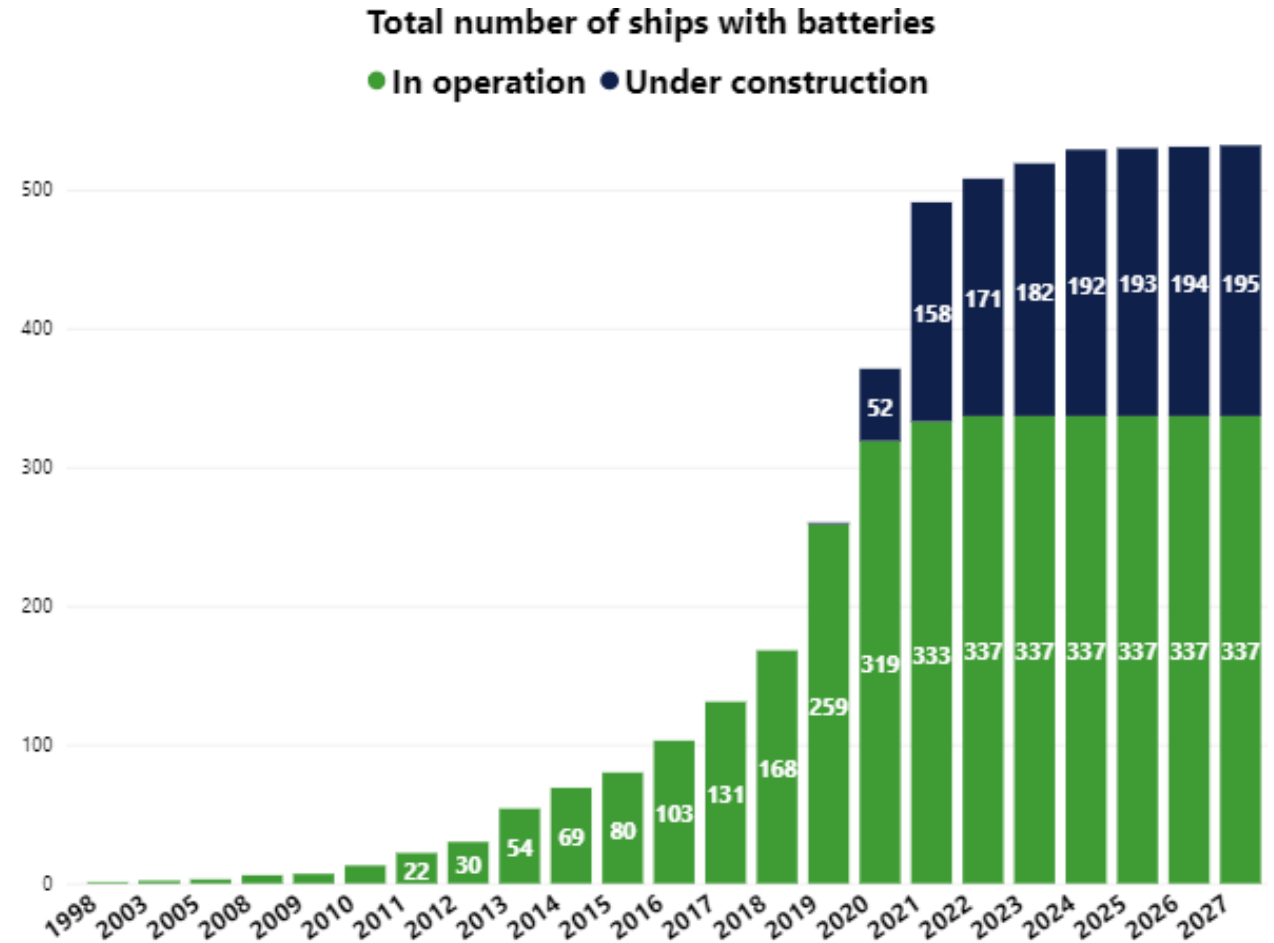
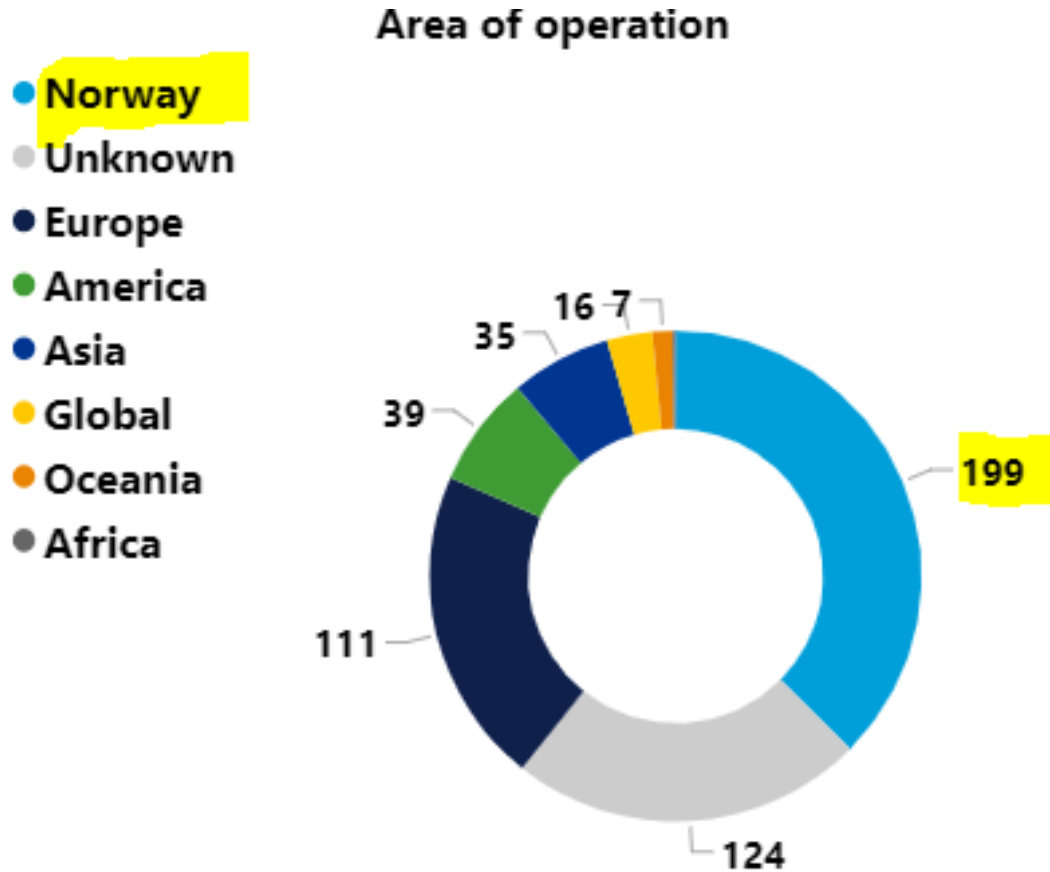
27 MAY 2021

Next generation bulker



Green Shipping Programme

The Norwegian maritime battery story



Would not be possible without leadership from the state and green public procurement

First movers are two cargo-owners - hydrogen

The Maritime Executive

INTELLECTUAL CAPITAL FOR LEADERS

World's First Zero-Emission Wind and Hydrogen Power Cargo Ship



World's first hydrogen powered cargo ship comes from Norway

By ANELA DOKSO © 26/03/2021

[Share](#) [Tweet](#) [inShare](#)



Egil Ulvan Rederi has been hired by HeidelbergCement Norway and Felleskjøpet AGRI to build and operate the world's first zero emission cargo ship.



Grønt Skipsfartsprogram

Ripple effects in the maritime industry - Greenbulk

11

hydrogen-
suppliers

31 ship-
owners

50 designers
and
equipment
suppliers



GreenBulk – status per September

- ✓ Ship owner selected
- ✓ Hydrogen supplier selected
- ✓ Design work started



IMO GreenVoyage 2050

Purpose

To support developing countries in meeting their commitment towards a lower carbon future for shipping

Scope

- Assist IMO in identifying and facilitating pilots

Status

- 7 countries want to engage in pilot projects
- KO with India this week

IMO point of contact

- **Astrid Dispert, ADispert@imo.org**



GREEN VOYAGE
2 0 5 0

Summary of GSP learnings

- Coastal shipping can pave the way
- Collaborate and engage
- Make the green markets to work
 - Green procurements in public sector
 - Smart regulations in private sector
 - Increased CO₂ price
- Identify and resolve barriers
- Piloting, piloting, piloting.....scaling
- Positioning in relation to future IMO requirements



Thank you for the attention!
Questions?

Narve Mjøs

narve.mjøs@dnv.com

+ 47 92 200 900



Green Shipping Programme