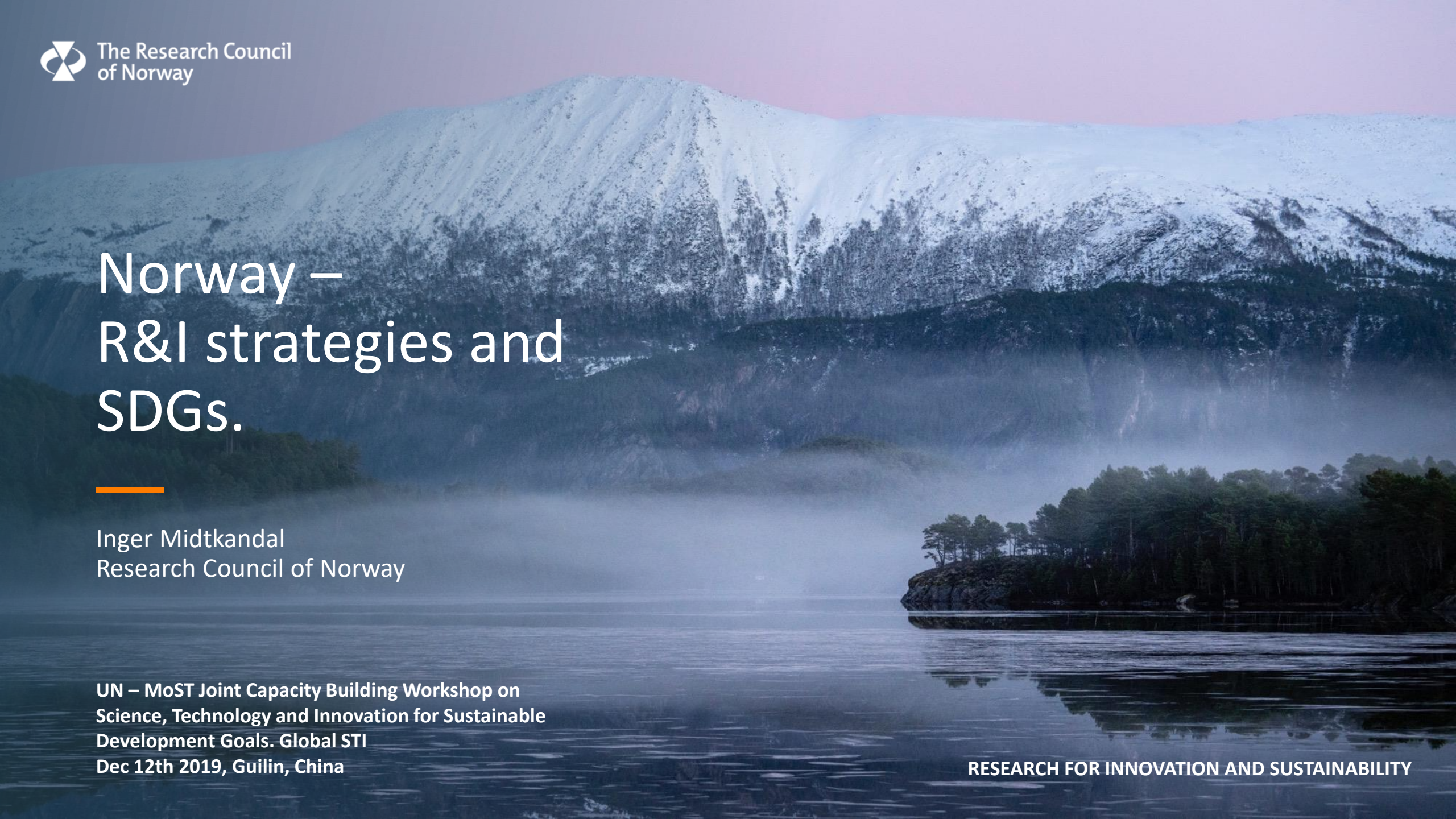


The Research Council of Norway

Norway – R&I strategies and SDGs.

Inger Midtkandal
Research Council of Norway

UN – MoST Joint Capacity Building Workshop on Science, Technology and Innovation for Sustainable Development Goals. Global STI
Dec 12th 2019, Guilin, China

RESEARCH FOR INNOVATION AND SUSTAINABILITY

Agenda

01 Setting the Norwegian scene

02 Our R&I strategies and SDGs

03 A few examples: 21-strategies

04 Implementation and results through institutional collaboration: Pilot-E

01

Setting the Norwegian scene

Population: 5 258 317

Total area of
385 252 square kilometres

Norwegian and Sami
are the two official languages

GDP: $ 391 billion
GDP per capita: $ 73 450

A resource-based economy

- Mining
- Minerals
- Hydroelectricity
- Petroleum
- Fishing & seafood
- Shipping

Norwegian Research – strong fields

- Renewable energy
- Geology
- Petroleum technology
- Climate change
- Marine sciences
- Maritime
- Clinical medicine
- Public administration

A society based on…

- Trust
- Technology
- Higher education
- Equality
- Cooperation

02

Our R&I strategies and SDGs

Linking our R&I strategies, SDGs and ODA agendas

Long-term plan for research and higher education 2019–2028 — Meld. St. 4 (2018–2019) Report to the Storting (white paper)

*"In the Government's view, the **Sustainable Development Goals** are a crucial component of dealing with the global challenges of today, and will play an active role in how these are followed up"*

The Research Council's strategy for sustainability – objectives

The Research Council will promote knowledge and solutions that will:

- resolve national and global challenges relating to sustainability in society
- facilitate industrial development that enhances sustainability and increases green competitiveness


HelseOmsorg21


energi21


KLIMA21


OG21


HAV21


MARITIM 21

03

A few examples: 21-strategies

Figure 2. Smart Specialisation methodology

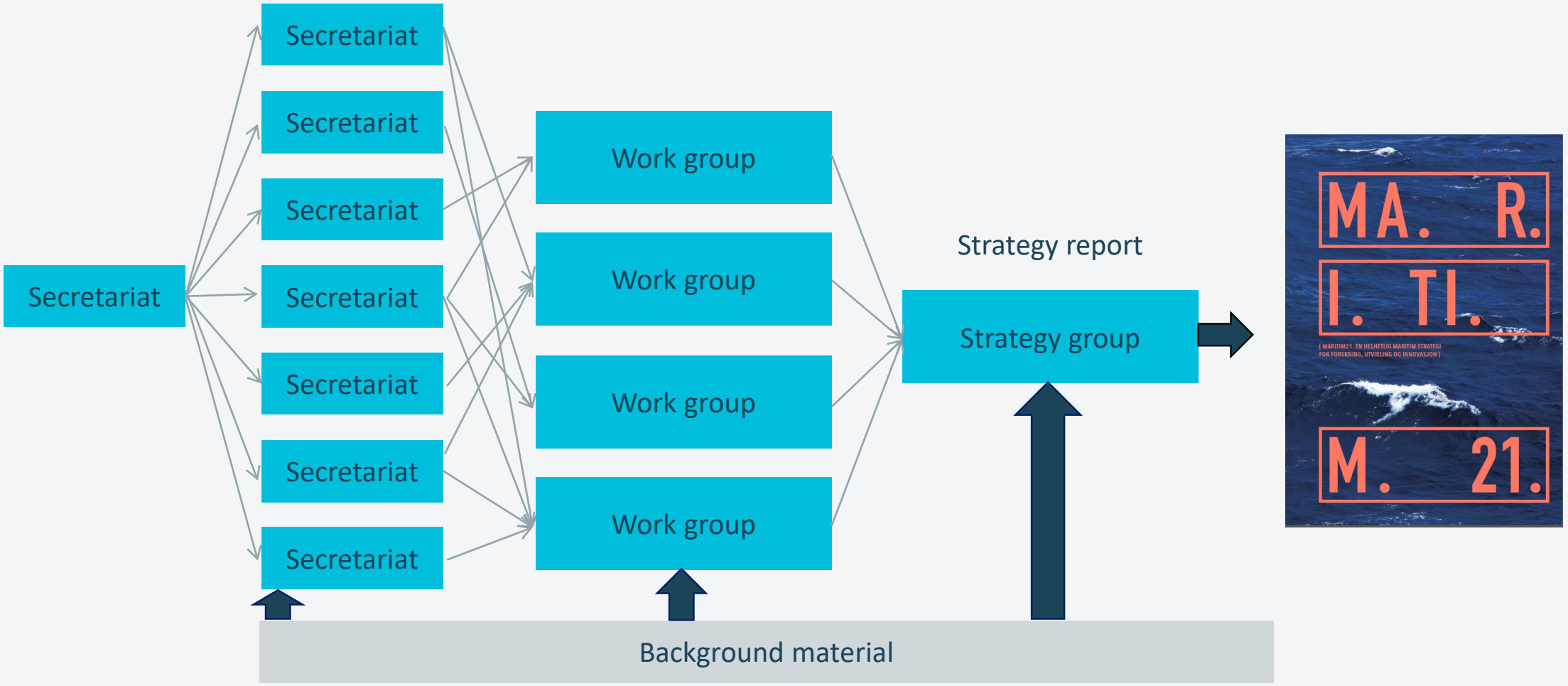
Source: Joint Research Centre, Smart Specialisation Platform

Inform

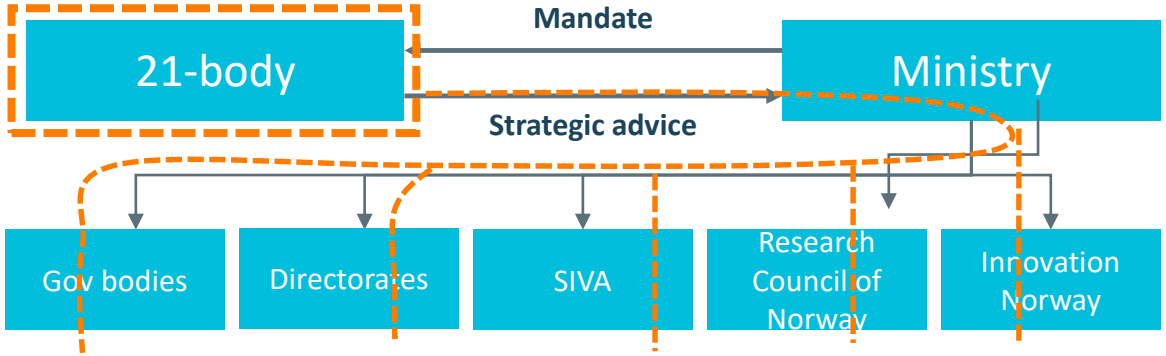
Written input

Sub reports

MARITIM 21



Basic Idea with 21-processes: R&I strategies with direction given from industry.



R&D and innovation policy:
Calls – Support mechanism – Policy mix – regulations

Industry, R&I institutions, NGOs, Civil society

Ideas – proposals – innovation – industrial development

Basic Idea with 21-processes: R&I strategies with direction given from industry.

Industry, R&I institutions,
NGOs, Civil society

Mandat

21-organ

Departement

Strategisk råd

Government

Etater | Direktorater | SIVA | Norges forskningsråd | Innovasjon Norge

R&D and innovation policy:
Calls – Support mechanism – Policy mix – regulations

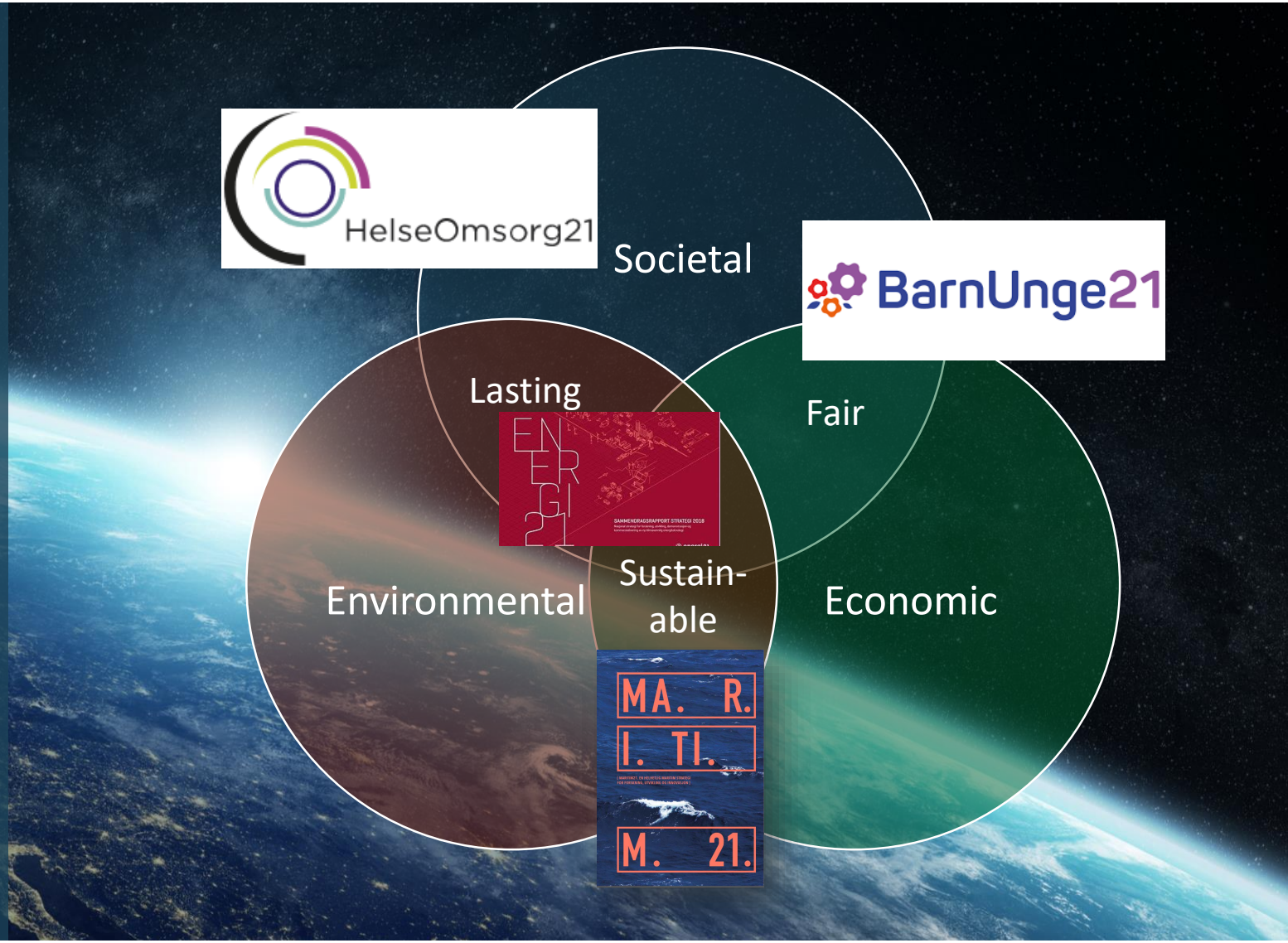
Value Creation /Solutions!

Industry/Research/Users

Ideas – proposals – innovation – industrial development

Need for sustainability – in society and industry

The word *sustainability* reflects different aspects and approaches

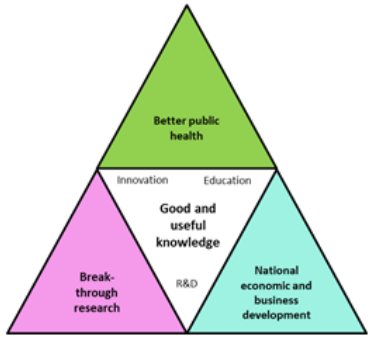


Health&Care 21

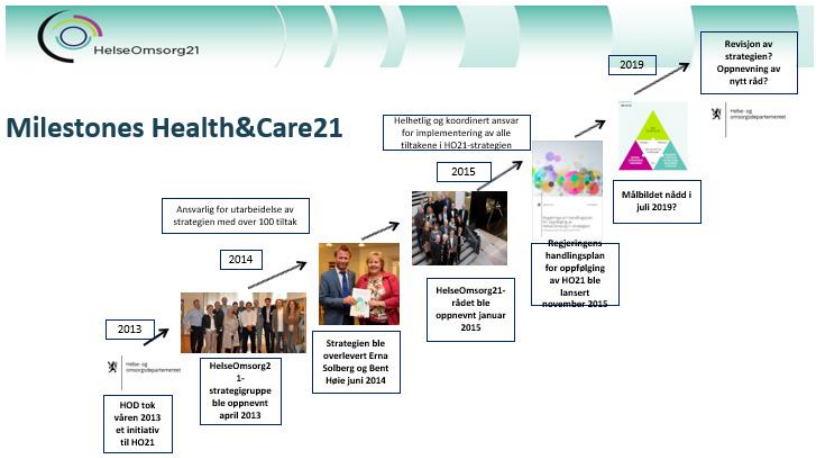
The aim of the strategy is three-fold

The aim of the Health&Care21 process is to promote evidence based health and care services characterized by high quality, patient safety and efficiency.

- **Better public health** – for individuals and the population as a whole, quality of care, patient safety, user involvement, innovation and efficiency.
- **Breakthrough research** at a high international level – research excellence, world-leading research groups, and research in its own right.
- **National economic and business development**– profitable and internationally competitive health and care industries, increased foreign investments in health-related R&D and innovation.



HelseOmsorg21



HelseOmsorg21

ry-oriented strategy process

Implemented through RCN program ENERGIX: € 50+ mill to R&I projects in 2018

Objective 1

Increased value creation based on national energy resources and utilisation of energy.

Objective 2

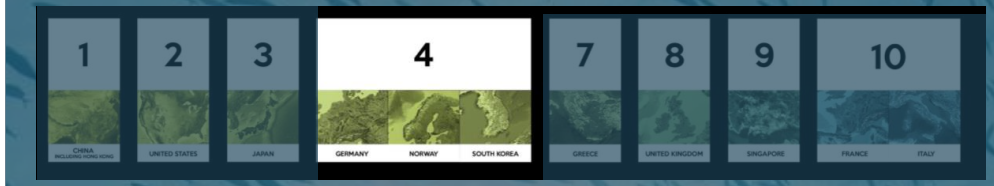
Restructuring of the energy system through the development of new technology to reduce energy consumption and greenhouse gas emissions, and through efficient production of more environment-friendly energy.

Objective 3

Development of internationally competitive expertise and industrial activities in the energy sector.

Maritime – the most global industry in Norway

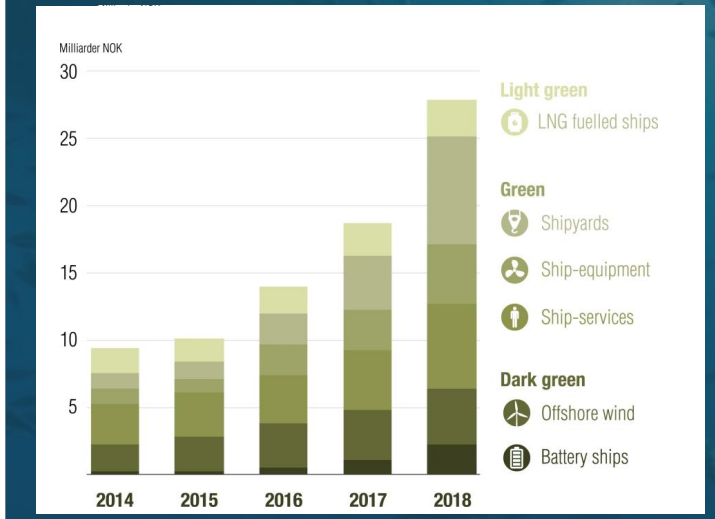
- 8 % of GDP (ex. O&G)
- 17 % of national export
- **74 mill US $ investments from RCN in R&I in 2019**
- Norway ranked as 4th overall maritime nation in 2018
- Oslo ranked 1st maritime technology capital in 2019
- **Green** investments pay off!



Norway ranked as 4th maritime nation in 2018 (DNV-GL and Menon 2018)

Oslo ranked as 1th maritime technology capital in 2019 (DNV-GL and Menon 2019)

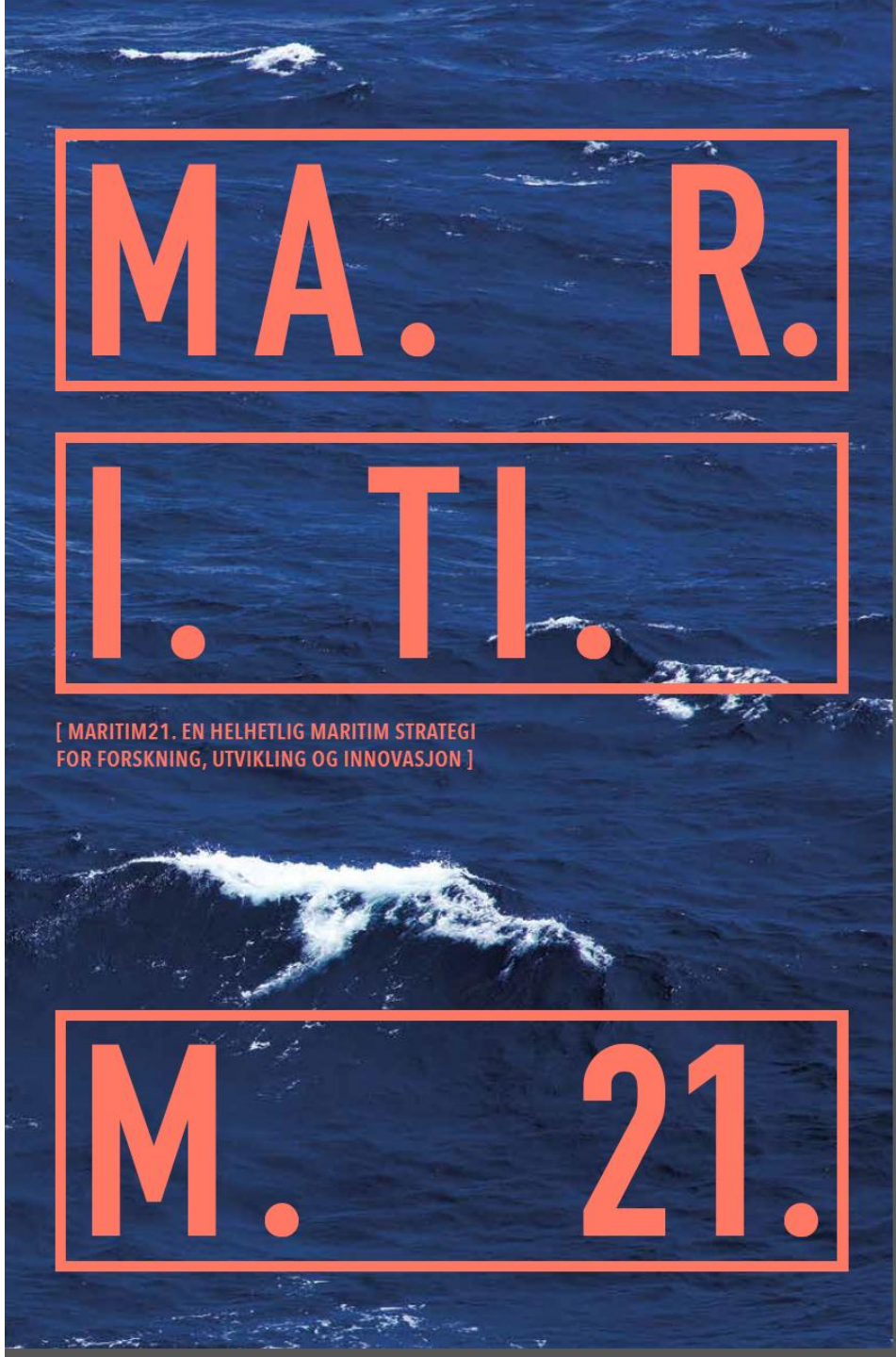
Norwegian total green turn-over divided in different segments from 2014-2018. Source Menon 2019.



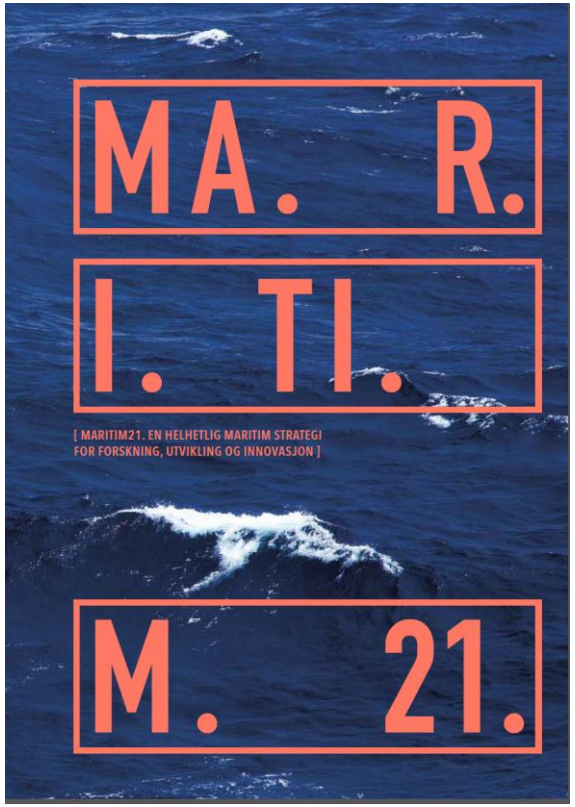
Maritime21 – an integrated R&I strategy for maritime industry in Norway

Objective:
encourage research, development and innovation activities **that promote sustainable growth and value creation,** boost the competitiveness of the maritime industry and realize the potential of the maritime industry through synergies with the other marine industries.

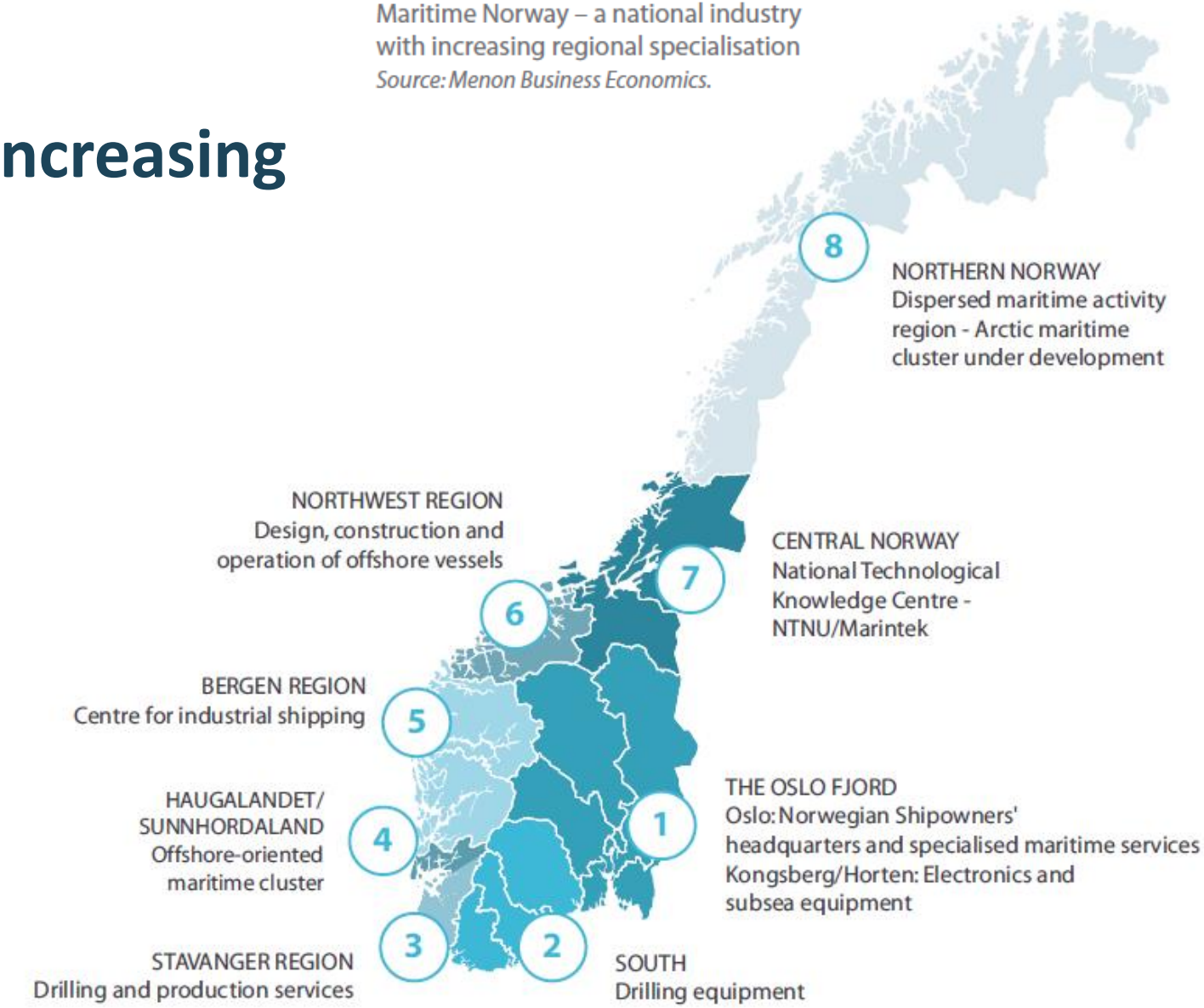
MARITIM 21



A national industry with increasing regional specialisation



Maritime Norway – a national industry with increasing regional specialisation
Source: Menon Business Economics.



Inform

Written input

Sub reports

MARITIM 21

Secretariat

Secretariat

Secretariat

Secretariat

Secretariat

Secretariat

Secretariat

Work group

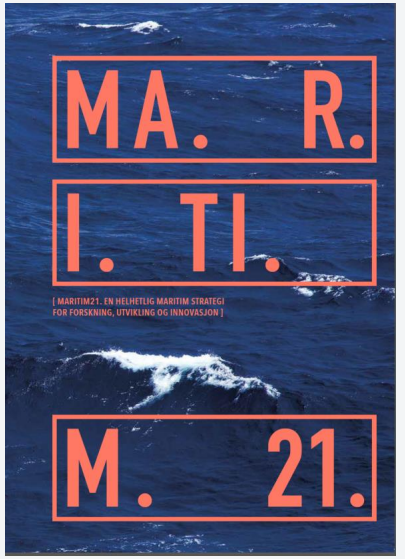
Work group

Work group

Work group

Strategy report

Strategy group



Background material

OCEAN INDUSTRIES

Existing ocean industries

- Shipping and logistics
- Offshore oil & gas
- Fishery
- Aquaculture
- Coastal/ocean tourism
- Security/surveillance at sea

Emerging ocean industries

- Renewable ocean energy
- Offshore aquaculture
- Marin biotechnology
- Deep sea mining
- Ultra deep oil & gas
- Marin carbon capture

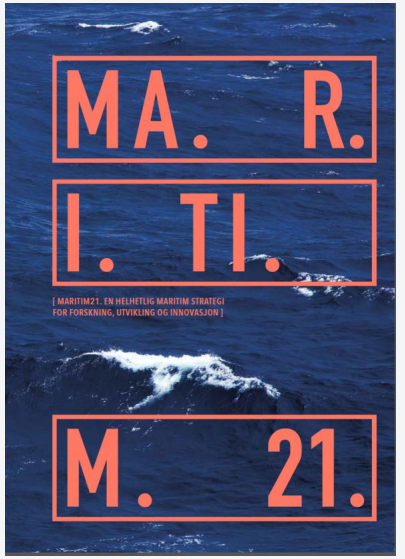
Value chains

Technologies

- Advanced materials
- Nanotechnology
- Biotechnology
- Underwater technology
- Sensors and image processing
- Satellite- and communication systems
- Digitalisation
- Autonomous systems

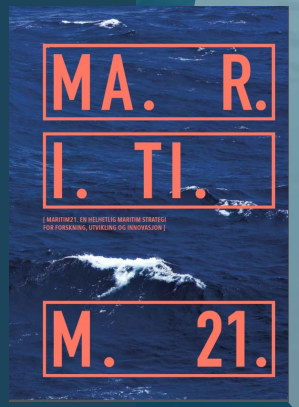
Value creation

MARITIM 21



Thematic priorities in RCNs Maritime and offshore Research program MAROFF = Maritime21 strategy

- **Opportunities in ocean industries**
- Autonomous and remote controlled vessels
- Digital transformation of the maritime industry
- **Promoting greener maritime activities**
- Arctic and northern areas
- Safety and security at sea



Framework conditions

Opportunities in ocean industries

Digital transformation of the maritime industry

Promoting greener maritime activities

Safety and security at sea

Arctic and northern areas

Enabling technologies

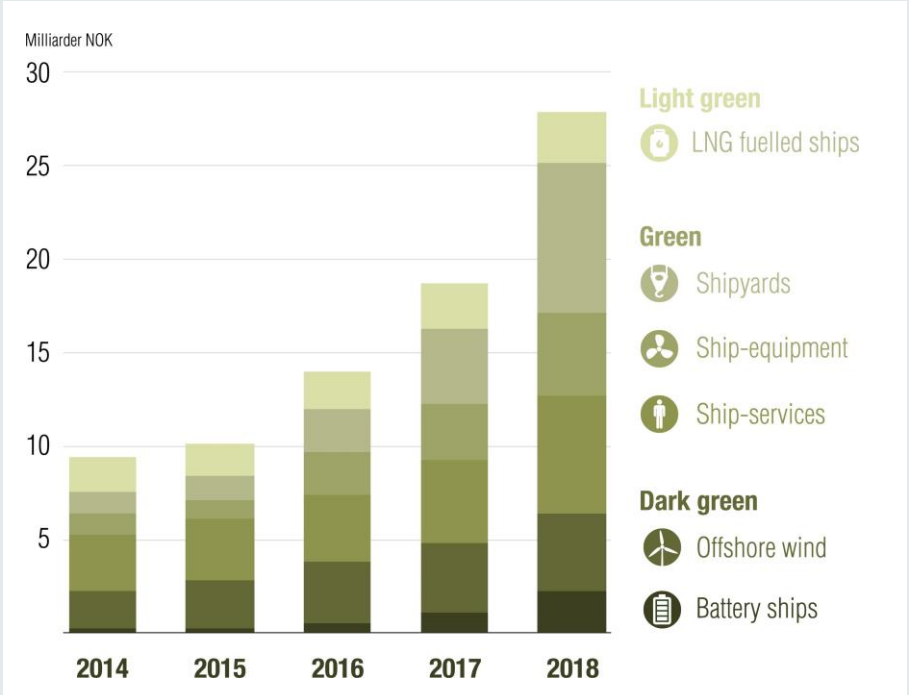




- IMO has set a target of **reducing GHG emissions from International Shipping by 50% by 2050** compared to 2008 levels – and reach 100 % reduction in this century
- The Norwegian Government's ambition is to **reduce emissions from domestic shipping and fisheries by half by 2030** and promote the development of low- and zero-emission solutions for all vessel categories To achieve this ambition, it will be necessary to speed up the green transition in the shipping sector *(The Government's action plan for green shipping)*

Promoting greener maritime activities

- **Contribute to reaching climate goals**
- **Increased opportunities for industry**
- RD&I in
  - **New energy carriers**
    - Zero- and low emissions
    - Battery, hydrogen and LNG
  - **Energy efficiency**
    - Important incremental improvements
    - Improvement "from tank to propeller“
  - **Emissions reductions**
    - Incentives and regulation
  - **Carbon Capture Storage and Utilisation**



Norwegian total green turn-over divided in different segments from 2014-2018. Source Menon 2019.

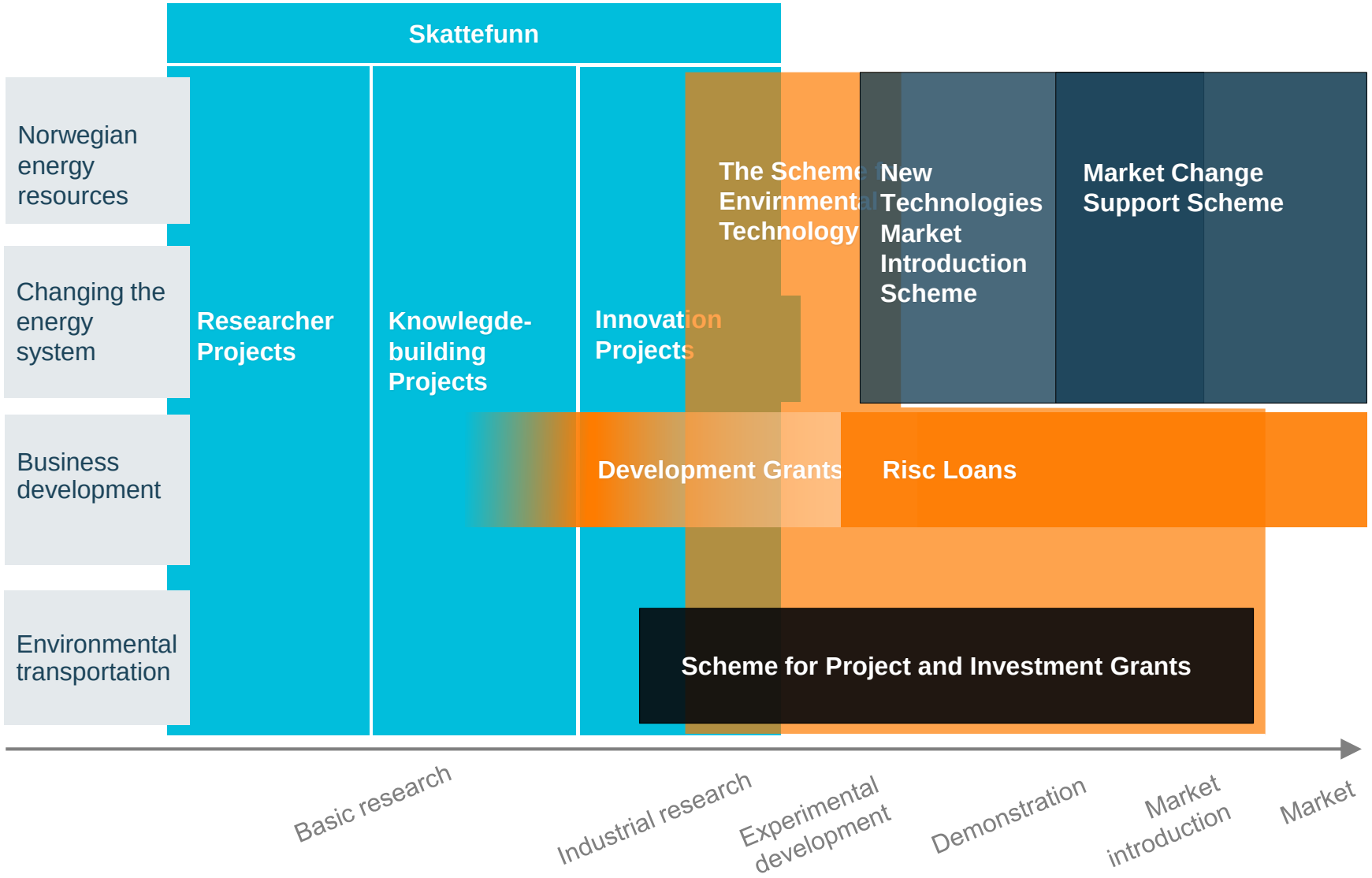
04

Implementation and results through institutional collaboration

- **Pilot-E :** Fast track from concept to market.

TOOL BOX of schemes

- Research Council of Norway
- Innovation Norway
- Enova
- Transnova



TOOL BOX of schemes

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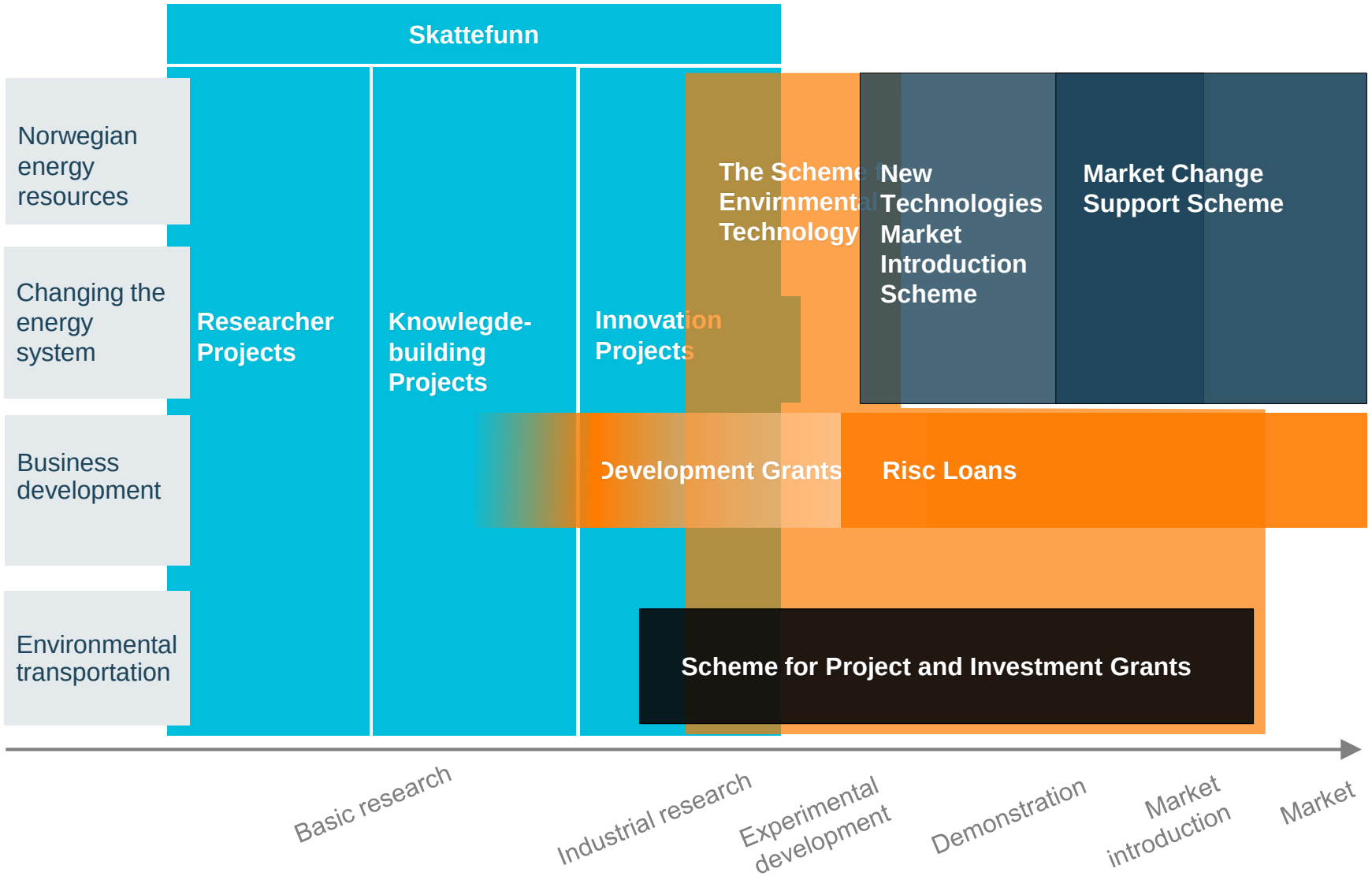
Tools and schemes for different purposes and different TRLs

Challenge:
How to combine these tools to solve societal challenges – missions – and at the same time develop business?



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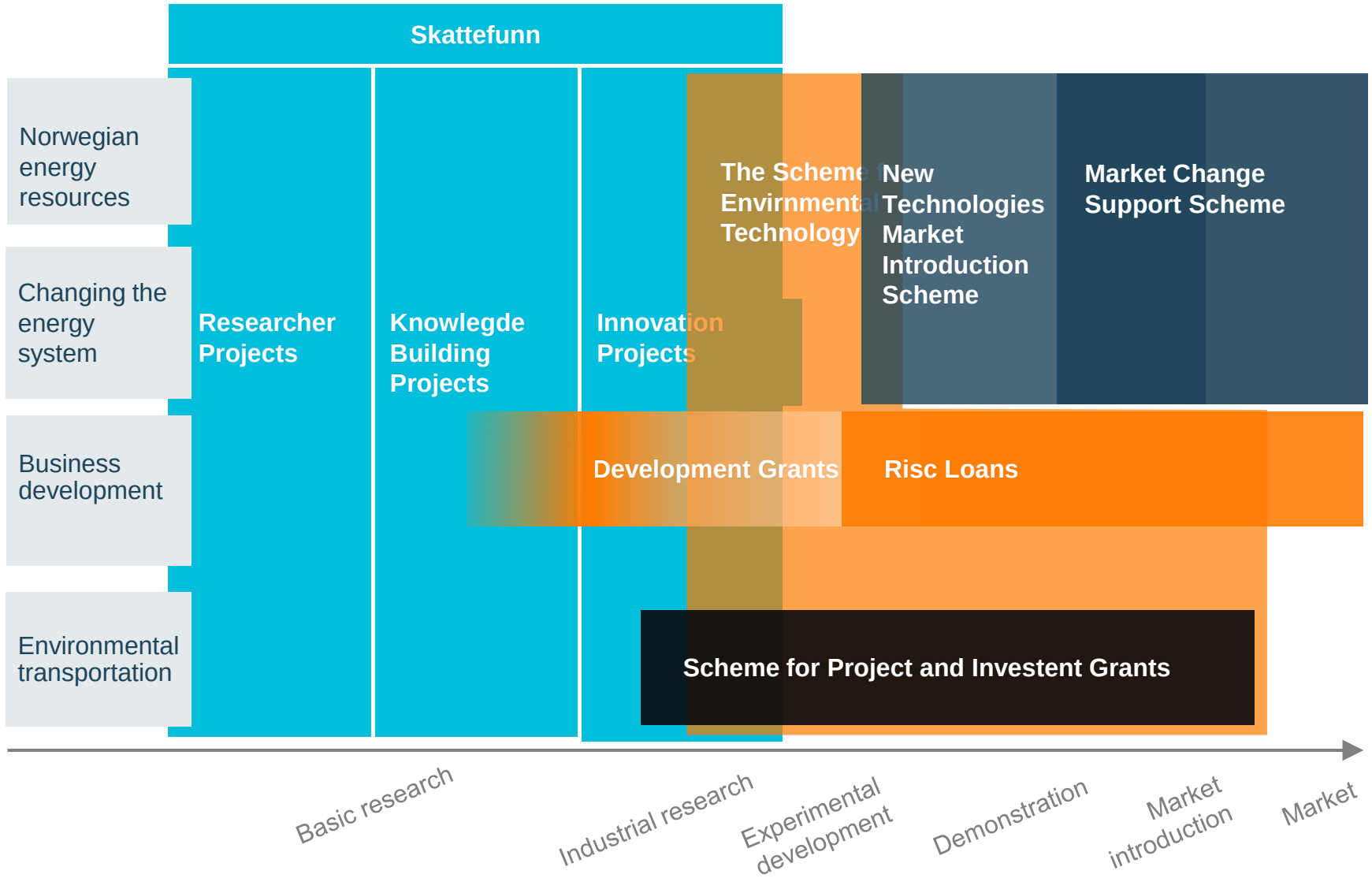
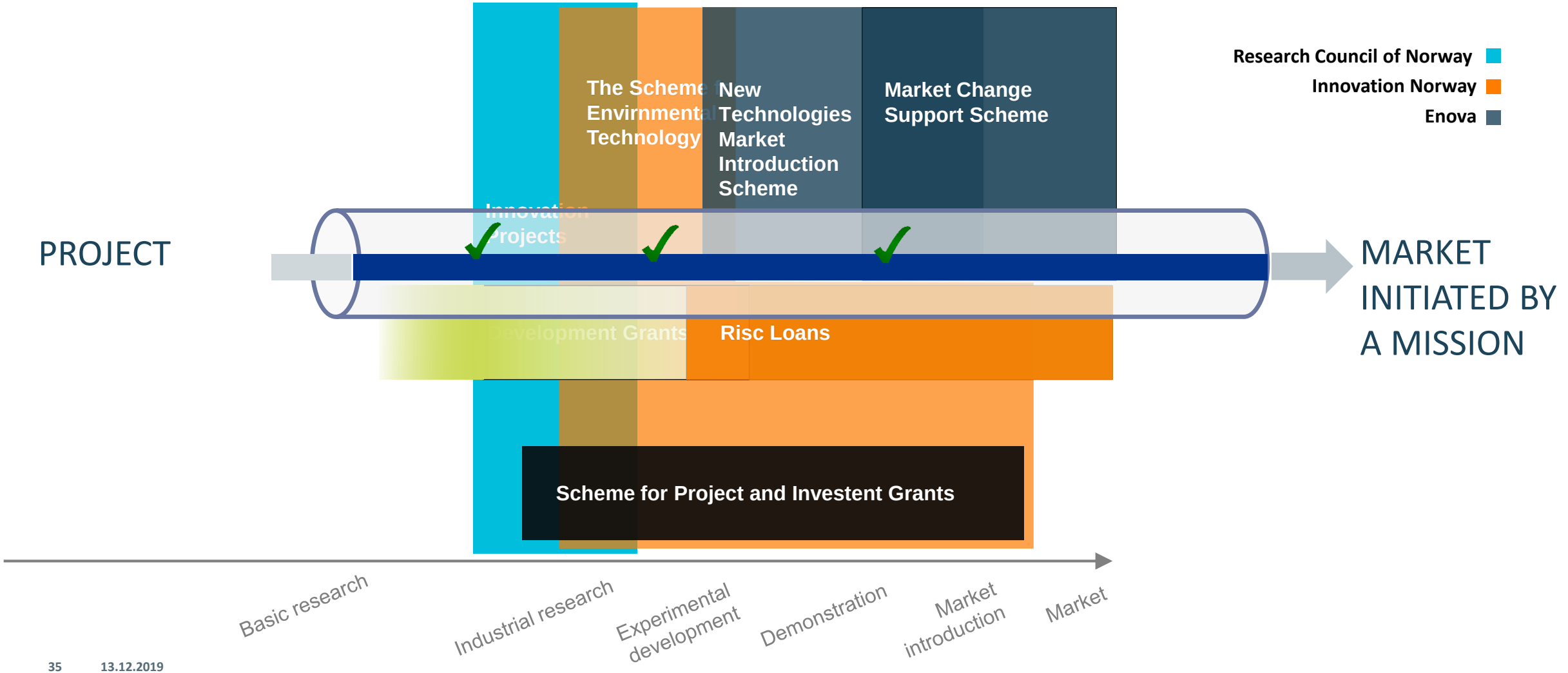


PILOT-E – basic idea: - Fast-TRACK through the toolbox of schemes



Wide thematic scope – different market segments – a new cluster of maritime emission-free suppliers

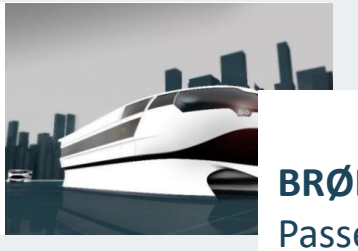
Supply

Passenger vessels

Ferry

SIEMENS
0-emission operation offshore wind power

WARTSILA
Urban water shuttle



BRØDRENE AA
Passenger vessel

Example

KONGSBERG
Emission-free autonomy ferry

FISKARSTRAND
Hydrogen and battery ferry

Battery

Hydrogen

Forskningsrådet Innovasjon Norge ENOVA

«Future of the Fjords»
Pure electric

Wide thematic scope – different market segments – a new cluster of maritime emission-free suppliers

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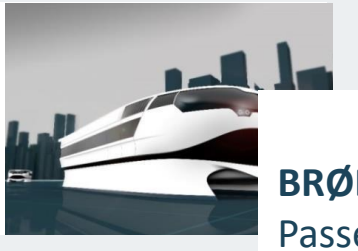

BRØDRENE AA
Passenger vessel

KONGSBERG
Emission-free autonomy ferry

FISKARSTRAND
Hydrogen and battery ferry

Battery

Hydrogen

Wide thematic scope – different market segments – a new cluster of maritime emission-free suppliers

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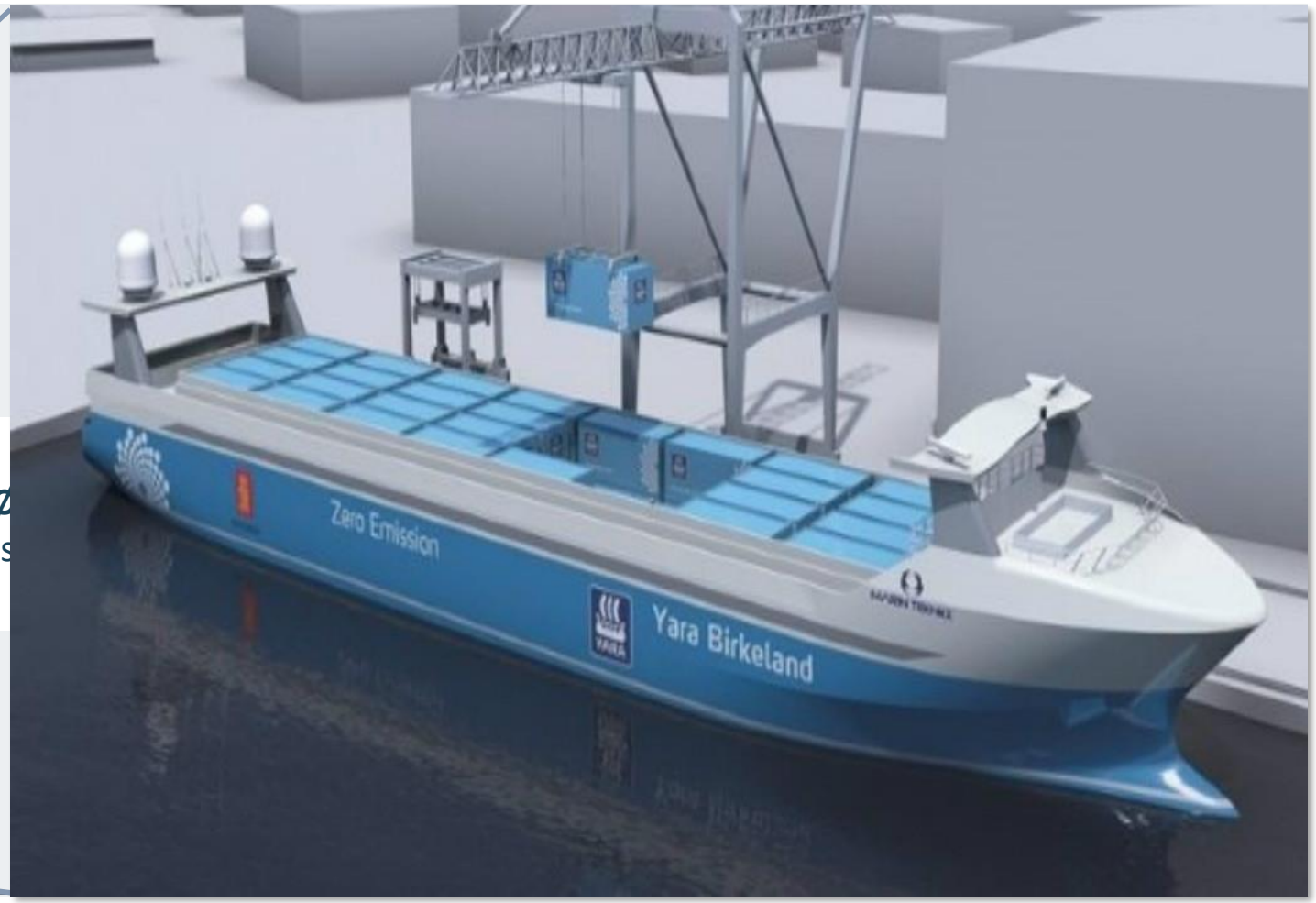
BRØ
Pass

KONGSBERG
Emission-free autonomy ferry



Battery

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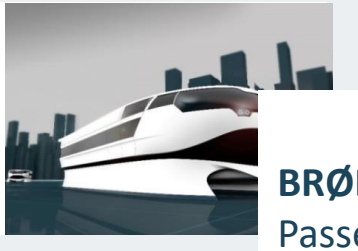

BRØDRENE AA
Passenger vessel

KONGSBERG
Emission-free autonomy ferry

FISKARSTRAND
Hydrogen and battery ferry

A new cluster of maritime emission-free suppliers

Battery

Hydrogen

First region in the world with only emission free ferries and passenger vessels by 2024?

HOME / NEWS / NEWSLETTER MARCH 2019 / ELECTRIC FERRIES

Electric ferries – a success for the climate and for Norwegian battery production

"By as early as 2022, so many electric ferries will be in operation that annual emissions of CO2 into the atmosphere will be 300 000 units less than at present, which corresponds to the discharges of 150 000 cars.

Achieving zero emissions from Norwegian ferry operations by 2030 is by no means unrealistic," say Ole Kristian Sollie and Edvard Sandvik of the Norwegian Public Roads Administration.

In 2015, the world's first all-electric ferry commenced operations on the Lavik-Oppedal crossing. By 2022, over 70 battery-powered ferries will be trafficking Norwegian fjords.

Aftenposten A-magasinet Osloby Sport Meninger Meny

Verdens første utslippsfrie hurtigbåter i Norge i 2024

Sogn og Fjordane vil bli først i verden med å kreve utslippsfrie hurtigbåter, og vil ha fossilfri drift fra 2024. Hurtigbåter forurenser mer enn fly.

FOTO: Terje Bendiksby / SCANPIX

NTB 20. sep. 2019 05:53 05:56

Some concluding reflections:

- Top down and bottom up
  - Ownership by Ministries
  - Stakeholder engagement and participation
- Short/medium term vs Long term
- From Priorities to Implementation
- Institutional collaboration
- SDGs give justification, momentum and direction


The Research Council of Norway
RESEARCH FOR INNOVATION AND SUSTAINABILITY
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