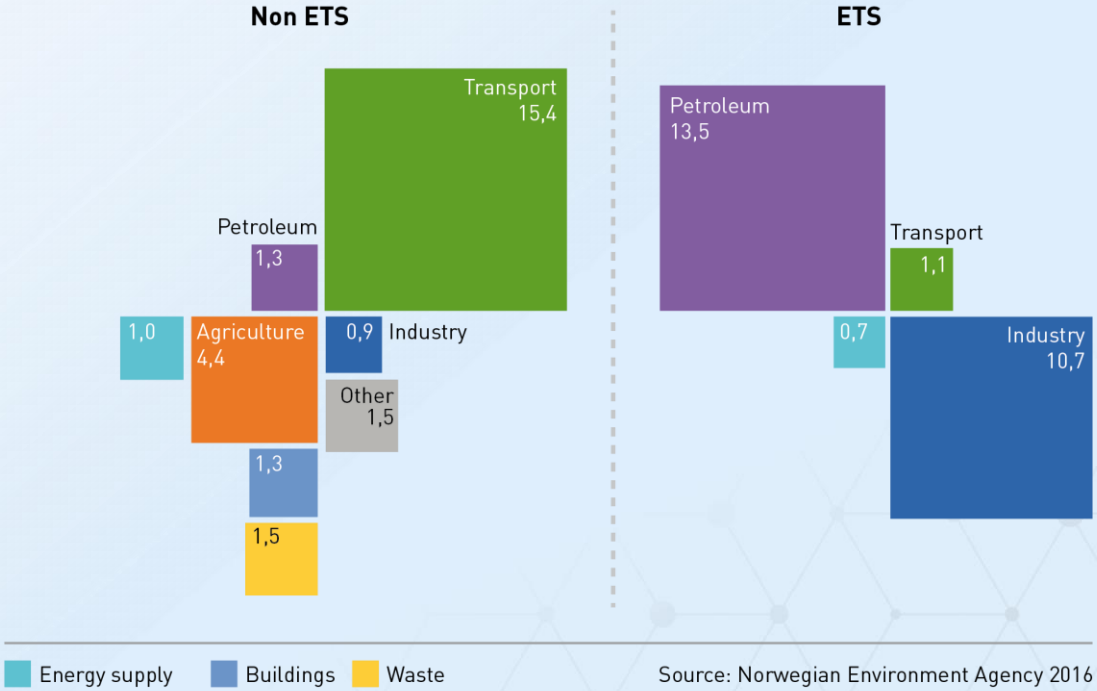

GREEN
COMPETITIVENESS

Norwegian Government's Expert Committee on Green Competitiveness

- Expert Committee:
  Connie Hedegaard, Idar Kreutzer
- Assignment from the
  Prime Minister in June 2015:
  Propose a national strategy for green competitiveness
- Secretariat with representatives from 5 ministries and Norwegian EPA, led by Per Sandberg
- Report delivered October 28th 2016

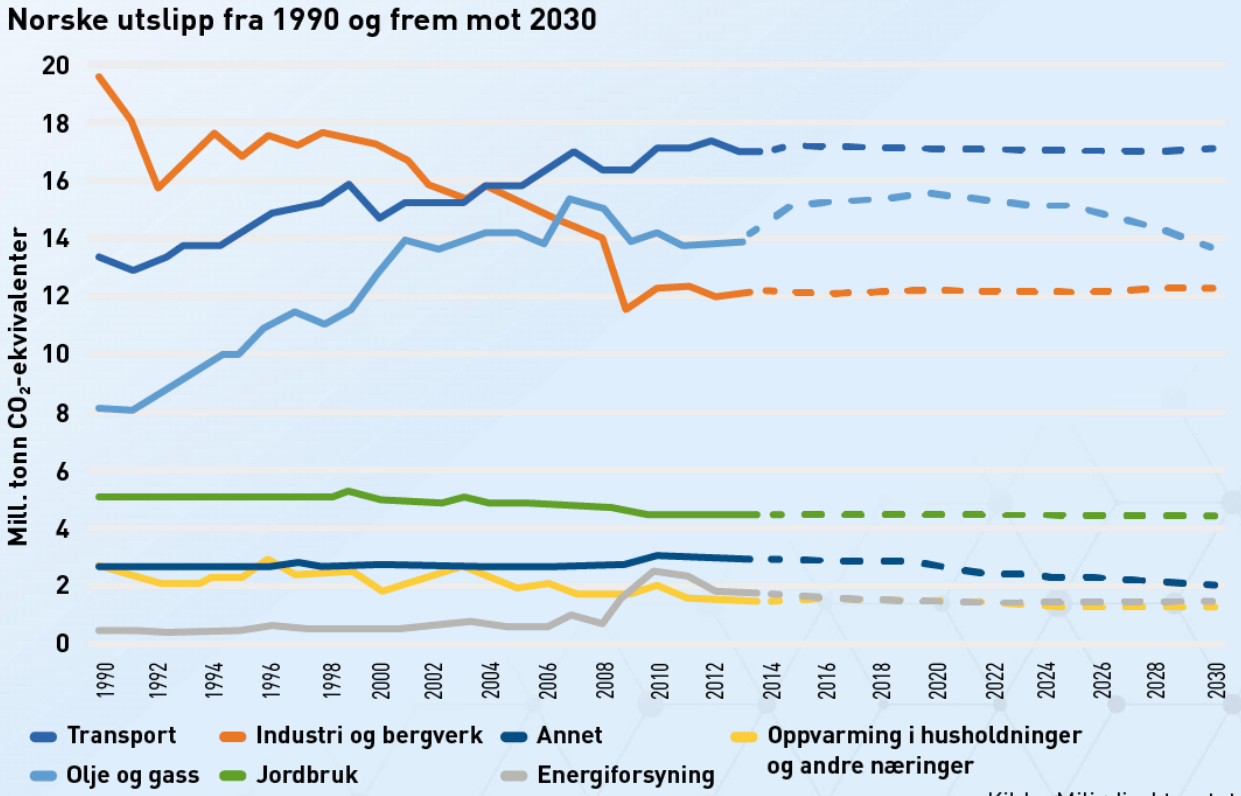
Norway's total greenhouse gas emissions: 54 million tonnes

Greenhouse gas emissions, Norway 2014
Million tons of CO_2-equivalents



Source: Norwegian Environment Agency 2016

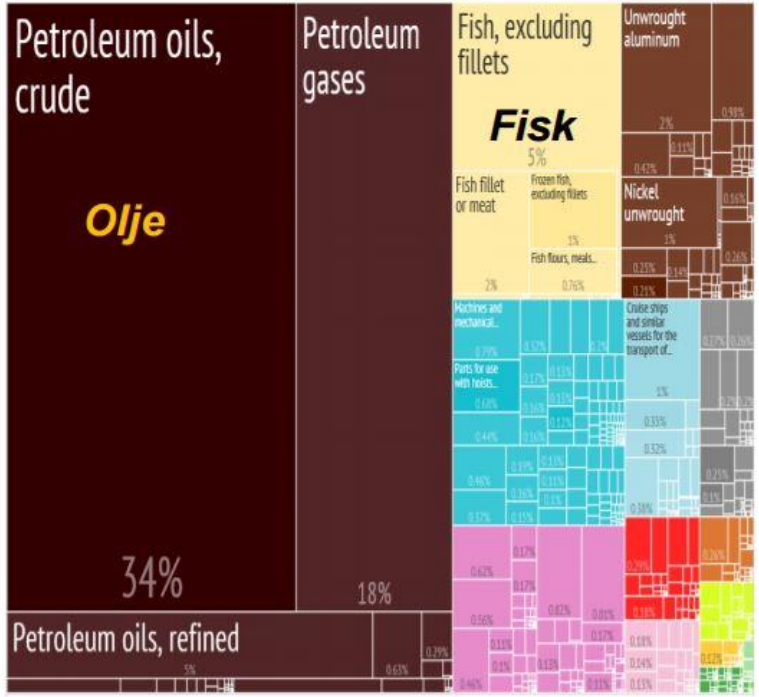
Norwegian emissions from 1990 and towards 2030



Kilde: Miljødirektoratet

Exports – oil & gas are big

Norway



Sweden

Kilde: Center for International Development, fra Produktivitetskommisjonen

Global trends impact Norway's future opportunities

Climate change • Paris agreement • National programs • Technology

A modern strategy – that can and needs to be further developed

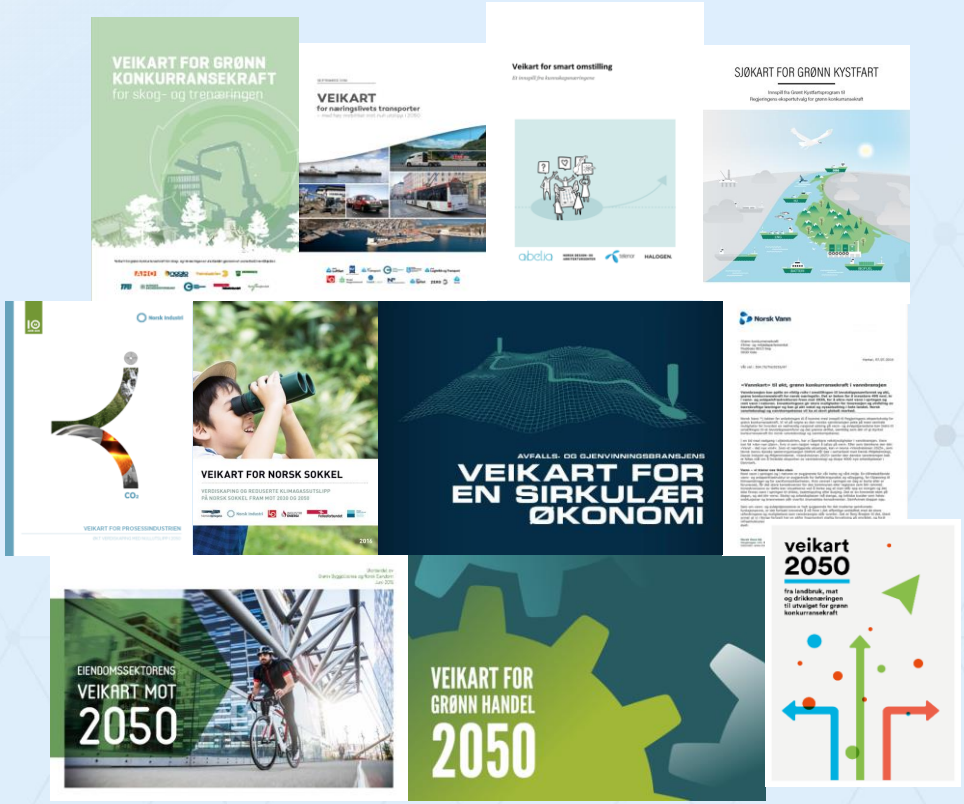
What commission did:

- Set direction – Engage – Accelerate
- Relates concretely to given goals, and how transition actually happens
- Price on carbon is important but not enough, we need pragmatic packages of policies; stick and carrot

Commission did not estimate costs and benefits of transition and policies

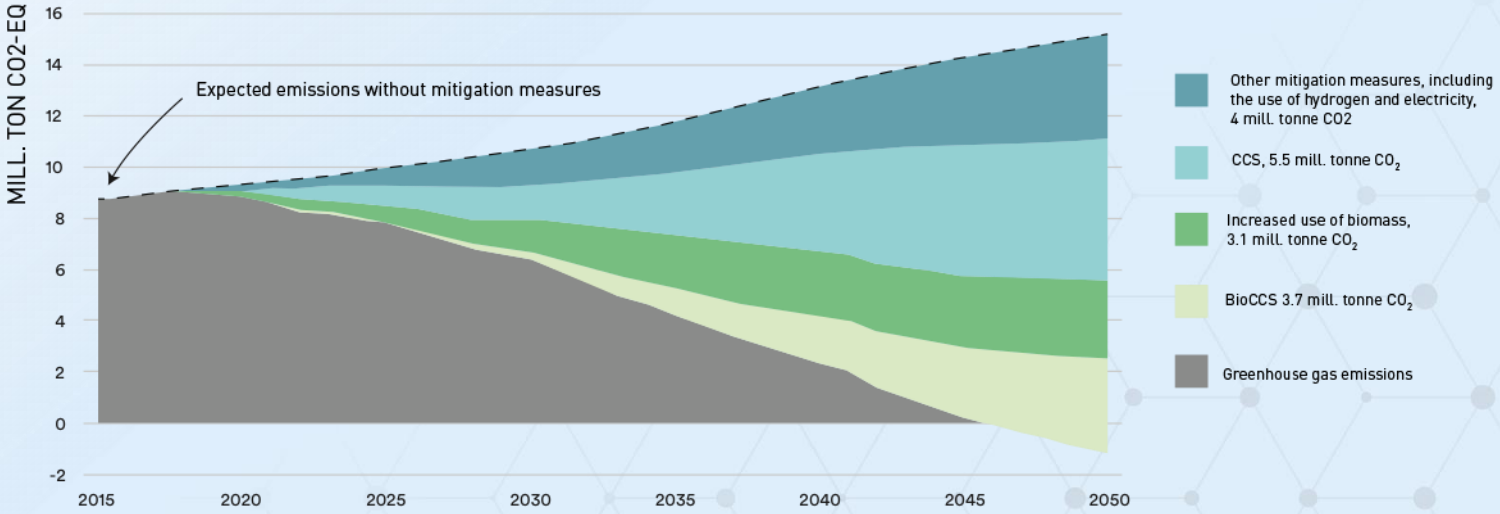
Expert Committee challenged "all of Norway"

- 8 industry meetings, 45 one-to-one meetings and 40 conferences
- «How to succeed with emission cuts, value creation and jobs creation?»
- Tremendous response
- Received 11 roadmaps from different industries



Processing industry roadmap

- Aims for double production, with negative emissions in 2050
- Need ambitious and long term technology development programs
- Requires CCS - national CCS effort should continue
- Requires sustainable biomass – opportunity for Norwegian industry



Sea map for coastal shipping

VISION FOR 2050

Our vision is for Norway to establish the world's most efficient and environmentally friendly coastal shipping, powered partly or entirely by batteries and other environmentally friendly fuels. By 2030, greenhouse gas emissions from domestic shipping shall be cut by 40% compared to current levels, and we shall have zero emissions by 2050.

- Increase collaboration in value
- Create markets for green technology
- Reinforce shipowners financial capacity
- Establish CO2 fond for transport sector
- Establish adequate fuel infrastructure

This will transform Norwegian coastal shipping into a showcase to the world, an incubator and a platform for the Norwegian export of environmental technologies and green transport services, making a considerable contribution to reducing global shipping emissions.

Petroleum industry roadmap for Norwegian shelf

2030 climate and business goals:

- Keep profitable and safe production at today's level
- CO2-reducing actions that sum up to 2.5 million tonnes CO2 per year from 2020

2050 ambition:

- Still be Norway's most important value creator
- Increase average recovery rate to 60%
- NCS should still be world leading on low emissions
- Develop and implement solutions that considerably reduce CO2 emissions per produced unit

Commission: Authorities should establish frameworks and incentives for market based solutions – policy packages

Supply side can be stimulated by education, research, targeted support for development of new technologies,, innovation, pilot testing og industrialisation.

Markets can be made more effective, e.g. through access to information

Demand side can be stimulated through regulation, consessions, price on emissions, demands for BAT = best available technology, public procurement

Commission: Government should consider petroleum demand-side risk more carefully

- Petroleum demand-side risk is increasing
- Government should consider the need for changes in current petroleum regime.
- Government should request sensitivity-analysis for demand and carbon-prices for decision making processes
- Turn research from fossil to green

What has happened since delivery?

- Hearing gave high-quality input: https://www.regjeringen.no/no/dokumenter/horing---rapport-fra-regjeringens-ekspertutvalget-for-gronn-konkurransekraft/id2519600/
- Many are positive to commission's advice and express **co-ownership:** labour organisations, NGOs, church, research, and many companies and industry organisations
- Huge enthusiasm for **doing** green innovation – many actors drive forward
- Divergent views on petroleum recommendations, but demand-side risk debate is maturing
- Pointing out themes that are missing in report: CCS, hydrogen, renewables and renewable investments abroad, tourism, minerals, enabling technologies, costs and benefits of recommendations
- Industrimeldingen 31.3 supports Process industry roadmap and commission recommendations
- Perspektivmeldingen 31.3 does not really deal with petroleum demand side risk
- NTP presented today…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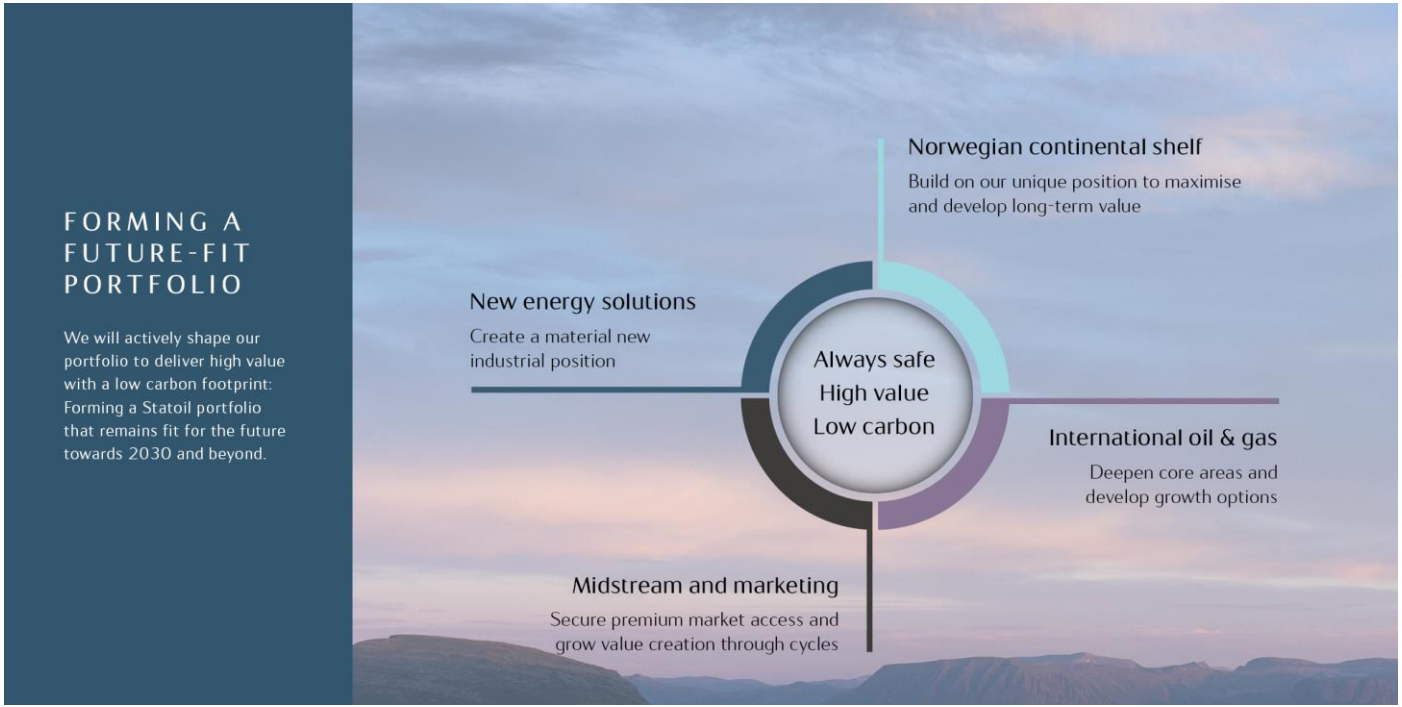
Statoil: Low carbon at core of our sharpened strategy



CLIMATE ROADMAP

Creating a low carbon advantage

Methane emissions in the gas value chain is below **0.3% of gas delivered** to the market for Norwegian gas to Europe

We aim to reduce emissions with **3 million tonnes/year** accumulated from 2017 to 2030

We aim to reduce our carbon intensity to **8kg CO2/boe** by 2030

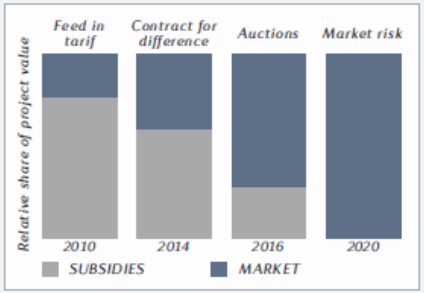
We expect **15-20% of our investments** to be in new energy solutions by 2030

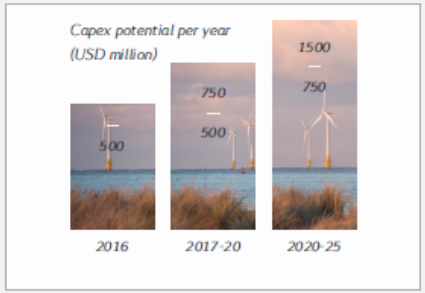
We expect low carbon R&D to account for **25% of research funds** in 2020

All investment decisions are evaluated against our **climate ambition**

15-20 % in New energy solutions

BUILDING A PROFITABLE NEW ENERGY BUSINESS





INDUSTRIAL APPROACH	VALUE DRIVEN	GROWTH OPPORTUNITIES
• Leverage core competence • Scale & technology reduce costs • Access to long-term projects	• From subsidies to markets • 9-11% return range (real) • Cash flow resilience	• 15-20% of capex in 2030 • Offshore wind and other options • Low-carbon solutions

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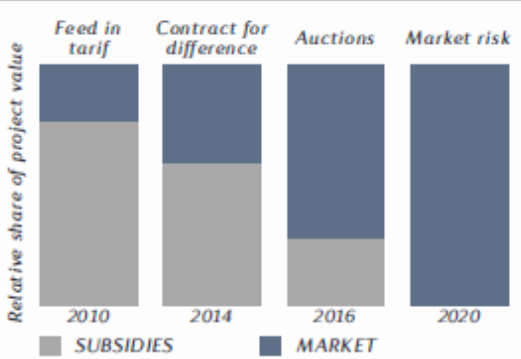

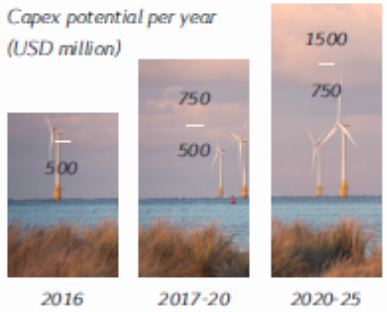

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- Access to long-term projects

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