



**NHO
LUFTFART**

Nordic leadership in aviation emissions reductions – Norwegian CO2 fund

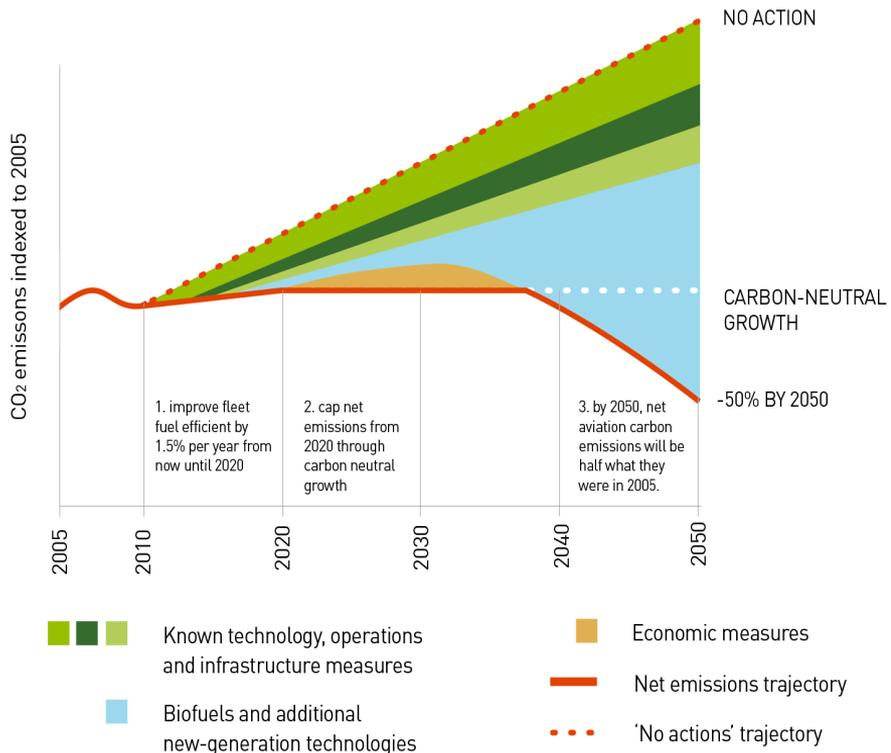
*Copenhagen, 10. October 2017
Torbjørn Lothe, Director General*

Background

- Fuel costs (still) constitutes a large part of an airline's cost base
- A modern and fuel efficient fleet is therefore crucial for an airline to succeed in a competitive market
- The industry is strongly committed in contributing to finding solutions to the environmental challenges
- NHO Luftfart and Avinor have taken a lead in studying possible production of sustainable aviation biofuel



Aircraft emissions shall be halved within 2050



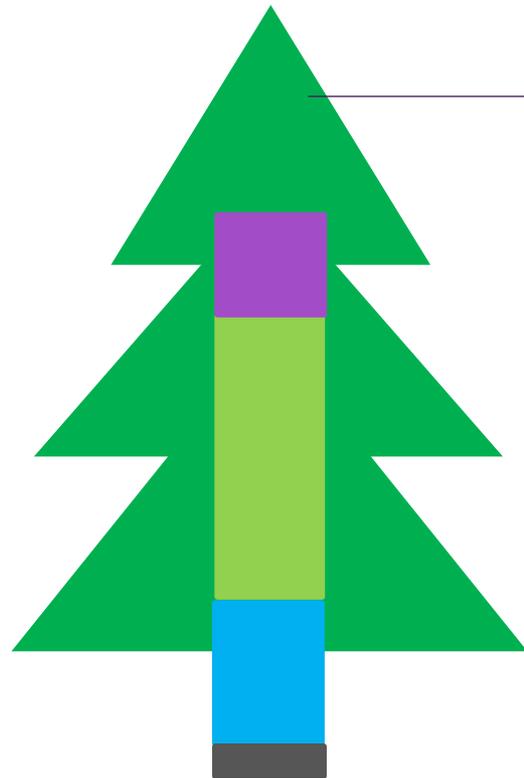
The industry goal is to reduce emissions from CO₂ from today's level with 50 percent within 2050.

This reduction is sufficient to ensure that air traffic's contribution to global heating is kept below 0,05 degrees Celsius.

The use of second generation sustainable biofuel and electric airplanes will gradually totally reduce the emissions.

To find and implement means to reduce- and even remove emissions is highly prioritized.

THE FOREST RESOURCES CAN AND SHOULD BE USED FOR BIOFUEL PRODUCTION



The forest resources consist of:

Approx. 1/3 twigs and treetops (GROT)
The rest (2/3) is timber

The timber log:

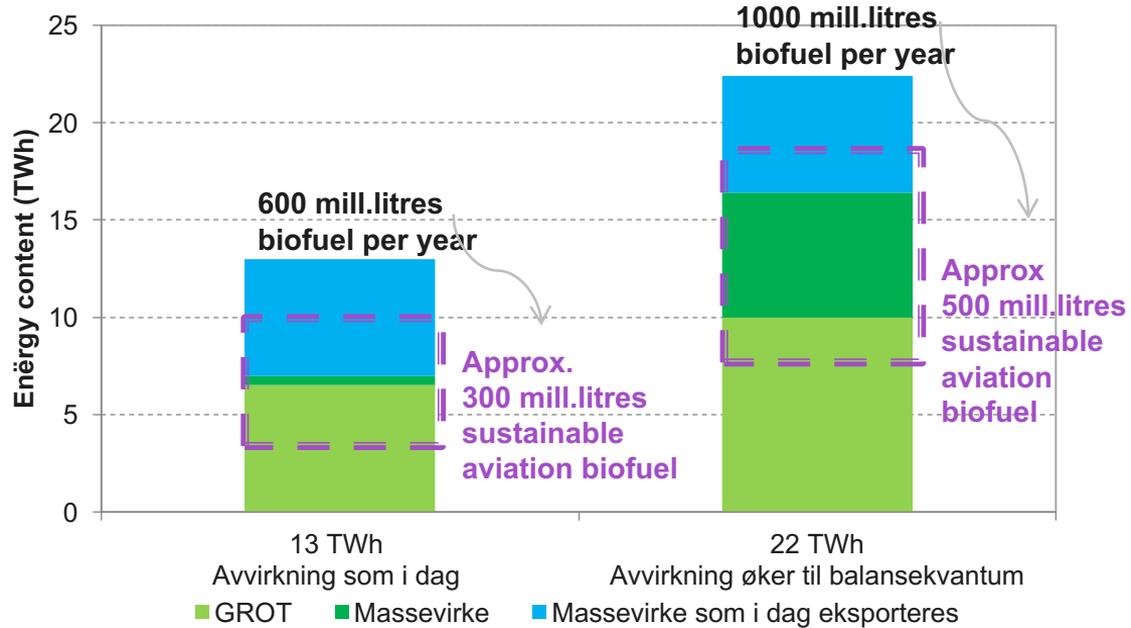
20% wood material products

50 % pulpwood for the paper industry etc.

25 % pulpwood for energy purposes

5% cuttings and waste from sawmills

TOTAL ESTIMATED SUSTAINABLE FOREST FEEDSTOCK AVAILABLE FOR AVIATION BIOFUEL PRODUCTION IN NORWAY



BIOFUEL CAN BE PRODUCED SUSTAINABLE

Two obvious value-chains

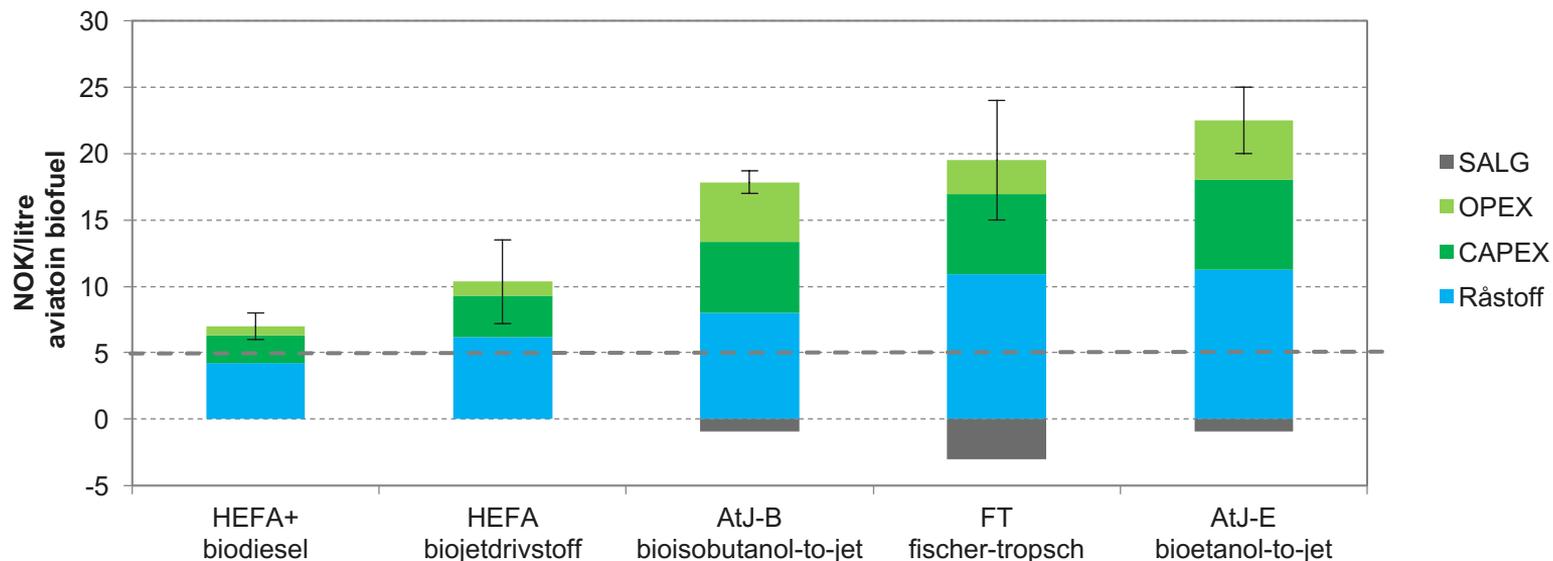
1. **Waste fractions not currently exploited**
2. **Current pulpwood exports**

Assumptions for sustainability

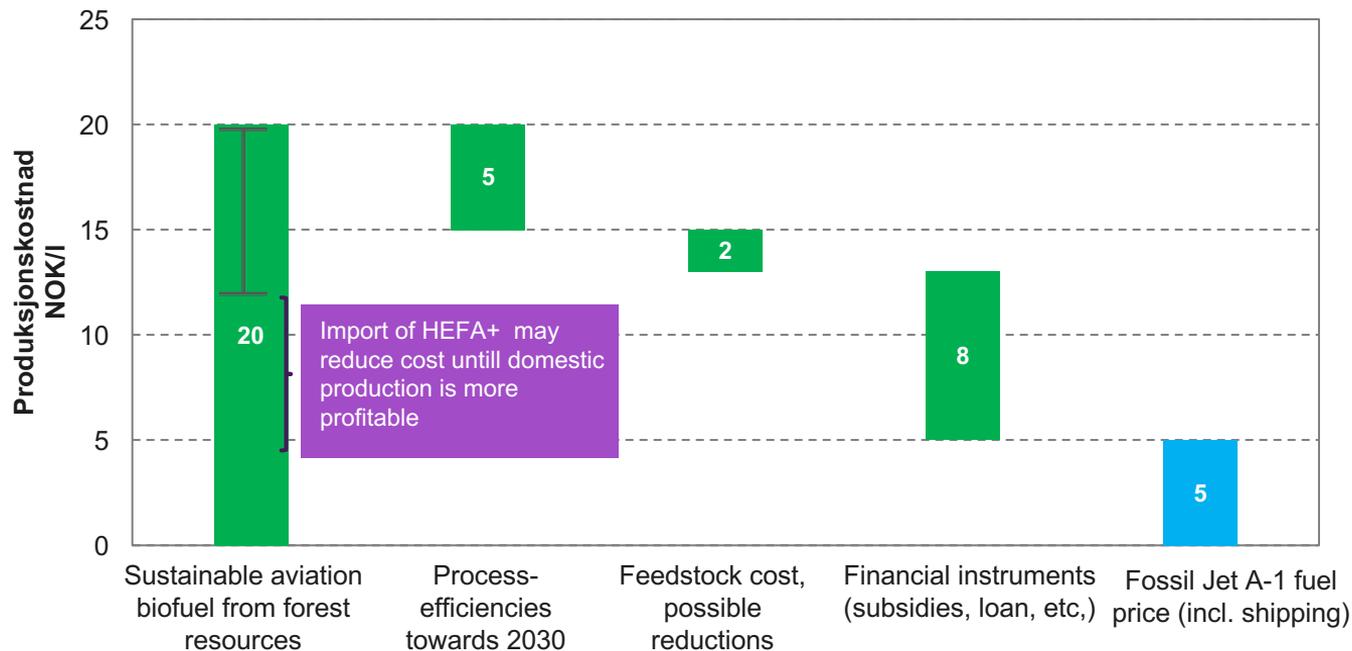
- Biojetfuel must fulfill the EU sustainability criteria
- Logging within sustainable volumes (sustained yield)
- Sufficient forest protection ensuring biological diversity

COST OF PRODUCTION PER LITRE AVIATION BIOFUEL, EXPRESSED FOR 5 PRODUCTION TECHNOLOGIES

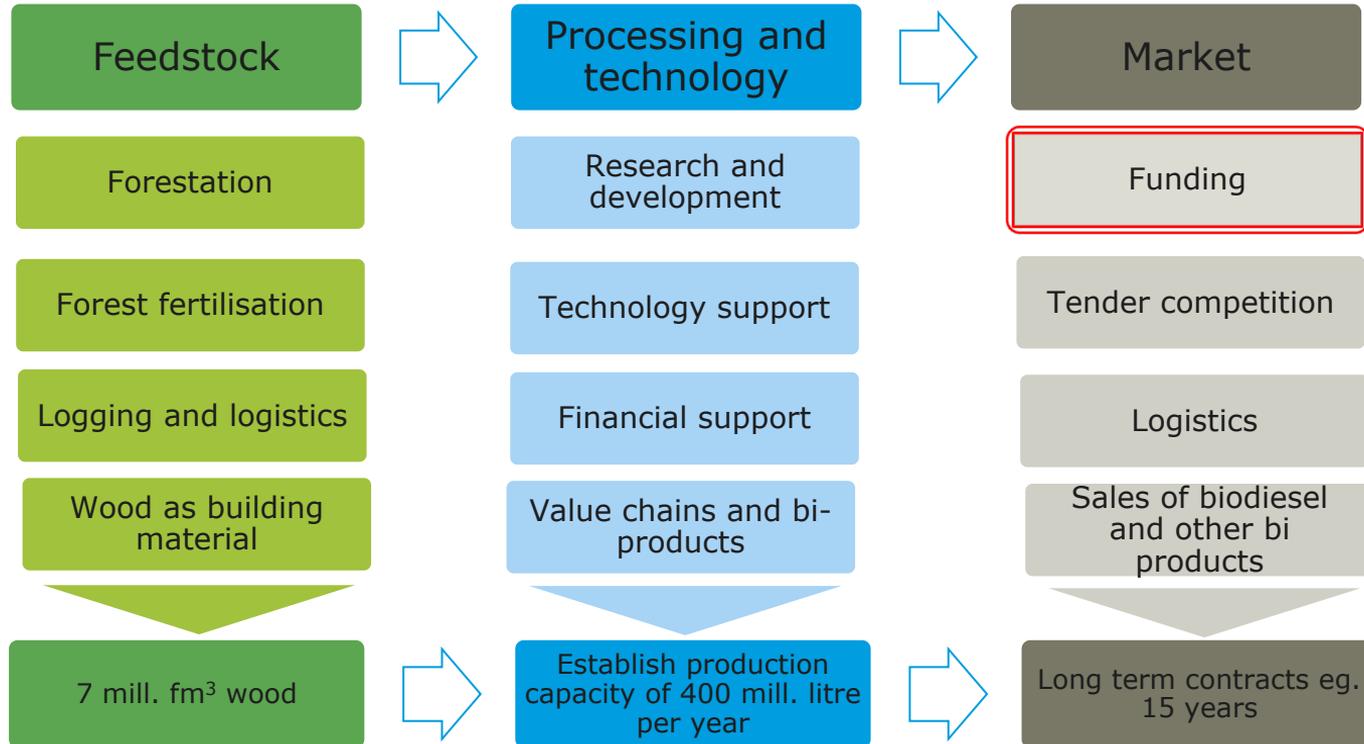
Cost of production NOK/litre aviation biofuel



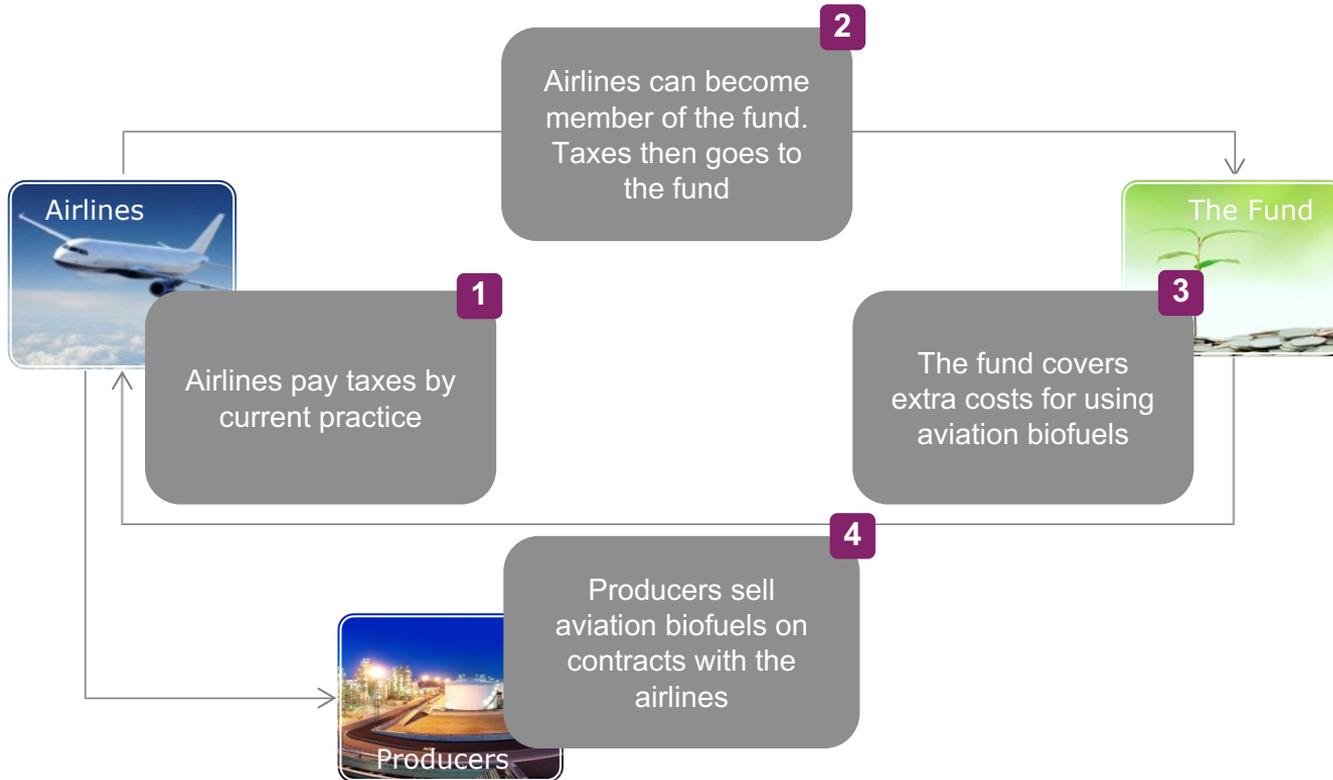
POSSIBLE COST REDUCTIONS TOWARDS 2030



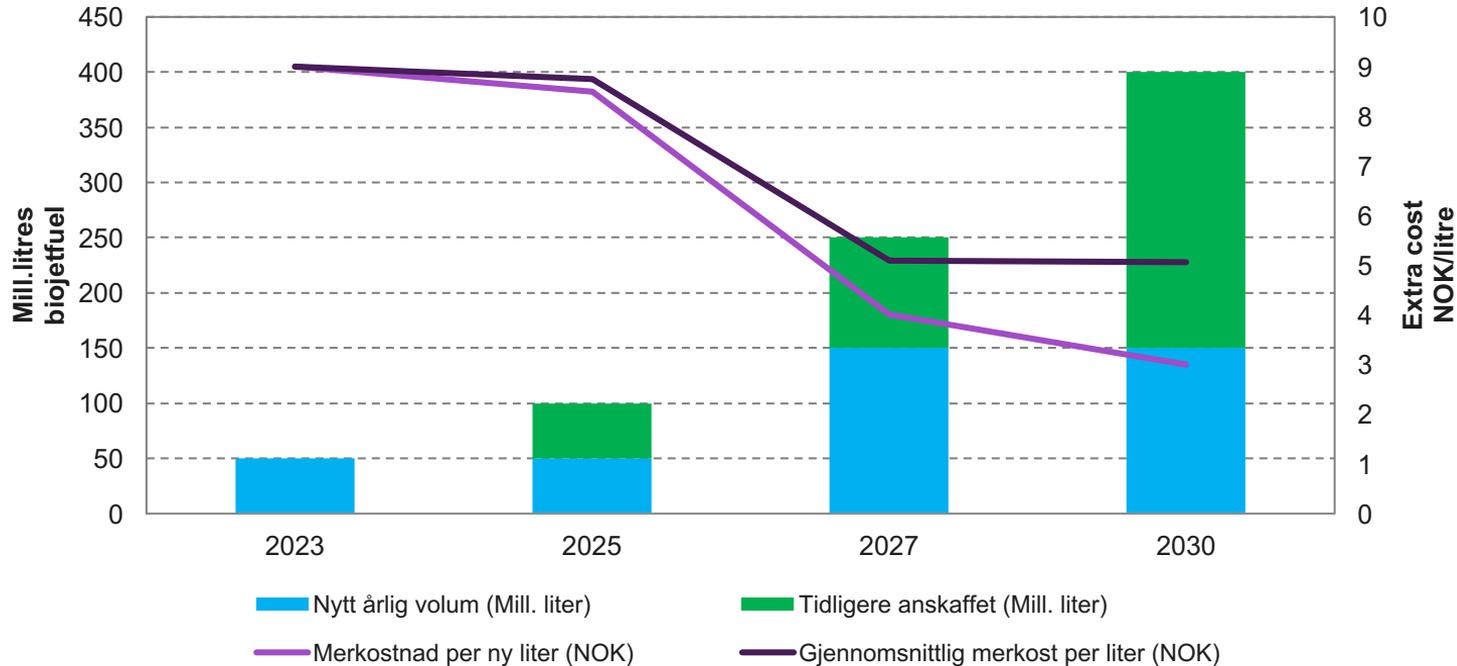
SELECTED POLICY INSTRUMENTS



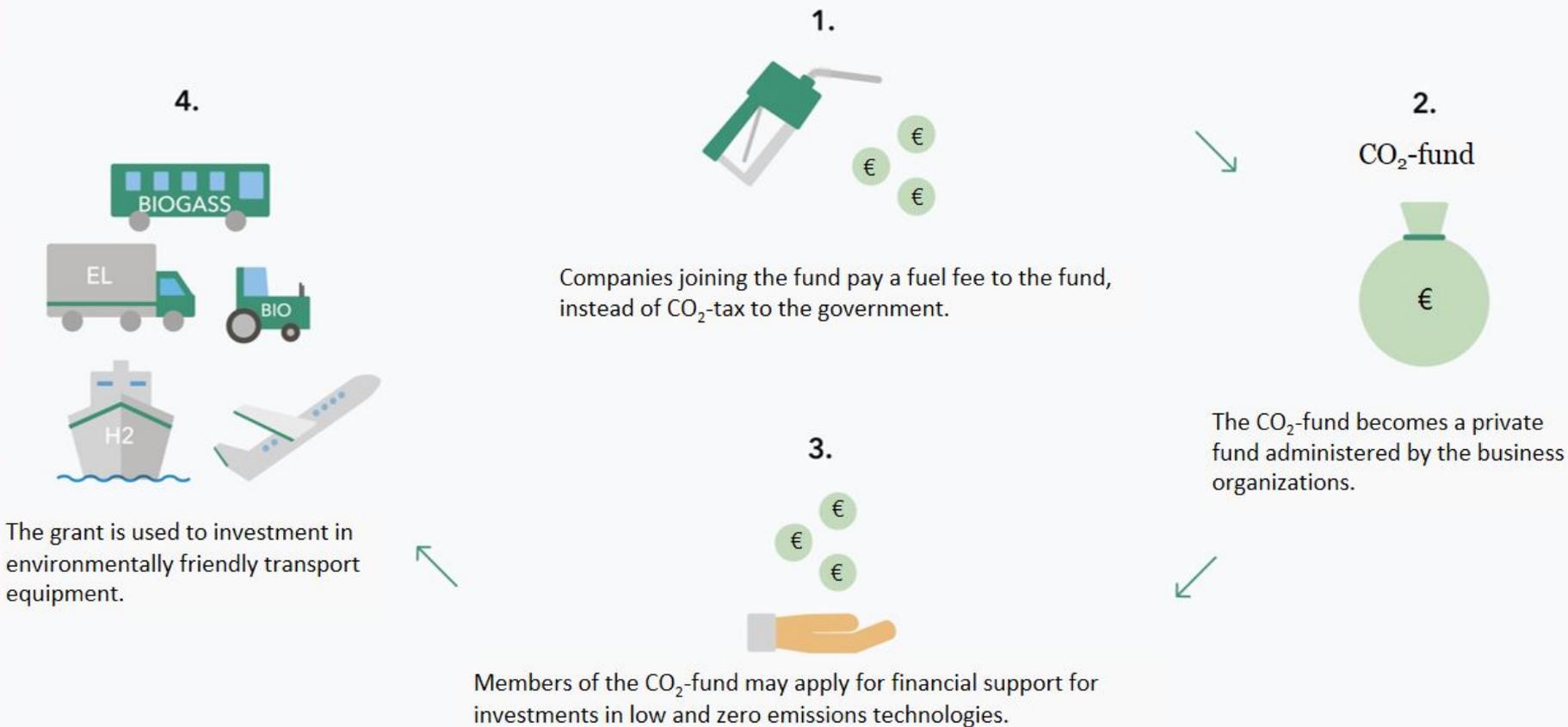
CO2 FUND CONCEPT



PHASE IN OF BIOFUEL BASED ON CO2 FUND AND TENDER – MAY FURTHER REDUCE COST

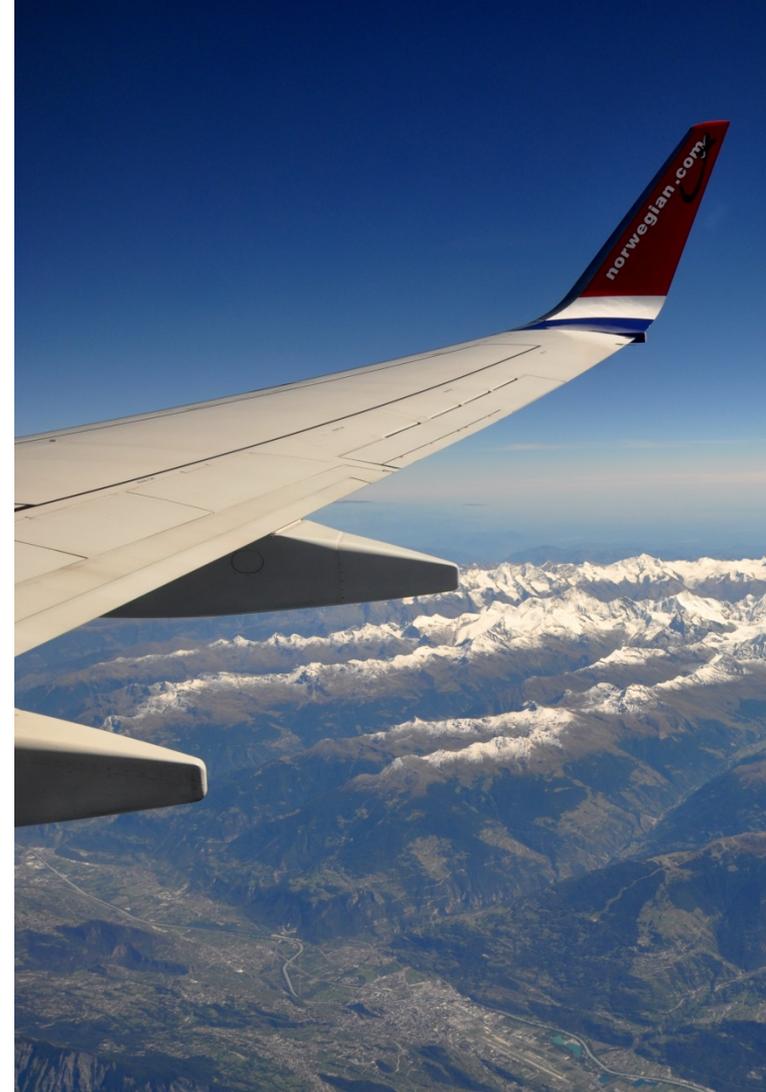


CO₂-fund for transport – how it works



Competitive advantages for production of biofuels in Norway

- Vast woody biomass resources - most relevant in medium term
- Biofuels will be an important part of forestry industry value chain
- Strong competencies and technical know-how
- Established infrastructure & logistic systems (must be improved)
- Total realistic potential in Norway is estimated to 800-1000 mill litres of biofuel (diesel+jet).
- Political challenge to bridge the (price) gap between sustainable and fossil fuel
- Negotiations with the Government has started – so far promising....





**NHO
LUFTFART**

The Federation of Norwegian Aviation Industries (NHO Luftfart) is an organisation that supports aviation industry companies in Norway. The association has more than 50 member companies employing 12.000 people. NHO Luftfart is affiliated to the Confederation of Norwegian Enterprise (NHO). It organizes companies within the domain of airline businesses, helicopter services, airports, technical services, ground handling and other aviation related businesses. NHO Luftfart shall strive to develop a stable and healthy regulatory framework, a strong corporate identity and profitability for the aviation industry. NHO Luftfart was established in 1988, and currently has four employees. We have four sector/regional committees dealing with industrial affairs, operational issues, technical issues and employment policies, all consisting of executives from the member companies. The Federation is governed by the NHO Luftfart Central Board and Executive Committee.