



# Sustainable biojetfuel in Norway

ICAO INTERNATIONAL AVIATION AND ENVIRONMENT SEMINAR

Warsaw, 19 MAR 2015

Olav Mosvold Larsen, Avinor



Video:

<https://www.youtube.com/watch?v=zpfQYnPEE70>



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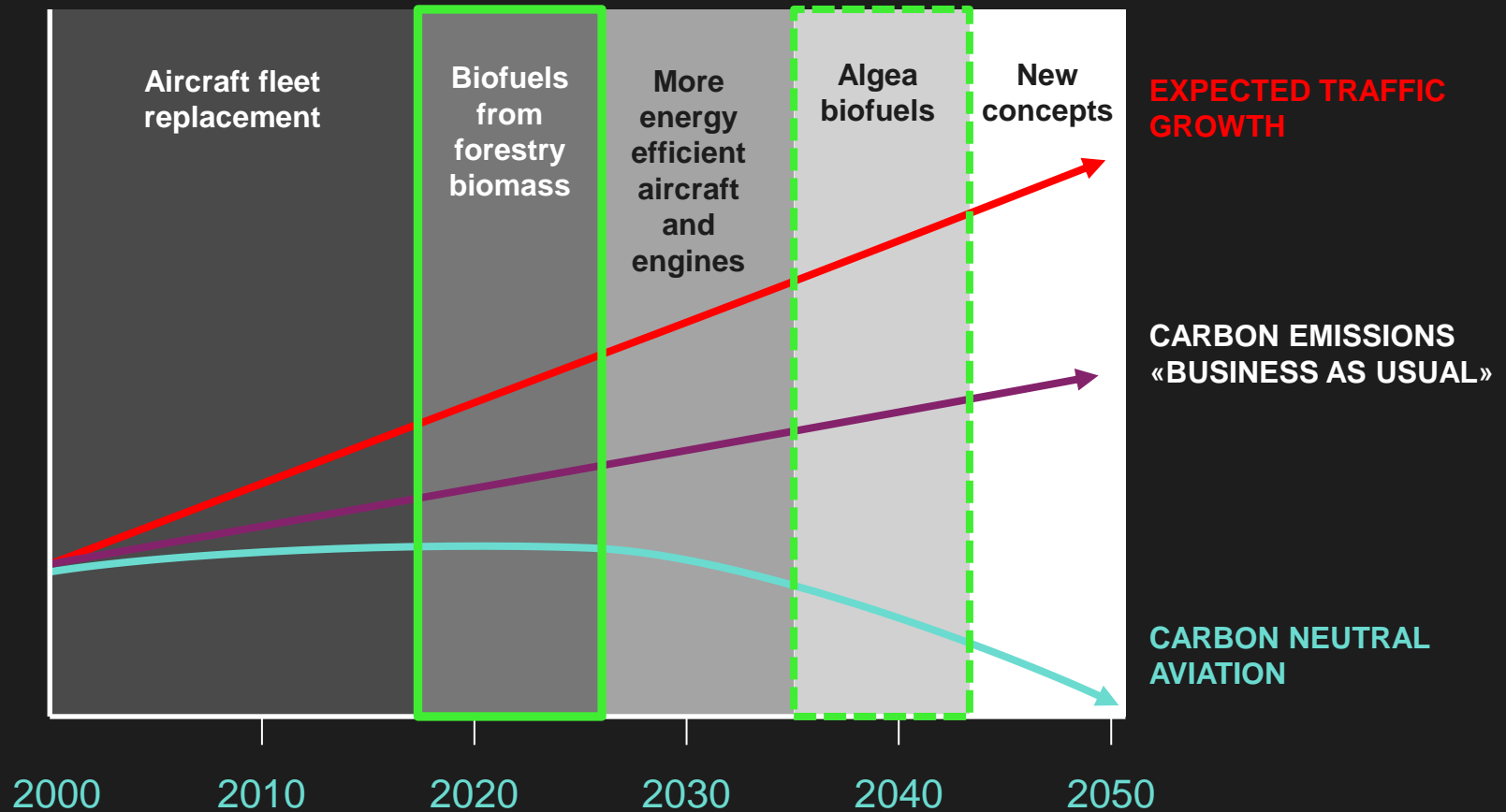
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- Avinor AS is responsible for Air Navigation Services (ANSP) and operate 46 airports in Norway
- Our modern society is totally dependent on aviation

# IS CARBON NEUTRAL AVIATION POSSIBLE?



# AVINOR'S INVOLVEMENT IS ETHICALLY SOUND AND GOOD FOR BUSINESS

- Demanding topography and geographic location makes aviation more important in Norway than (most) other European countries
- Avinor: Traffic growth should not imply emissions increase
- Biofuels certified for up to 50 % drop in
- Aviation (finally) has an alternative to fossil fuels
- Avinor prepared to invest up to NOK 100 mill
- Demoflights 11 NOV 2014 (used cooking oil)
- Available at OSL for all airlines in 2015 (used cooking oil)



# FORESTRY RESIDUES

- Woody biomass most relevant in Norway in short term
- Amount previously used for pulp and paper industry can reduce Norwegian aviation emissions with 25-30 %...
- ...and provide road transport with sustainable 2<sup>nd</sup> generation biodiesel
- Will be an important part of forestry industry value chain
- Avinor cooperating with industrial partners
- State incentives could be crucial





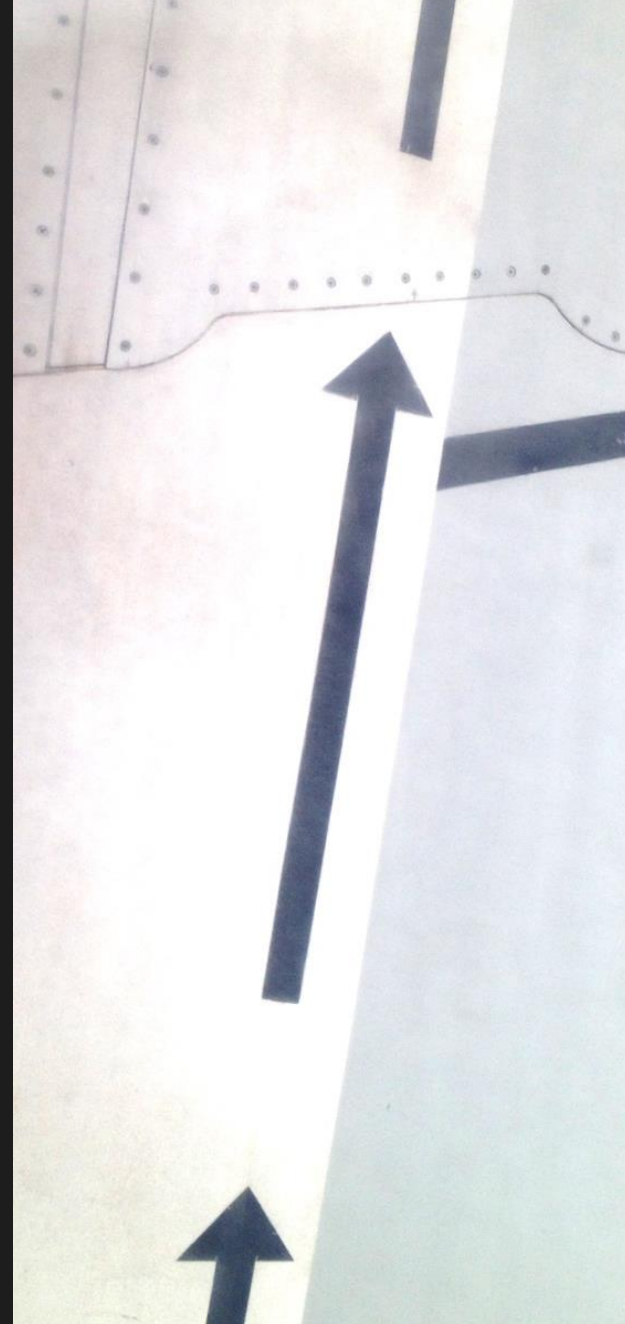
## SUSTAINABLE MARINE BIOMASS

- Fisheries residues: Limited availability
- Macro and micro algae:
  - Grows faster than land based biomass
  - Huge potential – The new aqua culture industry?
  - Interesting arctic micro algae strains
  - Cost effective after 2030?



## CONCLUDING REMARKS

- Impossible to envisage the future without aviation
- Must address climate change
- Aircraft energy efficiency: Aircraft and engine manufacturers
- Biojetfuel: ??
- Need for public-private partnerships and more R&D
- Utilize each region's comparative advantages
- State incentives could be necessary
- Is there a role for ICAO?



# WE HAVE DONE INCREDIBLE THINGS BEFORE – AND WILL DO IT AGAIN

