



AVIATION BIOFUELS AT OSLO AIRPORT

ICAO Seminar on Alternative Fuels
Montreal, 08 FEB 2017

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 AVINOR



46 airports



Air Navigation Service Provider



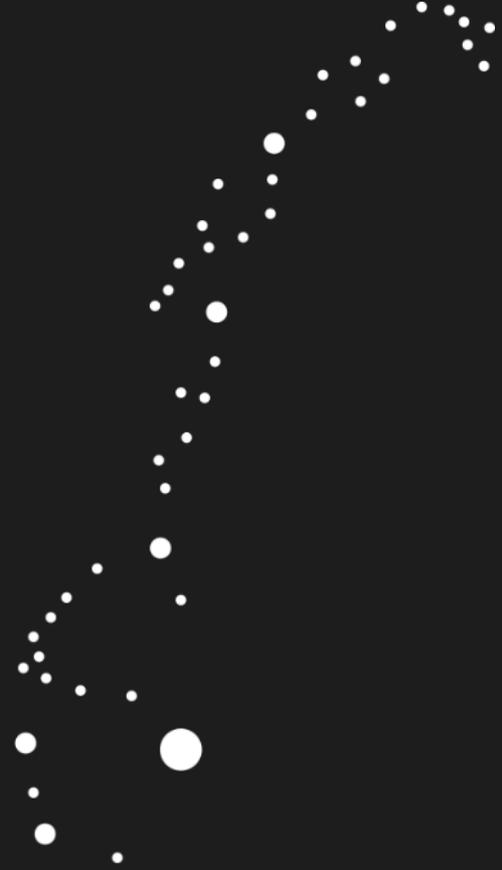
50 000 000

Terminal pax



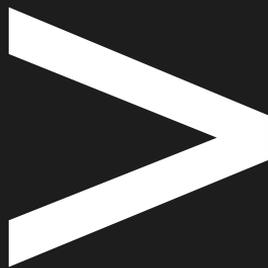
667 000

Movements



WHY?

Traffic-
growth %



Emission
reductions %



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

LONG TERM APPROACH

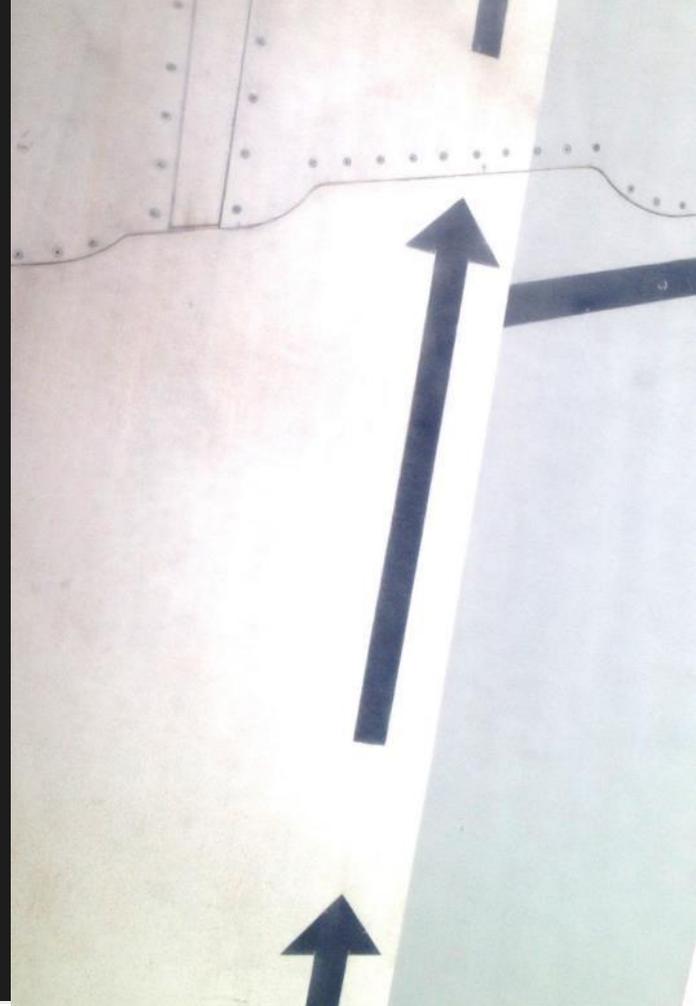
- The Norwegian aviation industry have been looking into sustainable jet biofuel since 2007
- Several projects
- Avinor to invest up to MNOK 100 in jet biofuels (2013-2022)
- Fruitful collaboration with academia, potential biofuel producers, AirBP, airlines and other stakeholders



OSL #1 AIRPORT IN THE WORLD TO OFFER JET BIOFUEL TO ALL AIRLINES

Project goal

- Demonstrate that jet biofuel can be dropped into an airport's main fuel system
- Overcome administrative and legal hurdles
- Sort out communication issues



Lufthansa



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JAN 2016: OSL #1 HUB TO OFFER JET BIOFUEL TO ALL AIRLINES ON A COMMERCIAL BASIS

- Cooperation with Air BP, SkyNRG, Neste, Lufthansa Group, KLM and SAS
- Dropped into the fuel farm
- Distributed in the hydrant and dispenser system
- Thousands of bio jet flights have been carried out
- This is the next step
- Important piece in the logistics puzzle for cost effective bio jet fuel distribution
- EU ETS and domestic CO2-tax waived
- Premium cost split between the project partners



1.25 MILLION LITRES JET BIOFUEL AT OSL

First batch:

- Based on Camelina oil from the ITAKA project in Spain
- Refined by Neste in Finland

Second batch

- Based on Used Cooking Oil
- Refined by AltAir in California
- First time jet biofuel is imported to Europe

Both batches:

- Shipped to Gävle in Sweden
- Transported to OSL on lorries



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OSL #1 AIRPORT IN THE WORLD TO OFFER JET BIOFUEL TO ALL AIRLINES

Experience

- Works very well!
- No issues technically
- Administrative issues sorted
- No issues with passengers or other airlines



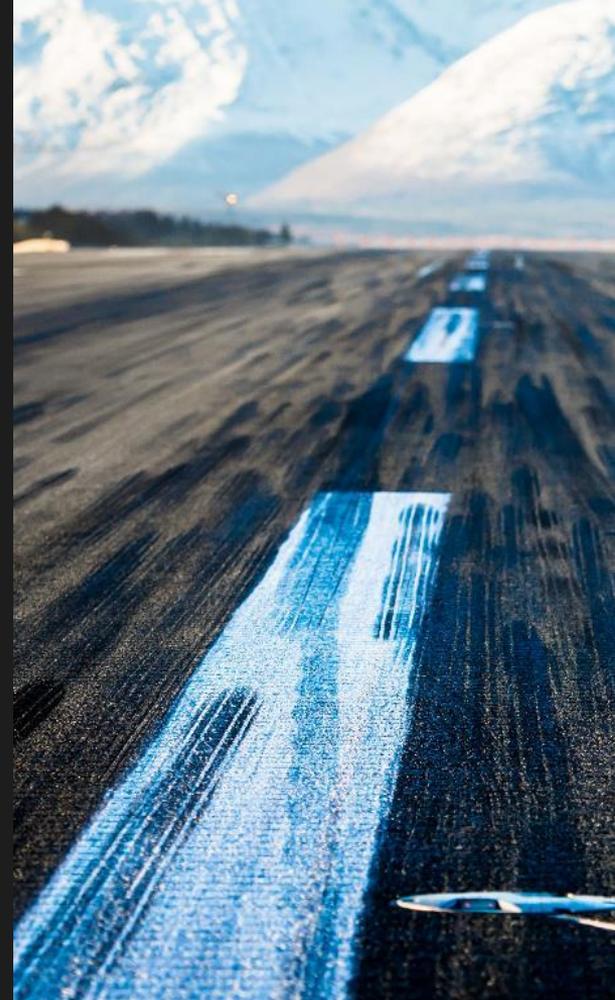
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WAY FORWARD

- Avinor 2030 goal: 30 % of aviation fuel in Norway should be sustainable biofuel = Approx 400 mill litres
- Continued supply at OSL and possibly other airports
- Develop a broad portfolio of projects
- Support industrial scale production of sustainable jet biofuel
- Push and pull for jet biofuel in Norway on several arenas



3 POLICY REQUESTS TO STATES

1. Production must be scaled up. Look into the entire value chain
2. Sectors without alternatives to liquid fuels should be prioritized
3. This is an industry in its infancy. Early movers must be rewarded with long term and robust incentives



THE AVIATION INDUSTRY HAS DONE AMAZING THINGS BEFORE – AND WILL DO IT AGAIN

