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NHH/Terravera seminar

Anders Fagernæs VP Sustainability November 14 2022



Agenda

→ ESG priorities

- Environmental sustainability strategy and governance structure
- → Reducing CO2-emissions from business flights with sustainable aviation fuels
- → Terravera-cooperation

Making sustainable air travel achievable for everyone



We will reduce our Co2-emissions by 45 percent by 2030

KPI targets		as measured by
Α	Carbon efficiency	→ A 45% reduction in carbon emissions per passenger kilometer by 2030 from a 2010 baseline
В	Waste resource optimization	 → A 100% reduction of non-recyclable plastics by 2023 → A 30% reduction and 100% recycling of single-use plastics by 2023
С	Accountability	→ Integration of climate risk and environmental factors into corporate governance, risk management and annual reporting

Grams Co2 per revenue passenger kilometer





Global Warming of 1.5 °C

ipcc

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An IPCC special report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.

Source: International Panel on Climate Change, 2018

Updated version September '22

and tasks



Portfolio of ongoing environmental actions

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How do we improve carbon efficiency in the most cost-efficient way?



Numbers in italics refer to the required reduction in grams of CO2 per RPK per action to reach -45% target in 2030.

Norwegian customers use less fuel per flown kilometer making it cheaper to reduce CO2-emissions with sustainable aviation fuel

- High load factors = less fuel used per customer
- Low CO2-emissions per passenger kilometer
 = less fuel used per flown kilometer
- Phasing in new and 14% more fuel-efficient aircraft = even less fuel per flown kilometer
 - → 2022: 2 MAX-8
 - → 2023: 17 MAX-8
 - → 2024: 28 MAX-8
 - → 2028: 78 MAX-8 + option of 30
 - → 2030: Fleet of only MAX-8
- Less fuel per flown kilometer = cheaper to reduce CO2-emissions with sustainable aviation fuel



Reducing CO2-emissions from business flights with sustainable aviation fuel

Work streams

- 1. Sourcing/offtake
- 2. Calculation methodology
- 3. Accounting methodology
- 4. Data management
- 5. Safety and sustainability documentation (chain-of-custody)
- 6. Reporting (voluntary and mandatory)
- 7. Sales



Creating a dynamic model for kgCO2 on route level

SkyBreathe

AIRCRAFT

Y SEATS

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Norwegian og TERRAVERA skal . samarbeide om måling av CO2utslipp AIRCRAFT 11.08.2022 FUEL Flyselskapet Norwegian og teknologistiftelsen Terravera har nylig inngått en samarbeidsavtale. Målet for samarbeidet er i første omgang å syreteste ORIGIN 1 Norwegian sin etablerte modell for måling av CO2-DESTINATION utslipp fra flyreiser. AIRCRAFT AIRCRAFT **KG FUEL PER** KG FUEL TO CO2 ŵ .16 CONSTANT ROUTE CUST. / CARGO LOAD FACTOR NO. OF **KG FUEL PER** 5 **CUSTOMERS** CUSTOMER 4 ,.....Y...... ACTUAL KG CO2 PER Source: ICAO Carbon Emissions Calculator Methodology **CUSTOMER**

YOUR FLIGHT





Calculation of aircraft fuel burn on a particular route



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Calculation of all customers' share of fuel consumption

Calculation of number of customers

Calculation of fuel consumption per customer



Calculation of actual CO2emissions per customer

Tailor-made and easy solution to meet your company's climate targets





Switch to sustainable aviation fuel





Meet climate targets



Welcome on board.