ICAO EUR/NAT and ACI EUROPE

REGIONAL GREEN AIRPORTS SEMINAR

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Norwegian perspectives on Climate Adaptation and resilience
Session 9

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Banksy (2009), Oval Bridge, Camden, London

Presentation overview

01 Avinor

02 What is climate risk?

03 Climate change in Norway

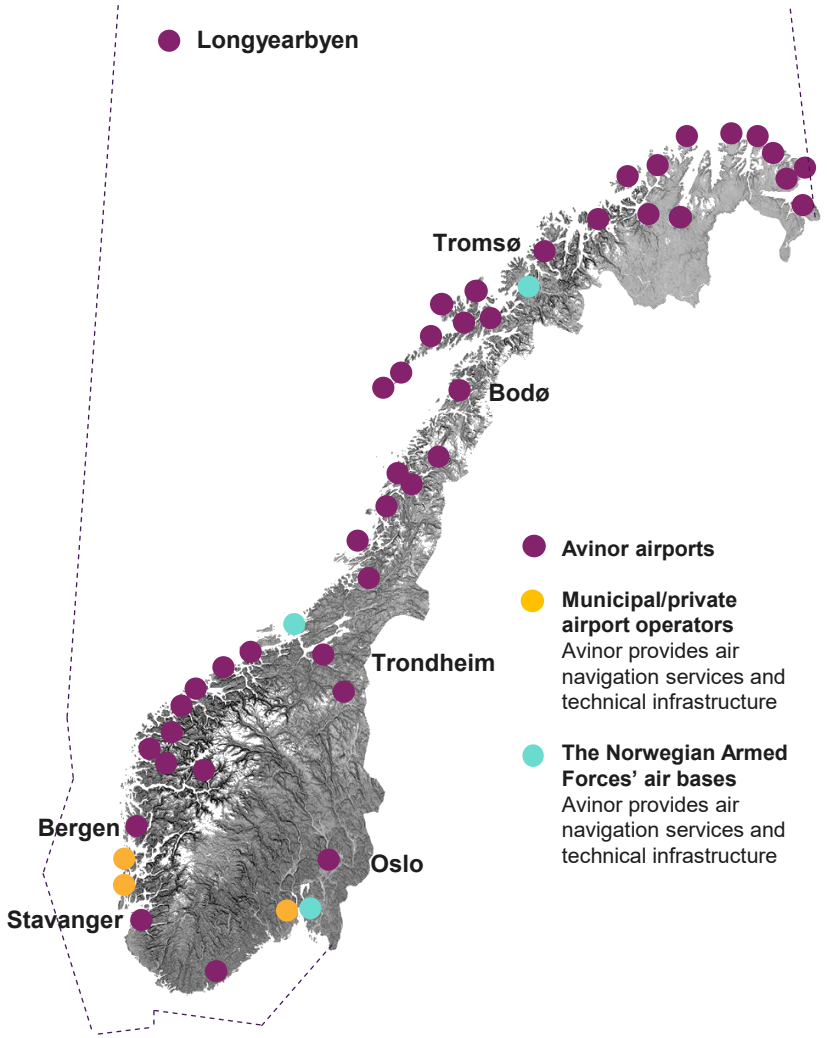
04 Climate change in Uzbekistan

05 Tools for analysis

06 Next steps

01 Avinor

- State owned
- Operating 43 airports in Norway
- Air Navigation Services Provider (ANSP) in Norwegian Airspace



02 What is climate risk?

- Physical risk/Climate adaptation (but also transition risk – not covered here)
- The climate is changing – and to ensure safe and reliable air transport, airport operators must adapt

- Our start was in 2000 when the Royal Norwegian Ministry of Transport challenged the transport sector to analyse how the future climate would affect transport infrastructure in Norway. This was our first of many analyses

- Aviation is already a risk averse business and perhaps better suited to adapt than other sectors
- However, well planned initiatives today can save on future costs

03 Climate change in Norway

- Warmer
- Wetter
- Wilder

Warmer

- Svalbard: Melting permafrost. Settling damages on RWY and buildings
- Mainland: Increased use of de-icing chemicals. Issues with environmental permits

Wetter

- Drainage systems for buildings and RWYs/TWYs
- Surface access

Wilder

- Wave protection
- Storm defences
- Design and maintenance requirements for buildings and RWYs/TWYs
- Navigational aids

04 Climate change in Uzbekistan

- Water scarcity
- Land degradation
- Desertification
- Air pollution
- Extreme heat impacts

(Very different from our challenges..)

05 Tools for analysis

- Carry out a risk assessment for your airports and your situation
- We have over the years tried various approaches
- TCFD (Task Force on Climate Related Financial Disclosure) provides a comprehensive, but actually quite good framework. Analysis contains
  - 2-3 predefined scenarios (saves a lot of time)
  - 2-3 time frames (short – medium – long term)
  - Chronic and acute risks
  - → Physical Risks – Transition Risks – Opportunities

- Our attempt here: Avinor Climate Risk Report 2025 (TCFD)

06 Next steps

Avinor's climate-related risks and opportunities (1/5)

R/O CATEGORY	DRIVER	DESCRIPTION	AVINOR'S KEY ACTIONS
Chronic physical risk	Permafrost thawing	Thawing of permafrost can lead to partial weakening of the pavement structure of the movement areas (Runway/Taxiway/Apron) at Svalbard Airport, Longyear (LYR/ENSB). This process can damage infrastructure both above and below ground, including buildings and underground systems. These disruptions may result in operational challenges and increased costs for repairs and comprehensive reconstruction of new infrastructure.	• Continuous partial repaving of the movement area. • Various geo-technical surveys have been implemented in an effort to monitor and track movements and react to changing conditions. • 2025: Land surveying initiated. 54-point measurements to monitor movements in the runway at millimetre precision level. • 2025-2026: Concept Assessment Project and Report (KVU).
Chronic physical risk	Unstable weather patterns	Increasing winter weather variability, especially temperature fluctuations around freezing, creates challenging conditions for airport operations. This may increase the need for snow removal and the use of chemicals for de-/anti-icing, and may cause schedule disruptions, temporary closures, and revenue loss. Enhanced environmental monitoring and compliance also raise operational costs. Additionally, freeze-thaw cycles can damage infrastructure above and below ground.	• Optimising the use of available snow/ice removal resources such as de-icing chemicals, sand, and mechanical removal. • Developing decision support tools that optimise winter maintenance (sensors, access to relevant data, use of AI, et cetera). • Investigate the possibility of replacing plastic cutting-edges on snowploughs with steel cutting-edges.

Upstream | Own operations | Downstream | Medium time-horizon (2030) | Long time-horizon (2050)

AVINOR

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Thank You

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