Transportation hubs as energy hubs

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Platform North Forum

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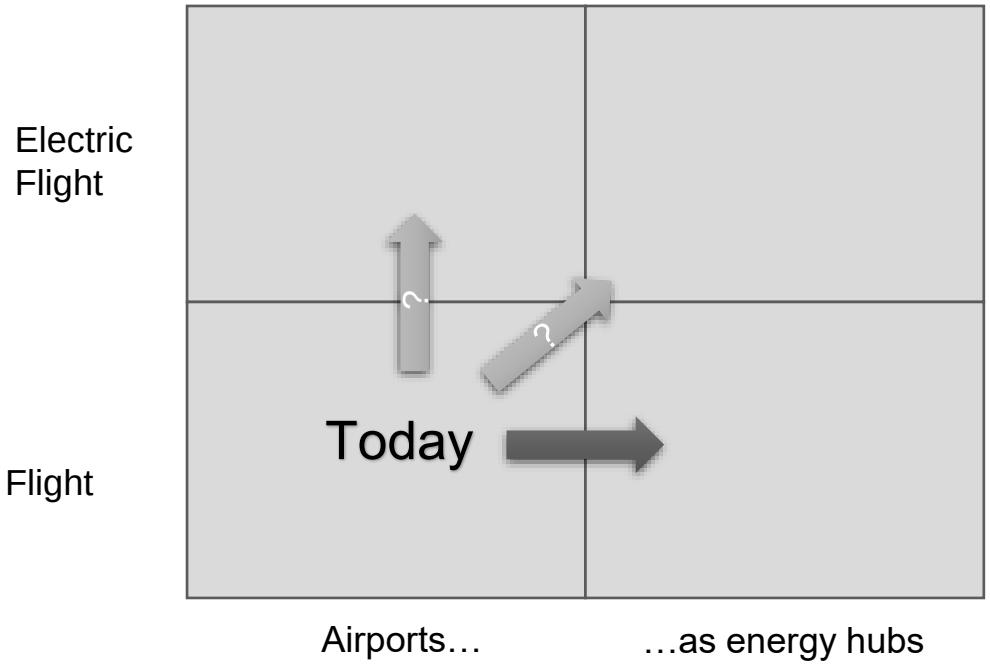
Foto Jonas Jacobsson, Unsplash

Context: Electrified airports, not electric flight



Regional airports play important roles

- Transportation system
  - Access points into global air transport system
  - Intermodal transport hubs
  - Reduce travel times in rural areas
- Socio-economic development
  - Improve access to remote areas
    - Emergency services (medevac)
    - Civil defense and preparedness
  - Stimulate regional tourism, employment, ”cohesion”

SAS’ MEDEVAC (Boeing 737)
Source: SAS

BRIEFING

The future of regional airports: Challenges and opportunities

SUMMARY

EPRS | European Parliamentary Research Service

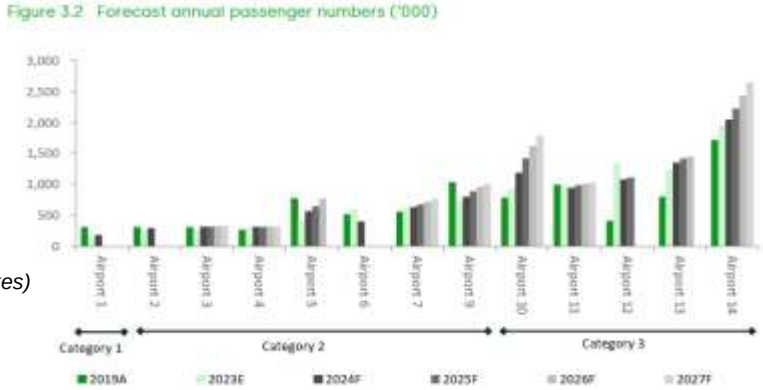
EN

Source: European Parliamentary Research Service (2021), ”The future of regional airports”

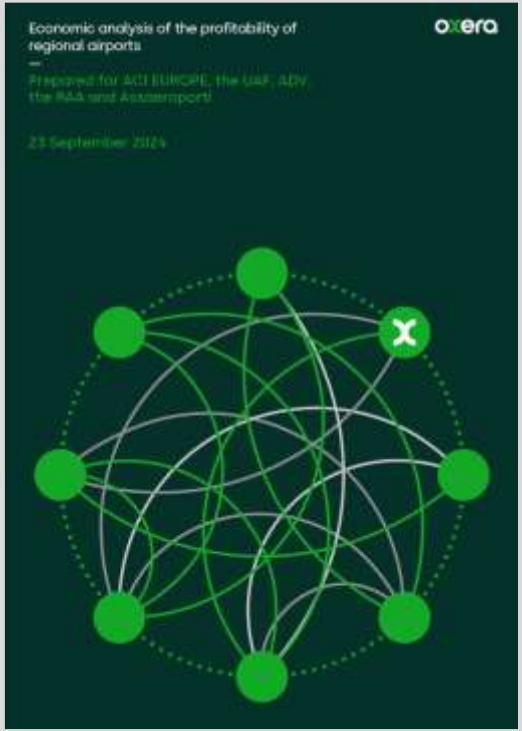
Headwinds against regional airports

- Aviation efficiencies of scale favor centralization

Sveriges kommersiella flyglinjer (inrikes)
Source: VTI



- Social and political actions can implicitly discourage domestic flight
  - Emissions reporting (domestic vs. international flights)
  - Flight shaming reduces passengers
  - Shift to rail (Norrbotniabanan, Air France vs. SNCF)



Source: Oxera Consulting (2024), "Economic analysis of the profitability of regional airports"

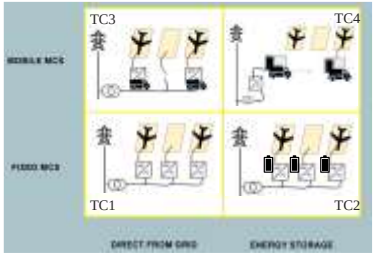
Electric aviation will save the day (or will it?)

- It should:
  - Decrease the scale advantage
  - Open new regional routes, increase schedule flexibility
  - Increase passenger traffic at regional airports
- It does:
  - Create technology uncertainty (cf. SAF, hydrogen)
  - Add infrastructure requirements
    - Aircraft charging equipment
    - Grid connection
    - Energy storage ?

70 passenger ATR-72-600
Source: SAS

9 passenger Alice
Source: Eviation

Source: FAIR project final report (2022)



Source: VTI

Source: Nordregio

Why is the transition taking so long?

Aviation is different

- Safety-first culture – certification process is thorough
- International standards – change requires multi-national agreement

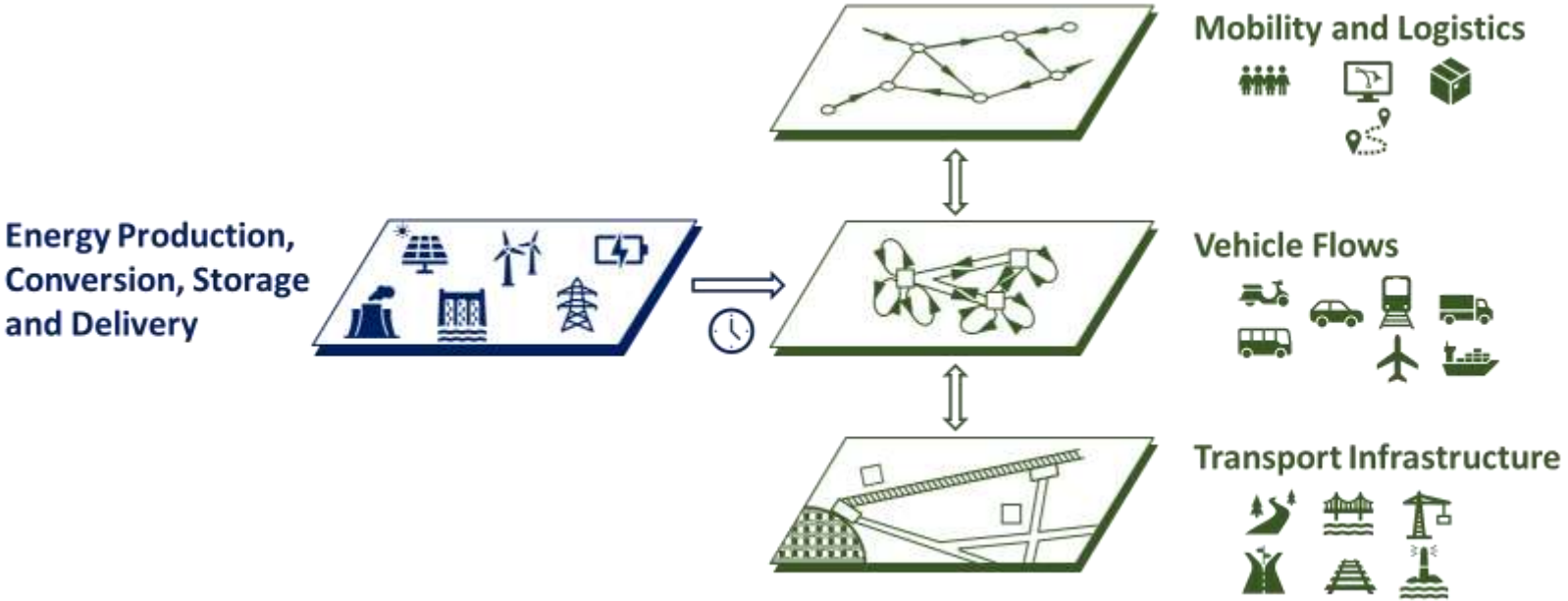
- Aviation is a minor consumer of transport energy
- Easier to electrify other transport modes

►Aviation needs different business models

The airport as the hub of a multi-modal transport system

Source: Skellefteå Airport

What is a hub in the electric power sector?



Source: VTI, inspired by original of Sten Wandel, 1993

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Distinct business models for acting as an energy hub (examples)

A. Focus on the airport's transportation mission

- Minimize net energy consumption to reduce cost of energy
- Maximize the economics of aviation operations by:
  1. Adding generation to offset demand
  2. Then, adding storage to smooth net load
  3. Demand management may be included

Increases *independence* from the grid, increases an ***airport's*** resilience

B. Create a secondary mission (energy) for an airport

- Seek ways to produce energy revenue to offset energy costs
- Maximize the value of an airport's (energy) assets by:
  1. Managing loads to reduce peak demand
  2. Offer grid services and energy arbitrage
  3. Add storage and generation as needed

Increases *interdependence* with the grid, increases resilience of the *system*

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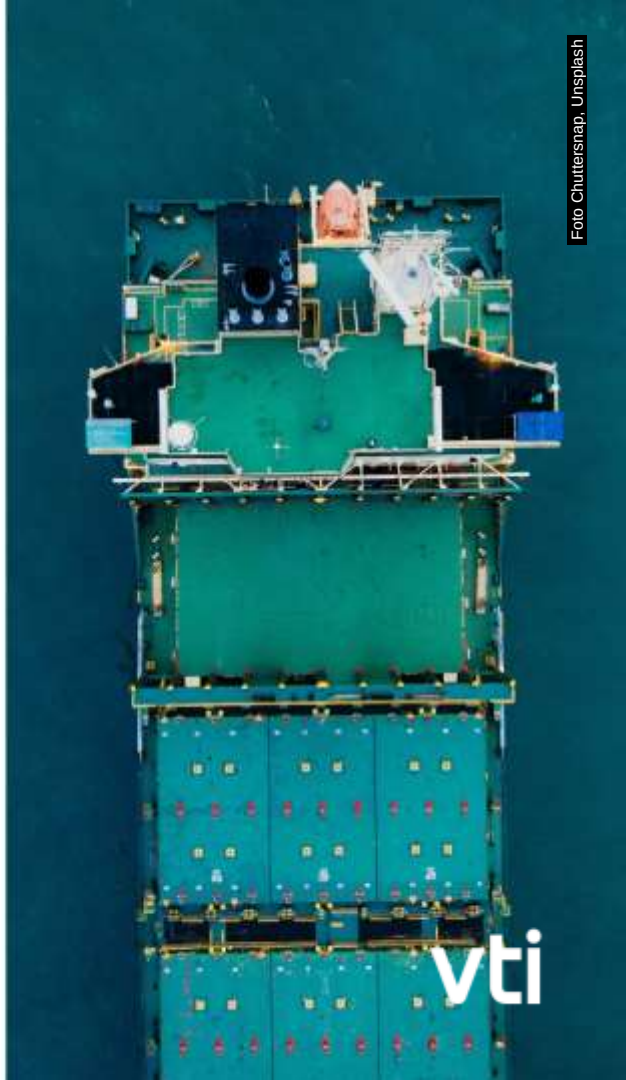
Port electrification motivates different ways of thinking about energy

Nedladdningsbart på hemsidan i slutet av projektet (april 2026):

- HELP-verktyget
- Användarguide
- Slutrapport

www.vti.se/help-verktyg



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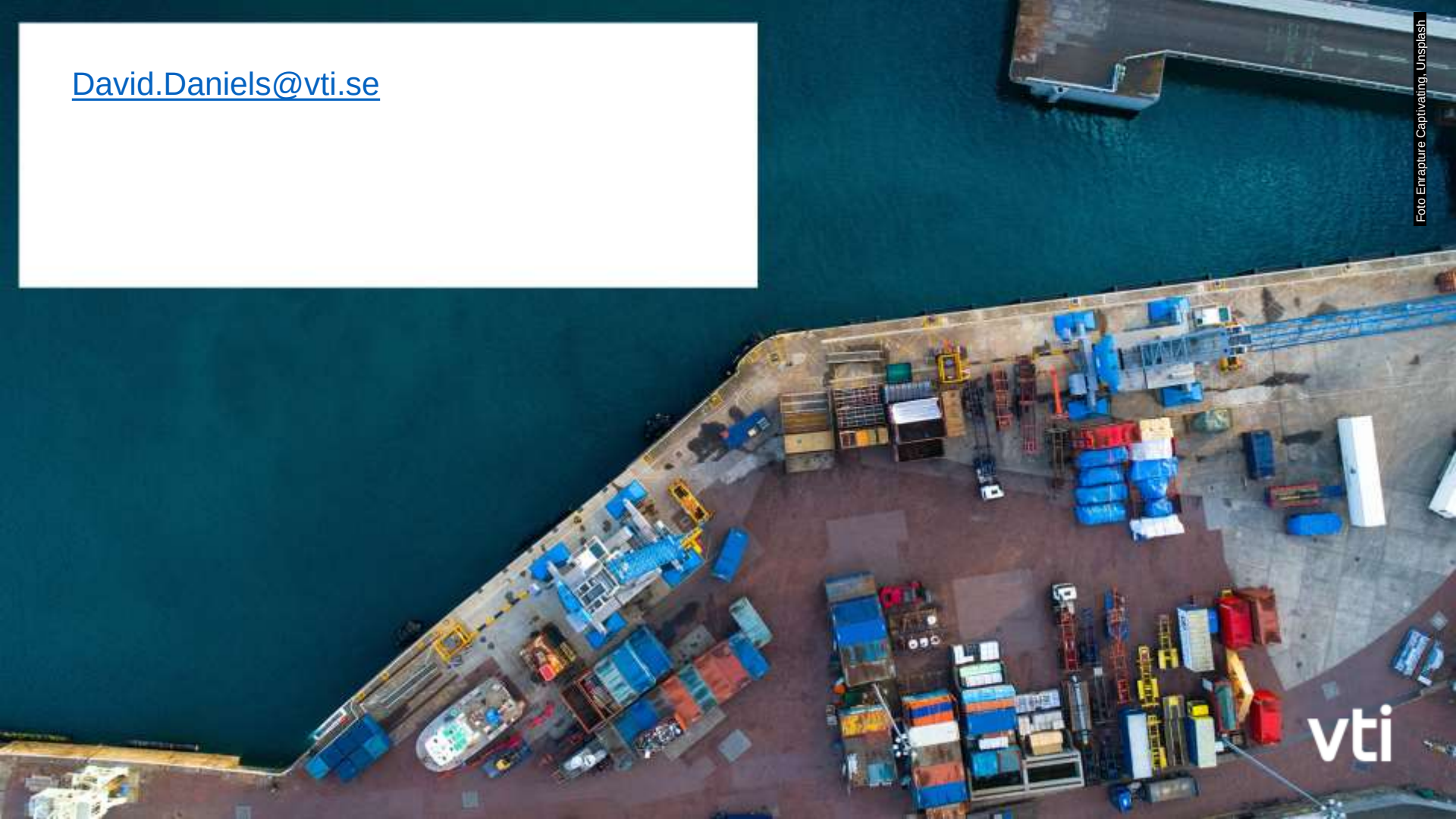

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