

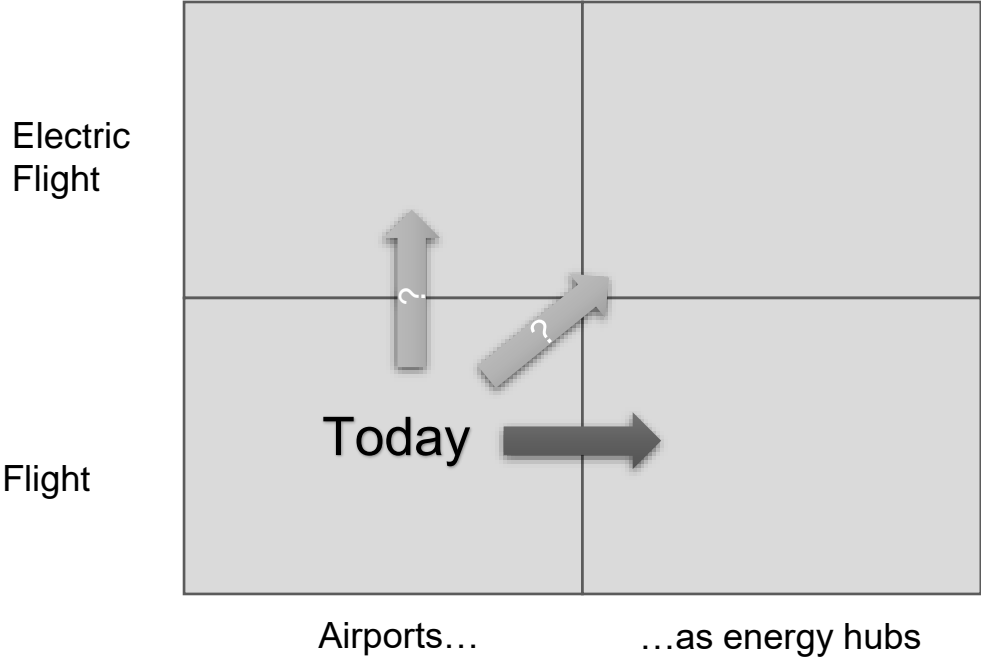


Transportation hubs as energy hubs

David Daniels, VTI
Platform North Forum
Luleå, 2026-03-18

vti

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

The future of regional airports: Challenges and opportunities

SUMMARY

Regional airports are an important part of the aviation system in the European Union (EU). They are engines of socio-economic development and improve accessibility to certain locations. In particular those that are remote or not well served by other forms of transportation. They also have a vital role in terms of economic and social cohesion, stimulating tourism and investment, as well as facilitating access to essential services. In addition, they can help to reduce congestion at major hub airports.

The Covid-19 pandemic has hit regional airports hard, especially those more dependent on passenger traffic, which has been more severely hit than cargo traffic. The situation is so difficult that without government support, many regional airports, which serve local communities, face the risk of insolvency. Meanwhile, the paradigm is shifting airports under pressure to become more digital. Moreover, a greater focus on tackling climate change is driving various projects to make airports more sustainable. The recovery from the crisis is likely to take several years. It will depend on several factors, such as the duration and magnitude of the crisis, pace of vaccination and consumer confidence. The speed with which the economy recovers will also affect the long-term recovery of air travel and take-off times requires support.

The EU has taken steps to ensure that Member States can make full use of the benefits allowed under State aid rules, to provide regional airports with support to overcome this unprecedented crisis. Since March 2020, the European Commission has approved numerous State aid schemes from which regional airports can benefit. The EU can also support airports through its Recovery and Resilience Funding, which aims at making Europe more sustainable, further and better prepared for the challenges and opportunities of the green and digital transitions.



In this Briefing

- 1 Impact of the coronavirus pandemic on EU airports
- 2 Focus on sustainability
- 3 Restoring public confidence
- 4 Accelerating digitalisation
- 5 Support provided to regional airports during the coronavirus pandemic
- 6 Both to recovery

This Briefing has been drafted at the request of a member of the European Committee of the Regions, in the framework of the cooperation agreement between the European Parliament and the Committee.

EFRE | European Parliamentary Research Service

Author: Maria Mouskoti
Member: Dimitris Sotiropoulos
17 000 130 - February 2021

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

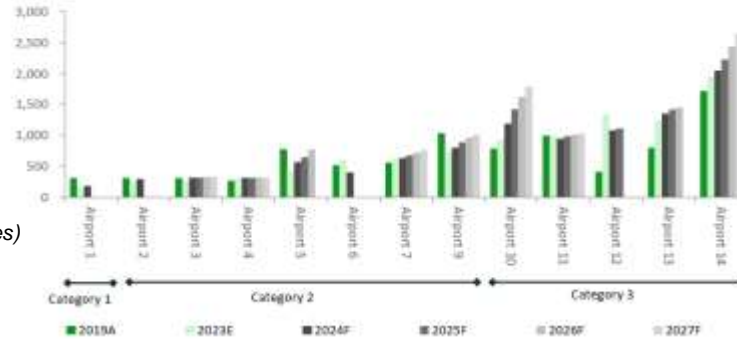
Headwinds against regional airports

- Aviation efficiencies of scale favor centralization

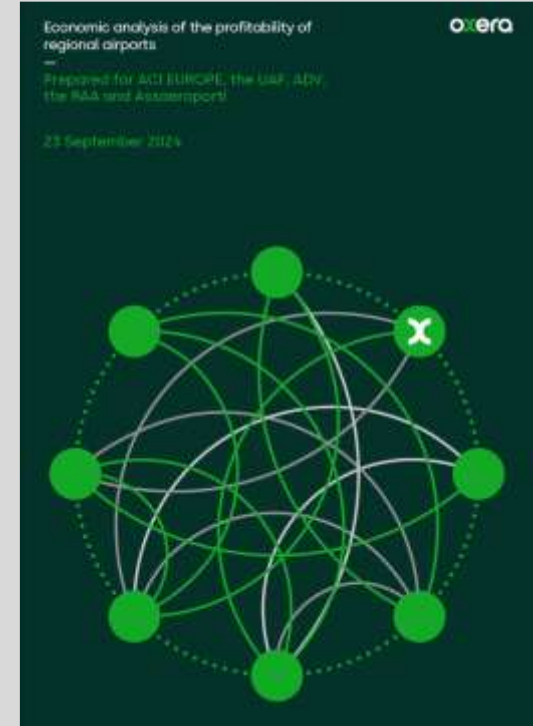


Sveriges kommersiella flyglinjer (inrikes)
Source: VTI

Figure 3.2 Forecast annual passenger numbers ('000)



- 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 ?



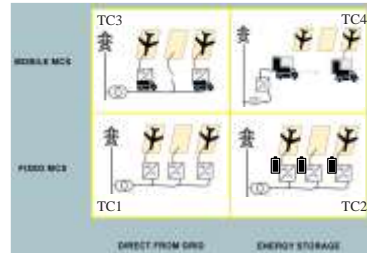
70 passenger ATR-72-600
Source: SAS



9 passenger Alice
Source: Eviation



Source: FAIR project final report (2022)



Source: VTI

Why is the transition taking so long?



Source: Nordregio

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

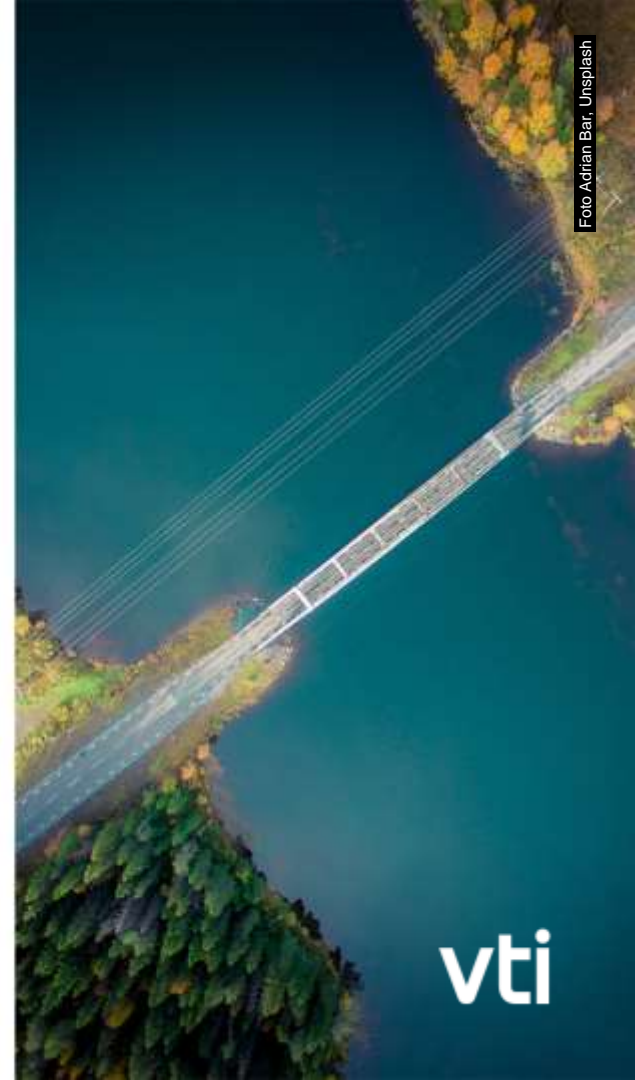
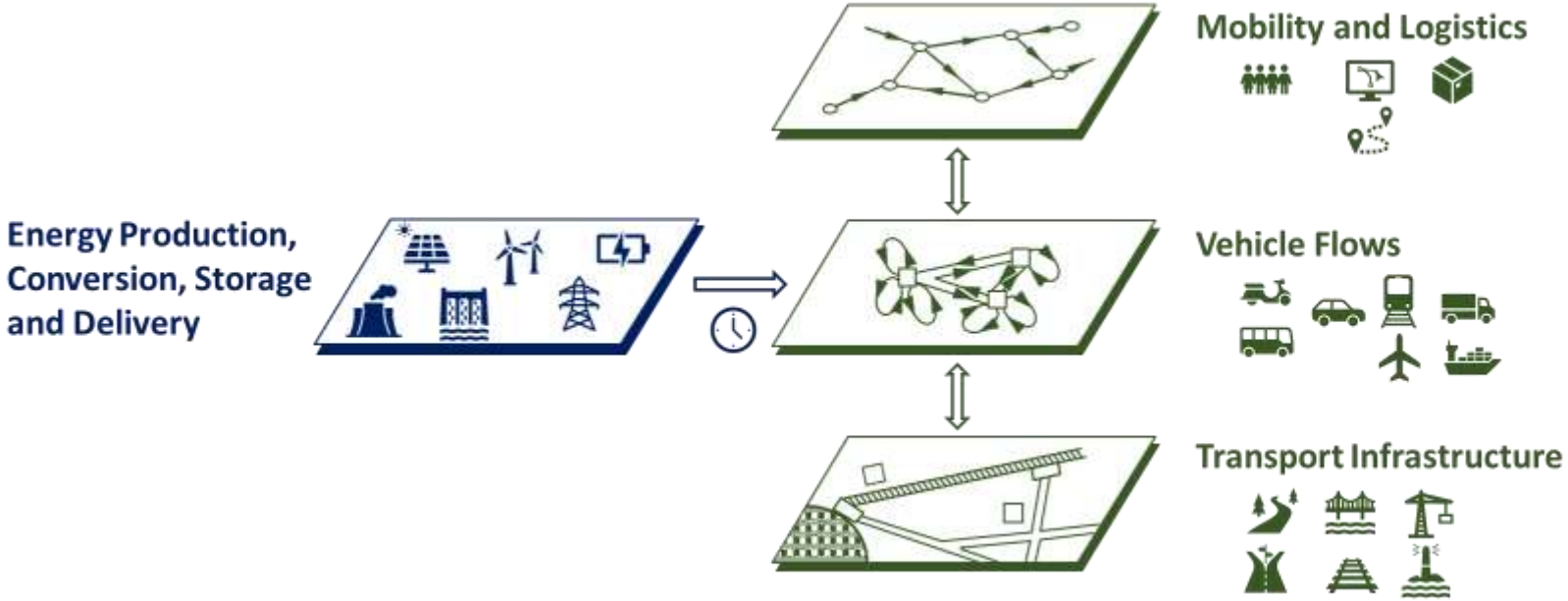


Foto Adrian Bar, Unsplash

What is a hub in the electric power sector?



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

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

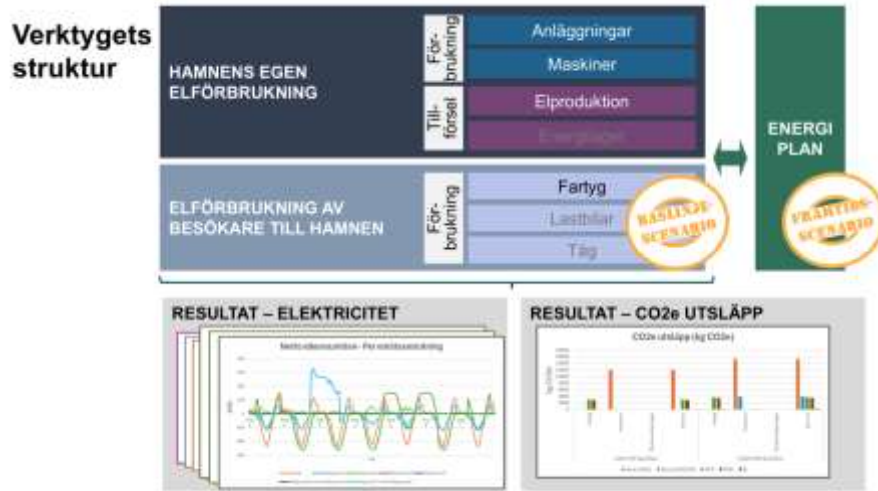
Increases *independence* from the grid, increases an *airport's* resilience

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*

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



David.Daniels@vti.se

