Electric aviation and the effects on the Nordic regions

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Electric aviation

- Here: focus on fully electric but also taking hybrid models (use of biofuels and batteries) into account
- Current limitations: limited seating and distance of c. 200 km
- Demands to airports or air fields regarding recharging stations

Why electric aviation in the Nordics?

- Many remote areas that may face accessibility challenges
- Distance to regional centers often short
- Number of passengers smaller

➢ But how would the development impact regions and local communities?

➢ What are the critical factors to consider and how should policies address them?

On-going project

- Working with Nordic Energy Research and University of Akureyri (Iceland) for the Nordic Council of Ministers

Accessibility study for electric aviation

Which possible routes have the largest accessibility gains in the Nordic Region?

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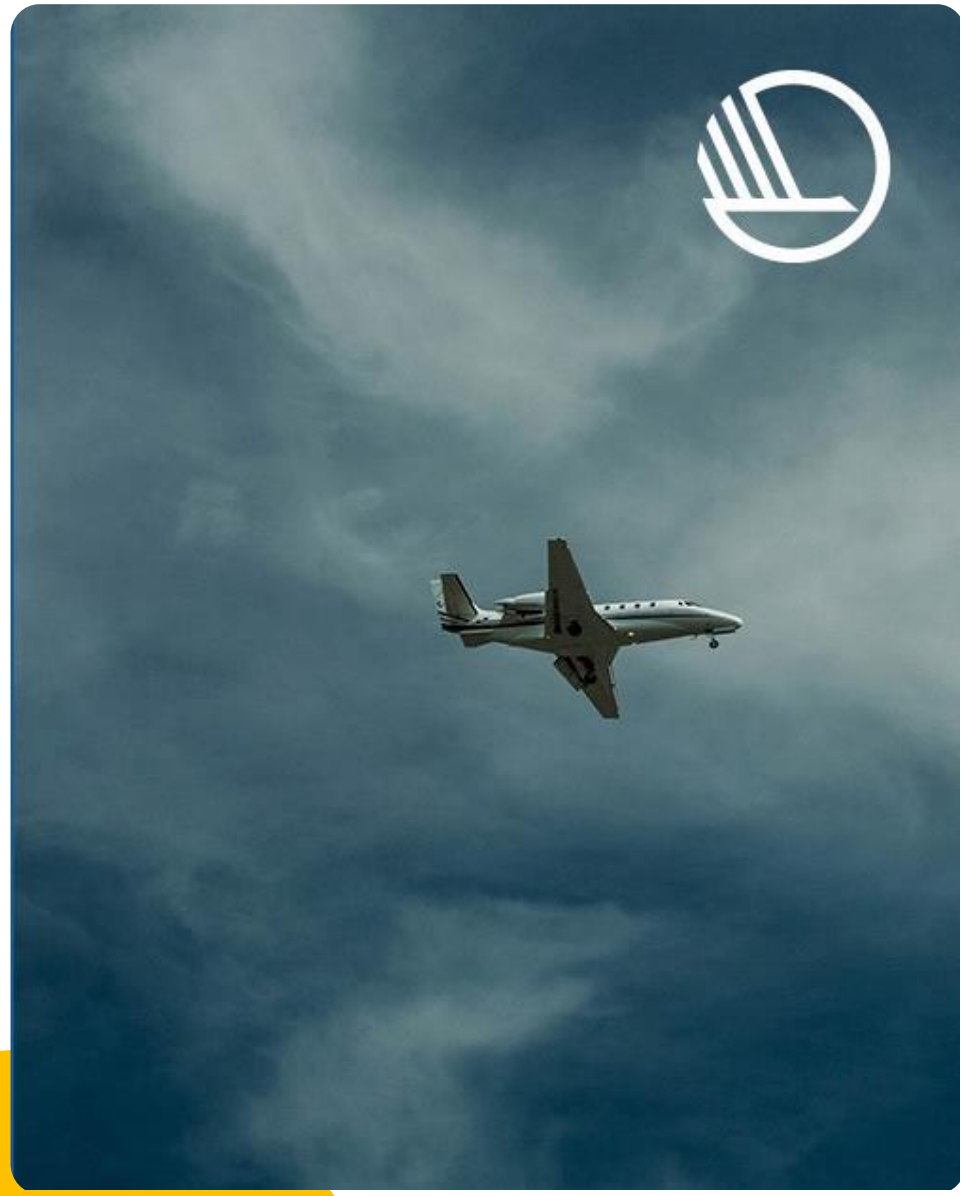
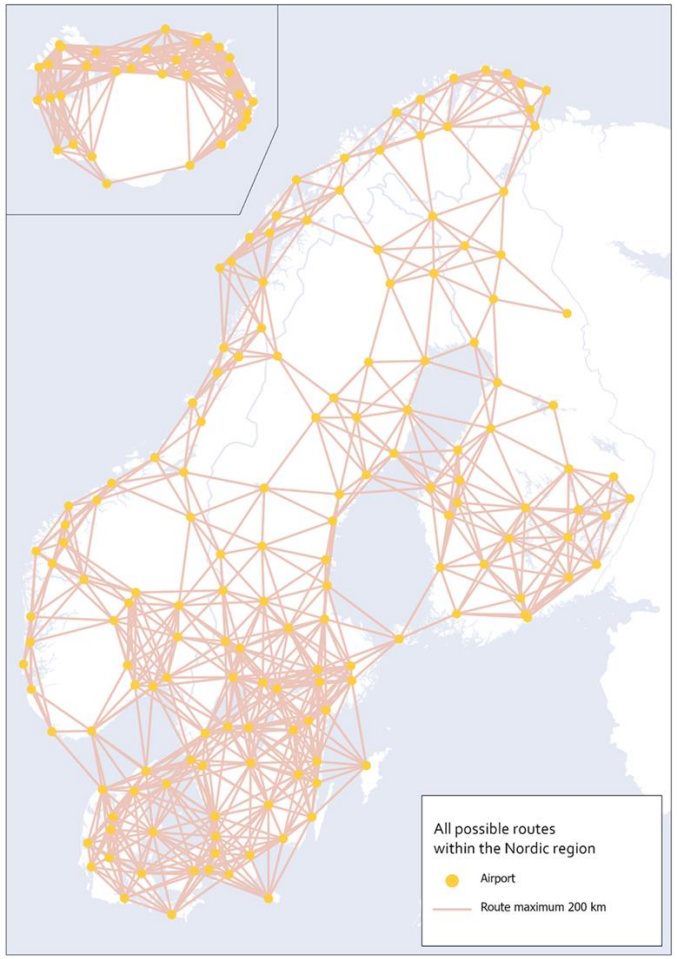


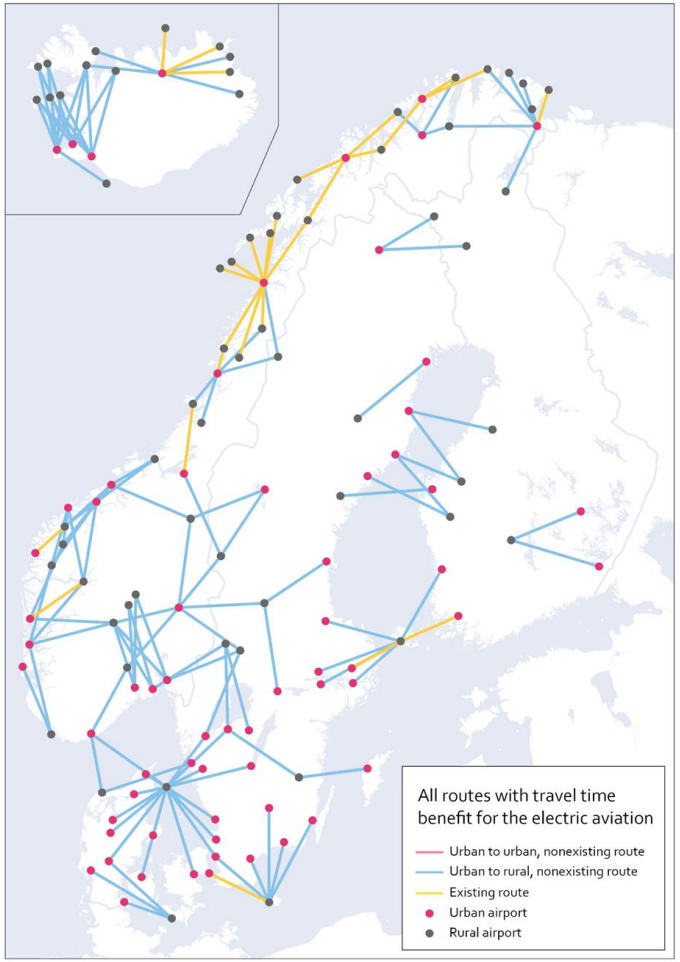
Some findings from previous research

- Many issues still to be solved: mainly technical but also legal, political, social, as well as high market uncertainty
- To begin solving them, attention should be given to cross-border cooperation
- Common visions for transport sector would be important
- Next step: what would electric aviation mean for regions?

Accessibility study results

- Potential geographic accessibility: comparing different modes of transport
- Travel time calculations to find the areas between which electric aviation could decrease travel time (1,5 times more by car/public transport)
- Next step: qualitative research on other drivers than just travel time





Iceland

- **Urban-urban route Akureyri – Reykjavik**
- 250 km, 45 min flight (busiest domestic flight route)
- Currently operated by Icelandair, which intends to participate in developing an electric plane with Heart Aerospace to be used in domestic flights by 2028. Electric aviation will therefore likely be a reality in the region within the next ten years. The first plane will be hybrid (the route is perhaps too long for first generation electric planes)
- Step 1: Background information for the case ✓
- Step 2: Focus group with key stakeholders – September 14th ✓
- Step 3: Deliverable which will include a pestel table highlighting key driving forces for the electrification of domestic flights in Iceland – in progress
- Electric aviation in the region could lead to cheaper and more frequent flights, connections to different parts of Iceland and better access to services in the capital region

Denmark

Urban/rural route Copenhagen – Bornholm
(c. 180 km)

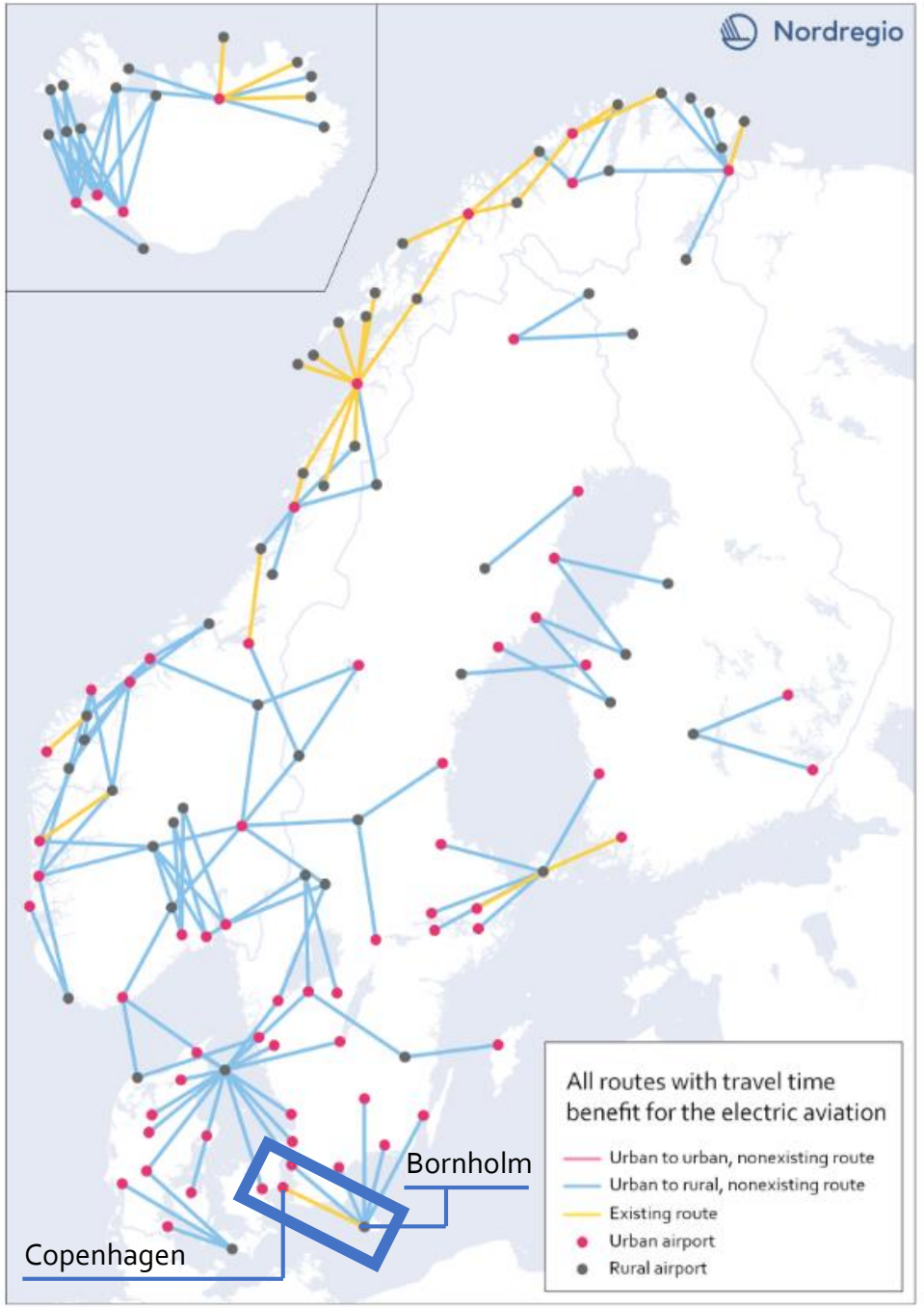
Electric aviation can play a significant part in the island's sustainability goals:

– Projects such as "Energy Island Bornholm" and "Bright Green Island Policy" illustrate Bornholm's determination to develop green electricity hubs and reach sustainable goals.

– Bornholm aims to achieve fossil-fuel free transportation on the island, (Municipality of Bornholm, 2018).

Electric aviation has potential to improve healthcare accessibility:

– Even though the island has a hospital, some patients are being transferred to Copenhagen with the municipality covering the costs of the cheapest travel option (the ferry), while the faster one by plane is being covered only when a patient's condition limits their capability to take the ferry, (Municipality of Bornholm, 2023b).



Norway

Urban/rural route Bodø – Leknes (c. 100 km)

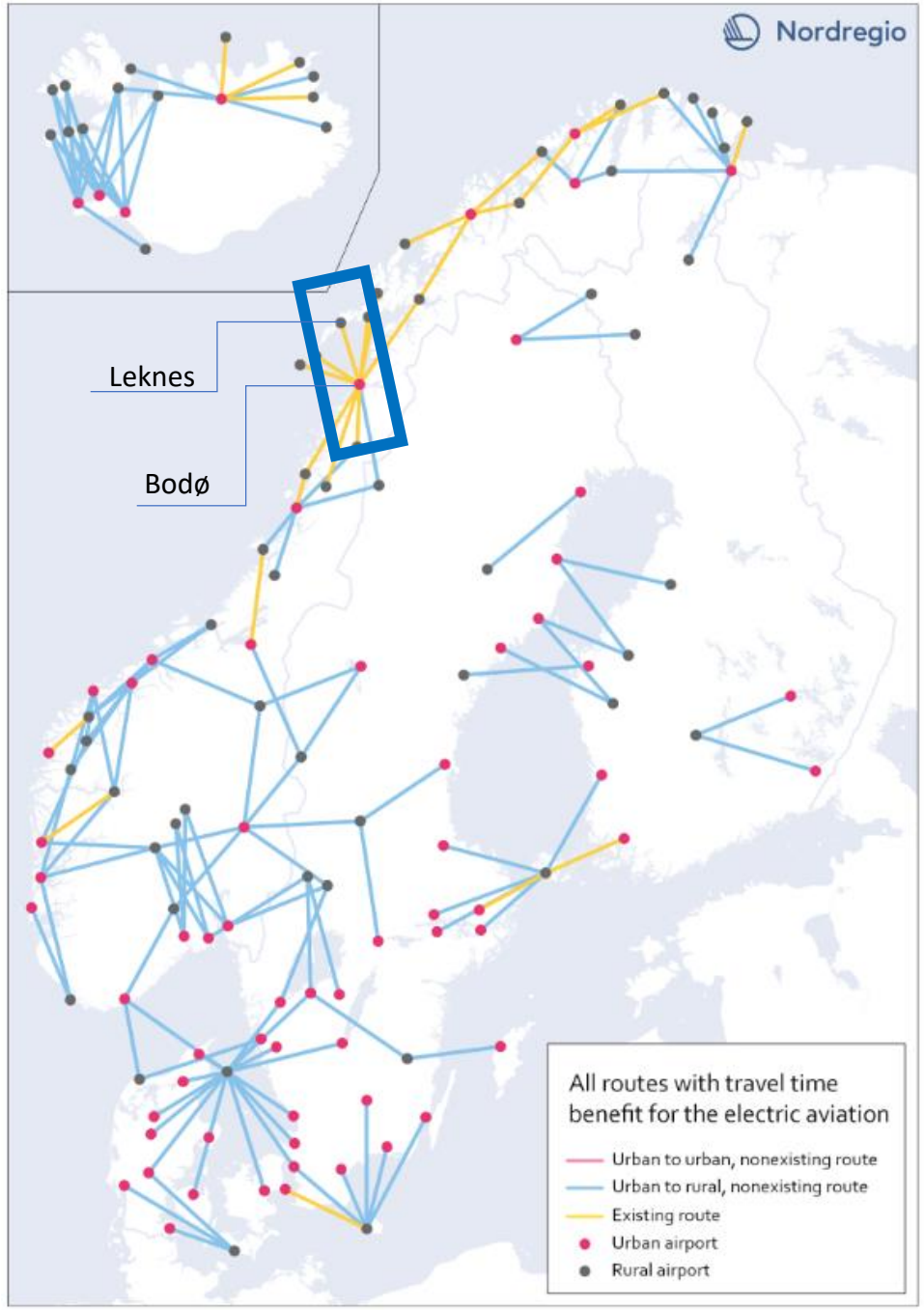
- *'Aviation is a very important way of transport in our Region. For many it is like taking a bus*'. Between 90300 - 100900 people travelled by plane between Bodo and Leknes in 2021-2022, (Osloeconomics, 2022).

- The main advantages linked to electric aviation are considered to be:

  - increased accessibility in a route with geographical obstacles (water and mountains

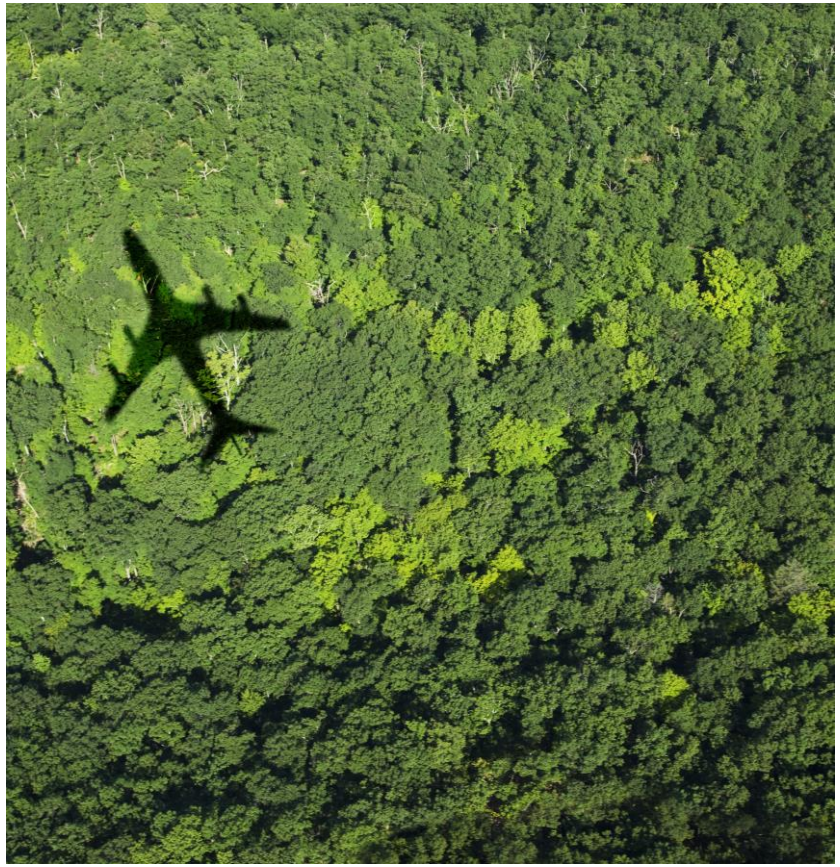
  - the possibility to reduce emission (political goals of becoming climate neutral)

- The main challenges are linked to the need of increasing energy production and the social acceptability of the new technology



Sweden

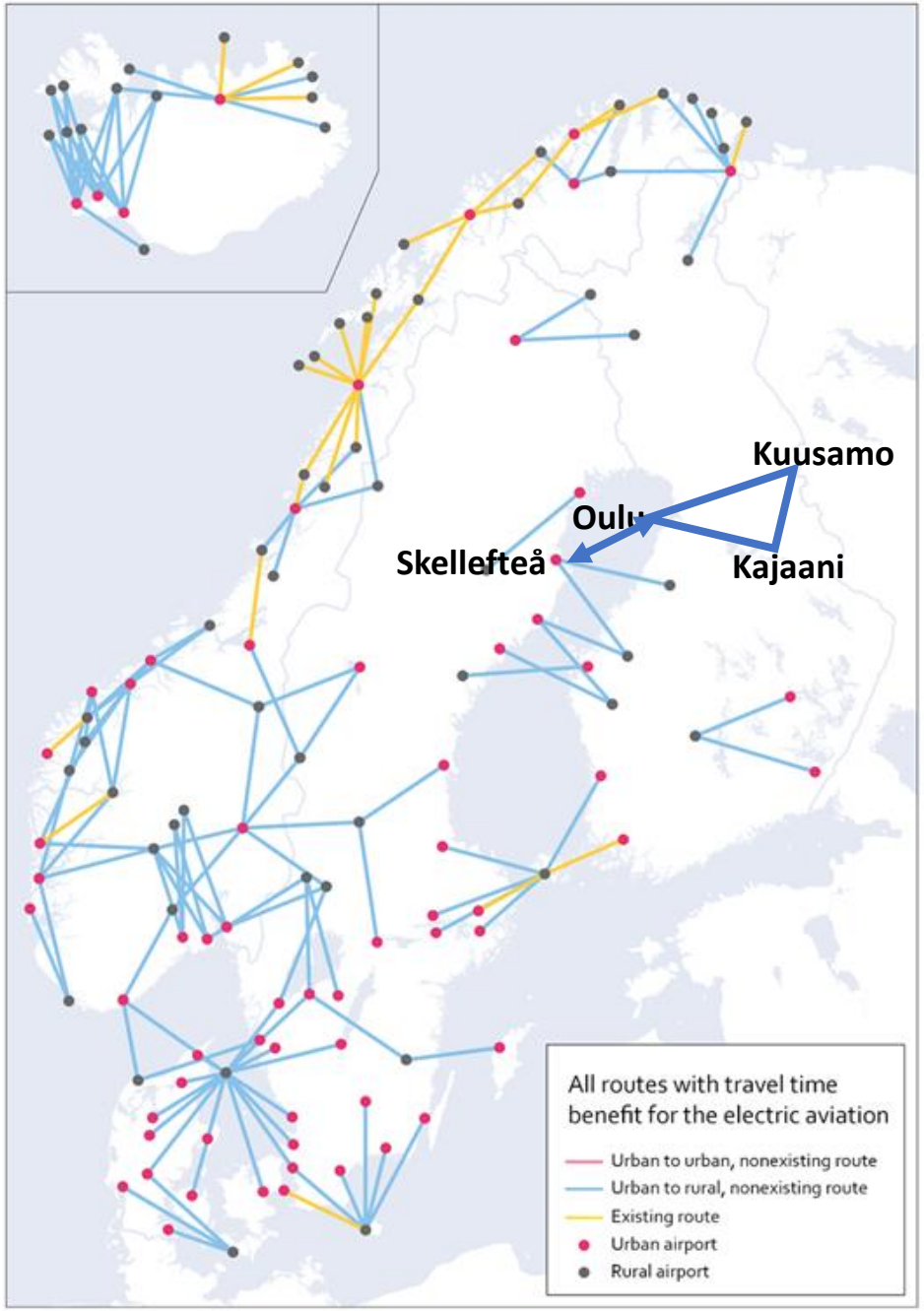
- **Urban/urban route Skellefteå-Oulu (c. 215 km)**
- Currently, there is no commercial flight between Skellefteå-Oulu. Yet, from the Swedish side there is a political will to connect Skellefteå with Finland and Northern Ostrobothnia. Electric aviation in the region could lead to better business and research-connections, and increased mobility among high-skilled workers.
- Skellefteå has a strong focus on electric aviation, with programmes such as ELIS (Elektrifierad Luftfart i Skellefteå), the Green Flight Academy, and investments to the infrastructure at Skellefteå Airport. With these, Skellefteå aims to be a frontrunner and test bed for electric aviation in Sweden.
- It is likely that electric aviation will be a reality in the region within the next ten years. Yet, some challenges connected to economic uncertainties and certification processes needs to be dealt with for the future development.



Finland

- **Urban/rural route (Skellefteå)-Oulu-Kajaani-Kuusamo (distances of 130-200 km)**

- Interesting triangle for several reasons: Oulu as a growing transport node for business and education, bioeconomy growing in the region, tourism, less rail connections
- Main advantages could be:
  - More flexible routes between regional centers for different types of needs and customers
  - Possibility to reduce emissions
- Main challenges:
  - Lack of operating actor: who will make the first investments?
  - Competing with existing routes maybe not profitable: need for new models



Initial findings: possible future ways for electric aviation

- Uncertain market: need for completely new business models
- Connections between Northern cities of Norway, Sweden and Finland
- Tourism: new experiences for less money and emissions
- Business travel (Oulu-Kajaani, Oulu-Skellefteå…)?
- Travel time and price are very important, but need to consider all possible factors (e.g. security politics impacting Northern transportation)

Next steps in the project

- Regional impact assessment
- Regional environmental impact assessment
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