Going Green

A Strategic Analysis of Swiss International Air Lines Towards Full Environmental Sustainability

IAEE Conference 2021 Research Reel Master Thesis by Juliette Kettler







The Challenge

Large contributor to global emissions

Strong Growth

Essential part of globalized economy

Pressure to mitigate emissions

Research Questions:

- 1. How is SWISS currently addressing environmental challenges?
- 2. What are important facilitating and impeding factors externally and internally for long-term strategies towards environmental sustainability?
- 3. How might economically attractive strategies for becoming a fully sustainable airline look like?



Goal Definition

Full Environmental Sustainability for Airlines (FESA)

- ✓ No use of fossil resources
- ✓ Net neutrality concerning its 1st scope GHG emissions by 2050

1st scope emissions in this case = emissions of burnt fuel



Three Ways Towards Sustainability

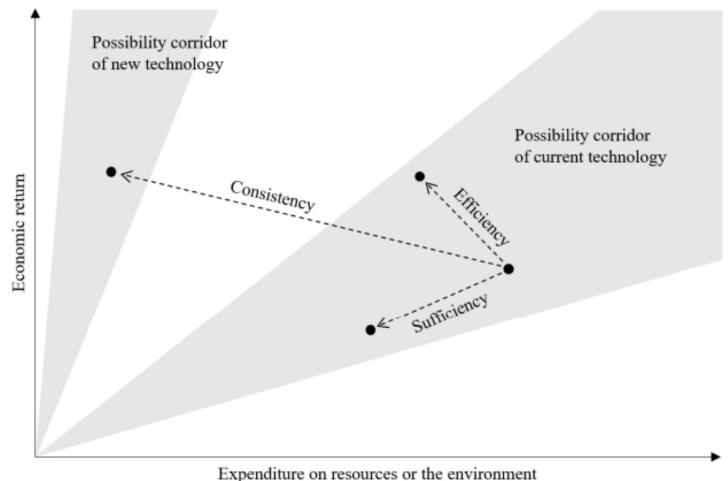


Figure 1. Visualisation of the three sustainability strategies. (Adapted from Schmidt, 2008, p. 14)

Research Design

Qualitative Case Study Design



11 Expert Interviews

- SWISS
- Federal Office of Civil Aviation
- NGO
- Fuel expert
- Industry Experts / Consultants
- Investment Analyst



Desk Research

- Public resources by SWISS and Lufthansa
- Industry Reports (e.g. by IATA, ICAO)
- Reports by other credible insitutions (e.g. IPCC, European Comission, IEA, UIC)



Main Findings

- Current strategy is not drastic enough to reach the Paris Agreement
- Efficiency: little further potential
- Consistency: Electric or hydrogen aircrafts are not the solution for decarbonizing commercial longhaul flights. Instead, synthetic fuels are the key to decarbonizing aviation
- Sufficiency: Replacing short-haul flights with highspeed rail is important to reach the goals in time



Strategy Overview «Green Status Quo»

Scenario

- little governmental support for synthetic fuels
- little policy effort to limit air travel growth
- steady demand growth
- sinking climate change-awareness of the public
- little willingness of customers to switch to trains
- little progress concerning the improvement of the European rail network

Vision

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Efficiency measures:

 Continue improving efficiency

2050 Vision:

SWISS's core business is aviation.

Next to aviation, the Lufthansa Group has invested

heavily in synthetic fuels and has acquired producing companies.

FESA is achieved by a complete replacement of fossil fuel with synthetic fuel

and a few compensation projects.

Consistency measures:

- Cooperation with synfuel-research and –producers, eventually acquire producing company
- Request state subsidies
- Push for Synfuel-promoting policy (in CH, but also on EU and ICAO level)
- Advocate for compensation via Synfuel, not generic climate projects
- Communication campaign about Synfuels
- Push voluntary compensation e.g. with additional incentives/rewards
- Monitor alternative engine technologies

Sufficiency measures:

- CORSIA
- Raise awareness about aviation's impact

Capabilities used:

- Government relationships
- Past R&D activities concerning synthetic fuels
- Ability to work on incremental improvements and major innovation
- Lufthansa embedding
- Synfuel research & production partnerships
- Unique compensation tool
- Fleet management
- Any other built environmental capability indirectly supports the strategy

| Capabilities to be built or expanded:

- Compatibility of environmental goals with FESA
- Environmental R&D concerning synthetic fuels
- Clear added value of sustainability
- Financial resources to invest in synthetic fuel production and acquire a producing company
- Control over development of crucial technology
- Business model which profits from two sustainability strategies
- Innovation concerning compensation

Developments in the environment

Little governmental support for synthetic fuels or effort to limit air travel growth.

Steady demand growth, little willingness to switch or reduce

Little progress concerning European rail network

Comming

Capabilities

Strategy Overview «Multimodal Mobility»

Scenario

- considerable governmental support for synthetic fuels
- policy effort to limit air travel growth
- slowing demand growth for longhaul flights
- customers increasingly taking the train instead of flying (a trend already visible today)
- increased efforts to improve the European rail network

Vision

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Efficiency measures:

- Continue improving efficiency

 Cooperation with synfuel-research and – producers

Consistency measures:

- Encourage customers to compensate via Synfuels
- Monitor alternative engine technologies
- Advocate for international measures to raise ticket prices and support high-speed trains and Synfuels

Sufficiency measures:

2050 Vision: SWISS is a mobility provider,

offering sustainable, end-to-end travel within, from and to Europe. FESA is achieved by replacing short-haul flights with an extensive European high-speed rail network, a 100% use of

synthetic fuel for long-haul flights and a few compensation projects.

- Establish partnerships with train companies, establish an end-to-end mobility platform together
- Collaborate with governments towards an improved and harmonized European rail network
- Explore the opportunity of entering the rail industry with disruptive technologies
- Repositioning from "SWISS is an airline" to "SWISS is a mobility provider" → Internal and external change management
- CORSIA

Capabilities used:

- Government relationships
- Ability to work on incremental improvements and major innovation
- Lufthansa embedding
- Existing partnerships with rail companies
- Synfuel research & production partnerships
- Unique compensation tool
- Fleet management
- Any other built environmental capabilities indirectly support the strategy

Capabilities to be built or expanded:

- Compatibility of environmental goals with FESA
- Closer partnerships with rail companies
- Expertise in maglev technology & scaling
- Clear added value of sustainability
- Identification as a mobility provider instead of an airline → from product- to customer-orientation
- Financial resources to invest in a new service and possibly an entry in a new market
- Business model which profits from two sustainability strategies

Developments in the environment

Large governmental support for synthetic fuels and effort to limit air travel growth.

Short-haul customers increasingly prefer to travel by train, long-haul demand grows slightly

European rail network is improving and expanding rapidly

Scenario

Capabilities

Call to action

- Compensate your flight with sustainable aviation fuel (e.g. through <u>compensaid.com</u>)
- Learn more in the upcoming book «Sustainable Aviation»
- Reach out to me via LinkedIn or E-Mail (juliette.kettler@gmx.ch)

