

# The aviation sector before and during the COVID-19 pandemic

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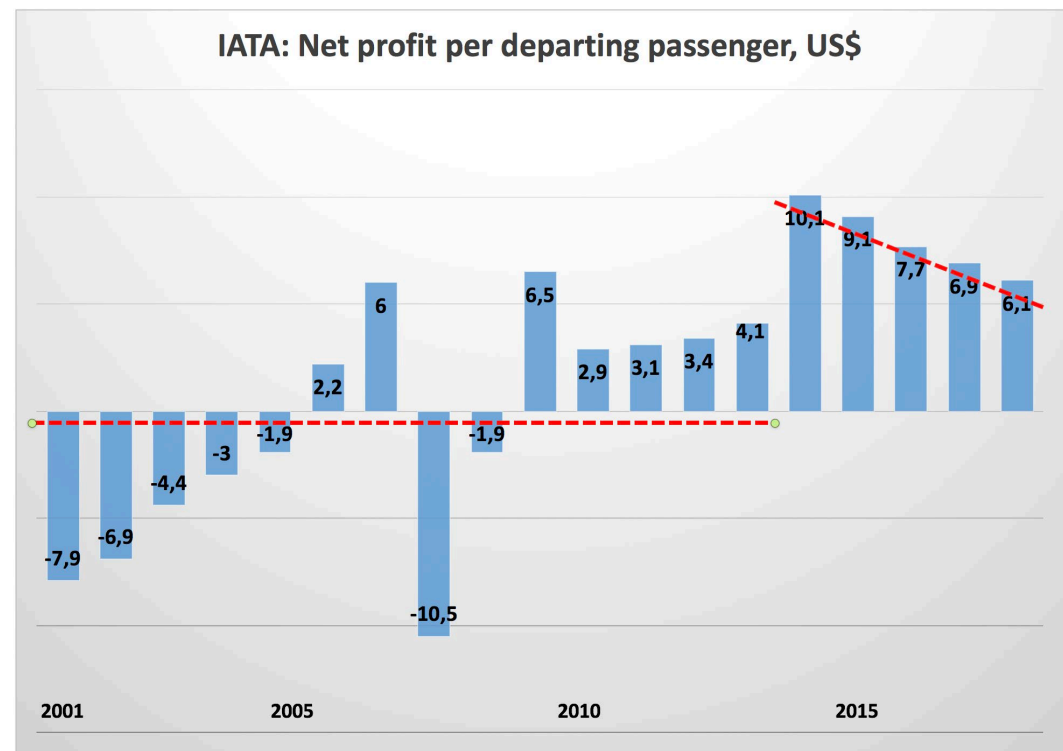


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# Aviation prior to COVID-19: unsustainable from any point of view

- Economically instable
- Reliant on subsidies
- Overcapacities, low profit margins
- Growth rates of 6-7% per year
- No credible strategy to reduce emissions
- No strategy to replace fossil fuels



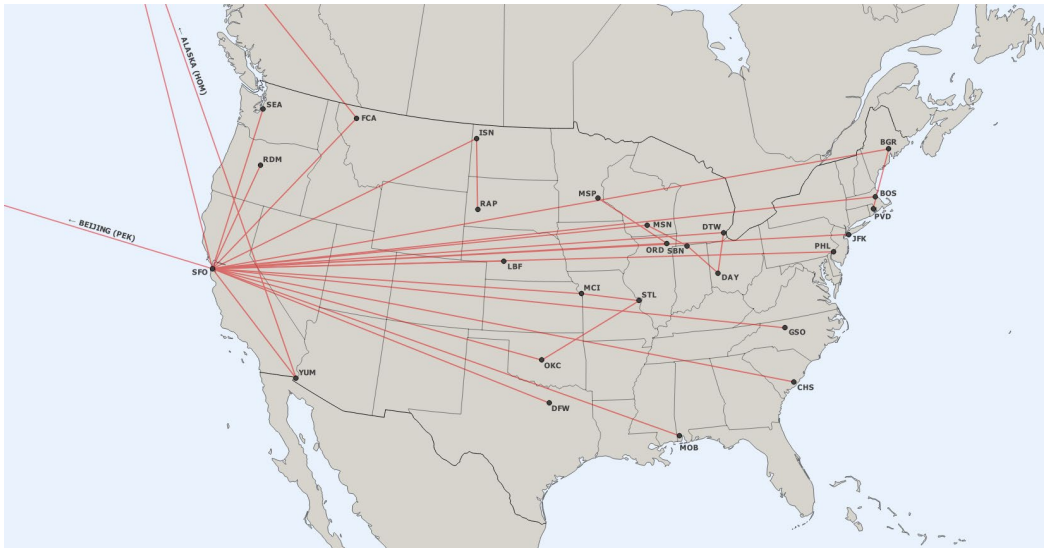
- Gössling, S. 2020. Risks, resilience, and pathways to sustainable aviation: A COVID-19 perspective. Journal of Air Transport Management 89, <https://doi.org/10.1016/j.jairtraman.2020.101933>
- T&E 2020. Bailout tracker. <https://www.transportenvironment.org/what-we-do/flying-and-climate-change/bailout-tracker>



# Recent findings

- 11% of humanity flew in 2018
- 4% of humanity flew internationally in 2018
- 1% of humanity responsible for 50% of emissions from commercial air transport

Gössling, S. and Humpe, A. 2020. The global scale, distribution and growth of aviation: Implications for climate change. Global Environmental Change, <https://doi.org/10.1016/j.gloenvcha.2020.102194>



Flight patterns Mark Zuckerberg, 2017

Gössling, S. 2019. Celebrities, air travel, and social norms. Annals of Tourism Research, 79, <https://doi.org/10.1016/j.annals.2019.102775>



# Other relevant findings

- Premium class flights 2.6-4.3 times as carbon intense as economy class (ICCT 2020)
- Non-CO<sub>2</sub> effects in the order of 3 times CO<sub>2</sub> (Lee et al. 2020)
- Real cost of air transport has declined by 60% over last 20 years (IATA 2019)

- Gössling, S. and Humpe, A. 2020. The global scale, distribution and growth of aviation: Implications for climate change. Global Environmental Change, <https://doi.org/10.1016/j.gloenvcha.2020.102194>
- ICCT (2020). CO2 emissions from commercial aviation: 2013, 2018, and 2019. Available: <https://theicct.org/publications/co2-emissions-commercial-aviation-2020>
- Lee, D.S., Fahey, D.W., Skowron, A., Allen, M.R., Burkhardt, U., Chen, Q., Doherty, S.J., Freeman, S., Forster, P.M., Fuglestvedt, J., Gettelman, A., De León, R.R., Lim, L.L., Lund, M.T., Millar, R.J., Owen, B., Penner, J.E., Pitari, G., Prather, M.J., Sausen, R., Wilcox, L.J., (2020). The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018, Atmospheric Environment, doi: <https://doi.org/10.1016/j.atmosenv.2020.117834>.
- IATA (2019). Economic performance of the airline industry. <https://www.iata.org/en/iata-repository/publications/economic-reports/airline-industry-economic-performance---december-2019---report/>



# ICAO's CORSIA inadequate

- Ignores non-CO<sub>2</sub> emissions
- Only covers 80% of international commercial air traffic
- Focuses on “carbon neutral growth”, ignoring >0.5 Gt CO<sub>2</sub> per year
- Is voluntary in character
- Focuses on offsetting through forest projects
- Does not stimulate technology/fuel change



# Barriers to progress: myths

- “Poor families cannot fly anymore”
  - “Technology will resolve the problem”
  - Industry has presented no less than 15 different technology “solutions” over the past 25 years.
  - Emissions from air transport have roughly doubled in the same period of time.
  - The most recent solutions (e.g. hydrogen-electric) all have significant disadvantages.
- Peeters, P., Higham, J., Kutzner, D., Cohen, S. and Gössling, S. 2016. Are technology myths stalling aviation climate policy? Transportation Research Part D, 44: 30-42.
  - World Economic Forum (2020). Clean Skies for Tomorrow: Sustainable Aviation Fuels as a Pathway to Net-Zero Aviation. Available: <https://www.weforum.org/reports/clean-skies-for-tomorrow-sustainable-aviation-fuels-as-a-pathway-to-net-zero-aviation>



# Barriers to progress: needs & wants

- Cross-cultural relationships
- Destination boosterism
- Aspirational consumption
- Competitive air travel
- Entangled policymakers
- Advertisement

=> *Much air travel is induced!\**

\*

- Cohen, S. A., Hanna, P., & Gössling, S. (2018). The dark side of business travel: A media comments analysis. *Transportation Research Part D: Transport and Environment*, 61, 406-419.
- Gössling, S., Humpe, A. und Bausch, T. 2020. Does 'flight shame' affect social norms? Changing perspectives on the desirability of air travel in Germany. *Journal of Cleaner Production*, <https://doi.org/10.1016/j.jclepro.2020.122015>
- Gössling, S., Hanna, P., Higham, J., Cohen, S., and Hopkins, D. (2019). Can we fly less? Evaluating the 'necessity' of air travel. *Journal of Air Transport Management*, 81, <https://doi.org/10.1016/j.jairtraman.2019.101722>

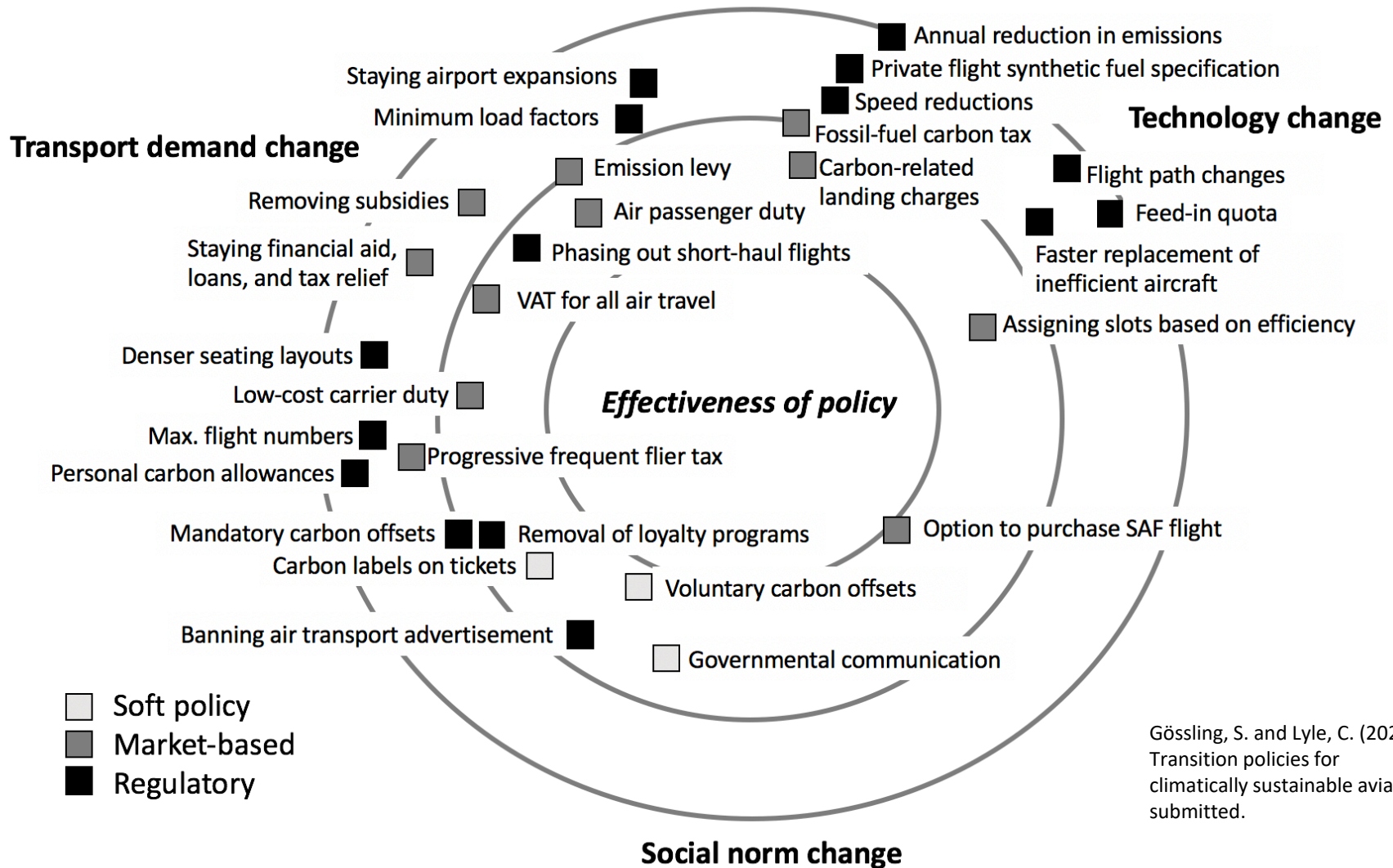
SVENSKA DAGBLADET

Nyheter Näringsliv Kultur Ledare Debatt





# Policies: many choices



Gössling, S. and Lyle, C. (2020),  
Transition policies for  
climatically sustainable aviation,  
submitted.





# Post-COVID?

## Rebound with climate change in mind

- ⇒ Remove subsidies
- ⇒ Internalize CO<sub>2</sub>/non-CO<sub>2</sub> cost
- ⇒ Transition to new fuels & technologies\*
- ⇒ (frequent fliers!)

\*World Economic Forum (2020). Clean Skies for Tomorrow: Sustainable Aviation Fuels as a Pathway to Net-Zero Aviation. Available: <https://www.weforum.org/reports/clean-skies-for-tomorrow-sustainable-aviation-fuels-as-a-pathway-to-net-zero-aviation>

Gössling, S., Humpe, A., Fichert, F., & Creutzig, F. (2020). COVID-19 and pathways to low-carbon air transport until 2050, submitted.

