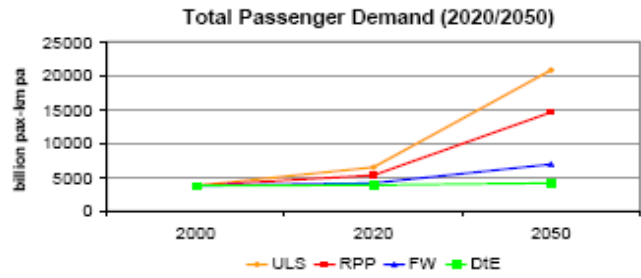


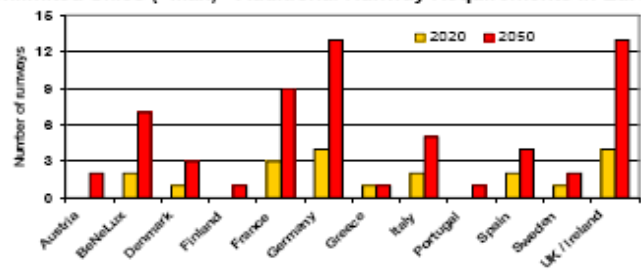


<u>Scenario-influencing Factors</u>	
Input-Parameters and Assumptions::	
Infrastructure Population Economical Development Mobility Behavior Technology (ICT, traffic, etc.) Resources Political Measures	
+	
Scenario-related Constraints:	
Infrastructure – lack of capacity, Emission-related measures (change of climate, noise, local air quality) Global-political development, Development and introduction of technology, Demand (value change), Availability of fuel, Profitability of airlines and airports, Safety costs.	
↓	
AERO-Model - Results (a. o.):	
Demand (passengers/cargo), Aircrafts (age, technology, type), Flight movements (related to routing), Fuel consumption, Emissions (inventories, climate-related), Local air quality (average), Noise exposure (average), Infrastructural requirements (average) Airline costs (per passenger/kg/flight) Profitability (airlines), Jobs (airlines, airports).	

Constrained Scenarios on Aviation and Emissions – Selected Results



Unlimited Skies (=Max) - Additional Runway Requirements in Europe



Noise reduction in 2050 compared to year 2000 (in Lden)

Scenario	ULS	RPP Hydrogen	RPP Kerosene	FW	FW	D1E
Region	EU	EU	EU	World	EU	EU
Source weighted reduction	-13,9	-15,8	-14,1	-12,5	-12,6	-15,3
Traffic volume factor	2,26	1,46	1,57	2,82	1,13	0,72
Traffic technology factor	0,9	0,95	0,95	0,95	0,95	0,95
Total noise reduction (Lden*)	-11	-14	-12	-8	-12	-17

EU-Project CONSAVE 2050

Based on analyses and survey, four long-term scenarios of development constraints (e.g. infrastructure, environmental problems, political fragmentation, value change) have been elaborated. These have been quantified according to their relevance regarding demand, supply and emissions of global air traffic until the year 2050, by considering prognoses for population, economical and technical developments.

Scenario results show, that conventional technology innovations will be overcompensated by high demand, that local and global emissions will increase, even that strong improvements are expected for noise reduction. The short-term transition to hydrogen-powered aircrafts is considered to be critical for the profitability of aviation without external funding.

Required infrastructure enhancements (especially in the EU) can be successfully targeted with higher landing charges (EU: Factor 3/2020 –6/2050). Kerosene tax on the other hand turned out to be a non-adequate measure to reduce emissions or demand: Significant emission reductions (10%) arise only with extreme tax levels (2\$/kg), not allowing airlines for profitable business.