

A Review on Aviation Emissions and Their Role in Climate Change Scenarios

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Abstract : Aviation causes carbon dioxide (CO₂) emissions and other climate forcers which increase the contribution of aviation on climate change. Aviation industry and number of air travellers are constantly increasing. Aviation industry has an ambitious goal to strongly cut net CO₂ emissions. Modern fleet, alternative jet fuels technologies and route optimisation are important technological tools in the emission reduction. Faster approaches are needed as well. Emission trade systems, voluntary carbon offset compensation schemes and taxation are already in operation. Global scenarios of aviation industry and its greenhouse gas emissions and other climate forcers are discussed in this review study based on literature and other published data. The focus is on the aviation in Nordic countries, but also European and global situation are considered. Different emission reduction technologies and compensation modes are examined. In addition, the role of aviation in a single passenger's (a Finnish consumer) annual carbon footprint is analysed and a comparison of available emission calculators and carbon offset systems is performed. Long-haul flights have a significant role in a single consumer's and company's carbon footprint, but remarkable change in global emission level would need a huge change in attitudes towards flying.

Keywords : aviation, climate change, emissions, environment

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