APPROACHES FOR SUSTAINABLE AVIATION

Muhammad Muneeb Safdar
Supervised by: Ms. Deborah J. McGraw & Ms. Jacqueline Schneider

FULBRIGHT

Syracuse University

Problem Statement

The ecological condition is worsening worldwide. The harmful emissions produced by aircraft are significant pollutants. Millions of gallons of fuel are burnt everyday during combustion in aircraft engines thus contributing to noxious emissions. These emissions are not only toxic and a respiratory health hazards but are increasing. It is a grave concern for which remedial measures need to be taken by all the stakeholders before the problem become intractable. So, what needs to be done to make aviation environmentally stable.

Solutions for Sustainable Aviation

1. Awareness to stakeholders

2. Green aerospace vehicles

3. Developing sustainable aviation fuels [2]

4. Continuous monitoring of emissions

5. Research into future design concepts by aircraft and engine manufacturers

6. Replacing older aircraft with efficient ones

7. Optimal flight trajectory [2]

8. Infrastructure efficiencies [2]

Conclusion

Impact of aviation is not all positive. The CO_2 emissions are increasing at an alarming rate. A balanced and integrated policy encompassing the operational improvements, improvements in aircraft and engine technology, and use of sustainable aviation fuels is exigent for sustainable development of aviation sector and to leave a better planet for future generations. All the stakeholders – policy makers, engineers, and civil aviation authorities – should contribute to mitigate the negative impacts of aviation.
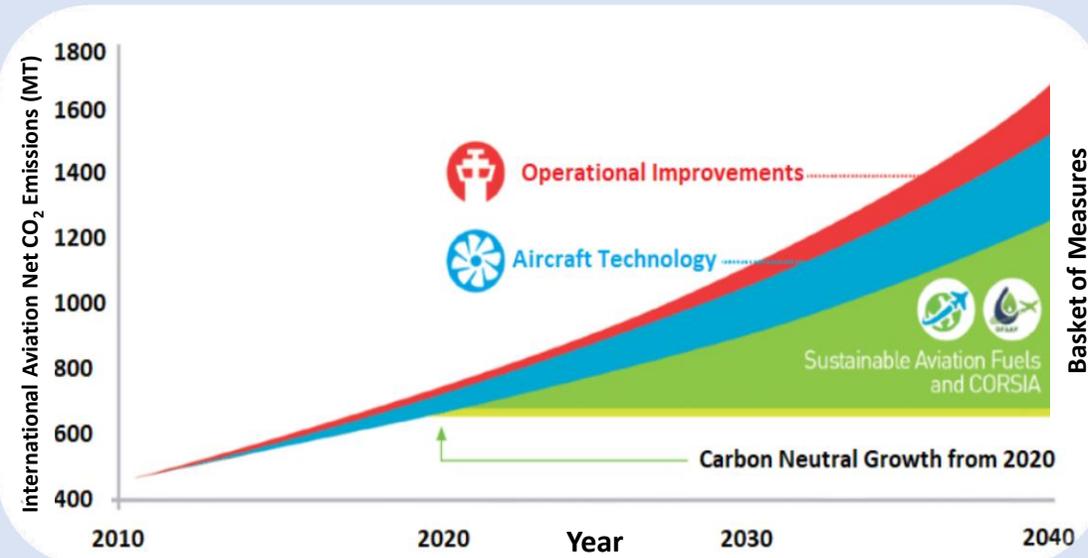
Trends

Overall CO_2 emissions from aviation have increased by 28 percent between year 2013 and 2019. [1]

Year	CO_2 (MT)
2013	700
2019	900

Comparison of CO_2 emissions in year 2013 and 2019 [1]

Forecast

CO_2 emissions are projected to increase at alarming rate of 4.7 percent per year.

References

[1] Brandon, Dan Rutherford and Sola Zheng (2020). CO2 emissions from commercial aviation. Retrieved from https://theicct.org/publications/co2-emissions-commercial-aviation-2020.

[2] Aviation industry reducing its environmental footprint, retrieved from https://aviationbenefits.org/environmental-efficiency/climate-action/

[3] Corsia – Carbon offsetting and reduction scheme for International aviation, retrieved from https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx

Contribution of measures for reducing International Aviation net CO_2 emissions [3]