

Background to Development on Non-CO₂ Roadmap and Programme

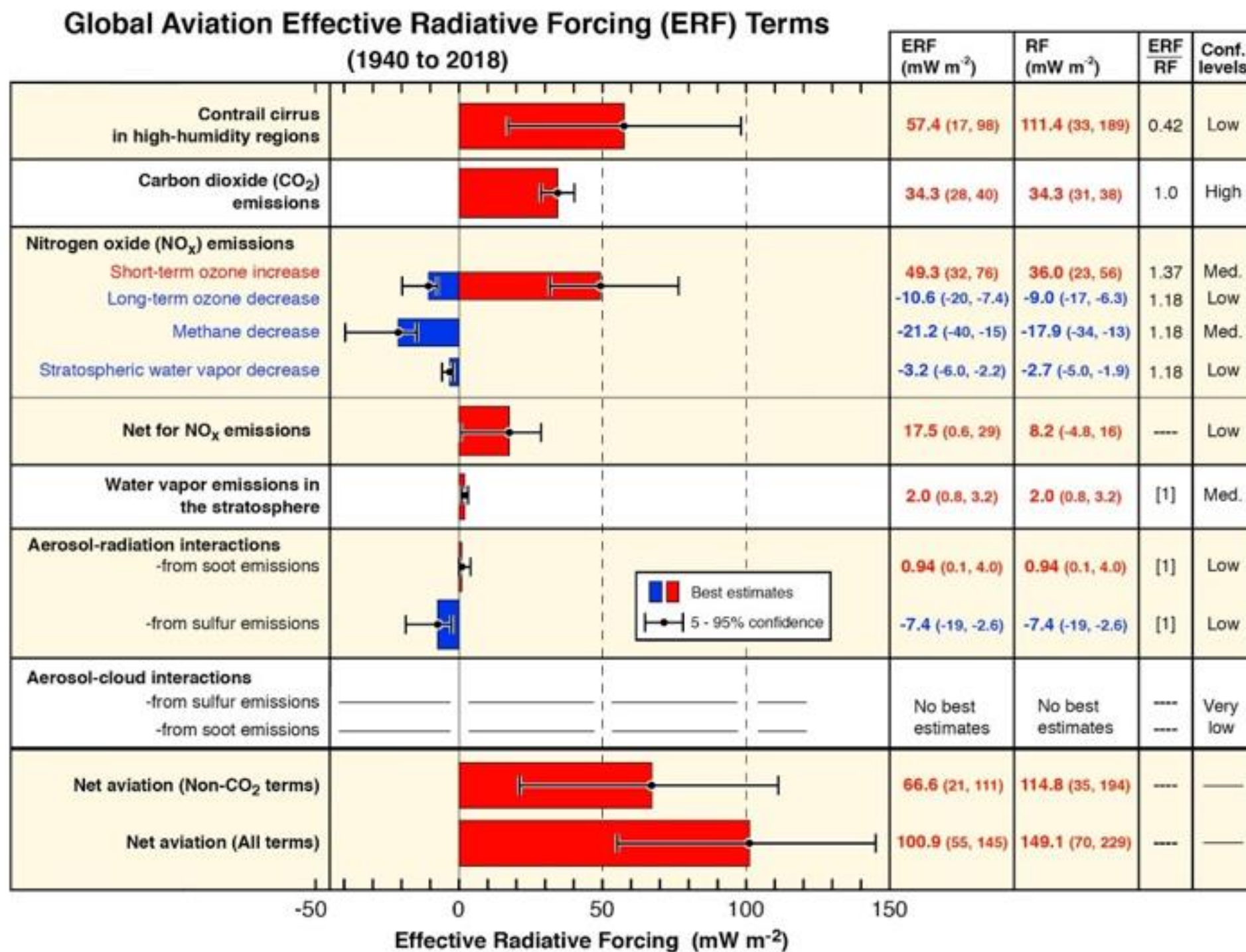
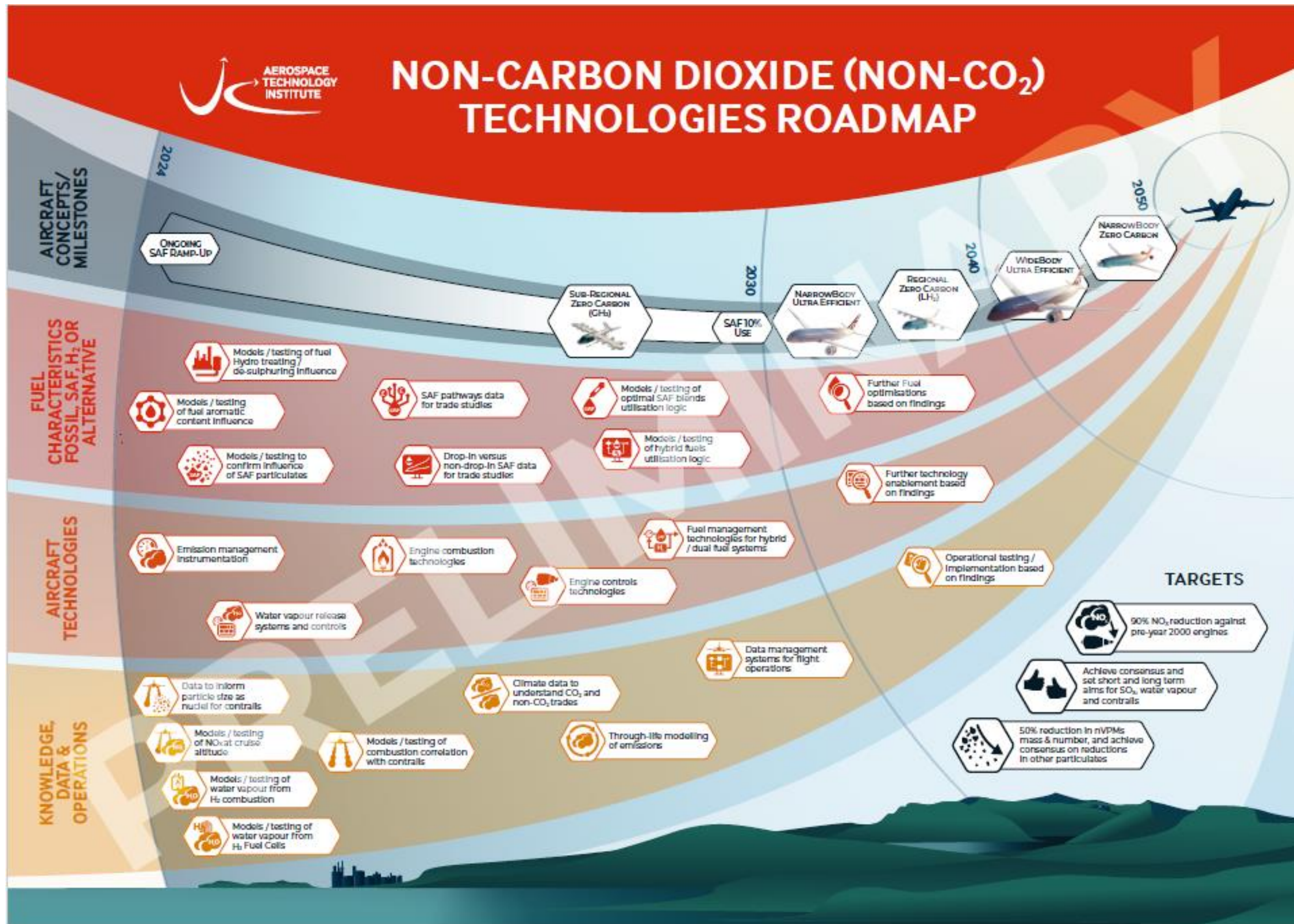


Figure 1.1: Climate forcing terms from global aviation from 1940 to 2018. From Lee et al. (2021).

- Recent research by UK and international researchers concluded aircraft non-CO₂ atmospheric emissions could potentially make a greater contribution to warming than aviation carbon itself
- The research also concludes our current understanding of contrail formation, and the effects of other non-CO₂ emissions is incomplete with this uncertainty likely to increase with the introduction new fuels and novel technologies
- In October 2023, the UK launched a programme to support Fundamental and Applied work in Non-CO₂
- The Non-CO₂ Roadmap aims to consolidate industry and academia views on non-CO₂
- Help supports evaluation of relevant technologies coming through ATI's main technology programme
- Complimentary to guidance and work streams of other stakeholders including NERC, DfT and the JZC T&F DG

Selected Roadmap Uses 3 Swim Lanes and Focus on Broad Industry Non-CO₂ Priorities



NON-CARBON DIOXIDE TECHNOLOGY ROADMAP

AIMS & OBJECTIVES

Address the key challenges facing the aviation industry in reducing non-CO₂ emissions and improve operational efficiency. The sector needs a clear, consistent, and achievable roadmap to guide investment and research. The sector needs a clear, consistent, and achievable roadmap to guide investment and research. The sector needs a clear, consistent, and achievable roadmap to guide investment and research.

NON-CO₂ EMISSIONS

Identify the key non-CO₂ emissions from aircraft operations and their contribution to climate change. This includes emissions of NO_x, SO_x, water vapour, and contrails. The sector needs a clear, consistent, and achievable roadmap to guide investment and research.

SCOPE & PRIORITIES FOR INVESTMENT

The roadmap identifies key areas for investment and research to reduce non-CO₂ emissions. Key areas include fuel efficiency, engine technologies, and operational improvements. The sector needs a clear, consistent, and achievable roadmap to guide investment and research.

KEY NON-CO₂ ROADMAP MILESTONES

- Achieve consensus and set short and long term aims for SO_x, water vapour and contrails.
- 50% reduction in non-volatile particulate matter (nVPM) mass and number for particulates, soot and aerosols.
- 90% NO_x reduction against pre-year 2000 engines.

CONCLUSION

The publication of this roadmap and the start of an aviation industry-wide programme will send a clear message to the sector and the public that the industry is committed to reducing its carbon footprint. The roadmap will guide investment and research to reduce non-CO₂ emissions and improve operational efficiency.