Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology

The Role of Carbon Markets in Tackling Aviation Emissions

ETS for Policy Practitioners: A webinar series hosted by ICAP

Lambert Schneider | Berlin | 9 June 2021

Overview

1. Aviation – What is its climate impact?
2. Carbon prices, taxes and exemptions for aviation – Where do we stand?
3. CORSIA – What is its impact and how could it be reformed?
4. EU Aviation ETS – What are the key issues at stake in the ongoing reform?

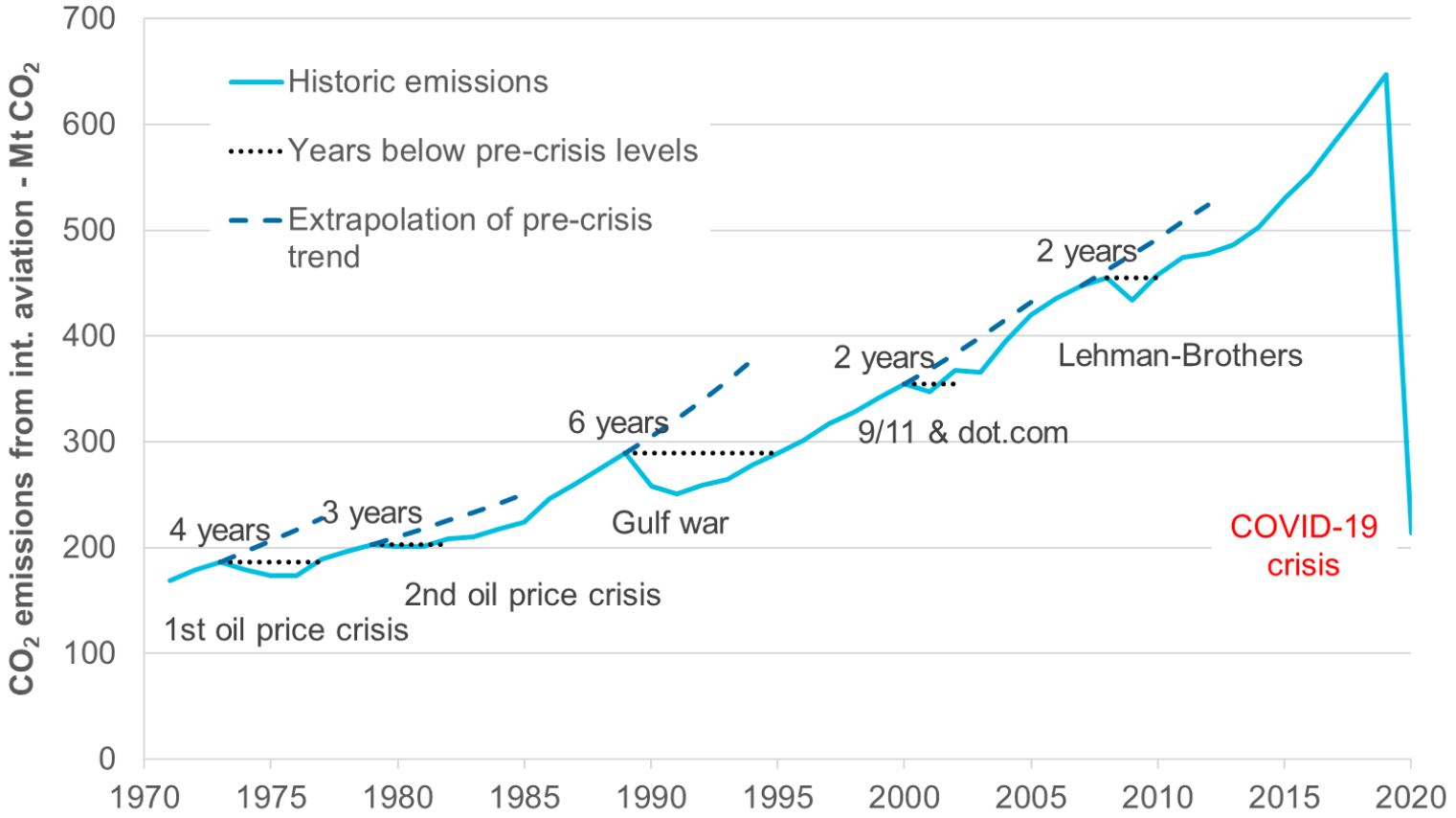
Aviation's climate impact

Climate Factors	CO_2	NO_x => O_3 increase	NO_x => CH_4 decrease	NO_x => O_3 decrease	Sulfate Aerosols	Soot	Contrails and Cirrus Clouds
Climate Impact	Warming	Warming	Cooling	Cooling	Cooling	Warming	Warming
Duration	Centuries	Weeks to months	Decades	Decades	Days to weeks	Days to weeks	Hours to days
Spatial Distribution	Global	Continental to global	Continental to global	Continental to global	Continental to global	Local to global	Local to global
Scientific Understanding	Good	Fair	Fair	Fair	Direct effects: good Indirect cloud effects: poor	Direct effects: good Indirect cloud effects: poor	Poor

- About **2.5% of global CO_2 emissions**
- Total climate impact about **3 times the impact of CO_2**
- Pre-COVID emissions were on a constant rise, despite efficiency improvements

Sources: www.offsetguide.org and Lee et al. (2020)

Impact of various crises on aviation emissions



Previous crises
Emissions recovered within 2-6 years to pre-crisis levels

COVID-19
Unprecedented decline in emissions

Source: Own calculations and estimates based on data by IEA and ICAO

What (carbon) taxes and prices apply to aviation compared to other sectors?

(Carbon) taxes and pricing instruments	International aviation	Domestic aviation	Examples of monetary impact (pre-COVID emissions)
Value added tax (VAT)	Exempted	Depends	EU: -30 billion EUR
Kerosene tax	Exempted	Mostly exempted (Very few jurisdictions have low taxes)	EU: -27 billion EUR
CORSIA	Applicable	Not applicable	Zero or very low
Emissions trading systems	Currently applicable to intra-European flights	CH, EU, KR, NZ, UK (China)	EU: 1.5 Billion EUR (at an allowance price of 50 EUR)
Ticket taxes	Depends FR: up to 63 EUR per flight	Depends	DE: 1.75 billion EUR

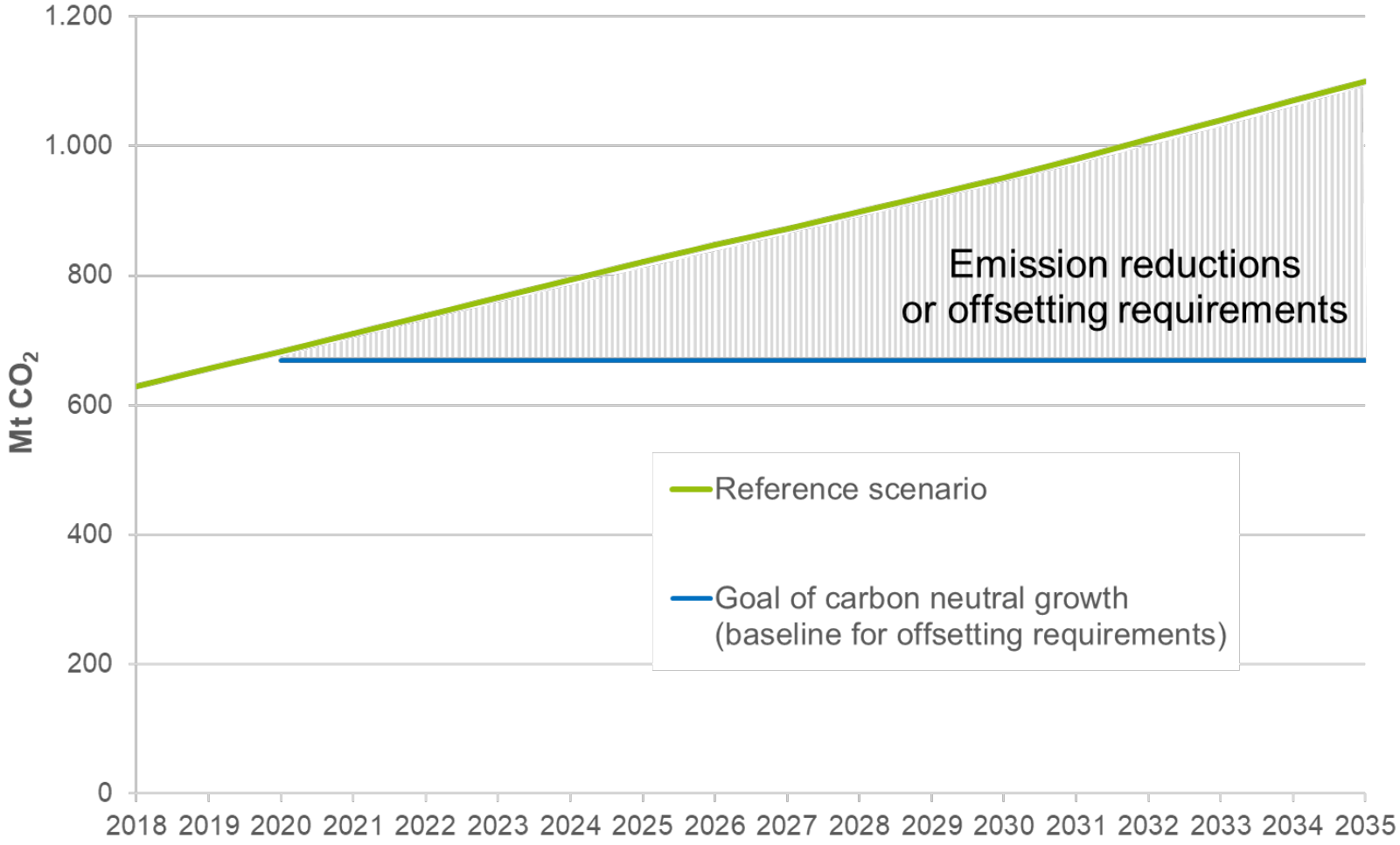
- Aviation enjoys tax privileges that no other sectors have
- Tax exemptions considerably outweigh costs of carbon pricing instruments

Sources: Oeko-Institut (2021), CE Delft (2019)

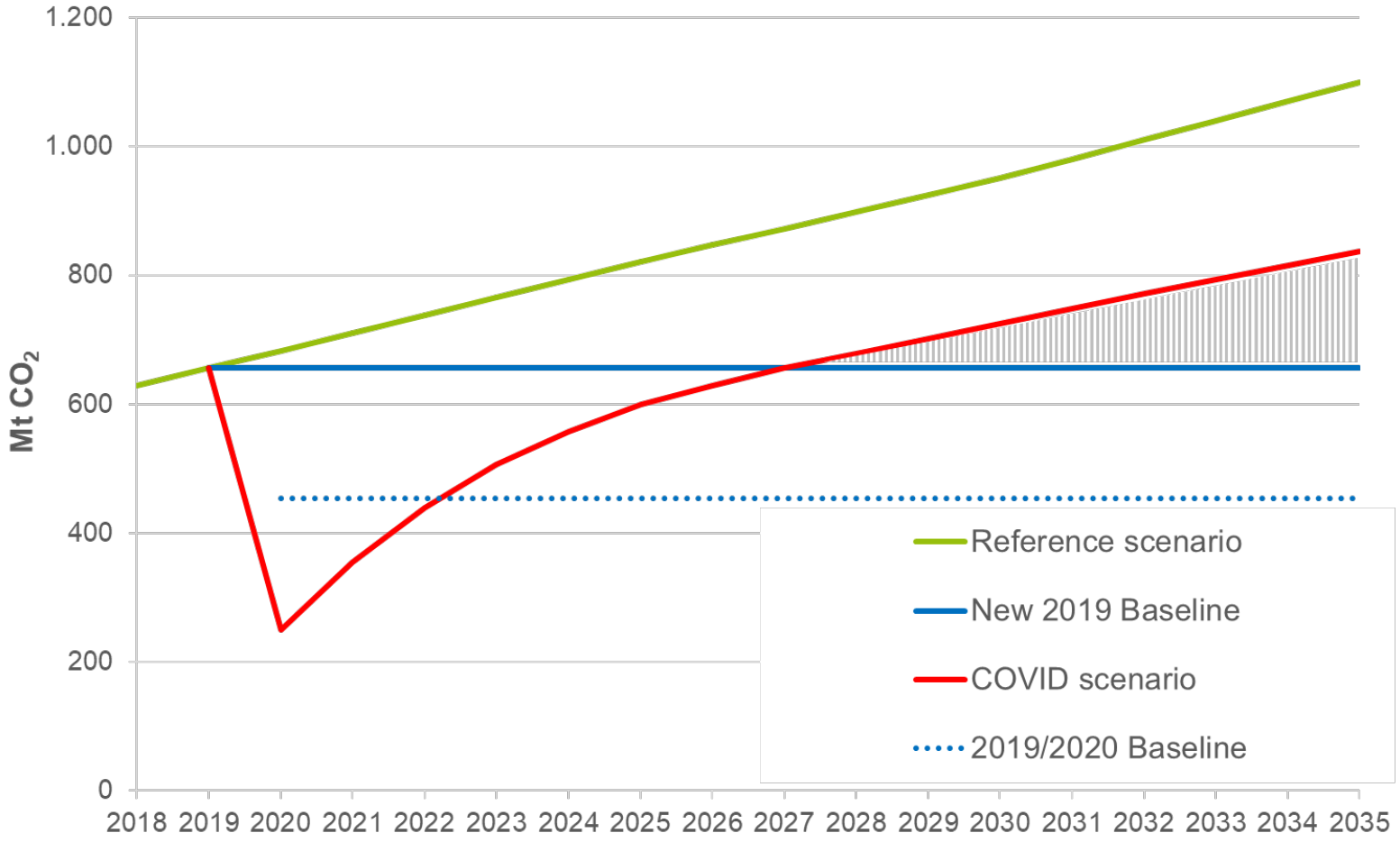
CORSIA at a glance

Goal	• Carbon neutral growth: Airlines must offset increase of emissions beyond 2019/2020 emissions by purchasing carbon credits
Scope	• International flights only • CO_2 only • Route-based approach • ~ 50% of international aviation for 2021-2026 • ~ 80% of international aviation for 2027-2035
Status of implementation	• Adoption in 2016 by the International Civil Aviation Organization (ICAO) • Detailed rule package adopted in 2018-2020
Measures	• Operational & technical improvements • Sustainable aviation fuels • Use of carbon credits

ICAO's original plan



Impact of COVID and ICAO's switch to a 2019 baseline



ICAO's baseline

- Original: 2019/2020 average
- Use of 2019 in response to COVID for 2021-2023 phase
- Future baseline to be decided

A continued 2019 baseline would…

- Delay climate action for years
- Reduce mitigation efforts or offsetting requirements by up to 75% (~ 1.9 $GtCO_2$)

Source: Oeko-Institut (2020)

CORSIA – Key challenges

Overall ambition

- **Goal:** “Carbon neutral growth” not aligned with Paris Agreement
- **Coverage:** Currently less than 20% of aviation’s climate impact (CO_2 only, participation)
- **2019 Baseline:** No or little climate action, no transformation towards net zero

Quality of eligible carbon credits

- **Vintage:** Already implemented and existing projects eligible
- **Additionality:** No exclusion of project types with questionable additionality
- **Non-permanence:** No assurance beyond lifetime of CORSIA
- **Avoiding double counting:** Requires implementation under the Paris Agreement

⇒ **No or little climate mitigation**

(1.4% in 2025 and 9.8% in 2035 with 100% high quality carbon credits)

⇒ **Low price for CORSIA eligible carbon credits**

Source: Assessment of ICAO's global market-based measure (CORSIA) pursuant to Article 28b and for studying cost pass-through pursuant to Article 3d of the EU ETS Directive

Emissions trading systems (ETSs)

Aviation included in various ETSs, upcoming review of EU ETS

- Ambition of cap
  - EU ETS: 5% below 2005 levels in 2020 decreasing to 27% below 2005 in 2030
    => Alignment with new EU 55% target necessary
- Auctioning versus free allocation
  - EU ETS: 15% auctioning, 85% free allocation (≈ 50% of emissions)
    => Change to 100% auctioning under discussion
- Scope in relation to CORSIA
  - ETS for domestic flights ⇔ CORSIA for international flights
  - ETS for domestic and some or all international flights ⇔ No or limited application of CORSIA
  - Various hybrid options: E.g. ETS obligations partially being met through CORSIA eligible credits

Conclusions – Ending tax exemptions

Aviation matters

- Significant growth – large share of climate impact in 2050
- Long-living capital stocks: early incentives for transformation towards zero emissions critical
- Industry already engaging towards a zero emissions pathway

Putting a price on carbon is only effective if tax exemptions are ended

- Ticket taxes: Rates should compensate for lack of VAT
  - 50 EUR/Trip (short distance, economy)
  - 150-200 EUR/Trip (long distance)
  - Business class: factor 3 to 5
  - Expand to freight transportation
- Abandon tax exemptions on kerosene

Source: Oeko-Institut (2021)

Conclusions – Carbon pricing instruments & more

Inclusion in ETSs

- Align ETS caps with Paris Agreement
- Full auctioning of allowances
- Move towards including non-CO_2 effects

CORSIA needs substantial reform to be effective

- Align with Paris Agreement
- Inclusion of non-CO_2 effects
- Adopt in-sector goal and measures (e.g., blending mandates for alternative fuels)
- Reform of emissions unit eligible criteria and use of high quality carbon credits

Policies to specifically support transformation towards zero emissions

- R&D: electrification, new propulsion options, new body designs, etc.
- New fuels: E-fuels (PtL), hydrogen (e.g. contracts for difference, blending quotas, etc.)

Thank you for your attention

Recent publications:

- Options for regulating the climate impacts of aviation
- Should CORSIA be changed due to the COVID-19 crisis?
- Options for Improving the Emission Unit Eligibility Criteria under CORSIA
- Avoiding double counting between CORSIA and Nationally Determined Contributions – Options for accounting under the Paris Agreement
- What makes a high-quality carbon credit?

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