

Nachhaltigkeitsanrechnung für erneuerbares Kerosin

Aktueller Stand für die Implementierung in der Praxis im internationalen Kontext

Robert Malina

DEMO-SPK Workshop „Nachhaltigkeit - Dokumentation und Anrechnung“

Berlin– 5. April 2017



Agenda

Monetary incentives from CORSIA
for Sustainable Alternative Jet Fuel (SAJF)



ICAO Process for Integration of
SAJF into CORSIA



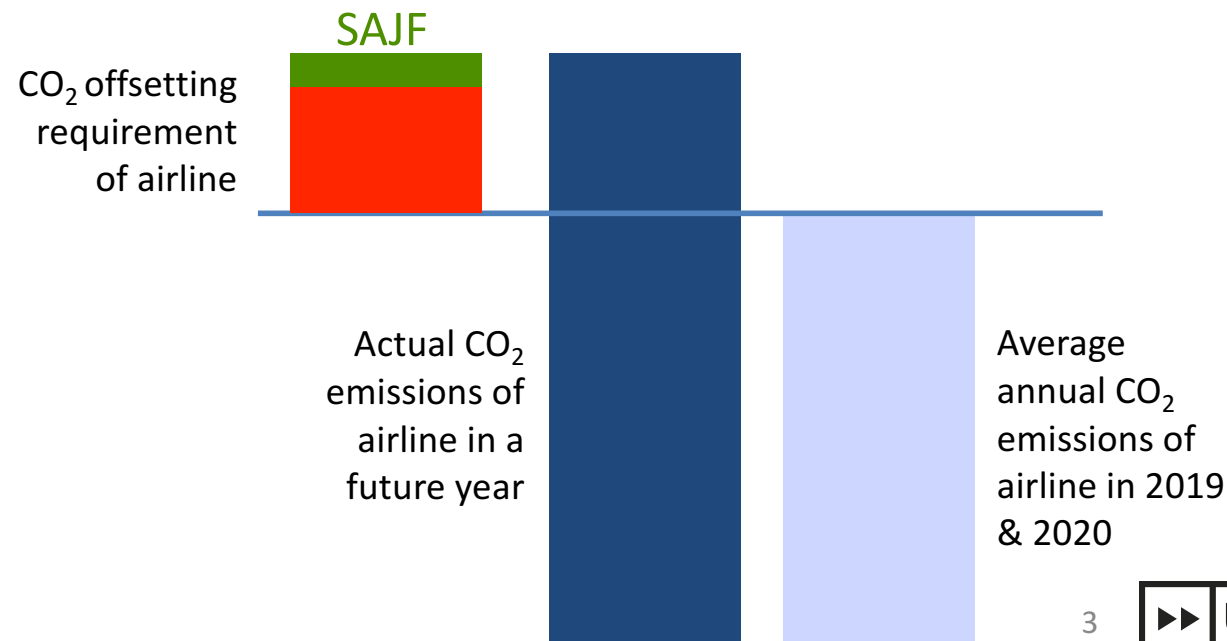
Possible sustainability requirements &
compliance mechanism



Timeline

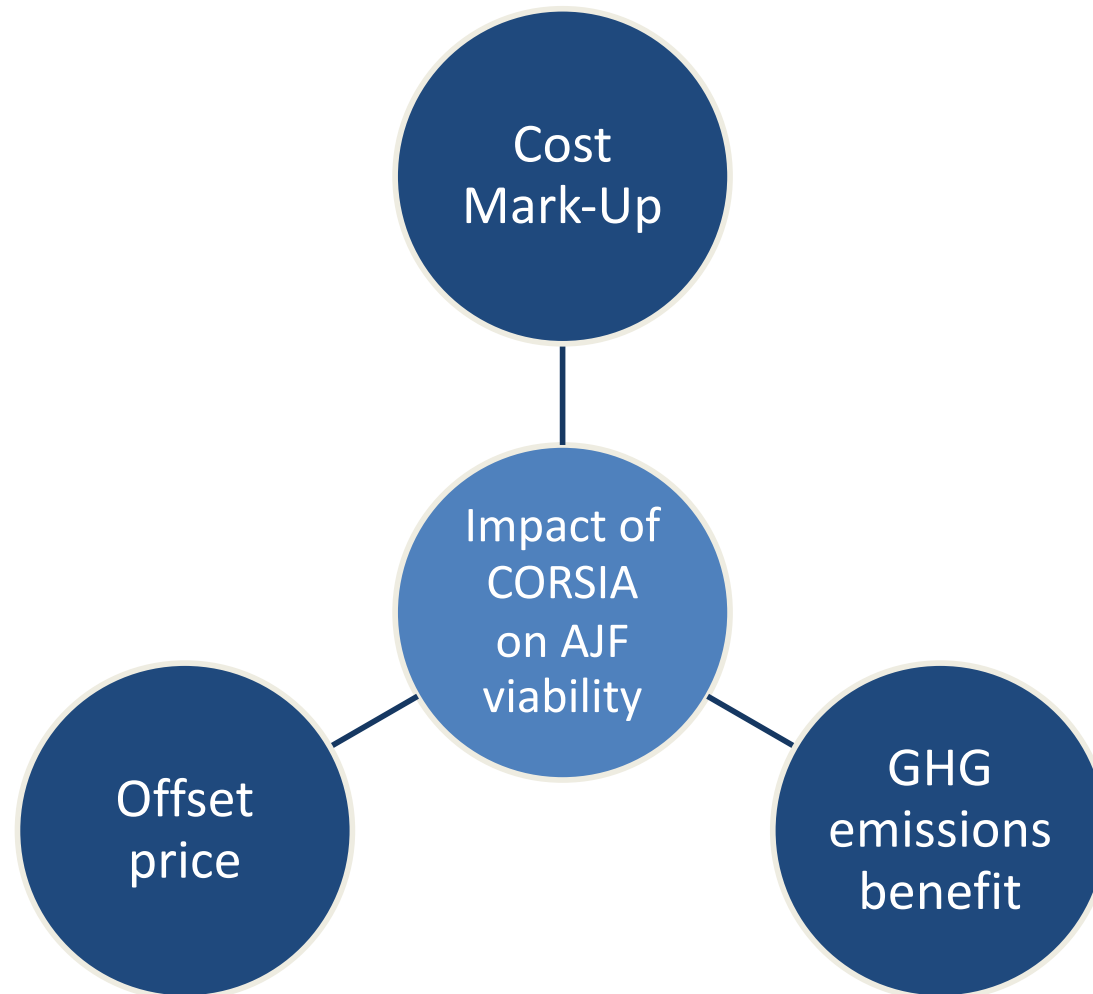
CORSIA

- From 2021, airlines will have to buy carbon offsets for all CO₂ emissions beyond average emissions p.a. in 2019 and 2020
- Offsets can be bought from the open market – offset eligibility criteria will be developed
- Voluntary participation by States until 2026, followed by mandatory participation (with exceptions) from 2027 to 2035
- Use of sustainable alternative aviation fuels reduces the offsetting requirements of airlines

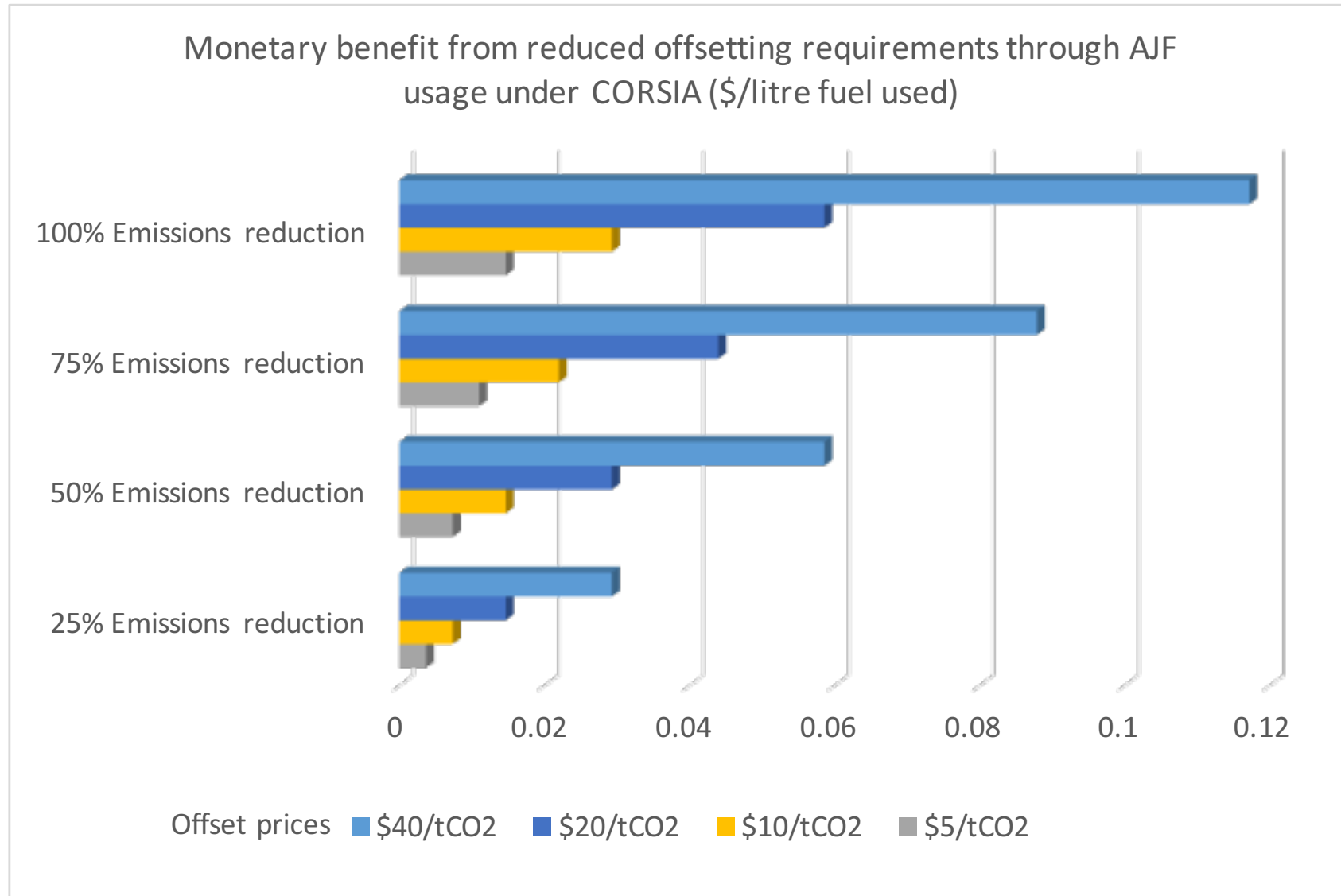


What does CORSIA mean for the economic viability of alternative aviation fuels?

CORSIA impact on economic viability

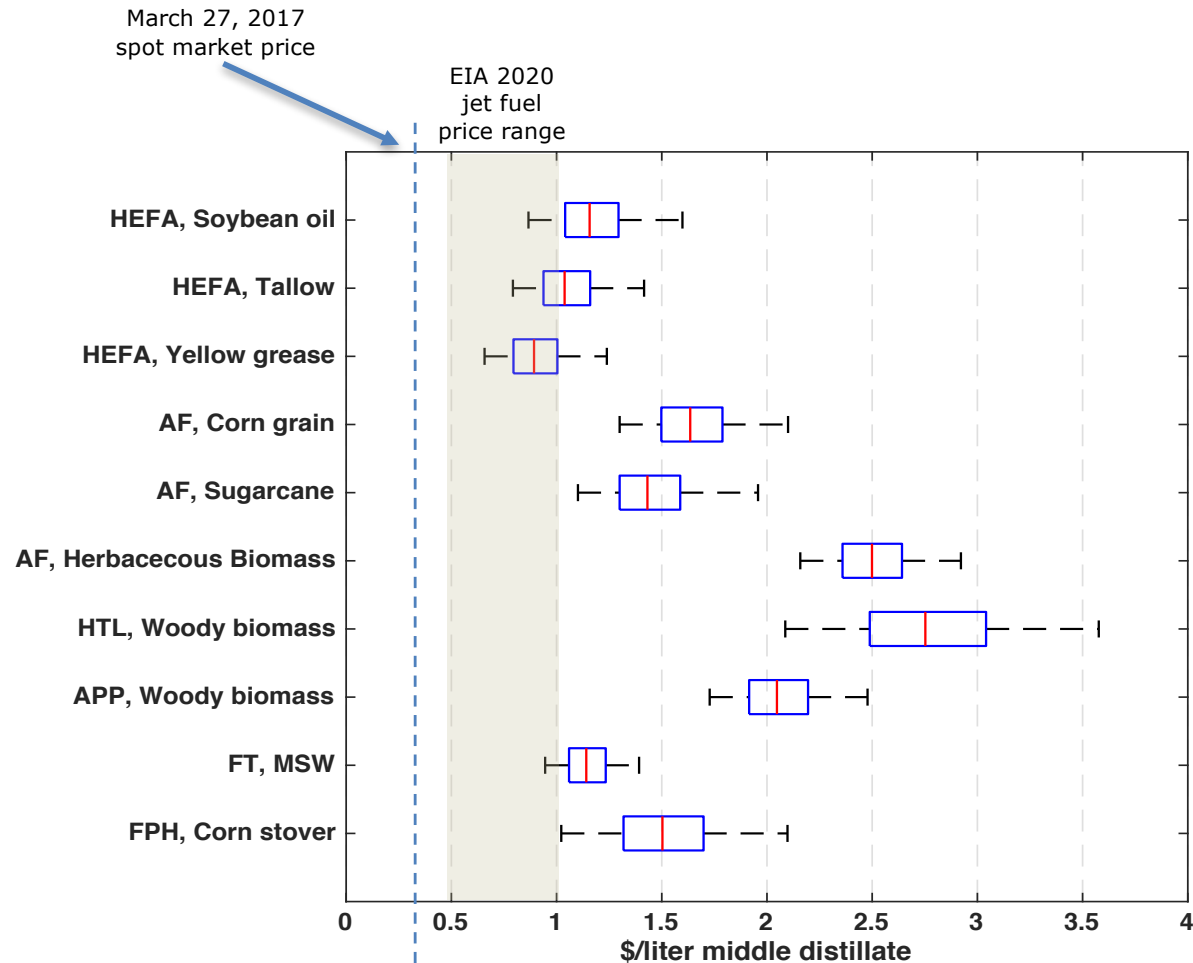


Potential monetary benefit of AJF under CORSIA



Assumes 1:1 conversion of emission benefit into reduction of CO₂ offsetting requirements

The costing perspective

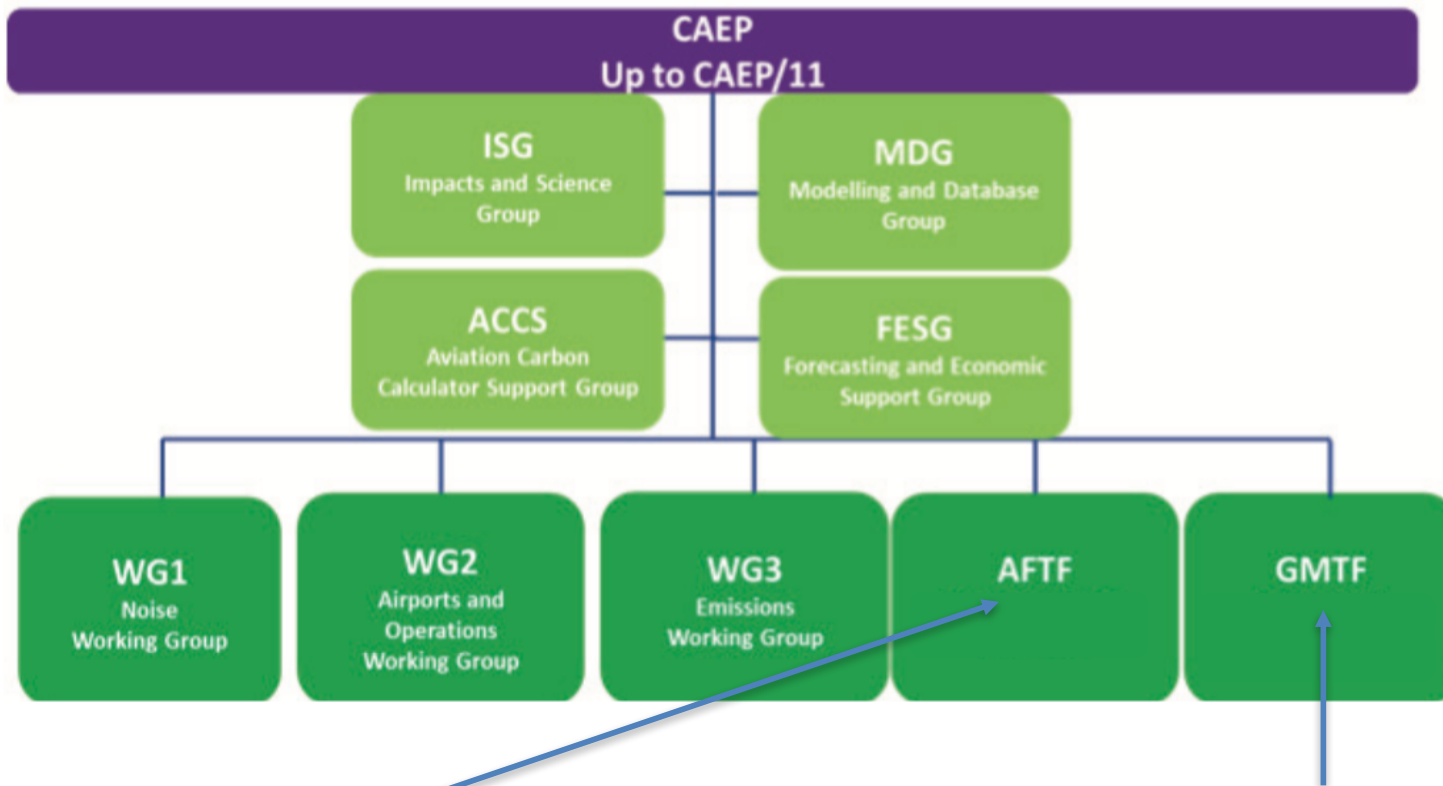


No RIN credits or other subsidies included.

Results from Bann, Malina et al. (2017): The costs of production of alternative jet fuel: A harmonized stochastic assessment, in: Bioresource Technology, Vol. 227, p. 179-187

How are sustainable alternative jet fuels added to CORSIA?

ICAO groups working on CORSIA



Alternative Fuels Task Force (AFTF)

Develops method for inclusion of alternative jet fuels in CORSIA

Global Market-Based Measure Technical Task Force (GMTF)

Develops the overarching CORSIA method

Eligibility requirements for alternative jet fuels

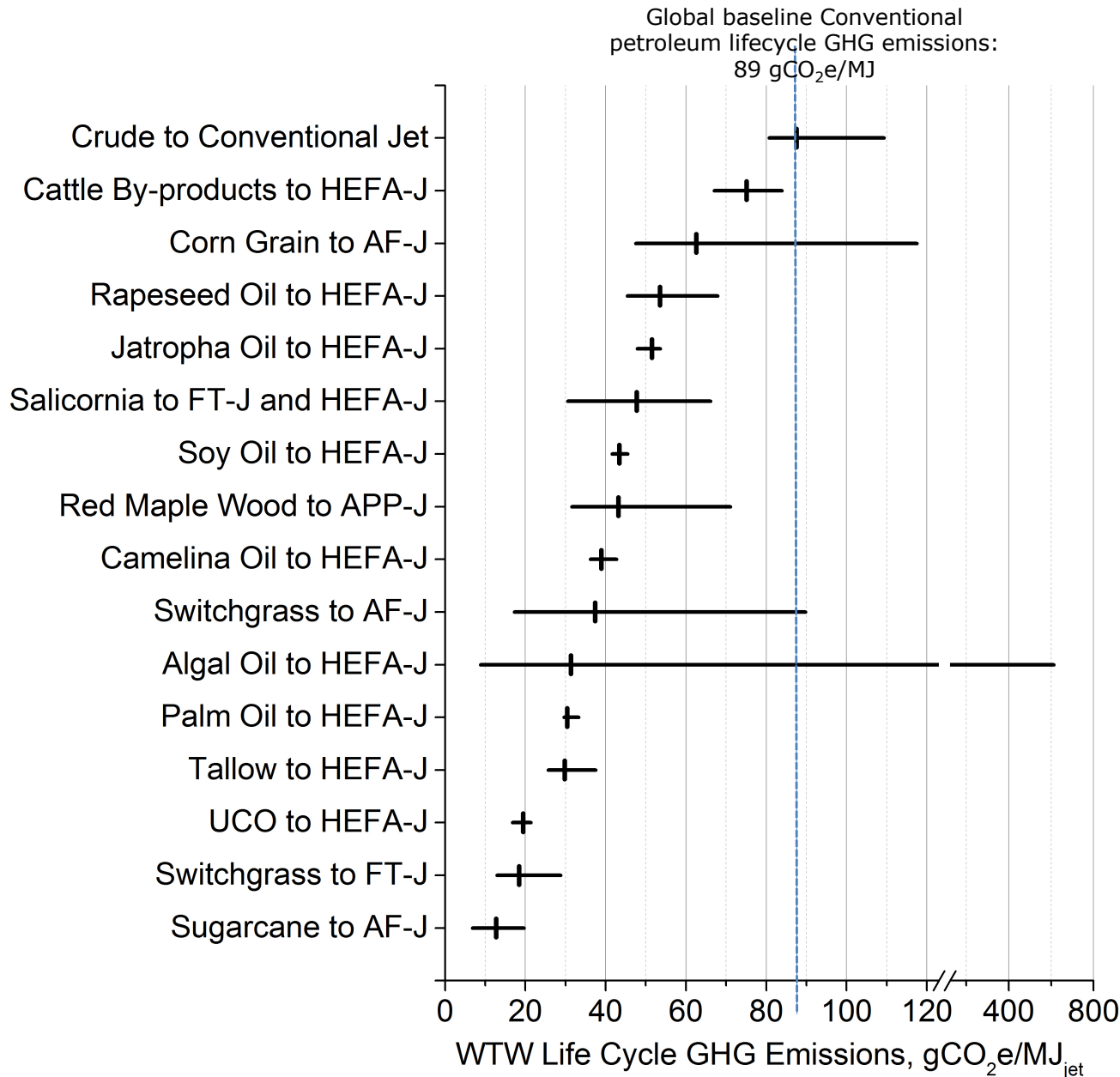
Provide GHG emissions benefit on a lifecycle basis compared to conventional petroleum

Currently being developed for specific feedstock/conversion pathway combinations

AFTF Core LCA Task Group
(Leads: Maria de la Rica Jimenez / SENASA, Robert Malina / U Hasselt)

AFTF Land Use Change Task Group
(Leads: Wally Tyner / Purdue U, Brad Saville / U Toronto)

The GHG emissions perspective



Note: These are **not** the draft core LCA values but rather values taken from our own analyses

Ongoing discussion on the use of thresholds

Results from Stratton et al. (2011), Carter (2012), Staples et al. (2014), Seber et al. (2014), Bond et al. (2014) and on-going work. All data peer-reviewed with exception of APP results. Results shown for production scenarios without land-use change

Method for calculation of lifecycle emission values

LCA method developed by AFTF covers the following aspects:

- Pathway Scope
 - System boundary
 - Emissions species of interest & functional units
 - Co-product allocation
 - Intended use & fossil fuel baseline
- Method summarized in a guidance document that can be shared with interested parties

Guidance Document for the Calculation and Submission of
Alternative Jet Fuel Lifecycle Analysis Data for Default
Values under the Global Market-based Measure

*October 2016
Version 1.1*

*Prepared by the
International Civil Aviation Organization – Committee on Aviation Environmental Protection
Alternative Fuels Task Force (ICAO-CAEP AFTF)*

Core LCA Data request

- AJF pathways will be assigned default LCA values under CORSIA
- LCA studies or values can be submitted to be considered for inclusion under CORSIA to aid this process. These must:
 - use the methodology described
 - use FT, HEFA, SIP/DSHC, or iBuOH-to-jet, ASTM certified conversion technology
 - be transparent and replicable
- Requirements for LCA studies or values submitted are outlined in a “Guidance Document”, to be circulated via email
- Data can be submitted to Core LCA TG Co-Leads:
 - Prof. Robert Malina - robert.malina@uhasselt.be
 - Ms. María de la Rica Jiménez - mmrica@senasa.es
- Note that submission of data is for information purposes only, and does not constitute the discussion or decision-making process of AFTF.

Eligibility requirements for alternative jet fuels

Provide GHG emissions benefit on a lifecycle basis compared to conventional petroleum

Currently being developed for specific feedstock/conversion pathway combinations

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Meet additional sustainability requirements

Currently being developed for AJF

AFTF Sustainability Task Group
(Leads: Thomas Roetger / IATA, Pedro Piris-Capezas / ICSA)

How will those “additional” sustainability requirements be defined and checked under CORSIA?



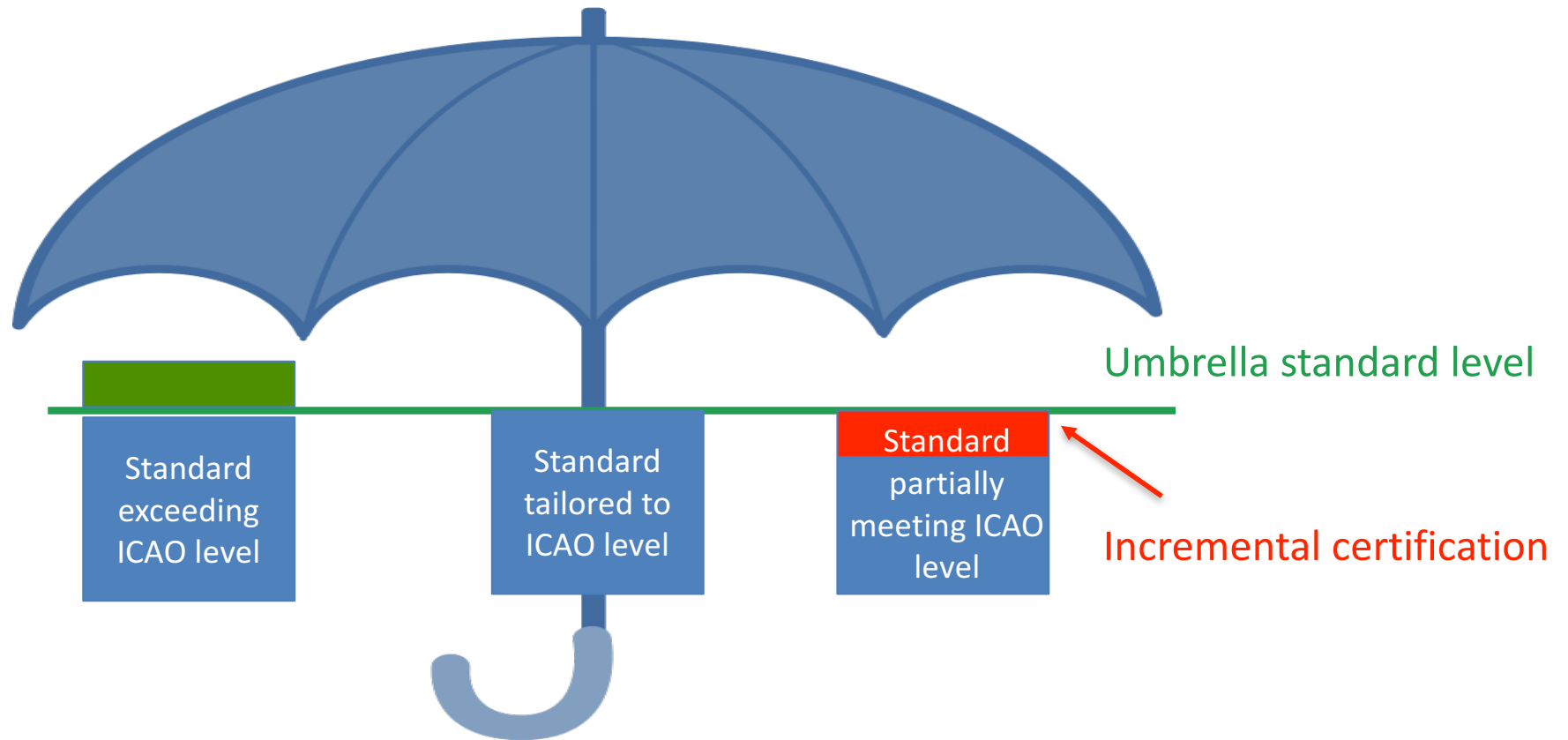
Sustainability considerations under CORSIA – the current thinking

- Global nature of the CORSIA requires a **global approach to sustainability**
- Ambitious timeline and existing (national) legislation requires to build as much as possible **upon existing standards and frameworks**
 - With regard to **sustainability criteria**
 - With regard to **compliance mechanism**

Existing standards and frameworks

Regulatory standards	Voluntary standards	Global frameworks
<ul style="list-style-type: none">• US RFS 2• EU RED/FQD• ...	<ul style="list-style-type: none">• ISCC• RSB• RSPO• ...	<ul style="list-style-type: none">• GBEP• ISO 13065•

Umbrella standard for sustainability

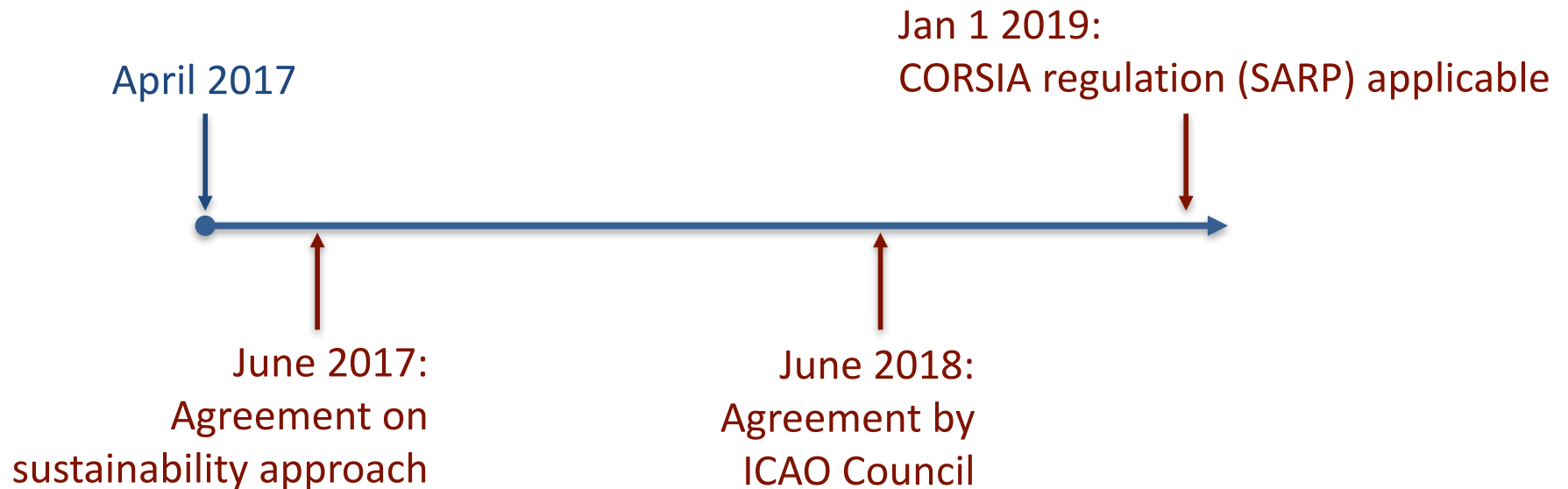


A framework (“umbrella”) standard would allow to recognize existing regulatory or voluntary standards as suitable to demonstrate compliance with the ICAO standard

Next steps

- Agreement on LCA GHG emission values
- Agreement on relevant environmental sustainability **themes, principles** and **criteria**
- Agreement on processes for **recognition** of sustainable alternative fuels under CORSIA
 - Requirements for compliance
 - Way to incorporate existing regulatory and/or voluntary standards

Schedule needed for consideration of sustainability of alternative jet fuel at start of CORSIA



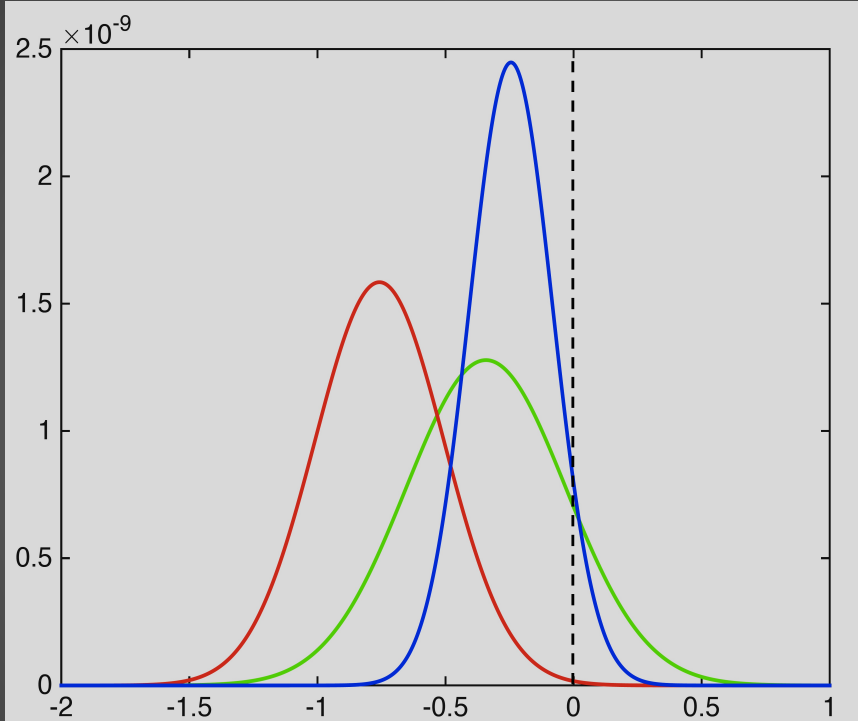


So is AJF worth the effort (by companies, researchers, governments)?

From investor to societal perspective: MSW to jet example



Investor perspective:

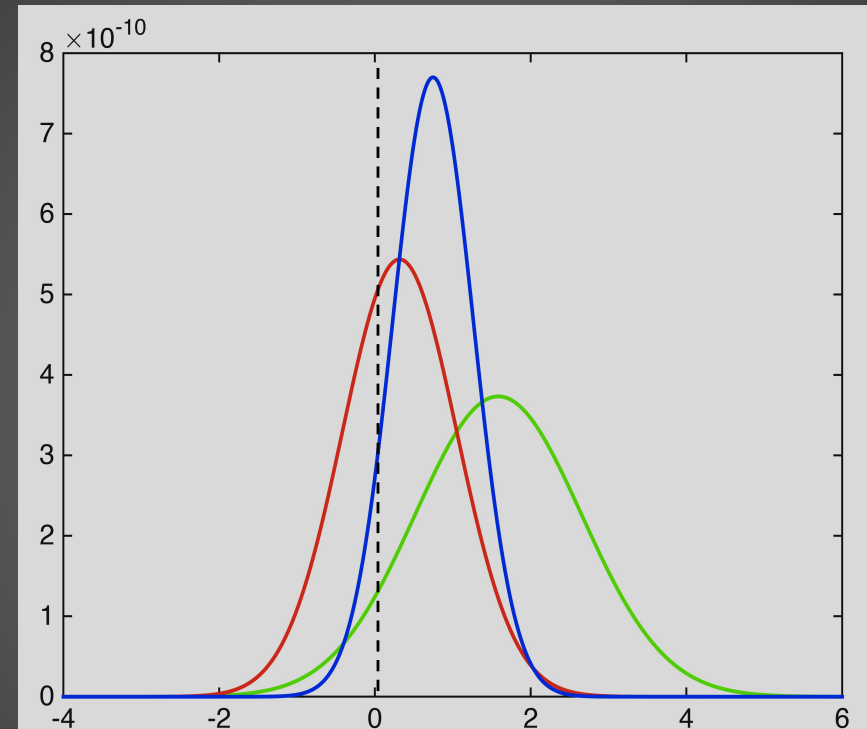


Net present value (\$B)*

Probability of NPV>0:

14% 0.1% 7%

"Societal" perspective:



Net present value (\$B)

Probability of NPV>0:

93% 67% 92.5%

Results are specific to the assumptions below and cannot be generalized

- FT MD
- Plasma FT MD
- ATJ MD

Assumptions used for societal case

- Costs of carbon based on US EPA social costs of carbon
- Societal costs of capital of 3.2%
- Taxes and subsidies excluded as they constitute transfers

*No RIN credits included



**Thank you for your
attention!**

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