

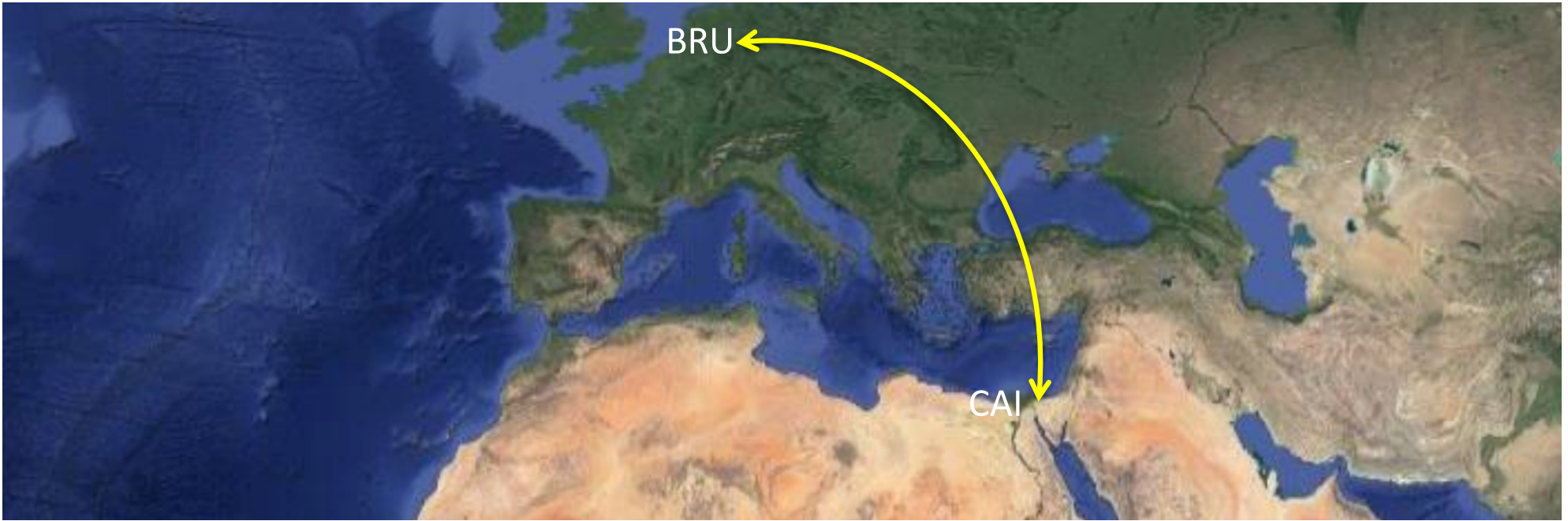
# Moving from regional to global sustainability rules: The proposed global sustainability regulation for biomass-derived jet fuel

**Robert Malina**

2nd Applied Biobased Materials Conference

Maastricht – May 12, 2017

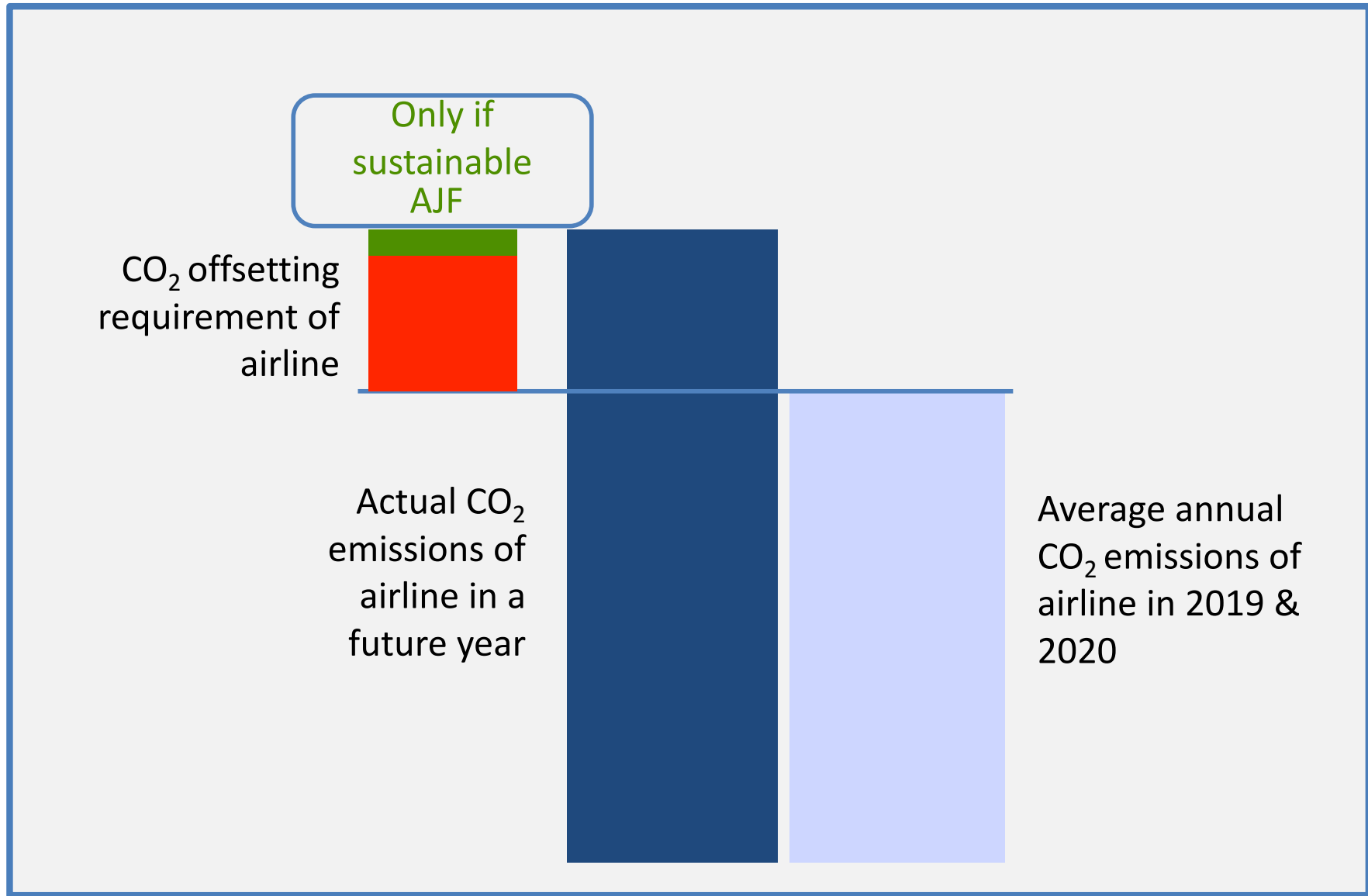




ICAO

**CORSIA**  
CARBON OFFSETTING AND  
REDUCTION SCHEME FOR  
INTERNATIONAL AVIATION

# CORSIA



Simplified schematic. Actual process more complicated

The CORSIA system will require a **global** agreement on how **sustainable** alternative jet fuel is being defined

# Regional sustainability requirements (examples)



**Renewable Fuels Standard**



**Renewable Energy Directive  
Fuel Quality Directive**



Committee for Aviation  
Environmental Protection



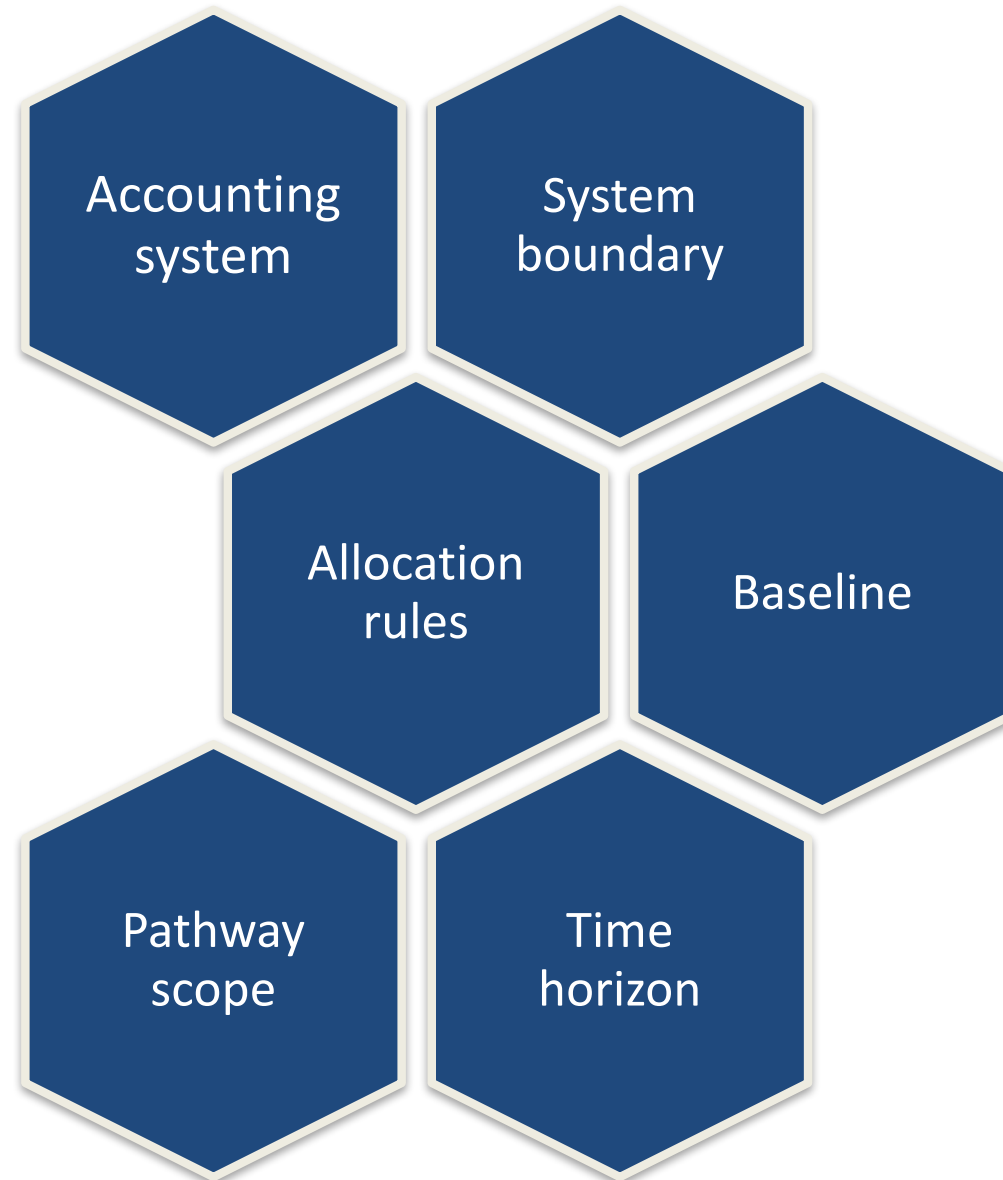
Alternative Fuels Task Force

# Sustainability requirements for alternative jet fuels

1.

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

# Critical issues for lifecycle GHG emission analysis





# Method for calculation of lifecycle emission values

LCA method developed by AFTF covers the following aspects:

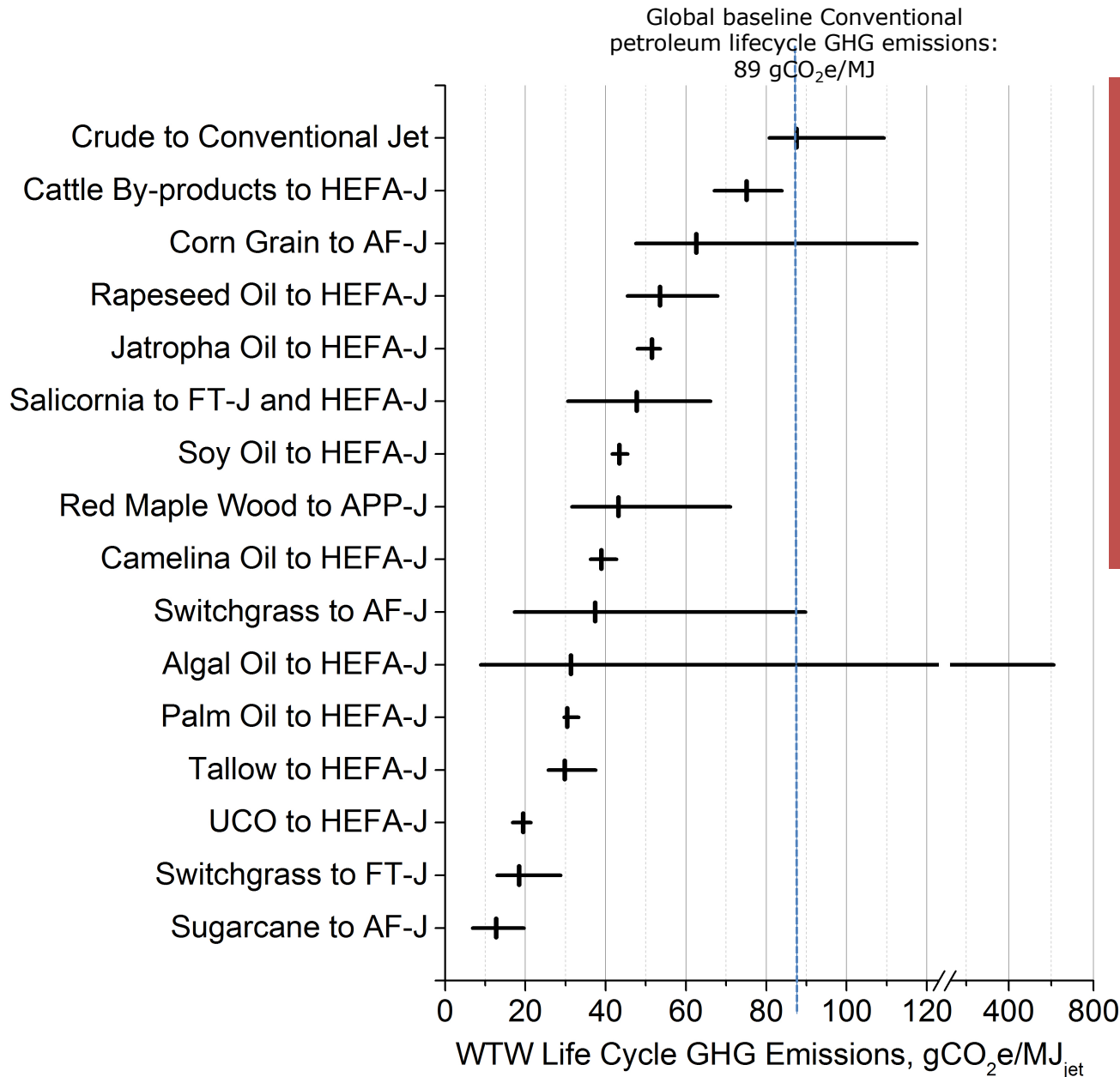
- Pathway Scope
- System boundary
- Emissions species of interest & functional units
- Co-product allocation
- Intended use & fossil fuel baseline
- Method summarized in a guidance document that can be shared with interested parties

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)*

# The GHG emissions perspective



Large **heterogeneity** in **carbon intensity** that needs to be considered

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

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

Lifecycle **greenhouse gas emissions'** values will need to be calculated **specifically** for **each** feedstock to fuel pathway



# Sustainability requirements for alternative jet fuels

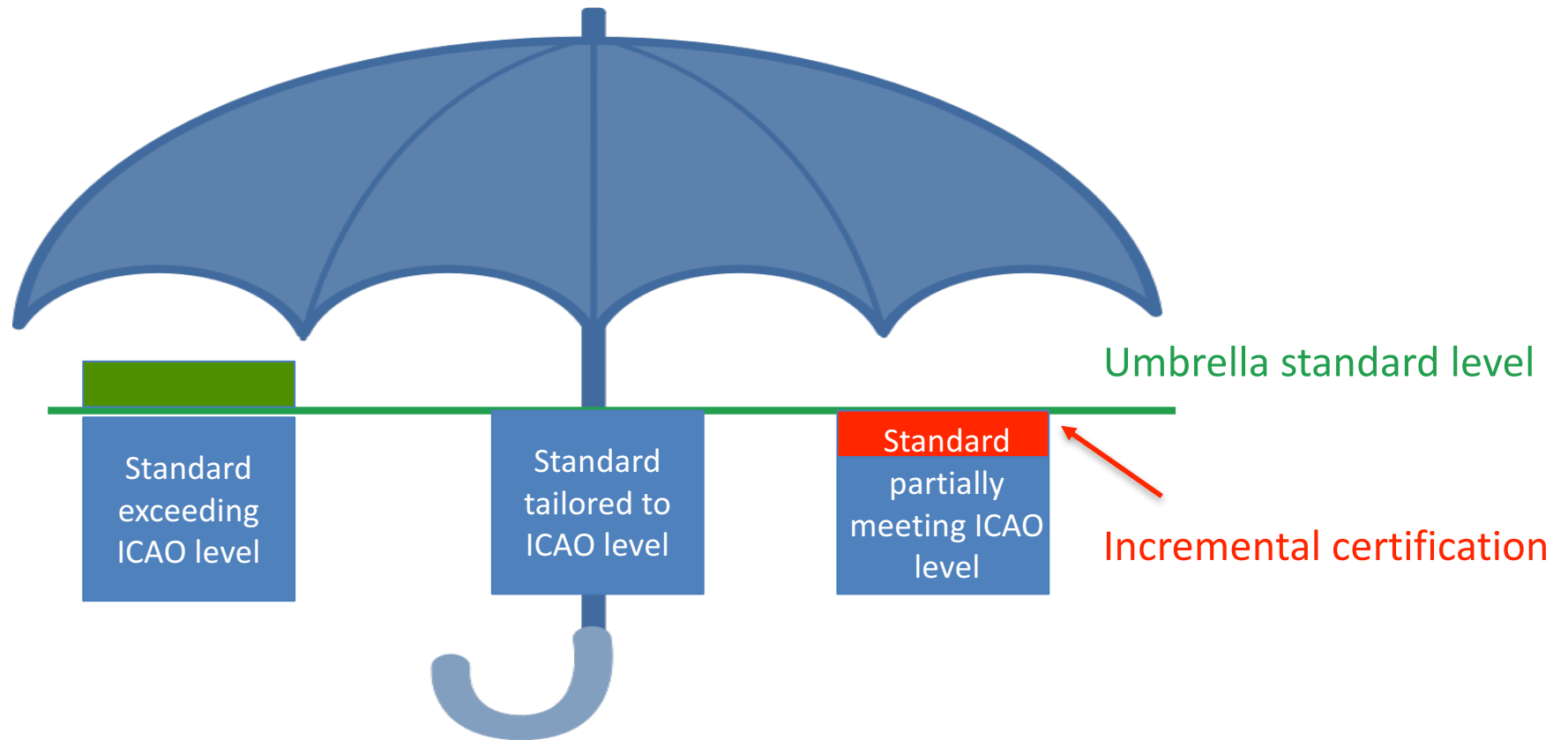
## 2.

Meet additional sustainability requirements

# 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**

# 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

# The ambition level

- Level of ambition currently under negotiation

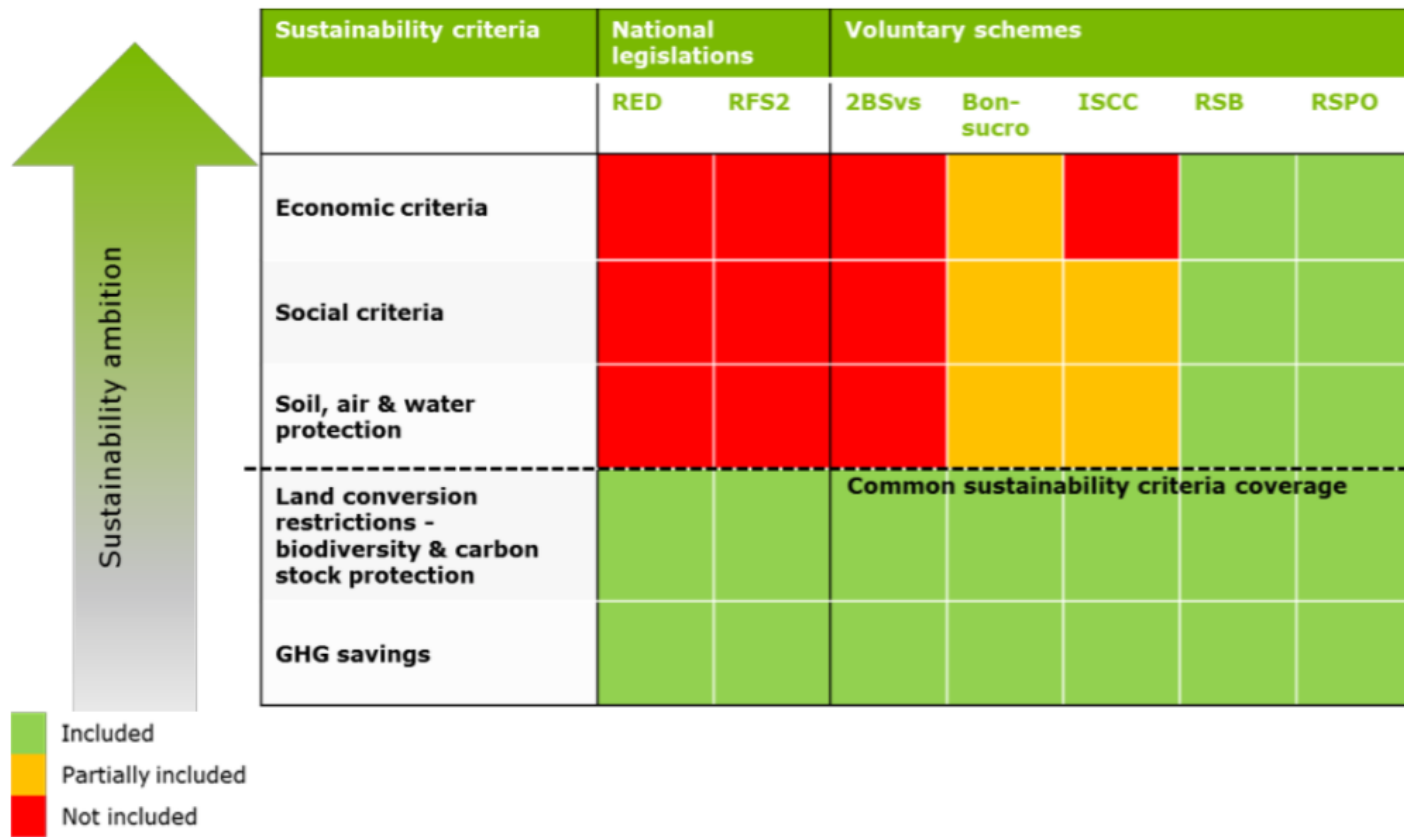


Figure taken from Ecofys (2015): Assessment of sustainability standards for biojet fuel, Final report.

## Next steps

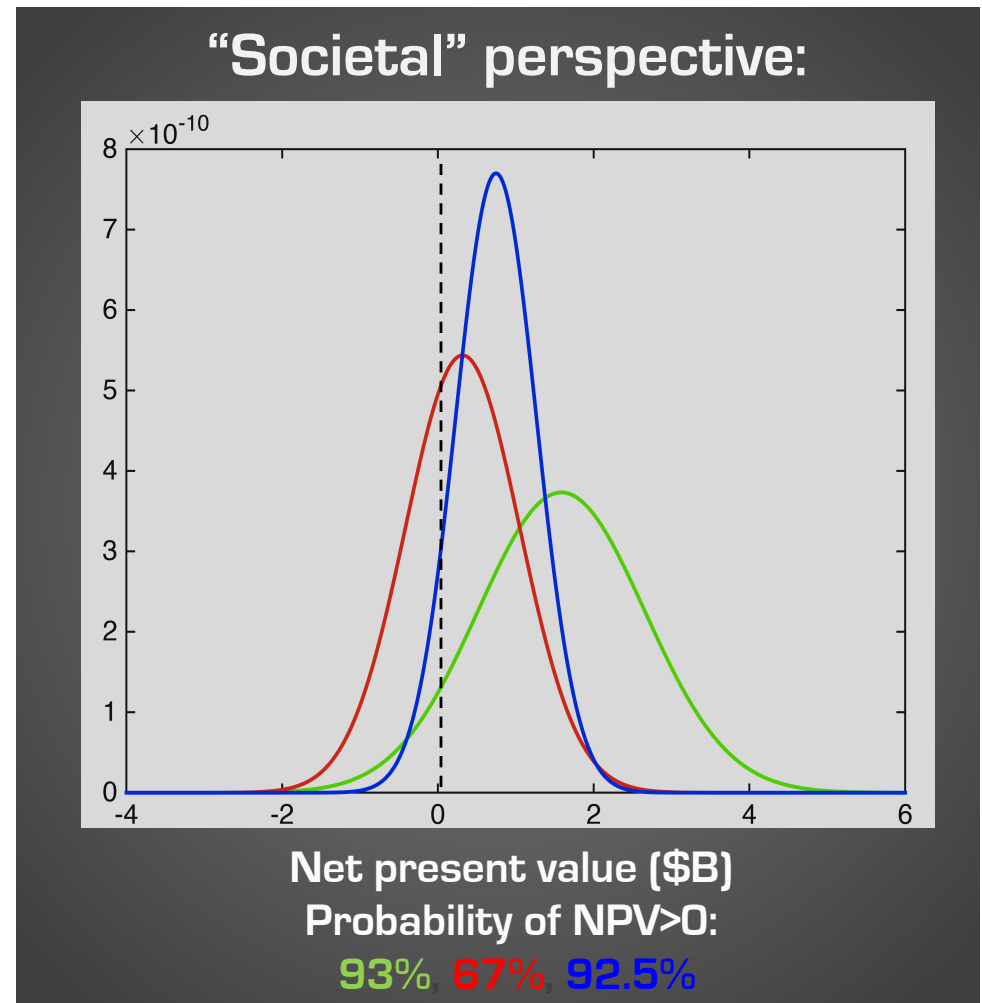
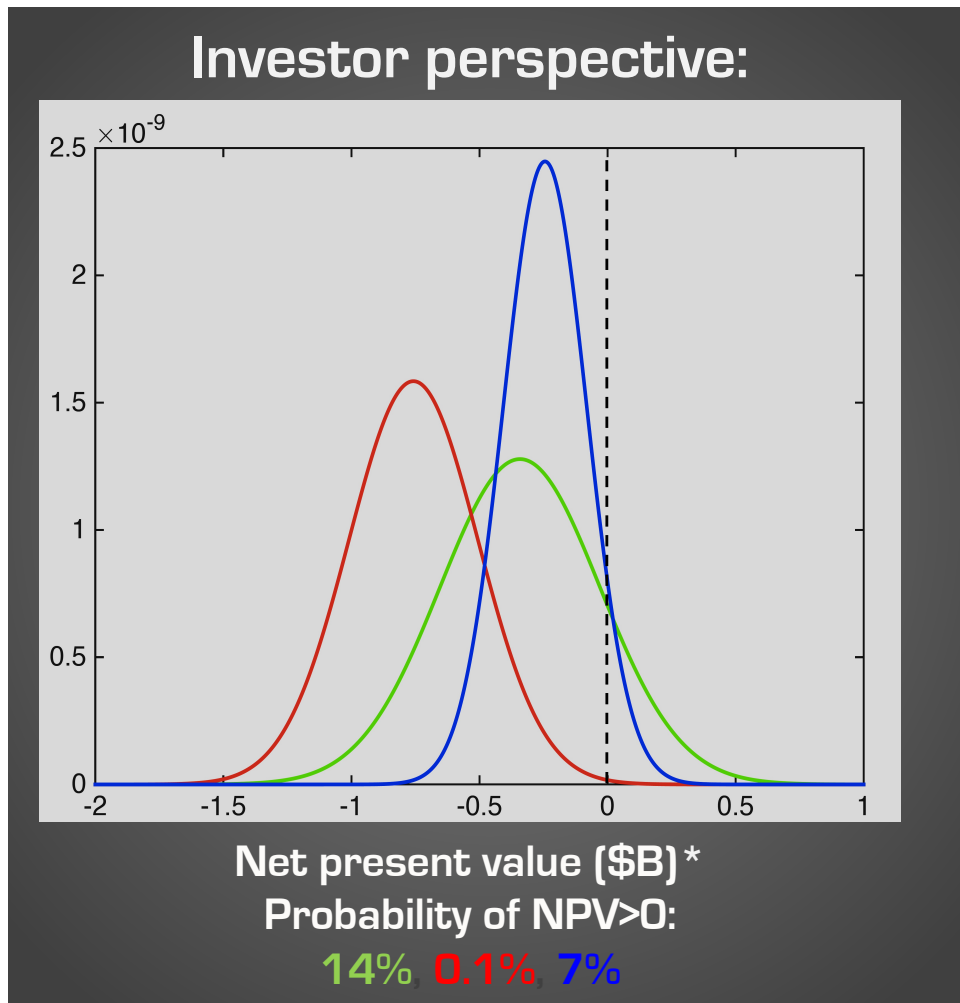
- Agreement on LCA GHG emission values
- Agreement on relevant environmental sustainability **themes, principles, and criteria** (& indicators?)
- Agreement on processes for **recognition** of sustainable alternative fuels under CORSIA
  - Requirements for compliance
  - Way to incorporate existing regulatory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



The process for developing a recognition mechanism for sustainable alternative jet fuels under CORSIA is **complicated** and **costly**.

Is alternative jet fuel actually **worth** all this **effort**?

# From investor to societal perspective: MSW to jet example



- FT MD
- Plasma FT MD
- ATJ MD

\*No RIN credits included

Results are specific to the assumptions below and cannot be generalized

**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



**Thank you for  
your attention!**

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