



X SEMANA DE LA  
**ENERGÍA**

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# Decarbonizing aviation in Latin America in a sustainable way

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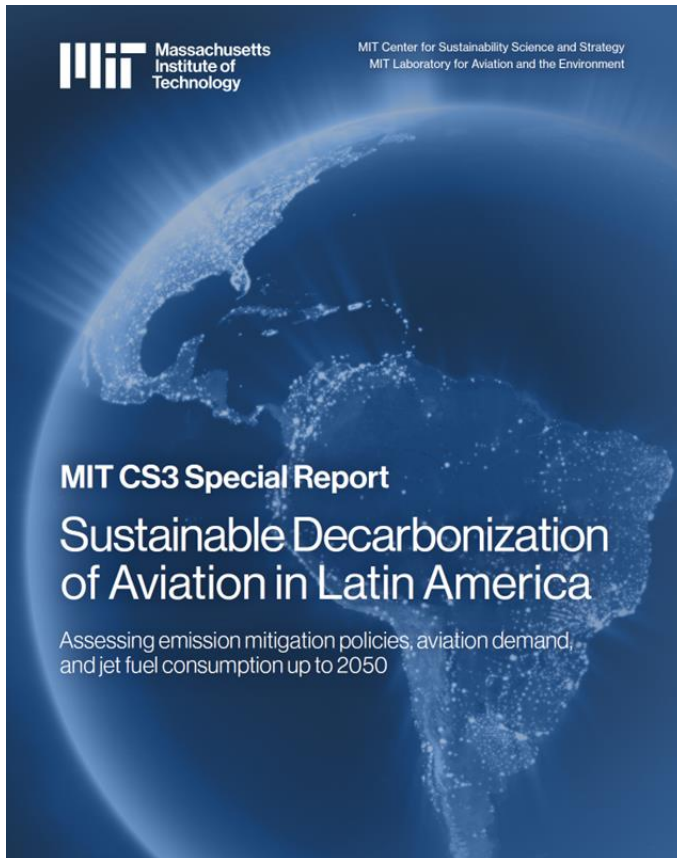
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**Overall Study:** *Options for decarbonizing aviation in Latin America in a sustainable way: an assessment of emission mitigation policies, aviation demand and jet fuel consumption up to 2050*

*Focus on countries:* Brazil, Chile, Colombia, Ecuador, Mexico, Peru

<https://cs3.mit.edu/publication/118414>



## SAF is a major, but not the only measure to reduce aviation emissions



2019 Emissions: 1 Gt

2050 Baseline Emissions: 1.8 Gt

### **IATA Approximate**

#### **Abatement Plan:**

65%: Sustainable Aviation

Fuels (SAF)

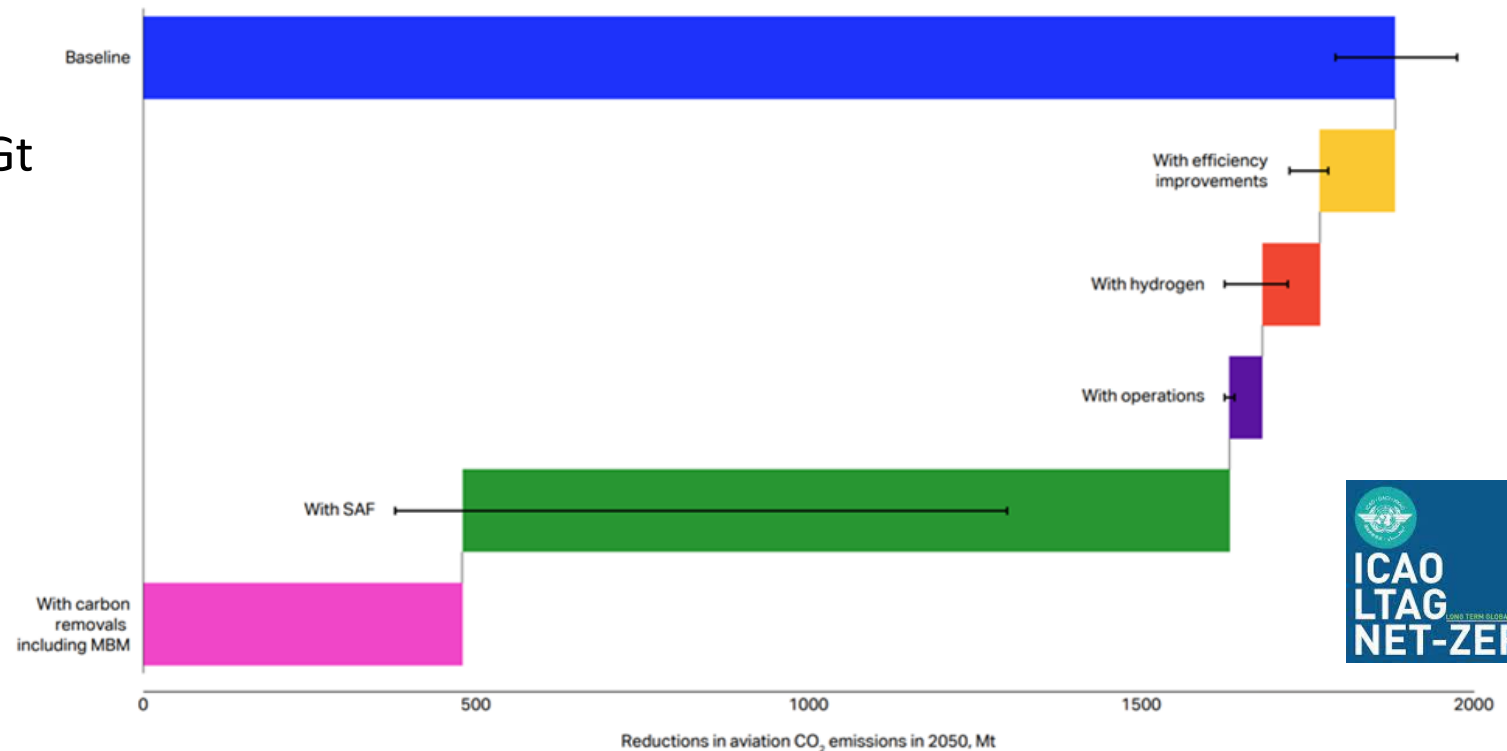
13% new propulsion

technology

3% efficiency improvements

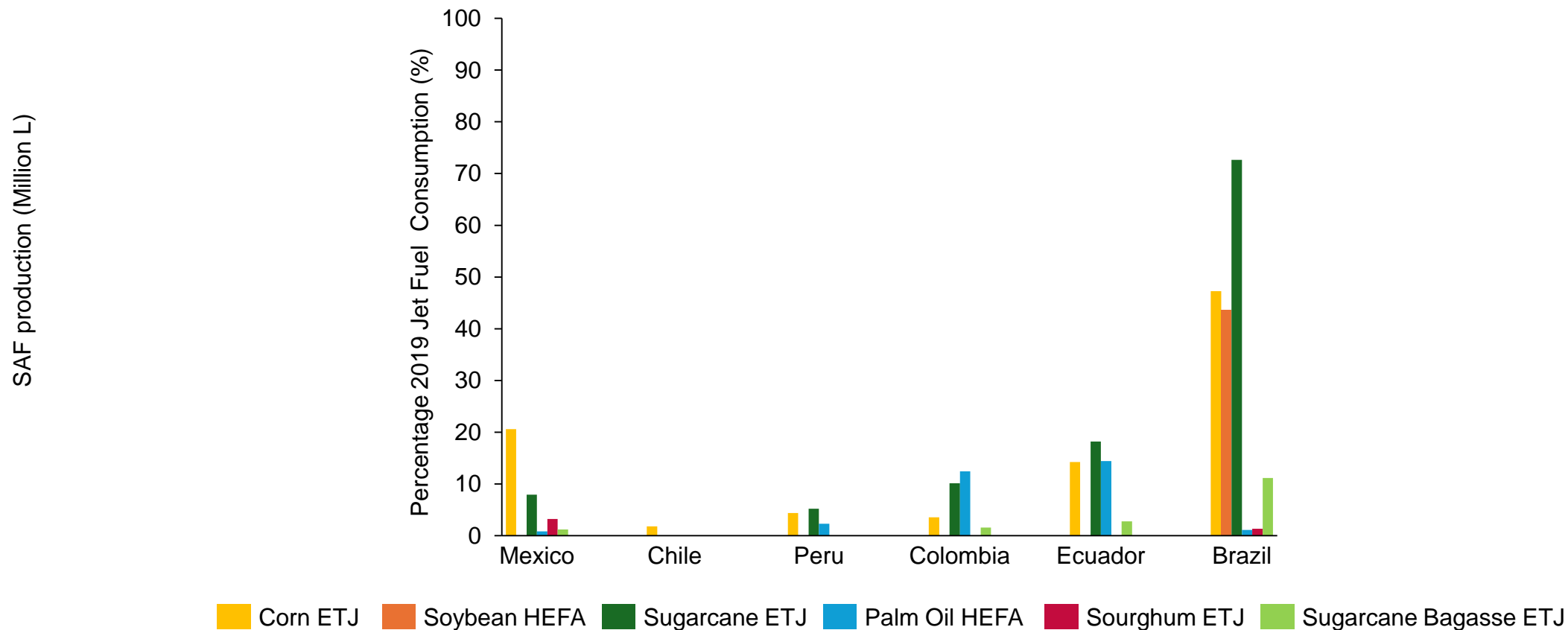
19% offsets and CCS

ICAO: Long term global aspirational goal (LTAG) for international aviation



## SAF potential if crop production in each country was increased by 20%

Percentage of 2019 jet fuel consumption offset if current crop production is increased by 20% \*\*



\*This assumes that expansion can happen at the same average yield.

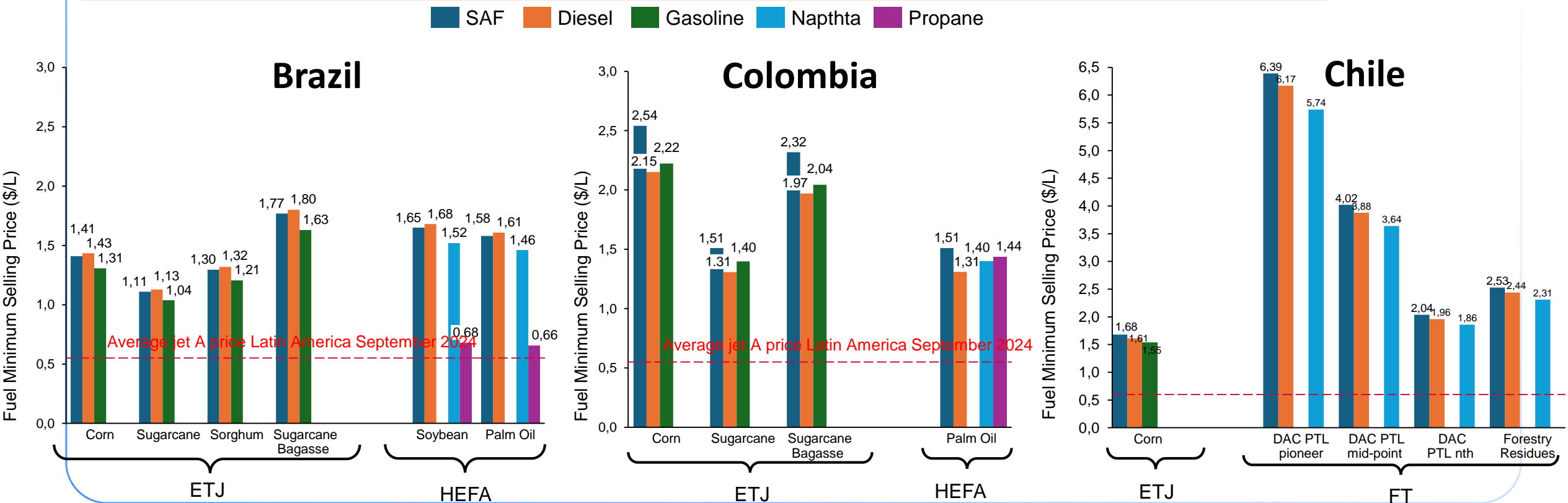
\*\* EIA statistics for jet fuel consumption

# Minimum Selling Price of SAF Pathways

MSP is the minimum price so that a production plant reaches  $NPV > 0$

MSP is calculated using a discounted cash flow method. It accounts for capital costs, operational costs (e.g. feedstocks, electricity, natural gas, maintenance), loan interest, and shareholder equity payments.

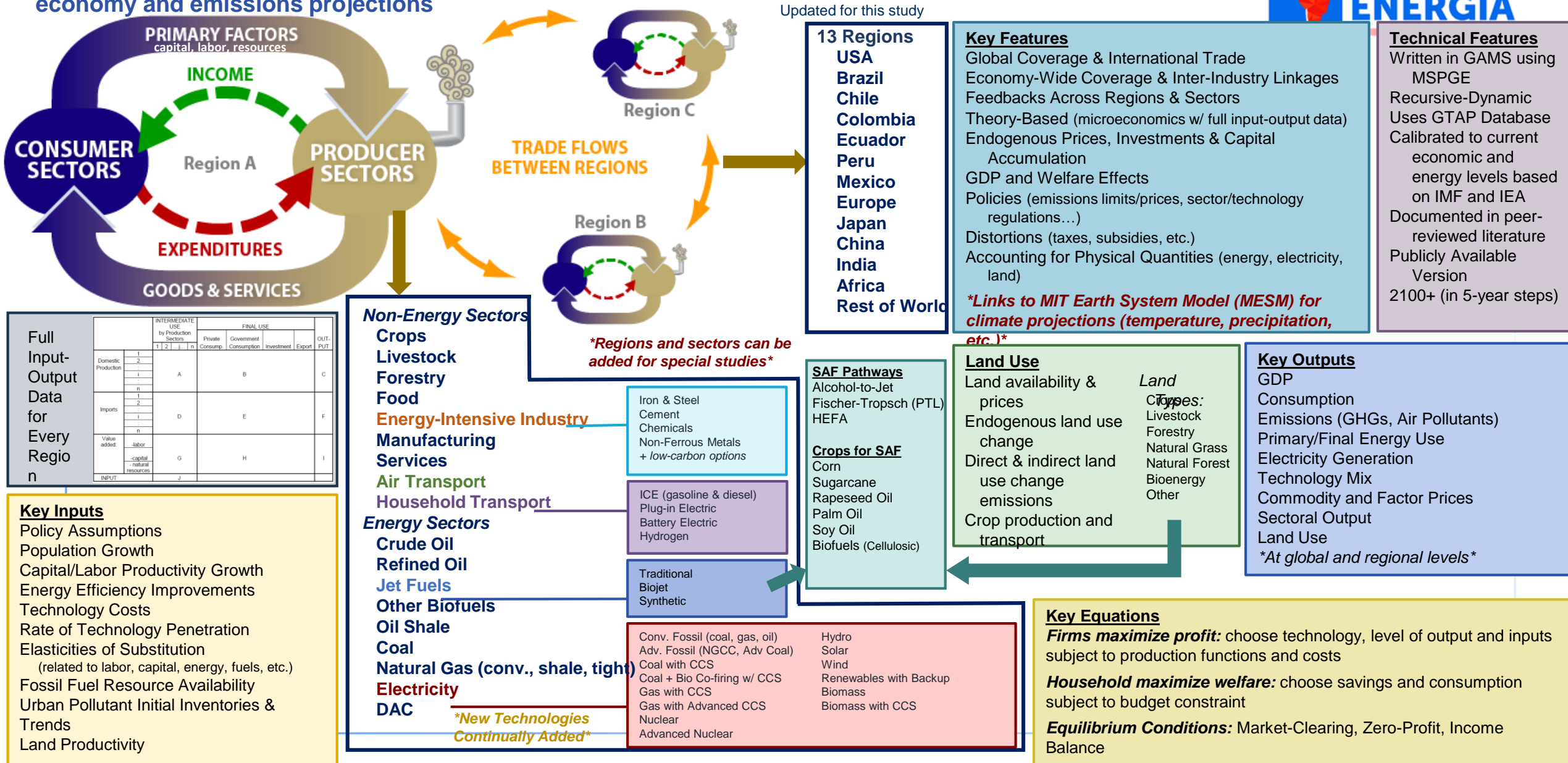
Variations in SAF MSP between countries are driven by differences in feedstock and energy costs.





# MIT Economic Projection and Policy Analysis (EPPA) Model

Multi-sector, multi-region computable general equilibrium (CGE) model of the world economy for energy, economy and emissions projections



# Domestic SAF policy: Proposal in development



Chile

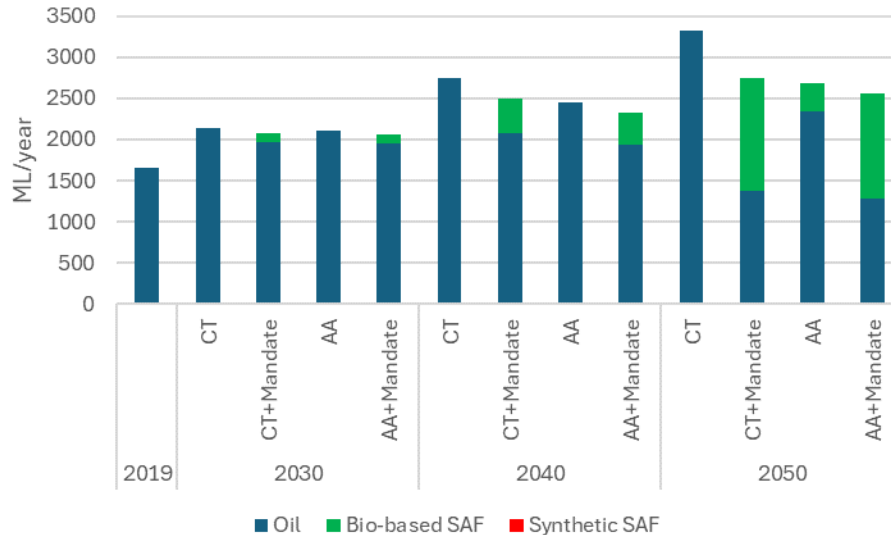
HOJA DE RUTA  
SAF 2050

50%

Porcentaje de SAF  
usado en la aviación  
en Chile al 2050.



## Projected jet fuel use under the current SAF



Impacts depend on the economy-wide emission mitigation actions.

Estimated **2050** impact of the current proposal (50% SAF in 2050) on **RPK**: decrease by 9% relative to CT; decrease by 6% relative to AA.

The largest impact is from the climate policy (economy-wide emissions reductions) from CT to AA.

AA with different SAF deployment (A2-25%, A3-50%, A4-70% by 2050, including e-fuels): the impact on RPK in 2050 is a decrease of 3%, 6%, and 8%, correspondingly (relative to AA in 2050).

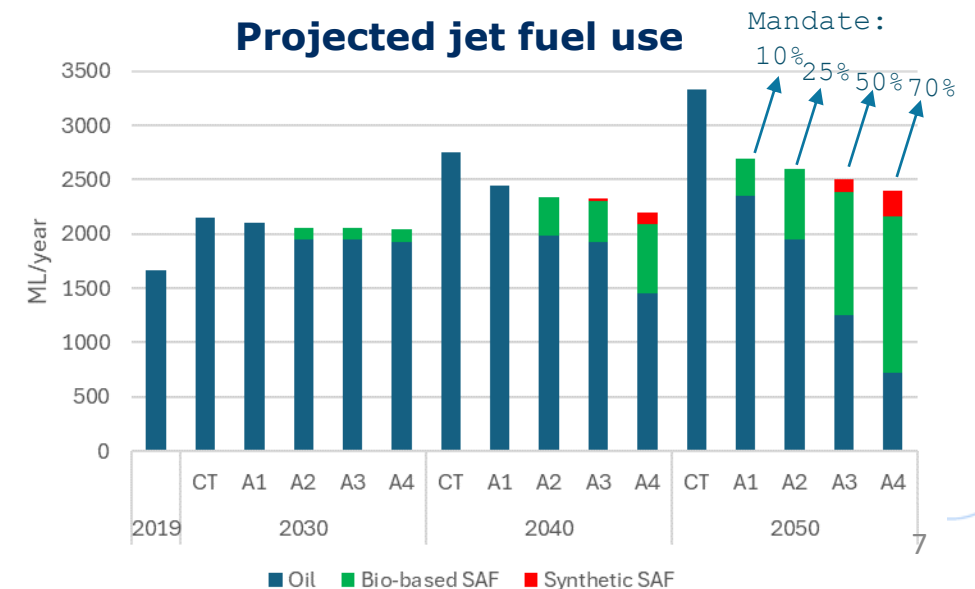
Economy-Wide Emissions:

**CT: Current Trends**

**AA: Accelerated Actions** (70% reduction by 2050, excl LUC)

Estimated impact of SAF mandates on **RPK in 2050**: decrease by 3-8% (relative to AA with no mandates in 2050), but RPK in 2050 is still about **50% larger** in comparison to 2019.

## Projected jet fuel use





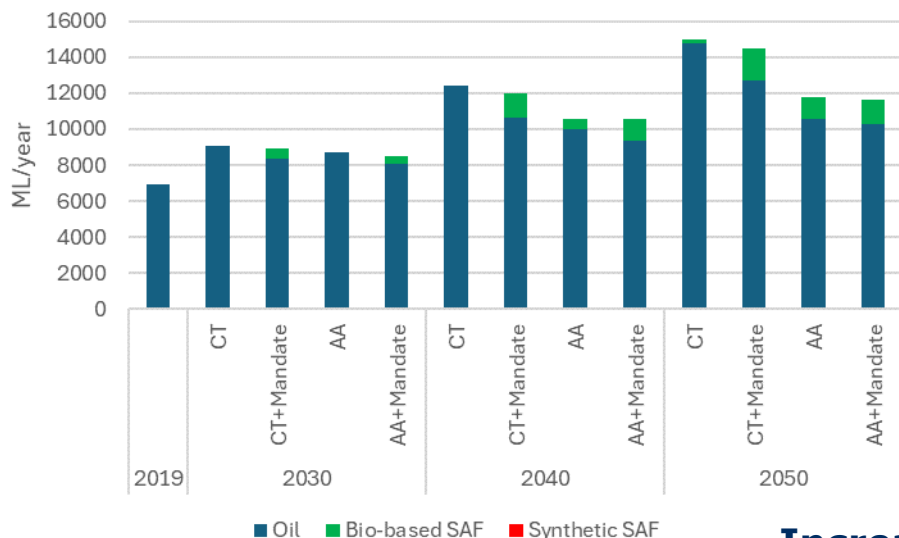
# Brazil

## Domestic SAF policy:



Year	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Minimum Percentage Emission Reduction	1%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%

### Projected jet fuel use under the current SAF



The largest impact is from the economy-wide emissions reductions (from CT to AA).

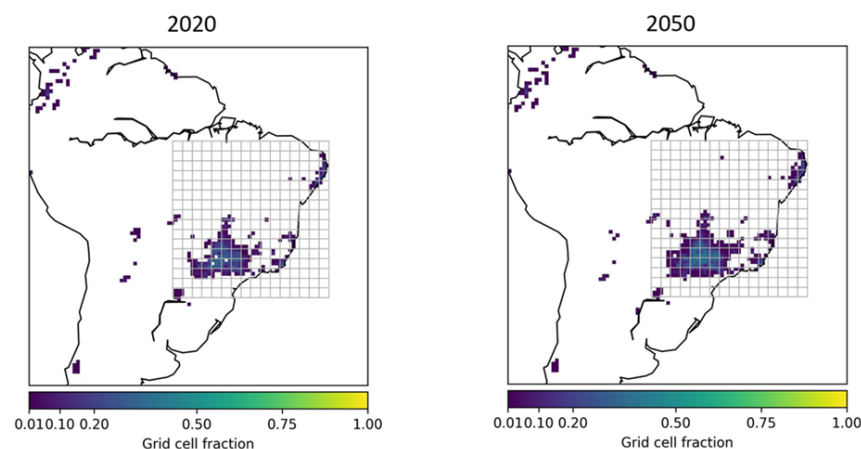
If AA is with more aggressive SAF deployment (A2-12%, A3-30%, A4-70% by 2050), then the impact on RPK in 2050 is a decrease of 0.4%, 1%, and 4%, correspondingly (relative to AA in 2050).

### Economy-Wide Emissions:

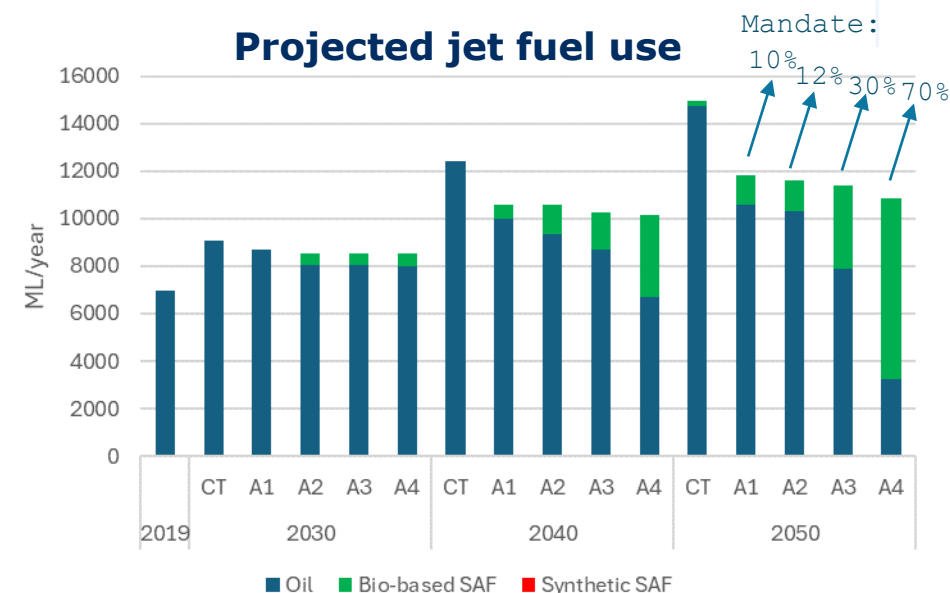
**CT:** Current Trends

**AA:** Accelerated Actions (75% reduction by 2050, excl LUC)

### Increase in land use for SAF



### Projected jet fuel use





# The Value of Regional Cooperation



*Brazil, Chile, Colombia, Ecuador, Mexico, and Peru have **different potentials** for the **amounts** and **costs** of SAF production.*

*In the case of **regional SAF trading**, Brazil, Colombia, Ecuador, and Peru become SAF exporters, while Chile and Mexico find it economically attractive to import SAF.*

*Ensuring access to the **cheapest SAF** (e.g., through “Book-and-Claim Mechanisms”) helps to facilitate an accelerated adoption of SAF, while also minimizing impacts on airline costs.*

*The estimated **impact** of allowing full regional trade in SAF among the six countries is an **increase in RPK in 2050 by 2%** (relative to the case where the SAF mandate achieved only by the domestically produced SAFs).*

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