

Sustainable Aviation Fuel

TEESDWG on Subsidies Meeting

WTO, Geneva, April 15, 2024





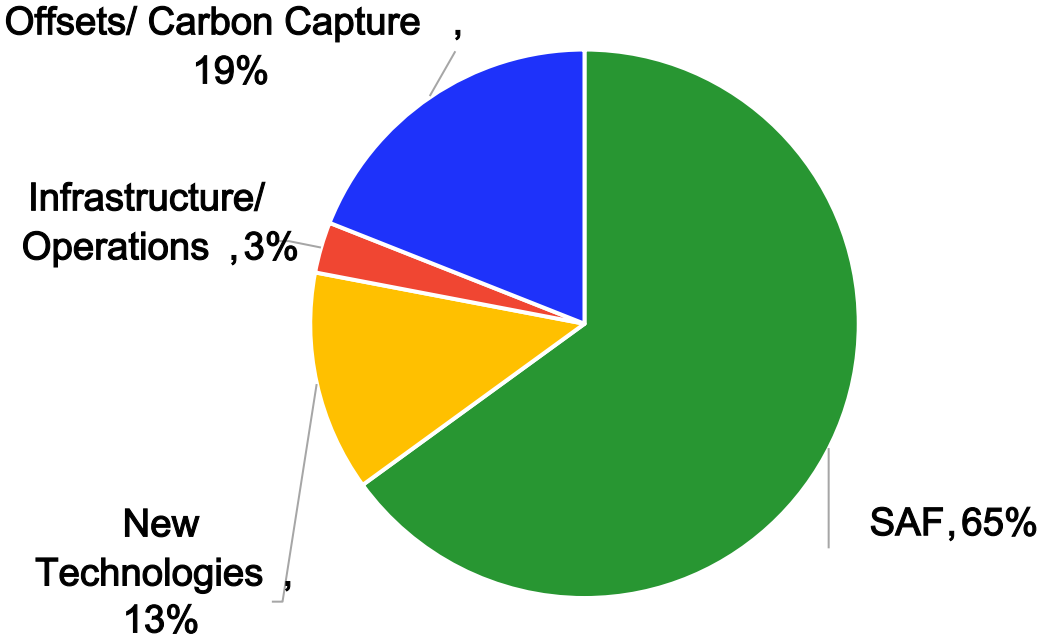
Our commitment:

TO ACHIEVE NET ZERO CARBON EMISSIONS BY 2050

Target aligned with Paris Agreement goal
to keep global warming under 1.5 °C

Aimed at keeping the benefit of global
connectivity for future generations

Technology Solutions to reach Net Zero



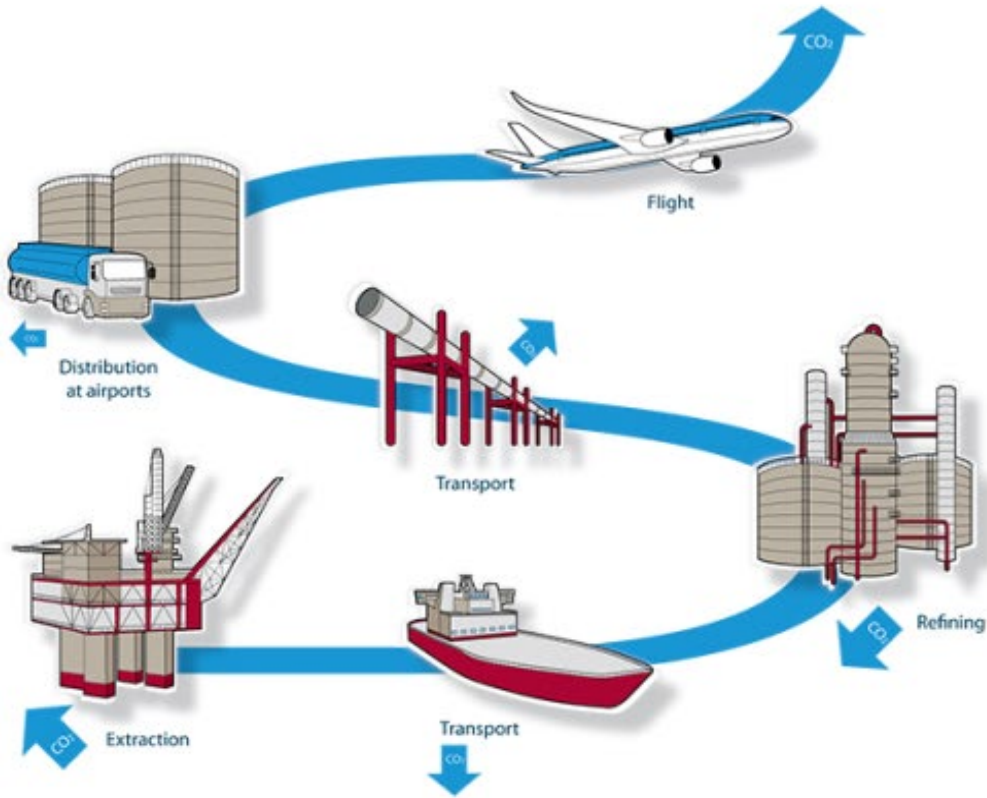
Year	2019	2020	2021	2022	2023e	2024f
Estimated SAF Output (Mt)	<0.02	0.05	0.08	0.24	0.45-0.5**	1.5***
Global Jet Fuel (Mt)*	288	157	182	254	271*	285
SAF % of Global Jet Fuel	<0.01%	0.03%	0.04%	0.1%	0.2%*	0.7%

2023 Average SAF output was ~ 3% of total Renewable Fuel output

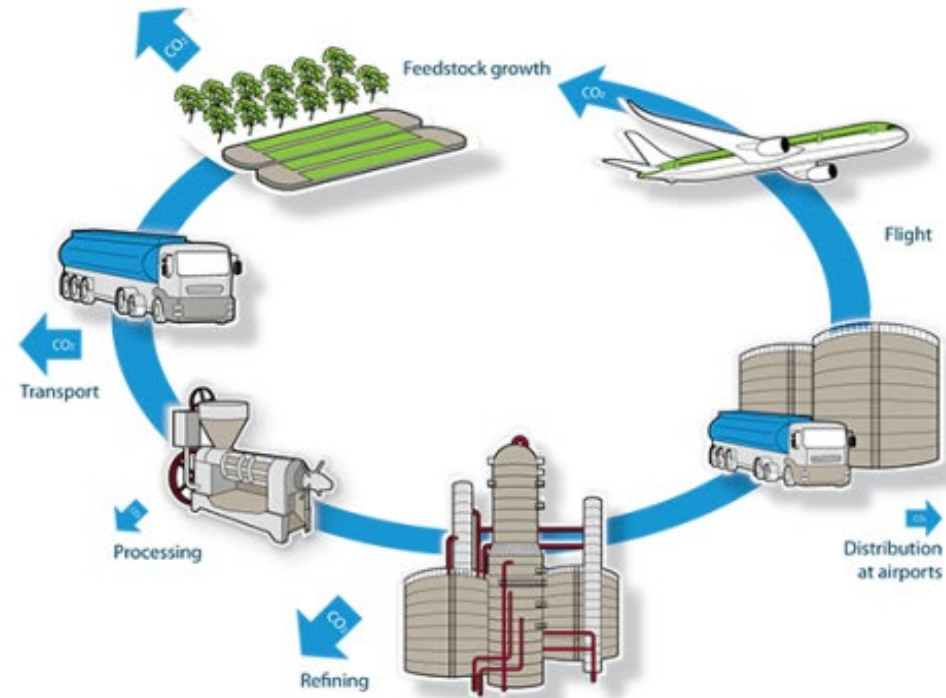
Between Now and 2030, SAF Production need to be ramped up by 100%



How SAF leads to a reduction in CO2

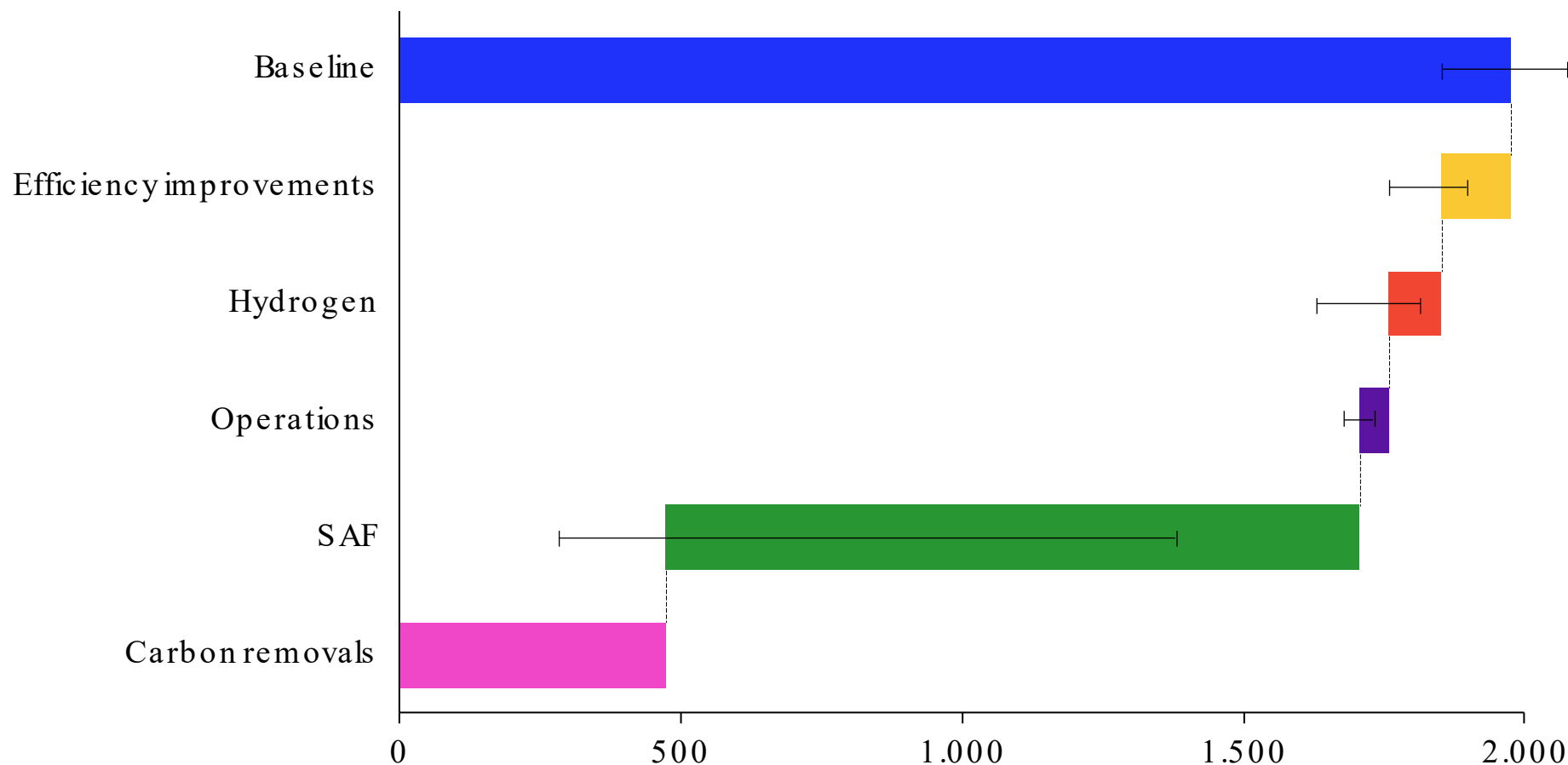


Conventional Aviation Jet Fuel



Sustainable Aviation Fuel

SAF is expected to have the largest contribution to aviation CO2 emissions reductions to achieve NZE2050. The absence of effective policies would severely limit the contribution to LTAG from SAF.



Canada

- Clean Fuel Regulation in force in which SAF creates credits
- BC LCFS regulation requires fuel suppliers to blend SAF starting at 1% in 2028, 2% in 2029 and 3% in 2030.
- Also includes a carbon intensity target for jet fuel: 2% in 2026, 4% in 2027, 6% in 2028, 10% in 2030.

USA

SAF Grand Challenge, California LCFS, US RFS, 2022 Inflation Reduction Act (promote domestic SAF production) in force

UK

- SAF mandate expected from 2025
- UK RTFO (production of SAF generate certificates for fuel suppliers) and UK ETS (0 emissions factor applies to SAF) in force
- Revenue Certainty Mechanism expected

France

- Volumetric domestic SAF mandate began from 2022
- EU RED II and EU ETS in force

Colombia

New climate action law tasks govt to promote SAF development domestically

Brazil

- SAF mandate expected for domestic flights from 2027 requiring them to achieve emissions reductions through the use of SAF: 1% in 2027, increasing to 10% in 2037

Norway

Volumetric SAF mandate began from 2020

Sweden

- Emission reduction obligation in force – 0.8% in 2021 to 27% in 2030
- EU RED and EU ETS in force

Germany

As part of national implementation of RED, PtL blending target established: 0.5% in 2026, 1% in 2028, 2% in 2030 by volume

Turkey

SAF mandate expected from 2025

UAE

“General Policy for SAF” announced in Dec 2023, including a voluntary target of providing 1% of fuel supplied to national airlines in UAE at UAE airports to be locally produced SAF by 2031

India

“Indicative blending targets” for international flights set: 1% in 2027, 2% in 2028, 5% in 2030

Thailand

There are indications towards implementing a SAF mandate: 1% SAF use by 2027

EU

- SAF mandate (RefuelEU) from 2025
- EU RED (SAF is qualified under the scheme to meet road and rail renewable targets, and is assigned a multiplier of 1.2) and EU ETS (SAF used under the scheme is considered to have 0 emissions) in force and also offers allowances for the use of SAF

China

CAAC has indicated consideration of a SAF target and is looking into the feasibility of achieving SAF consumption over 10% by 2035 and close to 50% by 2050

- SAF development roadmap from CAAC also expected including such overarching targets

Japan

- Soft target to replace 10% consumption by Japanese airlines by SAF by 2030
- GTET Act offers USD 2.2 billion for 5 years from 2024 also to support SAF production

Malaysia

National Energy Transition Roadmap published: 1% SAF blending mandate from 2027 expected, along with plan to incentivize investment in SAF production

Singapore

SAF Target and SAF levy established

Australia

Govt confirmed creation of Net Zero Authority: AUD 400 million to accelerate SAF projects in the country; emerging target of 1 billion litres of SAF by 2030

New Zealand

Draft Tourism Environment Action Plan mentions that a SAF mandate is being explored

- SAF Mandates implemented
- SAF Mandates expected
- Non-Mandate SAF policies/incentives implemented
- Non-Mandate SAF policies/incentives expected

Top 5 building blocks of policy effectiveness

Stable and Predictable

- Be stable, predictable, and consistent in implementation for the private sector to be willing to make investments
- Be of a sufficient duration to reflect project development timelines

Coherence and harmonization

- Be coherent at the sub-national/national/regional/international levels to maximize the intended outcome of the policy

Stackable

- Be “stackable” with other incentives, i.e., allowing credit to be received from multiple reinforcing incentives at the same time

Technology-neutral/Feedstock agnostic

- Be technology-neutral to enable diverse production pathways and to streamline feedstock supply chain

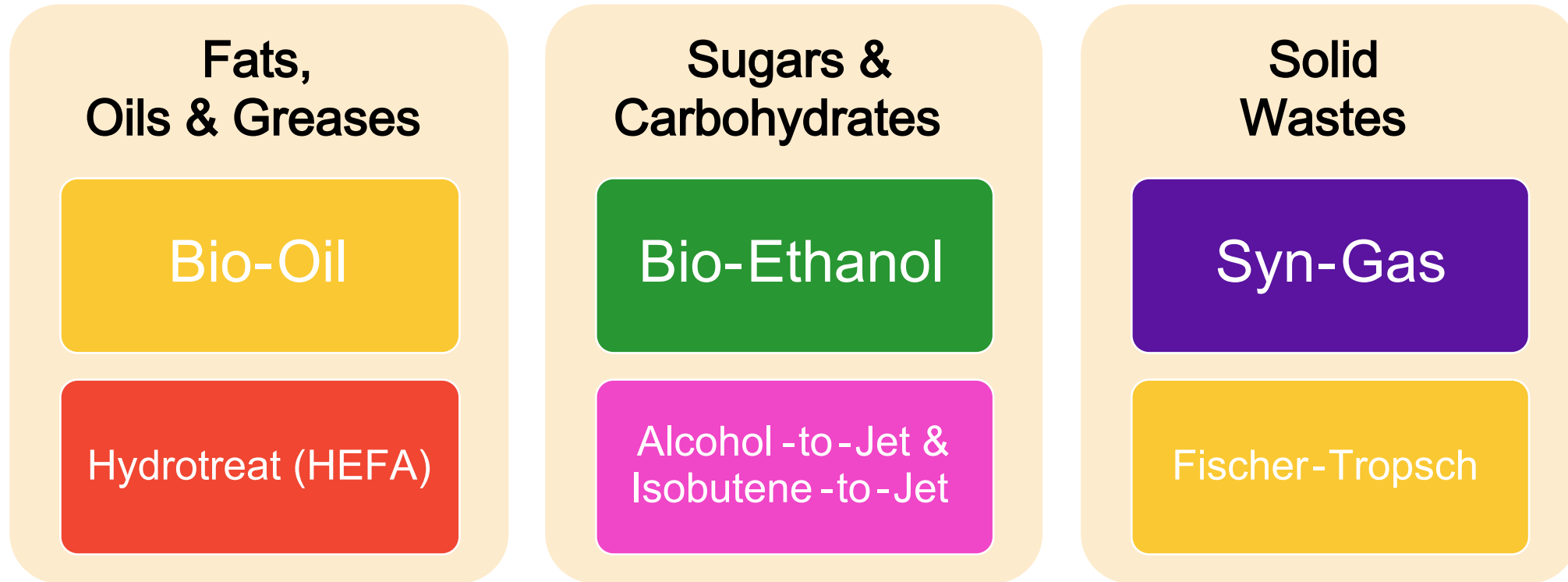
Review mechanism

- Be flexible by conducting periodic review exercises to ensure the policy design elements stay fit for purpose, and to be able to address any unintended consequences

Key Certified SAF Pathways

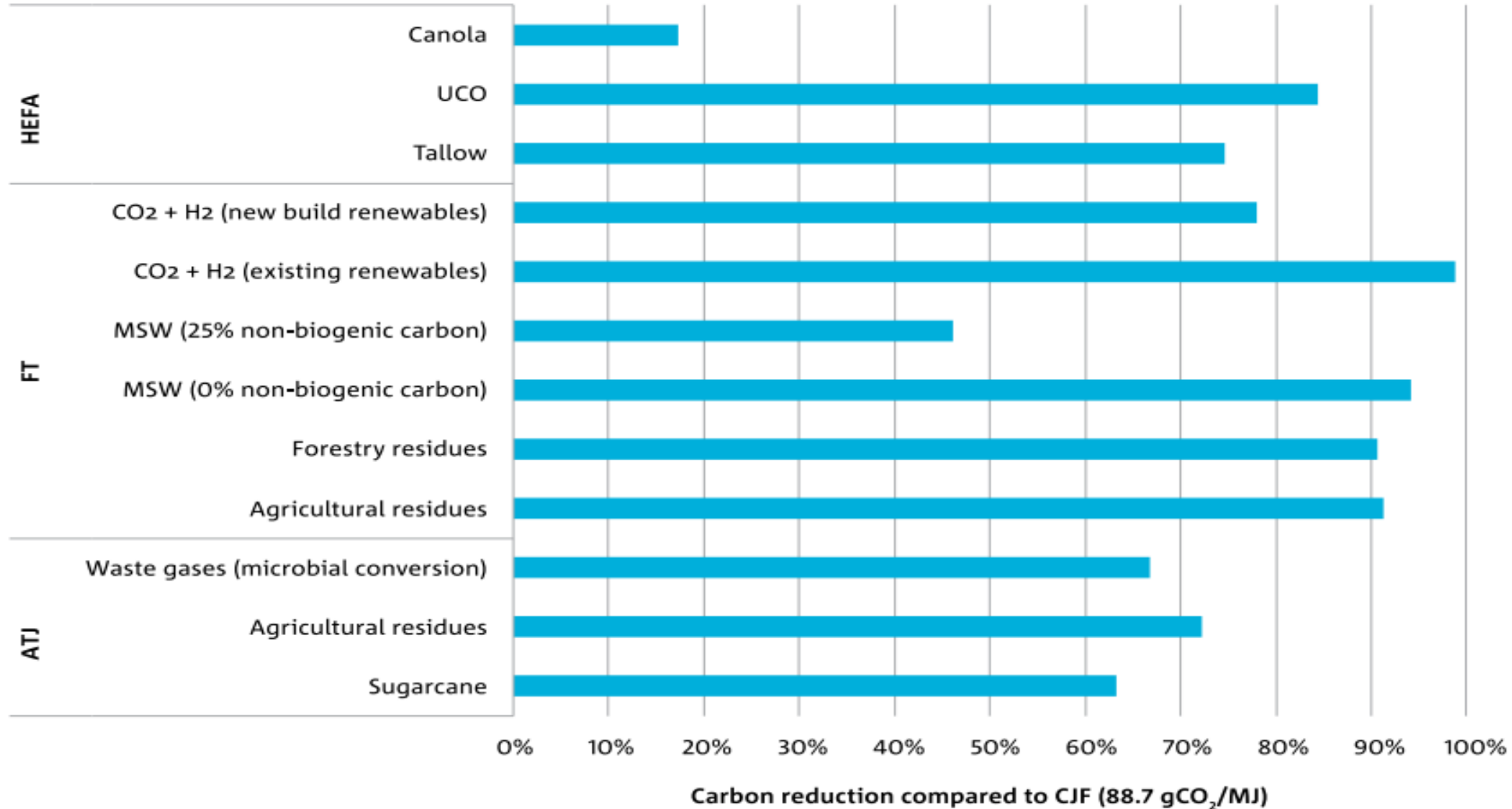
Pathway	Feedstock	Blend Limit
Hydroprocessed Esters and Fatty Acids (HEFA)	Waste Fats, Oils, Greases (FOGs) from Vegetable and Animals	Up to 50%
Fischer -Tropsch (FT) - Gasification	Energy Crops, Lignocellulosic Biomass, Solid Waste	Up to 50%
Fischer -Tropsch (FT) with Aromatics – Gasification	Energy Crops, Lignocellulosic Biomass, Solid Waste	Up to 50%
Alcohol -to-Jet	Agricultural Waste, Sugar/Starch Crops, Lignocellulosic Waste	Up to 50%
Isobutene -to-Jet <small>New Pathway</small>	Industrial Sugars from Forestry & Agricultural Wastes	Up to 50%
Catalytic Hydrothermolysis	Waste Fats, Oils, Greases (FOGs) from Vegetable and Animals	Up to 50%
HEFA from Algae	Micro -Algae Oils	Up to 10%
Direct Sugars to Hydrocarbons	Conventional Sugars, Lignocellulosic Sugars	Up to 10%
FOG Co-Processing	Waste Fats, Oils, Greases (FOGs) from Vegetable and Animals	Up to 5%
FT Co-Processing	Fischer-Tropsch Biocrude	Up to 5%

Breaking Feedstocks as Commodity



Feedstock Value Chains are Critical for SAF production and GHG benefits

Important : SAFs are not created equal



SAF & Broader Sustainability Benefits

Projects that aggregate wastes or recultivate degraded land create numerous socio-economic co-benefits, which are **major factors for attracting investment** :

**Sustainable
Supply Chains**

**Job & Wealth
Creation**

Energy Security

**Land
Restoration**

Biodiversity

Regional Development

'SAF' in WTO Subsidy Meeting Room.....



Feedstock

Strengthening Trade & Supply Chains, Sectoral Priorities with sustainability focus

Technology

Lowering barrier for Technology Diffusion
Accelerate Deployment with localization

Environmental attribution of SAF

SAF accounting with a robust chain of custody

Revenue certainty mechanism

Gov-led contract for difference: State subsidy?

**Thank You!
Questions?**

