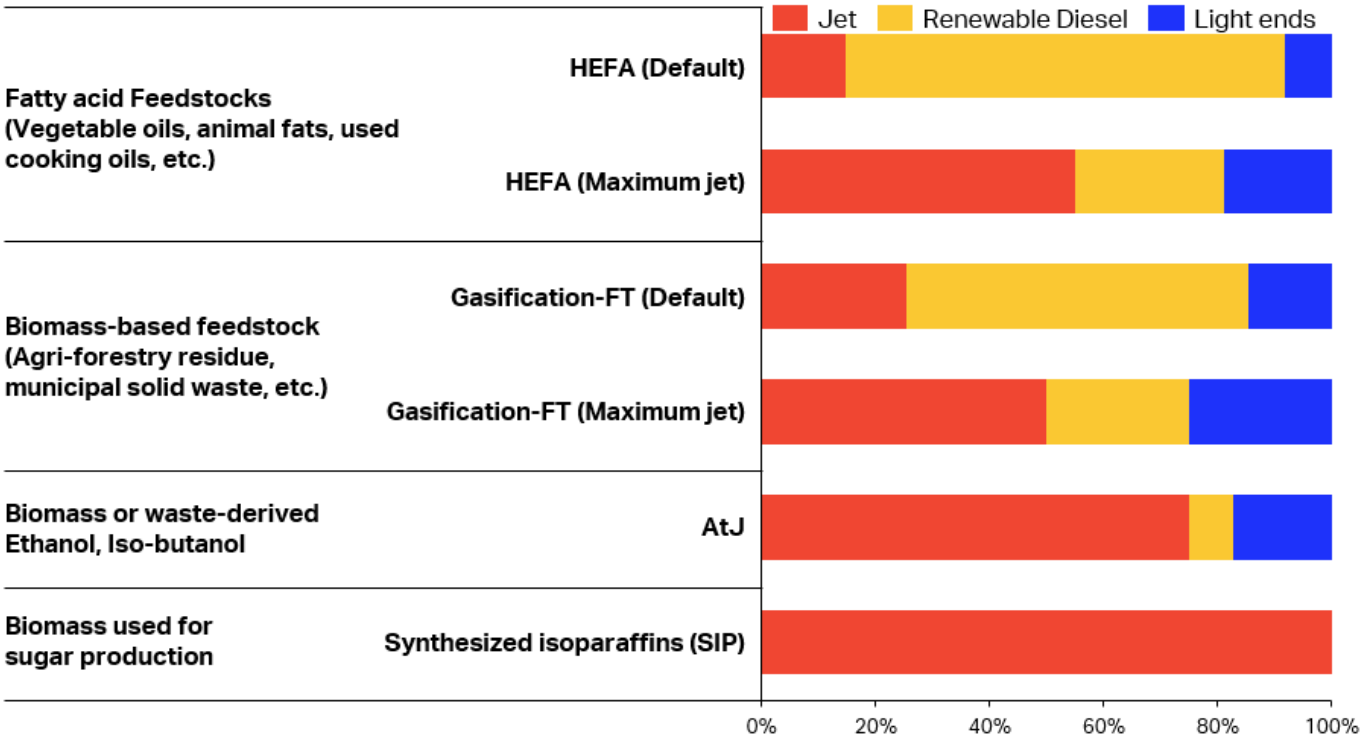
Chart of the Week

3 May 2024

Sustainable Aviation Fuels Pathways and Product Slate

Different Sustainable Aviation Fuel (SAF) Pathways with feedstock



Source: ICCT

- Aviation Net-zero CO2 2050 aspirations need various measures, including fleet renewal, increasing operational efficiency, and the adoption of sustainable aviation fuel (SAF). Among the ASTM-approved SAF pathways, Hydrotreated Esters & Fatty Acids (HEFA) stands out as a key commercial pathway today, alongside contributions from Fischer-Tropsch (FT), Alcohol to Jet (AtJ), while others are still undergoing commercialization. The FT process is also currently commercially used for producing 'Aviation Alternative Fuels' derived from Hydrocarbon feedstock (Coal, Gas). Accelerating the deployment of SAF to expand its availability faces several challenges beyond sustainable feedstock sourcing and technology scale-up.
- Each pathway offers a unique ability to produce SAF to a certain fraction of the overall product slate, which refers to the optimum output of different products from the refining process. This means that certain pathways may be more limited in their capacity to produce SAF volumes compared to other renewable fuel refining outputs. While technologies can enable the adjustment of product slates (as seen in the case of renewable diesel and SAF), this flexibility often comes at the expense of overall yields. Therefore, the industry must carefully balance the diversification of SAF pathways and the economic feasibility of SAF production.
- We must recognize that policy and market dynamics play a significant role in maximizing SAF production. Global SAF deployment requires a multi-faceted approach that addresses technological, economic, regulatory, and market challenges while ensuring sustainability across the entire value chain. Balanced incentives to support optimum outputs from the refining process and fairly supporting all users of renewable fuels are key to facilitating the energy transition.

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