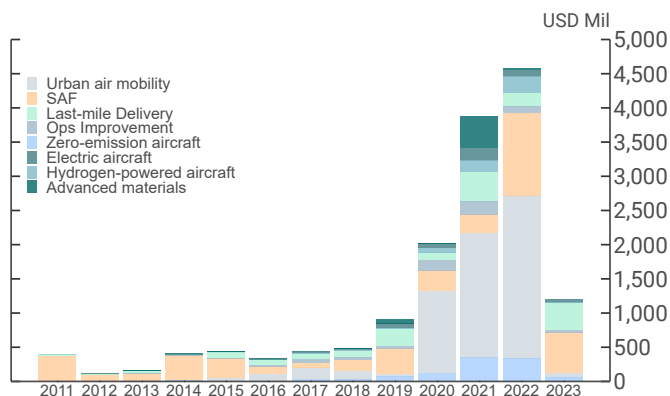


## BOX 2. ENERGY TRANSFORMATION TECHNOLOGIES: SUSTAINABLE AVIATION FUELS (SAF)

Sustainable aviation fuel (SAF) is an alternative fuel source derived from biomass such as crops, household waste, and other non-petroleum-based feedstocks. It produces just a fifth of the emissions of conventional jet fuel and its various options for sourcing feedstocks and production technologies give it the ability to [reduce greenhouse gas \(GHG\) emissions by up to 94%](#).

Currently, air travel accounts for 2% of global emissions and 12% of transportation emissions. And while there was a slight reprieve when emissions were nearly halved during the pandemic, the post-Covid boom, coupled with limited fuel alternatives, means traditional fuel consumption will continue to grow. While replacing old aircrafts with energy efficient options will provide some support for emission reduction efforts, the lifespan of a typical aircraft – usually 20 to 25 years – limits the opportunities to make meaningful reductions. Airlines will also need to start looking for carbon credit offsetting measures as the International Civil Aviation Organization’s carbon offset and reduction scheme (CORSIA) comes into force in 2024.

Figure 2.1 SAF Investments have been growing in recent years



Source: BloombergNEF.

The bulk of decarbonization efforts will come from the development of new technologies that capitalize on fuel alternatives. But SAF production faces a challenge in scaling-up production due to high costs and limited feedstock. Current production is not only twice the price of conventional fuels but only has the capacity to replace about 1% of global aviation emissions.

Growing energy demand will have significant implications for climate, particularly as medium- to long-haul flights make up a significant portion of emissions. Efforts to decarbonize aviation will come not only from electrification of fleets and introduction of hydrogen fuel cells – which largely help short commuter flights – but also the use of SAF for longer flights that make up more than 70% of passenger air-travel emissions today. The growing opportunities to harness these technologies make the area of alternative fuel sources an increasingly attractive investment, particularly as billions of dollars of opportunities are unlocked via the Inflation Reduction Act and international policy measures.