INFOGRAPHICS SUMMARY

MISSION POSSIBLE PARTNERSHIP

MAKING NET-ZERO, 1.5°C-ALIGNED AVIATION POSSIBLE

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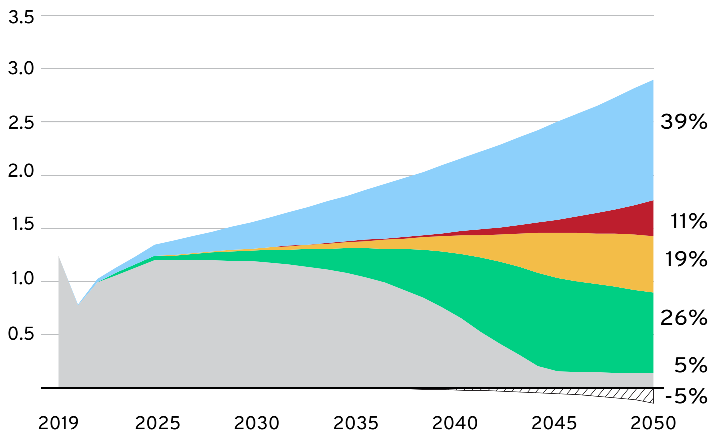
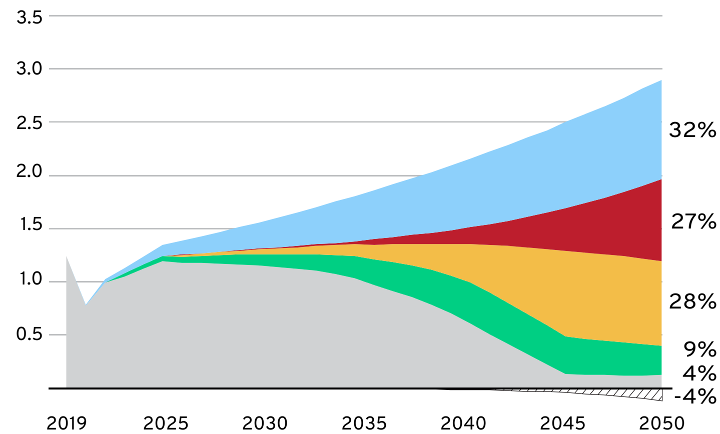
MISSION POSSIBLE PARTNERSHIP

1 The solutions: Fuel efficiency gains and SAFs are the main decarbonisation options

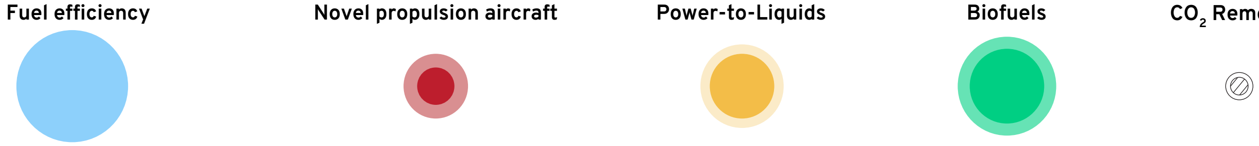
Two scenarios: Annual GHG emissions reduction, Gt CO_2e





Cumulative GHG emissions of 22–21 Gt CO_2e between 2022 and 2050, compared with 47 Gt CO_2e in a Business-as-Usual scenario

Percent of cumulative GHG reduction, between 2022 and 2050



Fuel efficiency

40%–45%

- More efficient turbines
- More aerodynamic airframes
- Air traffic management improvements

Novel propulsion aircraft

5%–15%

- Hydrogen fuel cell/ combustion aircraft
- Battery-electric aircraft
- Hybrid-electric aircraft

Power-to-Liquids

15%–25%

- Jet fuel produced from renewable electricity and captured CO_2

Biofuels

20%–35%

- Jet fuel produced from sustainable biomass

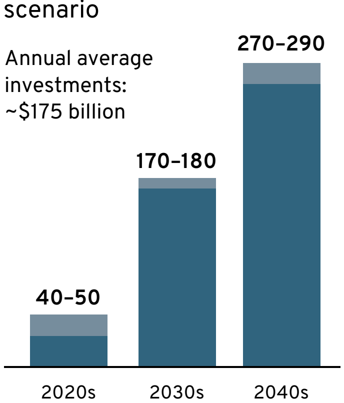
CO_2 Removals

~2%

- E.g., direct air capture and storage

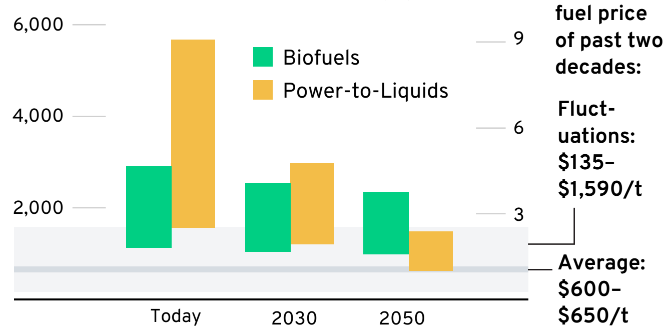
2 What it will take

Annual capital investments for net zero, billion $ compared with a BAU scenario



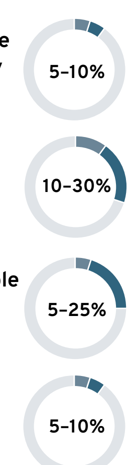
95% of investments required for fuel production and upstream infrastructure

SAFs are about 2–5x more expensive than fossil jet fuel.



Despite higher fuel costs, the cost of flying could see no increase but stay constant or even decrease by 5% by 2050.

Resource requirements, share of global demand by 2050



Renewable electricity — 5-10% — *6,000–9,00 TWh out of 90,000–130,000 TW*

Green hydrogen — 10-30% — *100–160 Mt out of 500–800 Mt*

Sustainable biomass — 5-25% — *4–12 EJ out of available supply of ~50–110 EJ*

Captured carbon* — 5-10% — *0.50–0.85 Gt CO_2 out o ~12 Gt CO_2 CDR*

**For PtL and CDR*

3 Key milestones

	2019	2030	2040	2050
Share of SAFs on final jet fuel demand	0%	13%–15%	60%–65%	100%
SAF production	0.05 Mt	40–50 Mt	215–230 Mt	300–370 Mt
Number of SAF plants	FEWER THAN 10	300–400	1,500–2,300	1,600–3,400
Number of hydrogen and battery-electric aircraft	0	800–8,000	12,500–26,000	30,000–49,000

=100 plans

4 Priorities for this decade

INDUSTRY ACTION TO BOOST SUPPLY

- **Invest in RD&D for low-TRL technologies** and efficiency measures to reduce energy demand
- **Bring down feedstock costs** (renewable electricity, hydrogen, sustainable biomass, and captured CO_2) and **redirect biomass** use from road transport **to aviation**
- **Create industry consortia to share risk** for first- and second-of-a-kind projects and supply 40–50 Mt SAF by 2030

INDUSTRY ACTION TO BOOST DEMAND

- **Double current offtake agreements between SAF producers and customers** by 2025, and increase volumes by a factor of 5 until 2030
- **Boost advanced market commitments** for low-carbon technologies
- **Pool demand from multiple sectors** (e.g. hydrogen demand for shipping, steel and aviation) to unlock economies of scale

FINANCE ACTION

- **De-risk first-of-a-kind projects via public–private partnerships** and financing consortia and **develop fit-for-purpose financing models** for first- and second-of-a-kind plants
- **Encourage 1.5°C-aligned target-setting** and disclosure of annual metrics to track progress
- Establish **exclusion criteria** to trigger divestments from non-1.5°C-aligned assets and companies

GOVERNMENT ACTION

- **Establish national/ regional blending mandates for SAFs** or a GHG intensity reduction pathway via legal emission limits
- **Reduce the cost differential between SAFs and fossil jet fuel,** e.g., by direct or indirect subsidies (like a blender's tax credit)
- **De-risk first- and second-of-a-kind projects,** e.g., via blended finance, concessional loans, capital grants, or long-term guarantees, and use **green public procurement** to increase the SAF share in public-sector air travel to 20% by 2030