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7th Future of biofuels conference

Energy demand scenarios
Future EU transportation

Conference presentation

We are the innovation powerhouse for mobility, energy and software that fosters sustainability and a greater quality of life for all

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BUSINESS AREAS

#FeelEVolution

The EU has created a landscape of intertwined legislation for alternative fuels in transportation, driving the need for intermodal modeling

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LEGISLATIVE LANDSCAPE

Light-duty vehicles	MHDV	Aviation	Maritime

Renewable energy directive

Energy taxation directive

EU ETS II (Light-duty vehicles, MHDV) | **EU ETS I** (Aviation, Maritime)

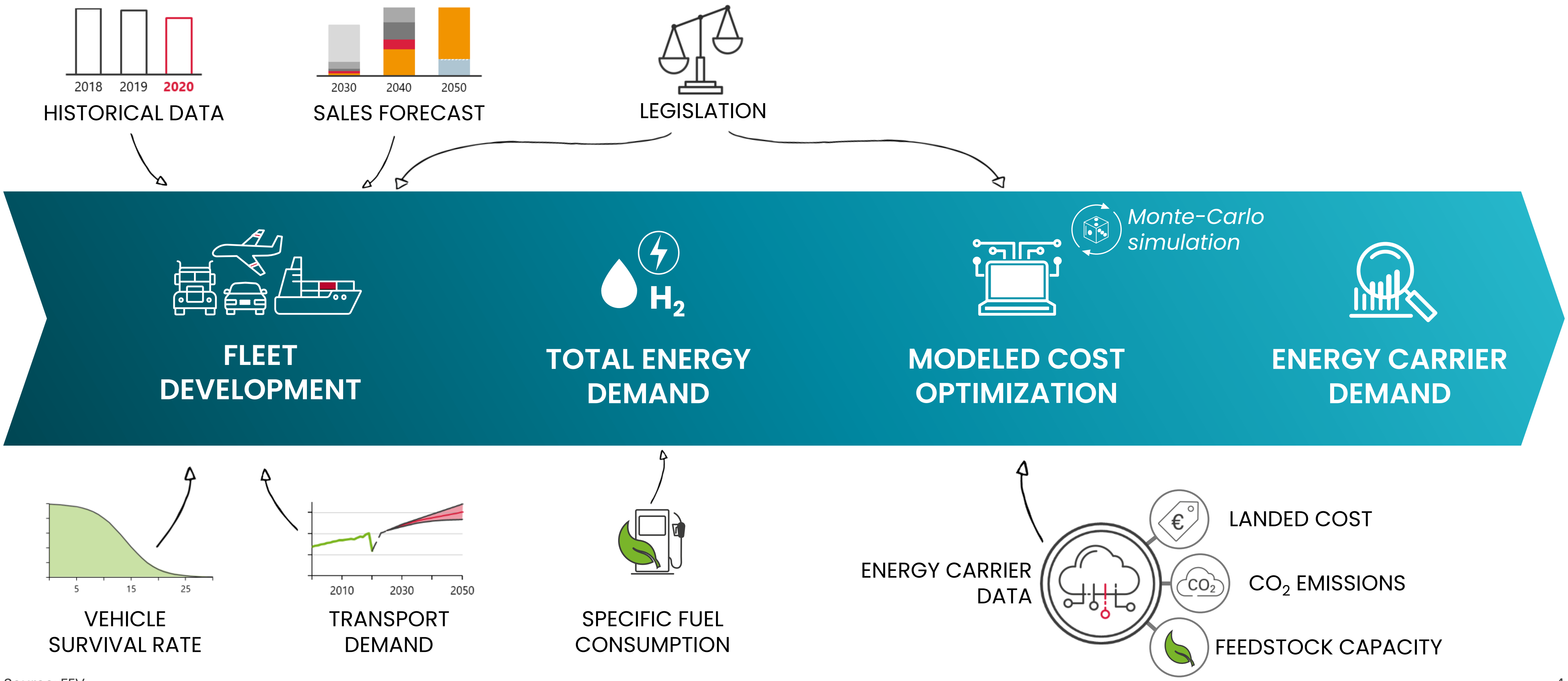
Light-duty vehicles	MHDV	Aviation	Maritime
LDV CO_2 standards	MHDV CO_2 standards	RefuelEU Aviation	FuelEU Maritime
		ICAO CORSIA	IMO MEPC83

Which fuels, **where** and **when?**

FEV Energy Demand Model is a demand driven model – compliance of the final energy demand with considered regional targets is assumed

ENERGY DEMAND MODEL – APPROACH

ILLUSTRATIVE



Source: FEV

The total EU transportation energy demand will decrease, but large amounts of e- and biofuels are required by 2050

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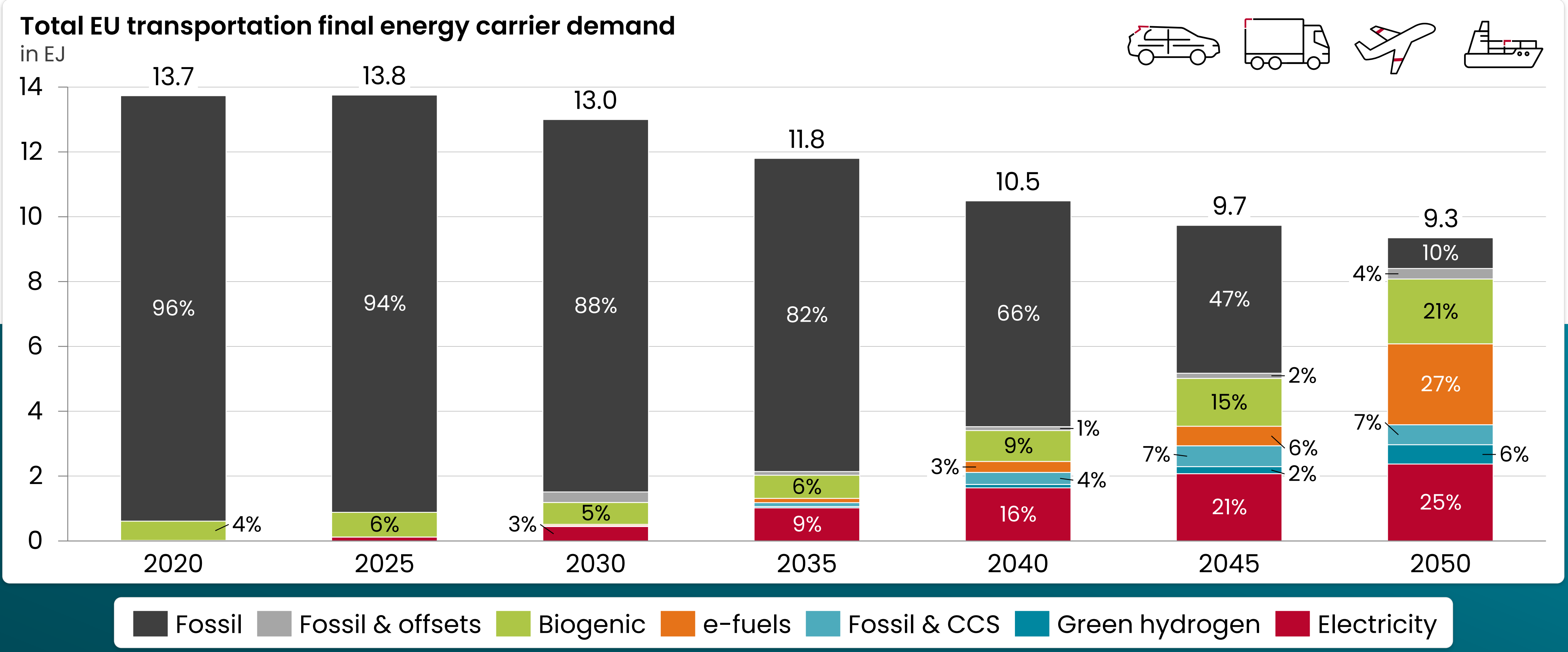
FINAL ENERGY CARRIER DEMAND – TOTAL



The next 10 years will likely see a shift from food & feed biofuels to waste- & residue-based biofuels (RED Annex IX)

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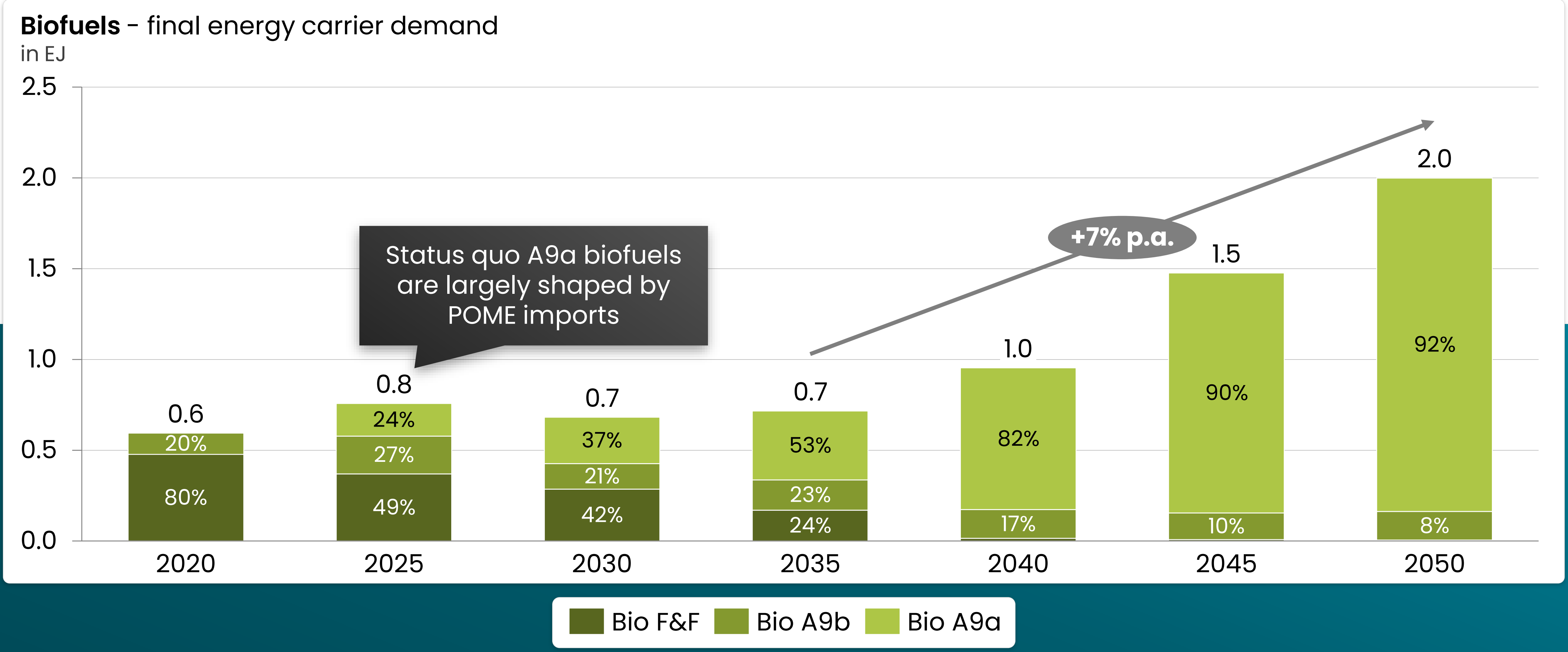
AGGREGATED ENERGY DEMAND – BIOFUELS – TOTAL



POME = Palm oil mill effluent

The 2030's will see a shift from F&F biofuels in on road applications to RED Annex IX part A & B biofuels in aviation & maritime, scale-up beyond 2040

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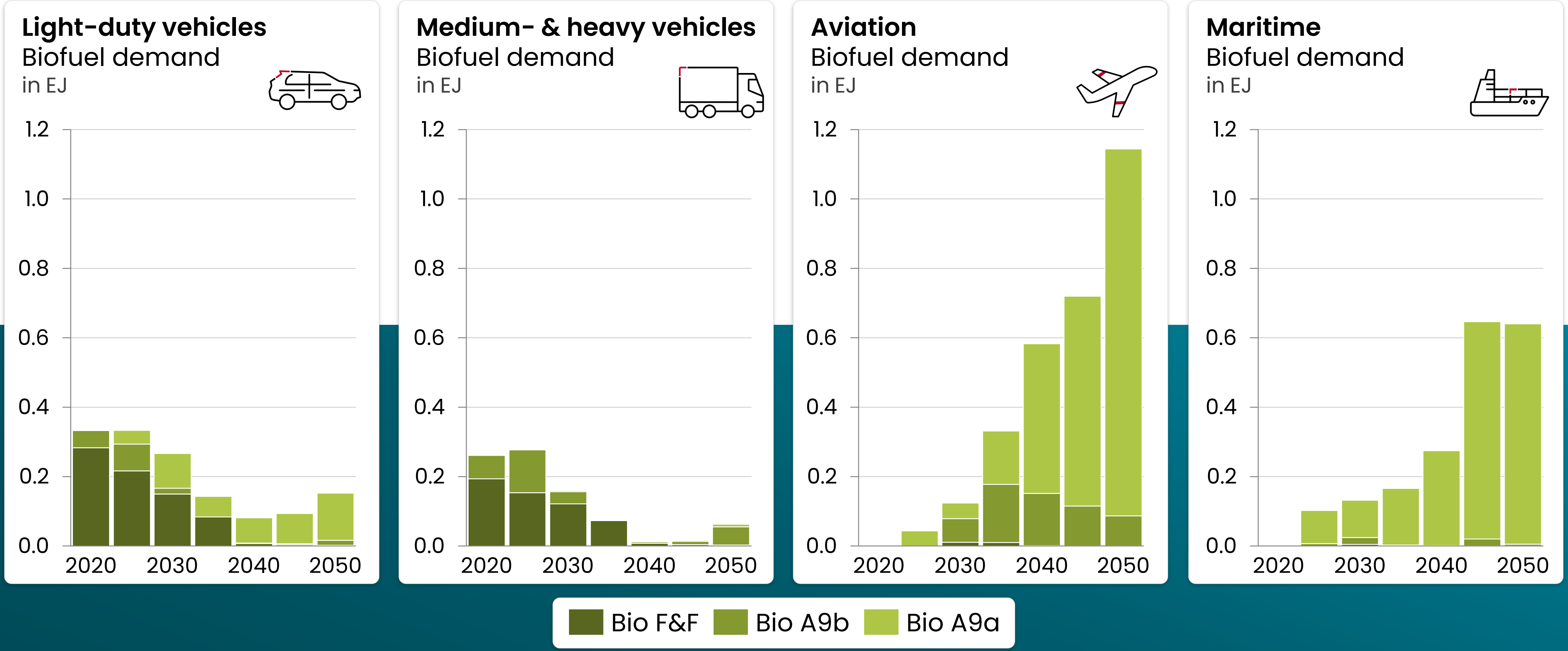
AGGREGATED ENERGY DEMAND – BIOFUELS – TRANSPORT MODE SPLIT



Erasing the biofuel multipliers strongly favors RFNBO demand, erasing all multipliers altogether however mostly pushes RED A9a fuels

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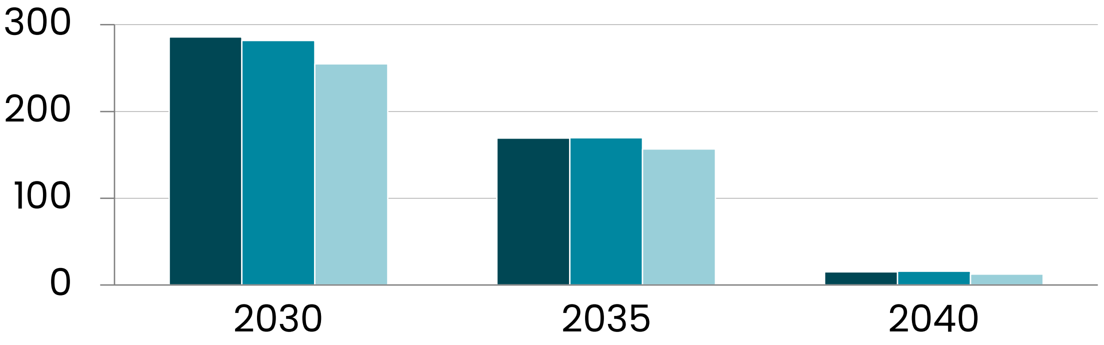
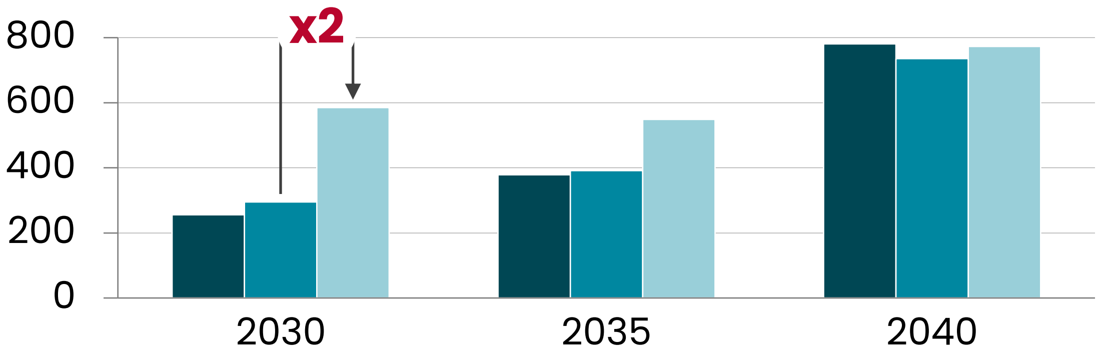
SCENARIO ANALYSIS – ALTERNATIVE FUEL MULTIPLIERS

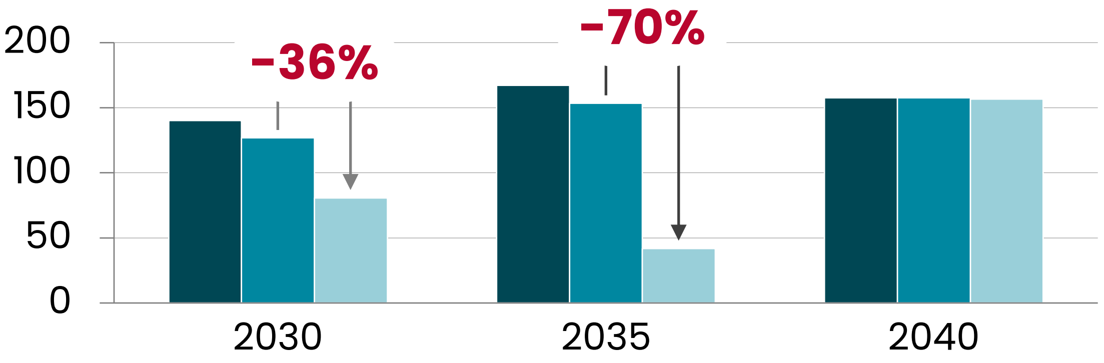
Food & feed biofuels – final energy carrier demand
in PJ



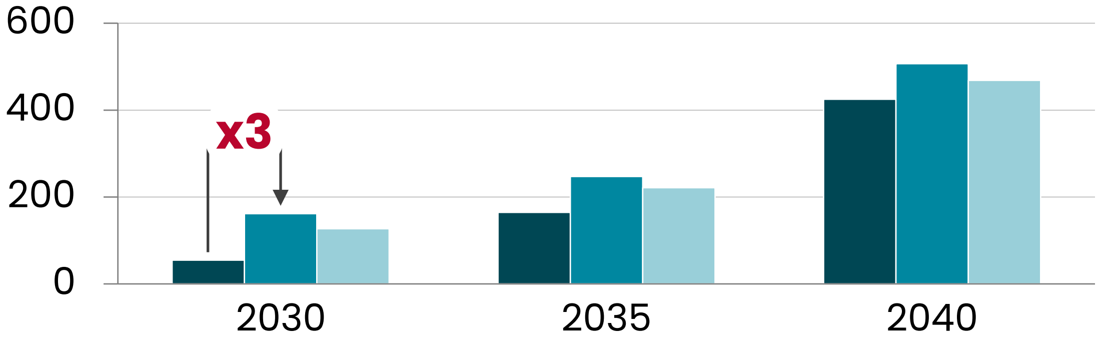
RED A9a biofuels – final energy carrier demand
in PJ



RED A9b biofuels – final energy carrier demand
in PJ



RFNBO – final energy carrier demand
in PJ



Reference | No bio multipliers | No multipliers

An exclusion of biofuels from multipliers only leads to a small increase in demand, as RFNBO will be a more cost-efficient solution

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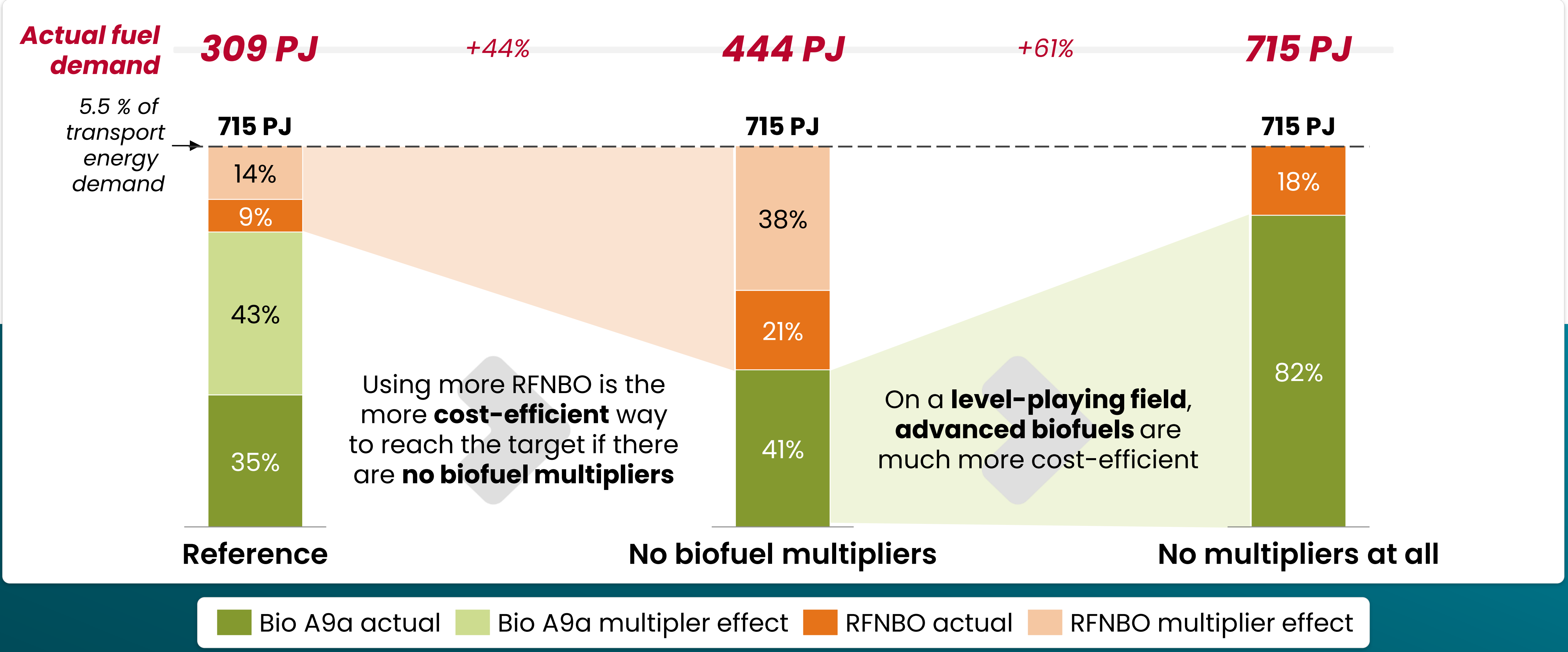
CONTRIBUTION TO THE 2030 5.5% TARGET FOR RFNBO AND ADVANCED BIOFUELS



KEY FINDINGS

The future transportation energy demand is a complicated, interdependent ecosystem that can only be understood holistically

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Cross-modal legislation and **competing interests** in feedstocks and fuel production capacities require **holistic modeling**

Under current EU policy, the biofuel demand are expected to enter a **transition phase** from 1st to 2nd gen and road to off-road **towards 2040**

The **big "scale-up"** of demand for advanced biofuels made from lignocellulosic biomass is likely only happening **beyond 2035**

The **details** of **national RED transpositions** can have a large impact on the short- to medium-term attractivity of different fuels

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