



Energy  
To the future

# Sustainable Aviation Fuel

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**LARGEST INDUSTRIAL COMPANY IN TÜRKİYE**  
*PROVIDING ENERGY OF TÜRKİYE FOR 60 YEARS*

EUROPE'S 7<sup>TH</sup>  
WORLD'S 30<sup>TH</sup>  
**LARGEST REFINING COMPANY**

**7 BILLION \$ INVESTMENT**

**4 REFINERIES**

**30 MILLION TON CAPACITY**

**75% REFINING CAPACITY\* OF TÜRKİYE**

**AMONG LARGEST EXPORTERS OF TÜRKİYE**

# STRATEGIC ACTIONS



BECOMING THE LEAD  
SAF PRODUCER IN TÜRKİYE



BECOMING A  
LEADING ZERO CARBON  
ELECTRICITY PRODUCER



ELIMINATE  
SCOPE 1&2 EMISSIONS  
AND BECOME  
CARBON NEUTRAL  
BY 2050



INVESTING FOR A SUSTAINABLE  
& PROFITABLE REFINING



CAPITALIZING HYDROGEN  
KNOW-HOW TO CREATE A  
GREEN VALUE CHAIN

# OUR TARGET: BECOMING THE LEAD SAF SUPPLIER IN TÜRKİYE



OPEN FOR PARTNERSHIPS



HYDROPROCESSING OF 2<sup>ND</sup> GENERATION BIO FEEDSTOCKS



USE OF HONEYWELL UOP ECOFINING™ TECHNOLOGY

Using Honeywell's UOP Ecofining™ technology in our Izmir Refinery, and finalized basic engineering design phase.

- Conversion of **400 ktons/year plant and animal-based waste feedstocks** into SAF, renewable diesel and other products
- ~**10%** of our **jet fuel sales** will be SAF by 2030
- **75% SAF production** yield (~300 ktons/year)

Ongoing partnership discussions on securing the raw materials

SAF production capacity will **triple by 2035** with front loaded capex

## BIOFUELS PRODUCTION CAPACITY

2030 ~ **400 ktons/year**

2035 ~ **1.2 million tons/year**

BIOFUELS

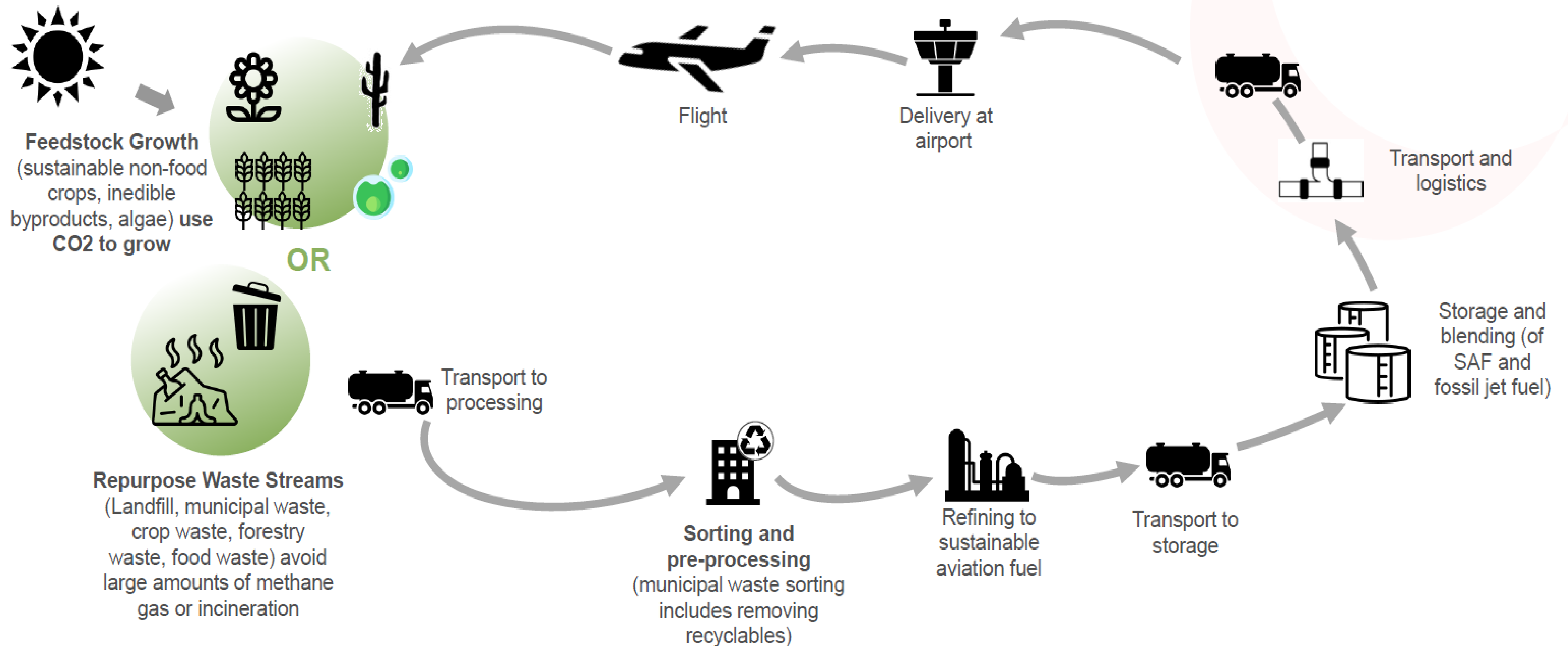
BIOLPG/BIONAPHTHA

BIOJET/SAF

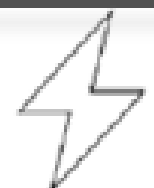






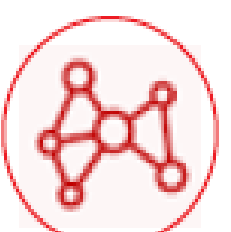
BIODIESEL/HVO


# WHAT IS SUSTAINABLE AVIATION FUEL (SAF)?

SAF is a liquid fuel used in commercial aviation which can reduce CO<sub>2</sub> emissions by ~50% (potentially up to 80%)



# MOST PROMISING OPTION TO MAKE AVIATION SUSTAINABLE

Comparison vs fossil kerosene		 <b>Electric – Battery</b>	 <b>Hydrogen (H<sub>2</sub>) fuel cell</b>	 <b>Hydrogen (H<sub>2</sub>) turbine</b>	 <b>SAF</b>
 <b>Climate Impact<sup>1</sup></b>	100% reduction <sup>2</sup>	75-90% reduction	50-75% reduction	Up to 80% <sup>3</sup>	
 <b>Aircraft Design</b>	Low-battery density limits ranges to 500km-1,000km	Feasible only for commuter to short-range segments	Feasible for all segments expect for flights >10,000km	Only minor changes	
 <b>Aircraft Operations</b>	Same or shorter turnaround times	1-2x longer refuelling times for up to short range	2-3x longer refuelling process	Same turnaround times	
 <b>Airport Infrastructure</b>	Fast-charging or battery exchange system required	LH <sub>2</sub> distribution and storage required	LH <sub>2</sub> distribution and storage required	Existing infrastructure can be used	

 Major advantages

 Major challenges

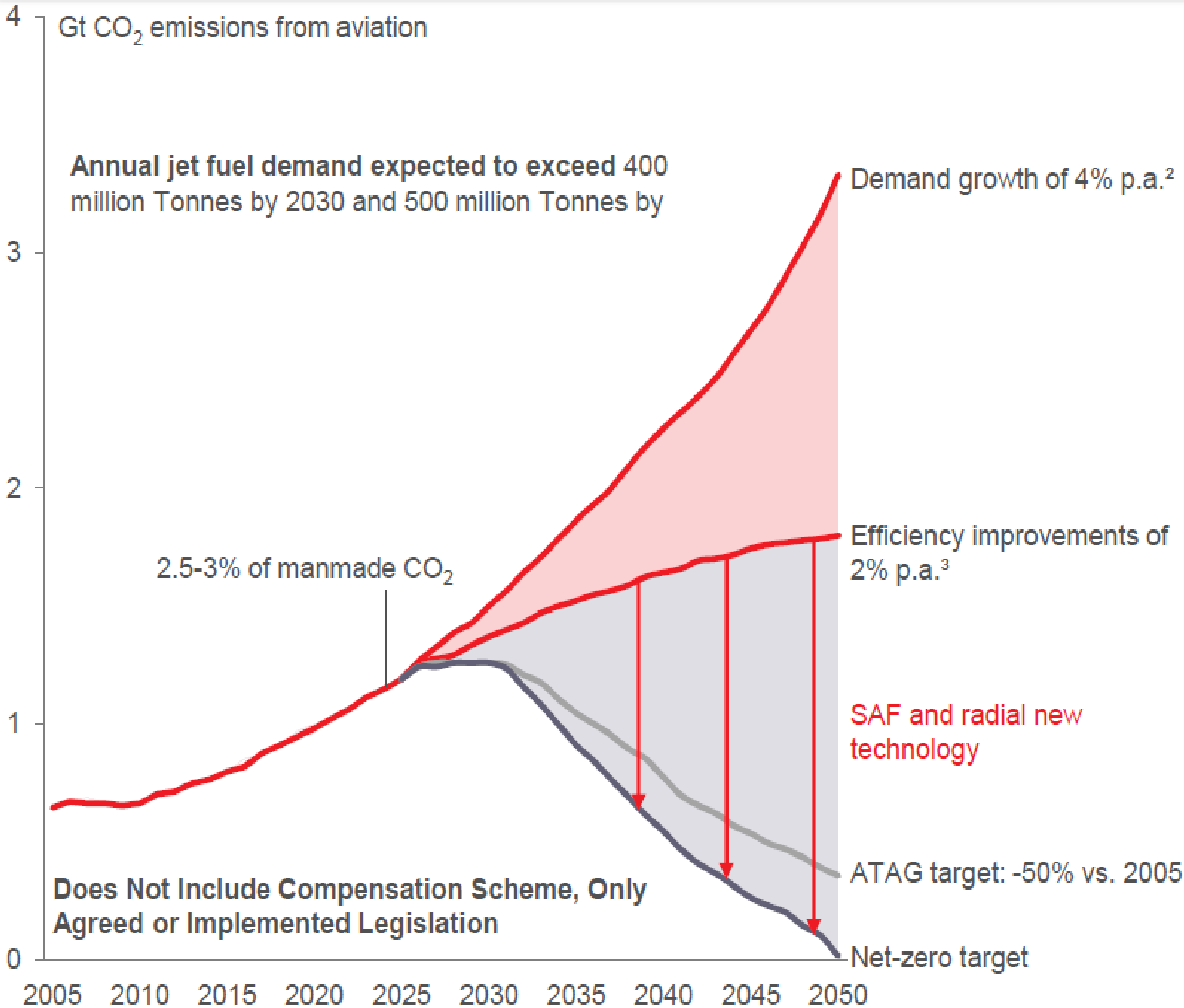
# BIOFUELS DEFINITIONS AND SPECIFICATIONS

ATAG Indicative  
timeline Overview<sup>1</sup>

	2020	2025	2030	2035	2040	2045	2050
<b>COMMUTER</b> <ul style="list-style-type: none"> <li>▪ 9-50 seats</li> <li>▪ &lt;60 minutes flights</li> <li>▪ &lt;1% of industry CO<sub>2</sub></li> </ul>	SAF	Electric or Hydrogen fuel cell and/or SAF	Electric or Hydrogen fuel cell and/or SAF	Electric or Hydrogen fuel cell and/or SAF	Electric or Hydrogen fuel cell and/or SAF	Electric or Hydrogen fuel cell and/or SAF	Electric or Hydrogen fuel cell and/or SAF
<b>REGIONAL</b> <ul style="list-style-type: none"> <li>▪ 50-100 seats</li> <li>▪ 30-90 minutes flights</li> <li>▪ ~3% of industry CO<sub>2</sub></li> </ul>	SAF	SAF	Electric or Hydrogen fuel cell and/or SAF	Electric or Hydrogen fuel cell and/or SAF	Electric or Hydrogen fuel cell and/or SAF	Electric or Hydrogen fuel cell and/or SAF	Electric or Hydrogen fuel cell and/or SAF
<b>SHORT HAUL</b> <ul style="list-style-type: none"> <li>▪ 100-150 seats</li> <li>▪ 45-120 minutes flights</li> <li>▪ ~24% of industry CO<sub>2</sub></li> </ul>	SAF	SAF	SAF	SAF potentially some Hydrogen	Hydrogen and/or SAF	Hydrogen and/or SAF	Hydrogen and/or SAF
<b>MEDIUM HAUL</b> <ul style="list-style-type: none"> <li>▪ 100-150 seats</li> <li>▪ 60-150 minutes flights</li> <li>▪ ~43% of industry CO<sub>2</sub></li> </ul>	SAF	SAF	SAF	SAF	SAF potentially some Hydrogen	SAF potentially some Hydrogen	SAF potentially some Hydrogen
<b>LONG HAUL</b> <ul style="list-style-type: none"> <li>▪ &gt;250 seats</li> <li>▪ &gt;150 minutes flights</li> <li>▪ ~30% of industry CO<sub>2</sub></li> </ul>	SAF	SAF	SAF	SAF	SAF	SAF	SAF

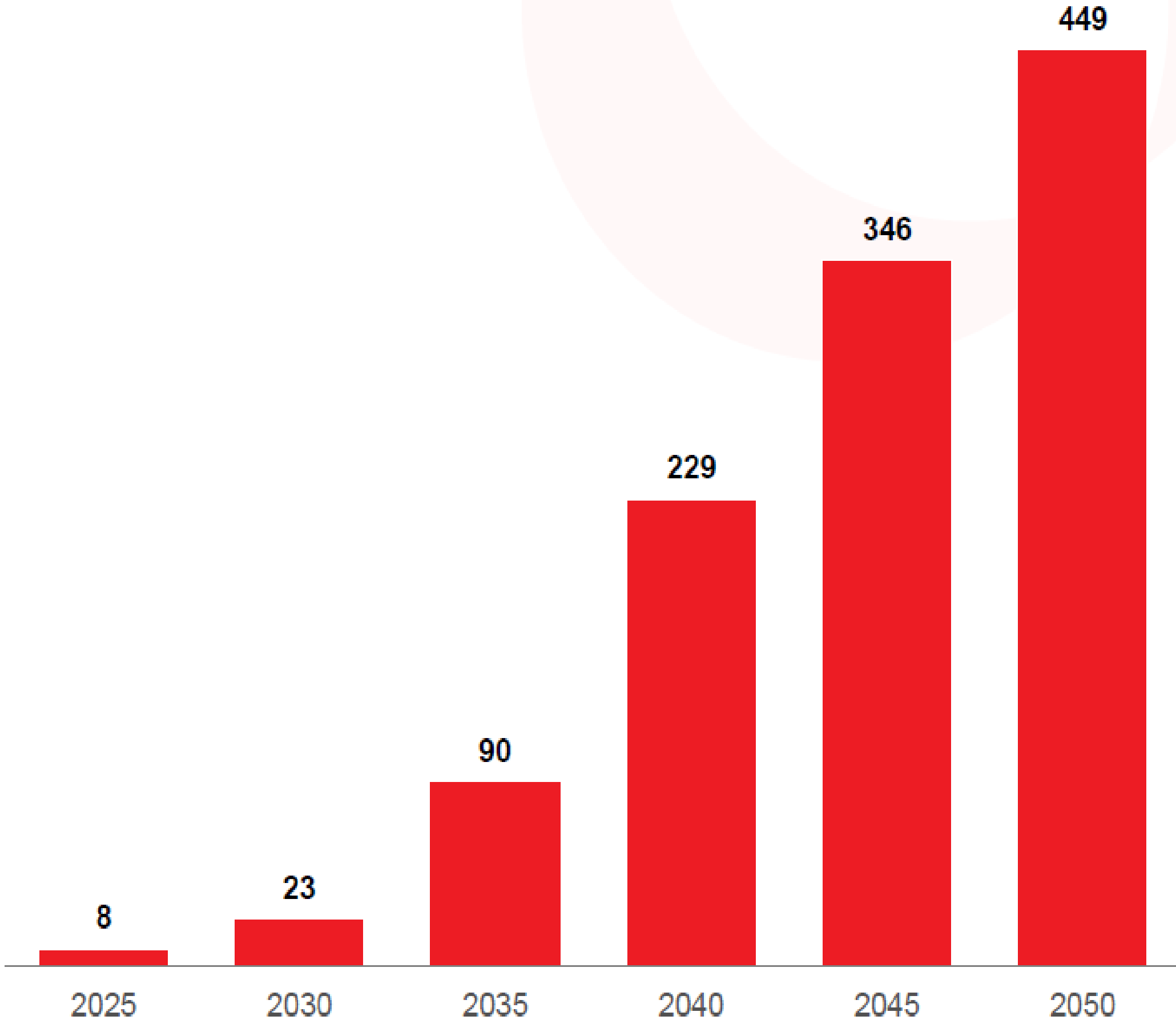
# ATTRACTIVE MARKET DYNAMICS

## CORSIA<sup>1</sup> – ENVIRONMENTAL IMPACT OF AVIATION



## EXPECTED SAF REQUIRED FOR NET ZERO CO<sub>2</sub> EMISSION (M/TONNES)

Based on IATA estimates



Source: Company information, IATA (International Air Transport Association) Net Zero 2050. Notes: (1) Carbon Offsetting and Reduction Scheme. (2) Assumption: Annual kerosene demand expected to exceed 400 million Tonnes by 2030 and 500 million Tonnes by 2045 based on growth projections from ATAG, IATA, ICCT, WWF, UN. (3) ICAO ambition incl. efficiency improvements in aircraft technology, operations and infrastructure – however highly ambitious compared to other sources (EASA).



# Tüpraş

## Koç



Strategic  
Transition Plan

