# Diversity in Carbon Neutrality
## -Accelerating Decarbonization with Sustainable Fuels -

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# Who We Are?

- JAMA (**J**apan **A**utomobile **M**anufacturers **A**ssociation, Inc.) is a non-profit industry **association comprising Japan's 14 manufacturers** of passenger cars, trucks, buses and motorcycles.

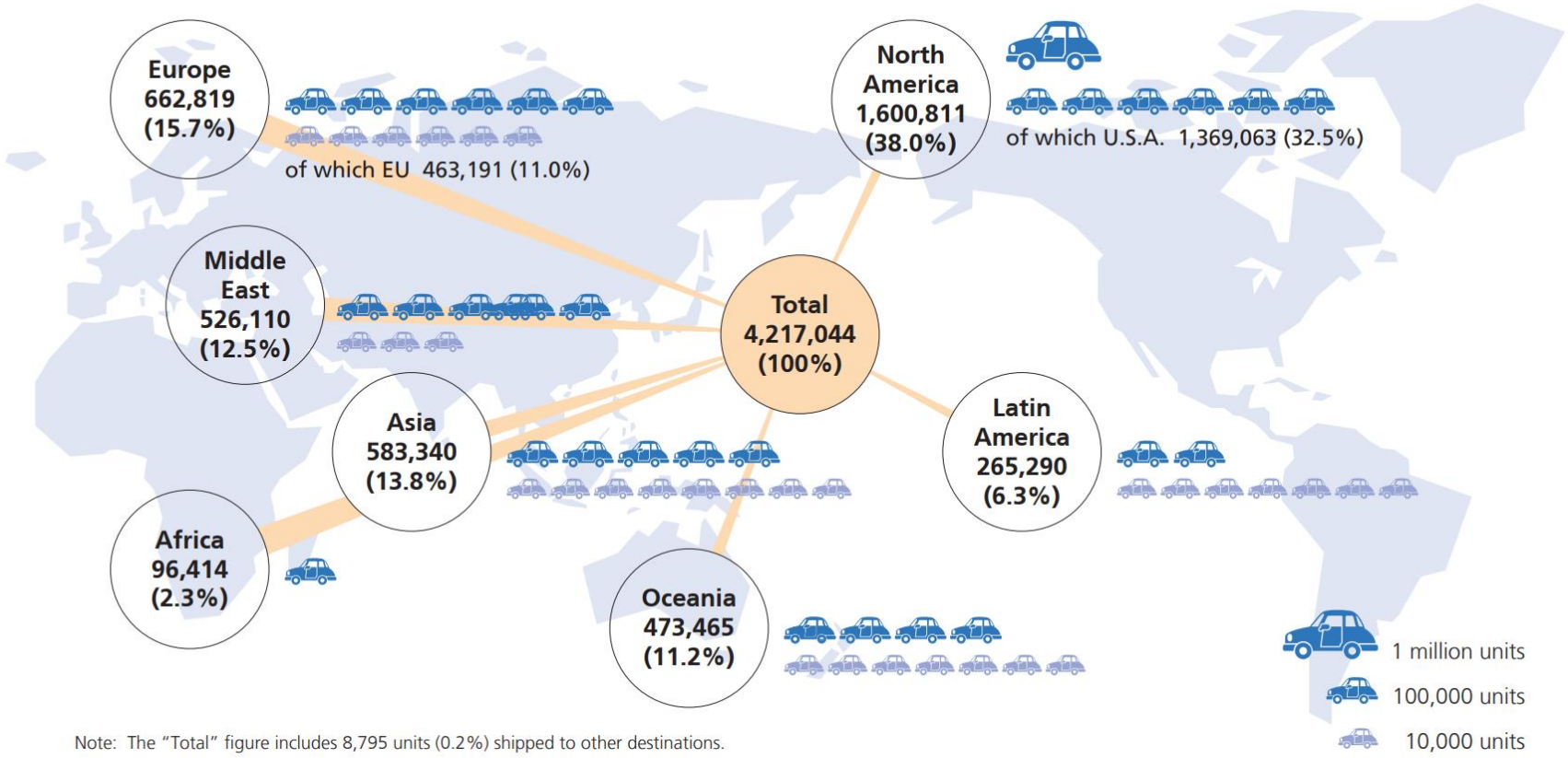
| | |
|---|---|
| **Established** | April 3, 1967 |
| **Our Objective** | • To promote the sound development of the automobile industry and contribute to social and economic welfare. |
| **Our Activities** | • Conducts studies and surveys related to automobile production, distribution, trade and use.<br>• Assists in the rationalization of automobile production, and helps establish policy for the development, improvement and promotion of production technology.<br>• Establishes and promotes policies related to automobile trade and international exchange.<br>• Carries out other activities involved in meeting its organizational objectives. |
| **Member Companies** | DAIHATSU, HINO, HONDA, ISUZU, Kawasaki Let the Good Times Roll, mazda, MITSUBISHI MOTORS, FUSO, NISSAN MOTOR CORPORATION, SUBARU, SUZUKI, TOYOTA, UD TRUCKS, YAMAHA |

# Who We Are?

- Member companies **produce and export motor vehicles worldwide.**

## Motor Vehicle Exports By Destination In 2024

In vehicle units




Note: The "Total" figure includes 8,795 units (0.2%) shipped to other destinations.

# Transitioning to Carbon Neutrality by 2050 (A Scenario-Based Analysis)

## 1. Purpose of using scenarios

- To understand based on quantitative assessments, **possible pathways towards carbon neutrality** in automotive transport by 2050, JAMA commissioned the **Institute of Energy Economics, Japan** to analyze **three scenarios** (CNF, BEV75, and NZE scenario) which took into account different circumstances between **developed and emerging economies.**

## 2. Scenario parameters

*FC: Fuel consumption

| 2050 Scenario Designation & Definition | | BEV/FCEV Share of New Passenger Vehicle Sales | | | 2050 Projected CNF Share in Automotive Fuel Mix [2020 FC*-Based] |
|---|---|---|---|---|---|
| | | Worldwide | Japan, North America, Europe etc. | Emerging economies | |
| 0 | **BAU**[1] | BAU | ← | ← | ← |
| 1 | **CNF (Wide use of CNF)** | 40% | 50% | 25% | 30% approx. |
| 2 | **BEV75 (Wide EV adoption)** | 75% | 100% | 50% | 20% approx. |
| 3 | **NZE (100% BEVs/FCEVs)** from IEA[2] NZE[3] scenario | 100% | 100% | 100% | 7% (biofuel only) |

[1] BAU: Business as usual [2] IEA : International Energy Agency [3] NZE : Net Zero Emissions by 2050

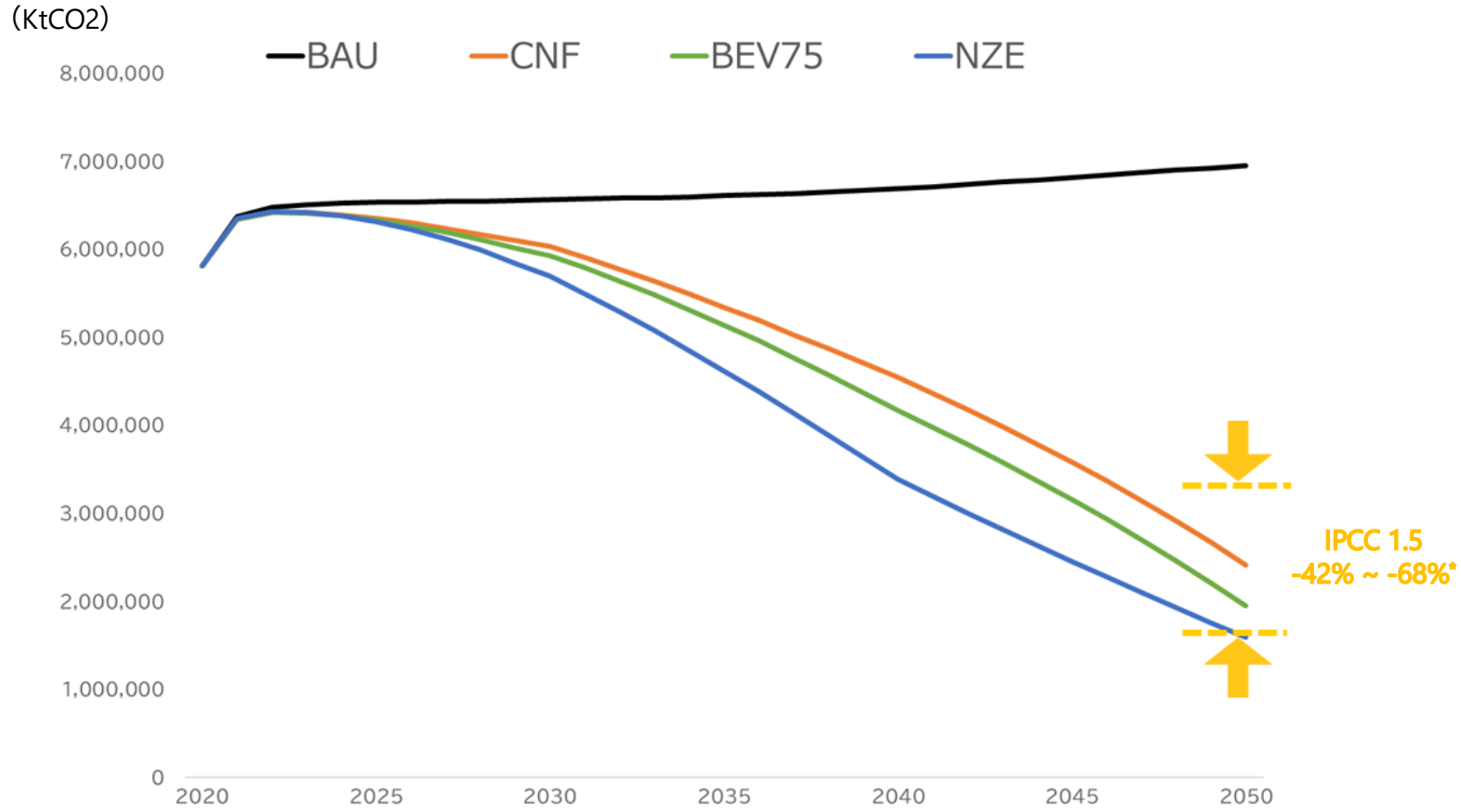
# Transitioning to Carbon Neutrality by 2050 (A Scenario-Based Analysis)

## 3. Outcome of the analysis

- Global CO2 emissions reductions in automotive transport can be **in line with the IPCC 1.5℃ scenarios** for 2050 with not only a **rapid BEV conversion scenario**, but also a scenario premised on the **wide use of HEVs, PHEVs, and carbon-neutral fuels.**
- In advanced economies, reductions to close to carbon neutrality by 2050 are **possible under the three non-BAU scenarios.** In emerging economies, where significant increases in new passenger car sales and in in-use vehicle fleets are anticipated, **reductions in line with IPCC 1.5℃/2.0℃ scenarios are possible** when **CNF supply** is increased within the extent of reasonable estimate.

# CO2 Emissions Worldwide 2020-2050, by Scenario

- In all three scenarios, CO2 emissions worldwide are in line with the IPCC's 2050 1.5℃ climate scenarios.

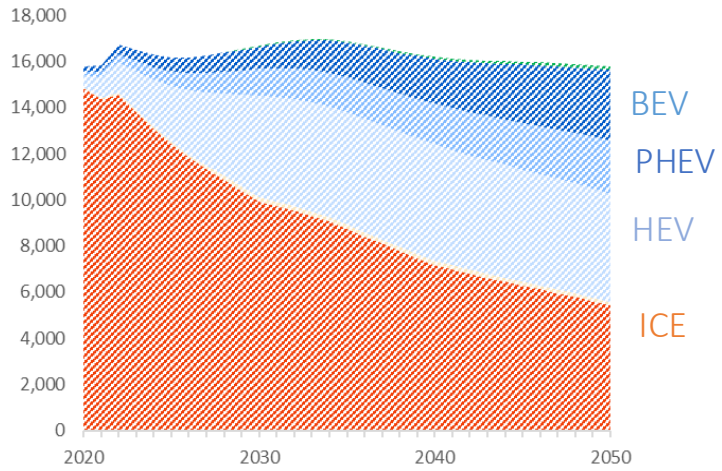



*The range of -42% to -68% shown in this describes the upper and lower limits of a number of 1.5℃ scenarios based on the scientific findings used by the IPCCAR6.

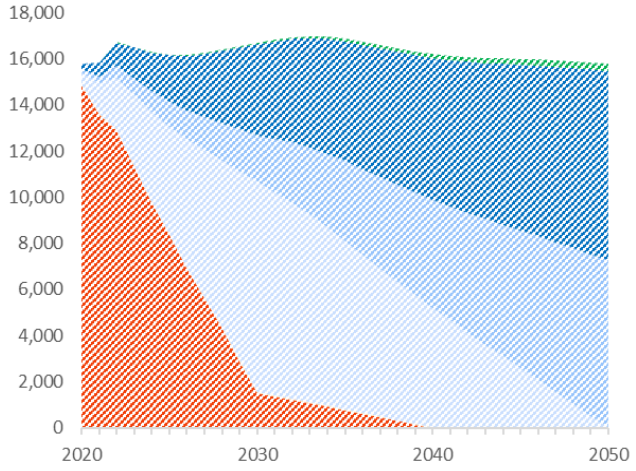
# New Passenger Car Sales (Advanced Economies Europe)

(x 1,000 units)

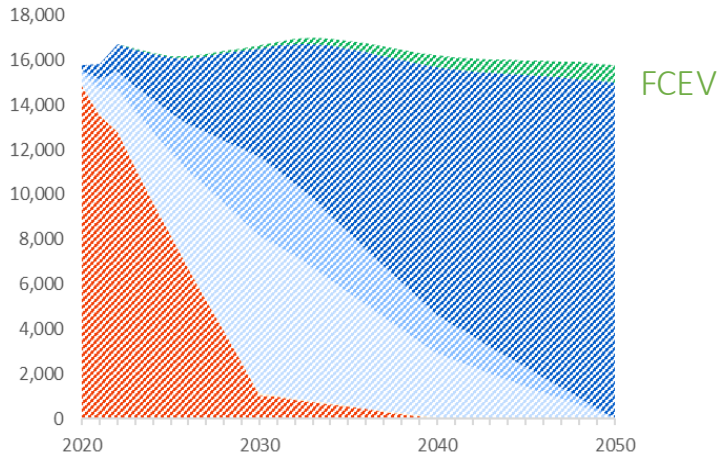
BAU



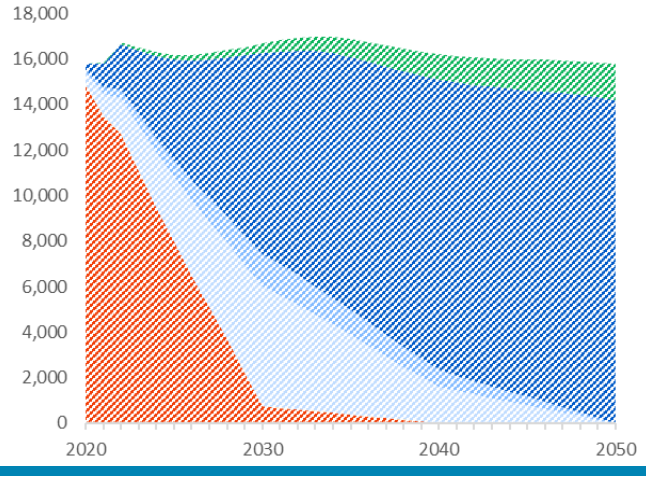

CNF




BEV75

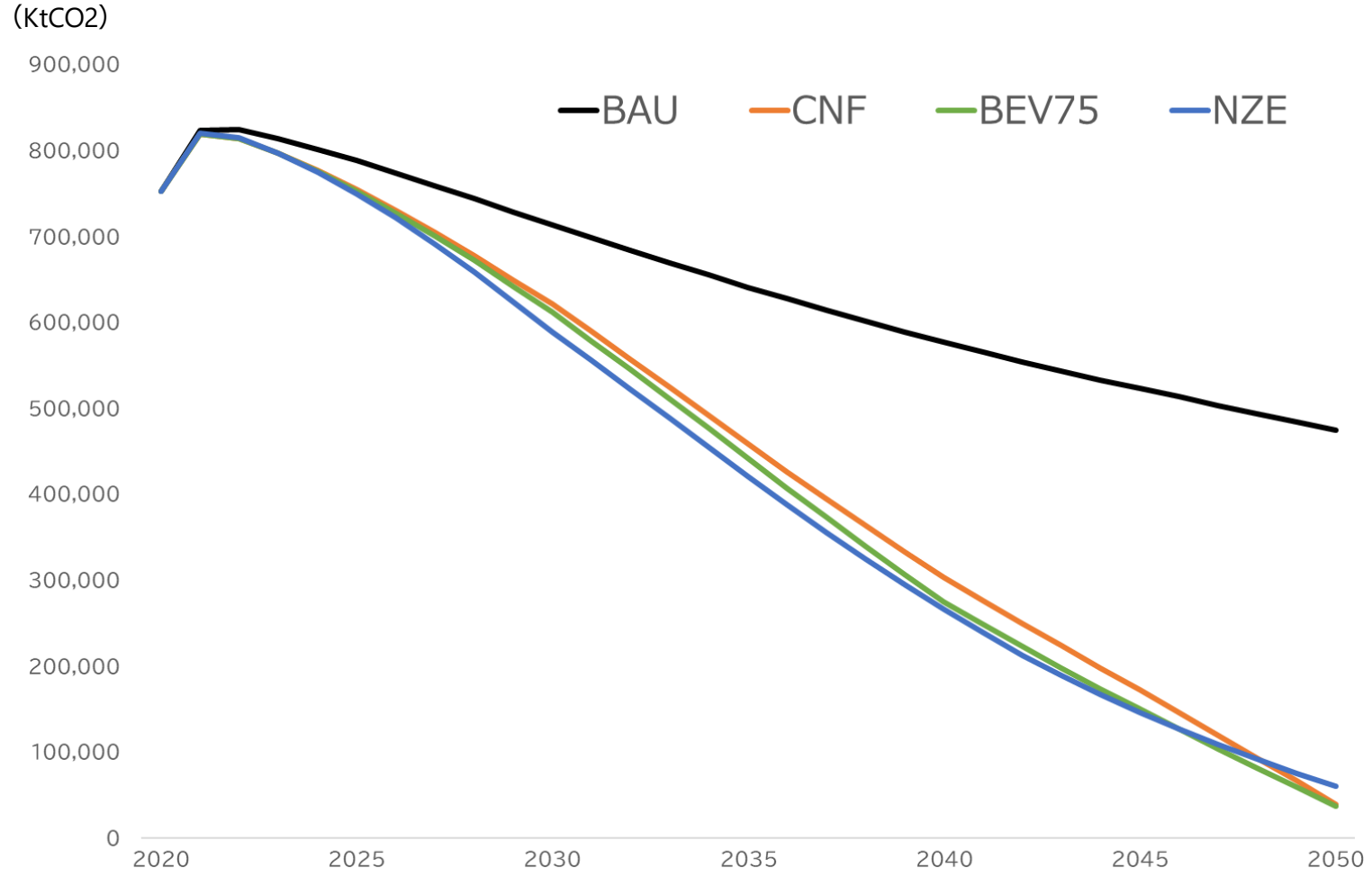



NZE



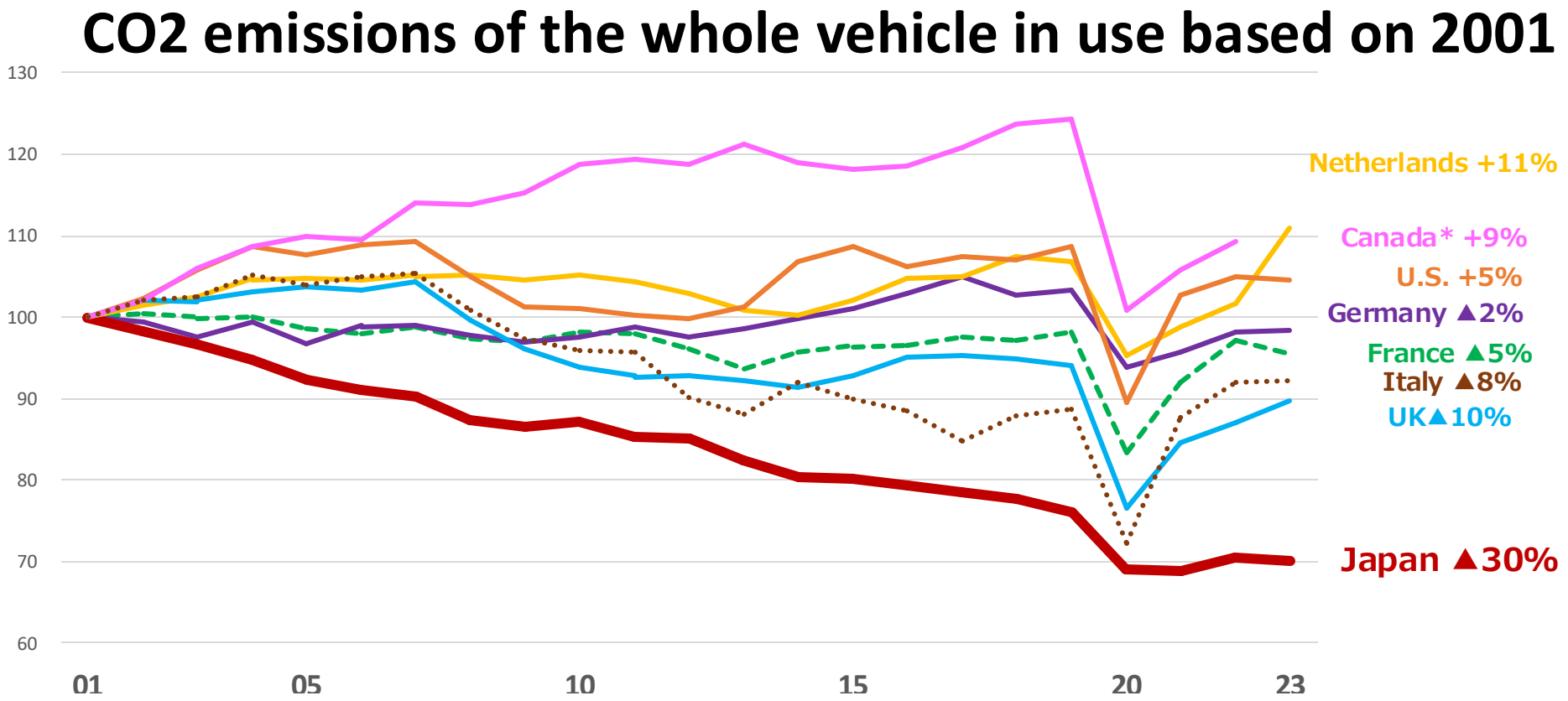
# CO2 Emissions (Advanced Economies Europe)

- In all the scenarios, CO2 emission levels are close to carbon neutrality.



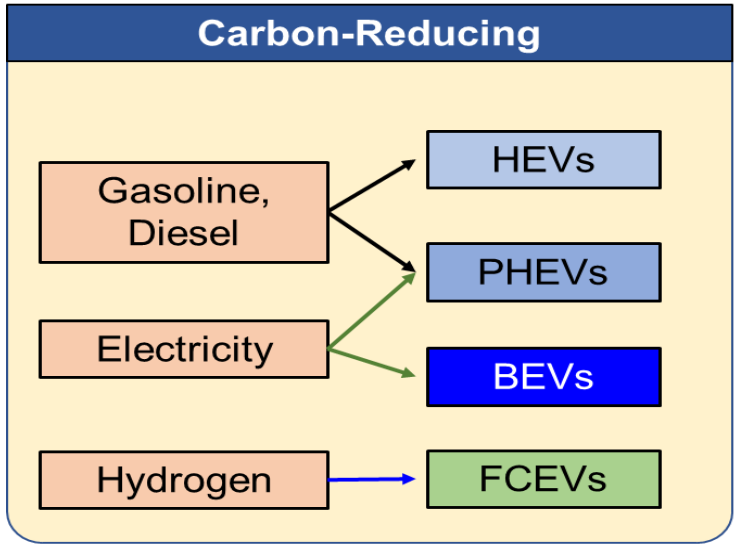
# $CO_2$ emissions from road transport sector in Japan

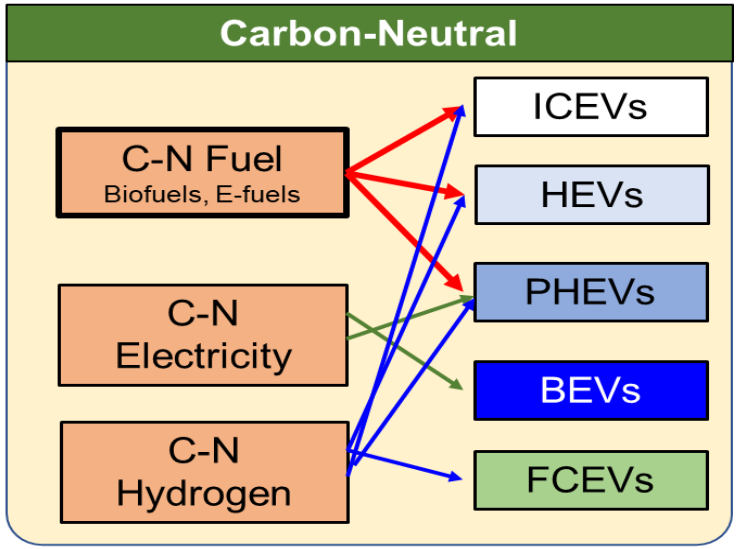
- CO2 emissions in Japan's road transport sector have declined significantly (-30%) since the early 2000s.
- Limited rebound after the COVID-19 pandemic.



# Importance of carbon neutral energy

- It is **important to use carbon-neutral energy**, not only type of vehicle.
- **Sustainable Fuel** is one of the **promising options** for achieving carbon-neutral society.
- The rapid adoption and use of carbon-neutral fuels is desired to **prevent the decline of valuable existing fuel infrastructure and ICE development**, and to **reduce CO2 from the existing vehicle stock.**

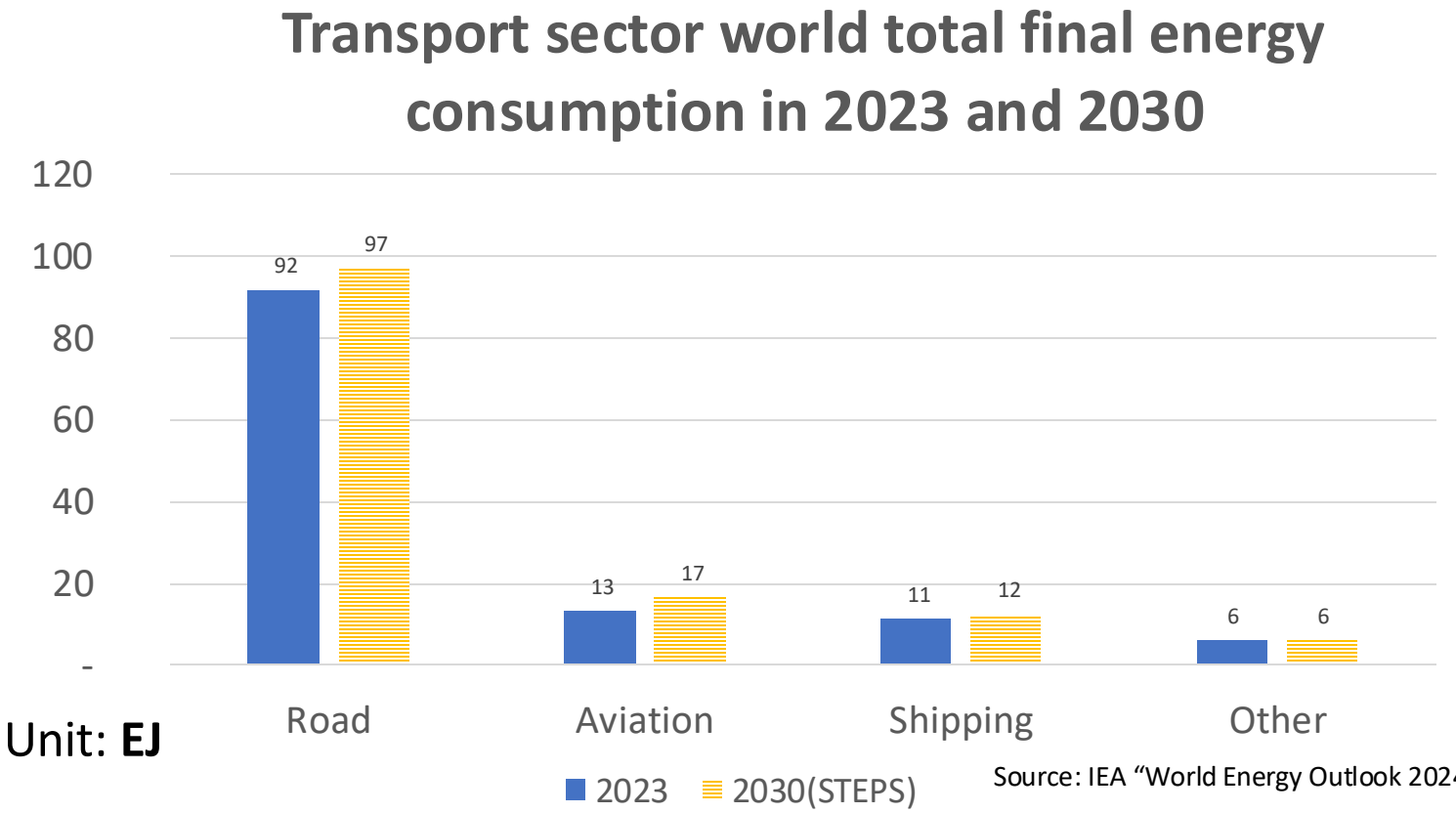



ICE: internal combustion engine

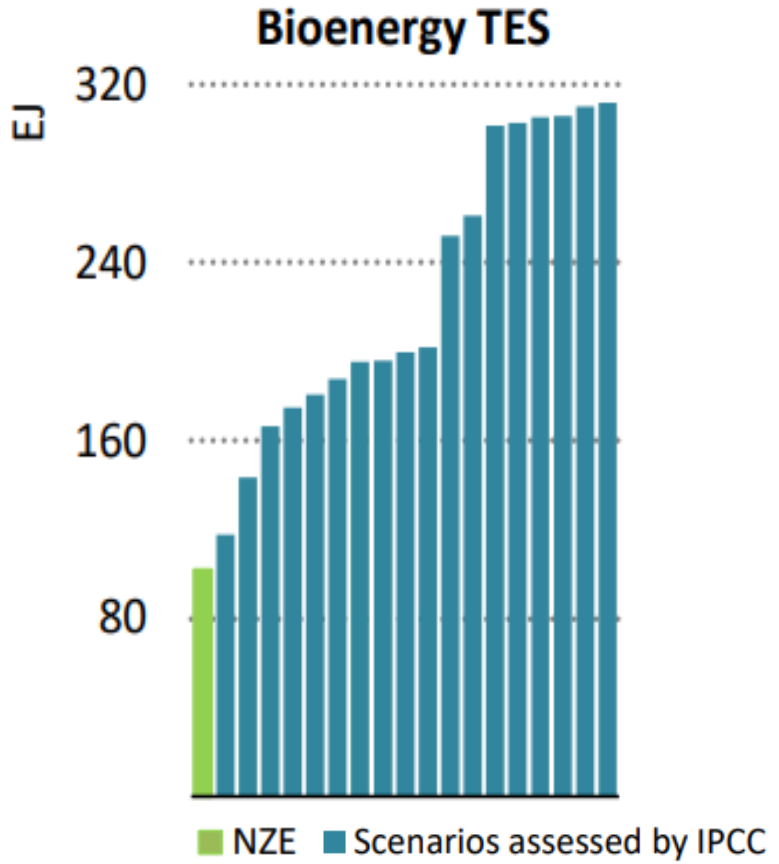
# Bioenergy global supply potential

- Bioenergy supply potential would surpass aviation and shipping demand
- Majority of the IPCC AR6 scenarios estimates above 160EJ Bioenergy total supply




Unit: **EJ**

Source: IEA "World Energy Outlook 2024"




Source: IEA "Net Zero by 2050 – A road map for the global energy sector"
**Figure 2.11 P63**

# International Timeline on Expanding Sustainable Fuels

**May 2023** — G7 Hiroshima

**April 2024** — Turin Joint statement on Sustainable Bio fuels

**May 2024** — Agreement of ISFM

**March 2025** — MoC on ISFM

**August 2025** — CEM-16

**September 2025** — Ministerial Meeting on Sustainable Fuels

- There is growing **international momentum for the utilization and expansion of sustainable fuels**, which are **effective** for even vehicles in use, **affordable**, and expected to deliver **significant CO2 reduction benefits**.

# Memorandum of Cooperation on ISFM

- On March 2025, at the Japan-Brazil Summit Meeting, Japan and Brazil signed a **Memorandum of Cooperation (MoC) on the Initiative for Sustainable Fuels and Mobility (ISFM).**
- Under the MoC, Japan and Brazil will **lead a global decarbonization effort in the automotive sector**, while harnessing the strengths of both countries.

**MEMORANDUM OF COOPERATION**

**BETWEEN**

**THE MINISTRY OF DEVELOPMENT, INDUSTRY, TRADE AND SERVICES OF THE FEDERATIVE REPUBLIC OF BRAZIL**

**THE MINISTRY OF MINES AND ENERGY OF THE FEDERATIVE REPUBLIC OF BRAZIL**

**THE MINISTRY OF FOREIGN AFFAIRS OF THE FEDERATIVE REPUBLIC OF BRAZIL**

**THE MINISTRY OF PORTS AND AIRPORTS OF THE FEDERATIVE REPUBLIC OF BRAZIL**

**AND**

**THE MINISTRY OF ECONOMY, TRADE AND INDUSTRY OF JAPAN**

**ON THE INITIATIVE FOR SUSTAINABLE FUELS AND MOBILITY (ISFM)**

# 16th Clean Energy Ministerial Meeting (CEM-16)

- On August 2025, the **16th Clean Energy Ministerial Meeting (CEM-16)** took place in Busan, focusing on **accelerating clean energy transitions and strengthening international cooperation.**
- At the **high-level dialogue on Future Fuels** during CEM-16, JAMA emphasized the importance of **the technology open approach** and the **critical role of sustainable fuels** in the road transport sector.


# Ministerial Meeting on Sustainable Fuels

- On 15 September 2025, hosted the **Ministerial Meeting on Sustainable Fuels**, to discuss the **importance of expanding the production and utilization of sustainable fuels**, such as biofuels, biogases, e-fuels and e-methane, in various sectors including aviation, maritime, **road transport** and industry.
- JAMA has issued a **joint statement with ANFAVEA**, which highlights that sustainable fuels can accelerate the shift toward cleaner mobility.
- We also presented this statement during the Ministerial Meeting.


Anfavea

jama
Japan Automobile Manufacturers Association

September 12, 2025

**Pragmatic and successful decarbonization of road transport**

**The Strategic Role of Sustainable Fuels including Biofuels and Technological Diversity**

(Scan and view the statement)

September 12, 2025
Updated: November 12, 2025

# Pragmatic and successful decarbonization of road transport

## The Strategic Role of Sustainable Fuels including Biofuels and Technological Diversity

The global challenge of climate change demands urgent and coordinated action. Achieving carbon neutrality by 2050 is not only an imperative, but also a strategic goal that requires inclusive, science-based solutions across all sectors. For automakers worldwide, the decarbonization of road transport is a common goal, and we continue to advance our efforts towards its achievement.

In November 2022, the International Organization of Motor Vehicle Manufacturers (OICA) released a position paper titled *Carbon Neutrality by 2050*, a comprehensive framework of specific policy recommendations to support the decarbonization of road transport.

As the OICA framework emphasizes, there is a need for flexibility through multiple technology-open approaches in order to provide practical and sustainable pathways to carbon neutrality by 2050 for all nations. Restricting the transition to a single solution risk overlooking regional realities, infrastructure constraints, and the diverse needs of mobility systems worldwide. To achieve carbon neutrality, measures to reduce $CO_2$ emissions from new vehicles, and also from in-use vehicles, must be pursued. To that end, it is important that technologies be affordably advanced and deployed across a spectrum: for zero-emission vehicles (i.e., battery and fuel cell electric vehicles) , and for internal combustion engine-equipped vehicles that use sustainable fuels such as carbon-neutral and renewable fuels.

Aligned with international ministerial meeting on sustainable fuels held in September 2025 in Japan and COP30 in Brazil this November, the undersigned automobile associations reaffirm the importance of utilizing sustainable fuels to promote decarbonization in the road transport sector. We also look forward to an expansion of the affordable and stable global supply of these fuels.

Sustainable fuels have high energy density, are well-suited for energy transport and storage, and offer an effective, immediate solution for in-use vehicles. For example, in Brazil, large volumes of affordable biofuels, which are beneficial for both the environment and the economy, are supplied and have achieved significant $CO_2$ emission reductions with high cost-effectiveness. In the Global South, expanding the use of sustainable biofuels in conjunction with agricultural policy not only provides an affordable $CO_2$ reduction option but also contributes to local employment, economies, and energy security. We believe it is crucial for the road transport sector, with its high consumption volume, to support demand for carbon-neutral fuels, which will encourage the energy industry to expand its supply for society as a whole, including the aviation and maritime transport sectors.

When combined with advanced propulsion technologies, such as hybrid systems and fuel cells, sustainable fuels including biofuels can accelerate the shift toward cleaner mobility in both light and heavy-duty applications. This multi-pathway strategy is essential to address the unique challenges of different countries and to ensure that no promising technology is left behind.

For these reasons, the automotive industry will continue to advance a multiplicity of efforts, including electrification and the active introduction of vehicles compatible with these fuels. Governments are therefore expected to provide appropriate policy measures and economic support to relevant stakeholders including energy industry, tailored to the specific circumstances of individual countries and regions.

OICA's Carbon Neutrality by 2050 can be accessed here.

# Summary of our presentation

- JAMA and its member companies will **make maximum efforts towards carbon neutrality by 2050.** Diverse options tailored to customers are important.
- While promoting BEVs/FCEVs, **Carbon Neutral (CN) Fuels** are a promising, fast-acting option due to their **high energy density**, **ease of storage/transport**, and **effectiveness on vehicles in use**.
- Japan is starting to expand Biofuel usage. **Brazil** offers a global model, **achieving cost-effective emissions reduction** through **affordable, large-scale biofuel supply** (benefiting environment and economy).
- In the **Global South**, sustainable biofuel expansion linked to agricultural policy is an **affordable CO2 reduction option** that also **boosts local employment**, **economy**, and **energy security**.
- To encourage the energy sector to **scale up CN fuel supply** for society (including aviation/maritime), **utilizing it heavily as road transport fuel is critical**.
- We will **continue to maximize efforts** to offer optimal choices for **diverse global customers**. We are **committed to expanding sustainable fuels** and will work with the global auto industry, **energy sector**, and **governments** to properly **address the climate crisis**.