

## Annex 14: Key Changes from the 2022 Study

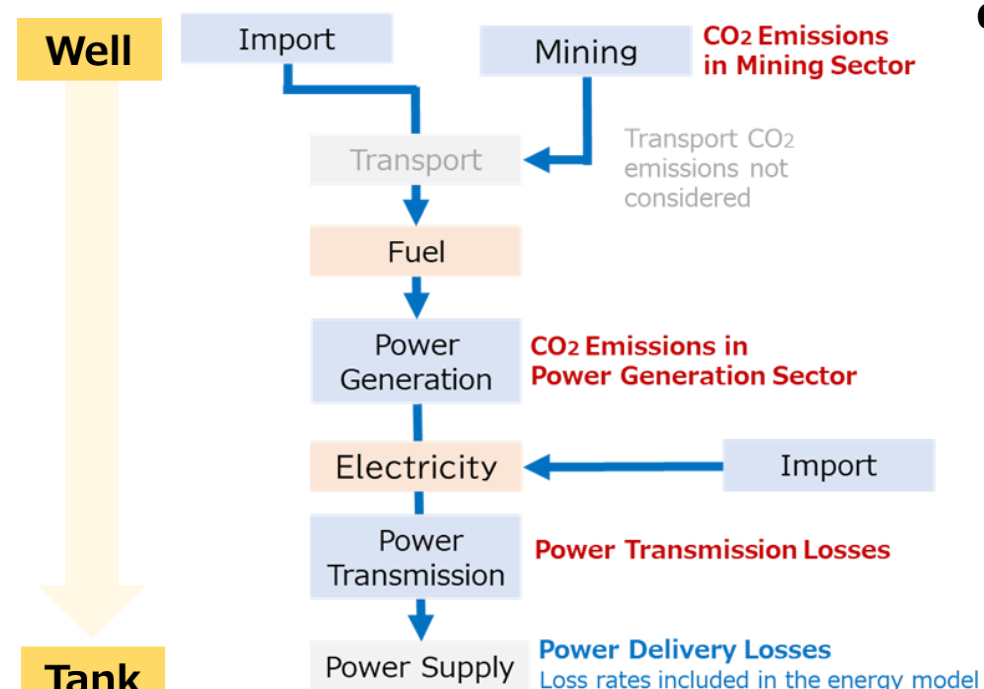
# 1. Key Changes in Assumptions

In the 2050 Carbon Neutrality Scenario-Based Analysis, the basic structure of the previous analysis (2022 study) was retained while content was updated taking into account **the latest market trends** and **a reformulated CO2 emissions assessment methodology**.

## 1. Latest Market Trends

| Key Changes                                         | Data/Assumptions Used in 2022 Study                                          | Data/Assumptions Used in 2026 Study                    | Impact on the Model                                                  |
|-----------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------|----------------------------------------------------------------------|
| <b>Socioeconomic Indicators</b>                     | Population and GDP data at that time                                         | Latest population and GDP forecasts                    | Changes in vehicle stock and sales projections                       |
| <b>Powertrain Mix</b>                               | Estimated based on 2019 actual data                                          | Estimated based on 2023 actual data                    | Changes in new vehicle sales mix and in-use fleet mix                |
| <b>Motorcycle Power Train Assumptions</b>           | Vehicle sales assumptions from the IEEJ Advanced Technologies Scenario (ATS) | Updated using actual motorcycle shipment data in Japan | Changes in motorcycle sales mix projections                          |
| <b>NZE Scenario</b>                                 | Net Zero by 2050 (IEA, 2021)                                                 | Net Zero by 2050 (IEA, 2023)                           | Changes in assumptions used in the NZE scenario                      |
| <b>Power Generation Mix CO2 Emission Factors</b>    | IEEJ Outlook 2021 Advanced Technologies Scenario                             | IEEJ Outlook 2026 Advanced Technologies Scenario       | Changes in electricity CO2 emission factors                          |
| <b>PHEV Electric Driving Range (Utility Factor)</b> | Based on average PHEV mileage available at the time                          | Reflects the latest EV driving distance ratio          | Changes in PHEV electricity demand and liquid fuel demand allocation |
| <b>CN Fuel Supply Volume</b>                        | Estimated based on then-current data for CN fuel demand and supply potential | Reflects lower liquid fuel consumption                 | Changes in CN fuel demand and blending ratio projections             |

## 2. Reformulated CO2 Emissions Assessment Methodology



Schematic of well-to-tank segment for electricity

**The 2026 study provides a more refined assessment of 2050 carbon neutrality scenarios for each country and region.**

## 2. Key Changes in Results

In the 2026 study, projections<sup>1</sup> through 2050 for each country/region, including new vehicle sales mix projections, were revised from the previous analysis (2022 study) and **the consistency of CO<sub>2</sub> emissions with the IPCC 1.5°C target under each scenario<sup>2</sup> was reassessed.**

<sup>1</sup> Projections for new vehicle sales mix, in-use fleet mix, automotive fuel mix, and energy mix

<sup>2</sup> Scenarios: CNF (wide use of carbon-neutral fuels); BEV75 (widespread electrified vehicle adoption); and NZE (100% BEV/FCEV adoption).

### 1. Key Changes in Projections

| Projections           | Key Changes from the 2022 Study                                                                                                                                                                                                                                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| New Vehicle Sales Mix | Reflects recent electrification trends<br>BEV share ↑                                                                                                                                                                                                                                                                                              |
| In-Use Fleet Mix      |                                                                                                                                                                                                                                                                                                                                                    |
| Automotive Fuel Mix   | <ul style="list-style-type: none"> <li>Improved PHEV utility factor (UF)</li> <li>Electricity demand ↑ Liquid fuel demand ↓</li> </ul>                                                                                                                                                                                                             |
| Energy Mix            | <ul style="list-style-type: none"> <li>Electricity emission factors in China and other countries ↓ (owing to increased renewable energy deployment)</li> <li>Electricity emission factors in Other Europe/Eurasia, Middle East, and Africa ↑ (owing to increased thermal power generation associated with higher electrification rates)</li> </ul> |

### 2. Key Changes in the Assessment of Consistency with the IPCC's 1.5°C Target

|                    | CNF  |      | BEV75 |      | NZE  |      |
|--------------------|------|------|-------|------|------|------|
|                    | 2022 | 2026 | 2022  | 2026 | 2022 | 2026 |
| Advanced Economies | ⊙    | ⊙    | ⊙     | ⊙    | ⊙    | ⊙    |
| China              | ⊙    | ⊙    | ⊙     | ⊙    | ⊙    | ⊙    |
| ASEAN              | ○    | ○    | ⊙     | ⊙    | ⊙    | ⊙    |
| India              | △    | ○    | ⊙     | ⊙    | ⊙    | ⊙    |
| Africa             | △    | ○    | ⊙     | ⊙    | ⊙    | ⊙    |
| World              | ⊙    | ⊙    | ⊙     | ⊙    | ⊙    | ⊙    |

⊙: Consistent with the IPCC 1.5°C target; ○: Consistent with the 1.5°C target with CNF+ supply; △: Consistent with the 2°C target

### Conclusions of the 2026 study (compared with the 2022 study)

- All scenarios remain consistent with the IPCC 1.5°C target worldwide.
- In India and Africa, the IPCC 1.5°C target can also be achieved under the CNF+ scenario.