IEA Transport Decarbonisation Workshop

18 November 2019
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Toyota Motor Europe
Toyota believes in different mobility needs.
Toyota announced acceleration of electrification

By 2025: 4.5 million HEVs/PHEVs and 1 million BEVs/FCEVs

Diversified Electrification - key for Toyota's challenge towards a sustainable society
GHG emissions per sector
Emissions from EU Transport Sector behind target

- **Transport is only sector to increase emissions 1990-2017**, going from 973 Mton (15.6%) to 1 250 Mton
- GHG Increasing since 2013; on its way to becoming #1 emitting sector in EU

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**GHG Emissions**

- **2020 target:** -20 % (ref. 1990)
- **2030 target:** -40 % (ref. 1990)

- **Energy Industries**: 23.8 % (1198)
- **All Transport**: 24.4 % (1225)
- **Energy Industries**: 23.3 % (1179)
- **All Transport**: 24.7 % (1250)

- **Intl. Maritime**:
  - 2020: 2.9 % (145)
  - 2030: 2.9 % (146)

- **Transport (incl. int. aviation)**:
  - 2020: 21.5 % (1080)
  - 2030: 21.8 % (1104)

- **International maritime transport**:
  - 2020: 2.9 % (145)
  - 2030: 2.9 % (146)

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- GHG Increasing since 2013; on its way to becoming #1 emitting sector in EU
- **Transport is only sector to increase emissions 1990-2017**, going from 973 Mton (15.6%) to 1 250 Mton

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*Values include International Maritime & Aviation

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Source: Eurostat
EU policy trends: CO2 new cars increasing
Not on track for 2021. 2025 & 2030 target require significant xEVs in mix

- Difficulty in reaching 2021 new car gCO2/km targets
- 2017 & 2018 increases again, largely because of switch from diesel to larger gasoline and the slow uptake of xEVs.

**New Passenger Cars: EU Avg. CO2 Emissions**

- **2005-2017:** -42 gCO2/km Avg: -3.23/year
- **2015 Target:** 130
- **2021 Target:** 95
- **2025 Target:** -15% (ref. 2021):
  - 2021-2025: -14.25
  - Avg: -3.56/year
  - 2021-2030: -21.375
  - Avg: -3.96/year
- **2030 Target:** -37.5% (ref 2021): 59.375

**REGISTRATIONS**

<table>
<thead>
<tr>
<th>Category</th>
<th>Registrations (2018)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor vehicles (world)</td>
<td>97.2 million units</td>
</tr>
<tr>
<td>Motor vehicles (EU)</td>
<td>17.6 million units</td>
</tr>
<tr>
<td>Passenger cars (world)</td>
<td>78.7 million units</td>
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<tr>
<td>Passenger cars (EU)</td>
<td>15.2 million units</td>
</tr>
<tr>
<td>Petrol (EU)</td>
<td>56.7%</td>
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<tr>
<td>Diesel (EU)</td>
<td>35.9%</td>
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<tr>
<td>Electrically-chargeable (EU)</td>
<td>2.0%</td>
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</tbody>
</table>

All data in NEDC

*Source: EEA, EU Commission*
Fuels & powertrain to reduce transport GHG footprint

Importance of **legacy car park** for liquid fuels substitutes. **Decarbonisation of all fuels required**

<table>
<thead>
<tr>
<th>Year</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
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<th>2030</th>
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<th>2040</th>
<th>2050</th>
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<tbody>
<tr>
<td>CO2 (TTW)</td>
<td>95gCO2/km</td>
<td>81gCO2/km</td>
<td>59gCO2/km</td>
<td>~50% RE</td>
<td>85% RE</td>
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**Energy & Fuel suppliers responsibility**
- Fleet + new vehicles

**OEM responsibility**
- new vehicles

**CO2 new cars (TTW)**

**Existing fleet**

**VEHICLES IN USE**

- Motor vehicles (EU): 308.3 million units, 2017
- Passenger cars (EU): 268.0 million units, 2017
- Motorisation rate (EU): 602 vehicles per 1,000 inhabitants, 2017
- Average age of cars (EU): 11.1 years, 2017

* Qualitative image
Potential for renewable liquid fuels & ICE
EU oil industry published decarbonisation strategy to 2050.

Concawe Low Carbon Pathways 2050 for Liquid fuels & ICE
(WTW Passenger cars C seg)

Source: Concawe