



# Custom scenarios: *Beyond Fit-for-55*

## Context and background

- EMISIA actively maintains **reliable** and **up-to-date** vehicle fleet and activity road transport data, ready to be used in air pollutant and GHG emission calculation tools
- In recent years, EMISIA performed a **major** update for the whole time series 1990-2050, considering all recent statistical data
- **Quality, completeness, and consistency** ensured with:
  - Significant expertise on transport data, more than 20 years of experience
  - Extensive reviews and cross-checking

## Objectives for creating the custom scenarios

- Investigate how the **Fit-for-55 proposal** meets the **Green Deal** target
- **Expand the Fit-for-55 proposal** to lorries, buses and L-category vehicles
- Find **alternatives to the Fit-for-55 proposal** aiming at **postponing the ban** of internal combustion engine vehicles, while meeting the Green Deal target
- **Create a tool** and gain expertise to quickly react to any new regulation or EC announcement by creating any scenario variation on-time

## Fit-for-55 proposal: COM(2021) 550 final and COM(2021) 556 final

- Amend Regulation (EU) 2019/631 → strengthen the CO<sub>2</sub> emissions performance standards for new cars and vans
- Proposal for **banning all NRs of ICE cars and vans** vehicles from **2035** onwards
- Set intermediate targets every 5 years

2025

**cars & vans** • 15% CO<sub>2</sub> reduction of NRs (compared to 2021)

2030

**cars** • 55% CO<sub>2</sub> reduction of NRs (compared to 2021)

**vans** • 50% CO<sub>2</sub> reduction of NRs (compared to 2021)

2035

**cars & vans** • 100% CO<sub>2</sub> reduction of NRs

2050

**all road transport** • 90% CO<sub>2</sub> reduction (compared to 1990)

# Basic methodological components

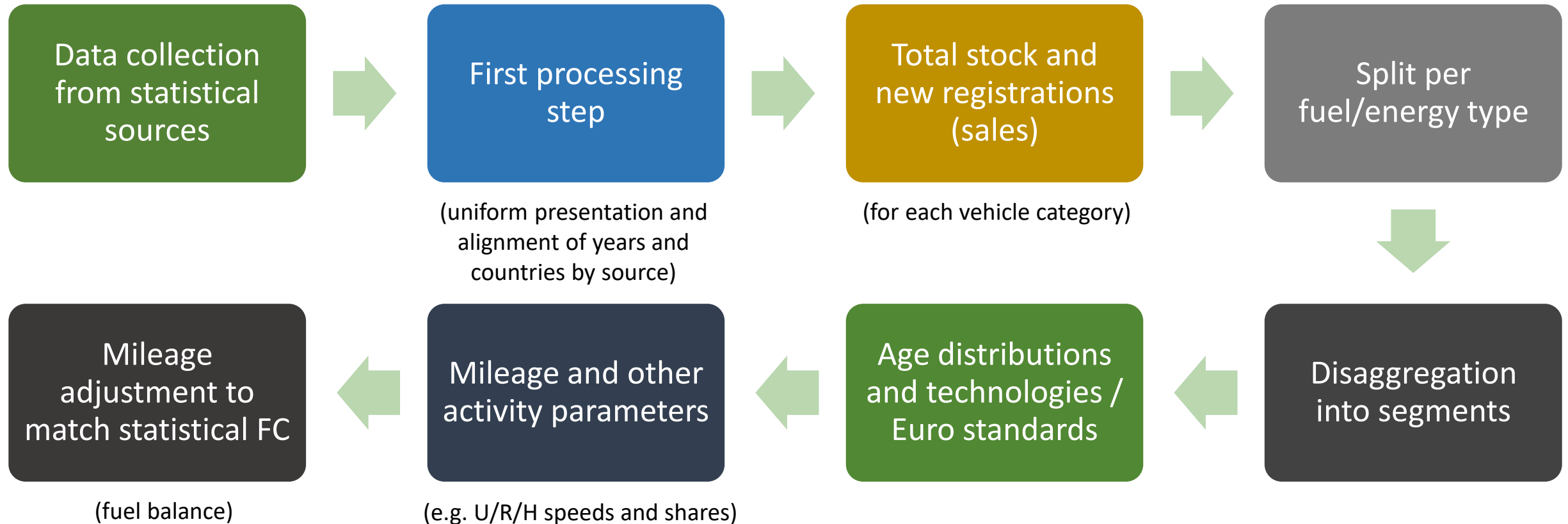
## Methodology in a nutshell

- Historical data
  - Come from **COPERT data**
  - Constitute the **basis for projections**
  - Reliable and up-to-date considering all recent statistical data as well as the **COVID-19 effect**
- Projections data
  - Based on **SIBYL data** (baseline scenario)
  - Total fleet and activity follow the trends of the **PRIMES – EU Reference Scenario**
  - Adjust the baseline scenario to follow the **Fit-for-55 proposal**
  - Aim to meet the **Green Deal Target**

## Basic assumptions

- Maintain the same total new registrations, stock and deregistrations per year and per vehicle category with the SIBYL baseline scenario
- The evolution of the new registrations over the years is based on
  - Intermediate targets of 2025, 2030, 2035, and 2050
  - Baseline scenario data evolution
  - Linear interpolation

## Flowchart of baseline dataset creation on which the scenarios are based





## Main parameters considered

Evolution of total stock and new registrations (sales)

Survival rates (i.e., lifetime functions and age distribution)

Share of alternative fuels and, especially, electric vehicles in the market

Stock evolution per fuel and segment

# Assumptions of Scenarios

## Scenario 1

- Implement the **Fit-for-55 proposal** for banning NRs of ICE cars and vans in 2035 by accomplishing also the proposed intermediate targets for 2025 and 2030
- All other methodological components, such as activity, driving patterns (average speed and U/R/H shares), energy efficiency, environmental parameters, fuel blend parameters, etc., follow the baseline scenario data
- Lorries, buses and L-category vehicles follow the baseline scenario data (i.e. not following the ban of cars and vans in 2035)

## Scenario 2

- **Expand the Fit-for-55 proposal to all road transport**, i.e., ban NRs of all ICE vehicles from 2035 onwards
- All other methodological components, such as activity, driving patterns (average speed and U/R/H shares), energy efficiency, environmental parameters, fuel blend parameters, etc., follow the baseline scenario data
- Green Deal target is achieved with a margin: 93% CO<sub>2</sub> reduction with regard to 1990  
→ the margin of 3% (Vs. the Green Deal target of 90%) is used in a variant of Scenario 2 (Scenario 2-b) to delay the ban of lorries and coaches by 5 years (in 2040)

## Scenario 3

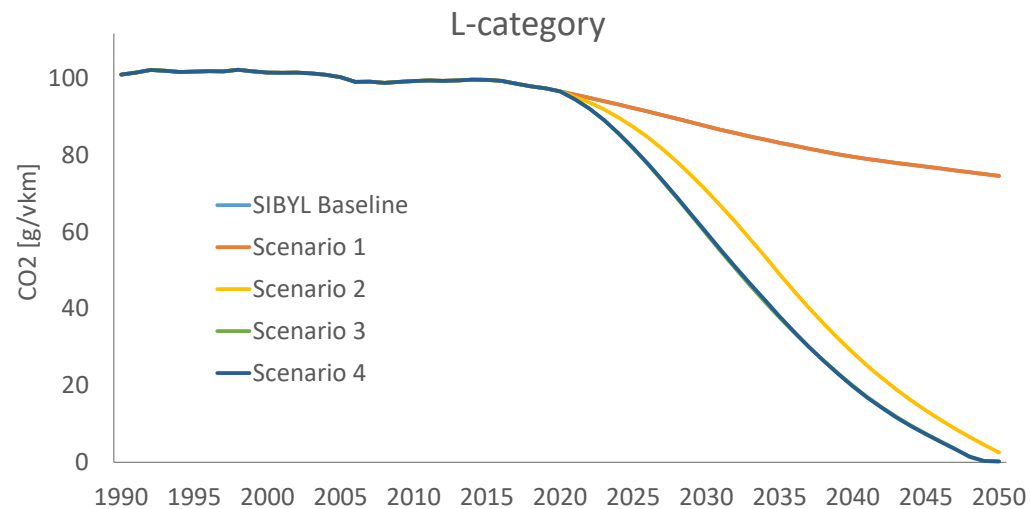
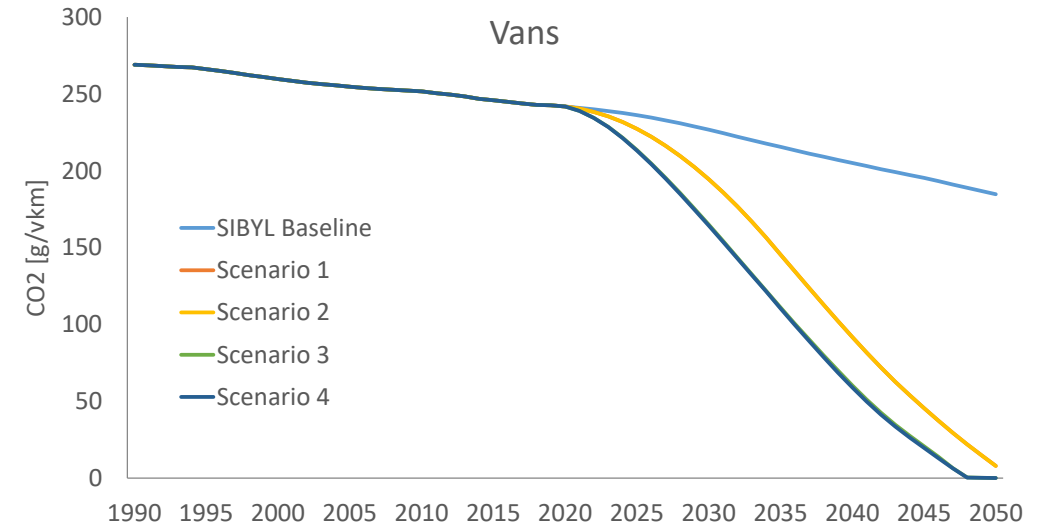
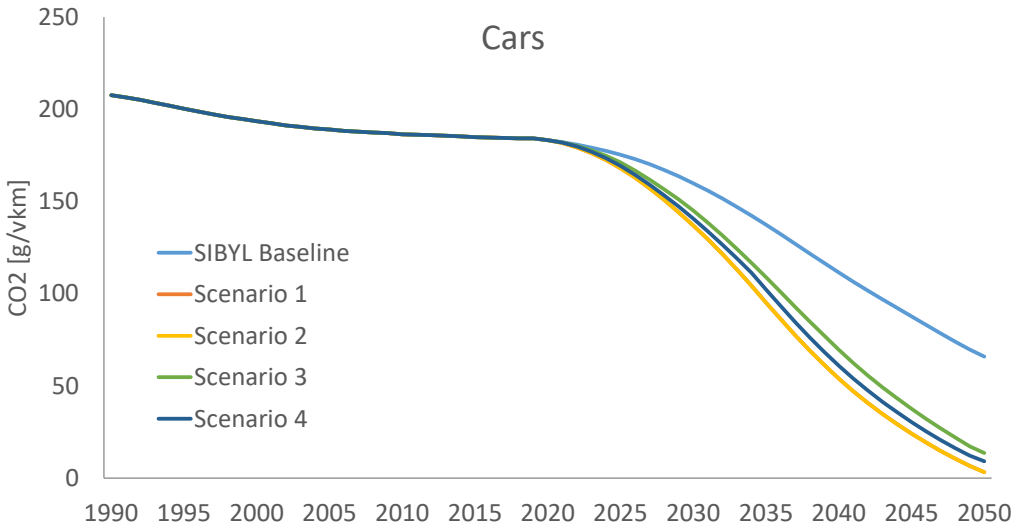
- **NRs ban is delayed** by 5 years for cars, vans, urban buses and L-category vehicles and by 10 years for lorries and coaches from 2035 targeted in the Fit-for-55 proposal
- Additional assumptions to the ban of ICE vehicles
  - More aggressive fuel shift from ICE vehicles to hybrids and BEVs than predicted for 2021
  - Transition from large to small engine size cars in the projected years
  - Total vehicle activity not reduced, even if BEVs are considered to travel less than ICE vehicles
  - More aggressive reduction of the ICE NRs until the year of the ban than in Scenarios 1 and 2
  - Reduction of urban share of ICE cars by 40% in 2050 due to Urban Vehicle Access Regulations restrictions
  - More aggressive reduction of energy efficiency of ICE vehicles than in baseline and Scenarios 1 and 2
  - Improve fuel quality by increasing bio-content of petrol and diesel (E10 and B10 correspondingly by 2050)

## Scenario 4

- NRs ban in **2035** (Fit-for-55 proposal) for cars, vans, urban buses and L-category vehicles and in **2050** for lorries and coaches
- Same additional assumptions of Scenario 3

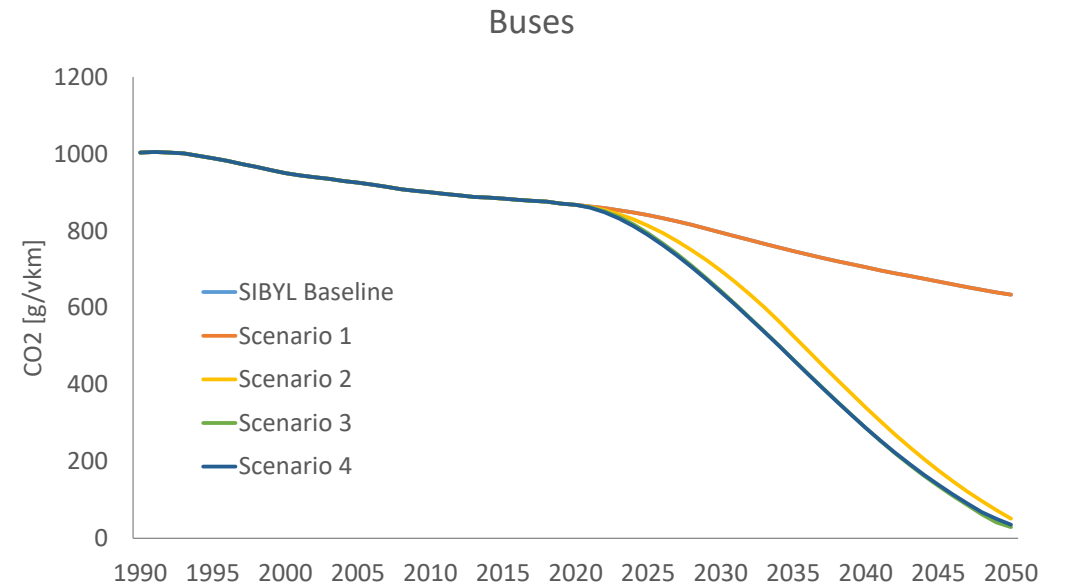
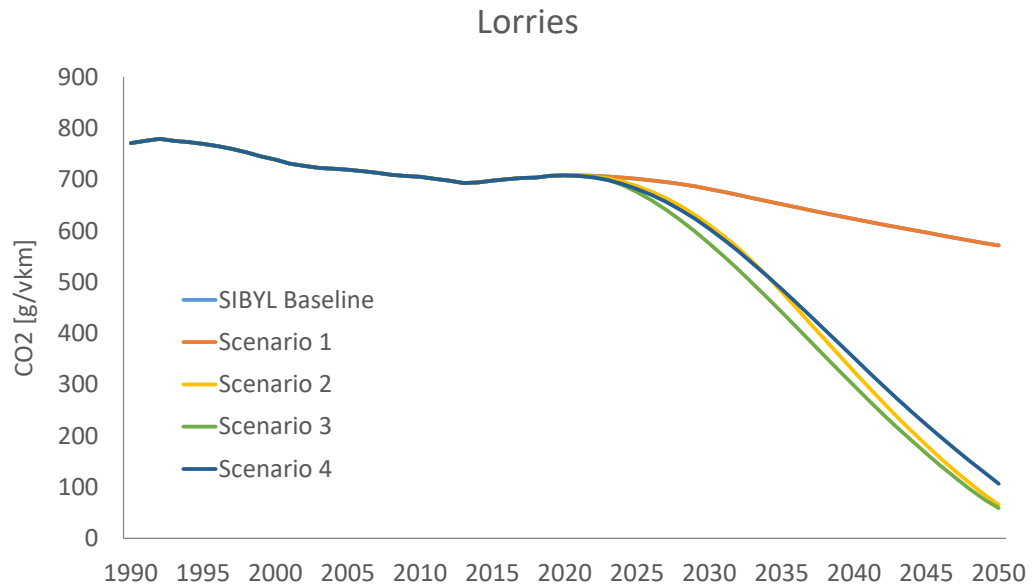
# Results and Comparison of Scenarios

# EU27 CO<sub>2</sub> implied emission factor: LDVs and L-category vehicles

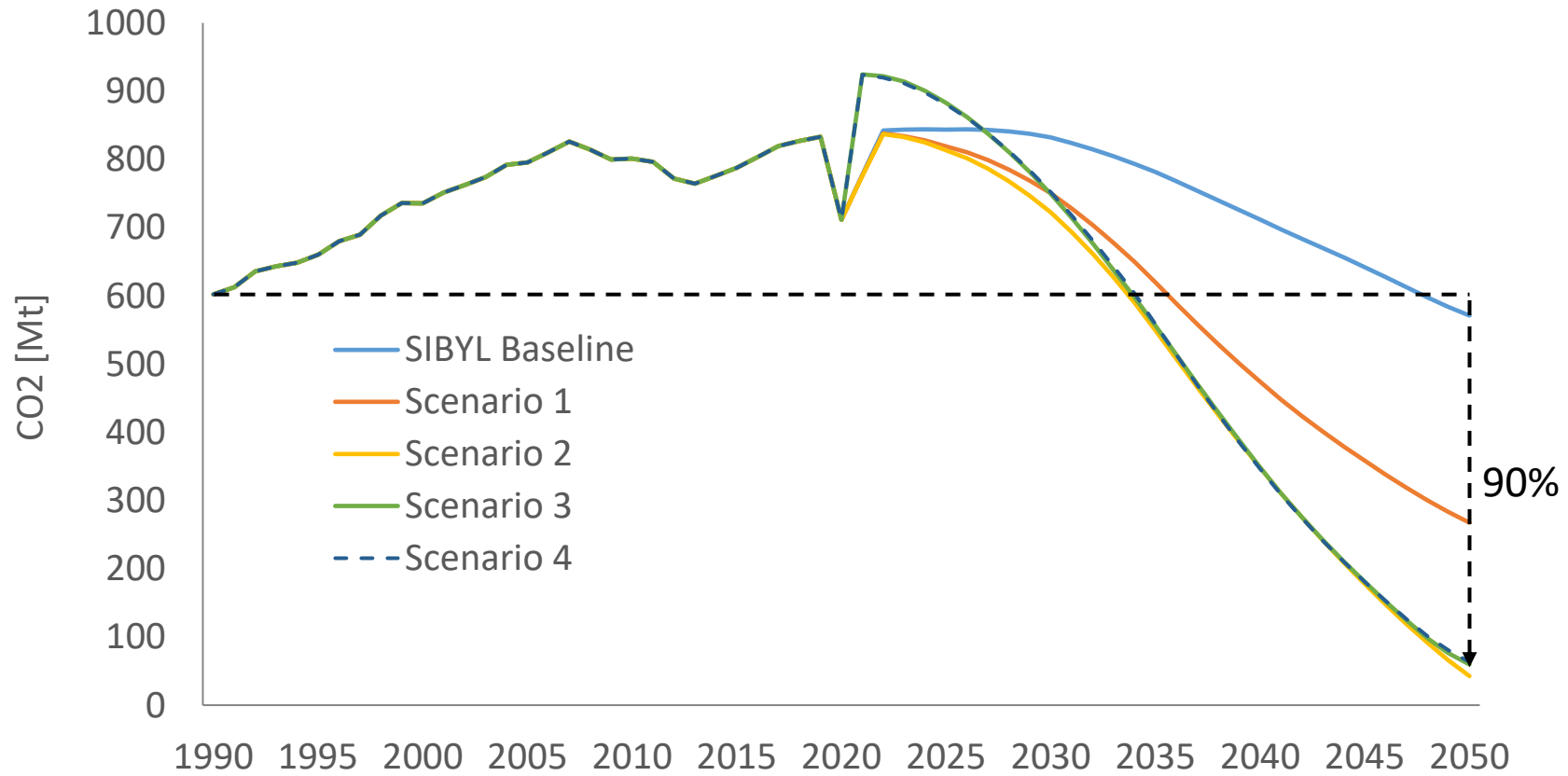




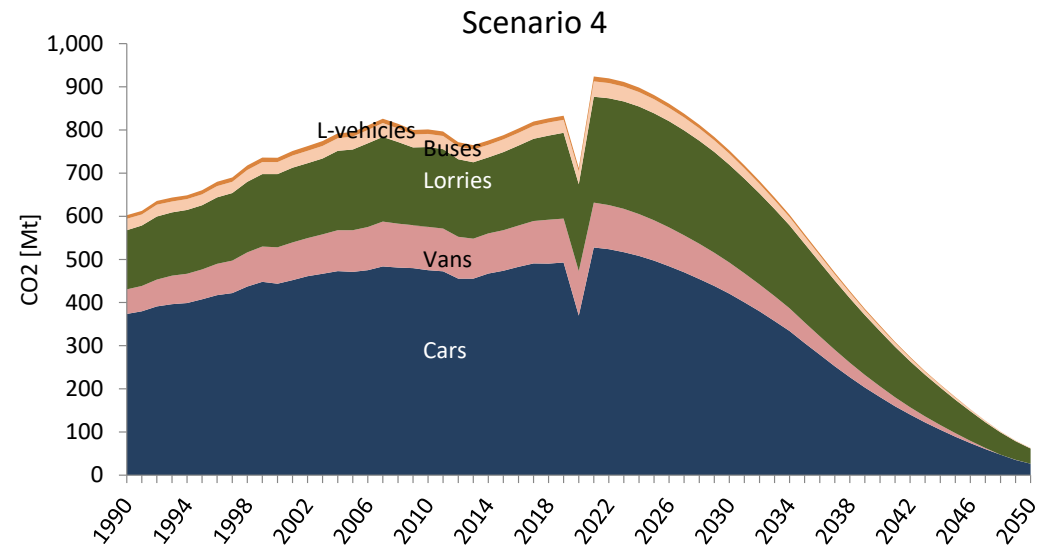
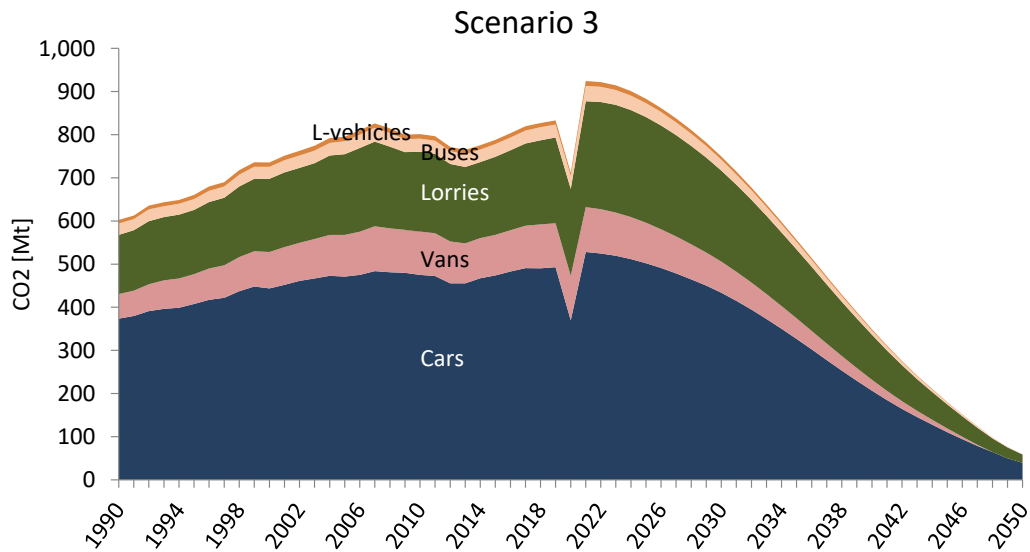
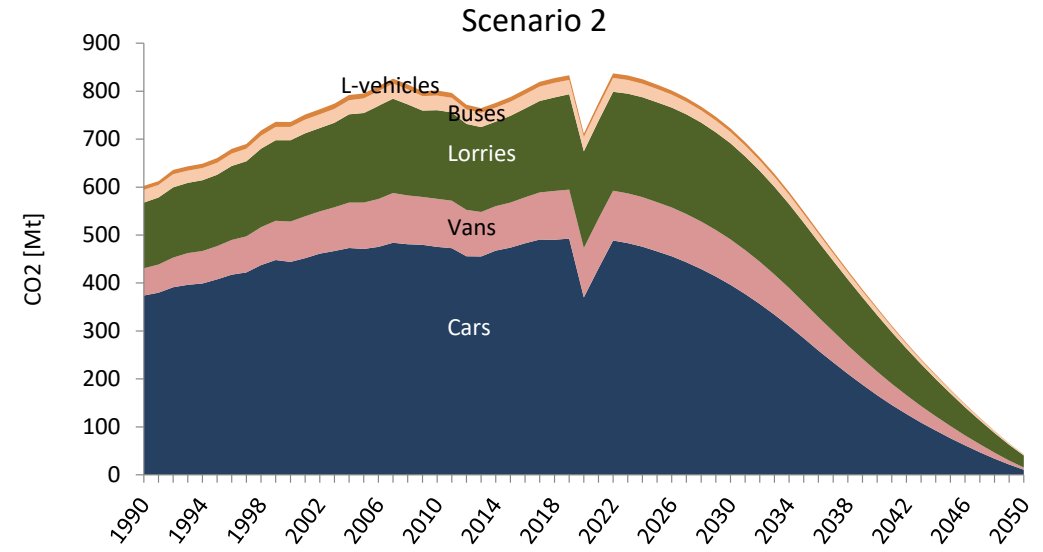
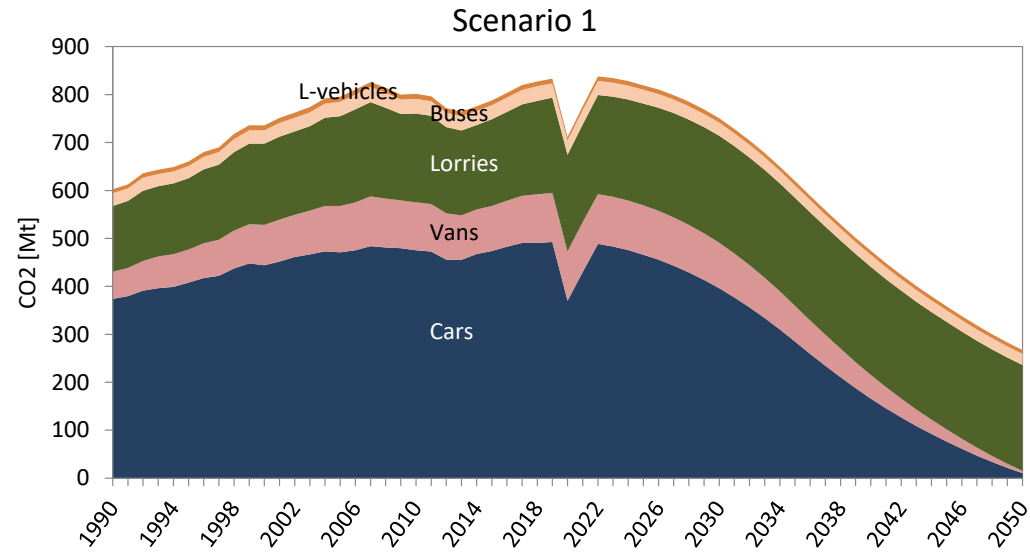
## EU27 CO<sub>2</sub> implied emission factor: HDVs



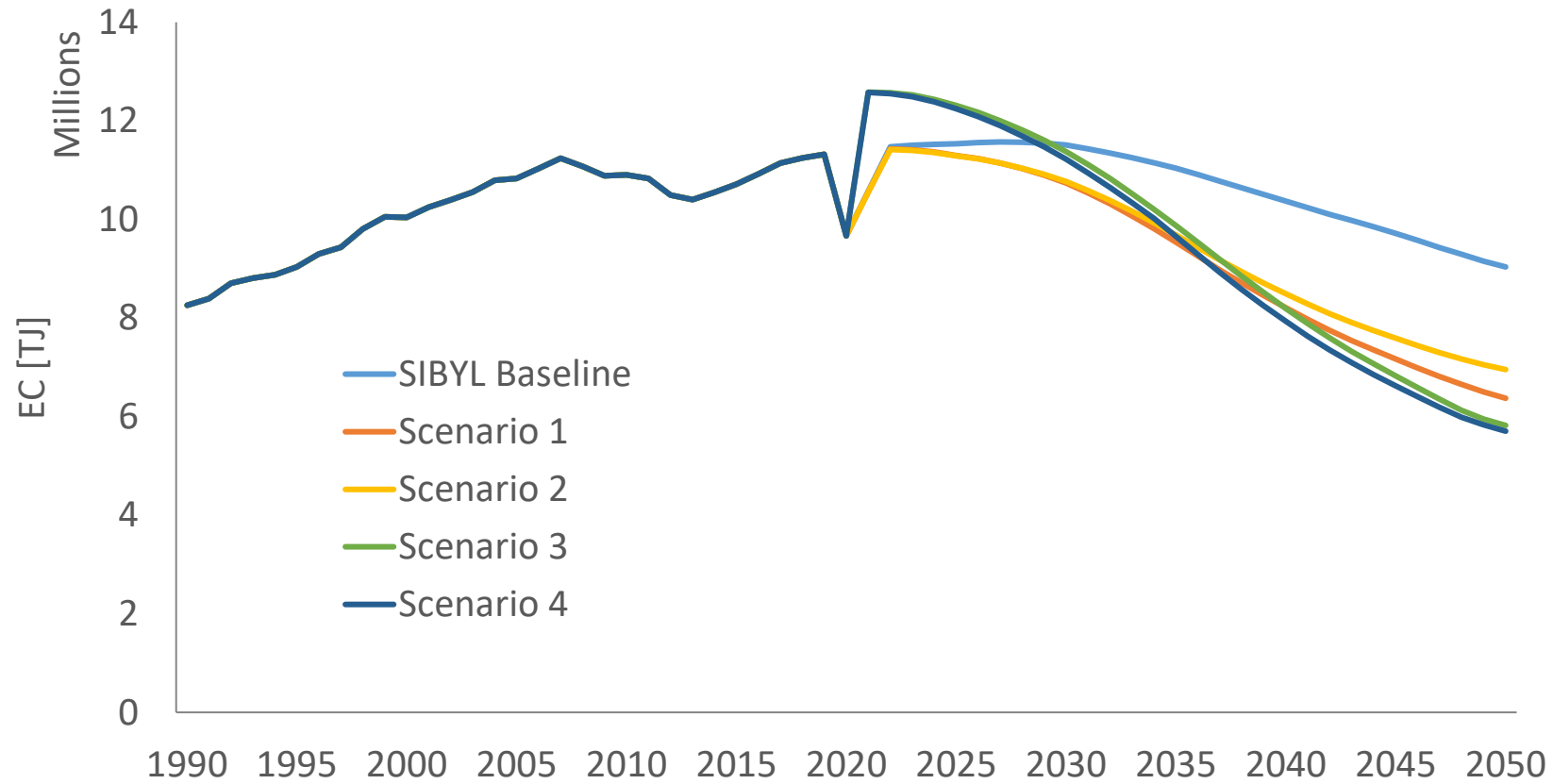
# EU27 TtW CO<sub>2</sub>



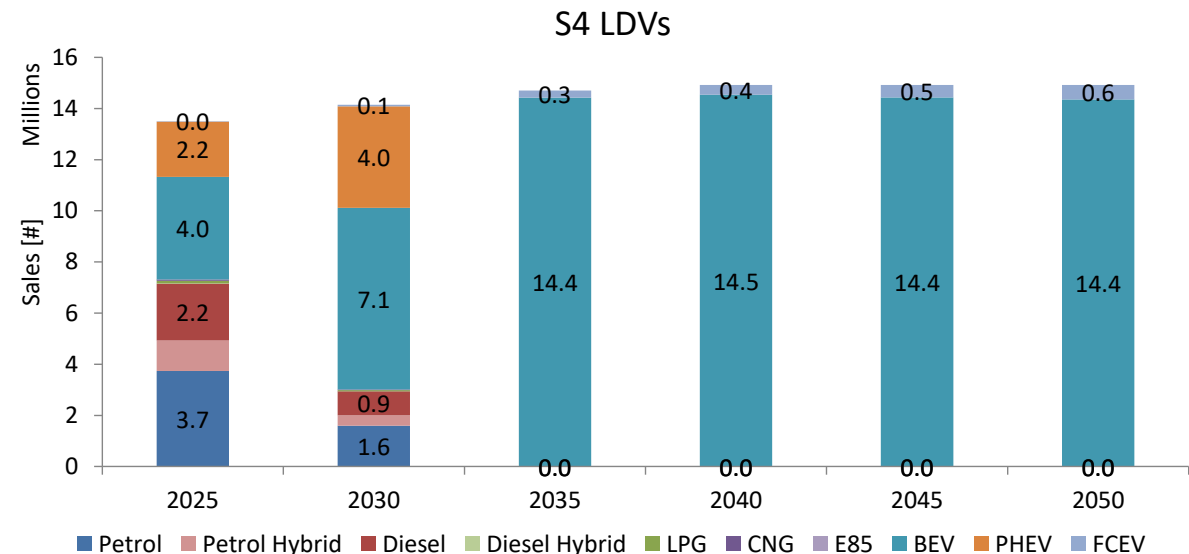
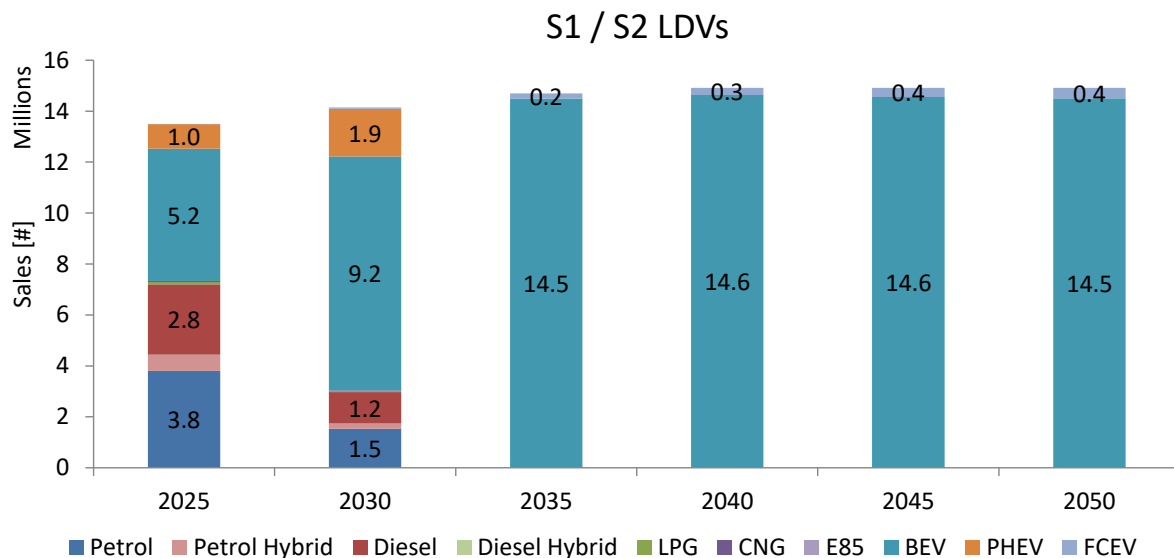
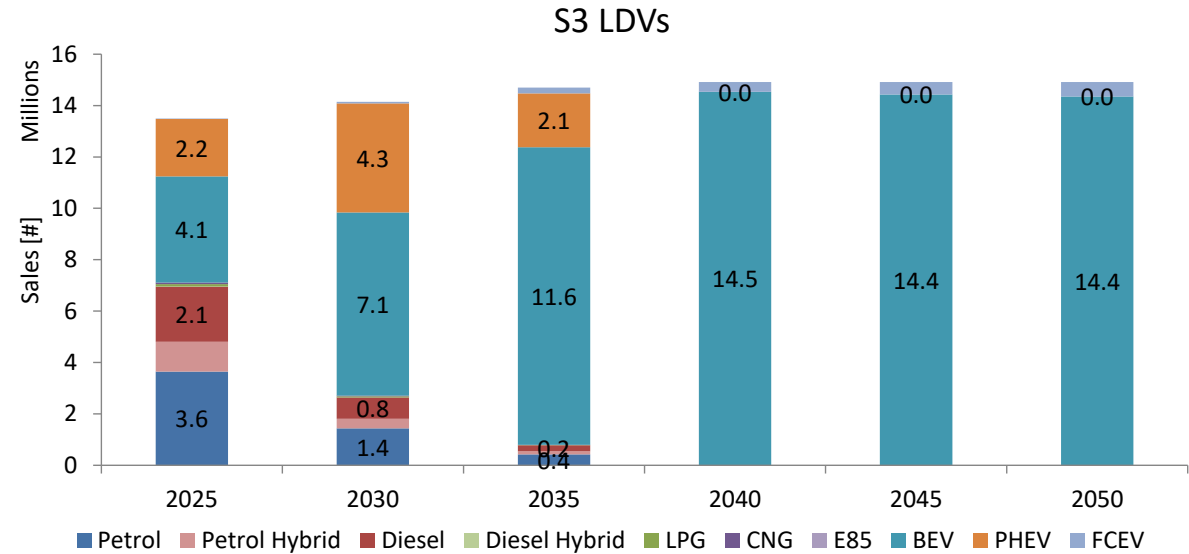
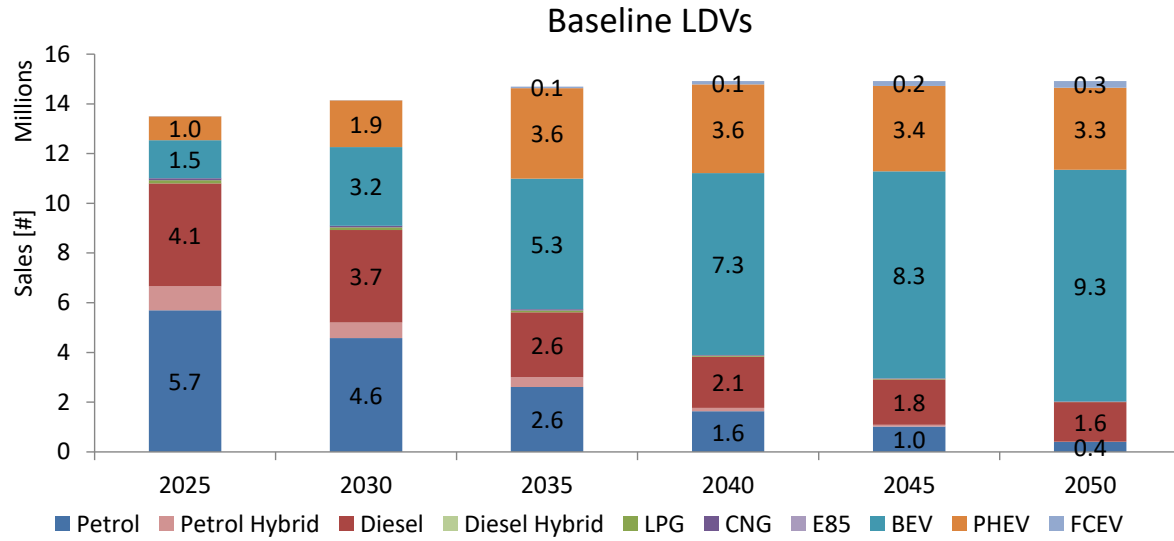
## EU27 TtW CO<sub>2</sub> per category



# Total Energy Consumption

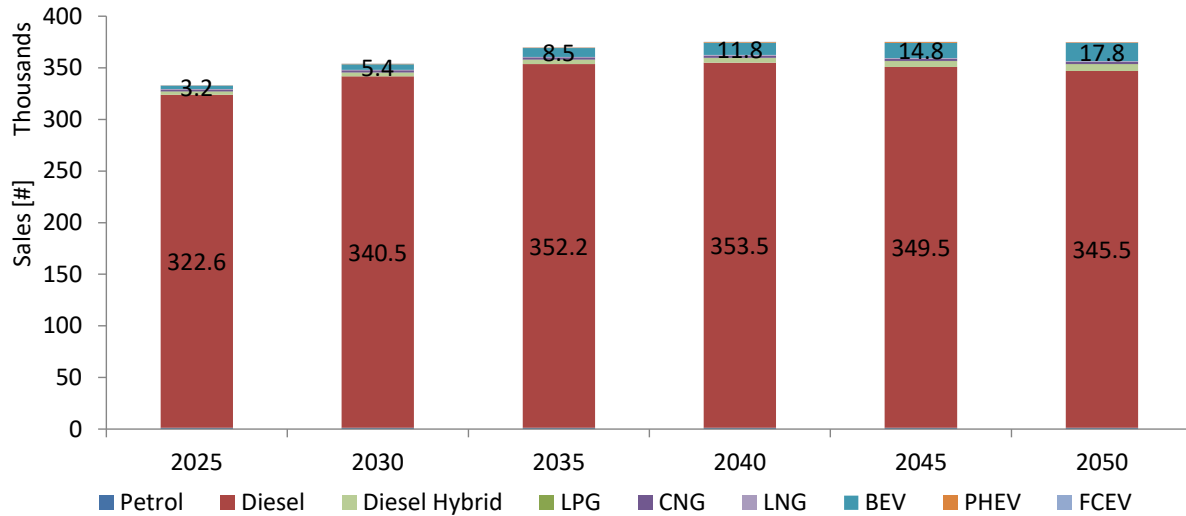


# Fuel mix for LDVs new registrations

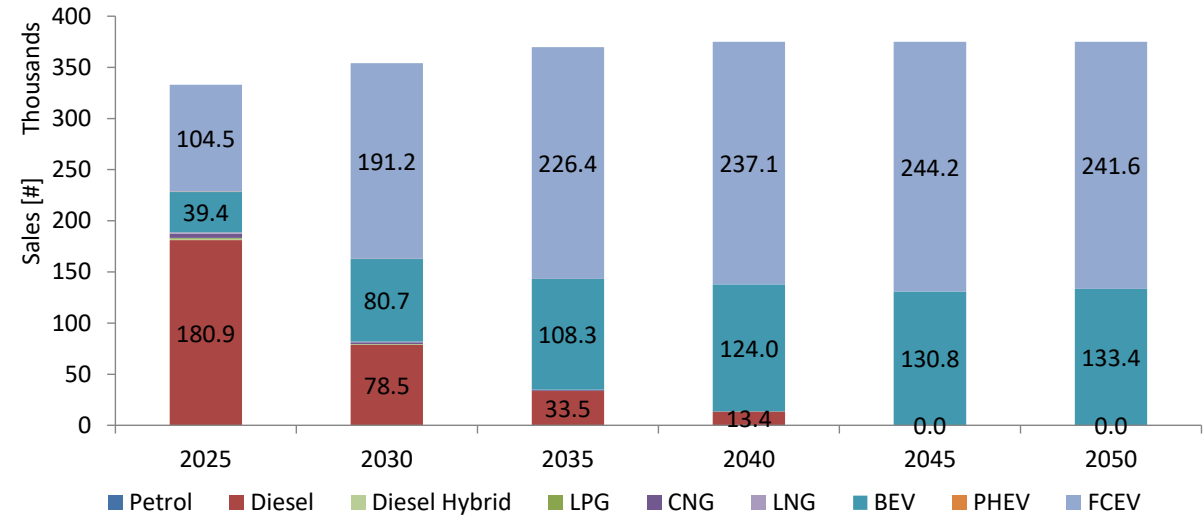


# Fuel mix for HDVs new registrations

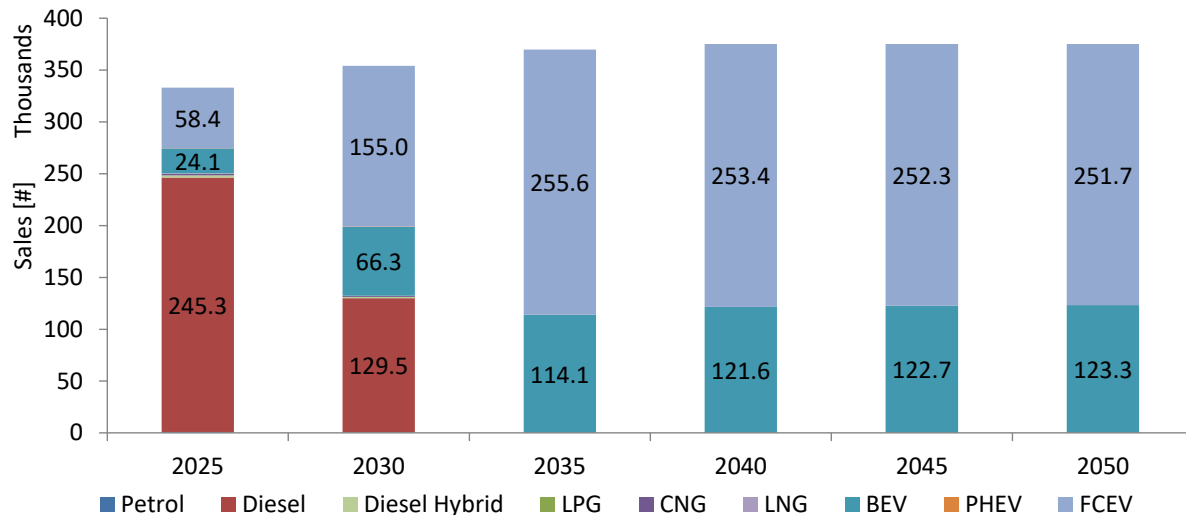
Baseline / S1 HDVs



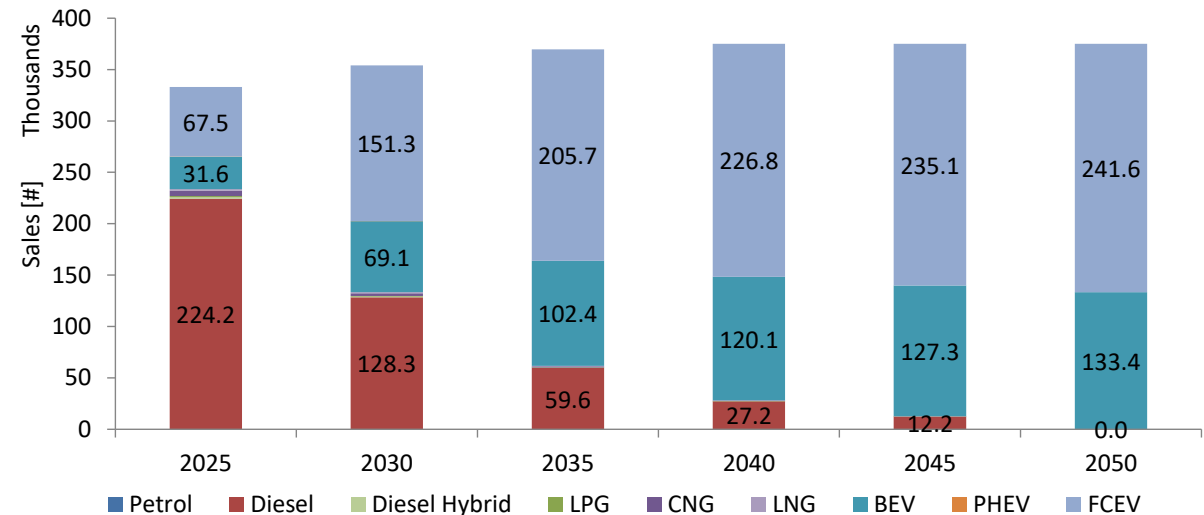
S3 HDVs



S2 HDVs



S4 HDVs



## Output format

- The output files are provided in **excel format**
- **Comparisons** among scenarios can be easily performed

Stay tuned ...  
more scenarios are on the way,  
either on-demand or not