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Transport Policy Options in a Low Emissions Economy

Energy lives here™

Transport Policy Principles

Sound Science

- Analyzing “well to wheels” impact
- Realistic projections for technology developments

Clear Regulatory Framework

- Appropriate
- Reasonable
- Flexible
- Consistently enforced

Free Market

- Technology neutral
- Promote innovation
- Markets drive solutions
- No mandates

Cost/Benefit Consideration

- Cost-effective solutions
- Economically sustainable without subsidies
- Benefits > overall cost

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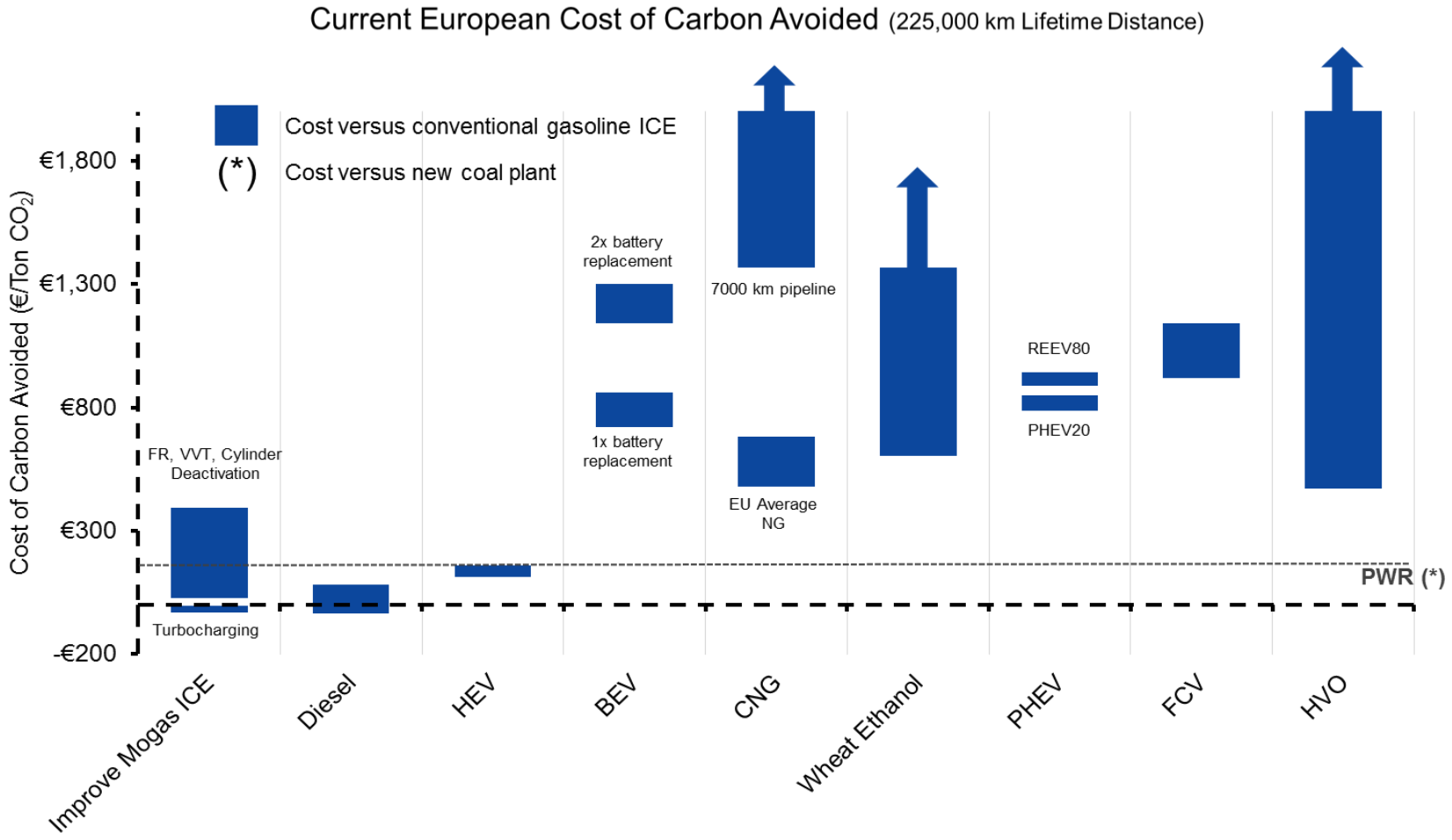
Vehicles

Many light duty vehicle technologies are available for reducing GHG emissions and energy demand, but with a wide range of costs



Source: JEC WTW4; Eurostat; McKinsey; ICCT

*PWR = options in power sector vs. new coal plant

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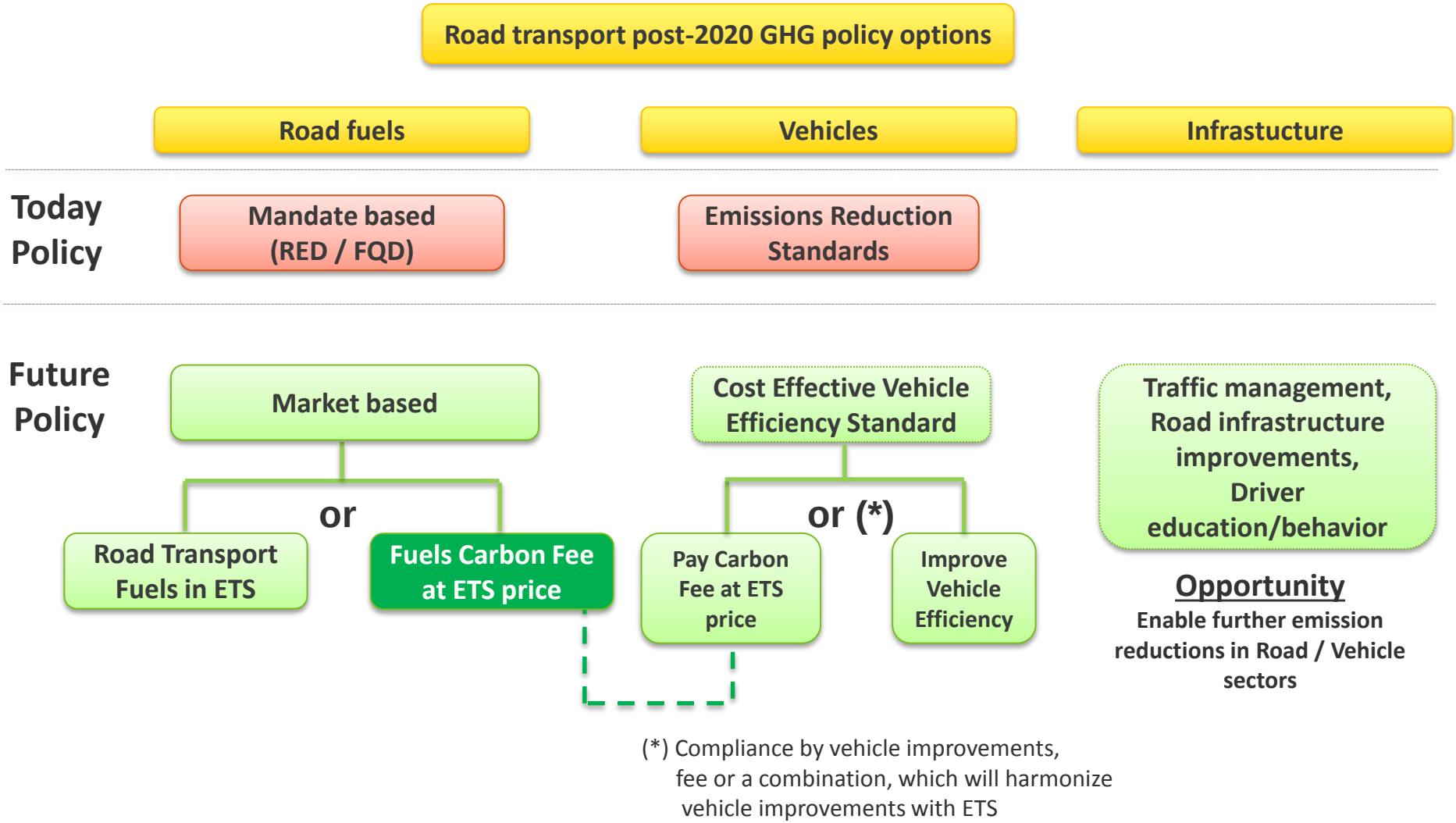
EU Integrated/Cost Effective Policy Solutions

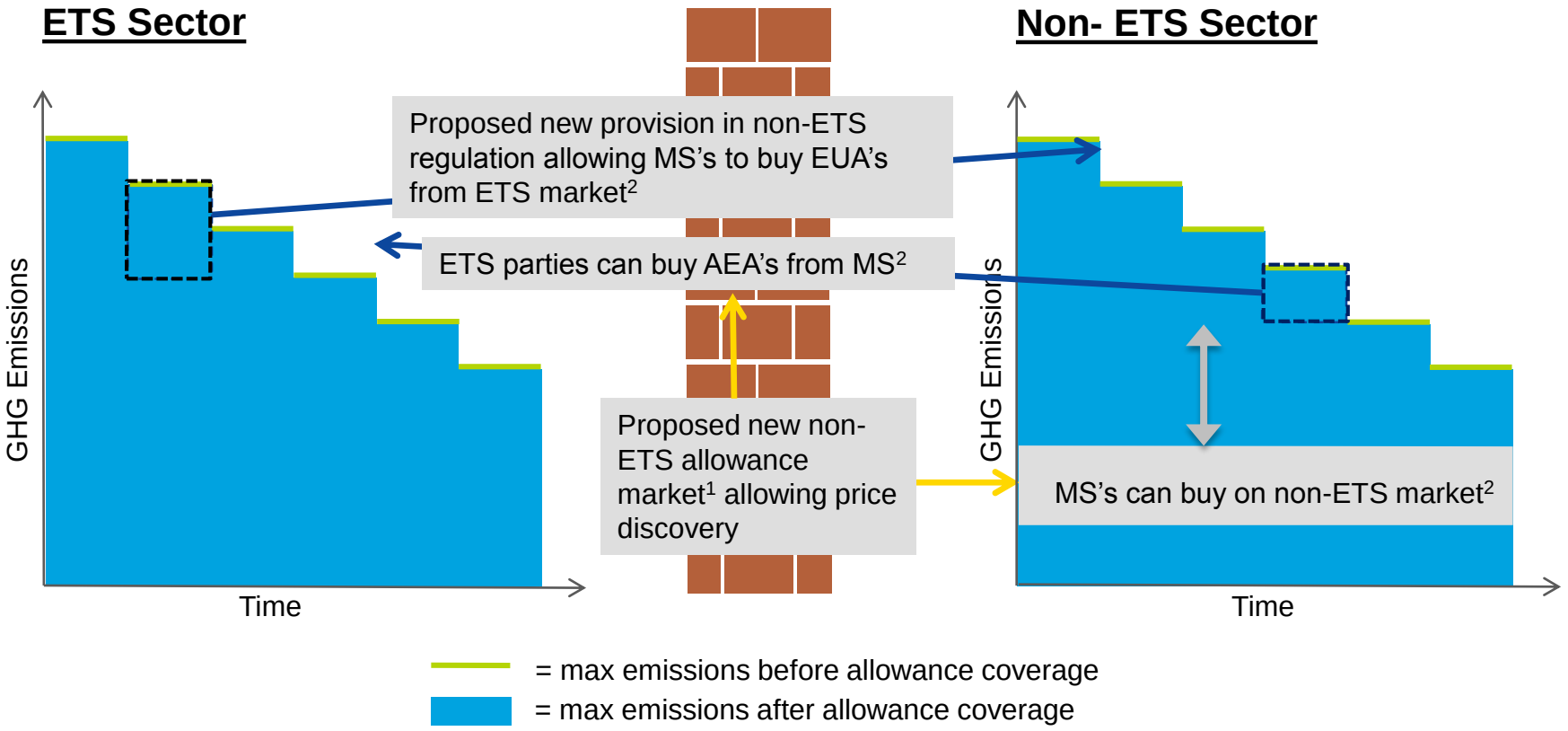


(*) Compliance by vehicle improvements, fee or a combination, which will harmonize vehicle improvements with ETS

WIN WIN WIN for Society, Environment and Economic Growth

Alternative EU Road Transport Fuel Consumption GHG Policy Position

In absence of linked GHG emissions fee or transport under ETS, market based flexibilities should be available between non-ETS and ETS obligated parties.



[1] By auctioning fixed % of MS's Annual Emissions Allocations (AEA)

[2] Flexibilities should be sufficient in range to achieve marginal GHG abatement costs convergence across sectors and MS's

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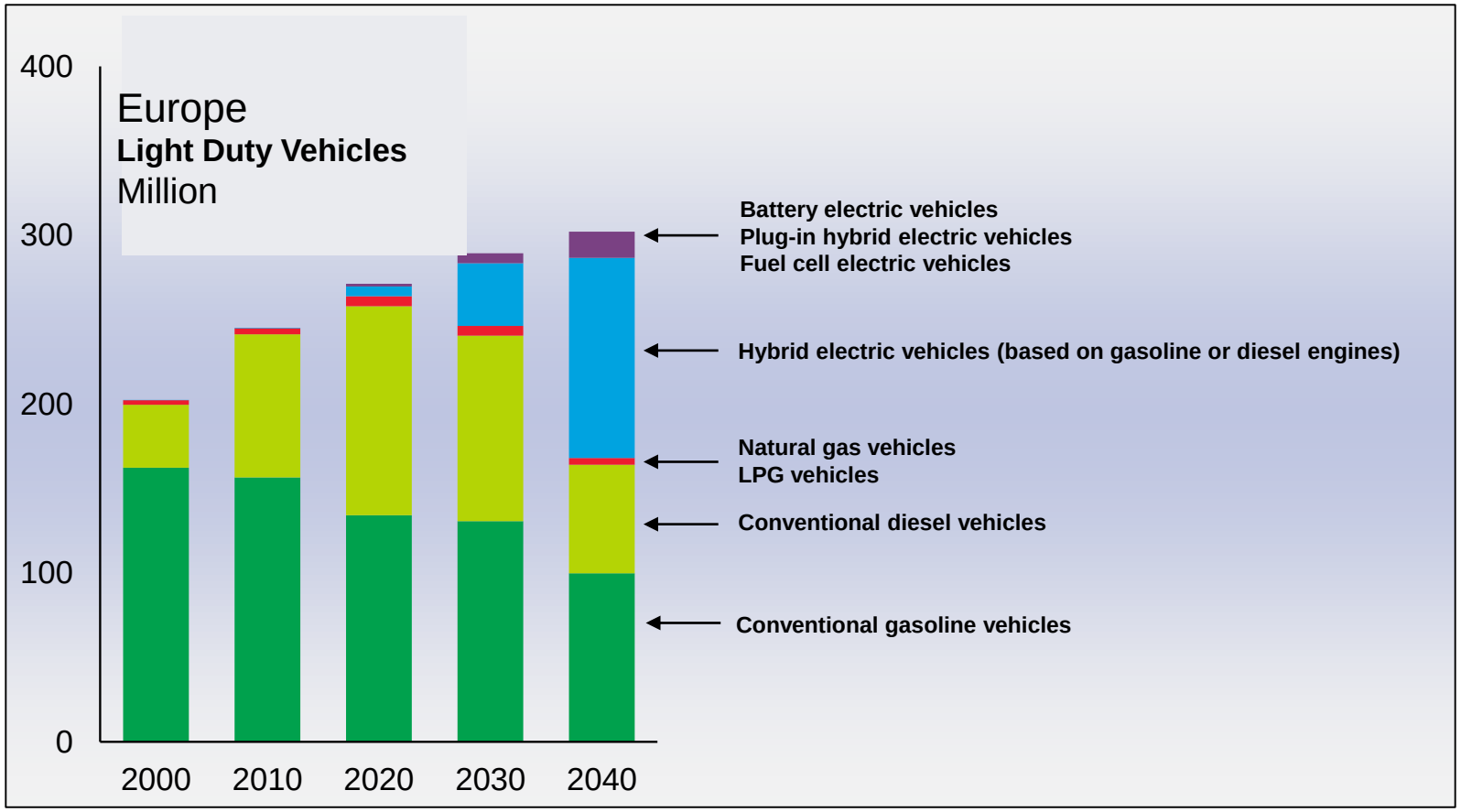
Summary

- The long-term objective of climate policy should be to reduce the risks posed by climate change at minimal society cost, in balance with other social priorities
- Market based systems that impose a uniform, economy wide cost on GHG emissions are more economically efficient policy options than mandates
- A revenue neutral GHG emissions fee on transport fuels is the more efficient market based policy option in the long term
- Bringing transport under the ETS cap could be an alternative market based policy option for the future
- Both concepts could be extended to all ‘fuels’ in the non-ETS sector (e.g. residential and commercial direct combustion)
- In absence of GHG emissions fee or transport under ETS, market based flexibilities should be maximized between non-ETS and ETS obligated parties
- Ultimately, policy should strive for carbon price convergence across the economy

Backup

Battery electric vehicles that are recharged from the grid will play a role in future transport …



… but their impact on the European fleet is expected to be limited compared to conventional vehicles and hybrid electric vehicles through 2040

Source: The Outlook for Energy, A View to 2040 – ExxonMobil, 2016

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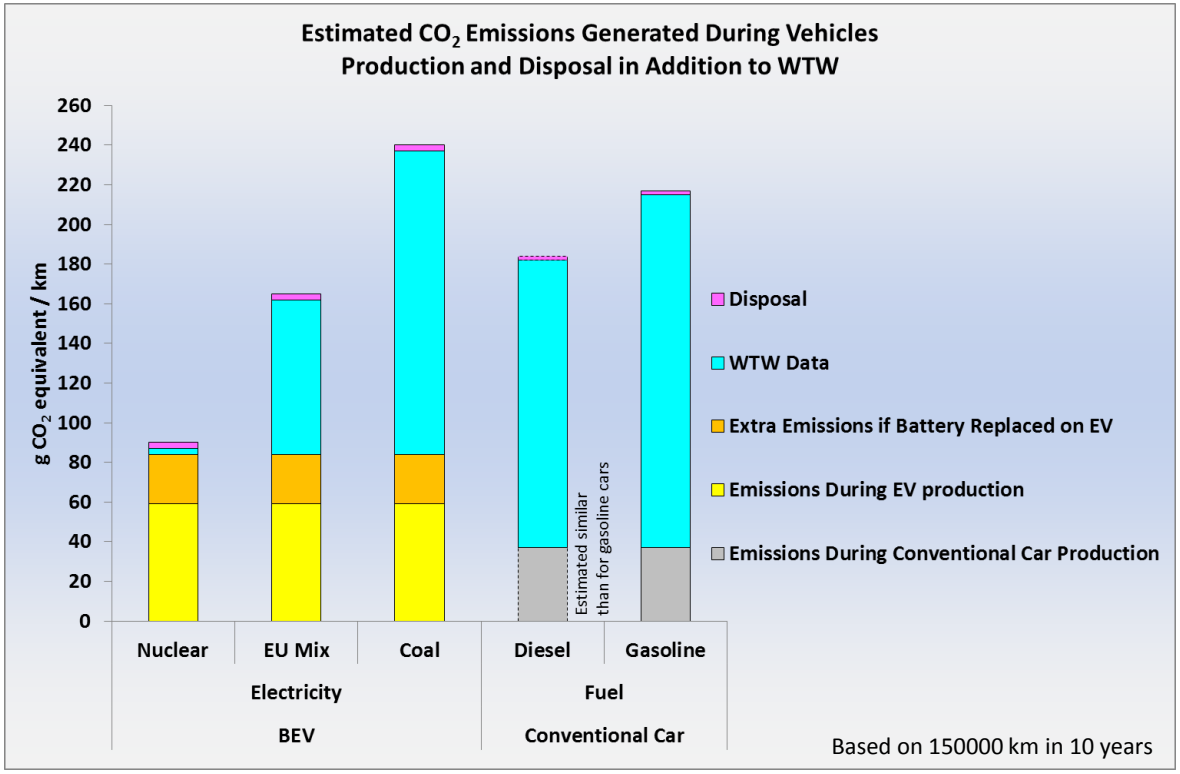
Battery manufacturing significantly affects overall GHG emissions associated with BEVs …



… and on a 'cradle-to-grave' basis, BEVs do not necessarily lead to overall GHG savings

Source (combined): Preparing for a Life Cycle CO_2 Measure – Ricardo, 2011 / WTW Report – JEC, 2014

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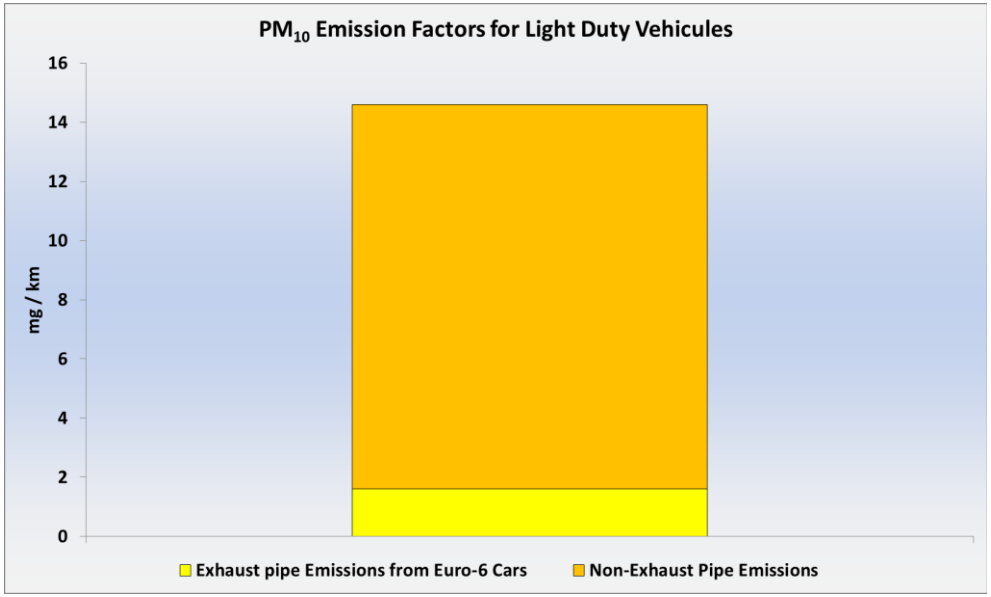
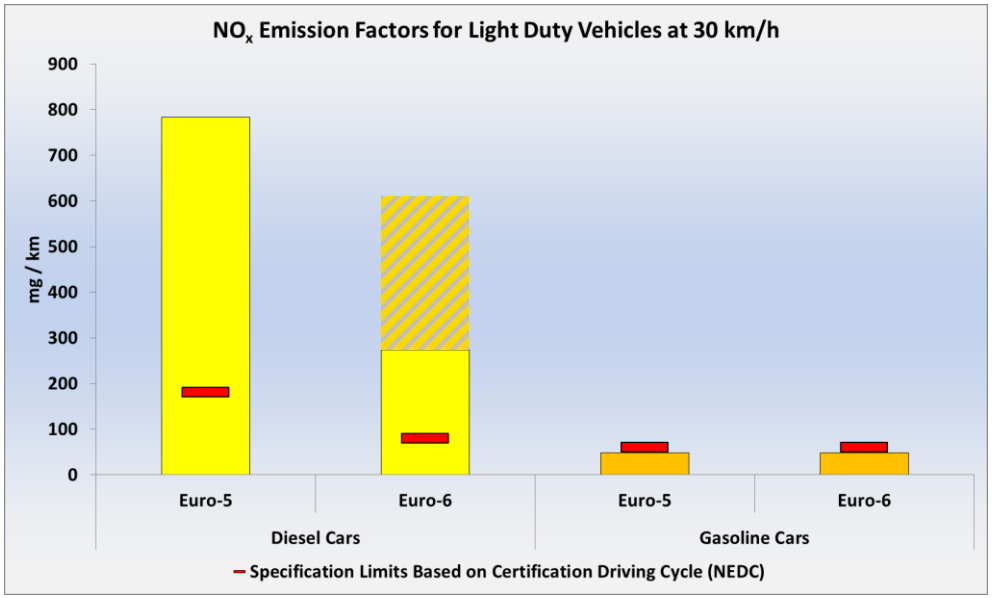
Euro-6 cars generate similar levels of particulate matter (PM) emissions as BEVs as their exhaust pipe PM emissions are negligible versus other sources …





… while nitrogen oxide (NO_x) emissions from conventional cars are dropping

Source top chart: UK National Atmospheric Emission Inventory, 2014 / Non-Exhaust Traffic Related Emissions - JRC, 2014
Source bottom chart: UK National Atmospheric Emission Inventory, 2014 and EEA, Explaining road transport emissions, 2016

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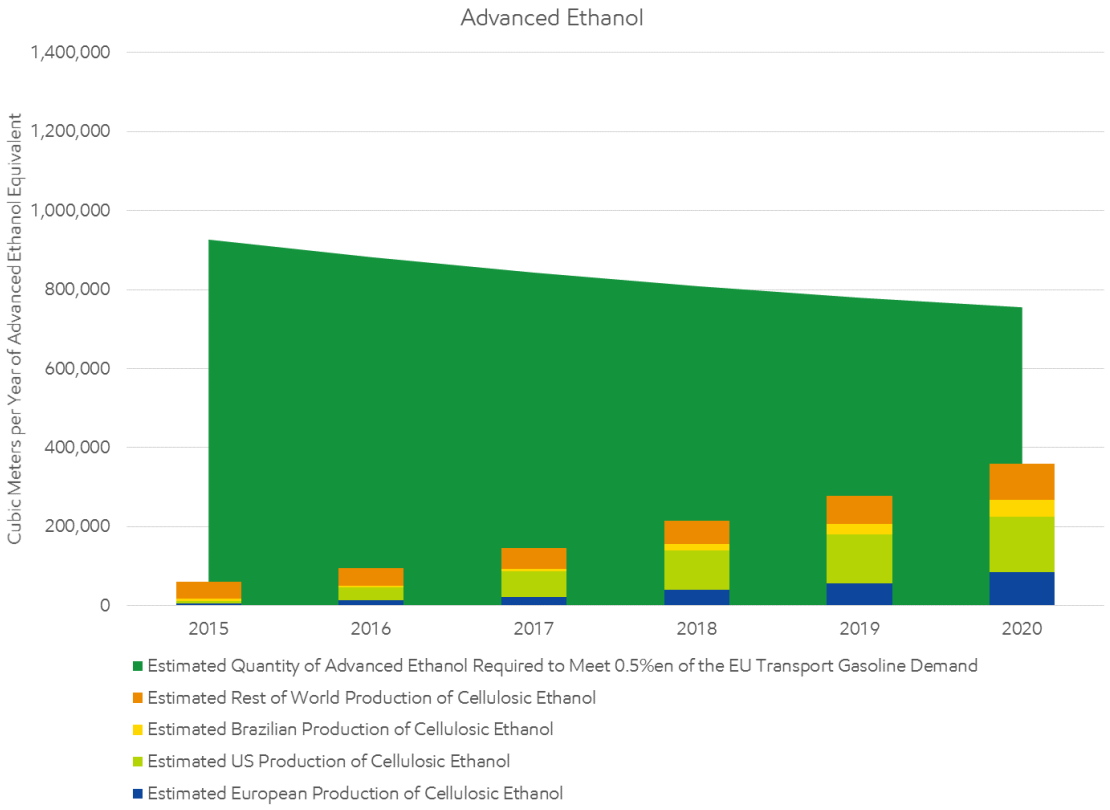
Advanced Biofuels for Gasoline Blending Operations – Ethanol



- Estimated European production of advanced ethanol is projected to be only 0.09% of EU transport gasoline energy demand in 2020 (11% of target)
  - Global production of advanced ethanol is projected to be 0.38% of EU transport gasoline energy demand in 2020 (47% of target)

ExxonMobil Analysis Based on Public Sources of Information / Single Counting Basis / 2015 Commission Annex IX for Feedstock Sources

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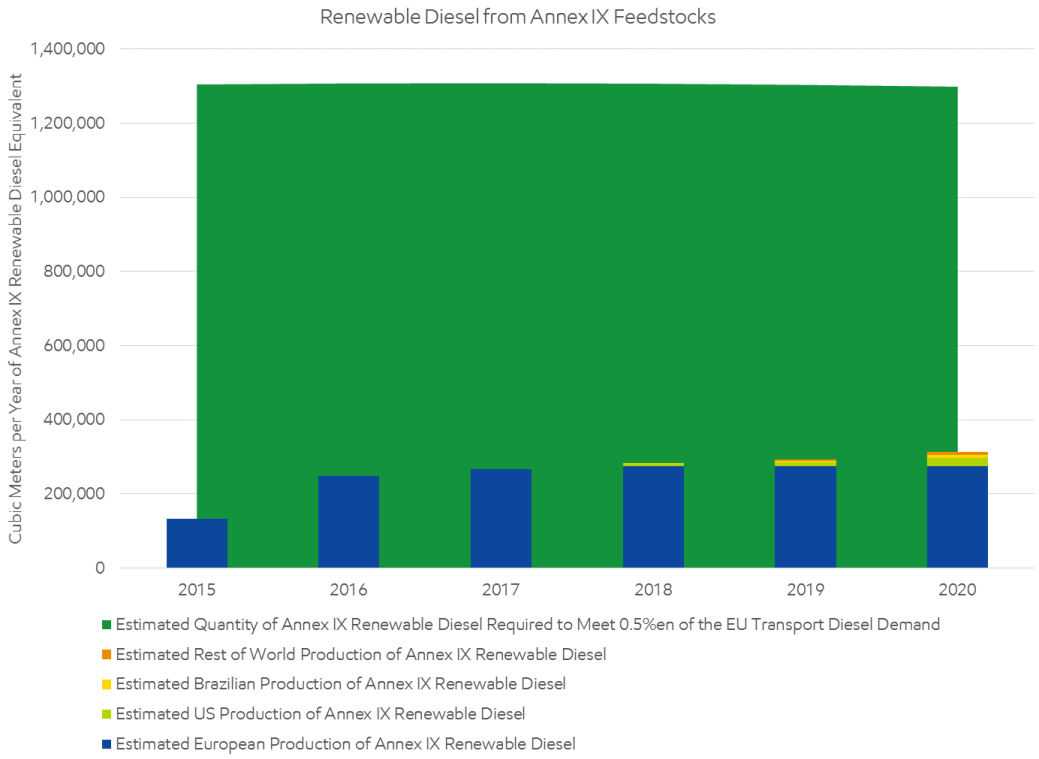
Advanced Biofuels for Diesel Blending Operations – Renewable Diesel from Annex IX Feedstocks



- Estimated European production of Annex IX renewable diesel is projected to be only 0.11% of EU transport diesel energy demand in 2020 (21% of target)
  - Global production of Annex IX renewable diesel is projected to be 0.13% of EU diesel transport energy demand in 2020 (24% of target)

ExxonMobil Analysis Based on Public Sources of Information / Single Counting Basis / 2015 Commission Annex IX for Feedstock Sources

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