



# Euro 6 and reduction of CO2

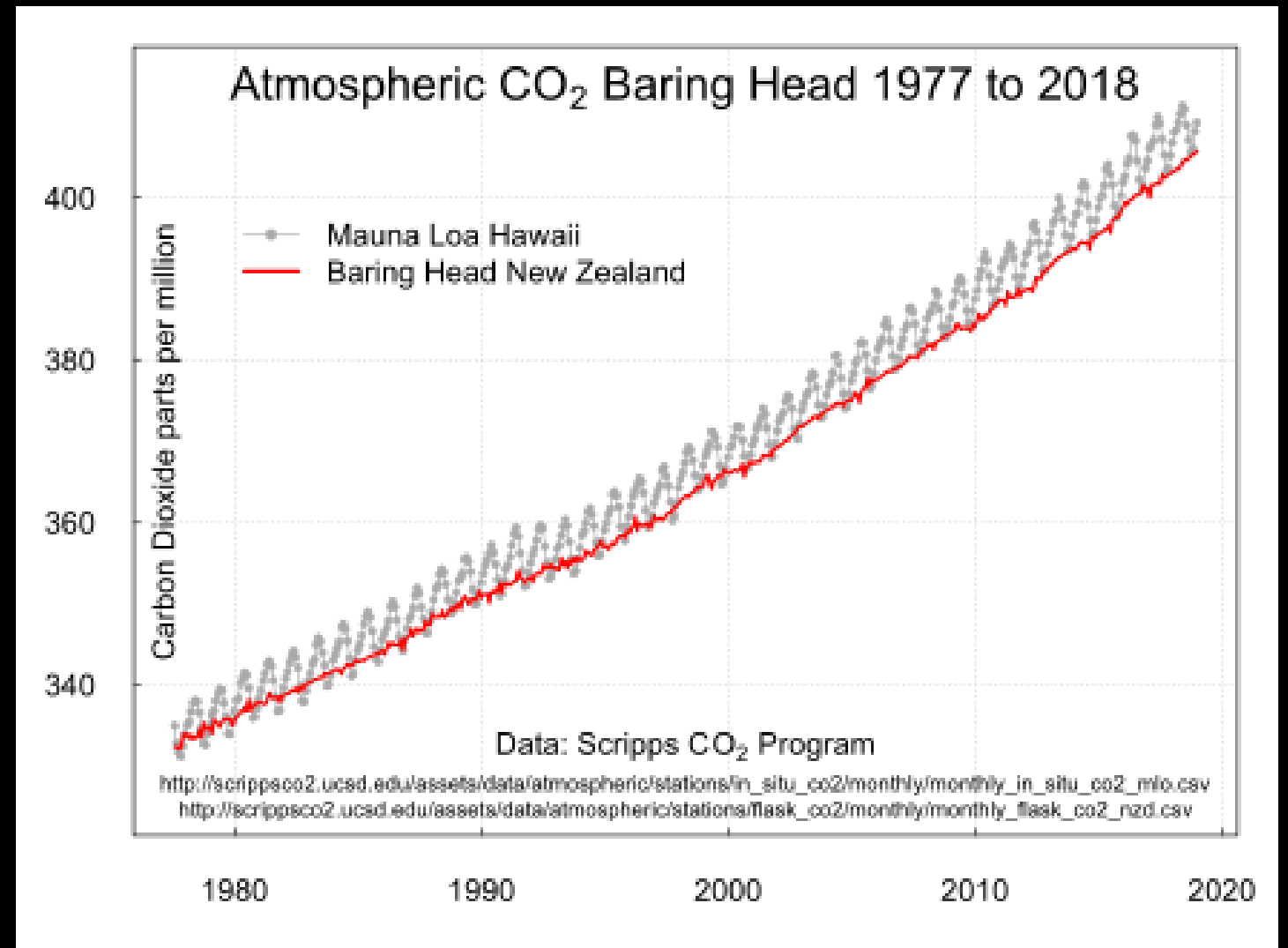
*Alfons Reitsma  
Product Sales Engineer  
Trucks and Trailers*

**Mercedes-Benz**  
Trucks you can trust



# An inconvenient truth in NZ ?

## Co2



Climate Accord Paris challenges us in the transport sector to reduce current CO<sub>2</sub> emissions even in New Zealand.



Euro 6. Protecting the environment is everybody's responsibility.

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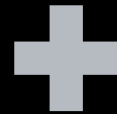
# Carbon Dioxide(Co2) & Diesel ?



720 g  
Carbon



1 Litre of Diesel



1920 g Oxygen



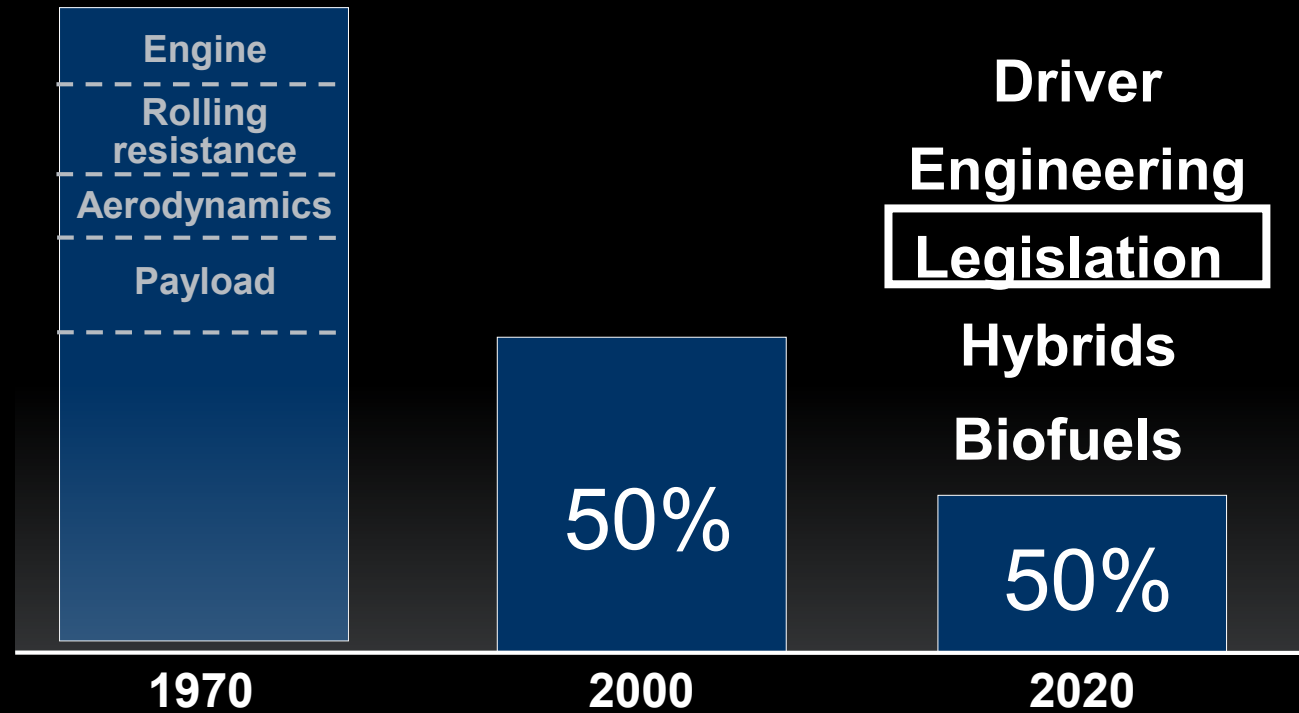
Combustion



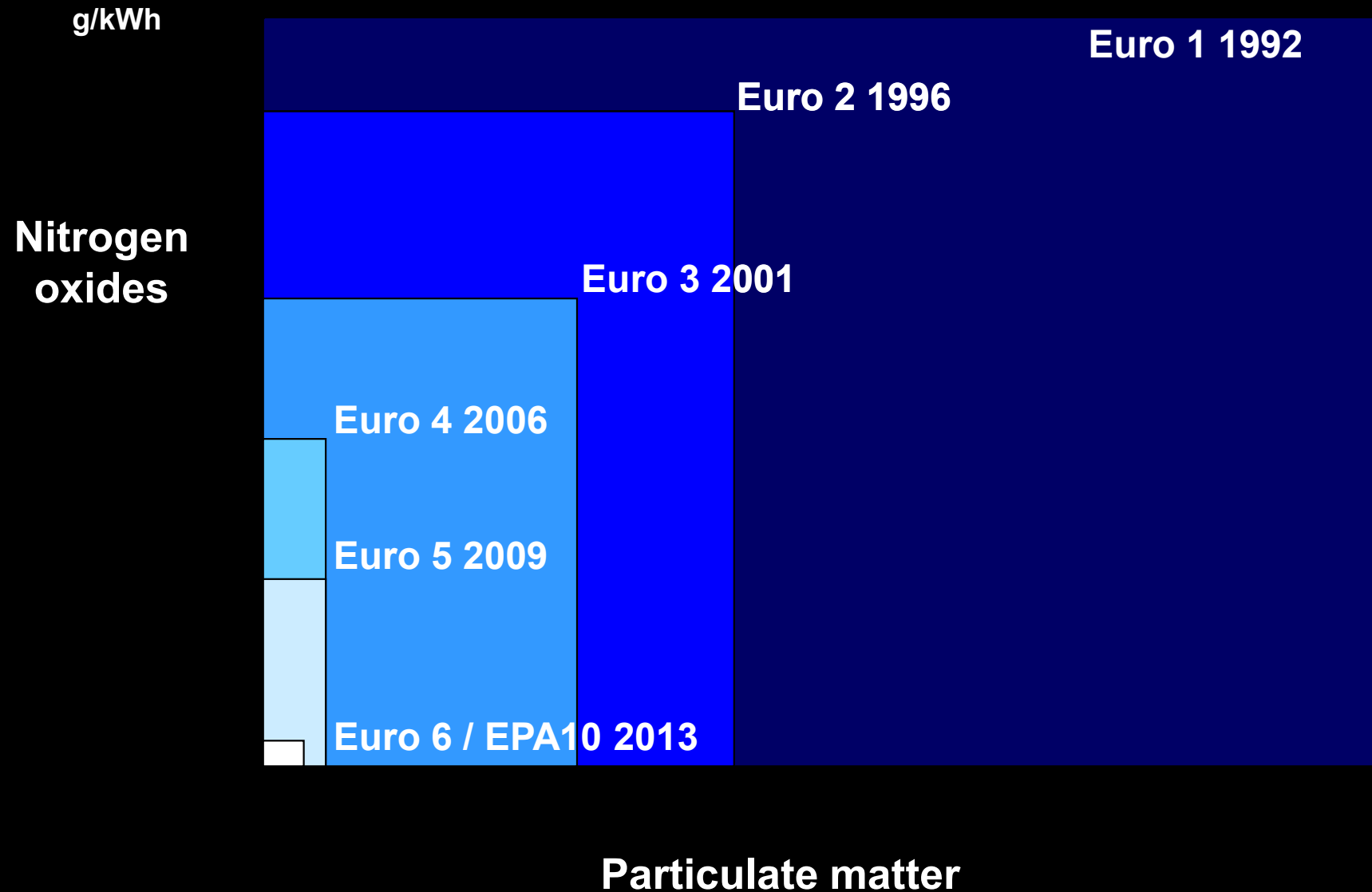
720 g + 1920g  
= 2640 g CO<sub>2</sub>/liter

The more fuel we burn the more CO<sub>2</sub> we produce!

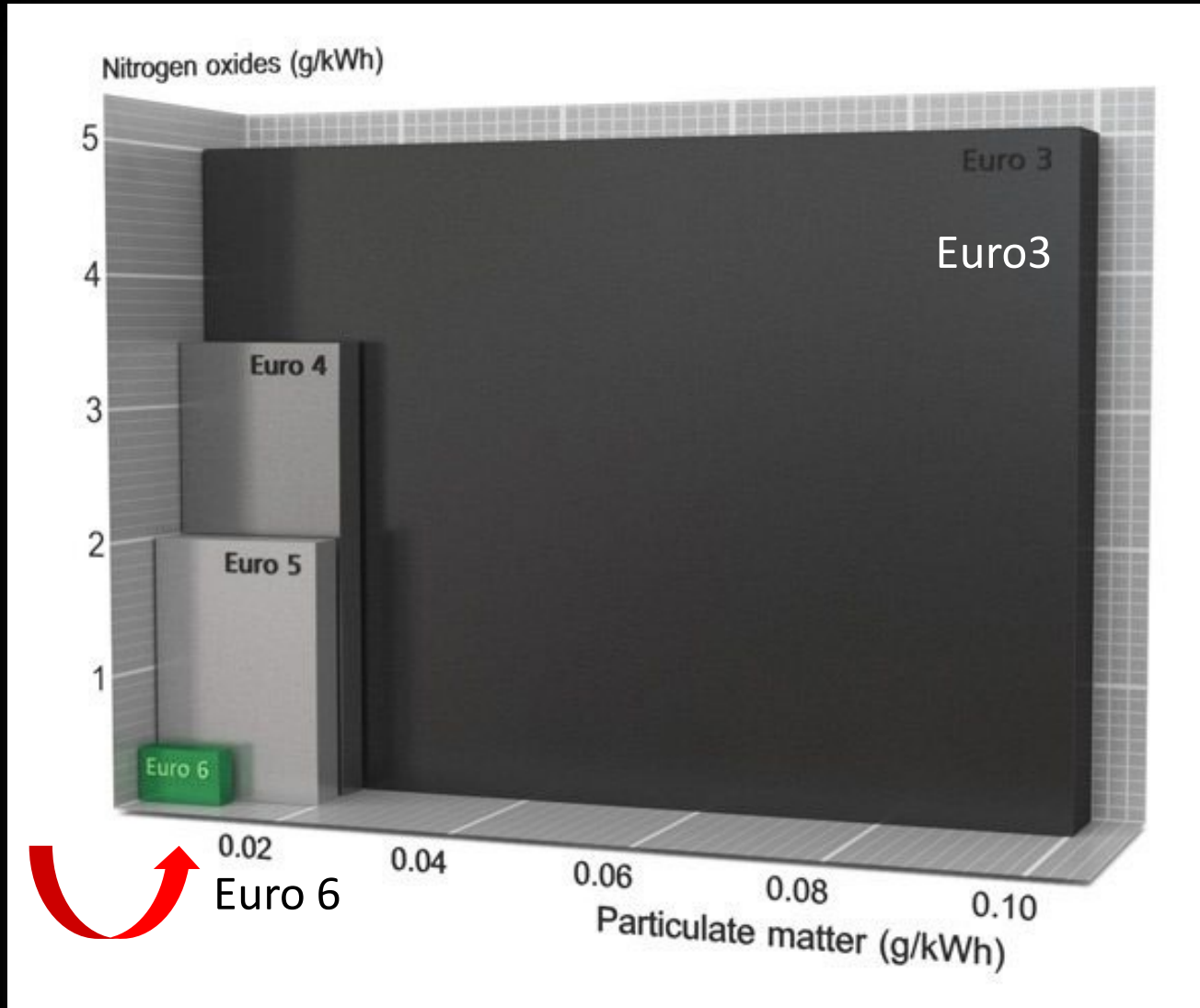
# Productivity improvements CO<sub>2</sub> emissions per tonne-km



# European emission standards - Introduction



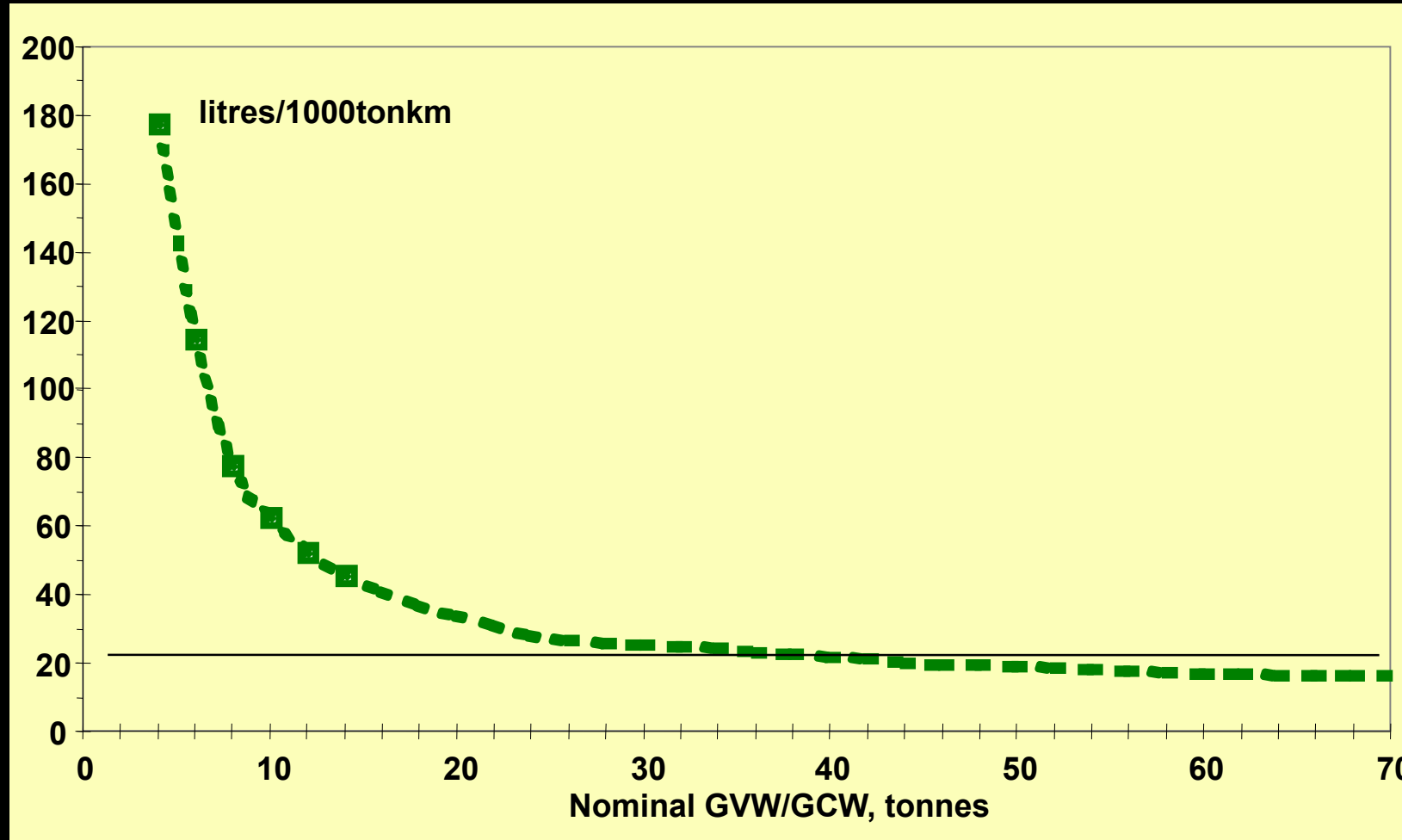
# Euro VI (6) versus Euro 5



- 7% Less Fuel
- 40% Less Ad blue
- 99 per cent reduction in particulate matter
- 97 per cent reduction in NOx (nitrogen oxides)
- Cleanest Heavy Truck Emission available today. !
- All MB trucks in NZ are Euro 6



# Longer vehicles = lower fuel consumption per tonne-km



Courtesy Volvo Last Bil

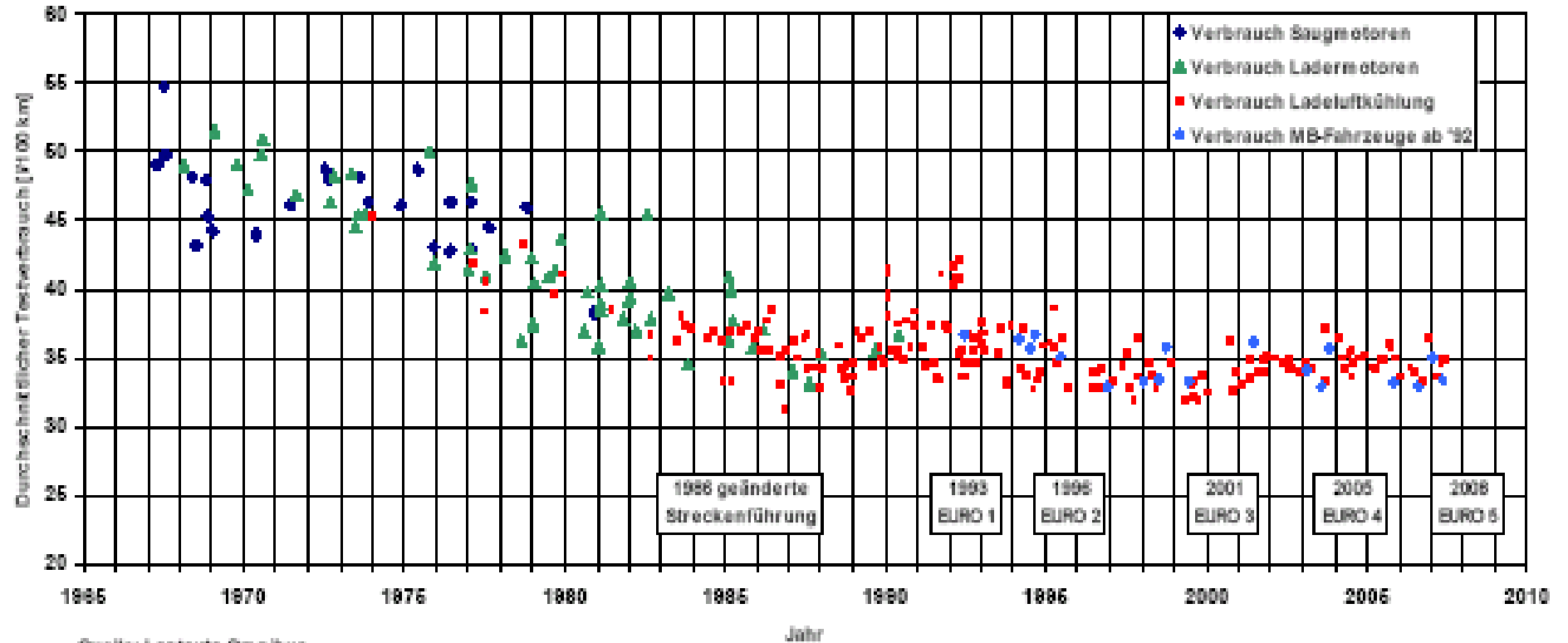


# Fuel Consumption Development



## Durchschnittlicher Testverbrauch

(Fahrzeug - Gesamtgewicht 38/40 t)



Quelle: Lastauto Omnibus  
Testberichte 1967 - 2007

TPE/HP Team Wettbewerbsanalyse

Stand: 06/2007



## *Euro 5 & 4 calculation*

- Average Fuel consumption average Fleet Pre- Euro 6
- 1.6 km/l @ 44 tonne ( 8 Axle's )
- Average Km's per annum = 120,000 Km's
- Average Fuel 75,000 Litres \* (1.30\$) litre\$ 97,500 Per Year Per Unit
- Average Co2 75,000 Litres \* 2.64 kg/litre = 198,000 or 198 Ton's of Co2/Truck/Year
- @ 20 Units = 3,960 Tonnes of C02 per annum released in to the atmosphere

# Euro 6 Comparison Calculation

## 20 Fleet Units Mercedes Benz Euro 6

- Savings as follows

- Average Fuel consumption Fleet Euro 6
  - **1.8 km/l @ 54 tonne ( 9 Axle's ) versus 1.6 @ 44 Tonne (fleet average)**
  - Average Km's per annum = 120,000 Km's
  - Average Fuel burn 66,000Litres \* (1.30\$) litre      \$ 86,666 Per Year Per Unit
  - Average Co2 66,000 Litres \* 2.64 kg/litre = 174,000 or **174 Ton's of Co2/Truck/Year**
  - 20 Units Mercedes-Benz =3,480 Tonnes of CO2 per annum and \$ 216,680 \$ saved
- 
- **Reduction = 480 Ton's of CO2 Per annum over the 20 unit Euro 5 Fleet.**
- 23 % Reduction in km's travelled per Tonne**

## Vehicle Emissions

Last updated on: 16/11/2018

The [emissions released by motor vehicles](#) on the road can be both harmful to the environment and human health, particularly in areas where there are high traffic and congestion rates.

The [2012 Health and Air Pollution in New Zealand \(HAPINZ\) report\(external link\)](#) found that harmful emissions from vehicles cause 256 premature deaths (with social costs of \$934 million) annually in New Zealand. [Find out more about the health effects of air pollution.](#)

[Find out more about what the Government is doing to reduce emissions from the transport sector.](#)

### Government work to reduce vehicle emissions

#### Vehicle emissions standards

The Government has progressively introduced measures to reduce the health and environmental impacts of [vehicle emissions](#) in New Zealand.

The Government's primary tool for reducing the release of harmful emissions from vehicles in New Zealand is the [Land Transport Rule: Vehicle Exhaust Emissions 2007](#) (the Rule). The Rule established progressively lower (more stringent) vehicle emissions standards depending on the date of entry into service, the date of manufacture, the type of fuel used (petrol or diesel), weight (less than or greater than 3.5 tonnes) and whether the vehicle is imported as a new or used vehicle. For example, light diesel vehicles imported new and manufactured on or after 1 January 2010 are required to have a particulate matter emissions level of 0.005 g/km, compared with the particulate matter requirement of 0.05 g/km for vehicles manufactured before 2008. Proposed amendments to the Rule will introduce requirements for Euro 6 for new light and heavy vehicles in line with the most current international standards in Europe, once decisions are made on timing of these standards in Australia. Changes to relevant standards for used vehicles will also be considered at that time (more information in the paragraph below 'Planned review of vehicle emissions standards in New Zealand'). The steady introduction of more stringent emission standards has contributed towards decreasing emissions of most pollutants, especially particulate matter emissions, from transport sources.

The Ministry for the Environment's [Environment Aotearoa 2015 report\(external link\)](#) found that between 2001 and 2013, estimated emissions for five key pollutants from road vehicles fell between 26 and 52 percent, due to improvements to fuel, and stricter emission limits on new vehicles. Specifically, carbon monoxide emissions from transport have declined by 46 percent since 2001.

Studies carried out in the United Kingdom and Germany suggests emission standards are among the most cost-effective measures aimed at reducing emissions.

[See more information about the changes to the Vehicle Exhaust Emissions Rule since 2003.](#)

# Conclusions

- 13 % reduction of CO2 per truck over Euro 5
- A 23 % Reduction in km's travelled per Tonne by going to HPMV, reducing traffic risk, congestion etc.
- Increased Road freight efficiency is feasible
- Lower fuel consumption per Tonne/KM directly relates to a reduction in CO2 emitted.
- Lowest Emission Euro 6 vehicles should be incentivised by NZ government on heavy commercial vehicles if they take climate change serious –
- There is no need to wait as there is no benefit in waiting !
- Why wait on Australia ? Lead the way.
- Mixed Large Fleet's benefits immediately from moving to Euro 6 even under current conditions
- Euro 6 is more reliable than Euro 5
- Ad Blue consumption is also lower and tamperproof



# What have we learned and done ? 10 years on

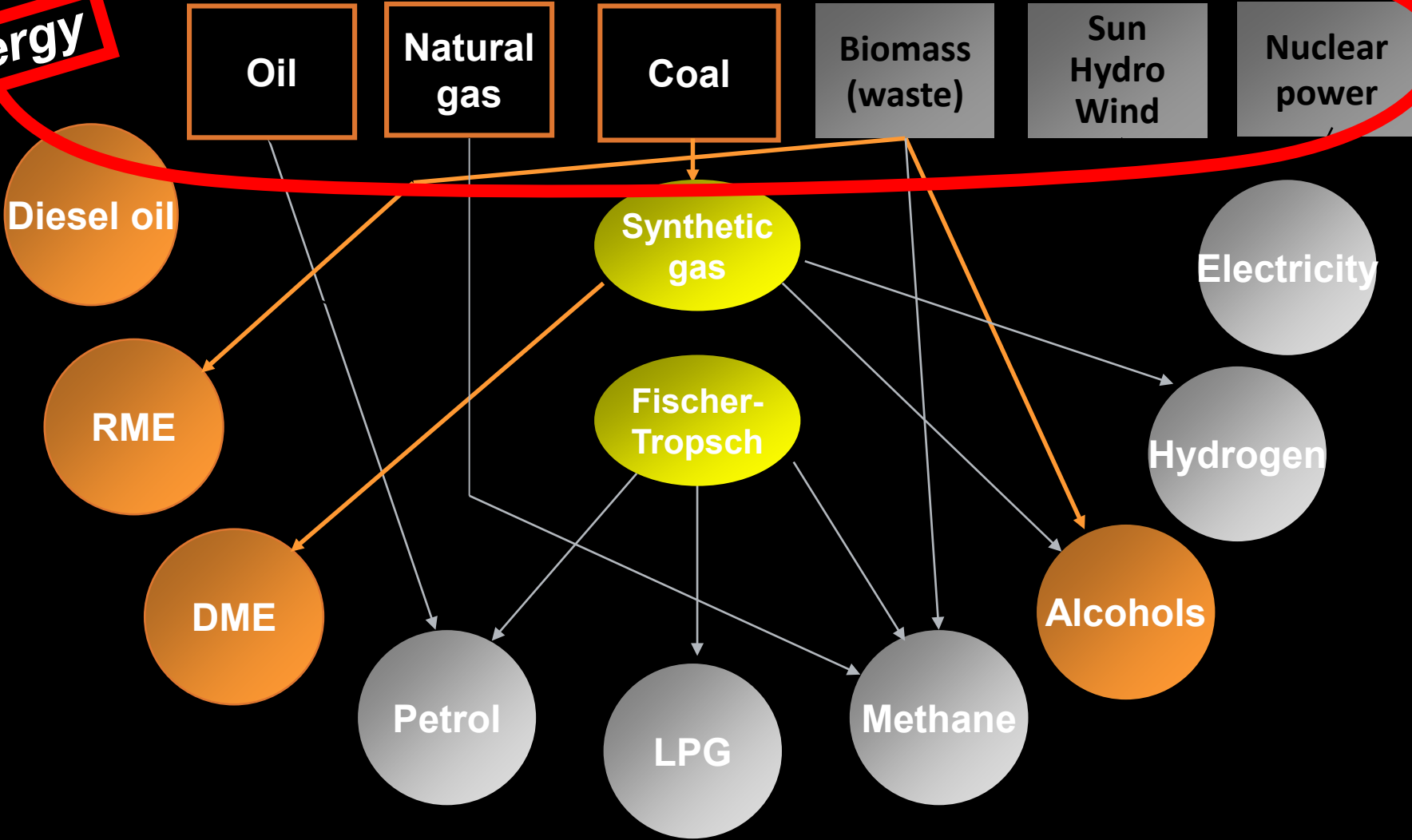
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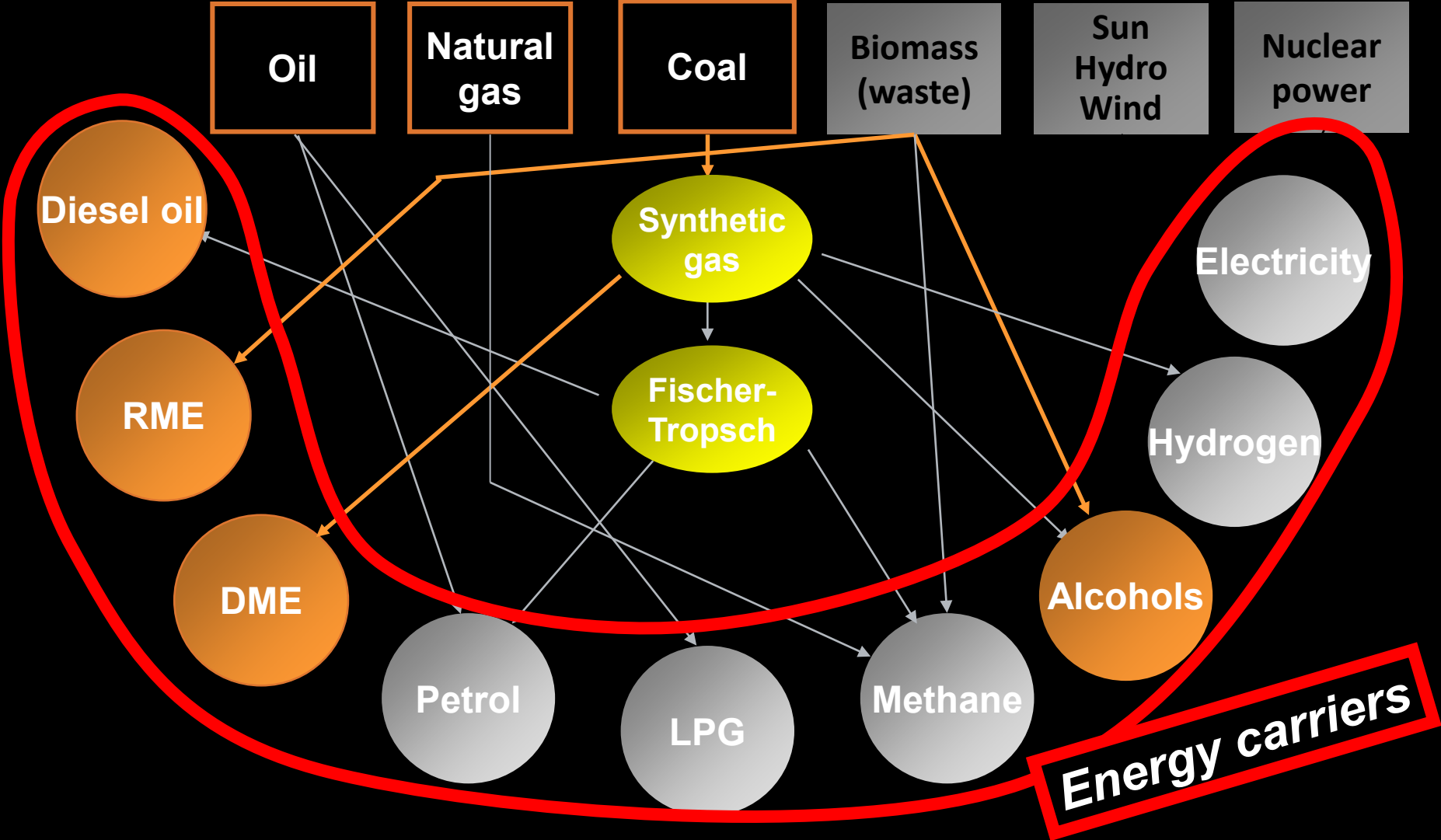
# Future fuels and energy carriers

**Primary energy**



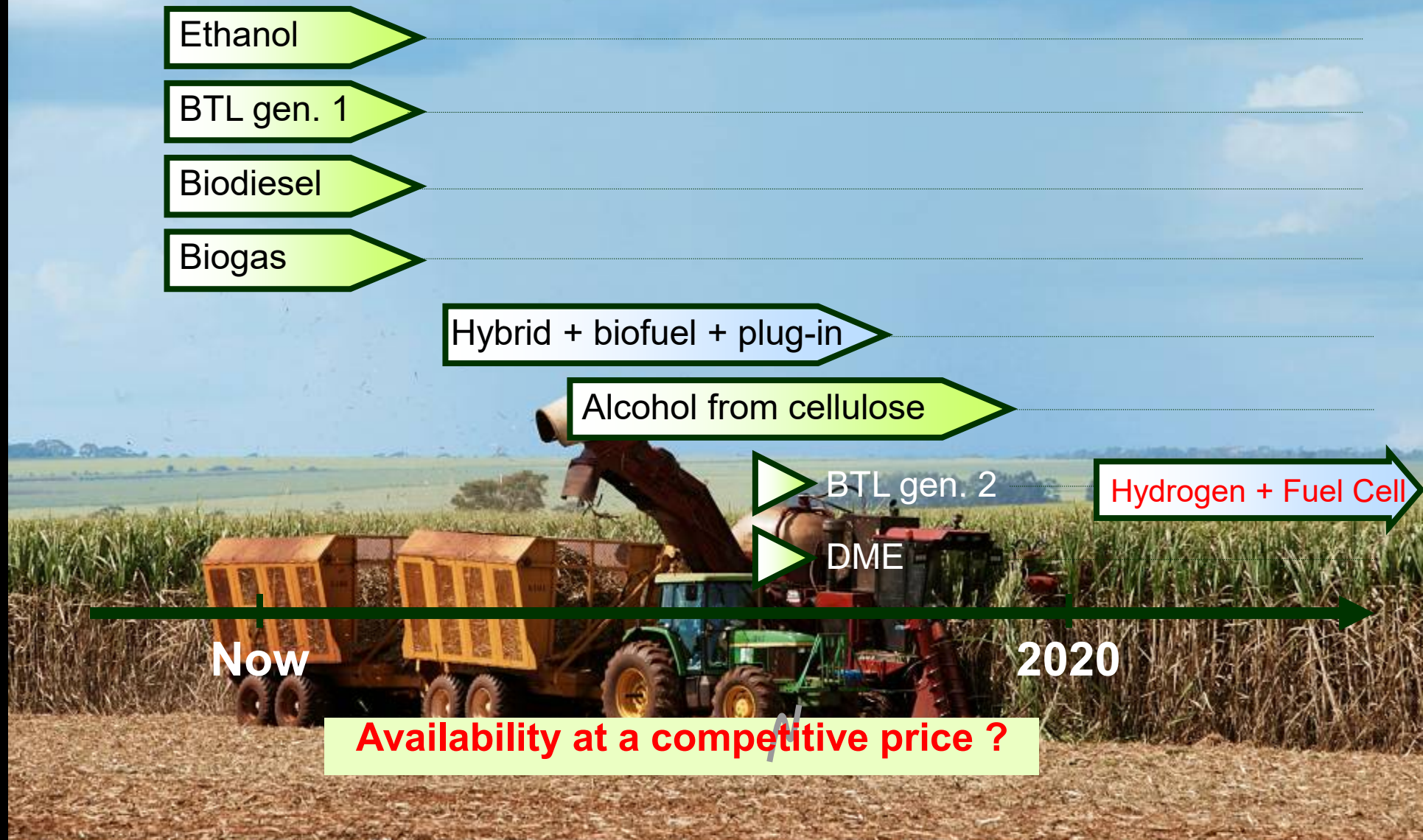
Source: Rolf Egnell, Lund Institute of Technology

# Future fuels and energy carriers





# Roadmap – biofuels and new technology



EBS/ESP/ESC Disc

Mirror Cam

Active Brake Assist Gen 5 !

*Stationary/moving objects & pedestrians !*

Predictive Power Train Control in NZ

Roll Control Assist

Lane Keeping Assist

Attention Assist

Proximity Assist

Automatic Dip / Cornering Lights

Airbags

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Thank You

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Product Sales Engineer  
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# Oil and gas production

Expected production peak in **2008**

