



Powertrains: engines, fuels, and electrification

ERTRAC 2015 Annual Conference

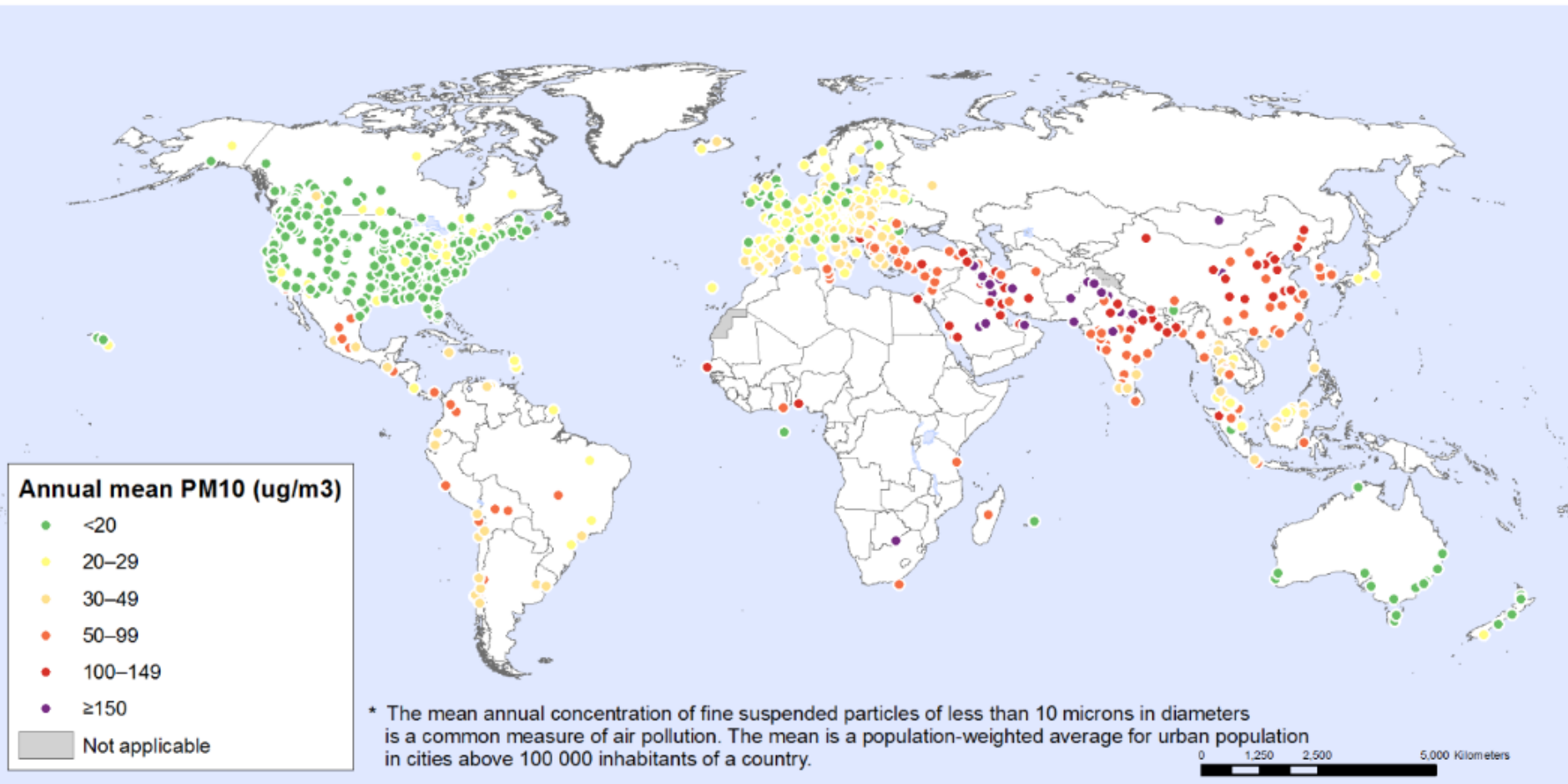
Zissis Samaras

Professor

Aristotle University Thessaloniki

ERTRAC Vice chairman

Exposure to PM₁₀ in 1100 urban areas, 2003 – 2010

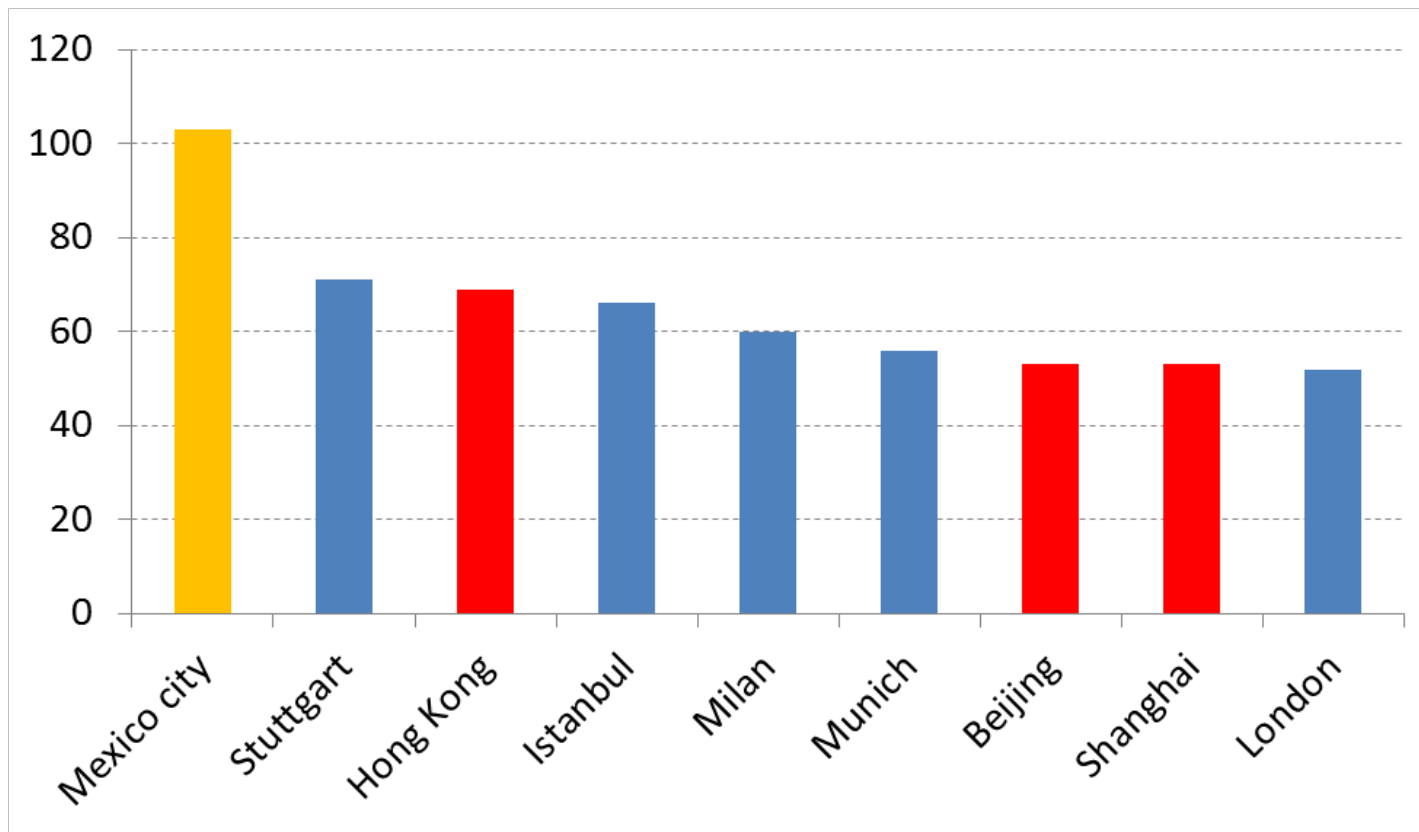


WHO Air Quality Guideline: Annual mean PM10 = 20 µg/m³ Source: WHO, 2012



NO₂ (µg/m³) concentrations in cities in the world Average of 5 years annual averages (2008-2012)

WHO Air Quality Guideline for the EU: Annual mean NO₂ = 40 µg/m³



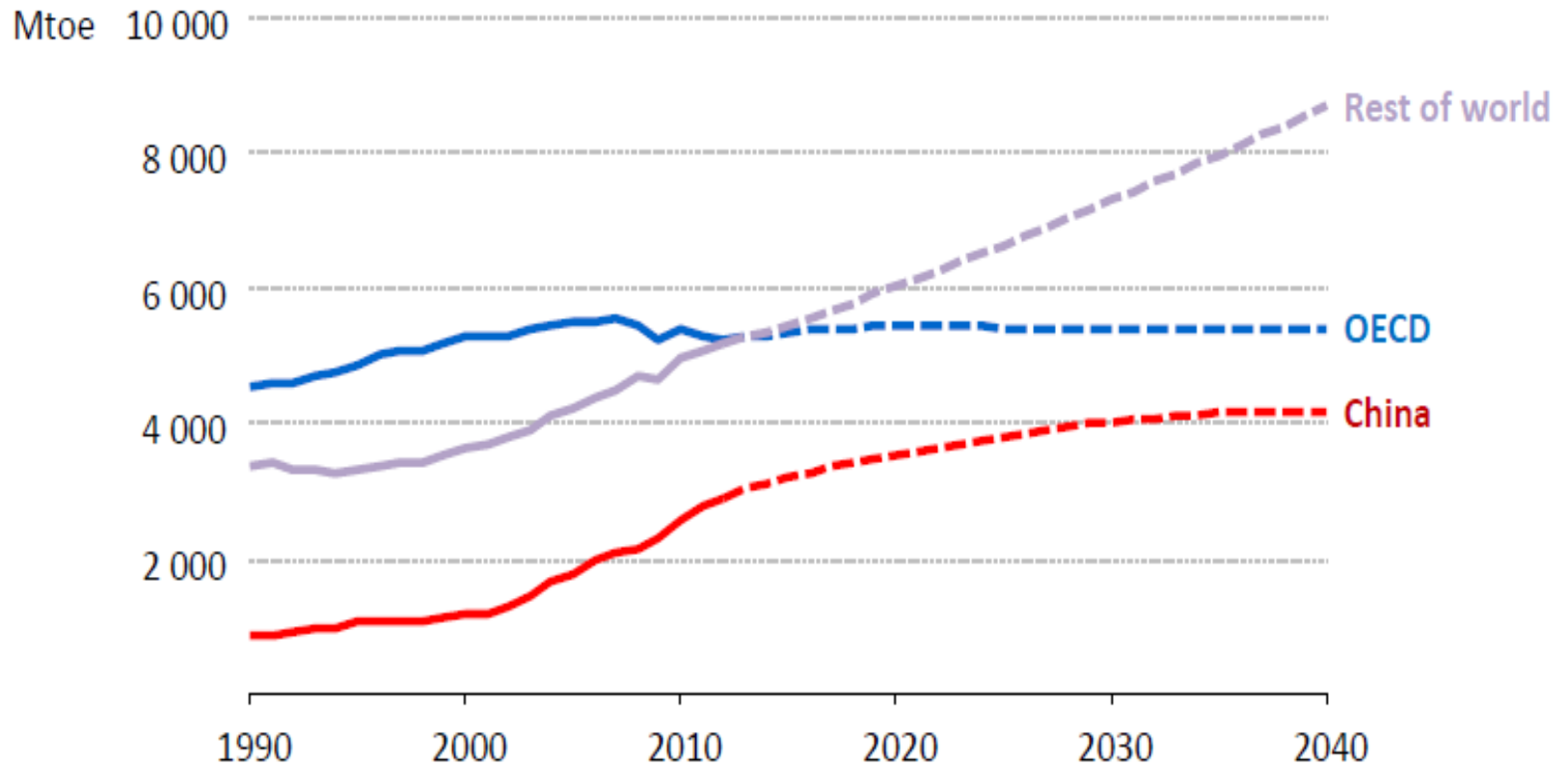
Source: Comparison of air quality for a number of world and European cities (london.gov.uk, 2014)

www.ertrac.org

Brussels 03/03/2015



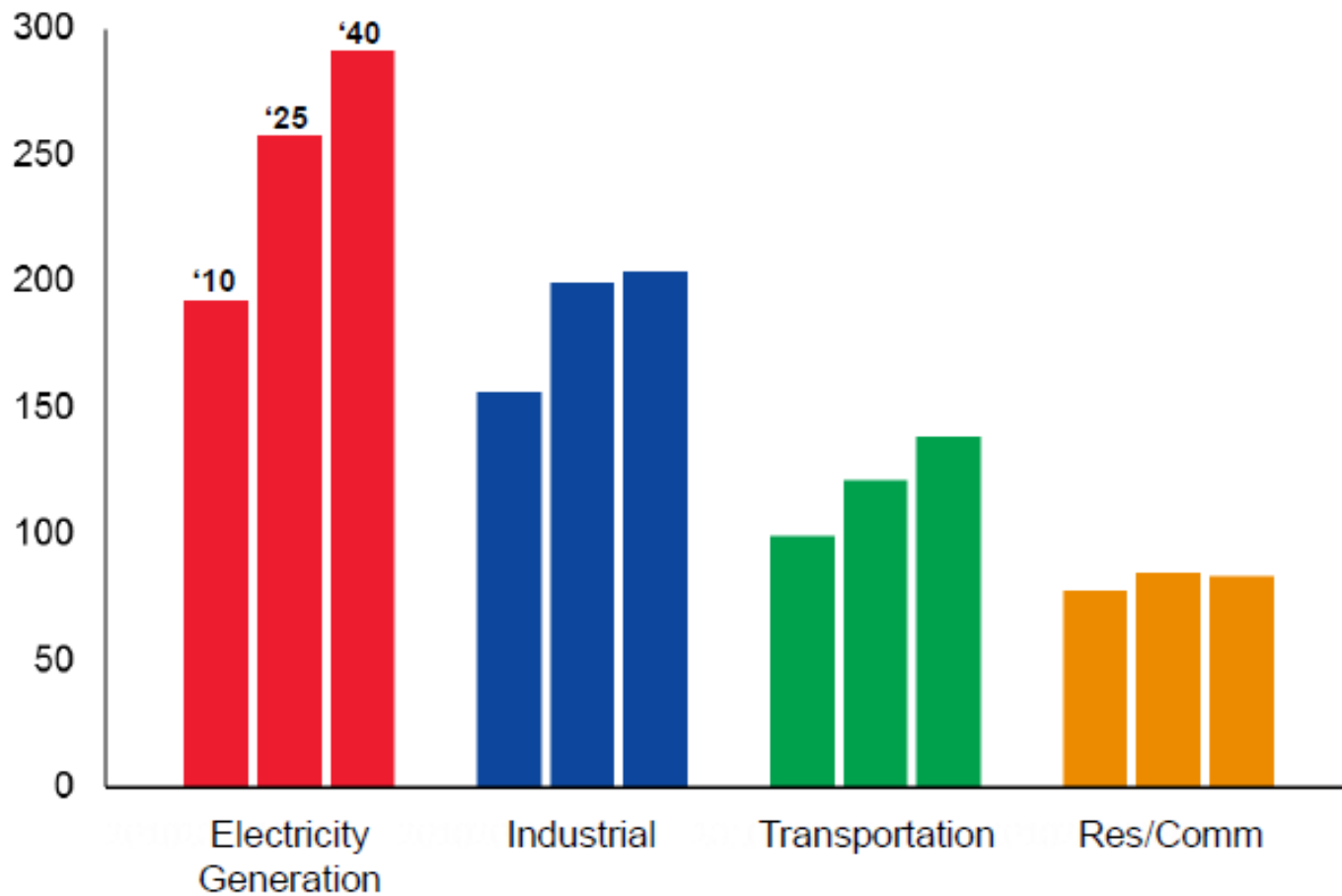
Energy Demand by Region



As China slows, India, Southeast Asia, the Middle East and parts of Africa & Latin America take over as the engines of global energy demand growth

Source: IEA 2014

Primary Energy Demand by Sector (Quadrillion BTUs) - World

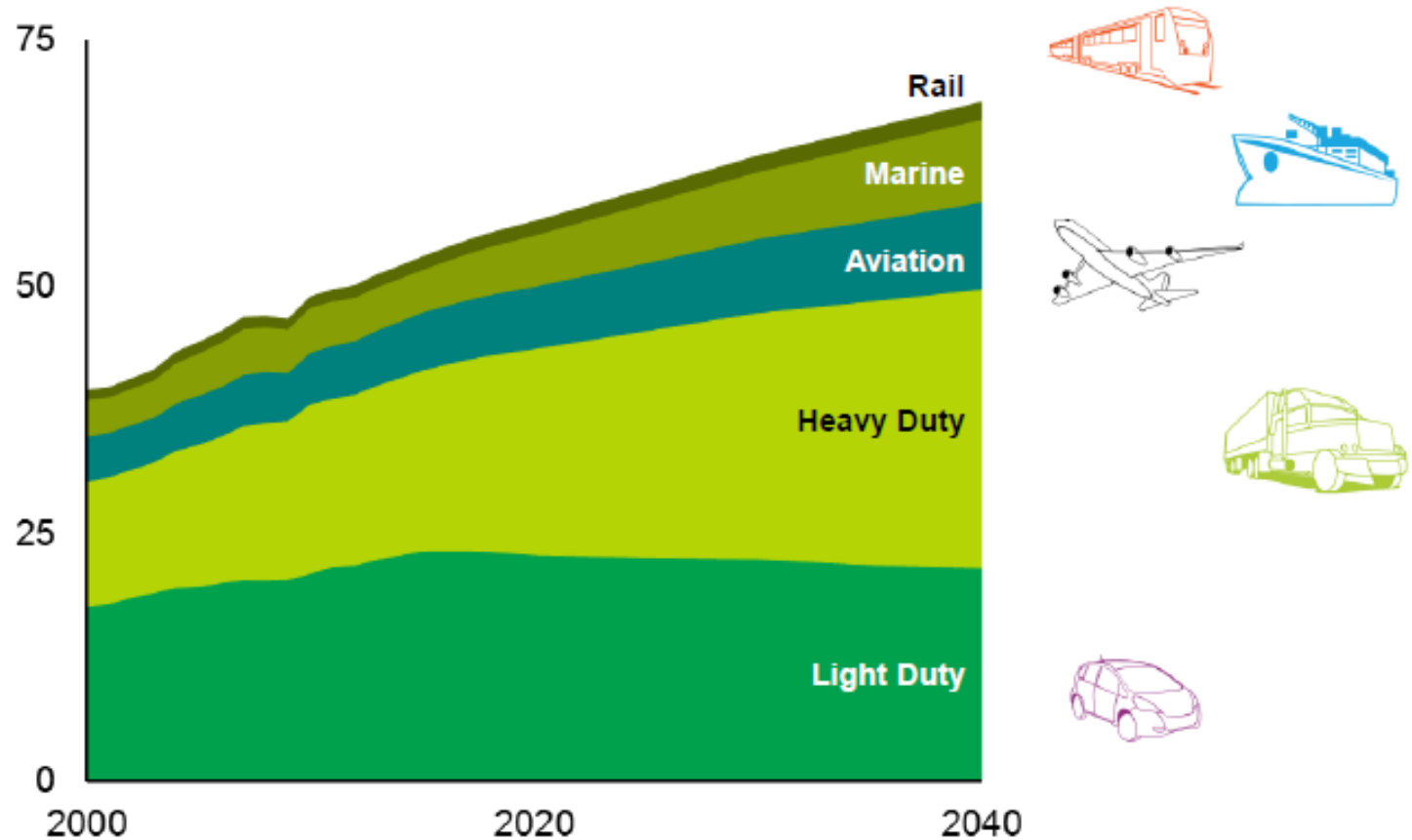


Source: ExxonMobil 2015



Transportation Energy Demand - World

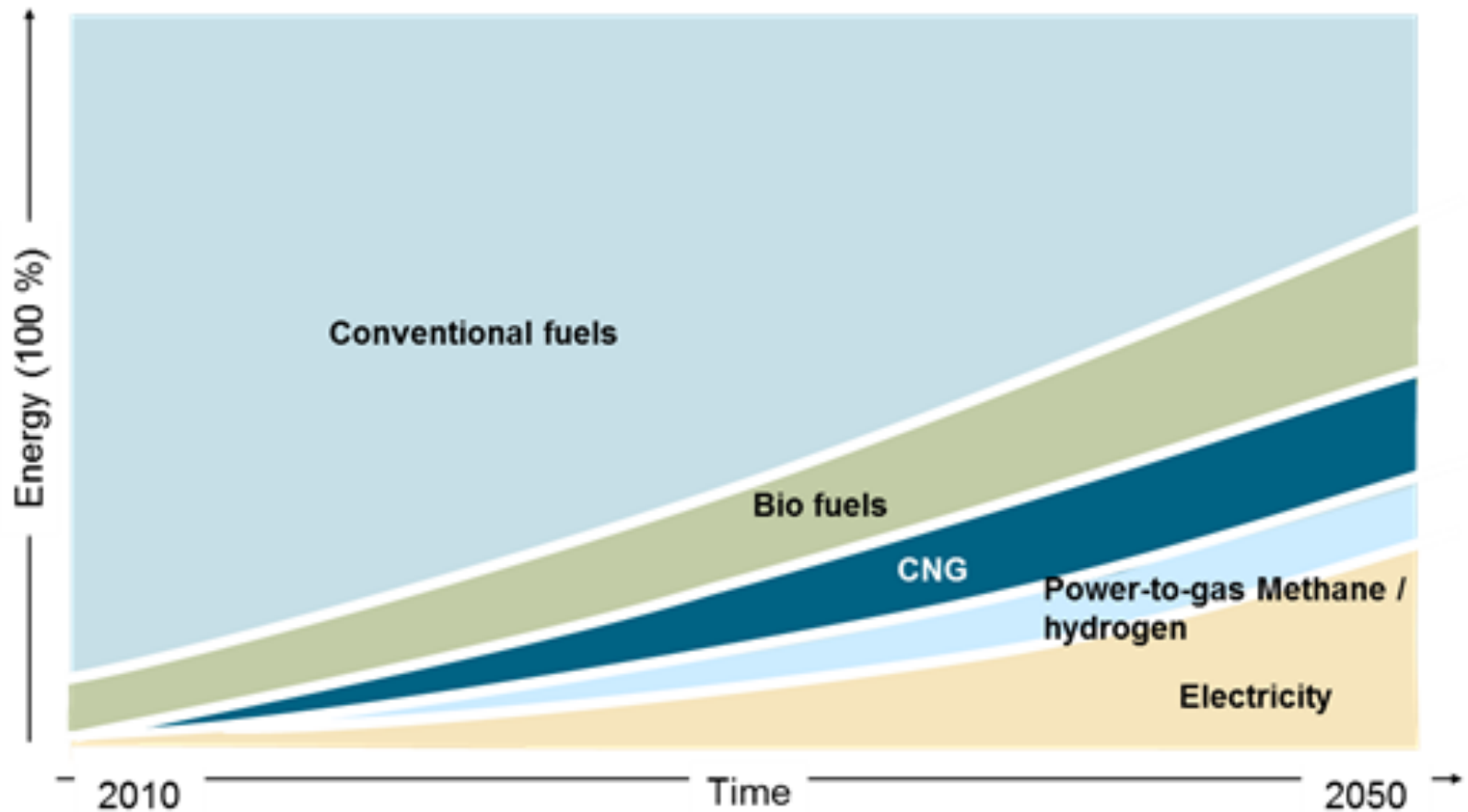
Million Barrels per Day of Oil Equivalent



Source: ExxonMobil 2015

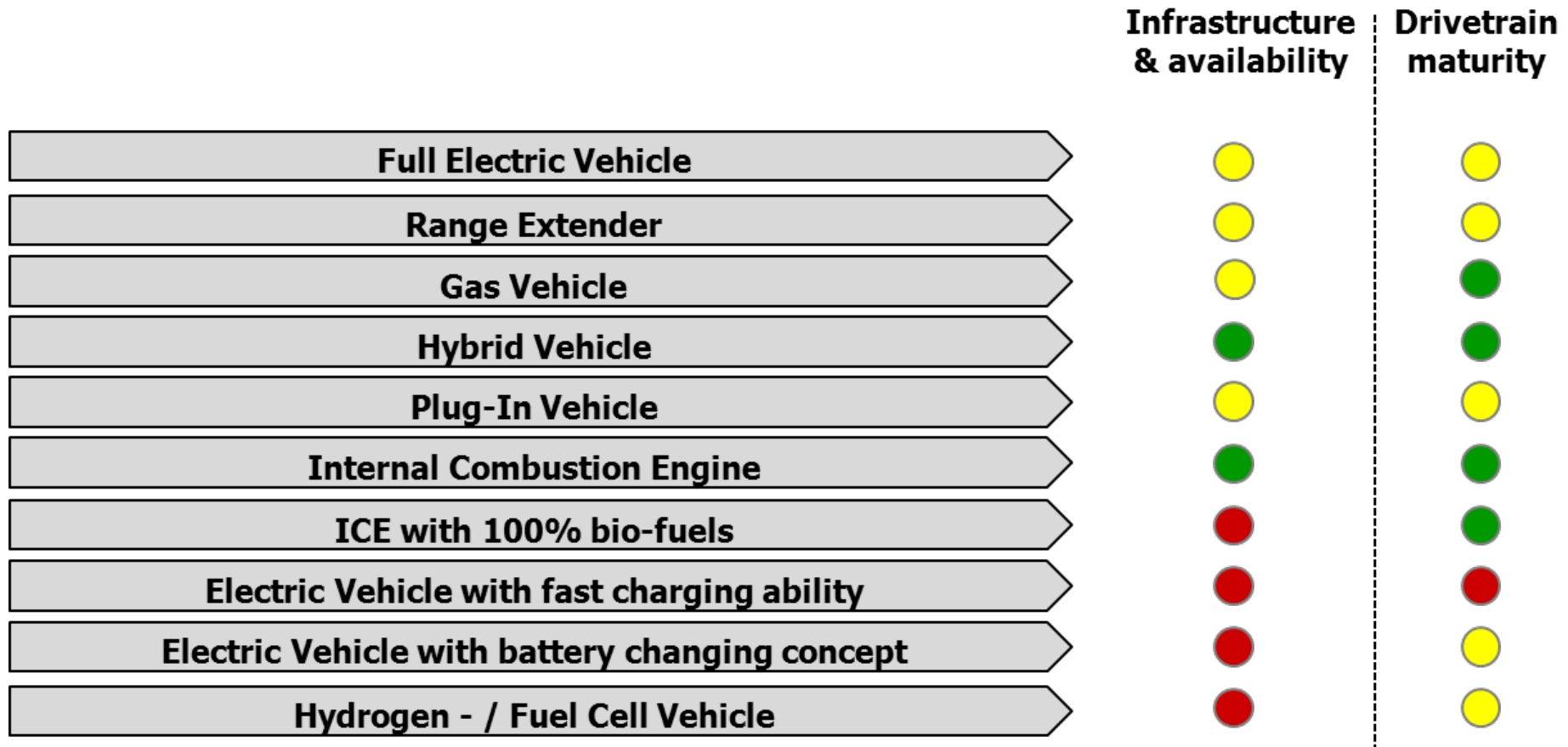


Evolution of Passenger Road Transport Energy Source and Propulsion Technology in the EU



Source: ERTRAC 2013

Solutions for 'Green' Cars with Market Maturity and Infrastructure Availability in the EU



Source: ERTRAC 2013

Our Speakers

- Dr. Stefan Schmerbeck “Clean Vehicle Development at VW” Future Technologies, Volkswagen AG
- Mr. Guillaume Eurin “Powertrain Roadmaps - 3 key messages based on current projects”, Innovation Projects for CO2 & Environment, Renault Nissan
- Dr. Stephan Neugebauer “Engines, Fuels and Electrification”, 3 and 4 Series, BMW Group
- Mr. Christian Senger “Towards Clean, Safe and Comfortable Mobility in Europe” Automotive Systems & Technology, Continental

