

***World Energy Congress 2013***  
**Future of transport: Decarbonizing growth**

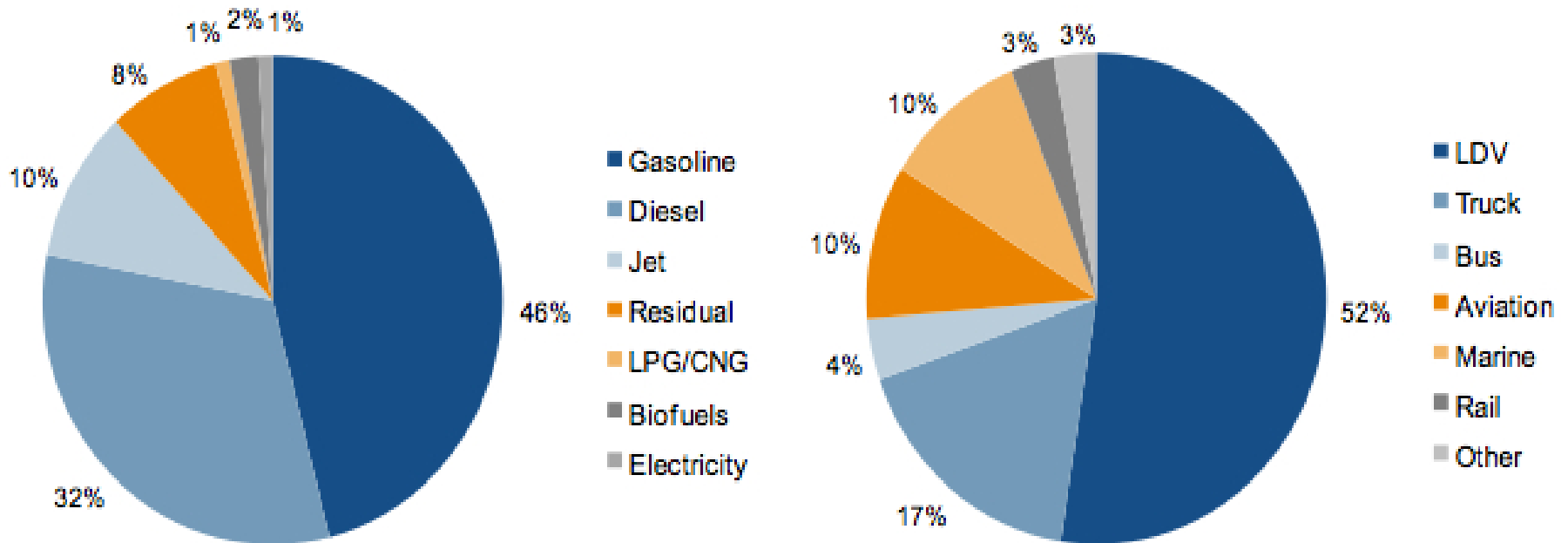
*Natural gas and LNG: a part of the solution*

**Jérôme Ferrier**  
**President IGU**

# Transport energy by source and mode 2010

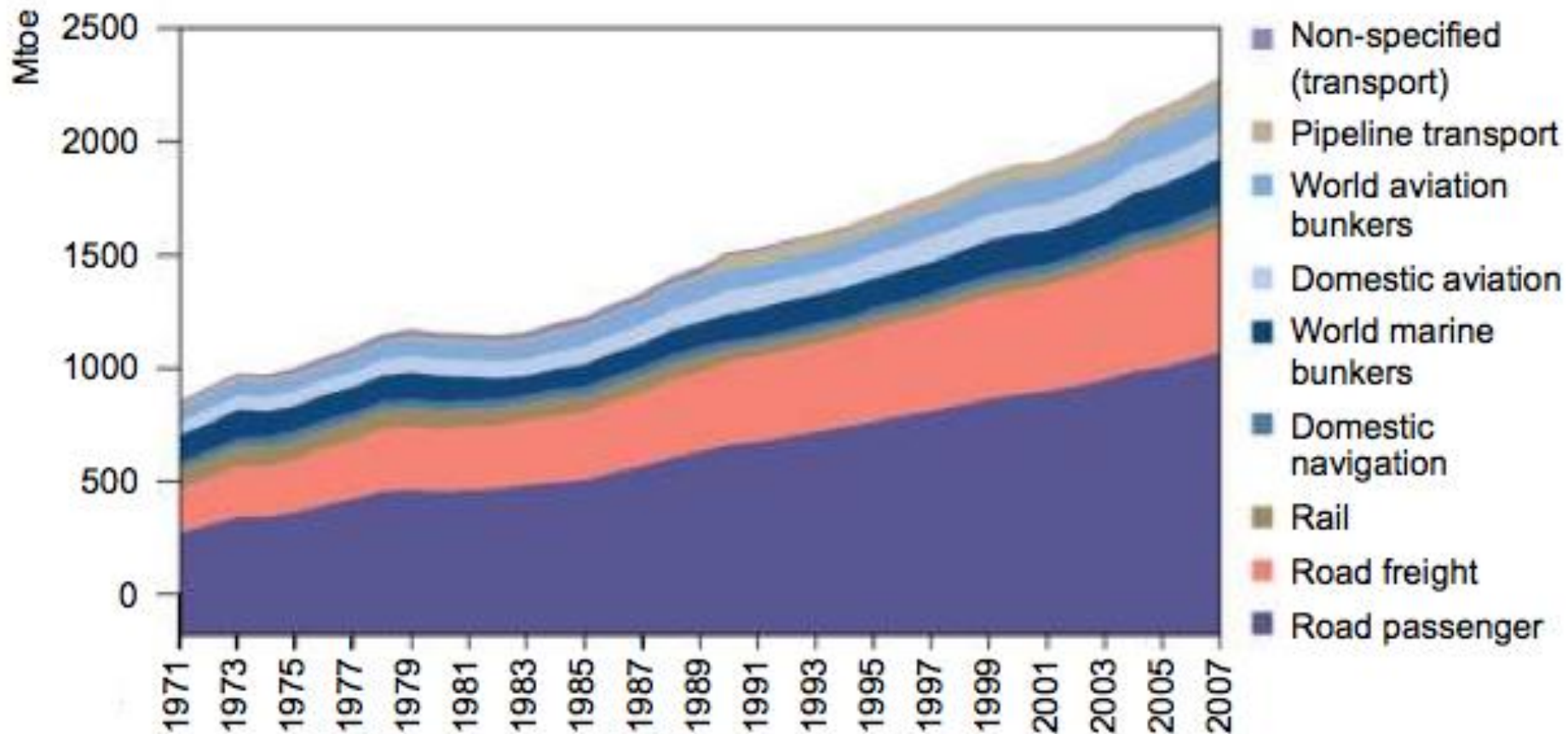
(Source: WEC Transport Scenarios 2050)

## Total: 2,2 Gtoe



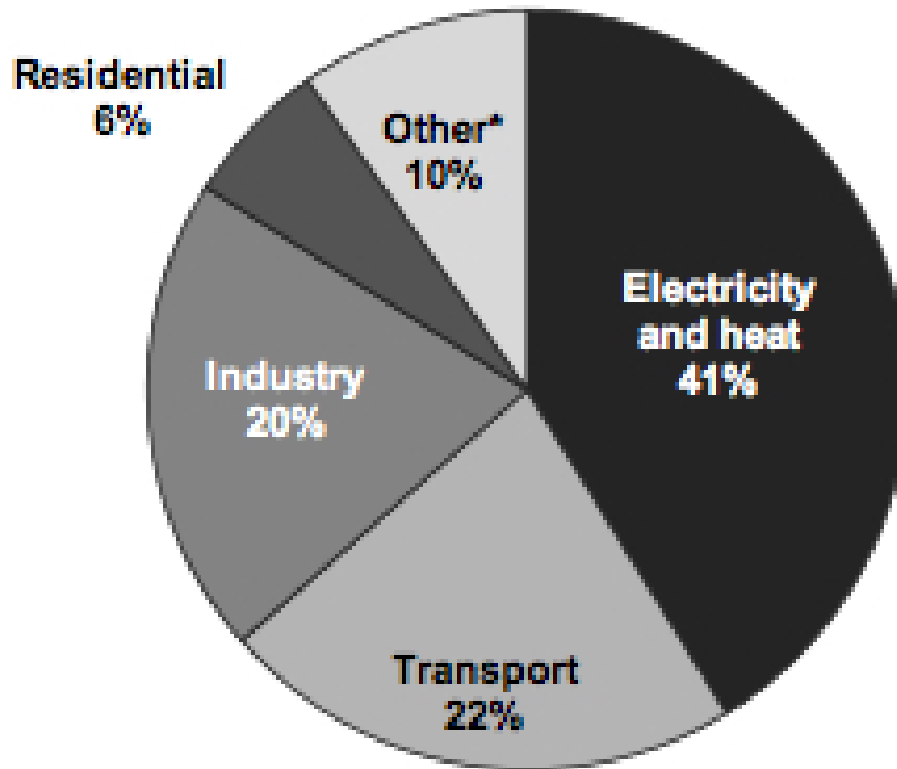
# Global transport energy use by mode (Mtoe)

(Source: IEA, *Energy Technology Perspectives*, 2010)

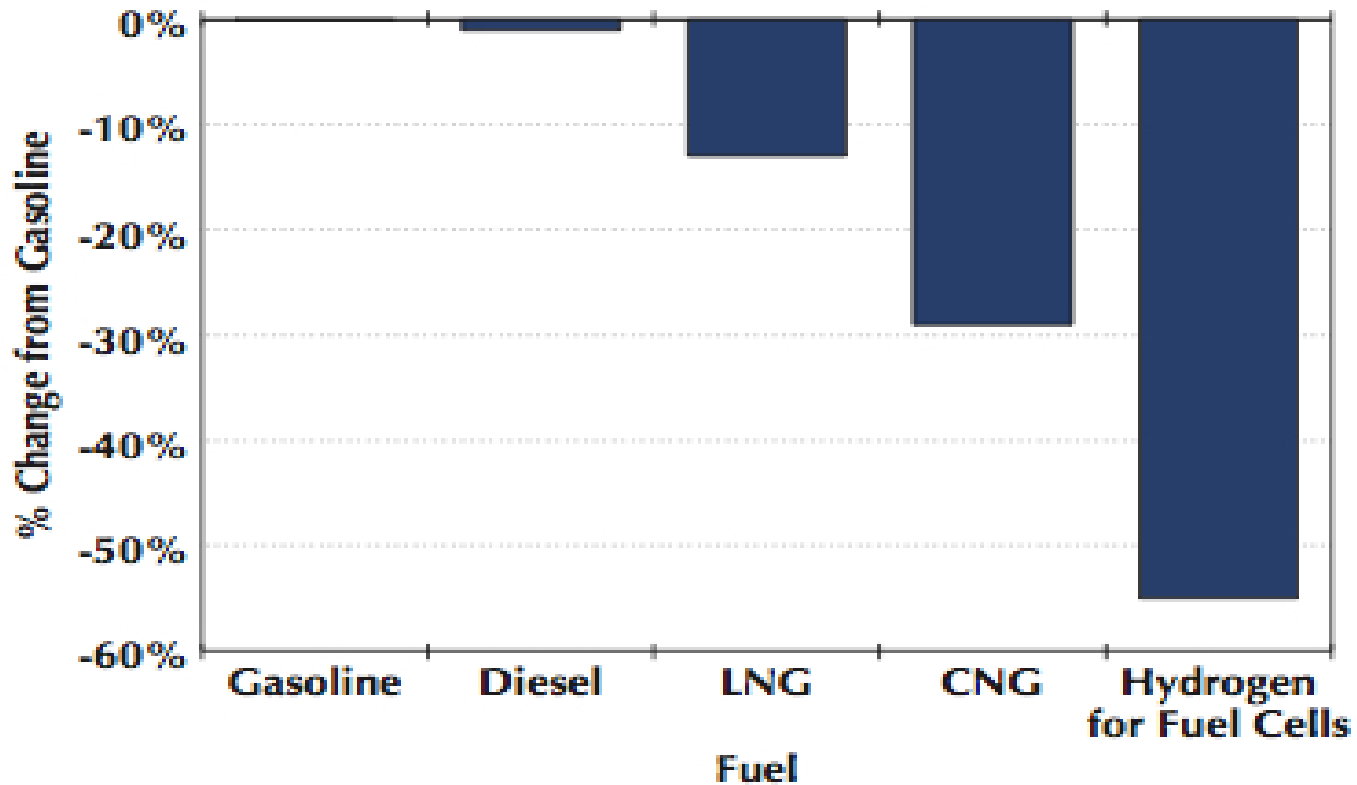


# Global CO2 emissions by sector in 2010

(Source: IEA)

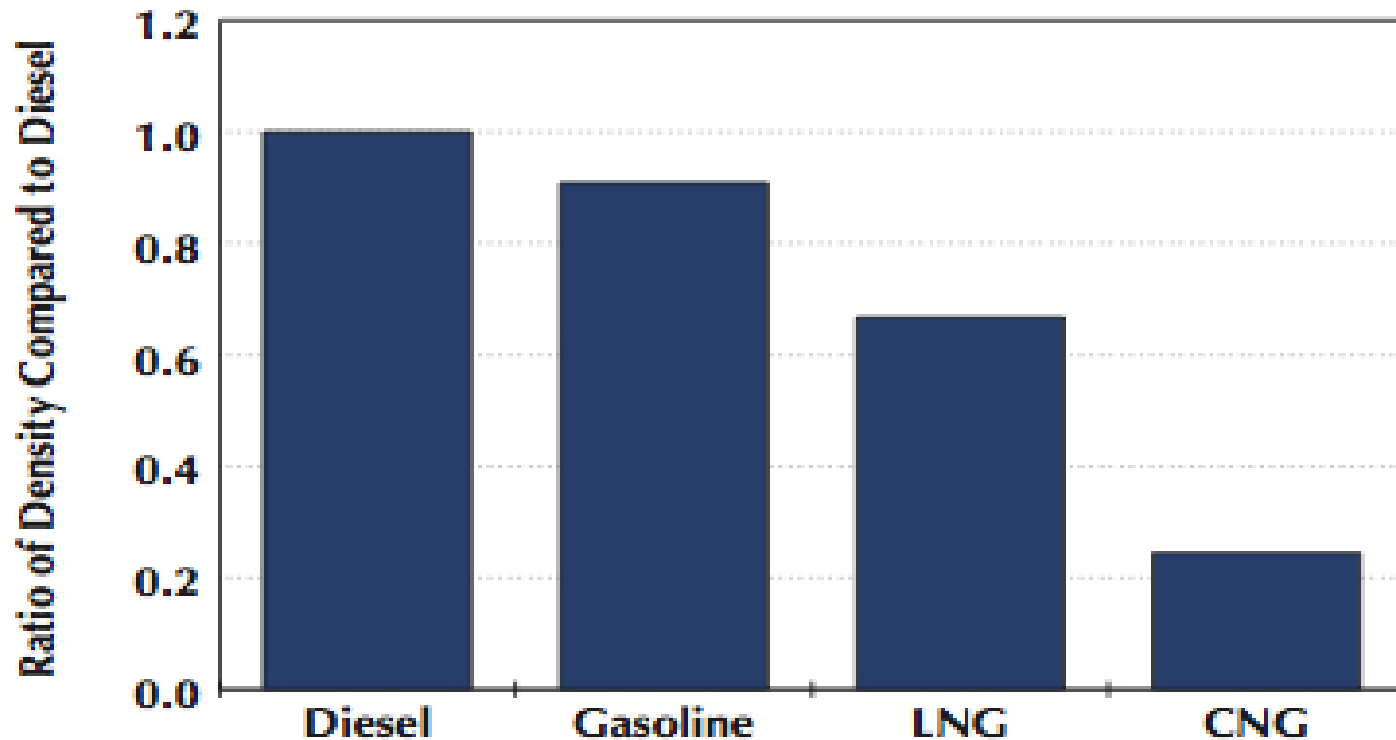


## Carbon print reduction in transportation



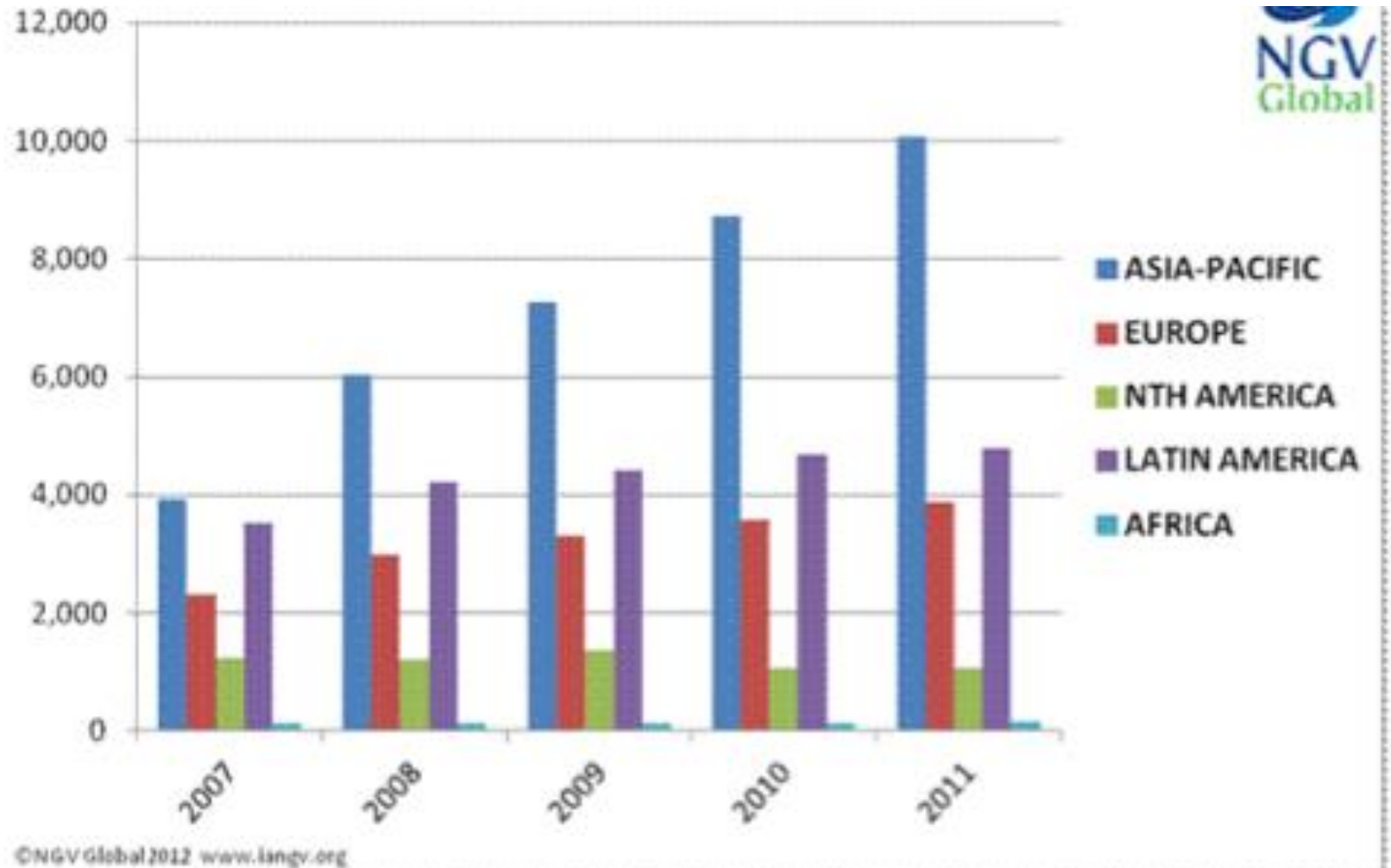
Source: California Air Resources Board, "Proposed Regulation to Implement the Low Carbon Fuel Standard," March 5, 2009. Table ES-8. Available at: [http://www.arb.ca.gov/fuels/lcfs/030409lcfs\\_isor\\_vol1.pdf](http://www.arb.ca.gov/fuels/lcfs/030409lcfs_isor_vol1.pdf)

# Comparison of energy density between transport fuels



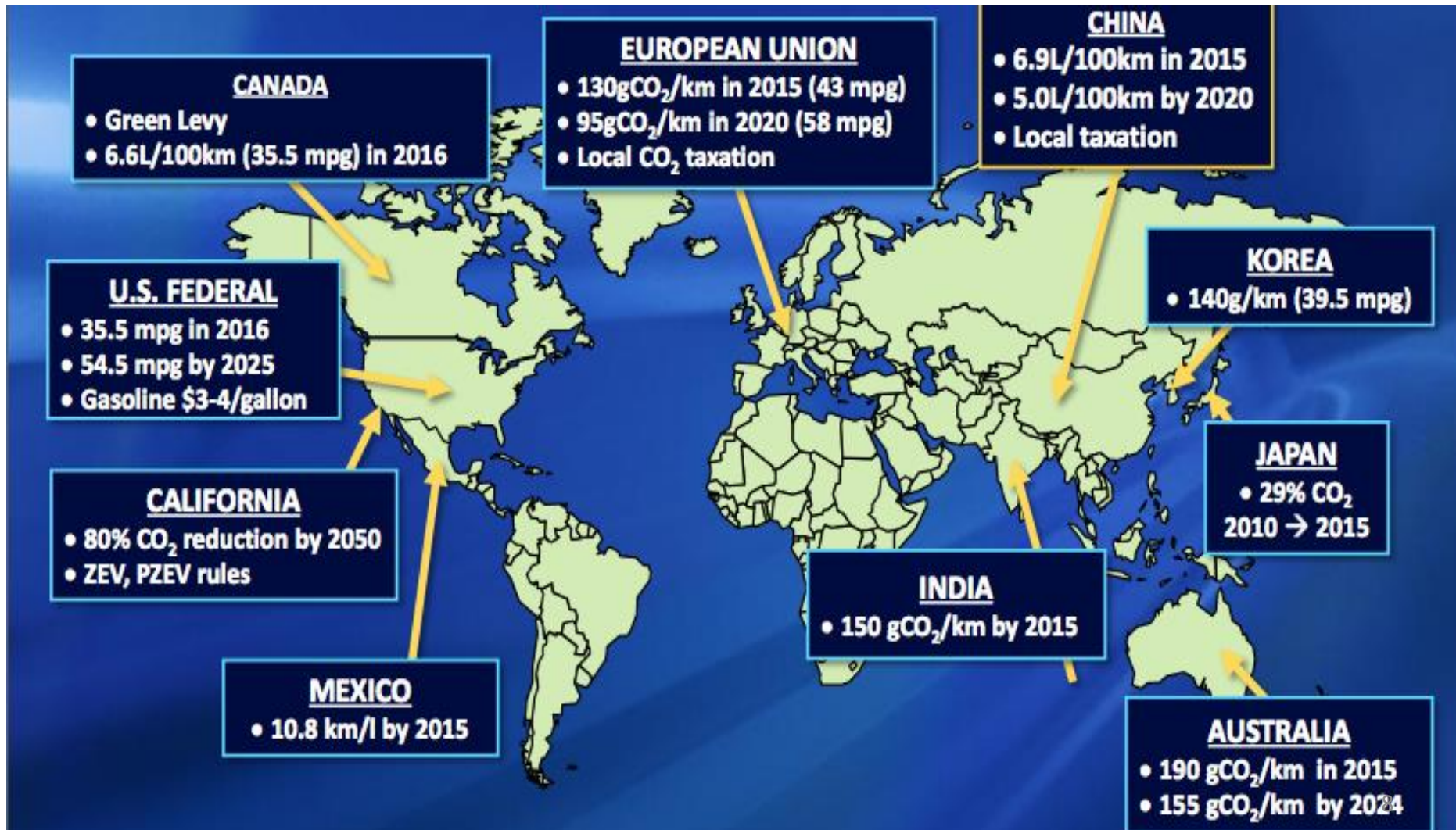
Source: Energy Information Administration, "Annual Energy Outlook 2010 with Projections to 2035," 2010. Available at: [http://www.eia.gov/oiaf/aeo/otheranalysis/aeo\\_2010analysispapers/factors.html](http://www.eia.gov/oiaf/aeo/otheranalysis/aeo_2010analysispapers/factors.html)

## Natural gas fuelling stations (number by region)



# Emission performance targets for transport

(Source: NGV Global)





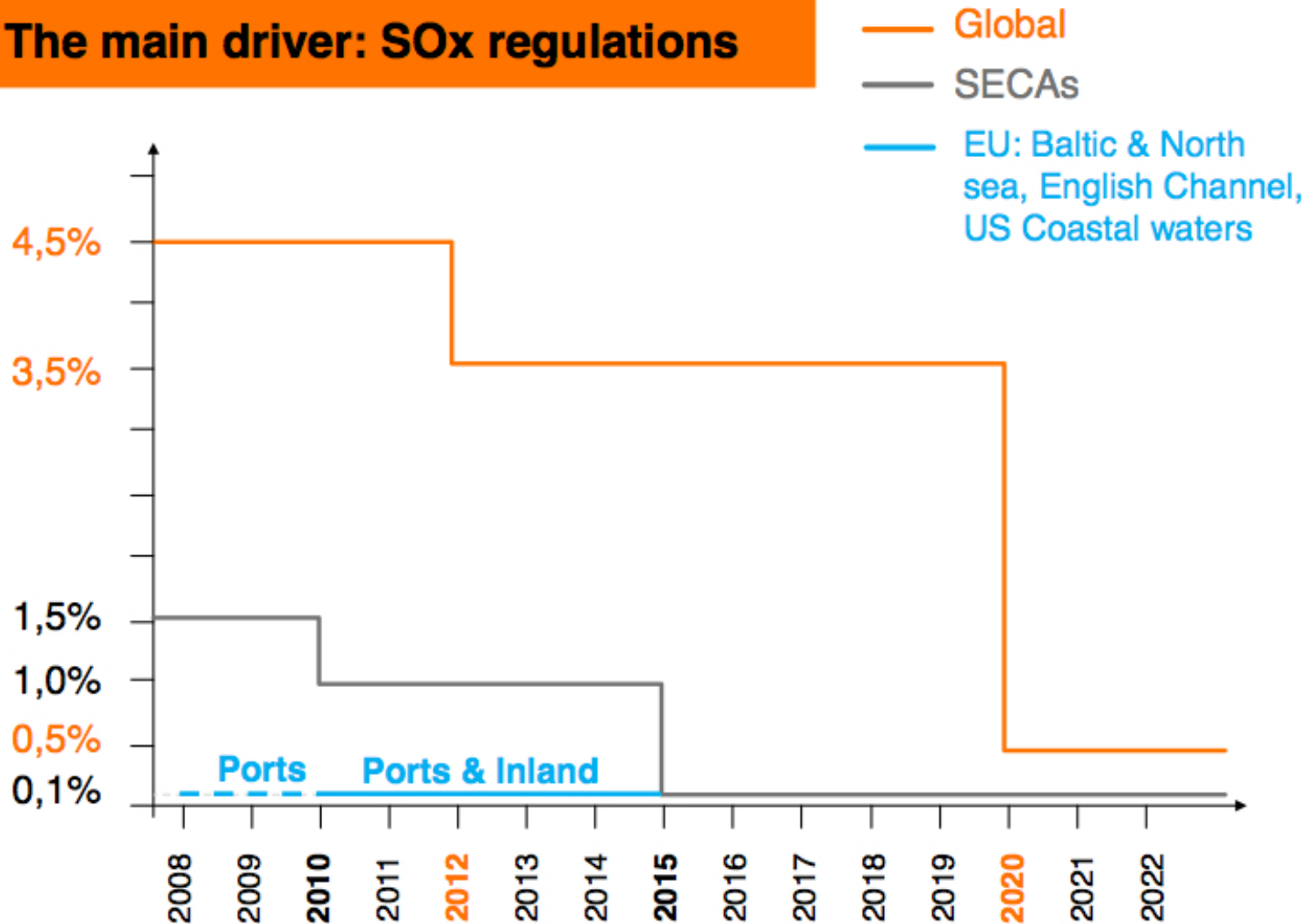
# Natural gas vehicles growth worldwide



# SOx standards global and regional

(Source: Wartsila)

## The main driver: SOx regulations



NOTE: today's average %S in HFO is 2.7

## Potential shares of various bunker fuels in time

