

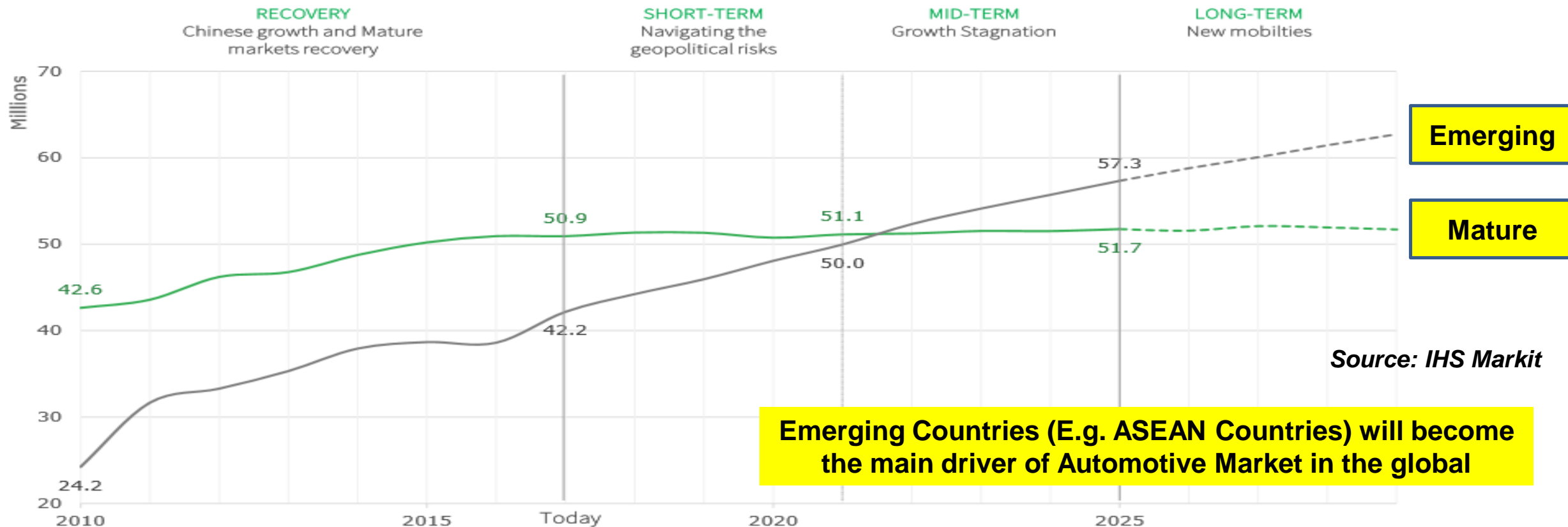


# SEMINAR

## “Future Power Train Technology Scenario”

**Kamis, 25 Juli 2019**  
Garuda Room 5, ICE - BSD City,  
Tangerang – Indonesia

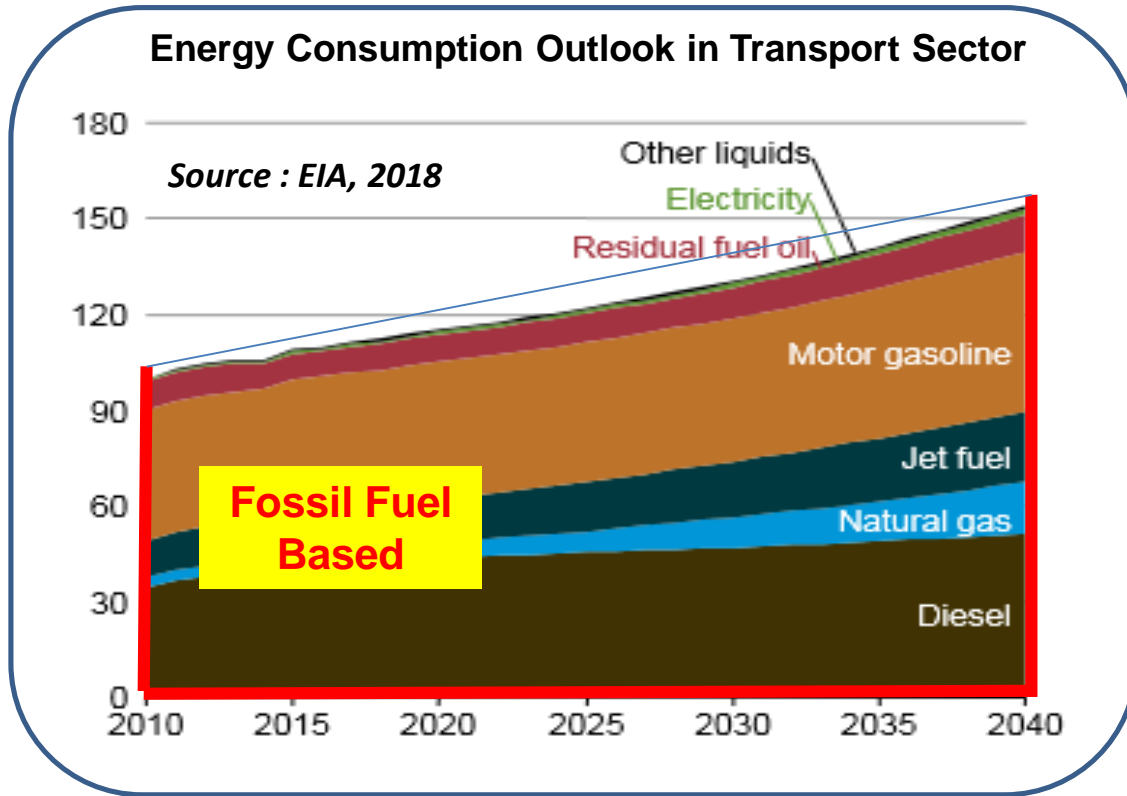
## ❖ Forecast Automotive (4 Wheeler) Market in the World



**Emerging Countries (E.g. ASEAN Countries) will become the main driver of Automotive Market in the global**

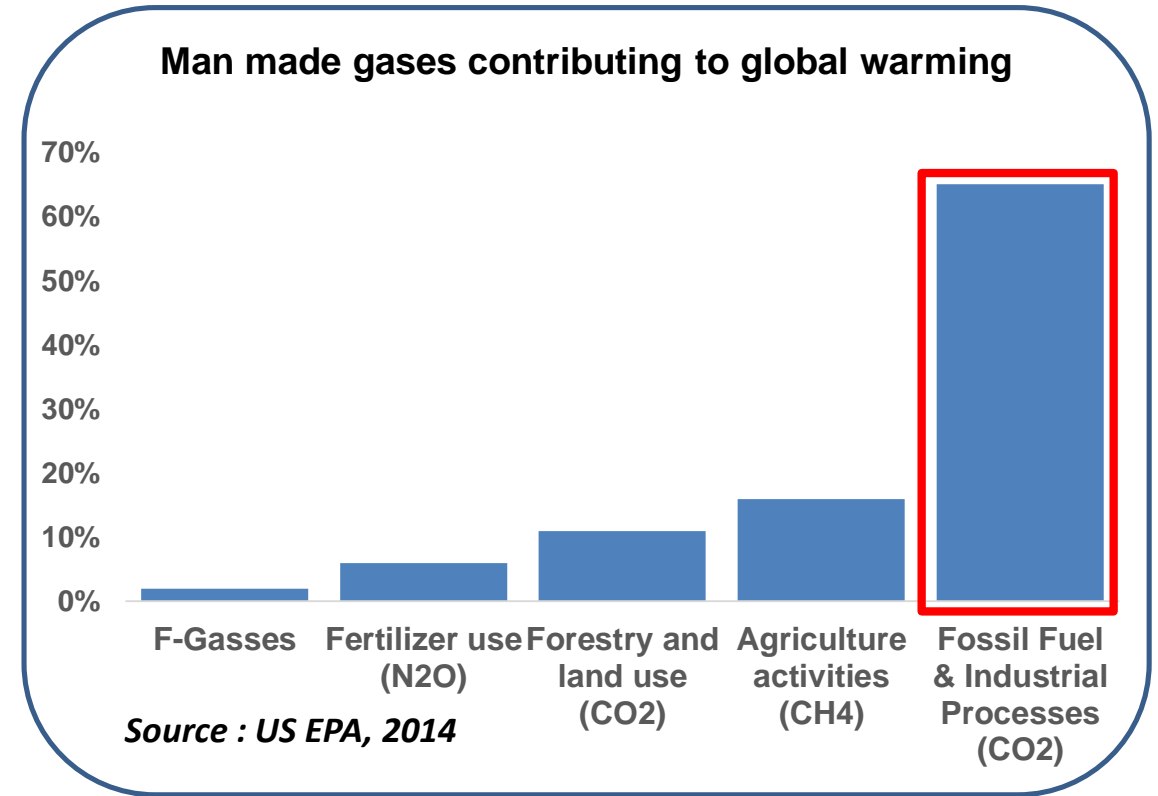
**Automotive Industry will remains growth, mainly is driven by emerging countries.  
 As an impact, there will be new challenged need to be managed**

## #1 : Energy Challenges



Energy demand will **continuously growth**, especially energy from **fossil fuel based (Non Renewable)**

## #2 : Environmental Challenges



Fossil fuel give **highest contribution to GHG emissions** which triggered **global warming**

Therefore future vehicle development **must have high fuel efficiency and low carbon emission**

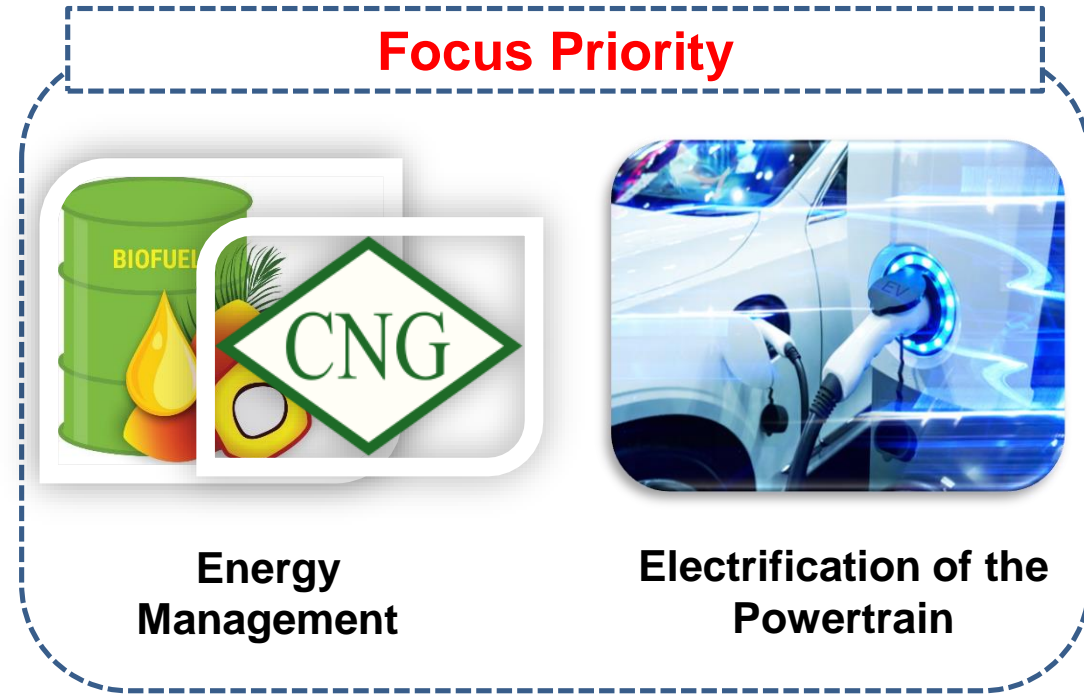
❖ *Several technology options to achieve low carbon vehicle*



**Lightweight construction,  
Aerodynamics**



**Improvement of existing  
drive technologies**

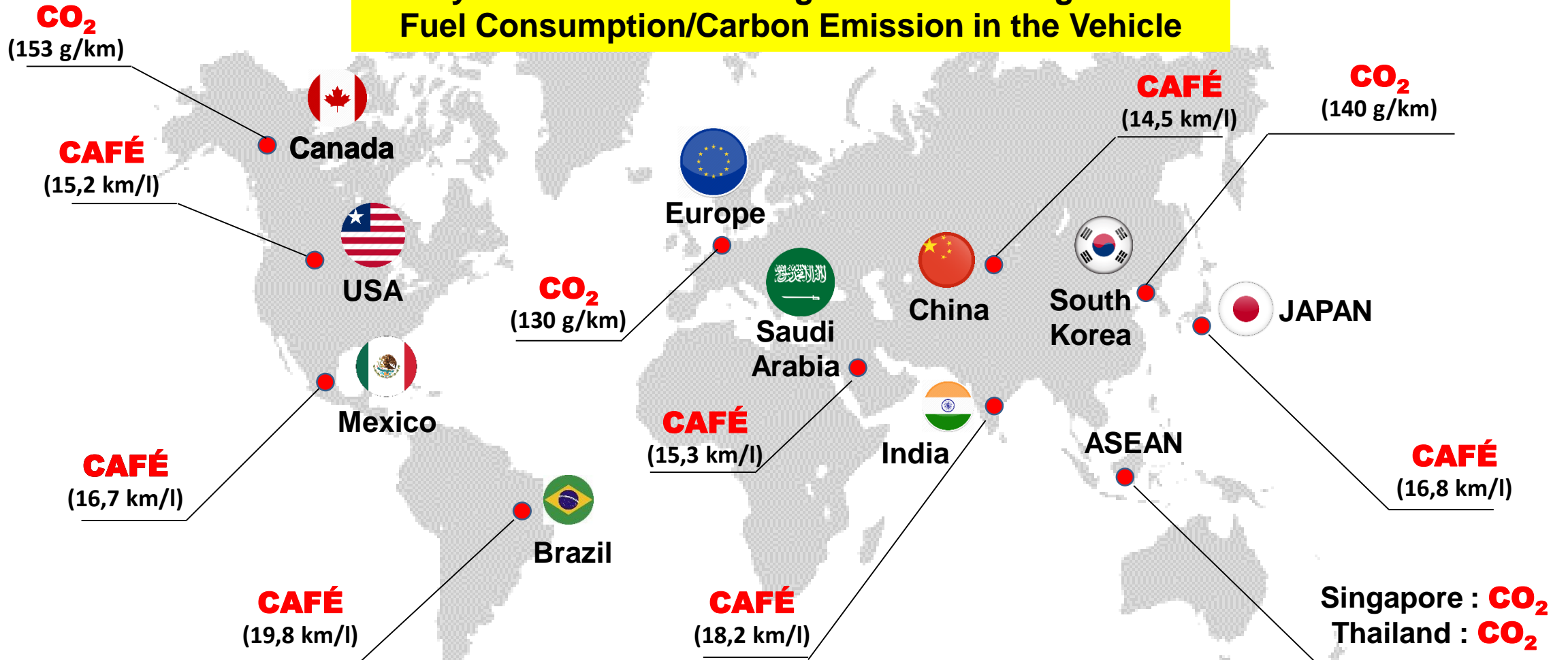


**Time Horizon (Effort Level)**

Even though there are several technology which can improve vehicle efficiency, however **powertrain improvement** (Utilize renewable energy or electrification) is the most important to **reduce more fossil fuel consumption**

# Technology Options to Achieve Low Carbon Requirement

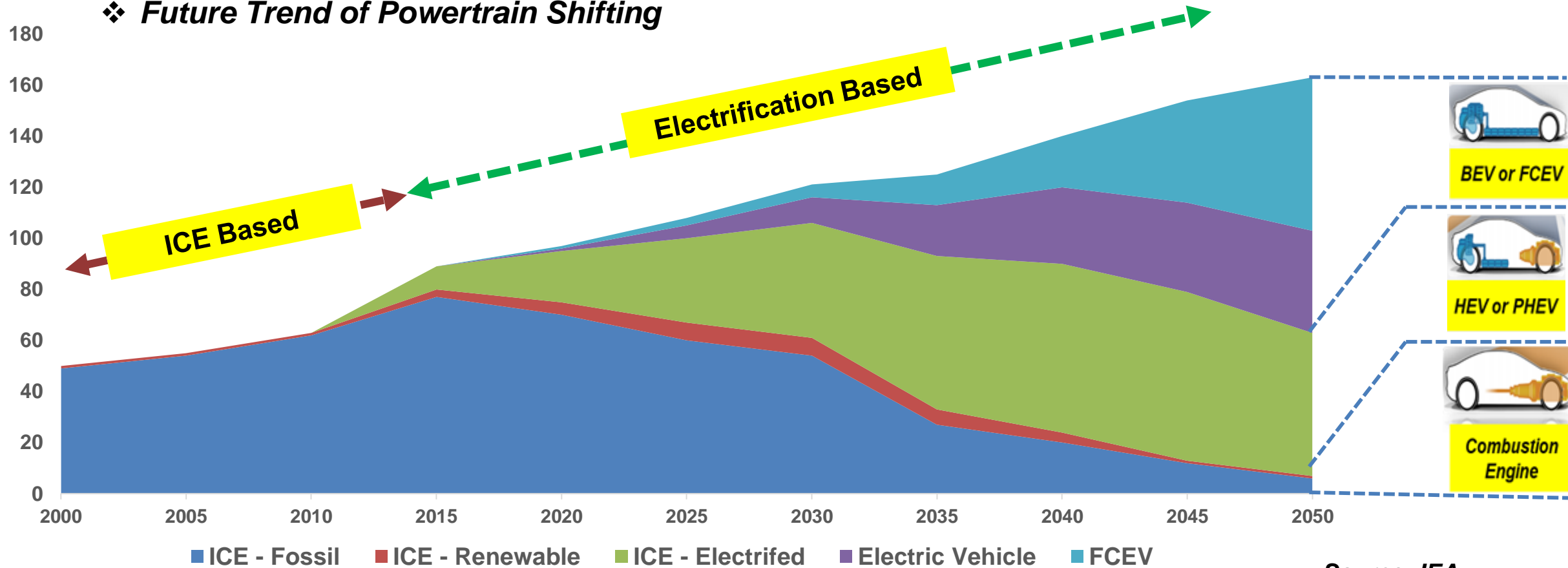
Many Countries Issued Regulation to Manage Fossil Fuel Consumption/Carbon Emission in the Vehicle



CAFÉ : Corporate Average Fuel Economy

Source: ICCT

## ❖ Future Trend of Powertrain Shifting



Source: IEA

As an impact of stringent regulation of Fuel Economy / CO<sub>2</sub>, Global powertrain is predicted will shift from ICE Based to Electrification Based in the future.



“Let’s discuss **the most appropriate way** to sustain the growth of automotive industry as well as **manage its potential negative impact /challenges**”

***Thank You***