



## MODERATOR

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## The current energy transition is driven by a number of important drivers over the next 20-30 years

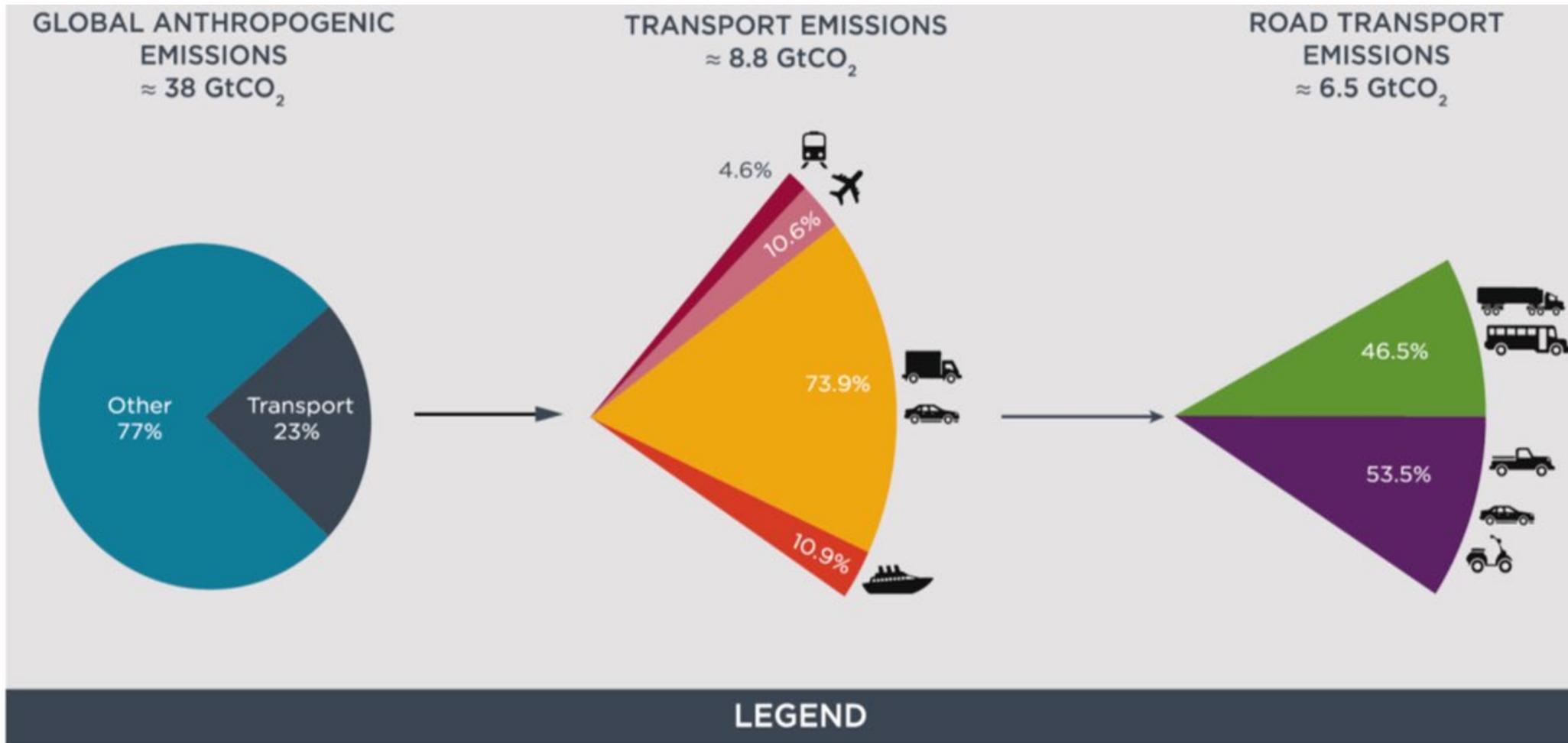
- Energy Access
  - provide *affordable modern* energy services for the well-being of the 7 billion people today and the 9 billion people projected by 2050
- Energy Security
  - provide uninterrupted supply of vital energy services
- Climate Change
  - reduce global energy systems greenhouse gas emissions to limit global warming to less than 2° C above pre-industrial level
- Air Pollution
  - reduce indoor and outdoor air pollution from fuel combustion and its impacts on human health
- Adverse effects and ancillary risks
  - Freshwater use, land use, waste and other impacts associated with some energy systems

## Climate change is the biggest driver of the current transition

- Human activities are estimated to have caused approximately 1.0° C of global warming above pre-industrial levels so far.
- Global warming is *likely* to reach 1.5° C between 2030 and 2052 if it continues to increase at the current rate causing significant changes in regional climate characteristics including
  - *higher mean temperature* in most land and ocean regions
  - *hot extremes* in most inhabited regions
  - *heavy precipitation* in several regions (*medium confidence*)
  - *probability of drought and precipitation deficits* in some regions
- Limiting the increase to 1.5° C or less will require that *global net anthropogenic CO2 emissions decline by about 45% from 2010 levels by 2030 and reaching net zero around 2050*
- For limiting global warming to below 2° C, CO2 emissions will need to decline by about 20% by 2030 and reach net zero around 2075

# TRANSPORTATION REVOLUTION

2019-2020 ENERGY SYMPOSIUM SERIES  
CRITICAL ISSUES IN ENERGY



**Notes:**

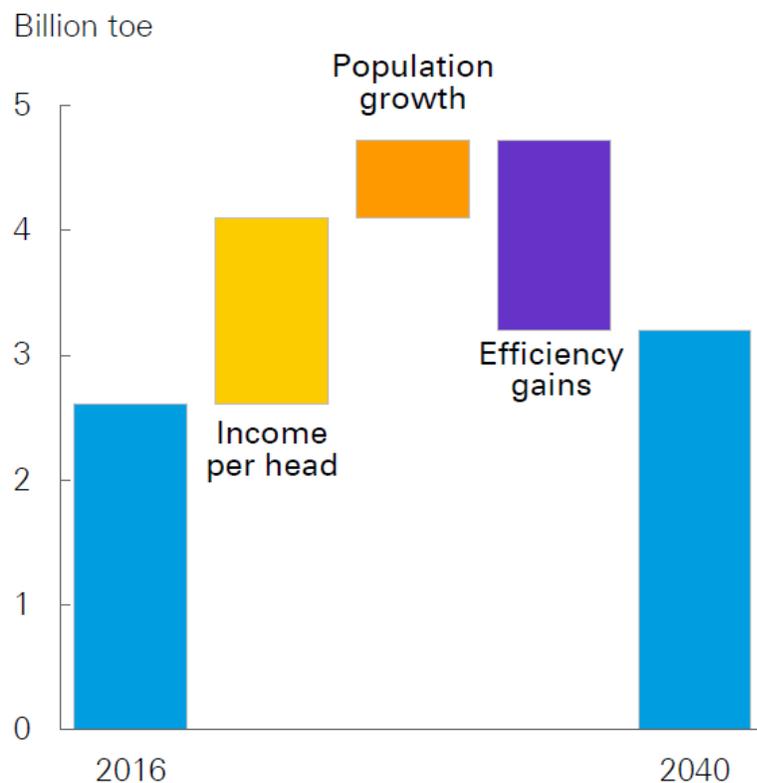
Global anthropogenic CO<sub>2</sub> emissions in 2010 based on IPCC (2014).

Transport CO<sub>2</sub> emissions in 2010 estimated by ICCT (2014) include the full fuel lifecycle, including direct emissions from combustion & upstream emissions from extraction, refining, & distribution of fuels.

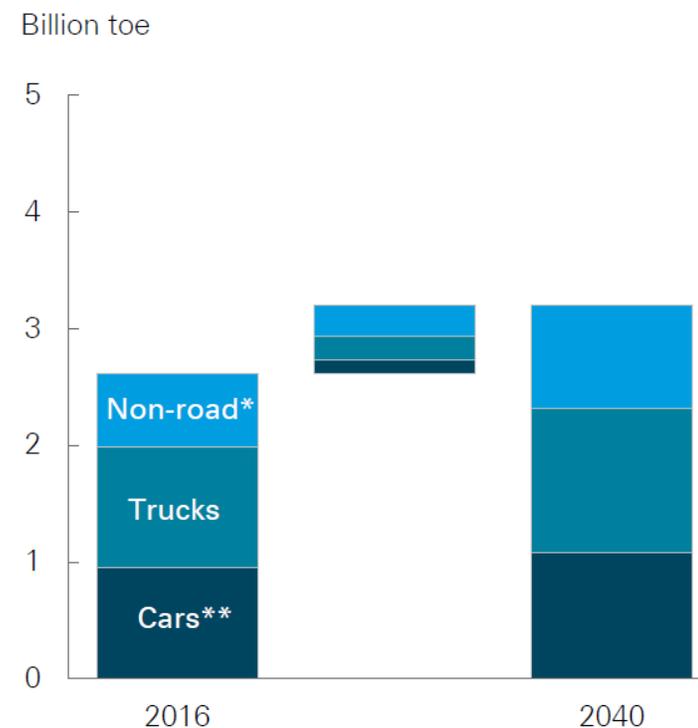
Our panelists represent unique projects/products that could have a significant impact on reducing transport GHG impact

## Efficiency gains will be insufficient to reduce projected transport energy consumption growth

Contributions to transport energy consumption growth



Transport energy consumption by mode



\*Aviation, Marine and Rail

\*\*Includes 2- and 3- wheelers

2018 BP Energy Outlook