



OIL & GAS IN THE ENERGY TRANSITION: THE ROLE OF TECHNOLOGY

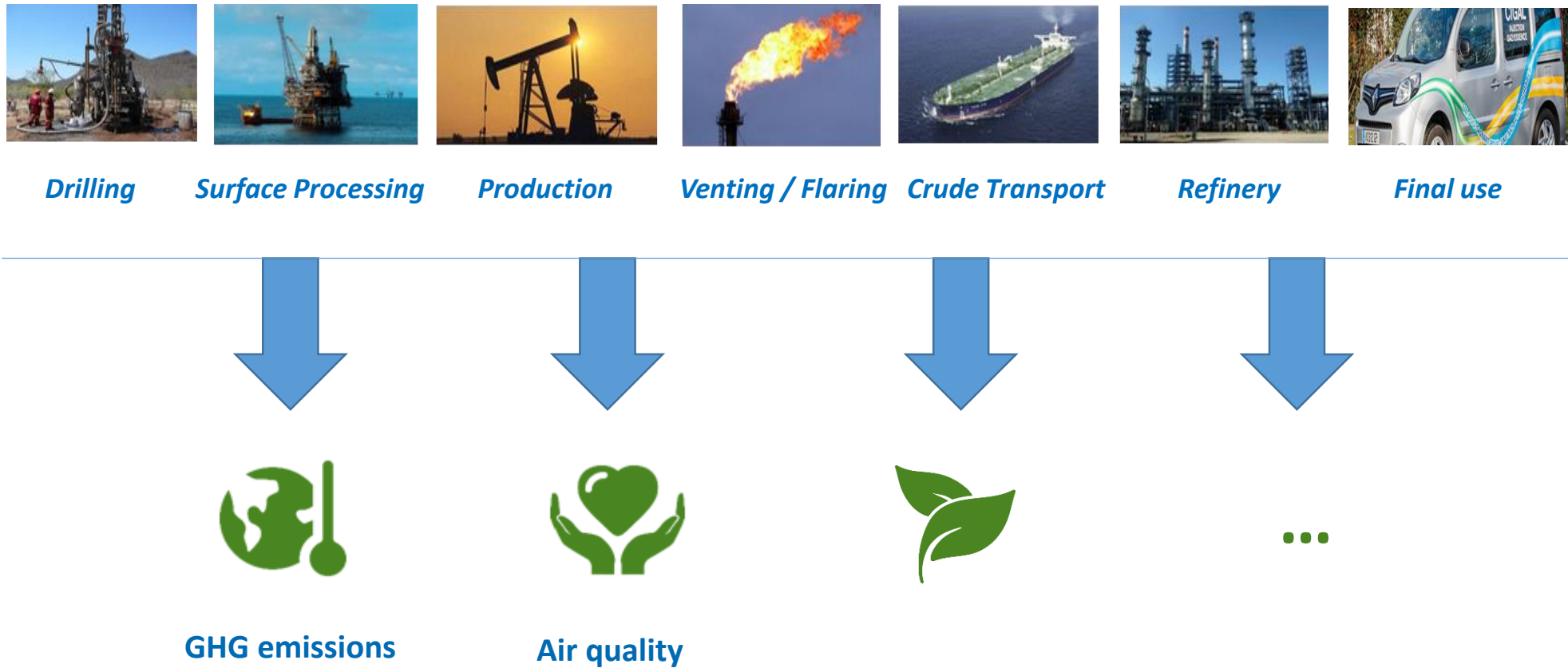
7TH EUROPEAN ENERGY FORUM - CFE
7TH & 8TH JUNE 2018

DIDIER HOUSSIN
CHAIRMAN AND CEO
IFP Energies nouvelles

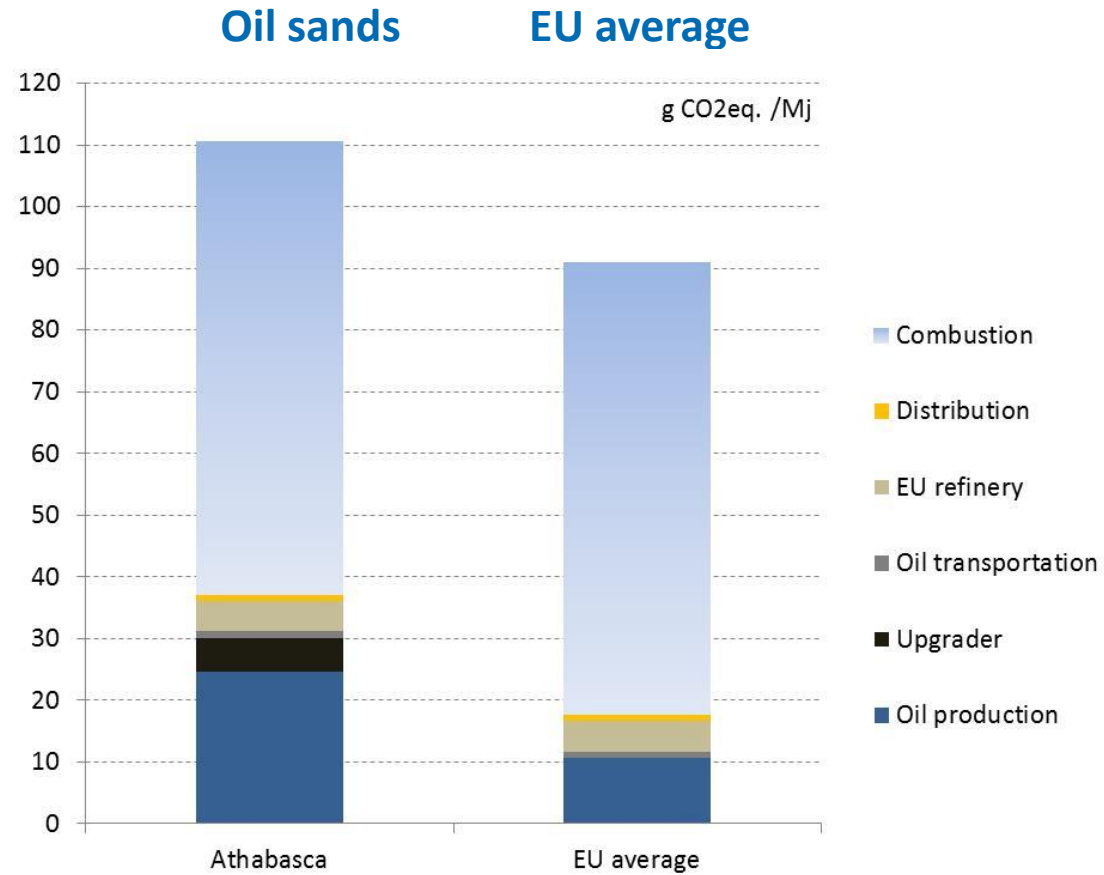


FROM LOCAL TO LIFE CYCLE APPROACH

NEW ENERGIES

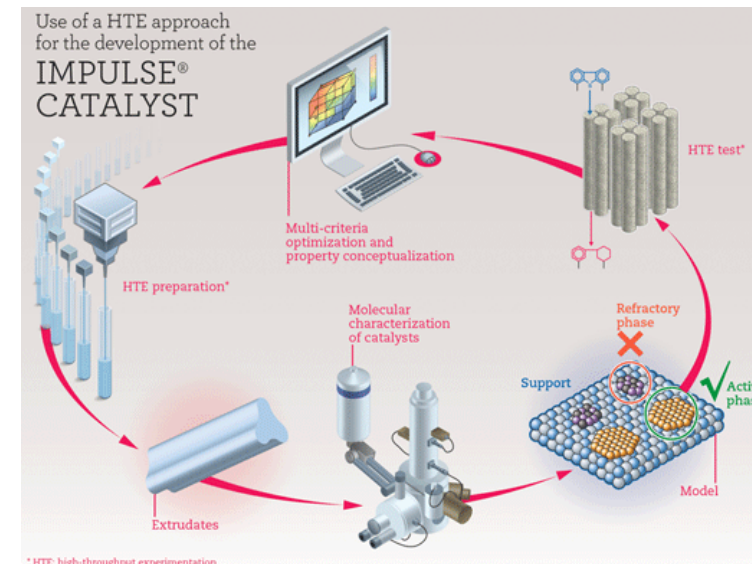


'Well-to-Wheel' Greenhouse Gas Emissions



Source: IFPEN

Innovative solutions catalysts, processes and other cutting edge technology to reduce environmental impacts



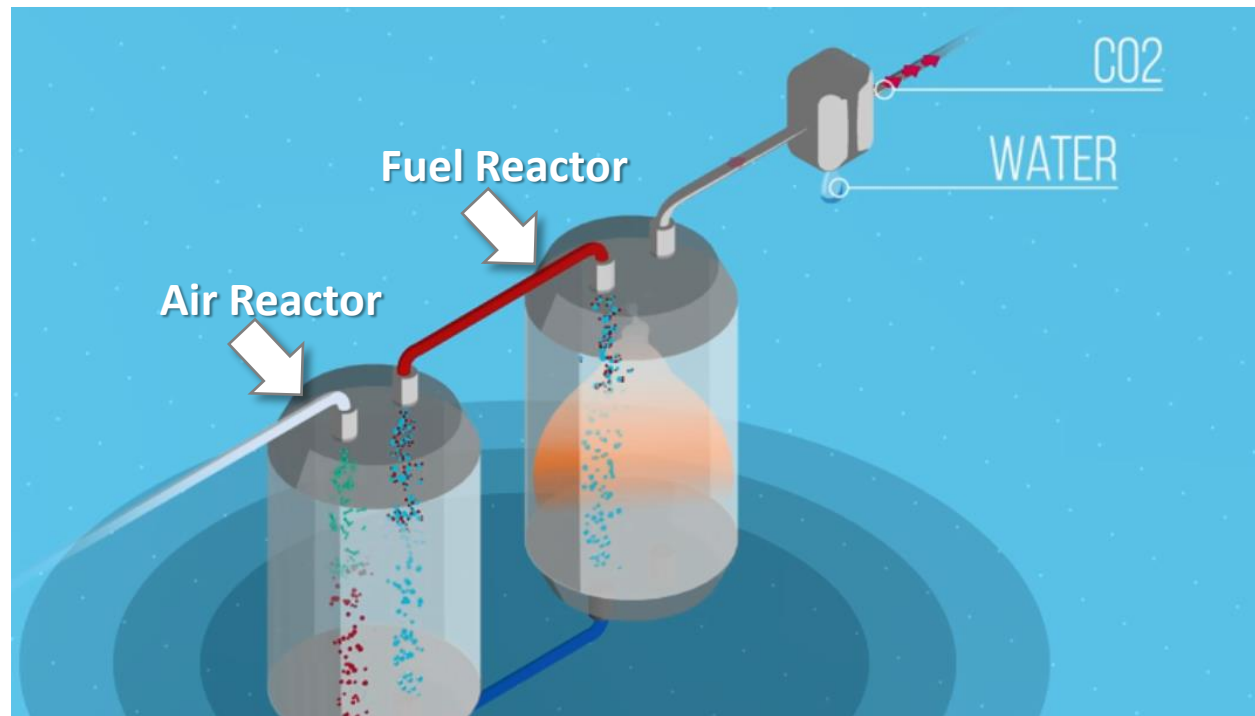
Source : IFPEN

REDUCING THE CO₂ EMISSIONS OF THE REFINERY SECTOR WITH CCS

« CHEERS », AN ON-GOING CHINESE-EU DEMONSTRATION PROJECT

NEW ENERGIES

Chemical-Looping Technology



Source : TOTAL

GHG EMISSIONS

THE IMPORTANT SHARE OF FINAL USE (TRANSPORT)

NEW ENERGIES

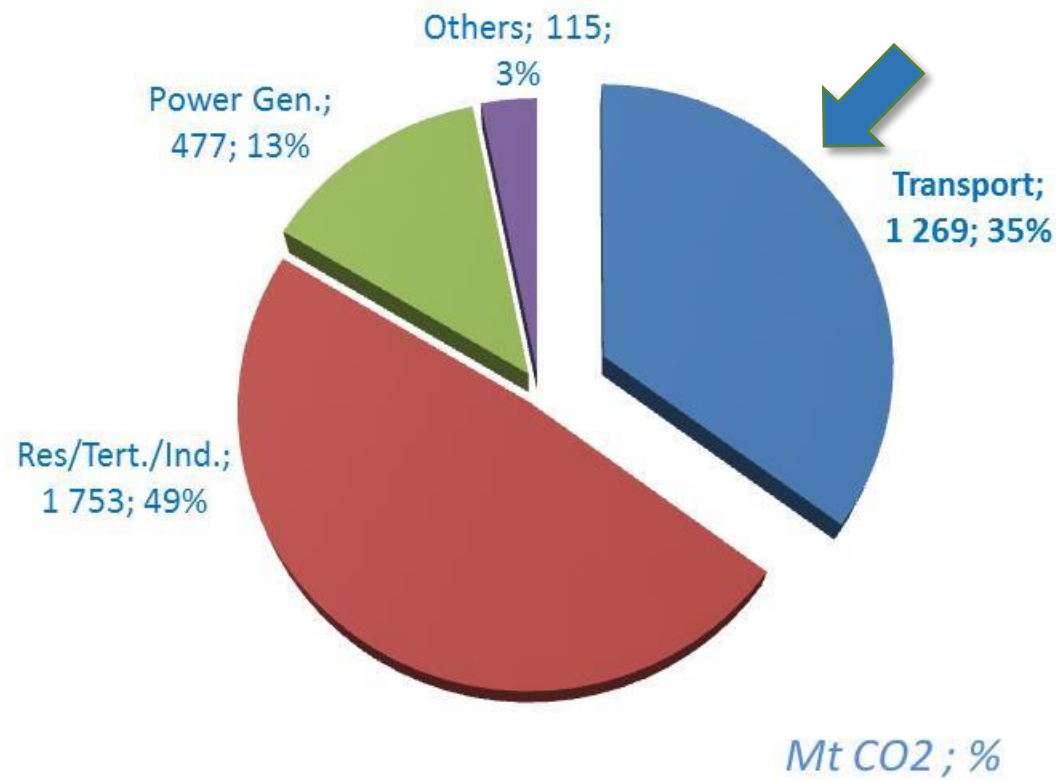


70 to 85 %
of total CO₂ emissions



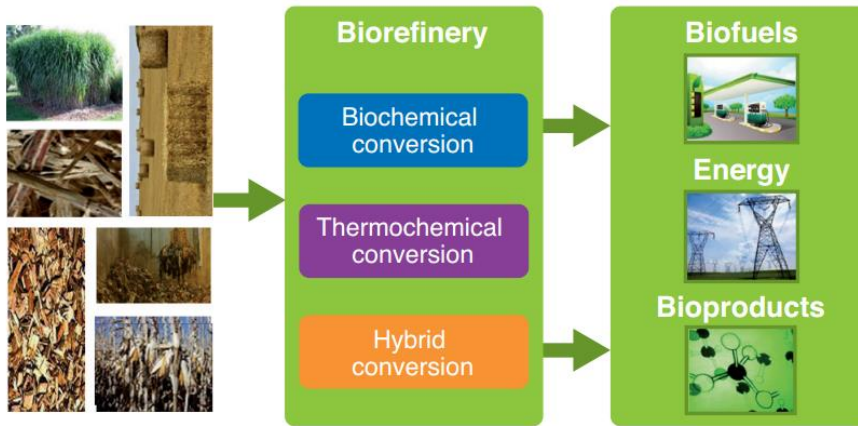
GES emissions

World CO₂ Emissions Growth 2015/2040 (NPS)



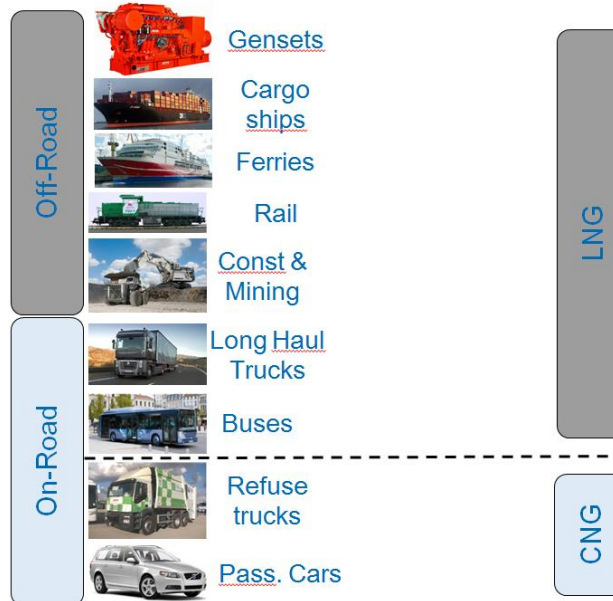
Source: WEO 2017

Second generation biofuels



Source: IFPEN from Advanced Biofuels

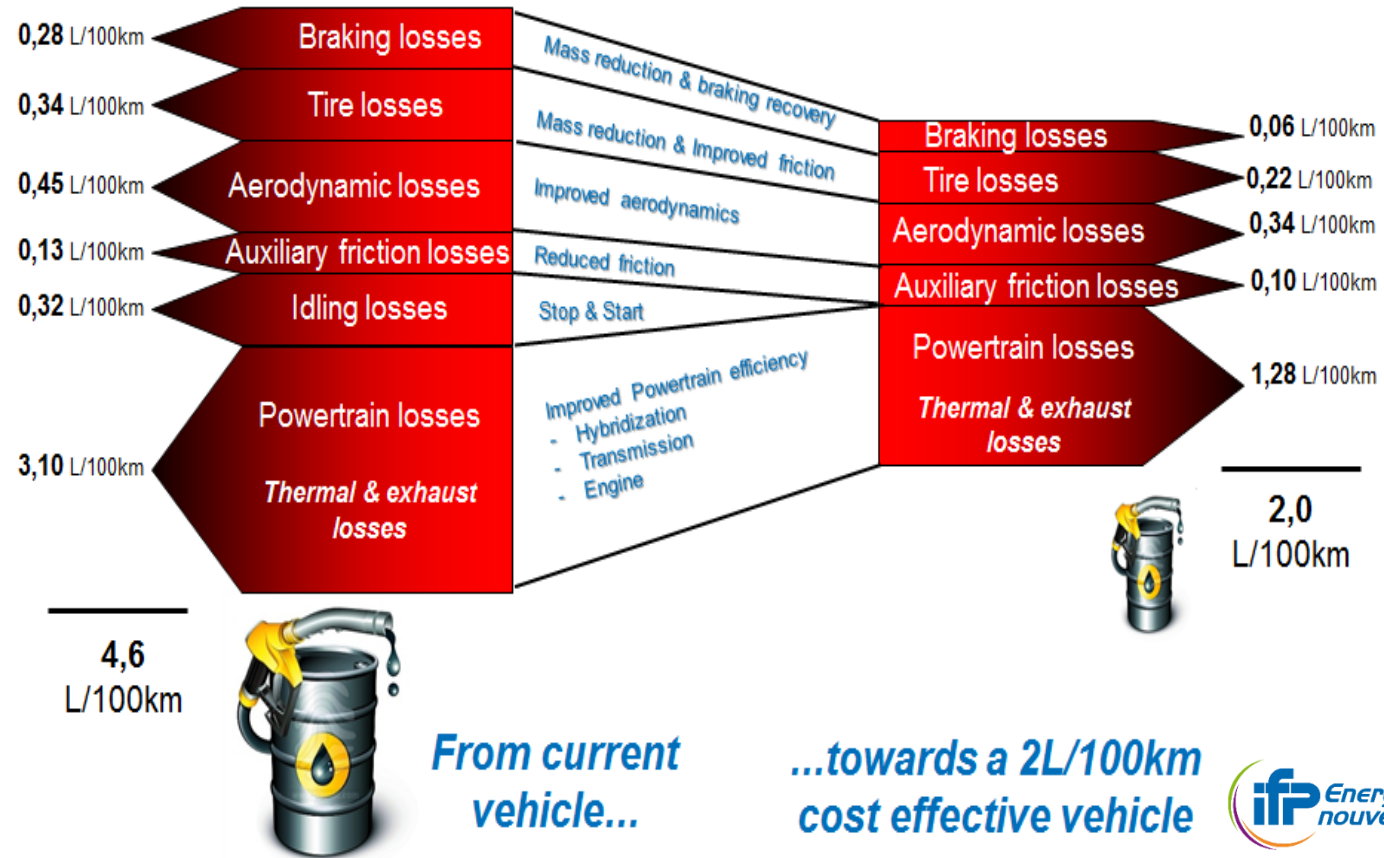
Nat gas / Biogas



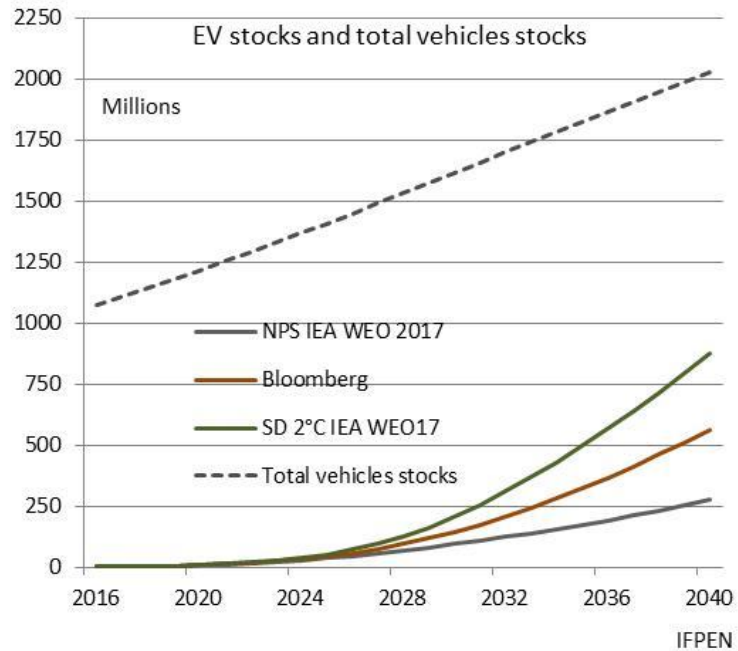
Hydrogen



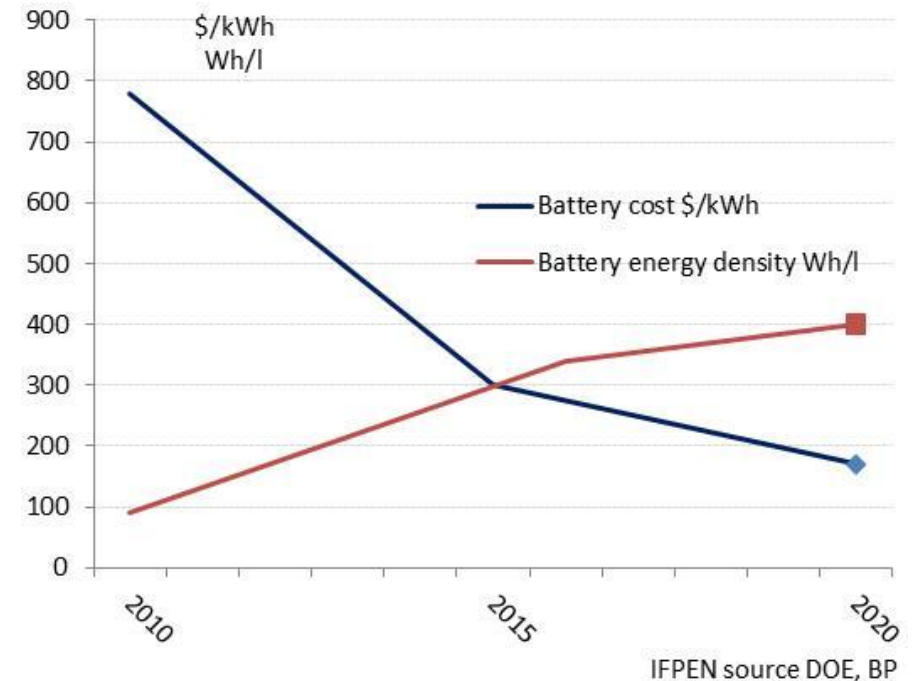
ENERGY EFFICIENCY IN THE TRANSPORTATION SECTOR



2 MILLIONS VEHICLES IN 2016 HOW MANY IN 2040 ?



BATTERY COST AND ENERGY DENSITY



TECHNOLOGY, DIGITIZATION AND SOCIETAL DISRUPTIONS
WILL RADICALLY CHANGE THE TRANSPORT SECTOR



Oil & gas in the Energy transition: role of Technology

- Technological improvement both in upstream and downstream to cut particularly GHG emissions
Gas flaring prevention, methane emissions reduction, processes optimization as well as CCUS
- Oil and gas companies are ready to adapt to a new energy world...
Solar, Wind, Biomethane, ... Advanced Biofuels, Hydrogen (French ambition)
- ... in line with new developments
Electricity with more ReN, diversification of the transport sector...
- *Life Cycle Analysis*: an essential tool for developing a comprehensive strategy
IFPEN' expertise

DEVELOPING INNOVATIONS

MOBILITY

High-efficiency IC powertrains, vehicle electrification and connectivity, emission reduction

NEW ENERGIES

Biofuels, bio-based chemistry, ocean energies and offshore wind power, energy storage, circular economy

OIL AND GAS

Optimization of production and recovery, produced water management, environmentally-friendly fuel and chemical intermediate processes

Fundamental research, the bedrock for the development of our innovations