

Come innovare la mobilità:

un approccio sinergico tra buone prassi, innovazione tecnologica e sensibilizzazione culturale



**POLITECNICO
DI TORINO**

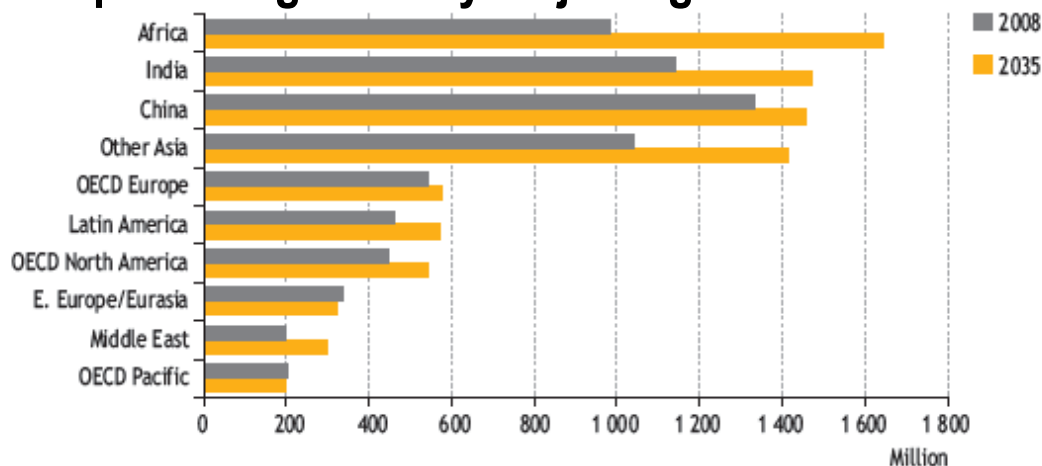
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TERRA DEL FUOCO LAVORO

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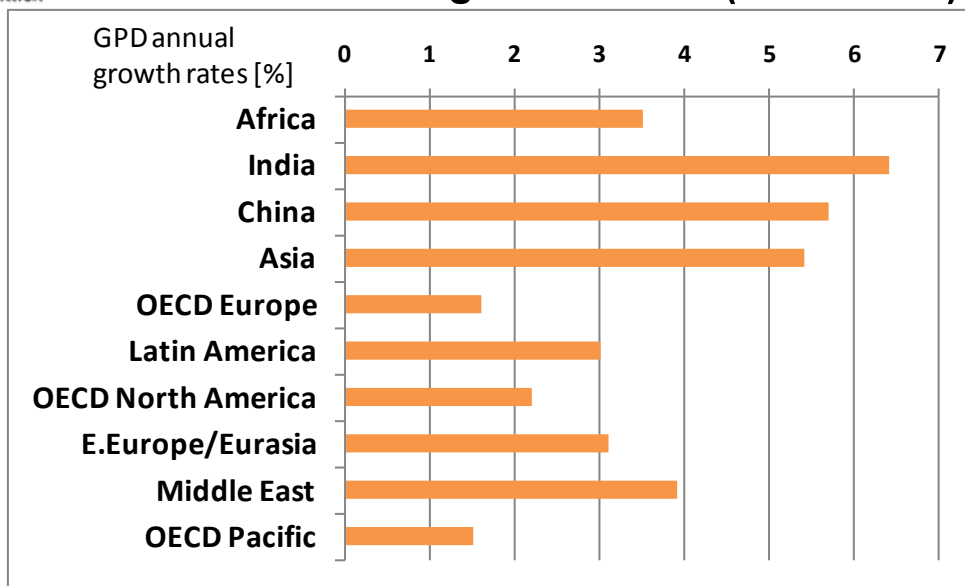
Population growth by major regions



Sources: UNPD and World Bank databases; IEA analysis.

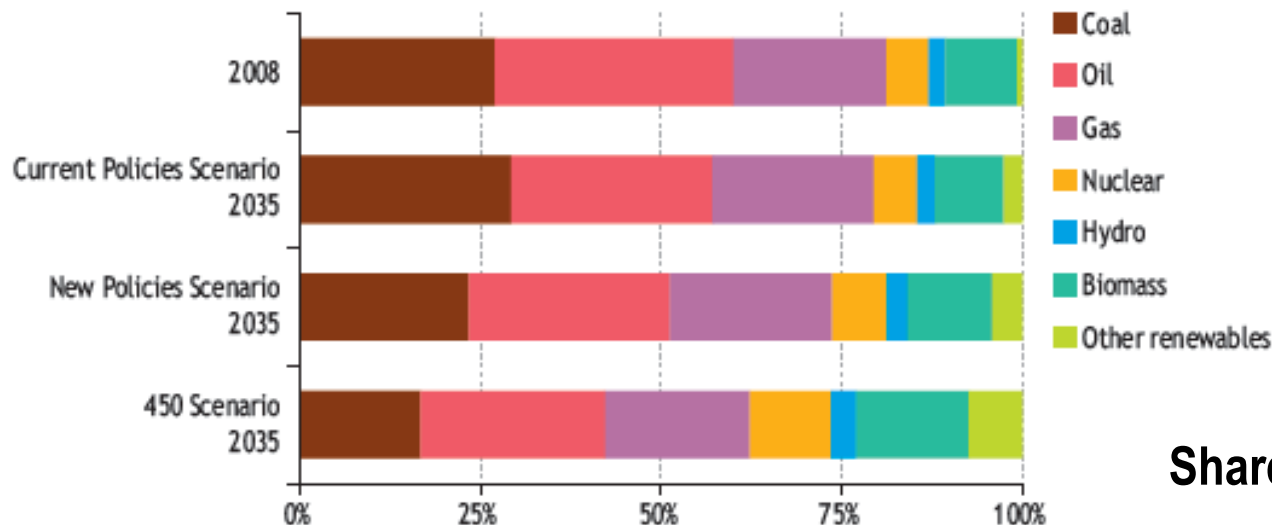
Population growth together with the economic activity is an important driver of the amount and type of energy use.

GPD annual growth rates (2008-2035)



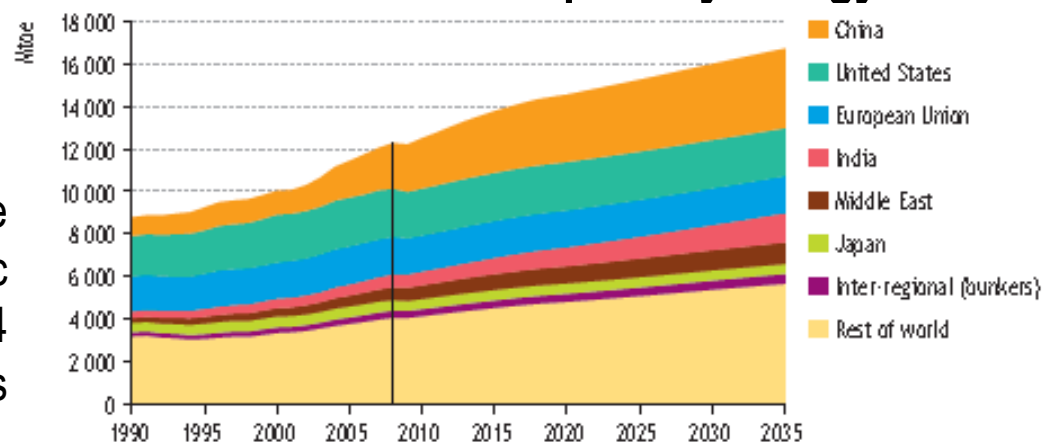
Energy demand tends to grow in line with the rate of growth of gross domestic product (GDP), though typically at a lower rate.

World primary energy demand



Fossil fuels are likely to remain the dominant energy sources in 2035 whereas the share of the overall primary fuel mix varies markedly according to the foreseen scenario.

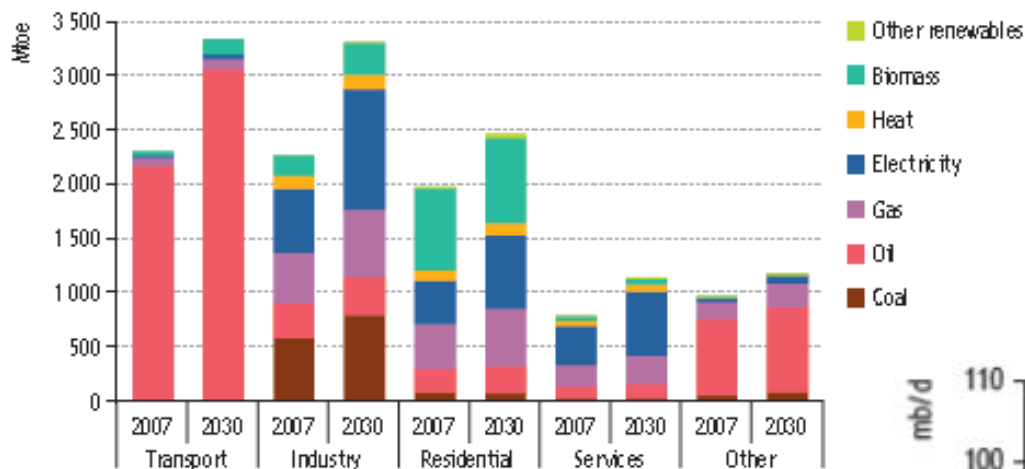
Shares of energy sources in world primary energy demand



Non-OECD countries generate the bulk of the increase in global demand for all primary energy sources

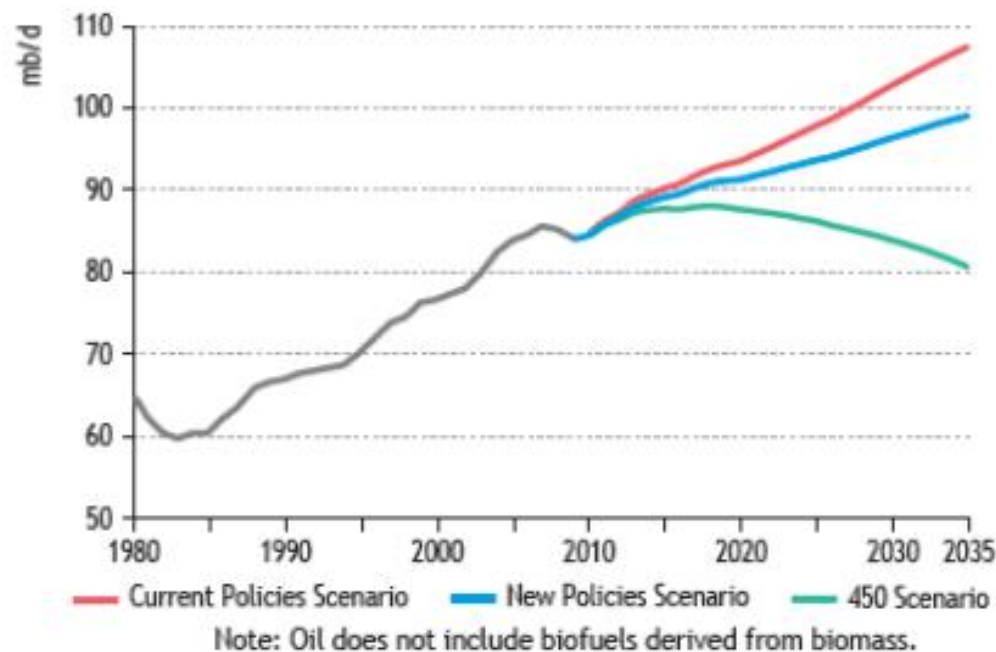
Twenty countries originally signed the Convention on the Organisation for Economic Co-operation and Development on 14 December 1960. Since then fourteen countries have become members of the Organisation.

By sector and fuel (Ref. Scenario 2010)



This is a sharp decline in the rate of growth observed over the last several decades, thanks largely to measures to improve fuel economy.

Oil-based fuels continue to dominate transport energy demand.



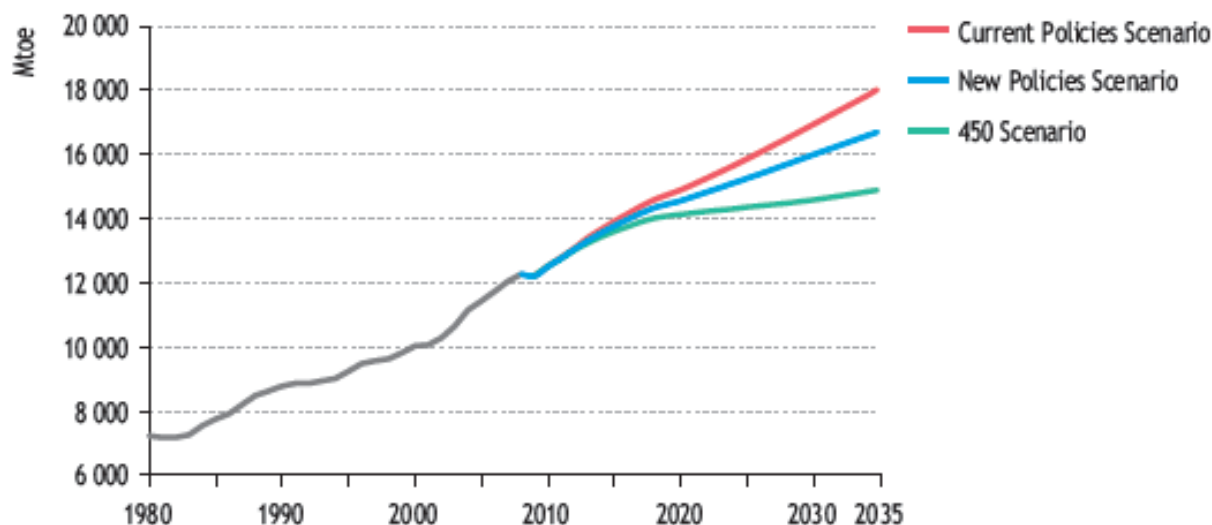
World primary oil demand by scenario

The demand of primary oil is bound to constantly rise over the next two decades according to the trend outlined by the last few years unless specific actions are adopted.

The Copenhagen Accord sets a goal of limiting the long-term average increase in the global temperature to 2°C above pre-industrial levels. This is widely acknowledged to mean that the **concentration of greenhouse gases in the atmosphere must be stabilised at a level no higher than 450 parts per million of carbon dioxide equivalent (ppm CO₂-eq).**

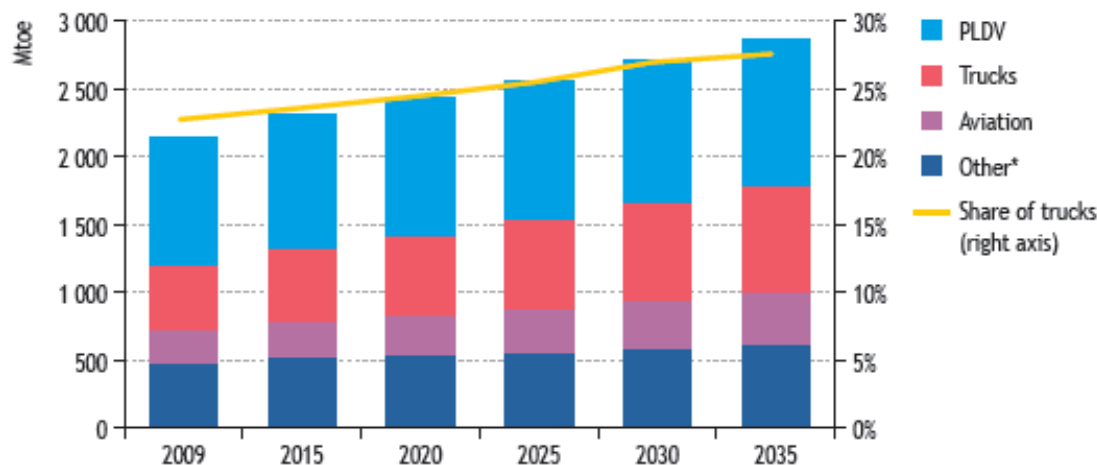
Thus, the global transformation of the energy sector to achieve the necessary reduction in CO₂ emissions requires very substantial spending on low-carbon technologies and energy efficiency and the greatest increase in investment is needed in the transport sector.

Urgent action is needed to tackle trucks and other modes of transport and to widely deploy the still immature technologies in these areas (hybrids and electric vehicles).



450 Scenario is defined by IEA - International Energy Agency (World Energy Outlook 2011)

Transport oil consumption by type (NPS)

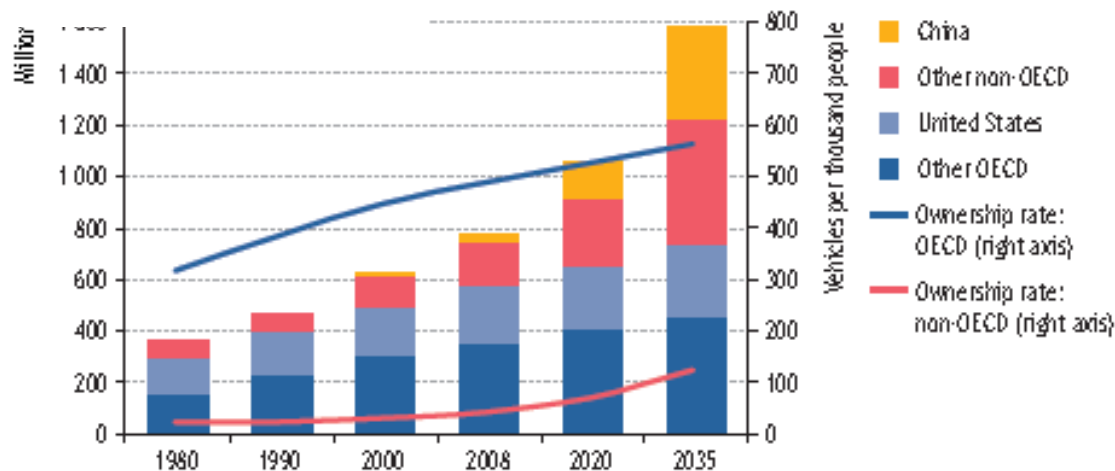


*Includes other road, rail, pipelines, navigation and non-specified.

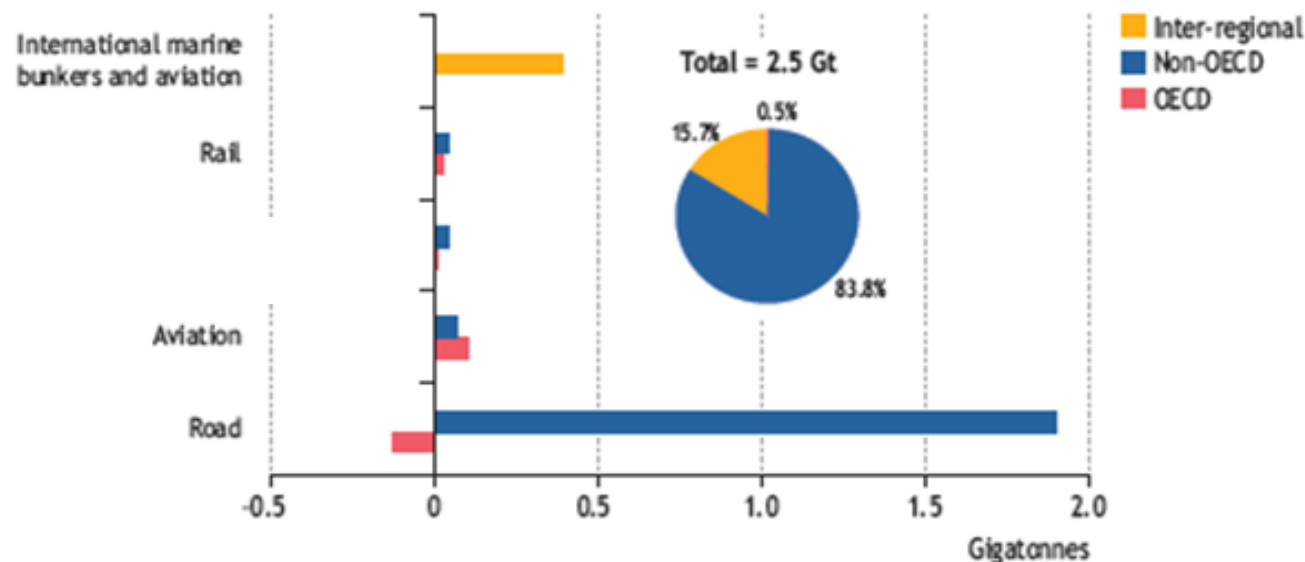
To avoid such an increase in oil demand faster improvements in vehicle efficiency, fewer kilometres driven per vehicle and/or faster penetration of biofuels and alternative fuel and vehicle technologies are required.

Trucks and passenger light-duty vehicles (PLDVs) account for most of the increase in transport-related oil use.

PLDVs vehicle fleet and ownership rates by region (NPS)



Change in transport sector CO₂ emissions by mode and region (Ref. Scenario 2008; timeframe 2006-2030)

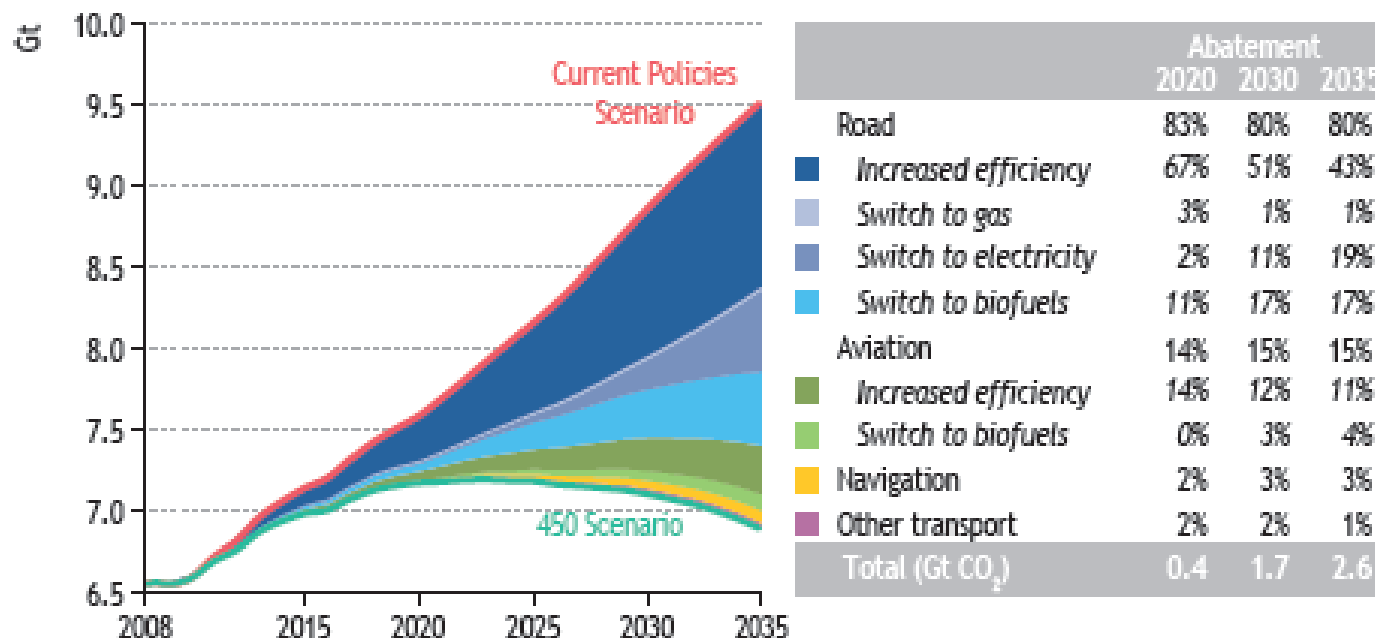


	2006
World energy-related CO ₂ emissions (Giga-tonns)	27,89
Power generation	41%
Transport	23%
Industry	16%
Residential, Services, Agriculture (direct)	10%
Other	8%

According to this study, **transport contributes one-fifth** of the increase in global emissions to 2030, growing from 6.4 Gt in 2006 to 8.9 Gt in 2030.

The **two main drivers** of growth are increasing vehicle ownership and use in non-OECD countries and increasing international travel, in the form of passenger aviation and navigation (marine freight).

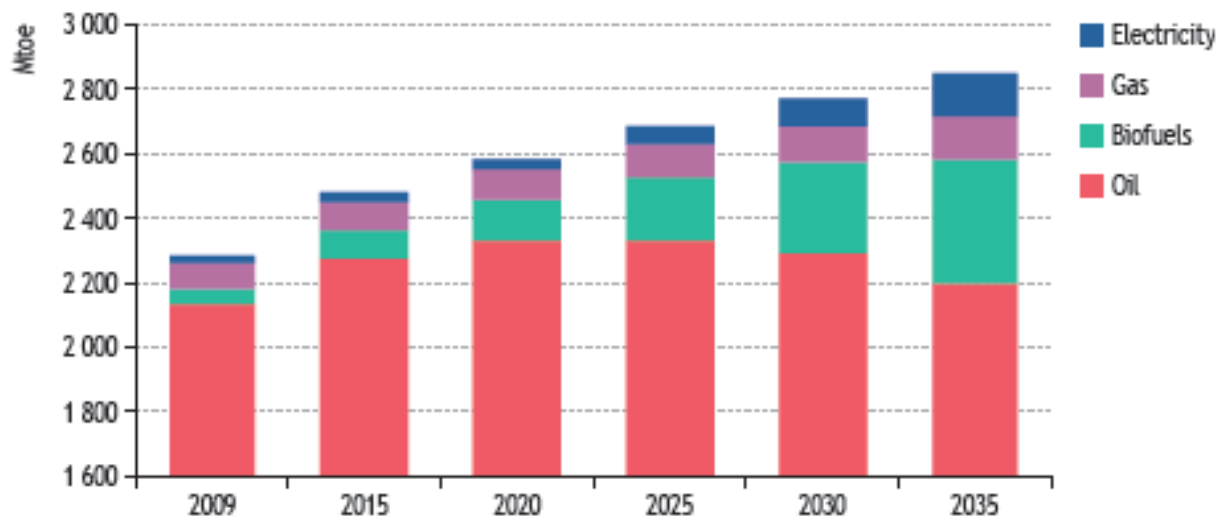
World transport-related CO₂ emission abatement



The largest contributor to emission savings is increasing end-use efficiency. However, the share of abatement achieved through efficiency falls over the period, because a large proportion of the possible efficiency gains are deployed before 2020, limiting the additional abatement that can be achieved from this source thereafter. Fuel and energy source switching, is responsible for more than 40% of abatement in the transport sector by 2035.

What is the transformation required by road transport?

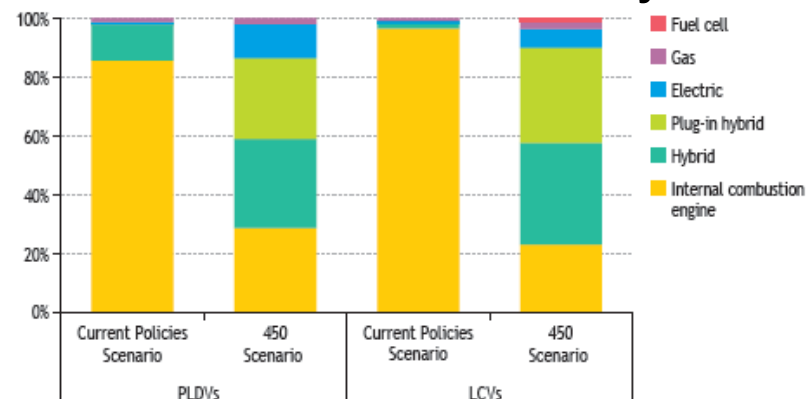
World transport-related fuel consumption (450 Scenario – 450S)



The increasing use of electricity in the transport sector as a whole is largely a result of electrification in road transport, which accounts for almost 90% of the increase in electricity demand.

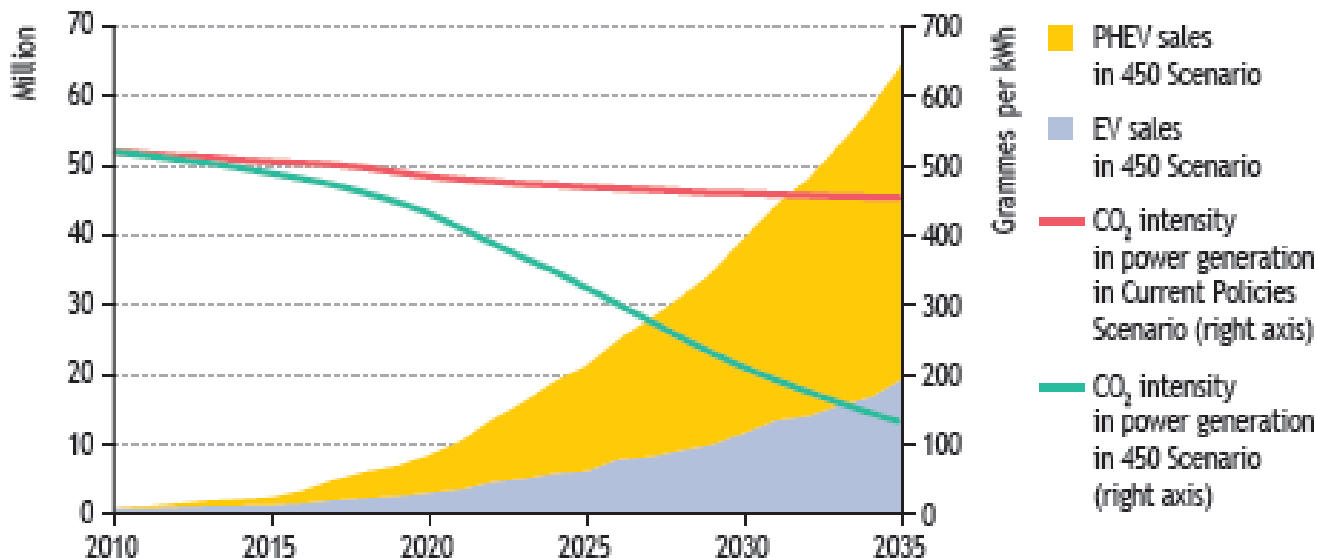
Vehicle sales by 2035

By 2035, about 70% of PLDV sales are advanced vehicles (electric cars, hybrids and plug-in hybrids). Almost 60% of vehicles sold still primarily use internal combustion engines, but either in hybrid vehicles or in highly-efficient flex-fuel vehicles.



Note: PLDVs = passenger light-duty vehicles; LCVs = light commercial vehicles.

Sales of electric and plug-in hybrid vehicles (450S) and CO₂ intensity in the power sector



Note: Includes passenger light-duty and light commercial vehicles. PHEV = plug-in hybrid electric vehicles. EV = electric vehicles.

Driven by the adoption of a CO₂ cap-and-trade system in the power sector, and the resulting price of CO₂ levels, average emissions per kWh of electricity are substantially reduced, thus increasing the amount of carbon saved through the adoption of electric cars and decreasing the marginal costs of abatement. With increasing decarbonisation, well-to-wheels emissions from electric cars are significantly lower than those from vehicles using oil-based transportation fuels.



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Mediterranean Areas Move Sustainable

CO-FINANCERS:



SUPPORTERS:



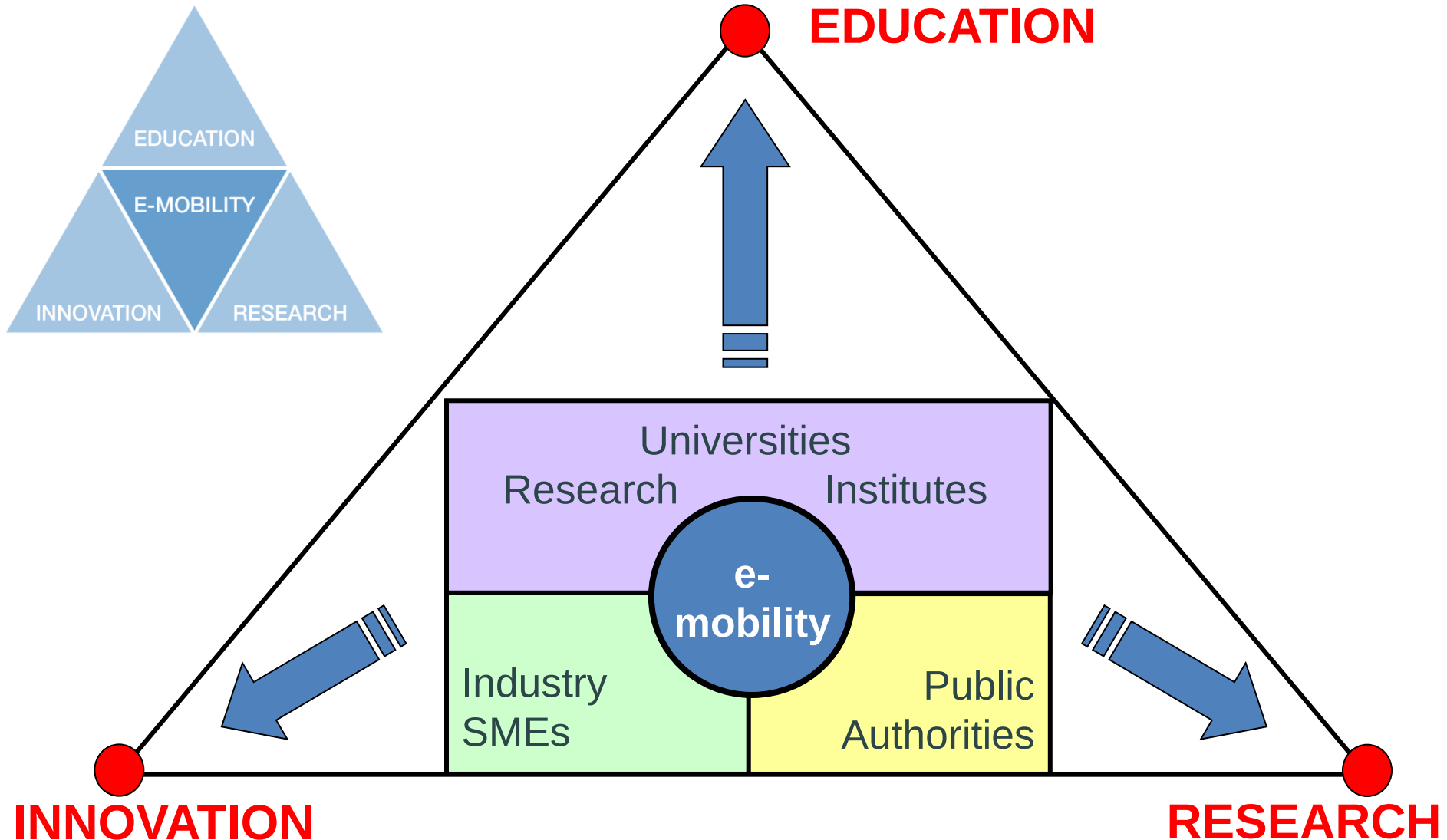
Comune di Candela



Comune di
**Castrignano
dei Greci**



CHALMERS



ALBERO DEI PROBLEMI

ALBERO DELLE SOLUZIONI

Miglioramento qualità dell'area in ambiente urbano con diffusione mobilità elettrica

Diffusione veicoli elettrici e veicoli a basso impatto ambientale

Diffusione cultura mobilità sostenibile

Creazione e ottimizzazione sistema di ricarica per veicoli elettrici

Definizione accordi commerciali e sponsorizzazioni

Eventi di piazza e organizzazione momenti con forte coinvolgimento cittadinanza

Percorsi educativi per studenti di scuole superiori e sensibilizzazione studenti universitari

Incentivazione partenariato pubblico privato

Installazione impianti FER – incentivi 5° conto energia

- **Challenge:**
Smart and Green Urban Mobility
- **Project objectives:**
 1. Enhancement of the air quality through the development of electric mobility;
 2. Enhancement of the acoustic pollution, through the development of electric mobility;
 3. Definition of European guidelines for a valuable application of the model for the development of Electric Mobility systems to be taken as a reference action for Sustainable Energy Action Plans (SEAP);
 4. Structured valuable Public Private Partnership consolidation for Renewable Energy and Electric Mobility Investments;
 5. Promoting an increased awareness and change of behaviors towards electric mobility;
 6. European dissemination of the valuable (mobility and PPP) model.



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New EU project within European Green Cars Initiative in Seventh
Framework program

e-gomotion (JobVehElec)

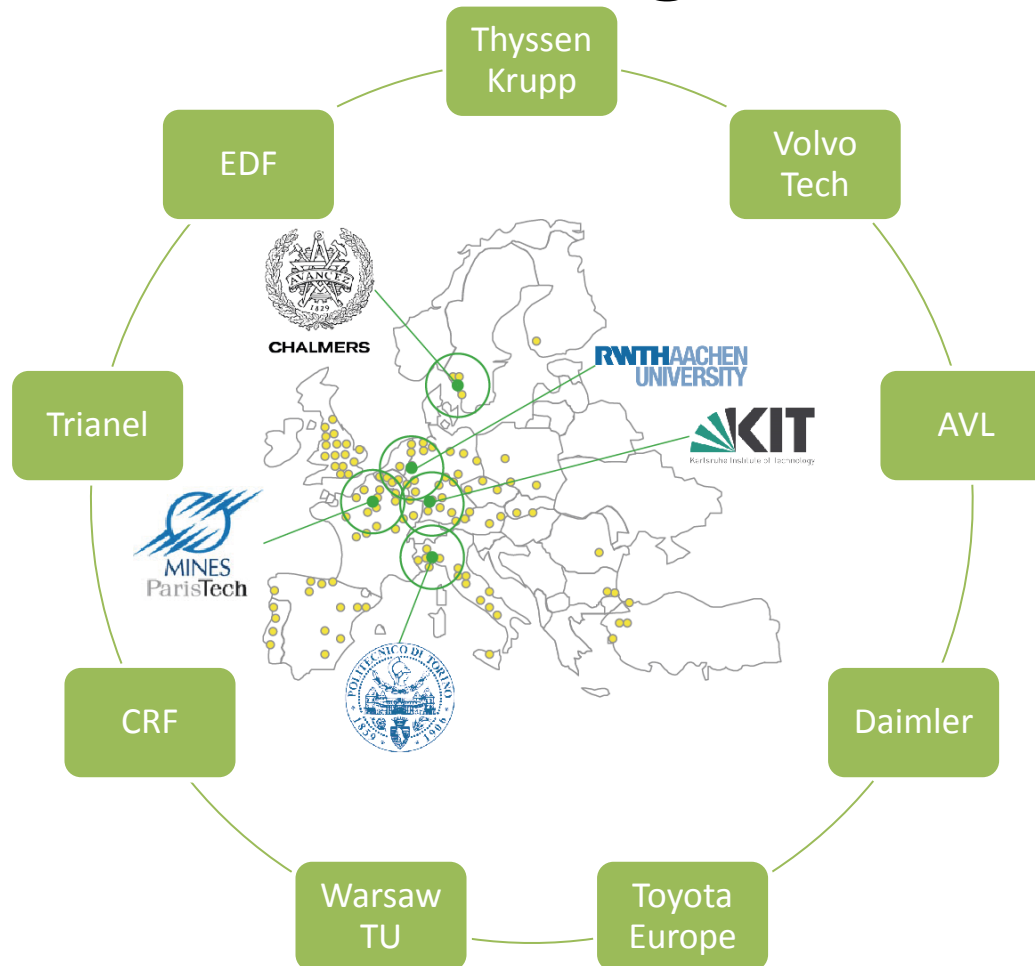
Raising awareness of Job opportunities in Vehicle Electrification



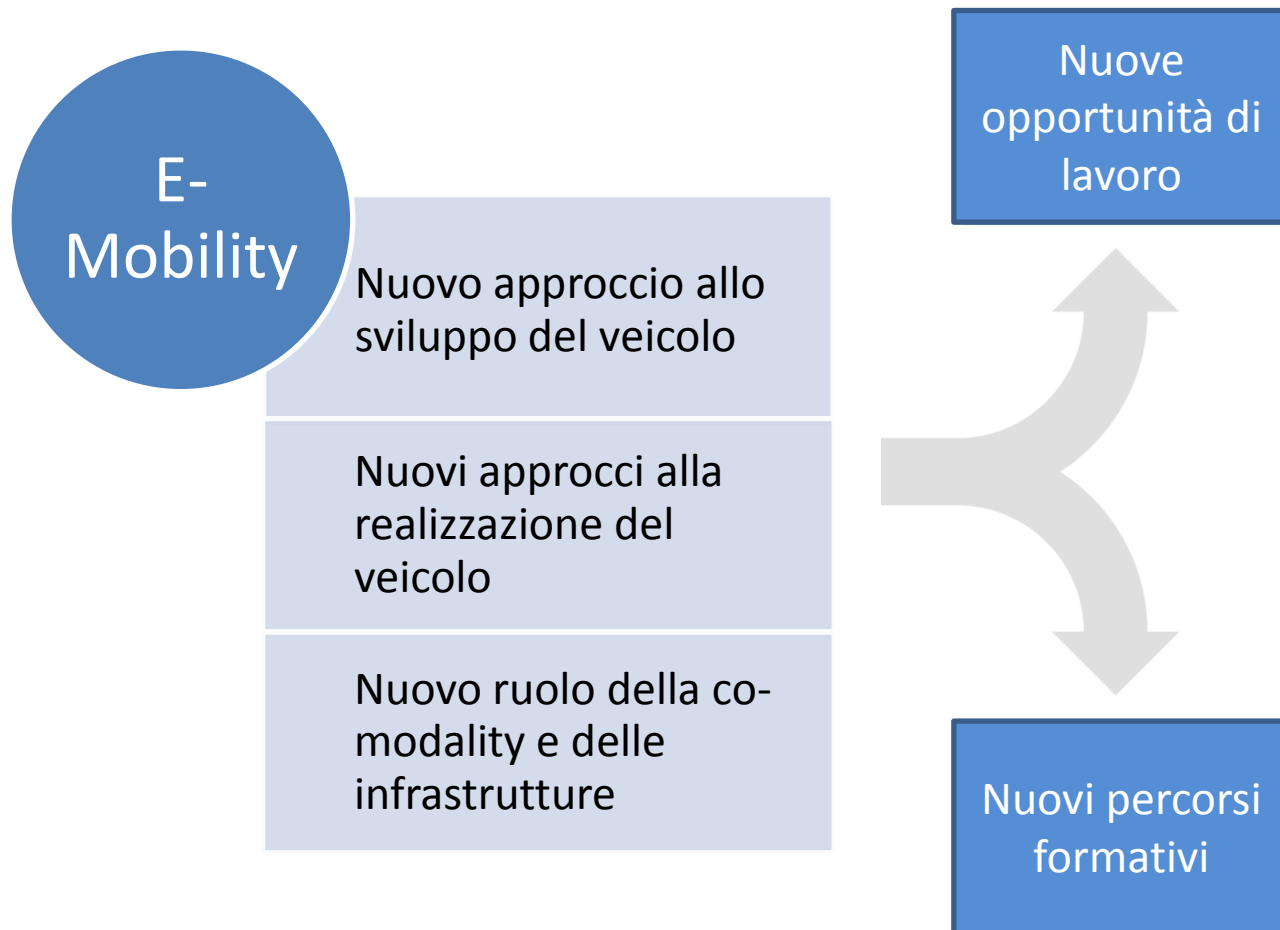
e-go motion

www.e-gomotion.eu

Partners di e-gomotion



Formazione e lavoro





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SAGE

SAGE

Safe and green road vehicles

Torino Regional Workshop.

SAGE: uno strumento per l'analisi del contesto regionale e
l'individuazione delle priorità di ricerca nel settore
“automotive”



VOLVO

mov'eo
Pôle de compétitivité



HOCHSCHULE
REGENSBURG
UNIVERSITY
OF APPLIED
SCIENCES



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WARSAW UNIVERSITY OF TECHNOLOGY

SAGE Concept

Scope

- innovative road vehicles, safety, greening and usability

Vision

- facilitate an increasing pace of innovation

Objectives

- increase overall capacity of regions with strong automotive industry
- integrated mega-cluster

Results

- enhancing science and technology based development
- smart specialisation
- efficient knowledge sharing

Prerequisites

- systemic approach – mobilising triple helix
- analysis – common methodological framework

Cittadella Politecnica: A Co-Location Center on its Own



Cittadella Politecnica hosts classrooms, research departments, student facilities (including cafeteria and sport center), BRC, business partners, I3P, VC hub



Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile



安徽江淮汽车股份有限公司
ANHUI JIANGHUAI AUTOMOBILE CO.,LTD

The new **Mirafiori** campus of Cittadella Politecnica hosts classrooms and student facilities for the course of Automotive Engineering and Design.



Mirafiori



It will also host research laboratories and departments, and the offices of the new **Automotive technology platform** launched by Regione Piemonte.

Grazie per l'attenzione



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