

Sustainable mobility An Unione Petrolifera contribution



Franco Del Manso - Unione Petrolifera
Roma 4 novembre 2017



2ND AIEE ENERGY SYMPOSIUM
Current and Future Challenges to Energy Security
2-4 November, 2017 - Rome - LUMSA University



The main objectives of sustainable mobility

CO2 reductions to fight long term climate change

Paris agreement - COP21
Energy-Climate Package
EU Strategy «Low Carbon Mobility»



Require long term actions to fight climate change with measures effective at global level and the involvement of each world Government.

Emissions reduction to improve air quality in town areas

Air quality Directive
Infringement procedure about
PM e NO_x in 12 Italy areas



A problem to be solved at local level with instruments working effectively in short time with involvement of city Authorities

The Electromobility

- *It's considered the main option for the solution of problems of air quality and climate change. To implement it has been required to:*
- *Raising incentives for purchase of new low emission vehicles, mainly electrical and electrical plug-in*
- *Introduce incentives for the development of the charging network for electric vehicles;*
- *Ban the circulation of fossil fuels vehicles, particularly diesel, in many areas of the towns*
- *Increase taxation on gasoline and diesel*
- *Introduce the ban on the registration of diesel/gas vehicles from 2030;*



The electromobility still have a lot of problems

First of all Batteries

- *The batteries technology has improved a lot in recent years but is still far to compete with diesel and gasoline*
- *In Li-ion batteries we have seen progress but not breakthroughs that can change the reality that **fossil fuels can store more energy in a smaller space at a low cost** at least for the next decade*
- *Someone thinks that the performance of these batteries can improve as quickly as that of the microelectronics, software or semiconductors but Li-ion are not electrons and have mass and volume and complex chemistry*
- *It's always a question of balance of **lifetime, energy, power, safety and costs** not easy to solve at least in short time*
- *If you charge very fast, the lifetime will be very poor, non dangerous materials have poor performance, and so on....Of course there will be new materials to improve performance but it takes more than 10 year to commercialize a new material*

The electromobility still have a lot of problems

- *The large costs reduction in recent years is justified by the optimization of electrochemical processes and economies of scale. The effects of such actions have almost entirely been absorbed*
- *In the near future, without any technological breakthrough, the costs of battery pack will only be subject to minor further reductions and so the only cost reduction can derive from lower labor costs and lower environmental and safety requirements for industrial activities.*
- *In these conditions the Far East industries will become world leader of batteries suppliers – China in fact, that cannot compete with the European technology of cars manufacturers, is giving very strong support to the electromobility (China is world leader on batteries production and electric engine is much more simple than ICE)*

The electromobility still have a lot of problems

- *For the power grid, with the powers normally available in private homes (3 kW), a 30 kWh battery will be charged in 10 hours, during which no small light bulb can be turn on*
- *With 6 kW power it would still be 5 hours when no additional electrical demand could be met. Powers of 6 kW are in any case very limited in Italian reality*
- *Power stations far higher (25 kW, 50 kW or even 100 kW) require a deep adaptation of the grid, in particular in the city, with very large **investments both for the grid and the charging points***
- *Without a real **breakthrough** in battery performances and costs the **electromobility will never reach the mass market** and so will never solve both the climate and air quality problems*
- *In these conditions strong incentives to electromobility represent a big mistake. **Economic resources**, on the contrary, need to be addressed to **research and development** activities to improve radically the batteries performances*



The impact of legislation on energy industries

- *The current electromobility technology has not yet reached the maturity and need a strong economic and political support to be developed.*
- *Despite this situation several proposals at national and European level are addressed to force an immediate development of electromobility and to phase out the ICE – Internal Combustion Engine vehicles*
- *These proposals are very dangerous for oil industries. To fix by law the phase out of ICE vehicles will jeopardize the maintenance and development of existing oil domestic infrastructures with concrete risks of industry shut-down distorting*
- *The transition to a low-emissions economy will require fundamental changes in the energy system over the course of this century. These changes will take decades to be completed*
- *To reach the decarbonization, the existing energy infrastructures will remain critical for a long time to preserve affordable energy prices and to ensure energy supply security until alternatives are really available.*



The impact of legislation on energy industries

- *Also the imminent revision at European level of CO2 legislation on cars emission can introduce strong elements of distortion on transport sectors*
- *The Commission in fact is being encouraged by some, to turn this regulation into a support scheme primarily to drive rapid, wholesale electrification of light duty vehicles*
- *The current CO2 in Cars regulation measures emissions from the tailpipe only, disregarding many other GHG emissions due to manufacturing the car and the battery, the way to produce energy, etc.*
- *This is simply wrong, and to force a big reduction of tailpipe CO2 emissions (e.g. 70 g/km) **will not become a CO2 regulation**, but becomes the de facto an automotive industrial, and transport energy strategy for Europe*
- *Also introducing a mandate for a quota of EV is totally against any principles of **technology neutrality***
- *We ask the Commission to include in the forthcoming revisions the possibility to recognize the improving GHG intensity of liquid fuels as a contribution to the CO2 performance of vehicles and to consider a medium term transition to a life-cycle based vehicle GHG policy. .*

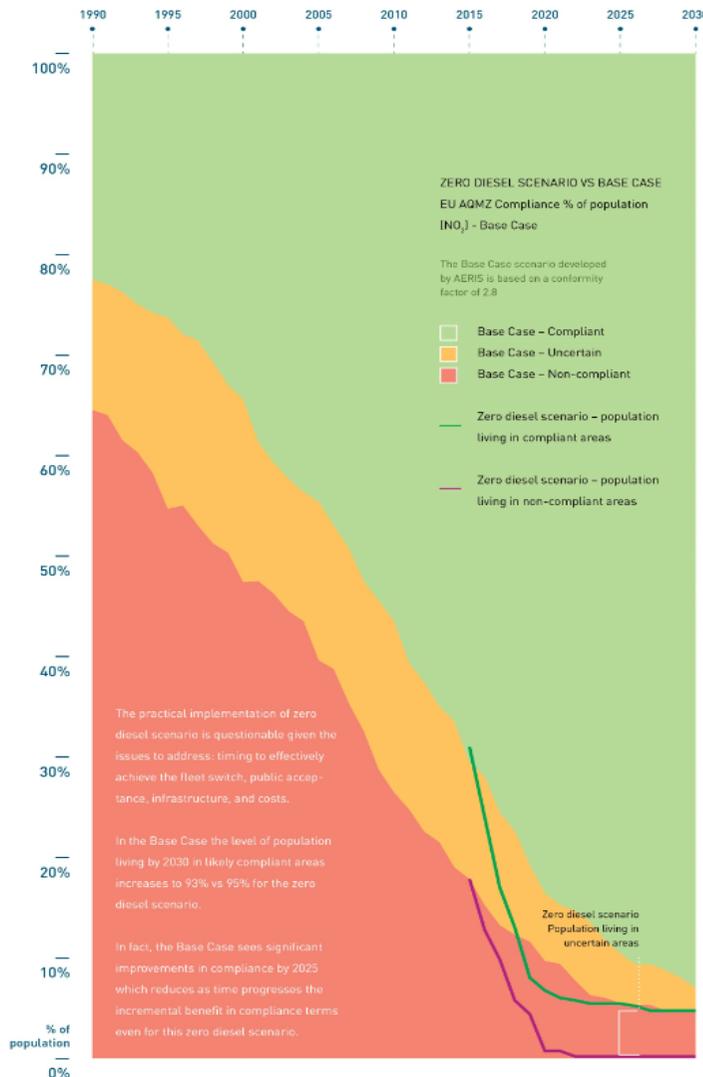


The effects on world economy without oil

- *If Authorities effectively decided to phase out diesel and gasoline vehicles, the shut-down of oil industry will be inevitable*
- *But oil industry provide with many other products that are of vital importance for world economy. Some examples of oil products without alternative in medium - long term:*
 - *Diesel for freights (90% of the world demand)*
 - *Jet fuel for aircrafts (99.5% of the world demand)*
 - *Bunker for ships (98% of the world demand)*
 - *Bitumen for road pavements (to ensure road security and comfort)*
 - *Petrochemical feedstock (70% of the world demand)*
 - *Heating products (essential in certain remote areas without natural gas and electricity)*
 - *Many products for the electric cars: electrolytes for lithium-ion batteries; plastic and rubber parts to reduce the weight; tires; lubricants; ecc.*
- *It's clear that in any energy transitions pathway to low carbon economy the oil industry will remain essential for everyday life.*



Addressing the urban air quality challenge



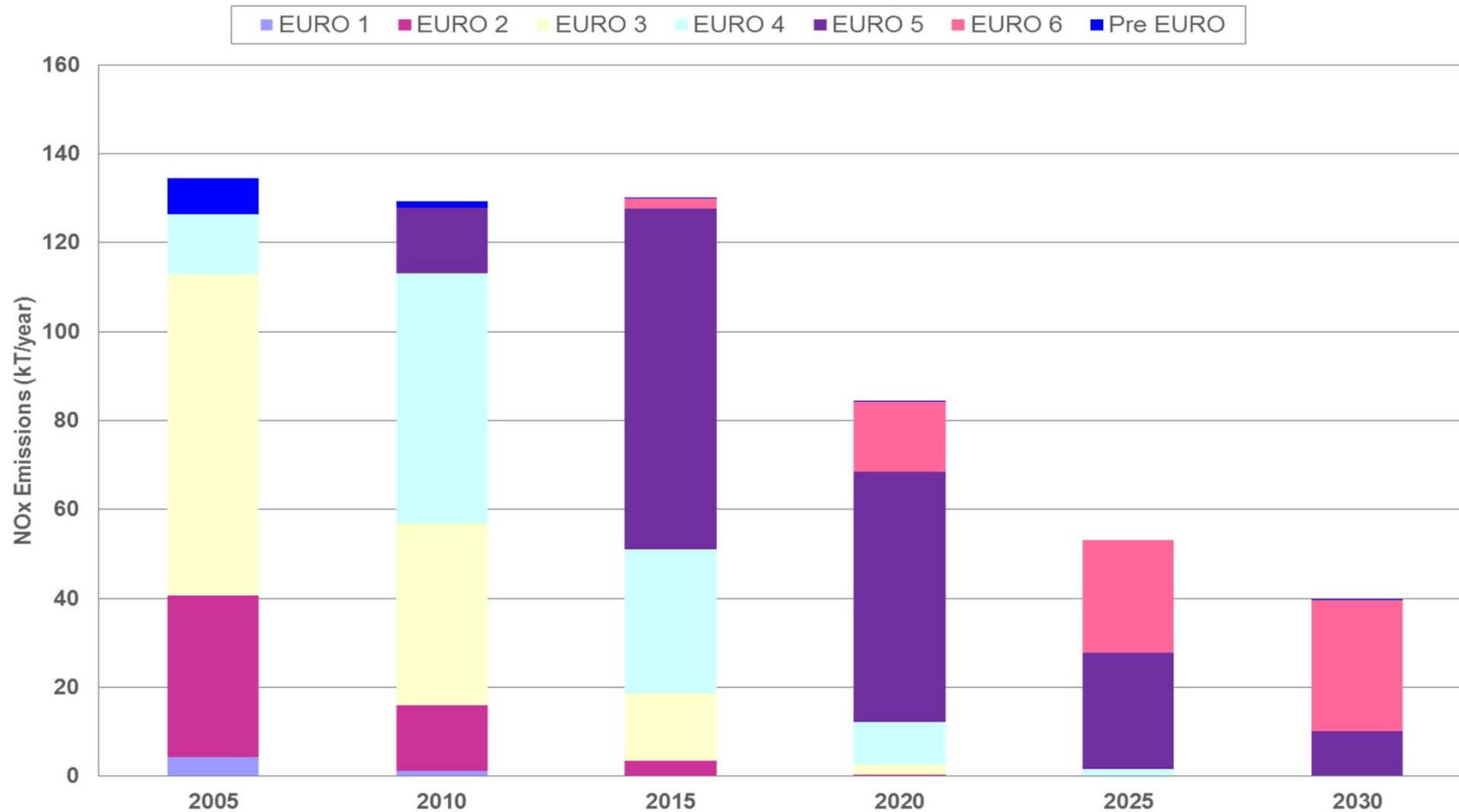
	Zero diesel scenario – population living in compliant areas
	Zero diesel scenario – population living in non-compliant areas

- **The practical implementation of zero diesel scenario is questionable given the issues to address: timing to effectively achieve the fleet switch, public acceptance, infrastructure, and costs**
- **In the Base Case the level of population living by 2030 in likely compliant areas increases to 93% vs 95% for the zero diesel scenario**
- **In fact, the Base Case sees significant improvements in compliance by 2025 which reduces as time progresses the incremental benefit in compliance terms even for this zero diesel scenario**



Addressing the urban air quality challenge

Italy Projections of NOx Emissions from Diesel Cars by EURO Standards
(Source IIASA)



Unione Petrolifera proposal for air quality improvement

- ***Acceleration of the turn over of car fleet with Euro 6c vehicles fueled with conventional fuels, CNG and GPL with both normal and hybrid engines. It's the only way to have immediate effects on air quality***
- ***Scrapping cars from Euro zero to Euro 3 as quickly as possible.***
- ***Strong incentives to public transport, especially on electric rail and trolleybus.***
- ***Infrastructural investments to improve the flow traffic***
- ***No battery electric buses, as these are far long from the technological maturity.***
- ***Establishment of low emission zones for the most critical situations in the city, whit traffic restrictions even strong***
- ***Free circulation of electric cars in low emission zones***



Unione Petrolifera proposal for low carbon mobility

- *To meet the EU binding targets on transport in coherence with technology neutrality, avoiding to force any specific form of mobility*
- *Coexistence between conventional mobility and electrical mobility provided that the latter has achieved the significant improvements expected on the batteries, the charging infrastructure has been realized and the electricity from renewable sources will be able to meet the demand of both transport and domestic/industrial users*
- *Conventional vehicles with advanced efficient ICE combined with liquid fuels containing advanced lower-carbon component*
- *Diesel and gasoline produced, strongly reducing the current greenhouse gases emissions in refineries, including the capture and storage of CO2 emitted*
- *Huge growth in the production of advanced liquid and gaseous biofuels, in particular biomethane from urban and agricultural waste with zero CO2 emissions*
- *Introduction in the market of liquid fuel produced from renewable hydrogen.*



Concluding remarks

- *The petroleum fuels, due to their superior energy density in respect to any available alternative provide economic and technological advantages in comparison to any other competing fuels or other energy sources.*
- *The oil industry will continue to invest in research and development activities to contribute to reach the future decarbonization targets;*
- *The improvements in ICE's technology (including hybridization) and the deployment of all potentials of liquid fuels could in fact play a key role to reduce the GHG intensity in transport by 2030.*
- *The optimization of liquid fuels production and use could give a strong reduction of GHG emissions from all transport activities (**not just passenger cars but also heavy duty, air and marine transport**) and at comparably lower cost versus other alternatives.*
- *Moreover the relevant improvement on liquid fuels emissions can be deployed without the need of huge investments in energy generation and distribution infrastructures, but using existing assets.*

Thank you for your attention