



# Oleofuels Business Today, Vision & Strategy

## An Oil Company Perspective

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Oleofuels 2015 Conference

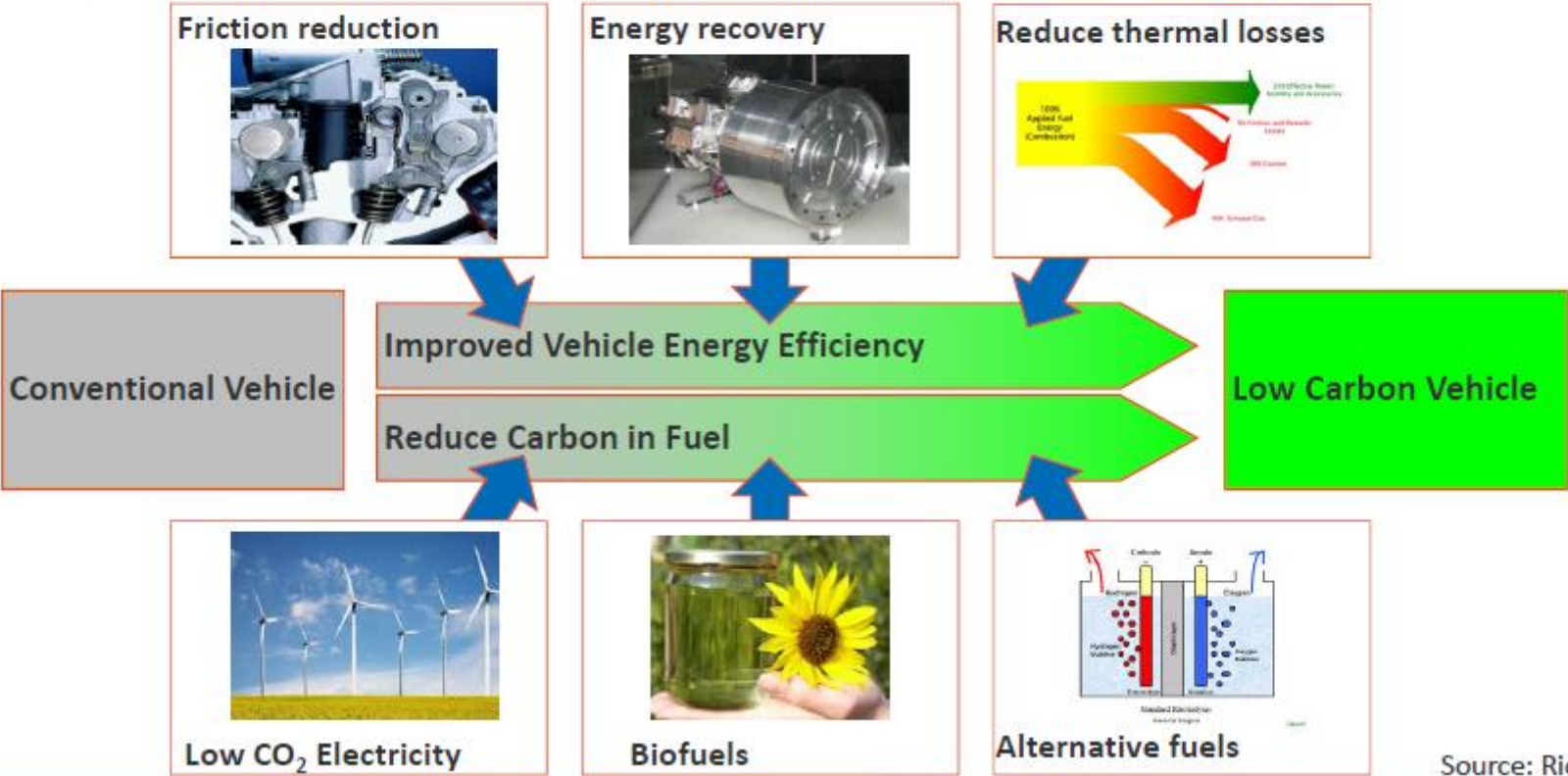


## • The future of transport

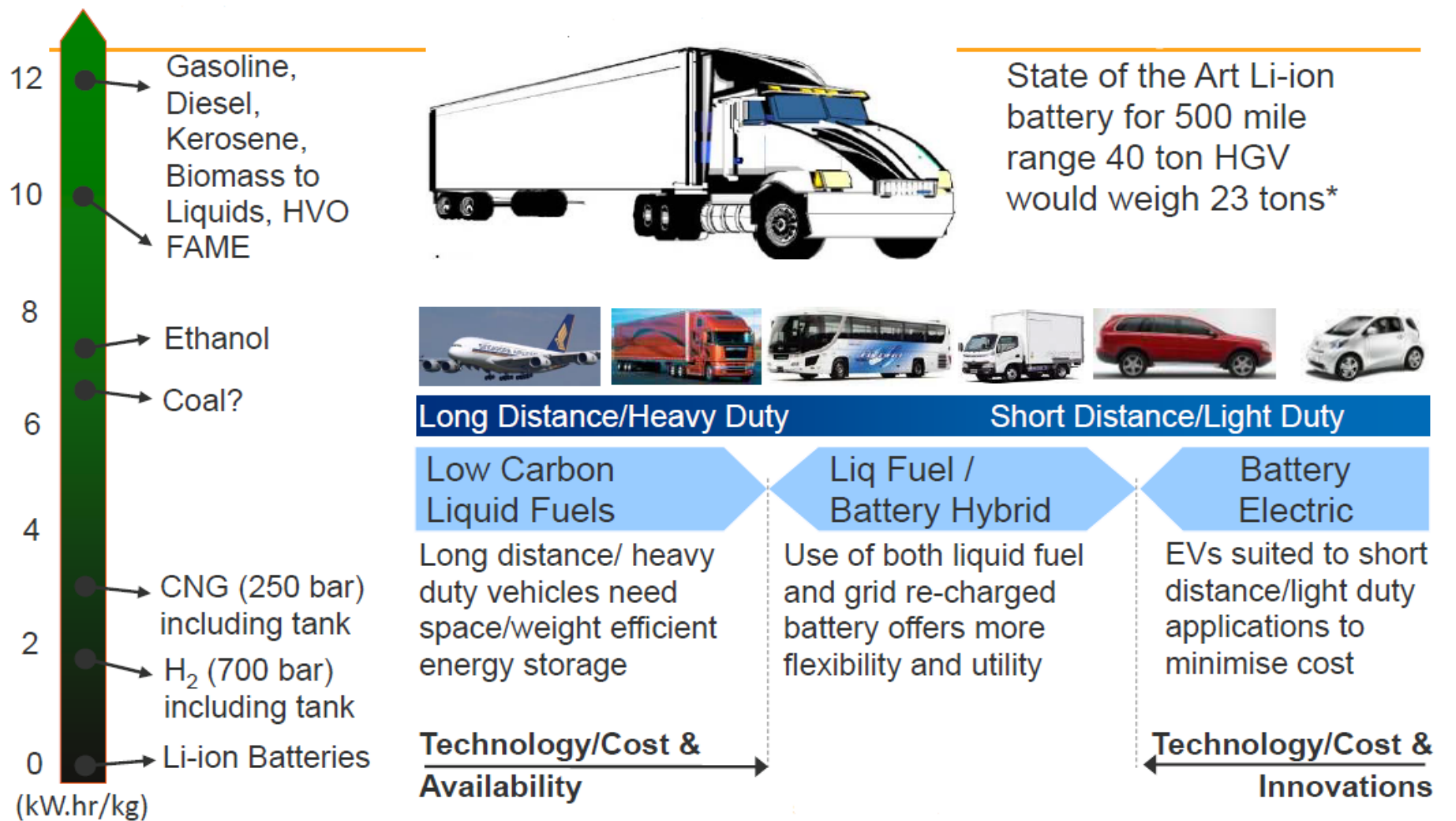
- Hellenic Petroleum overview
- Renewable energy strategy
- Investing in new technologies in energy and transport

# Transport Focus has been on Energy/GHG Reduction

- Options broadly fall into two categories:
  - Improve vehicle efficiency.
  - Reduce carbon footprint of fuel.
- Both pathways result in reduced CO<sub>2</sub> emissions for a specific vehicle/condition.

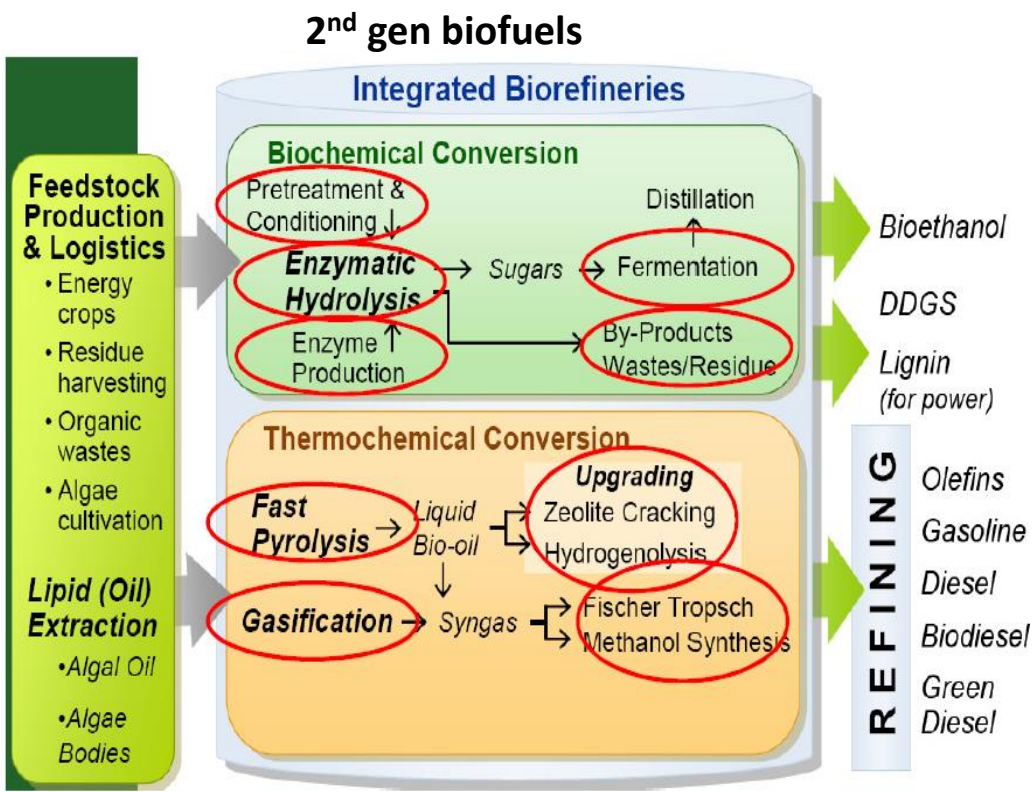
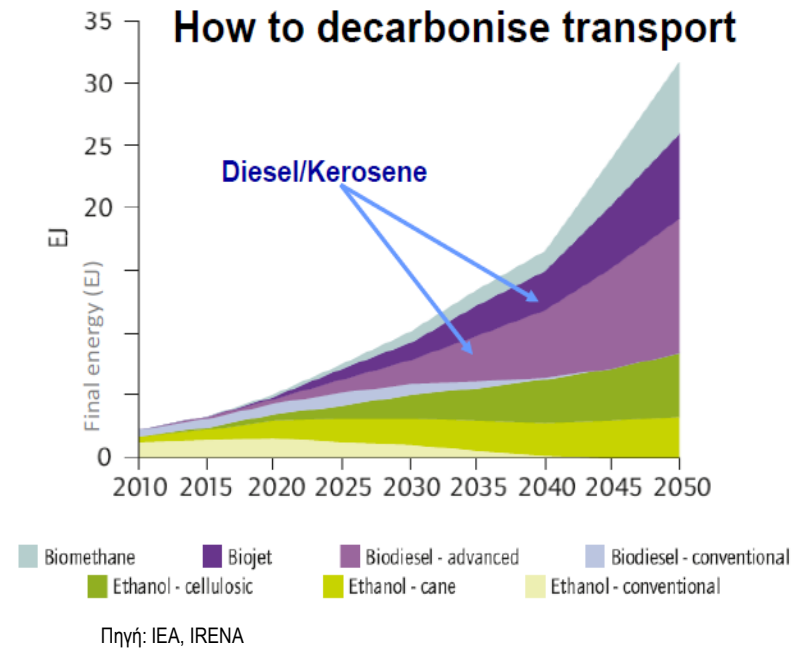


# Electric Vehicles likely attractive for some light duty applications but long haul will need low carbon fuels



Πηγή: Ricardo research & US DoE

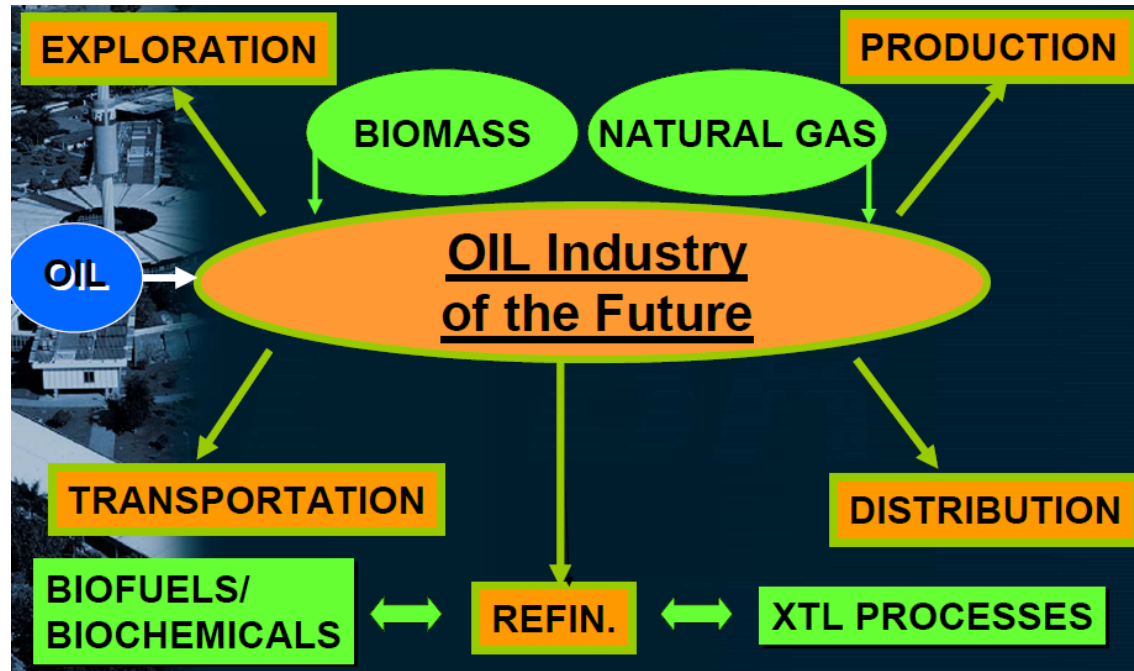
# Next generation biofuels can be an alternative



Πηγή: IEA - Bioenergy



## Biorefinery – oil industry's next step



- ✓ Increasing stringent environmental regulation
- ✓ Growing demand for cleaner fuels
- ✓ Increase in the production of derivatives from declining quality oil
- ✓ Growing pressure of several segments of the society aiming at the reduction of GHG
- ✓ Search for alternative raw materials such as biomass, NG and coal
- ✓ Profitability maintenance - Survival

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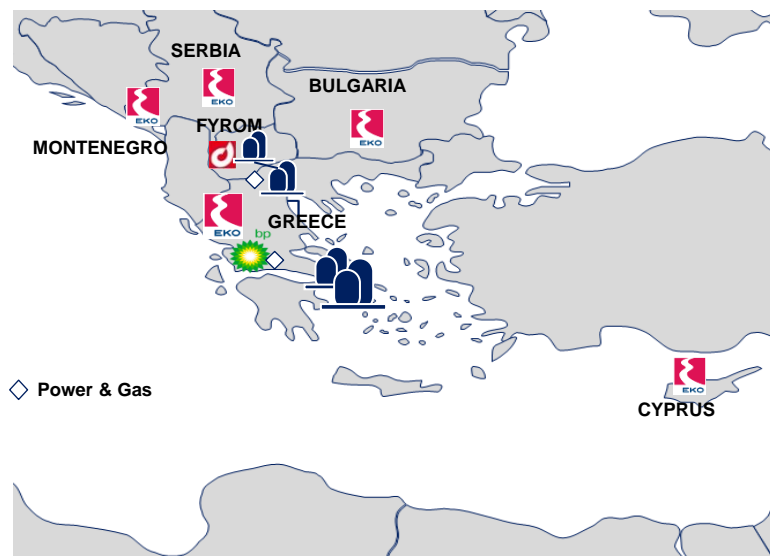


- Hellenic Petroleum overview

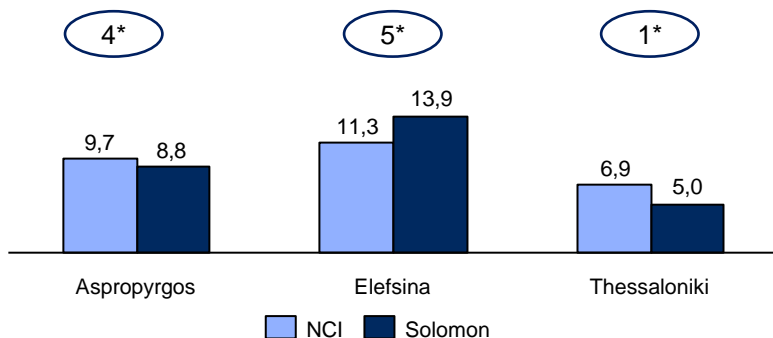
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# Leading independent refiner in SEE with recently upgraded complex refining asset base; sales evenly split between exports and domestic, where leading market position supports high over-performance vs benchmarks

## Group operational footprint



## Nelson/Solomon complexity and benchmark margins



(\*) Average benchmark margins 2014-2015 (\$/bbl)

- High complexity and net cash margin refineries
- Balanced sales channel mix with exports at 50% of total sales
- Regional footprint with international subsidiaries
- > 70% of cashflows driven from international sales and regional benchmark margins
- Leading domestic market position with c.60-65% of wholesale and c.30% of retail
- Marketing and Petchems vertically integrated with Refining; diversification in G&P
- Completed extensive restructuring plan significantly improving competitiveness position with c.€50 -70m of further upside




# Assets overview

## Core business around downstream assets with activities across the energy value chain

		DESCRIPTION	METRICS
Exploration & Production		<ul style="list-style-type: none"> <li>Exploration assets in Greece, Montenegro</li> </ul>	
Refining, Supply & Trading		<ul style="list-style-type: none"> <li>Complex (recently upgraded) refining system:               <ul style="list-style-type: none"> <li>Aspropyrgos (FCC, 148kbpd)</li> <li>Elefsina (HDC, 100kbpd)</li> <li>Thessaloniki (HS, 93kbpd)</li> </ul> </li> <li>Pipeline fed refinery/terminal in FYROM</li> </ul>	<ul style="list-style-type: none"> <li>Capacity: 16MT</li> <li>NCI: 9.6</li> <li>Market share: 65%</li> <li>Tankage: 7m M<sup>3</sup></li> </ul>
Petrochemicals		<ul style="list-style-type: none"> <li>Basel technology PP production (integrated with refining) and trading</li> <li>&gt; 60% exports in the Med basin</li> </ul>	<ul style="list-style-type: none"> <li>Capacity (PP): 220 kt</li> </ul>
Domestic Marketing		<ul style="list-style-type: none"> <li>Leading position in all market channels (Retail, Commercial, Aviation, Bunkering) through EKO and HF (BP branded network)</li> </ul>	<ul style="list-style-type: none"> <li>c.1,700 petrol stations</li> <li>30% market share</li> <li>Sales volumes: 3MT</li> </ul>
International Marketing		<ul style="list-style-type: none"> <li>Strong position in Cyprus, Montenegro, Serbia, Bulgaria, FYROM</li> <li>Advantage on supply chain/vertical integration</li> </ul>	<ul style="list-style-type: none"> <li>c.290 petrol stations</li> <li>Sales volumes: 1MT</li> </ul>
Power & Gas		<ul style="list-style-type: none"> <li>ELPEDISON: Second largest IPP in Greece (JV with Edison/EdF)</li> <li>DEPA/DESFA GROUP: 35% in Greece's incumbent NatGas supply company (DESFA in sale process)</li> </ul>	<ul style="list-style-type: none"> <li>Capacity: 810 MW (CCGT)</li> <li>Volumes (2014): 3.0bcm</li> </ul>

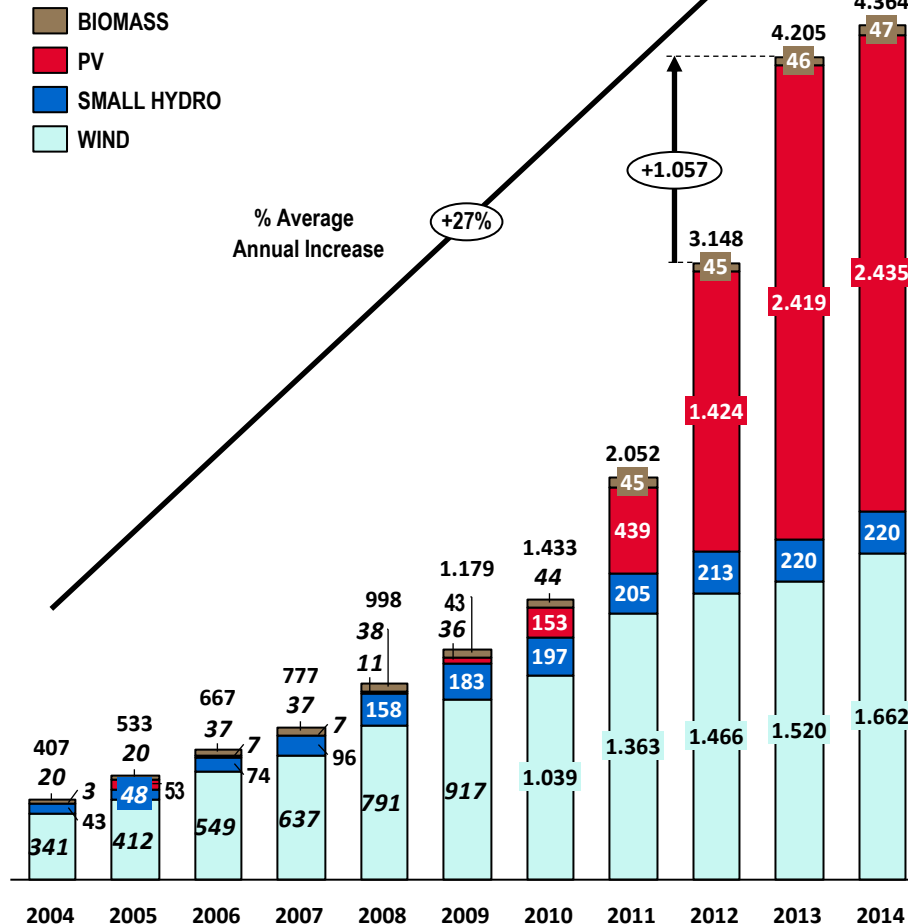
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# The Greek renewables sector: one of the fastest growing in Europe with increasing contribution in the energy mix

## RES Installed capacity on the grid (interconnected)

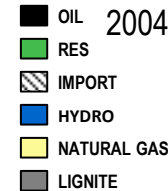
2004-2014 (MW)



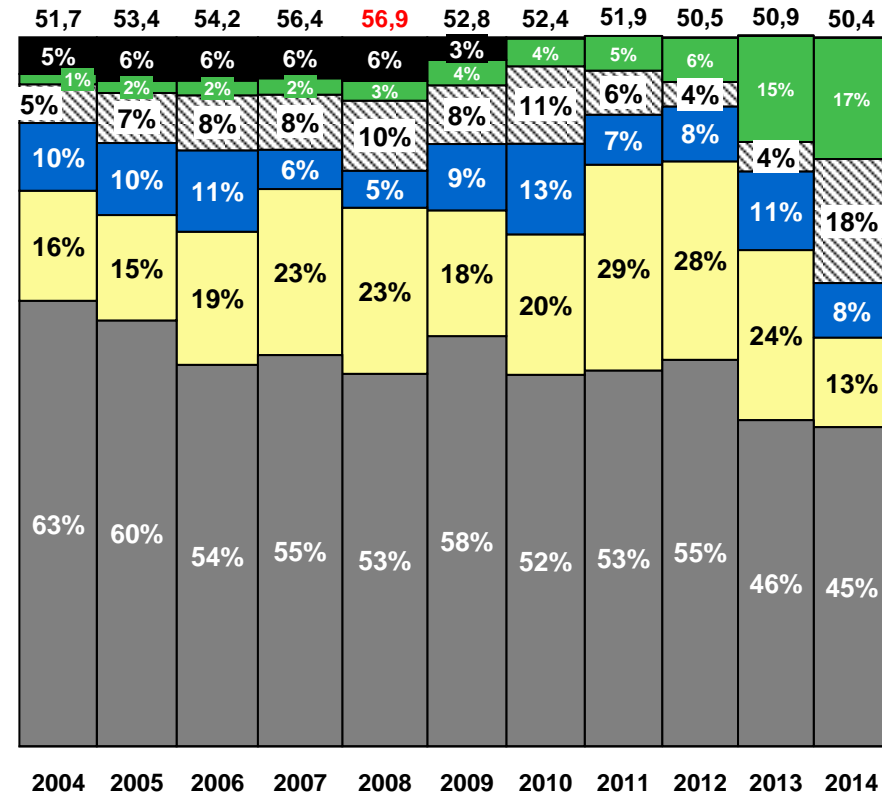
SMALL HYDRO < 15MW

## RES contribution in electricity consumption

2004-2014 (TWh)



*Note: This is the energy consumption monitored on the HV grid. The increased penetration of PV in the last 3-4 years resulted in the decrease of HV consumption. Overall there is a stabilization of the consumption in the last 3 years.*



Source: ADMIE – INDEPENDENT POWER TRANSMISSION OPERATOR

# ELPE Renewables is Hellenic Petroleum Group's renewables and new technology arm

## Renewables Strategic Goals:

- Renewable electricity installed capacity: 100-200 MW
- Balanced and diversified portfolio

## To be achieved through:

- Pipeline c.200 MW (PV, Wind, Biomass, Hybrid) in various stages of development
- Selective acquisitions
- Strategic partnerships

## Competitive Advantage:

- In-house know-how in procurement, project management and operation of RES units
- ELPE Group's real estate for RES project development
- Credible and reliable partner for renewables projects in Greece
- Better access to funding of projects in a challenging environment
- ELPE Group already active in electricity production and trading through ELPEDISON



# Investing in Renewable Energy Sources

- Developing renewable electricity to diversify Group's energy portfolio. Also offsetting part of CO<sub>2</sub> emissions due to refining and power generation.
  - Wind farm and PV stations in operation
  - Developing a 200 MW portfolio (in various maturity stages)
- Expanding in biofuels
  - 2<sup>nd</sup> and 3<sup>rd</sup> generation biofuels



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# Supporting new technologies in energy and transport

- Supporting R&D projects with various academic institutions :
  - ✓ “Sustain-Diesel”: hybrid diesel from used cooking oils
  - ✓ “Sustainable use of marine microalgae for the production of biofuels and high-added value biochemicals”: 3<sup>rd</sup> gen biofuels
- Pilot applications of alternative technologies in transport
  - ✓ Electric vehicle charging points in selected petrol stations
- Corporate Venture Capital - under discussion



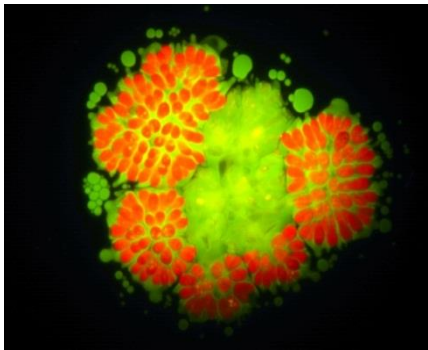
# Participating in R&D projects ...



Sustain-Diesel



Hydrosol Plant project - FCH JU



Sustainable use of marine microalgae for the production of biofuels and high-added value bio-chemicals



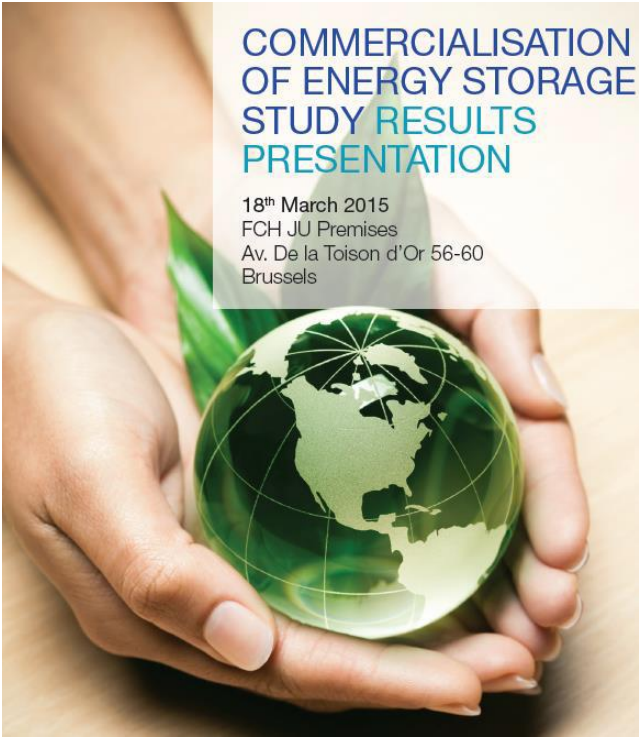
GREEN MEOH

Green MEOH project - CAPITA

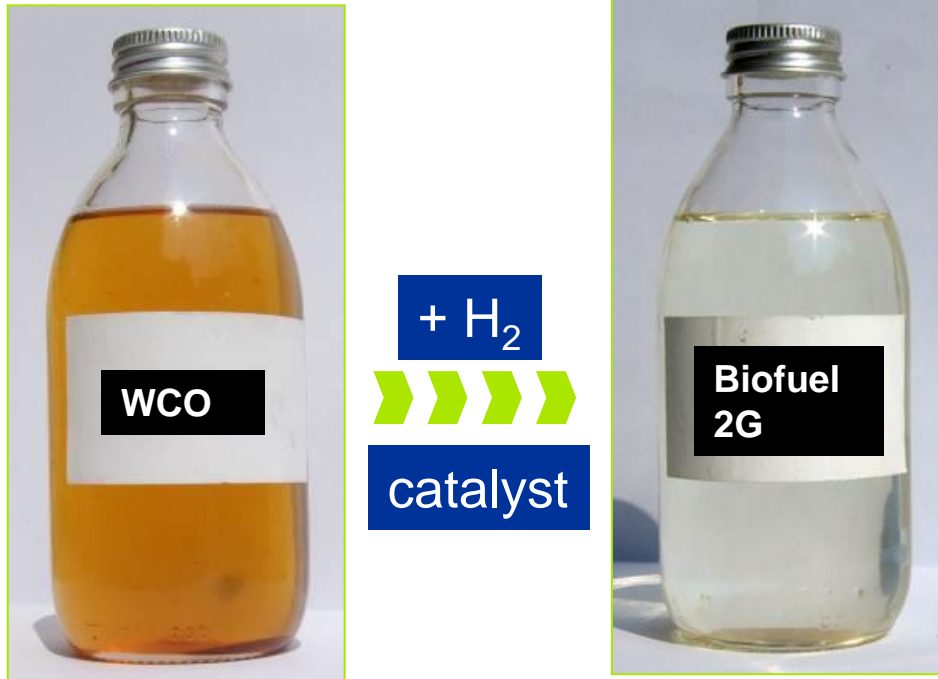


Innovation Clusters

# ... and European Union initiatives



# Sustain Diesel: Used Cooking Oil → Diesel-2G



Potential to cover up to 2% of Greek diesel demand



- Increased cetane
- Higher HHV
- More stable - no TAN
- Sustainable



- Pilot testing to determine max UCO mixing ratios
- Large-scale units require large investments

# Sustain-Diesel: co-hydroprocessing of heavy atmospheric gas-oil/waste cooking oil – next steps

## Market data:

- Vegetable oil annual consumption in Greece: 265.000tn (24Kg/person/year)
- 52.400tn/yr Used Cooking Oil (~15.000tn recycled)
- Vegetable oils: available, mature market & distribution network

## Potential co-processing problems:

- Catalyst deactivation
- Metal corrosion
- Increased hydrogen consumption
- Raw material degradation during storage





# Our vision: Sustainable transport & Clean energy

- Gaining know-how in future energy technologies
- Developing new business
- Converting R&D outputs in production

Evolving to an innovative, reliable and competitive energy supplier in the future





# Hellenic Petroleum: Energy for life

