

International multidisciplinary discussion seminar

Energy policy changes in Central Europe over the
last 20 years in the light of current challenges

20 years of promoting clean fuels in passenger car transport in Europe - hardly a success story

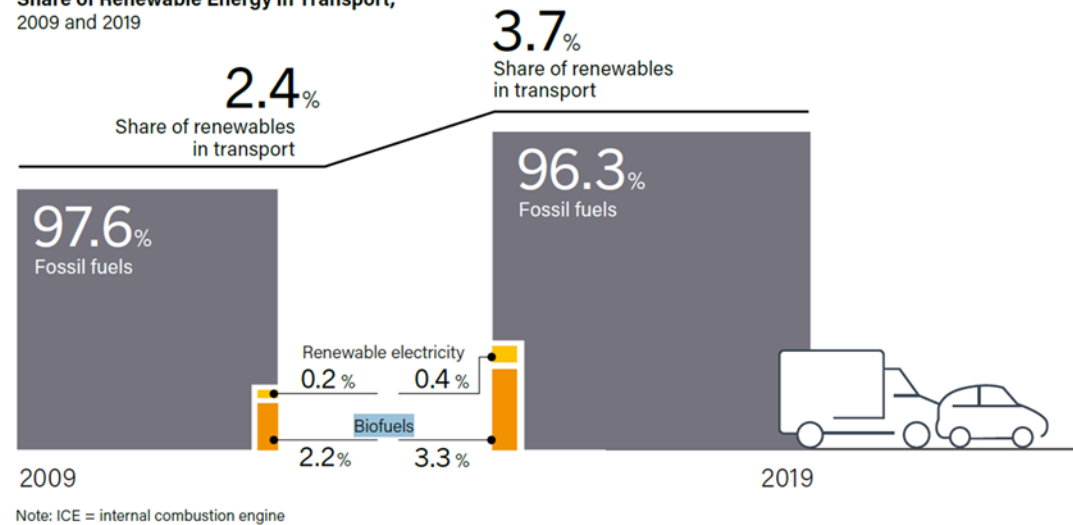
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21.11.2022

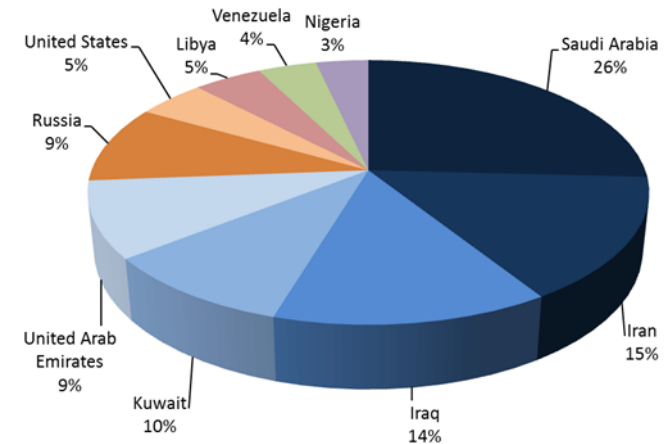
- Introduction
- Policy framework
- Alternative fuels and technologies
 - ✓ Biofuels
 - ✓ Zero-emission vehicles
- Conclusions

- oil products
- least-diversified

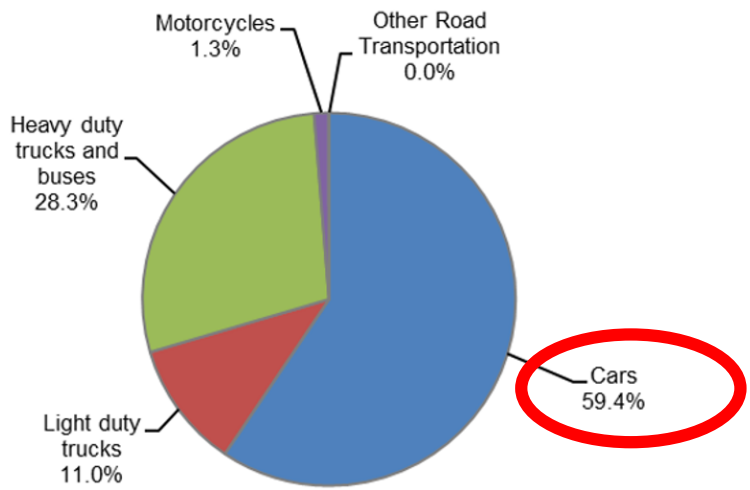
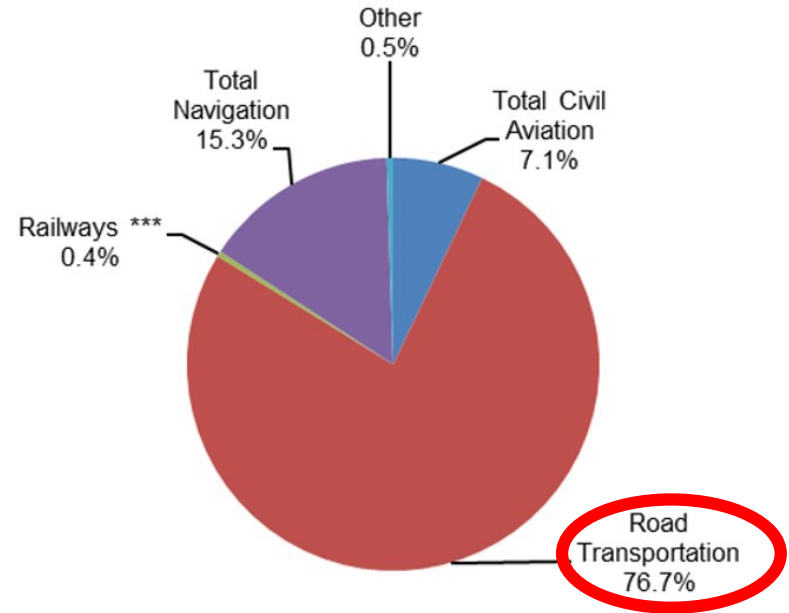
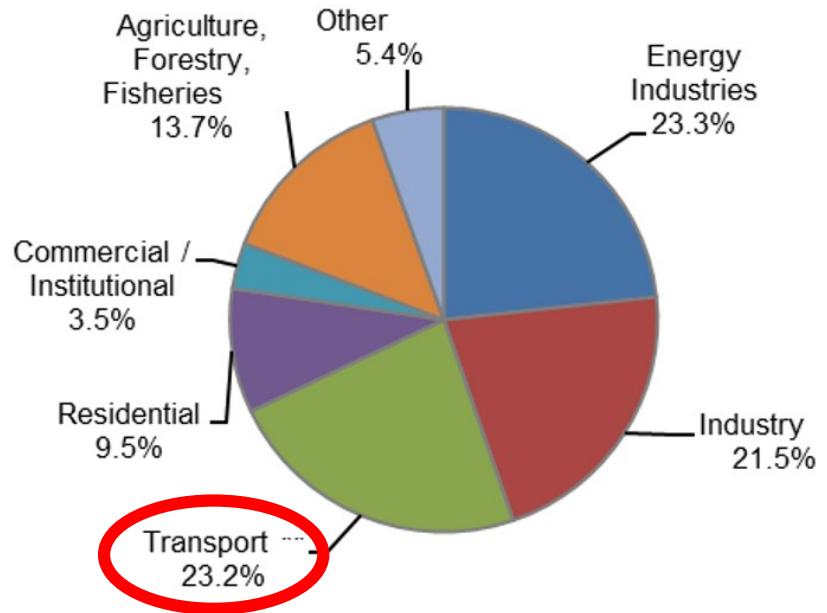
Share of Renewable Energy in Transport, 2009 and 2019



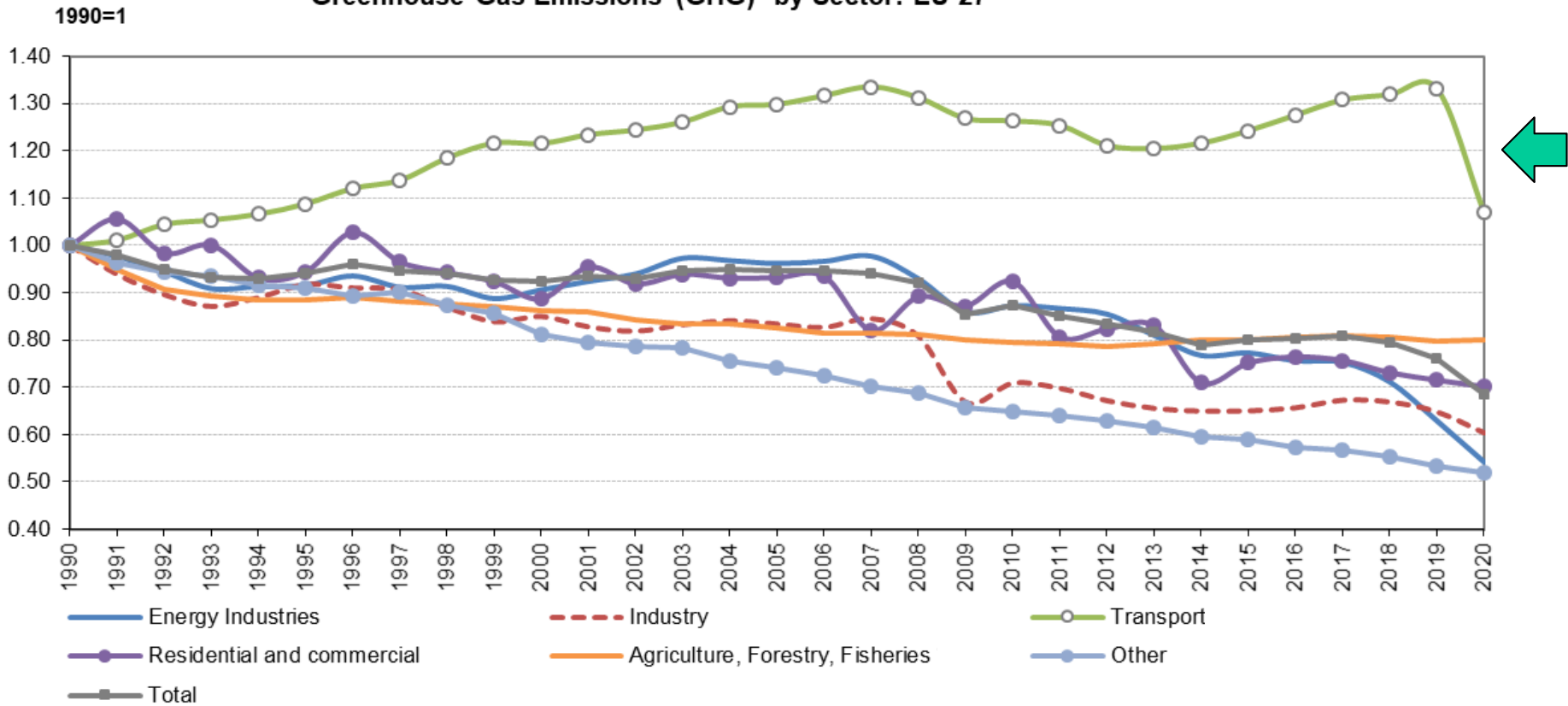
- energy import dependency



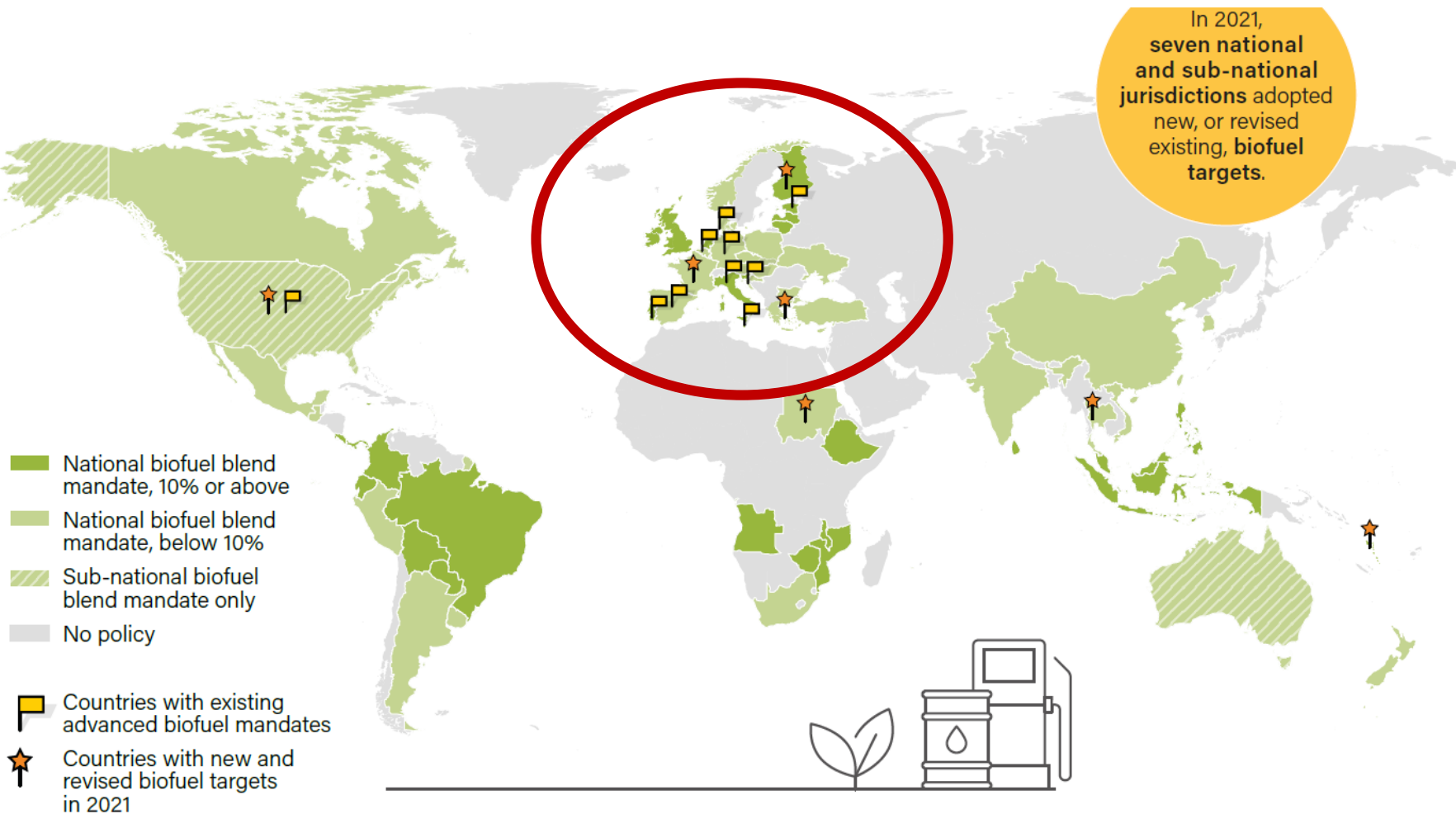
GHG, EU-27 (2020)



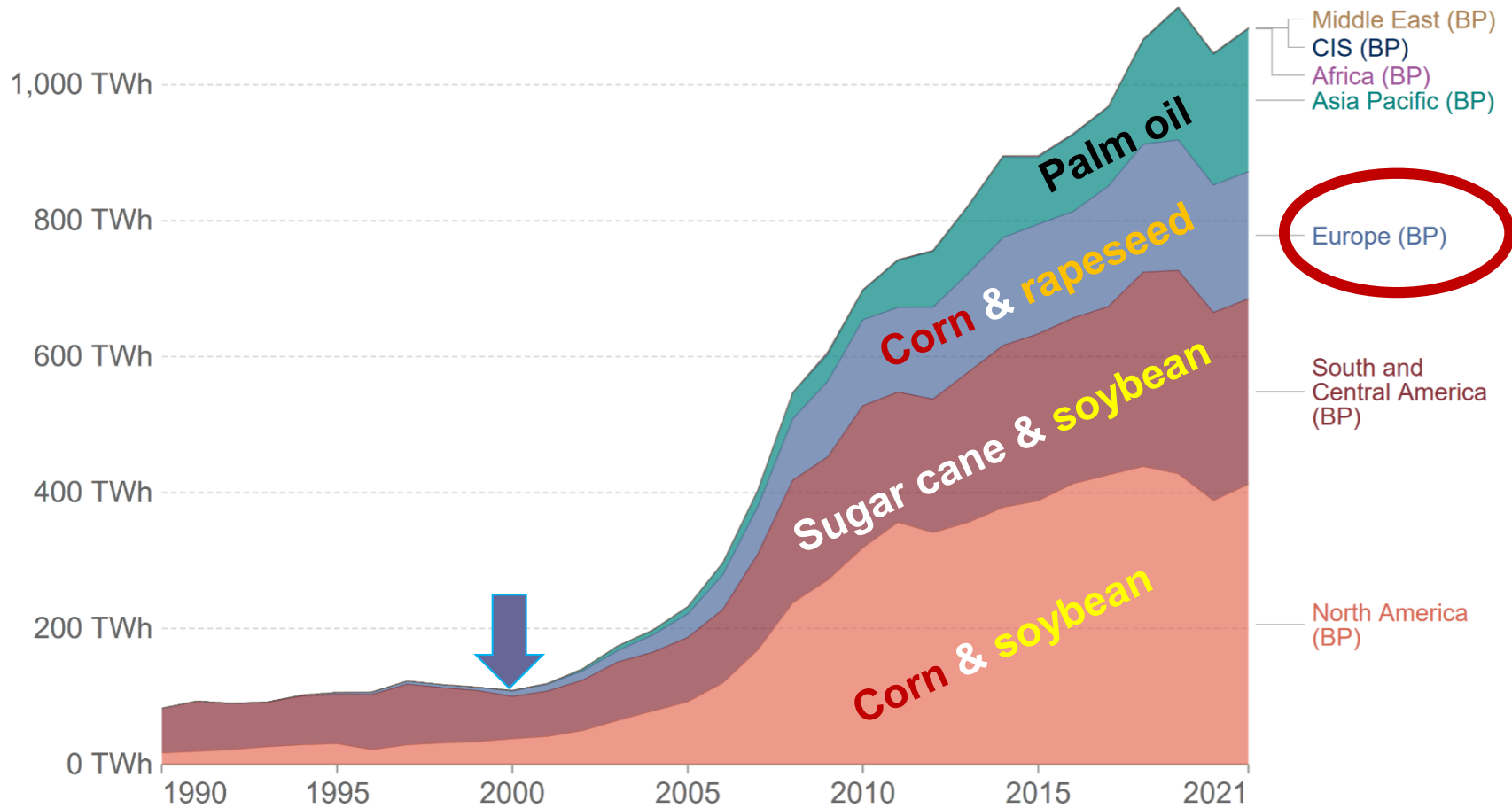
Greenhouse Gas Emissions (GHG)* by Sector: EU-27



National and Sub-National Renewable Biofuel Mandates and Targets



Biofuel production by region



Source: Statistical Review of World Energy - BP (2022)

OurWorldInData.org/renewable-energy • CC BY

Note: CIS (Commonwealth of Independent States) is an organization of ten post-Soviet republics in Eurasia following break-up of the Soviet Union.

1st generation biofuels

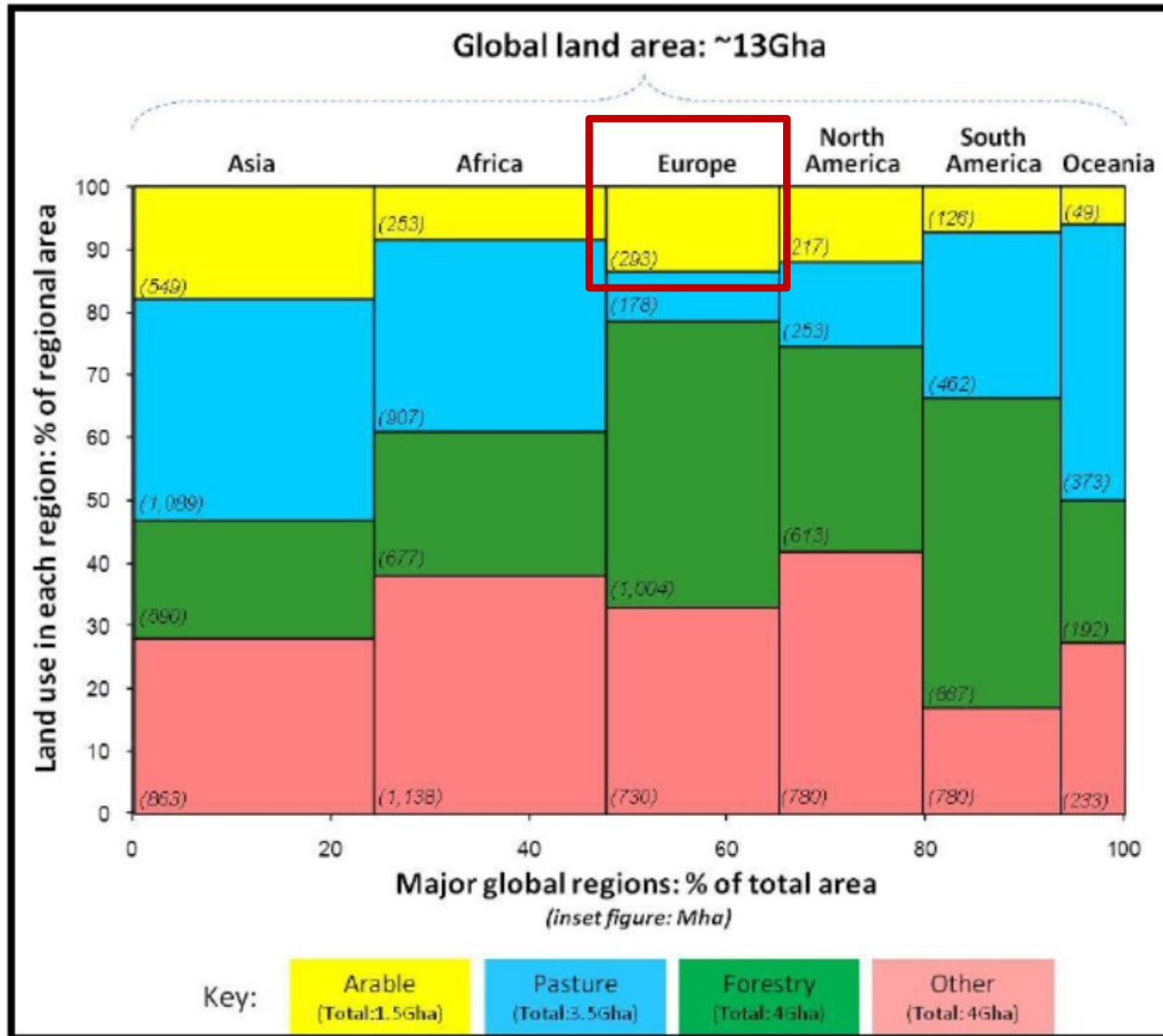
Bioethanol is mostly produced from wheat, corn, sugar beet and sugar cane.



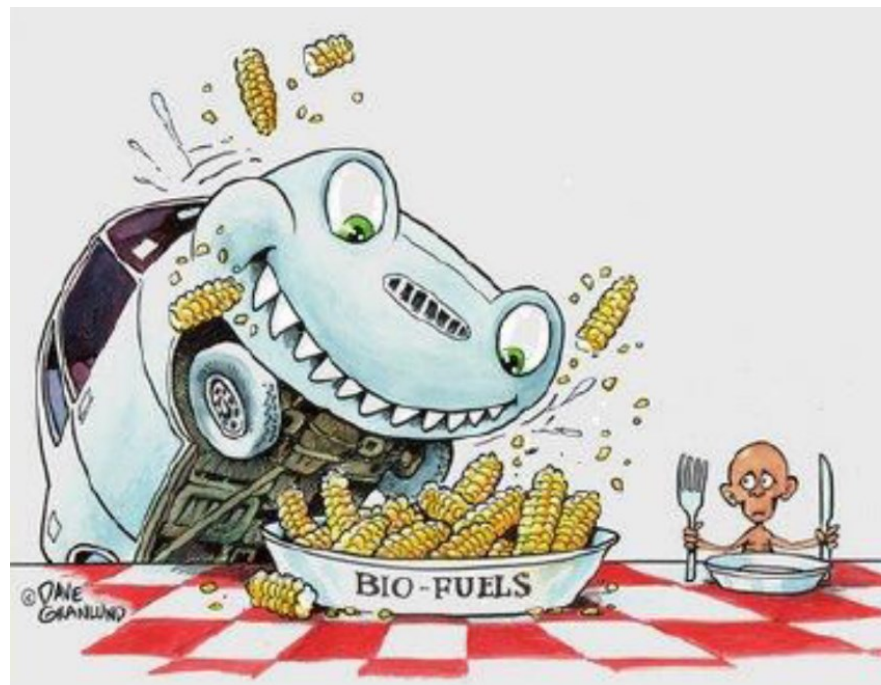
Biodiesel is produced from different kinds of vegetable oil (e.g. rape seed, sunflower, and soybean).



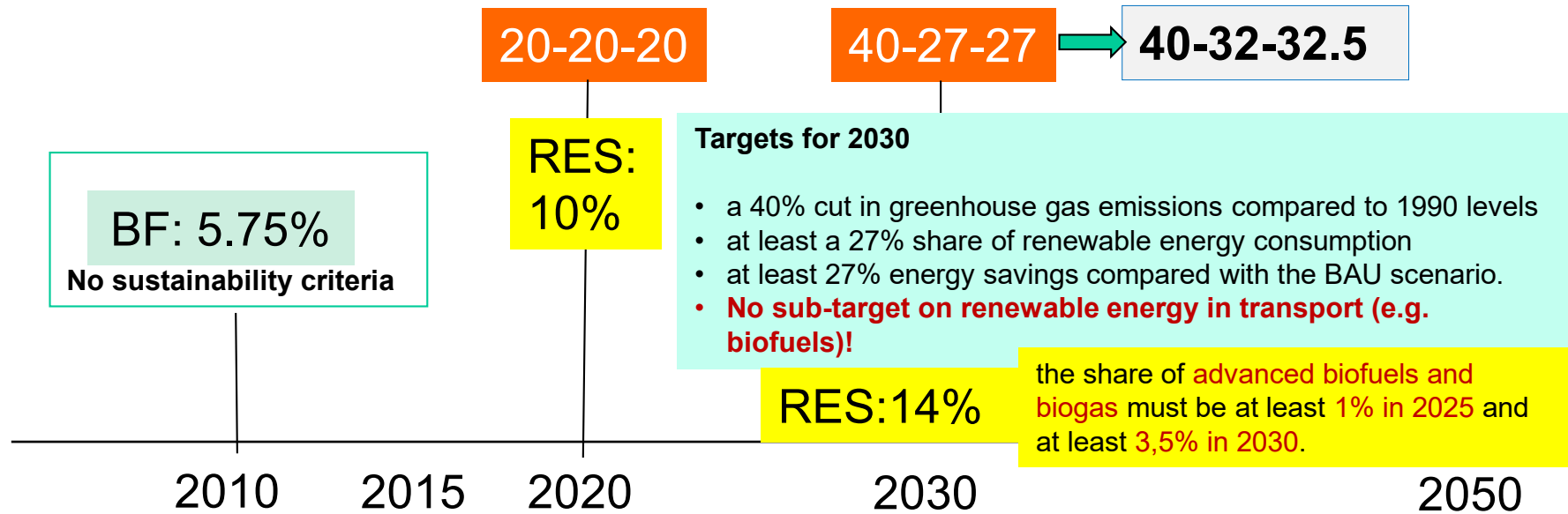
World land use



- + Reduction of GHG emissions
- + Energy security
- + Rural development



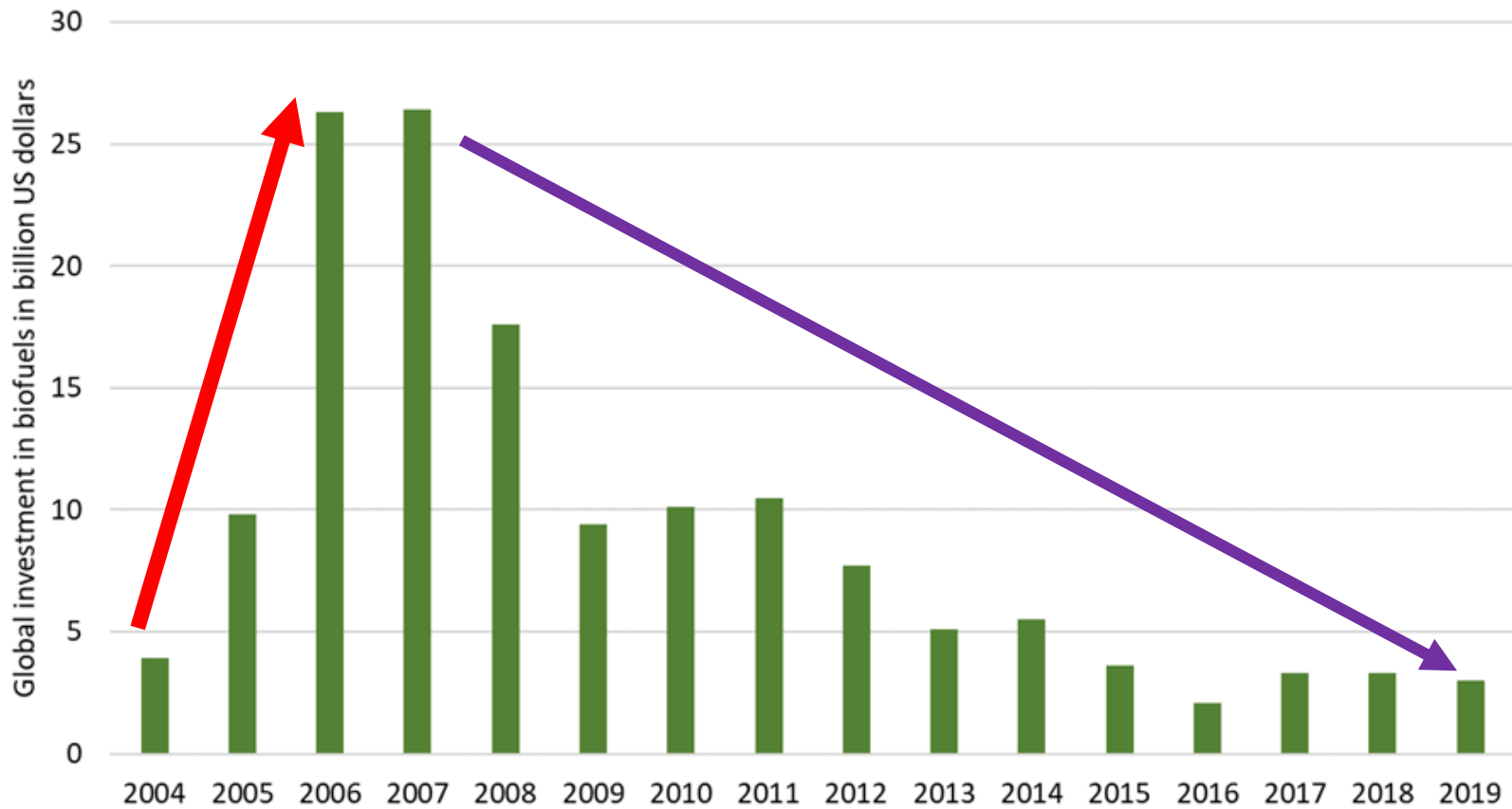
- Food and fuel competition
- Sustainability....risk of increase in GHG emissions – LUC
- Risks of degradation of land, forests, water resources and ecosystems - associated with use of freshwater, fertilizers and pesticides



New legislation approved by European Parliament on 28 April 2015

- Cap of 7% on the contribution (to 2020 targets) of biofuels produced from 'food crops' to mitigate ILUC emissions
- No public support for food crop based biofuels post 2020

Global investment in biofuels



- Optimistic estimates – biofuels contribute ca. one-third of global fuel supply in 2050
 - 2nd generation and 3rd generation –commercially available by 2030
- Incentives for the development of 2 gen. biofuels...especially from wastes and residues
- Biofuel – dependent on markets created by government policy
- Biofuels...in aviation, shipping and heavy goods vehicles

EU - the first climate-neutral continent by 2050

European Green Deal

Sustainable and Smart Mobility Strategy

at least 30 million
zero-emission cars
will be in operation
on European roads

nearly all cars,
vans, buses as
well as new
heavy-duty
vehicles will be
zero-emission.

2030

2050

ICE -50% in city

20% GHG
(2008)

No ICE in city

60% GHG
(1990)

Transport White Paper

Announced 100% ZEV sales targets and bans on ICE vehicle sales



	2025	2030	2035	2040	2045	2050
Costa Rica						●
Denmark		●				
France				●		
Iceland		●				
Ireland		●				
Israel*		●		●		
Netherlands		●			●	
Norway	●					
Portugal				●		
Slovenia		●				
Spain				●		●
Sri Lanka				●		
United Kingdom				●		



ICE sales ban or 100% ZEV sales target



Fleet without ICEs

Advantages

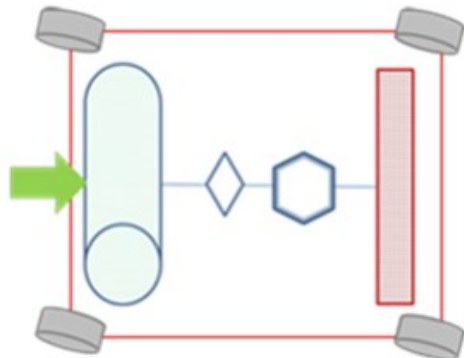
- ✓ Energy efficiency
- ✓ Energy security
- ✓ Air pollution
- ✓ Noise reduction



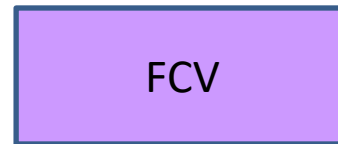
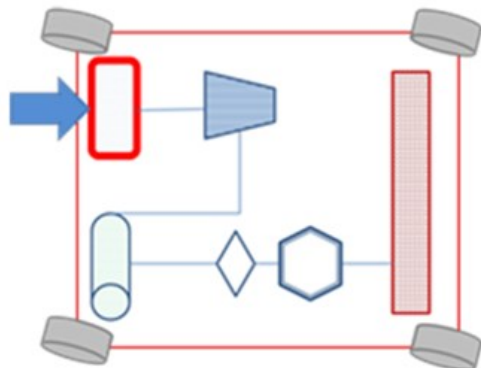
100% electrification

Disadvantages

- Costs
- Charging infrastructure



~ 11 000 000



~ 42 400



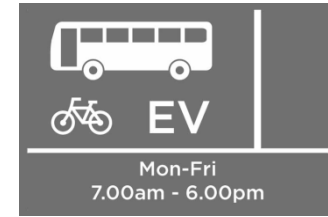
The most commonly used monetary measures are subsidies and exemptions (or reductions) from:

- road taxes
- annual circulation tax
- company car tax
- registration tax
- fuel consumption tax
- congestion charges



Non-monetary measures

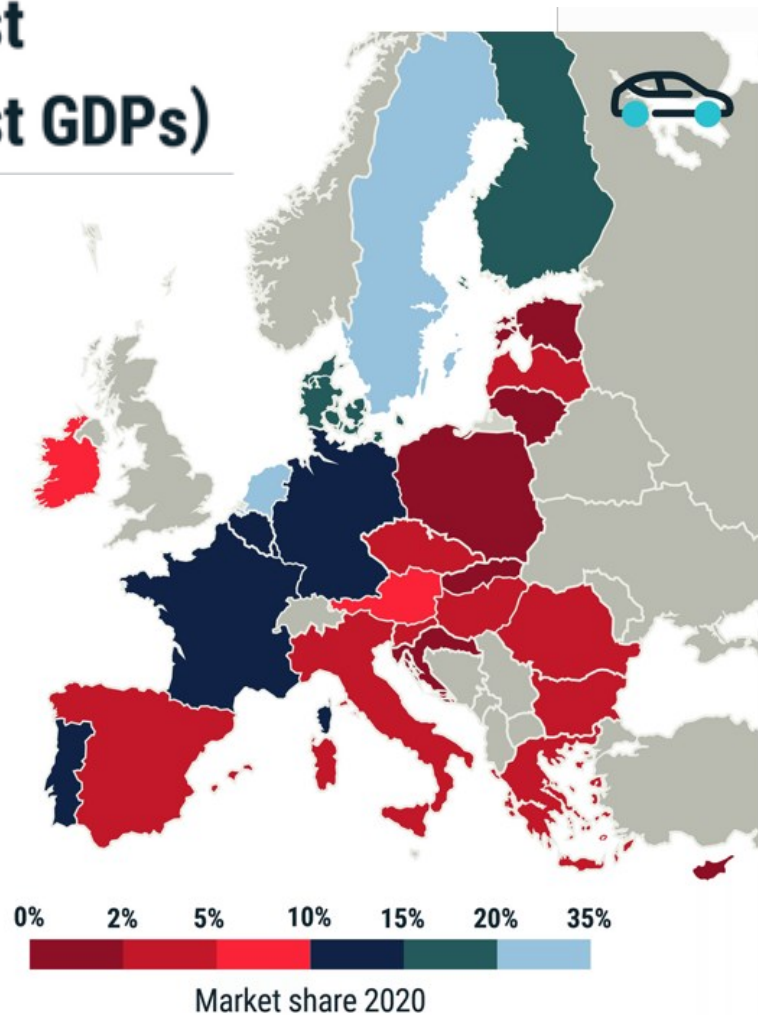
- free parking spaces,
- possibility for EVs drivers to use bus lanes,
- wide availability of charging stations,
- permission for EVs to enter city centers and zero emission zones.



73% of all electric cars are sold in just 4 countries (with some of the highest GDPs)

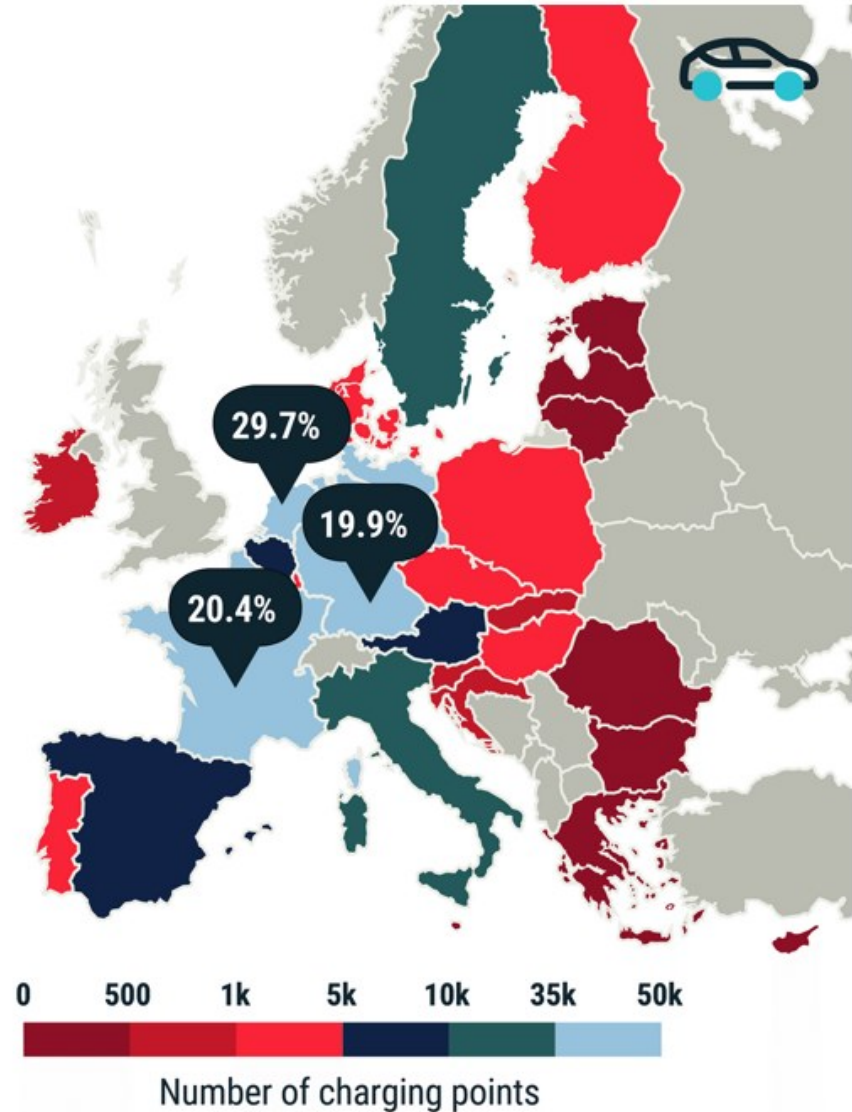
Electric cars < 3% of total sales
= average GDP < €17,000

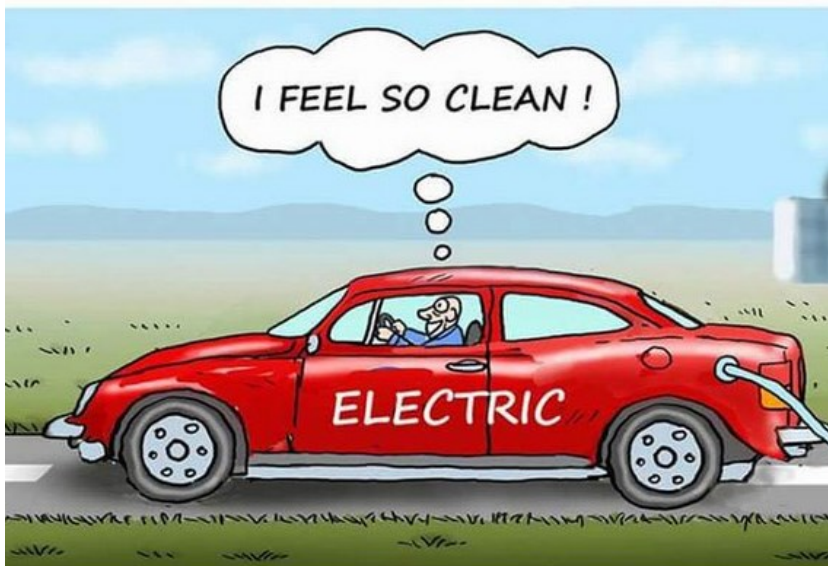
Electric cars > 15% of total sales
= average GDP > €46,000



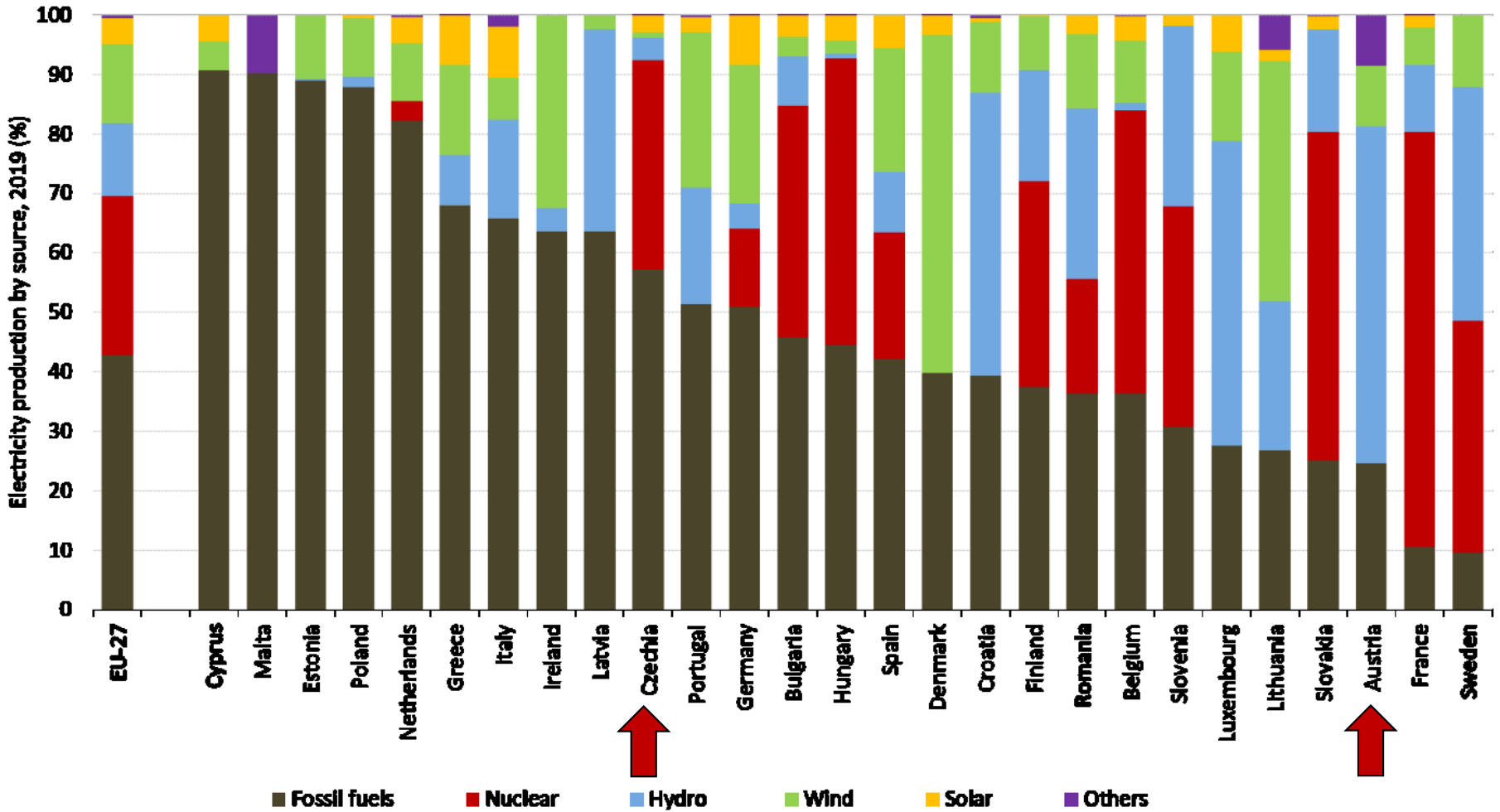
**70% of all charging points:
Located in just 3 EU countries**

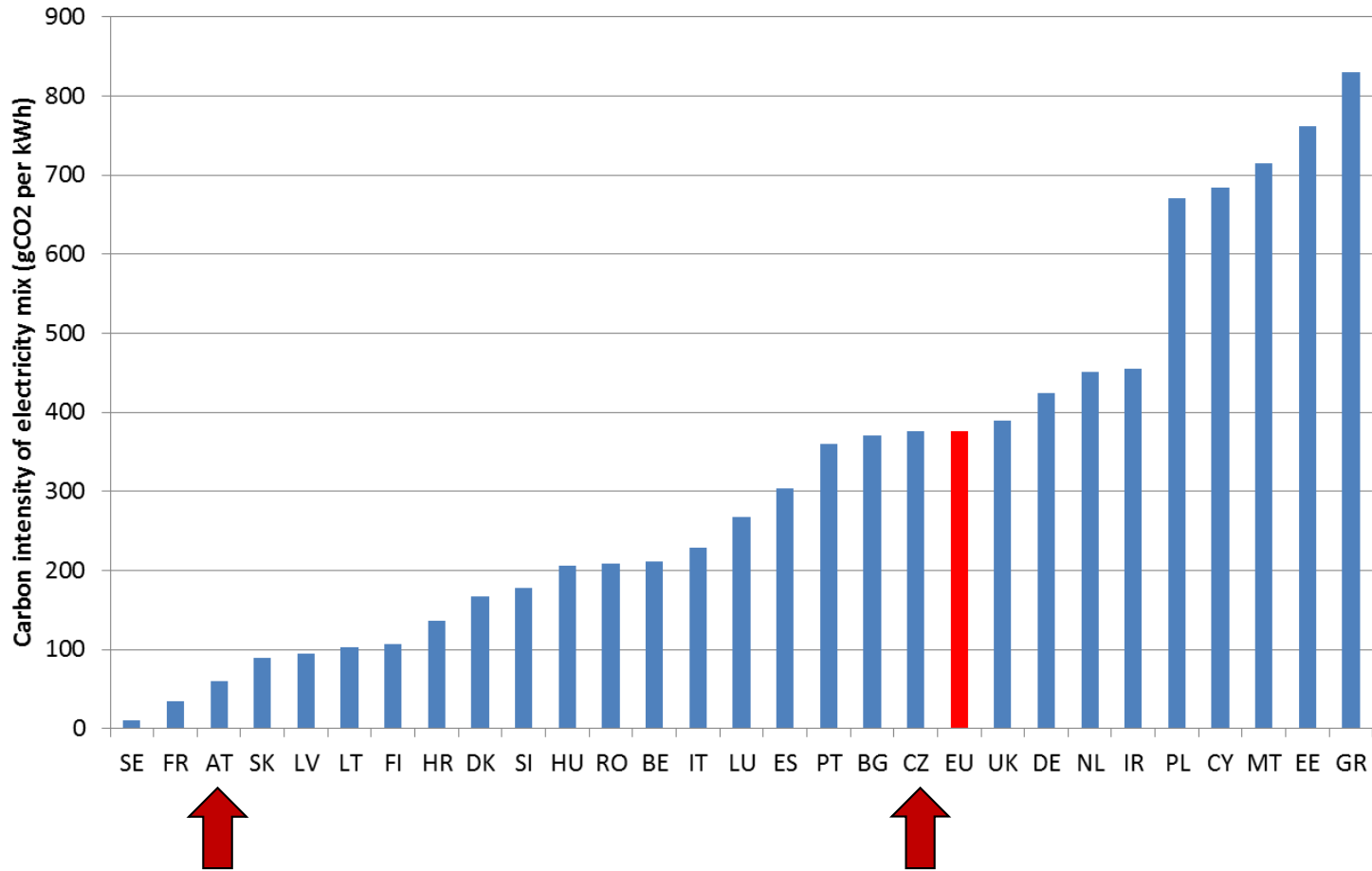
29.7% Netherlands **20.4%** France
19.9% Germany





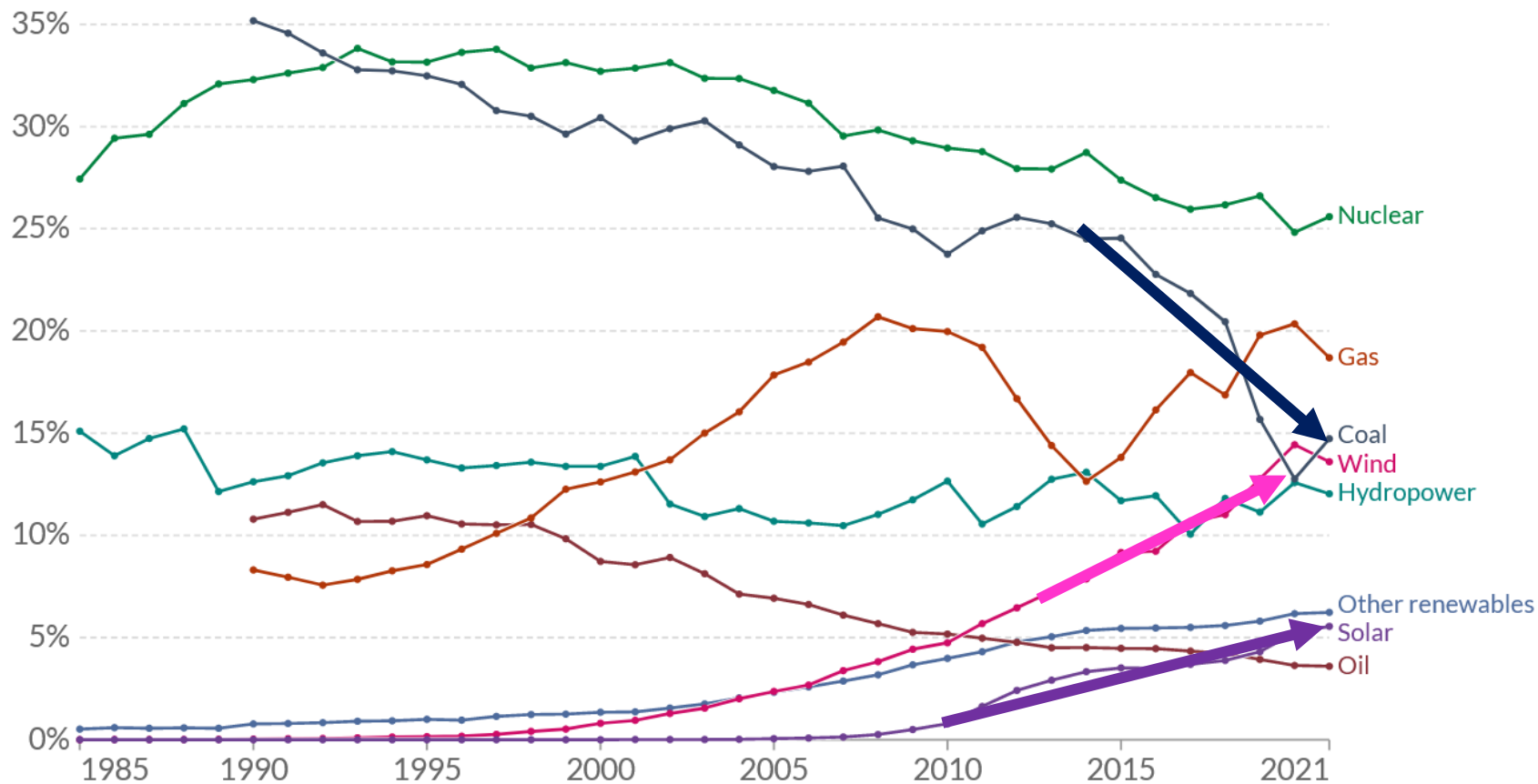
Electricity production by source



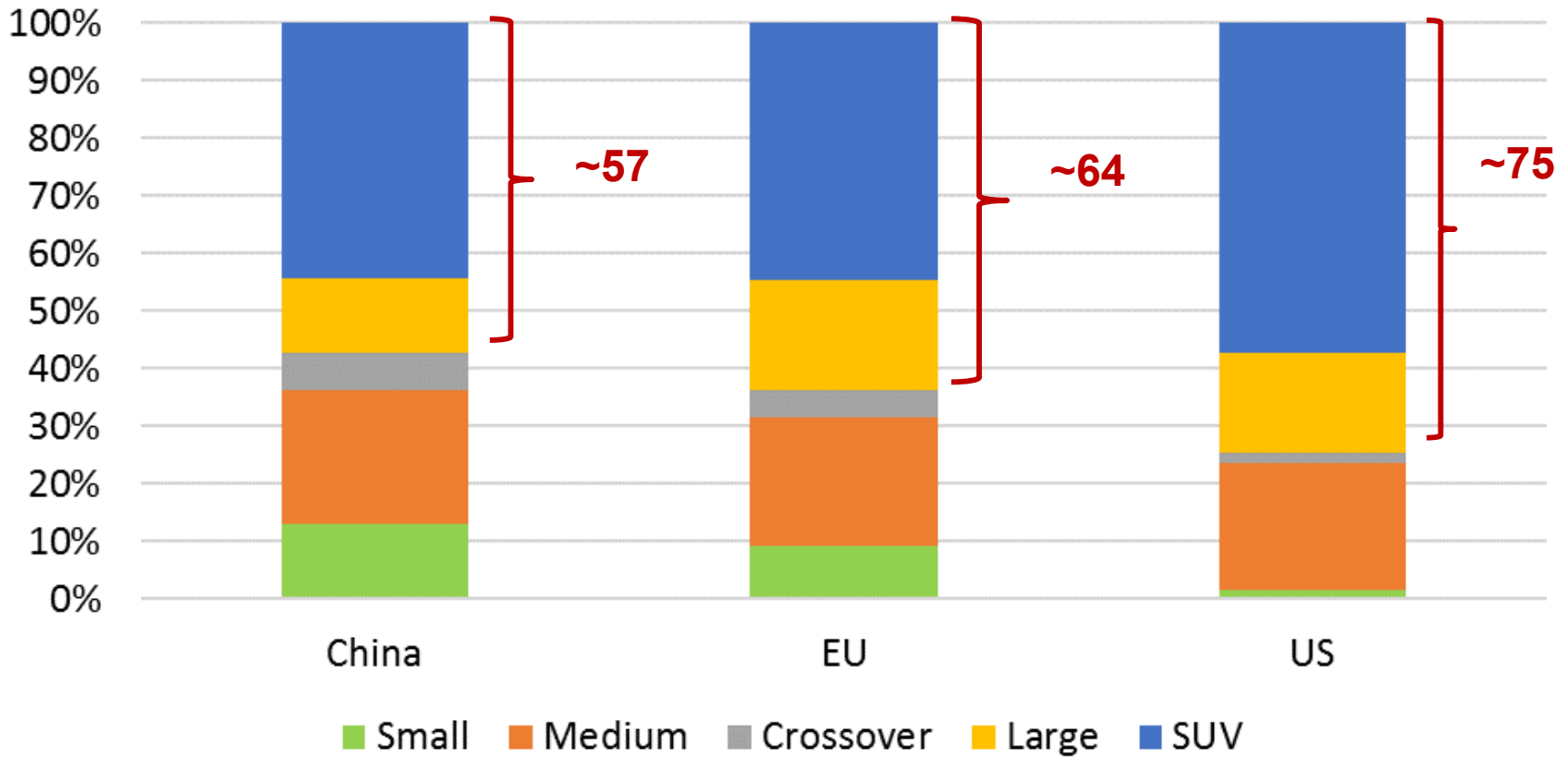


CO₂ per kWh electricity generated in different European countries

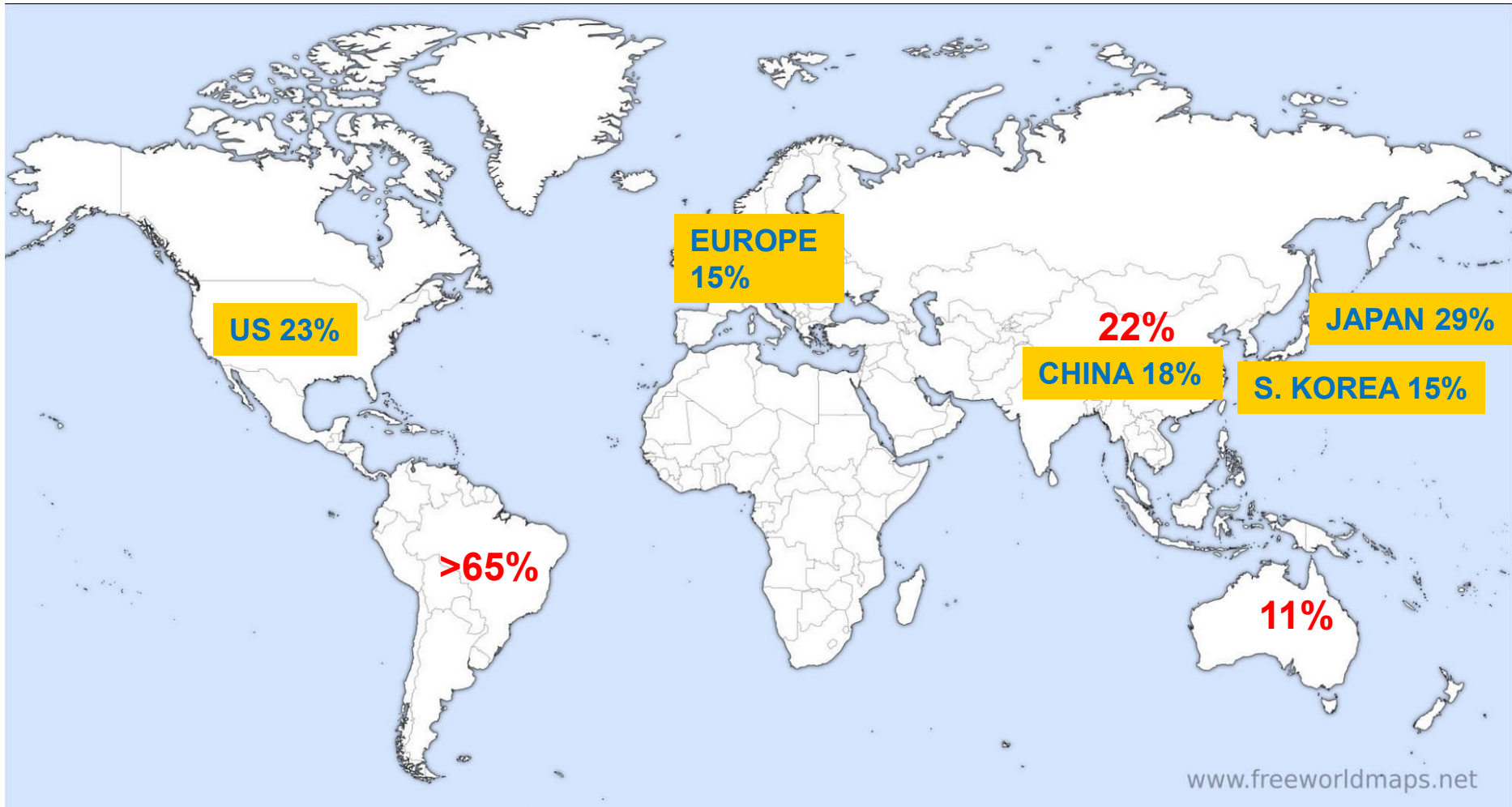
Share of electricity production by source, EU-27



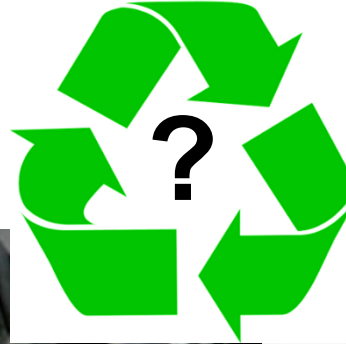
Available EV models by vehicle segments



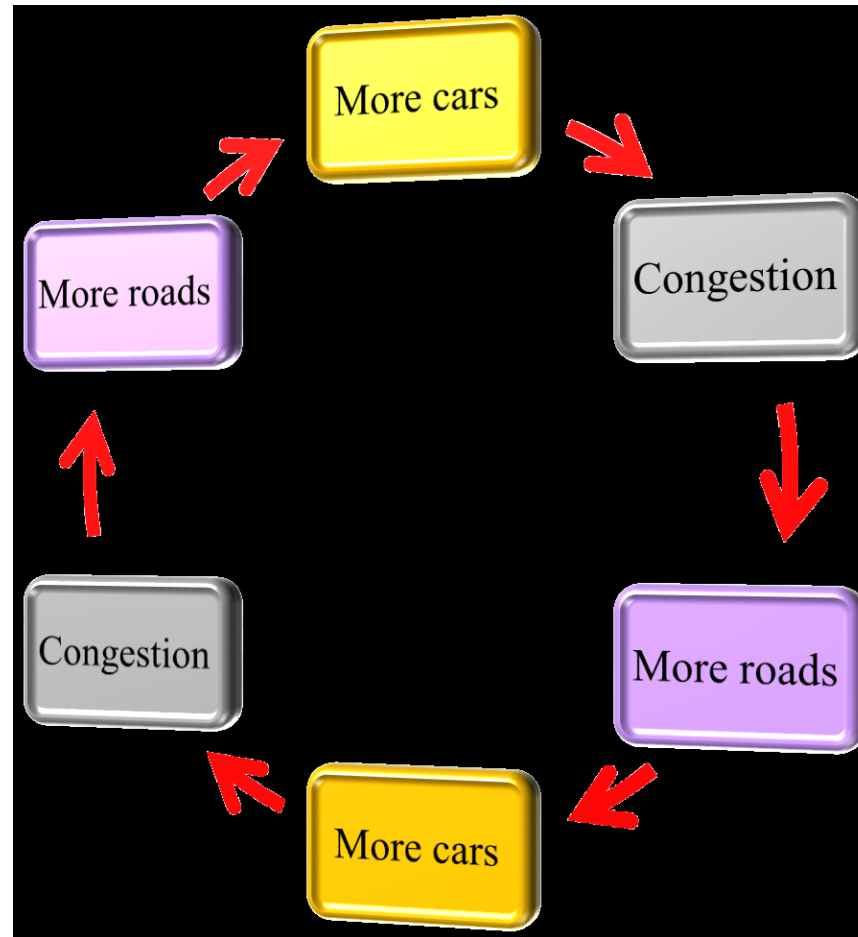
Main battery cell manufactures



Recycling

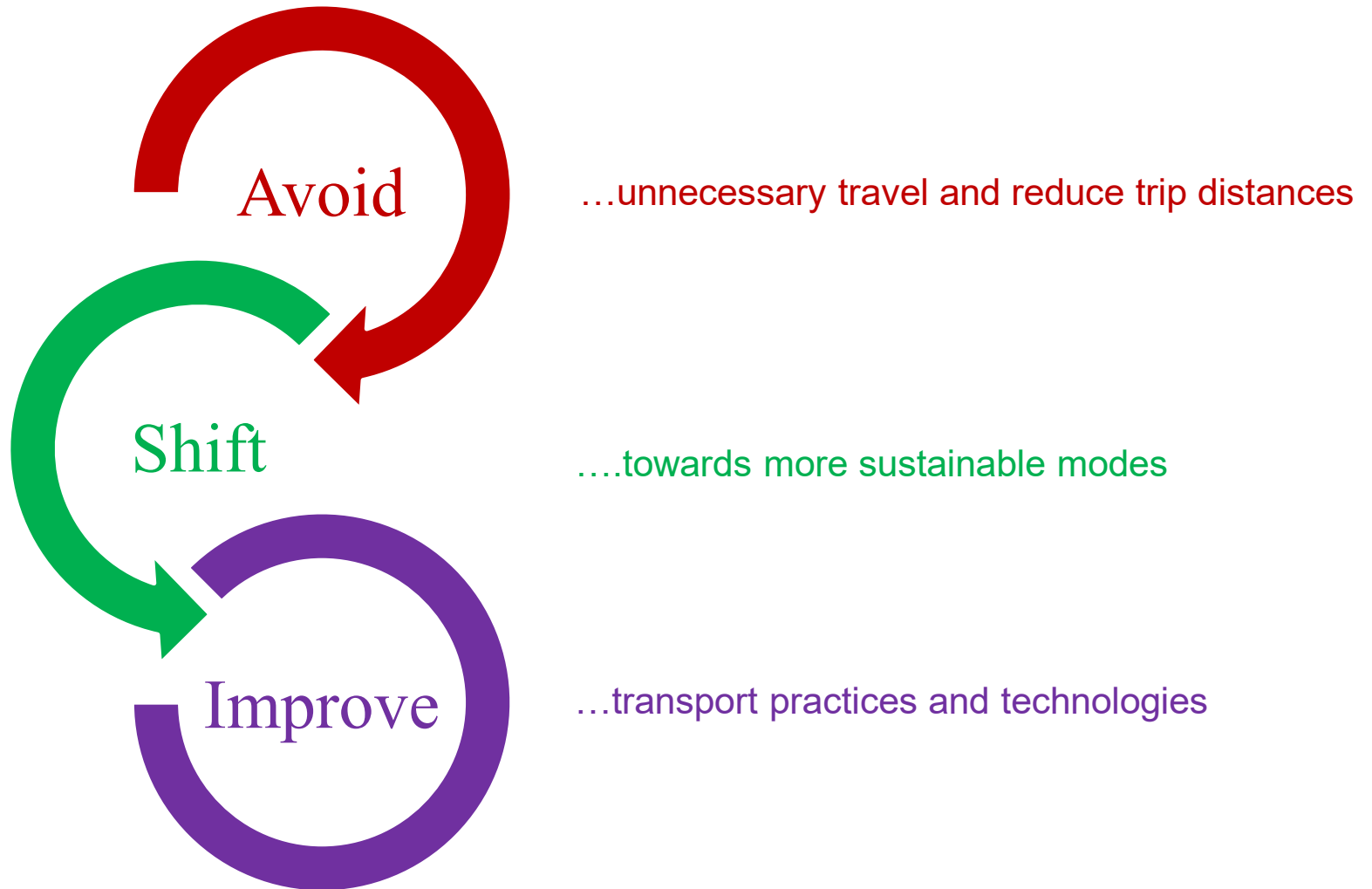


Car-oriented mobility





Car-oriented transport development



- EVs ...part of the solution...cost reductions, improvement of battery characteristics, as well as development of infrastructure
- Most of the policies implemented will be abolished with the increasing number of EVs
- Future policy design should ensure high environmental benefits of EVs
- Sustainability

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