

Alternative fuels and technologies

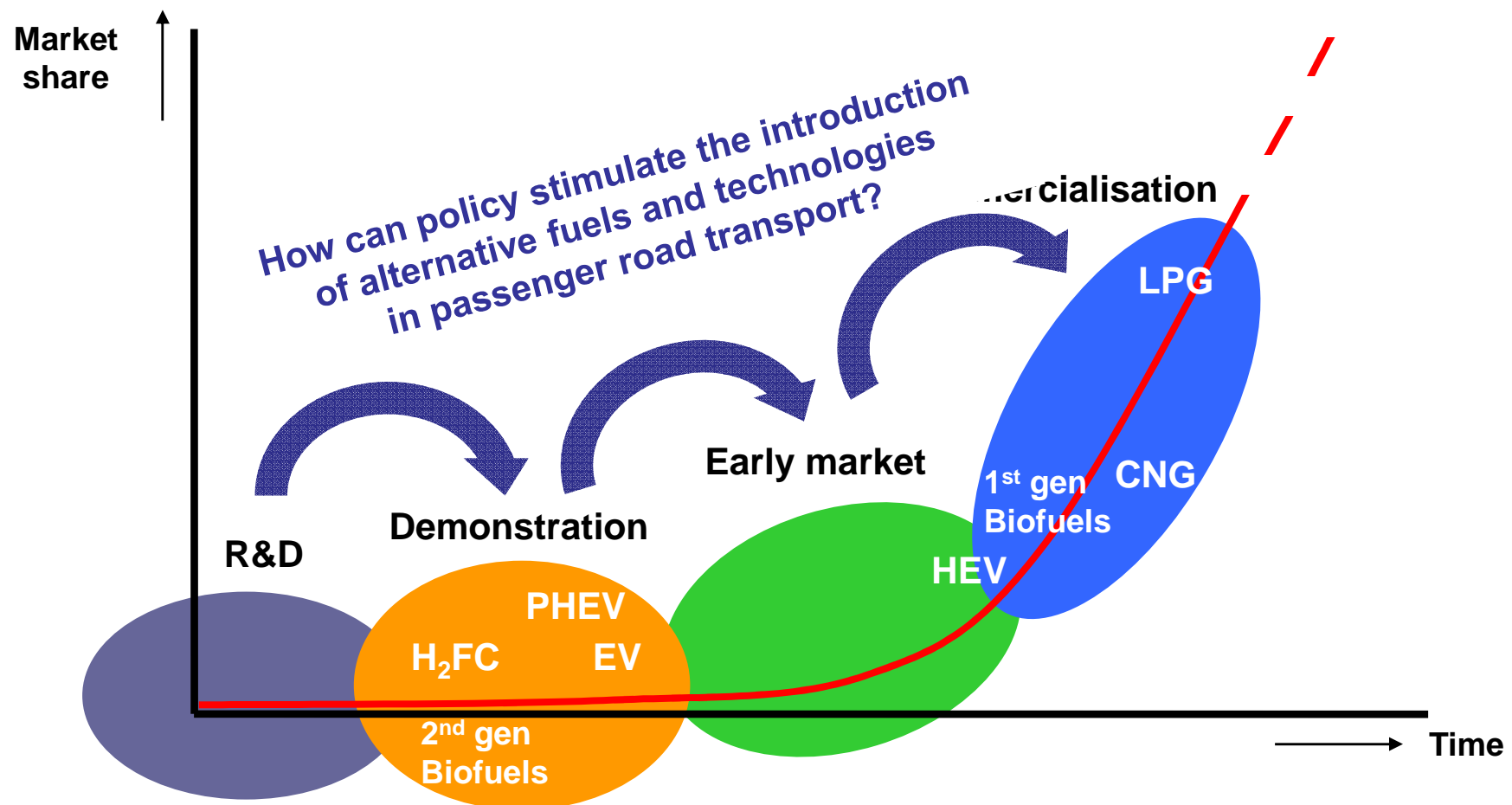
Policies for successful introduction

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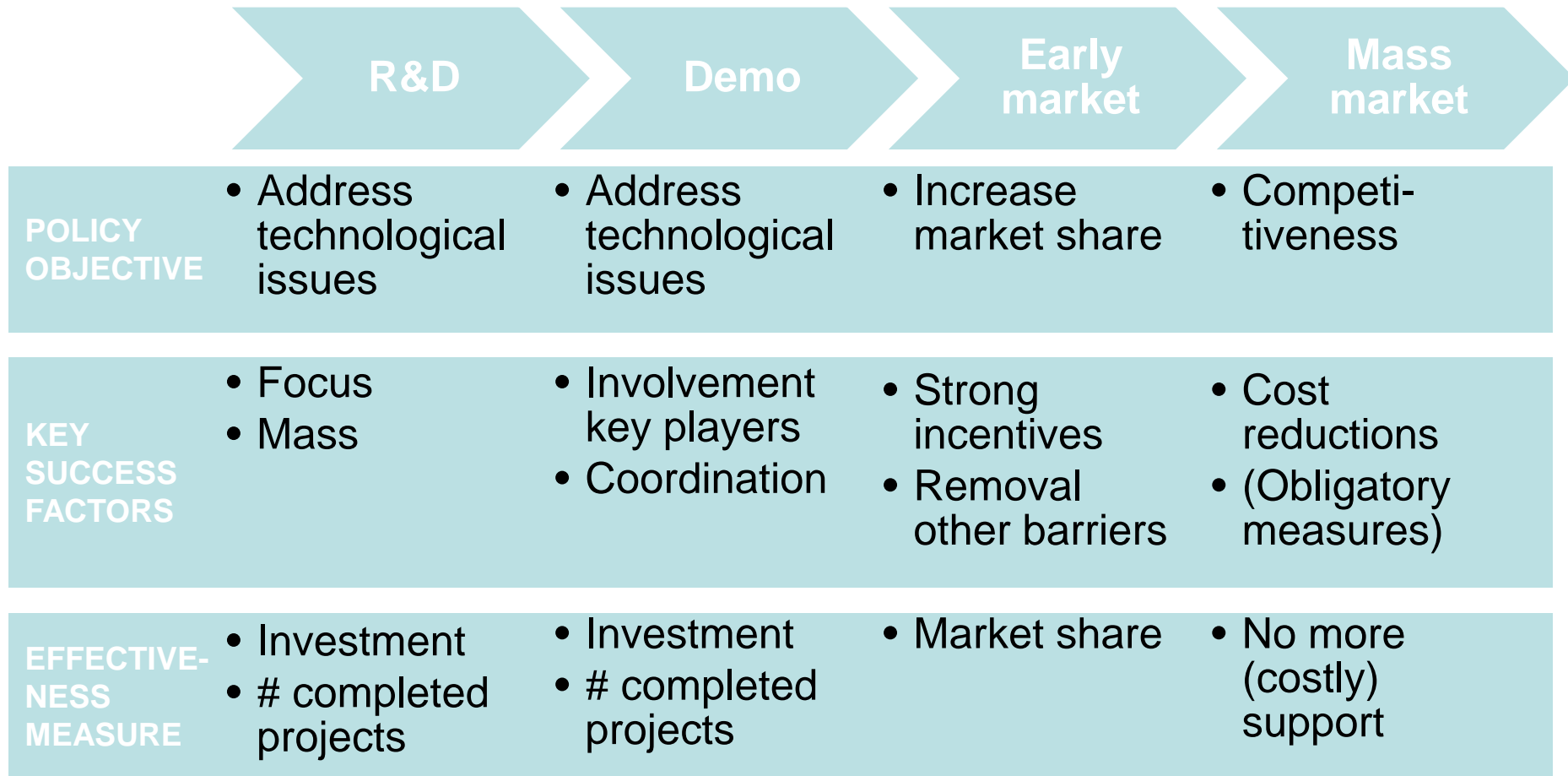


Berlin, 17 January 2011















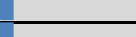
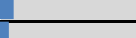



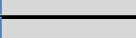


Alternative technologies and fuels face barriers on their way to the market



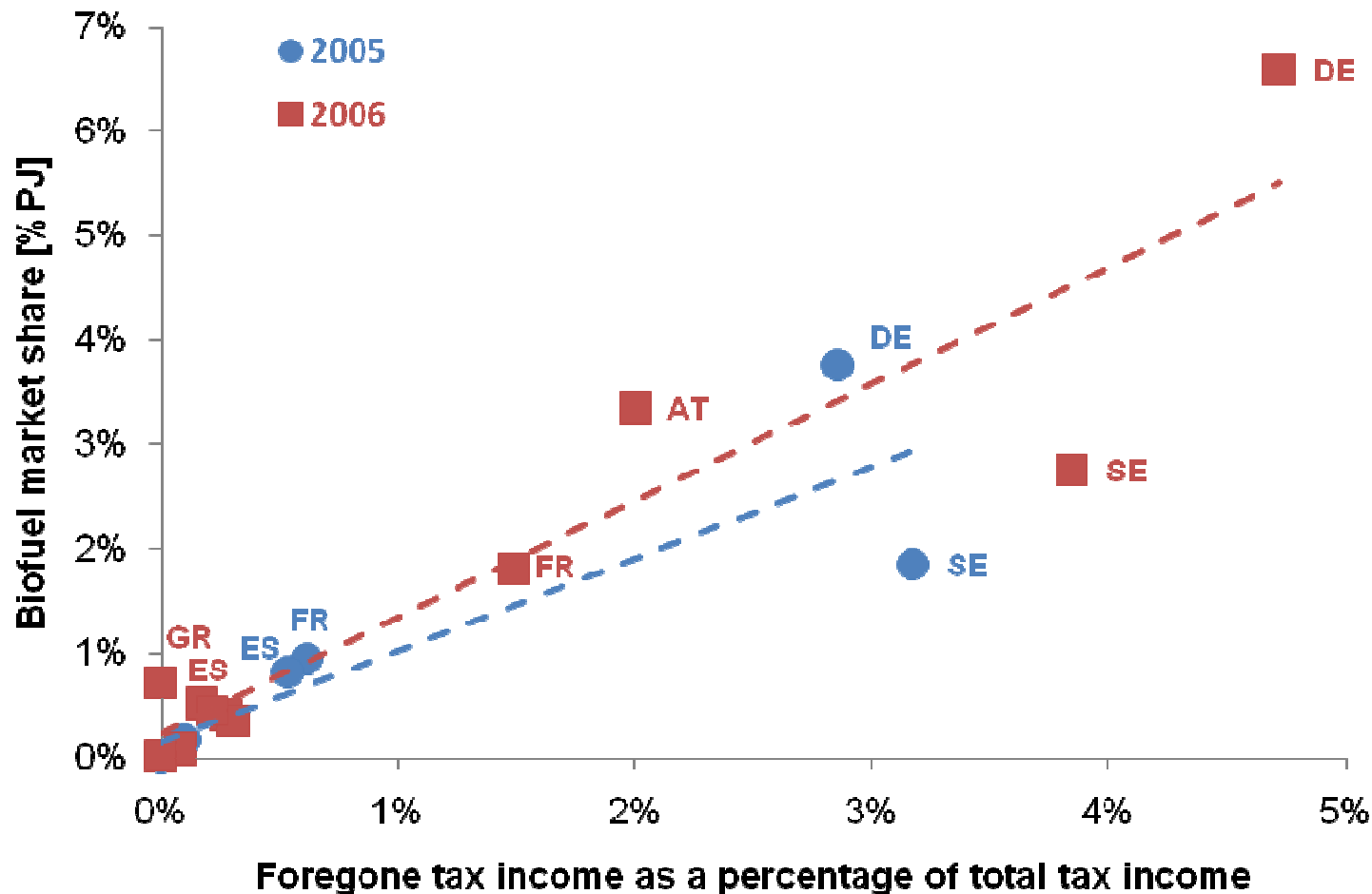
Policy objectives, success factors, effectiveness measures depend on innovation phase



Biofuels are in the early market phase
 Key policies are tax reductions and obligations

	Market share	Tax reduction	Obligation	Vehicle Subsidies	Public Procurement	Production support	Support for 2nd gen.	Other support policies
Germany	 7.7%	X	X				X	
Sweden	 3.8%	X	X	X	X	X	X	X
France	 3.4%	X		X				
Austria	 3.1%	X	X					
Netherlands	 2.6%		X				X	
Lithuania	 2.6%	X	X					
Luxembourg	 1.6%	X	X					
Greece	 1.2%	X						
Spain	 1.1%	X	X			X	X	
Belgium	 1.0%	X						
United Kingdom	 0.8%	X	X					
Slovenia	 0.8%	X	X					
Poland	 0.8%	X	X					
Hungary	 0.7%	X						
Czech Republic	 0.5%	X	X			X		
Ireland	 0.5%	X						
Italy	 0.4%		X					
Bulgaria	 0.1%	X	X					
Latvia	 0.1%	X						
Denmark	 0.1%	X					X	
Cyprus	 0.1%	X						
Finland	 0.0%		X					

Tax exemptions have not been equally effective in all countries



Main issue for biofuels is who should bear costs in anticipation of the (cheaper) 2nd generation

Major barriers

- Fuel cost relative to conventional

Minor barriers

- Vehicle cost premium
 - Dedicated infrastructure
- } only for high blends

Policy recommendations

- Tax break (or subsidy)
- Obligation

Government (i.e. all taxpayers) pays

Motorists pay

To overcome the 'blend wall' additional measures are required

Major barriers

- Fuel cost relative to conventional

Minor barriers

- Vehicle cost premium
 - Dedicated infrastructure
- } only for high blends

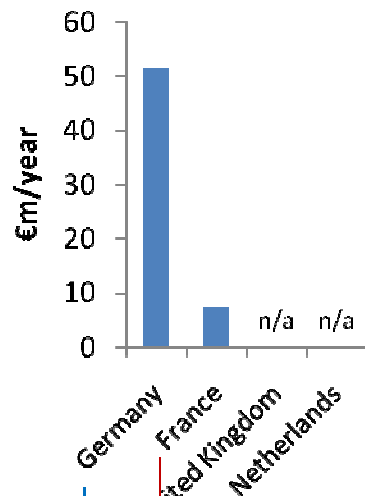
Need to anticipate future developments

Policy recommendations

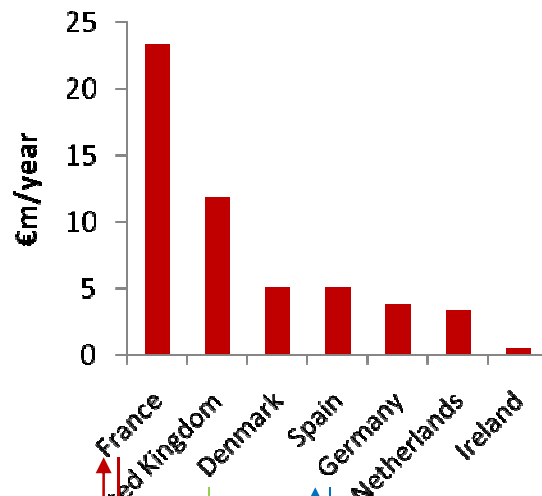
- Tax break (or subsidy)
- Obligation

Electric vehicles are in the demonstration phase Countries are taking strategic positions

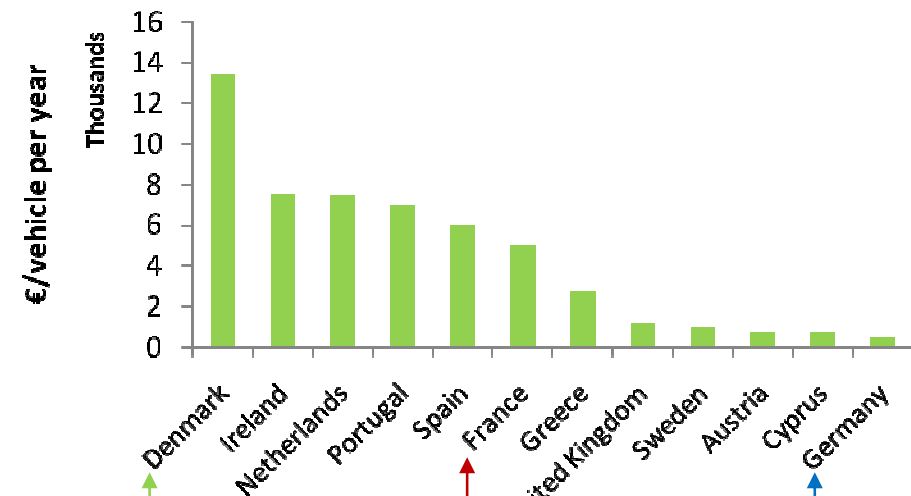
R&D expenditures



Demo expenditures



Early market expenditures



Note: The expenditures of the British and Dutch R&D programmes are unknown.
Note: Different scales on the vertical axes.

The relative importance of the various barriers for EVs is unclear, but costs will be (very) important

Barriers

- Battery capacity
- Unknown user behaviour
- Vehicle cost
- Lack of charging infrastructure
- Vehicle model availability

Policy recommendations

- Measures to address barriers in all phases
- Appropriate mix depends on local circumstances

Different barriers become important in different phases of the innovation process

Barriers

- Battery capacity
- Unknown user behaviour
- Vehicle cost
- Lack of charging infrastructure
- Vehicle model availability

R&D

Demo

Early
market

Policy recommendations

- Measures to address barriers in all phases
- Appropriate mix depends on local circumstances

Different barriers can be solved in different phases in the innovation process

Barriers

- Battery capacity
- Unknown user behaviour
- Vehicle cost
- Lack of charging infrastructure
- Vehicle model availability

R&D: Techn. development
Demo: Fast charging, battery swapping
EM: User behaviour

R&D: Techn. development
EM: Battery leasing

Policy recommendations

- Measures to address barriers in all phases
- Appropriate mix depends on local circumstances

Conclusions

- It is unlikely that fiscal policy will sufficiently stimulate alternative fuels
- Technology-specific measures are needed to address technology-specific barriers
- Effectiveness depends on the creation of a solid investment perspective
- Policy measures can serve to...
 - ...‘kick start’ a market
 - ...trigger ‘learning-by-doing’
- Policy only needs to address key barriers

Thank you for your attention!



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ALTER-MOTIVE: Has the wheel already been invented?

BACKUP SLIDES

Fiscal policy is the main policy instrument creating a playing field

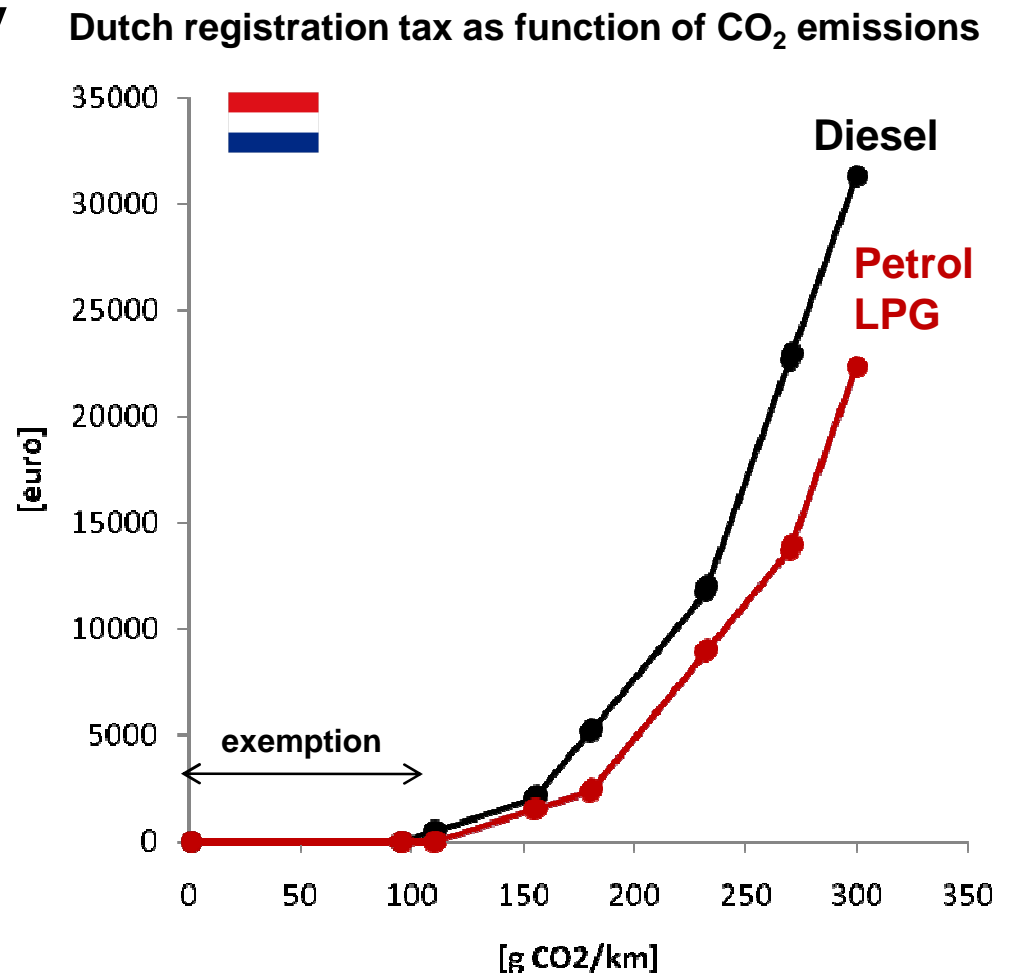
- 17 EU countries have implemented CO₂ differentiation in taxation
- There is evidence that fiscal policy affects:
 - Car ownership
 - Car use
 - CO₂ emissions[Nordisk Ministerråd, 2008]



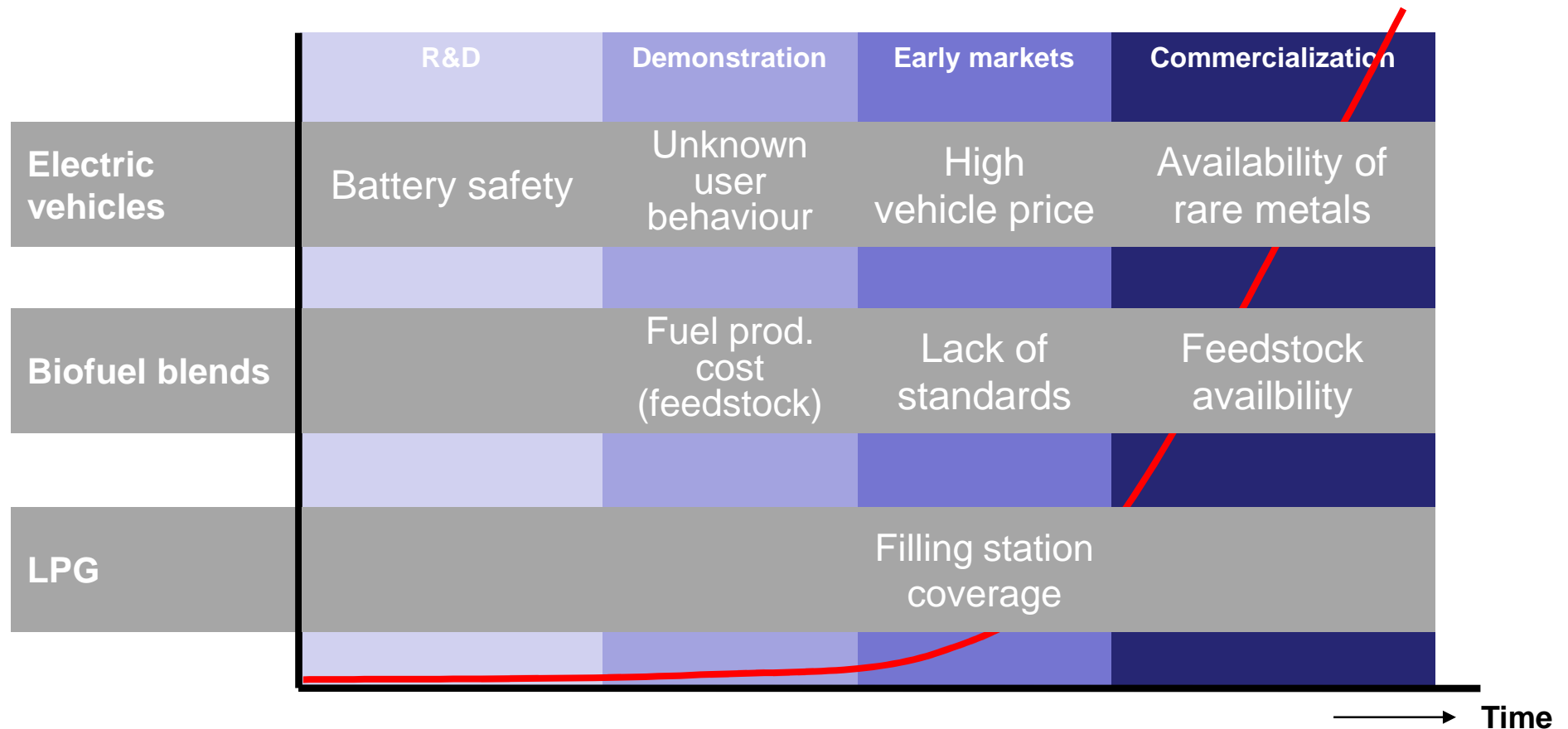
Source: ACEA Pocket Guide 2010

Alternative fiscal policies could possibly help to provide a more level playing field

- In current fiscal policy (in NL), tariffs differ per fuel
- A more level playing field is possible, e.g. by using WTW emissions as a basis
- This does not ensure competitiveness of alternative fuels

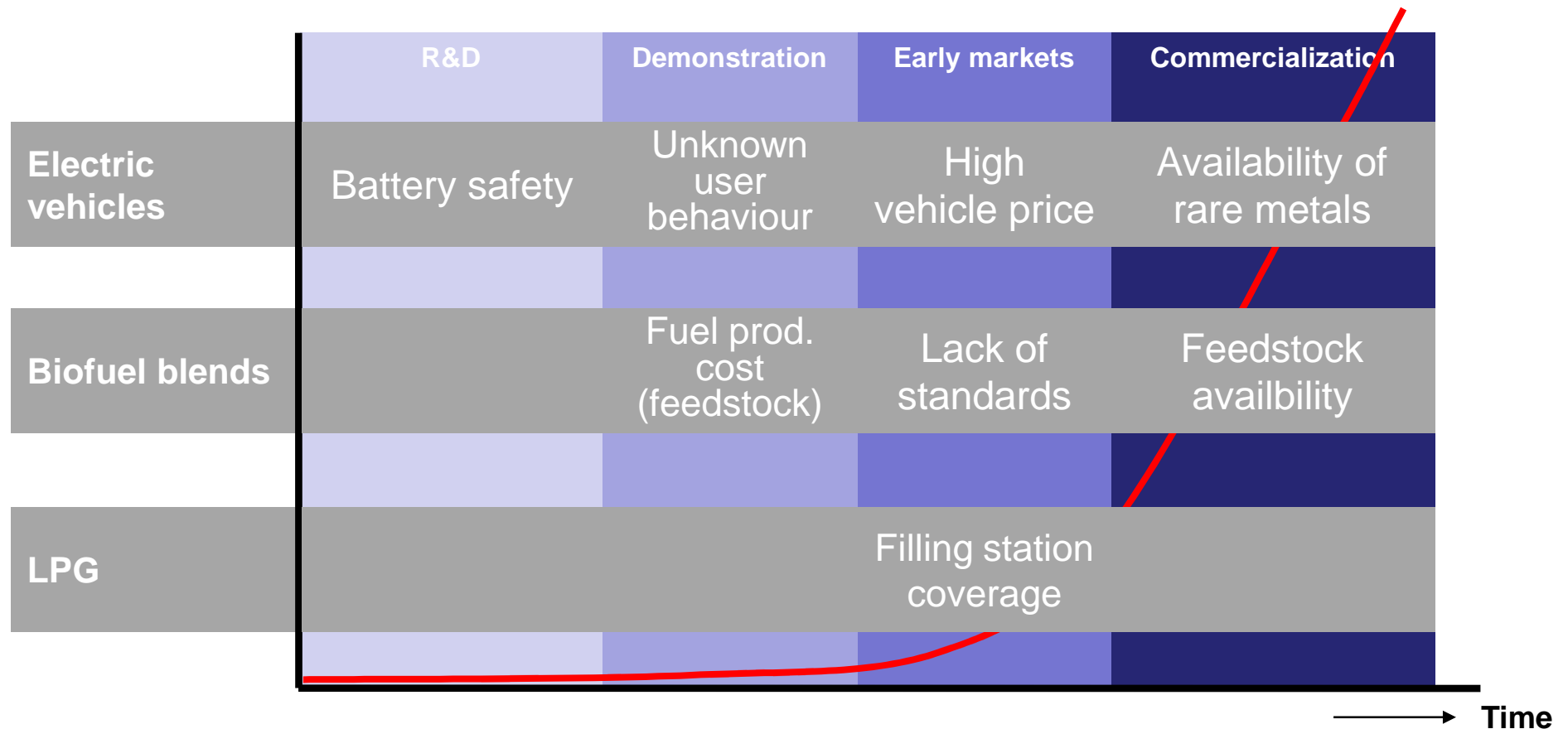


Barriers are technology-specific and phase-dependent



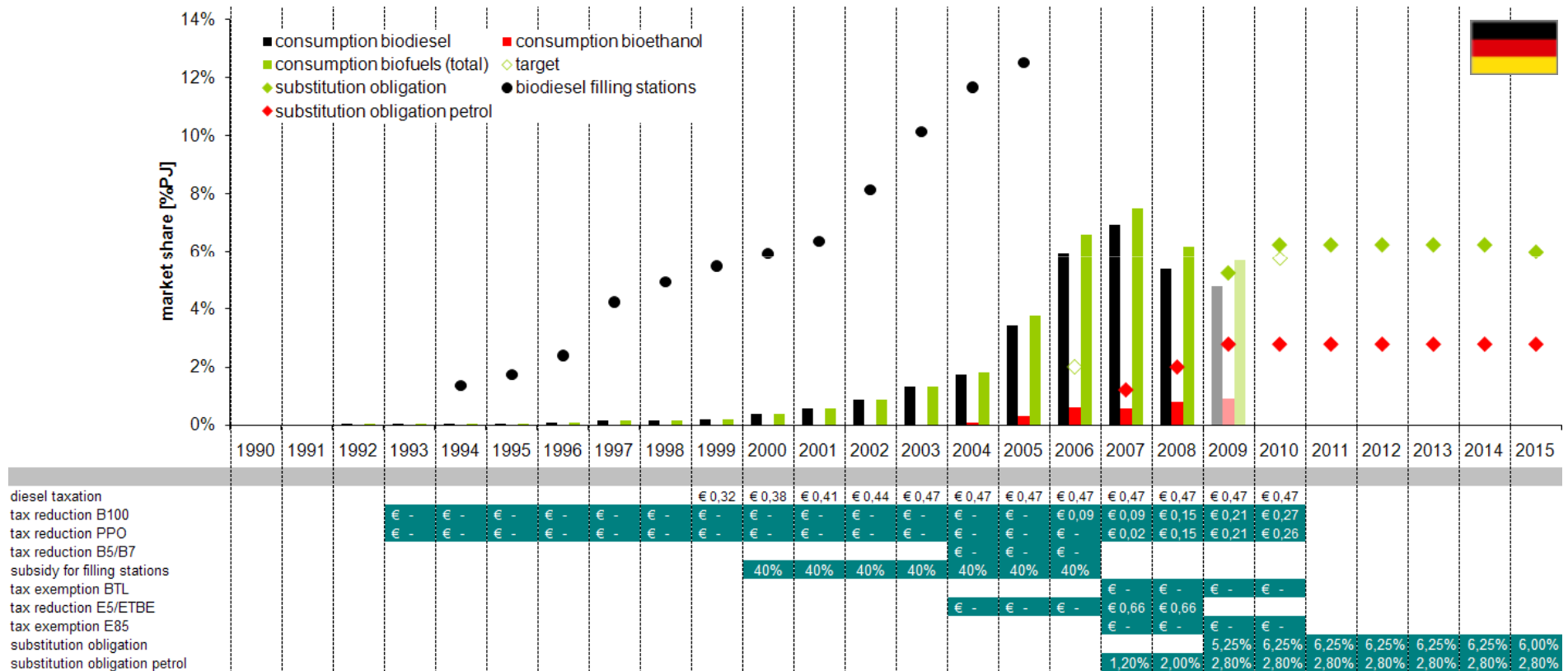
» Specific policy package per fuel required «

Barriers are technology-specific and phase-dependent

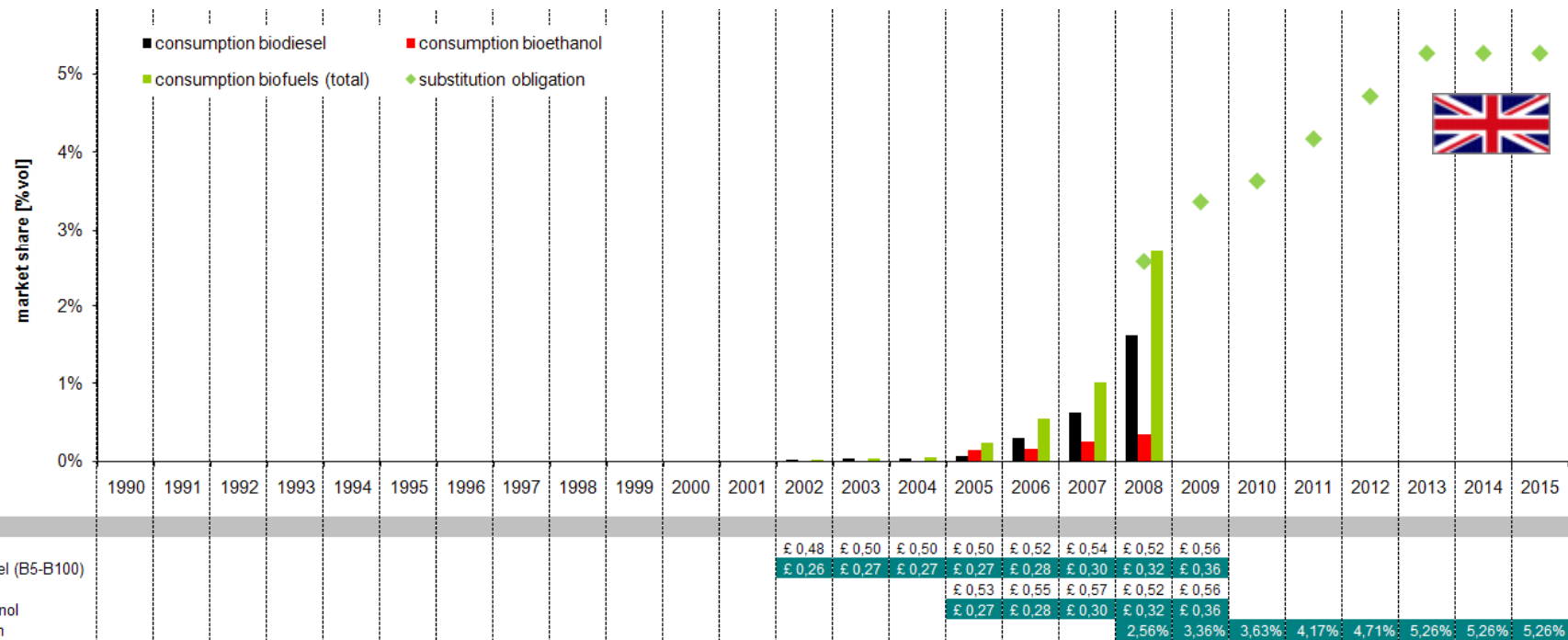


» Policy package needs to be adapted over time «

Biofuel policy in Germany proved too expensive



Biofuel policy in the UK did initially not provide a sufficiently strong incentive



CNG is on the brink of commercialization
 Low taxation is combined with additional measures

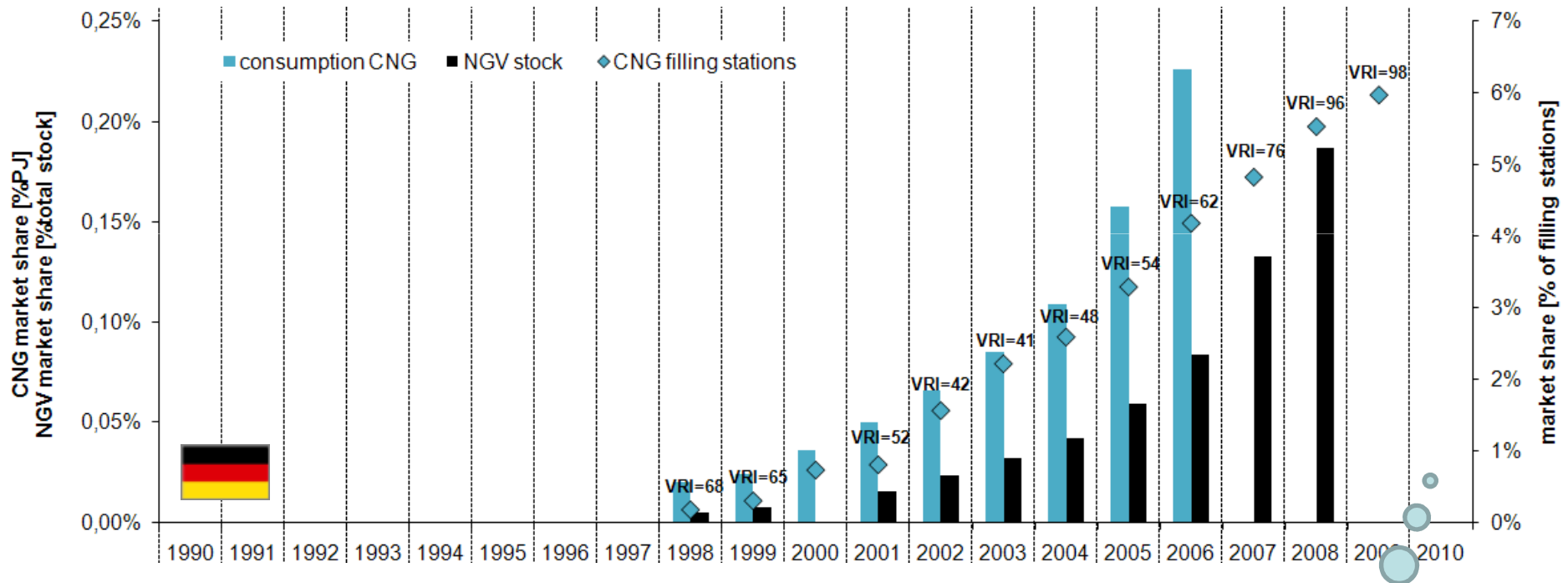
	Market share	Low taxation	Acquisition tax reduction	Vehicle Subsidies	Filling Station Subsidy	Other support policies
Bulgaria	1,7%	?	?	?	?	?
Italy	1,4%	?		X		X
Sweden	0,3%	X			X	X
Greece	0,2%	X			X	
Germany	0,2%	X	X			
France	0,2%	X		X		X
Czech Republic	0,1%	X				
Austria	0,0%	X				
Netherlands	0,0%	X	X		X	X
Belgium	0,0%	X				
Poland	0,0%	X				

CNG is on the brink of commercialization
 Low taxation is combined with additional measures

	Market share	Low taxation	Acquisition tax	Vehicle	Filling Station subsidy	Other support policies
Bulgaria	1,7%				?	?
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Greece	0,2%	X			X	
Germany	0,2%	X	X			
France	0,2%	X		X		X
Czech Republic	0,1%	X				
Austria	0,0%	X				
Netherlands	0,0%	X	X		X	X
Belgium	0,0%	X				
Poland	0,0%	X				

Mainly biogas

Example: Germany slowly but steadily increases CNG market share



- Main instruments: low taxation & vehicle subsidies
- Some incentives to stimulate infrastructure buildup
- New vehicle model introductions have significant impact

Cost advantage:
€0,57/lt petrol-equiv
€0,23/lt diesel-equiv

Low taxation is a key policy, but needs to be complemented by other measures

Major barriers

- Fuel costs relative to conventional fuels
- Vehicle model availability
- Dedicated infrastructure

All major barriers:
chicken-egg
dynamic

Minor barriers

- (none)

Policy recommendations

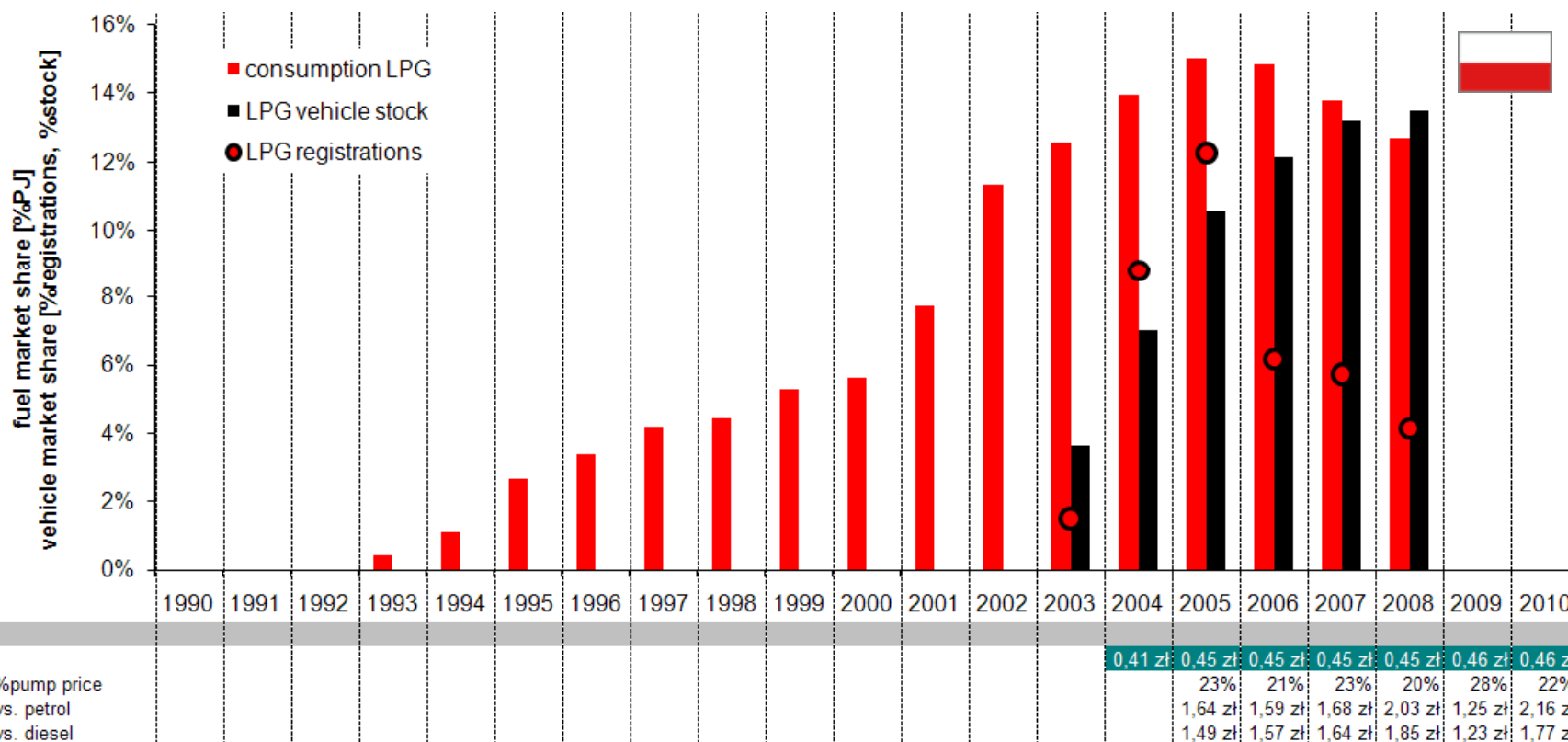
- Tax break
 - Investment subsidy
 - Covenants with industry
- Provide favourable investment perspective

LPG is a mature technology and can be stimulated by tax reductions only

	Market share	Low excise tax	Vehicle tax reduction	Vehicle Subsidies	Other support policies
Bulgaria	15,8%	X			
Lithuania	15,3%	X			
Poland	13,8%	X			
Netherlands	3,3%	X	X		
Italy	2,6%	X		X	
Latvia	2,5%	X			
Czech Republic	1,4%	X			
Belgium	0,8%	X			
Hungary	0,7%	X			
Germany	0,5%	X			
Portugal	0,4%	X			
United Kingdom	0,3%	X			
France	0,3%	X	X	X	X
Austria	0,2%	X			
Greece	0,2%	X			
Spain	0,1%	X			
Denmark	0,1%	X			
Luxembourg	0,1%	X			

Eastern Europe:
cheap conversion

LPG market share in Poland has been in decline in recent years



LPG requires a significant discount over conventional fuels

Major barrier

- Fuel costs relative to conventional fuels

Minor barriers

- Vehicle conversion costs
- Dedicated infrastructure

Policy recommendations

- Tax break (or subsidy)

LPG does not require specific policies for infrastructure buildup

Major barrier

- Fuel costs relative to conventional fuels

Minor barriers

- Vehicle conversion costs
- Dedicated infrastructure

If fuel costs are sufficiently low, the market will take care of infrastructure buildup.

Policy recommendations

- Tax break (or subsidy)

Hydrogen vehicles are in the demonstration phase
Commitments to hydrogen vary between countries

Hydrogen faces major barriers that relate to a chicken-egg dynamic

Barriers

- Vehicle cost
- Infrastructure
- Vehicle model availability

Policy recommendations

- Cooperation with industry (PPP, covenants)
- Tax breaks & subsidies (vehicles & fuel)
- Investment subsidy & accelerated depreciation

National policies are likely required to help hydrogen in the early market phase

Barriers

- Vehicle cost
- Infrastructure
- Vehicle model availability

EU unlikely to fund early market

Policy recommendations

- Cooperation with industry (PPP, covenants)
- Tax breaks & subsidies (vehicles & fuel)
- Investment subsidy & accelerated depreciation