資料3－2

EU 2050 Roadmaps

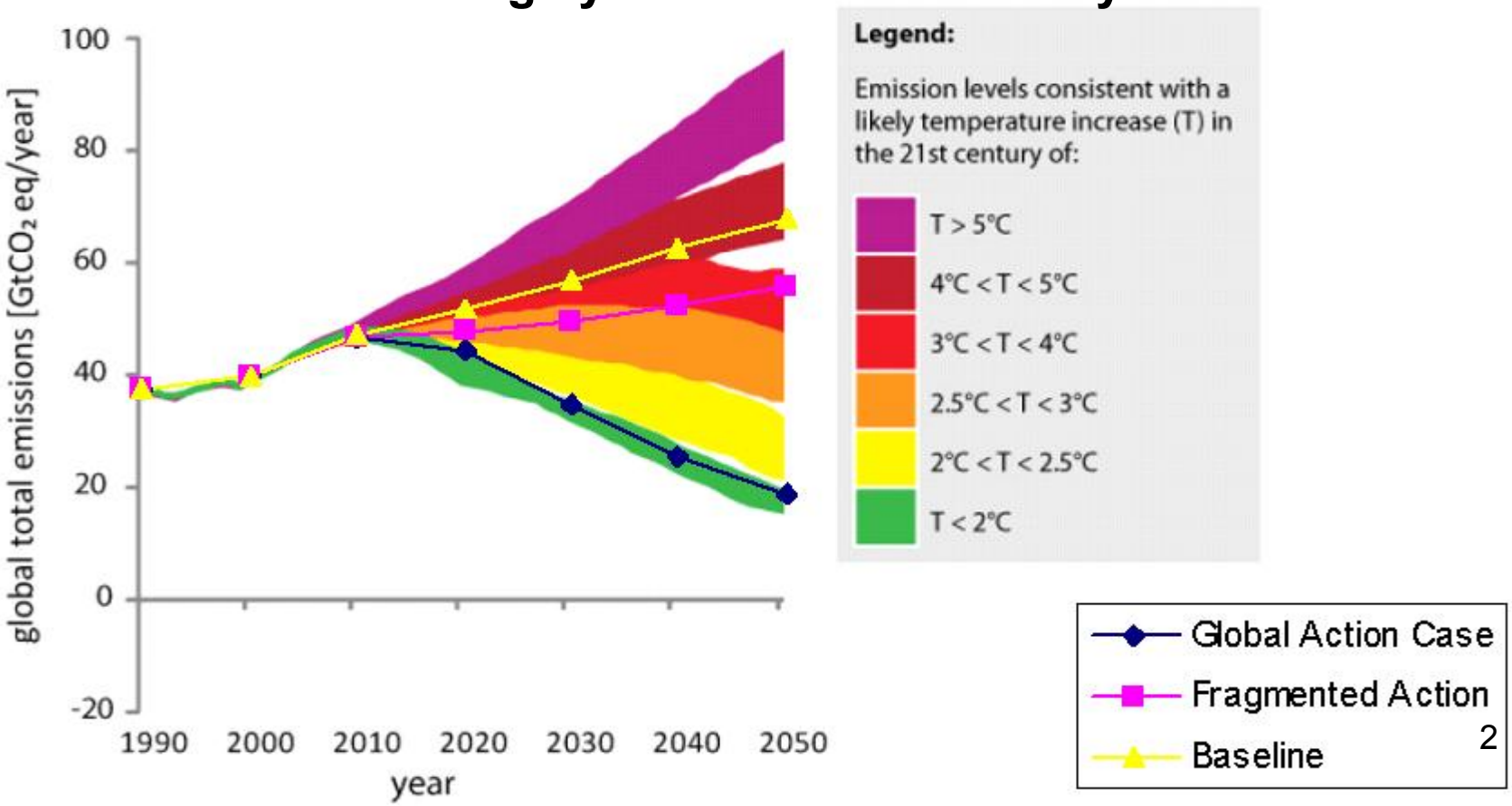
Moving towards a competitive low carbon economy and a decarbonised energy sector

Gijs Berends

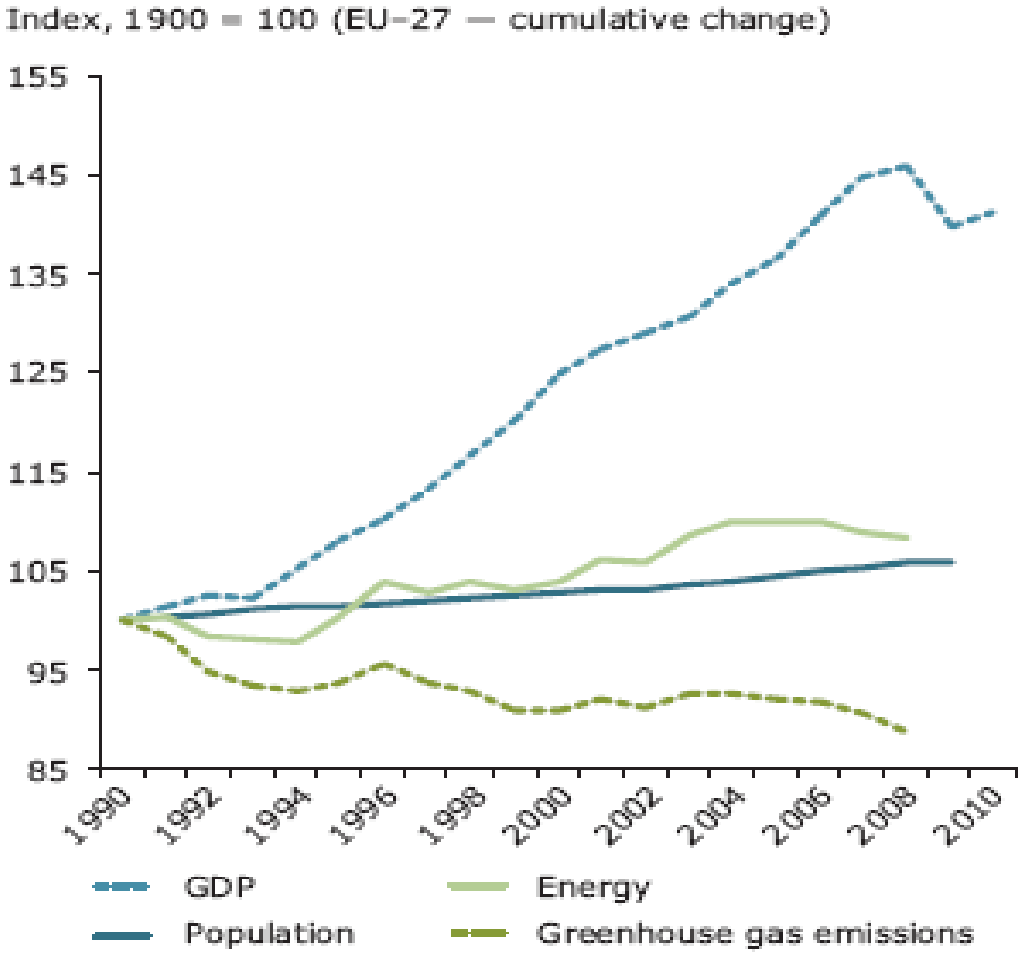
EU Delegation to Japan

The impact of climate action

Global emissions pathway in the next 40 years will determine likely warming by the end of the century



GHG emissions: Where is the EU now?



- EU emissions reduced by 16% between 1990 - 2009
- EU GDP grew by 40%, manufacturing by 34%
- EU on track towards the - 20% emission reduction target by 2020
- However, current policies would only lead to ca. - 40% GHG emissions by 2050

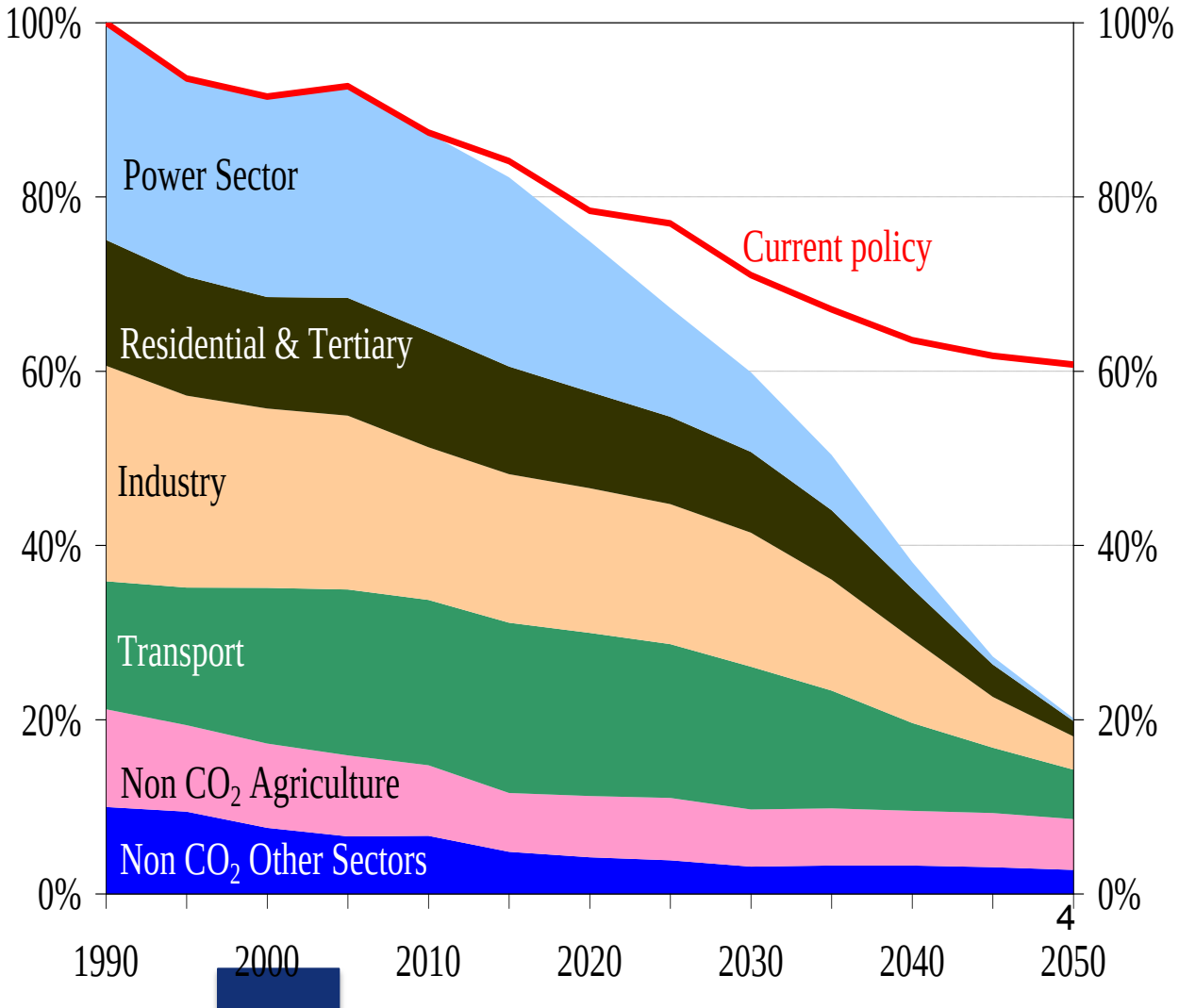
Cost-efficient EU pathway towards 2050

80% domestic GHG reduction in 2050 is feasible

- with currently available technologies,
- with behavioural change only induced through prices
- If all economic sectors contribute (energy: 85%)

Efficient pathway:

-25% in 2020
-40% in 2030
-60% in 2040



Investment

Additional domestic investment: € 270 billion annually during 2010-2050, equivalent to 1.5% of GDP (Total investment – 19% of GDP in 2009), of which

- **built environment (buildings and appliances): €75 bn**
- **transport (vehicles and infrastructure): € 150 bn**
- **power (electricity generation, grid): € 30 bn**

Note:

- Investment in the EU economy and EU jobs, not cost

- delaying action increases overall investment requirements

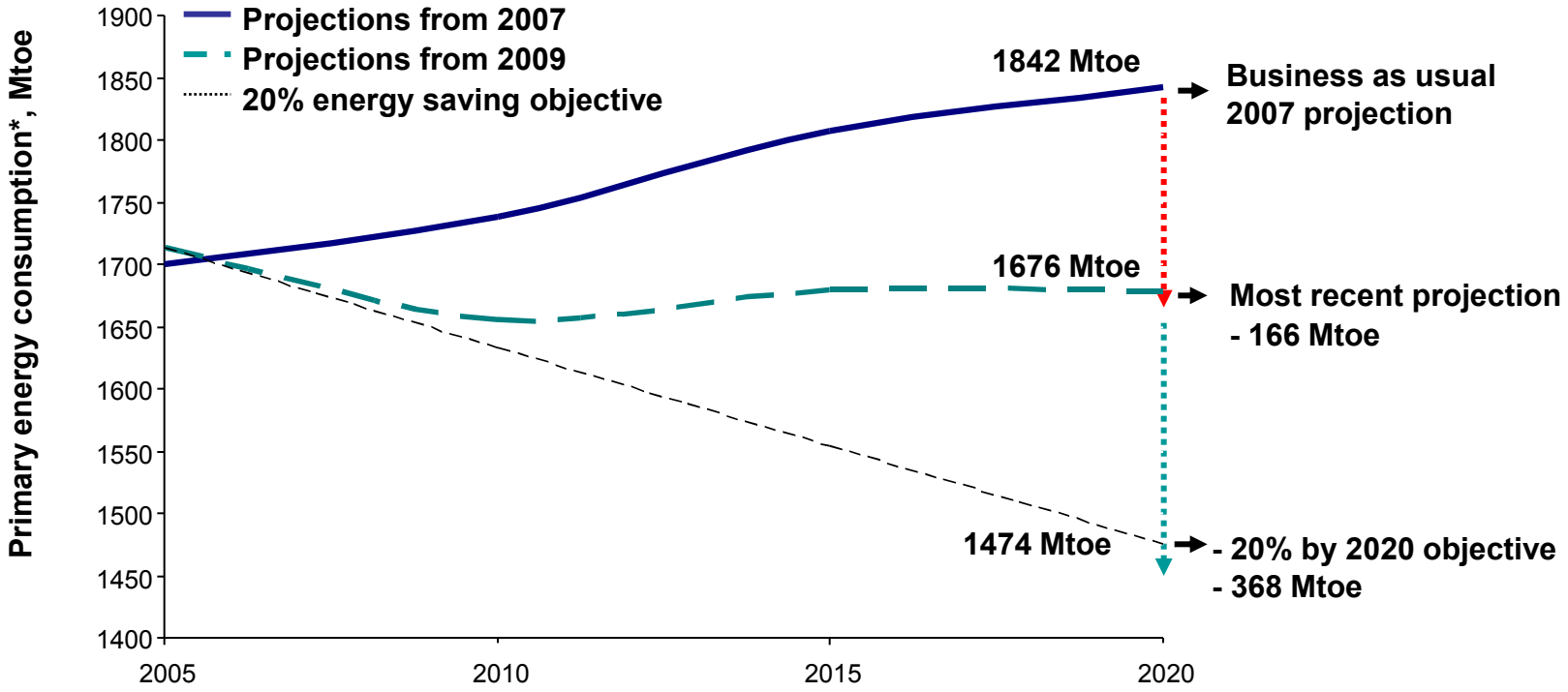
- R&D and early demonstration/deployment crucial

Employment

Sources of new jobs

- **Short term: e.g. in renovation of buildings, production of insulation materials, renewables industry**
- **Potential** net job creation **up to 1.5 million by 2020**
- **Use auctioning revenues from EU emissions trading system and tax revenues for reduction of labour costs and increase in investments and R&D**
- **Long term job prospects depend on favourable economic framework conditions, e.g. expenditure on research & technology development, innovation, entrepreneurship, new skills, investment**

Energy efficiency



* Gross inland consumption minus non-energy uses

Additional efforts are needed to achieve the 20% energy efficiency improvement. Current policies will achieve only 10% savings

Scenarios explore routes to decarbonisation of energy system

Current trends scenarios

Reference scenario (as of March 2010)

Current Policy Initiatives (as of April 2011)

➔ *40% GHG reduction by 2050*

Decarbonisation scenarios

High Energy Efficiency

Diversified Supply Technologies

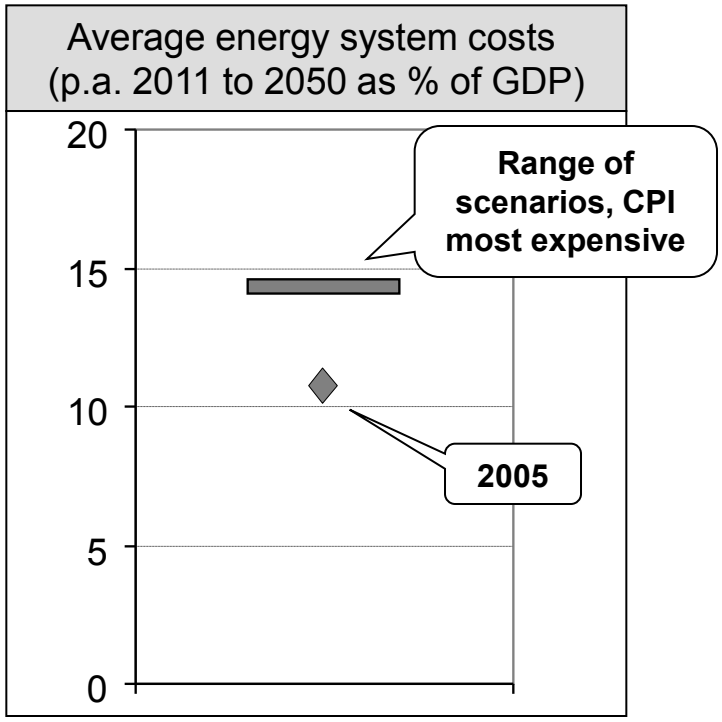
High RES

Delayed CCS

Low Nuclear

➔ *80% GHG reduction*

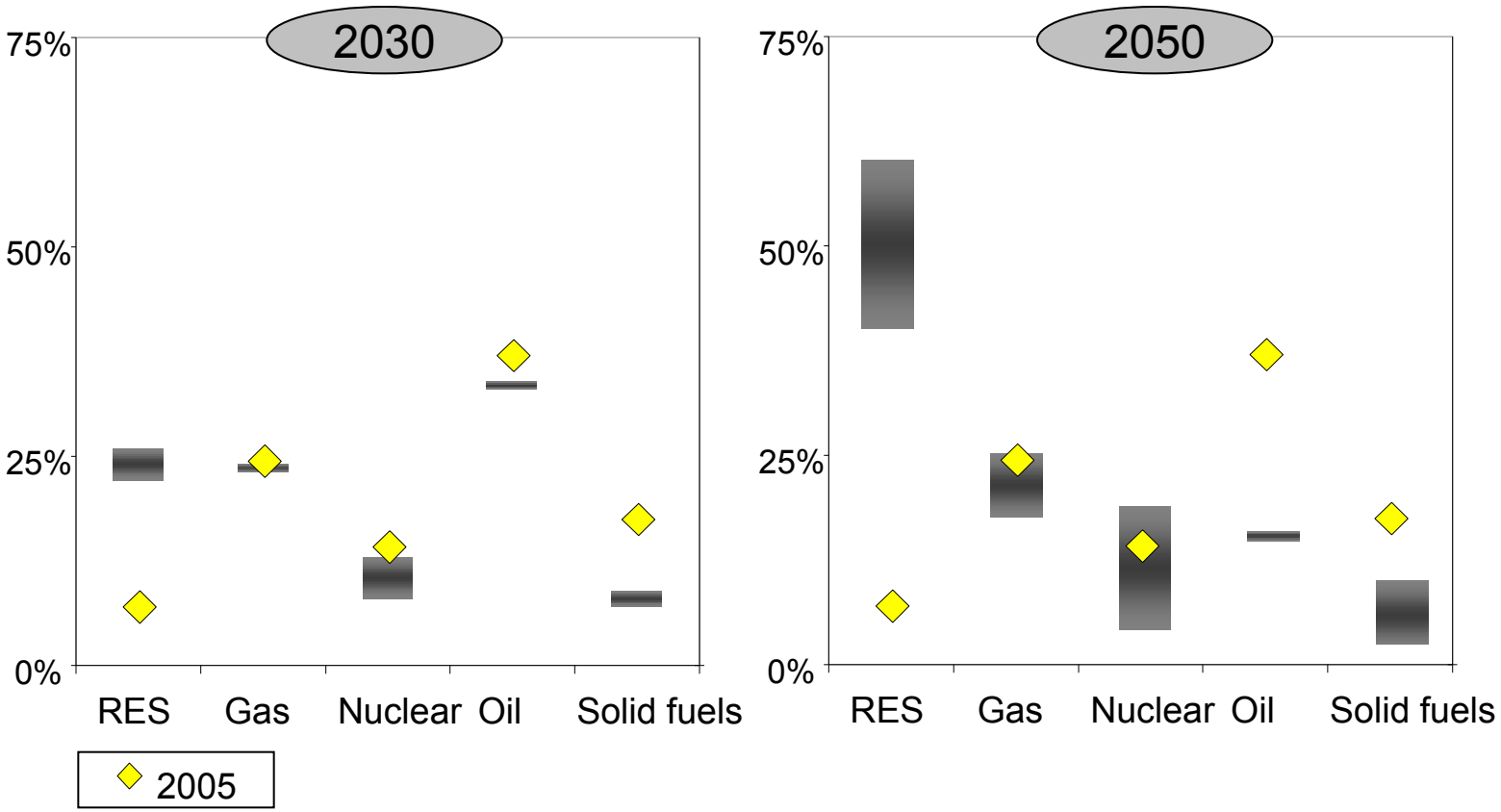
Decarbonisation is possible – and can be less costly than current policies in the long-run



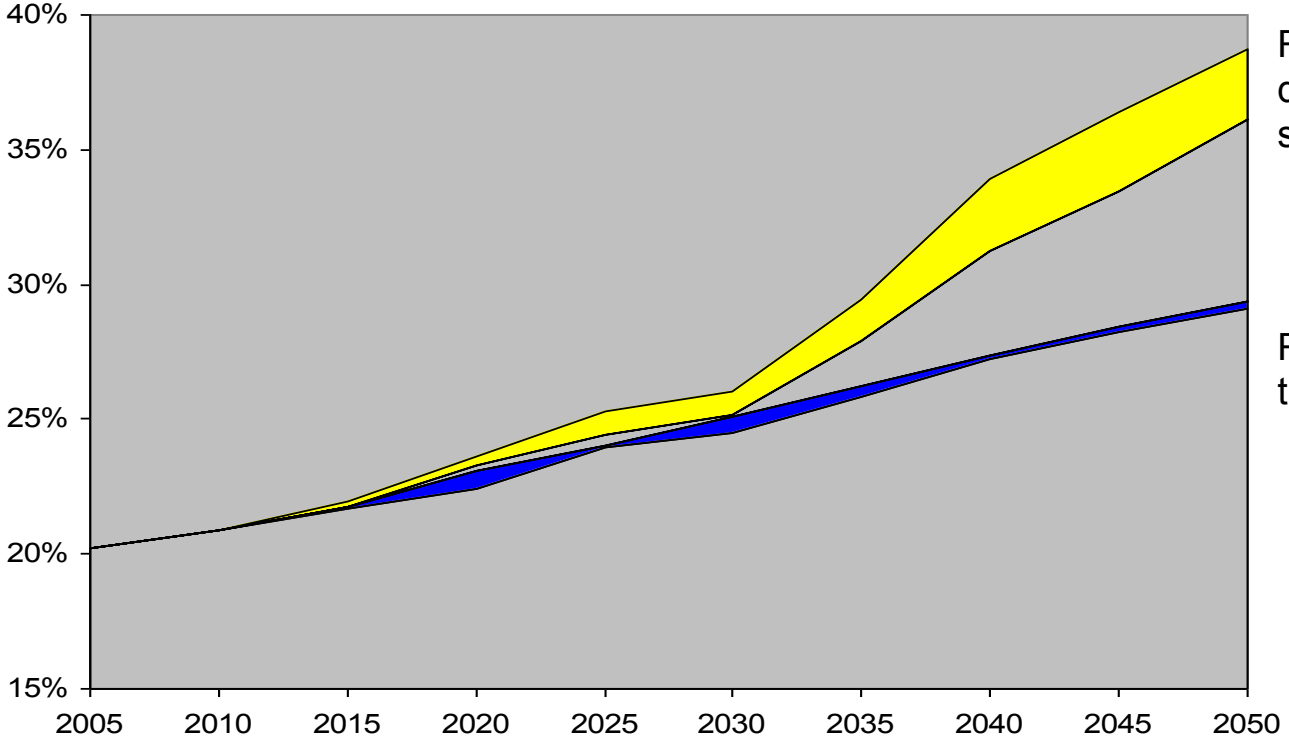
- In all decarbonisation scenarios, total costs are similar to current policies (CPI scenario)
- Capital expenditure increases steadily over time, throughout the system
- Fuel costs drop in long-run
- Investment expenditure goes into the EU economy rather than to non-EU for energy imports; households can gain more control (e.g. as micro generation increases, use of smart appliances)

Renewables move centre stage – but all fuels can contribute in the long-run

Decarbonisation scenarios - fuel ranges (primary energy consumption in %)



Power sector emissions decrease most though **strong increase role of electricity**



Share of electricity in current trend and decarbonisation scenarios of the Energy Roadmap (in % of final energy demand)

EU Roadmaps: the way forward

Council conclusions and European Parliament responses on Low carbon and Energy roadmaps 2050

Member States to develop long-term national and regional low emission development strategies

Next step at EU level is to define 2030 policy framework