

Roadmap for moving to a competitive low carbon economy in 2050

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<http://www.lowcarbon-societies.eu/>



Limiting climate change – a global challenge

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- Keeping average global temperature increase below 2°C confirmed as global objective (Copenhagen, Cancun)
- Concrete emission pledges made by countries responsible for > 80% of global GHG emissions
- Need to prepare long-term low-emission development strategies
- ...but current pledges are not sufficient to stay below 2°C

Climate Action until 2020

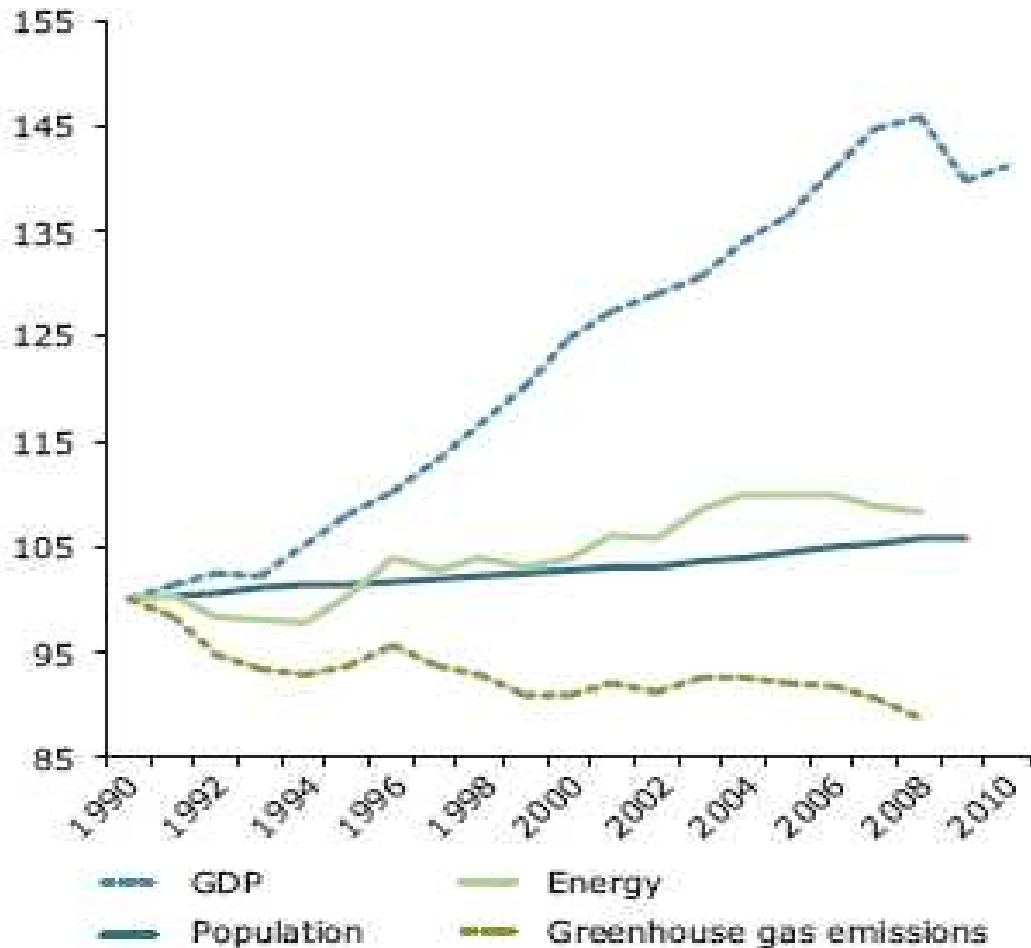


Climate Action at the heart of Europe's 2020 strategy

- **Europe 2020 Strategy for “smart, sustainable and inclusive growth”:**
 - Headline target to achieve climate and energy goals: 20% cut in GHG emissions by 2020
 - Flagship initiative to increase resource efficiency in the EU
- **Benefits for energy security**
 - EU increasingly dependent on imported fossil fuels
 - Risks from high price of oil and gas
- **Benefits for innovation, jobs & growth**
 - EU traditionally strong in manufacturing industries, ensure continued leadership while other regions are also investing in green growth
- **Avoiding dangerous impacts of climate change**
 - More frequent and severe extreme weather - floods, storms, heat waves, droughts – impacts many sectors (agriculture, tourism, transport, health..)

GHG emissions: Where is the EU now?

Index, 1990 = 100 (EU-27 — cumulative change)



- EU emissions reduced by 15,5% between 1990 -2010
- EU GDP grew 40%
- EU manufacturing grew 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



What the EU is doing already: the 2020 targets⁶

- **Reduce GHG emissions by 20%** (compared to 1990)
 - EU Emissions Trading System reducing overall emissions from industrial installations (and aviation from 2012)
 - National emission targets cover other sectors: e.g. buildings, services, agriculture, transport (except aviation)
- **Increase share of renewables in EU's energy mix to 20%**
- **Improve energy efficiency by 20% compared to business as usual projections**



Where the EU is not on track: Energy efficiency

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- Under current policies only **9% energy savings** will be achieved in 2020
- June 2011 – **Energy Efficiency Directive Proposal**
 - Public sector buildings renovations – 3% of total surface per year
 - Public procurement energy efficiency requirements
 - Energy Savings Obligation – 1.5% of energy savings among end users
 - Energy audits requirement for industry
- Interactions with the EU ETS
 - Possible need for a set-aside of allowances

A competitive low carbon roadmap until 2050



The Context: European Council Conclusions

- Science requires that global emissions are cut by -50% by 2050 compared to 1990
- EU objective of reducing GHG emissions by **80-95% by 2050** compared to 1990, in the context of necessary reductions by developed countries
- Need for a **low carbon 2050 strategy** providing the framework for the longer term action
- Need to **fix intermediary stages** towards reaching the 2050 objective
- Need to **keep developments under review** on a regular basis



2050 Low-carbon Roadmap:

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- ✓ identifies **cost-effective** pathway, with **intermediate** milestones
- ✓ identifies **key technologies** guiding R&D
- ✓ identifies **investments** needs and benefits
- ✓ identifies **opportunities** and trade-offs
- ✓ guides **EU, national and regional** policies
- ✓ gives direction to **private sector** and private **households** for long term investments



Methodology for the EU: model-based scenario analysis

- EU ambition level consistent with (European) Council 2050 policy targets and results of global analysis of EU contribution to 2°C
- A large set of decarbonisation options to analyse possible pathways in different contexts
- Models used cover all sectors
 - PRIMES: energy system and industrial processes
 - GAINS-CAPRI: agriculture and other non-CO2 emissions
 - G4M + GLOBIUM: land use
 - GEM E3: macro-economic effects

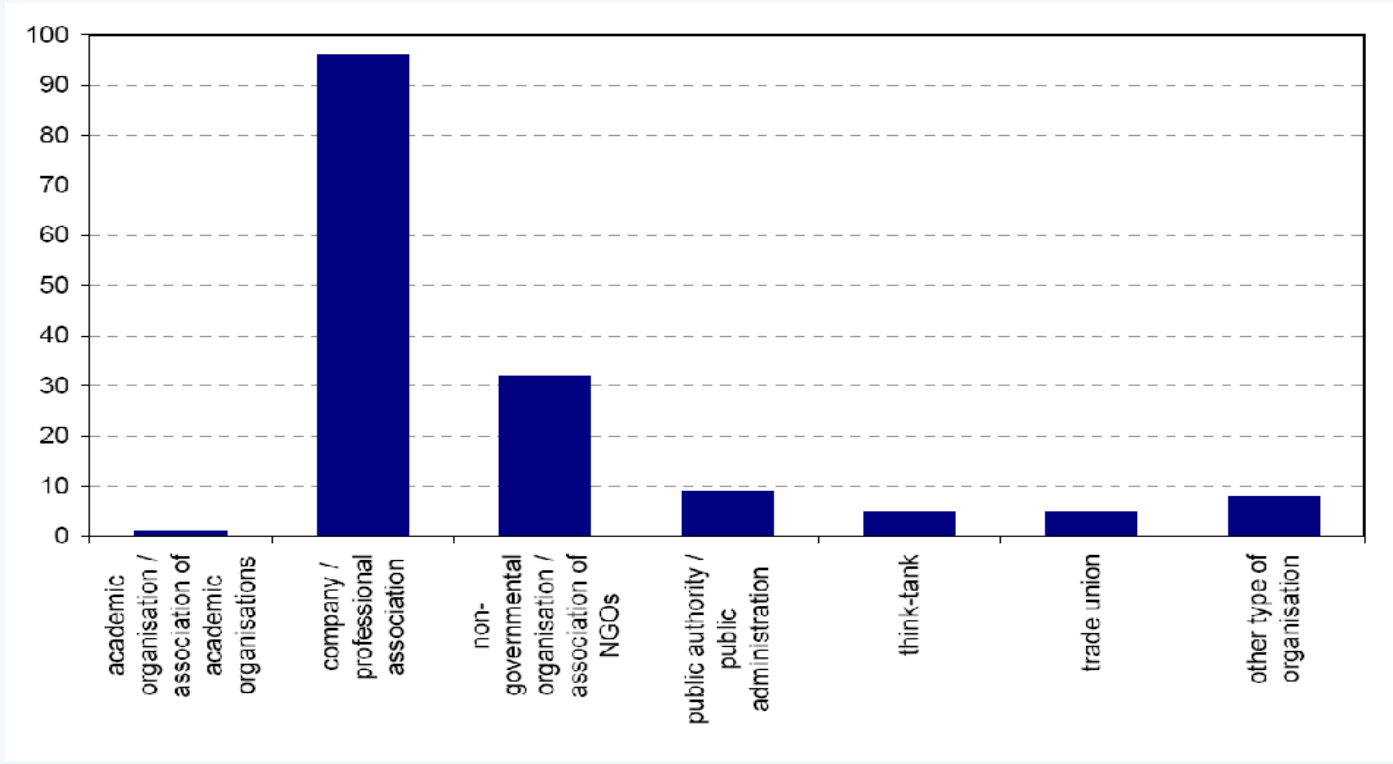


2050 Low-carbon Roadmap: Stakeholders consultation

- **Online questionnaire:** 288 evaluated responses (132 from citizens and 156 from organized stakeholders)
- **Analysis of published reports** on decarbonisation pathways developed by stakeholders
- **Stakeholders conference** on 17 March 2011 with 500 participants
- Constant **dialogue** and exchange with **social partners**



2050 Low-carbon Roadmap: Stakeholders consultation



A cost-efficient pathway towards 2050

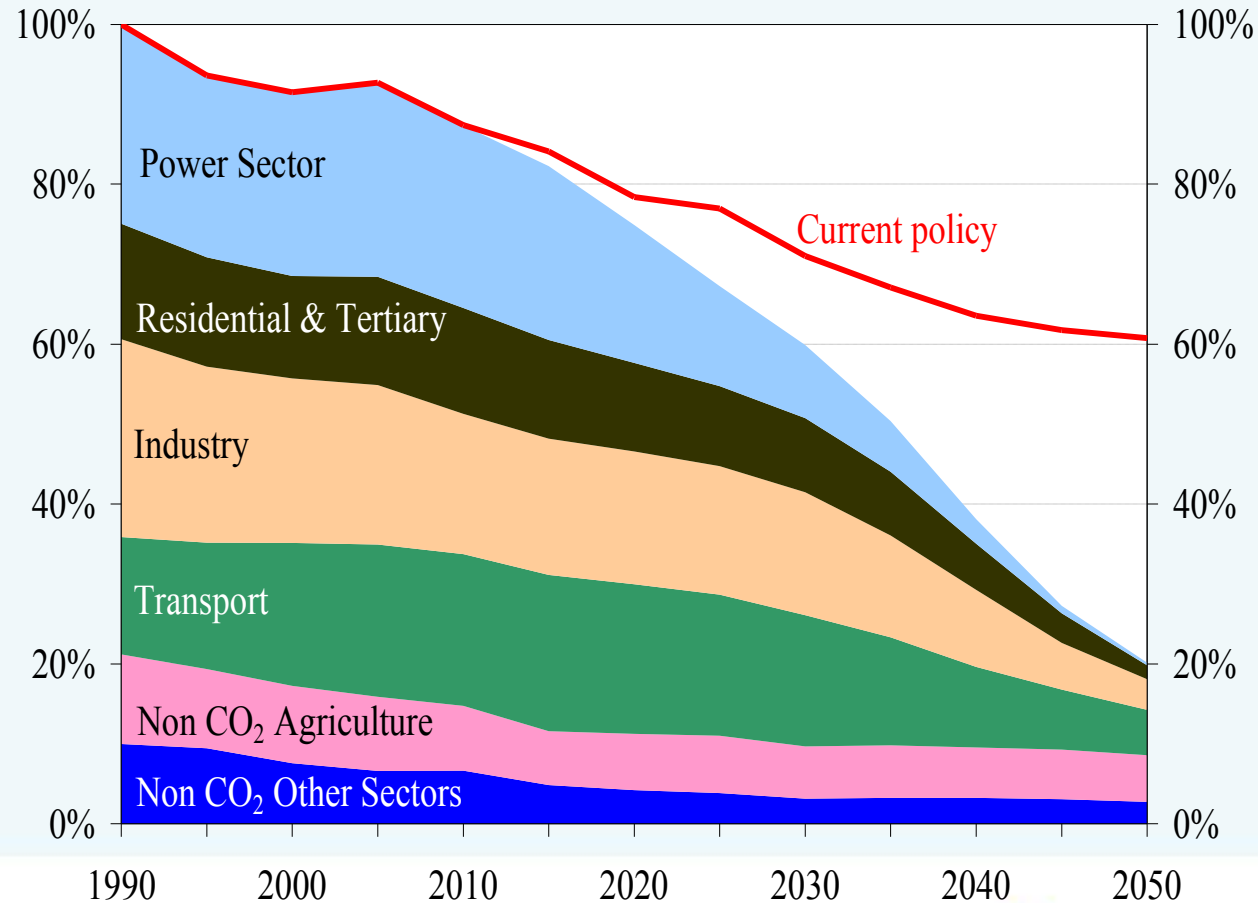
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80% domestic reduction in 2050 is feasible:

- with currently available technologies,
- with behavioural change only induced through prices
- if all economic sectors contribute to a varying degree & pace.

Efficient pathway and milestones:

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



Roadmap Milestones: reductions by sector

GHG reductions compared to 1990	2005	2030	2050
Power (CO ₂)	-7%	-54 to -68%	-93 to -99%
Industry (CO ₂)	-20%	-34 to -40%	-83 to -87%
Transport (incl. CO ₂ aviation, excl. maritime)	+30%	+20 to -9%	-54 to -67%
Residential and services (CO ₂)	-12%	-37 to -53%	-88 to -91%
Agriculture (non-CO ₂)	-20%	-36 to -37%	-42 to -49%
Other non-CO ₂ emissions	-30%	-72 to -73%	-70 to -78%




Roadmap 2050: Investing in the EU economy

- Additional domestic investment: € 270 billion annually during 2010-2050, equivalent to 1.5% of GDP
 - built environment (buildings and appliances): € 75 bn
 - transport (vehicles and infrastructure): € 150 bn
 - power (electricity generation, grid): € 30 bn

Note:

- Shift from fuel costs to investment expenditure
- Delaying action increases overall investment requirements
- R&D and early demonstration/deployment crucial



Roadmap 2050: Benefits for EU Energy Security and Air quality

- Fuel savings: € 175 to 320 billion on average annually during 2010-2050
- Making EU economy more energy secure
 - Halves imports of oil and gas compared to today
 - Safeguard against macro-economic impacts of future energy price hikes
- Air quality and health benefits: € 27 billion in 2030 and € 88 billion in 2050



Roadmap 2050: Benefits for EU jobs

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- 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 ETS 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



Policy challenges and future work (1)

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- ETS to remain central policy, consider interaction of policies
- Give longer term clarity on policy development to guide long term investments, especially in ETS sectors
- Work more on energy efficiency in all sectors, as the single most important abatement option
- Smart grid is key : to enable efficiency, more distributed generation, and electrification



Policy challenges and future work (2)

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- Implement Strategic Energy Technology Plan (€ 50 billion from 2014-2020), key to remain leader in “Clean Tech”
- Develop financing instruments to use limited public finance to leverage private sector investments, eg in the next EU budget (R&D, cohesion policy)
- Use CAP to contribute to further emission reductions and increased absorption of natural sinks



Special Eurobarometer 372: Climate Change

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- More than two Europeans in three see climate change as a very serious problem
- Almost 80% consider that taking action to combat it can boost the economy and jobs
- Overall, climate change was seen as the second most serious problem facing the world, after poverty, hunger and lack of drinking water (considered as a single issue)
- The public expects Europe to become a climate-friendly society by 2050

Thank you

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