Industry, innovation and investment risks in alternative technologies: differences and commonalities between sectors and countries

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What NOT to do to cut GHG emissions: The "naïve economist" approach

- Same CO_2 price on every emission source
  → cost-efficient solution
- Why not? *Inter alia*:
  - Inertia in technology deployment (Vogt-Schilb & Hallegatte, 2011)
  - Induced technical progress
  - Other market failures (information = public good, landlord-tenant dilemma…)
  - Carbon leakage and spillovers
- What to do? Let's see…

Electricity

- Consumption side: huge savings potential
  - Efficiency: regulations (e.g. Eco-design directive)
  - Sufficiency: CO_2 price
- Production side:
  - CO_2 price: useful but not enough
  - Renewables: feed-in tariffs
  - Networks, storage: public sector involvement

Heavy industry

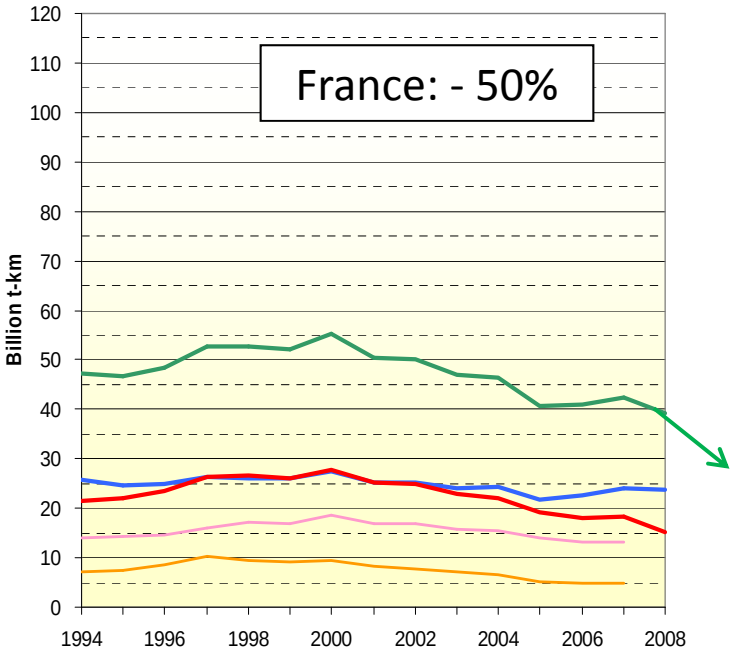
- Technical solutions:
  - Breakthrough technologies
  - Better energy efficiency
  - Higher rate of recycling → less material cons.
  - Higher rate of biomass → id.
- How to reach them?
- R&D
  - Collaborative model (e.g. steel: ULCOS)
  - Every company does its own research (e.g. cement)
- CO_2 price
  - Ideally: CO_2 tax with border adjustment
  - 2nd or 3rd best: cap-and-trade, free allocation

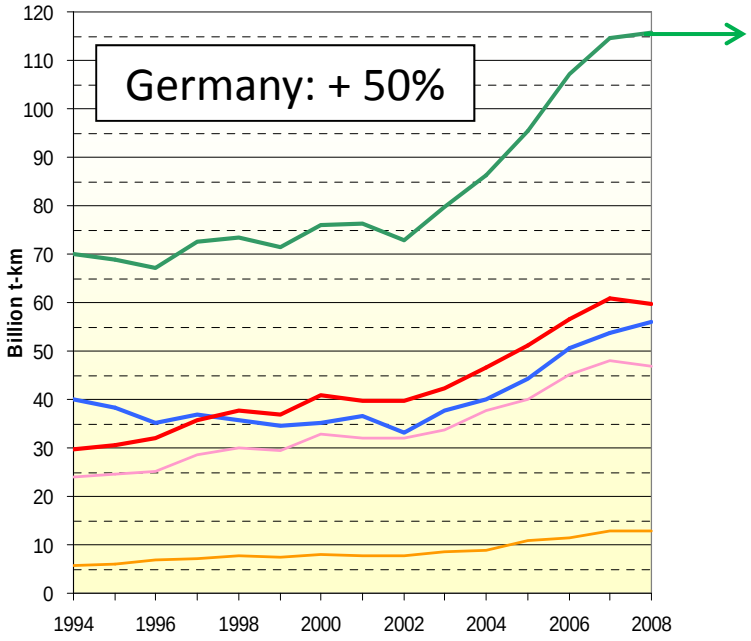
Buildings

- Today: significant subsidies. In part unavoidable, but:
  - Socially regressive
  - Rebound effect
  - Partly transferred to suppliers
- What to do?
  - Regulations (also for existing buildings). But behaviour matters →
  - CO_2 price
- How to bring retrofitting price down?
  - Public information?
  - Standardisation?

Transportation

- No silver bullet: the electric car will not save us
- Efficiency: massive gains still available in vehicle energy efficiency → regulations
- Sufficiency: CO_2 price
- Urban sprawl: CO_2 price won't be enough → regulations
- Modal shift, e.g. rail freight 2000-2010:





Conclusions

- CO_2 price necessary but not sufficient
- Cost-effective public intervention also requires:
  - Subsidised and collaborative R&D programmes
  - Energy-efficiency regulations
  - Feed-in tariffs for renewables
  - Direct public involvement (energy & transport networks…)
- Key issue: preventing lobbying-induced policy distortions