Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology

Necessity to reform Europe's carbon market

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Assumptions

- Climate change is the greatest challenge for mankind
- To prevent dangerous, non-linear climate changes, the global temperature increase needs to stay below 2°C
- To achieve this, developing countries need to decarbonize there economies almost entirely by 2050, i.e. 35 years remaining
  - Technologically this is challenging but possible
  - Requires also behavioral change, i.e. reduced material consumption
- Quantity control instruments are an important option to
  - achieve the environmental goal
  - provide incentives for technological and behavioral changes

Expectations

- Put a price on greenhouse gases
- Internalize climate externalities
- Reduce emissions in the covered sectors
- Drive investment towards carbon friendly technologies
- Incentivize innovation
  - One major aim of the European Union Emissions Trading Scheme (EU ETS) is to “promot[e] global innovation to combat climate change” (DG ENV 2004).
  - “The analysis of the EU ETS has revealed some indications that the instrument has basically worked as originally intended although it has certainly not yet developed its full potential in terms of promoting innovation towards a more climate friendly electricity system.” (Cames 2010)

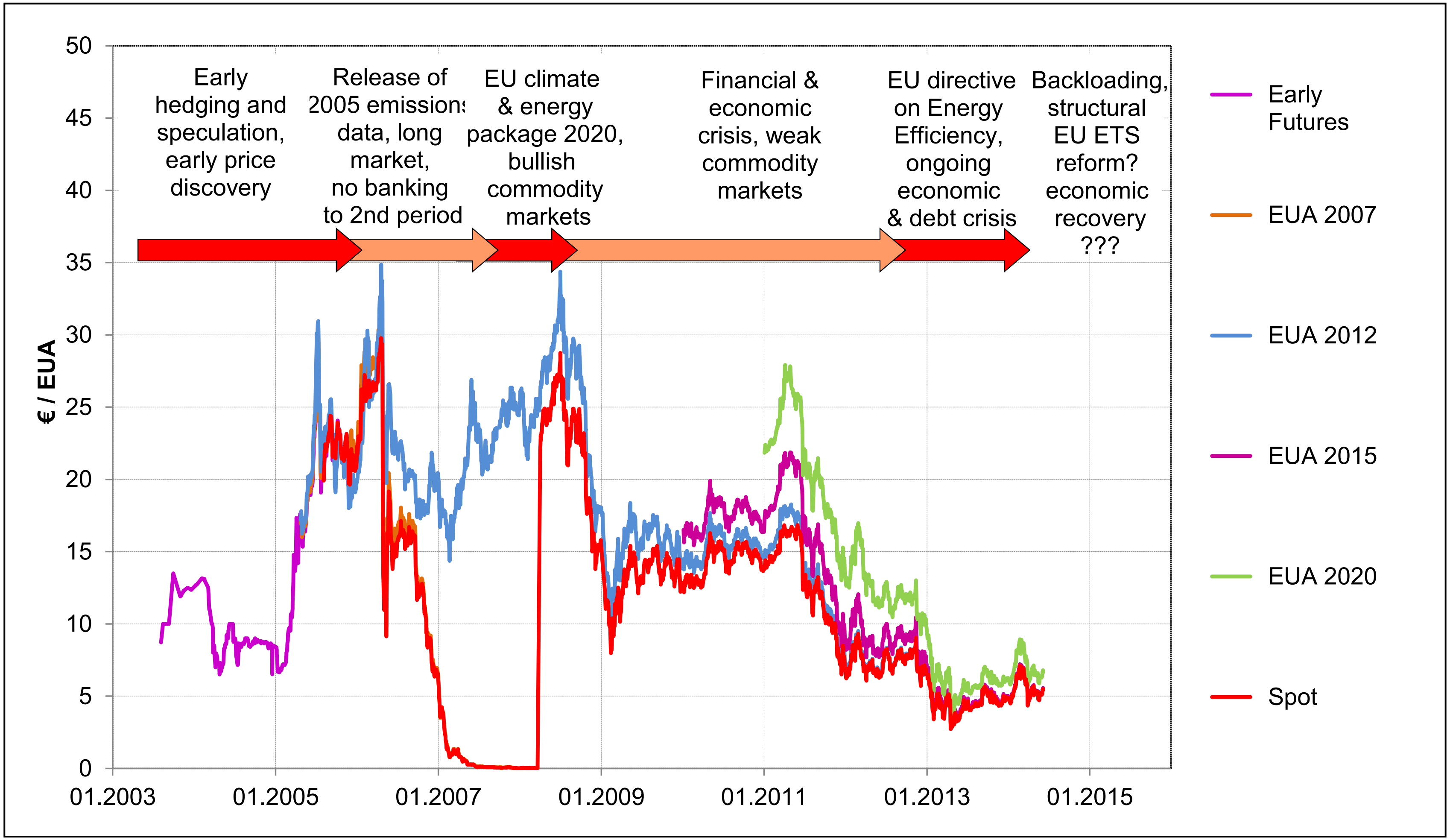
Own expectations

Preliminary conclusions

- The term “innovation” is more linked to technical innovation, institutional changes are mostly not considered as innovations
- We can differentiate two dimensions of impacts of emissions trading on innovation
  - Before start of the emissions trading mainly “soft” innovations without large investment decisions (establishment of a task force, calculating avoidance cost curves and sketching scenarios, adaptation of software etc.)
  - “Hard” innovations with larger needs for financial resources will actually be postponed and will only be put on the agenda again when first experiences with emissions trading are gained (new power plants etc.)
- In this respect emissions trading has quite innovation delaying effects
- The importance of the “discovery function” of emissions trading is considered to be very small in the companies
- In general, the innovation effects are underestimated in the companies right now
- Finally, the innovation effects will be only visible in the long term

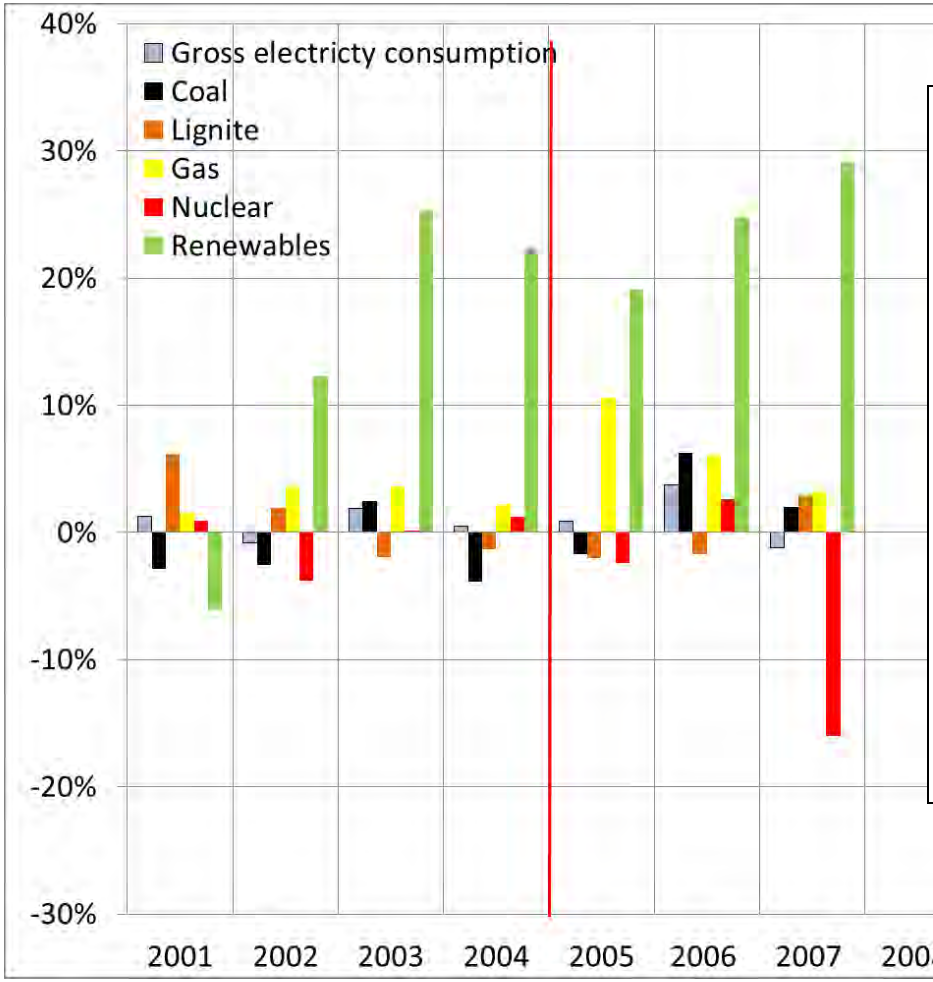
Source: Cames 2004, 9th Reform Group Meeting, Salzburg

European Union Emissions Trading Scheme Allowances price trends



Sources: EEX, ECX, Öko-Institut

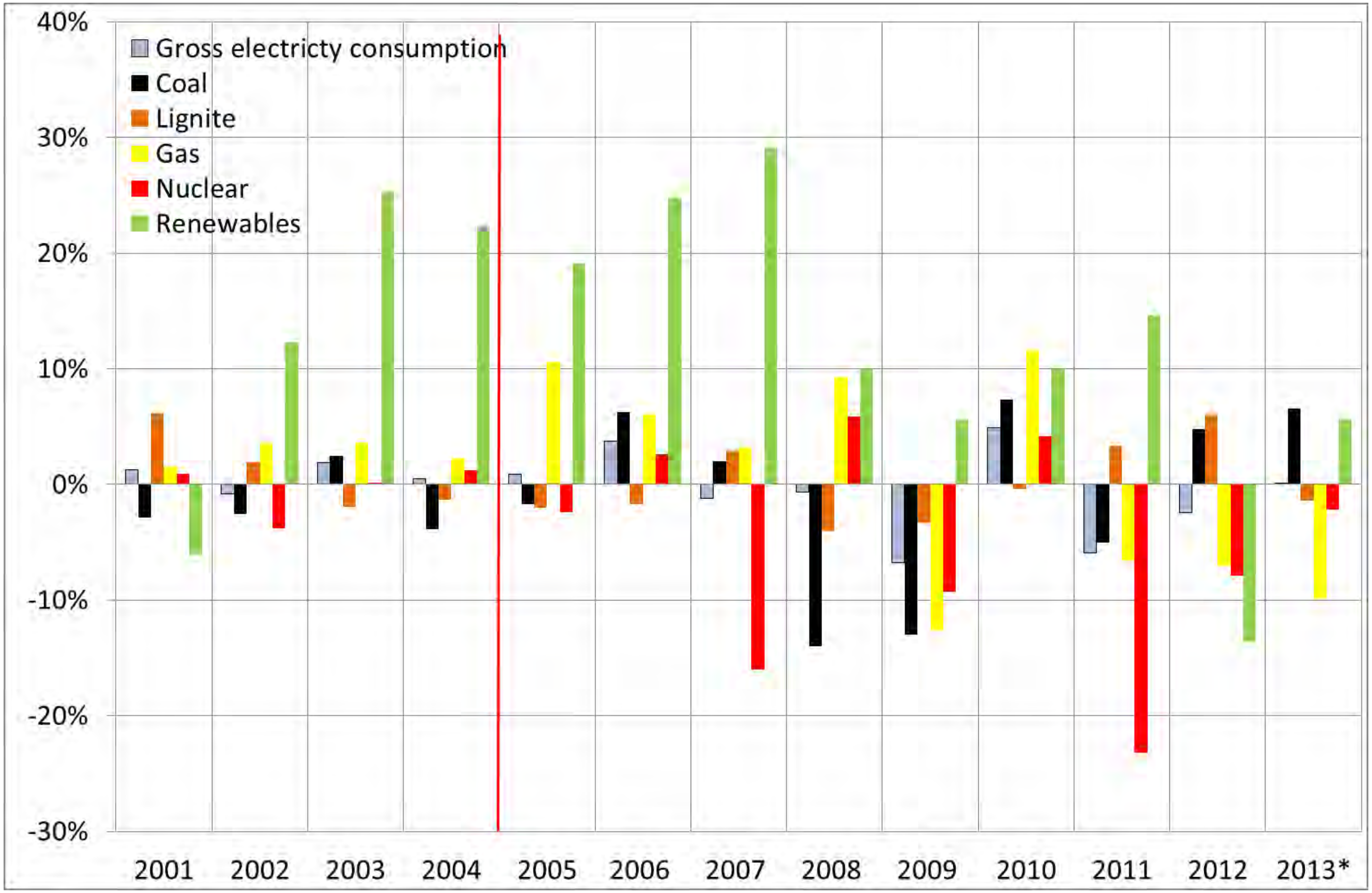
Electricity generation by fuel type (2009)



The fuel structure for electricity generation is evidently influenced by other factors and changes in the fuel structure and can therefore not clearly be attributed to the carbon priced introduced by the EU ETS – at least not yet. (Cames 2010)

Source: AG Energiebilanzen

Electricity generation by fuel type (2014)



Source: AG Energiebilanzen

Reality

- Surplus of units (2.1 billion units)
- Declining carbon prices
  - Lingering since 2 years around 5 €/t
  - However, prices are not at zero
  - Transactions volumes are significant, i.e. liquid market
- Price volatility
- Lack of incentives towards carbon friendly technologies

Potential reasons

- Global financial crisis after 2008
- Renewables policy
- Energy efficiency policy
- Offsets, particularly Certified Emission Reductions (CER) from the Clean Development Mechanism (CDM)
- Expectations of market participants

What went wrong?

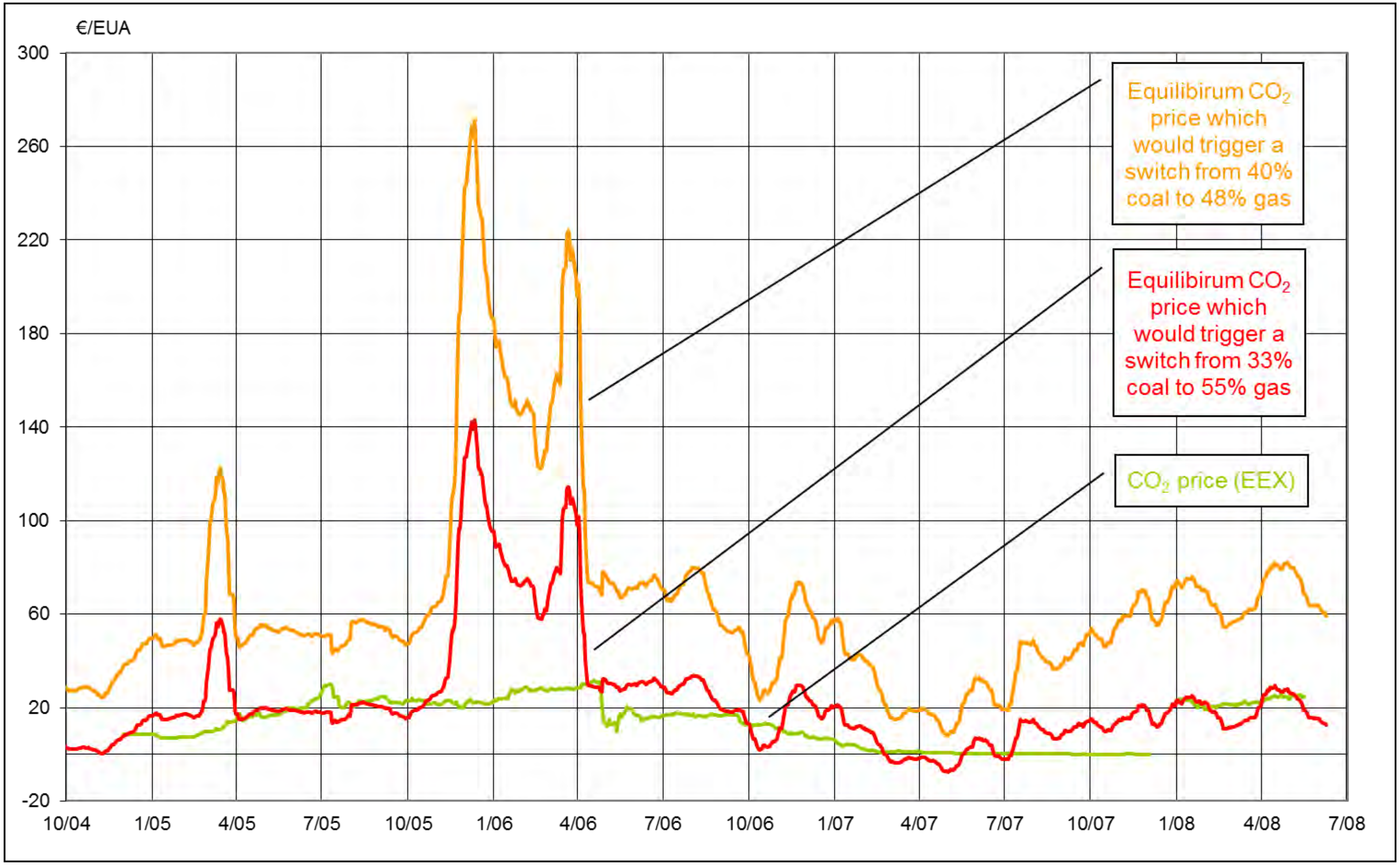
- In the design
  - Generous allocation: 2005-2007 & 2008-2012
  - Linking directive: further implicit extension of the cap
  - Free allocation: investment subsidy for coal/lignite plants
  - Ban on other GHG regulation in covered installations

- In the analysis
  - Ignoring the time period required to swing-in
  - Focus on actual surplus
  - Focus on carbon prices
  - NGO shit storm based on unjustified expectations

Potential reforms

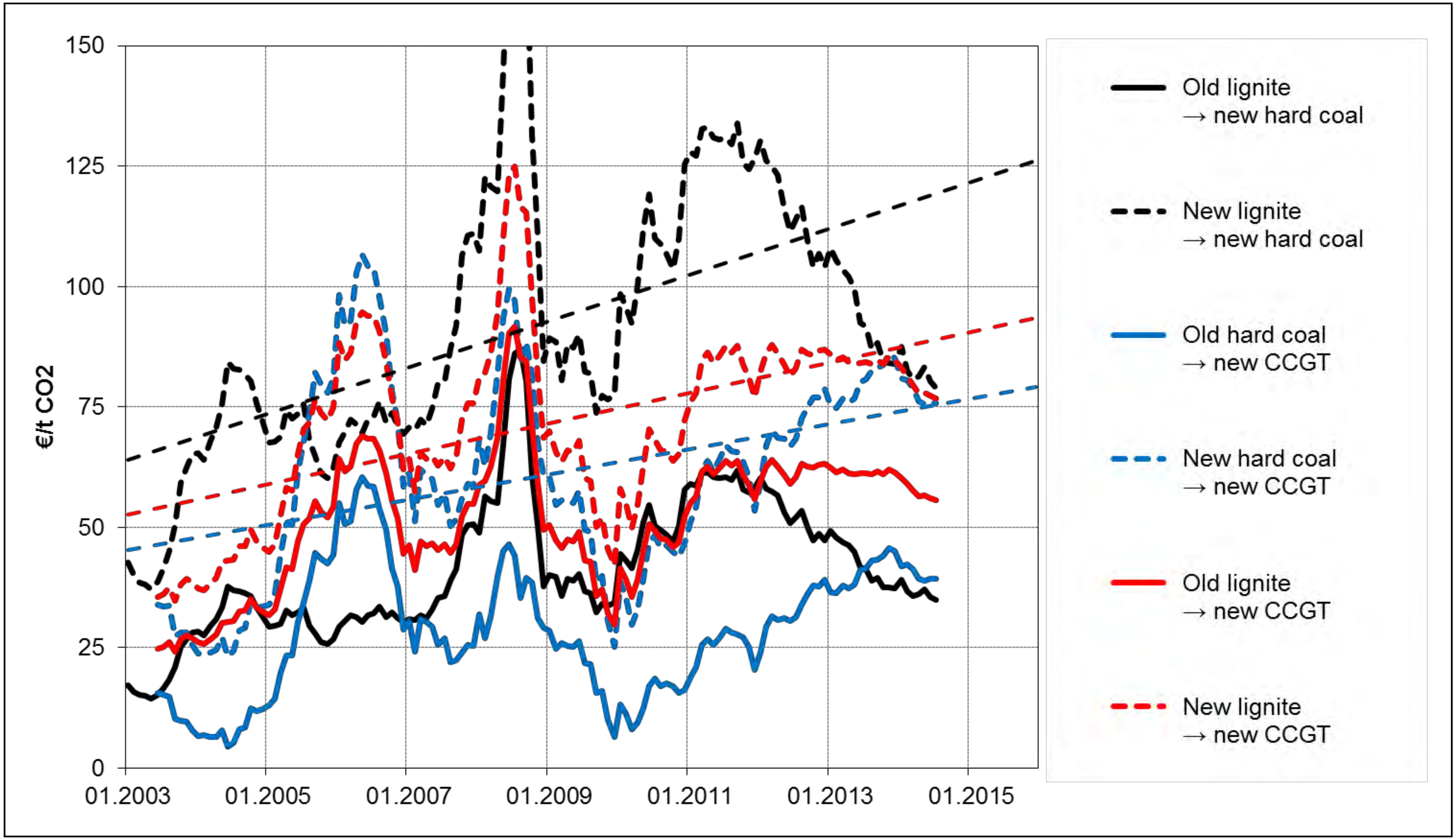
- Price oriented
  - Backloading
  - Establishing a price corridor
    - Discretionary intervention to stay within the corridor
    - Establishing an independent body similar to the ECB
- Quantity oriented: Strengthening the Linear Reduction Factor (LRF): from 1.74 %/a to 2.2 - 3.0
- Hybrid: Market Stability Reserve (MRS)
  - Rules based, no discretionary quantity control
  - Cancelling (parts of the) reserve in the longer term?
- Other: extending coverage (upstream: transport, buildings)

Coal to gas switch band – 6 years ago



Sources: PointCarbon (2008); Spectron (2008); SDT (2008); Oanda (2008); calculations by Öko-Institut

CO_2 prices required for fuel switch



Sources: EEX; Energate; Vattenfall Europe Mining; Mc Closkey; Pfaffenberger/Hille 2003; calculations by Öko-Institut

CO_2 prices required to shift investment

	€/kWh	g/kWh	€/t	€/t	€/t
Lignite	0,056	389	0	538	198
Coal	0,084	337	538	0	67
Gas	0,093	202	198	67	0
Wind onshore	0,066	0	26	-53	-134
Wind onshore	0,096	0	103	36	15
PV field	0,087	0	80	9	-30
PV field	0,107	0	131	68	69
Wind offshore	0,120	0	165	107	134
Biomas	0,112	0	144	83	94
PV roof	0,121	0	167	110	139
PV roof	0,142	0	221	172	243
Biogas	0,147	0	234	187	267

Source: Prognos 2013 - Entwicklung von Stromproduktionskosten

Hypotheses

- Enforcing a GHG mitigation target by law was more important (vested rights of many individuals) than putting a price on GHG (internalization)
- Low prices are rather an indicator that reduction efforts can be increased than that ETS is working wrong
- The swing-in phase of a new market instrument has been entirely ignored
- Therefore, the EU ETS cannot drive investment into low carbon technologies in the short run
- The time remaining to decarbonize the economy is too short to drive carbon friendly investment through ETS only
- ETS needs flanking instrument which promote renewables and ensure the phase out of hard coal and lignite within 30 years
- Paradoxically: measures flanking the ETS will at the same time undermine any effort to increase the carbon price

Conclusions (revision of expectations)

- ETS is unlikely to achieve GHG prices required to trigger investments towards decarbonization, at least no in the time span remaining to achieve decarbonization
- Price oriented reforms tend to be rather cosmetics
- Should the EU ETS than be scrapped? No, the long term cap established through the LFR provides trust to long-term climate policy goals also in other sectors (spill-over)
- Focus should be put on quantity regulations (strengthening the LFR) rather than on price regulations
- Main purpose of ETS: provide incentive for short term dispatch
- ETS needs flanking instruments which steer investments in renewables and ensure the phase out of coal and lignite

Thank you for your attention!

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