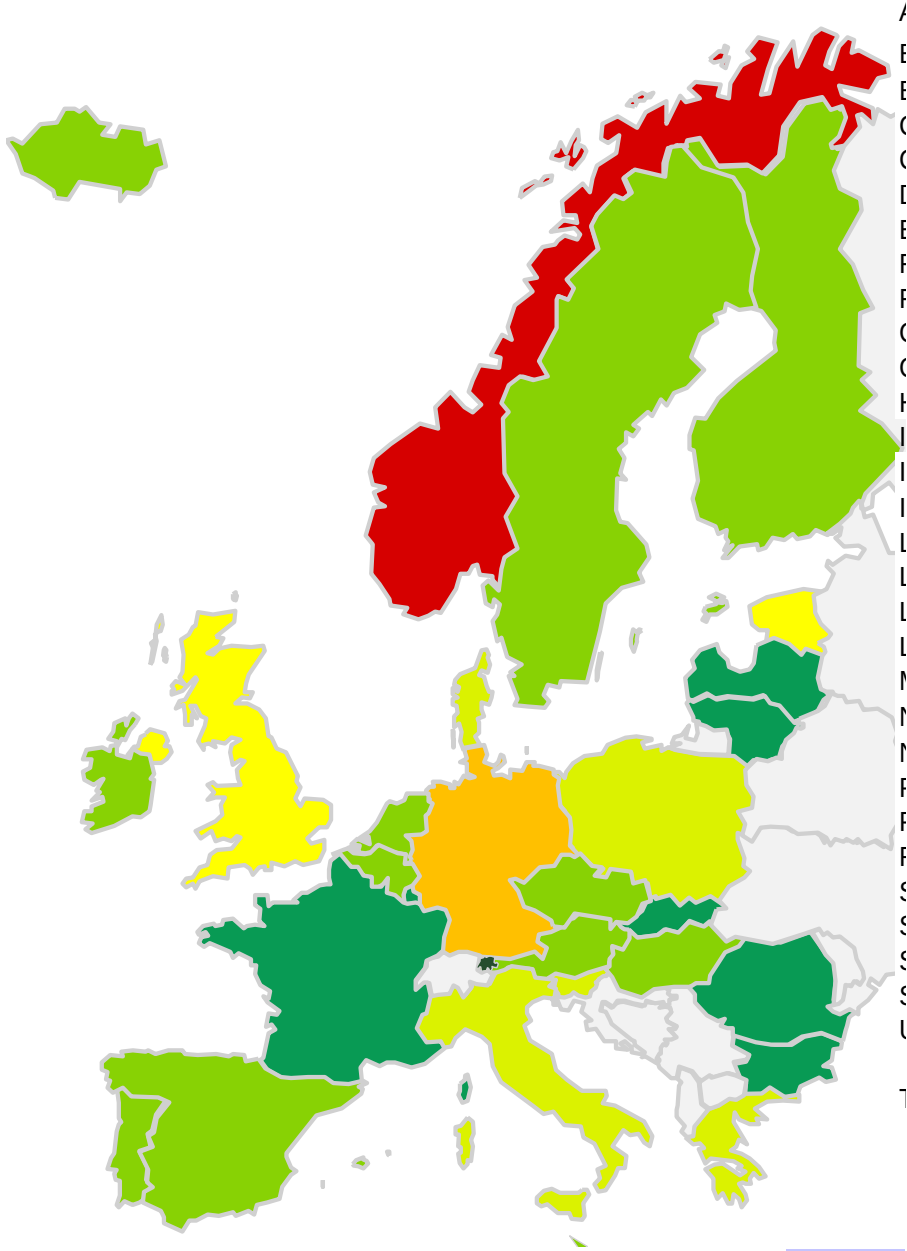
ENTRACTE & CECILIA
Joint Climate Policy Workshop
12 September 2013, Dublin

Current state and conceivable futures of EU ETS



Stefan P. Schleicher
Wegener Center for Climate and Global Change
University of Graz

Wegener Center

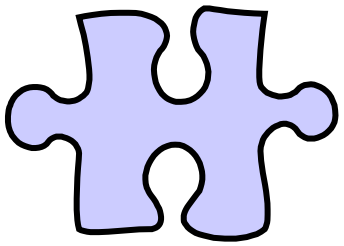
The evaluation of EU ETS in the paper by Christian de Perthuis and Raphael Trotignon (2013)

- **Reasons for the current market situation**
  are economic conditions, policy overlap, Kyoto credits
- **Structural issues**
  will not be resolved by "backloading" or "set aside"
- **Changing the reduction target**
  is necessary but not sufficient
- **Governance could be improved**
  by independent carbon authority

Wegener Center

I want to underline this evaluation by contributing some additional arguments and suggesting a broader policy perspective for EU ETS

Wegener Center

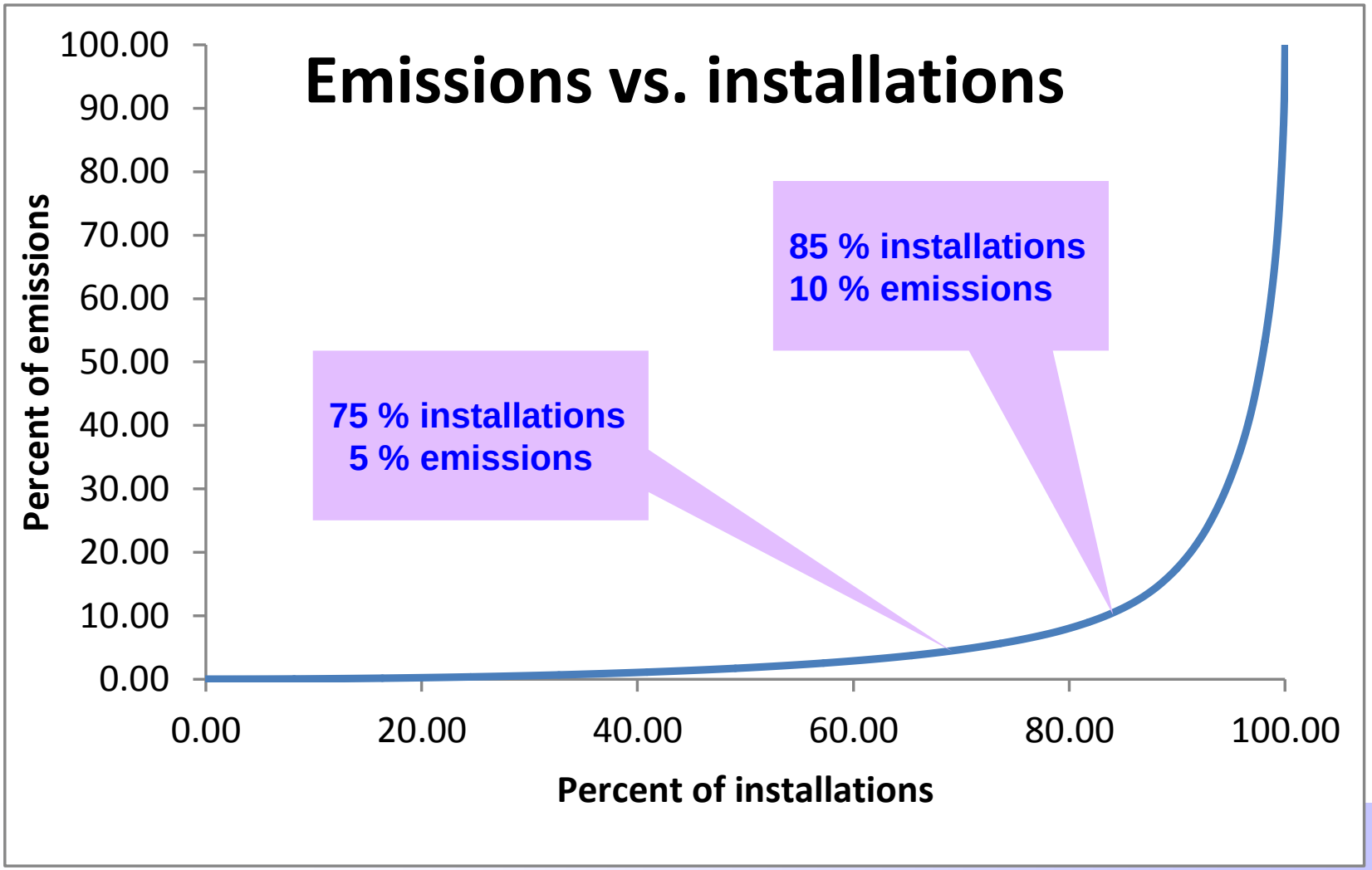


More facts than just the carbon price need to be considered

The overlooked fragmentation of the market

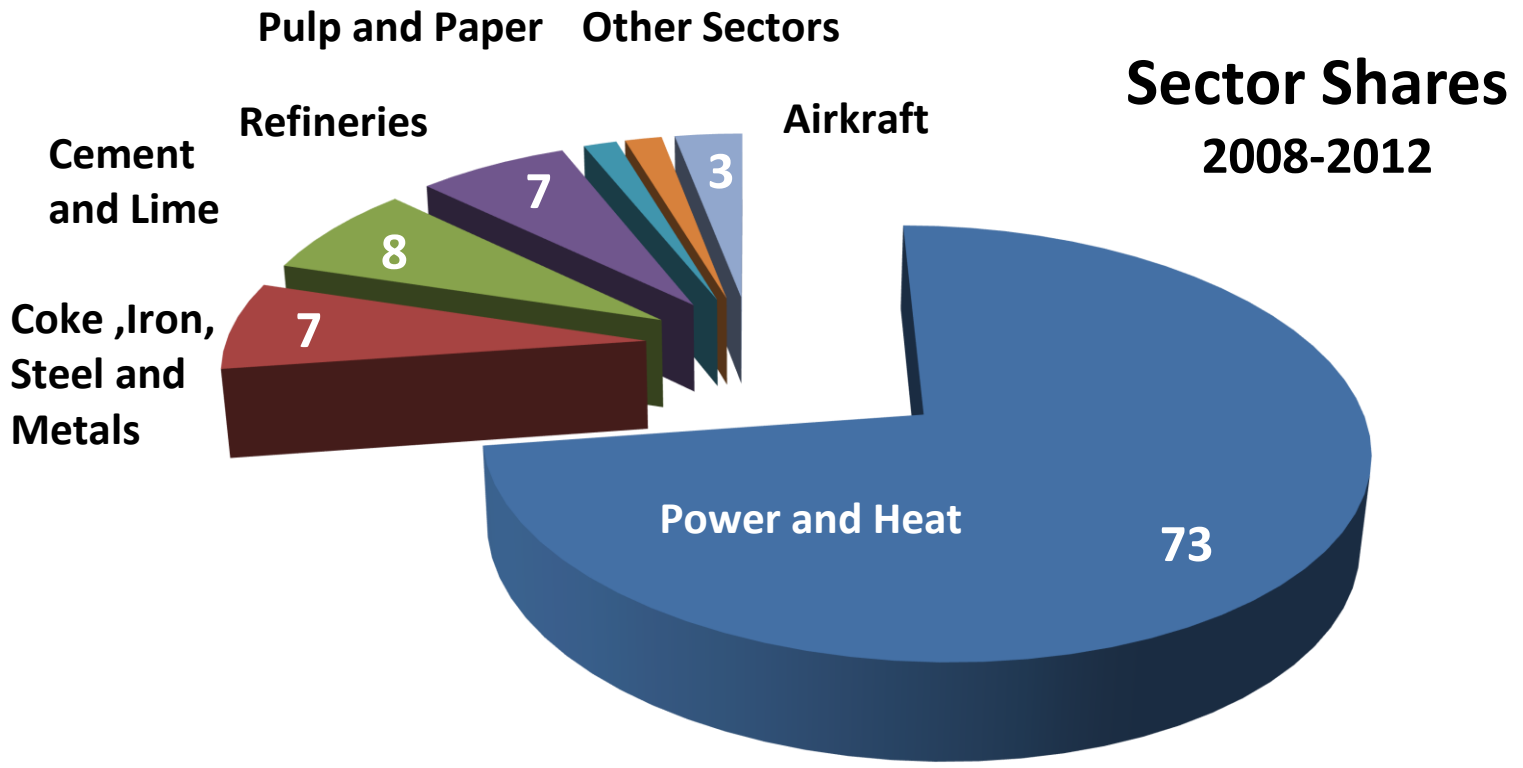
Wegener Center

Highly unequal size distribution of installations
85 % installations account for only 10 % emissions



Wegener Center

Power sector dominates
Accounts for 73 % of emissions

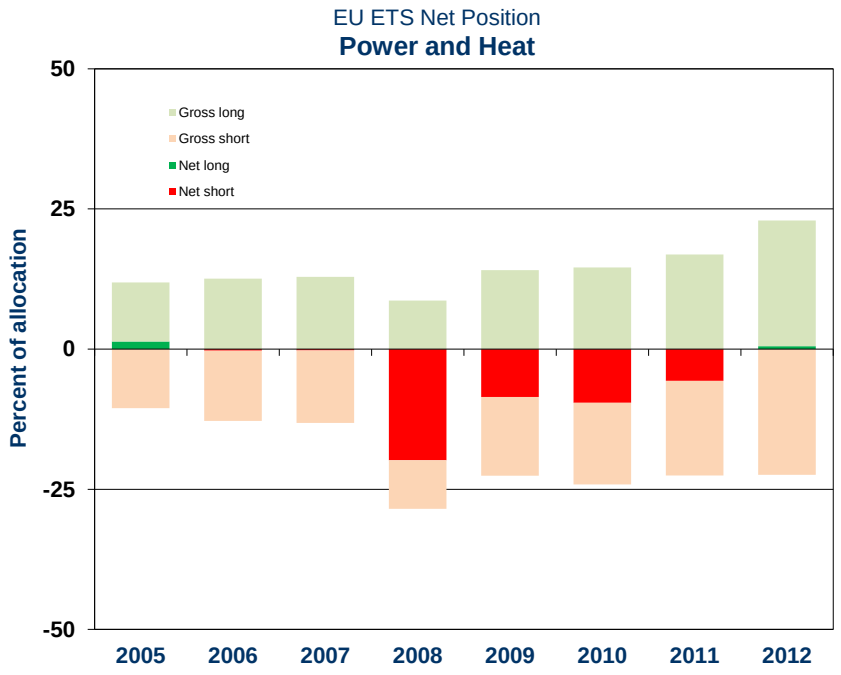


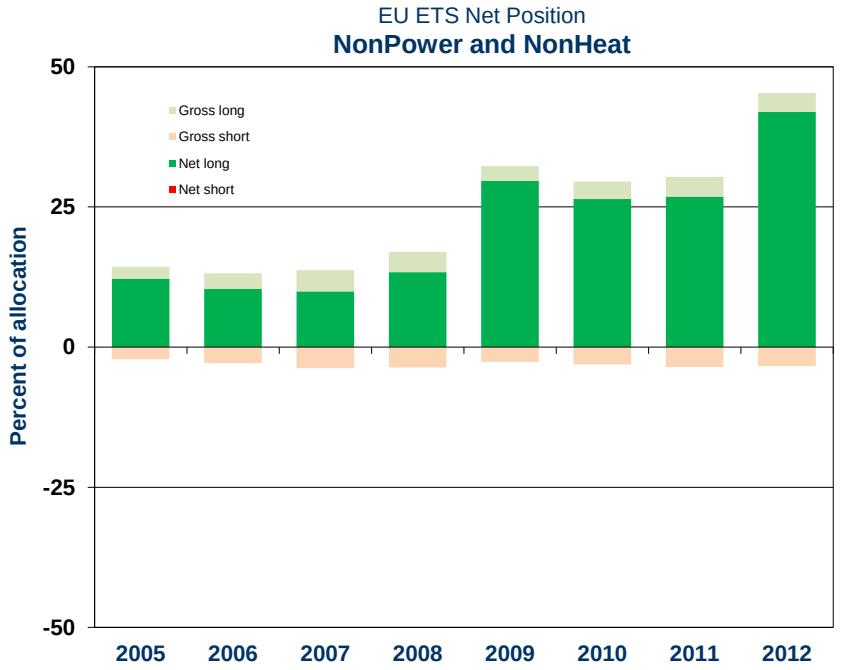
Wegener Center

Fragmentation of stringency

between Power and NonPower sectors

- **Power sector was rather short**
- **NonPower sector was always long**
- **Differences between trading periods**





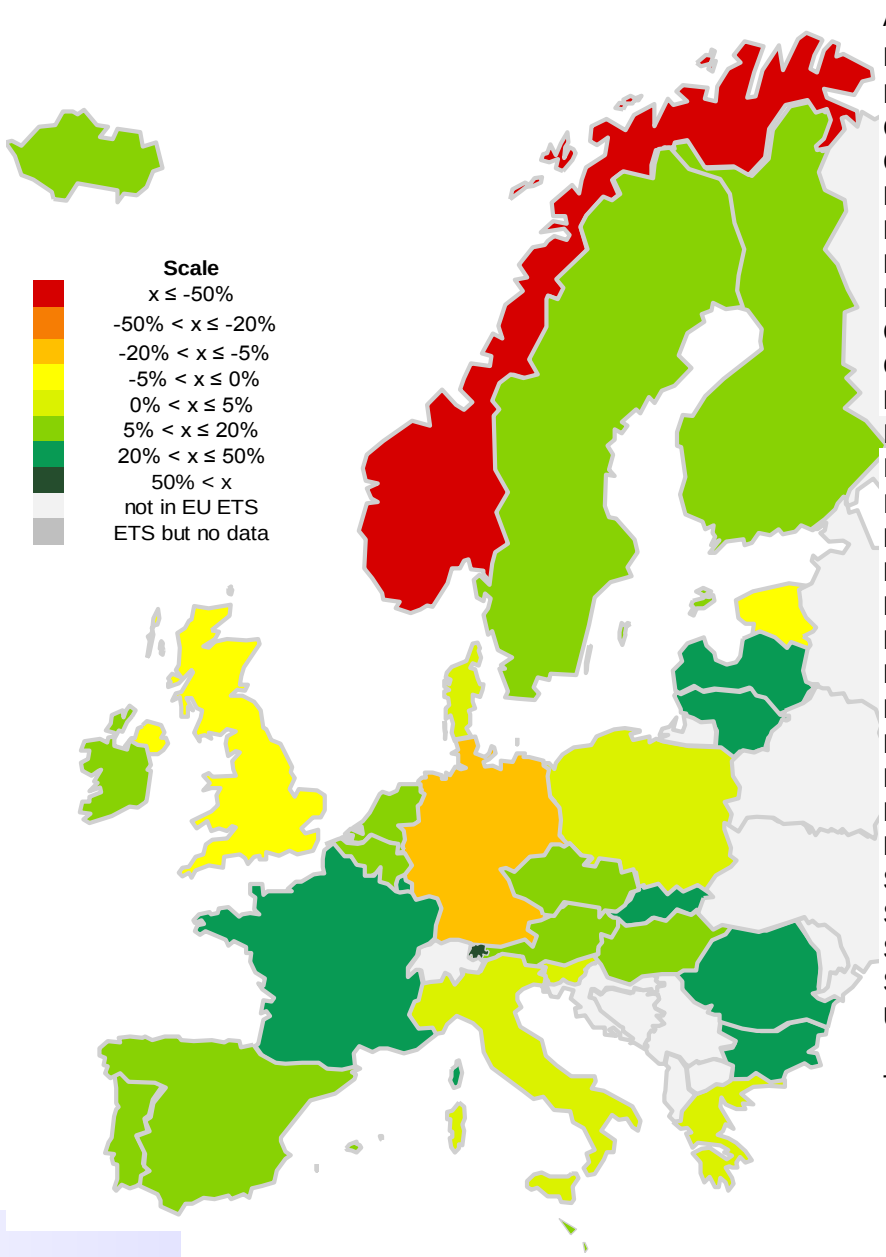
Profile of country stringencies

2008 - 2012

- **The overall market was long by about 5 %**
- **Country positions differ**

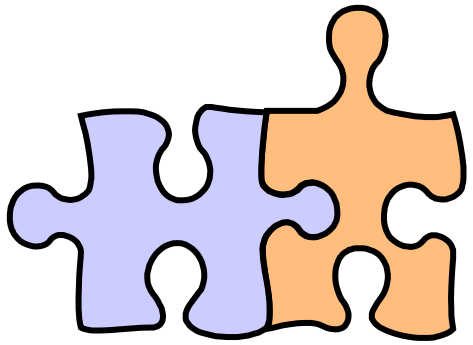
EU ETS Net Positions

All sectors 2008-2012



Austria	7.2%
Belgium	15.3%
Bulgaria	27.5%
Cypres	26.0%
Czech Republic	13.4%
Denmark	3.2%
Estonia	-2.1%
Finland	6.4%
France	21.6%
Germany	-11.0%
Greece	2.8%
Hungary	5.6%
Iceland	14.6%
Ireland	12.9%
Italy	4.4%
Latvia	37.9%
Liechtenstein	59.7%
Lithuenia	25.3%
Luxembourg	27.9%
Malta	8.5%
Netherlands	5.6%
Norway	-86.2%
Poland	3.4%
Portugal	18.3%
Romania	30.1%
Slovakia	33.2%
Slovenia	1.1%
Spain	9.5%
Sweden	13.6%
United Kingdom	-4.0%
Total	4.7%

Wegener Center



The economic foundations of EU ETS have turned out to be only limited operational

Uncertainty about abatement costs and impacts on technologies undermine the cost minimization argument

Wegener Center

Problem 1
Abatement costs are not a well defined concept

Abatement options	Operating decisions no investments	Investment decisions different levels of investments
Change of output		
Change of energy efficiency		
Change of energy mix		

- **This is caused inter alia by the difference between integrated and add-on abatement technologies**

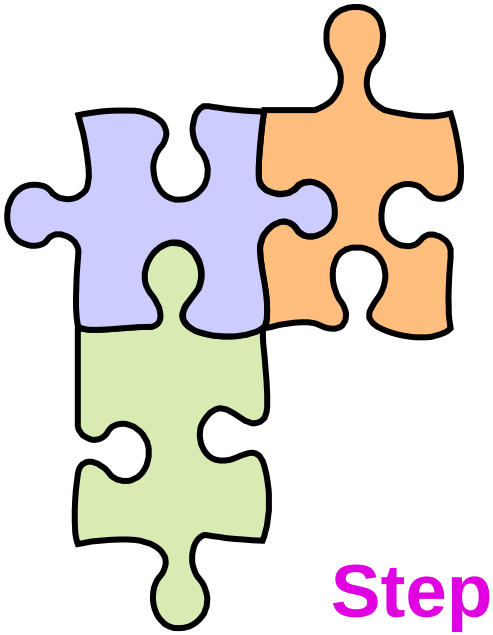
Wegener Center

Problem 2

The causality from the stringency of allowances to technical change is highly uncertain

- Carbon prices of a conceivable size have only a very limited impact on the choice of technologies

Wegener Center



Steps to a structural reform of EU ETS

More than backloading and tightening

Wegener Center

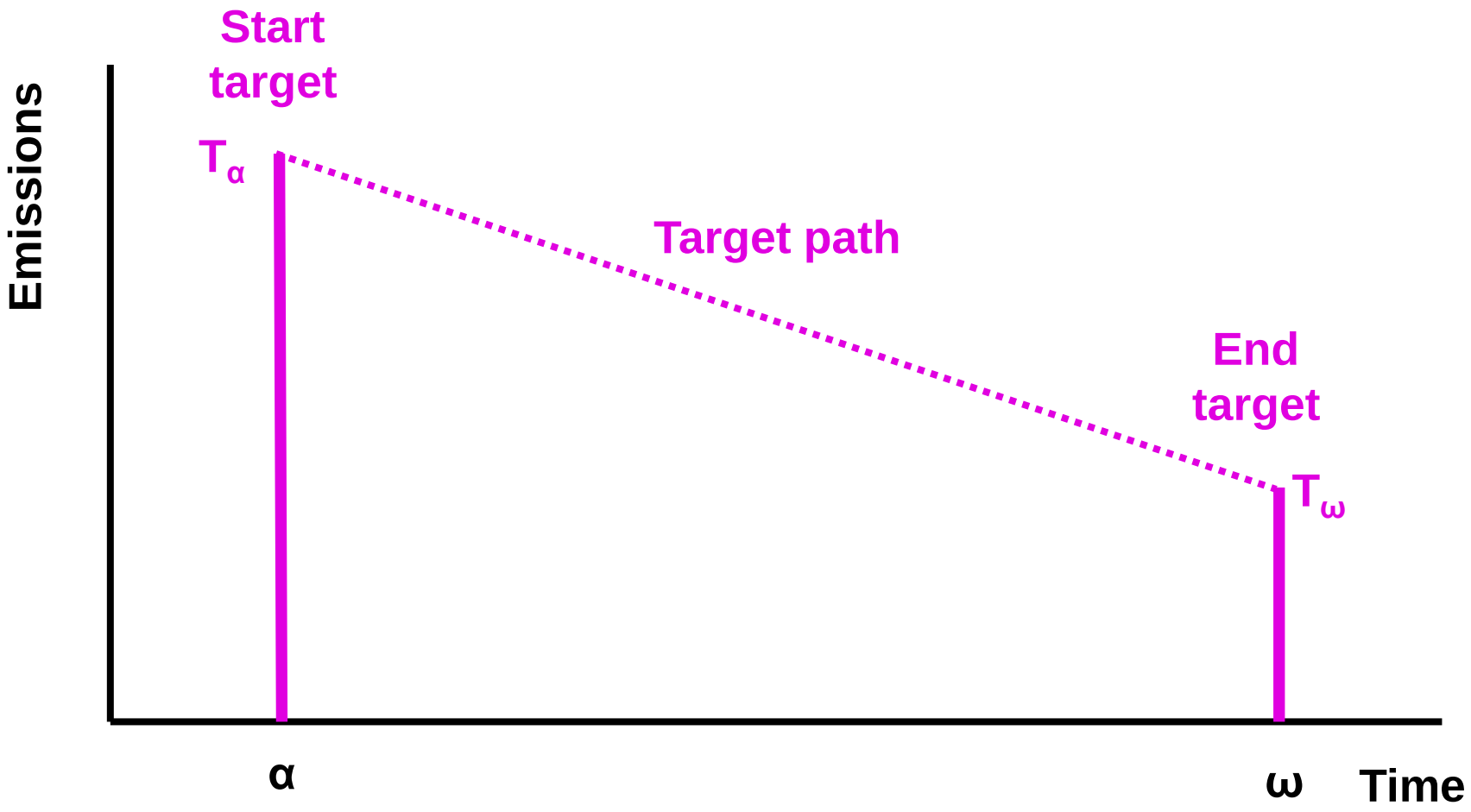
(1)

A long-term target path (up to 2050?)
instead of fixed caps with fixed trading periods

This will create confidence for investors

Wegener Center

A long-term target path



Wegener Center

(2)

A flexible supply mechanism
that maintains the intended stringency
of the target path

This will decouple the stringency of supply
from fluctuations of economic activity

Wegener Center

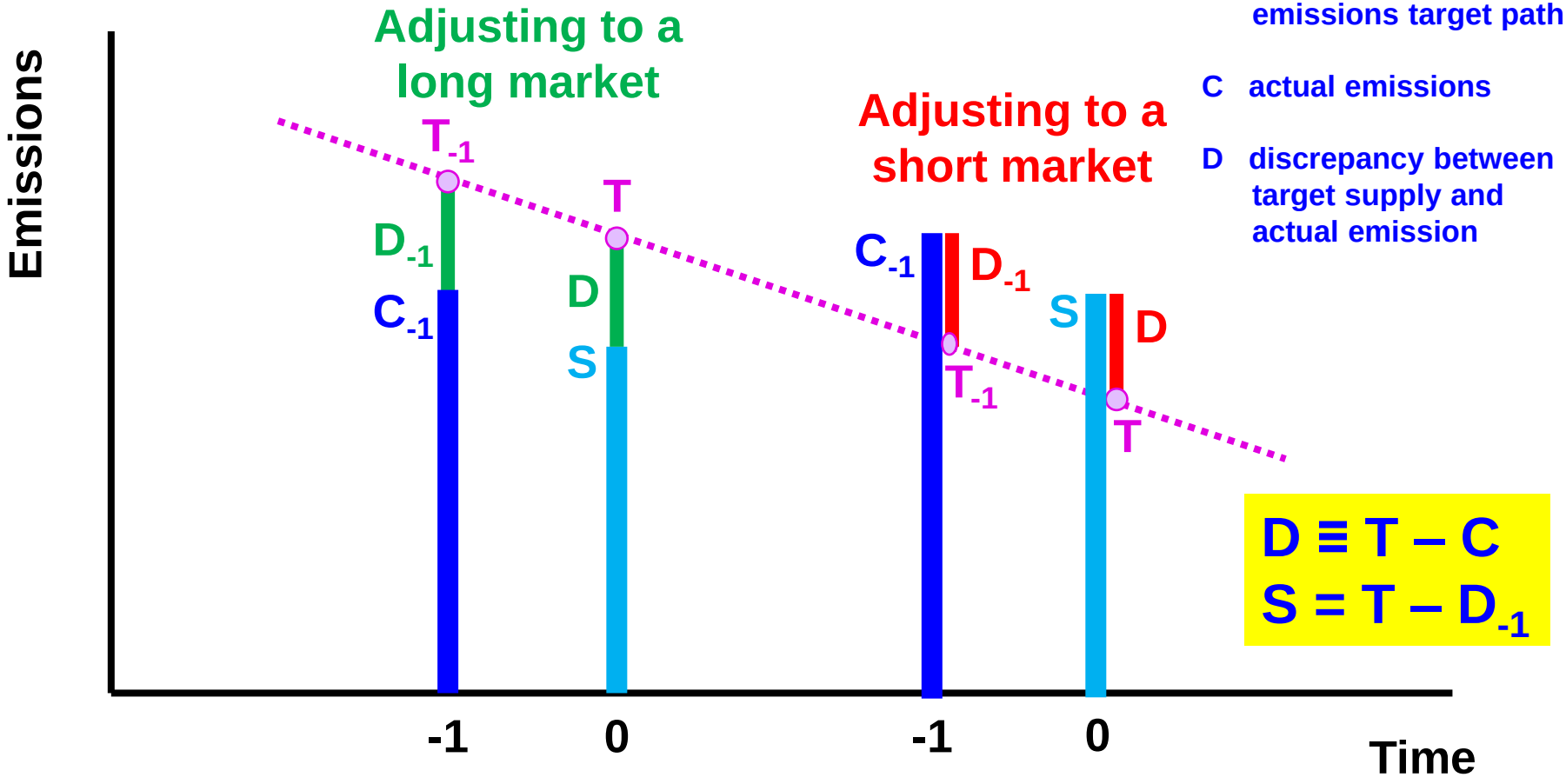
Supply compensation for maintaining target stringency

S actual supply of allowances

T target supply as to the emissions target path

C actual emissions

D discrepancy between target supply and actual emission



Actual supply of allowances in the current year compensates the discrepancy between target supply and actual emissions of the previous year.

Wegener Center

(3)

Emissions or emissions intensities can be used as base for the target path

Intensities will reduce the vulnerability of the market with respect to output fluctuations

Wegener Center

Reasons for switching to an emissions intensity target

- An emissions intensity target encompasses both an
  - energy efficiency target and a
  - carbon share target

C carbon emissions
E energy used
Q GDP
I emissions intensity

- An emissions intensity target can be considered as a substitute for the current three EU 2020 targets

$$I \equiv C / Q$$

emissions intensity | energy efficiency | carbon share

$$[C / Q] \equiv [E / Q] \cdot [C / E]$$

Wegener Center

(4)

Recycling of auctioning revenues for stimulating technical innovation

This can be done via a technology fund for targeted technology policies

(5)

Eliminating small emitters

85 percent of the installations account for only 10 percent of total emissions

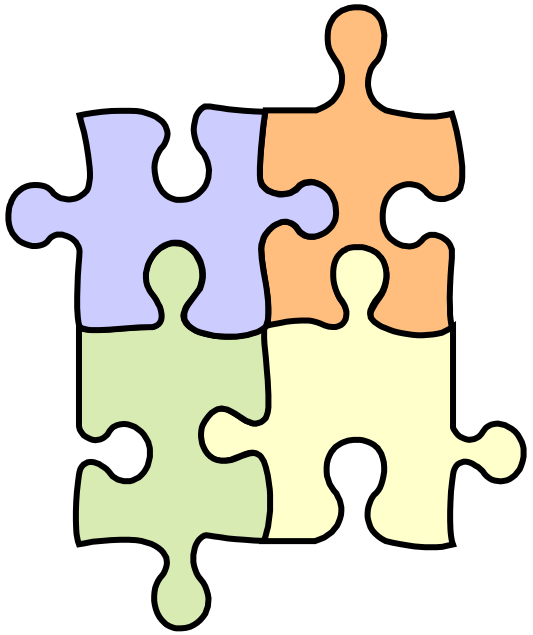
Wegener Center

(6)

An independent carbon market authority

For maintaining the stringency of the target path, monitoring and verification of emissions

Wegener Center



Time for a Plan B?

Imbedding energy and climate policy into innovation-driven industrial policy

Wegener Center

Facing the current state of the EU

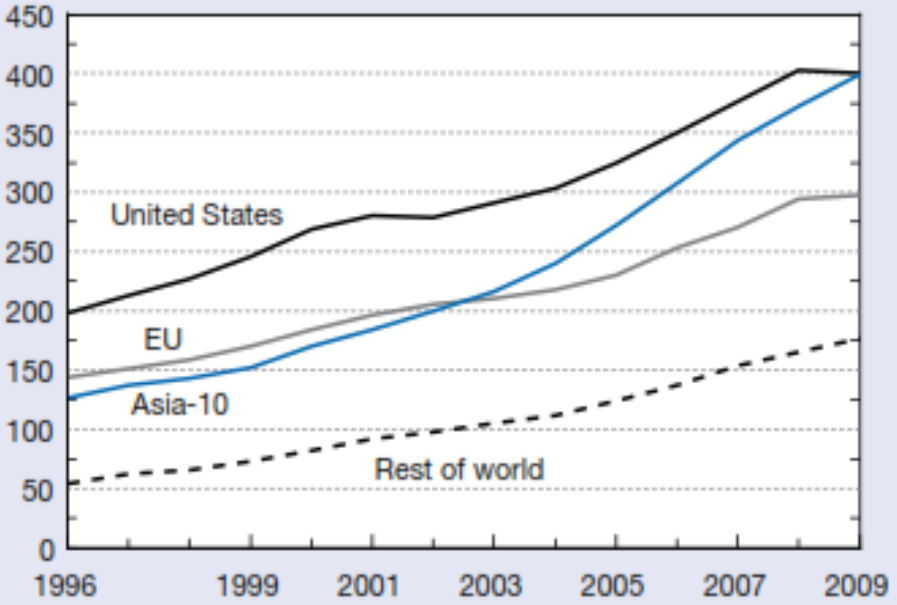
- The ongoing financial, economic and sovereign debt crisis
- The loss of competitiveness
- Industry's widening technology gap

EU's industry is loosing ground in the global technology competition

National Science Board (2012): Science and Engineering Indicators

R&D expenditures for United States, EU, and 10 Asian economies: 1996–2009

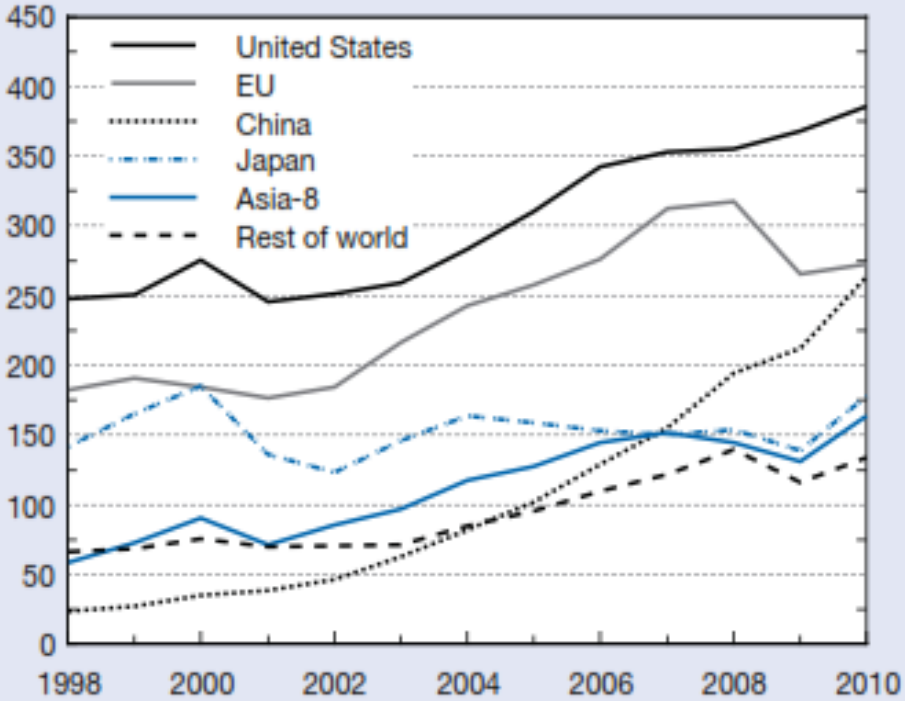
Dollars (billions)



Asia-10 = China, India, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand; EU = European Union

Value added of high-technology manufacturing industries, by selected region/country: 1998–2010

Dollars (billions)



The technology gap of EU vs. US and China is widening

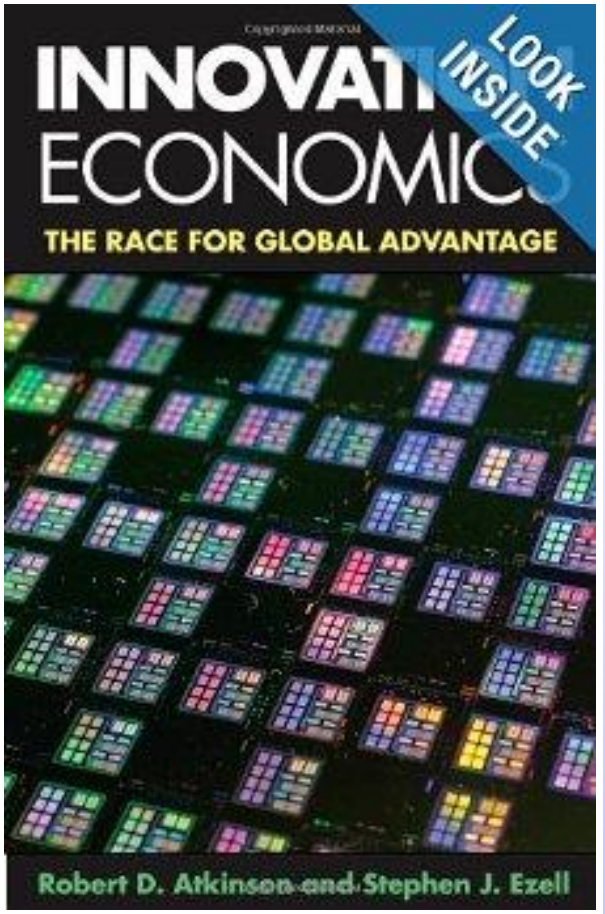
Wegener Center

Innovation - the key to industrial policy

- **McKinsey Global Institute (2012). Manufacturing the future. The next era of global growth and innovation.**

- **Robert D. Atkinson and Steven J. Ezell (2012). Innovation economics: the race for global advantage.**

- **Julian Allwood (2012). Sustainable materials. With both eyes open.**



Wegener Center

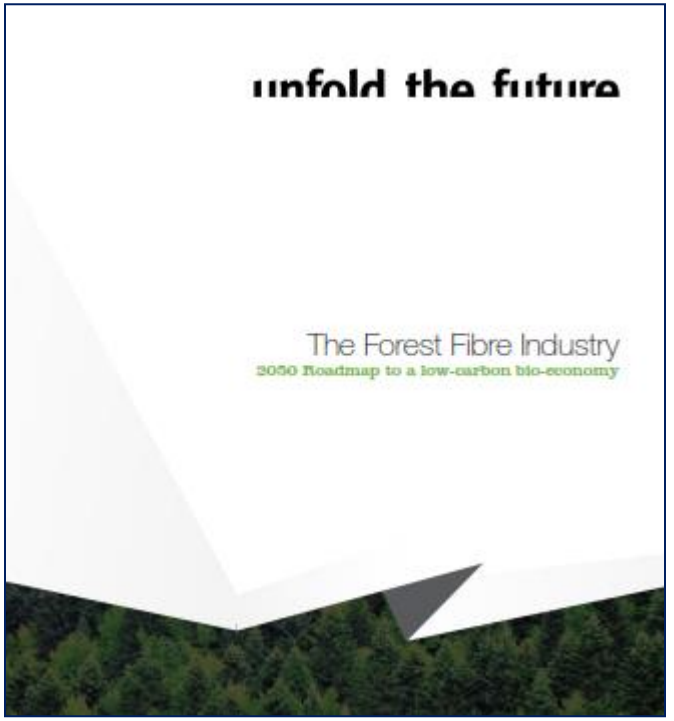
A Copernican turn for EU energy and climate policy

- **Embedding EU ETS into a targeted technology package**
- **A structural reform as far as allowed by a political consensus**
- **But the main impact on emissions reductions is expected from stimulating break-through technologies**

Wegener Center

Focus on break-through technologies (1)
Incentives for innovative processes and products

- **CEPI 2050 Roadmap to a low-carbon bio-economy**
- **Additive manufacturing (3D printing)**



Wegener Center

Focus on break-through technologies (2)
Incentives for innovative business models

David Crane - CEO of NRG Energy, the biggest power provider to US utilities,
at the MIT Energy Conference 2013
"Consumers are realizing they don't need the power industry at all"

- NRG started investment programs for homes and businesses

- Mini and micro generation systems
  - PV panels
  - Micro cogeneration based on natural gas

Wegener Center

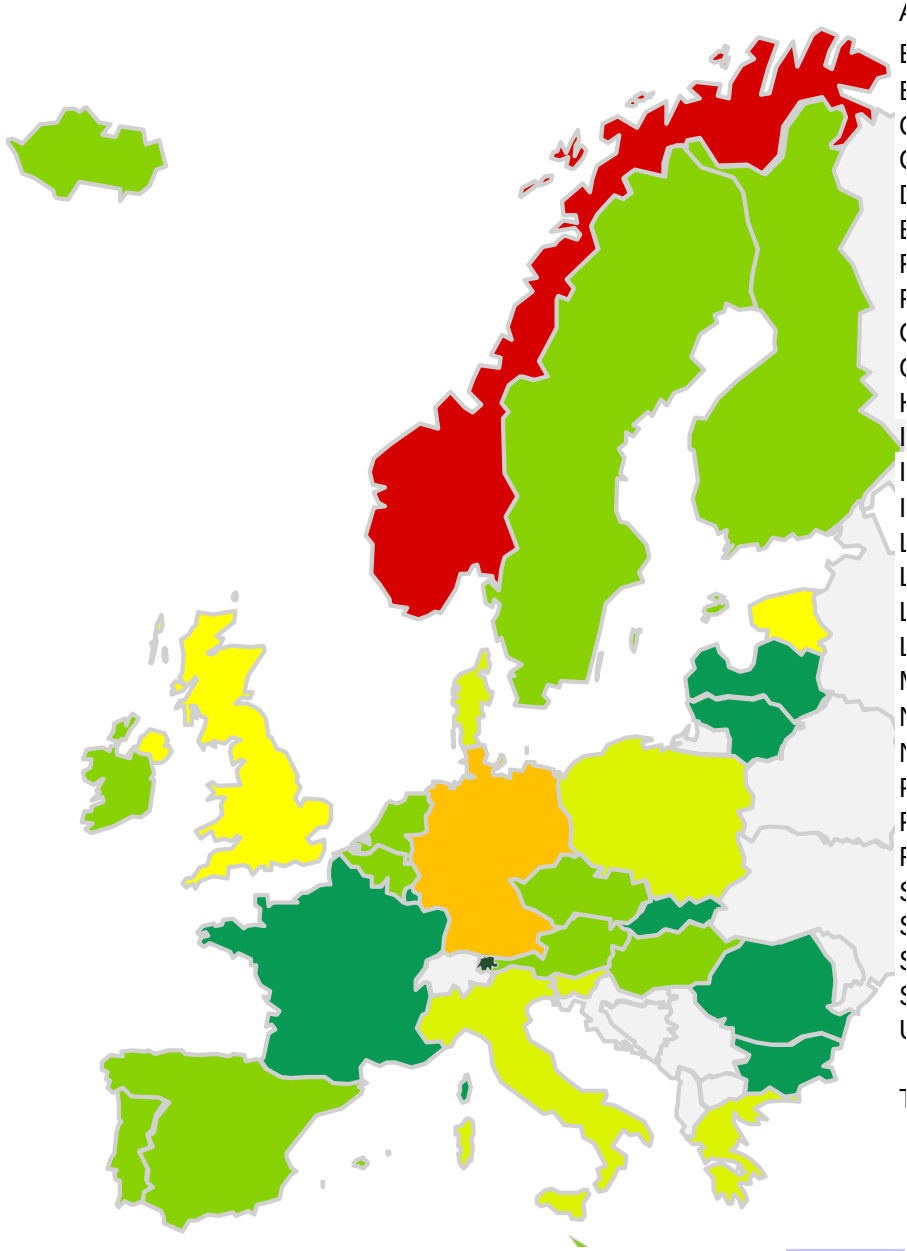
Focus on break-through technologies (3)
Incentives for innovative financing

- Targeted project financing by EIB and EBRD
- Re-financing of business banks by ECB linked to targeted projects of the real sector

Thank you.

Stefan P. Schleicher
Wegener Center for Climate and Global Change
University of Graz

Stefan.Schleicher@uni-graz.at
+43 (316) 380-7512



Wegener Center