Four dimensions for effective carbon prices

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Success story of renewables:
The underestimated potential of solar PV

- 30-50% of global electricity generation could come from PV in 2050
But: Emissions are rising

Data: CDIAC/GCP/BP/USGS

Projection 2017
36.8 Gt CO₂
△ 2.0% (0.8%–3.0%)

2016: 36.2 Gt CO₂

1990–99
+1.1%/yr

2000–09
+3.3%/yr

Global Carbon Project
The success story of coal

- Cheap and abundant coal is the driver of a „re-carbonisation“ of the energy system in some parts of the world

Four dimensions for effective carbon prices

- Regional coverage & cooperation
- Sectoral coverage
- Political feasibility and fairness
- Price level, increase and credibility
Four dimensions for effective carbon prices

Regional coverage & cooperation
Carbon Pricing in G20 Countries

2005

[Map showing carbon pricing in G20 countries for 2005, with regions colored to indicate different types of pricing mechanisms.]

Own presentation, based on Worldbank (2016)
Four dimensions for effective carbon prices

Regional coverage & cooperation

Sectoral coverage
## Sectoral Coverage

<table>
<thead>
<tr>
<th>Sector</th>
<th>Industry</th>
<th>Power</th>
<th>Buildings</th>
<th>Transport</th>
<th>Waste</th>
<th>Aviation</th>
<th>Forestry</th>
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<tr>
<td>Asia Pacific</td>
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<td>Fujian</td>
<td>Guangdong</td>
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<td>New Zealand</td>
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<td>Switzerland</td>
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<td>Québec</td>
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* Sectors represent upstream coverage

ICAP (2017)
Four dimensions for effective carbon prices

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Conclusion of the Stiglitz-Stern Commission

• Based on the analysis of three approaches: technical roadmaps, national roadmaps, global models

• Carbon price is necessary to implement the Paris Agreement: 40-80 $/t CO₂ until 2020 and 50-100 $/t CO₂ until 2030

• Assuming that the carbon price is complemented by measures and policies such as efficiency standards, R&D, urban development, favorable investment climate, etc.

• Emphasis on the relevance of the revenue side. Use for the reduction of other taxes, investments in clean infrastructure, etc.
ETS lacks dynamic cost efficiency.

- Falling CO₂ price
- No increase expected before 2020
- Market Stability Reserve will be implemented, but effect might be limited

ICE Futures Europe
Cost of capital as a barrier to transition

**Fig:** Decarbonization of the energy sector for a range of weighted average cost of capital

**Fig:** High capital intensity of low-carbon energy sources

Hirth und Steckel (2016), ERL
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Why finance ministers should be interested in carbon pricing

- Revenue aspect important for acceptance of carbon pricing
- Carbon tax schemes raised around 3 times more government revenue (21.7 bn USD) than emission trading schemes (6.57 bn USD).

Shares may not add up to 100% since annual budgeting might not match income flows and categories are not comprehensive.
Tremendous progress is needed in all four dimensions to make CO$_2$ pricing effective.