

Für Mensch & Umwelt

Umwelt 
Bundesamt

*5TH FLORENCE **INTERMODAL** FORUM.
INTERNALISING THE EXTERNAL COSTS OF TRANSPORT*

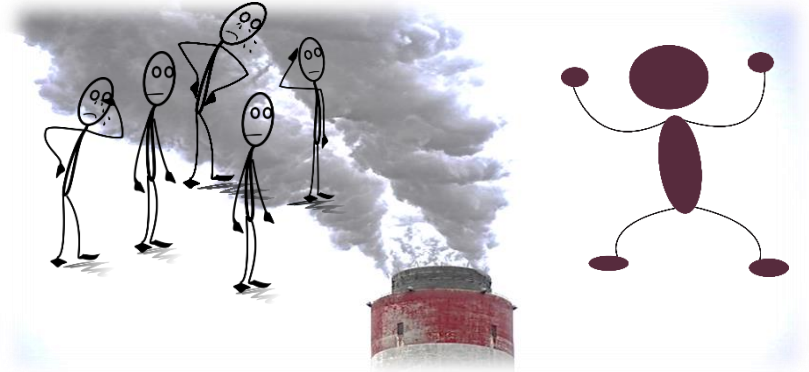
The Polluter-pays Principle and Environmental Costs

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Polluter pays?

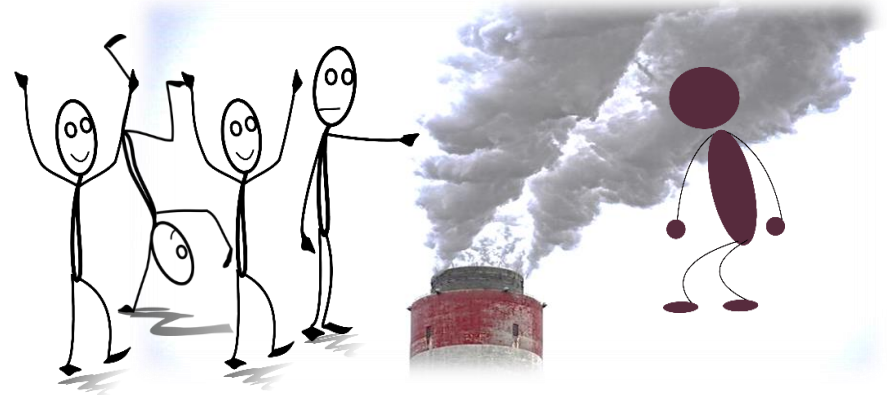
Costs arising from environmental effects tend to be external costs, i.e., not borne by the polluter but by society.

→ This results in market distortions and inefficient allocations.



Environmental costs provide the basis for internalizing damage from environmental effects.

- Polluter pays;
- Reduction of market distortion;
- Efficient allocation.



Which environmental cost concept for polluter-pays?

Social costs / Damage costs:

- denote the overall loss of welfare that arises from an environmental effect (GHG emission, land use change, emission of air pollutants etc.);
- permit an evaluation of the welfare effect of mitigation measures;
- provide the basis for identifying external effects.

Abatement costs / Mitigation costs:

- denote the costs of avoiding an environmental effect (GHG mitigation, air filtration etc.);
- depend on setting a mitigation target and on specifying a mitigation pathway, i.e., a set of mitigation measures;
- do not permit the evaluation of measures, as mitigation measures have to be specified beforehand.



The polluter-pays principle can only be based on social costs / damage costs, not on abatement costs.

Is it unrealistic to base taxes on social costs?

At least not for those who have to endure more of the future of our climate than we here in the room:



Demand of German „Fridays for Future“:

“A tax on all GHG-emissions. Within a short time period, the rate has to increase to a level that reflects the costs that we and future generations have to bear. According to UBA [German Environment Agency] these are 180 €/tCO₂.“

Is it unrealistic to make business account for social costs?

At least not for some who talk to business every day:



In its methodological papers on the assessment of environmental costs, PwC states that it bases its climate cost rates purely on **social-cost-of-carbon models**.

UBA Climate Cost Rate – Social Costs of Carbon

	Social costs of carbon in € ₂₀₁₆ / t CO _{2 eq}		
	2016	2030	2050
1% Pure Rate of Time Preference	180	205	240
0% Pure Rate of Time Preference	640	670	730

For 2019 this results in SCC of ca. 190€₂₀₁₉/t und 660 €₂₀₁₉/t.

Pure Rate of Time Preference:

- weighs the welfare of present vs. future generations;
- 0% → equal weight;
- 1% → less weight to welfare of future generations.

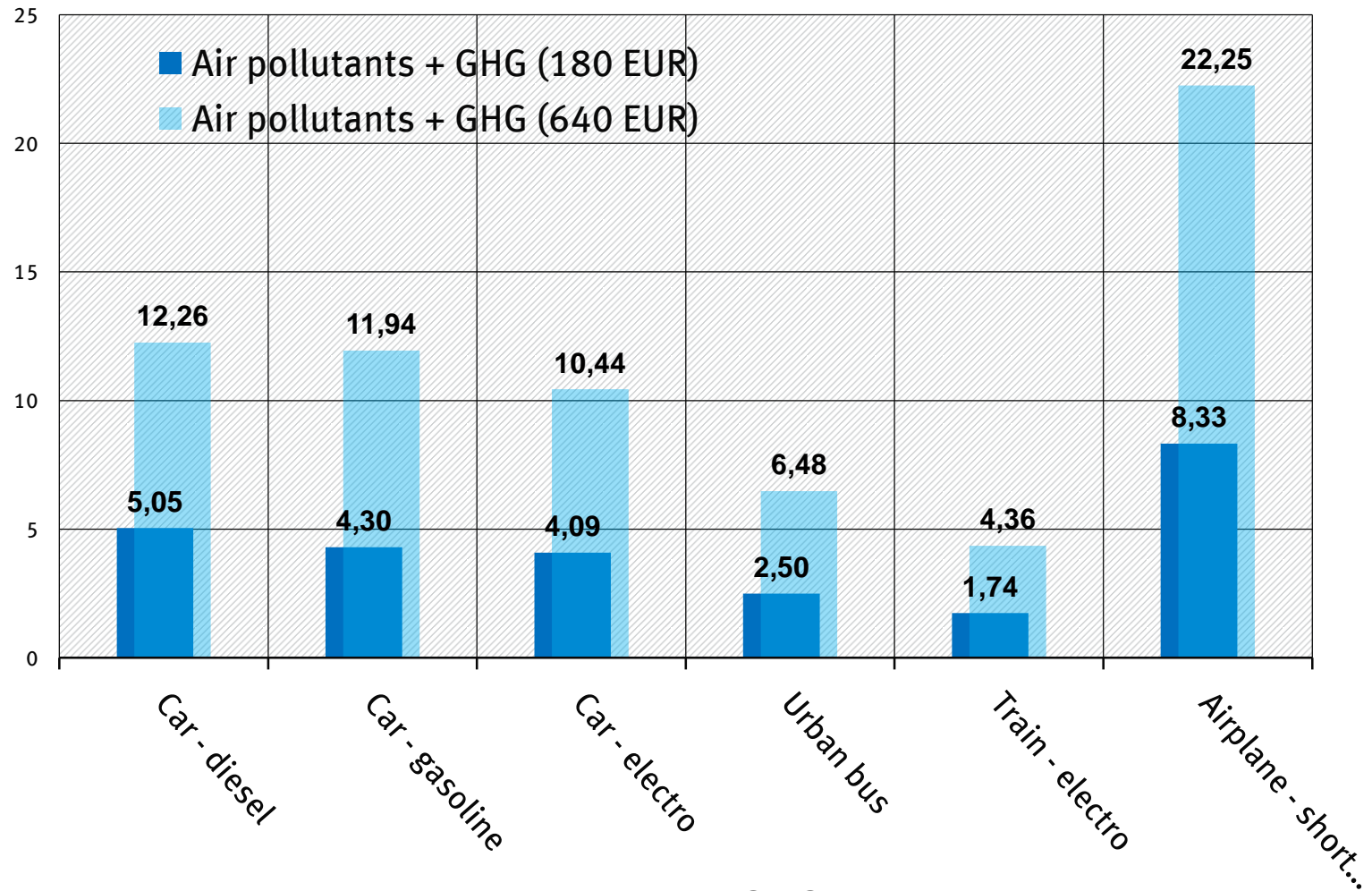
Values are based on the SCC-IAM FUND 3.0 using western European equity weighting.

Social Cost Rates for Air Pollutants

Environmental Costs of Air Pollution (emissions from unknown source)					
€ ₂₀₁₆ /t Emission	Health costs	Loss of Biodiversity	Crop loss	Material damage	Sum
PM _{2.5}	58.400	0	0	0	58.400
PM _{coarse}	960	0	0	0	960
NO _x	14.400	2.600	800	130	17.930
SO ₂	13.600	1000	-160	600	15.040
NM VOC	1.100	0	950	0	2.050
NH ₃	21.700	10.400	-100	0	32.000

Results are based on EcoSenseWeb, NEEDS and EU Clean Air Package.

Social Costs of Transport (Ct. / passenger-km, 2016)



Results are based on UBA social cost rates for GHG and air pollutants and on emission factors from HBEFA v3.3, Tremod, Ecoinvent 3.3 und Mobitool.

Thank you for your attention!

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