



WBGU

GERMAN ADVISORY COUNCIL ON GLOBAL CHANGE

Climate Policy – Justice and Burden Sharing as Major Challenges

Dirk Messner

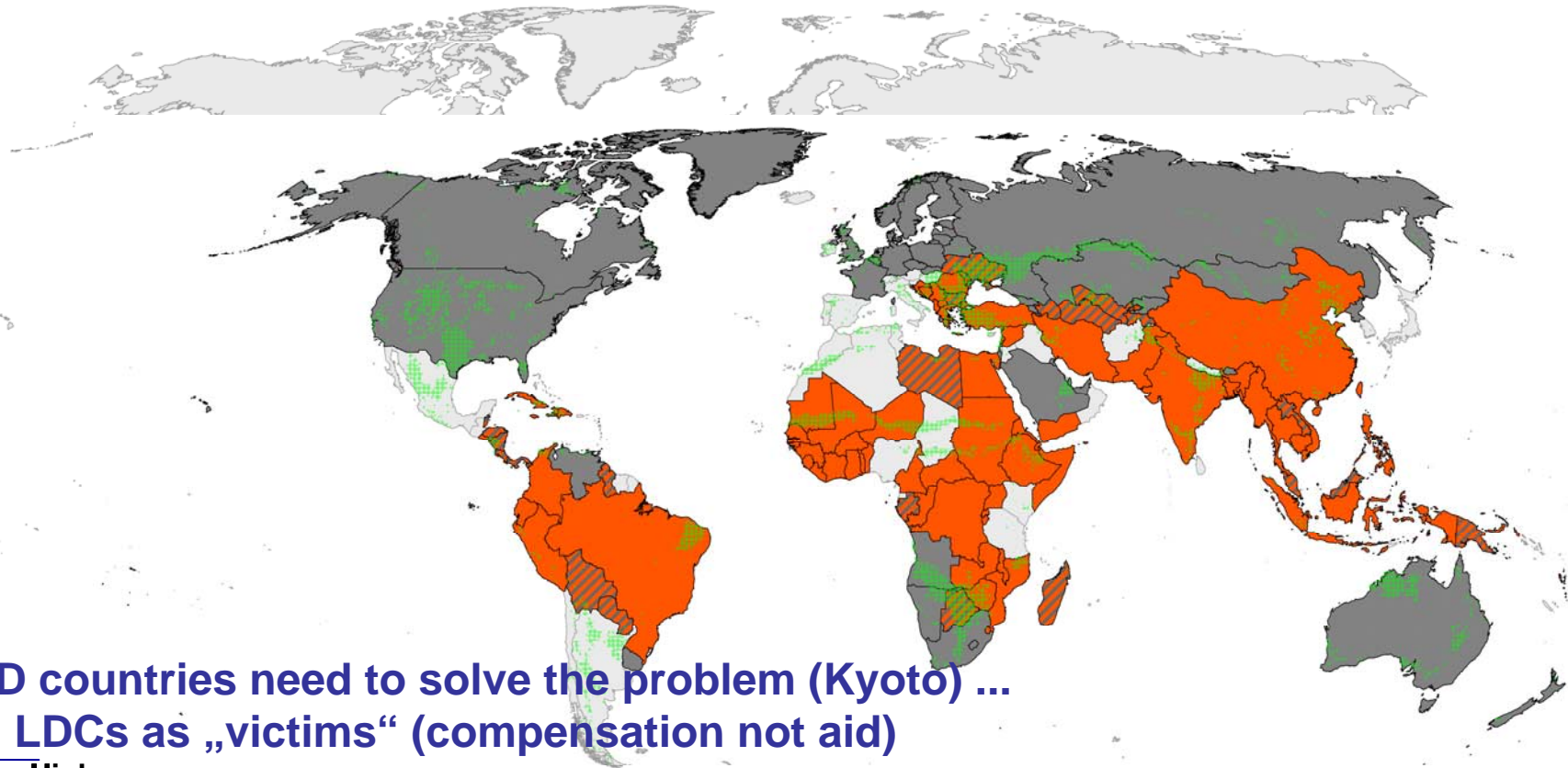
European Ideas Network
Konrad-Adenauer-Stiftung
Berlin, January 29, 2010



Burden sharing as a key challenge

- **Consensus: 2 ° celsius target**
- **Negotiations in Copenhagen failed**
 - individual reductions targets for many countries:
slow, intransparent
 - trend: low(est) common denominator
 - why are some countries responsible, others not? Burden sharing?

How could we „measure“ the responsibility of states to reduce or to limit GHG emissions?



**OCED countries need to solve the problem (Kyoto) ...
LDCs as „victims“ (compensation not aid)**

High

and cement p

highest vulnerability towards climate change vs. largest CO₂ emissions (from fossil fuel combustion and cement production, and including land use change, kg C per person and year from 1950 - 2003)



Grey: Largest per capita CO₂ emitters

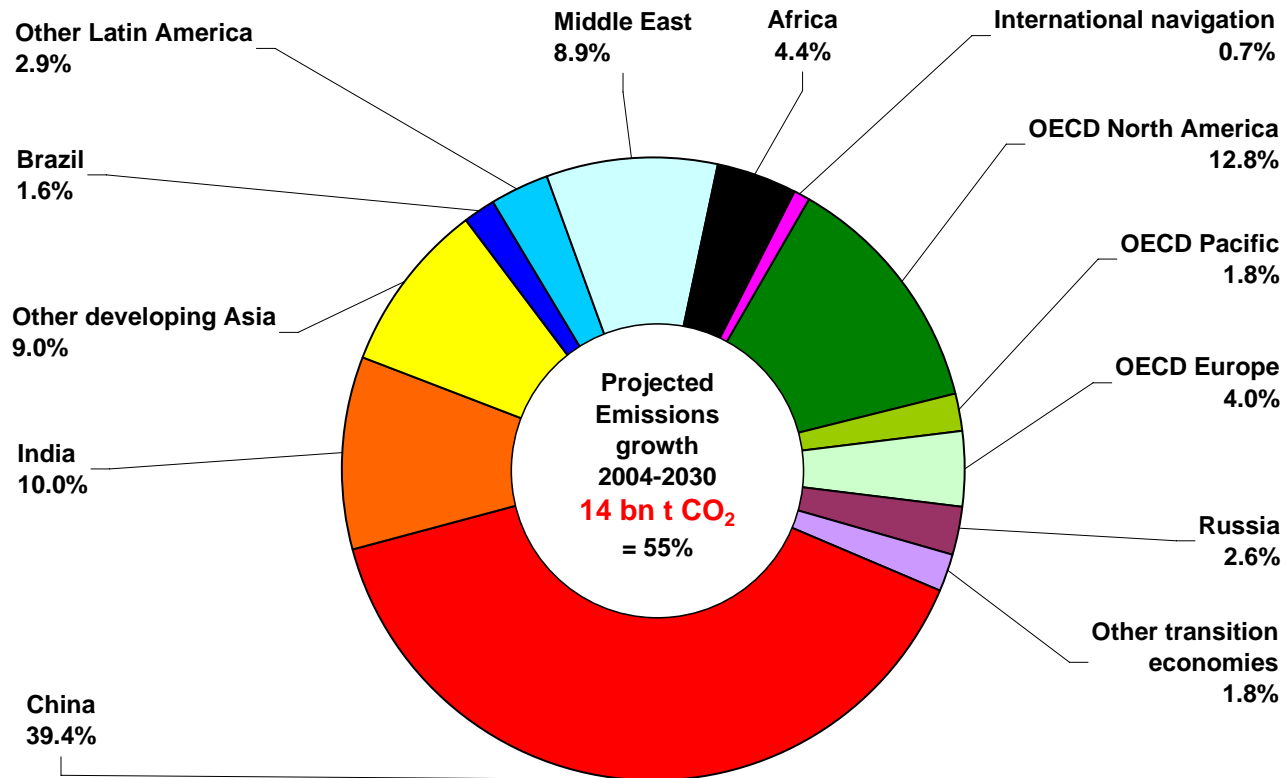
Orange: Highest social and / or agro-economic vulnerability

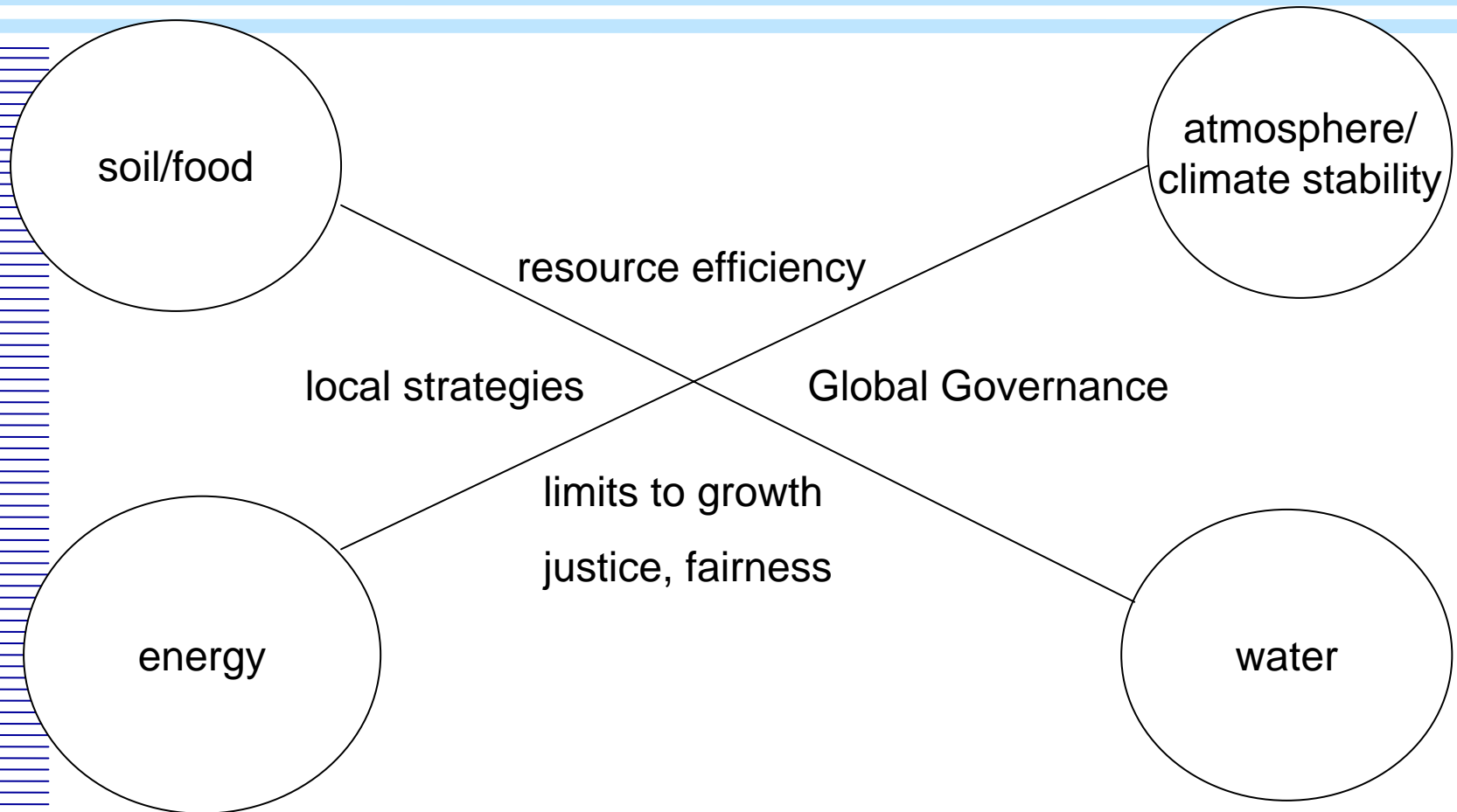
Hatched: Largest per capita CO₂ emitters, and highest social and / or agro-economic vulnerability

Green: Areas with highest ecological vulnerability



We argue: China needs to become a responsible climate actor now
China, India: ... finally we have growth ... development first ... climate later ... OCED
needs to start with sharp reductions

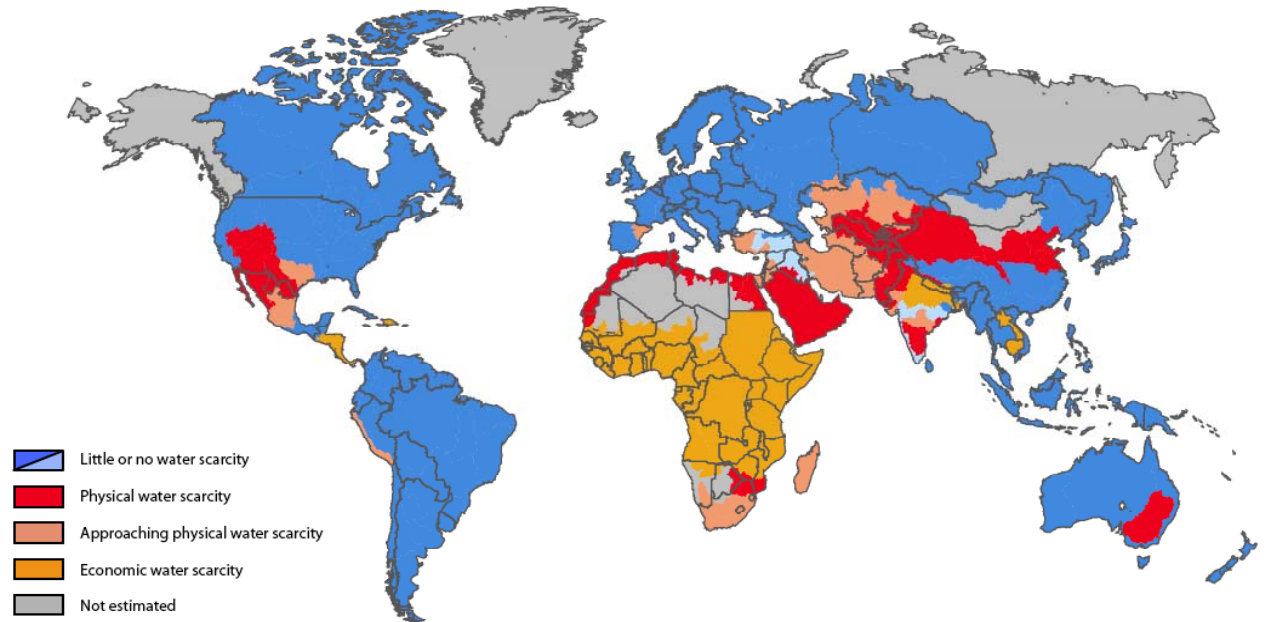









Risks for the most vulnerable ones ... and global systemic risks
How to get the four fundamentals right?



Map 2. Areas of physical and economic water scarcity



-  Little or no water scarcity
-  Physical water scarcity
-  Approaching physical water scarcity
-  Economic water scarcity
-  Not estimated

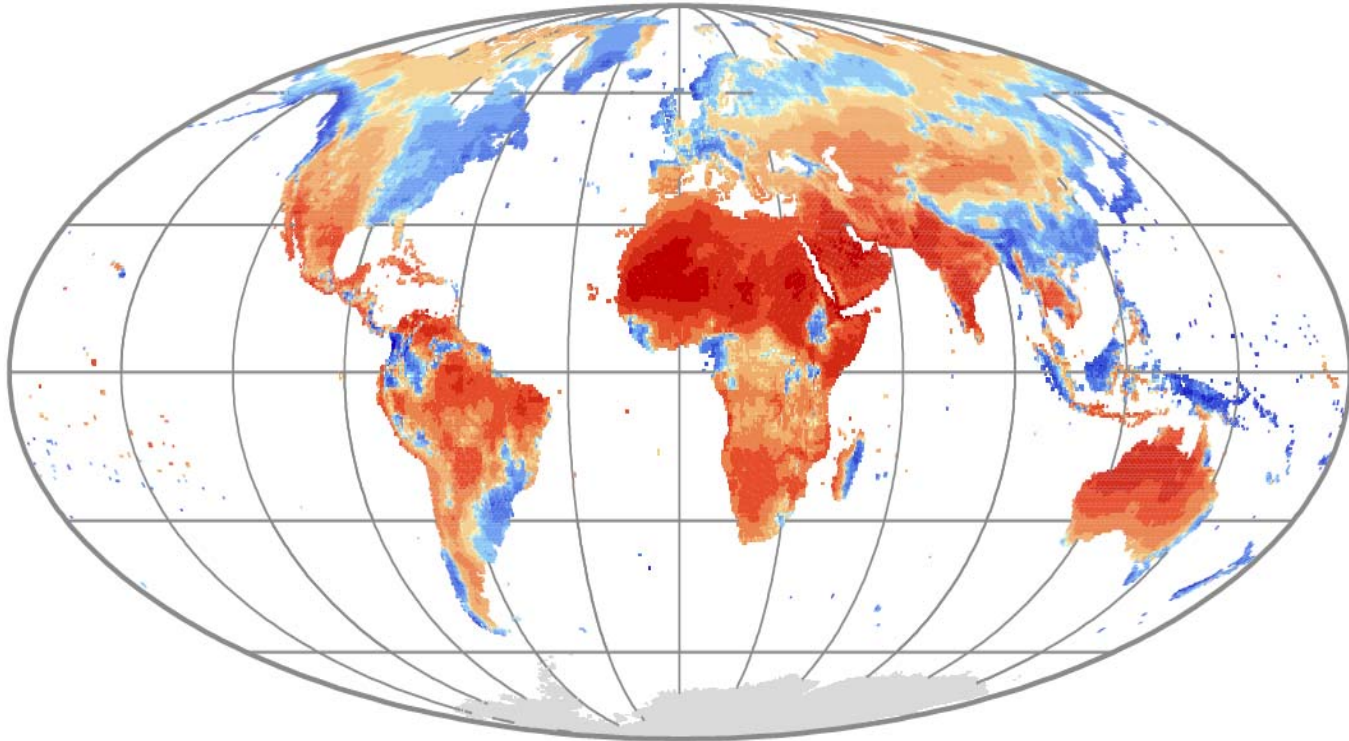
- Red:** Physical Water Scarcity. More than 75% of the river flows are allocated to agriculture, industries or domestic purposes (accounting for recycling of return flows). This definition of scarcity—relating water availability to water demand—implies that dry areas are not necessarily water-scarce. For example, Mauritania is dry but not physically water-scarce because demand is low.
- Light Red:** More than 60% of river flows are allocated. These basins will experience physical water scarcity in the near future.
- Orange:** Economic Water Scarcity. Water resources are abundant relative to water use, with less than 25% of water from rivers withdrawn for human purposes, but malnutrition exists. These areas could benefit by development of additional blue and green water, but human and financial capacity are limiting.
- Blue:** Abundant water resources relative to use: less than 25% of water from rivers is withdrawn for human purposes.



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Global water map (3-4 ° C plus) 2041/2070 (Hadley Centre)



Änderung der klimatischen Wasserbilanz [mm]





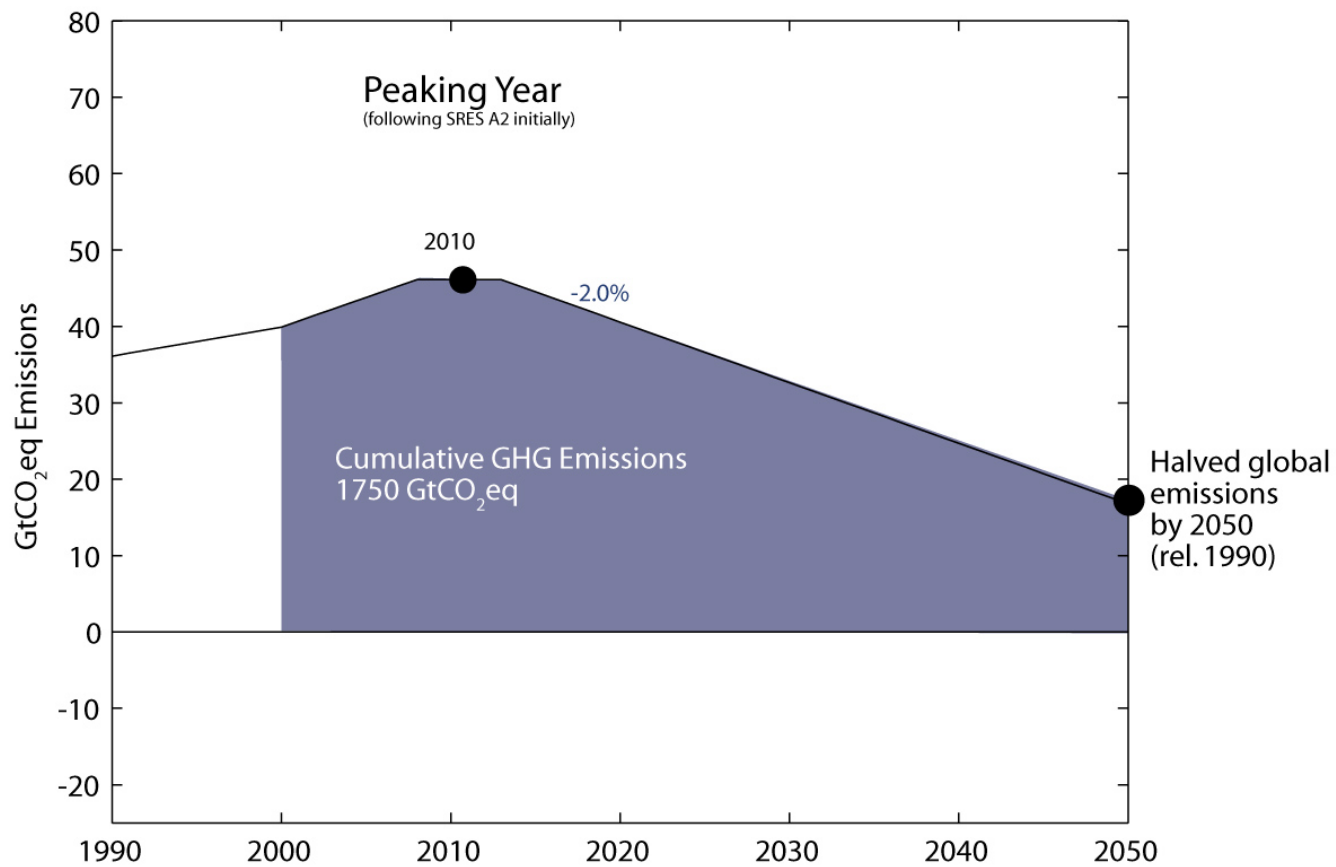
Four Major Questions

- Is there a „burden sharing formula“ to calculate the responsibilities of all 193 countries? ... The budget approach
- Based on that formula: What would 2 ° C imply for the world and different country groups (time schedule to reduce GHG, speed of decarbonization)?: „Kassensturz“
- Pillars of a global climate regime? Linking development and climate
- How to link the climate regime with an institutional design for a global low carbon economy?



The Budget approach formula to define national emission budgets: simple, transparent, fair

- **2 ° C - Global budget Which probability (50 %, 67 %)**
- **Budget period: „historical responsibility 1990-2050“, „future oriented 2010-2050“**
- **Fairness criteria to distribute national budgets: equal per capita emissions**
- **Growing world population: datas from 2010 (incentive to reduce popolation growth)**





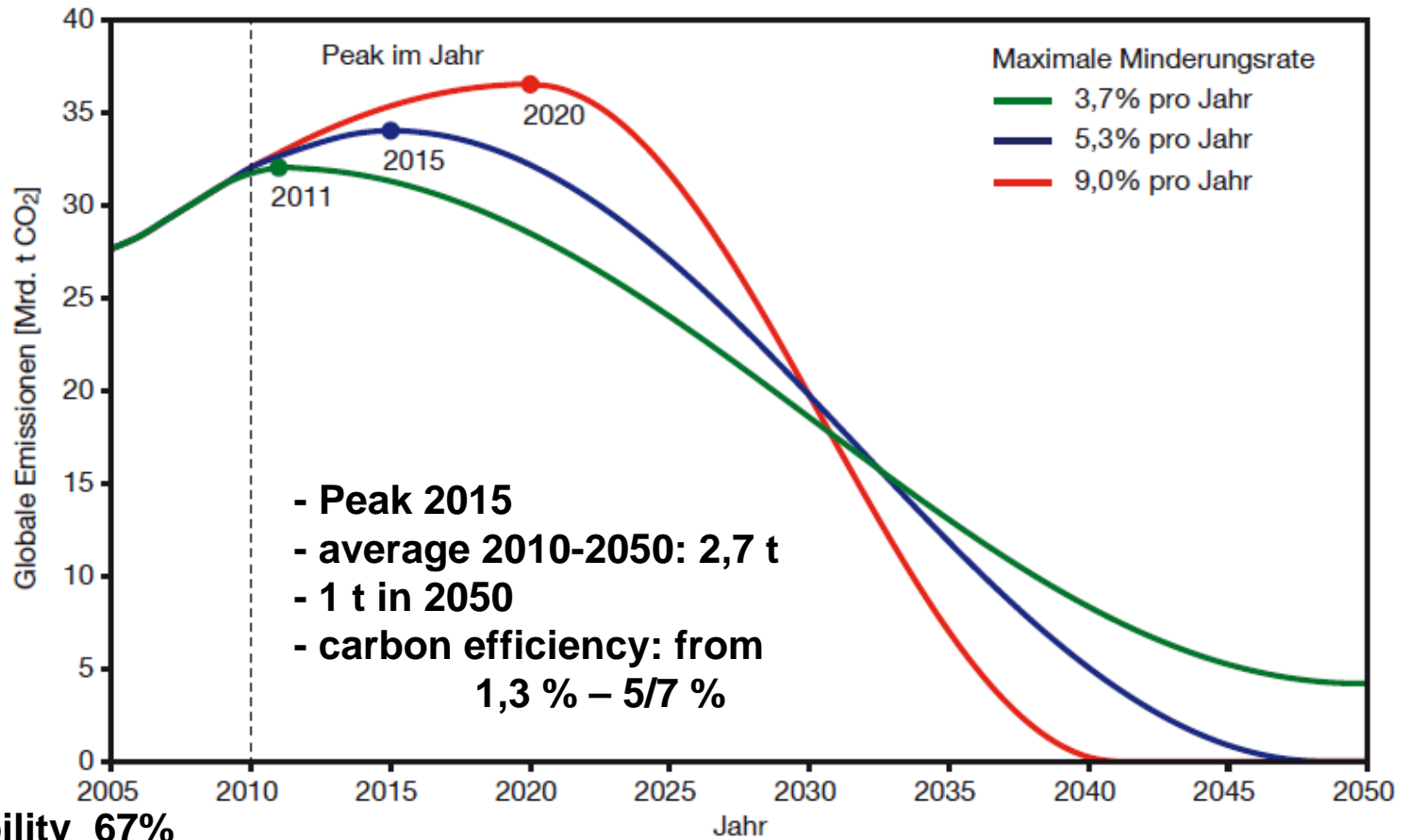
Ethical basis of global climate policy

Balancing interests of different country groups

- **Polluter pays principle**
 - OECD first ... but also the „new emitters“
- **Precautionary principle**
 - we are all responsible to prevent irreversible damage from future generation: OECD responsibilities ...but: high carbon catch up development of developing nations would undermine the Earth system
- **Principle of equality**
 - OECD population does not have a natural right to per-capita emissions many times greater than those of the developing world



Corridor to reach the 2 ° C target



probability 67%



2010 – 2050: 100 t per person ...

Option II „Zukunftsverantwortung“: Zeitraum 2010–2050; 67 % Wahrscheinlichkeit, die 2°C-Leitplanke einzuhalten; 2010 als Referenzjahr für Bevölkerungsdaten. Berücksichtigt sind ausschließlich die CO₂-Emissionen aus fossilen Quellen. Die CO₂-Emissionen sind Schätzungen für das Jahr 2008, die Bevölkerungszahlen Schätzungen für das Jahr 2010.

Quellen: WBGU unter Verwendung von Daten aus: Meinshausen et al., 2009; WRI-CAIT, 2009; U.S. Census Bureau, 2009

	Anteil an Weltbevölkerung im Jahr 2010 (Schätzung) [%]	Budget 2010–2050 [Mrd. t CO ₂]		Emissionen im Jahr 2008 (Schätzung) [Mrd. t CO ₂]	Reichweite des Budgets bei jährlichen Emissionen wie 2008 [Jahre]
		Gesamter Zeitraum	Pro Jahr		
Deutschland	1,2	9,0	0,22	0,91	10
USA	4,6	35	0,85	6,1	6
China	20	148	3,6	6,2	24
Brasilien	2,8	21	0,52	0,46	46
Burkina Faso	0,24	1,8	0,043	0,00062	2.892
Japan	1,8	14	0,34	1,3	11
Russland	2,0	15	0,37	1,6	9
Mexiko	1,6	12	0,29	0,46	26
Indonesien	3,4	25	0,62	0,38	67
Indien	18	133	3,2	1,5	88
Malediven	0,0058	0,043	0,0011	0,00071	61
EU	7,2	54	1,3	4,5	12
Welt	100	750	18	30	25

Tabelle 5.3-2

Where do we stand? How long do our national budgets last?



Option I „Historische Verantwortung“: Zeitraum 1990–2050; 75 % Wahrscheinlichkeit, die 2°C-Leitplanke einzuhalten; 1990 als Referenzjahr für Bevölkerungsdaten. Berücksichtigt sind ausschließlich die CO₂-Emissionen aus fossilen Quellen. Die CO₂-Emissionen für das Jahr 2008 sind Schätzungen.

Quellen: WBGU unter Verwendung von Daten aus: Meinshausen et al., 2009; WRI-CAIT, 2009; U.S. Census Bureau, 2009

	Anteil an Weltbevölkerung im Jahr 1990 [%]	Gesamt-budget 1990–2050 [Mrd. t CO ₂]	Bisherige Emissionen 1990–2009 [Mrd. t CO ₂]	Budget 2010–2050 [Mrd. t CO ₂]		Emissionen im Jahr 2008 (Schätzungen) [Mrd. t CO ₂]	Reichweite des Budgets bei jährlichen Emissionen wie 2008 [Jahre]
				Gesamter Zeitraum	Pro Jahr		
Deutschland	1,5	17	17	-0,90	-0,022	0,91	-1
USA	4,7	52	108	-56	-1,4	6,1	-9
China	22	239	75	164	4,0	6,2	26
Brasilien	2,9	31	6,1	25	0,62	0,46	55
Burkina Faso	0,16	1,7	0,0090	1,7	0,042	0,00062	2.810
Japan	2,3	26	23	2,4	0,058	1,3	2
Russland	2,8	31	31	-0,29	-0,0071	1,6	0
Mexiko	1,6	18	6,9	11	0,26	0,46	23
Indonesien	3,4	38	4,8	33	0,81	0,38	88
Indien	16	175	19	156	3,8	1,5	103
Malediven	0,0041	0,045	0,0098	0,035	0,00086	0,00071	50
EU	8,9	98	81	18	0,43	4,5	4
Welt	100	1.100	500	600	15	30	20

Tabelle 5.3-1

carbon insolvency of the OECD



Transformation paths within national budgets

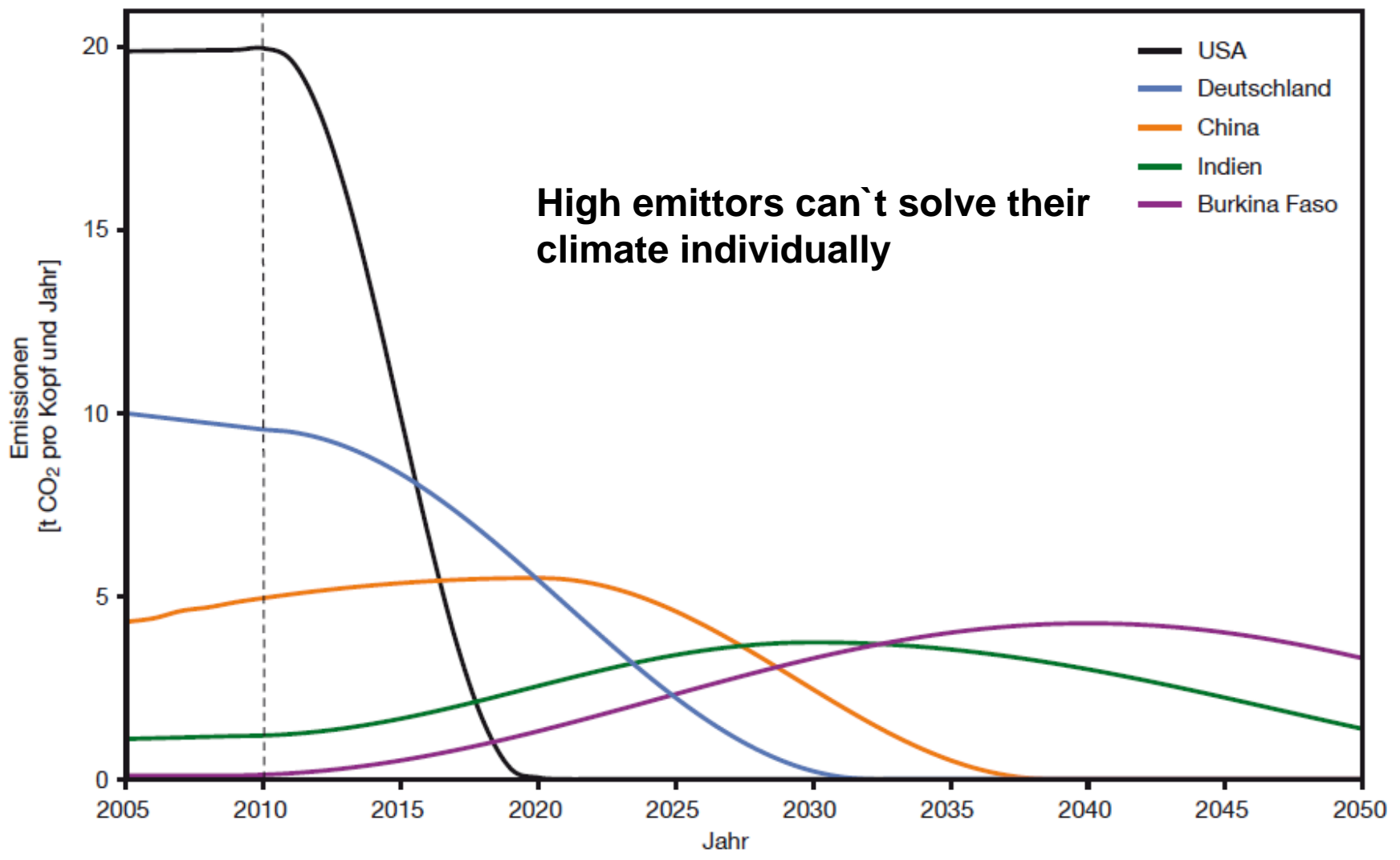
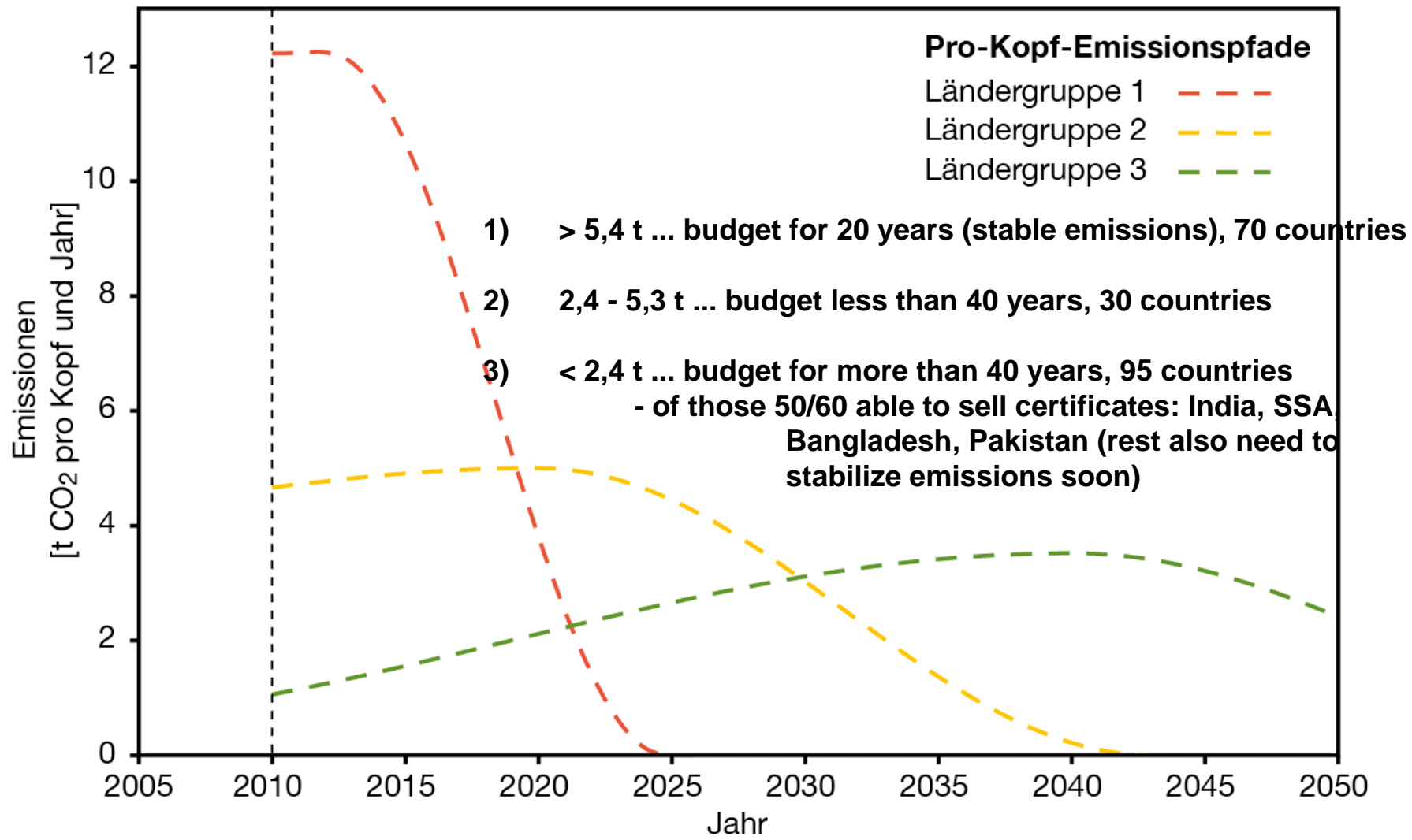


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Carbon rich and carbon poor countries

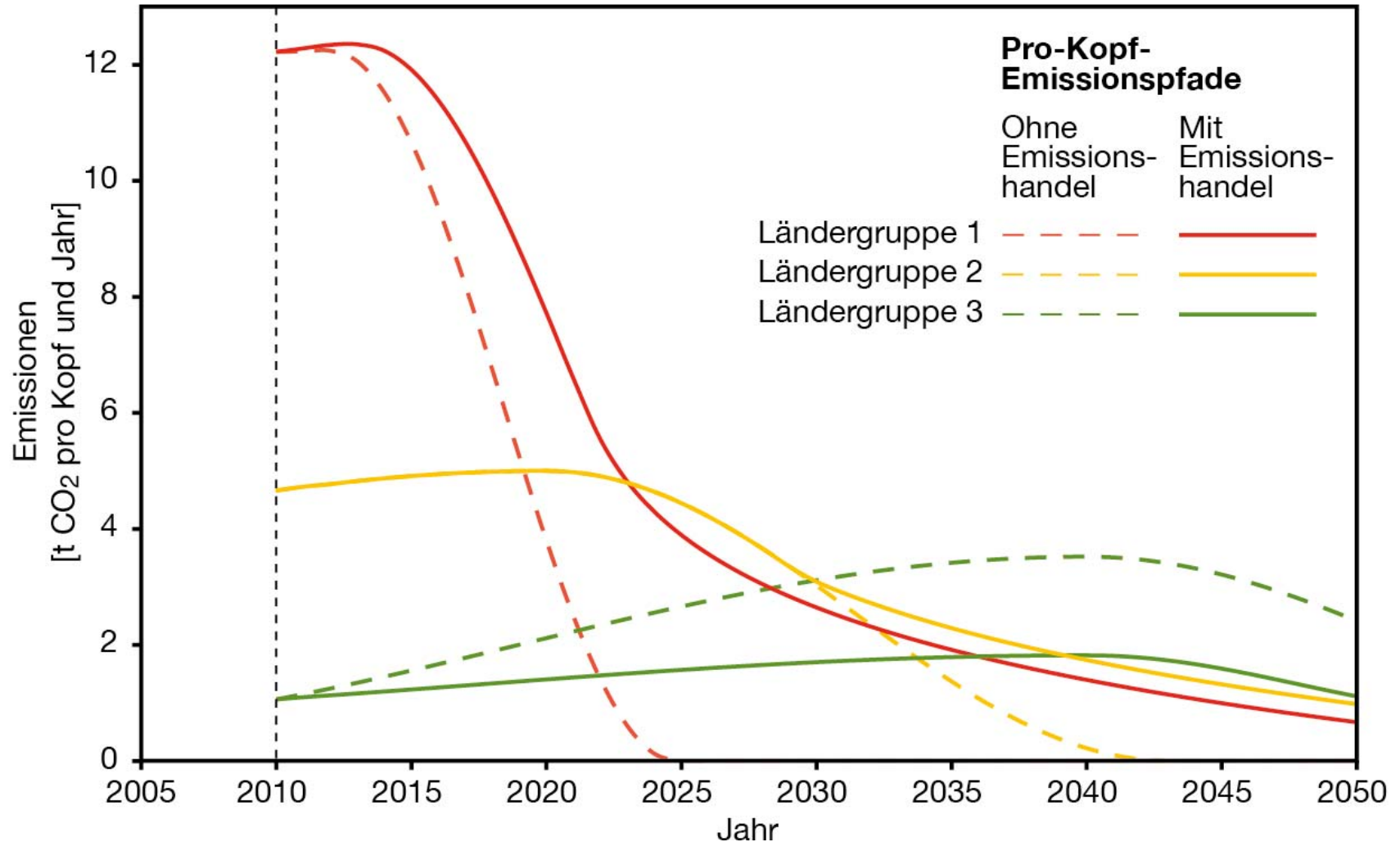
Three country groups



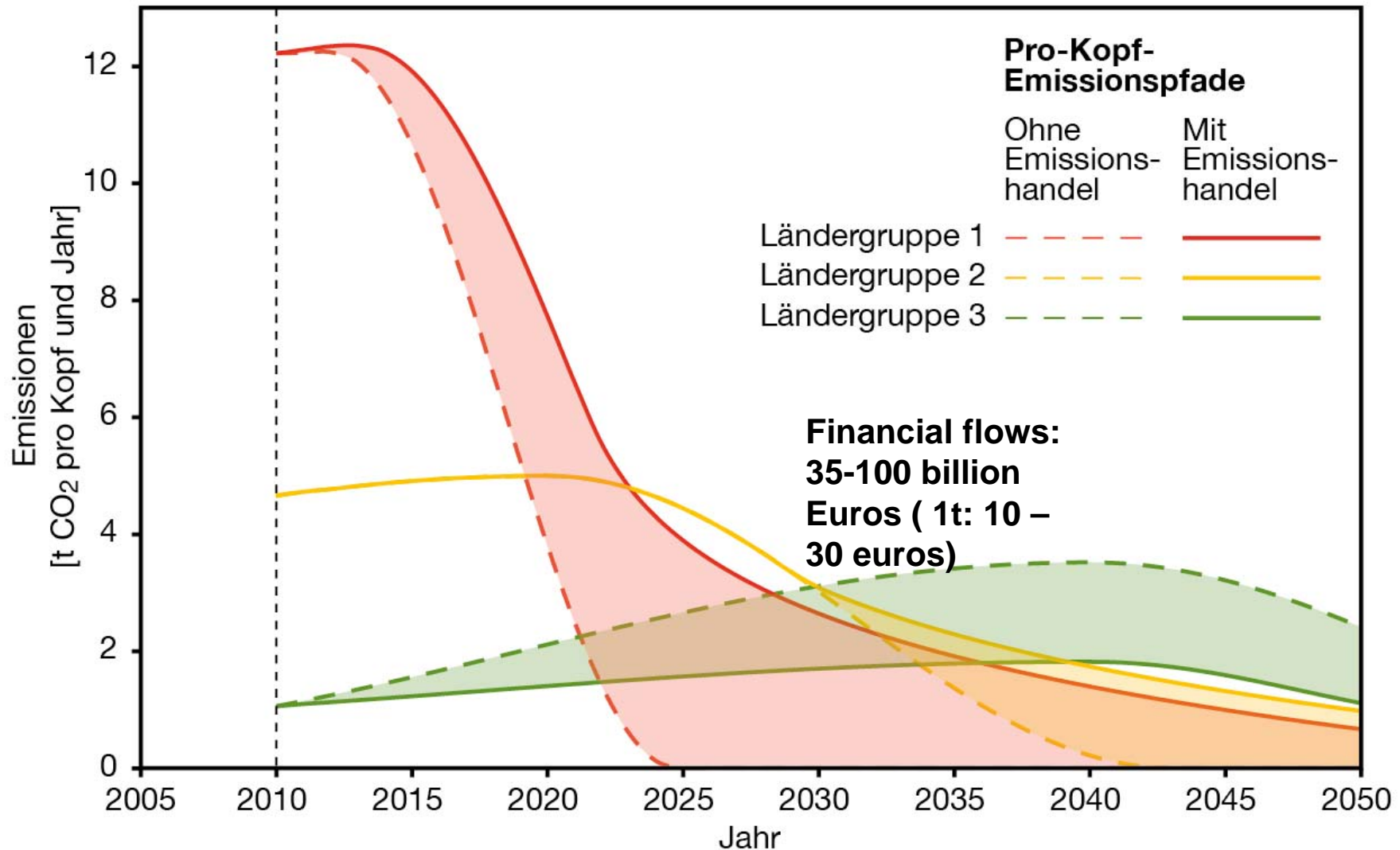
100 – 140 countries: rapid stabilization ... Decarbonization, different speeds



Global emission trading between high and low emitters: fair and efficient!



Reciprocal interests between OECD, MICs, LDCs would emerge ... (donors/borrowers; recipients/ creditors)





Main pillars of a global climate regime

- **2 ° C, global budget, national budgets legally binding**
- **Peak 2015 – 2020, national milestones 2020/2025**
- **Decarbonization roadmaps**
- **Emission trading, joint implementation (climate partnerships: finance, technology)**
- **Global Climate Bank: monitoring of the budgets, scrutinizing of the roadmaps, rules for emission trading, enforcement mechanisms**
- **Adaptation fund based on the climate formula**



Institutional design of a global low carbon economy ... „building carbon into the system“

- **2 ° C, global budget, national budgets legally binding**
- **Emission trading Cap and trade ... A price for carbon**
- **Incentives for climate partnerships: finance, technology, EU – Africa; everyone will like India!**
- **decarbonization roadmaps**
- **World Climate Bank: monitoring of the budgets, scrutinizing of the roadmaps, rules for emission trading, enforcement mechanisms
... The „eco-pillar“ of the Global Economic Governance architecture**

Being carbon efficient as a competitive advantage



If we fail ... „not grounded in political realities“

- **Dangerous climate change undermines human development and the „fundamentals“ of zivilisation (arable land, water, energy) – World Development Report 2009**
- **Climate Changes as a Security threat – WBGU 2008**
- **Costs of adaptation/ climate impacts (N. Stern 2007)**
- **Geo-engineering – intervene in the dynamics of the Earth System risk of producing tipping points**



Global „We-Identities“ – is global cooperation within the given time frame possible?

