



Leibniz-Zentrum für
Agrarlandschaftsforschung
(ZALF) e.V.

Confronting the climate change challenge: Discussing the role of rural India under cumulative emission budget approach

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Our
Indo-German
Research-Team
is dealing with
sustainable
development of
rural areas in
India.

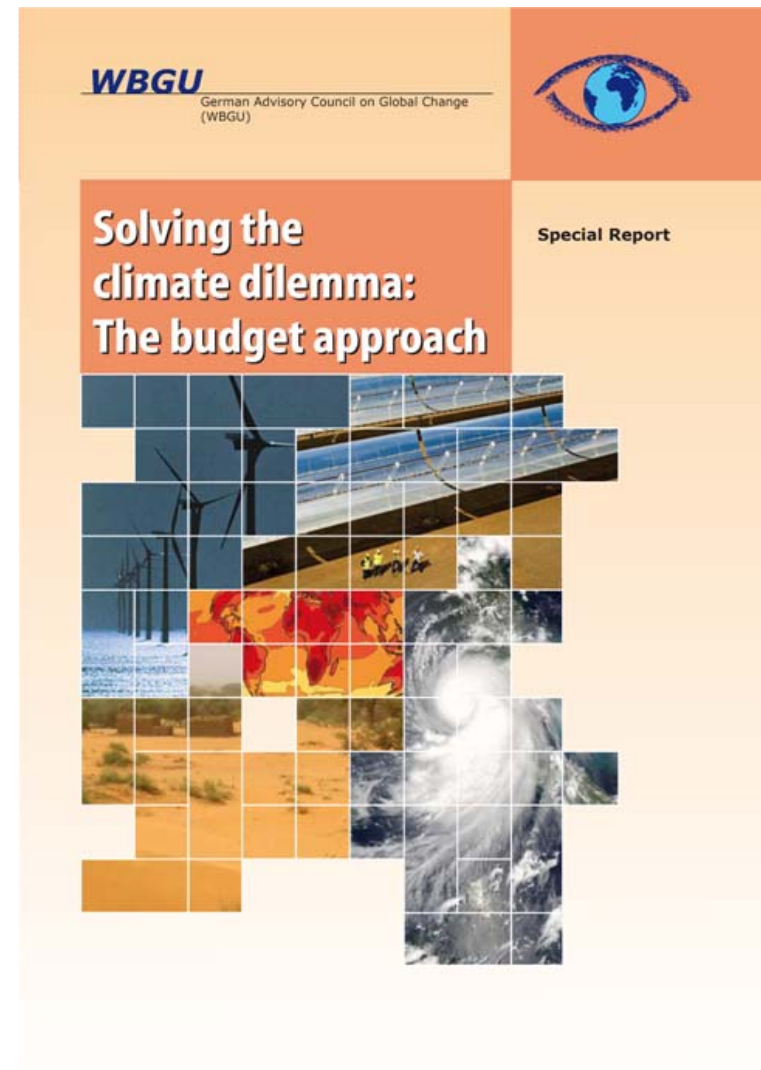


Why is Germany funding research in rural India?



Charity?
or
Selfishness?

The vital linkage
between rural India
and industrialized
Germany is
exemplified by the
fight against
climate change.



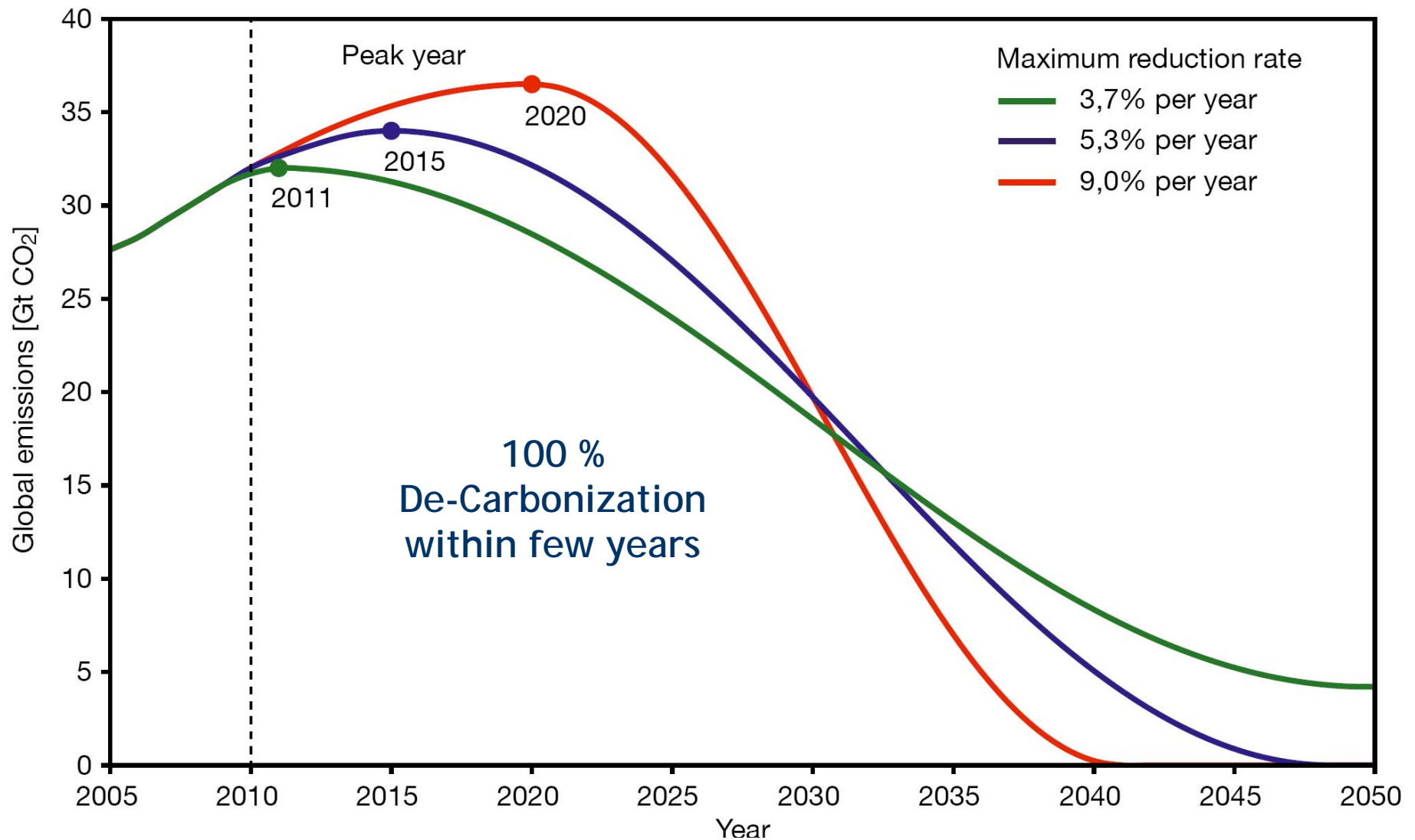
G 20 and Copenhagen
Accord agreed to
2°C guard rail.



To meet this aim with a probability of 67 %,
max. 750 Gt CO₂ may be released into earth
atmosphere until 2050 (WBGU)

Examples of global emission pathways for the period 2010-2050 with global CO₂ emissions capped at 750 Gt

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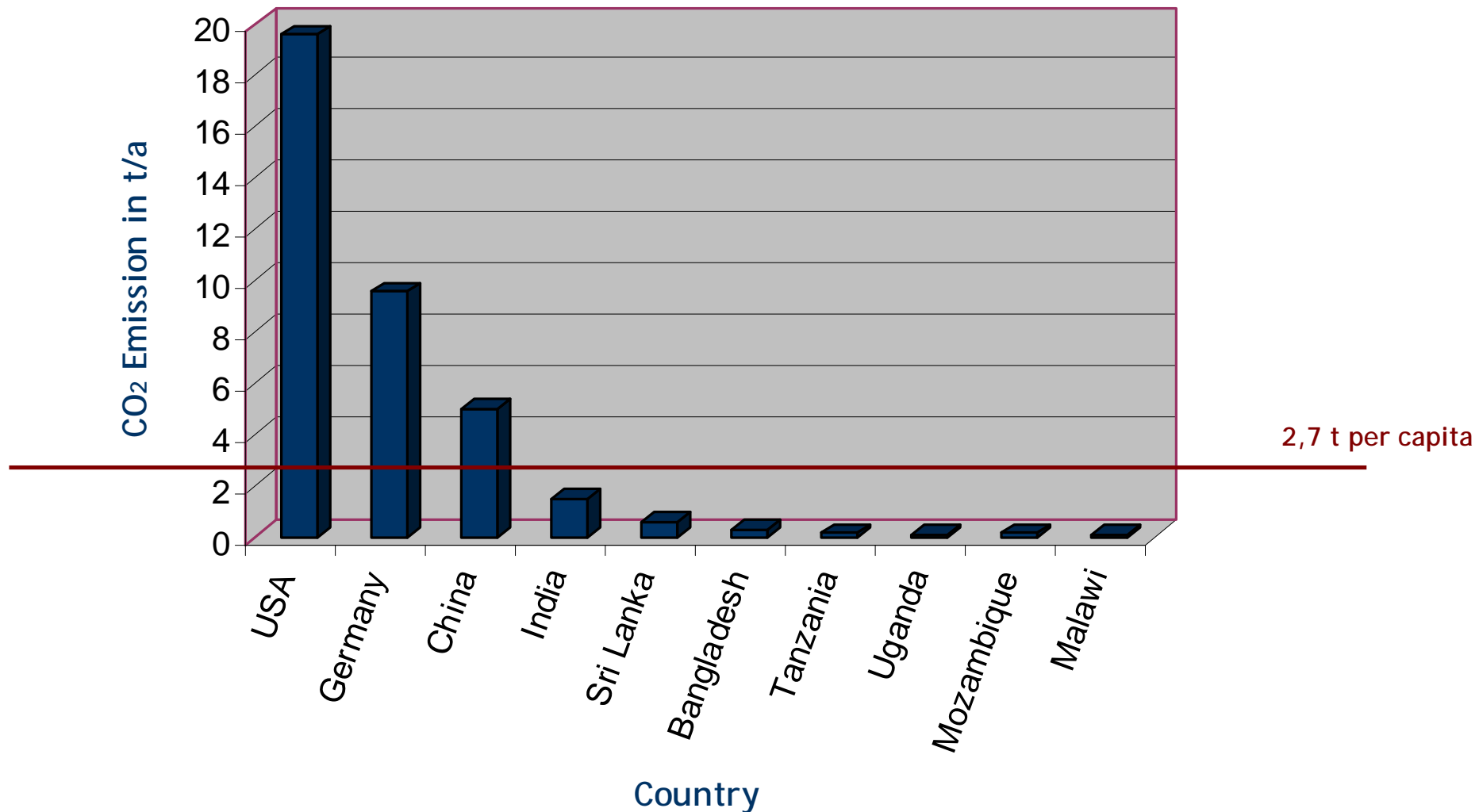


Source: WBGU, 2009

Along with the vision of *climate justice*
formulated by Indian Prime Minister
Manmohan Singh and German Chancellor
Angela Merkel, Global CO₂
budget should be distributed equally among the
world population (per capita basis)

According to WBGU,
average yearly emission
allowance amounts to *2.7 t CO₂* per capita
(for world population 2010)

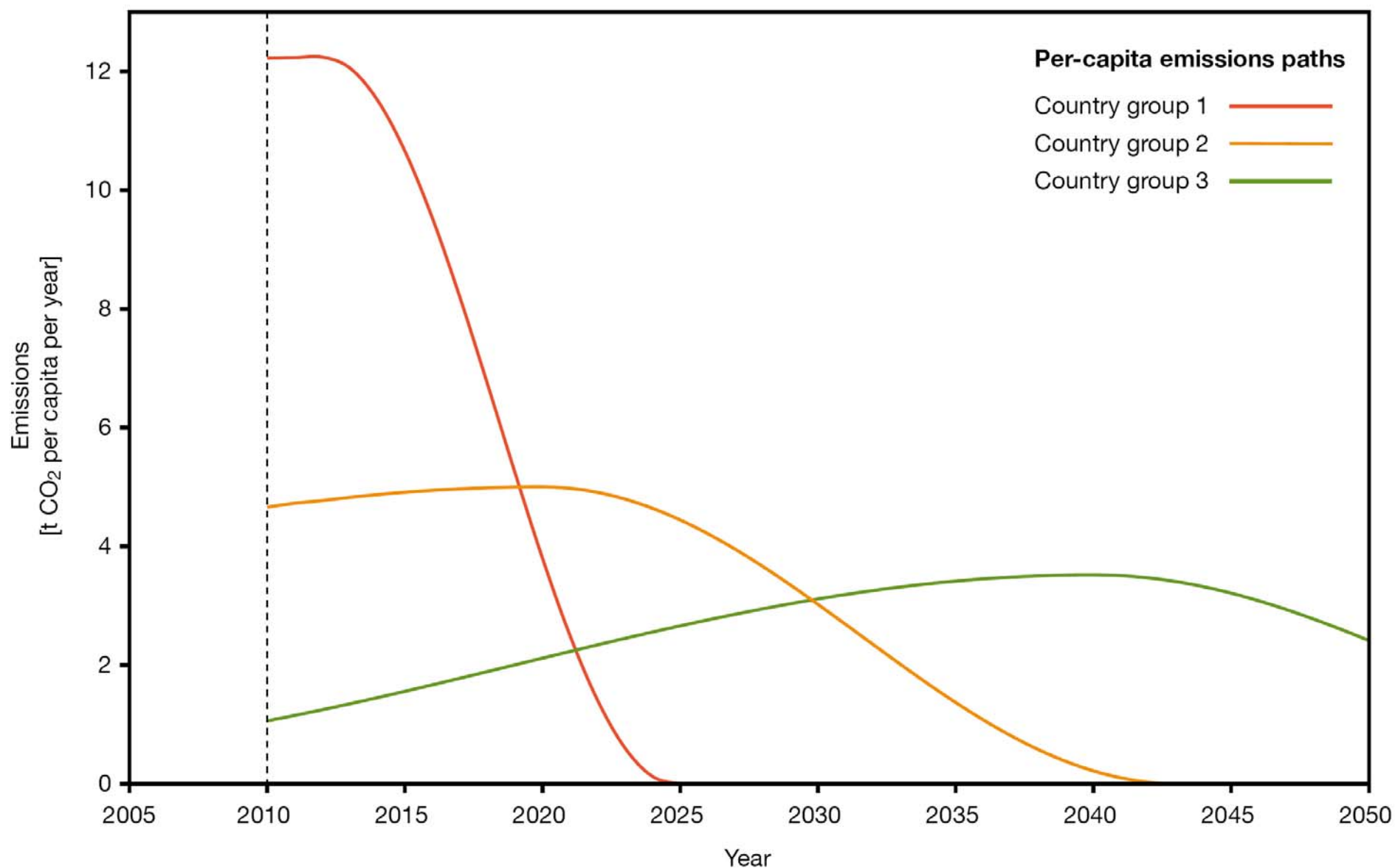
Per capita CO₂ Emmissions in 2007



WBGU identifies 3 groups of countries that can follow different pathways to decarbonisation

group 1	> 5,4 t	CO ₂ per capita per year
group 2	2.7 to 5.4 t	CO ₂ per capita per year
group 3	< 2.7 t	CO ₂ per capita per year

Examples of per-capita emissions paths of CO₂ for three groups of countries according to the WBGU budget approach



Source: WBGU, 2009



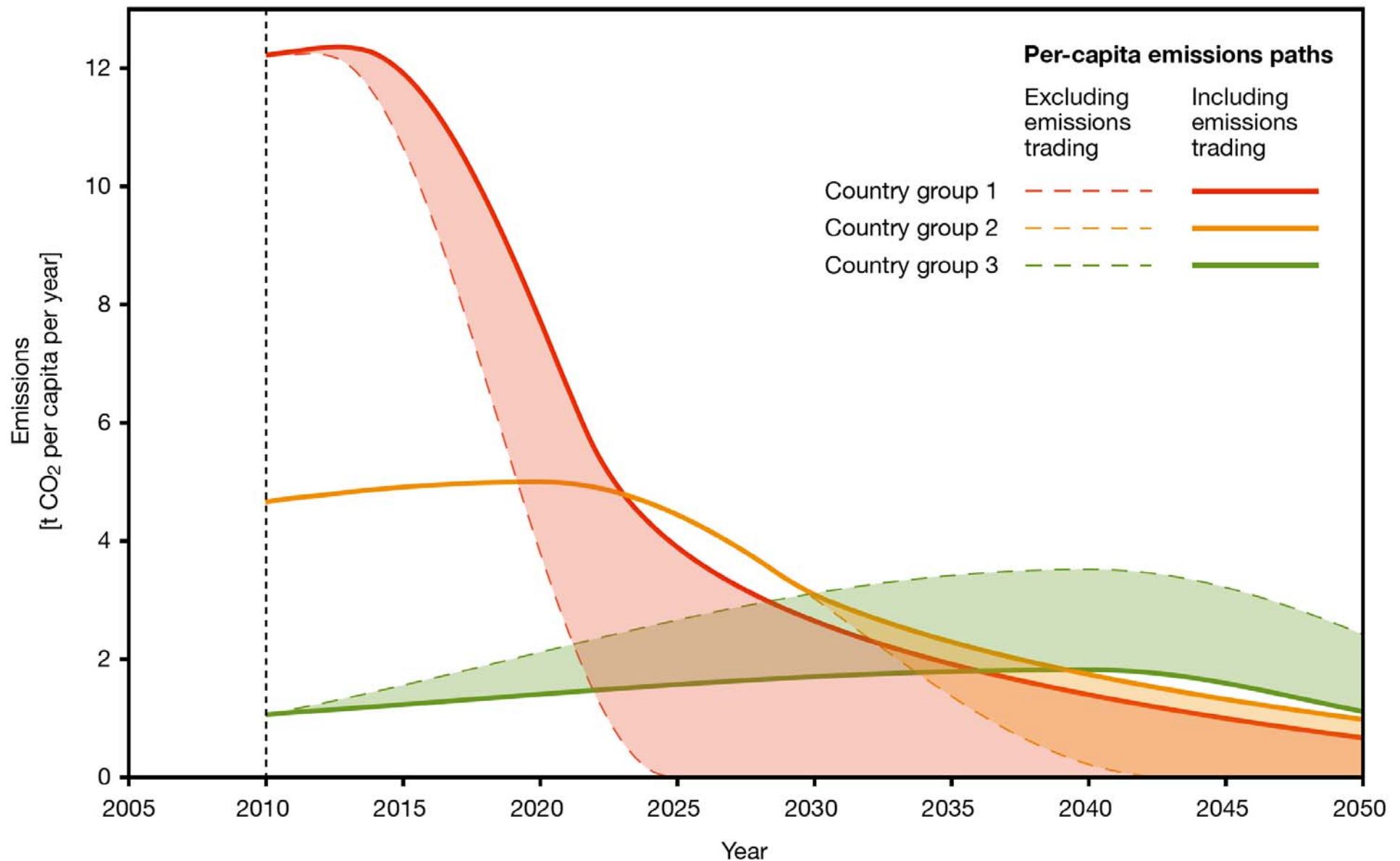
Core Issues of Budget Approach

Group 1: even if countries undertake exceptional efforts to de-carbonize their economy, for a limited time there is a need for extra CO₂ permits from other countries

Group 2 might meet CO₂ guard rail without extra permits

Group 3 might provide permits for group 1 countries (sell permissions via International Climate Bank)

Examples of per-capita emissions paths of CO₂ from fossil sources for three groups of countries according to the WBGU budget approach, which could emerge through emissions trading



Source: WBGU, 2009

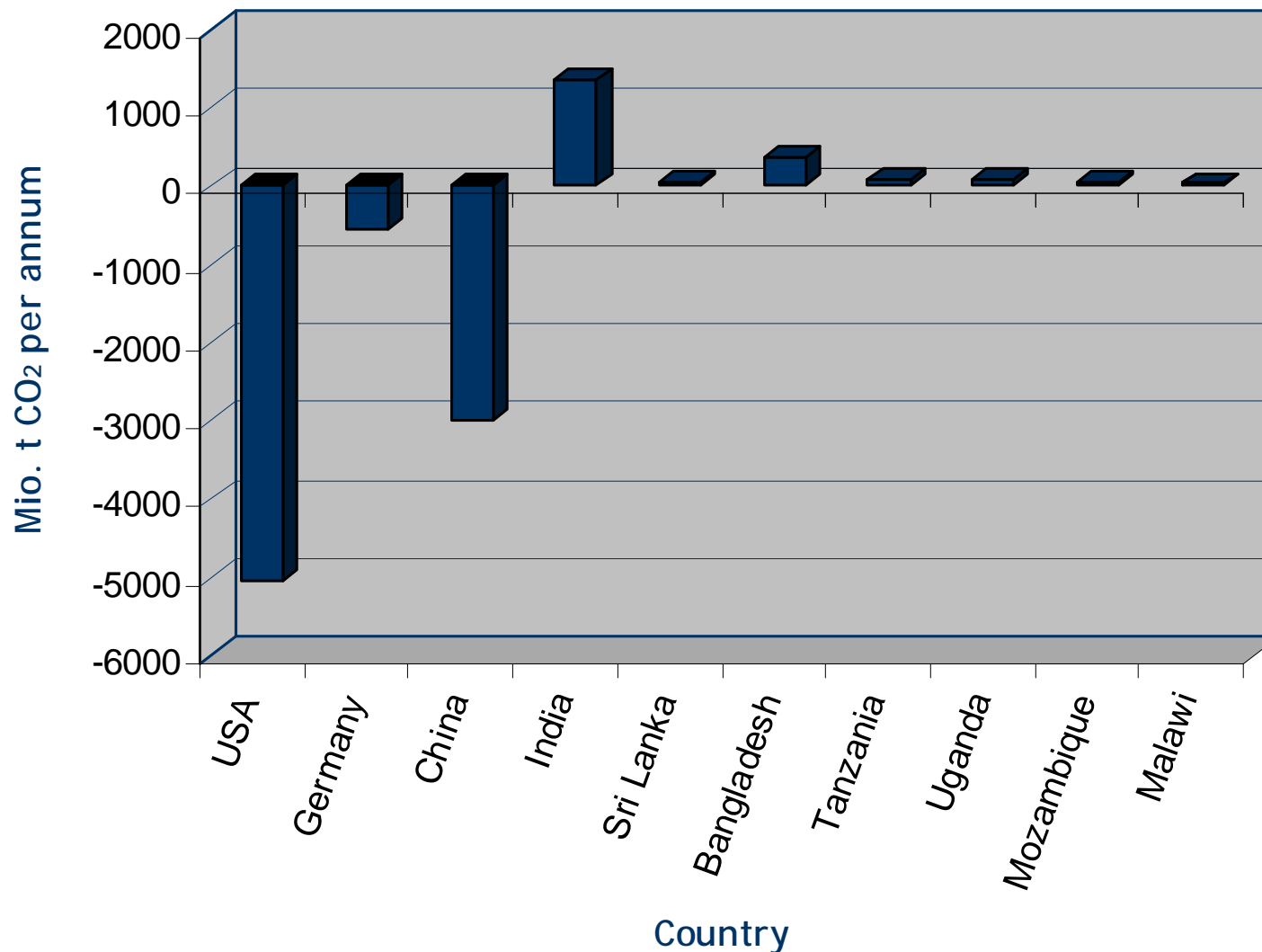


Core Issues of Budget Approach

India, due to its big population, is the only country within 3rd group that might be able to provide substantial amount of CO₂ permits

Core Issues of Budget Approach

Demand/Supply of CO₂ Budgets per annum in Mio t in 2007



Discussing the role of rural India under
cumulative emission budget approach

I) Tradable carbon surplus stems from the poor



Population, expenditure class and CO₂ emissions in India 2003-2004.

Expenditure class (2003-04)	Population (millions)		CO ₂ emissions (t/capita/year)	
	rural	urban	rural	urban
EC1 very poor	77.2	30.0	0.150	0.272
EC2 (poor below poverty line)	154.4	60.0	0.215	0.432
EC3 average	308.7	120.1	0.336	0.802
EC4 above average	154.4	60.0	0.677	1.567
EC5 relatively well off	77.2	30.0	1.365	4.099

Source: Saluja and Yadav, 2006; Parikh et al., 2009.

II) CO₂ surplus budget might provide funding for low carbon development in rural India



Picture: New and Renewable Energy

Auctioning of Emission Allowances in Germany: Periodical Report July 2011

Month	Contract	Dates	Bid Volume	Auction Volume	Cover Ratio	Clearing Price	Revenue
January	Spot	4	5,931,000	1,200,000	*4.94	*14.14 €	16,965,000 €
	Futures	4	11,877,000	2,280,000	*5.21	*14.51 €	33,071,400 €
February	Spot	3	8,657,000	1,200,000	*7.21	*14.66 €	17,595,000 €
	Futures	4	14,081,000	2,280,000	*6.18	*14.87 €	33,892,200 €
March	Spot	5	11,693,000	1,500,000	*7.80	*15.92 €	23,886,000 €
	Futures	5	25,105,000	2,850,000	*8.81	*16.54 €	47,139,000 €
April	Spot	4	9,529,000	1,200,000	*7.94	*16.45 €	19,737,000 €
	Futures	4	18,997,000	2,280,000	*8.33	*16.92 €	38,577,600 €
May	Spot	5	19,924,000	1,500,000	*13.28	*16.62 €	24,930,000 €
	Futures	4	24,197,000	2,280,000	*10.61	*16.69 €	38,047,500 €
June	Spot	4	15,479,000	1,200,000	*12.90	*15.12 €	18,147,000 €
	Futures	5	20,503,000	2,850,000	*7.19	*15.55 €	44,328,900 €
July	Spot	4	15,477,000	1,200,000	*12.90	*12.49 €	14,988,000 €
	Futures	4	21,270,000	2,280,000	*9.33	*12.63 €	28,790,700 €
Spot		29	86,690,000	9,000,000	*9.63	*15.14 €	136,248,000 €
Futures		30	136,030,000	17,100,000	*7.95	*15.43 €	263,847,300 €
Total		59	222,720,000	26,100,000	**8.53	**15.33 €	400,095,300 €

Per capita value of annual CO₂ trading budget in India 2003-2004
(20,25 US \$ /t CO₂)

Expenditure class (2003-04)	Population (millions)		CO ₂ trading budget (US \$ /capita/year)	
	rural	urban	rural	urban
EC1 very poor	77.2	30.0	51.64	49.17
EC2 (poor below poverty line)	154.4	60.0	50.32	45.93
EC3 average	308.7	120.1	47.87	38.43
EC4 above average	154.4	60.0	40.97	22.94
EC5 relatively well off	77.2	30.0	27.03	-21.65

Source: according Kaechele et. al 2011

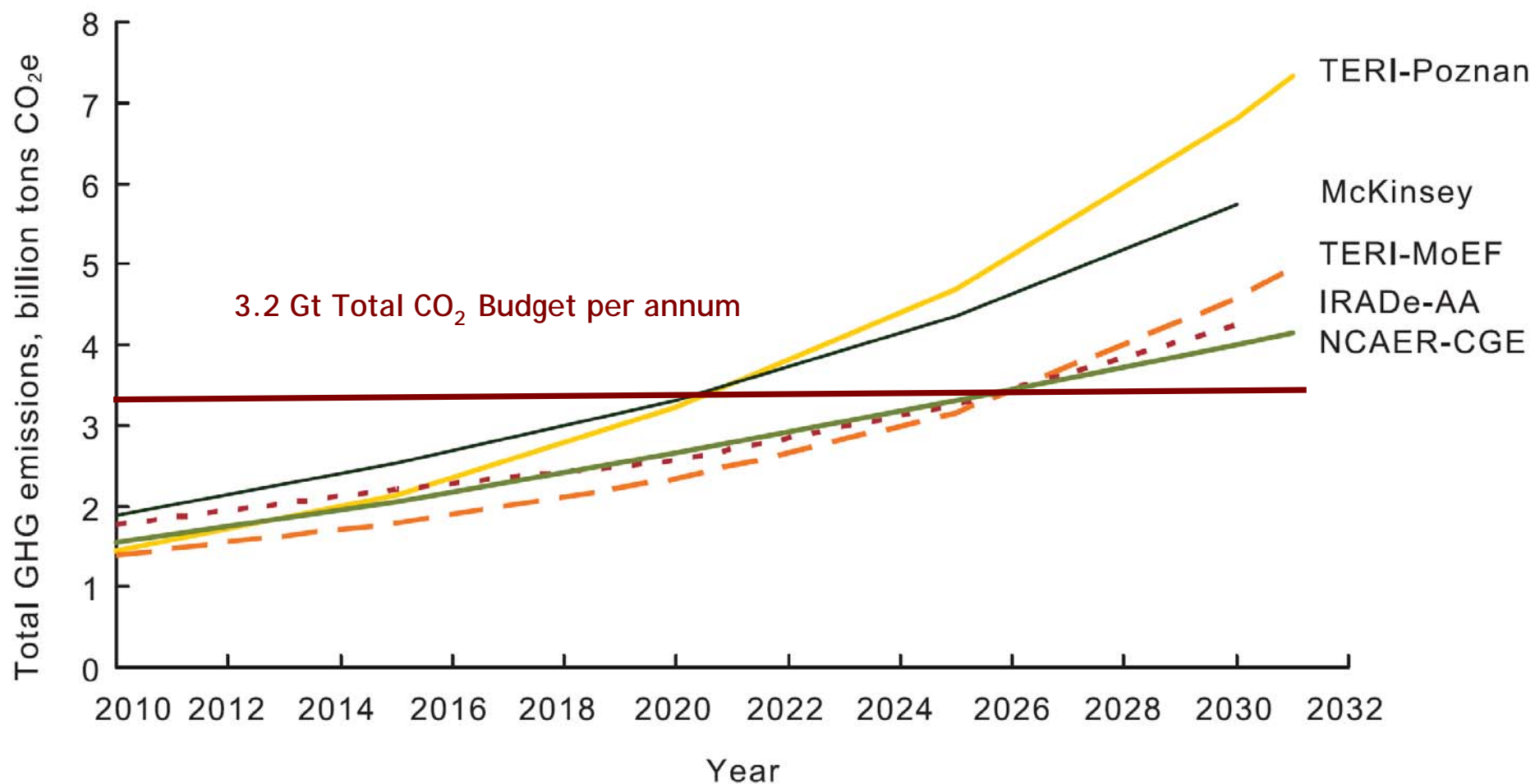
III) Current tradable carbon budget surplus is
1.7Gt (35 billion US \$) but in the case of
business as usual development,
this window of
opportunity
closes soon



Picture: Git4you.com

Total GHG emissions

GHG emissions projections for India from 5 studies in Illustrative Scenarios (2010-2031)



Source: Climate Modelling Forum, 2009

Conclusions

- Industrialised world is depending on India's poorest to provide surplus budget to buffer their carbon budget deficit
 - Western Countries need buffer budget for long time
 - Western Countries should have a vital interest to support India's poorest to develop without additional CO₂ requirement
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- Even though Indian rural societies have a right to increase CO₂ emission tremendously, Indian rural societies may abstain from following a fossil strategy
 - Rural development in India might better follow an innovative low carbon path instead of a carbon intensive pathway
 - Generating tradable CO₂ permissions might become a powerful instrument for generating money for low carbon development in rural societies
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Thank You
