

## **[AT] Josef Baum**

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### **Curriculum vitae Josef Baum**

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1979 - 1981: Institute for Advanced Studies, Economics Department, Vienna:  
Post Graduate Scholarship  
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1983 STUDIA Laxenburg, Austria, research assistant  
1984- 1987 freelance researcher in projects on economic policy & consulting  
1988 - 1996 economist and research project manager at the Austrian Institute for  
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1997 - date: freelance researcher in projects on industrial and ecological economics &  
regional studies

### **Publications (selection):**

Baum J. (2007), Environmental Issues have become Questions of Distribution -  
Constellations for a Social-Ecological Turnaround. Conference Rosa Luxemburg-Stiftung

(RLS), 30.6.07 Berlin. Social-Ecological Transformation as a Central Challenge for Alternative Economic Policies and Strategies [Ökologische Fragen sind Verteilungsfragen geworden](#) (presentation)

Baum J. (2008) Chinese Global Strategies and Frameworks of medium- and long-term economic developments in China. For Vienna Institute for International Economic Studies (wiiw)

## **Elements of political economy and political ecology of climate change – Distribution and climate change – principles for global solutions**

**[AT] Josef Baum**

### **The rationale**

The issue of sustainable development is reframed by the necessities to react globally to climate change. The fundamentally new: There are "deadlines" for the solution to the climate issue, becoming an existential question of humanity.

In relation to the tremendous dimension of challenge there is a relatively short window of opportunity of about the next 15 years to turn the trends and to keep the drastic world wide change of the foundations of human existence still controllable.

The solution to the climate issue has to be realized finally on all levels. A global solution therefore requires the inclusion of all countries. Developing countries can and will join only on the basis of equity and equality. Fairness in this sense puts the questions on the historical responsibility of the accumulation of greenhouse gases.

From the beginning of industrialisation from the 19<sup>th</sup> century (in Britain from the end of the 18<sup>th</sup> century) there is **strong correlation and co-evolution** between

The emergence of **capitalist mode of production**

Colonialism, neo-colonialism, global **asymmetrical accumulation of capital** (and infrastructure "capital", "human resources", "social capital") and thus the huge planetary increase of disparities

(Industrial) use of **fossil energy and CO2-emissions** and other greenhouse gases, and thus the accumulation of greenhouse gases in the commons of the atmosphere

Tremendous irreversible **loss of diversity** of species and ecosystems

[I will show the similar graphs in the presentation]

But there is the **real possibility for simultaneous global solutions** by global redistribution sustainable development beyond capitalism. The latter mankind starts with effective mitigating the more there will be sacrifices.<sup>1</sup> The former we start we can minimize harm und increase positive effects. So these „deadlines“ will create fundamental pressure for simultaneous global solutions.

So ecological issues, and (global) distribution issues are now inextricably linked by necessities of climate change policy: It is generally roughly undisputed that the divide between developing and developed countries will increase by climate change by "costs" for impacts (vulnerability) and adaptation. But in global mitigation developing countries hold trumps: the expected harms by climate change also for developed countries are so big that it does not matter if they are relatively less to developing countries. This question **brings capitalist north's past back in an rather unexpected way**. For the first time after decades or centuries strong trump cards belong to the south in the central question of burden sharing.

There will be big and comprehensive solutions for many fundamental problems created by capitalism – or there will be no solutions. A fair solution for costs of climate change mitigation and adaptation will bring the foundation for the development of the South to

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1 In the following the well-known Stern report is cited although there could be much criticism on methodology: "...the Review leads to a simple conclusion: the benefits of strong and early action far outweigh the economic costs of not acting. Climate change will affect the basic elements of life for people around the world – access to water, food production, health, and the environment. Hundreds of millions of people could suffer hunger, water shortages and coastal flooding as the world warms.

Using the results from formal economic models, the Review estimates that if we don't act, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20% of GDP or more. In contrast, the costs of action – reducing greenhouse gas emissions to avoid the worst impacts of climate change – can be limited to around 1% of global GDP each year.

The investment that takes place in the next 10-20 years will have a profound effect on the climate in the second half of this century and in the next. Our actions now and over the coming decades could create risks of major disruption to economic and social activity, on a scale similar to those associated with the great wars and the economic depression of the first half" Stern Review. Summary and Conclusions p. vi

overcome the huge gaps now on the planet by reallocation of capital and know-how, implicating global convergence and cohesion.

But perhaps only after several attempts.

World-wide, there is a movement of "climate justice" rapidly gaining more importance.

### **Burden sharing of climate change completely unsolved**

**The topical IPCC document states:** "All sorts of climate change policies related to vulnerabilities, adaptation, and mitigation will have impacts on intra- and intergenerational equity. These equity impacts apply at the global, international, regional, national and sub-national levels. Article 3 of the UNFCCC (1992, sometimes referred to as 'the equity article') states that Parties should protect the climate system on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country parties should take the lead in combating climate change and the adverse effects thereof. Numerous approaches exist in the climate change discourse on how these principles can be implemented."<sup>1</sup>

"Much of the political and philosophical debate is about which rights are valid in this context – a debate that shows little sign of resolution."<sup>2</sup>

"...appealing to global economic efficiency is not enough to get countries together, due to the large disparities in current welfare and in welfare changes implied by efficient climate

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1 IPCC, 2007: Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA., p. 145f

2 IPCC, 2007: Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA., p. 145

policies.”<sup>1</sup>

“Social welfare functions and other value functions, when applied to the assessment of the costs and benefits of global climate change policies, run into a number of crucial equity questions. These include issues that are related to the asymmetry between the concentration of major GHG emission sources in industrialized countries and the relatively large expected damages in developing countries, the treatment of individuals with different income levels in the social welfare function, and a number of inter-generational issues.”<sup>2</sup>

Historical Responsibility has a long agenda in the history of UNFCCC<sup>3</sup>.

Concepts like “global but differentiated responsibility” or “contracting and converging” are found in the documents of IPCC and UNFCCC since the beginning. The specifications in the Kyoto protocol also implicitly assume that the industrial countries shall go ahead in climate policy. In principle, there is a broad consent to statements that global climate politics will be possible only at fair solutions. However, the interpretation of fairness differs very far to states and various interests.

There are at least some dozens of different concepts for equity and fairness in climate policy. E. g. the Bush administration advocates the principle of equal carbon intensity per unit of GDP, complying with the interests of strong lobbies in of the United States.

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1 IPCC, 2007: Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA., p. 146

2 IPCC, 2007: Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA., p. 146

3 Friman M.(2007): Historical Responsibility in the UNFCCC. Centre for climate and Policy Research

**So almost all the details in the process of burden sharing are open and evidently these are the greatest hurdles for the start of an effective global climate policy** or the after-Kyoto process at all.

Already currently very sensitive distributional impacts by prices of energy, transport and food

Just within the last months it has got obvious that the world is not only confronted with negotiation problems of diplomats or future practical problems. In most countries we see problems of inflation: The current increase in food and energy prices is a highly sensitively political question shaking severely many governments.

The basis for this lies in the adhering of the enormous resource intensity and pollutant intensity of production and way of life in the industrial countries. The absolutely non-sustainable modes of production and consumption together with intended measures against climate change like promoting production of agro-fuels trigger a rally of prices for energy, almost all kinds of raw materials and food when simultaneously global industrialization is emerging on a broad front.

The increase of food prices especially hits poor people all over the world, particularly very strongly in such countries dependent on imports of food.

Maybe these problems will be relieved at good crops for some time but with high probability they will stay for the next years and decades,

Because the mitigation of climate change has to be centred in taxation of CO<sub>2</sub>, there are strong impacts to all kinds of energy production and transport based on fossil energy. Anyway it can be foreseen that **any further steps in climate policy - even if they aren't far-reaching - will considerably effect the price structure and with that the life situation of broadest parts of population** particularly in the developing countries. **This applies to a more comprehensive climate politics still much more.**

By that it is further underlined that concrete national, regional and global distribution concepts on a fair basis are needed to have appropriate approval in the global and national negotiating process for implementing and starting solutions. But it is also necessary to keep approval in shaping and managing the foreseeable fundamental distribution consequences of climate and resources policy, in a way that the process is neither descending in chaotic social tensions, nor is losing support in danger of stopping the sustainable path.

At least "regressive" impacts<sup>1</sup> within the framework of existing instruments should be weakened, but better is triggering progressive distributional effects. The distributional problems by climate change are set worldwide, but also on all other levels.

The international negotiations are focussed on the distribution between countries. This is determined by the structure of institutions. But if there will be any substantial results in burden sharing anyway then eventually this could result in transfers from the more poor in the industrialized countries to the more rich in the developing countries. So not only the level of distribution between states has to be seen but also the comprehensive global (personal) distribution.

### **The basic concept**

Historical development of factors in mutual interaction approximately since the beginning of the 19th century; along the "trinity of 3 Cs: "Coal, Capitalism, Colonies"

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1 Any policy to curb emissions – will raise prices of fossil fuels, and have a regressive impact on income distribution, since fuel expenditures represent a larger fraction of income for lower-income household than for upper-income households.“ Boyce, J.K.; Riddle M. (2007): Cap and Dividend: How to Curb Global Warming While Protecting the Incomes of American Families, Political Economy Research Institute, University of Massachusetts Amherst, Working Paper Series Number 150

“Without the dual boons of coal and colonies, Britain would have an economical impasse with no apparent internal solution.”<sup>1</sup> “Before Synthetic fertilizer, synthetic fibers, and the cheap mineral energy that makes synthetics economical, there were limits on the ability of labor and capital to substitute for land...Trade helped, as we will see, but it could not solve these problems.”<sup>2</sup>

(Global) industrialization partly proceeding with exponential processes

#### A. "Social metabolism"

raw material, input

emissions, output The changed since the Industrial Revolution emerging intensification of the "social metabolism" is not only with regard to CO<sub>2</sub> increased, it applies to various substances. Global significance in the 80 years the cause of the enlarged ozone hole - by certain chemical substances - gained.

The emerging intensification of the "social metabolism" since the Industrial Revolution does not regard only to CO<sub>2</sub>, it applies to a great variety of substances. Some of them reached also some sensitive treshholds. Global significance in the 1980ies got ozone hole – caused by certain chemical substances.

#### B. Distributional asymmetries

Colonization, colonialism, neo-colonialism - unequal exchange

Global asymmetrical accumulation of

capital,

infrastructure (capital),

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1 Pomeranz, Kenneth (2000): The Great Divergence: China, Europe, and the Making of the Modern World Economy. Princeton. Princeton University Press, 2000, p. 218

2 Pomeranz, Kenneth (2000): The Great Divergence: China, Europe, and the Making of the Modern World Economy. Princeton. Princeton University Press, 2000, p. 211

"human resources",

"social capital",

with just as asymmetrical material implications (raw material consumption and emissions; the accumulation of greenhouse gases corresponds to global asymmetrical accumulation of capital

High distributional disparities on different levels ("World income inequality worsened dramatically over the past two centuries."<sup>1</sup> „Inequality of world distribution of income worsened from the beginning of the 19<sup>th</sup> century to World War II and after that seems to have stabilized or to have grown more slowly. In the early 19<sup>th</sup> century most inequality was due to differences within countries; later, it was due to differences between countries.“<sup>2</sup>

**C. Tremendous irreversible loss of diversity of species and ecosystems (minus 50 % at + 3,6 ° Celsius) and thus unconceivable losses of resources and safety.**

**D. Concentration (oligopolisation) und centralisation of capital, de-democratization (here neglected)**

**E Arms build-up (here neglected) with the real risk of devastation of earth**

Current situation: Increase in the rate of increase of greenhouse gas emissions

Global mega-trends of the social-ecological development, particularly distinctive within the years since 2000:

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1 Bourguignon, F., Morrisson, C. (1999): Inequality among World Citizens, 1820 – 1990. American Economic Review (September 2002): pp. 742

2 Bourguignon, F., Morrisson, C. (1999): Inequality among World Citizens, 1820 – 1990. American Economic Review (September 2002): p. 727

Acceleration of industrialization on a global scale - big emerging countries "- but **this is not surprising**:

A. Intensification of the social metabolism on all continents: \* **Growth** of productive consumption **for various raw materials** (e. g. metals), inclusively fossil fuels \***Increase in the rate of increase of greenhouse gas emissions**

B. Complicated development of the global **patterns of disparity** of income, according to different the intra- and interregional effects. (Global convergence and divergence effects at high level total gaps)

C. Further accelerating of declining biodiversity

D. Further oligopolisation

E. Continuing high level of weapons with high risks

Concept of a (multidimensional) matrix of distribution by climate change (policy)

Dimensions:

**Spatial distribution\_**

Global

Continental

National

Regional

Local

**Distribution along strata** (or classes)

operationalized along income

**Distribution along gender**

**Historical Dimension** – integration of historical responsibility (and foreseeable development)

*all for:*

***Mitigation***

***Adaptation***

***Vulnerability-Impacts-Risk***

### **Socially differentiated emissions per capita<sup>1</sup>**

*We see an empiric correlation of stratification along income strata, classes and gender, so we meet differentiated emissions per capita resp. differently affected impacts of climate change. Some highlights on the differentiated emissions per capita within a country:*

*Systematic statistics for households in Austria hold for a very differentiated extent in using cars dependent in income: the 40 km per household a working day in the second quartile (income) doubles the first (20 km), the third shows some 53 km, and in the upper quartile we see 80 km, the 4-fold of the first quartile<sup>2</sup>. If we assume proportionate emissions along the daily way by car, and if we consider that the emissions of traffic are the most dynamic part of climate relevant gases, we see very different contributions to emissions dependent on income.*

Evidence of differentiated emissions/consumption of the traffic services a day for Austria<sup>3</sup>:

4 quartiles (income):

1<sup>st</sup> : 20 km

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1 Baum J. (2007): Pareto-optimal Sinking in the Climate Change or Redistribution – The “Brazil Proposal” and Equity Concepts for Sharing the Burden of Mitigation Activities on Climate. European conference of ecological economists 2007

2 Steining K., Gobiet W. (2005): Technologien und Wirkungen von Pkw-Road Pricing im Vergleich, Wegener Center Graz, Bericht 1/2005, p 20f

3 Steining K., Gobiet W. (2005): Technologien und Wirkungen von Pkw-Road Pricing im Vergleich, Wegener Center Graz, Bericht 1/2005, p 20f

- 2<sup>nd</sup>: 40 km  
 3<sup>rd</sup>: 53 km  
 4<sup>th</sup>: 80 km

*The consumption of the traffic services is differentiated to social classes also in the historical development. For the year 1912 the traffic budget for Swiss regions was analysed for different incomes. The share of the traffic budget approximately was similar in all income classes: about 2% (the smallest incomes with 1,8%). According to the high income dispersion - lowest income class reaches 1,000 Swiss francs yearly income, the highest class 10,000 to 20,000 - the similar relative share of the traffic budget in the various classes of income implicates absolutely very differently amounts (18 Swiss francs in the lowest income class, 400 in the highest income class) <sup>1</sup>*

*“...middle and higher income consumers are often more easily able to make lifestyle adjustment to meet these requirements than are poorer consumers”<sup>2</sup>*

*Women cause less emissions in transport.<sup>3</sup>*

*The extent of worldwide inequality widens once again dramatically when men of different income are compared: an average US citizens emits 540 CO<sub>2</sub> times more than citizens in Ethiopia, Burundi, Afghanistan and similar countries. If US- millionaires are compared to the mass of poor people in these countries the relation becomes 1: 10.000 or 100.000<sup>4</sup>*

These highlights give some hints that a worldwide CO<sub>2</sub> reduction programme is confronted with complex intertwined equity issues.

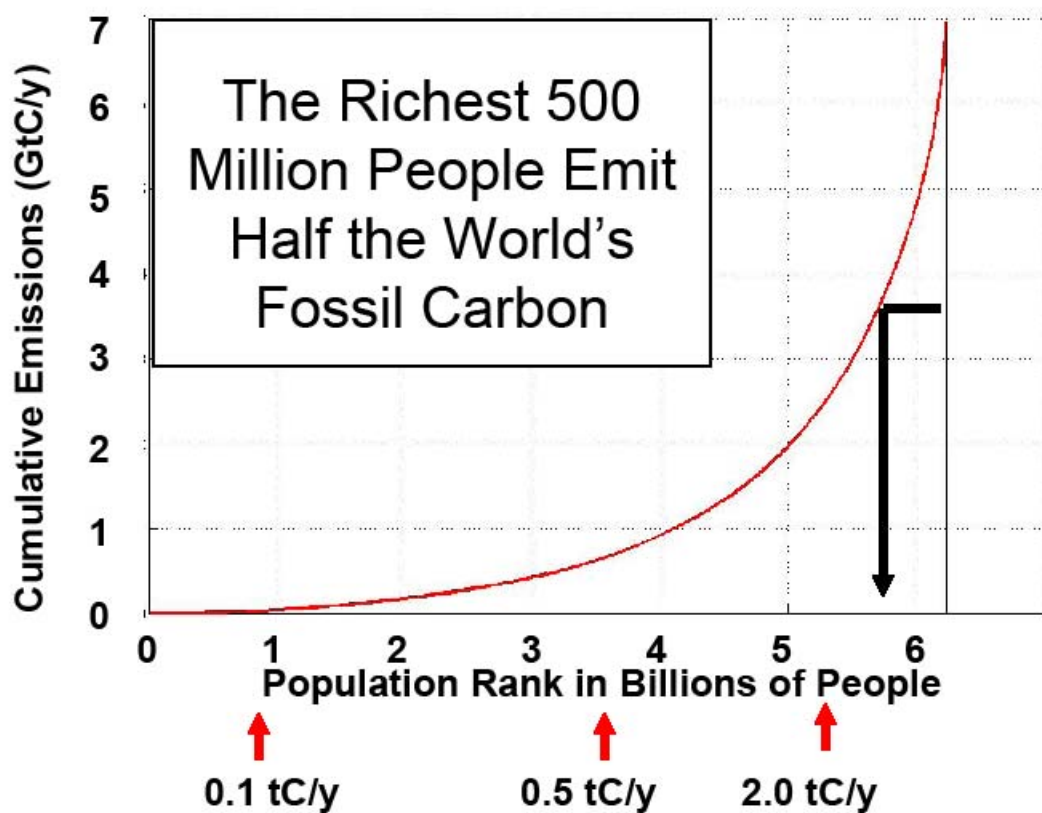
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1 Frey T., Schiedt H.-U. (2005): Wie viel Arbeitszeit kostet die Freizeitmobilität? – Monetäre Reisekosten in der Schweiz 1950-1910, In Gilomen H.-J., Schumacher B., Tissot L. (Hg.): Freizeit und Vergnügen vom 14. bis zum 20. Jahrhundert, Chronos, p 159

2 O'Brien K., Leichenko R. (2006): Climate Change, Equity and Human Security. Die Erde 137 2006 (3), p 170

3 VCÖ (7.3.2007): Frauen sind klimafreundlicher mobil als Männer! Vienna

4 Roberts J. T., Parks B. C. (2007): A climate of injustice: global inequality and climate change – vulnerability; responsibility and action. MIT Press. P 146-8; 284



*Aus:*

*Pacala S.W.: Equitable Solutions to Greenhouse Warming: On the Distribution of Wealth, Emissions and Responsibility Within and Between Nations. Princeton, at IIASA, November 2007 <http://www.iiasa.ac.at/iiasa35/docs/speakers/speech/ppts/pacala.pdf>*

### Heuristic approach

The starting points for the view of equality and fairness in connection with the climate change can come e. g. from:

- ethical moral reasons,
- obligations from international documents,
- concepts of the sustainable development.

**Or from the fact that necessary international contracts simply will not come into being otherwise**

**It seems usefully to approach to distributional aspects from more basic principles heuristically:**

Fundamental principles of distribution

**can be e. g. – (pre- scientific/political/ethical):**

Parity

Proportionality

Priority

Basically we can see procedural, cost oriented or outcome based definitions of quality and fairness.

Some examples:

**Oxfam uses three principles:**

Fairness,

capability,

simplicity

CICERO-ECZ mainly stress

guilt,

capacity und

need

Principles of procedural equity and fairness

Market mechanism

Willingness to pay

auction

consent (can mean very different: from discretionary to fixed rules

....

**„Efficiency“ targets**

***Equal CO<sub>2</sub>-emissions per unit GDP***

Equal marginal mitigation costs

Mitigation costs in proportion to emissions per unit of GDP

...

**„Grandfathering“**

*Equality of absolute CO<sub>2</sub>-reductions per capita (could be negative at poor countries, therefore not possible logically at any events)*

*Equality of relative CO<sub>2</sub>-reductions per capita (for industrial countries - Kyoto),*

Equal proportion of reductions in relation to historical accumulation of emissions

“Ability to pay”: equal proportion in mitigation costs/GDP

*Outcome based, “horizontal”: Equal net welfare change (equal proportion of GDP) compensation for net-losing countries: “No nation should be made worse off” –*

...

**Grandfathering with „minimum securing“**

*Rawls - Maximin (Maximization of lower incomes within the existing environment)*

*“No purchase“: poor countries get CO2-certificate without payment within a basis scenario*

*„No harm“: No costs for more poor countries*

...

**Equal rights (for the atmosphere)**

*“Outcome based – vertical“:*

*(Net)gains inverted to GDP, losses proportional to GDP*

*Egalitarian: Equal right for pollution (per capita) – territorial*

*Position of G-77*

*Date of convergence has to be fixed*

*Egalitarian: Equal right for pollution (per capita) – functional  
compare „ecological footprint*

*Clearing up of trade - net*

*Modified polluter pays principle*

***Production (incl. emissions) for whom (not : where)***

**- “Net exports (in China) accounted for 23 % of China’s total CO2 emissions.”<sup>1</sup>**

*Egalitarian: causal historical responsibility for greenhouse gas emissions – territorial*

= Brazil proposal

UNFCCC - MATCH-process

Former economic and ecological asymmetric distribution integrated

*In the context of the Kyoto process Brazil made a proposal which aims at differentiated emission reduction after accounting the sums of the historical contributions of greenhouse gas emissions by various countries.*

*Egalitarian: causal historical responsibility for greenhouse gas emissions – functional*

***Clearing up of trade - net***

Historical polluter pays principle

Production (incl. emissions) for whom (not : where)

<sup>1</sup> Watson J., Tao Wang, Is the west to blame for China’s emissions? December 20, 2007  
<http://www.chinadialogue.net>

CO2 emissions from China’s net exports in 2004 in comparison to other countries’ total emissions  
 “A number of other studies have been conducted, some of which reach similar conclusions. A report in 2005 by Bin Shui, of the US National Centre for Atmospheric Research, indicated that 7% to 14% of China's CO2 emissions in the period from 1997 to 2003 were due to exports to the US alone. Jiang Kejun of the Energy Research Institute, which is based in the Chinese government’s National Development and Reform Commission, suggests exports account for around 20% of China’s total national energy consumption.

These results are inevitably subject to uncertainties and simplifications, not least because of a lack of data on the carbon intensity of different exported products. However, the implications are clear. The extent of “exported carbon” from China should lead to a re-think by government negotiators working towards a new climate-change agreement beyond 2012.”

*Egalitarian: Equal right for pollution (per capita) – control view*

***Rights of property and power of disposal?***

***Who controls the value added?***

*58% of Chinese exports are controlled by transnational companies*

*Egalitarian: Equal right for pollution (per capita) – control view for the whole viewed era - historical*

***Who has had the property and disposal rights in previous time periods?***

***And who has checked the obtained net product?***

**World-system approach - (Wallerstein)**

*The historical world-system theory approach can be used as the background for asymmetric accumulation of capital and similarly asymmetric emissions of pollutants. So differentiated historic and current emissions per capita for the global centres, semi-periphery and periphery, and also the stratification along income, classes and genders can be explained.*

A preliminary result facilitates the analysis: There is a largely confirmed correlation between GDP per capita on the one hand and the causing of emissions in the sense of historic responsibility for the accumulation of greenhouse gases in the atmosphere on the other hand. Relevant deviations from this only are for countries with high GDP growth rates per head in recent times (like China or Asian "tiger")

Open questions

Integration of „land use changes“?

Integration of sinks?

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The Brazilian suggestion doesn't imply that developing countries shall pursue no climate politics or no CO<sub>2</sub>-mitigation. The main consequences are about

financing,

redistribution

economic compensation

Results show high amounts of redistribution

Gruebler-Nakicenovic<sup>1</sup> presented one of the first scenarios with different emission allocation rules (reductive and distributive aspects). 13 regions of the world by 2050 were regarded with the focus on the principle of "Equal emission right person".

Anyway these calculations and also similar ones in the following literature showed very high amounts of redistribution.

**Calculations are also possible on the global personal level. See e.g. Baer along world regions und quintiles of income within the regions: The upper two quintiles in the USA would have a need for redistribution of some 144 billion \$.**<sup>2</sup>

Boyce-Riddle<sup>3</sup> calculated for US deciles of households budgetary expenditure on food, services, electricity, fuel, other modes of transport and industrial goods, and corresponding CO2 emissions per capita for the year 2003. A limit to the total emission ("Cap") is defined, and this limit can be gradually reduced according to climate goals. On the other side CO2 taxes are levied, which will be collected at producers (as the production is concentrated, it is an effective approach). The revenue is to be placed in a fund "Sky Trust". Equal rights implicate per capita emissions. Those that are under the threshold emission limit receive net disbursements. The results are net monetary benefits for the first six deciles, with by far the greatest benefit to the bottom decile.

The basic scheme (the emission limitation, the egalitarian distribution of the burden, and the monetary transfer to the low emitters) of this allocation of resources can be achieved at different levels from the regional to a global level.

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1 Grübler A, Nakicenovic (1994): International Burden Sharing in Greenhouse Gas Reduction, IIASA, 1994

2 Baer, P. (2006): Adaptation: Who pays whom? In: Adger W.N., J. Paavola, S. Hug and M. J. Mace (eds.) (2006): Fairness in Adaptation to Climate Change. – Cambridge, Mass, p. 148

3 Boyce, J.K.; Riddle M. (2007): Cap and Dividend: How to Curb Global Warming While Protecting the Incomes of American Families, Political Economy Research Institute, University of Massachusetts Amherst, Working Paper Series Number 150

**“Climate change is the greatest market failure the world has ever seen.”**

To converge to the level of 550 ppm CO<sub>2</sub> in the atmosphere at the end of the century European countries would have to get at least roughly 80 % below the actual level<sup>1</sup>

“For a 50% reduction in global emissions by 2050, the world average per capita must drop from seven tonnes to two or three. Within these global targets, even a minimal view of equity demands that the rich countries' reductions should be at least 80% - either made directly or purchased. An 80% target for rich countries would bring equality of only the flow of current emissions - around the two to three tonnes per capita level. In fact, they will have consumed the big majority of the available space in the atmosphere.”<sup>2</sup>

The former chief economist of the world bank and Senior Vice-President of the World Bank Nicolas Stern delivered not only such remarkable fundamental remarks but also constructed in new defence line for capitalism: “Climate change is the greatest market failure the world has ever seen,” is a result which still probably will become more popular. Admitting this tremendous “failure” threatening the existence of mankind then the conclusion for more further “market” (some euphemism for capitalism) solutions seems to be not logical. And why should it work then?

Besides, how responsible is mainstream economics for the “greatest market failure”?

A recent study by the Dag Hammarskjöld Foundation in Uppsala<sup>3</sup>, for instance, strongly gives evidence for failing of “market- based” attempts to solve global warming, such as

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1 Stern Review p xi (Global peak around 2020 and then global annual reduction rate of 1-2%)

2 Stern Nicholas: Bali – now the rich must pay, December 11, 2007

<http://www.chinadialogue.net/homepage/show/single/en/1559-Bali-now-the-rich-must-pay>

3 Lohmann L. et al. (2006) Carbon Trading: A critical conversation on climate change, privatisation and power, development dialogue, no. 48, September

emission rights trading. It pleads instead for locally-based, climate-friendly, planned economies.”

### **Discounting as the most central determinant of intergenerational distribution and sustainable development**

The “present value” defined in cost-benefit-analyses is defined by

$$PV = X / (1+r)^n$$

r:= discount rate      n:= number of accounted years

Discount rates are used for evaluating future harms (or positive effects). If the discount rate is not near to zero and usually the extension of discount rates is assumed as high as the average profit rates then benefits and harms beyond the next decades converge fast to a value of almost zero. Therefore huge future harms in fifty or hundred years evaluated by a discount/profit rate are near to zero and therefore mitigation would not be worthwhile – so was the result of dozens of articles. Within a short-sighted profit mechanisms the solving of the climate problem is difficult. Must the “profit rate” vanish for the rescue of the basic environment of mankind in climate change?

202 *Dividing time and discounting the future*

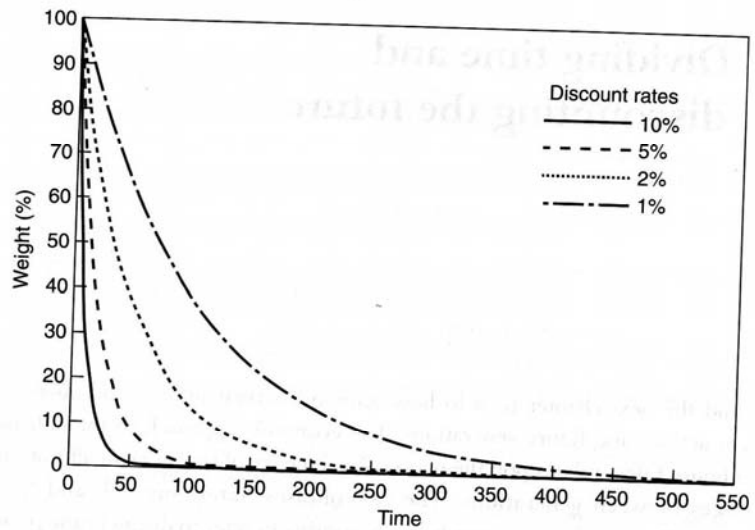


Figure 8.1 Reducing the weight of future events

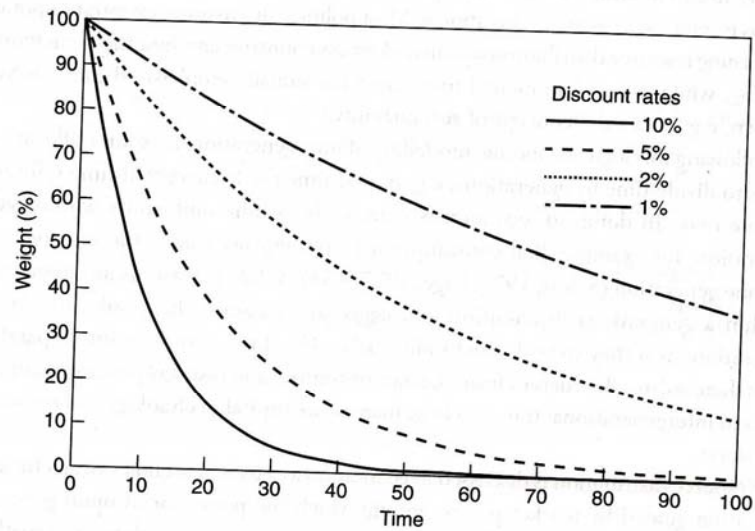


Figure 8.2 Weighting for 100 years of discounting

within about 40 years, at which point values (flows of costs or benefits) would add almost nothing to the summed discounted value arising from a project. Even the lower rates of 1 or 2 per cent limit time horizons to a few hundred years with events then having little or effectively no weight in decisions. Figure 8.2 shows the impact within a 100-year time horizon. For example, under the 10 per cent rate half the

*C. Spash (2002)*

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