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The Limits to Climate Economics

A critical review of and an alternative to economic theory in general and also in the works of Nicholas Stern and the IPCC – Thoughts on "Ethics" in the IPCC-Reports

Summary

By examining the problem of climate change this paper develops (a) a substantial critique of the background assumptions that not only the formulation of economic theories but, in parts, also that of sociological/ political theories base on and (b) an approach to what should be understood by the term "ethics" with regard to the fifth IPCC Assessment Report 2014. However, ethics do not "supplement" to efficiency considerations" which up to now dominate the practical results of the IPCC; it rather has to supersede them. It will be demonstrated that the supposed rationality behind the cost-benefit analysis used by economists and the IPCC – in correspondence to neo-classical economic theory – in order to more or less calculate mathematically the ideal climate policy is only vaguely visible as both incorrect and incomplete normative and descriptive assumptions are incorporated into the calculation of what is supposed to be "efficient" climate policy. Accordingly, keywords are: predated and too optimistic climate data; problematic handling of prognosis uncertainty; missing important consequences of global warming such as wars over resources; the limits of growth are not taken into account; improper quantification of what cannot be quantified; incorrect discounting of future events; ethical and democratic deficiencies of "efficiency/ preference theory" (to be clear, the problem lies within normative preference theory itself and not within the descriptive anthropology of the so called "homo oeconomicus" which is often criticized in a rather misleading manner). The critique not only points at neoclassical environmental economics, Nicholas Stern, the IPPC, and, what is more, their "skeptical" critics but also to some extent even alternative economists. This paper also outlines an alternative to "efficiency thinking" which is not to be associated with "Rousseauian" or "Marxist" theories focusing on basic human needs or capabilities and Rawls´ critique of utilitarianism. It therefore goes beyond the prevalent critique of the neo-classical approach to economics. A possibly more moderate but, therefore, from a methodological standpoint, more coherent climate economics could be the objective that rather merges into a more general "climate social science" (Klimasozialwissenschaft) and a general balancing theory instead of only focusing on technicalities and natural sciences. Furthermore, the idea behind terminologies like "ethics" and "theory of justice" that most social scientists have adopted will be corrected in the process of this review. Neither are these ideas "vague", when it comes to their justification, nor do they solely correspond to the "democratic will of the majority". They are not even something completely different from preference theories which have to be qualified as (less convincing) ethics themselves.

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1. Introduction and problem specification

Science is the methodical and rational search for truth and/ or justice – in the end, for its own sake. In case "facts" are to be found objectively we are talking about "truth" and in case "norms" are to be justified objectively we are contemplating "justice". Climate (natural) science deals with facts, climate social sciences deals with facts and norms. As a part of climate social sciences, Climate economics have played a more and more prominent role within the debate about both "facts" and "norms" that the appropriate climate policy should be based on. Especially the economical ideas of Nicholas Stern and IPCC have been very important and helpful for the climate debate during the last years. Even though there is more than one scientific approach to climate economics, all of them, at least if they can be assigned to the neo-classical approach to economics, are subject to more or less substantial and often simply overlooked criticism.[2] This critique will be presented here in order to establish comprehensive climate social sciences with a much broader view on the problem at hand that is not constricted by economics.[3]

The subject of climate economics is the calculation of optimal climate policy paths; this is also underlying the economic parts of the IPCC reports, where economists are so far the only representatives of climate social science. Hereto, the looming damages of climate change and general advantages and disadvantages of climate policy steps, (for the most part) translated into monetary values, are set in a relationship. Looming damages of climate damage, climate policy costs and climate policy benefits (translated into monetary values) are thus generally netted in economics to come to an optimal path of climate protection.[4] The underlying principle is the idea of efficiency. This traditional welfare economic cost-benefit method, however, has a fundamental problem. "Exact data" in climate economics and in the IPCC may be convenient for many politicians and media representatives, and especially appear to be so. Seemingly "exact data", however, disguise concealed facts and assumptions about climate facts and normative goals. If these assumptions are wrong or questionable, the figures are worthless and ultimately a dishonored suggestion of objectivity. Even if "exact data" scientifically - and even more politically and for reasons of media coverage – may appear seemingly attractive[5], we shall see below that the economic approach is a disguised theory of justice, namely, the dominant theory of the climate debate. Unfortunately, the theory proves untenable in important parts. Along the way this paper, thus, criticizes the restriction of the term "science", which is commonly reduced among natural scientists and economists to (a) descriptive statements and especially (b) quantifiable information.

2. Realistic climate data, economic damages and uncertainties?

First, we have to recapitulate the factual elements of the climate problem briefly. This is also necessary because already there the dominant climate economics approaches are sometimes problematic, which has consequences for justice issues, inter alia because the looming damages might be underestimated. Climate change is likely to challenge mankind with unprecedented problems. At its core concern climate protection is rather simple despite the scientific

[2] An alternative model to the neo-classical approach to economics would be ecological economics; see Daly 1996; Rogall 2009, p. 157 et seq. However, some of the following critique is also valid for such an alternative concept.

[3] What is meant here is the underlying economics of climate protection and not economy as such.

[4] See, e.g., Lüdemann/ Magen 2008, p. 5; Posner 1986, p. 85 et seq.; Nordhaus, 2008, p. 5.

[5] Critical (however, only with regards to factual uncertainties) also Stehr/ von Storch 2008, p. 19 et seq.

complexity of climate change[6]: the simple issue it to emit far fewer greenhouse gases, i.e. (mainly) to consume a lot less oil, coal and gas. This requires strict greenhouse gas reduction targets, more energy efficiency, more renewable energy, which theoretically are largely free of GHG emissions, but perhaps also a certain amount of sufficiency. Thus a model of civilization is at stake, which especially in the West in the last 200 years, is largely funded on a high consumption of fossil fuels. In that model fossil fuels are omnipresent. Not just in gasoline and electricity, even in heat, in fertilizers, in almost every product, in plastics, transportation of goods. High meat consumption, car trips and regular long distance holidays, overheated homes, consumer electronics, etc. therefore become part of the climate change discussion.

By the year 2100, assuming unchanged development, global warming is forecast to range between 3 and 6 degrees, possibly even more, especially if the emerging economies like China and India are increasingly successful in adopting the Western lifestyle. Without a much more rigorous climate protection the world is threatened with economic damages and dangers for global peace as well as loss of life to a great extent. At the heart lies a flagrant global and intergenerational conflict[7]: Despite the in Europe and Germany often claimed role as a "climate leader", data until 2005 shows that a German still emitted about three times the greenhouse gas amount of a Chinese and about twenty times of an African[8], while southern countries will be affected relatively more from climate change.[9] The same applies to future generations: they are the victims of climate change without having caused it. Total global emissions since 1990 have increased by 40 %. Even in Western countries, emissions mainly (only) remained constant, and even this is almost exclusively "crabwise" by accounting the industry collapse of Eastern Europe in 1990 and the (unintended) relocation of production to emerging countries as "domestic climate policy".

One often hears in political and scientific debates that global warming needs to be limited to no more than 2 degrees. Therefore it was necessary to emit 60-80 % less GHG in developed countries and 40-50 % less worldwide by 2050 compared to 1990. However, the global climatological research, regularly consolidated in the IPCC, demands far more radical reductions to be able to avoid the possible catastrophic consequences with some certainty. The IPCC states in its 2007 report, a 50-85 % reduction of worldwide (!) greenhouse gas emissions from 2000 to 2050 was necessary if one wants to accept no more than 2-2.4 (!) degrees global warming. It calls this (because of the feedback effects not covered) as probably still too cautious.[10] With a world population growing from 6.6 billion today to about 9 billion this IPCC figure would require a reduction of per capita CO_2 emissions from 4.6 tons per year (excluding deforestation) - in Germany, about 11 tons - to about 0.5-1 tons.[11] For industrialised countries, this would result in well over 90 % emission reductions by 2050. This (1) does not even take into account feedback effects, and (2) 2-2.4 degrees global warming may already imply substantial threats. In addition (3) recent research related to the IPCC shows, that the 2007 IPCC fore-

[6] This formulation goes back to Hänggi 2008, p. 7.
[7] On the concept of sustainability (which means „more intergenerational and global justice") see Ekardt 2010c; Ott/ Döring 2004.
[8] Cf. Baumert/ Herzog/ Pershing 2005, p. 22.
[9] Böhringer/ Welsch 2008, p. 265; Nordhaus 2008, p. 6, is rejecting any kind of consequences – in contrast to Stern 2009, p. 13.
[10] On the following see IPCC 2007, p. 15, table SPM.5.
[11] See Hänggi 2008, p. 31, who calculates that according to the data of the IPCC in 2007 and in case world population rises to 9 billion by 2050 the per head out-put of CO2-aquivalents should be around 1,3-0,4 t even without taking rebound-effects into account.

casts of climate change[12] will be overtaken by reality. Hence, from the perspective of climate science the 2050 target for the Occident is basically a (nearly) zero-emission society, if one wants to avoid catastrophic damage.[13] Since human land-use emissions can never fall to zero, even negative emissions may be required for the energy sector, i.e. the recovery of greenhouse gases from the atmosphere.[14] All this is easily overlooked, since climate change is a delayed phenomenon and greenhouse gases sometimes remain in the atmosphere for centuries.

On the one hand some damping feedback effects are already largely included in the climate models upon which climate forecasts are calculated. On the other hand, possibly massively climate change reinforcing feedback effects are currently only inadequately covered. This concerns for instance melting ice, which can reflect less sunlight, increasing amounts of water vapor around the world due to increased temperature, the role of a change in cloud formation, the role of the oceans and the marine fauna, the release of greenhouse gas from thawing permafrost soil, and effects of climate change related changes in land use. Further calculation uncertainties exist in agriculture, particularly so in nitrous oxide and methane, and especially with respect to the global deforestation, which contributes about 20 % to climate change. Climate skeptics (who are never even climatologists) (1) not only ignore that the IPCC is rather cautious. They also exaggerate the degree of uncertainty in climate predictions and understate the predicted damage.[15] In addition, they regularly miss that (2) solely because of the running out of fossil fuels robust action is required even if less dramatic forecasts at the end prove to be closest to the truth. Moreover, (3) climate skeptics in most cases neglect the precautionary principle: If one assumes that may be a dramatic risk to sensitive issues is imminent and one knows that at the onset of the risk it will probably be too late for a remedy, it is recommended to act today. The latter, however, is a normative idea and assumes that there are normative issues that deserve protection. That this is indeed the case will be shown in chapter 4.

The first problem of climate economics is that many climate economists appear relatively optimistic regarding the future development of climate change. Accordingly, they assume too little potential climate damage. Even the scientific foundation just described is not or not continuously represented throughout the previous climate economics. At best, the IPCC 2007 data are used which due to their methodology reflect the state of knowledge of about 2004, and often also in that context there a more lenient scenario is used. Even Nicholas Stern, who is considered perhaps the most influential climate economist and in this case often cited exemplary and who likely exceeds a number of other climate economists in many ways, still talks in the summer of 2009 of a global reduction of only 50 % until 2050 and does not even seem to have accounted for the Copenhagen Synthesis by IPCC members (2009). On the other hand, the Stern Review of 2006 points out that those figures are likely to be rather low.

[12] Cf. the Copenhagen Synthesis from the beginning of 2009 (available at: http://climatecongress.ku.dk/pdf/synthesisreport); see also Hansen 2007 with regards to research conducted by NASA.

[13] See the conclusion of EU's Council of Ministers (Environment) on the 2nd of March, 2009 (available at: http://register.consilium.europa.eu/pdf/de/09/st07/st07128.de09.pdf) and the resolution of several managers of energy companies from April 2009, cited in TAZ on April 10th, 2009.

[14] It could, e.g., be feasible to combine bioenergy with CCS; cf. Ekardt 2009b, chapter 15-16.

[15] As an example for the following see only Lomborg 2007. Climate skeptics are ignoring that some negative developments will occur with a delay of (at least) several decades as some GHGs will stay in the atmosphere for a long time. Furthermore, because of the physical limits to growth the world will probably not for all time become richer and, therefore, we cannot assume that potential climate damages will simply be compensated by growing wealth. And, climate protection policy costs (in parts only alleged costs) are not better spend on the fight against Aids or malaria; we should better do both, not only because climate change threatens to become the worst catastrophe developing countries have ever faced.

Thus, problematic factual assumptions become the basis for climate economical calculations, which tend to underestimate the potential climate damages. This is all the more true, if in the sense of the many Stern-critics such as William Nordhaus, who is to be used hereinafter sometimes exemplary for a more "skeptical" position, the Stern assumptions are even rejected as exaggerated.[16]

It is therefore often overlooked, that climate change leading to crop failures, natural disasters, floods, water shortages, food shortages, areas and whole countries becoming uninhabitable, as well as vast migration flows would be many times more expensive than effective action on climate change. Although the Stern Report of 2007 has highlighted this recognition against large resistance in economics[17], under latest calculations it now actually proves too careful.[18] Stern on the other hand criticises that many economists do not adequately see the economic benefits of climate policy, that greenhouse gas limits, more efficiency, more renewable energy, and more sufficiency indeed secure permanent supply of electricity, heat and fuel long-term at acceptable prices, given the scarcity of fossil resources and the instability of some supplier States[19], as well as even short-term savings in energy costs (such as thermal insulation) and the opportunities for new jobs and markets through new technologies.[20] Beyond the question of current climate data, however, another major omission is present in the economic fact material, in the Stern Report, the IPCC as well as otherwise: the maybe cynical sounding, but perhaps most monetarily quantifiable cost does not seem to occur - the cost of possible military conflicts over oil, water and other resources. If calculations are still rather too cautious, then this also documents how problematic even in purely economic terms the current political debate about "less climate protection because of the financial crisis" likely is.[21]

These suggestions for an "update" of climate economic calculations do not yet reject a climate economic approach altogether but could be considered within an economic framework. A structurally unsolvable problem, however, cast some general doubt about the climate economical approach. Due to its high degree of complexity, climate change cannot exactly be predicted with respect to its concrete development and its economic impact. Rather a high degree of uncertainty is immanent. Future uncertain events are hardly integrated into precise cost calculations. For if a future event is not subject to specifiable probability (risk), but that probability is rather uncertain (uncertainty), this will render quantification impossible per se. Consequently, one cannot say something like "a looming damage of 10 billion euro with a probability of 10 % is valued 1 billion euro" in a case of uncertainty. This problem is also apparently not solved in the Stern Report. From this problem Stern's critics draw the conclusion that rather low damage forecasts should be made.[22] However, a different conclusion could be more convincing (which is also a thesis of this study): that the economic approach altogether partially suggests false precision and that, therefore, a critical review as such is necessary.

Ultimately, these are all well-known problems - less with respect to climate data, but as regards economic loss amounts and dealing with uncertainty. Therefore, in the following, the

[16] Cf. Nordhaus 2008, p. 5 et seq., but especially p. 123 et seq.
[17] Stern 2006; Welzer 2008; Ekardt 2010, § 1; Kemfert 2008, p. 63 et seq. (for an overview of pandemic events that are likely to happen see p. 54 et seq.).
[18] Parry et al 2009 speak of 500 billion Euro total costs per year instead of only about 100 billion Euro.
[19] Cf. Stern 2009, p. 39 and passim.
[20] Cf. Kemfert 2008, p. 135 et seq.
[21] Thus, amiss Knopp/ Piroch 2009, p. 409 et seq. and Frenz 2009, § 1 no. 1 et seq. and passim; for a correct analysis see Wustlich 2009, p. 515 et seq.
[22] On the following, in more detail, see Byatt et al. 2006, p. 199 et seq.

focus will be more on other less discussed problems of climate economics, which are not unique to Stern and the IPCC but in about the same to their critics. The first concerns an almost entirely overlooked factual assumption - and then a set of normative assumptions, which are conditions for the further discussion, whether the projected climate data and associated events (e.g. hurricanes or high oil prices) can lead to the classification as a "benefit" or a "loss".

3. The limits to growth

The most problematic factual assumption in climate economical calculations of the "optimal climate policy" is the core assumption of "eternal" global economic growth - coupled with the focus on emission reductions to be achieved through technical measures (which is characteristic of the IPCC Working Group III). In this view of things, climate damage could perhaps result in (maybe significant) "setbacks in growth" (Wachstumsdellen). That long run (!), however, after a recent economic revival due to the promotion of new technologies and after the (necessary) fight against poverty in parts of the world, an effective climate policy might require more of a critical revision of the idea of growth, is almost not an issue in the current climate economical discussion. This also applies to Stern.[23] This problem is further reinforced by Stern and apparently the IPCC accepting that climate change was a mere "market failure" (i.e. it is just seen as an *economic* and in the logic of current economics *solvable* problem).[24] Other economists such as Nordhaus fall far behind Stern and are even less open to critical questions on the validity of eternal growth.[25]

The cause of the climate problem is, however, in brief, the wealth of the industrialised world. When aiming at further growth, energy consumption and the consumption of fossil fuels also tend to increase. But climate protection at its core has to dramatically reduce the use of oil, gas and coal, and thus the amount of GHG emissions. Of course one can say: you can switch from fossil fuels to renewable energy - which emit only little greenhouse gases - and it is generally possible to use energy more efficiently.[26] These are key strategies to combat climate change. Thus, energy consumption, prosperity and economy seem to be able to continue growth, and yet shrink the greenhouse gas emissions. Climate protection is indeed a short term opportunity for profits. For three reasons, however, sooner or later climate change will make it necessary to review the growth paradigm as such:

1. If economic growth continues limitless, the increase in wealth outweighs at least in part the GHG reductions from technically feasible energy efficiency and renewable energy on greenhouse gas savings ("rebound effect").[27] Figuratively speaking, if my car is still running ever more energy-efficient, but globally more and more people drive a car (and I myself an ever bigger car), little is gained. And such is currently the trend. This explains why the emissions in developed countries stagnate since 1990 despite various climate policy efforts.
2. If one wants to limit global climate change to a non-catastrophic level, *drastic* green-

[23] E.g. Stern 2009, p. 11 or p. 92; cf. also Weimann 2009, p. 26.
[24] Cf. Stern 2009, p. 11 et seq.
[25] Cf. Nordhaus 2008, p. 32 et seq. and passim.
[26] E.g. Stern 2009, p. 111 et seq.
[27] The German Federal Environmental Agency found this effect to be true with regard to private energy consumption (cf. the underlying study available at: http://www.umweltdaten.de/publikationen/fpdf-l/3544.pdf.); even more pessimistic in this respect is the, albeit controversial, analysis by Garret 2009.

house gas reduction targets are urgently needed. It's not a matter of increasing global prosperity and keeping GHG emissions constant through greater efficiency or slightly decreasing them, but in fact it is necessary to reduce them globally (!) by about 80 %. And these goals with the size of the challenge force us, besides "energy efficiency", also to contemplate an end to the paradigm of infinite growth in prosperity. For a reasonably stable global climate is the basis of human existence.

3. Ultimately something banal, but very basic applies: in a finite world, growth has physical limitations (unless we think of growth in education, piano-playing skills, etc.). It is impossible for the entire world - including all the Chinese, Indians, Indonesians, Brazilians, etc., which gradually take over the Occidental life-style and growth – to become infinitely richer. Even if humanity switches from fossil fuels to solar energy, other raw materials of this world remain finite. Wind turbines and eco-cars are made of resources, too. And that only "new ideas" grow permanently and thereby allow "eternal growth" without any use of resources, one might hope though, but it seems at least open, so it is doubtful whether one should develop serious climate policy recommendations on the basis of such an assumption.[28] As a general result "ideas" potentially lead to consume of material resources. The Internet, for example, may seem an intangible idea, but computers and servers still require electrical power and finite and scarce resources for the production of various devices and the corresponding infrastructure.

All three problems are basic in kind. They cannot be negated by saying that the world today has, for example, larger oil reserves than was predicted 30 years ago. The problems can only be postponed (if at all). The problem of "physical limitations" of the earth also shows something essential: Even without climate change, the common perspective on the idea of growth deserves a review.[29] This is also reflected at other points. Global growth rates, for example, give no information about the distribution of wealth: Some are getting richer and those in need who needed growth the most occur remain poor or get even poorer. Moreover, the growth concept - so far it is a well-known debate – ignores many aspects: private social work, such as private child care, and the ecological damage of the growth path which are currently deemed without alternative. Likewise, there is no empirical proof that growth per se increases human happiness.[30]

If the much-needed debate on climate change thus becomes a growth debate, however, this creates a serious problem. In most common economic views, capitalism and welfare need some form of growth, and even Marxists usually assume some form of growth. Whether this is so compelling, is of course quite controversially discussed.[31] The idea that a departure from the idea of growth would be the end of adequate human life, appears at least historically dubious. For the whole human history up to the end of the 18th Century there was basically one of only stationary, i.e. non-growing economies.[32] Historically, a growth society is a special case

[28] The question whether it would be reasonable or not to build modern societies on a vague prospective like that is controversially discussed within the framework of the new Network on Sustainable Economy (www.nachhaltige-oekonomie.de). Even the Austrian government has spurred a discourse about the paradigm of unlimited growth (www.wachstumimwandel.at).

[29] Cf., on the following, the contributions by Schmidt 2005, Behrens/ Giljum 2005, and Löhr 2005; Ekardt 2009d, p. 223 et seq.; Daly 1996; Wuppertal-Institut, 2008.

[30] Psychological research, however, implies the opposite; cf. Wuppertal-Institut 2008, p. 282 et seq.

[31] Rogall 2009, p. 157 et seq., tries to find an unbiased and balanced answer.

[32] Cf. Daly 1996, passim. This alone hints at the fact that the idea of growth has a cultural background – which is not only rooted in classical liberalism alone, but also (already) in Calvinistic Protestantism; cf., with additional

tied to the occurrence of fossil fuels. Moreover, mankind in the age of fossil fuels has gained technical knowledge, which should nevertheless enable it to maintain substantial achievements of this era.[33] Whatever one may think of this: The scale of the climate problem, the "rebound" and the physical finiteness of the world could spare any debate about it. To accept this, however, would mean unlike the IPCC, Stern and much of the research no longer to search solely for "new technologies", but (in the developed world) to draw more on taking into account the possibility of sufficiency with regard to certain habits. Similarly, an increased reflection and research on the problems of a long-term "end of the idea of growth" would be appropriate.

One might ask, whether a discussion on the previous problem be worth while. Who says that facts or forecasts of future facts on oil prices, hurricanes, etc., are of any relevance? Why do we not leave all this to the purely factual preferences of consumers? The present study is to oppose such a view, however. This leads to a review and critique of the preference approach, which is typical for economics - and also for the IPCC Working Group III with its mainly economic-engineering focus. At issue here are not just quantification and discounting, which are rather treated separately (see below 5). It is rather a broader question of climate change and justice.

4. Climate Protection and Justice: Why not only natural science and preference based decision theory can be labeled „objective" – and what "ethics within IPCC-Reports" would mean

4.1 The core of sustainable ethics

This leads to a not (natural) scientific or empirical, but normative question, i.e. a question of "ought" or judgement: To what extent ought the (uncertain, but possibly drastic) negative and irreversible consequences, possibly after a consideration of present interests, be prevented or accepted? Because from an empirical nature observation as such does not follow logically that this observation is normatively welcome or unwelcome; even this basic fact is not sufficiently present in the economic and scientific debate.[34] This leads us into the field of ethics or theory of justice (the terms are used here interchangeably).[35] In the following, it will be shown that climate economical models are not only based on questionable descriptive (see above), but also questionable normative and ethical assumptions. However, many economists would argue that their discipline has nothing to do with ethics at all when cost-benefit calculations or the efficiency of certain paths of possible climate policy are examined.[36] It will be seen below, however, that this is probably incorrect.

To see this, some more general thoughts are necessary. Let's assume the following thesis: A society is just where everyone can live according to their own ideas, and everyone else can too - where everyone alike (!) has such a right to freedom, and conflicts of freedoms are re-

references, Ekardt 2009b, chapter II.

[33] The classic national „policy for growth and jobs" is further pressured by Globalization and, accordingly, makes regulatory efforts even more difficult; see Ekardt/ Meyer-Mews/ Schmeichel/ Steffenhagen 2009e, chapter 1 and 3.

[34] Stern 2009, p. 86 et seq. only hints at that problem and immediately forgets about it again.

[35] With regards to some of the possible misunderstandings that can arise in the context of the following chapter see the controversy between Dilger 2006, p. 383 et seq. and Ekardt 2006b, p. 399 et seq. (triggered by Ekardt 2004).

[36] See, e.g., Wink 2002; Nordhaus 2008, p. 175 et seq.; Böhringer/ Welsch 2009, p. 261 et seq.

solved through democratic means including a separation of powers. Human coexistence would be just if human rights or liberties (Freiheitsrechte), the rights to the basic preconditions of freedom (elementare Freiheitsvoraussetzungen), and certain other freedom supporting arrangements ("additional freedom conditions"/ "weitere Freiheitsvoraussetzungen"), respectively, were optimally achieved, including the ever-necessary balancing conflict resolution between the competing spheres of freedom. The considerations in the following sections will briefly try to show that this is the only necessary and possible criterion of justice, if only one interprets it right. Suffice it say that with a proper (re-)interpretation of democratic legal systems with respect to all of the following statements there is convergence of a genuinely ethical and (in free democracies) a legal perspective, since human rights are the subject of international treaties and national constitutions.[37] The right to freedom is often referred to as human rights, which could be split up as general freedom of action, freedom of assembly, freedom of occupation, freedom to own property, religious freedom, freedom of speech, etc.[38] Legal and ethical traditions, however, often only parenthetically consider the protection of fundamental preconditions of freedom such as life, health, and subsistence (e.g. a basal access to energy, but also a sufficiently stable global climate[39]) as well as the freedom of future generations and people in other parts of the world. However, there is a strong argument that the protection of fundamental preconditions of freedom is already logically inherent in the concept of freedom itself: For without those basic preconditions there can never be freedom. An argument for the expansion of freedom in an intergenerational and global dimension will be given in chapter 4.5. More detailed, ethical and legal arguments for this "new" freedom - different from the classical liberal model of the West and in the sense of freedom worldwide and for all generations - were subject elsewhere.[40]

4.2 A key distinction: Anthropology (homo economicus) versus normative preference theory / efficiency theory

The important thing is: all these considerations are part of a theory of justice. In contrast, a theory of action describes the purely factual behaviour of humans, unlike a normative (moral or legal) consideration based on the theory of justice, which refers to how people ought to behave and how societies should be arranged. Instead of action theory one can also use the terms anthropology or idea of man. Unfortunately much confusion is based on the common misunderstanding that an idea of man erroneous was something normative, a picture of how man should be or how the society should be. This leads to a blurring of anthropology and theory of justice.[41] That the economists' common theory of action which assumes that man is only self-interested is oversimplifying has widely been noticed in the last decades, though

[37] Ethics is not only developing the principles of liberal democracies parallel to the law. In the following, it will be shown that it is also justifying them and, thereby, providing an ultimate basis for law; on the relation of law and ethics, see Ekardt 2010b, § 1 A. (Law always combines normative and instrumental rationality).

[38] As regards content, there is no further significance for this differentiation – apart from the idea that the constitutional lawmaker has in parts (pre-)structured the balancing of colliding freedoms (see chapter 5.) by deciding about their weight within the catalogue of fundamental rights.

[39] For the reasons to even include threatening damages (precaution) that are not certain, see chapter 2 above.

[40] For a detailed analysis of the theory of justice underlying chapter 4 and with additional references, see Ekardt 2010c, § 3-7; Ekardt 2009b, Chapter 4-6; Ekardt 2010a; focusing on the intergenerational dimension is Unnerstall 1999.

[41] This is very unfortunate as it causes a tendency to see facts in a somewhat screwed, desired way and as it, then, builds the basis for certain "do's and don'ts" – or, in contrast, as it prohibits to get through to the question whether solely normative statements can be justified at all. That is why, e.g., Heinig 2008, p. 330 et seq. is missing the point.

some economists might still use it. A theory of action saying “man is purely factually (almost) only self-interested”, i.e. Thomas Hobbes’ theory of the homo economicus, is the focus of controversy in many discussions with economists. This doctrine, however, which helps economists explaining and forecasting possible factual developments will not be analysed here. Elsewhere it was shown in this regard how companies, voters/ consumers, and politicians are often linked in vicious circles to each other - and how factors such as conformity, emotional perception problems with spatiotemporal long-term consequences of own actions, self-interest, incorrect traditional values, technical-economic path dependency and structures of collective interests have thwarted drastic climate protection efforts.[42] Even though economic anthropologies do not always reach this necessary differentiation, their reference to the human tendency to self-interested behaviour makes a valuable contribution (in fact the concepts of the homo economicus has correctly been modified in the last few decades and today is quite close to the ideas just presented).

Therefore, the real problem is not what Marxist economists often target: the empirically reasonably accurate descriptive anthropology of the *mainly* self-interested man. The problem is neither any theory of happiness of life. With respect to the principle of freedom, such a theory of happiness lacks any general standards, so that there cannot be such a theory at all. Hence, an analysis of the dispute between some economists, who may see a particular increase in happiness as the result of economic struggle for profit, and their Marxist-inspired critics, who instead deem living a life of solidarity (as is allegedly a true human desire) happiness increasing, is unnecessary on a theoretical level. In that regard, a freedom based democratic ethical and legal framework does not set any defaults, since there is no objective criterion for “happiness”, and freedom allows no binding idea on happiness, too. However, a less “resource focused” ideal of happiness would help many people recognise that their own freedom be restricted for the intergenerational and global freedom's sake.

However, the problem is rather the (not only climate) economics underlying theory of justice, i.e. the efficiency theory or normative preference theory, as it is called in this context. Thus, the problem is not mainly descriptive anthropology but the normative theory of how human beings and societies *should* be.

4.3 Why the economic efficiency theory (normative preference theory) is ethics itself – also on the concepts of objectivity and rationality

In order to show that an objective theory of justice is possible and that it must have the content that was briefly described above - and that the efficiency theory and normative preferences theory is a different but incorrect theory of justice – we first have to consider a question following from the given arguments on freedom: Is there a reason to deem the principle of freedom and its consequences (perhaps globally equal per capita emission rights) objectively just? Justice in this sense means the general rightness (Richtigkeit) of any social order. Thus justice is not something “additional”, which can be formulated after demanding prosperity or something similar. Any idea of how a society should be (even a simple “a society should be as rich as possible, and the distribution of wealth does not matter” or just “right is whatever the sum of the empirical preferences is”), is inherently a concept of justice, no matter whether it is

[42] For references, see supra fn. 40. A slightly unsystematic list offers Rogall 2009, p. 63 et seq. – who incorrectly assumes that sufficiency (i.e. “doing without” certain things and aspects of life) per se is voluntary, while instead it is much more often caused by (high) prices (see chapter 6.).

right or wrong. Theories of a successful society – as can be found work in moral philosophy, law, normative politics or moral theology – are per se concerned with justice, like physics or biology or sociology deal per se with a descriptive truth (even if some research might result in untrue findings, and therefore fails to meet the claim). The basic idea of neo-classical (including climate) economists that it was necessary to maximise wealth as expressed in valuable goods, is thus neither trivial nor can even be classified as "empirical". This basic idea is rather a normative concept - it is an ethics (of efficiency)[43], which appears for the first time in Thomas Hobbes, like the homo economicus. Unlike anthropology it is not meant to explain or predict anything, but rather propose right decisions. It follows:

- "Efficiency versus justice" or "efficiency versus ethics" as an alternative, as economists like Stern or Nordhaus and their left-wing critics are used to state it, is just wrong.[44] The only reasonable discussion is whether the ethics of efficiency is right or wrong. Consequently, there is no point, if the IPCC in its fifth progress report wants to include an ethics or theory of justice analysis (the terms are synonymous) "in addition" to the efficiency analysis. This is again erroneously assumes, that ethics (or justice) was a kind of diffuse part of the questions of social life, such as issues that seem somehow "very important" or even appear to have a religious connotation.[45] Such can be read in the Stern Report.
- The controversy "ethics versus efficiency" rather concerns the question whether to a greater extent social equality in certain material goods as defined by increased redistribution should be reached. However, this is a more specific question. We come back to this shortly in chapter 5.

But is there an objective ethics? Are there any objective, universal standards in a post-metaphysical, global, multi-cultural world (regardless of whether they are called "ethical" or "efficient")? That statements of fact, e.g. as regards anthropology or climate data, although partially uncertain and hard to prove, can be basically true and therefore objectively reasonable, i.e. rational, is seldom contested. Less clear is whether moral and legal norms may be correct and objective/ rational. Many economists, including Stern, implicitly assume that only economic and empirical (natural) sciences can be rational. It will therefore be outlined briefly, that there are indeed rational and objective norms and that freedom is their basic principle.[46] But first we have to define the following terminology:

- "Objective" means "not subjective", thus not subject to special perspectives, cultural backgrounds or settings - that is universal and valid everywhere.
- Reason, respectively rationality refers to the ability, to decide questions with reason, i.e. objectively. When it comes to the question of the rightness of moral and legal prin-

[43] A from an economic perspective striking analysis provides Gawel 2001, p. 9 et seq. and p. 43 et seq.
[44] That is why Nutzinger 2003, p. 77 et seq. and Grzeszick 2003, p. 647 et seq. are, in my opinion, slightly misleading; see also Mathis 2009.
[45] Unfortunately, the day-to-day and often even the scientific (if not philosophical) usage of the word "ethics" is rather arbitrarily. It does not make any sense, however, to classify medically assisted suicide or the protection of embryonic stem cells as "ethical problems" and to leave out other societal questions that are normative as well (e.g. the scope of economic freedom).
[46] There are justification models that are (in parts) similar to the one we will develop here – yet, without the link to the questions of sustainability and climate protection. Cf. Alexy 1995, p. 127 et seq.; Illies 2003, p. 129 et seq.; Kuhlmann 1985; Apel/ Kettner 1993; to some extent Habermas 1983, p. 56 et seq.; implicit Ott/ Döring 2004, p. 91 et seq. The classics Immanuel Kant and John Rawls remain, in contrast, at least incomplete with regard to the theoretical basis of their substantiations although basic terms like rationality, human dignity, freedom, impartiality and separation of powers can be associated with them.

ciples of justice – here freedom and the rules for balancing conflicting freedoms that can be derived from it – this is called normative reason (normative Vernunft). On the other hand, instrumental reason (instrumentelle Vernunft) and theoretical reason are related to facts. Instrumental reason is concerned with the question what means can implement any norm which is assumed to be right, e.g. a specific climate target (or a very selfish target as a theft) most effectively – e.g. through an emissions trading. Theoretical reason regards the determination of facts without any concrete related action, such as the scientific climate research. Economist usually only accept the balancing aspect of normative rationality; the subject of this balancing, however, are preferences expressed in monetary values. That this is not convincing we will see in the further course of analysis.

Whether there are objectively valid, i.e. rationally provable, norms and facts, is distinct from the - correct - observation that factually humans are often biased by subjective views when trying to determine facts and norms. This tendency for a subjective point of view is a natural one. But this by no means proves that objectivity - for example through careful examination and discussion with others - is altogether impossible.[47] We can consider the following example: It may be true that there are scientists who express their opinions for or against the presence of human-induced climate change because they expect financial benefits. Their statements were therefore not objective but subjectively distorted. But this does not mean that it is impossible to gain objective and unbiased insight on climate change. Furthermore, the finding that often perspectives are very "subjective" logically requires that there *are* objective perspectives – otherwise the subjective nature of those subjective perspectives could not reasonably be determined.

With respect to normative questions (unlike questions of fact) economists, sociologists, and political scientists mainly deny the possibility of objective statements altogether. For (not only climate) economists "norm" is usually just what people purely factually prefer. Rational were only quantifying (!) considerations, which transformed the not rationally verifiable preferences into a single "currency" (money) and thus made them comparable. If an economist asks for the right climate policy, he usually does not ask: What climate policy framework does freedom (including the freedom of those spatially and temporally far away as well as balancing rules derived from freedom) set under which then various political decisions are possible? Economists would usually rather ask: How much would people living today be willing to pay for a stable global climate and what would be the advantages and disadvantages of climate change on the one hand and climate policy on the other hand, expressed in market prices? Such a preference theory might get to the conclusion: Valid is what all can agree on. Or: Valid is the mathematical sum of preferences respectively expressed in money. Political scientists often tend to say: Valid are simply the actual preferences of the respective majority.[48] It is important to note that in any case even though these perspectives are founded on a theory of self-interested behaviour or anthropology (homo economicus), as was mentioned above, they can still strictly separately be considered. To put it bluntly, one can use the following simple formula: "People are in fact purely self-interested" (= anthropology) - "and this is a good thing, and listening to the purely factual preferences of the people is the best order

[47] Berger/ Luckmann 1960, p. 2 have shown and advocated this differentiation in their classical (and often misperceived) analysis.

[48] Many times this is not expressed openly but presupposed implicitly; cf. only Stern 2009, chapter 5; Panther 2006, p. 21 et seq.; differing Ott/ Döring 2004, p. 41 et seq. and passim.

of society" (= theory of justice, specifically the normative preference theory).

4.4 Why the normative preference theory is not convincing

The normative preference theory is the theoretical basis of how much climate change the respective economists deem objectively right, respectively efficient.[49] Any other approach, especially a normative argument without "figures", as will be developed in the course of this analysis, is usually declared unscientific and irrational. There are, however, strong objections against the preference theory not only but also with respect to climate protection:

- Quite familiar in neo-classical is the objection is that the standard methods to identify the actual preferences as numeral values simply do not work. The relevant issues and the necessary balancing of interests just cannot adequately be represented through prices. And it is impossible to detect actual preferences from real economic transactions on the basis of some kind of "disclosed morality of markets" (not even if de facto preferences as such were normatively relevant!). And even if this somehow were possible, must future damages not be discounted. This whole aspect of "simply not functioning" is subject of a separate section (chapter 5). Instead, it shall be shown here – and this might come as a surprise to economists – that regardless of those "application problems" the preference theory as such is unconvincing:
- According to the preference theory, our purely factual will is per se right (one could only ask whether the average utility (Durchschnittsnutzen), the sum of utilities (Nutzensummen) or a genuine consensus shall be accounted for). Any normative test of "how the world actually is" is no longer present. The theory of justice or ethics as independent discipline would be pointless and abolished per se.
- But we are not only facing a practical, but also a logical problem. For this is a naturalistic fallacy: Why should our purely factual preferences ("is") be considered to be correct per se ("ought")?
- Furthermore, the question arises: Should the factual ignorance as to the needs of future generations who cannot express any preference today per se be correct?
- If one pleads for majority rather than average preferences, there is the further question: whose preferences are meant? Can 50.1 % of a society take any decision, or 73.4 %, or 84.5 %? And why should the majority per se always be right without any limits (as envisaged by a liberal democracy in the form of guarantees of freedom)?
- But particularly, the preference theory of justice entails a logical self-contradiction. For whoever says that there are no general normative propositions, and therefore general preferences should be determinative, makes a general statement about norms. The statement "everything is relative with respect to norms" refutes itself. The possibility of objective morality just cannot logically be contested. Its denial contradicts itself.
- It should be noted that all these arguments also apply with respect to some kind of ethics that is not based explicitly on preferences, but goes something like: "Just is that society that represents the current de facto national traditions."

All this does of course not mean that, for example, self-interested preferences - or de facto na-

[49] See, despite their contrariness, Stern 2009, chapter 3 and 5 and Nordhaus 2008, p. 38 et seq. and 59 et seq.

tional traditions - do not play a major role for the *factual enforcement*, i.e. the governance of climate protection. It was only pointed out that a *normative (moral or legal) justification* of climate protection – or a normative limitation or refutation – cannot be based on those preferences. But the principle of freedom, including its rules of balancing might be suited for this purpose. This principle can take future generations into account, is not subject to any of the problems of the type just described, while retaining the basic intention - everyone should be able to determine themselves – and derives it compellingly.

4.5 The case for a theory of justice based on discourse rationality as a better alternative to the preference theory

However, this is correct only under a major condition: namely, if the principle of freedom, including all principles derivable from it, founds the universal standard for justice. But why should this be right? And why should such a statement possibly be "objective"? We can briefly consider the following: In a pluralistic world we necessarily argue on normative issues. Even fundamentalists and autocrats do so inevitably, at least *occasionally*. And they avail themselves of the human language. But who argues with reasons (i.e. rational, i.e. with words like "because, since, therefore"), who uses phrases like "X is valid because of Y" with respect to normative questions logically assumes (1) the possibility of objectivity in morality, and (2) the existence of freedom - whether he wants it de facto or not[50]:

1. We imply logically that normative questions can be decided using reasoning at all and ergo objectively and not only subjectively, preference based, otherwise we contradict ourselves. We assume this (a) even every day when we pose normative theses and justify them, that is attach them with the claim of objective acceptability (rather than to present them only as subjective). And it would be almost impossible never to use words such as "because, since, therefore" with respect to normative questions. Thus there is no escape from the fundamental *possibility* (!) of objectivity in normative issues. We even logically imply the possibility of objective statements (b) if we say: "I am a skeptic, and say there are objectively only subjective statements about morality." This statement can only be valid if there is objectivity. Thus, the criticism raised towards objectivity voids itself.
2. We also logically imply that potential discourse partners deserve equal impartial respect. For reasons are egalitarian and the opposite of violence and degradation, and they are addressed to individuals with intellectual autonomy because without autonomy one cannot assess reasons. No one could say: "My theory X and its reasons could easily be refuted by Mr P, but you, Mr Q, as a fool, should believe in it." And no one could say: "After we had P silenced we finally were able to convince us that Y is a good reason for X." It therefore contradicts the very meaning of "reasons", to understand the act of reasoning as relative to the person of the addressee – a reason is convincing and can be tested by anyone. Someone who gives reasons in a conversation about justice (i.e. uses sentences with "because, since, therefore" etc.), but then dis-

[50] So called negative or transcendental pragmatic arguments of the following kind have been used by Alexy 1995, p. 127 et seq.; Illies 2003, p. 129 et seq.; Kuhlmann 1985, passim; implicitly also Ott/ Döring 2004, p. 91 et seq. and passim. The structure of a negative (and not deductive) argument with which an infinite regress or a "randomly chosen axiom" can be prevented goes back to Platon, Augustinus and Thomas of Aquin (as a logical figure but not referring to the issue at hand). For some misunderstandings that often occur in the discourse "philosophy/ economy", see the dispute between Dilger 2006, p. 383 et seq. and Ekardt 2006a, p. 399 et seq.

putes the other's respectability ergo contradicts what he assumes logically.

This means: Logically, who ever engages in the dispute of justice based on reason must respect the partner as equal - regardless of whether he is aware of the implications of his reasoning or whether he intents to reason only to persuade the other one, for it is all about strictly *logical implications* of our speech (but not about our purely *factual self-image* which per se does not imply anything). The respect for autonomy as self-determination as required by reason must apply to the individual and therefore mean respect for individual autonomy: collectives as such are in fact no possible discourse partners. This is rather the individual human being arguing.[51]

This is the justification for the principle of respect for the autonomy of individuals (human dignity[52]). In addition, but hardly distinguishable this also founds the principle that justice means independence from subjective perspectives (impartiality/ Unparteilichkeit). From this in turn follows the right to freedom for all people[53] – and only the principle of freedom: Due to the lack of compelling reasons, other principles cannot interfere with the principle of freedom. Therefore, the same freedom based self-determination, along with its supporting preconditions, is the sole criterion of justice. Being man in general, after all, requires necessarily (only) the right to self-determination for all. And this right to freedom applies to all people, even if I never talk to them. For reasons in issues of justice (unlike statements made in private or aesthetic issues) are addressed to anyone who could potentially disprove them – therefore, I have to recognise all people as to be respected, as soon as I *occasionally* use reasons, and that everyone does. This in turn is made clear by the following control example. No one could seriously say: "The absent Mr P could immediately refute my theses - but because of your stupidity you should believe them." This, of course, is no valid reasoning.

The principle of freedom is thus universally founded. And because potential discourse partners are included, as we have just seen, I must also concede freedom to people living spatially and timely far away. This is (a) one of the key arguments for the extension of the principle of freedom to future generations, thus for global justice and intergenerational justice and hence for sustainability - in addition (b) to the idea that freedom as such implies protection exactly there, where freedom is threatened. A "Kantian discourse ethics" concept of reason and autonomy, as outlined here, in this case opts different from a "economic-Hobbesian" concept. However, both concepts are concerned with freedom. But for the discourse ethics, not just in the sense of consumer sovereignty and factual consumer preferences.[54]

[51] A whole set of fictive or real arguments against this justification of (1) the possibility of rationality and (2) of human dignity and impartiality as sole universal principles that can be deducted from rationality are discussed by Ekardt 2010c, § 3; Ekardt 2007, chapter 3.

[52] The principle of human dignity itself is not a freedom right or human right. It is not a norm at all that refers to any kind of singular case, neither ethical nor legal. Human dignity is rather the reason for human rights (in contrast to being a norm/ a right on its own); it, therefore, guides the application of other norms – in our case, different types (realms) of freedom that belong to human beings – and proclaims autonomy as the central idea of our legal system. The "inviolability" of human dignity and its visible – in norms like Art. 1 par. 2-3 of the German constitution and the EU Charter of Fundamental Rights – character as a "reason" shows that all this is not only philosophically but also legally correct. For the current state of discussion, see Ekardt/ Kornack 2006, p. 349 et seq.; Ekardt/ Kornack 2010e; similar, e.g., Enders, 1997; for a contrasting viewpoint, see Böckenförde 2003, p. 809 et seq.; differentiating Heinig 2008, p. 330 et seq. and p. 353 et seq.

[53] That freedom exists because of dignity is, e.g., explicitly stated in Art. 1 par. 2 of the German constitution (it says "darum" (= therefore) exists freedom, i.e. because of human dignity, and is also supported by the explanatory documents (Gesetzgebungsmaterialien) on the EU Charter of Fundamental Rights; see Ekardt/ Kornack 2010e.

[54] Although following a different path, this is also the conclusion of Rothlin 1992 and Ott/ Döring 2004, p. 78 et seq. and 91 et seq.; rather a (in our opinion hardly to the point) critique of profit-oriented competition can be

5. The balancing processes – efficiency through quantifications and discounting?

Solving the generational and global conflict between many competing freedoms, i.e. determining the right amount of climate policy, is not an easy task. Both, the normative weighing or balancing itself and the relevant facts (see chapter 3 supra), which are necessary to find out in how far a certain normative concern is actually affected, are characterised by uncertainty. As regards the climate facts, we already encountered this problem supra. It is also possible to ethically and similarly legally derive rules of balancing (Abwägungsregeln) from the principle of freedom and infer institutions of balancing (Abwägungsinstitutionen) (as has been done elsewhere in more detail[55]). A rule of balancing is, for example, that the factual basis of a decision has to be determined as carefully as possible.[56] Another rule is that only freedom and the (broadly understood) freedom conditions are possible concerns that are relevant for balancing. Another one is that freedom and its fundamental and "further" conditions may only be interfered with as far as it is necessary to strengthen other freedoms and freedom conditions. Yet another rule – again, already inherent in the very concept of freedom itself – promulgates that if someone shall be obliged ex ante to prevent or ex post to remedy impairment of a freedom, this should wherever possible be the causer of the impairment. Still another rule was derived earlier in this study, namely the precautionary principle: even under uncertain circumstances, the interference with freedom or its conditions need be recognised, but possibly with less weight. Many other rules can be derived. In all this there generally is no "one correct" result of balancing. This is true for climate policy as well. Consequently, there is certain leeway with respect to a just climate policy - but not arbitrarily large. And the bodies which have to use this leeway within the framework of the balancing rules are not arbitrary, too: Rather, an institutional rule can be derived from freedom saying that a decision maker which can be elected and deselected has to make the decision. Where necessary, further concretisation must be made by authorities and courts obeying to the principle of the separation of powers; furthermore, there must be constitutional courts to verify compliance with the balancing rules.[57]

Economists, however, quantify all interests concerned and calculate what the "right" level of climate protection is. Everything that has a value for people, i.e. that a respective factual preference exists, is translated into monetary terms, including life and health – or it is disregarded.[58] Specific rules of balancing are unnecessary within the framework of such an approach. The facts of benefits and harm merge with the preferences. This sounds attractive insofar as no leeway is required – theoretically "exactly one" policy recommendation can be made and the results are "exact figures." This, however, is problematic in several ways. First, (see 4 above) the underlying normative preference theory in itself is not convincing. Second, (see 3) already benefits and damages, which have a market price, lack sufficiently precise facts if, as with climate change, the entire world economy is involved with unmanageable numbers of individual actions, and also periods of more than 100 years. Third, there are, as

found in Hoffmann 2009, p. 23 et seq.; see further Nutzinger 2004, p. 7 et seq. and 51 et seq.

[55] Cf. supra fn. 40; similar Susnjar 2010 and Alexy 1986.

[56] The actual decision for a certain extent of climate protection policy based on the weighing and balancing of interests or efficiency thinking is itself a normative statement and not a factual one (even if, as demonstrated, within the limits of the above-mentioned rules balancing procedures have, this normative statement is to be regarded objective). Facts alone can never deliver decisions as they are only possible if normative criteria are available.

[57] Furthermore, one can deduce that there should be a decision on the national or transnational level, whichever is suited best for it (the global level in case of climate protection policy); see Ekardt/ Meyer-Mews/ Schmeichel/ Steffenhagen 2009e, chapter 1, 3 and 5.

[58] Cf. Nordhaus 2008, p. 4; critical also Burtraw/ Sterner 2009.

already indicated and now further demonstrated, more insurmountable problems of application of the preference theory[59]: The calculation of climate change costs (and, in comparison, climate policy costs) disguises the fact that essential concerns cannot be quantified in monetary terms[60], e.g. (massive) damage to life and health. For the absence of damage to life and health from climate change has just no market price, neither has peace in the sense of "absence of conflicts over resources." Thus both cannot reasonably be quantitatively be used to offset the economic effects of climate change and climate policy. Neither can an artificial market price be determined for concerns without an actual market price, as economists are doing by the "hypothetical willingness to pay" for life and health, i.e. the absence of hurricanes, wars, etc. This is already true since those willingness is fictitious and therefore not very informative (that no taking a preferences based on a "morality of markets" does not help is discussed immediately after when analysing the discounting method). Moreover, the willingness to pay is of course limited by the ability to pay and would lead to the remarkable result that, e.g., Bill Gates' interests are worth much more than a Bangladeshi's, because Bill Gates can pay a lot and the Bangladeshi can pay nothing. This is also noticed by Stern, contrary to the economic mainstream, and yet he suddenly uses monetary values for "non-market effects".[61] If he accounts the same amount for every human, this is in fact true (see below), but in the context of the preference theory without justification and therefore inconsistent.

Another problem of climate economics is discounting[62]: Future damages are said to weigh less than today's. This is understandable, at least superficially, if the victim today and in ten years is the same person. But why should a Bangladeshi's damage in 50 years (1) per se be less important than my damage today? One could say: future people cannot express any preferences today, so they are uninteresting. This idea is, as has been indicated, inherent in the preference theory. But then, consequently, one would not have to discount, but to completely disregard someone's damage, who is not yet alive. And compared to those living today the discounting is inconsistent with regard to the passage of time. Given the preference theory, why should an economist be allowed to dictate whether I have a present preference and should not care for the future? The expectation of perpetual growth (2) also cannot justify discounting, whether with respect to those already living today or to future generations. The limits of growth shall be recalled. Also (3) the empirical observation of real market prices ("morality of markets"), which according to many economists expresses the preference for the present over the future, does not justify discounting. For (a) there are no observable market or interest rate developments that would say anything about what factual preferences exist in terms of damages over several centuries – and with irreversible character. Moreover, (b) drawing conclusions from market prices, only considers the preferences of today's people.

Those preference determination based on a "morality of markets" is criticised by Stern (stating this as a criticism against most other economists)[63], but not the growth-oriented discounting. Stern certainly offers an argument for discounting which is at least worth considering: (4) the uncertain probability of future losses. However, whether this can be mathematically ex-

[59] Cf. Ekardt, Theorie, § 6; Mathis, Efficiency, p. 113 et seq.; Otsuka, Philosophy & Public Affairs 2006, 109 et seq.; Meyer, Philosophy & Public Affairs 2006, p. 136 et seq.
[60] For a critique concerning this matter see Ekardt 2010c, § 6; in parts also Mathis 2009, p. 113 et seq.; Otsuka 2006, p. 109 et seq.; Meyer 2006, p. 136 et seq.
[61] Conceding to this is Stern 2009, p. 92.
[62] For a detailed and critical analysis of the problem of discounting, see Unnerstall 1999, p. 320 et seq.; cf. also Rawls 1971; supporting the method of discounting is Birnbacher 1988.
[63] Cf. Stern 2009, p. 80 et seq. and 95 et seq.

pressed is doubtful. At least where no mathematical probability can be determined, a supposedly clear discount rate is ultimately arbitrary, and therefore is not superior to general balancing rules as where introduced above. And even if all this could be disregarded, discounting would only be possible if the respective damage could actually be expressed in monetary terms despite the above criticism. And this is often not the case.

All this shows once again the fundamental problem of (not only but especially climate) economic approaches: behind seemingly clear mathematical results, assumptions are concealed which are far from universally compelling, but are rather contestable in important respects. This criticism is not limited to normative assumptions (e.g. to discounting and the preference theory) but is also directed at factual assumptions: e.g. on the extent of looming climate damage or the growth idea. *Hence, it is impossible to calculate the correct amount of climate protection and the associated distributional issues required by morality and legal principles*. It is rather necessary to make climate policy decisions within the limits set by the described rules of balancing - worldwide and nationally. As repeatedly indicated such a decision must mean more climate protection than previously. Briefly stated[64]: (1) the existing climate policy probably already disregards the balancing rule that its decisions must be based on a correct factual basis: In particular, the recent actions are probably erroneously deemed suitable to avoid the looming of drastic damage caused by climate change. (2) Furthermore, politics so far has not taken into account in its decision-making that the basic right of freedom also has an intergenerational and a global cross-border dimension and therefore the legal positions of future generations and the proverbial Bangladeshis have to be considered in parliamentary/ legal decisions.[65] (3) The human right to a subsistence minimum as elementary precondition for freedom (which is a right of those living here and now, but also intergenerationally and globally) can be overcome in balancing only in limited areas because freedom is pointless without this physical basis. But this right also includes a basal energy access and at least somewhat stable global climate. This in turn requires drastic climate policies. This, too, has currently not been taken into account by decision-makers. Similarly, it has not been considered that the scarce remaining emissions budget would probably have to be distributed equally in the face (a) of its scarcity, and (b) of the imperative nature of at least low emissions for human survival.[66] An egalitarian distribution is also proposed by Stern, but with the mistaken reason (relying on the uncertainty of the burden of proof) that there was ultimately no reason to argue against an equal distribution.[67] By the way, it should be mentioned once again that all this is meant as a both ethical and legal statement.

[64] On a legal and ethical level that also implies: in case of actions against lawmakers constitutional courts have (or had) to decide in favor of the plaintiff and force lawmakers to rethink and re-decide on their respective climate protection policy with the following aspects in mind. In more detail, cf. Ekardt 2010a.

[65] Focusing less on the preventive level and (in my opinion suboptimal) more on the subsequent level of liability is Verheyen 2006.

[66] With regards to ideas on a substantial climate change policy, including a (virtual) per-capita-distribution of emission-rights as the basic criterion for "climate justice" (with some modifications concerning the problem of the industrialized countries' historical emissions), see Ekardt 2009b, chapter 4-5; Ekardt/ von Hövel 2009c, p. 102 et seq.; this is economically presupposed – and without any real normative justification – by Wicke/ Spiegel/ Wicke-Thüs 2006 and (however without citing them and a number of other authors) WBGU 2009.

[67] The approach developed here, in contrast to Sen 1999, has justified (and not only asserted) universal freedom and, therewith, the relevance of its preconditions (and, furthermore, a theory from which rules structuring the balancing process can be deduced). These advantages also exist compared to "theories concerning basic human needs" (inspired by Marxist or Rousseauian ideas); in addition, the latter also have the flaw of mixing descriptive anthropology and normative theory of justice. Also, they do not have a method to determine its basic categories (what is there a "need" for?) and they mingle justice and conceptions of what a "good life" is supposed to look like (with potentially authoritarian tendencies). Viewed against this background, Ott/ Döring 2004, p. 78 et seq. seems to be problematic.

To verify the factual basis of a political decision, economic research is undoubtedly extremely valuable - and it also helpful for balancing to the extent that goods with a market price are concerned and unvarnished figures are generated which also account for, e.g., the costs of possible climate wars (this is not included in the Stern Report[68]). If a calculation is done, one should at least try to include all the real monetary costs to the extent they are recognisable. In this way, economists can provide crucial factual material for balancing – within the framework of the overall balancing theory. It shows for instance that the actual monetary damage to the climate such as crop failures or other weather damage would be more expensive than an effective climate policy. These are key benefits of the IPCC reports and the Stern Report. Equally important are statements on the probabilities of events. In my view, however, economists and natural scientists can often only provide those probabilities with a lower degree of precision than one would expect. The natural conditions of climate change and the global economy are simply too complex. A perhaps more modest, not normative, also less quantifiable and less focused on natural science – a climate economics which is merged with the other climate social sciences within the framework of a balancing theory could be a feasible consequence. Provided, however, that climate social science is concerned with these themes: limits of growth, a normatively and logically rigorous theory of justice, a theory of balancing, anthropology, also a governance and control theory which is based on more than purely economic perspectives (see below 6).[69] In governance, too, climate economics is and remains very important, but again not exclusive. It is therefore a welcome development that Stern admits the omissions of the economic approach - if only generally and without addressing the basic problems of growth and preference theory.[70]

On the other hand, the efficiency theory must be defended against John Rawls' accusation stated under the (once again) misleading heading "efficiency versus justice." Rawls criticises that the efficiency theory - in other words, the utilitarian and Hobbesian ethics – does not recognise *absolute* rights, i.e. rights that cannot be offset by other rights, not to be confused with *universal* rights meaning "everywhere applicable"!).[71] Even though this is true for the efficiency theory, just as it is for the balancing approach advocated in this study, given the many possible collisions of freedoms, which are at the heart of (climate) policy, there is little need to do so. Absolute guarantees of freedom are only rarely justifiable, mainly when balancing would undermine the liberal character of the system as a whole (for example torture in order to convict criminals).

Until now, some key points on climate change and justice conflicting with the dominant climate economics can be summed up as follows: (also climate) ethical findings are not empirical, and especially no natural scientific observations, they are rather normative (= judgement / ought) findings. Even though the application of an ethical or legal norm often refers to scientific (factual) questions, these facts do not infer as such any ethical or legal result. Further-

[68] Stern 2006, p. 151, only very generally speaks about more and more „instability".

[69] Many climate social scientists, however, favor working on merely factual descriptions of existing (and possibly incorrect) theories of justice, climate discourses, how climate is perceived and so on – cf., in this respect, some of the articles in Voss 2010 – which seems to be less important (unless it is helpful to elucidate the anthropology behind lacking climate protection).

[70] Cf. Stern 2006, p. 149 et seq.

[71] Cf. Rawls 1971, p. 19. German legal scholars – e.g. Böckenförde 1991, p. 188 et seq. – tend to make the same mistake and seem to think that rejecting quantifications would also include the dismissal of balancing procedures (in most cases). Therewith, they mistake the universality of values for their absoluteness. See also Heinig 2008, p. 353 et seq., who does not distinguish precisely between the principles referring to justice and the subsequent balancing procedure.

more, the basic principles of ethics, although normative in their nature, can objectively be specified. Ethics is not "subjective" or "mere convention", and is not founded on "axioms" with arbitrary starting points. On the other hand, the actual decision of specific ethical issues is somewhat blurry. Yet, the balancing rules and the institutional competences limiting the discretion are again objective. Since ethics is generally concerned with the conflict between different interests, every ethical decision is ultimately a balancing problem between conflicting freedoms (and their preconditions). Absolute obligations or strict balancing prohibitions (e.g. an absolute right to environmental stability at any price which cannot be balanced with other interests) are ethically and legally hardly justifiable.[72] This does not mean that the balance can be resolved by a mathematical quantification - even though "figures" have the advantage with respect to politics and the media that they allow complex statements to be easily displayed. Therefore "figures", even if they represent a new welfare index, as defined by Amartya Sen and others, for the "landmark gross national product" (the latter being calculated on the basis of valuable goods) as it is currently discussed in France, can only be symbols, but no replacement for complex balancing.

6. Governance: Can „more business ethics and CSR" be effective climate protection instruments? On the misleading separation of „bottom up" and „top down" approaches

To finalize this paper, one last question shall be raised in all shortness: What conclusions do economists draw from efficiency analysis or from the balancing process as regards climate policy instruments? Elsewhere I have supported and further developed the idea of a worldwide emission trading system, which is also pursued by many economists, however, based on much more incising climate protection goals and with a dual social component within the industrialized countries and with respect to the developing countries as a compensation for global and strict climate protection goals.[73]

The fact that the proposed approach has to work on a global level, follows (a) from the global nature of the climate problem and (b) from the threat of a simple shift of emissions from a country with ambitious climate policy into another country (carbon leakage) which would be devastating for both, climate protection and competitiveness - if, for example, steel companies transfer their industrial plants from Europe, for example, to China. Finally the following aspect shall be discussed. There are economists who seem to focus on "bottom up" approaches on climate protection instead of political regulations, i.e. on voluntary corporate climate protection activities. Certainly any voluntary corporate commitment in terms of climate protection (or sustainability in general) is welcome. For the company itself, this should often be attractive, either as a means of customer acquisition, or to motivate employees, or simply as a means of cost savings (e.g. with respect to resource consumption). However, appeals to individual firms or citizens, and a reliance on their voluntary initiatives, unregulated free trade,

[72] Based on what was demonstrated here one could also try to give an answer to the question whether the often repeated accusations of economic efficiency analysis to be blind on one eye for questions regarding distributive justice are correct. This answer would probably be: yes and no. Because, there is no way to deduct a strict imperative that says we have to redistribute extensively. Certain "social elements" result from theory of justice with respect to the balancing procedure, like a right to a subsistence minimum; beyond that the lawmaker has a wide margin for questions of distributive justice. Cf. Ekardt/ Heitmann/ Hennig 2010d und Ekardt 2007, chapter V.

[73] For further details, see the references supra fn. 40.

and industry self-regulation[74] cannot replace binding climate policy regulations.[75]

- First, the individual citizen or entrepreneur is not the appropriate authority to undertake ethically always necessary complex balancing of different interests. This is rather primarily the task of politics formed into a legal order, i.e. the legislature. This problem of "too little specificity" is a standard problem of purely ethical appeals, if they are not transposed into a legal form and thus substantiated.
- There is a second fundamental problem of relying on purely voluntary activity: this will regularly only work as far as potential property interests of the company are involved. And when a massive change is needed, the question is precisely: Can we really expect that, for example, the auto industry will "voluntarily" (i.e. without economically incentivising instruments such as emissions trading) adapt the social model "only car-sharing" and will therefore switch to the production of bicycles? Why should the mostly self-interested man, who is regularly diagnosed by economists, reduce emissions to almost zero on a purely (!) voluntarily basis? And how will rebound effects from companies' private pursuit of growth disappear, if they might try to produce more efficient products but ultimately want to sell more products than before? And how can consumers, especially in light of economists' demand for realistic anthropology, be truly expected to exert pressure for the described necessary change through their purchasing decision? Especially as the worst affected by climate change, the world's poor and the future poor, have the lowest purchasing power to exert market pressure on companies through their purchasing decisions. Ultimately on entrepreneurial initiative also always remains a variant of the general growth paradigm - which is doubtful.

In that regard, on an instrumental or governance level we must adhere to the anthropological insights of many "climate macro economists" as opposed to CSR-oriented climate micro economists: Climate appears on the market superficially as a "free" good and is therefore used too strongly. And there are many other human characteristics such as short-term interest, tendency to convenience and habit, emotional non-perception of spatial-temporal remote loss, etc., which further increase the problem. The only response is the creation of regulations (such as taxes or certificate markets) which provides clear enforcement mechanisms and sanctions for the given targets and which already today price looming climate damage and thus stop the "market failure". That this is so far too occasionally compared to the challenges can be explained with the described "vicious circle" of politics and voters. This, however, does not change the fact that without political and legal regulations, which due to the vicious circle in turn depend on a social rethinking, a solution to the climate problem cannot be expected. All this cannot be changed by demanding a general "bottom up" rather than "top down" approach to climate policy. Of course, voluntary actions ("bottom up") are welcome in principle. But where they cannot be expected with reasonable certainty, other alternatives are required. One cannot argue that this is adverse to freedom. Precise political regulation rather protects the freedom of future generations and the people in transition and developing countries, which have contributed little to climate change.

Instead economic preference theory is destabilizing modern democracy: the seemingly exact

[74] As an example for the following problems, see Becker 2009, p. 7 et seq.; Davidson 2009, p. 22 et seq.; Wieland 2009; Suchanek/ Lin-Hi 2007, p. 67 et seq.
[75] In more detail and with further references, see Ekardt 2010b, § 1 C. II.; Ekardt 2010c, § 8.

climate economical statements make politicians appear completely irrational if they do not follow the climate policy proposed by economists. They are not. Therefore, the other climate social sciences should no longer leave the leading role to climate economists. Not only in the interest of climate protection but also in the interest of a further improved climate economics that, at first sight, might appear more humble but ultimately integrates a more convincing and realistic concept for weighing and balancing interests.

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