



Methodological and Ideological Options

A Kantian approach to sustainable development indicators for climate change

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ABSTRACT

Agenda 21 required countries to develop and regularly update a national set of indicators for sustainable development. Several countries now have such sets also including separate indicators for climate change. Some of these indicators typically report global concentration of green house gasses in the atmosphere or time series for global temperatures. While such indicators may give the public information about the state of the global climate, they do not provide a benchmark which makes it possible for the public to evaluate the climate policy of their government.

With Kantian ethics as our point of departure, we propose a benchmark for national climate policy. The benchmark is that each nation state should act as if a global treaty on climate change were in place. This would require each nation state to carry out all green house gas mitigation projects below at a certain cost. Furthermore, it would require each nation to keep their national green house gas emissions including acquisitions of emission permits from other countries within a certain limit. Both measures are relatively easy to track and can thus serve as indicators.

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1. Introduction

The Brundtland commission report of 1987 (*World Commission on Environment and Development – WCED, 1987*) brought the concept of sustainable development into politics. The follow-up of the Brundtland report, Agenda 21 (*UN, 1992a*), introduced the concept of sustainable development indicators. The text in Agenda 21 reads as follows “Countries at the national level and international governmental and non-governmental organizations at the international level should develop the concept of indicators of sustainable development in order to identify such indicators”.

According to *Alfsen and Sæbø (1993)* a sustainable development indicator should provide *condensed* and *neutral* information about the state and development of an environmental or economic asset to the general public. As long as the indicator concerns states of the environment or natural resources over which the national government has some level of influence or control, there is a causal link between government policy and performance on the indicator. Hence, properly crafted indicators also make it possible for the general public (the electorate) to evaluate current national environmental policies (their politicians). Indicators can thus discipline politicians to follow sustainable policies.

With respect to global environmental assets, this link is in most cases broken. A single country is very likely too small to make a notable difference to the state of a global environmental asset. Hence, we may have a situation in which the indicator shows that the development of the asset is undesirable, but at the same time it is unclear to what extent the country in question is to blame. The indicator could then lose political influence.

Global warming represents one of man's biggest environmental challenges. The objective of the UN Framework Convention on Climate Change (*UN, 1992b*) is to stabilize greenhouse gas (GHG) concentrations in the atmosphere at levels that would prevent dangerous anthropogenic interference with the climate system. In spite of the fact that the current concentration of GHG in the atmosphere is approaching such levels, global emissions are steadily increasing (*IPCC, 2007*).

Rockström et al. (2009) introduce the concept of biophysical planetary boundaries, and identify nine thresholds which if crossed could have large negative consequences for humanity. According to *Rockström et al. (2009)* the climate change threshold is already crossed, which could imply that the world as a whole is on an unsustainable path. First, a national sustainable development indicator for climate change should obviously inform the public about such possible developments. Second, the climate change indicator should ideally also tell the public to what extent their government contributed to solve the problem.

Today, several developed countries have their own separate indicators for climate change (*UNECE, 2009*). The climate change

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indicators can be grouped into two categories. The first type focuses on the state of the global climate, for instance, an indicator showing the global concentration of GHGs in the atmosphere or the global mean temperature as compared to pre-industrial levels. The second type focuses on national GHG emissions or national energy usage, for example, we have indicators showing national emissions as compared to the Kyoto climate treaty obligations, indicators for the energy intensity of the economy, and indicators tracking energy usage as a share of GDP (see Appendix 1 for an overview).

While the first type of climate indicator is clearly needed, we question the purpose of the second type. Obviously, they do not say anything about the state of the global climate. Furthermore, they lack a clear benchmark by which national climate policy can be measured. For instance, an indicator measuring EU's compliance with the Kyoto treaty would turn out positive, but does this imply that the EU's climate policy deals with the challenge of climate change in a sufficiently strong manner? Another indicator may show that energy use per unit of GDP declines. It is however impossible to know whether this results from a sufficiently strong climate policy, or if it is just a natural development resulting from changes in the composition of the economy.

In this paper we work out a proposal for a climate policy indicator based on Kant's categorical imperative. We argue that this imperative implies that the climate policy of a nation state should be judged by the extent it contributes to the global solution of the climate change problem. Obviously this can be interpreted in a number of ways. We understand this to mean an ethical norm that each nation state should act as if a sufficient global treaty on climate change were in place.

There are a series of choices that must be made when constructing a climate policy indicator based on a sufficient global treaty on climate change. The first, and most basic, concerns the ethical foundation for the indicator. In most discussions on climate policy, the framework of cost-efficiency is used, which frames the discourse in economic utilitarianism: the climate policy of a nation should be chosen such that it maximizes the utility and thus the social welfare of its citizens. It is a consequentialist ethics, which restricts the scope to include the nation state's citizens, and excludes concern with other nation states' citizens.

An alternative approach to the state-centered utilitarianism is a Kantian ethics, which is based on duty rather than consequences. The first choice or question therefore becomes:

- 1) Should the climate policy indicator be based on state-centered utilitarianism or Kantian ethics?

If utilitarianism is chosen, one can then construct a climate change indicator based on cost-efficient fulfillment of international obligations and on the capital approach (more below).

If Kantian ethics is chosen, the second choice becomes:

- 2) How do we measure to what extent a country complies with a hypothetical sufficient global treaty on climate change?

In order to answer this question we must conjecture what a sufficient global treaty on climate change will look like. We argue later in the paper that this conjecture should be based on the UNFCCC (UN, 1992b), the Kyoto Protocol (UN, 1997) and the Copenhagen Accord (UN, 2009).

In the Copenhagen Accord nations agreed to limit the anthropogenic increase in global temperature to 2 °C. This target makes it possible to calculate the remaining global GHG-emission budget, and a global shadow price on GHG emissions.

The remaining global GHG-emission budget should be allocated between nation states such that each state receives a national GHG-emission budget. In a hypothetical treaty nation states will trade with their GHG-emission budget, and an emission permit price

equal to the global shadow price on GHG emissions will emerge. We can then formulate our Kantian climate change indicator. The indicator should measure:

- (i) To what extent national green house gas emissions including acquisitions of emission permits from other countries is kept within the national GHG-emission budget.
- (ii) To what extent the national price on GHG emissions is in accordance with the global shadow price on GHG emissions.

Since no agreement exists on rules for allocating the remaining global GHG-emission budget, the nation state needs to take its own position on this question. Because countries can choose differently with respect to the allocation rule, we may end up in a situation in which all countries keep within their GHG budget, but still the global warming challenge is not brought under control. This is solved by the second part of the indicator. The global shadow price on GHG emissions is independent of the allocation principle, and thus, the 2 °C target will be reached even if countries choose different allocation rules for their emission benchmark.

Fig. 1 illustrates the stages described above.

The figure also gives an outline of the structure of the paper: first, we discuss the existing literature on sustainable development indicators. Next, the ethical basis (utilitarian or Kantian) of a climate policy indicator (CPI) is outlined. In Section 4 the questions of the design of the sufficient global treaty, allocation between states and the global shadow price on emissions are discussed. This leads to Section 5 where our proposed indicator, KCPI, is outlined with an example application of the indicator for the nation state of Norway.

In Section 6 we discuss some additional topics such as how to treat emissions that happen outside the jurisdiction in question and the implications for R&D policy. Finally, in the concluding Section 7 we discuss and evaluate whether the KCPI meets the important criteria for evaluation of indicators such as measurability, relevance and the precautionary principle.

2. The Existing Literature on Sustainable Development Indicators

Our Kantian indicator departs from earlier thinking about sustainable development indicators. There are two main strands of literature on sustainable development indicators. The first strand is coined the Driving forces – Pressures – States – Impacts – Responses (DPSIR), while the other strand is called the capital approach.

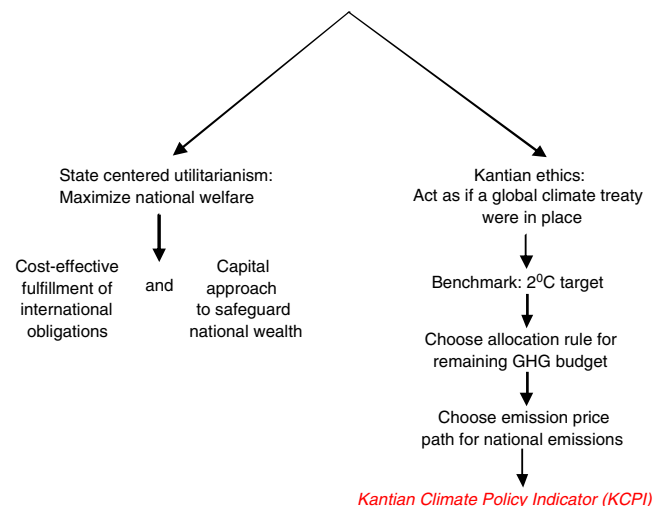


Fig. 1. "Choosing a sustainable development indicator for the global climate".

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