

## **EQUITY AND SOCIAL CONSIDERATIONS OF ANTHROPOGENIC CLIMATE CHANGE**

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### **Summary**

Equity is a critical issue in human interactions, including the ongoing concerted effort to protect the global climate system. While many interpretations of equity are suggested in the context of climate change, this article focuses in particular on guilt or responsibility, capacity, and need. The norm of responsibility implies that countries should contribute to the solution to a common problem in proportion to their share of responsibility for causing the problem. The norm of capacity means that countries should contribute to a common good in proportion to their capacity to do so. A third norm deals with basic human needs, the individual's "right" to a certain minimum of social and economic welfare and, by implication, a certain emission level. This norm would imply that individuals have the right to emit an equal amount of greenhouse gases. These three distinct norms of fairness create the deeper normative structure in which global climate policy is embedded. Significantly, they concur that the developed countries should shoulder the main share of the burden of coping with climate change. It is therefore unsurprising that the main global climate agreements repeatedly stress equity and fair burden sharing, in particular that developed countries should "go first," cooperating with and assisting other countries, especially the developing ones. They also emphasize the need for fair burden sharing among developed countries. The article moreover summarizes some of the most prominent arrangements for equitable burden sharing proposed by governments and analysts. It concludes with a discussion of some significant challenges in developing and operationalizing conceptual frameworks and/or rules for fair burden sharing. The article does not discuss intergenerational equity, which is concerned with the responsibility of the present generation towards future

generations. Nor does it examine procedural fairness, namely fair procedures and institutional arrangements for distributing costs and benefits among groups and nations.

## **1. Introduction**

Equity is a critical issue in human interactions. Thus, it should come as no surprise that the issue of equity figures prominently in international discussions and negotiations on global climate change. Because both abatement costs and damage costs of climate change are likely to be high, equity and fairness are salient issues when countries hammer out the international distribution of burdens and benefits of global climate protection (see *Economics of Potential Global Climate Change*). Many find it almost self-evident that coping with climate change will depend on the development and implementation of perceived equitable national and international solutions. National obligations and international bargains that are seen as unfair will not generate the collective action that is necessary to solve this long-term global environmental problem.

But equity is sometimes addressed only indirectly, defined imprecisely, seems invested with different meanings, or even overlaps with other concepts. The second section therefore discusses prominent fairness norms and equity principles, and distinguishes equity from related concepts. As the third section documents, the two main global agreements addressing climate change, namely the United Nations Framework Convention on Climate Change (FCCC) (1992) and the Kyoto Protocol (1997), repeatedly emphasize equity. Analysts as well as governments have proposed a number of arrangements for equitable burden sharing, and the dominant approaches as well as their international distributional implications are summarized in the fourth section. The fifth section discusses some of the key challenges in developing and operationalizing conceptual frameworks and/or rules for fair burden sharing.

## **2. Equity Principles and Burden Sharing Rules**

While burden sharing refers to the way in which a group of countries benefiting from an international common good agrees to share the costs (and benefits) of providing the good, there exists no commonly accepted definition of equity. It is nonetheless possible to identify four more widely accepted norms of distributive fairness that underlie and sometimes even shape international environmental affairs, including global climate policy to some extent. These four norms emphasize guilt or responsibility, capacity, need, and contribution to a common good, respectively. They follow two different approaches to the question of what constitutes an equitable distribution of costs among actors. The norms of guilt and capacity focus on the distribution of the costs (burdens) of providing a common good, whereas the norms of need and contribution, which likewise are concerned with fair and just cost distribution, take into account the distribution of the benefits (goods) flowing from a common good.

The first norm is concerned with the responsibility for a common problem. Focusing attention on the question of guilt, this norm states that those who have caused the problem are responsible for solving it. It is undoubtedly a generally accepted norm in international environmental affairs. Thus, according to Principle 21 of the Stockholm Declaration on the Human Environment (1972): “States have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the

environment of other States.” Essentially, this norm implies that countries should contribute to the solution to a common problem in proportion to their share of responsibility for causing the problem. In the context of climate change, this would mean that responsibility for coping with this problem rests with those countries that emit the largest amounts of greenhouse gases per capita, namely the developed countries. Developing countries with high total emissions should, despite modest emissions per capita, also contribute relatively more, especially if their future total emissions increase significantly.

A second widely accepted norm of international environmental affairs is concerned with the individual role of countries in providing a common good. According to the norm of capacity, countries that have greater capacity or ability to solve a joint problem, and thus provide a common good, should contribute more than countries with less capacity and ability. This norm says, in essence, that countries should contribute to a common good in proportion to their capacity to do so. Gross domestic product (GDP) per capita is often used as a rough indicator of a country’s capacity to contribute to the solution to an international common problem. Also this norm places the main share of the burden of coping with climate change on developed countries.

A third widely accepted norm deals with the issue of basic human needs, the individual’s “right” to a certain minimum of social and economic welfare and, by implication, a certain emission level. Interpreted in the context of climate change, this norm would imply that individuals have the right to emit an equal amount of greenhouse gases. Individuals should therefore receive an identical amount of permits, allowances, or quotas to emit greenhouse gases. The norm of need would establish an equal level of greenhouse gas emissions per capita in all countries, irrespective of the existing emission levels. Because per capita emissions generally are low in developing countries, this norm would be relatively more burdensome on developed countries.

According to a fourth generally accepted norm, states should contribute in (some) proportion to benefits. Similar to the norm of need, it focuses attention on the distribution of the benefits of solving a common problem, particularly on those actors who would receive disproportionately larger gains from collective efforts to mitigate a problem. But unlike the norms concerned with responsibility, capacity, and need, this norm generally attracts little attention in international discussions and negotiations on global climate change. It seems that the primary reason for this is that it potentially would shift the costs and burdens of climate protection from developed to developing countries. Scientists and decision-makers generally expect the most severe economic, environmental, and social damages due to climate change to be inflicted on developing countries, so this group of countries stands to gain more than developed countries from climate control (see *Economics of Potential Global Climate Change*). But many would probably find it immoral to demand that poor developing countries should contribute proportionally more than rich developed countries to the solution to climate change. Because of its “perverse” distributional implications in the climate change context, the norm of contribution conflicts with the first three norms, and they seem to completely overrule it. The norms of guilt, capacity, and need evidently influence international discussions and negotiations on the issue much more.

The three norms of guilt, capacity, and need together create the deeper normative structure in which global climate policy is embedded. Thus, those equity principles that are proposed most frequently by analysts and governments fit well with this normative structure (for an overview of the most prominent equity principles, see Table 1). It is quite evident that guilt and responsibility create the underlying rationale and justification for the polluter pays principle; that the norm concerned with capacity and ability is paralleled by the principles of horizontal equity (the equal treatment of equals) and vertical equity (a progressive distribution of burdens); and that the egalitarian principle echoes the norm of need. Sovereignty, which takes a different approach to proportionality, is often justified by claiming so-called acquired rights.

Equity principle	1.1.1.1 Interpretation	Example of implied burden sharing rule
Egalitarian	Every individual has an equal right to pollute or to be protected from pollution	Allow or reduce emissions in proportion to population
Sovereignty	All nations have an equal right to pollute or to be protected from pollution; current level of emissions constitutes a status quo right	Allow or reduce emissions proportionally across all countries to maintain relative emission levels between them
Horizontal	Countries with similar economic circumstances have similar emission rights and burden sharing responsibilities	Equalize net welfare change across countries (net cost of abatement as a proportion of GDP is equal for each country)
Vertical	The greater the ability to pay, the greater the economic burden	Net cost of abatement is directly correlated with per capita GDP
Polluter pays	The economic burden is proportional to emissions (eventually including historical emissions)	Share abatement costs across countries in proportion to emission levels

Table 1. Selected equity principles and related burden sharing rules

Sovereignty reflects a frequently observed practice of international negotiations, namely that identical and equal obligations should be imposed on all countries, in other words the fairness norm of equality. It is almost routine to follow an across-the-board, symmetrical approach in international environmental negotiations; at least, this approach often serves as the starting point of negotiations on how costs and obligations should be distributed among countries. In climate change policy, a prominent across-the-board measure would be to simply reduce greenhouse gas emissions by the same percentage, relative to a specified base year. Owing to different national situations and starting points, however, symmetrical agreements may often distribute burdens unevenly across countries. Countries will therefore attempt to differentiate obligations.

Burden sharing rules or formulae should be conceived of as potentially useful conceptual tools in international climate negotiations. While they cannot take the place of political negotiation, they can help countries develop the overall formula that forms the basis for agreement and perhaps even identify a sufficiently equitable formula for burden sharing. Differentiation will in the end be decided through a political process,

not a technical one, involving pressures and offers. But this should not overshadow the fact that equity principles and burden sharing rules can play an important role in creating a conceptual framework and choosing criteria for comparison of country obligations. Norms of fairness and justice can provide focal points around which international negotiations and discussions can be structured and bargains made.

Equity principles should be distinguished from specific burden sharing rules and formulae as well as from indicators and criteria. Equity principles refer to more general norms of justice and fairness and, by linking them to rules (formulae), can be operationalized. Burden sharing rules are operational functions generating a specific scheme for reducing greenhouse gas emissions or bearing the abatement costs. Rules are based on input from one or more indicators (criteria). They must specify both the relevant indicators and how these should be combined. Indicators provide the “hard” data, for example CO<sub>2</sub> (carbon dioxide) emissions per capita and GDP per capita. It should be stressed that some equity principles could be consistent with more than one type of burden sharing rules, and particular rules could be consistent with more than one particular equity principle. Thus, there exists no simple one-to-one relationship between equity principles and burden sharing rules.

To illustrate, in the course of the negotiations on the Kyoto Protocol, which took place in the period 1995–1997, one country suggested a burden sharing rule that combines CO<sub>2</sub> equivalent emissions per unit of GDP, GDP per capita, and CO<sub>2</sub> equivalent emissions per capita. These were thought to indicate how energy efficiency, ability to pay (capacity), and emission entitlement and contribution of pollution vary among countries. According to this rule, developed countries with above average values would receive a percentage target above the average target, whereas countries with below average values would receive a target below the average target. The rule is

$$Y_i = A[x(B_i/B)+y(C_i/C)+z(D_i/D)] \quad (1)$$

$Y_i$  is percentage reduction of emissions from country  $i$ ,  $B_i$  is CO<sub>2</sub> equivalent emissions per unit of GDP for country  $i$ , and  $B$  is the equivalent average for the developed countries;  $C_i$  and  $C$  are GDP per capita for country  $i$  and the average of the group; and  $D_i$  and  $D$  are CO<sub>2</sub> equivalent emissions per capita for country  $i$  and the average of the group;  $x$ ,  $y$ , and  $z$  are weights that add up to one.  $A$  is a scaling factor that ensures that the desired overall emissions reductions for the group of countries is achieved. As discussed in Section 4, many alternative types of burden sharing rules and arrangements are being suggested by governments and analysts.

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## Biographical Sketch

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