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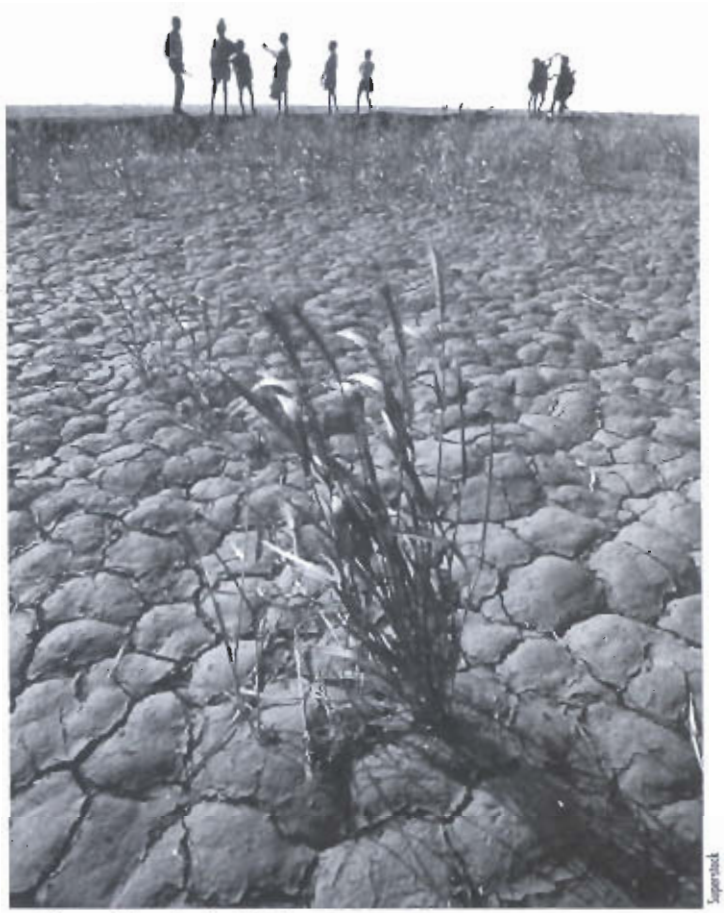
Distributing Costs of Global Climate Change



Desertification in Mali.

The problem of global climate change links the issues of energy utilization, economic development, environmental degradation, and equity on a planetary scale. While questions concerning the scale and timing of the impact of continuously increasing emissions of greenhouse gases remain, the outcome of the Earth Summit conference in the summer of 1992 was that coordinated international action is necessary to begin addressing the problem [1]. While the debate over the type and extent of such actions continues and while some proposals based on principles of equity and fairness have been put forth [2], [3], a set of approaches has emerged which claim to objectively demonstrate that nothing or very little should be done to address this problem.

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These approaches rely on standard economic theory and analytical methods to reach their conclusion that significant worldwide action is unnecessary. In our view, however, these approaches contain biases which place an exceptionally high value on maintaining the status quo of global patterns of resource consumption and distribution of wealth. When utilized to analyze various policy options, this bias results in a determination that equity considerations are too costly and may impede technological and economic progress [4]. As an alternative, we propose an approach based on a principle of equity in atmospheric resource utilization.

Economic Approaches to Policy Formulation

Policy formulations to address the problem of global climate change based on economic theory can be placed in three broad categories: the "no regrets," "insurance," and "pollutant market" approaches. While each of these approaches is

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distinguished by a particular combination of values, basic assumptions and arguments, several elements which are common to all three can be identified.

Perhaps their most important shared characteristics are that they have been developed by economists from industrialized nations, primarily the U.S., and were originally designed to evaluate response options of these nations in the event that international action was demanded. These characteristics are reflected in the basic values which shape the arguments and conclusions of these approaches.

▼ No Regrets Approach

Several economists who figure prominently in the global climate change policy debate, including Cristofaro [5], Nordhaus [6], and Shelling [4],[7], offer analyses which are typical of the "no regrets" approach. Two arguments distinguish this approach: the high value placed on economic growth and the great faith invested in the ability of as-yet-undeveloped technology to address humanity's major problems.

The "no regrets" approach proposes that societies respond to global climate change by comparing the costs and benefits which their economies will incur in responding to this problem with the costs and benefits of doing nothing. According to its proponents, only actions which result in benefit/cost ratio to a society that is greater than or equal to one are justified.

No restrictions are placed on the level of greenhouse gas (GHG) emissions so long as the net economic benefits outweigh the expected environmental costs. The latter are determined by assigning probabilities to the risks of global warming and multiplying them by damage estimates expressed in economic terms. Also, the scenarios used to evaluate different policy options include measures designed to mitigate, as well as to prevent, the possible negative effects of global climate change [5], [7]. This is significant because it places the burden of the argument on minimizing economic costs. Specifically, prevention can be justified under this approach only if it is cheaper than mitigation.

Not surprisingly, proponents of this approach generally conclude that no action to eliminate the possibility of global climate change should be taken unless it is justified by considerations that are extraneous to the issue of global climate change (such as productivity gains from advanced technologies that, incidentally, result in lower GHG emissions). The use of present values[1] in the cost-benefit analysis places greater emphasis on the costs of action, which will have to be undertaken early on, than on the benefits, which occur mostly in the distant future. Thus, the potential cost of adverse environmental effects, when combined with the uncertainty of whether and when they may occur, and then discounted into a present value, appears insignificant compared to the cost of prevention.

Adaptation to the effects of global climate change, rather than any concerted efforts at prevention, then, appears in this approach to be the most economically sound option. In an interview in the *New York Times* [8], Schelling cogently argues the "no regrets" position:

While climate has not changed rapidly in the last century, both the will and technological ability to adapt to radically different weather obviously has... While changes in rainfall, temperature and sea level could be dramatic, there is yet no reason to believe that the process would be completed too quickly to allow evolutionary responses — expanding irrigation, for example, or building dikes. The cost of growing food might conceivably rise by 20 percent, Mr. Schelling speculates. But this loss, he argues, is almost certain to be overwhelmed by a century's worth of improvements in seed strains and growing techniques... The quality of life in 100 years, he suspects, will depend as much or more on the endowment of technology and capital as on the percentage of carbon dioxide in the air. And if money to contain carbon emissions comes out of other investment, future civilizations could be the losers.

Conducting similar analyses, and following the same reasoning, economists of the U.S. Department of Agriculture in a 1989 study concluded that the costs of decreased grain yields in industrialized countries would be less that one-tenth of one percent of GDP [8]. This is because losses in yields would be largely offset by higher world prices. Econometric models used by the U.S. Environmental Protection Agency indicate that global warming could actually increase agricultural income in the U.S., while technologies to protect coastal cities against sea-level rise — if such a phenomenon should occur — would probably cost far less than curtailments of greenhouse gas emissions [8],[9]. In a basic sense, the results of all of these analyses are the foregone conclusion of a method that assigns inherent value to economic growth and assumes that any serious environmental obstacle to growth can and will be overcome by new technology.

The "no regrets" approach, in its assumptions and its method of evaluation, anticipates but fails to justify the international distribution of costs and benefits that accompany a "no regrets" response. Global increases in food prices may

[1]The present value method discounts future costs and benefits to reflect their value in the present. The further cost or benefit is to be incurred in the future, the smaller its value in the present is, everything else being equal.

have little impact on the citizens of the U.S. and other industrialized nations but could have devastating effects on the citizens of developing nations. These nations may find it difficult or impossible to muster the resources necessary to protect themselves from a sea level rise, especially as some of them, particularly the small island and low-lying nations, face the possibility of complete inundation. The distributive perversity of "no regrets" is not accidental. The costs and benefits it assumes as data are the facts of a highly uneven global economy. It is logically inescapable that this data, when introduced into the "no regrets" method, will yield results that favor the interests of the industrialized nations over the developing countries.

▼ *Insurance Approach*

A second economic model, the "insurance" approach, seeks to determine the shares of resources which should be diverted from economic growth in order to "purchase" some measure of insurance to forestall catastrophic global climate change. This approach places great value in the scientific analysis of global change which, it assumes, can eventually determine with considerable certainty what the effects of increasing GHG concentrations will be on climate, oceans, species, etc. The aim of this "insurance policy" is to buy societies time until science can inform its actions [10]. Devoting resources to the scientific study of global warming, thus, constitutes a form of insurance against future risks. Such insurance can also be "purchased" through the expenditure of some resources to limit GHG emissions. The amount of resources to be spent on slowing the rate of GHG accumulation in the atmosphere is to be determined by an estimate of the time at which "adequate" information will become available and the likely severity of the environmental effects [10]. It is important to recognize that this approach assumes a first-order commitment to mitigation only. Prevention of global climate change is not justifiable at this time under the "insurance" reasoning of the problem.

The "insurance" approach shares with its "no regrets" counterpart the belief that economic costs and benefits should be the determining factors of social action. But its proponents are willing to concede that environmental consequences could go beyond what our economic systems are currently organized to evaluate. To grapple with this problem, science is summoned to predict the course of events accompanying global climate change. The "purchase" of "greenhouse insurance," i.e., some immediate action to lessen the effects of global climate change, is justified because scientific knowledge indicates that the process of global warming may have already started [11], but science does not yet possess the means to predict its course [10], [12].

According to proponents of this approach such as Manne and Richels [10] and Cline [12], any policy course designed to address this problem should be based on scientific knowledge and should be cost-effective. Manne and Richels spell out the reasoning behind this approach [6]:

It is straightforward to calculate the benefits from reducing scientific uncertainty. Better information leads to better decisions. Global 2100 allows us to calculate the aggregate economic impacts. The analysis leaves little doubt that there can be a big payoff to reducing climate-related uncertainties — something of the order of $100 billion for the U.S. alone... The near-term implications are clear. There is less need for precautionary emission cutbacks if we undertake a sustained commitment to reducing climate uncertainty and to developing new supply and conservation options. Better climate information reduces the need to hedge against a potentially hostile future. Improved supply and conservation technologies will enhance our ability to deal with such a future if it should occur.

The "insurance" and "no regrets" approaches consider global warming of any magnitude as acceptable if it makes "economic sense." Both propose analytical methods which center around the evaluation of the aggregate monetary benefits and costs of various policy alternatives while virtually ignoring distributive effects. Neither approach considers the distribution of costs and benefits among social classes, nations, and regions of the earth. Indeed, the most fundamental difference between the two approaches is that "no regrets" proponents show a moderately greater reluctance to espouse immediate action to counter the threat of global climate change, thus placing complete faith in technological progress. The only other area of difference concerns the estimates of damage from global climate change. Insurance proponents use less conservative assumptions in estimating potential damages and also entertain the possibility that a technological fix may not be forthcoming [12]. However, these differences pale in comparison to their agreement on the core issues of economic primacy in valuation and the absence of any consideration of distributive effects.

▼ *Pollutant Market Approach*

Advocates of the third approach — "pollutant markets" — do not attempt to address the question of global climate change directly. Instead, they focus on the method of societal response. There is really no contest for economists on this question. They uniformly hold that market mechanisms are the most efficient way for

achieving any reduction in greenhouse gas emissions. Once agreement has been reached on the permissible levels of such emissions, a free market is advocated to allocate emission rights. This is generally contemplated as taking the form of either a global carbon tax, or an international emissions trading regime [13], [14]. The rationale for these methods is illustrated by the following discussion by Cline [12]:

If the international community moves to limit global warming, it will be important to limit costs by applying efficient instruments. Most economists favor carbon taxes as the most efficient mechanism for reducing emissions... Most analyses show that a physical quota regime could approximate the efficiency advantages of a carbon tax if tradeable permits are allowed.

The pollutant market approach advocates that, if any action is warranted, it should be based on firm economic foundations. This approach is an articulation of the principle of maximization of economic efficiency and, as far as method is concerned, it is complementary with the "no regrets" and "insurance" approaches. Markets are advanced as simply an instrument for achieving an objective which is decided by some other method. This economic instrument, however, is not devoid of values. Like "no regrets" and "insurance," "pollutant markets" recognize no intrinsic value for the natural environment. The price of environmental stability is determined by the actors in the pollutant market, the "buyers" and "sellers" of pollution. The outcome of this approach is not difficult to guess. The "sellers" will be the industrialized nations of the world. As they already own most of the world's economic wealth, they possess the means for influencing prices to their advantage.

When no provision is made for addressing issues of equity, adherence to the principle of maximizing economic efficiency can provide the means for industrialized nations to dictate the terms of greenhouse policy to the developing nations. A more detailed analysis of the impact of the economic approaches on the on-going international policy debate illustrates their inherent problems.

Problems Inherent in Economic Approaches

The economic approaches reviewed here depend exclusively on the quantification of costs and benefits of various policy alternatives to select the most appropriate policy response. There are no overarching ethical principles upon which outright rejection of some costs can be based. Instead, the test of economic efficiency rules. The blindness of economic analysis to ethically objectionable positions is amply illustrated in proposals recently made by Lawrence H. Summers, chief economist of the World Bank, on the issue of the international trade and disposal of hazardous wastes [15]:

The measurement of the costs of health-impairing pollution depends on the foregone earnings from increased morbidity and mortality. From this point of view a given amount of health-impairing pollution should be done in the country with the lowest cost, which will be the country with the lowest wages. I think the economic logic of dumping a load of toxic waste in the lowest-wage country is impeccable and we should face up to that... I've always thought that underpopulated countries in Africa are vastly underpolluted; their air quality is probably vastly inefficiently low...

There are a host of values and ideological predispositions in economic approaches to the global warming question. Four are highlighted below as among the most salient:

1) Human life is valued differentially, on the basis of wage-earning capacity. In pragmatic terms this means that people are valued on the basis of class, sex, ethnicity and country of residence.

2) The natural environment has no intrinsic value. Any amount of environmental degradation (for example, any level of global warming) is acceptable if the economic cost of avoiding such degradation is outweighed by the net benefits of economic growth that would have to be foregone.

3) CO_2 sinks such as the forests are devalued, their only inherent value being as lumber. The CO_2 absorption capacity of the biosphere is incidental from an economic point of view until and unless economic value is assigned to this capacity on the basis of, for example, a carbon tax.

4) Economic activity is intrinsically valued for its easily and directly measurable income-producing capacity.

Together, these predispositions of economic analysis determine a policy preference that prizes economic growth and sacrifices environmental capacity unless it can be monetized. Again, Lawrence Summers succinctly states the economic viewpoint [16]:

...[T]here is no intellectually legitimate case for abandoning accepted techniques of cost-benefit analysis in evaluating environmental investments... The argument that a moral obligation to future generations demands special treatment of environmental investments is fatuous. We can help our descendants as much by improving infrastructure as by preserving rain forests... as much by enlarging our scientific knowledge as by reducing carbon dioxide in the air.

By their nature, economic approaches to policy-making highly value the economic processes of industrialization and capital accumulation which have impressively served the needs and interests of the industrialized nations. On the other hand, these same processes have tended to recognize little of value in the natural environment *per se*, and have led to few — and some argue no — improvements in living conditions for the people of developing nations [17], [18].

The economic models under international discussion fail to take into account the fact that while the wealth "benefits" of environmental degradation are concentrated in a few nations of the world, its costs are widespread. In fact, the adverse effects of global climate change are likely to be borne disproportionately by developing nations because of their geographic location, as well as their poverty and lack of technological development, which make them especially vulnerable.

Yet, the market mechanisms which these models indicate as the most appropriate means for limiting the effects of this environmental threat may actually shift a disproportionate amount of the burden for environmental protection to developing nations. A carbon tax strategy, for example, in which only present or future emissions are taxed, would result in writing off the cost of greenhouse gases already concentrated in the atmosphere by the industrialized nations. Additionally, because CO_2 emission rates of industrial countries are declining, while those of developing nations are and will be increasing, the burden of tax payments could quickly fall upon developing nations. Without equity safeguards written into a policy, a carbon tax regime will require the developing nations to pay dearly for the opportunity to develop, while the industrialized countries, which thus far have been entirely responsible for the build-up of greenhouse gases in the atmosphere, will have received the opportunity to develop virtually cost-free in environmental terms.

A tradeable emission-permit regime for greenhouse gases could be designed on an equitable basis. Equity, however, would have to be demanded by some external force, as tradeable permits inherently promote only efficiency and not equity. Proponents of tradeable permits concede as much when they argue for a distribution of permits on the basis of "realism." This, of course, means that the status quo (with the industrialized nations emitting far greater amounts of greenhouse gases per capita) will not be disturbed, at least not for a significant period of time [12].

The principles, assumptions, arguments, and methods promoted by the economic approaches to policy making are also ill equipped to take into account the fact that "the environment may deliver nasty and irreversible surprises" [19]. While economic principles may deem that any degree of global climate change may be acceptable, it may be that a global average temperature rise of more than 4°C (7°F), which would create a warmer earth than at any time in the last 40 million years, may bring about the downfall of human civilization [20]. What meaning could there possibly be, in this instance, to Cline's calculations of the cost of a 10° to 18°C (18° to 32°F) global mean temperature rise as 28% of GDP "under the worst assumptions" [12]?

The favored position given to economic principles and analysis in the policy-making debate is justified by its proponents on the grounds that it offers an objective means for choosing among policy options. As has been shown, however, economic approaches promote a specific set of values. The use of economic analysis and methods to the exclusion of other social considerations can lead to the adoption of inequitable policies in the name of a false objectivity and rationality.

Equity-Based Approach

An equity-based approach to policy making is necessary, not only because it could produce more just policy options, but because, in all probability, it would produce the only tenable basis for policy adoption at the international level. It is likely that developing countries will simply refuse to participate in a policy-making process which they perceive to be biased against them. Only a policy which is perceived to be fair would have a reasonable chance to elicit the cooperation necessary for an international agreement on actions to avert the threat of global climate change.

The development of an equity-based approach was called for by the World Commission on Environment and Development [21], and again advocated during the 1992 Rio Conference on Environment and Development. In order, however, for a method to be developed which allows for the evaluation of various policy options on the basis of equity, it is necessary that an equity principle, as it applies to sustainable development in general, and the problem of global climate change in particular, be stated in concrete terms.

▼ *Equity Proposals for Reductions in Greenhouse Gas Emissions*

A variety of equity-based approaches to policy making at the international level have been proposed. Although these differ in the way in which the principle of equity is operationalized, they are in basic agreement that those who benefit from GHG-generating activities should bear a greater burden under policies to reduce the emission rates of these gases. Current equity-based

approaches can be divided into four broad categories.

The first category proposes that GHG emission rights or quotas be allocated on the basis of the land area of countries [22]. The justification for this is that greater land area necessitates greater energy expenditures for movement of goods, people, etc. This distribution of emission rights, however, would discriminate against small nations and would reward those with large land masses and with sizable natural resource endowments.

The second category proposes a distribution of emission rights or quotas that is, at least to some extent, proportional to current emission levels [23]. Such a distribution would present the fewest problems of acceptance by industrialized nations and would cause few dislocations in the international economic system, but can hardly be justified on the basis of equitable treatment of developing country interests.

The third group of approaches proposes a distribution of emission rights or quotas on the basis of national populations [3], [24]. These approaches adhere to a principle of equality in the assignment of current and future emission rights. However, such equality will not reflect the disproportionate contributions of industrialized countries to the elevation of GHG concentrations over the last two centuries.

Finally, the fourth set of approaches proposes that GHG emission rights be allocated on a per capita basis, while taking into account the historical per capita emissions of different nations. Thus, nations which have, historically, produced more GHGs will be allocated lower per capita quotas [25]-[27]. This approach distributes the burden of GHG emission reductions in a way which reflects the responsibility for creating the problem of GHG accumulation in the atmosphere in the first place.

All of these approaches add some measure of equity over the economic models reviewed above. However, each of these approaches focus on emissions and emphasize actions to reduce current levels. Missing from these approaches is a consideration of a sustainable limit to anthropogenic emission rates. In fact, current equity proposals can lead to a significant increase in the amount of carbon in the atmosphere. Several anticipate a doubling of CO2 concentrations as inevitable [27].

▼ *Sustainability-Based Equity Principle*

A truly equitable policy approach would need to include a principle of CO_2 sustainability, defined as the worldwide organization of human activities such that emissions of this gas do not exceed its biospheric absorption. This is because solutions that ignore sustainability would inherently contain environmental threats that would pose disproportionate dangers for developing countries. Additionally, such an approach would need to adjust for the historical contributions of societies to the buildup of greenhouse gases.

One possible way of stating a sustainability-based equity principle in the context of global climate change is as follows: No human being is entitled to use the biosphere's carbon absorption capacity more intensively than another and, equivalently, no human being is entitled to store greater amounts of greenhouse gases than another. Operationalizing this statement requires that the biosphere's carbon absorption capacity be determined and allocated in an equitable manner. Several researchers such as Agarwal and Narain [28], and Mukherjee [29] have attempted this calculation. But considerable disagreement exists on whether and how such a calculation can be performed because of uncertainties concerning the relative effects of various greenhouse gases, their longevity in the atmosphere, nonlinear effects of natural absorption processes, etc. [29].

While we do not deny the complexities involved in this calculation, there are scientifically accepted estimates of the biosphere's current level of CO_2 absorption. The U.S. Environmental Protection Agency [30] and the World Resources Institute [31] indicate, with some confidence, that the biosphere is currently capable of absorbing between 14 and 17 billion tons of carbon dioxide per year. Dividing this number by the world population (about 5.2 billion in 1989) yields what we term a sustainable CO_2 emission rate of approximately 2.7 to 3.3 tons of CO_2 per person per year. A rough estimate of the inequity present in the status quo can be made on the basis of these numbers.[2]

▼ *Inequity of the Status Quo*

Fig. 1 shows that the industrialized countries of the world (including countries with centrally planned economies) have historically been responsible for most of the carbon dioxide emissions into the atmosphere (carbon dioxide is generated primarily from fossil fuel use). While in recent years developing countries have been contributing an increasing amount of these emissions (as a result of their economic development process), their contribution to the historical total amount of emissions remains minor.

[2]The CO_2 absorption capacity of the biosphere depends, to some extent, on the amount of this gas present in the atmosphere. As the amount of CO_2 in the atmosphere increases, the absorption capacity of the biosphere will also increase. This, however, is a dynamically unstable situation, for it is based on ever-increasing levels of atmospheric CO_2. For this reason, the present discussion is based on the estimation of a stable, sustainable absorption rate.

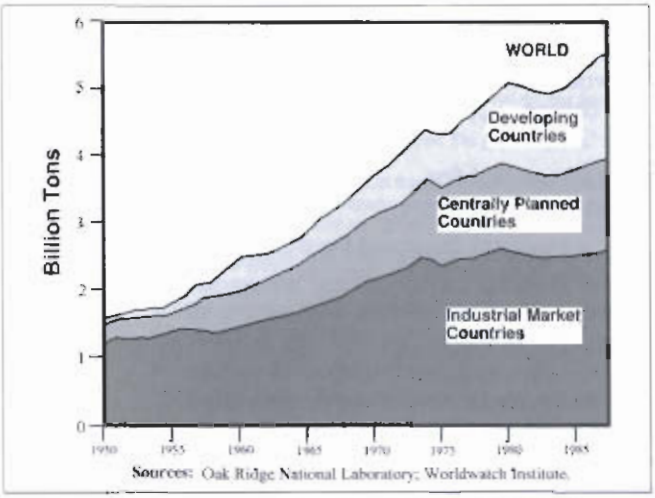

Fig. 1. Carbon emissions from fossil fuels: 1955-1988.

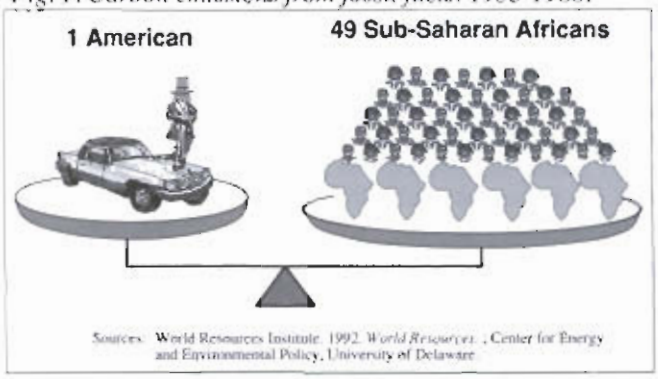

Fig. 2. Inequality of biosphere use.

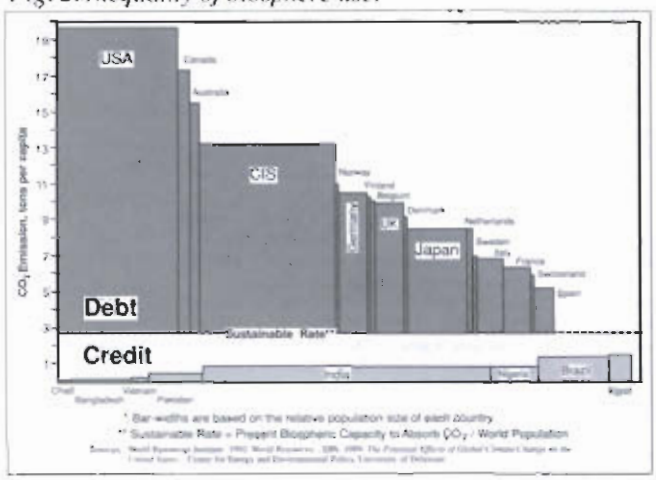

Fig. 3. CO_2 emissions for selected nations, 1989.

The sustainable CO_2 emission rate can be used to allocate a sustainable emission quota to each country of the world. The principle of equity would demand that allocations be based on each country's population. Such an equitable allocation indicates that almost none of the developing countries has yet exceeded their per capita quota, while all industrialized nations have exceeded theirs by large amounts. As an example, one U.S. citizen produces as much carbon dioxide annually as 49 residents of Sub-Saharan Africa (Fig. 2). Clearly, industrialized nations have appropriated more than their "fair share" of the biosphere's absorption capacity and use of the atmosphere to store their excess emissions and continue to do so.

As a basis for addressing this inequitable situation, the amount of the sustainable CO_2 emission quota which is not used by a nation can be thought of as "credit" which can be purchased by nations exceeding their own quota (Fig. 3). If industrialized countries could be induced to pay developing countries for the right to emit CO_2 beyond their sustainable quota, a system of tradeable emission permits would be established. If it is assumed that the price of a ton of CO_2 emissions would reflect the cost of avoiding a ton of such emissions (utilizing the avoided cost method for establishing value or price, routinely used in economic analysis), the total price tag for industrialized nations would range between $0.3 and $1.9 trillion per year. Such an amount would be adequate to retire the entire developing-nation debt within 44 weeks.[3] While it is improbable that the environmental debt of industrialized nations could actually be collected in this manner, its comparison with the economic debt of developing countries demonstrates two points:

▼ In terms of CO2 emissions in excess of the sustainable emissions rate, the industrialized nations are heavy borrowers from the developing nations. They are debtors to a much greater extent than developing nations are debtors in the strictly financial sense (see Fig. 3). Unlike industrialized nations, however, developing nations have almost no means at their disposal to collect on this debt.

▼ The comparison of CO_2 debt with financial debt suggests a means whereby the multidimensional nature of the equity problem may be addressed. The two types of debt could be traded, and the financial debt of developing to industrialized nations could be eliminated over some reasonable time period (probably several years), lifting a significant weight off the economies of these nations.

Perhaps as important, the calculation of the CO_2 debt of industrialized countries demonstrates the extraordinary level of dependence on

[3] The calculation of environmental debt is based on the cost of CO_2 emissions of OECD countries over their sustainable quota. The cost of CO_2 avoidance is based on estimates by Flavin [2] using energy efficiency technologies for the lower limit and combined-cycle combustion technologies as the upper limit. Excess CO_2 emissions were calculated by subtracting the product of the Sustainable CO_2 Emission Rate and the population of the OECD countries from their actual emission levels in 1989.

atmospheric inequality for the standard of living of these nations to be maintained. The dependence of industrialized economies on CO_2 emissions for the creation of wealth is so great that attaching almost any cost to these emissions would impose a significant burden on their economies. This is one reason why many economic analyses ([4]-[7]) suggest that very little should be done to address this problem. This points to a special challenge to an equity-based approach: any effort to develop realistic policies for addressing both the issue of global climate change and the inequity of the status quo would have to address the fundamental problem of transforming CO_2 emission-intensive industrial societies. Thus, both the analysis and the policy outcomes indicated by an equity-based approach must be quite different than those indicated by the economic approaches reviewed above.

The inequity of the status quo and the dependence of industrialized economies on carbon emissions for the creation of economic wealth should serve as motives for action rather than delay. Actions that begin to address these problems would clearly be better than no action at all [26].

▼ *Elements of an Equity-Based Approach*

One option for an equity-based policy is to adopt a regime of tradeable greenhouse-gas-emission permits as one of the means for managing the reduction of these gases. Such a system would ensure a high level of economic efficiency. The fundamental difference from similar methods proposed by existing economic approaches is that the initial allocation of "emission rights" under this regime must be based on the equitable distribution of the biosphere's CO_2 absorption capacity.

This difference has important ethical implications. First, it reflects and guarantees the equal rights of people regardless of where they live. Second, by being based on the biosphere's absorption capacity (the evaluation of which must become a priority for global climate change research), it recognizes the value of long-term environmental stability. Third, it avoids the reduction of the environment to the status of a commodity. Instead, commodity production is obliged to adjust to the social and environmental requirements of sustainability.

A sustainability-based equity approach would also provide considerable incentive to industrialized countries to pursue critically important energy and environmental policies such as: the increase of their own greenhouse sink capacity through, for example, extension of forested land; and the balancing of economic development and environmental goals through the pursuit of non-greenhouse-gas-producing energy options so that opportunities remain for material growth by developing nations. The pursuit of such an alternative would address the root problem of global climate change.

Equity Essential for Sustainable Solution

Popular economic approaches for addressing the threat of global climate change adhere to a distinct system of values which prizes capital accumulation, economic growth and quantifiable monetary costs and benefits, while discounting nonmonetary social and environmental values that are essential to identifying a long-term sustainable solution. As a result, policies proposed by prevailing economic approaches shift burdens unreasonably upon developing nations for the opportunity to develop.

A policy-making approach based on the principle of equity is necessary if the evolution of sustainable responses are to be made possible. In our view, the utilization of such an approach is the only means for securing just and viable international agreements and policies.

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