

implies that the rights of future generations are not relegated beyond the horizon of economic computation.

- The Polluter Pays Principle, when understood that 'a polluter agent should pay for the economic damage it causes', is not equivalent to an incentive policy. At the level of 58 cents per barrel, the 'price-signal' will be lost in the noise of random variations of the price of oil on the spot market. The price of energy *may* be an incentive, as we shall see, but not below a higher threshold.

Anyway, Nordhaus illustrates quite well one possible theorization for a possible attitude of northern states: 'Do Nothing'. Up to now, it could seem that the normal attitude of southern states should be 'Do Something'. The 'enclosure conflict' should present itself as the South trying to protect its climate against the northern pollution by GHG. But the reality of negotiation on climate was and is still quite different. In order to understand this paradox, we have to introduce a more realistic representation of North and South.

A CARTOGRAPHY OF GHG POLITICS

The first elaboration we may propose is a closer scrutiny of the costs of 'Doing Something', and not only to its advantages (that is, to the damages of 'Doing Nothing'). To my knowledge the most impressive systematic attempt is the study by Benhaim, Caron and Levarlet (1991) (later BCL). They classify 50 countries (including most of OECD and Eastern Europe, the main Third World countries) by automatic taxonomic methods according to 20 criteria. The result is quite interesting, both when it confirms *actual* similarities of attitudes in the climate negotiation and when it contrasts with reality.⁸

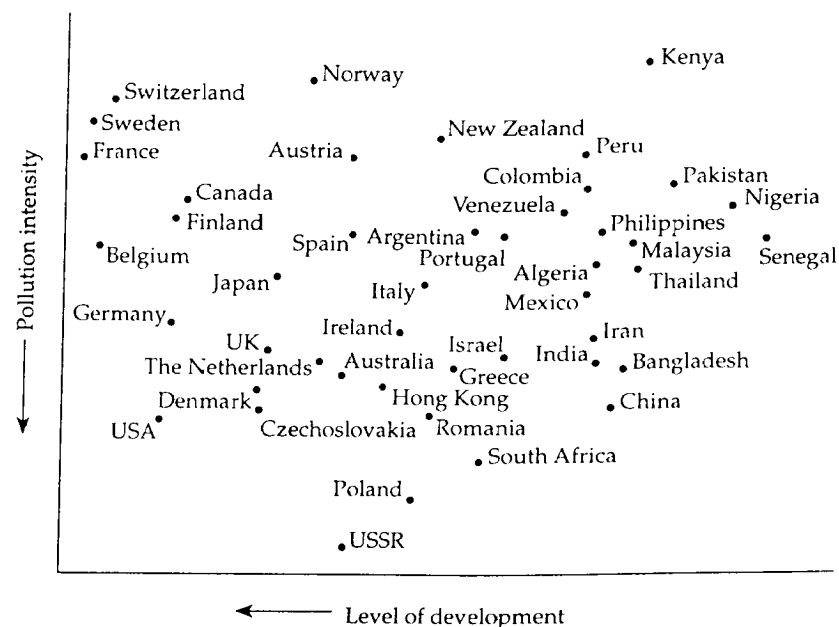
The BCL Methodology

The first group of indicators includes GDP per capita and the Index of Human Development (PNUD 1988). They are static indicators (by contrast to rates of growth), neutral with respect to population. All other indicators are linked to the energy system: type of energy used, indices of consumption of primary energy, of energy efficiency, of energy reserves, of CO₂ emissions, per capita, per unit of GDP, per country.

Note that the last one is not neutral with respect to the size of population, just as energy reserves are not neutral with respect to the surface of the country.⁹ Also note that there is no index of 'advantages in doing something' (such as share of peasantry, share of population living at sea level).

⁸ For detailed criticisms of BCL's study, see Lipietz 1992a.

⁹ Consider, for instance, that USSR is counted as one country! This may seem a major methodological flaw. Yet the *compound* nuisance capacity of a country is a real parameter of its diplomacy.



Source: Benhaim et al, 1991

Figure 7.2 Level of development and pollution intensity

In Figure 7.2 BCL present a classification of countries via principal components analysis. The horizontal axis in the analysis presents an opposition between 'development' (on the left) and 'underdevelopment'. Development is positively correlated to:

- energy-consumption per capita;
- CO₂ per capita;
- share of nuclear energy;

and negatively to:

- coefficient of CO₂ per unit of GDP (measured at exchange rates);
- share of hydrocarbons;
- reserves of hydrocarbons.

In other words, the more a country is developed, the more it consumes energy per capita and thus the more it emits CO₂ though the more GHG-efficiently it produces its energy.

On the vertical axis, the criterion of 'cleanness' of production is illustrated, opposing GHG-efficient use of electricity at the top to GHG-polluting use of carbon at the bottom.

Combining these two axes, a 'virtuous' hierarchy, from the top-left to

the bottom-right appears. The 'GHG virtuous' are, on the first line, Switzerland, Sweden, France, then other Scandinavian countries, Canada, Belgium, then Germany and Japan, then the US and UK, Spain...

Further investigation separated out 'open frontier countries' (the US, USSR, China, Brazil) with large populations, as opposed to all others, including Bangladesh.¹⁰

In a very graphic way this chart isolates, in the (sociological) North West of the world, countries which are both rich and GHG-efficient in the production of their energy: the 'super-virtuous' of European Free Trade Area (EFTA), the 'virtuous' Japan and EEC (less so in the cases of UK and Spain). These countries are ready to implement the *precaution* principle: they have or can get the technologies, they are already at a relatively low (yet unsustainable) level of emissions.

By contrast, the US appears in the South West of the chart, along with fossil energy wasters: ex-Socialist countries, South Africa and China. In these countries, along with Petromonarchies, welfare is correlated to GHG wasting. They are in favour of what BCL label the *blockage strategy*. Georges Bush, with his Rio statement 'Our way of life is not subject to negotiation', illustrates this position.

Very different in appearance are the countries at the South East of the 'GHG-virtuous' North West: India, Brazil, Mexico, China, Malaysia. These countries are too poor to be already GHG-dangerous and to be GHG-efficient. But clearly they aspire to be as 'developed' as western countries, and consider that up to now these precursors never implemented any precaution principle. These countries are pushed into an *accusation strategy*: denouncing the responsibility of the North West *in the past* for the concentration of GHG in the atmosphere, such a strategy contends that it is not yet time to implement a precaution principle in developing countries.

The Concrete Positions in the Debate

If we now cross the two criteria (advantages of 'Doing something' discussed earlier, and costs of 'Doing something' analysed above), the North-South conflict appears now much more complex.

Along the two criteria, the position of the US is clearly in favour of 'doing nothing': the dangers from greenhouse effects are weak, the cost of fighting it may be very high, even if the low GHG-efficiency of their energy production makes the marginal improvements quite inexpensive (as for ex-Socialist countries). The problem is that, from a *global sustainability* point of view, the improvements required from the US are far from marginal.

Here we have to anticipate what a global sustainability criterion would be. World development would be GHG-sustainable if the total amount of anthropogenic GHG-emissions were equal to the capacity of the world 'sinks'

for GHG.¹¹ Assuming a world population of 10 billion (in 2040), the average sustainable quantity of emissions would be 500 kg of carbon per capita. At present, the US production is 10 times this figure! It is thus perfectly clear that the 'selfish' interest of the US is the blockage strategy (Do Nothing).

The radical *accusation* strategy seems to be the opposite, and indeed its glamour in a North-South conflict is very attractive: 'You are the culprits, you have to do something'. The problem is that this position is also a blockage position, since it is subordinated to the implementation of a precaution strategy by foreign countries which are in favour of blockage. It is quite appealing for elites who desire to emulate the US model of development (a savage capitalism in an open frontierland) and which are not too much worried by the consequences of the greenhouse effect on their own population. Here it is important to note that international negotiation involves *governments*, that is elites, and not people. The position of a government may be quite different from its people interests if the political regime is rather independent from a civil society it purports to represent.

Malaysia provides a good example of satisfying these criteria. As the Prime minister Mahathir Muhammad did not hesitate to put it in the *Asian Society Forum* 1991: 'Democracy, human rights, ecology, union rights, are but obstacles that advanced countries try to put on the road of their future competitors'.

So we have in fact two types of 'Do Nothing' positions: the one of the North (fighting the greenhouse effect is too expensive and useless for us) and the one of the South (fighting the greenhouse effect would unfairly hinder our development, and the results of global warming are irrelevant to us).

But our discussion indicates two classes of potential followers of a precaution strategy. The first one includes the nations which have serious reasons to believe that they would be the first victims of global warming: Bangladesh, Maldives India, Africa, South America. When, moreover, they are countries which are both low producers of GHG (much less than the 'sustainable' 500 kg/capita) and quite GHG-inefficient, they may assume that they have a wide margin for globally GHG-sustainable development: their contribution to the world production of GHG may increase for a while without being a real problem, and their very development will induce a more GHG-efficient production of energy.

Symmetrically, we noticed that there exist northern countries which may think of increasing their GHG-efficiency faster than their production of energy (for example EFTA, France). Producing less than two tons per capita, and evolving towards a 'service society' with a steady population, they may think that the 500 kg target is within their scope. When, moreover, they are countries particularly sensitive to their leadership responsibilities *vis-à-vis* southern countries, or to the dangers stemming from demographic and ecological turmoil at their southern borders, they may assume that a precaution strategy is relatively inexpensive and really

10 The 'open frontiere' criterion was introduced as an explanatory factor in the debate by Banuri 1992.

11 At present, the power of absorption by the sinks is about half the anthropogenic emissions of CO₂. But it may be argued that efficiency of the sinks could be dependent on the growth of CO₂ concentration in the atmosphere, according to some retroaction principle à la Le Chatelier.

useful. EEC countries are the most representative of this position. Moreover, domestic ecological militancy begins to frame their politics.

So we have in fact two types of 'Do Something' position: the one of the South (we need to fight the greenhouse effect, and we could afford it with some help from the North) and the one of the North (we have the capacities to fight the greenhouse effect and it is in our interests to offer it to the world).

So the North/South divide is crossed by another divide: Do Nothing/Do Something (see Figure 7.3)

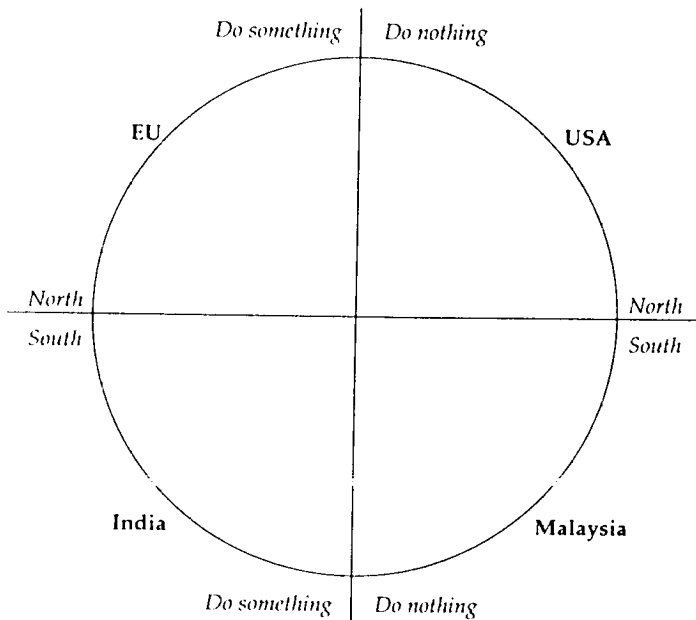


Figure 7.3 Environmental strategies

WHAT IS TO BE DONE?

In the years leading up to Rio, blockage positions could less and less express themselves in a crude way. On the contrary, the years 1990–1992 were punctuated by conferences, reports of IPCC, books, TV programmes, ecologists' mobilizations, stressing more and more clearly the necessity to 'do something'. The debate was less and less 'should we do something?', more and more 'is it so urgent to do something? and who should take the biggest share of the burden?'

The debate on burden-sharing followed two interwoven paths: a technical debate on the sources of GHG emissions and a policy debate on targets and

instruments. The interweaving is so tight that it would be counterproductive to isolate the two aspects: in fact, the debate on the sources ('who is the culprit?') was a debate on targets ('who has to reduce its emissions?').

The WRI–CSE Controversy

That was very clear when, in 1991, in the times of *Prep Com II* (and of Gulf War II¹²), Anil Agarwal and Sunita Nerain of the Centre for Science and Environment (New Delhi) launched their polemics against the apparently 'technical' report 1990–1991 of the *World Resources Institute*, an independent Washington think-tank connected to the US administration. Up to this time, there were few questions about the absolute responsibility of CO₂ emitted by industrial countries for the growth of the greenhouse effect. The WRI report (1990) brought two new elements in the discussion.

- It attempted a *comprehensive* evaluation of all GHG emissions including the CO₂ emitted through deforestation (especially spectacular in Brazil in 1987, the year on which the report relies), and above all methane, which is a by-product of fermentation of organic matters in cattle digestion and in paddy fields. Methane is a more dangerous gas than CO₂: each molecule of methane (CH₄) has 40 times more effect in capturing infra-red rays than one CO₂ molecule.¹³ Through such indices of conversion, the WRI was able to evaluate the gross production of GHG by country.
- The report took into account the fact that the gross flow of emissions of GHG to the atmosphere is not equal to the change of their stock in the atmosphere. The oceans and earth reabsorb about half of it. These natural sinks are the real 'global commons', given by Nature to Humankind. The WRI report allocates these sinks to countries proportionally to their gross emissions: thus it yields the *net* emissions by country.

The rating is then unexpected. The contribution of the South is nearly equal to that of the North (which, at the time, included Socialist countries). The major polluters are the: US, USSR, Brazil, China, India

The WRI report was important. Apart from more detailed arguments, it provided a first survey of all GHG emissions, and drew attention to gases other than carbon dioxide. And it identified clearly the sinks, and not the atmosphere, as the global common which was to be 'enclosed', allotted and regulated for the safety of humankind. Yet, in doing this, the report included two major flaws from the theoretical point of view, with very important policy implications.

12 The Gulf War II context was certainly of great importance in the pre-Rio 'ecological order' debate, since the 'New International Order' appeared as a 'double-standard' order (Lipietz 1992b, Postscript)

13 CFC and other halons are thousands of times more dangerous, but are under another international agreement.

1. All the gases are not equally subject to the 'precaution principle'. CO₂ remains in the atmosphere from 50 to 150 years. Thus the concentration of CO₂ in 2050 will depend on the sum of emissions over the proceeding century. By contrast, methane is very unstable and remains in the atmosphere for around three years. The control of the methane cycle can wait. While the 'comprehensive approach' implies as a *target* the reduction of all GHGs, the precaution principle implies only the reduction of CO₂.
2. The distribution of the sinks according to the gross emissions implies a peculiar form of enclosure (or entitlement): it is according to the acquired contribution to global pollution. Since we are at the dawn of an initial entitlement or endowment process *à la* Rawls, it is clear that such a deal is far from fair: the poorest, the less developed, the less accountable for present pollution and the more likely to increase their population, are offered the smallest possibility to increase their emissions!

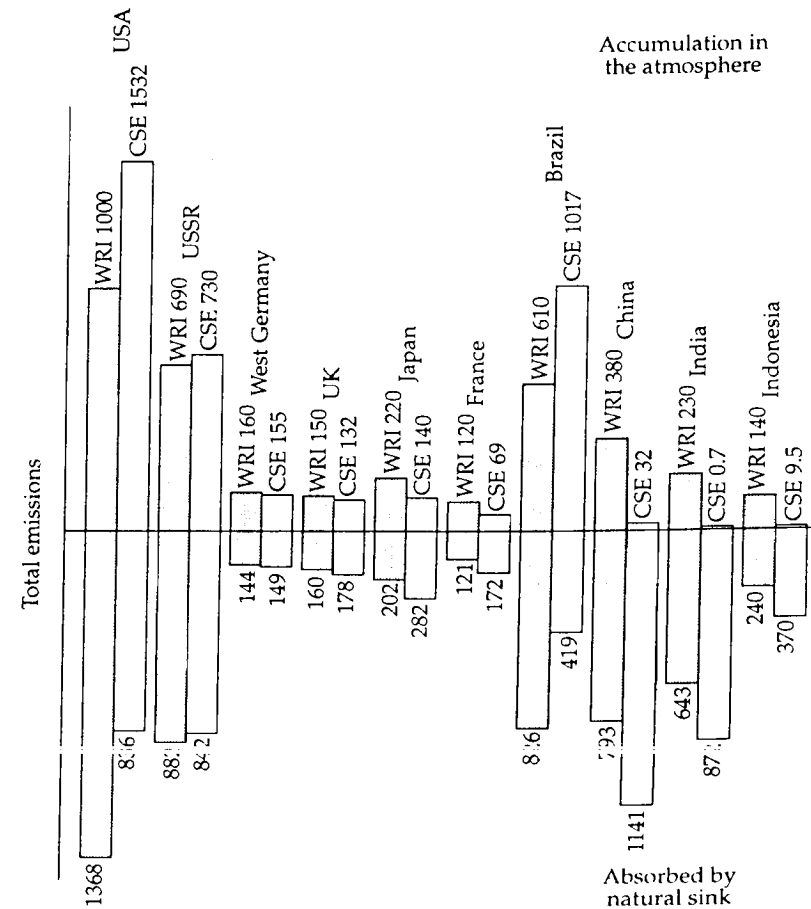
The reply by Agarwal and Nerain (1991) was devastating and focused mainly on the second point.

First of all, the CSE criticizes the data of the WRI: 1987 was exceptional for forest fires in Amazonia, the emissions of methane by southern cattle are overestimated, etc. But, being unable to propose another quantitative basis for the discussion, the CSE criticizes the two methodological points of the WRI. The comprehensive approach is rejected on the basis of an ethical argument: the production of methane (in food production) is a necessity, the production of CO₂ (in industries and car driving) is a luxury. Clearly, such a critique is most appealing in a North-South confrontation, when 'South' means the LDCs (and not the NICs), and their peasants (not their elites...).

More constructively the CSE opposes the WRI allocation of the global common (the sinks for CO₂) between nations. Arguing that all human beings are born equals in rights, the CSE proposes an egalitarian allocation, that is an initial endowment between countries proportional to their population at present time. The structure of 'net emissions' changes completely, hence the 'burden sharing' scheme.

This powerful proposition was extremely welcome in the international negotiation. Soon it became the unifying position of the southern environment and development NGOs in the process up to Rio. In North-South meetings between NGOs (the *Prep Com III* and IV, the Ya Wananchi conference in Paris, December 1991), this position became hegemonic. But it also influenced the governments of Southern Asia (India, Pakistan, Bangladesh) which relied upon such NGOs as the International Union for Conservation of Nature for the writing of their national report to UNCED. These more official positions were frequently based on the more academic work of Grubb (1990) in favour of the principle of tradeable permits. Hence it became the unifying position of India and all the group of the '77', of China, of UNCTAD. The advantages of the proposal are indeed impressive:

- The permits are distributed according to base-year population, so it is an incentive for each country to control its own birth rate.



Source: Agarwal and Nerain, 1991

Figure 7.4 Allocation of responsibility for greenhouse gas emissions (in million tonnes of carbon equivalent) as calculated by CSE

- Countries exceeding their permissible emissions are all northern countries. A levy should be put on this excess in order to finance GHG-efficient technologies.
- Countries with emissions in excess could also buy permits from countries which have excess permits. All these countries are in the South. Thus, even with excess permits, economies in emissions would be profitable for southern countries. In turn, this price for tradeable permits would finance the sustainable development in the South.

We are not going here to discuss the economics of tradeable permits. In fact, once the initial endowment is given, the market for tradeable permits would