

02 WHO IS RESPONSIBLE?

Centre for Science and Environment
41, Tughlakabad Institutional Area, New Delhi 110 062, INDIA
Ph: +91-11-29956110 - 5124 - 6394- 6399 Fax: +91-11-29955879
E-mail: cse@cseindia.org Website: www.cseindia.org

WHO IS RESPONSIBLE?



The question ‘who is responsible for climate change?’ lies at the heart of the politics of negotiations related to the United Nations Framework Convention on Climate Change (UNFCCC). In December 1988, the UN General Assembly resolution recognised climate change as a “common concern of mankind” and noted that “the largest part of the current emission of pollutants into the environment including toxic and hazardous wastes, originates in developed countries... those countries have the main responsibility for combating such pollution”. The resolution affirmed that “the responsibility for containing, reducing and eliminating global environmental damage... must be in relation to the damage caused, and must be in accordance with (the country’s) respective capabilities and responsibilities”.

Over time, the issue of responsibility (along with its related issues of new and additional financial resources, and technology transfer) has become the major source of North-South differences.

In November 1989, a ministerial conference at Noordwijk, Netherlands – the first high-level political meeting to focus on climate change with substantial developing country presence – recommended a framework convention and said industrialised nations had ‘specific responsibilities’ to tackle climate change. What were these responsibilities? Hard negotiations by the US ensured the declaration’s text remained vague on specific targets to cut emissions.

It was in April 1990, at the New Delhi Conference of Select Developing Countries, that developing countries first formulated their climate policy. The conference placed the primary responsibility of climate

change mitigation on industrialised nations. Developing countries were clear that they:

- contribute little to the problem, though their share is increasing;
- need technical and financial assistance to adopt environmentally benign technologies;
- would accept only those responses that do not impede their economic development;
- would not accept GHG emission reduction targets because they needed to increase their energy consumption for development.

That same year, the First Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) was released, which mentioned “common responsibilities” of nations, developed and developing. Developing countries wanted the IPCC text changed to reflect the fact that developed nations were mainly responsible. The final text – a semantic compromise – read: “Industrialised and developing countries have a common but differentiated responsibility in dealing with the problem of climate change and its adverse effects.”

The Framework Convention was agreed upon at Rio in 1992. In the agreement, “primary responsibility” was toned down to “common but differentiated responsibilities and respective capabilities” (Article 3).

Questions: past, present and future

In climate change negotiations, all three questions are important. The fact is it matters how much each country has emitted in the past. It matters because carbon dioxide has a long life – once emitted, it lasts for more than 100 years. The present also matters, for countries have to make space for others – some have to reduce their use of the common atmospheric space so that others can increase theirs. The future is even more important, as the world has to ‘avoid’ emissions – it has to desperately find ways so that countries do not add to the already overburdened atmospheric space.

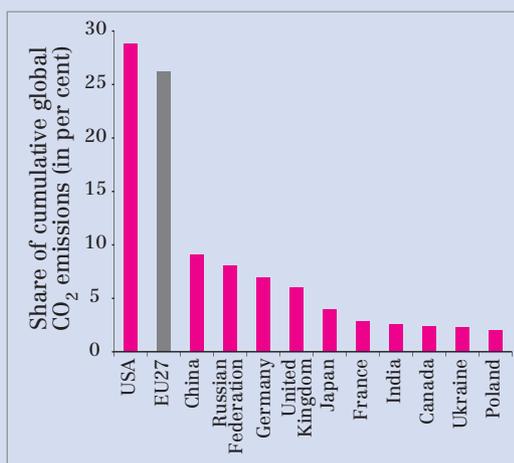
THE PAST

Historical responsibility I: Start of industrial era to now

Climate change is about cumulative historical emissions – a tonne of CO₂ released in 1850 is equal to a tonne of CO₂ released today. Rich countries account for about seven out of every 10 tonne of CO₂ that have been emitted

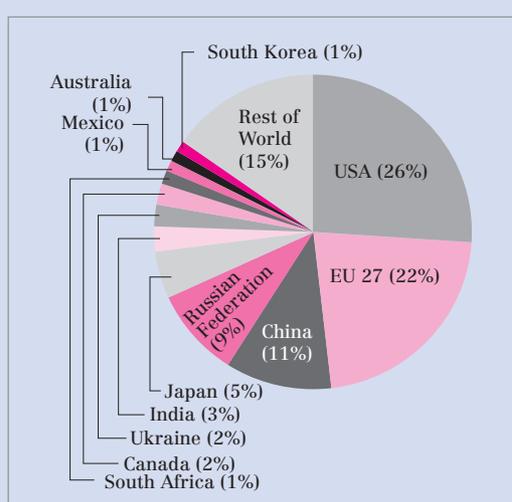


Graph 1: Historical burden: Share of global CO₂ emissions, 1850-2007 (in per cent)



Note: *Includes a share of USSR emissions proportional to the Russian Federation's current share of former Soviet bloc emissions
Source: Climate Analysis Indicators Tool (CAIT) Version 8.0. (Washington, DC: World Resources Institute, 2011)

Graph 2: Cumulative CO₂ emissions, 1950-2007, without land use



Source: Climate Analysis Indicators Tool (CAIT) Version 8.0. (Washington, DC: World Resources Institute, 2011)

since the start of the industrial era. Historical emissions amount to about 1,126 tonne of CO₂ per capita for the UK and the US, compared with 80 tonne per capita for China and 26 tonne per capita for India. This is the natural debt of the rich countries as against the financial debt of industrialised countries and it has to be paid.

Historical responsibility II: Re-industrialised era to now

Even if the world does not go as far back as the beginning of the industrial era, the fact of who is responsible for climate change does not change. A recent data compiled by World Resources Institute (WRI) estimates such responsibility. It estimates Annex 1 countries account for roughly 69 per cent of total carbon dioxide emissions that have accumulated in the

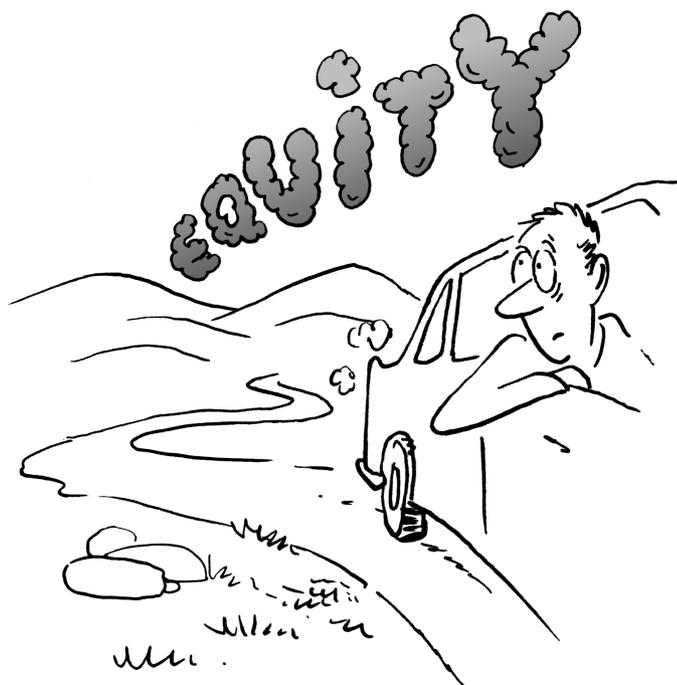
atmosphere between 1950 and 2007 (*See graph 2*).

This data changes slightly if land use changes – increased emissions because of deforestation and decreased contribution because of afforestation – is taken into account. If deforestation is taken into account, Brazil's and Indonesia's share in global pollutants increases, as do Australia's and Canada's. However, since the data on land use changes and their conversion into equivalent units of greenhouse gas emissions is subject to high level of uncertainty as per WRI, this estimate is not taken into consideration.

THE PRESENT

Current cumulative emissions

Forget the past, even the present atmosphere is being filled by the already industrialised countries. Rich



countries are still the major emitters of total CO₂. **Between 1980 and 2007, the total emissions of the US were almost double that of China and more than seven times that of India.** The current emissions from developed countries are still very high: with just 15 per cent of the world's population, they account for 45 per cent of its CO₂ emissions (See graph 3).

Negotiations for a protocol to the UNFCCC treaty focussed on emission cuts for developed countries. Rightly so. Freezing emissions of the developing world would have meant – and still means – freezing inequity. Climate justice demanded the rich had to reduce. But the agreed target was a weak one.

Per capita emissions

While China has overtaken the US as the world's largest emitter of CO₂, its per capita emissions are

Graph 3: Cumulative energy-related CO₂ emissions: 1980-2007*



Note: *all figures in million tonne of CO₂

Source: Climate Analysis Indicators Tool (CAIT) Version 8.0. (Washington, DC: World Resources Institute, 2011)

just one-fourth that of the US. Emissions from India are increasing. Even so, its per capita carbon footprint is less than one-tenth of that in high-income countries. The mere 'per capita increase of emissions' for a thinly populated Canada between 1990 and 2007 is higher than 'per capita emissions' of India in one year-2007 (1.3 tonne) (See graph 5).

It was for this reason the world agreed that freezing emissions of developing countries at current levels would mean freezing inequity. Climate justice demanded the rich had to reduce their emissions, so that the poorer, emerging world could grow. It was about making and sharing common atmospheric space.

In late 1997, the Kyoto Protocol agreed on a small and hesitant target of 5.2 per cent cuts over 1990 levels by 2008-2012 by industrialised countries (Annex 1 countries) to establish this principle.

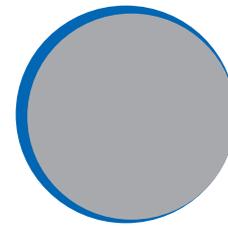
Graph 4: US vs India per capita CO₂ emissions (tonnes)

Beyond compare

USA

● 1990 (19.7)

● 2009 (19.3)



India

● 1990 (0.7)

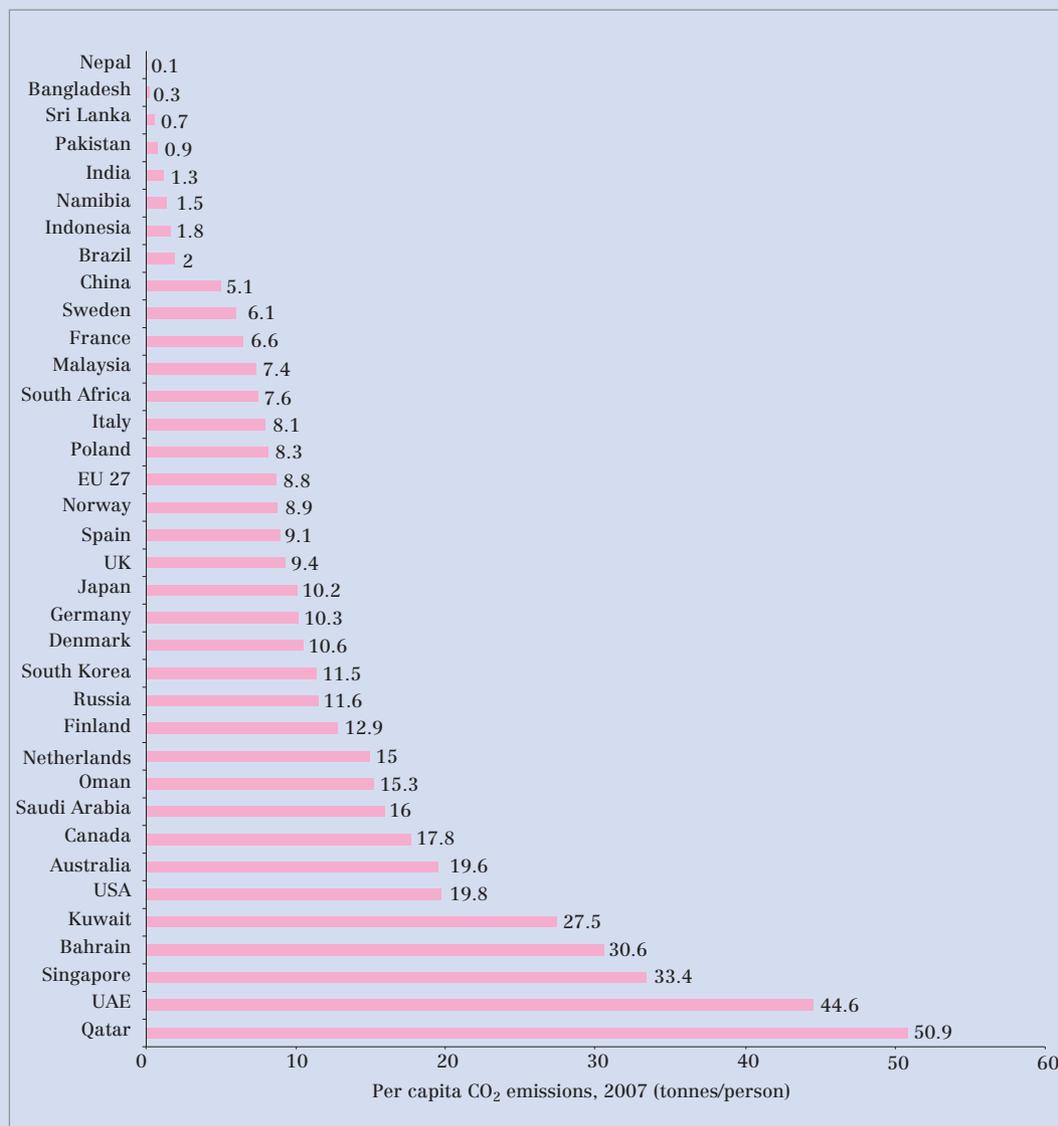
● 2007 (1.3)

The current per capita emissions is almost 15 times higher than India's



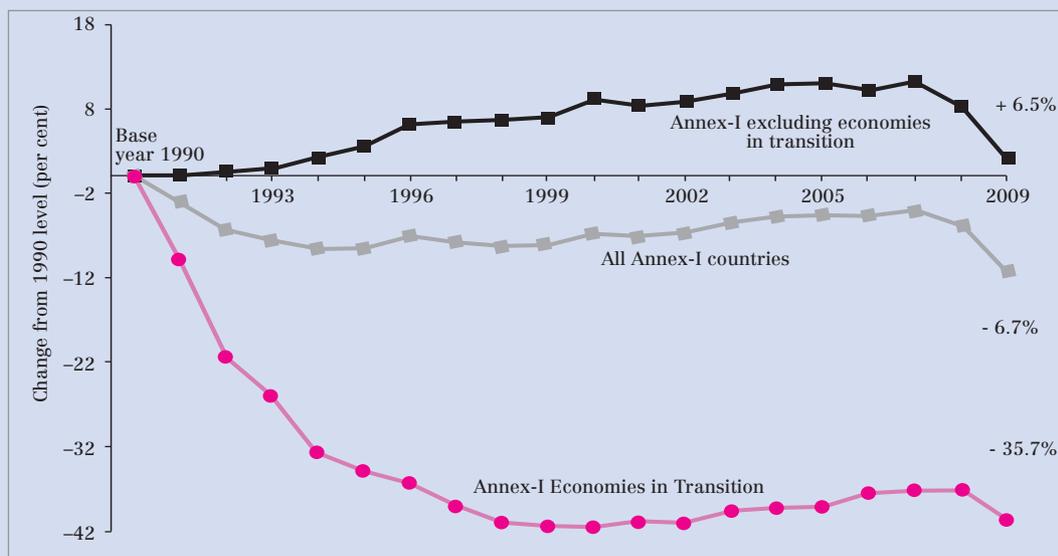


Graph 5: Per capita CO₂ emissions, 2007 (tonnes)



Source: Climate Analysis Indicators Tool (CAIT) version 8.0, (Washington, D.C: World Resources Institute, 2011)

Graph 6: Annex I: 1990-2009 trend of GHG emissions without land use change and forestry



Note: Annex I countries under the UN Framework Convention on Climate Change
 Source: UNFCCC 2011, Greenhouse Gas Inventory Data - Detailed data by Party, <http://unfccc.int/di/DetailedByParty/Event.do?event=go>, as viewed on October 16, 2011



Kyoto burden: Has the industrialised world kept its agreement?

Rich country emissions have increased, not decreased

As the call for action has become more strident and urgent (as it must), the world has looked for small and petty responses. On one hand, there is a well-orchestrated media and civil society campaign to paint the Chinese and Indians as the villains of the piece. If they 'cry' about their need to develop, the response is to tell them that they are most vulnerable. Rich countries seem to be saying: 'We cannot afford to waste time in the blame game. Even if, in the past, the Western world created the problem, *you* must, in *your* interest, take the lead in reparations.'

This hysteria is growing. But unfortunately, action is not keeping pace. In late 1997, after protracted negotiations, the Kyoto Protocol was established. Under this, the industrialised world agreed to cut its emissions by just 5.2 per cent below 1990 levels between 2008-2012. The world is nowhere close to achieving even this measly reduction. Not only has the world's largest polluter – the United States – walked out of the global agreement, even some European nations are finding it difficult to reach this modest target. A 2010 review by the secretariat of the UNFCCC found that, between 1990 and 2009, while carbon dioxide emissions of all industrialised countries (classified as Annex I under the Convention) **declined by 6.7 per cent, this reduction was largely due to the countries**

A 2010 review of the UNFCCC found that between 1990 and 2008, CO₂ emissions of all industrialised nations declined by 6.1 per cent, this reduction was largely due to the decreased emissions of economies in transition and to some extent due to the economic slowdown. If countries excluding economies in transition are considered, Annex-I emissions actually increased by 7.9 per cent.

Graph 7: Change in emissions 1990-2009 for Annex I countries excluding economies in transition



Source: GHG data from United Nations Framework Convention on Climate Change, 2011



whose economies are in transition (former Soviet block countries) and to some extent, due to the economic slowdown. The carbon dioxide emissions of the rich Annex 1 countries, excluding countries in transition, actually increased by 6.5 per cent (See graph 6).

During the same period, the carbon dioxide emissions of key polluters increased – in the case of the US by 7.2 per cent, and by a whopping 30.5 per cent in Australia. Even most European countries have seen an increase in their emissions. The only countries that have cut carbon dioxide emissions are Sweden, France, the UK and Germany. But it is important to note that the UK and Germany are finding it difficult to cut further. The reason is simple: the UK partly gained its emissions reduction by switching from coal to natural gas, a transition that is now predominantly completed. Germany reduced its emissions greatly because of the reunification of the industrialised west with the economically depressed east.

New answers must now be found. In other words, these emission cuts were nowhere close to what was needed, then or now, to avert catastrophic climate change. The industrialised countries have reneged on their commitment. They have let us all down (See graph 7).

So far, the rich world has found only small answers to existential problems. It not only wants to keep its coal-burning power plants (even as it points the finger at China and India), but wants to build new ones. It believes it can keep polluting while finding new techno 'fixes'.

No energy transformation made

What is clear is that no dent has been made where emissions are the greatest: in the energy sector. Here, emissions of the rich industrialised countries have increased by almost 5.4 per cent since 1990 (See graph 8).

Within the energy sector, both energy industry and transport emissions have seen the biggest jump: 13.0 and 17.3 per cent respectively (See graph 9). The only hard sector that has seen a decrease is manufacturing industry and construction, partly because manufacturing related emissions have been exported to China and other emerging economies.

Now science tells us emissions have to be cut by 50-85 per cent by 2050. How will these countries cut their emissions so drastically, when their track record over the past years is worse than dismal?

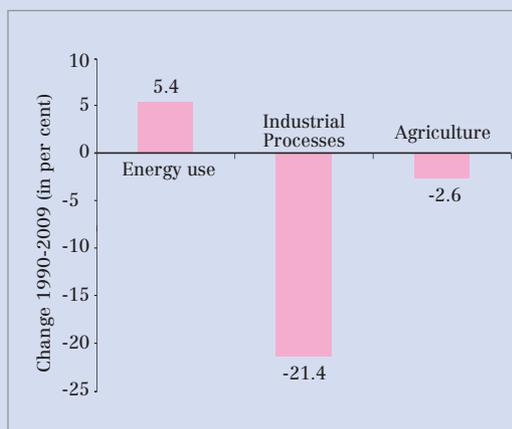
The future

Future responsibility: China and the rest of the world

There is no doubt that in the current economic model, China, India and all other countries are in the catch-up race. Their pathway to industrial growth and wealth will add to emissions, which the world cannot afford.

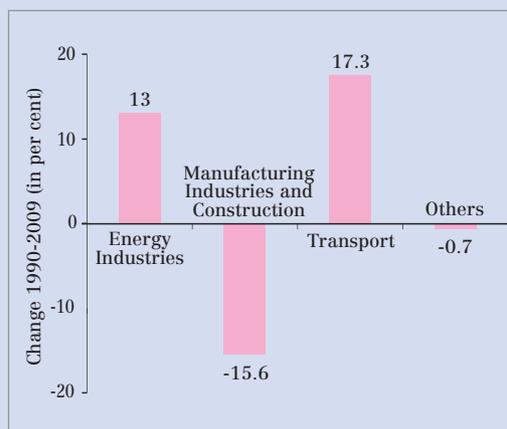
What, then, is the way ahead? First, we must accept that the rich world must reduce emissions drastically. There is a stock of greenhouse gases in the

Graph 8: Change in total emissions 1990-2009 for Annex 1 countries excluding economies in transition (in per cent)



Note: Excludes land use change and forestry
Source: GHG data from United Nations Framework Convention on Climate Change, 2011

Graph 9: Change in emissions in energy use 1990-2009 for Annex 1 countries excluding economies in transition (in per cent)



Note: Excludes land use change and forestry
Source: GHG data from United Nations Framework Convention on Climate Change, 2011

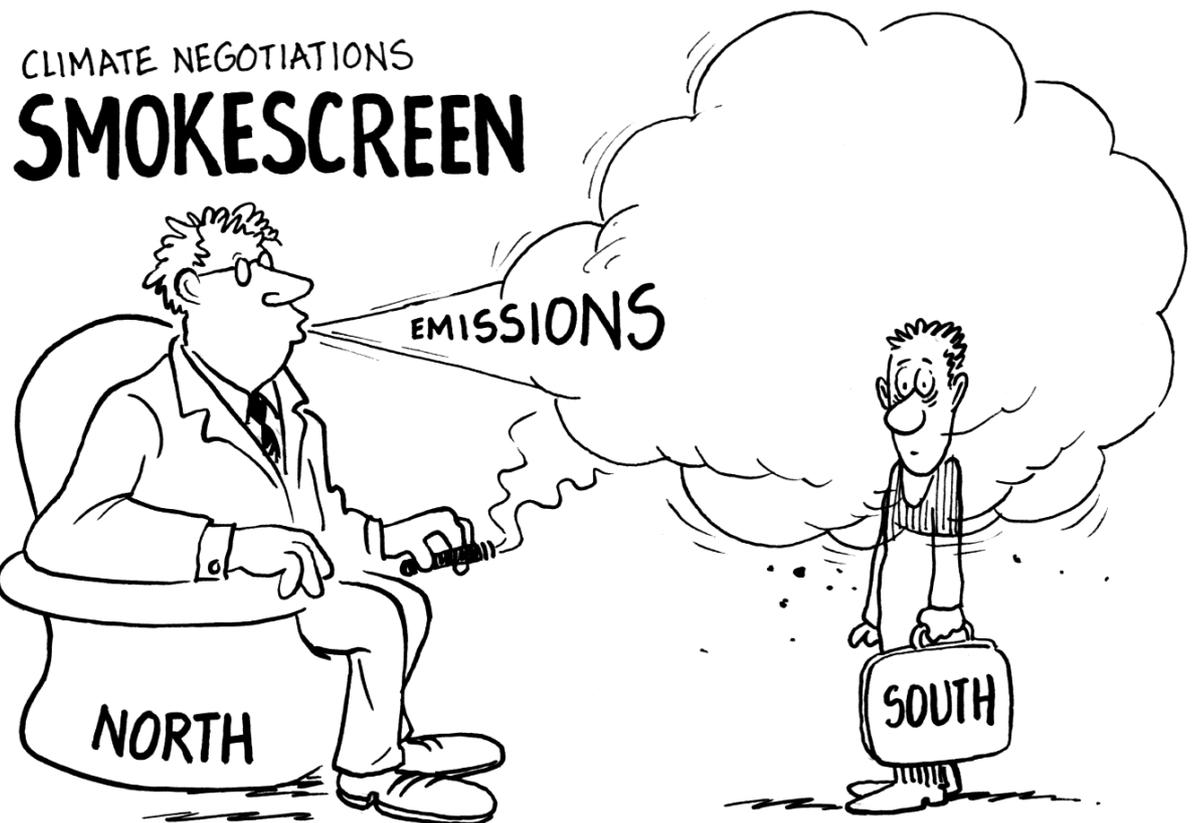
atmosphere, built up over centuries in the process of creating nations' wealth. This has already made our climate unstable. Poorer nations will add to this stock through their desire for economic growth. But that is not an excuse for the rich world to avoid adopting tough and binding emission reduction targets. The principle should be: the rich must reduce so that the poor can grow.

Second, any agreement must recognise the poor and emerging countries' need to grow. Their engagement should, therefore, not be legally binding but based on national targets and programmes. The challenge is to find low carbon growth strategies for emerging countries, without compromising their right to develop. This can be done.

It is clear countries such as India and China can 'avoid' additional emissions. The reason is that they are

still in the process of building their energy, transport and industrial infrastructures. They can invest in 'leapfrog' technologies to avoid pollution. In other words, they can build their cities based on public transport; their energy security based on local and distributed systems – from biofuels to renewables; and their industries using the most energy-efficient and pollution-free technologies.

These countries know it is not in their interest to first pollute, then clean up; or first to be inefficient, and then to save energy. But the hard fact is that existing 'green' technologies are costly. It is not as if China and India are bent on first investing in dirty and fuel-inefficient technologies. They invest in these, as the now rich world has done, based on the principle: first create emissions, then make money, then invest in efficiency. This is the challenge.





Carbon footprint: Who is responsible for emissions made for the consumption of faraway others?

Is China responsible for all the emissions it has generated, given the fact that it produces goods consumed in rich countries? Have these countries not out-sourced their pollution to the poorer and emerging world? In whose carbon balance-sheet should these emissions be accounted for? This debate has been on the fringe of the climate change negotiations, partly because it leads to a hotbed of issues concerning World Trade Organization rules.

But a 2009 paper published in the journal *Environmental Science and Technology* presents the carbon footprint analysis of the most important economies of the world, accounting for greenhouse gas (GHG) emissions caused by the production of internationally traded goods. The authors, Edgar G Hertwich and Glen P Peters from Oslo-based research institutions, make nations responsible for the carbon footprint of their imports (not exports).

In the study, total 2001 global emissions of 24.7 gigatonne (Gt) of CO₂ and 9.5 Gt of CO₂ equivalent are divided, not by country but by the item of consumption. The study finds:

- 72 per cent of GHG emissions are related to household consumption, 10 per cent to government consumption and 18 per cent to investments. Food accounts for nearly 20 per cent of GHG emissions; 19 per cent for shelter because of high energy costs of heating and lighting, while mobility accounts for 19 per cent of world GHG emissions.
- Average per capita footprint varies from just over 1 tonne per person per year for several African and other countries to 28 tonne per person per year for the US (See table 2.1) and 33 tonne per person per year for an import-dependent, high consuming country like Luxembourg.
- The carbon footprints of most of the rich countries are higher than the territorial emissions because the carbon footprint of imports is larger than that of exports.
- The carbon footprint is strongly correlated with per capita consumption expenditure. The study estimates that as nations become wealthier, the carbon footprint increases by 57 per cent for each doubling of consumption. But the carbon intensity of consumption decreases with rising expenditure.
- With a doubling of per capita expenditure, the CO₂ emissions from fossil fuel burning and industrial processes increase by 81 per cent. The emissions of other GHGs, primarily methane and nitrous oxide, increase less strongly with wealth – only 32 per cent – because they are mostly associated with food production.
- Food production is the GHG emissions in poor countries, followed by household energy use – mostly for food preparation, hot water and heating.
- Only extremely few, poor countries such as Bangladesh, Malawi and Mozambique have carbon footprints near the 1 tonne per capita required for all nations by 2050 in order to limit global warming to 2°C. For most countries, the carbon footprint of food alone is around 1 tonne per capita.

So, who's responsible?

Table 2.1: Carbon footprints of some nations

Country	Footprint [tCO ₂ e/p] ^a	Domestic share	Population (million)	Construction ^b	Shelter ^b	Food ^b	Clothing ^b	Manufactured products ^b	Mobility ^b	Service ^b	Trade ^b
Australia	20.6	82%	19.4	9%	21%	16%	2%	8%	16%	16%	11%
Canada	19.6	75%	31.2	8%	18%	8%	2%	9%	30%	18%	6%
United Kingdom	15.4	62%	59.3	7%	21%	14%	3%	15%	22%	10%	11%
United States	28.6	82%	277.5	7%	25%	8%	3%	12%	21%	16%	8%
Bangladesh	1.1	86%	132.1	7%	13%	55%	3%	4%	6%	11%	0%
Brazil	4.1	88%	172.3	6%	5%	43%	2%	7%	19%	15%	4%
China	3.1	94%	1269.9	25%	12%	27%	3%	10%	8%	15%	2%
India	1.8	95%	1032.1	8%	14%	41%	3%	9%	12%	10%	3%
Sri Lanka	1.4	67%	19.4	8%	12%	27%	3%	8%	20%	19%	4%
Uganda	1.1	91%	22.6	4%	9%	61%	0%	1%	6%	16%	3%
Tanzania	1.2	90%	34.5	1%	22%	45%	2%	3%	5%	21%	2%

Note: ^aTonne of carbon dioxide equivalent per person; ^b Contribution of different consumption categories (in per cent)

Source: Hertwich, Edgar G and Peters, Glen P 2009, 'Carbon footprint of nations: a global, trade-linked analysis', published on June 15, p 3, downloaded from <http://pubs.acs.org> doi: 10.1021/es803496a