BRIEFING PAPER FOR MEMBERS OF PARLIAMENT

An Occasional Paper from the Centre for Science and Environment

# CLIMATE CHANGE
## A CHALLENGE TO INDIA'S ECONOMY

*By Anil Agarwal*

**Calling upon policy makers to recognise India's stake in the international climate change negotiations**





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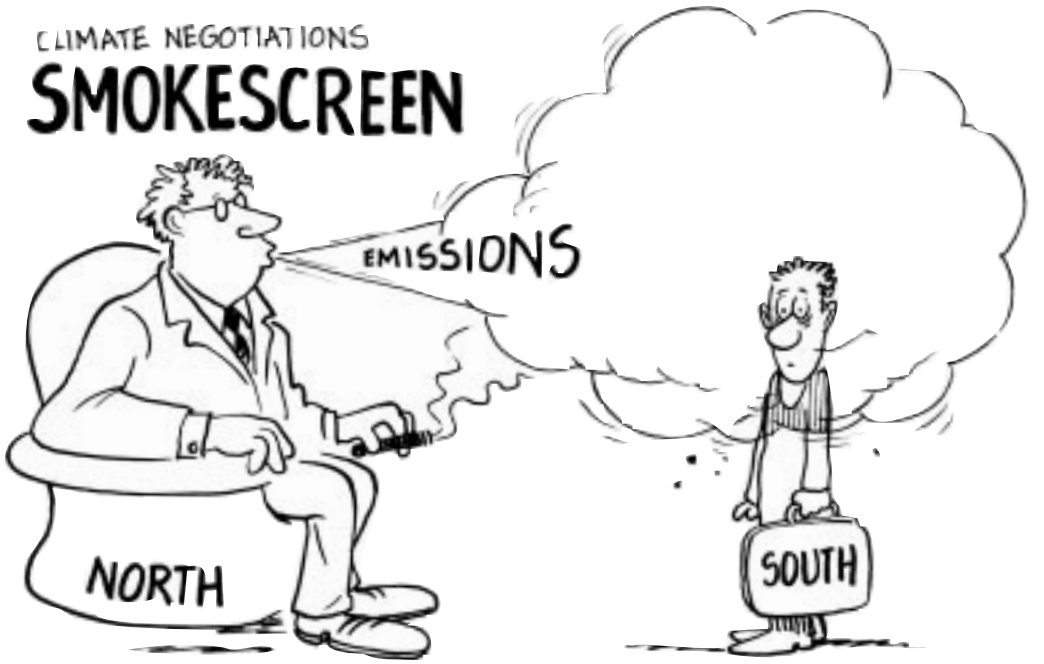
# BRIEFING PAPER
## ON CLIMATE CHANGE




Dear Members of Parliament,

Unknown to most people in the country, India is currently facing one of the biggest threats it has ever faced, which could not only result in natural disasters and untold misery for its citizens in the years to come, but also compromise our future economic growth. This threat is global warming.

The series of floods and droughts suffered by the country over the last year have proved that these disasters take an enormous toll not just on life, but also the country's resources. Our capacities to deal with such disasters are limited. According to studies conducted by the Indian Institute of Technology, New Delhi, and by scientists around the world, these incidents will only increase in frequency in the future as a direct result of global warming.

International negotiations to deal with the global warming problem are currently posing an even bigger threat. Richer countries like the US are refusing to take responsibility for their contribution to the global warming problem because they are afraid it will affect their economies. Instead, they are putting political pressure on countries like India to take 'meaningful' action.

This pressure must be resisted at all costs, because it could not only compromise India's development in the future, but also because it would set a wrong precedent for global democracy. Instead, India must demand fair and democratic per capita rights for its citizens.

The following briefing paper has been prepared to appraise you of the linkages between global warming and the country's economy, and food and water security. Information is also provided about the climate negotiations under the UN Framework Convention on Climate Change (FCCC), its Kyoto Protocol and the Clean Development Mechanism (CDM).

This period in the negotiations is crucial. India will come under tremendous pressure to submit to the demands of industrialised countries at the sixth conference of parties in The Hague, from November 13-24, 2000. It is important at this stage to ensure that India gets a fair deal.

Please do not hesitate to contact us for further information.

**Anil Agarwal**
DIRECTOR, CENTRE FOR SCIENCE AND ENVIRONMENT

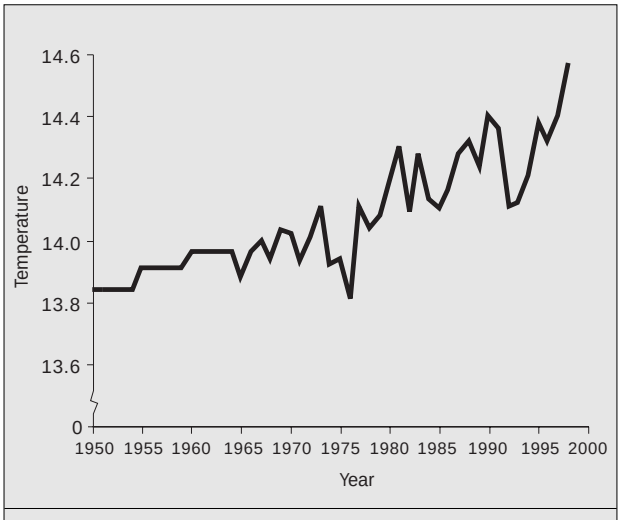
**What is global warming and climate change?**

The Earth's temperature is maintained at a level where it can sustain life by a balance between heat from the sun, and cooling from reflecting some of the heat by the Earth's warm surface and atmosphere back to space.

But atmospheric gases such as carbon dioxide, methane, nitrous oxide and halocarbons absorb some of the rays reflected back from the Earth's surface. These are 'greenhouse gases' (GHGs). They act like a blanket, preventing much of the heat reflected by the earth's surface escaping directly to space. By slowing the release of cooling radiation, these gases warm the Earth's surface. While this is a natural process that is essential to life on Earth, the trouble starts when the concentration of these GHGs in the Earth's atmosphere increases. The result is an increase in the Earth's temperature, or global warming *(see Graph 1)*. Global warming in turn interferes with the Earth's climatic systems, resulting in climate change.

Of all GHGs, carbon dioxide is singly responsible for over half the effect of global warming. Though the gas is naturally present in the Earth's atmosphere and in oceanic and terrestrial 'sinks' (such as forests), the trouble starts when carbon concentrations increase beyond limits that can be absorbed by the Earth's natural cycle.

**Graph 1: Global average temperature –1950-97 (degrees centigrade)**




Source: Lester R Brown *et al* 1999, *Vital Signs 1999*, Worldwatch Institute, Washington DC, p 59

Carbon dioxide concentrations have been increasing rapidly in the atmosphere since the start of the industrial revolution, when the world became heavily dependent on carbon-based fossil fuels for economic growth. Ever since then, human beings have been emitting carbon dioxide into the atmosphere in their pursuit for industrialisation, economic growth, and better lifestyles.

**What are the effects of global warming and climate change?**

Global warming could have many disastrous effects on the society directly (water, food, habitat, health, economic infrastructure such as energy, transport and industry) and also through the environment (rainfall, sea level rise, extreme events such as hurricanes and typhoons, floods and droughts).

Polar ice melts as a result of the rising temperature and, combined with the thermal expansion of seawater, causes oceans to slowly creep up and swallow low-lying islands. According to a panel of international experts studying climate change, entire forests may disappear and biological diversity may reduce because of the disappearance of habitat or reduced migration potential.[1]

Climate systems, such as the Indian subcontinent's monsoon system, could be dramatically affected. This will have a direct impact on the economy of nations. For instance, both drought and floods caused by interference in India's climatic systems could result in crop failure, affecting both the economy and the food security in the country. Dealing with the natural disasters also imposes a huge cost on the country's economy, as is evident from the droughts and floods India has suffered over the last year.

**Have any effects of climate change already been recorded?**

According to the Intergovernmental Panel on Climate Change (IPCC), an international committee set up by the UN to track global warming, the average global surface temperature has already

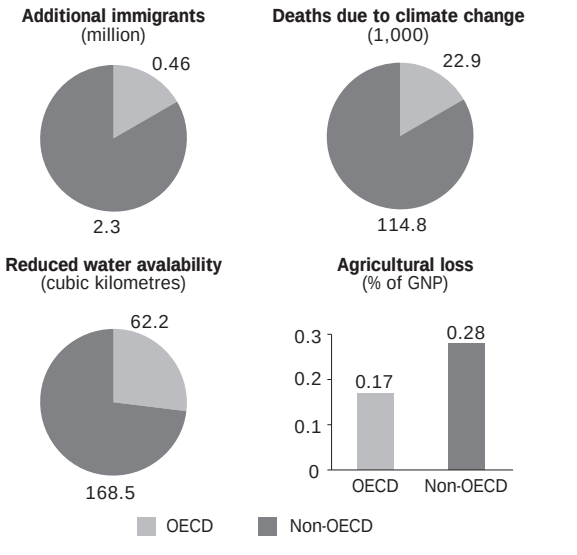
increased by 0.3-0.6°C in the last one hundred years.[2] Scientists have recorded the 1990s as the hottest decade in the world since the industrial revolution began. Devastating hurricanes and typhoons have cost lives and destroyed entire national economies in previous years.

Scientists have also recorded that spring now arrives a week earlier in the northern hemisphere, tree lines in the northernmost forests of the world are moving towards the poles, and ice shelves on Antarctica's northern fringe are disintegrating.

### Who will suffer most from global warming?

A team of scientists sponsored by the UN have reported that developing countries are, on an average, twice as vulnerable as industrialised countries and small island developing countries are three times as vulnerable *(see Graph 2)*.[3] A 15-95 cm rise in sea-level could turn people now living on islands and in coastal areas into environmental refugees. Significantly, adverse effects on small island states and low-lying deltas such as in Bangladesh, Egypt and China could render millions of people homeless.

**Graph 2: Estimated damages from long-term climate change**




Source: S Fankhauser 1995, *Valuing Climate Change: The Economics of the Greenhouse*, Earthscan, London, derived from data of the Intergovernmental Panel on Climate Change (IPCC)

It is estimated that while Central America, Brazil, Africa and India will suffer from a 2-10 per cent loss in agricultural production, the US, Canada, China, and Australia will have an increase of production by 5-10 per cent.[4]

### What will be the effects of global warming on India?

India's economy is largely dependent on agriculture and is already under stress due to its increasing population, and the resulting increase in demand for energy, fresh water and food. This situation will worsen with the effects of global warming. Some of the most obvious effects are listed below.

**Increased temperature**: Scientists from the Indian Institute of Technology (IIT), New Delhi, already report that surface air temperatures over India are going up at the rate of 0.4°C per hundred years, particularly during the post-monsoon and winter season.[5] Using models, they predict that mean winter temperatures will increase by as much as 3.2°C in the 2050s, and 4.5°C by the 2080s, due to GHGs. Summer temperatures will increase by 2.2°C in the 2050s and 3.2°C in the 2080s.[6]

Extreme temperatures and **heat spells** have already become common over Northern India, often causing loss of human life. In 1998 alone, 650 deaths occurred in Orissa due to heat waves.

**Effect on monsoon**: India is heavily dependent on the monsoon - to meet its agricultural and water needs, and also for protecting and propagating its rich biodiversity. Subtle changes have already been noted in the monsoon rain patterns by the IIT, Delhi, despite the 11 near-normal monsoons in a row. IIT scientists warn that India will experience a **decline in summer rainfall** by the 2050s. Since summer rainfall accounts for almost 70 per cent of the total annual rainfall over India and is crucial for Indian agriculture, this could have a **devastating effect on the Indian economy, and on food security**.

**Effects on water resources**: Relatively small climatic changes can cause large water resource problems, particularly in arid and semi-arid regions such as northwest India. This will have an impact on agriculture, drinking water, and on

generation of hydroelectric power, resulting in limited water supply and land degradation.

Apart from monsoon rains, India uses perennial rivers, which originate and depend on glacial melt-waters in the Hindukush and Himalayan ranges. Since the melting season coincides with the summer monsoon season, any intensification of the monsoon is likely to contribute to flood disasters in the Himalayan catchment. Rising temperatures will also contribute to the raising of the snowline, reducing the capacity of this natural reservoir, and increasing the risk of flash floods during the wet season.

Increase in temperatures can lead to increased eutrophication in wetlands and fresh water supplies.

**Effect on agriculture:** Increased temperatures will impact agricultural production. Higher temperatures reduce the total duration of a crop cycle by inducing early flowering, thus shortening the 'grain fill' period. The shorter the crop cycle, the lower the yield per unit area.

Increased temperature also mean increased evaporation and transpiration rates. Even a small increase of 1°C could increase the rate of evaporation/ transpiration by 5-15 per cent. With no rainfall to compensate, yields will be reduced. In north India, for instance, a temperature rise of 0.5°C could reduce wheat yields due to heat stress by about 10 per cent if rainfall does not increase. IIT scientists predict that a temperature increase of 3°C will result in a 15-20 per cent decrease in wheat yields, and also a decrease in rice yields.

Rise in surface temperature will create more conducive conditions for pest infection, which is already a major constraint in achieving higher crop production in India, and hence loss of crop.

**Human health:** Modelling suggests that the rise in temperature and change in humidity will adversely affect human health in India. Heat stress could result in heat cramps, heat exhaustion, heat stroke, and damage physiological functions, metabolic processes and immune systems. Increased temperatures (particularly minimum temperatures) can increase the range of vector borne diseases such as malaria, particularly in regions where minimum temperatures currently limit pathogen and vector development.

Stress on food supply, water availability, sea level rise and changes in ecosystems is likely to have additional effects on human health in India. Water borne diseases, natural disasters, environmental migration, nutritional deficiency could be other major risk factors.

**Effect on forests:** Increase in temperatures will result in shifts of lower altitude tropical and subtropical forests to higher altitude temperate forest regions, resulting in the extinction of some temperate vegetation types. Decrease in rainfall and the resultant soil moisture stress could result in drier teak dominated forests replacing sal trees in central India. "In any case an increased turnover of forest species is indicated," says M Lal from IIT Delhi. This could potentially result in species extinction and decline in biodiversity.

Increased dry spells could also place dry and moist deciduous forests at increased risk from forest fires.

**Effect on coastal low lands and deltas:** A trend of sea level rise of 1 cm per decade has been recorded along the Indian coast. Sea level rise due to thermal expansion of seawater in the Indian Ocean is expected to be about 25-40 cm by 2050. This could inundate low lying areas, drown coastal marshes and wetlands, erode beaches, exacerbate flooding and increase the salinity of rivers, bays and aquifers.

Deltas will be threatened by flooding, erosion and salt intrusion. Loss of coastal mangroves will have an impact on fisheries. The major delta area of the Ganga, Brahmaputra, and Indus rivers, which have large populations reliant on riverine resources, will be affected by changes in water regimes, salt-water intrusion and land loss.

In addition to dealing with its own problems, India will not be able to ignore its neighbours, whose citizens are also likely to be very badly affected and seek refuge in India. For instance, Bangladesh will not only loose land to sea-level rise, it will also become more vulnerable to many

environmental hazards, including frequent floods, droughts, cyclones, and storm surges that damage life, property, and agricultural production.

### Who is responsible for global warming?

Developed countries have had a head start on developing countries in the industrialisation process. They have been emitting carbon dioxide in the Earth's atmosphere for years before developing countries, at the time when the harmful effects of these emissions were not known, and hence there were no restrictions on emissions.

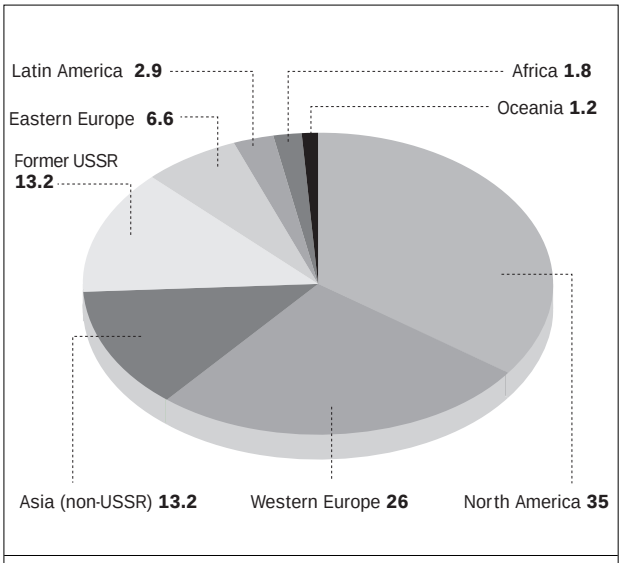
Since carbon dioxide accumulates in the atmosphere for hundreds of years, the emissions by developed countries are still present in the Earth's atmosphere, and are still causing global warming. Therefore, developed countries are responsible for increasing the carbon dioxide concentrations in the atmosphere through their historical emissions.

Carbon dioxide emissions of developing countries like India have now grown as they follow the fossil fuel-intensive economic growth model set out by the rich countries, and try to achieve better standards to living. But even to this day, many industrialised countries emit more carbon dioxide than many developing countries (*see Graph 3*).

The differences in developed and developing country emission are even more apparent when per capita emissions of carbon dioxide are concerned. In 1996, the emissions of one US citizen were equal to 19 Indians, 30 Pakistanis, 17 Maldivians, 19 Sri Lankans, 107 Bangladeshis, 134 Bhutanese or 269 Nepalis *(see Table 1)*. This is because of the energy intensive lifestyles of industrialised countries. Many of the uses of energy in the richer countries are for purposes of luxury, and the emissions caused from such uses may be termed **luxury emissions**.

But the lower per capita emissions of developing countries are because a large number of poor people do not even have access to basic amenities such as electricity. They will need their share of ecological space to increase what could be termed **survival emissions**. Citizens of richer countries will have to decrease their per capita emissions in order to allow these poor people to increase theirs, and to allow them to improve their living standards.

**Graph 3: Emissions of carbon dioxide since 1800 (percentages)**




Source: Fred Pearce 1999, Countdown to chaos, *New Scientist*, New Science Publications, London, November 29, p 22

### Why is it important to consider per capita carbon dioxide emissions?

As we have seen, carbon dioxide emissions are essential for economic growth so long as economic growth is dependent on fossil fuel use. But the Earth's capacity to absorb carbon dioxide is limited. If the Earth's capacity to absorb these

**Table 1: Comparison of per capita emissions of USA and South Asia**

| Country | Per capita emissions (tC) | | No. of citizens equivalent to one US citizen | |
|---|---|---|---|---|
| | 1990 | 1996 | 1990 | 1996 |
| USA | 5.18 | 5.37 | 1 | 1 |
| Bangladesh | 0.04 | 0.05 | 130 | 107 |
| Bhutan | 0.02 | 0.04 | 259 | 134 |
| India | 0.22 | 0.29 | 24 | 19 |
| Maldives | 0.19 | 0.31 | 27 | 17 |
| Nepal | 0.01 | 0.02 | 518 | 269 |
| Pakistan | 0.16 | 0.18 | 32 | 30 |
| Sri Lanka | 0.06 | 0.11 | 86 | 49 |

Note: tC: tonnes of carbon

Source: Gregg Marland *et al* 1999, *National carbon dioxide Emissions from Fossil Fuel Burning, Cement Manufacture and Gas Flaring,* Oak Ridge Laboratory, USA

emissions is exceeded, the ill effects of global warming will be unleashed.

In other words, one could say that the 'ecological space' available to human beings to pursue their economic goals is limited. Life on Earth will be threatened if this ecological space is exceeded.

It is only fair that this 'ecological space' is shared equally among all human beings on the Earth, so that each and every one of us has an equal right to development, and to improving our lifestyles. In other words, each one of us has the right to equal per capita emissions of carbon dioxide.

### How can global warming be stopped?

The only way to stop global warming is for the world to reduce GHG emissions by 50-70 percent below 1990 levels, by reducing, or even altogether abandoning, the use of carbon-based fuels.

This is a difficult task, because the world's economy depends on fossil fuels. And because GDP growth in all countries in the world is currently linked with the growth in carbon dioxide emissions (*see Graph 4*). Not even an environmental friendly country like the Netherlands has been able to break this link. Under these circumstances, any limit on carbon emissions amounts to a limit on economy growth.

### What has the world done so far to deal with the global warming problem?

To deal with the climate change problem by reducing GHG emissions, a global Framework Convention on Climate Change (FCCC) was signed under the auspices of the UN in 1992. This convention recognised that the problem of global warming was caused mostly by industrialised countries, and hence they should take the first step to limit emissions.

The Kyoto Protocol, adopted under the FCCC in 1997, laid down a timetable for industrialised countries to reduce their GHG emissions. **According to the protocol, industrialised countries have to decrease their emissions by at least 5.2 per cent compared to 1990 emission levels, by the 2008-2012 period**.

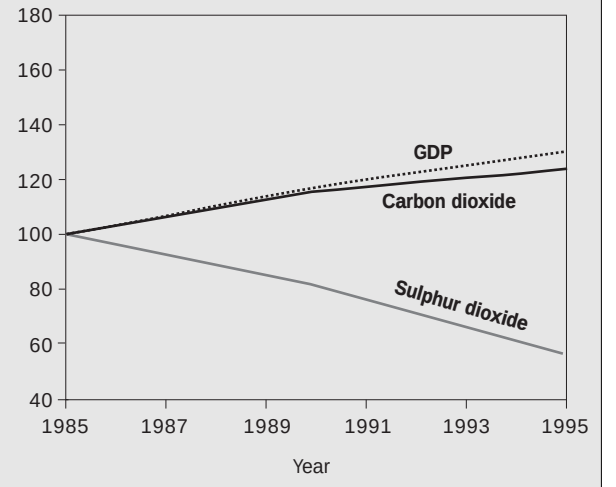
The Kyoto Protocol has not yet come into effect, and the finer details of some of its articles still have to be negotiated. This is expected to happen at the sixth conference of parties (CoP-6) to the FCCC, to be held in The Hague from November 13-24, 2000.

### What prevents the Kyoto Protocol from coming into force?

The protocol will come into effect only after it has been ratified by 55 countries who are parties to the FCCC, with emissions adding up to at least 55 per cent of the total 1990 carbon dioxide emissions of industrialised countries. This means the US and Russia, which together account for almost 54 per cent of these emissions, have to ratify the protocol for it to come into force. Also, the protocol would be meaningless without the ratification of the US, which accounts for a fourth of the world's carbon dioxide emissions.

Unfortunately, the international negotiations have turned acrimonious as the US has made its ratification of the protocol conditional to 'meaningful participation' of key developing countries (mainly

**Graph 4: Growth in GDP versus growth in sulphur dioxide and carbon dioxide emissions in the Netherlands**




**The Netherlands has been able to delink its economy from sulphur dioxide emissions but has failed to do the same with carbon dioxide emissions. This is true for all industrialised countries**

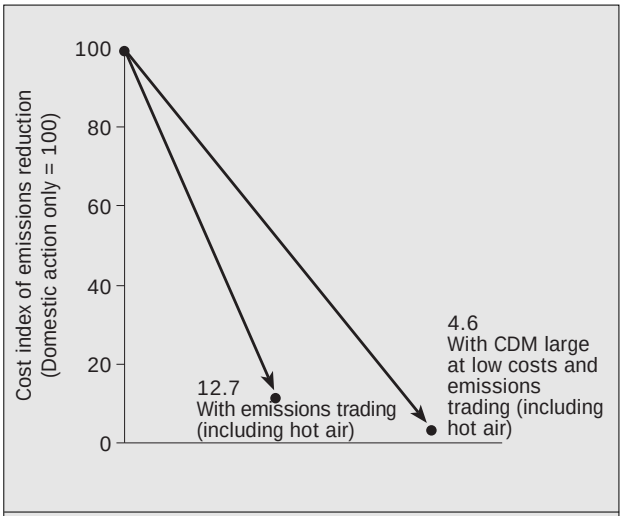
Source: Anon 1998, National Environmental Policy Plan 3, VROM, The Hague

China, India and Brazil), in clear contravention of the FCCC agreement. This is because the US Senate wants to protect the US economy. They are afraid that industries and hence jobs will move from the US to these developing countries, if the US has limitations of greenhouse gas emissions and these countries do not.

But asking developing countries to reduce their carbon dioxide emission levels amounts to asking them to freeze at their current level of development. **This amounts to freezing global inequality, by accepting that some countries will always be more developed than others in the world.**

Also, the US is looking for new ways to meet their commitments under the Kyoto Protocol in the cheapest possible way, without compromising its economy. Therefore, it is pushing for the acceptance of the so-called 'flexibility mechanisms' of the protocol. With these mechanisms, the cost of meeting the Kyoto commitments could come down by over 95 per cent for the US (*see Graph 5*).

**Graph 5: Cost reduction using different flexibility mechanism**




Source: Christiaan Vrolijk 1999, The potential size of the CDM, in *Global Greenhouse Emissions Trader*, UNCTAD, Geneva, Issue 6, February, pp 2-4

### What are the Kyoto Protocol's flexibility mechanisms?

The 3 flexibility mechanisms of the Kyoto Protocol are based on the notion that reductions of GHGs can be achieved at lower costs in many developing countries as well as in Central and Eastern Europe (CEE) than in industrialised countries. **Joint Implementation** (JI) and **Emissions Trading** allow for emissions trading programmes between only industrialised countries.

But the **Clean Development Mechanism**, or CDM, is a form of joint implementation between industrialised and developing countries. Under this mechanism, industrialised countries pay the extra cost of upgrading technology in developing countries. In turn, they get credits for the amount of GHG emissions mitigated by the technology upgrade.

### What is CDM?

The primary purpose of CDM mechanism is to allow industrialised countries to buy cheap reductions from developing countries.

Let us say that India decided to invest in a new power station, and has decided on a particular technology at the cost of X crore. An entity from an industrialised country (which could even be a company) offers to provide India with slightly better technology, which costs more (say Y crore), but will result in lower emissions.

The industrialised country will only pay the incremental cost of the project – viz. Y minus X. In return, the 'investing' country will get 'certified emission reductions' (CERs), or credits, which it can use to meet its Kyoto commitments.

This is a very good deal indeed – but for the investing country. Not only do they sell developing countries their technology, but they also meet their Kyoto commitments without lifting a finger to reduce their domestic emissions. Countries like the US can continue to pollute at home, so long as it makes the reductions elsewhere.

### But do developing countries like India stand to gain from the CDM?

Not the way the CDM is currently designed. In fact, developing countries stand to lose a lot if they do not insist on equal per capita GHG emission entitlements for all countries before this mechanism comes into effect. There are several fundamental errors in the mechanism from the point of view of developing countries.

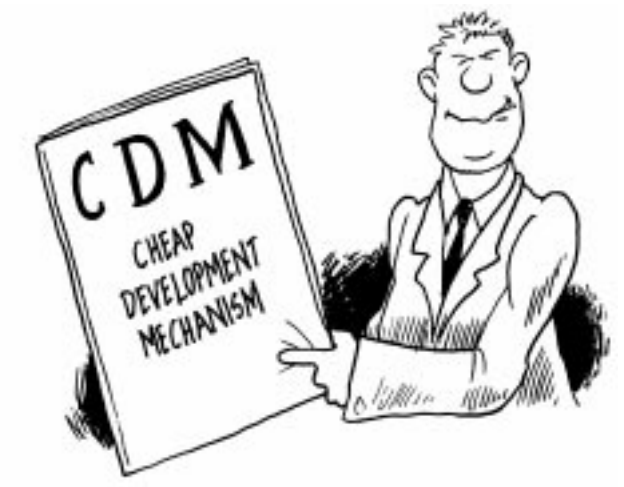
• The mechanism recognises and institutionalises the right of countries like the US to emit more GHGs, and hence their right to a higher standard of living than people in poor countries. This goes against the tenets of global democracy and social justice.

To be a fair and just regime, the climate negotiations must decide the per capita rights of every citizen on the Earth before allowing trade in these rights. As the Indian delegation has often asked at the climate negotiations, *how can we be expected to trade what we do not own?*

Therefore, it is important that developing countries demand the recognition and allotment of equal per capita entitlements before they agree to CDM.

• Possibly, the worst aspect of CDM is that while it helps industrialised countries to buy up the cheap emissions reduction options available today, it leaves developing countries to pay a heavy price tomorrow. Economists predict that the many carbon saving options that currently cost as little as US $10-25 per tonne of carbon could cost up to US $200-300 per tonne in the long term. This is the cost that developing countries will be expected to bear.

When developing countries themselves have reached high levels of energy efficiency and therefore its cost of curtailing emissions is high, the North will have no economic incentive to buy emissions credits from it. And if global warming is still a threat – as it definitely will be because industrialised countries would have taken little action domestically - then pressure will mount on developing countries to take expensive emissions reductions themselves.




In other words, CDM encourages the current generations of developing countries to sell off their cheaper emissions control options today, leaving future generations straddled with high cost options. It is, literally, a scheme that offers cash-strapped developing country governments an opportunity to discount the future.

And nobody knows what would be the form of international cooperation at that time *(see Box: Whose carbon hypocrisy)*.

• If CDM is used to bring in advanced technology into developing countries, there is a danger that they could get used as technological guinea pigs. If these countries do not have the capacity to manage these technologies, many CDM projects could fail.

• There is a strong concern amongst poorer, less industrially developed countries that CDM will totally bypass them. Within a purely market driven framework, most CDM projects will go to larger and more industrially advanced developing countries like India and China. It should be noted that even India and China will have to compete for least-cost options which will reduce their ability to ensure that climate change abatement projects address their national priorities in sustainable development.

• A share of CDM proceeds will also be used to pay for the adaptation costs of developing countries. This provision literally amounts to taxing the poor to pay the affected poor. There is no such provision in the other mechanisms, JI and emissions trading, meant for emissions trade between industrialised countries.

• Under the protocol, an industrialised country can buy up a large amount of emissions reduction credits from developing countries through CDM and then bank these emissions for future use! In this way, a rich country can siphon off the advantages of the current cheap emissions reduction

## WHOSE CARBON HYPOCRISY?

*Rather than critiquing the retrograde, undemocratic and inequitous position taken by their government and industry, Western non-governmental organisations (NGOs) have taken it upon themselves to deliver developing country participation to the US senate by hook or by crook.*

Several Northern groups are now urging their governments to use their influence on international financial institutions, and stop funding for fossil fuel projects in the South as a means of climate change mitigation. A petition to this effect was submitted by the Washington DC-based World Resources Institute (WRI) to the Group of 8 (G8) industrialised countries at their annual summit held in July 2000 in Okinawa, Japan. WRI urged the countries "not to undermine *their* (viz. industrialised countries') commitments to reduce the threat of global climate change by continuing to finance new projects that increase greenhouse gas emissions *in developing countries*" (emphasis added).[1]


To Southern groups familiar with the delicate and often duplicitous politics of international climate change negotiations and the resulting Kyoto Protocol, this position is an anomaly. Industrialised countries do have commitments under the Kyoto Protocol to reduce greenhouse gas (GHG) emissions, but these are *industrialised country* commitments presumably to be met by them *domestically*. The protocol certainly does not have any provision for the G8 to force developing countries to take on GHG reduction activities by making this conditional for energy loans.

If G8 countries do as WRI and other Northern NGOs want them to, and refuse to fund fossil fuel projects in developing countries, they will not be doing so with any powers vested to them by the Kyoto Protocol, as the WRI seems to suggest. In fact, they will only be using financial muscle against weaker countries. **Any section of the global civil society interested in global democracy should find the use of financial clout within an environmental treaty reprehensible.**

To begin with, of course, developing countries *do not have commitments under the Kyoto Protocol*. There is a very good reason for this: they have contributed little to the global warming problem historically, and need time, and 'ecological space' to develop. They will take on commitments at a later stage. Meanwhile, industrialised countries, having contributed most to the problem, must take the lead in cutting GHG emissions. US NGOs are blindly pushing the interests of their industry at the cost of global democracy, when they ask that greenhouse gas reductions be thrust on developing countries by using the aid lever.

In fact, the **NGOs are actually actively encouraging the use of aid, loans and trade as patently unfair mechanisms to bully developing countries into participation**. Aid and trade are not democratic means of getting developing countries to act (that too on commitments which do not even exist yet), because they cannot be used by developing countries against industrialised countries. US representatives are already humming and hawing about the Kyoto commitments, and there is a fair chance that industrialised countries will default once again. Developing countries will not have any funding or aid that they can withdraw to punish them.

Organisations like WRI believe in "harness(ing) the potential of the international public financial institutions to promote national policy reforms in borrower countries". This of course, once again amounts to leveraging aid to push for action on climate change in least developing countries. In May 2000, WRI produced a report condemning export credit and investment insurance agencies, which facilitate private investment from the North to developing countries, for funding fossil fuel projects.[2] The WRI analysis "suggests a reform agenda for (export credit authorities), and actions that might help to align trade and investment policies with climate commitments".[3] *Whose* commitments? To be carried out *where*?

Such positions ignore the fact that developing countries have a genuine need to increase their power generating capacities. Should international funding organisations begin to lay down conditions to make developing countries invest in more expensive technology? Should developing countries end up paying the price for the industrialised countries' past development orgy simply because they are forced to? Unless industrialised countries invest to make the non-fossil fuel path technically and commercially viable, and use their greater wealth to show the way to a more sustainable path through example, they have no right to force costs and restrictions on developing countries that might compromise their development.

possibilities in developing countries for its own benefit for a long time to come.

• As of now, CDM does not allow developing countries to sell emissions reduction credits. It only allows industrialised country agents to purchase them. A company in the North can, therefore, purchase numerous low cost emissions reduction credits and then sell them later at a higher cost. But CDM does not allow developing country companies to do so.

**But will CDM help address the problem of climate change?**

Again, not the way CDM is currently designed. On the contrary, the mechanism could ultimately prove to be a disaster for precisely the objective it is supposed to meet, that is, combating climate change. This is because it will subsidise the very source of the problem — viz. carbon based energy system. Industrialised countries are only willing to invest in least cost options under CDM, and all the least cost options are only available within the carbon-energy sector!

By subsidising carbon based energy technologies, CDM will create further obstacles in proliferation of non-carbon based energy technologies and could lock them out for several decades of the 21st century, thus, ensuring that a high order of climate change becomes inevitable.

Though the Kyoto Protocol says that besides assisting developed countries CDM will promote sustainable development, nobody knows how a market-based mechanism will achieve this aim. A Dutch study has found that it can actually increase global emissions. It argues that the 'CDM subsidy' will decrease the unit production cost of energy-intensive production. This could lead to an increase in the total output of the country's energy intensive industries.

Thus lower energy cost will go hand in hand with higher total energy use and hence carbon emissions. The study's finding is that China will host the bulk of CDM projects, which reduces its energy use substantially. But this also reduces local energy prices and, as a result, energy-intensive sectors in the country's economy increase their energy demand.

**What should be the stance of developing countries in the climate negotiations, particularly with regard to the Kyoto Protocol and CDM?**

To protect their long-term economic interests, developing countries have two main priorities at the climate negotiations. One is to ensure that the global warming problem is addressed, so that they are not left to spend their limited resources on dealing with the effects. To this extent, they should insist that all action under the Kyoto Protocol and its mechanisms is **ecologically effective**.

The second priority is to ensure that they have sufficient 'ecological space' in the future to expand their economies, just like industrialised countries have done in the past. For this, they have to demand that the Kyoto Protocol is democratic and just, and that it recognises their right to future development. It must be ensured that **all countries are allotted equal per capita entitlements**.

**How can the Kyoto Protocol and CDM be made ecologically effective?**

This can be achieved by keeping an eye on the goal at all times. In order to combat global warming, governments of the world must ensure that GHG concentrations do not build up beyond an acceptable level, after which they begin to decline.

According to IPCC studies, if GHG concentrations stabilise at 450 parts per million (ppm) by the end of the 21st century, global average temperature will increase by 0.7°C, accompanied by a sea level rise of 10-65 cm. Though this temperature rise exceeds natural variability, it would allow many – though not all – ecosystems to adapt. It can thus be tentatively taken as an upper limit on the tolerable rate of climate change. Already, the current global concentration of carbon dioxide alone (ignoring other GHGs) is around 360 ppm.

In terms of per capita emissions, not interfering with the world's climate poses an extremely daunting challenge. It means that both industrialised and developing countries will have to reduce per capita emissions substantially. Industrialised countries must reduce their current carbon emissions of about 3 tonnes per capita from fossil fuel sources to about one-tenth.

Developing countries must eventually reduce their current per capita carbon emissions of about 0.5 tonnes per capita by half even as its population and economies motorise and industrialise in the years to come.[7]

This task will be impossible, unless nations not only change their current carbon-intensive energy path by undertaking energy efficiency measures, but the world moves towards a zero-carbon energy-based economy as fast as possible. **Several studies show that a rapid shift towards a zero-carbon energy transition is not only the best but also possibly the only option to combat climate change in the next century** (*see Graph 6*).

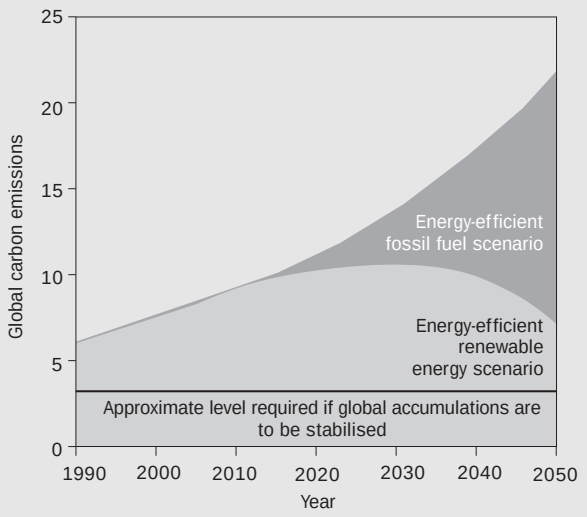
Though the goals of moving to a zero carbon economy and energy efficiency are not mutually exclusive, a focus on energy efficiency measures could pose a serious risk to a zero-carbon energy transition. Such a focus could 'lock in' fossil fuels for a longer time than desired and 'lock out' renewable energy sources. Many studies show that governments must take a proactive role in promoting the transition here and now. Though a zero-emissions future looks more promising today than ever before, the transition will not take place by itself.

With appropriate 'technology push and policy pull', renewables could contribute as much as 37-39 per cent of the global primary energy supply by 2050 and net carbon emissions could be below 1990 emissions by as much as 15 per cent. Both in the case of industrialised and developing countries, gross carbon emissions remain at the lower end of 2050 projections only where governments take a proactive position to push for non-polluting renewable energy sources and for energy efficiency. In such a scenario, industrialised countries will be able to cut their 1990 carbon emissions by about 75 per cent and developing countries will be able to stay within 2.5 times of their 1990 carbon emissions. The world as a whole will be able to return to the gross carbon emissions of 1990.

Any deviation from this path would mean that even by 2050, the world will not be able to reduce its gross carbon emissions below the 1990 levels, which in itself are 2-3 times higher than those considered to be environmentally sustainable.

Therefore **developing countries should insist that only renewable technologies should be eligible under CDM**. There is no point in their investing in carbon-based technologies, when they will have to reduce their emissions sometime soon in the future.

**Graph 6: Global carbon emissions under an energy-efficient fossil fuel scenario (billion tonnes of carbon (gtC) per year)**




**Energy-efficiency in a fossil fuel based carbon economy cannot avert climate change**

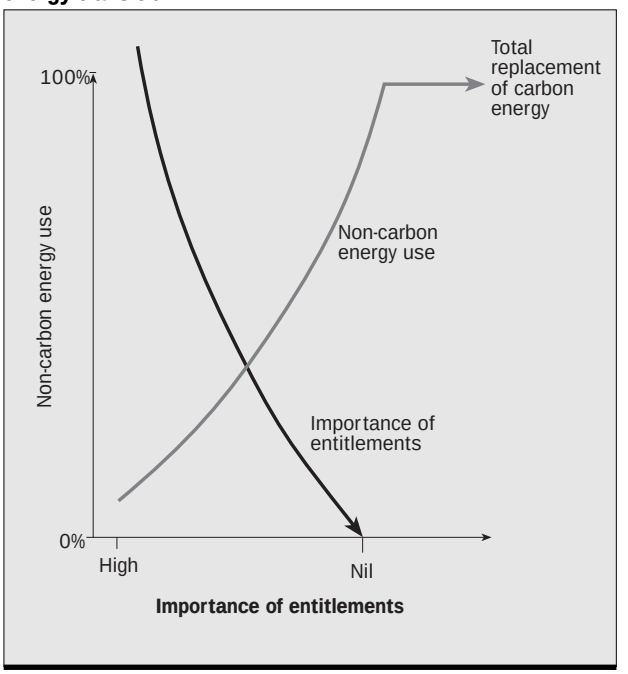
Source: Dennis Anderson 1996, Energy and Environment: Technical and Economic Possibilities, *Finance and Development*, June, pp 10-13

### How can the Kyoto Protocol and CDM be made more democratic and just?

As long as the world remains within a carbon-based energy economy, equitable sharing of 'atmospheric space' becomes a critical issue, especially for poor developing countries who need the maximum space for their future economic growth.

To make the protocol and CDM more democratic and just, developing countries have to push for recognition of their per capita entitlements to the atmosphere. Developing countries should demand "space to grow" while refusing to take on emission cuts at their current stage of development. The atmosphere is a common property resource, to which every human being has an equal right. The people of industrialised countries have more than

**Graph 7: Reducing importance of entitlements in a non-carbon energy transition**




used up their share of the absorptive capacity of this atmosphere, through high emission levels in the past and in the present. So they have to cut their emissions, and allow developing countries space to increase theirs.

Once this principle is accepted, then the sale of the unused annual share of the entitlements of a country could be done bilaterally – between India and USA for instance – or through an intermediary like the UN or World Bank.

**But will the demand for per capita entitlements be politically acceptable to industrialised countries?**

Per capita entitlements should be acceptable to anybody who is interested in ensuring a fair world, governed by democratic principles. Developing countries should settle for nothing less from the very countries which have lectured them on good governance in the past.

Moreover, demanding per capita entitlements does not mean that we want industrialised countries to bring down their living standards. That is not the purpose of the entitlements. The purpose is so that the world recognises that there are definite limits to fossil fuel based economic growth. If it is unlimited growth that they want, with limited harm to their economies, then the only option is to develop non-carbon technologies.

Once the world is not dependent on fossil fuels, the entitlements framework will be no longer necessary, and there will be no limitations to growth because the link between carbon dioxide and GDP growth will be broken (*see Graph 7*).

So in fact, a climate framework based on per capita entitlements puts pressure on industrialised countries to move out of fossil fuel based technologies, and invest in research and development of renewable energy, in order to eventually break free from the entitlements framework.

**What should India's position be at the climate negotiations?**

India has already led the G77, the bloc of developing countries, in the demand for per capita entitlements under the climate convention. However, India is coming under a lot of political pressure from the US, in particular, to agree to CDM without any such principles.

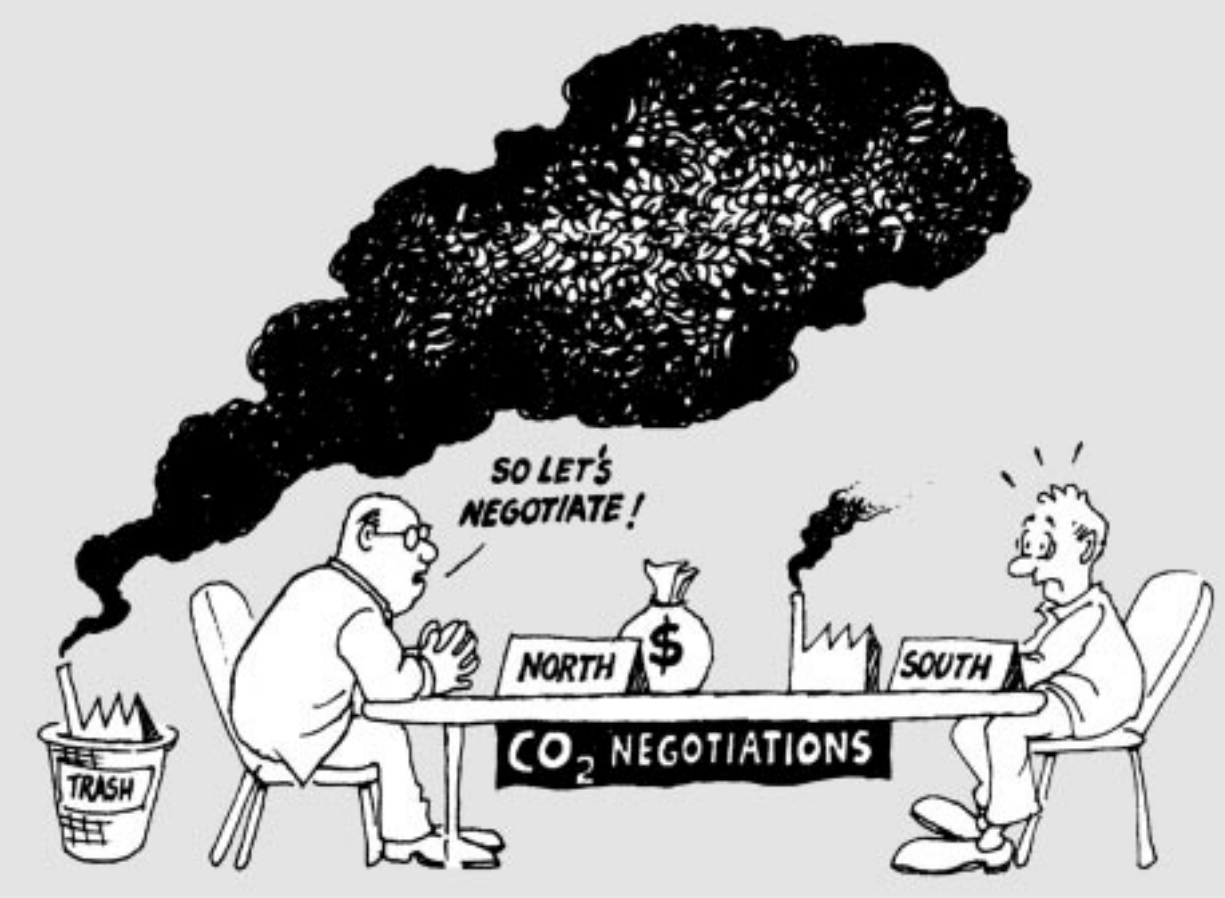
The number of US delegations that have visited India over the last one year are evidence of this political pressure (*see box: Spreading myths of money)*. First, Kathleen McGinty, Al Gore's and subsequently Bill Clinton's principal environmental policy adviser for ten years, and chairperson of the White House council for environmental quality came to India for a year. She went from city to city in India, telling people that CDM meant a lot of money would flow into India. (Of course she did not tell them that even more money would flow into India if the Indian government's position of per capita entitlements was accepted).

Subsequently, both US energy secretary Bill Richardson and the US president Bill Clinton signed energy agreements with India. Both agreements explicitly asked for India's support for the US position on CDM, by the early acceptance of the mechanism. Neither agreement asked for US support on the Indian position on CDM.

It remains to be seen whether India will succumb to this political pressure and sell the rights of Indian citizens to the atmosphere for a few dollars

## SPREADING MYTHS OF MONEY

***The US is making a concerted effort to break down the country's position at the international negotiations on climate change, with the active support of some Indian non-governmental organisations (NGOs) and business groups.***




Call it political naivete. But non-government and business organisations in India have hosted a series of meetings over the last year in metros across India, where claims have been made that the clean development mechanism (CDM) proposed by the Kyoto Protocol under the UN Convention on Climate Change (UNFCCC) is good for the country.

This is despite a strong and *considered* position held by the Indian government in the international forum that CDM is unacceptable to the country in its current form, without per capita entitlements. Along with China, India has led the demand for social justice and equity in the international climate negotiations. In this, the government deserves the support and active encouragement of Indian civil society, particularly since their stand has come under strong opposition from the US, which has refused to ratify the protocol unless countries like India and China agree to CDM.

After the US Senate passed a resolution in 1997 demanding 'meaningful participation from key developing countries' as an absolute prerequisite to signing the protocol, the US government has employed considerable ingenuity in bringing on international pressure onto developing countries to agree to trading.

Part of this effort had been a series of meetings in Indian cities, ironically hosted by Indian NGOs, focused on eroding India's international position. Not surprisingly, all these meetings have been funded by USAID, and most have been attended by Kathleen McGinty, Al Gore's and subsequently Bill Clinton's principal environmental policy adviser for ten years, and chairperson of the White House council for environmental quality.

In fact, the first indication of the lengths the US was willing to go to win over Indian opposition to the CDM came when Kathy McGinty stationed herself as a research fellow at the Tata Energy Research Institute (TERI) in New Delhi for a year. She came with her husband, Karl Hausker, also a former senior official first in the US Senate and then in the US Environmental Protection Agency (EPA). By this time it was clear, at the Kyoto conference in 1997 and at the fourth conference of parties in Buenos Aires in November 1998, that the two main opponents to the US demand for emissions trading would be India and China.

What were two senior members of the Clinton administration doing in an institute in Delhi for a year? The reason was

soon apparent, at a series of public speeches by McGinty in Delhi, and subsequently in Bangalore and Calcutta, where she focused on persuading audiences that CDM was the best thing for India. McGinty's mission was to break down Indian resistance to trading without per capita entitlements.

In her speeches, McGinty made no effort to offer a constructive response to the criticism of CDM by the Indian government and the Centre for Science and Environment (CSE), or even mention that the Indian government was opposed to CDM. It was as if the official Indian position did not exist. At some of these meetings, representatives from USAID accompanied McGinty, with promises of money for climate change abatement in India. And all over the country, NGOs, research institutes and business representatives fell for the obvious, time tested trick developed countries resort to as a means of countering honest, ethical, scientific or even socioeconomic objections raised by developing countries. Promise short-term financial gains, and watch the objections, however genuine and serious, melt away.

Perhaps the biggest casualty of the McGinty circus was the Confederation of Indian Industries (CII). With funds from USAID and overall direction from Hagler Bailly, a "international consulting agency", CII produced a paper, *Investment Potential for the Clean Development Mechanism in India*, claiming that Indian business stood to gain at least US $1 billion a year from CDM. What this obviously US-centric study did not look at was how much *more* India would stand to benefit if their demand for equal per capita rights to the atmosphere was accepted at the climate negotiations.

The Indian industry, taken in with this promise of short-term benefits, has started to work against the government position which argues for the country's right to development taking into account long-term interests, and instead joined hands with USAID in pushing for CDM. They currently look all set to shoot themselves in the foot by accepting a framework for the climate convention that will, very soon, demand that they take on carbon reductions.

McGinty's mission culminated with US secretary for energy Bill Richardson's visit to India in October 1999. Richardson and Indian minister for external affairs Jaswant Singh signed a joint statement on 'cooperation in energy and related environmental aspects'. Richardson pointedly congratulated both McGinty and the CII for their role in bringing about the statement. "CII and Katie McGinty are really to be congratulated," he said. "Recognising the dangers of climate change they also saw the tremendous opportunity for India presented by the CDM."

Earlier, at a meeting in May 1999 of Indian business persons specially invited to Washington DC by the US government to participate on a dialogue on CDM, Richardson had warned that without India there would be no ratification of the Kyoto Protocol. "While politicians and diplomats are standing still in policy, I think it is important what you are doing, moving ahead," he told the industrialists.[1]

The statement signed by Singh and Richardson promised all sort of cooperation from India in sorting out the Kyoto mechanisms, of which CDM is one. But the Indian government seemed to have given some thought to the wording, and stuck to generalities. No definite promises have been made to agree to CDM. How much the statement will harm the Indian position in future remains to be seen.

In the US, however, Al Gore has touted the statement as a 'breakthrough', giving it far more importance than the Indian government. "This is a breakthrough because India is one of the two most important and largest developing nations and they've now changed their posture, " Al Gore said on an ABC News programme in November 1999.[2] He was referring also to a similar agreement signed with China, the other country demanding equal rights to the atmosphere, during Chinese premier Zhu Rongji's visit to the US in April 1999. Rongji and Gore signed statement of intent on the development of a sulphur dioxide emission trading feasibility study, pushed for by the US in the hope that it would move China closer to the concept of emissions trading.

During his visit, Richardson went a step further and called for commitments from India to reduce GHG emissions, in order to be able to make use of the other Kyoto mechanisms.

One thing is sure. The US government will stop at nothing to get CDM through, and India is likely to come under considerable political pressure at the sixth conference of parties starting on November 13, 2000 at the Hague, to accept CDM as it is and give up talk of equity. The Indian government will need all the support and pushing it can get to stick to its guns and refuse to compromise.

## WORDED IN DIPLOMACY

*Elements related to climate change in the 'Joint statement on cooperation in energy and related environmental aspects' signed by Indian Minister for External Affairs Jaswant Singh, and US Secretary for Energy Bill Richardson, on October 26, 1999*

- The two governments agree to cooperate and to work together in appropriate forums for advancing the goals of the UN Framework Convention on Climate Change, in accordance with the decisions of the Conference of Parties to the UN in its various sessions

- The governments of the United States and India agree to cooperate within the framework of the Conference of Parties and its subsidiary bodies of the UN Framework Convention on Climate Change, to work towards an early agreement on the elements of the Kyoto mechanisms

- In particular, the governments of the United States and India agree that the Kyoto mechanisms could offer the opportunity to achieve mutually beneficial partnerships between industrialised and developing nations. The Governments of the United States and India resolve to work closely with other countries to develop agreed international rules and procedures for the Kyoto Mechanisms, including the Clean Development Mechanism.

today, or insist on entitlements. This will be tested at the sixth conference of parties in The Hague from November 13-24, 2000.

But one thing is certain – there has to be much more political backing from within India, or at least a discussion at a political level about this issue, to ensure that the Indian position is carefully considered before The Hague meeting.

**What can you do?**

**a. Recognise that global warming will have economic, as well as health and environmental impacts on your constituency.**

**b. Initiate a parliamentary debate on the impacts of global warming on the country's economy, and also on the impacts of the current international negotiations.**

**c. Ensure that India accepts no less than per capita entitlements, and the best and most effective renewable energy technology under the Kyoto Protocol.**

**d. Insist that Indian scientific institutions generate detailed studies listing these impacts, and that this information is made available to the people.**

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