

GLOBAL COMMONS INSTITUTE

*Energy subsidy from
South to North running
@ \$3.1 trillion p.a.*

* * *

*\$14.6 trillion worth pf
production-dumping
by energy debtors*

* * *

*Sustainable per capita
fossil GDP level required*

* * *

*Structural adjustment
good governance and
democracy recommended.*

**The arguments presented in this GCI publication
were presented to all delegations [Government
and Non-Government] at the UN Climate
negotiations [INC-7] New York, March 1993.**

Power Subsidy from the poor

THE industrialised countries receive an energy subsidy from the South worth \$3.1 trillion annually at current value. This is the political issue at the UN climate negotiations under way again in New York. This figure reflects the fact that 93% of global Gross Domestic Product is generated with fossil fuels at levels above that required to preserve climate stability. This is done by 36% of the world's population. The other 64% generate 7% of global 'fossil GDP' at or below the sustainable level. The extent of their unused Fossil GDP entitlement was \$3.1 trillion for 1990. The current conditional offer through the World Bank from the subsidised North is at best 0.00006% of this amount. This is a confidence-busting measure at a time of deepening crisis.

Aubrey Meyer, Anandi Sharan
The Global Commons Institute at the UN

The letter to the Guardian above, was published at that time.
The \$3.4 trillion subsidy figure became an international news story.

CLIMATE CHANGE AND THE PRECAUTIONARY PRINCIPLE

Equity and Survival are inextricably linked.

Human induced global climate change is now in an unnecessary condition of gathering fossil GDP driven risk. This contravenes the 'precautionary principle' which says that "risks which do not have to be taken, should not be taken." The dangers of fossil-dependence are great and there are alternatives to fossil fuels. In order to understand the political and the ecological nature of this risk, the global relationship between fossil-GDP-economics and global eco-politics must be assessed. This assessment should recognise that the climate change threatened global economy is a single system within which equity is now inextricably linked to survival. 'Equity' is the trans-temporal equal sharing of rights, risks, responsibilities, rewards and restraints. Our global survival prospects depend on understanding this and preventing powerful minority fossil fuel interests from continuing to raise the levels of risk and obliging the majority to face risks which violate universal survival interests. The UN Climate Convention may yet be the legal instrument which embraces these fundamentals. Preventing dangerous anthropogenic interference with the climate system is its stated objective.

Vested interest in a 90% fossil global economy

To this end, the case for initiating immediately the displacement of fossil fuels in favour of renewables, is now more compelling than is the case for refining their use through 'efficiency gains' so as to justify their retention. Efficiency arguments are relevant, but alone are incapable of solving the climate problem. They should not be used to post-pone fossil fuel displacement. (This will be examined in greater detail later on in this paper). The only arguments which can be (and are) put up for efficiency alone are those inequitably based on unnecessary and dangerous risk-enhancement in violation of the precautionary principle. The fundamental judgement against the continuation of fossil energy investment and dependence is really only opposed by vested fossil fuel interests.

These interest groups have resorted to the so-called "no-regrets" arguments. These energy-efficiency and cost-effectiveness arguments are divorced from the precautionary principle. The no-regrets idea is, "if it makes economic sense to do it anyway, do it anyway". The arguments try and minimize the public's perception of the risks of climate change whilst trying to maximize the image of their proponents as caring and competent in the management of risk. The proponents' track record however, has been in the management of financial risk. And this has been in a context of unsustainable resource deployment and unaccountability over the creation of social and environmental disbeneficiaries. In reality these vested interests are a monopoly of self-interested primary fuel and energy producers in a global fossil economy which is still 90 dependent on the combustion of fossil fuels for energy.

The IPCC and CO2 emissions cuts

If further deterioration in the global climate is to be avoided, the Intergovernmental Panel on Climate Change (IPCC) atmosphere stabilising CO2 emissions cuts must be initiated promptly. The IPCC stated in 1990 that in order to stabilise the rising atmospheric concentrations of CO2 at 1990 levels, immediate minimum 60 cuts in the emissions of CO2 were required. (See chart two overleaf). It was not clear whether that represented an optimistic or a pessimistic view of where the levels of atmospheric CO2 should be stabilised to avoid interference with the climate system. The IPCC did however, exclude from that estimate the effect of what they described as the probably positive feedbacks which would further accelerating the warming trend.

Where must emissions cuts commence?

It is in the lead economies of OECD from where these emission cuts must be led. The Convention text already acknowledges this requirement. Historically, the industrialised countries are responsible for at least 83 of the CO2 output (the principal greenhouse gas) from industry

(see chart one). Currently, OECD alone is still responsible for nearly 50% with only 16% of global population, and the US is responsible for 50% of this amount with only 3% of global population.

Polluters should pay-per capita fossil GDP is the principal indicator of environmental impact globally.

In order to solve the problems of human-induced climate change, a per capita fossil GDP indicator needs to be established. Three years after the IPCC warned of the need to reduce CO₂ emissions, emissions are still rising, dangerously provoking global climate change. The difficulty is the global economy and its Gross Domestic Product (GDP) are currently 90% linked to the combustion of fossil fuels for energy. So, fossil CO₂ emissions and GDP trajectories are very closely inter-related. We can therefore measure what GCI calls this 'fossil GDP'. (See chart two and the US/Japan charts at the end of the booklet - and for detailed discussion of this, see GCI "GDP:CO₂ = B-A-U:I-0-U").

However, despite this context, rising per capita GDP is still taken as a valid monetary measure of economic benefit. It is the World Bank's principal so-called 'development indicator'. But attention is not given to its fossil fuel component, and rising per capita GDP is assumed to be a universally achievable phenomenon giving rise to a universally accurate indicator of benefit. The truth is in a fossil GDP economy, universally rising per capita GDP is only possible (if at all) in the context of rising CO₂ emissions, rising environmental impact and rising risk of climate change adversity.

Consequently we believe that; - "per capita fossil GDP is - and should be made - the principal indicator of environmental impact globally." It is for this reason and in the understanding of equity as defined above, we assert that 'responsibilities for' rather than 'rights to' environmentally finite and vulnerable resources - like stable climate - should be allocated by income.

We will return later to the detailed consequences of using this indicator to calculate the "sustainable per capita fossil GDP threshold" and what this reveals about consumption globally.

It Pays to Pollute; view from World Bank

The World Bank and others advocate the reverse saying that environmental rights should be allocated by income. The 1992 Development Report contains a description of why they feel CO₂ emissions entitlements should be allocated by income. Allocating rewards to income is normal in the bank's normal line of business. It is the business-as-usual incentive of positive feedback for capital. However, in the management of climate change this approach is clearly problematic. Rising global temperature indicates net positive feedback (or self-reinforcing reactions)

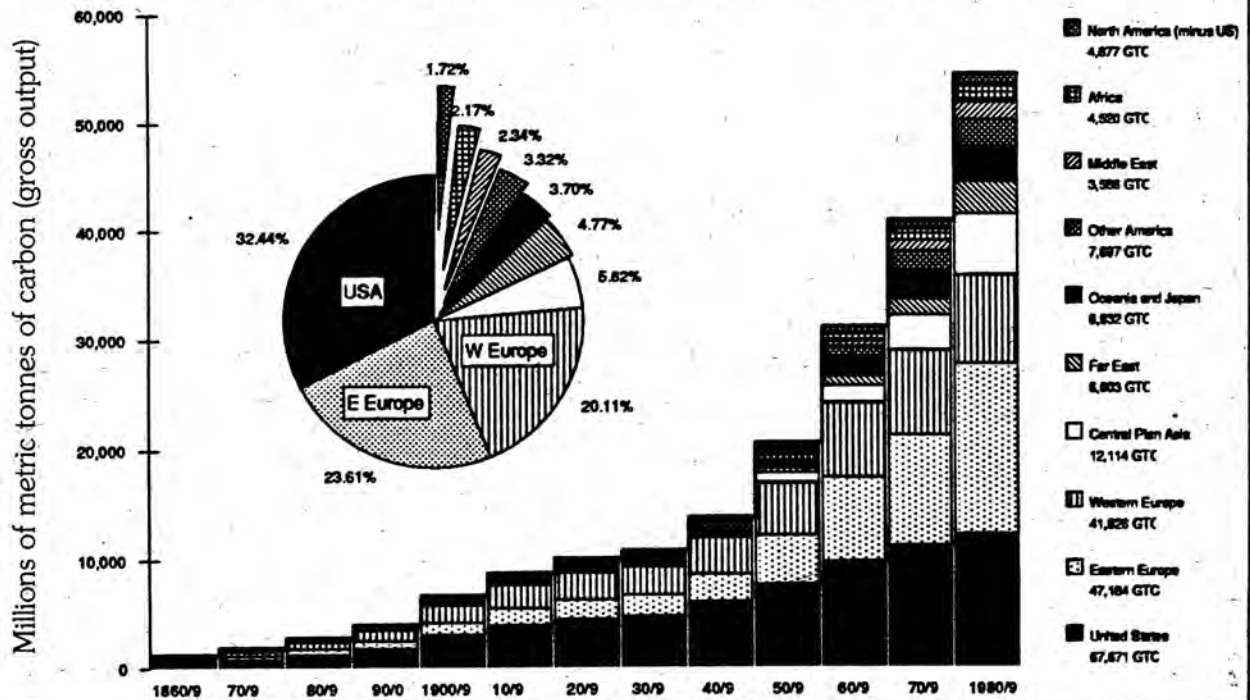
coming into play in the global climate system. For e.g; - heat trapping gases accumulating in the atmosphere raise global temperature and this in turn causes other temperature raising phenomena to manifest - examples of this are polar ice melting as a consequence of temperature rise which causes the incoming heat from the sun to be less efficiently reflected back into space with more heat retained - as more heat begets more heat, the oceans warm up releasing more CO₂ and so on; - this is a sampling of positive feedback.

On the other hand, the global economic system seeks growth operating on a series of deliberately applied positive feedback mechanisms such as interest and profit. Here the practice of seeking financial gain is facilitated by rewarding capital and capital transactions with the incentives of interest, growth and/or commissions. In fact, 'growth' is an expression of net positive feedback within any frame chosen for observation. In the economic process, investors and traders naturally try to take out more than they put in for personal and corporate reasons. But the global climate crisis is really about this very point - if you take out more than you put in, the system will eventually compensate for the imbalance. The neo-classic economic law of diminishing returns should really be viewed in this context; the current net fossil GDP growth phenomenon (ie in spite of the diminishing returns), and the growth of risk (ie the diminishing prospect of climate stability).

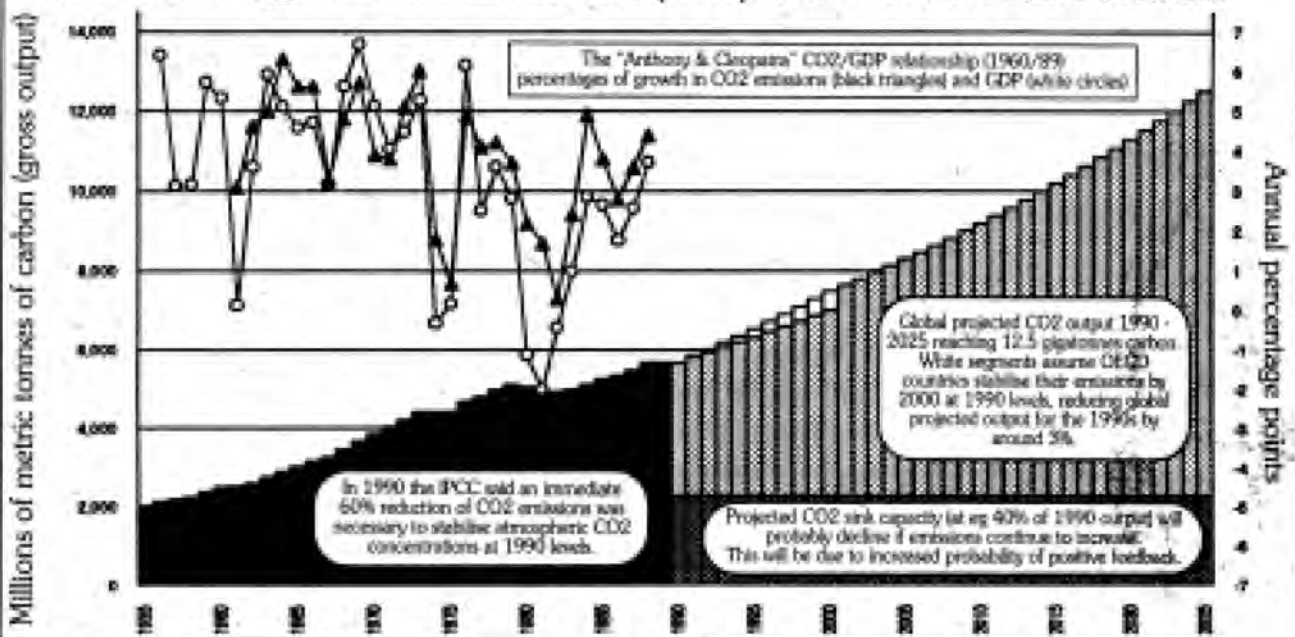
By proposing as the Bank does, that rights to emit CO₂ should be allocated on the extent of fossil GDP income which a country derives from the global fossil economy, the Bank and others are effectively formalizing the marriage of the deliberate positive feedback of the financial system on the one hand to the already positively fossil fuel sensitized climate feedbacks on the other. De facto, this approach exists already. Formalised, it would simply consummate folly. But the Bank describes it as "more feasible" than their Aunt Sally alternative. The Aunt Sally is where rights are allocated by population and then regarded as implicitly infeasible because the high income countries "*have exhausted their right to emit.*"

What they should be recognising is that by allocating responsibilities by income, causers of climate change would be targeted. This would enable responsibility for remedial actions to be specifically allocated to those who have been and continue to be responsible for creating and unnecessarily sustaining this crisis. Contrary to the assertion made in the Report by the Bank, this approach seems to have more prospect of a political - not-to-mention an ecological - future. It is also more consistent with the "polluter pays principle" than the Bank's adroit shift to the "it pays w pollute principle".

Industrial CO2 emissions by region 1860-1990 incrementally by decade and as regionally disaggregated percents of total global output



Industrial CO2 emissions past and projected, 1955 - 2025, with IPCC suggested stabilisation cut (60%) reflected from 1990 forward



At the heart of this crisis there is this great conundrum. Individual well-being can now only really manifest in the context of seeking the well-being of all. This is not so much a moral question as an economic question. Self interest needs to be re-defined to embrace the universal interest. Indicators of progress, development, impact and change which we choose, need therefore to be universally valid as well. The narrow self-interest of profit and the business of seeking this in the short term at the expense of second and third parties, will continue to ensure the irresponsible investment decisions which still dominate the global fossil economy. In consequence, and because the threat of global climate change is so comprehensive, we must re-educate personally narrow assumptions about well-being to assimilate this fundamental sense of per capita income accountability and the universal interest.

What is the appropriate context in which to position energy efficiency argument?

We now look more closely at energy efficiency and explain why it is subsidiary to the primary issue, namely; -the early start to fossil fuels being displaced in favour of renewables.

First the meaning of energy efficiency. Energy efficiency is expressed as a ratio. It has a technology component, ie how efficiently does a device or a system match the energy it uses to produce the usable energy it puts out. In economics, energy efficiency is taken as the ratio between the money or GDP generated by the energy/economic system on the one hand, and the energy units required by this system to generate the GDP on the other. In the context of the global fossil economy, it is the ratio of dollars of GDP generated per unit of carbon (from CO2 emissions from the fossil fuels) used to generate the dollars of GDP. For example: -

Global GDP in 1990 totalled around twenty and a half trillion dollars (\$20,500,000,000,000);

Global CO2 emissions from industry in 1990 (according to US energy department statistics) contained around six billion tonnes (that is metric tonnes) of carbon (6 Gigatonnes, or 6 GTC, or 6,000,000,000 metric tonnes of carbon);

Fossil fuels supplied 90% of the energy required to generate the global GDP, so the 20.5 trillion dollars should be reduced by 10 to make the calculation of the dollar/carbon ratio more precise; this gives a figure of \$18.45 trillion;

The 1990 global average energy efficiency ratio was therefore \$18.45 trillion/6 GTC or \$3,075 per tonne of carbon from fossil fuel burning.

For comparison the: - Japanese energy efficiency ratio for 1990 was \$10,839 per tonne of carbon, US energy efficiency ratio for 1990 was \$3,852 per tonne of carbon, Chinese energy efficiency ratio for 1990 was \$596 per tonne of carbon.

Of the group, Japan was clearly the most energy efficient economy, China very inefficient by comparison (there are grounds, for regarding the available Chinese GDP figure as an underestimate) and the US is about average. However, if every one of the 5.2 billion people on the planet in 1990 had emitted industrial CO2 even at the 1990 efficiency rate of the average Japanese person (ie 2.35 tonnes of carbon per person), the actual global CO2 output of 6 billion tonnes would have been more than doubled to over 12 billion tonnes of carbon. If every one of the 5.2 billion people on the planet in 1990 had emitted industrial CO2 at the 1990 rate of the average US person (ie 5.23 tonnes of carbon per person), the actual global CO2 output of 6 billion tonnes would have been more than quadrupled to over 27 billion tonnes of carbon.

The point of this observation is to show that in the context of rising energy demand and the need for universally valid indicators as already argued, even by the standard of the conventionally most energy efficient economy on the planet (Japan), five-fold universal average gains in energy efficiency (or an 80 reduction in the amounts of carbon per \$) would be required to meet a 2.4 GTC maximum output level - or the IPCC atmospheric CO2 concentrations stabilisation requirement of a 60 cut in the 1990 levels of CO2 emissions. Even assuming such a technological miracle could happen, it would take years to achieve by which time the cut requirement would have increased because of further atmospheric CO2 build-up.

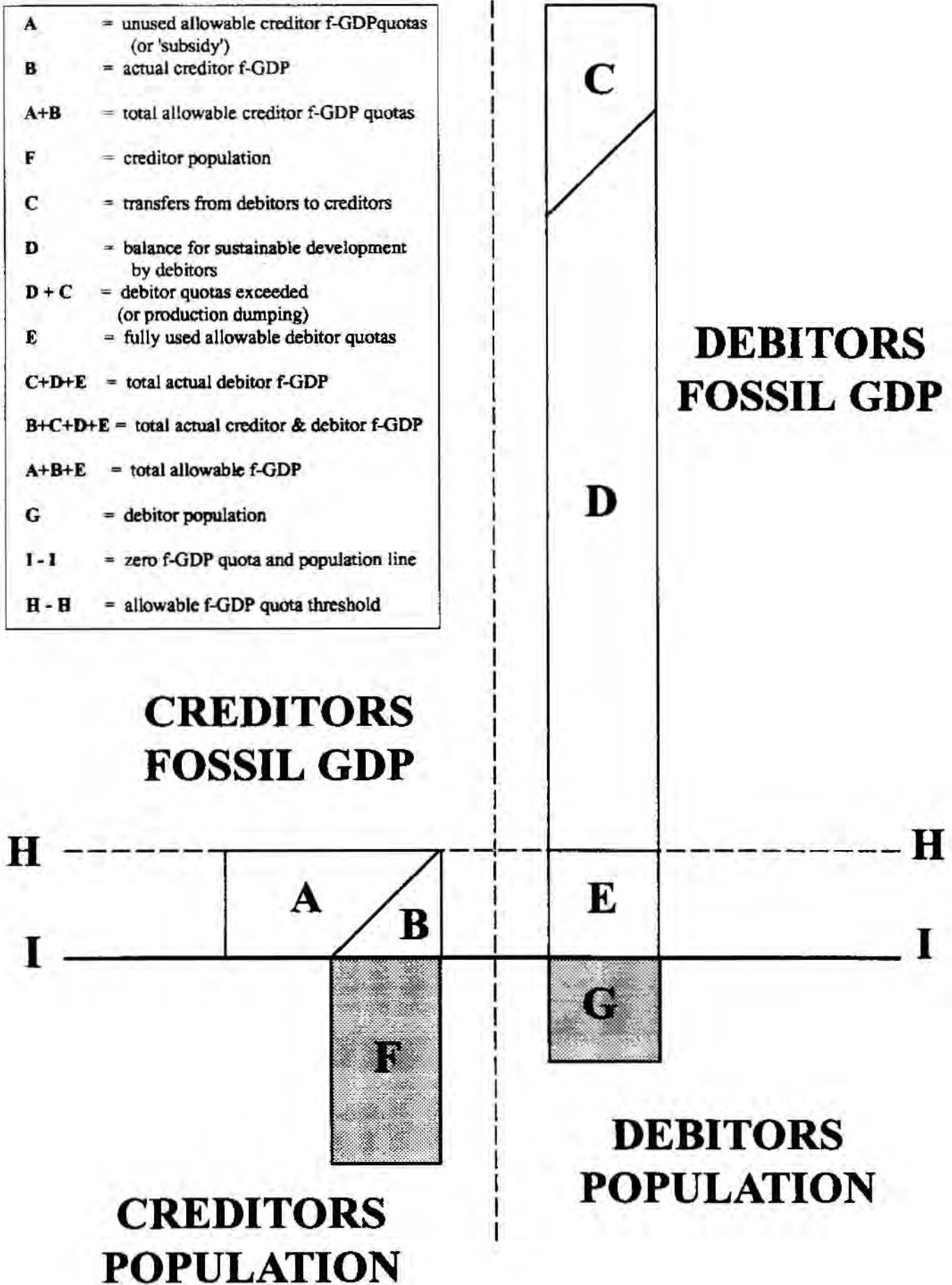
So the real point of this is to back up the main assertion at the outset - namely, that the case for the immediate displacement of fossil fuels in favour of renewables, is more compelling than is the case for retaining them whilst refining their use in the name of efficiency gains. The efficiency gains will never outpace the positive growth in emissions unless this displacement is initiated immediately. The lead-time for such a technology transition is considerable and even with an urgent action plan under way, it is not a foregone conclusion that we will beat the clock of fossil GDP-induced climate adversity, especially if the second hand of corporate efficiency arguments continues its sweep unchallenged.

Sustainable per head fossil GDP threshold.

We already know that the global average energy efficiency ratio for 1990 was \$3,075 per tonne of carbon. We can also calculate the 1990 global average per capita carbon emission from industrial CO2. It was 6 GTC divided amongst 5.2 billion people or 1.15 metric tonnes of carbon per person. This figure reduced by 60% - consistent with the IPCC stabilisation cut - gives an "allowable" 0.46 tonnes per person per annum.

The sustainable per capita fossil GDP threshold for 1990 is calculated by seeing what globally averaged level of dollars could be generated,

- A** = unused allowable creditor f-GDPquotas (or 'subsidy')
- B** = actual creditor f-GDP
- A+B** = total allowable creditor f-GDP quotas
- F** = creditor population
- C** = transfers from debtors to creditors
- D** = balance for sustainable development by debtors
- D + C** = debtor quotas exceeded (or production dumping)
- E** = fully used allowable debtor quotas
- C+D+E** = total actual debtor f-GDP
- B+C+D+E** = total actual creditor & debtor f-GDP
- A+B+E** = total allowable f-GDP
- G** = debtor population
- I - I** = zero f-GDP quota and population line
- H - H** = allowable f-GDP quota threshold



given the \$3,075 per tonne efficiency average and the allow-able 0.46 of a tonne per capita. The answer is Sussex per person for 0.46 tonnes of fossil carbon) and this is the sustainable per capita fossil GDP threshold for 1990. The results of applying this figure to the global economy are striking.

1990 % of GDP	Debitor	Creditor	Total [\$ Trillions]
actual	94%	6%	\$18.5=100%
allowable	36%	64%	\$6.6=100%
excess	100%	n/a	\$14.6=100%
shortfall	n/a	100%	\$3.1=100%
population	36%	64%	5.2=100%

GDP 'debtors' and 'creditors' were assessed using the following method. The 'sustainable per capita fossil GDP threshold' figure of \$ 1,415 is allocated to each country by population. These 'sustainable fossil GDP quotas' are then compared with the actual 1990 GDP values for each country. When a country exceeds its quota, we call it a 'fossil GDP debtor'. The amount by which a country exceeds its quota, we call 'production dumping'. When a country shortfalls its quota, we call it a fossil GDP creditor'. The amount by which a country shortfalls its quota, we call 'subsidy'. Also 'Transfers' are calculated in the following way. The total amount of the transfer required, equals the total amount of the subsidy. The debtors settle this collectively with amounts calculated in proportion to the size of their debt. For example the US debt represents 33 of the total value of the debt, therefore they put up 33 of the value of the transfer. After deductions in this way to liquidate the subsidy, all countries commit the balance of their economies unconditionally to the pursuit of sustainable development and displacement of fossil fuels. The diagram opposite summarises the actual fossil GDP quotas and related population imbalances on 1990 values. The diagram segments are approximately proportional to the actual imbalances described. The actual 1990 \$ amounts of fossil GDP are summarised in the table below. Proportions, expressed as percentages, are summarised in the table alongside. The actual full country breakdown appears on the full page chart overleaf entitled, "All countries as 1990 fossil dollar debtors and creditors with proportional transfers and sustainable development commitments."

The accumulated (1860/1990 - segmented by decade) credits and debits, assessed on the basis of allocating sustainable per capita emissions quotas nationally and then calculating excess and shortfall emissions [see detailed explanation in, GCI "GDP:C02 = B-A-U:I-0-U"] are summarised on the page beyond in the chart beyond entitled, "1860-1990, accumulated debits, credits, proportional transfers and sustainable development commitments in 1990 fossil dollar values". The accumulated debt runs into hundreds of trillions of dollars. It is included here to contextualise historically the order of \$ magnitude referred to in the discussion below about only current subsidy and redress.

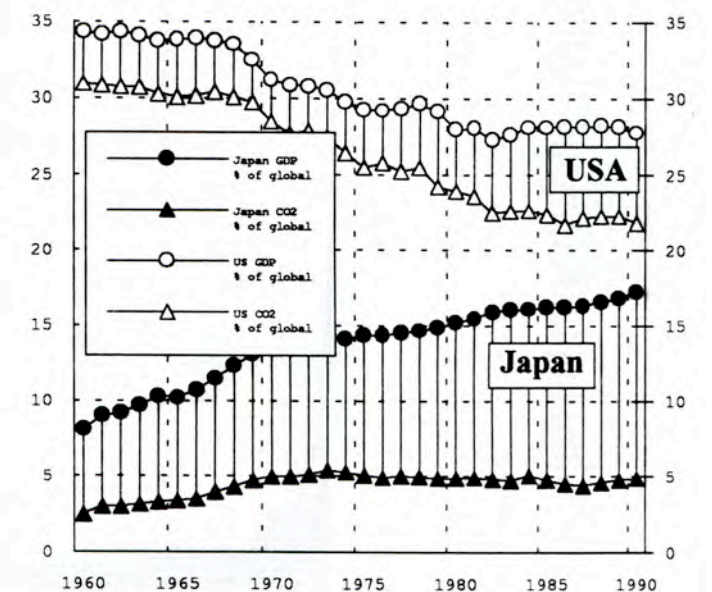
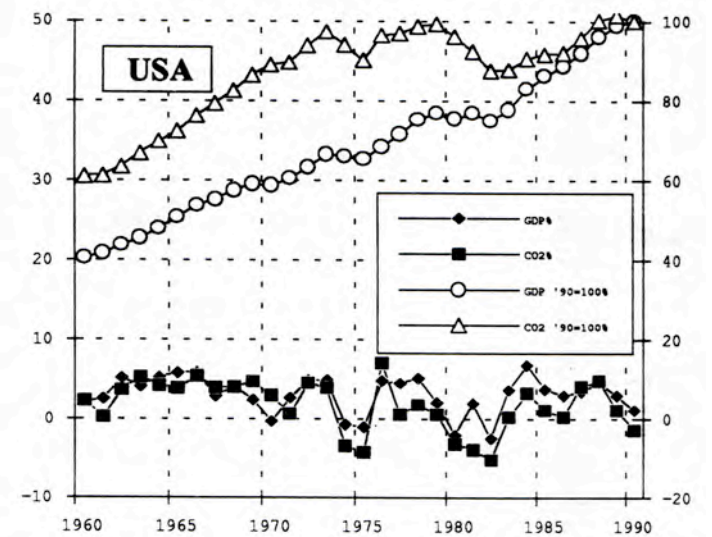
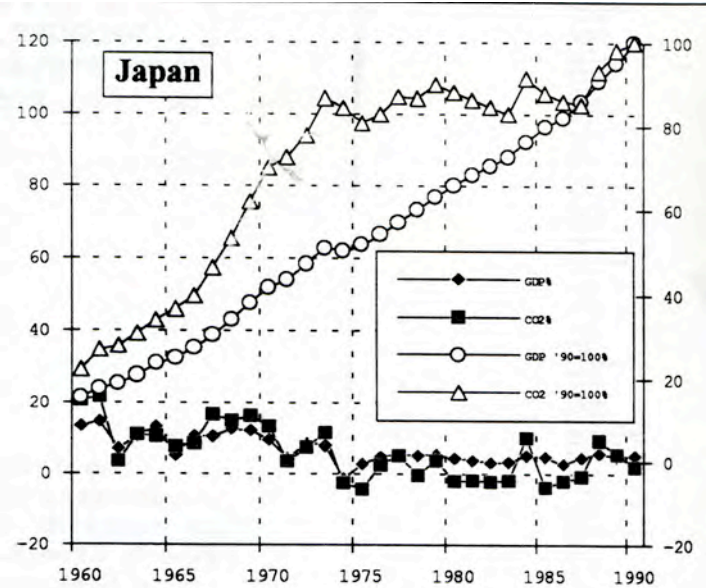
Conclusions

In total, the energy subsidy received at the present by the debtor countries from the creditor countries, is worth \$3.1 trillion annually on 1990 values. It is a serious distortion of the global political economy and shows clearly where the unsustainability of the present economic order is to be found and in what proportion. The energy subsidy actually assists the unsustainable production-dumping of \$14.6 trillion worth of fossil-fuel products on the global market by the debtor countries. At least the current subsidy should be dealt with immediately. The fact this runs annually in the order of magnitude of trillions of dollars, makes risible the OECD countries' response to the issues outlined in this paper. They have yet to grasp the policy implications of their own enormous and unrestructured fossil debt overhang. What is required is structural adjustment of the fossil debtor economies and an end to the energy subsidy and the fossil production dumping. The diversionary responses theoretically proposed so far by debtor countries are incapable of dealing with the structural issues. \$6 billion are being offered conditionally through the World Bank's new "Global Environmental Facility" (GEF) for global warming and biodiversity projects. Monies are even projected net of the value of the 'local' benefit of any project. The World Bank's professed global outlook will founder if it continues to identify the universal interest based on the rationale of 'it pays to pollute'.

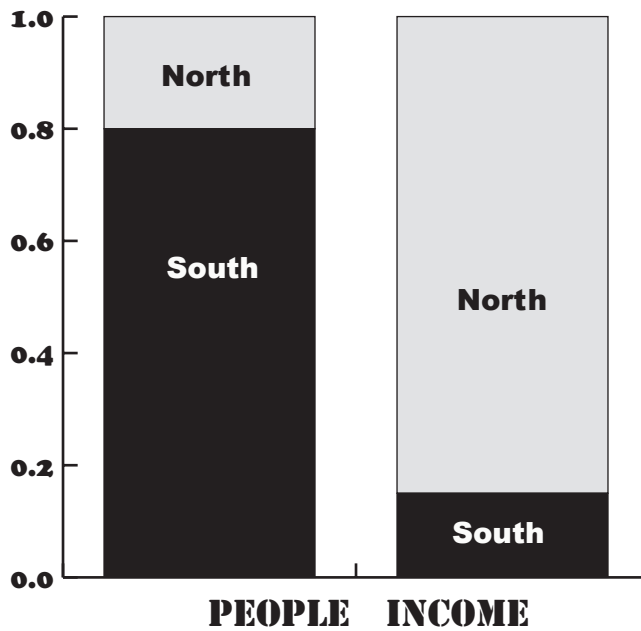
1990	segment	Debitor	segment	Creditor	segment	Total	segment	Balance SD	segment	Transfer
actual f-GDP	C+D+E	\$17.3 Trillion	B	\$1.2 Trillion	B+C+D+E	\$18.5 Trillion				
allowable f-GDP	E	\$2.4 Trillion	A+B	\$4.2 Trillion	A+B+E	\$6.7 Trillion				
excess f-GDP	D+E	\$14.6 Trillion					D	\$1.2 Trillion		
Shortfall f-GDP			A	\$3.1 Trillion					C	\$1.2 Trillion

Equity and survival are linked, because it is clearly dangerous, anti-democratic and in violation of the precautionary principle to allow a subsidised 36 of the world's population, controlling 93 of the fossil derived income, to continue to raise the level of climate change risk which the global population is obliged to take in consequence. Income differentials of this kind are clearly the appropriation of the survival rights of the many by the inequitably and unsustainably subsidised few. Adopting procedures like those outlined here, will allow us to phase out fossil fuel led GDP growth consistent with the precautionary principle. We can then concentrate on the strong and sustainable economic growth and development of democratic, decentralised, renewable, energy systems. This is the prerequisite of global ecological recovery.

For interest we include these final graphics. US and Japanese CO2:GDP curves 1960 - 1990, floating, fixed and as shares of global. It is clearly precipitous to allow 5 of world population to control 50 of the unsustainably generated wealth. We also include (back cover) a chart comparing the 1991 UNDP assessment of skewed distribution, with GCI's. UNDP's income split is 6:1; GCI's income split at the sustainable fossil GDP threshold, is 16:1.

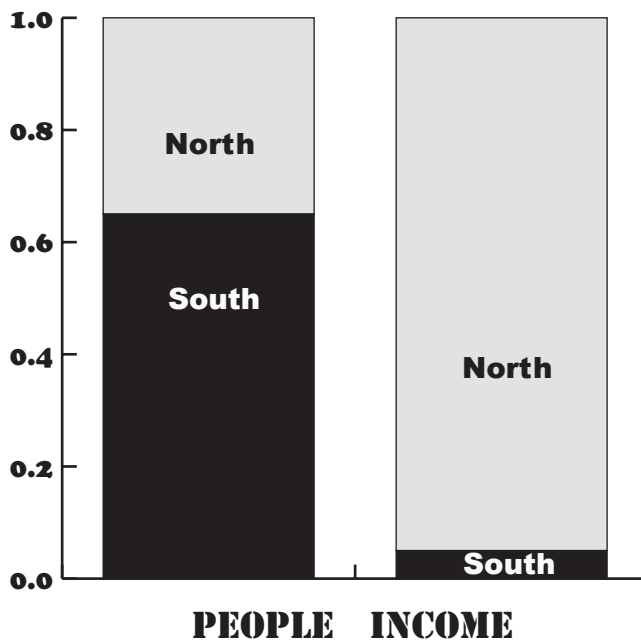


UNDP PEOPLE & INCOME



UNDP Estimate of
Skewed Income Distribution

GCI PEOPLE & FOSSIL GDP INCOME



GCI Estimate of
Skewed Unsustainable Income Distribution

IPS Daily Journal - Friday 10th March 1993

LDCs footing \$3.4 trillion bill for North's energy practices

by Jaya Dayal
New York, Mar 22 (IPS)

Developing countries are subsidising unsustainable energy practices in the North to the tune of \$3.4 trillion a year, an environment research body said here.

A document by the London-based Global Commons Institute (GCI) calculates just how much industrial countries, or "energy debtors", owe developing countries, or "energy creditors".

The document has been presented to the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC/FCC), which is meeting at U.N. headquarters this week to discuss funding for the convention.

Anandi Sharan of GCI explained the links between gross domestic product (GDP) and carbon dioxide emissions, noting that the two go up and down together, so that, *"the higher the GDP, the greater the carbon dioxide output."*

An Intergovernmental Panel on Climate Change (IPCC) has said a minimum of 60 cuts in carbon dioxide emissions were needed to slow further warming and curb adverse changes in the climate system.

"At present there are countries which are massively over their allocated quota limit and countries which are well under that limit," Sharan said.

She said that currently total global GDP amounted to some 20 trillion dollars per year, but that based on the IPCC recommended cut in greenhouse gas emissions, only seven trillion dollars worth per year is sustainable.

And of the global 20 trillion dollar GDP, industrialised countries account for 19.2 trillion dollars. But on the basis of their population, industrialised countries are only allocated \$2.7 trillion worth of global GDP, *"so they're actually appropriating, or in debt to the tune of \$16.5 trillion annually based on 1990 figures,"* she said.

Based on IPCC the assumption of a 60% cut in greenhouse gas emissions, the GCI calculates that environmentally non-damaging carbon dioxide output per person annually would amount to some 0.46 metric tonnes of carbon. But it says that today, the United States alone emits between seven and eight metric tonnes of carbon dioxide per person annually.

"When you look at the per capita consumption figures, we find that India and China can triple and quadruple their emissions without getting anywhere near the present levels of developed countries' emissions," Sharan said.

Commenting on the INC talks so far Sharan said, *"the biggest scandal is that the only accountability that seems to be being discussed here is the accountability of developing countries through the Global Environmental Facility (GEF)."*

The GEF is the interim financial mechanism mandated to provide the resources on a grant or concessional basis to developing countries to help them implement the commitments of the Climate Convention.

The convention, signed by 160 countries at the Earth Summit in Rio de Janeiro last June, invites countries to return to their 1990 levels of greenhouse gas emissions as soon as possible.

"There is no formal accountability, as yet at all, by the emitter countries - there's an 'intention' to cut emissions, but the stated commitment is to 'strong and sustainable economic growth'," Sharan said.

She noted that through the energy subsidy the South pays the North, the industrialised nations can run a system, *"which allows them to dump their unsustainable technologies and energy systems on the world at prices that drive out sustainable technologies like renewables and reproductive holistic systems."*

"It is of paramount importance that we stop talking about developing countries at all in the context of climate change, and that we concentrate whole-heartedly on getting eco-restructuring in the North," she said.

And Jeremy Leggett, Scientific Director of Greenpeace International's Climate Campaign warned Wednesday that, *"time is everything in this game."*

He said, *"as every month goes by, we learn depressing news out there in the natural world — it looks less and less likely that this series of record-breaking storms around the world, is not at least, in part, getting its excess energy from the known heat-trapping ability of greenhouse gases."*

He warned that insurance companies in the industrialised countries, on whose health successful economies depend, could soon be ruined by the avalanche of recent windstorms.

According to Greenpeace, between 1966 and 1987, there was no windstorm anywhere in the world which cost more than billion dollars in insured losses. But it says that during the period 1987-1992, there have been at least ten such catastrophes.