

# COLLISION COURSE

Free trade's free ride on the global climate

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# 1. Summary

*"If there is one immediate issue that threatens global disaster, it is the changes in our atmosphere,"* British Prime Minister, Tony Blair, 24 October 2000

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**International trade is set for a head-on collision with attempts to control global climate change. Trade makes up a growing share of an increasingly fossil fuel-hungry global economy. The transport it depends on is one of the fastest rising sources of greenhouse gas emissions that add to climate change.**

Two major conflicts emerge between the growth of international trade and dealing with our greatest common environmental challenge, global warming. One is fundamental and one is of more technical interest to policy makers.

Technically, the articles of agreement policed by the World Trade Organisation come into conflict with various multilateral environmental agreements. Where WTO trade rules clash with the measures needed to implement the Kyoto Protocol to the climate change convention, there is no clear mechanism yet to resolve disputes or decide which should form the higher authority.<sup>1</sup> Such confusion feeds the burgeoning employment market for trade and environmental lawyers.

More fundamentally, the simple logic of growth and trade liberalisation conflict with attempts to control climate change. International trade is set to grow by 70 per cent in a period of time directly overlapping the transitionary phase in which industrialised countries have to cut their emissions by an average of just over 5 per cent. Currently, for this group, transport accounts for just under a third of all emissions and freight for over half of emissions from transport. These figures imply a continual growth of greenhouse gas emissions at a time when the scientific consensus is that we should be seeking 60-80 per cent cuts. Also at the local level, the huge rise in vehicle numbers has a dramatic impact on human health through declining air quality, a growing death toll from accidents and significant environmental and social effects due to transport's 'land grab.' This report shows that:

- Trade forms a growing share of all global economic activity.
- Greenhouse gas emissions from transport is one of the fastest growing contributors to climate change. Road freight and aviation, the most polluting modes, are rising dramatically.
- International trade is getting a free ride because emissions from international freight are both untaxed, and excluded from national greenhouse gas reduction targets, agreed as part of the Kyoto Protocol.
- Wealthy countries, even with the benefit of 'efficient' information and computer technologies, have failed to make the transition to 'weightless economies.' On the contrary, they are increasingly heavy, dependent on fossil fuels, polluting and – per person – generating carbon dioxide at many times the sustainable rate.
- International trade fails, even in conventional economic terms, to bring human development to the world's poorest countries. Maximising trade for its own sake, sets us on a collision course with the limits of social and environmental tolerance.

Drawing attention to the links between economic activity and environmental degradation is not new. But what has passed largely unnoticed is the fact that the internal dynamics of globalisation are in such direct confrontation with the task of maintaining a liveable planet.

The problem is even more pressing now than at the birth of the environmental movement a few decades ago. Fuel protests across Europe demonstrate the fragility of seemingly stable political orders. Our continuing dependency on fossil fuels and the absence of peace in the Middle East threaten world-wide depression economics and a form of environmental insurrection. The carbon sins of the last few generations are returning to haunt Europe and North America in the form of less predictable and more extreme weather patterns. Worryingly there are early indications that the atmosphere is warming more quickly than previously predicted. Even more disturbing is the suggestion that climate change and ozone depletion may, after all, be linked in a negative spiral.

The ultimate issue will not be agonising over how to sell fuel taxes to reluctant electorates. It will be how to broker equitable allocations to finite and declining fossil fuels, set within the limits of environmental tolerance.

But, in the face of this difficult task, there are several things that are easily within the power, and without question in the responsibility, of our governments to deliver. They include:

- **Ending the international freight free ride** – transport underpinning international trade can be brought within both tax regimes and the targets set for industrialised countries as part of the Kyoto Protocol.
- **Paying the full price for fuel** – until the social and environmental costs of fuel are included in its price, it will remain impossible to either measure, or manage for real economic efficiency.
- **Clarifying the international hierarchy of trade and environmental agreements** – international commitments to social and environmental sustainability should take priority over the 'jam tomorrow' promises of trade liberalisation.
- **Promoting more sustainable trade through the 'proximity principle'** – by encouraging local production and consumption of goods and services to reduce unnecessary freight.
- **Acknowledging the 'carbon debt'** run up by industrialised countries by the unsustainable consumption of fossil fuels, and promoting sustainable development by:
  - i. making sure aid and lending stops the perverse investment in unsustainable transport, and
  - ii. increasing resources and technology transfer to support sustainable transport.
- **Accepting that everybody has an equal right to the atmosphere** – by moving from the guesswork embodied in the sub-global Kyoto Protocol to the framework for tackling global warming based on precaution, equity and efficiency known as contraction and convergence (see annex).

## 2. 'Little short of madness'

– the recent history of trade liberalisation



International trade is rising, both absolutely and as share of all economic activity.

### Introduction

A fashionable defence of economic globalisation is to point out that markets, the profit motive and international trade are as old as human civilisation. The claim could not be more misleading. For much of human history, the long distance exchange of fancy goods and luxuries was a relatively marginal activity compared to the routine, and more local, day-to-day meeting of human needs. It was something that is quite different from organising the entire global economy as a market system.

One day's trade today equals a whole year's commerce in 1949.<sup>2</sup> But historians point out, that for most of the last millennium the **"notion that a general struggle for gain might actually bind together a community would have been held as little short of madness"**.<sup>3</sup>

Now we are challenged with binding together a global community in the face of growing environmental, economic and social instability. And it is worth asking whether a general struggle for gain can either benefit the world's majority, or manage specific dangers to our well-being such as climate change.

In fact, trade liberalisation and the pursuit of conventional growth that lie at the core of globalisation are policy obsessions that don't relate to the real world. One sign of mental illness is when people stop obeying the consensual

constraints on social behaviour necessary for the functioning of a community. Ignoring the constraints imposed on economic activity, necessary for the functioning of our planet's life support system, is equally a sign of malfunction and denial.

- **Trade growth – to have the earth and eat it**

Trade is changing. While international trade is growing, the regulations designed to manage trade are progressively being removed. Behind the international trade system overseen by the World Trade Organisation is a belief in the automatic benefits of liberalisation. Within this belief is a largely unrecognised dynamic – that we are moving towards a utopian endgame – a market free of 'red tape,' of any rules constraining the private sector.

In making this case, free trade advocates express the teenage child's indignation at having to accept limits on their behaviour, and a similar difficulty understanding why their behaviour might have real consequences on the lives of others. The irony is that such a world would place serious constraints on the freedom of others to choose their way of life.

Even today, it is heretical to suggest that economic growth, of which international trade is an increasing part, is constrained by any fundamental limits like the management of the natural capital of the atmosphere.

After the Second World War, rates of growth in world trade went beyond the boom expected as part of post-war reconstruction. For the five years from 1948, world trade increased at a rate of 6.7 per cent. From 1958 to 1963, the average rate was 7.4 per cent, and during the next five years it rose to an 'unprecedented' 8.6 per cent.

Trade was growing much faster than production during this period. Between 1950 and the mid-1990s, while total world output grew by a factor of five, exports went up by over 14 times.<sup>4</sup>

Global trade in goods and services grew twice as fast as GDP during the 1990s, and the faster rate of growth is a trend 'likely to continue' according to the World Bank.

The significant dynamic of this process has been the globalisation of production and distribution inside multinational businesses. Globalised production within the subsidiary networks of transnational corporations saw components and parts making up one third of all trade in manufactured goods by the early 1990s, to a value of \$800 billion.<sup>5</sup> Although the picture can vary enormously from country to country, this case is also born out by the rising share of exports that manufactured goods account for. 'Advances in international logistics,' according to the Bank, 'have greatly expanded the scope for international trade in goods and services.'<sup>6</sup>

From 1960, manufactured goods as a share of exports rose from 70 to 77 per cent for industrialised countries in just under three decades, and more significantly for developing countries from 20 - 47 per cent.<sup>7</sup>

Even though most remain junior partners on the global stage, four out of five developing country regions saw a steady rise in foreign trade since the 1970s. In less than two decades in the East Asia and Pacific region, trade as a share of GDP grew from 32 per cent in 1980 to 58 per cent in 1996.<sup>8</sup>

In spite of these dramatic figures, the old industrial giants – North America, Japan and Western Europe – still dominate the trade in high value manufactured goods. These regions are expected to account for and profit from 70 per cent of increased trade over a ten-year period. The 48 least developed countries still account for only 0.4 per cent of total world trade and also generally rely on low-value primary commodities.<sup>9</sup>

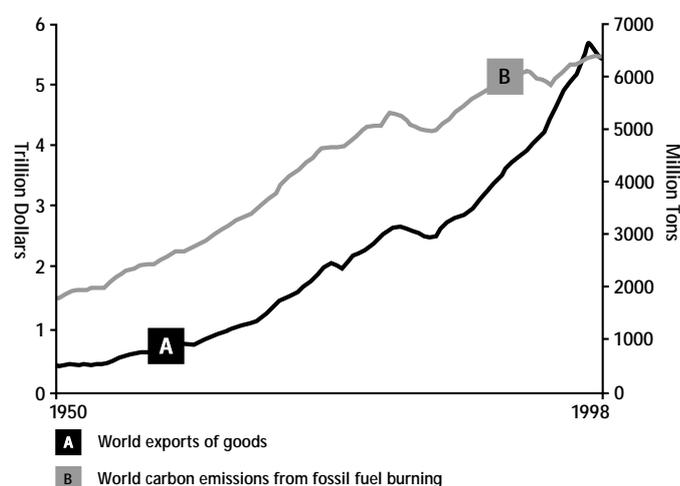
The unique character of the most successful newly-industrialised economies is not as producers but as international traders. In the mid-1990s, the four first-generation industrialising Asian economies accounted for 4.4 per cent of world output, but 13 per cent of exports of manufactured goods.

The lesson that many draw from this experience is that conventional industrial, and export-led development is *the* economic model for poor countries to follow. But there are two insurmountable landslides in the path of the less developed countries. One is that the rules of world trade have changed since the blinding light of the Asian miracles, to the point that the many of the policies available to yesterday's industrialisers are now considered

infringements of free trade. Second is that transport is one of the fastest-rising sources of greenhouse gas emissions, and that the resulting climate change and air pollution is most damaging to poor people in poor countries.

### • Flying and driving blind – how trade wishes away the real world

Much international trade lives in a bubble. International aviation and marine fuels are immune from any kind of taxation that would indicate and internalise the real environmental cost of freight and shipping. Greenhouse gas emissions from international freight are also exempt from the emissions reduction targets set for rich countries to meet under the Kyoto Protocol of the UN climate change convention.



### International trade grows in tandem with rising carbon dioxide emissions

(Source: IMF, Worldwatch Institute)

The transport networks underpinning the movement of goods are hugely subsidised and their contribution to the devastating consequences of global warming goes unaccounted. As well as the free ride for international marine and aviation bunker fuels, most of the increased demand for freight transport in developing and transition economies is for high-polluting road transport, and it is growing at up to double the rate of GDP.<sup>10</sup>

Carbon dioxide emissions from Indonesia, Malaysia, the Republic of Korea and Thailand during their periods of rapid development from 1980 - 1996, rose by between 100 - 278 per cent.<sup>11</sup> Transport emissions of carbon dioxide from Central Europe are expected to double by 2030 from levels in 1994. Truck freight and air traffic will drive a major share of the increase.<sup>12</sup>

Ironically, increased efficiency thanks to information technology was supposed to deliver a more 'weightless economy' with less environmental impact. In reality, the global economy, weighed in carbon emissions, and with only very occasional fluctuations, has grown consistently heavier. This is true even in the most advanced economies.

Research by the Dutch Association of Transport Operators estimates that e-commerce will result in a 17 per cent increase in road journeys in the Netherlands by 2005 – a combination of more journeys by consumers and more business-to-business activity.

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The volume of materials traded has risen five-fold since 1960.<sup>13</sup> A recent assessment of major industrialised countries including Germany, Japan, and the United States by the World Resources Institute showed total waste and pollution in their economies increased by up to 28 percent since 1975, regardless of improved efficiency in natural resource use. It concluded that *'by its very nature, economic growth poses a fundamental challenge to the environment's capacity to provide sufficient resources and absorb wastes without serious degradation.'*

One of the report's authors said: 'The resource efficiency gains brought about by the rise of e-commerce and the shift from heavy industries toward knowledge and service-based industries have been more than offset by the tremendous scale of economic growth and consumer choices that favour energy and material-intensive lifestyles.'<sup>14</sup>

The report confirms that carbon dioxide emissions from fossil fuels account for more than 80 per cent of total waste flows in the countries studied. It concluded that: 'The atmosphere is by far the biggest dumping ground for industrial wastes.'

To build the global economy on the foundations of fuel-intensive international trade and consumption is to build a castle on shifting and treacherous sand.

- **Growth like cancer – attitudes to economic growth and fossil fuel use**

**'The time has come for economists and business leaders, who so haughtily pride themselves as masters of the real world, to acknowledge the existence of the real real world.'** E.O. Wilson, biologist in *Consilience*

Even before the threat of global warming was widely understood there were good reasons for society to shake its addiction to fossil fuels, energy intensive economies and the 'industrialisation of traffic'. In *Energy and Equity* Ivan Illich promoted the idea that a better quality of life and more stable communities would result from low-energy technologies and more equally shared access to power.

"A low energy policy allows for a wide choice of life styles and cultures," he wrote. The alternative of a society based on high-energy consumption meant, "its social relations must be dictated by technocracy and will be equally distasteful whether labelled capitalist or socialist." Illich's warning was realised in the security structures that grew up around civil nuclear power programmes, like in Britain's largely unaccountable specialist nuclear police force. He concluded that: "Only participatory democracy creates the conditions for rational technology."

E.F. Schumacher also understood that 'big power' generation for 'big technology' stood to reduce the individual. In his seminal 1973 *Small is beautiful – a study of economics as if people mattered* he quotes the leader of the Indian independence movement, Gandhi, saying: "there should be no place for machines that concentrate power in a few hands and turn the masses into mere machine minders."

Schumacher proclaimed the central conundrum: "Economic growth, viewed from the point of view of economics, physics, chemistry and technology, has no discernible limit". He pointed out that this does not fit into the real world, because the real world, however many new mineral resources are discovered, is sooner or later a 'strictly limited' space.

Growth is the central tenet of faith in contemporary economic theology. Economist and historian Barry Eichengreen says that growth below 2 per cent a year is the accepted definition of recession. In *The Death of Economics* Paul Ormerod, points out that for much of human history such growth levels – at which an economy doubles every 35 years required 'not just a year but decades to achieve'.

Ormerod describes how the publication of the 1972 environmental classic *The Limits to Growth*, often dismissed for its mistaken estimates of resource depletion, nevertheless affected a fundamental shift in the way economies were understood. It affected an irreversible slow change from the mechanistic approach of orthodox economics, to the view of systems as more like living organisms, which experience complex and unpredictable feedback.

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Trade is increasing faster than growth, and aviation freight fastest of all.



(Source: ICAO, IMF, Worldwatch Institute)

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In the last few decades, new measures of economic activity tried to include the environment and social impacts. Most still showed that conventional growth – which is simply a measure of all the buying and selling going on - accompanied, improvements in human welfare even if it was at a slower rate.

The claim was that the car in which we were all travelling was getting generally more comfortable, but then it was suggested that vehicle of growth was driving toward a head on collision with an environmental wall.

Switching metaphors, the biologist E.O. Wilson in *Consilience* describes humankind as 'like a household living giddily off vanishing capital.' Using growth as the strategy to raise material global living standards to those of the average US citizen would require 'two more planet Earths.'

He asks whether, using our 'smartness', we should gamble with our climate and resources because: 'In ecology as in medicine, a false positive diagnosis is an inconvenience, but a false negative diagnosis can be catastrophic.'

Reluctance to accept the environmental consequences of indefinite conventional economic growth could be because climate change challenges the very 'viability of the capitalist system,' according to economist Robert Heilbroner writing in *21st Century Capitalism*. The 'externalities of a gigantic order' posed by global warming introduce 'barriers in the face of the accumulation process on which the (economic) system's life force depends.' It also, he says, asks fundamental questions about the ability of the market 'to serve as the co-ordinating mechanism of the social order.'

New calculations from the World Bank's research department in 2000 tried to re-establish the unquestionable benefits of crude growth. When 'identical' results were achieved by other researchers using the same methodology, but by using random numbers, the credibility of the earlier work suffered.<sup>15</sup> Then in September 2000, the World Bank published *The Quality of Growth*. The Bank accepted the greenhouse effect and the link to human activity.

They point out how rapid growth in the Asian economies during the 1980s generated carbon dioxide emissions per capita that 'doubled or tripled' following, 'economic reforms.'

There is a broad historical correlation between growth and greenhouse gas emissions – they tend to rise and fall together. But, while the Bank appeal for 'clean growth,' nowhere do they explain how growth can be achieved, globally, while simultaneously capping and reducing total greenhouse gas emissions by the 60 – 80 per cent recommended as necessary by the Intergovernmental Panel on Climate Change.

- **No other side of the hill - trapped on the rising slopes of an environmental Kuznets curve**

Most people accept that environmental degradation will rise in the early stages of industrial expansion. But then, beyond a certain level of rising income per person, according to some theorists, levels of environmental damage will reduce. It is like walking up, over and down a hill. If proved right the environmental Kuznet's curve becomes a convenient excuse for business-as-usual economic growth.

But do we ever see the other side of the hill? At what point do things get better? Recent evidence of rising levels of waste and pollution suggests that not even the richest countries have reached the point of ecological improvement. If that is true, and it is also true that two extra planets would be needed for everyone to enjoy the material standard of living of the United States, improvement may lie beyond the point of environmental no-return.<sup>16</sup>

This, in turn, means we would be trapped forever on the destructive upward slopes of the imaginary environmental Kuznets curve.<sup>17</sup> A World Bank assessment of literature concluded that a general rule applied: "A *growing economy imposes even greater demands on natural resources and makes management interventions crucial.*"<sup>18</sup>

As income rises some suggest that a point arrives where certain things improve, like air and water quality. But, according to the Bank, at whatever rate an economy grows, there will still be an absolute depletion of natural resources such as forestry, fisheries, soil and the natural capital of coastal regions. Therefore, "neither rapid nor slow growth is an automatic ally of natural capital," and fast growth especially creates pressure causing a decline in its "quality." Even in areas which might respond as societies grow more conventionally wealthy, such as air and water quality, assuming improvements will occur is dangerous because "many developing countries cannot reach the turnaround income level for decades." And, by that time, environmental rehabilitation may be impossible or prohibitively expensive.

One alternative is to 'tunnel' through the hill of the curve using a combination of active policies including demand management, real cost accounting, financial incentives and technology transfer.

## The double development impact of trade liberalisation and climate change

**“But times are altered; trade’s unfeeling train**

**Usurp the land and dispossess the swain;”**

*Oliver Goldsmith, The Deserted Village*

In 1993, still at the height of post-Cold War neo-liberal triumphalism, Nobel Prize-winning economist Maurice Allais declared that free trade between nations did not bring general benefits. He proposed that it could only be a win-win strategy under ‘very special circumstances’ – which meant only when trade took place between regions at similar stages of economic development.<sup>19</sup>

### • Set-up to lose the trade game

But there is enormous pressure on poor countries to liberalise their trade regimes. Membership of the WTO is a badge of respectability in the world economy, but comes at a price. Non OECD country membership of the WTO grew from 65 members in 1987 to 110 in 1999. The last decade also witnessed a record new number of regional trading agreements, when 82 entered into force compared with only 14 during the previous decade. The WTO is proud of the number of developing countries queuing to join it, but perhaps it is not surprising that a queue should form at your door when you advertise as the only bread shop in town.

The United Nations Development Programme concluded that the impact on sub-Saharan Africa of the last round of trade talks was clearly negative.<sup>20</sup> Global transport networks have grown in tandem with the trade they help facilitate. But for poor countries who depend heavily on selling primary commodities, increased supply and availability to the rest of the world, has meant a long-term downward trend in the prices they receive for their goods. This has cost poor countries many times more than the immediate impact of new trade rules – around \$55 billion per year in the early 1990s.<sup>21</sup> Ghana, for example, increased its exports of cocoa by nearly 80 per cent between 1986 and 1996, but earned just two per cent more in return.<sup>22</sup>

Because many poor countries rely on selling similar things - and under World Bank and IMF – sponsored adjustment programmes, they were collectively advised to increase exports – the downward pressure on prices increased. The consequence is that they have to run faster to stay still, whilst at the same time putting greater pressure on their natural resource base.

A study of the more immediate environmental impacts of trade liberalisation in developing and transition economies by the United Nations Environment Programme concluded that there were ‘serious negative environmental, and related social, impacts of expanded trade activity.’<sup>23</sup> These included:

- land degradation,
- water pollution,
- biodiversity loss,
- displacement of local, community-serving economic activity,
- loss of common property rights in the shift to export led activity,
- social instability resulting from structural economic changes,
- the failure and obstruction of policies designed to mitigate environmental impact,

- land use conflicts,
- deforestation, and
- perverse incentives for resource depletion.

### • Drowning not waving

Any benefits to poor countries from trade liberalisation remain the subject of intense academic debate, but the economic costs of climate change continue to rise inexorably.

The impact of climate change will have disproportionately negative impacts on developing countries. A doubling of carbon dioxide in the atmosphere is estimated to cut growth by between 2-9 per cent, up to six times the anticipated effect on industrialised countries.<sup>24</sup> The figure also compares unfavourably with the World Bank’s estimate of the value added to growth by energy intensive transport, equivalent to 3-5 per cent of GDP.<sup>25</sup> Yet all such calculations are dependent on changing circumstances.

An even more dramatic picture of the impact of greenhouse gas emissions and climate change comes from projecting forward the trend of the last few decades of rising economic costs linked to ‘natural’ disasters. Using historical data from reinsurance giant Munich Re and assuming that current trends were to continue, by shortly after the middle of this century – in 2065 – the economic costs of natural disasters and an increasingly volatile climate would exceed total world output.<sup>26</sup>

Poor people in poor countries are more vulnerable to increasingly common extreme weather events. Today, 96 per cent of deaths from ‘natural’ disasters happen in developing countries. By the year 2025, more than half of all people living in developing countries will be ‘highly vulnerable’ to floods and storms.<sup>27</sup>

Almost every aspect of life will be seriously affected unless there are significant cuts in greenhouse gas emissions, according to recent research.<sup>28</sup> By the year 2080:

- Including Africa, the Middle East and the Indian sub-continent over 3 billion people will suffer increased stress of **water** resources.
- Africa’s **agriculture** especially is expected to experience drops in yield, falling production and ‘increases in the risk of hunger’.
- There will be a substantial ‘die-back’ of **tropical forests** and **grasslands**.
- The annual number of people who suffer **flooding** will rise from 13 million a year to 94 million.
- More than 290 million more people will be at risk from the more dangerous strains of **malaria**.

### The free-riding rich – but which way forward?

Countries	Low income	High income
Air passengers carried (1998)	53.6 million	1.1 billion
Vehicles per 1000 people	12.1	584.7
Trade as % of GDP	8.3	38.3

(Source: World Bank)

### Death race 2000 – the human costs of transport

In the century stretching forward from the first fatal traffic accident in 1896, the car claimed 30 million lives. By 1990 traffic accidents were the world's ninth biggest cause of death, but were forecast to become the third most significant cause of death and disability by 2020, ahead of respiratory infection, to which vehicle exhaust is also a major contributor, tuberculosis, HIV and war.

By 1990, traffic accidents were killing between half a million and one million people a year around the world and injuring around 15 million. The focus of the death toll has also shifted South and is rising fast. An estimated 70 per cent of global fatalities occur in developing countries. In adults aged 15-44, traffic accidents are the leading cause of deaths for men.

Like with many other issues, people in poverty are worst affected. Traffic accidents are estimated to cost developing countries \$53 billion per year roughly equal to all overseas aid.

In a three year period between 1990-1993 India saw a 23 per cent increase in four wheeled vehicles. In Vietnam, between 1995-96 the number of cars and motorbikes went up by 17 per cent, but accidents rose even more, up by 22 per cent.<sup>29</sup>

Air pollution chiefly linked to vehicle traffic in the newly independent states of Central Asia and the Caucasus is creating human misery of epidemic proportions. In all countries for which comparative statistics were available, fuel consumption – in this case diesel especially – is projected to grow significantly faster than the overall economies.

In big cities across the region, an estimated 40,000 people already die prematurely and 100,000 fall ill because of 'exposure to excessive air pollution.' Economic costs of the health crisis could reach as much as 5 per cent of total city incomes.<sup>30</sup>

The great car economy is now a road to nowhere.



### Trade miles – the average distance travelled by traded goods is getting longer

- Worth their weight in carbon?

#### Kiwis

Kiwi fruit transported by freight carrier plane from New Zealand to Europe results in 5kg of CO<sub>2</sub> being pumped into the atmosphere for every 1kg of fruit carried.

#### Asparagus

To import 1kg of asparagus from California to Europe requires four litres of fuel. If grown domestically the 'energy grab' from transport would be over 900 times less.

#### Apples

Importing apples from South Africa to Europe, rather than producing locally in Europe within a 30km radius of their selling point, results in 600 times more production of nitrogen oxide pollution.

#### People

The energy required to fly one person from the centre of Europe to New York would do, "the washing of a family of four over a period of 14 years."<sup>31</sup>

#### Strawberry yoghurt

Delivering glass cups of strawberry yoghurt produced for the German market in the mid 1990s required journeys for the contents and finished product that added up to 8000km.<sup>32</sup>

#### Cotton

Energy intensive transport of textile products is 'known to be a feature of the textile industry worldwide,' and is increasing with globalisation. After the soil erosion and chemical pollution typical of its growing stage, transport is, by a long way, the next highest environmental cost of producing cotton.<sup>33</sup>

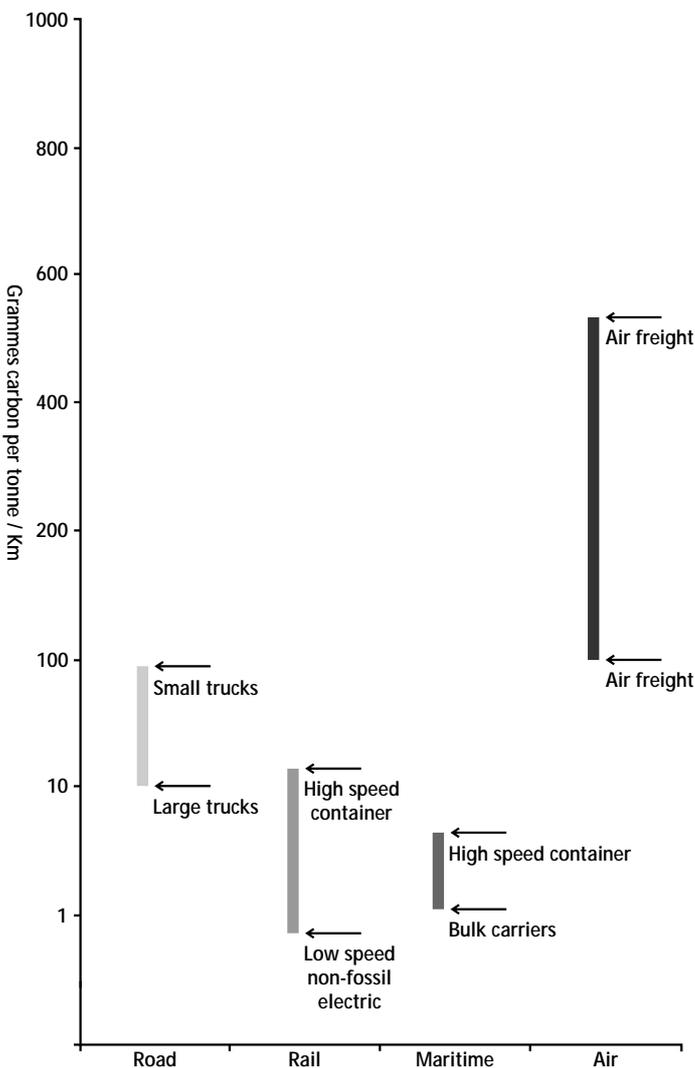
#### Orange Juice

Eighty per cent of orange juice drunk in Europe comes from Brazil. For every ton consumed at least 25 tons of materials are used up – mostly water, but it is also fuel thirsty requiring 10 per cent of its own weight in fuel. European produced blackcurrant juice would be just as nutritionally valuable but need less transport, water and pesticide.<sup>34</sup>

### 3. Assessing the links – trade and climate change

Conflicts between trade and the environment have risen to the top of the global agenda over the past decade. Surprisingly perhaps, most discussions have focused not on the impacts of trade itself – through the transport of goods across national borders – but on the ways in which internationally traded goods are produced. The classic tuna-dolphin dispute between the USA and Mexico is the obvious example.

This blind spot about freight has led to a double failure: first, to appreciate the real impacts of rising freight movements and second, to introduce the necessary policies to shift freight onto a sustainable path. It was exemplified in the recent WTO report on trade and environment which concluded in the accompanying press release that, *"trade as such is rarely the root cause of environmental degradation, except for the pollution associated with the transportation of goods."*



Different freight modes and their relative fuel efficiency. (Source: OECD 1997)

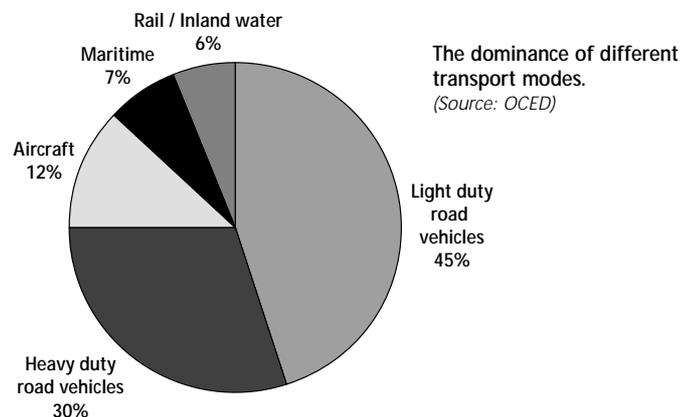
The direct environmental impacts of trade were then largely ignored in the body of the report – apart from a vague recommendation for, "a tax on fossil fuel to curtail excessively long shipments of goods with a low value relative to weight or volume".

The raw facts are clear. Each year, we ship, truck and fly ever more stuff across national borders. Standing now at an annual total of \$7 trillion, flows of trade have expanded far faster than economic output. And freight activities have been growing in accordance with trade flows. The environmental impacts of this growth are mirrored in the growing share of transport related greenhouse gas emissions.



In spite of damaged yachts, poor people suffer most from extreme weather.

A study in 1997 by the OECD and IEA estimated that the transport sector accounted for 20-25 per cent of carbon emissions from energy use for the year 1995. Industrialised nations, the so-called Annexe 1 countries in the UN Framework Convention on Climate Change, were responsible for 66 per cent of these emissions. The average annual rate of growth of transport related carbon emissions - including international aviation bunker fuels but excluding the marine equivalent - was 2.4 per cent between 1990 and 1995.



The dominance of different transport modes. (Source: OCED)



Climate change is making the earth's weather less predictable and more extreme.

These high rates of growth are all the more alarming because the almost complete dependency on oil based fuels makes the transport sector inflexible and resistant to change.

Within the transport sector, freight transport – including marine, aviation, rail / inland water and heavy duty road vehicles – accounted for 55 per cent of anthropogenic carbon dioxide emissions in 1990. Carbon emissions from marine bunker fuel combustion increased by 7 per cent, from 102 million tonnes of carbon to 109 million tonnes between 1990 and 1994.

The stress on the environment caused by freight transport is dependent on the volume (weight) of traded goods and the distance such goods are carried. When analysing the relationships between trade, international transport and the environment, it is important to keep in mind both the quantities traded and distances transported.

The OECD undertook a series of studies to examine the environmental impacts of freight movements associated with trade. In 1995, the Joint Session of Trade and Environment Experts of the OECD initiated a study to examine the extent to which trade liberalisation and increased freight movements contribute to environmental pressures.

The OECD used a model called the Global Trade Analysis Project (GTAP) to conduct a series of experiments related to the Uruguay Round of trade liberalisation talks. It sought to simulate the effects on bilateral trade flows of the reduction of import tariffs and export subsidies and the elimination of the Multi-Fibre Agreement.<sup>36</sup>

The results indicate that there are changes in international transport associated with the implementation of the Uruguay Round commitments, but that these are dwarfed in comparison to the effects of overall economic growth.

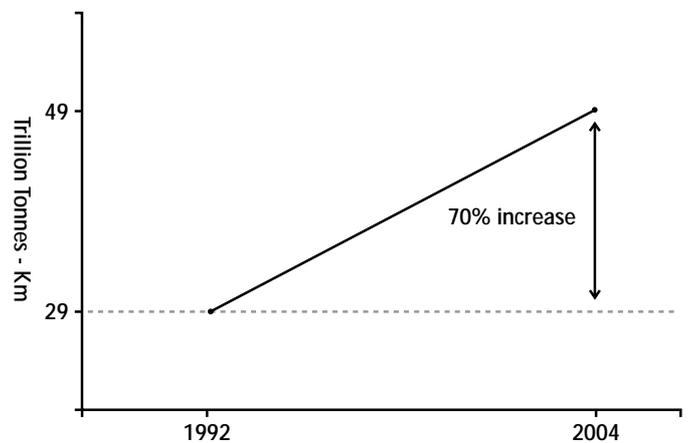
The macro economic model's general projections for growth in the transport of internationally traded goods indicates that in 2004, the year of the full

implementation of the Uruguay Round commitments, there will be an increase by 70 per cent over 1992 levels. This is over 15 times greater than the 4.5 per cent directly attributable to the specific consequences of the Uruguay Round.

No matter how much liberalisation, rather than other factors, actually generates growth in trade, the essential fact remains that transport of internationally traded goods measured in tonnes-kms is set to increase by 70 per cent, and the volume of trade by 66 per cent by the year 2004.

This also indicates that, on average, traded goods will be travelling longer distances than in 1992. Similar results have been forecast for the US, where it is estimated that the growth of tonne-miles is outpacing the growth of tonnes of traded goods.<sup>37</sup>

The impact on greenhouse gas emissions and climate change of this projected freight increase is clearly devastating. The transport sector accounts for 20-25 per cent of Annexe 1 (industrialised) country greenhouse gas emissions.<sup>38</sup>



The rise and rise in the transport of internationally traded goods.

(Source: Based on an OECD projection)

**If the projected 70 per cent increase in international freight transport were to materialise by 2004, the resulting increase in emissions would make a mockery of both the reduction targets set for industrialised countries, and the current exclusion of international freight from Kyoto controls.**

The gravity of the situation is further heightened by the fact that shifts in types of transport have been in favour of more energy-intensive modes. The share of road and aviation is increasing in overall freight movements. Trucks have emission intensities that are much higher than rail and marine traffic (see diagram).

## • Smoking guns – freight and transport at a glance

According to the International Energy Agency (IEA), over 29 per cent of total carbon dioxide emissions in OECD countries come from the transport sector, with no sign to an end in the growth of energy use. The IEA comment that: 'Without new actions, there are few prospects for the stabilisation of CO<sub>2</sub> from this sector.'<sup>39</sup>

Globally, transport makes up 20–25 per cent of CO<sub>2</sub> emissions. In the early 1990s small vehicles such as cars accounted for 48 per cent of transport emissions, heavier vehicles another 32 per cent, air transport 13 per cent and other forms including waterborne transport and rail took up 7 per cent. Long haul flights and single occupant small to medium vehicles prove to be the most energy intensive transport choices.<sup>40</sup>

- The OECD generate the world's greatest greenhouse gas emissions. Britain alone saw a 9 per cent rise in transport emissions between 1991 and 1998 according to the Office for National Statistics.
- Air passenger traffic within the European Community and in and out of the Community went up 40 per cent in just five years between 1993-1997. Passenger numbers in the European Union are expected to double in the next 15 years.<sup>41</sup>
- Aviation is the fastest growing source of greenhouse gas emissions, as a mode of transport it also has the highest growth rate.<sup>42</sup> Even allowing for increases in efficiency, total fuel consumption by air transport could rise 65 per cent by 2010 based on 1990 levels.<sup>43</sup> Other estimates suggest that fuel consumption by civil aviation is going up at rate of three per cent each year and could rise by nearly 350 per cent on 1992 levels by 2050.<sup>44</sup>
- Also based on 1990 levels, burning of marine bunker fuels could rise by 62 per cent by 2010.<sup>45</sup>
- The burning of untaxed aviation and marine bunker fuel accounts for about 20 per cent of total emissions from the transport sector.<sup>46</sup>
- Road transport in the OECD is responsible for the vast majority of greenhouse gas emissions from overall transport, amounting to 80 per cent.<sup>47</sup>
- According to the World Resources Institute there were 70 million cars, trucks, and buses on the world's roads in 1950. By 1994, there had been a nine-fold increase to 630 million. Over the last three decades, vehicle numbers grew at around 16 million vehicles per year, in line with growth in fuel consumption. Following that trend, by the year 2025 the number of vehicles will rise to 1 billion.<sup>48</sup>
- China has only about 8 vehicles for every 1,000 people, India 7, the United States, however, has 750 motor vehicles per 1,000 persons. If current trends continue by the year 2050, OECD countries which account for only 16 per cent of world population, will still be responsible for 60 per cent of global motor vehicle emissions, in spite of rapid growth in developing countries.<sup>49</sup>

## • Technology can't keep up

At a global level, technological and environmental efficiency in the transport sector has been more than offset by increased activity, increased demand for power and volume, reduced load factors and limited application of low-emission fuels. This trend mirrors the global economy as a whole. There are relatively few instances where environmental improvements have been achieved through increased technological efficiency and infrastructure investment. One exception is that of North America, where inter-city freight movements by rail have increased relative to road. But in the EU, road haulage has increased substantially and the more environmental friendly modes like rail, coastal shipping, and inland waterways have lost ground.

The OECD says this is because of how the EU liberalisation policy on transport has been implemented: 'European common market policy first focused on creating a free market situation for the road sector whereas the rail and inland waterway sector reforms lagged behind... external diseconomies are not internalised and harmonisation of social, fiscal and safety regulations is missing.'<sup>50</sup>

Quite explicitly the OECD concludes that: "The way in which EU liberalisation policy has been implemented has favoured the less environment-friendly modes [of transport] and accelerated the decline of rail and inland waterways."<sup>51</sup>

There may be some gains from technological developments in ship design, such as for lower speed ships, but this runs counter to market pressures which demand faster delivery, and is unlikely to materialise given current trends in the growth of world trade. Maritime freight is, anyway, responsible for only seven per cent of total transport.

## • Speeding in the wrong direction - The EU, freight and climate change

The links between an expanding economy, the removal of trade barriers and increasing environmental stress are particularly acute in the case of the European Union. The completion of the border-free internal market in the 1980s and 1990s prefigured many of the issues now seen at the global level. The EU highlights the way in which the removal of trade barriers can encourage increasing dependence on freight and rising environmental impacts, unless countervailing measures are designed in from the start – a rare achievement up to now.

In fact, the demand for freight transport in the EU has still not been decoupled from increasing economic activity – freight has been growing faster than the economy as a whole, making the European pattern of development ever-more transport intensive.

A recent report from the European Environment Agency shows that growing transport volumes, limited improvements in energy efficiency and a shift towards more environmentally-damaging and energy intensive modes – such as road and air – have led to a dramatic growth in energy use in the past decade.<sup>52</sup> Increasing international trade, the completion of the internal market, and overall economic growth have all contributed to a doubling in



Protests over fuel prices ignore how real human and environmental costs of road systems are not paid by vehicle owners.

demand for freight transport in the past 25 years. Journey lengths are increasing and are set to grow still further with the extension of just-in-time deliveries. Such delivery methods mean 30 per cent of all freight vehicles travel empty.

This has led to increased emissions of greenhouse gases due to the overwhelming reliance – 99 per cent – on fossil fuels, rising from 0.6 to 0.8 billion tonnes from 1985-1996. The transport sector is thus the fastest growing source of greenhouse gas emissions, and emissions from transport are forecast to increase 39 per cent above 1990 levels by 2010.

To date, policy in the EU has been unable to reverse these trends. Two main factors explain this failure. First, the costs of freight still do not include environmental costs: only about 30 per cent of road infrastructure and external costs are recovered from users. Secondly, investment in infrastructure is still biased towards road, which accounts for almost two-thirds of transport spending.

### Free riding – and on the wrong side of the road

- In spite of available cleaner-burn engine technology, the average new vehicle from every car manufacturer, apart from one, generates more greenhouse gasses today than ten years ago. In the most fuel hungry economy in the world – the United States, overall economy dropped to its lowest level in twenty years.<sup>53</sup> According to the Union of Concerned Scientists; "Two decades of fuel-saving technologies that could have helped curb CO<sup>2</sup> emissions have instead gone into increasing vehicle weight and performance."
- In the US, vehicles made by the three major manufacturers – Daimler Chrysler, Ford and General Motors – accounted for 76 per cent of all vehicle CO<sup>2</sup> emissions in 1998.<sup>54</sup>
- One estimate of the external costs of transport, including accidents, noise, congestion and air pollution puts the economic damage currently at 10 per cent of GDP. Ninety per cent of those costs are the result of road transport.<sup>55</sup>
- Over the last decade in relatively wealthy Britain, the average distance goods were transported increased by 24 per cent.<sup>56</sup>
- Also in Britain, 80 per cent of freight goes by road and in the last decade the traffic of heavy goods vehicles has increased by 38 per cent and vans by 40 per cent. At any one point in time – partly due to the inefficient nature of the 'just-in-time' distribution method – just under one third of the lorries on Britain's roads are 'running empty'.<sup>57</sup>
- Lorries account for seven per cent of vehicles on British roads but 25 per cent of fatal traffic accidents.<sup>58</sup>

### Held up in the lobby – the air freight industry as an obstacle to environmental regulation

The framing of environmental regulation and international agreements is always a focus of corporate concern. Business often fears that new rules will bring higher costs and more constraints. As a result they invest heavily in lobbying and often pool resources to influence international negotiations. Industry typically favours voluntary approaches instead of actual regulation. One of the more notorious lobbies is the Global Climate Coalition which has focused on, and many say obstructed, the progress of the UN Framework Convention on Climate Change. But there are many such industry organisations and few realise how active and vigilant they are.

In June 2000, a European parliamentary committee finalised a report on air transport and the environment. It laid out the framework in which future policy will be set, but did not itself introduce new legislation.<sup>59</sup>

For this reason, its principle author Green MEP Caroline Lucas was surprised at the air transport industry's response. "I was deluged by lobbyists," reported Lucas. "The enormous amount of time and energy the industry invested at such an early stage of the process, before specific legislation, was astonishing." Up to 30 separate representations were made to her personally ranging from the umbrella body the Association of European Airlines (AEA) to IATA, the Airports Authorities and international courier service DHL.

"The AEA went through the report line by line and distributed their version to the Committee. They made 43 'general comments' and wrote 20 amendments, leading to members of the British Conservative MEPs group to propose the very same amendments to the Committee," said Lucas. "The intense lobbying seemed designed to create confusion, even around issues where there was wide consensus such as the contribution of air transport to climate change. The waters were deliberately muddied."

Overnight air delivery has become a feature of new business methods and production and distribution methods. Courier company DHL lobbied the Committee to protect what Lucas calls, "cheap, nasty, noisy night-flight deliveries," because they kept costs down for the industry and were an integral link in the chain of 'just-in-time' retail delivery methods. To Lucas this represented the kind of perverse subsidy that demonstrated the fundamental unsustainability of the system.

The industry lobbying also had the effect of legitimising the contrary position taken by the grouping in the Parliament of disparate right-wing elements.

On the role of the industry lobbyists Lucas believes that, "their influence is even stronger and more pervasive than the way it appears from the outside with their armies of people visibly pushing their case. More worrying is their links with the Commission. Dialogue is one thing," she says, "but it looks more like they are in the driving seat."

A simple request from Lucas to attend one of the routine meetings between the Commission and industry led to bureaucratic panic. Such meetings are arranged to 'advise' on the implications of upcoming legislation – and as opportunities for lobbying.

At any one moment, 10,000 lobbyists are in the corridors and offices of the Commission. "Many times they do succeed in weakening regulation," said Lucas, "This time we were lucky." The Parliament adopted the Committee's report as a strong call for a more sustainable transport policy.<sup>60</sup>

The report creates a context for the work of the Commission, but one which the Commission, especially subject to intense industry lobbying, does not have to follow.



Industry lobbies to continue the once-in-a-lifetime firesale of our fossil fuel inheritance.

# 4. Scenarios for sustainable transport

## – the official scale of the challenge

New measures are clearly required to shift international freight transport onto a sustainable path. In one recent exercise, the OECD projected a series of scenarios for achieving environmentally sustainable transport in the year 2030.

For climate change, the OECD decided that "total emissions of CO<sub>2</sub> from transport in 2030 should not exceed 20% of the total emissions of CO<sub>2</sub> in 1990" - in other words an 80 per cent reduction. This they admitted "may seem extreme particularly in the light of evidence that CO<sub>2</sub> emissions from transportation are increasing in OECD countries and elsewhere".<sup>61</sup>

Projecting a 'business as usual' world of increasing transport growth and expected efficiencies, emissions of CO<sub>2</sub> in 2030 were between six and more than 10 times the target set.

An alternative 'high technology' scenario managed to achieve the required reductions essentially through a massive shift to hydrogen sources of fuel, including for road freight and air travel. Changes on the demand-side through greater reliance on rail and water, a reversal of the trend to 'just in time' deliveries, better load optimisation, and a reduction in freight due to an increase in locally produced goods also managed to meet the target.

While at first sight these technological and behavioural changes may seem expensive or unrealistic, the challenge is to start planning now, make the necessary investments in innovation and infrastructure and introduce the right package of incentives to ensure that freight has a soft landing in the 21st century.

**Aid donors continue to push 'dirty' development.**



### • The energy pushers – World Bank lending and fossil-fuel addiction

*"By exporting their crisis and by preaching the new gospel of Puritan energy worship, the rich do even more damage to the poor than they did by selling them the products of now outdated factories... Inevitably the poor abandon the option for rational technology when they choose to modernise their poverty by increasing their dependence on energy."* Ivan Illich, Energy and Equity

Seemingly oblivious to any contradiction, the World Bank simultaneously comments that the 'price of inaction (on climate change) is likely to fall particularly on the poorest,' whilst at the same time promoting energy intensive development strategies that will speed the onset of global warming.

The carbon footprint from transport growth linked to trade continues to grow. International financial institutions including the World Bank allocated \$51 billion toward fossil fuel and mining projects between 1995–1999. These sums would also have been used to leverage significant other financial resources to develop 'dirty' energy.<sup>62</sup> Between 1992–1998 the World Bank spent 25 times more on fossil fuel projects than on environmentally friendly energy sources such as solar and wind.

Up to the mid-1990s the Bank lent approximately \$62 billion to the development of transport infrastructure, again inevitably leveraging much greater funds from bilateral donors and the private sector. By the Bank's own admission the make up of their lending has shifted toward dirtier forms of transport, with the amount going to roads and urban areas 'increasing at the expense' of railways and shipping.

Average annual lending between 1998-2000 showed 51 per cent of the \$2.67 billion budget going to roads (not including urban transport) and only one and three per cent respectively going to railways and water-borne transport. Up to 1960 rail and water-borne transport accounted for two thirds of transport lending.<sup>63</sup>

In spite of their lending patterns the Bank observe, that: 'Road motor vehicles are the dominant source of the emissions that have local and continental effects... and account for more than three-quarters of the transport sector's contribution to global pollution.'<sup>64</sup> One projection suggests a nine-fold increase in carbon dioxide pollution in developing countries between 1986 and 2010 due to rises in vehicle emissions.<sup>65</sup> The Bank also expects trucking to triple over a twenty-year period in Central and Eastern Europe.

In a report focused on Central Europe, ministers from the OECD countries said that international financial institutions (IFIs) should "have a special focus on investments for the reconstruction, modernisation and extension of railway systems, combined transport, inland waterways and in particular on investments in ... public transport."

They concluded that IFIs "focus too much attention on sectoral road transport projects," which is "the result of the emphasis on short term economic returns... at the expense of longer term environmental or social costs."<sup>66</sup>

## • RECOMMENDATIONS – ending the free ride in the greenhouse

The policy response to the collision course between trade growth and climate change has been to allow freight a free ride. Bunker fuels used for international aviation and marine transport have traditionally been exempt from taxation, and have also been excluded from the emission reduction targets in the Kyoto Protocol.<sup>67</sup> As the Institute for Public Policy Research points out in the case of aviation: "International aviation slipped through the net at Kyoto. It has been treated as a special case, not for reasons of poverty or genuine need, but essentially because it was too difficult to sort out."<sup>68</sup>

Allocating emissions from international freight to individual countries is certainly difficult, but this should not be an excuse for doing nothing. In fact, there are moves to establish a level playing field between all emissions, whether from national or international fuel burning.

For example, the International Civil Aviation Organisation (ICAO), part of the UN, is studying options to control greenhouse gas emissions. Recommendations will be debated at an ICAO Assembly in late 2001. Critical to the process of bringing international freight into the body of the climate change convention is to ensure that efforts are taken on a broad front so that more climate-compatible modes, such as marine are not penalised. Looking ahead, a number of clear principles should guide this process to end freight's free ride:

- **Establishing a 'level playing field'** by removing tax exemptions from all forms of international transport.
- **Incorporating international freight** within the assigned amounts for industrialised countries' emissions under the Kyoto Protocol.
- **Moving towards full cost accounting** so that proper transport management and planning can be based on a real understanding of costs and benefits.
- **Investing in alternative fuel sources**, such as hydrogen cells, for international freight.
- **Ending the perverse subsidies** that promote fuel-intensive transport infra - structures, especially those pushed by aid donors to aid receiving countries.
- **Moving away from the 'just-in-time' retail methods** that promote convenience, but increase freight traffic at great cost to both local environments, and long-term sustainability.
- Accepting that international agreements intended to achieve broad-based and long-term **sustainability, should take priority** over purely economic international obligations.
- **Encouraging local production and consumption** of goods and services to reduce unnecessary freight - the 'proximity principle'.
- Finally, the ultimate principle that underpins the management of the atmosphere is the natural justice that **all global citizens have an equal right to the atmosphere's** services (see annex on contraction and convergence).

## Claiming the regulatory crown – free trade versus the climate convention

Global rules for the world economy are gradually emerging. But each set of new rules gallops from different and conflicting institutional stables. Each set of new rules tends to embody very different views of the world and what is most important. This is leading to demands for clarification about what should take priority - opening a country's borders to the unrestrained movement of goods and services, for example, or managing the economy to reduce greenhouse gas emissions.

The UN Framework Convention on Climate Change and its Kyoto Protocol is an economic agreement as much as it is an environmental one. This raises the question of what happens when the policies necessary for its implementation conflict with obligations that countries have accepted as part of joining the World Trade Organisation (WTO).

For example, if countries try to encourage clean, low-energy domestic industries by investing in them, they could fall foul of Article 5 of the WTO Agreement on Subsidies and Countervailing Measures. This is because the WTO is built on the notion that liberalisation is by definition a good thing, and any government action that might seem to favour local over international actors and industries is therefore a distortion of trade and a bad thing.

Separately, attempts to introduce energy efficiency standards to meet climate change goals could be challenged under the WTO Agreement on Technical Barriers to Trade. Under this regime, countries are not allowed to discriminate between traded goods on the basis of the way they have been made, even if one is produced in a wasteful and environmentally damaging fashion and another is not. Closely related to potential problems with energy efficiency standards is the issue of eco-labelling. Eco labels draw deep suspicion as attempts to introduce non-economic criteria into trade and "even when voluntary," have failed "to pass the WTO trade discrimination test."

There is no clear hierarchy in international agreements. A transparent process is needed, with global legitimacy, to clarify which comes first, economic theory or agreed social and environmental goals. Until then there will be regulatory anarchy more than likely operating on a 'might is right' principle.<sup>69</sup>

### The psychology of climate change – denial and the death wish?

*"Pliny the Eldest has an Observation that nullum frequentius votum, No Wish more frequent among Men than the Wish for Death" Hawksmoor, Peter Ackroyd*

There is enough evidence of human activity adding to global warming, and enough awareness of what we stand to lose as a species, to reason that the lack of international action needs a deeper explanation than any yet given. The problems of a complex policy process are an inadequate excuse for procrastination that might lead to the loss of a liveable climate.

Evidence from the last century provides no shortage of examples of a **death wish** at the heart of human society. This could be one of Freud and Jung's more lasting, if depressing, contributions to understanding the human condition. Another could be Freud's concept of **disavowal**. More subtle than outright **denial**, also a contending psychological problem, it is still common enough for individuals to know something very well and yet act as if they don't, often against their better interests. We are driven this way when in love or trying to diet. We try too hard and eat the food we shouldn't. Magnified to a global scale, and put in the context of behaviour likely to threaten our planetary life-support system, the problem of disavowal moves into a new more threatening dimension.

A more prosaic problem is the unfitting jigsaw of **political and environmental timescales**. The political picture is made up of pieces rarely larger than five years in size. Environmental jigsaws, however, can be made of pieces from 50 to 500 or 50,000 years in size. The emergence of multilateral environmental agreements that have life spans beyond those of individual administrations is an attempt to manage the mismatch of policy formulation and planetary change. Yet the very weakness of such environmental agreements demonstrates a failure of vision imposed by the unfitting jigsaw.

Easier to locate is the problem of **conspicuous consumption**. It was introduced to the language by Thorsten Veblen in 1899 in a study called the Theory of the Leisure Class that went beyond straightforward economics. He explained the dynamics of consuming goods and services that take over beyond the point where our basic needs are met. The conspicuous consumption characterising most modern societies that have any excess disposable income, he wrote, is driven by a primal desire to differentiate the individual in the crowd, essentially to establish superior status. He also describes how this process is an ever-upward spiralling magic roundabout of things, that in order to achieve its ends of making the individual stand out, demands ever higher levels of accumulation. This is because "it frequently happens that an element of the standard of living which set out with being primarily wasteful, ends with becoming... a necessary of life."

It explains how even the wealthiest economies continue growing heavier with 'goods'. To really understand our failure in the face of environmental crises, perhaps less effort is needed measuring exhaust emissions and more analysing the mind.



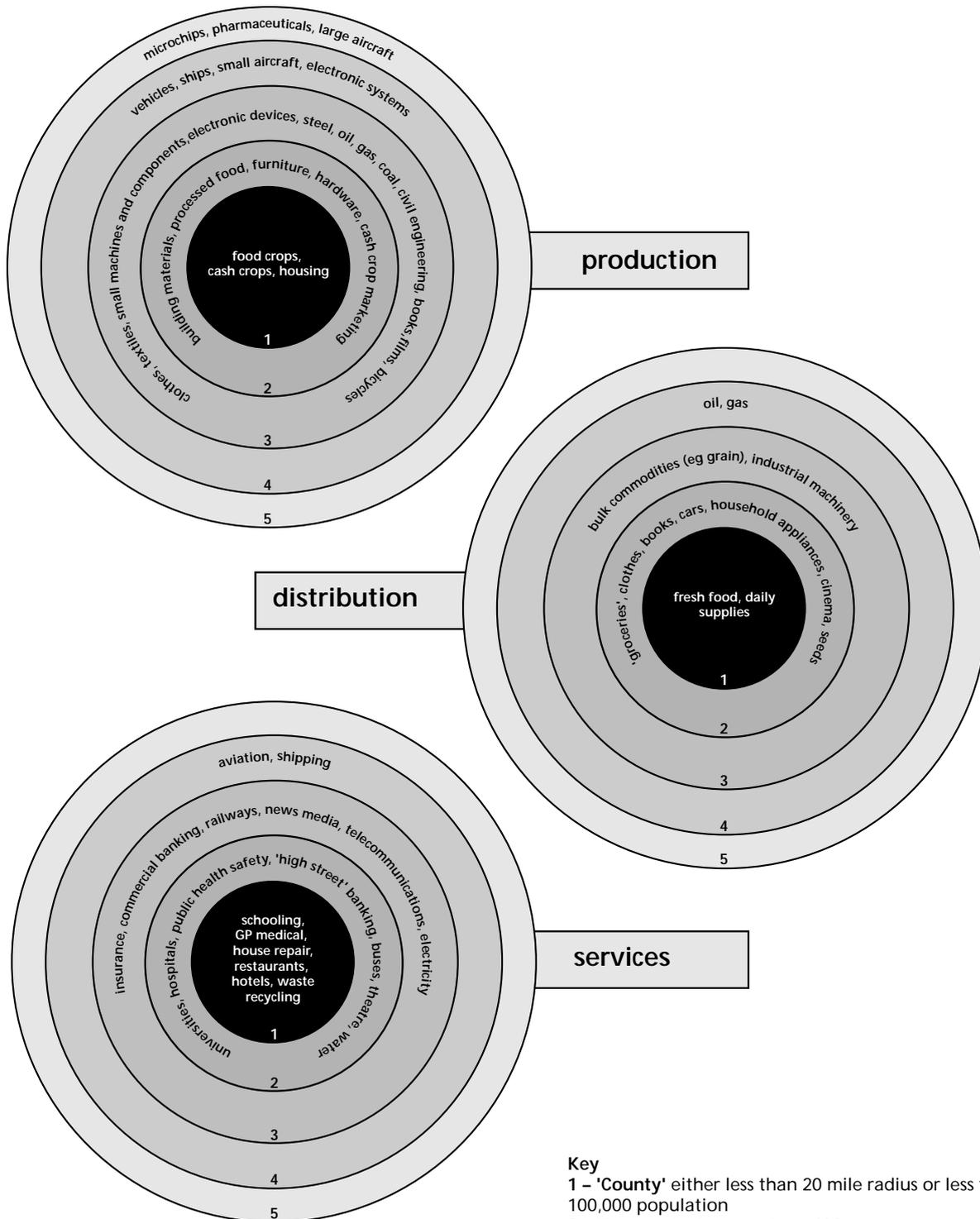
The clash between growing international trade and climate change calls for a reshaping of the global economy.

## 'Thinking locally' - alternatives to globalisation and a framework for sustainable trade?

This exercise in thinking locally shows one model for economic organisation that would minimise unnecessary freight transport, both domestically and internationally. The diagram is adapted from an idea by professor of physics, John Ziman. It sketches what a framework for sustainable trade might look like. The model assumes that: lifestyles are not immediately changed; trading

between units can take place through information networks, co-operatives and fair markets; low-cost capital is available for investment at all levels; and, there are mechanisms to stabilise agricultural prices.

The different zones are estimates for geo-demographic units that provide sufficient economies of scale for enterprises to succeed, but also give limits beyond which the costs of scale and economic integration can outweigh the benefits. The model implies a very different toolbox for the management of trade than the one currently available at the World Trade Organisation. The time is now right for a debate on what these policies should be.



### Key

- 1 - 'County' either less than 20 mile radius or less than 100,000 population
- 2 - 'Province' either less than 100 mile radius or less than 2 million population
- 3 - 'Region' either less than 500 mile radius or less than 50 million population
- 4 - 'Sub-continent' either less than 2,000 mile radius or less than 1 billion population
- 5 - 'Globe'

# Conclusion

*'Global warming is primarily a result of the industrialisation and motorisation levels in the OECD countries, on whom the main onus for mitigation presently lies.'*<sup>70</sup> World Bank

The economist Herman Daly once described an anomaly of international trade. Two factories produce similar biscuits, one in continental Europe, one in the North of England. Huge lorries obeying complex logistical manoeuvres carry the factories' biscuits, each to the other's towns, and pass in the night ploughing Europe's motorways. Wouldn't it be easier, asked Daly, if they simply exchanged recipes by fax. It is time to question the underlying logic of blanket trade liberalisation.

Protests against rising fuel prices and taxes spread across Europe like a bushfire during 2000. The protests happened in the face of accelerating climate change and depleting oil resources. A desire for the transport free ride to continue is now on a collision course with the planet's natural limits. The wall is the point at which impossible demand hits declining supply. In response, policy makers have to choose between a rational framework to manage and minimise global warming, or the guesswork that goes with adhoc responses to self-interested lobbies.

There are empirical problems linking trade liberalisation to both conventional economic growth and poverty reduction. But policy makers now acknowledge that "...the greater exchange of goods that accompanies the economic growth gained from trade liberalisation, and liberalisation in the transport sector will contribute to increased environmental damage."<sup>71</sup>

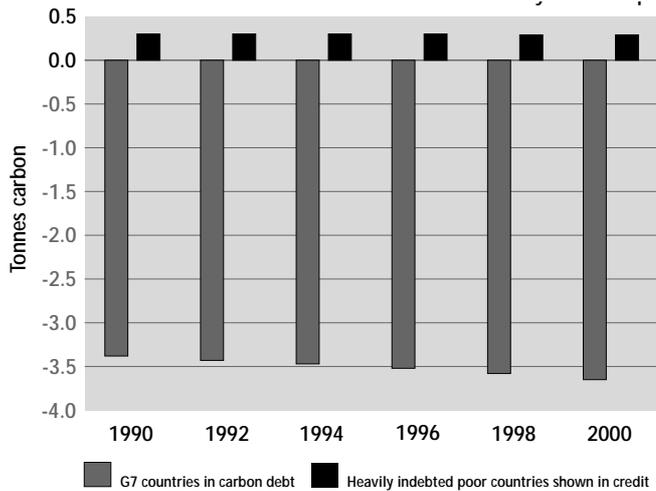
International trade forms an increasingly large share of world output and liberalisation acts as the fine-tuning of a fossil fuel hungry, global economic engine. If liberalisation improves the efficiency of that engine, it does so only in the sense of making the engine run faster, consume even more fuel and throw out more pollution.

International trade cannot continue growing on its current trajectory. That would require an overnight revolution in transport technology and infrastructure that history suggests will not happen and would, in any case, only be a limited answer. Instead of relying on failing and distorted international markets to shape the patterns of production and distribution we use to meet our needs, 'proximity' or 'subsidiarity' can instead provide guiding principles for sustainable trade.



# Annexes

1. The carbon debts of the G7 countries and the carbon credits of conventionally indebted poor countries (HIPC). The debts and credits are shown per person against the IPCC threshold for sustainable consumption of fossil fuels. The G7 are in debt while the poor countries are in credit.



(Source: Christian Aid, CDIAC, UNFCCC, GCI)

## 1. Claiming carbon debt and the case for international tort action

Faced with rising human and economic costs from climate change and an emerging network of international judicial processes, the day may be coming closer when developing countries could make tort claims against the industrialised countries most responsible.

Apart from relatively small initiatives such as the Clean Development Mechanism, no framework yet exists to balance out the overwhelming responsibility of industrialised countries for climate change and the fact that costs fall most heavily in poor countries.

Recognition of the carbon debts of rich countries would provide one foundation for reparations. Contraction and convergence (see below), on the other hand, is the only contending mechanism that currently meets the multiple needs of tackling global warming. It recognises both historical wrongs, and allows for a truly global deal, based on the precautionary principle and the fact that we all have an equal right to use the atmosphere.

### • An international tort climate court?

The damage from climate change falls most heavily on poor countries and the responsibility for it lies largely with the industrialised countries. These are grounds for international tort action. It could be argued that the behaviour of developed countries has been both improper and reckless given the high level of scientific understanding of global warming.

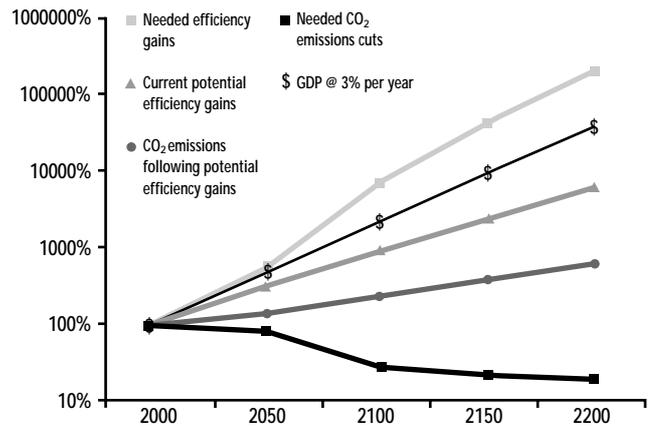
An emerging international judicial system could create the context for the poor countries most affected by climate change to sue for both compensatory and punitive damages. A tort action would be a more just response to the problems that poor countries have with climate change than another recent proposal. The Commonwealth Disaster Management Agency proposed that small states pay for their own insurance to enable continued payment of foreign debts should their economies suffer following natural disasters.

## 2. Can efficiency win the day?

Many believe that global warming can be halted by improving the efficient use of fuel. It is a comforting argument because it requires no fundamental shift in the way the world does business. Unfortunately few have considered the degree of increased efficiency that would be needed to achieve the cuts in greenhouse gas emissions necessary to control climate change.

This graph shows that, with growth increasing at a steady 3 per cent a year, over the next 200 years, efficiency would have to increase by a massive 173,000 per cent. If recent actual trends in energy efficiency continued, only a sixty fold improvement would be achieved, increasing atmospheric concentrations of carbon dioxide to over ten times

2. Projections of carbon emissions and 'efficiency' – current against needed gains



(Source: GCI)

the pre-industrial levels with unimaginable consequences for a climate capable of supporting human communities. Current efforts are seeking to stabilise concentrations at just under double pre-industrial levels.<sup>73</sup>

### • You can't trade what you don't own – equal rights in the greenhouse

Several carbon trading schemes are being promoted to help implement the Kyoto Protocol. But all of them suffer a fatal flaw. As long as climate change mechanisms remain sub-global in character, there can be no politically acceptable allocation of permits to trade. No one owns the atmosphere but we all depend on it. For this reason 'property rights' to the global commons of the climate have to respect the principle of per capita equity. It is unfeasible to argue that any mechanism designed to tackle global warming should entrench the historical privilege of those industrialised countries almost entirely responsible for the original problem. This would have the effect of guaranteeing in international law the right of consumers in Europe and North America to use up vastly more of the Earth's resources than people living in poor countries. The solution to this problem is the policy framework called contraction and convergence.

### What is contraction and convergence?<sup>74</sup>

Contraction is the reduction of CO<sub>2</sub> emissions. Convergence is the process of moving toward sharing equally the ability of the atmosphere to absorb pollution, within global limits set to avoid catastrophic global warming.

Sir John Houghton, chair of the Intergovernmental Panel on Climate Change (IPCC), for example, told the British Association for the Advancement of Science global greenhouse emissions need to be reduced by at least 60 per cent in less than a hundred years. When governments agree targets for reduction, the diminishing amount of carbon dioxide and other greenhouse gases that the world could release while staying within the set target can be calculated for each year in the coming century.

Convergence proposes that each year's tranche of the global emissions budget is shared among the nations of the world in a way that ensures that every country converges on the same allocation per inhabitant by, say, 2030. To negotiate domestic adjustment to low-pollution economies, countries unable to manage within their allocations would, within limits, be able to buy the unused parts of the allocations of other, more frugal, countries.

Many individuals and a wide variety of government and non-government organisations now support contraction and convergence as a global solution. While support has not yet reached critical mass, it is growing at a significant rate.

# Notes

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