

Cap & Share



A fair way to cut greenhouse emissions

May, 2008

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“ Continued growth of greenhouse gas emissions for just another decade practically eliminates the possibility of near-term return of atmospheric composition beneath the tipping level for catastrophic effects.

If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted, paleoclimate evidence and ongoing climate change suggest that CO₂ be reduced from its current 385 ppm to at most 350 ppm.

Remaining fossil fuel reserves should not be exploited without a plan for retrieval and disposal of resulting atmospheric CO₂. ”

James Hansen et al, *Target Atmospheric CO₂ : Where Should Humanity Aim?* April 2008 (<http://arxiv.org/pdf/0804.1126>)

Since the above was written, the concentration has risen to 387 ppm.

Drastic cuts in the world's greenhouse gas emissions are required to avoid a climate catastrophe. A worldwide agreement to secure such cuts will be impossible to negotiate unless both the pain and the benefits are shared equitably around the world. Moreover, the sharing system must be robust enough to ensure that the cuts agreed actually happen. Cap & Share is both robust and equitable. It has the additional advantage that, until it is adopted globally, it can be used by individual countries to make sure their emissions take a downward path.

Cap & Share

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Executive summary

Cap and Share was developed to meet the twin challenges presented by climate change and the peak in the world supply of easily-extracted oil. It is a variant of cap and trade and would limit the use of coal, gas and oil. It can, however, be used to share the benefits from using any scarce natural resource. It works by placing a cap on the use of the scarce resource and charging the users whatever price is necessary to balance their demand with the capped supply. The receipts from the resource users are then shared on an equitable basis amongst all those with an interest in the resource involved.

This paper deals with the use of C&S to deal with oil peak and climate change. If it were to play that role globally, C&S would cap world fossil fuel greenhouse emissions and then tighten the cap year by year at a faster rate than oil production was decreasing. This would make the emissions tonnage set by the cap a scarcer resource than the oil supply. As a result, the whole of the extra amount that users would have been forced to pay the producers for supplies of the scarce oil would be captured in the price paid for C&S emissions permits.

The captured money would then be shared amongst those with a claim on the capped scarce resource and, since that resource is the limited capacity of the sky to act as an emissions dump, everyone on Earth would have an equal claim and thus get an equal share. The emissions permits would also be scarcer than the supply of coal and gas, so C&S would capture the extra that people were prepared to pay to use them too. This extra is what economists call the "scarcity rent". After some deductions which are explained in this paper, C&S would then share the total rent from the three fossil fuels amongst everyone on the planet.



Executive summary *continued*

The first paragraph mentioned charging resource users for their use of a scarce resource. Under Cap and Share, these charges are collected indirectly. The emissions permits are not sold to fossil fuel users – that would be difficult because there are billions of these. Instead, they are sold “upstream” to companies introducing fossil fuels to the global economy. As only a small number of firms produce most of the fossil fuel used in the world, this makes C&S easy to administer. Each producer is required to acquire enough permits to cover the eventual emissions from the fossil fuels they extract.

Of course, the fuel firms have to add the cost of the permits to their prices and this puts up the cost of everything sold because all goods and services have an energy content. However, anyone who uses, directly or indirectly, rather less energy than is produced from the fuel burned when their share of each year's capped emissions is released is likely to receive more money from selling their permits than their cost of living goes up. As a majority of people in the world manage on less than the average amount of energy used per person, most people would gain financially from the use of C&S. This would make C&S popular and therefore politically robust.

The paper argues that C&S needs to be adopted urgently not just for climate reasons but because the scarcity rent being captured by fossil fuel producers is concentrating global wealth in a way that threatens to collapse the world economy. The payment of scarcity rent is already causing severe hardship for millions of poorer people around the world.

The paper describes the way C&S could be used as the operating system for the fossil fuel part of a global climate agreement. Other systems are going to be needed to enhance greenhouse gas sinks and conserve the stocks of carbon held in soils and plants. The various options that could be incorporated into the design of C&S are described and the paper looks at the changes that would be required in other systems, such as the money-creation system, for C&S to work well. The paper ends with an account of the steps being taken to get C&S adopted internationally, and stresses that before this can happen, the concept needs to gain massive public support.

Abbreviations

AEA	.....Atomic Energy Authority
EAT	.....Earth Atmospheric Trust
ebcu	.....emissions backed currency unit
EIA	.....Energy Information Administration
ETS	.....Emissions Trading Scheme
GAT	.....Global Atmosphere Trust
GWP	.....Gross World Product.
IEA	.....International Energy Agency
IRC	.....International Red Cross
Mbd	.....million barrels per day
NASA	.....National Aeronautics and Space Administration
PAP	.....Pollution Authorisation Permit
UNDP	.....United Nations' Development Programme
UNFCCC	.....UN Framework Convention on Climate Change

Cap and Share seeks to provide a simple, workable and ethical economic framework for dealing with the climate crisis. It is based on the belief that every human being has a right to an equal share of the fees that fossil fuel users would be prepared to pay for the right to discharge greenhouse gases into the global atmosphere.

Under C&S, global emissions would be capped at their current level and then brought down rapidly year by year. Each year, the tonnage of emissions that the world community decided that it could risk releasing over the following twelve months would be shared equally amongst the Earth's entire adult population. Each of us would actually receive a "fossil fuel pollution authorisation permit" (PAP) conveying the right to our individual share of that year's global emissions and making us responsible for it.

The important thing to note about these permits is that they would not ration our personal energy use. Instead, they would permit fossil fuel production. They would be valid for a year, during which people would sell them to financial intermediaries such as banks and post offices, who, in turn, would sell them on to oil, coal and gas producers. These producers would need to acquire enough permits to cover the carbon dioxide emissions from every tonne of fossil fuel they sold and international inspectors would check to ensure they did.

Cap and Share is clearly equitable and, arguably, fairer than any other practical method of sharing out rights to emit around the world. It would also be robust because, as the tonnage of emissions being distributed was reduced year by year, the market value of each person's permit allocation would increase, ensuring that poorer people received an income from the sale of their permits which enabled them to buy food and fuel as these became increasingly expensive. Since the reductions required in fossil fuel use to avert a climate catastrophe are so rapid and deep, adopting some other greenhouse gas control system that failed to protect the poor would cause serious injustice and provoke massive opposition. C&S provides an orderly way of managing the transition from fossil fuels to alternative energy sources with the market setting the price at which the right to emit is sold.





- 1 The Cap** If C&S was adopted internationally, a Global Atmosphere Trust would cap (limit) global greenhouse gas emissions at their present level. Then, using the best scientific advice, it would tighten the cap each year so that emissions eventually fell to a level at which the atmospheric concentration of greenhouse gases was judged to be consistent with a stable climate.
- 2 The Share** Every year, national climate protection trusts would share out whatever emissions tonnage had been allocated to them on the basis of their country's population. They would give an equal amount of pollution authorisation permits to every adult resident in their country.
- 3 The Sale** When people received their pollution authorisation permits (PAPs), they could take them to a bank, post office or other financial institution and sell them at the current market rate, exactly as if they were foreign currency notes. On the other hand, they might choose not to authorise the release of the emissions the permits conveyed. In this case, they could withhold their permits and thus reduce the world's emissions that year by their share. This annual distribution of fossil fuel PAPs would provide the recipients who sold them with a supplementary income to offset the effects of the rising cost of fossil fuels. A tighter cap would result in greater competition for PAPs and a higher sale price for them. Indeed, since a majority of the world's population use little energy and would thus get more for their PAPs than their cost of living went up, there would be pressure on the Global Atmosphere Trust to accelerate the rate at which it was tightening the cap.

- 4 **The Buy** A well-defined and relatively small number of companies introduce the majority of coal, oil and gas into the world economy. These firms would need to acquire enough PAPs to cover the eventual emissions from the fuels they sold and competition between them for the limited supply would set the PAP price. Only these fossil energy suppliers would need to buy permits from the banks. Fuel users, whether families, companies or utilities, would never need them to purchase fuel.
- 5 **The Enforcement** An inspectorate would be set up by the Global Atmosphere Trust to verify that the quantity of fossil fuel each company produced was in line with the number of PAPs it had bought. Unless there was serious undiscovered fraud, the world would be certain to achieve the emissions target the Trust had set.. An important feature of C&S is that policing it would only involve fossil-fuel producing companies. Other companies and individuals would not be affected.

Parallel proposals from the US...

A similar system to Cap and Share called Cap and Dividend has been proposed in the United States. Under Cap and Dividend, the Sky Trust, the organisation responsible for setting the cap and issuing the permits, would not allocate an emissions tonnage to each individual and send them a PAP for that amount. Instead, it would auction the permits to the fossil fuel producers and then share out the money it received on an equal per capita basis, sending a cheque or some other form of payment to each person. This system is likely to be slightly cheaper to operate than C&S because the amount charged by the financial intermediaries for handling or cashing a cheque or processing an electronic payment directly into someone's account might well be less than the charge made for cashing an instrument whose value would change day by day according to market demand. On the other hand, individuals would be far less involved. They would just get the money without having to think about where it came from and they would not have the option of reducing the world's emissions by tearing up their PAP. See <http://www.capanddividend.org>.

...and from Oxford

Kyoto2 is another system with similarities to Cap & Share. It was developed by Oliver Tickell, an Oxford-based journalist and campaigner on health and environmental issues. Besides placing an upstream cap on fossil fuel emissions it would also cap those from cement factories, gases such as the HFCs and HCFCs, and high-flying aircraft. The cap would be tightened sufficiently rapidly to return the atmospheric concentration to 350ppm CO₂-equivalent by 2050.

It differs from C&S in that all the permits for the capped emissions would be sold by global auction and the revenue used entirely for tackling "the causes and consequences of climate change". None would go to people as a right. Tickell estimates that the auction would provide around \$1 trillion per year (approximately the level of global military spending) to be invested in renewable energy, energy efficiency, energy research, reducing emissions from agriculture, reversing deforestation and rebuilding degraded native ecosystems, providing emergency aid following climate-related disasters, and financing adaptation to the climate change that is already inevitable. See <http://www.kyoto2.org>



3.1 Setting the annual cap

The determination of the specific rate at which emissions should be reduced is beyond the scope of this paper. However, what can be said is that the Global Atmosphere Trust (GAT) would need to be able to make its capping decisions purely on the best scientific advice on the pace that warming was taking place, on the risks that this represented and on the reduction necessary to avert those risks. If it regarded the risk of a runaway warming developing as unacceptably high, the GAT should be able to ignore the social and economic disruption that a rapid contraction in fossil energy could entail. Its trustees would have to be appointed in a way which gave them this level of detachment.

Getting such a trust into operation with full international co-operation presents a major challenge. However, a factor which might ease that process would be the recognition that the world's production of crude oil has been in a slow decline since May 2005. See Graph 1 on p10. As a result, its price is likely to rise well above current levels and, if no action is taken, the producers will make greater profits than they are already doing from the 'scarcity rent'. The total amount of scarcity rent they have received since oil prices began their climb has been substantial. Most currently-active oilfields were developed on the assumption that the price of oil would be about \$20 a barrel. If one increases that figure to \$30 to allow for inflation, more than half of the \$1,975 billion paid for oil last year was actually scarcity rent. The amount involved, around \$1,000 billion, was roughly 2% of gross world product. To put this into context, overseas aid was about \$100 billion in 2007¹, about a tenth of the rent the fossil fuel producers received.

“ When I arrived at the European Commission in 2004, a barrel of oil cost 52 dollars. It has doubled in three years. We can't rule out that in 2011 it will be at 200 dollars, ”

Andris Piebalgs, EU Energy Commissioner, on March 3rd, 2008 when oil was \$104.95 a barrel.

The essence of C&S is that it would capture this scarcity rent by making the pollution authorisation permits (PAPs) it issues scarcer than the supply of fossil fuel. As a result, the scarcity rent would be paid to everyone for their permits rather than going to the producers. A delay in negotiating an international climate treaty that involves an effective emissions cap and the establishment of a GAT will therefore mean that huge sums in scarcity rent will continue to be paid by fossil fuel users to increase the producers' profits. This poses a threat to the world economy. The last time that oil prices gave the Gulf producers an equivalent surplus was in the 1970s. As *The Economist* puts it: “The Gulf's money was a disaster for Latin America, for, recycled through Western banks, it caused a decade-long debt crisis. The Gulf itself suffered by inflicting stagflation on the West, thus causing a 20-year-long slump in oil prices.” This time “The sheer quantity of cash is hard to manage. It is too plentiful for small economies to spend, and has therefore added to the glut of global saving that is in part responsible for the financial excesses of recent years. Indeed, some economists see an analogy

with the 1970s. Gulf petrodollars have been recycled not to improvident governments in Latin America but instead to improvident homebuyers in the uncreditworthy fringes of America.”

Table 1: The share of world output going to pay for oil

Year	Oil consumption (mbd) Source: BP Statistical Review of World Energy	Average oil price (\$/barrel) http://www.inflationdata.com/inflation/inflation_rate/Historical_Oil_Prices_Table.asp	Total amount paid for oil (\$ bn)	Gross world product (\$1000 bn) http://www.imf.org/external/pubs/ft/weo/2007/02/weodata/weorept.aspx?sy=1980&ey=2008&scsm=1&ssd=1&sort=country&ds=.&br=1&pr1.x=75&pr1.y=13&c=001&s=NGDPD%2CNID_NGDP&grp=1&a=1	Price paid for oil as % of GWP
1974	55.5	9.35	189	75	2.5
1980	61.7	37.42	843	11.8	7.1
1990	66.8	23.19	565	22.8	2.5
1999	75.5	16.56	456	30.9	1.5
2000	76.3	27.39	763	31.8	2.4
2001	76.8	23.00	645	31.6	2.1
2002	77.7	22.81	647	32.8	2.0
2003	79.2	27.69	800	36.9	2.2
2004	81.9	37.66	1126	41.5	2.7
2005	83.1	50.04	1518	44.7	3.4
2006	83.7	58.30	1781	48.2	3.7
2007	84.3 (est)	64.2	1975	53.4	3.7

The proportion of world output going to pay for oil is increasing steadily, shifting the balance of financial power and giving the oil exporting countries large amounts of capital to invest in the consumer countries. In 2007, oil consumers were paying \$4 billion to \$5 billion more for crude oil every day than they did just five years previously. The 2008 figure is likely to be very much larger. Source: Calculations by Feasta

Lending to uncreditworthy homebuyers at least put money into ordinary people's hands. Unless the huge sums being paid in scarcity rent are recycled properly, the world economy will go into a decline. The danger is that consumer spending will fall as money is diverted to pay for energy. This will reduce demand and cause business investment to decline too as firms find they have surplus capacity. This could mean that there were no commercial takers for the loans being offered by the funds attempting to place the scarcity rents and unless governments borrowed to invest themselves, the fossil fuel producers would be left with no profitable ways of injecting their money back into their customers' economies. A depression would result and fossil fuel prices could fall considerably.

Even if the scarcity-rent recipients were able to re-inject their money in the fuel users' economies, much of it might be spent on real estate and blue chip shares. If this happened, very little of the money involved would find its way back to ordinary people, something which is vital if large numbers are not to be progressively impoverished or driven out of the energy market altogether. *Money must complete a circular flow if the trade it facilitates is to be sustainable.* Put another way, anyone paying over money to buy energy must somehow get that money back if he or she is to be able to buy energy again. C&S would ensure that ordinary people got it back. Other methods of distributing the scarcity rent might not.

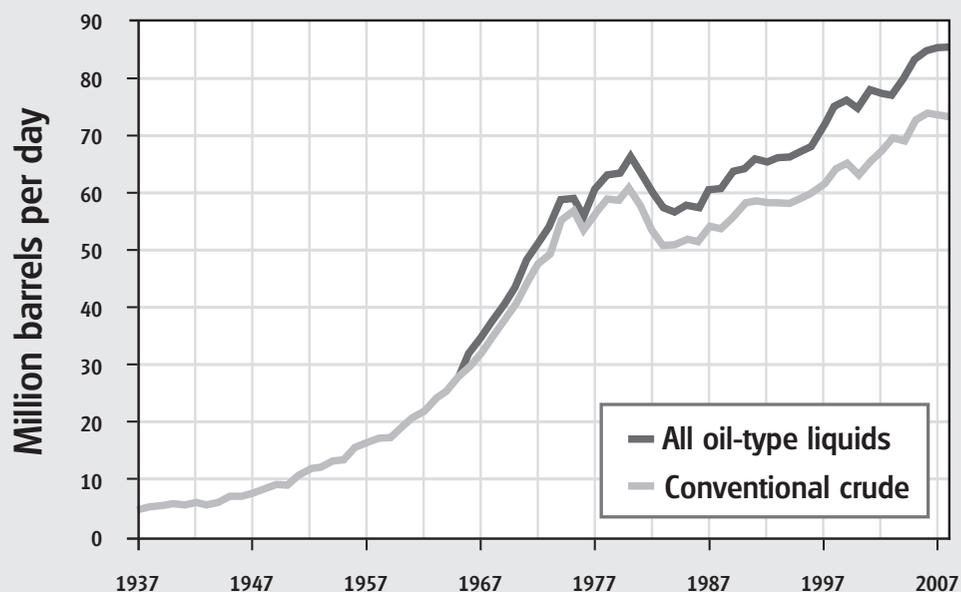


The unsustainability of failing to return the scarcity rent to the people who paid it has become apparent since oil prices began to rise because some poorer people have ceased to be able to buy adequate amounts of food and fuel. The president of the World Bank, Robert Zoellick, warned in April 2008 of 100 million people being pushed deeper into poverty because of food price rises which were due, at least in part, to the higher price of energy.

The oil peak therefore makes it urgent to set up a trust to cap the world's fossil fuel use and then reduce consumption more rapidly than the rate at which oil production falls. This would achieve two turning points. One is that, rather than increasing, the world's greenhouse emissions would actually start coming down. The other is that the poor would be compensated for the price rises taking place.

Coupling fossil fuel depletion with climate change makes it apparent that the world has a simple choice. It can either

1. Begin reducing fossil fuel use rapidly now and have some hope of avoiding a runaway warming. This course would leave larger stocks of fossil fuel for use in the future – but only after emissions had fallen to well under the capacity of the sinks to take them in, or,
2. Wait twenty years and then find that resource depletion (see following panel) forces a similar drop in fossil fuel energy anyway. By that time, too, climate change is almost certain to have passed the point of no return. Positive feedbacks will have developed which are likely to have set off a period of rapid warming which humanity would be unable to reverse, no matter how rapidly emissions were reduced. In addition, severe weather events can be expected to be doing enormous damage.

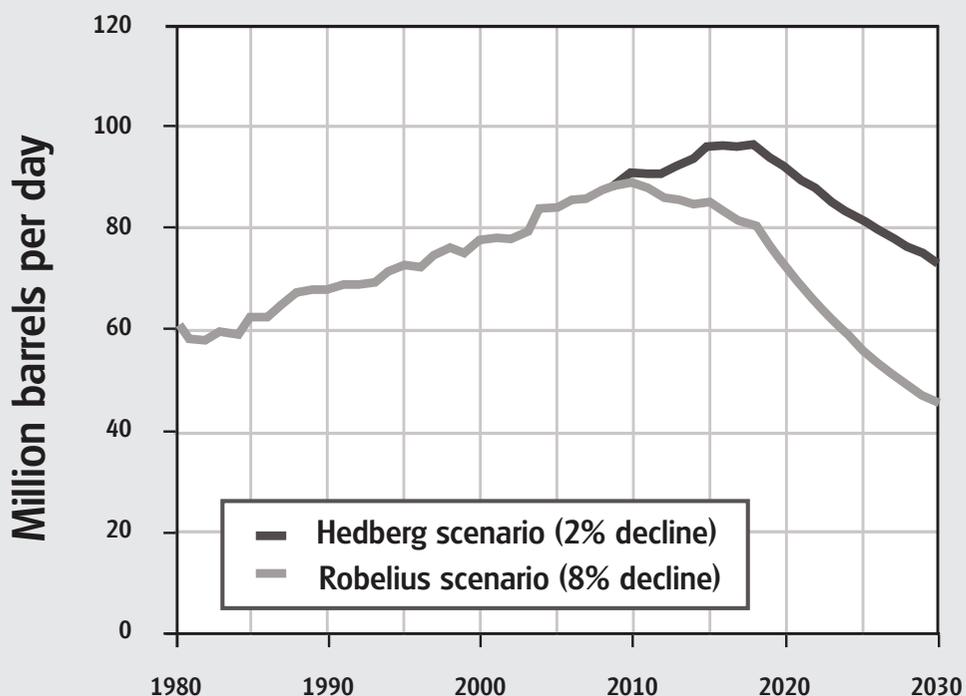


Graph 1: World crude oil production seems to have begun a gentle decline after peaking in May 2005. This graph from the December 2007 issue of *Oilwatch Monthly* is drawn from data supplied by the US Energy Information Administration. Total oil production is still rising however because of the increasing supplies of liquids from unconventional sources, such as the very light liquid that is produced as a by-product of natural gas production.

Availability of fossil fuels may decline sharply soon

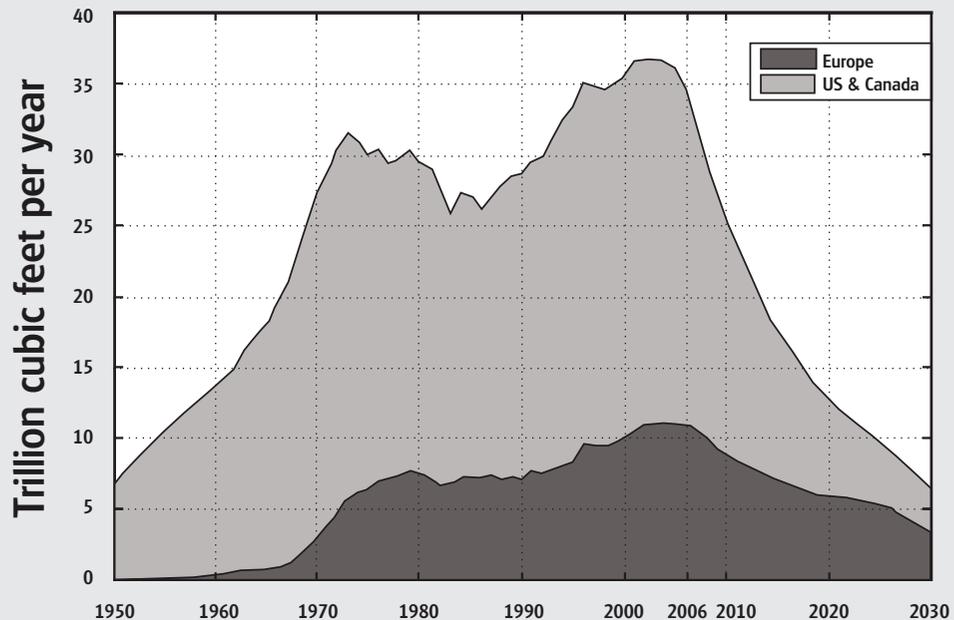
If Cap and Share is to work, the Global Atmosphere Trust not only has to ensure that it tightens the cap sufficiently rapidly to avert a climate crisis. It also has to ensure that it always issues permits for fewer emissions than the fossil fuel producers require for the amount of fuel they would like to sell. Only that way will the permits capture the scarcity rent. The rate at which world fossil fuel production declines as a result of resource depletion will therefore determine the minimum rate at which the GAT tightens the cap. Recent studies show that this rate might be surprisingly rapid.

World oil production is probably as high now as it will ever be and output may begin to decline rapidly within the next two or three years. Rembrandt Koppelaar, the editor of *Oilwatch Monthly*, saysⁱⁱⁱ that the output from existing oilfields is declining at 4.5% but that the overall rate of decline could be anywhere between 8% beginning almost immediately and 2% starting in 2018. His projections are shown in Graph 2. He based the 2% figure on figures for “reserve growth” as a result of improvements in ways of getting oil out of the ground released after a by-invitation-only conference of 75 international oil industry figures at Hedberg near Colorado Springs in the US in November 2006. The 8% decline figure is based on the doctoral thesis of Frederik Robelius of Utrecht University who looked at the rate that output from the 507 giant oilfields which supplied over 60% of world demand in 2005 was likely to decline in future.



Graph 2: Since there has been a range of predictions when peak oil will occur, it is scarcely surprising that there is a range of predictions for the rate at which oil output will decline and when the decline will begin. This graph by Rembrandt Koppelaar spans the possibilities.

World gas supplies are also nearing their peak. The world expert in this area, Jean Laherrere, expects world production to peak around 2025. However, he points out that there is no global market for gas because of the high cost of transport. There is, instead, a series of regional markets. Shortages could occur in two of these, North America and Europe, before oil shortages begin, he told^{iv} a conference in Groningen in November 2006. Graph 3 shows how rapid the decline is might be, starting any time from now on. The rate of decline is about 5%.



Graph 3: Gas supplies to the European and North American markets are expected to decline rapidly in the near future and it will be expensive to bring supplies in from elsewhere. Europe has been looking to Russia for its supplies despite the political price to be paid. Production in the Former Soviet Union as a whole is expected to begin to decline around 2020. The data are from Jean Laherrere.

Source: <http://europe.theoil Drum.com/story/2006/11/27/61031/618#more>.

The timing and rate of decline of coal output is less clear. For years, the consensus was that there was abundant coal but in April 2007, Werner Zittel and Jorg Schindler released a report *Coal: Resources and Future Production* which concluded that the world's coal reserves had been over-estimated and that global coal production was likely to peak around 2025 at 30 percent above the present level. It would then decline and from 2060 onwards, the fall would be about 2% a year. However, as with oil and gas, the net amount of energy the coal would be able to provide would decline even faster than the actual output because of the increased effort required by the mining process.

We cannot therefore be certain about the rate at which world fossil fuel output will decline as a result of resource depletion. However, two things are clear. One is that because there is already an excessive amount of greenhouse gases in the atmosphere, the eventual decline



will come too late to prevent a climate crisis. The other is that the supply of oil will not be able to keep pace with demand from 2009 or 2010 onwards if the world economy stays buoyant. As Nobuo Tanaka, the Executive Director of the International Energy Agency (IEA), told a conference^v in London in October 2007: “Despite five years of high oil prices, market tightness will actually increase from 2009. New capacity additions will not keep up with declines at current fields and the projected increase in demand.” The IEA also said on its *World Energy Outlook 2007* that it expects “An abrupt escalation of oil prices after 2015 as a result of a global supply crisis.” It continues “...it is very uncertain whether new oil production in the period to 2015 will be enough to compensate for the natural falloff in output from existing oil fields and keep pace with the projected increase in demand.” In view of this, the establishment of a trust to share the scarcity rent is extremely urgent.

3.2 The share

The basic choice about how to share the right to emit around the world is straightforward once the decision to cap has been made. Any form of capping delivers a scarcity rent to whoever is given the rights to the resource being restricted. If a international climate agreement involving a cap was put into place (and it is hard to see how there could be an effective climate agreement without one), there would only be two ways to dispose of the rights to the rents arising from that cap. They could be allocated either to governments or to people.

Since the UN Framework Convention on Climate Change (UNFCCC) process is run by governments, the likelihood is that they will allocate the emissions rights and thus the rents to themselves. They could devise a formula to share them according to their populations, or their current emissions levels, or some hybrid between the two, such as that suggested by Contraction and Convergence^{vi}. Responsibility for historic emissions could be brought into the formula too. Once the deal was done and countries knew their allocations, they would have to decide what to do with the tonnage they had received. They could follow the EU Emissions Trading Scheme model and give the emissions rights to big energy users. Or they could auction them and spend the money in various ways, even including distributing some of it to their populations.

The drawbacks to allocating emissions rights to governments are:

- It might be harder for nations to agree a formula for dividing the rights country by country rather than person by person. For example, countries with a big mining or heavy industrial sector might feel that they required a greater emissions tonnage than those with similar populations but with economies based on agriculture or the service sector. Such feelings would be a mistake because, for the most part, the extra fuel would be being used by heavy industries located in their territories on behalf of

“ The possibility of \$150-\$200 per barrel seems increasingly likely over the next six to 24 months, ”

Arjun Murti of the investment bank Goldman Sachs on May 6th, 2008 when oil was \$122.25 a barrel.

the people in the rest of the world who buy their goods. To the extent this was the case, the necessary emissions rights should be bought in from the rest of the world. But would governments accept this and be prepared to accept the same per capita allocation as other countries? Similarly, countries with cold climates might feel that they were entitled to a greater emissions allocation than those with warmer ones which, in any case, had a greater biomass or solar energy potential. Warmer countries might want an extra allocation for air-conditioning and the de-salination of their water supplies .

- Huge sums of money would be involved if the emissions tonnage was auctioned. Governments would have to redistribute this fairly if the result was to be comparable with C&S. In particular, they would have to see that the interests of the least well off were protected as the prices of energy, food and materials rose in relation to most people's wages. However, if the flows of oil money are any guide, many governments would fail to do this. Oil-rich countries have been shown to do far less to help the poor than countries without resources. According to Michael Ross of the University of California^{viii}, oil and mineral states fare worse than resource-poor countries on child mortality and nutrition. They have lower literacy and school-enrollment rates and do relatively worse on measures like the UNDP's Human Development Index. This is said to be because their ruling elites have no need of the poor as a source of tax revenue and therefore have no incentive to spend on projects which would improve incomes and thus the national tax base. Moreover, the flow of mineral wealth to governments has not been good for democracy and Ross has shown how states with such flows have experienced more insurrections and coups. In addition, if governments collected the permit revenue, the risks of corruption would be huge and the development path that countries took would be almost certain to be distorted, since big, top-down projects would tend to be favoured over those at a family or community level.

By contrast, the direct distribution of a share of the scarcity rent to each adult as proposed by C&S would create a much better balance between rulers and the ruled. The other advantages of individual entitlements include:

- The less-well off would be automatically protected against the effects of higher energy prices
- Purchasing power would get to people and places that would otherwise be hard to reach. The urban-rural divide would be narrowed.
- People would receive, as a right rather than a government hand-out, the resources that they need if they are to adapt to a low-carbon world. They would be able to borrow against their annual income from the sale of their emissions rights for projects which would produce or save energy. Local-level projects would be easier to develop and finance.
- Governments would benefit from higher tax revenues produced by the extra economic activity that the distribution of the scarcity rents would generate.
- The scope for corruption would be greatly reduced.

Despite all these advantages, it is likely to be very difficult to get governments to agree that emissions should be capped by an autonomous international organisation and that the permits it issues, or the revenue from their sale, should be distributed by autonomous national organisations to every adult in their jurisdictions. In part this opposition would be because such an agreement would restrict a government's powers by making the independent management of a commons on behalf of present



and future human generations and of other species equivalent to having an independent judicial system to safeguard legal rights. Yet isn't this what is required? In a healthy society the judicial system is kept apart from the government decision-making so that governments and politicians can be bound by the rule of law. Should not the same independent status be given to the people and organisations charged with maintaining the integrity of global and national ecological systems?

If C&S was nevertheless adopted as the world framework for tackling fossil fuel depletion and climate change, it would share out three things:

1. the scarcity rent arising because emissions rights have been restricted would be shared between everyone in the world
2. the scarcity rent arising as a result of fossil fuel depletion would be shared between fossil fuel producers and the rest of the world, and
3. fossil energy use would be shared between this generation and later ones.

We will look at these in turn.

3.2.1 *Sharing emissions rights between people*

As we've discussed, the Global Atmosphere Trust would set the cap and supervise the international distribution of the Pollution Authorisation Permits, PAPs. It is envisaged that each country would set up a statutory climate protection trust at arm's length from its government to distribute the permits. Each PAP would bear the beneficiary's name, just as polling cards do in many countries, and the climate protection trusts would use electoral registers, social welfare and tax records to compile the list of names and addresses to which the permits were to be sent. The draft lists would then be published so that people could check that their names were there. Governments would want to see as many people on the distribution list as possible because that would bring more permits into their countries and that would save, or earn, foreign exchange. It would also entitle their treasuries to extra payments, as we'll explain later.

Basing the distribution list on electoral and tax records would mean that only adults got PAPs but that they would receive a higher emissions tonnage than if children got them too. Confining the distribution to adults avoids a lot of administrative difficulties, removes opportunities for fraud (few young children have worthwhile photographic identity documents) and safeguards C&S from the charge that it would encourage people to have more children just to collect the income from the entitlements each birth would bring.

Possible add-on 1. - The Transition Fund

Although distributing emissions rights on an equal per adult basis is obviously equitable, is it fair? Not all people are on an equal footing when it comes to facing the consequences of climate change or adapting to a very low level of fossil energy use. Fairness surely requires that consideration be given to each area's circumstances and, to enable C&S to do this, it is proposed that the Global Atmosphere Trust should retain a proportion of each person's share each year. It would sell the retained emissions tonnage itself and put the proceeds into a Transition Fund to be allocated to countries whose governments had proved that some or all of their citizens were much more seriously disadvantaged by emissions restrictions or the effects of climate change than people in other countries.



The Transition Fund would not be used for poverty relief or to compensate for historic injustices. It would all go to capital projects. For example, countries might receive grants to improve the energy efficiency of their buildings and transport systems, or to take precautions against the increasing storms, drought or rising sea levels brought about by climate change. Or they might qualify because they had a greater need than other countries to enable their industries to adopt new, low-energy technologies. Both rich and poor countries would be able to apply.

It would only be possible to retain a small percentage of any year's emissions permits to benefit the Transition Fund. The following calculation indicates why. About 20% of the world's annual output is used for investment purposes and since machinery manufacture and construction projects are energy intensive, capital spending probably accounts for 40% of world fossil energy use and hence 40% of global emissions. Assuming this figure is broadly correct, how much of the 40% should be allocated to the Transition Fund for hardship cases? The answer is probably that only about an eighth of the 40% or 5% of the total global emissions could go to the fund since every household, firm and government in the world is also going to want to use energy for capital projects to adapt to the new low-carbon conditions.

Although the division of the Transition Fund between countries is likely to be contentious, a major advantage of having the Fund in the C&S design is that the international community would be able to agree that PAPs should be issued and start the annual distributions without having first settled how the Transition Fund should be shared out. The money from the sale of the emissions tonnage the Fund withheld could be kept in a bank account until an agreement on how it should be divided up emerged. This would be far better than allowing a failure to agree on the division of emissions rights between countries to delay the signing of an adequate international treaty for several years, which may well be the outcome under the present each-country-fighting-its-corner-against-all-the-others arrangement. Moreover, since an international decision that C&S was to come into effect in two or three years would produce massive changes, it would scarcely matter if the share-out of the Transition Fund was delayed for some time.

Possible add-on 2. - Collective distribution

Distributing PAPs to individual adults is very much a Western approach and some non-Western societies operate on a more collective or communal basis than is usual in most of the fossil-energy-intensive world. However, it should also be said that the nation state is also a Western concept and, just because the distribution to individuals might be inappropriate in some places, that does not mean that the emissions rights should go to a national government instead. A much better solution would be for the Global Atmosphere Trust to issue guidelines on the circumstances in which distributions could be made to groups such as communities and tribes and for the national climate protection trusts to follow these where they, and the communities involved, thought appropriate. For most of the world, though, distributing PAPS to individuals would be the norm.



Possible add-ons 3 & 4. - Community response and the Children's Fund

The GAT should not oblige the national climate protection trusts to distribute all the remaining tonnage to individuals. Because not all energy-saving-and-supply problems can be solved by changing prices and ensuring that people have more money in their pockets, the national trusts should be free to consider giving out perhaps 10% of each individual's allocation in a form which prevented it being sold by the recipient. Instead, every local area could have a choice of collective projects intended to develop local energy supplies or to reduce fossil energy use and the projects would compete with each other to persuade people to give them the special permits to sell to raise enough funding to go ahead. Similarly, a national trust could decide that a proportion of the tonnage that would have been distributed to children had they been included in the division should be distributed in a form in which it could only be invested by their parents, through special Childrens' Funds, in ways likely to benefit all children when they became adults themselves.

3.2.2 Sharing the profits from the scarcity of fossil fuels between producer and consumer

We've already noted that Cap and Share is, first and foremost, a mechanism for distributing the benefits that can be gained from using fossil energy fairly around the world. If C&S or a similar system is not introduced and the distribution of the diminishing supply of fossil energy is left to the market, the prices of all three fuels will increase as a result of fierce competition. The increases produced by this competition will alter the division of the benefits of using fuel between the producers and the users, with some of the people who used fossil fuel previously being squeezed out and getting no benefit at all.

The increase in the amount of benefit going to the fossil fuel producers is the scarcity rent. It is important to recognise that they are not entitled to all of it. While the fuels themselves undoubtedly belong to the countries in which they are found, the rent only exists because people throughout the world want to use fuel and, without their demand, it would be almost valueless. The rent therefore belongs to those whose demand has created it – the fuel consumers.

As the proportion of the gross world product that is paid in scarcity rent grows, the way it is shared between governments, fuel producing companies, major fossil fuel users and ordinary people will become an increasingly important global issue. The C&S proposal to share the scarcity rent fairly amongst the world's entire population is likely to provoke a hostile reaction from the fossil fuel producing companies and countries. And, since oil production is becoming increasingly concentrated in a few countries (Saudi Arabia and Russia alone are responsible for 18% of world oil exports) and only three countries – Russia, Iran and Qatar – have 58% of the world's gas reserves, the producers do have a strong hand particularly as the recent high prices have left many of them flush with funds. So, if the Global Atmosphere Trust tried to limit their sales and prices in a way that they felt damaged their interests, they could afford to retaliate by cutting production below the level for which permits had been issued by the Trust. This would swing the scarcity rent back to them. The producers would know that the world needed their oil more desperately than they needed the world's money and that if the Trust responded to their production cuts by reducing the supply of permits, they could cut production again. It would be a battle which the billions of people around the world the Trust represented could not win because of the control that the producers have over vital energy supplies.



C&S can therefore only be introduced internationally if the Trust can hammer out a rent-sharing agreement with the producing countries. Part of this could involve the use of the Transition Fund to ensure that the communities dependent on the production of fossil energy were helped to make the transition to a post fossil energy economy and were not thrown onto the scrap heap. Another element might be for the Trust to say, in effect: "In order to withdraw from the fossil fuel economy as quickly as possible, we are going to reduce our demand for your coal, gas and oil by 3% a year from now on. However, we don't want your export income to suffer too much so we'll offer you a guaranteed price which we will increase each year to compensate in part for our smaller purchases. We'll also pay you a little extra each year to cover your rising production costs and to help the transition to new energy production arrangements." The guaranteed price^{ix} would be fixed in purchasing power terms rather than in any particular currency. If there was any price shortfall in a particular year, the Trust could honour its price guarantee by withholding from the following year's distribution whatever tonnage of emissions it needed to sell to raise the money to cover it.

The producers would gain substantially from this arrangement. Not only would they have a fair, guaranteed income for more years into the future than if the production was uncontrolled but they would avoid the damage that the oil peak might do to them if the higher prices it brought about pushed the world economy into a recession. No-one would need to tell them that a recession would hurt them in two ways – it would cut the fuel prices they received for an indeterminate period while simultaneously reducing the value of their substantial investments overseas.

3.2.3 *Sharing energy use between this generation and later ones.*

“ Warming is accelerating greatly, especially recently ”

Dennis Bushnell, Chief Scientist,
NASA Langley Research Center,
January 2007

By limiting fossil fuel use now, C&S conserves stocks, and thus shares their use between this generation and succeeding ones. However, it could potentially share energy use in another way too. If, as seems likely, the Trust decided that it was unsafe to emit any more greenhouse gases into the atmosphere and that all emissions from now on needed to be recovered before their full heating effect had developed, it could hold back an additional amount of each year's emissions tonnage to auction itself to pay for this.

The funds generated could be used in two ways. One would be to encourage farming practices that sequestered atmospheric carbon in the soil. It would only take a 10% increase in the 2,000 billion tonne stock of carbon held in soils and the plants growing on them to reduce atmospheric carbon dioxide levels from their current level of 387 parts per million to their pre-industrial level of 270 ppmv. A 3.5% increase would get them back down to 350 ppmv, a level which the US climate scientist James Hansen suggests might be safe.



It seems unlikely that it will be possible to measure soil carbon sufficiently accurately to be able to pay farmers directly for increasing the amount of carbon their soils hold and to penalise them for any reduction. However, it would be possible to use the funds to alter the price signals farmers face so that the most profitable forms of farming become the ones which significantly increase the amount of carbon held.

This soil and biomass sequestration effort would be inadequate to stop the atmospheric concentration of CO₂ increasing for some years until annual emissions had come down and the scale of the farmers' effort built up. Funds should therefore be put aside to pay for future sequestration efforts. As money might not hold its value, it might be better invested in renewable energy projects whose output could be sold in the future to meet the cost of the sequestration when the capacity became available.

By reducing the amount of energy this generation used for current consumption so that the next generation had more, this technique would, in effect, transfer energy use from this generation to the next. It is right that such a transfer should be made because, in its absence, this generation would be leaving the energy cost of cleaning up its environmental mess to its successors. It would be, in the jargon, externalising an environmental cost. This generation, the polluters, would not be paying for the clean-up, but the next generation would.

The share out of the scarcity rent under Cap and Share could therefore be as follows.

Stage One: The Global Atmosphere Trust retains some emissions tonnage and auctions it to cover:

1. Its own running costs and those of the national climate protection trusts
2. The Transition Fund
3. The price guarantee to fossil fuel producers
4. Any payments necessary to ensure that the agricultural sector ceases to be the source of over a quarter of the world's greenhouse gas emissions and, instead, becomes a sink for the surplus already in the atmosphere.

Stage Two: The national climate protection trusts divide up the emissions tonnage they receive from the GAT amongst their adult populations. They have the option of earmarking part of each person's allocation for community-level projects of his or her choice and for a children's fund. Their distribution could therefore be:

5. Individual allocations
6. Allocations to communities such as tribes in place of individual allocations
7. Allocations to community-level projects as decided by each individual.
8. Allocations to projects intended to benefit the next generation as decided by each individual.

Stage Three: Governments capture part of the scarcity rent by taxing the economic activities generated by the Stage Two distribution.



3.3 The Sale

The Trust would phase the distribution of permits around the world so that the amount it made available each month reflected the normal energy consumption pattern for that time of year. In some countries the distribution would probably be on a national holiday, so that everyone could travel to their local government offices to claim their permits, cash them in by selling them at a nearby bank and celebrate by spending part of the proceeds. The newspapers and the radio would be full of stories about the price people should expect to get and whether it was advisable to sell PAPs now or if the price might go higher later in the year.

In the poorer parts of the world, the annual distribution would be the equivalent of the introduction of a reliable new crop. It would put money into rural areas and give the people there, possibly for the first time, a source of income against which they could borrow. While bars and street stalls would do well on distribution day, during the rest of the year people would improve their houses, develop their businesses and invest in their children's education. So, while the sale of luxury items in energy-hungry economies might contract a little because of the higher cost of using fossil fuel with the cost of the producer's emissions authorisation added on^x, the demand for basic materials and simple goods in poorer countries would grow. This would provide opportunities right up the production chain, benefiting factories and design shops in rich countries which would make the machinery to go into the new production plants. In addition, the knowledge that energy prices were going to rise reliably year after year would speed up the development of renewable energy supplies and energy-saving technologies, which would also provide opportunities for richer countries' firms.

National climate trusts in countries with weak administrations should be able to handle the permit distribution without serious problems. When demobilisation payments worth roughly US\$2 a week were given for two years to nearly 93,000 former fighters after Mozambique's civil war ended in 1992, everything went well. There was a similarly successful outcome when once-off payments of US\$92 were made to 106,000 families who suffered in Mozambique's floods in 2000. In both cases, cheques were used which had to be cashed by named individuals. According to Joseph Hanlon of the Development Policy and Practice group of the Open University, Milton Keynes^{xi}, rural people had no difficulty cashing them and used the money prudently. He adds that the money stimulated the rural economy and thus had a development impact. Administrative costs were around 5%.

3.4 The Buy

An international trade in PAPs would begin immediately the first ones were distributed. The banks and post offices that bought them from the public would lodge the paper notes they had bought to their accounts with their national climate protection trust, which would validate the lodgments by passing the notes through a barcode reader to check for forgeries. The various climate protection trusts would, in turn, have accounts with the Global Atmosphere Trust and, if a bank in Country A wished to sell permits it had lodged to its account with the Country A Climate Protection Trust to a fossil fuel producer in Country B, the transfer would be exactly the same as it is at present when a bank customer wishes to send money to someone who has her account with another branch of the same bank.



Only licensed institutions would be permitted to hold climate protection trust accounts. This, and the fact that the permits were trickled on to the world market throughout the year by having countries issue them at different times, would lessen the risk of speculators buying up large quantities to withhold from sale until the price had risen substantially and they were able to sell them at a large profit. Actions of this type would enable the speculators to capture some of the scarcity rent at the expense of the people who had originally sold the permits. However, with a constant flow of permits on to the market, those receiving their permits later would benefit from the higher prices, as would the original sellers when their next distribution came around.

It would be very important for the Trust to ensure that all permits were used by fossil fuel companies within a fixed period from the date on which they were issued. This is because, as progressively fewer permits would be issued in successive years, the market would expect their price to go up. If the rate of price increase expected from year to year was greater than the rate of interest, it would seem attractive to buy permits now and to hold them indefinitely as an investment. This would push up permit prices in the current year to close to the discounted level they were expected to reach in several years' time.

These speculation-driven prices could cause an economic crisis. One of the aims of C&S is to signal to families and investors that energy prices are going to be very much higher in future and they should make decisions on that basis now so that they are ready for the higher prices when they come. C&S would be a disaster if those higher prices went into effect right away. Accordingly, the Trust should design its system so that the permits it issues lose their validity after, say, a year if not presented by a fossil fuel producer to its inspectors. This would mean that, when the national climate protection trusts accepted permits from the financial intermediaries, they would have to record the month in which they were issued. The different months would, in fact, be traded as different commodities.

Possible add-on 5: Global and national monetary reform

What currency should the fossil fuel producers use to pay for the permits they buy from other countries? The answer is important because, if reserve currencies like the dollar or the euro were used for the trade, it would be possible for the countries issuing those currencies to receive what would be, in essence, a discount on all their purchases. At present, the United States receives a discount of roughly a third on all its imports of goods and services because it pays for them in dollars and then, when it fails to earn enough dollars from its exports to pay for its imports, borrows the missing dollars from the countries with which it is doing business. To be sure, it pays interest on the dollars it borrows but the dollars it pays in interest just increase the amount it owes to the rest of the world. As no goods or services flow to other countries because of this borrowing, it has at no real cost. In 2006, the US bought goods and services from the rest of the world worth \$2,202.1 billion and only sent goods and services worth \$1,436.8 billion back in return, a shortfall of \$765.3 billion or 34.75%^{xii}. Its overall current account deficit in 2006 was a record \$856.7 billion, 6.5 percent of its GDP.

It would be quite wrong if the purchase of permits could be carried out in types of money which give such a massive advantage to powerful nations. To do so would allow countries which have caused the climate crisis to continue to use energy at preferential prices.



To prevent this, Feasta proposes that a new world currency, the ebcu (for emissions backed currency unit) should be issued by the Global Atmosphere Trust and given to member governments over a period of years according to the size of their adult populations. This is why we said earlier that governments would benefit from having as many people as possible on their PAP distribution rolls.

It is suggested that the value of the ebcu should be fixed in relation to the right to emit a tonne of carbon dioxide. The Trust would announce that, if ever the price of the right to emit rose above one ebcu per tonne, it would reduce the number of ebcus in circulation. This would be done either by issuing ebcu bonds or by offering more PAPs for sale and removing the ebcus it received in payment for them from circulation. (In this case, the Trust would claw back the extra PAPs it had issued by distributing less the following year.) On the other hand, if the price of the right to emit was less than an ebcu, the Trust could either cut the tonnage of PAPs it distributed or, if the world economy was in a seriously depressed state, increase the number of ebcu distributed to governments. By putting a tight upper and lower limit on the ebcu price of a tonne of CO₂, this mechanism would provide stability for the world economy.

As a condition of getting their ebcus, governments would be required to introduce legislation requiring their countries' international trading to be done either in ebcus or in one of the currencies of the two trading partners. Consequently, as ebcus were trickled into the financial system, they would gradually replace the dollar, the pound, the euro and the other reserve currencies for all international transactions, not just the trade in the emissions permits.

Governments would also be required to use a proportion of the sum they received each year to pay off some of their overseas debts. Suppose their debt was denominated in dollars. The governments would sell their ebcus for dollars and pay back their dollar loans. This would do two things. First, it would reduce the number of dollars in circulation, making space for the ebcu and preventing the issue of the new money having an inflationary effect. Second, it would increase the demand for dollars, thus supporting their value and reducing the risk of the currency collapsing during the period during which the ebcu was being phased in.

National currencies would have floating exchange rates with the ebcu, determined by supply and demand. Countries which converted quickly to renewable sources of energy and consequently did not need to buy so much fossil fuel would do well. Their currencies would be strong and they would find that imports were cheap. Other countries would find that it was costing them more and more in national currency terms to buy their imported energy. This would give them a very real incentive to switch to renewable energy sources too.

The need for inflation

It should be mentioned that C&S, in common with every response to fossil fuel depletion and/or the climate crisis that makes energy more progressively expensive in relation to labour, needs an inflationary climate in which to operate if it is to work well. This is because every product we buy and every service we use has different proportions of energy and labour making up its price. Consequently, as energy prices rise, the prices of our purchases need to rise by differing amounts to allow the

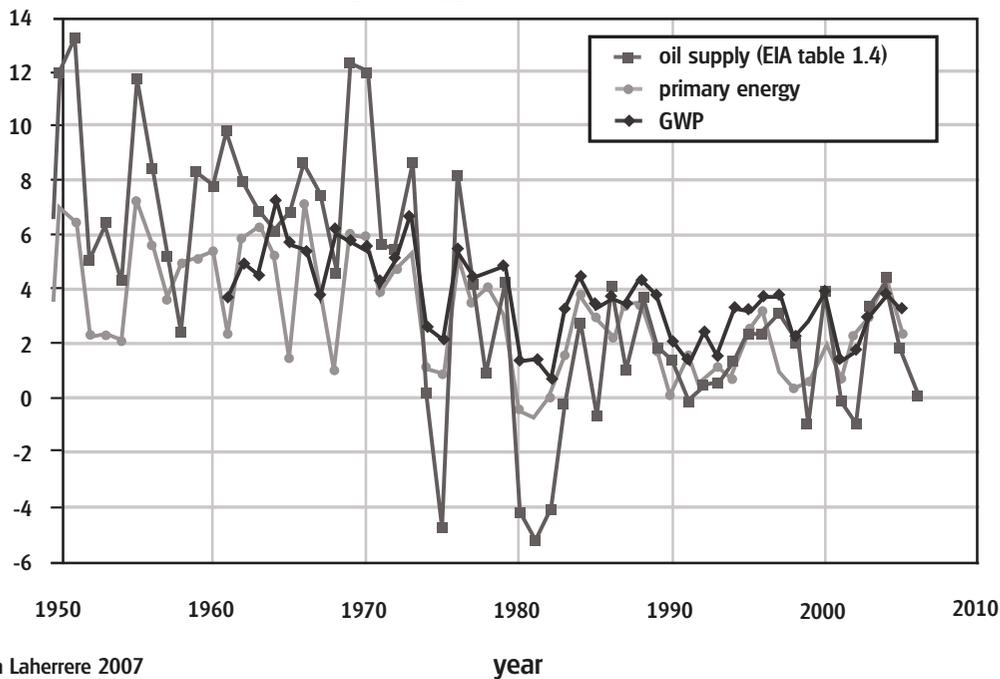


suppliers to cover their increased costs. When a once-off energy price increase takes place, suppliers put up their prices up to recover their direct energy costs. A little while later, they need to increase their prices again to pass on the increases that their suppliers passed on to them because to the increase in their energy costs. And then, later still, a third round of increases comes through, as the second-round price increases get passed on by the supplier's suppliers. In short, a single energy price increase leads to the prices of everything else rising by different amounts over a period of time.

Both the oil peak and restrictions on fossil fuel use in response to the threat of climate change are going to mean that energy prices rise not just once, but more or less continuously over a long period. The prices of everything else are therefore going to need to be able to adjust continuously too. This will leave the ebcu as the only fixed point on the monetary horizon and national currencies will lose value in relation to it as their internal inflations proceed. Countries which are less dependent on fossil fuels for their export production will experience less inflation and out-compete those which need more.

Before the necessary national level inflations can take place, however, money will have to be injected into the economies concerned. This raises the questions: Who is to do the injecting and how? The current money system issues money on the basis of debt. Borrowers pledge a portion of their future earnings to service and pay off their loans. In other words, borrowing is dependent on future income streams. The problem with reducing the fossil energy supply is that incomes in many countries will almost certainly fall as there is a very close link between the level of fossil energy use and gross world product as graph 4 shows. As a result, people may be unwilling to borrow and banks to lend.

World annual growth in oil production, primary energy and GWP 1950-2006



Jean Laherrere 2007

Graph 4: The annual percentage growth rate of the world economy has moved closely in step with the rate of increase in the oil supply and that of total energy production.



If this is the case, then the extra national currency required for an inflation will have to enter the economy in some other way. There are two options. One is that the government spends it into circulation. The other is that a national or regional money-creation trust gives it into use. Feasta prefers the second option as governments have a very bad record when in direct control of the money supply. If given the choice of taxing enough to balance their budget or printing the money they need, they have generally preferred to print. This was the reason that inflation once reached 5,000% in Argentina.

A money-creation trust would not be subject to the same pressures. Its sole responsibility would be to the people who gave its money its value – its users – and who were thus entitled to any gains from issuing more. The trust's job would be to assess whether any more money was needed in circulation to enable an adequate amount of trading to go on and to issue it on some defensible basis. This could be by giving it out to all users equally. Alternatively, the trust could decide to compensate savers for the erosion of their capital and to give a disproportionate amount of the balance to the poor on the basis that other groups in society had been protected from the inflation because the value of their assets had gone up.

The currency-creation trust money would be used for trading rather than saving. Anyone wishing to save money would buy ebcus in the way that people once bought gold. The savings demand for ebcus would, in effect, remove them from circulation. This would be a good thing as it would save the Global Atmosphere Trust from having to reduce the amount of ebcus in circulation itself as the supply of emissions rights became tighter and tighter. However, if too many ebcus were ever tied up by savers, the Trust would be able to issue more of them by giving them to governments to spend and, since much of the ebcu saving would have been carried out in richer countries, this issue, which would go predominantly to poorer countries since that is where the majority of the world's population lives, would help narrow the gap between rich and poor.

Whether global monetary reform along these lines can really be considered to be an optional add-on to C&S is open to serious doubt. Feasta regards it as highly desirable if not essential as C&S would not work nearly as well without it. In addition, it would free poor countries from their debt burden and give their governments some of the resources they need to adapt to a carbon-negative world.

3.5 The Enforcement

As PAPs would be equivalent to money, many people would undoubtedly spend a lot of time devising schemes to divert their distribution to their own pockets. Some corruption would inevitably occur with C&S but the scale of this should be far less than if the emissions rights were given to governments to sell since, in some countries, very little of the proceeds from those sales could be expected to trickle down to the general population.

Under C&S, each adult would know that he or she should get a PAP each year and political turmoil or even riots could result if significant numbers of people failed to receive them. Fraud would be easy to detect since each PAP would be made out for a specific person and banks would be required to



check the bearer's identity when one was presented for sale. The bank's stamp on the permit would provide an audit trail and the barcode reader used by the national climate protection trust would be able to show which bank had lodged it to its account. In addition, the Trust would employ inspectors to check for irregularities and would have the power to withhold all or part of a country's PAP allocation following year if any were detected. In such a case it would sell the emissions rights itself and hold the money in escrow until it was satisfied that any misappropriation had been rectified.

It would also be simple to enforce the requirement that fossil fuel producers buy enough emissions permits to cover their production as much of the production is concentrated in a very few companies. This is particularly true of oil and gas production, which is increasingly in the hands of large state-owned companies. Coal production is less concentrated. China is the world's largest coal producer, mining an estimated 2,226 million tonnes of hard coal in 2005 to deliver 61% of its primary energy. Its industry currently consists of hundreds large state-owned mines and thousands of smaller town and village ones but plans were announced in February 2006 to reduce the fragmentation in the industry by establishing five or six giant conglomerates in the main coal-producing provinces and closing down all the small coal mines by 2015. In the US, the world's second biggest producer with an output of 951 million tonnes in 2005, the consolidation is well advanced. The total number of mines fell from 4,424 in 1986 to 1,828 mines in 1997 by which time 69% of the tonnage produced was in the hands of 20 companies^{xii}. In effect, resource depletion in both countries is concentrating fossil fuel production into ever fewer hands and making C&S easier to implement.

Endnotes

- i The actual figure was \$103.7 billion according to OECD figures from http://www.oecd.org/document/8/0,3343,en_2649_34447_40381960_1_1_1_1,00.html
- ii Editorial "The rise of the Gulf", 26th April, 2008
- iii http://www.aspo-usa.com/index.php?option=com_content&task=view&id=232&Itemid=91
- iv <http://www.oilcrisis.com/laherrere/>
- v http://www.finfacts.com/irelandbusinessnews/publish/article_1011642.shtml Accessed 3/11/2007
- vi See www.gci.org. Cap and Share can be regarded as a special case of C&C, one in which there is immediate convergence on equal per capita entitlements and the entitlements go to the people and not their governments.
- vii *Mineral Wealth and Equitable Development*, 2006, downloadable from <http://www.sscnet.ucla.edu/polisci/faculty/ross/>
- viii About 40 percent of world gas reserves are situated in Middle East with Iran holding 14.9 percent, Qatar 14.3, Saudi Arabia 3.8 and the United Arab Emirates 3.4 percent of the world total. Russia has about 29 percent
- ix The price guarantee would only apply to oil, and the prices of the other fuels would be left to find their own level in relation to it. The prices generally move in step with each other.
- x It needs to be stressed that the total price of fossil fuel under C&S would only be higher than the price in an uncontrolled energy market to the extent that the emissions reduction rate set by the Trust was above the rate at which the output of fossil fuels would have declined without the Trust's intervention.
- xi *It is Possible to Just Give Money to the Poor? Can be downloaded from* <http://www.open.ac.uk/personalpages/j.hanlon/>
- xii <http://www.bea.gov/newsreleases/international/transactions/2007/pdf/trans406.pdf>
- xiii *The U.S. Coal Industry in the 1990's: Low Prices and Record Production* by Richard Bonskowski <ftp://ftp.eia.doe.gov/pub/coal/coalfeat.pdf>



The advantages of Cap & Share as a global framework for halting climate change.

- It is a whole-world solution for a whole-world problem.
- It is fair.
- It is cheap to set up and administer.
- It is simple and thus capable of being implemented quickly
- Any target set for fossil fuel emission reductions could be met with certainty.
- The targets would be set by an authority established for that purpose (the Global Atmosphere Trust) instead of by bargaining between state governments
- The scarcity value of the natural sinks which absorb greenhouse gases would be shared equally by all humankind. So would the scarcity value of the world's depleting fossil energy supplies.
- The poor would have an income which automatically increased in step with higher fuel and food costs. The gap between rich and poor would cease to widen both within countries and between them. Rural areas that have been left behind would catch up.
- Families would have a new source of annual income which they could use to reduce their reliance on fossil fuels.
- Emissions rights would be distributed to people, rather than countries. This would make it much easier for a global climate treaty to be agreed.
- A new world currency would be introduced. This would not only provide a stable basis for international trade but also support the dollar during the ebcu's introduction period. Highly indebted poor countries would have their debts cleared.
- Countries facing special problems in meeting the challenge of climate change or in moving to low levels of fossil energy use would have a fund on which to draw.
- Big new markets would open up for high-technology countries' exports. Mid-tech countries would also do well meeting basic demands. Farmers would benefit from food higher prices, from the production of biofuels and from indirect payments to encourage them to increase the carbon content of their soils.
- Fossil energy producers would get a guaranteed price which increased per unit of energy delivered as their output fell. Stocks would be conserved for future generations.

The disadvantages of any method of limiting fossil fuel use

- Energy prices will rise in relation to other factors of production A long-run inflation is necessary to allow the prices of goods and services to adjust to reflect the amount of fossil energy used in their production and delivery.
- Economic growth will take a different form. Energy-intensive activities will decline, labour-intensive ones will expand. The overall effect on total world income is impossible to calculate but incomes in the energy-intensive parts of the world can expect to decline in relative terms.



It seems unlikely that if it carries on in the way it has in the past, the UNFCCC process will produce an adequate, workable global climate treaty within the very limited period the world has left to make the drastic cuts in emissions required to avoid a runaway warming. We say this because any such treaty would have to contain four elements:

1. An agreement on the maximum rise in the average global temperature that could be permitted without running a significant risk of triggering a runaway climate change.
2. A consensus on the level of greenhouse gases in the atmosphere that was likely to be consistent with that temperature rise.
3. An agreement on a way of cutting back emissions so that the target greenhouse gas level was achieved that was internationally fair. This would have to cover not just emissions from fossil fuel use but also those from changes in land use and the clearance of forests. These contribute around 25% to the global emissions total.
4. A method for reducing the current level of atmospheric CO₂ which could be put into large-scale use almost immediately.

The UNFCCC machinery has achieved none of these since the Convention was signed was in 1992. It has failed even to agree a temperature target. The frequently quoted 2 degrees C above pre-industrial levels figure is an EU target and even that is too high. It would mean the end of the coral reefs, for example and the possible extinction of 30% of plant and animal species. Rajendra Pachauri, the chairman of the Intergovernmental Panel on Climate Change, said in 2007 that 1.5 deg. C might be the upper limit. Others feel that the 0.7 deg. C rise the world has experienced already is too much in view of the feedbacks that have developed. They point out that even if atmospheric greenhouse gas concentrations stopped increasing now, another 0.7 deg. C rise can be expected when the full effects of the gases already released have worked their way through - plus whatever additional rise the positive feedbacks that the temperature rise itself might generate.

The situation would seem quite hopeless were it not for two things. One is that there are good prospects that the Irish government will announce that it intends to use C&S to control all Ireland's fossil fuel emissions not covered by the EU's Emissions Trading System (ETS). Comhar Sustainable Development Council, an independent but publically-funded body advising government on sustainability policy, has commissioned reports on the concept from two British consultancies. One of these, AEA Energy and Environment, has already produced a highly-favourable policy analysis and the other, Cambridge



How an Irish pollution permit might look



Econometrics, is carrying out a modelling exercise comparing the effects of using C&S to reduce emissions by up to 30% by 2020 with those of using a carbon tax to do the same job. This second report will be delivered in August 2008, in time to allow the government to consider whether it should announce the adoption of C&S in its December 2008 budget. If it does, its move would encourage other EU governments to consider the adoption of C&S too because they all have to meet emissions-reduction targets set by the European Commission. The use of C&S by most of the 27 EU member states would make the approach lead candidate for a world role.

Non-EU states could become involved as follows. It is likely that the Irish government will say that it is going to use C&S initially to control Irish road transport emissions and, if that works well, that the scheme will be extended to the rest of the non-ETS emissions. That extension would create a moral problem. If a Global Atmosphere Trust was in operation today, each person in the world would be issued with permits authorising the release of 4.1 tonnes of CO₂. Consequently, if the Irish C&S agency issued permits for more than that amount, it would be dealing in stolen goods. Any recipients who sold them would be selling other people's entitlements.

To avoid this, Feasta has suggested that the Irish C&S agency should find a low emissions country somewhere in the world whose government was prepared to twin with Ireland and introduce C&S itself. The total emissions-entitlements of the two countries would then be shared by both populations and firms introducing fossil fuels to either country would be required to assemble enough permits to cover the emissions from them. The low-emissions country would benefit in two ways. First, its people would get an income when they sold their permits. Second, its fossil fuel prices would rise, reducing its fuel imports while encouraging energy-saving and the shift to renewables. It is possible to imagine the 27 EU states all adopting C&S to control their non EU ETS emissions and then finding partners in the rest of the world so that the combined per capita emissions did not exceed the average per head under a global cap. Such a bloc could take in perhaps half the world and its formation could set off a chain reaction so that almost every nation joined.

The second hopeful development is that two independent but related attempts are being made to set up the Global Atmosphere Trust. One attempt is being made by a group of Feasta members who plan to adopt the approach used by a group of Swiss citizens to set up the International Red Cross 150 years ago. The Swiss, tired of appealing to governments to insist that their warring armies treated civilians and prisoners decently, set up the IRC, called a conference and invited those governments that bothered to attend to subscribe to the IRC's principles. It worked because it changed the balance of power. The people involved moved from being supplicants to holders of substantial moral authority to which governments were expected to conform.

So, instead of appealing to national governments to come up with an adequate response to a global threat by negotiating with each other, the group proposes that ordinary people should themselves set up an international body capable of taking effective action. The group points out that the existing system of negotiation between states grew up in the 18th and 19th Centuries to meet the needs of states and was not designed to deal with global problems. Instead of an inter-national regime, they believe that what is needed is a global one whose purpose would be to look after the interests of humanity as a whole.



The other attempt to set up the GAT is led by Peter Barnes, the originator of the Cap and Dividend concept mentioned on page 7 and the author of *Who Owns the Sky?* and *Capital 3.0*. Barnes' intends that his organisation, the Earth Atmospheric Trust (see http://www.earthinc.org/earth_atmospheric_trust.php) should:

- Set up a global cap and trade system for all greenhouse gas emissions from all sources.
- Auction off all emission permits – and allow trading of permits.
- Gradually reduce the cap to follow the 450 ppm target (or better). The price of permits will go up and total revenues will increase as the cap is reduced.
- Deposit the revenues into a trust fund, managed by trustees appointed with long terms and a mandate to protect the asset (the climate and atmosphere).
- Return a fraction of the revenues to everyone on Earth on a per capita basis. “This amount will be insignificant to the rich, and much smaller than their per capita contribution to the fund, but will be enough to lift all the world’s poor out of poverty.”
- Use the remainder of the revenues to enhance and restore the asset. The revenues could be used to fund renewable energy projects, research and development on renewable energy, payments for ecosystem services such as carbon sequestration, etc.

Barnes insists that none of the revenue from the sales of the permits should go into the general fund of any government and that EAT’s trustees will be appointed on the basis of their qualifications and understanding of the purposes and details of the trust, not their political affiliations. The trustees will be made accountable for their actions and subject to removal if they fail to manage the trust for the benefit of all current and future people. Several eminent people have given their support to the project including Robert Constanza, Paul Hawken and David Orr.

The people involved in both projects know each other personally and welcome the prospect of two organisations working for similar goals, one in Europe, the other in the US. The two bodies can try different ways of going about things, find out what works and amalgamate later on.

One role the GAT or the EAT could play would be to negotiate the partnership agreements between high-emissions countries adopting C&S in advance of a global cap and low-emissions countries prepared to adopt C&S and pool their emissions with the high-emission states so that their poorer inhabitants would get a supplementary income from their permit sales.

What is certain, however, is that any power the GAT or the EAT gathers to bring about a global C&S or Cap and Dividend system will only come as a result of massive public support. Neither is about limiting people. Both are about people limiting the system. The hope is that millions of people will react against being told by their governments that they, as individuals, are responsible for climate change and that they should provide the solution by turning off lights, flying less and driving hybrid cars. What particularly annoys many people is that, at the same time as their governments are telling them to cut back personally, the governments themselves are expanding airports, building roads and doing everything they can to keep consumption increasing so that their economies expand. Such people believe that the system is the problem, not them. They know they can only make significant changes to the way they live after the system itself has changed and, as the system is not going to change itself, they have to change the system. GAT and EAT are essentially instruments for harnessing massive public support for systemic change.



It will be extraordinarily hard to get C&S implemented internationally because its use entails massive changes to way the world economy works and to the power and wealth structures that way of working has created. However, new problems require new policy mechanisms and, for the first time in history, the global economy has grown beyond the globe's capacity to support it by providing its fuel and removing its waste. As a result, the economy's survival, and that of the billions of people who rely on it, depends on its ability to change. And that, in turn, depends on a few thousand people finding a way to circumvent the present power structures so they can get the economy into balance with the natural world. They also have to find ways of holding society together while all that is going on. Quite a task.

The C&S concept is work in progress. It has been developed over three years by a group of 30-40 people and it now needs the input of many more if it is to become an adequate tool for that task. C&S not only needs to be developed itself, but other part-solutions need to be found to accompany it. For example, its use would be a disaster if measures to protect the stocks of carbon in the soil and in the world's peat bogs and forests were not introduced simultaneously. This is because, by raising fossil fuel prices, C&S would increase the demand for biofuel. This would lead to the clearance of forests to plant oil palms, as is already happening in Indonesia, and the clearance could release more carbon into the atmosphere than the use of the biofuel would save for many decades. In other countries, land would be switched out of pasture into arable and some of the carbon content of the soil would migrate into the air. In this and other ways, our good intentions could pave our road to hell. If you would be interested in helping to prevent this or in developing C&S itself, please get in touch.

“*The necessary revolution will leave us free to make and remake a human society which does not abolish our national societies but embraces and completes them. The necessary revolution is a world revolution. The world revolution is a revolution not in the streets but in our minds.*”

Philip Allott, Professor of International Public Law at Cambridge University, in his 2002 book *The Health of Nations: Society and Law beyond the State* which inspired the Global Atmosphere Trust.



“ The greenhouse gas levels in the air now pose an unacceptably high risk of damage to nature and an unacceptably high risk of triggering runaway heating. The only way to bring the risk down to an acceptable level is to cut greenhouse gas emissions to zero, to take the excess CO₂ out of the air as fast as possible, and to find environmentally acceptable ways to cool the planet. The transformation of the economy from a business-as-usual structure to a sustaining structure must be physically accomplished within 10 years. ”

Philip Sutton, Greenleap Strategic Institute,
Australia, December 2006.

This paper is dedicated to Dr. Will Howard, 1951-2008, who helped develop its ideas.

When the American cyclist Floyd Landis was accused of taking a performance-enhancing drug after winning the 2006 Tour de France, his supporters pointed out that his performance had not been exceptional. He had, they said, delivered an energy output of only 280 watts for the five hours of his winning ride whereas he had averaged 320 watts for six hours in training.

Drug-assisted or not, there can be no doubt that Landis is a superb athlete. A normally-fit man would be doing well to produce 75 watts per hour or around 3 kWh in the course of a 40-hour working week. As electricity costs 16.5 cents per kWh including VAT in Ireland, this means that the energy value of a week of hard human labour is about 50 cents, or just over 1.25 cents per hour. A litre of petrol has an energy content of 8.9 kWh, and is therefore equivalent to three weeks' manual work. Yet it was priced at only around €1.23 in April 2008 including lots of duty and tax,

This explains why the sort of energy benefit sharing system proposed in this paper is necessary. Anyone who has access to fossil energy and uses it to boost their productivity should always be able to earn a bigger income than someone whose earnings are entirely dependent on their unaided muscle power. As a result, the fossil energy-user will be able to earn enough to keep buying fuel as the price goes higher while the manual labourer will find it increasingly hard to afford kerosene for his oil lamp and, because of its energy content, food for his table. The labourer may be driven from the market altogether as the global rich-poor polarisation becomes extreme.