

Three Key Steps to Sustainability

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*The Johannesburg summit achieved very little because those taking the crucial decisions felt they had to put economic goals before social and environmental ones. But, says Richard Douthwaite, the author of **The Growth Illusion**, if three major changes were made to national and international money systems, it would in future be possible to put people and the planet first.*

Sustainability needs to be achieved in two time-frames. One is short-term and largely economic. We need to eat tonight. Employees have to be paid at the end of the week. Interest has to be paid at the end of the half-year. The second time-frame seems less urgent but is no less important. The natural environment has to be preserved. Capital equipment, buildings and infrastructure have to be kept up. Health has to be maintained. Knowledge and skills have to be preserved and passed on. And social structures such as families, friendships and neighbourhoods have to stay strong.

Unfortunately, the achievement of immediate, short-term sustainability is often at the expense of the longer-term type. One reason for this is that the components of long-term sustainability are far too forgiving for their own good and, eventually, for ours. They allow themselves to be damaged quite a lot before they turn around, bite, and force us to pay them some attention by impeding us economically. We take advantage of their forbearance by ignoring them whenever we can. Indeed, we have organised our personal lives, our economies, our companies and our politics in a way which makes it hard for us to do otherwise. Only when a crisis actually occurs do we consider changing our habits but by that time, it may already be too late, as many societies in history have found to their cost. In Mesopotamia, in the Indus Valley and in the jungles of Mesoamerica, civilisations collapsed because they had undermined their environment. So did the Soviet and Roman empires. The people of Easter Island turned to cannibalism to replace fish protein to their diets after cutting down all the trees suitable for building fishing canoes. In New Zealand, the Maori also became cannibals after they had killed and eaten to extinction all twelve species of the flightless moa birds. Abel Tasman, the first European navigator to reach New Zealand, had several of his ship's crew eaten.

The difference between today's sustainability crisis and those in the past is that this one affects the whole world rather than just regions or small parts of it. The consequences of our continuing to set short-term sustainability ahead of the longer-term type will therefore be global and very grave - some commentators¹ warn of a drastic fall in human numbers. So, despite the fact that it is hard to think of any historical precedent for people listening to warnings of impending disaster and radically changing their way of life to avert it, can we improve our chances of doing so this time by finding ways in which the economic system could be reformed to make it easier to maintain short-term sustainability and thus free enough resources and enthusiasm to make progress towards the longer-term type?

At present, governments attempt to maintain economic sustainability by following four short-term indicators: the rate of economic growth, the balance of payments, the health of the public finances and the rate of inflation. Let's explore why these indicators are currently so crucial to see if there is any way of making them easier to ignore.

National income growth is the world's most widely considered economic sustainability indicator. It is the percentage by which the amount of trading in the monetarised part of a national economy has risen^{*}, usually in the course of a year. Put another way, it is the percentage increase in the total of all the money incomes generated.

It is an indicator for much more than that, however. Because it measures the amount of additional incomes and resources the economy has generated, growth is an excellent indicator for the extra profits that arose in the economy and hence its attractiveness to investors. If there is no growth in any given year, the investments made the previous year have produced no return. Indeed, it's worse than that because as borrowed money will have been used to part-finance the investments and as interest will have to be paid on the borrowings, the failure of an economy to grow means that profits fall in comparison with the previous year.

Falling profits and unused capacity from last year's investments obviously discourage companies from making further investments in the current year. This has serious results. In normal years in OECD economies, somewhere between 16% (Sweden) and 27% (Japan) of GNP is invested, and a similar proportion of the labour force employed, in projects which, it is hoped, will enable the economy to grow the following year. If the expected growth fails to materialise and further investments are cancelled, up to a quarter of the country's workers can therefore find themselves without jobs. With only savings or social welfare payments to live on, these newly-unemployed people are forced to cut their spending sharply, which in turn costs other workers their jobs. The economy enters a downward spiral, with one set of job losses leading to further ones. The prospect of this happening terrifies governments so much that they work very closely with the business sector to ensure that, regardless of any social or environmental damage, the economy continues to grow.

This is the main reason why short-term sustainability gets in the way of the longer-term kind. Governments need to be able to be much less concerned about whether growth occurs or not before they can feel free to tackle long-term unsustainability. So how might the link between growth and employment be broken? How can the rate of growth be made a totally unimportant indicator, at least as far as politicians and the general public are concerned? After all, as infinite growth is impossible in a finite world, an economic system has to have the ability to cease to grow without collapsing before it has any claim to be considered sustainable.

Despite the above, the main reason why the economy implodes when investment stops is not that people lose their jobs and consequently have less to spend. Any market economy that functioned well would automatically re-allocate a resource (in this case, people) that

* If the economy shrinks, professionals use a rather odd phrase to say so – 'negative growth'.

was surplus in one area of activity to some other where it could be used. This is not happening in the present economic system because, as the rate of investment slows down, the money supply contracts, making it impossible for trading in the rest of the economy to carry on at even its former level – and still less expand to take on the newly redundant workers. What is needed, therefore, is a constant stock of money rather than one which, like a fair-weather friend, tends to disappear when times get hard.

Money disappears because almost² all the money we use only comes into being when a company or an individual draws on a loan facility they have been granted by their bank. Borrowers create³ money when they spend their loans and it disappears when the loans are repaid. Consequently, if people ever repay loans worth more than the total value of the new ones being taken out, as can happen if the proportion of national income being invested declines, the amount of money in circulation will fall. This makes it harder to do business. Redundancies occur. And that, in turn, destroys the optimism required for further borrowing.

For example, if enough people begin to fear for their jobs ('Perhaps I'd better not take out that car loan just now') or think that house prices are about to fall so that there's no need for them to rush to take out a mortgage to secure a place on the property ladder, they are collectively making self-fulfilling prophecies. Whatever enough of them fear or expect will come about. They will defer borrowing, less money will be put into circulation, the property market will become less buoyant, and, yes, there was no need to rush to get into it after all. It's the same with business. If enough firms think that their future prospects are so doubtful that it would be better not to risk borrowing to expand, they will find that they were right and there really was no need for a loan to put in that extra equipment.

This mechanism works in the opposite direction too. If people are optimistic and increase their borrowings, the extra money they put about enables an increased amount of business to be done. Firms find that not only are they running into capacity constraints but they are more profitable when their books are done at the end of the year because, with extra money in circulation, there was more of it to be shared around. So they borrow to expand, and this in turn provides work for other companies who, when they reach their production limits, borrow to expand as well.

The modern economy therefore constantly moves between boom and bust because of the way the money system works. There are very few periods in which there is a happy medium, an in-between. In the booms, the economy enters a virtuous circle with borrowing leading to more profits and therefore more borrowing. The only danger is inflation. In the busts, cuts lead to further cuts and a vicious spiral down.

It is very difficult for governments to control such booms to prevent them becoming excessively inflationary. Increasing the interest rate to deter borrowing (and thus limit money creation) is a very blunt economic tool because it has to do a lot of damage to the economy to be effective. After all, when an economy is on the way up, how much does an increase of one or two per cent in the interest rate matter to a firm which has customers with large orders battering down its door? Very large rate increases indeed are

necessary to stop the system running away with itself, particularly as, if inflation is already at, say, 5%, it is reducing the effective interest rate by that amount. Yet if a central bank over-reacts and pushes up the interest rate too far, it risks frightening too many potential borrowers and plunging the economy into a precipitate decline.

Yet interest rates work even less effectively when the economy is on the way down. If I've surplus capacity in my factory already, why should I borrow to install more, even if the interest rate is very low? Unless I am absolutely confident that the market is going to turn around and there will be a boom again soon, I don't want to trap myself in a more heavily indebted position with no sure way of trading my way out. And, of course, as interest rates can't become negative (though they did become zero in Japan for a time), there is a limit to how encouraging to borrowers they can become. Indeed, if things get really bad and the prices of goods and services start to fall, as they did in Japan in 2001, this has the opposite effect to inflation and pushes the real rate of interest up.

In such circumstances, firms have to be bribed to invest by being offered large grants. Alternatively, governments can try to get investment - and hence borrowing - started again by adopting Keynesian methods and borrowing and spending themselves. The Japanese tried this after their property and stockmarket boom burst in the early 1990s but to little effect. By 2001, a great many under-used roads, bridges, ports and airports had been built and the amount the country owed in relation to its national income had become so large that the scope for further state borrowing was restricted, particularly when, in 2002, the credit rating agencies reduced their grading of Japanese government debt to below that of Botswana.

Because it is so difficult to get an economy out of a depression, governments will do almost anything to keep the economy growing, regardless of the damage that this might do to the environment, or through, perhaps, changes in the distribution of income, to society. As the former British Prime Minister, Edward Heath, once said 'the alternative to expansion is not an England of quiet market towns linked only by trains puffing slowly and peacefully through green meadows. The alternative is slums, dangerous roads, old factories, cramped schools, and stunted lives.'

Step One: Ending the reign of debt-based money

The replacement of the current bank-debt-based, time-limited currency by a permanent stock of money would mean that when the economy turned down and people lost the confidence to borrow, the means to buy and sell didn't just disappear too. Instead, the money stock would stay at a constant level so that there was still the same amount of potential purchasing power about. This would limit the downturn and make recovery much easier.

What form might such a permanent money take? Gold and silver coins provided a permanent money stock in the past, of course, but we've no need to revert to them. With debt-based money, the sum total of all the debits in people's accounts is equal to the sum of all the credits. To achieve a permanent money stock, therefore, we simply need to be

able to create credits without the corresponding debts. In their book, *Creating New Money* (2000), James Robertson and Joseph Huber suggest a method for doing just this. They propose that money whose creation is authorised by commercial banks should be gradually replaced by money spent into circulation by the government. The immediate advantage of this is that it would make it very easy to control the size of the money stock and thus the level of activity in the economy. The need to encourage investment in order to ensure that growth takes place would disappear. If unemployment was becoming a problem, a government could just spend a little more. If prices then began to rise too much, it would either cut its spending or increase tax, thus withdrawing money from the system's circular flow.

Government-created money has another big advantage besides ending the growth compulsion and the economic stability it would bring. It is that in a growing economy, either taxes could be cut or a higher level of public services afforded. Between January 1998 and January 1999, the increase in the money supply authorised by the commercial banks in Britain was £52,600 million. If the government had created this sum instead of the banks' borrowers and spent it into use, taxes could have been cut by over 15%.

Huber and Robertson propose that, once the government has started spending money into circulation, the banks should be limited to credit broking. In other words, they would simply take in money from one set of customers and lend it out to others*. This would end the massive subsidy the banks get from charging for authorising money creation. Robertson and Huber estimate the British banks got a £21,000 million subsidy from this source in 1998/99. Their estimate for the US subsidy is \$37,000 million and DM30,000 million for the German one. These sums obviously distort the way the national economies concerned operate by underwriting the banks' costs and enabling them to make abnormal profits.

Some of the serious drawbacks to the present system of creating money are

1. It generates a growth compulsion which makes it impossible for countries to build stable, sustainable economies
2. It is highly unstable and tends to swing from inflationary booms to deflationary busts.
3. These swings are exceedingly difficult to control
4. The banking system benefits from a massive subsidy because it does not have to pay anything for half the money whose use it authorises. This leads to a misallocation of resources.

* Under the present system banks accept money (whose creation they authorised when they allowed someone to go into debt) as a deposit which they then lend out, thus creating a further debt which becomes another deposit, and this too is lent out, setting off a spiral whose size is limited only by the willingness of people to borrow and the ratio between the bank's own capital and its total lending imposed by the central bank. Huber and Robertson propose (personal communication, 2 September, 2002) that the spiral should be prevented by enacting legislation to ensure that when one person is approved for a loan, the money involved is transferred to his or her account from another customer's account, and that the balance in the second customer's account is reduced accordingly. This ensures that no new money appears. The bank's role would be to arrange the two transactions and to guarantee that, if the borrower defaulted, it would use its own funds to make good the lender's loss.

5. Taxes are higher (or public services worse) than would be the case in a growing economy in which the state spent the currency into circulation.
6. Because a high volume of bank lending is required to keep the present money system functioning, the banks shape the way the economy develops. This is because they determine who can borrow and for what purposes according to criteria which favour those with a strong cash flow and/or substantial collateral. As a result, the present money system favours the rich and multinational companies and discriminates against smaller firms and poorer individuals.

Putting a permanent stock of money into circulation is therefore the first key step towards building a sustainable, equitable economic system. Crucially, it would make the growth rate unimportant and allow governments to set themselves other targets beyond that of doing everything possible to ensure that commercial investments keep flowing.

As the three other short-term economic sustainability indicators track factors that can interfere with growth, they are currently used as guides to its achievement. This does not mean, however, that they could be ignored if the achievement of growth became unimportant. As the sustainability of an economy which had pulled off the trick of ceasing to grow without a recession emerging could be threatened by adverse movements in any of them, we ought now to look at each in turn.

First, the balance of payments. If a country is tending to import a greater value of goods and services than it is exporting, it can handle the situation in two ways. One is to allow the exchange rate between its national currency and those of its trading partners to fall so that its imports decline (because they cost its citizens more) while its exports rise (because they become more lucrative for its exporters in terms of the home currency). This corrects the incipient imbalance.

The alternative is for the country to attract foreign investment or to borrow foreign currency to finance the purchase of the excess imports. In this case, the exchange rate does not have to adjust, which is good for those with savings who are worried they might be eroded by inflation. For everyone else, the fact that the inflow of foreign capital enables the exchange rate to remain higher than it would otherwise be has undesirable effects. For example, the country's exporters get less national currency when they convert the foreign currency they earn. This cuts their profits and might mean that some have to cease trading altogether. Companies supplying the home market also suffer because imports stay cheap. This undermines national self-reliance. In short, the increased availability of foreign exchange damages companies and costs jobs.

So, apart from pandering to a sectional interest, it is difficult to see why should any country ever take the second course. After all, if it takes in overseas capital it has to get itself into a position at some stage in the future in which its exports exceed its imports so that it can at least pay the dividends or the interest on that money. (There is no need for it ever to actually repay its foreign obligations. All it has to do is to pay the service costs on them Britain and the US have been importing more than they have been exporting for the past two decades.) If it doesn't get into that position itself, sooner or later, those

supplying it with foreign currency will decide that other, less-indebted countries are safer havens for their money and decline to supply more. The long-delayed adjustment of the exchange rate will come about – indeed, an serious over-adjustment is likely.

While this delayed adjustment will at last make foreign goods more costly and exports more profitable, it is likely to make the country poorer than it would have been had it made any necessary exchange rate alterations as it went along. One reason for this is that paying the interest and dividends on the large foreign obligations the country will have built up will require resources which could otherwise have been used to benefit the people of the country themselves. Indeed, having to service any foreign financial obligation is a threat to a country's sustainability because of the pressures it creates for the country to mis-use its resources - its soils, its forests, its fisheries, its people - to generate the necessary exports since they have to be sold in competition with equally desperate countries in exactly the same trap.

While it is hard to think of circumstances in which a net inflow of foreign capital could be beneficial, a net outflow of capital is just as bad. True, after the exchange rate has fallen, the country's exporters will, initially, get more national currency for the goods they sell overseas. However, if they are to provide increased employment, they will have to increase their sales and, in the short-run, they will only be able to do this by cutting their prices enough to give new purchasers an adequate incentive to abandon long-running relationships with their existing suppliers. But as these rival suppliers will not allow their business taken away without a fight, they will reduce their prices too. It is impossible to say what the final outcome will be, but if it takes a large fall in price to greatly increase the world's consumption of the commodity, the extra profit and employment that exporters provide will be very limited. Significantly, the sales of most of the commodities exported by the poorer countries of the world do not increase much when prices fall.

So would domestic producers provide more employment instead? The answer is – it depends. All imported goods will cost more and local manufacturers will be able to provide substitutes for only some of them. So their customers, whose incomes in the local currency will not have risen, will have to pay more for the imported part of their purchases and this will leave them with less spending power to buy local goods. Only the switching of purchases from importers to local suppliers creates extra work and if the extent to which this can be done is limited, total local employment might fall.

What tends to happen, then, is that when capital flows into a country, it damages existing exporters and domestic producers, leaving them in a weaker position to win overseas markets and take over from imports when it flows out. Then, when capital flows in the other direction, the local economy might be forced to contract because too few locally-made substitutes for the now more costly imports are available.

Step 2: Keeping current account and capital account money flows apart.

The lesson from all this is that there should be no net capital flows. Movements of investment money should not be lumped in with those from imports and exports for reasons of administrative convenience. If the government, a bank, a company or an individual wishes to move capital overseas they should be free to do so but they should not convert their national currency into foreign currency by purchasing foreign exchange earned by exporters or tourism. Instead, they should get their foreign exchange from people wishing to move their capital in the opposite direction. If a lot of people want to move their capital out and very few in, then the exchange rate for capital flows adjusts to reflect this without affecting the exchange rate for current (that is, the import/export) flows. In other words, there would be two quite different exchange rates and each would adjust independently of the other to ensure that both accounts, capital and current, always balance. There would be no net inflow or outflow of capital to the country, and the value of imports would always equal exports.

Such a system was used in what was then the Sterling Area from 1947 when Britain passed the Exchange Control Act until May, 1979. Anyone wanting to move capital out of the Area had to pay what was known as the 'dollar premium', the difference between the two exchange rates. A similar two-tier currency system was used in South Africa between September 1985 and March 1995. The capital currency was known as the financial rand. "The financial rand system has served South Africa well during the years of the country's economic isolation" the South Africa minister of finance, C.F. Liebenburg, said when he announced its abolition⁴ on the grounds that it might discourage foreign investment in the country. As, of course, it would have done to the extent that it ensured that there was no net foreign investment, as capital inflows would have been matched by capital coming out.

From a sustainability perspective, the major advantage to be gained from operating what are effectively two currencies, one for capital purposes and the other for normal buying and selling, each with its own exchange rate, is that policies to promote sustainability cannot be derailed by investors taking fright at what is going on and rushing to get their money out of the country. Consider what happened in Mexico in December 1994. The government devalued the peso by 13% in an attempt to correct an 8% deficit on its current account – a deficit caused, of course, by overseas investors in 'emerging markets' moving their money into the country to lend short-term at attractive rates or invest in the stockmarket.⁵ But no-one was convinced that the devaluation would prove large enough and foreign and local investors rushed to get their money out of the country before another took place. With so many people panicking, the new rate was abandoned the following day and the peso was allowed to float, ending almost 40% below its former level. The higher price of imports naturally caused an inflation so the Central Bank jacked up interest rates to try to suppress it. This ruined many companies and 250,000 jobs were lost in one month, January 1995, alone. The business collapses left bad debts which in turn ruined the local banks. "With most local banks reeling, the eight foreign banks operating in the country have moved quickly to take advantage" *The Financial Times* wrote at the time⁶. "The Mexican financial crisis is an object lesson in the power and caprice of the international capital markets" Will Hutton wrote in *The Guardian*⁷. "[Capital] flows can be cut off at will with hugely destabilising consequences."

A two-tier exchange system would, of course, have prevented the crisis happening. It would have given the government enormous freedom to develop policies to suit its people rather than international investors. It would not have mattered to it at all whether or not Intel was going to build a chip fabrication factory in the country as the only effect that such a massive inward investment would have would be to make it much more attractive for Mexicans to move their capital overseas.

The second key step towards sustainability is therefore to keep capital flows completely apart from those on the current account.

The two remaining conventional economic sustainability indicators, the rate of inflation and the health of the public finances, can be discussed quite quickly. In an economy in which the government spent any additional money into circulation, excessive inflation would only occur if ministers behaved irresponsibly and tried to capture more of a greater a proportion of the country's scarce resources by putting too much extra money into use rather than by removing those resources from private hands by increasing taxes. The remedy would be in their hands. Management of the public finances would be much easier, too. There would be no need for the state to borrow – ever. If the economy did slow down, it would be possible for the government to create extra demand by spending extra money into use. No debt would be incurred. And if the economy then began to overheat, causing too rapid an inflation, taxes could be increased and the money they brought in removed from circulation, dampening overall demand. So while both indicators would still have to be watched, their management, and that of the economy, would be very easy.

Step 3: Limiting the supply of money to that of the scarcest resource.

While the two steps we have identified so far would make it much easier for governments to pay less attention to short-term economic sustainability and to follow other objectives, they would not compel them to do so. Indeed, without step three, steps one and two could just make the economic system easier to run and, by freeing it from the credit squeezes, recessions and depressions that currently slow its expansion down. It could become even more destructive. Accordingly, the final step involves tying the global money supply to the availability of the scarcest global environmental resource so that the world economy automatically functions within the limits set by that resource and the two are not in constant conflict with each other. This would mean that, whenever people tried to save money, they would automatically be minimising the stress they were placing on the scarcest aspect of the global environment rather than denying someone else work, which is what saving can do at present.

In my view, the scarcest environmental resource is the ability of the Earth to absorb the greenhouse gases created by humanity's economic activities. The Intergovernmental Panel on Climate Change (IPCC) believes that 60-80% cuts in greenhouse gas emissions are urgently needed to lessen the risk of the

catastrophic consequences of a runaway global warming. Contraction and Convergence (C&C), the plan for reducing greenhouse gas emissions developed by the Global Commons Institute in London which has gained the support of a majority of the nations of the world, provides a way of linking a global currency with the limited capacity of the planet to absorb or break down greenhouse gas emissions.

Under the C&C approach, the international community agrees how much the level of the main greenhouse gas, carbon dioxide (CO₂), in the atmosphere can be allowed to rise. There is considerable uncertainty over this. The EU considers a doubling from pre-industrial levels to around 550 parts per million (ppm) might be safe while Bert Bolin, the former chairman of the IPCC, has suggested that 450 ppm should be considered the absolute upper limit. Even the present level of roughly 360ppm may prove too high though, because of the time lag between a rise in concentration and the climate changes it brings about. Indeed, in view of the lag, it is worrying that so many harmful effects of warming such as melting icecaps, dryer summers, rougher seas and more frequent storms have already appeared.

Whatever CO₂ concentration target is ultimately chosen automatically sets the annual rate at which the world must reduce its present emissions until they come into line with the Earth's capacity to absorb the gas. This is the contraction course implied in the Contraction and Convergence name.

Once the series of annual global emissions limits have been set, the right to burn whatever amount of fuel this represents in any year would be shared out among the nations of the world on the basis of their population in an agreed date, say, 1990. In the early stages of the contraction process, some nations would find themselves consuming less than their allocation, while others would be consuming more, so under-consumers would have the right to sell their surplus to more energy-intensive lands. This would generate a healthy income for some of the poorest countries in the world and give them every incentive to continue following a low-energy development path. Eventually, most countries would probably converge on similar levels of fossil energy use per head.

But what currency are the over-consuming nations going to use to buy extra CO₂ emission permits? If those with reserve currencies like the dollar, sterling and the euro were allowed to use them, they would effectively get the right to use a lot of their extra energy for free because much of the money they paid would be used for investing and trading around the world rather than purchasing goods from the countries which issued them. To avoid this, Feasta, the Dublin-based Foundation for the Economics of Sustainability, worked with GCI to devise a plan under which a new international organisation, the Issuing Authority, would assign Special Emission Rights (SERs, the right to emit a specified amount of greenhouse gases and hence to burn fossil fuel) to national governments every

month according to their entitlement under the Contraction and Convergence formula.

SERs would essentially be ration coupons, to be handed over to fossil-fuel production companies in addition to cash by big users, such as electricity companies, and by fuel distributors such as oil and coal merchants. An international inspectorate would monitor fossil energy producers to ensure that their sales did not exceed the number of SERs they received. This would be surprisingly easy as nearly 80 per cent of the fossil carbon that ends up as manmade carbon dioxide in the earth's atmosphere comes from only 122 producers of carbon-based fuels⁸. The used SER coupons would then be destroyed.

The prospect of this happening is not a fantasy. A considerable amount of work has already been done towards the development of an international trading system in carbon dioxide emission rights both at a theoretical level and in practice in the United States, where trading in permits entitling the bearer to emit sulphur dioxide into the atmosphere has led to a rapid reduction in discharges at the lowest possible cost.

Besides the SERs, the Issuing Authority would supply governments with the system's new money, energy-backed currency units (ebcus), on the same per capita basis, and hold itself ready to supply additional SERs to whoever presented it with a specific amount of ebcus. This would fix the value of the ebcu in relation to a certain amount of greenhouse emissions and through that to the use of fossil energy.

The issue of the ebcu money would be a once-off, to get the system started. If a buyer actually used ebcus to buy additional SERs from the Issuing Authority in order to be able to burn more fossil energy, the number of ebcus in circulation internationally would not be increased to make up for the loss - the ebcus paid over to the Issuing Authority would simply be cancelled and the world would have to manage with less of them in circulation. This would cut the amount of international trading it was possible to carry on and, as a result, world fossil energy consumption would fall. In other words, the level of international trading at any time would always be compatible with achieving the CO₂ concentration target. If renewable energy output grew or the efficiency with which fossil energy was used was improved sufficiently rapidly, it would be possible for world trade to increase.

Governments could auction their Issuing Authority allocation of SERs at home to major energy users and distributors and then pass all or part of the national currency received to their citizens as a basic income. They could also sell SERs abroad for ebcus. The prices set by these two types of sale would establish the exchange rate of their national currency in terms of ebcus, and thus in terms of other national currencies.

The use of national currencies for international trade would be phased out. Only the ebcu would be used for trade among participating countries and any countries which stayed out of the system would have tariff barriers raised against them. Many indebted countries would find that their initial allocation of ebcu enabled them to clear their foreign loans. In subsequent years, they would be able to import equipment for capital projects with their income from the sale of SERs.

A major advantage of this system is that it would establish what would amount to a dealers' ring for the purchase of fossil fuels similar to those set up by groups of dishonest antique dealers before an auction? The dealers in the ring decide who is to bid for each item and the maximum the bidder is to pay and then, afterwards, they hold a private auction among themselves to determine who actually gets what. The point of this ploy is to ensure that the extra money which would have gone to the vendor if the dealers had bid against each other in the original auction stays within the group and does not leak away unnecessarily to a member of the public. By limiting demand, the ebcu/SER system would prevent excess money going to fossil fuel producers in times of scarcity and plunging the world into an economic depression. Instead, the money would go to poor countries after an auction for their surplus SERs. This money would not have to be lent back into the world economy as would happen if the energy producers received it. It would be quickly spent back by people who urgently need many things which the over-fossil-energy-intensive economies can make.

So, rather than debt growing, demand would, constrained only by the availability of energy. Suppose it was decided to cut emissions by 5% a year, a rate which would achieve the 80% cut the IPCC urges in thirty years, the sort of goal we need to adopt if we are to have any chance of averting a sudden, catastrophic climate change. Cutting fossil energy supplies at this rate would mean that the ability of the world economy to supply goods and services would shrink by 5% a year *minus the rate at which energy economies became possible and renewable energy supplies were introduced*. Initially, energy savings would take the sting out of most of the cuts – there's a lot of fat around - and as these became progressively difficult to find, the rate of renewable energy installations should have increased enough to prevent significant falls in global output.

The global economy this system would create would be much less liable to a boom and bust cycle than the present one for two reasons. One is that, as the shape of every national economy would be changing rapidly, there would be a lot of investment opportunities around. The other is that as debt was no longer being used as the basis for either the world currencies or for national ones, the supply of the world's money, the ebcu, and of the various national currencies would no longer fluctuate up and down, magnifying changes in the business climate.

Everyone, even the fossil fuel producers, would benefit from such an arrangement and, as far as I am aware, no other course has been proposed which tackles the problem in a way which is both equitable and guarantees that emissions targets are met. What is certain is that the unguided workings of the global market are unlikely to ensure that fossil energy

use is cut back quickly enough to avoid a climate crisis in a way that brings about a rapid switch to renewable energy supplies.

So the three main monetary changes requires to ease the world's passage to sustainability are:

1. The replacement of debt-based national currencies with ones spent by governments into permanent circulation.
2. The separation of capital flows and current account flows on foreign exchange markets.
3. Ending the use of the currencies of major nations for international trade and their replacement by a proper global currency which would be given into circulation and whose supply would be controlled so that the total level of global economic activity was reduced to one compatible with a sustainable world.

Of course, there are many other changes that would be desirable for sustainability too. There's even another monetary one – the introduction of regional currencies to allow local economies to develop and thrive regardless of the amount of national (or, in the case of the euro, multinational) currency flowing in from outside. But these three are the essential ones Without them, short-term economic sustainability will always have to be put first and long-term sustainability will seem an impractical dream.

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¹ See www.dieoff.com for examples.

² The only type of currency in circulation at present which does not disappear when debts are repaid are notes and coins. These are issued by governments through their central banks, which sell them to commercial banks in exchange for debt money, which the governments then spend on their normal operations as if it was a tax payment. The commercial banks, of course, make the cash available to their customers. Governments make a significant profit from these sales. Between January 1998 and January 1999, for example, the value of the notes and coins in circulation in the UK rose by £1,300 million. As the cost to the Bank of England of printing the notes and minting the coins would not have been high, the seigniorage, as the profits from creating money are called, must have been over a billion pounds.

Unfortunately, the proportion of the money supply made up by notes and coins is falling year by year, so the British government's earnings from this source is declining. A century ago, for example, notes and coins made up **% of the British money stock. By 1930, the proportion had fallen to **% and by 2001, it was only 3.4%. This means that the current depression has the potential to be much more severe than that in the 1930s as more of the money stock could cease to exist.

³ The conventional view among those campaigning for changes in the way the national currency is put into circulation is that it is the commercial banks which create it at present. That's not strictly true. While the creation of national currency is authorised by the commercial banks when they approve requests for loans, the new money only comes into being when it is actually transferred out of the borrower's account into that of the person or firm being paid. So it is the borrower who creates the currency and the moment of creation is the instant he or she gets whoever it is that they are trading with to accept their cheque. This line of thinking makes it apparent that the interest a bank charges you on your overdraft is not a rental for the use of its money – it's not its money that you are getting - but a fee for authorising you to create national currency for a limited period and for shouldering the risk that, if you fail to repay, it will cover the loss from its own capital in order to re-balance the debit and credit accounts in its books.

⁴ <http://www.resbank.co.za/Address/1995/ad100395.html>

⁵ The Economist, 7.1.1995, p. 16.

⁶ 'Flight to quality in troubled Mexico: A handful of foreign banks are doing brisk business' by Leslie Crawford, 29 June, 1995.

⁷ 'The markets pour scorn on safety net as Mexico falls off high wire', 5 January, 1995.

⁸ *Kingpins of Carbon: How Fossil Fuel Producers Contribute to Global Warming*, Natural Resources Defense Council and others, New York, July 1999.