

## Churches Together in Cumbria Environment Group

### The Modern Economy: Growth and Sustainability

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#### Abstract

The crises of the modern economy and the environment are closely linked, in the mis-use of nature and, reciprocally, in the rising costs of economic growth. The roots lie in the mindset that became dominant in economics and technology in the 1800s, promoting increasingly large-scale industrialisation, unlimited exploitation of nature and economic expansion. Today this involves globalisation of markets, business and free trade, with active state support. Progress is measured in purely monetary terms of growth in a country's Gross Domestic Product, no matter how it's spent or obtained (as our current financial crisis shows). The solution to the crises is to move to a truly sustainable way of life, in which we live in harmony with, rather than degrading, the ecological systems and resources on which we fundamentally depend. For Christians, what is at stake is God's Creation, given into our care. Will the financial crisis help save us, providentially, from ecological and economic 'decline and fall', at least providing the necessary shock and time for a significant change in the direction of our civilisation (not the first, of course)?

#### A The Root of the Problem: 'It's the economy stupid' (President Clinton)

Christians are called to 'tend and keep' God's Creation and certainly not to degrade it, or to diminish its ecological sustainability. It is impossible to believe that the Kingdom of God can advance on Earth if his Creation is being ruined. In their work, Christian Aid, Tearfund and CAFOD have now come to recognise this. It is only in the last 150 to 200 years that human activities have come to threaten the Earth globally (and this has been primarily in the last 60 years or so). Moreover, the threat is growing year by year as we continue to pursue a certain course and type of economic development, which is not new but began in the Eighteenth Century - with the industrial revolution. This was preceded, however, by a revolution in ideas, in Western Culture, which itself began seriously to take hold in the previous century. It is *this* revolution, that of the 'New Science', which enabled the industrial one to drive forward at increasing pace and extent in the Nineteenth and especially Twentieth centuries. Earth itself has been viewed as a cornucopia to be exploited without limit, and this was justified as a matter of human achievement ('The Ascent of Man') and well-being.

This worldview has its origins in the scientific revolution, strikingly expressed by its leading figures (Galileo, Bacon, Descartes, Newton) in their image of and attitude to nature. The Medieval and Renaissance view of nature was as a living *organism* whose main characteristics were qualities such as purpose, meaning, harmony, feelings, colour, smell, taste<sup>1</sup>; the new one was of it as a *machine*. Nature was revealed essentially as a system functioning according to timeless, invariant (mechanical) laws. Mathematics was the key tool of this understanding; what could be expressed through it and not simply experienced or imagined was considered of superior importance. Underneath the apparent natural variety lay the determining mechanism, of matter and its motion according to given laws. For these scientists, the laws were still given by God in the beginning, but he was now seen as a contented on-looker of nature – if not of humanity. In the end, causation would be reduced to a few fundamental law-like mechanisms; or, as Descartes put it, 'to know perfectly what are the small parts composing (ie governing) all bodies, would be

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<sup>1</sup> For Galileo these did not belong to nature, but 'resided only in men's consciousness' (opening the way for nature's unrestrained investigation, experimentation etc).

to know it, to know perfectly the whole of nature'. This form of reasoning, or rationality, is now known as reductionism.

All this might seem as of purely theoretical significance. But this is not so, because it was quickly seen as increasingly giving possessors of such knowledge power and control over nature. Francis Bacon called on humans to unite against nature and 'to storm and occupy her castles and strongholds and extend the bounds of Human Empire leading to the effecting of all things possible'. He even used phrases such as 'torturing nature's secrets from her' and 'nature to be hounded in her wanderings' and made a 'slave'. For Descartes, the aim was to 'render ourselves masters and possessors of nature', with animals regarded as 'no different from extremely complicated machines', while 'rational man will not seek to commune with nature' and to understand nature as organism was 'nothing less than a wicked effort to curtail human power over nature'. The practical, applied side (at least) of modern science still holds largely to this worldview – and it *has* delivered impressive technological results. One of Bacon's prime tasks, and successes, was to proselytise the Government, entrepreneurs and financiers into supporting this new science for the material advantages (his 'knowledge is power') it could deliver.

It is interesting to note that for centuries the Christian Church held to the organism view of nature, which its leading thinkers, notably Aquinas, helped develop – although today Christianity is often accused of largely contributing to the exploitative and domineering approach to nature characteristic of modern Western civilisation (one thing it did do, with the rise of new science, was largely to abandon interest, including ethical and spiritual, in nature, ie natural theology fell out of favour). What was forgotten was that ultimately 'machine' is a metaphor, perhaps because it was (and is) a very useful one – and in a number of different ways, applied to society as well as nature. Moreover, the machine is a purely human invention. This all points to the folly of pursuing action based on this metaphor (as a model) too far; it now seems we already have.

A new revolution in culture (certainly applied thought) is called for. Can Christianity help in this? I believe and hope so. Particularly because it involves spirituality as an integral part of life and thus human activities, the source of living other than by 'bread' alone (the materialist world) that today science-based technology largely delivers in Western-style societies. This 'bread' comes too easily to dominate society in an exclusivist manner, being powerfully promoted by government and business leaders alike, and pushing spirituality into a separate private realm seen as marginal to the 'real business' of the day, namely the economic and financial (and whatever, eg education, can promote it). Yet humanity and the earth need just as much the qualitative values, generally referring to relationships, that Christ as well as prophets and saints have revealed and demonstrated. Currently, of course, the most important relationship that needs repairing is that between the earth (our natural environment) and the human world, which we have made increasingly distinct from the rest of nature. This distinctiveness has been summed up by Theodor Roszak as 'the artificial environment' that increasingly surrounds us – depending, of course, on which 'stage' of development we have reached (the higher the stage, the more artificial and remote from nature – and should we now add, the more 'virtual?').

However, while the artificial environment *at odds* with the natural environment may encapsulate the cumulative effect of science's mechanistic world view, in practice another problematic root which developed later has been of greater significance for our current situation. This is economics, which emerged in the Eighteenth Century as a distinct subject of study. Not too surprisingly, as a framework in which to undertake its investigations and interpret its findings, it soon came under the sway of the already successful model and methods of the natural sciences. By now that was seen – singularly so – as providing the incontrovertible truth through an objective (value-free) account of whatever natural phenomena were being studied. There seemed no reason why this should not apply also to human social phenomena – a social science alongside the natural.

What was to be established were the laws and mechanisms underlying human economic behaviour and interaction. The big ‘breakthrough’ came with Adam Smith’s work ‘The Wealth of Nations’ in 1776, which showed that the market, made up of many competing suppliers and buyers, possessed an ‘invisible hand’ which regulated supply and demand according to a price mechanism. The ‘law’ of this was that a higher price would bring forth more supply and a lower price more demand, so that supply and demand would be kept in balance – as long as the market was ‘free’, buyers and sellers being able to move freely in and out of it, without any restrictions on entry to limit competition or any external interference, notably by government. The market could naturally grow, as more supply became available through technical advance (Smith pointed to the development of mass production) and goods became cheaper, and so more of the population could enter the market and those already in it could buy more. To promote this growth, external barriers to trade (eg local currencies) needed removing, as well as enlarging the bounds of the market beyond the nation state. In this way supplies could come from wherever and go to wherever, thereby encompassing more and more buyers as well as materials and the greater circulation of money and capital for investment in further development.

So emerged the four practical watchwords of liberal market capitalism: the free market, free enterprise, free trade, and laissez-faire (no state intervention); the state was to be limited to a ‘night watchman’s’ role, providing only those things the market was not suited to – regulating natural monopolies (eg water), armies, police, and the basic legal framework within which companies could operate (eg for fraud, bankruptcy). It is to be noted that Smith also believed a society needed a shared moral ‘sentiment’, provided in Britain’s case by Christianity. The market’s dynamism *driven by self-interest* required the anchor of common standards of decency and trustworthiness. However, in itself the *free* market was governed by a deterministic mechanics which ensured the most efficient and growing utilisation of resources to satisfy human material needs and wants. Marx, as its first (social) scientific critic, was, indeed, impressed by its power in sweeping away the old, cyclical economy, with the landed aristocracy/gentry and church as its guarantors, replaced by one bent on continuous material development. For him such welcome progress was, of course, blighted by the owners of capital assets creaming off most of the wealth created, leading to growing material and social inequality between the masses and the capitalists. This would produce another social ‘mechanism’, revolutionary class conflict, to move history on again to another (and final) stage: Communism. Marx’s analysis, while of considerable political interest, changed little in respect of humanity’s image of nature or relationship with it that came from the Cartesian-Newtonian scientific paradigm (perhaps not surprisingly given the seemingly god-like power it gave humans).

## **B The Contemporary Economy**

By the Twentieth century the West was firmly launched on its essentially market driven economy, though deeply divided politically between the ideologies of ‘Left’ and ‘Right’. But there was a common understanding that humans could intervene in nature to control and exploit it, knowing very largely what they were doing, so no significant negative effects of this were to be expected (other than, as some saw it, the exploitation of many workers). But while the biggest problem after 1900 was war between major nations, one aspect of the economic system did come to give great concern, that in which a period of expansion gave way to a downturn in activity (the trade or business cycle); this was normally expected to be relatively short-lived in relation to the whole economy and be self-righting. However, after the Wall Street crash of 1929, the Western economy went into a deep recession (the Great Depression) with activity seeming to stabilise at a considerably lower level than previously, and in the US and Europe many millions were unemployed. In the US the government introduced the New Deal to stimulate the economy by public expenditure, as did Hitler in Germany (though more in line with his military ambitions). In fact, rearmament after the mid-Thirties became generally the single main impetus to economic recovery.

This episode is very important for the lesson it held for market capitalism after 1945: fundamentally this was to put the *commitment to economic growth* at the heart of theoretical and especially applied economics. Debate could still arise as to *how best* to achieve and maintain it (now ‘sustain’ is preferred), particularly between Left and Right, and government and business. After the collapse of the USSR, this

debate narrowed considerably – in favour, of course, of market-based and (big) business-based policy. In one very important respect, especially for what is happening now, such policy had at its centre the pursuit of the world-wide *liberalisation* of industry's functioning<sup>2</sup>, of trade and of capital flows. It is the means of choice for promoting economic growth. What it has specifically meant has been the progressive abolition of a government's capacity to protect domestic industries and capital market (so in effect its currency exchange value), or regulate the labour market. International institutions have operated to this end, notably the International Monetary Fund, the World Bank and the World Trade Organisation (shaped mainly by the US's dominant economic influence). A few developed countries, notably France, and increasingly developing ones, have not altogether favoured limiting their domestic policy choices to the liberal economic and trade agendas (the UK had been the first to promote these in the Nineteenth century – suggesting that the most powerful know what best suits their economic interests).

With *economic growth the guiding star* of the modern economy, it behoves us to examine what it actually means in practice (it is also possible to talk of the 'Myth of Growth'<sup>3</sup>, and it may be compared as such to the Pacific Islanders' 'Cargo Cult' following the arrival of Western influence). Basically it is the production or provision of more and more goods and services with a monetary value. There has to be a *yardstick to measure growth* from year to year. This is the annual *Gross Domestic Product* (or GDP) for each country, which consists of the total monetary/financial transactions that have occurred in that country (also known as national income). In other words, only those activities are included that have a monetary value placed on them, most by being traded in the market but some funded and carried out directly by government or its agencies (ie without entering the market). So *economic growth means GDP growth*, which is equated by politicians and the media, with rising living standards - 'more' quantitatively in money terms. The measure of growth used is in per cent over the previous year's GDP; this means that *growth is exponential* – not at a steady amount each year, but a growing amount (assuming a steady per cent increase each year). The result is the time taken for the GDP to double (or production or population) gets shorter and shorter. At the recent UK growth rate, of around 3% annually, the Government has expected GDP (the economy) to triple by mid-century (it is truer to say, it is aiming for that). Now surely wishful thinking! (and no bad thing that it is?).

### **B (i) What brings about growth?**

To achieve growth, the *market* for goods and services *has to expand, by increasing demand*, which can be done in a number of ways: (i) internationalising trade, (ii) widening the market socially, including by making 'credit' (borrowing) more widely available, (iii) bringing activities and work outside the market economy within it (referred to as the 'commercialisation effect'), with more and more things being bought which were previously available within families, neighbourhoods or other smaller communities, (iv) bringing 'commons' (things which used to be freely available to everyone like common land, water, the absorption value of the atmosphere etc) into the economy, (v) creating new demand to have 'the latest thing', by 'built in obsolescence' and to meet needs resulting from social developments eg for personal security, for protection against identity fraud ('defensive' expenditures, and also 'intermediate' or 'instrumental' ones undertaken in order to permit other forms of consumption<sup>4</sup>), (vi) giving more and more time over to consumption and promoting it – the 24/7 society. A very important aspect of all this is that *all* these extra activities (under (iii) to (vi) above) *enter into the calculation of GDP*, whatever their qualitative value – indeed, often representing a negative factor in personal or social life. To that extent economic growth gives a misleading indication of well being<sup>5</sup>. But today this aspect is more and more strongly reinforced by the effect that market expansion has on the environment: an increasing rate of consumption of natural resources and of pollution.

<sup>2</sup> especially privatisation and deregulation

<sup>3</sup> See P.Berger, 'Pyramids of Sacrifice'.

<sup>4</sup> See Hirsch Part 2 notably 'saving time'.

<sup>5</sup> The French President has recently established a commission headed by two Nobel economists to find a new system of measuring, taking into account quality of life factors.

This brings us to problems arising on the supply side of market activity. The ability to increase production in supplying the market is clearly crucial for its expansion and thus economic growth. This depends on the availability of *resources, capital, technology* and *labour*. If any of these ‘inputs’ is lacking in some respect, eg causing a bottleneck, supply will start to act as a restraint on expansion (specifically prices will rise, reducing demand in most cases). The answer is traditionally seen as substitution of one natural resource for another eg oil-based fibres for wool or cotton, or petro-chemical fertilisers for natural ones (like animal manure or ground rock), or especially of technology for labour and for enabling more efficient use of resources (or developing more ‘difficult’ ones eg, oil tar sands). Capital is a different matter: while being essential for developing resources and technology, it cannot be substituted for, being provided by personal and corporate savings (mostly profits) and tax; this provision can be increased through government and banking system manipulation of the money supply (with the attendant financial and economic risks). The stock exchange is a way of bringing together those who have capital (*savings*) to invest and businesses seeking finance to develop their operations; the emphasis is very much on well established firms, and looking for the best returns on a short-term basis (particular investments are regularly traded). If the business outlook is not so good, investors are likely to retain their funds, making raising capital more difficult; while retrenchment in loans by banks is to be expected, especially if insecure debt is widespread. We have now a major case of this happening (the “credit crunch”). The capital base and confidence have been severely eroded, imposing a significant limit on lending and borrowing.

### **B (ii) Globalisation and the limits to growth**

In the last twenty years the main force driving the expansion of market demand and production has been the rapidly increasing *globalisation* of trade and capital flows. The fall of Communism opened the way for this fully, and now China (whilst not forgetting Russia) is a major global trader, with GDP growing fast and sucking in capital and natural resources. The outlook is for global GDP to continue rising, with India and Brazil also joining in more strongly; yet as a result, the ecological limits to this growth path are becoming more and more evident. More immediately, in financing the expansion, the financial system in the West at least has over-reached itself. A rectification is under way – though, desperate to ward off recession, the US and UK have sought to make credit cheaper, despite inflationary pressures still being evident from rising *global* demand for natural resources; the outcome of this situation is uncertain but a serious recession is developing. In any case, any further global growth *will* bring rising costs for economies, especially those dependent on imports for basic resources whose cost reverberates significantly through the economy. The resulting consumer price rises will reduce demand, with clear and additional recessionary implications (which cutting taxes would scarcely alleviate, simply transferring the deflationary impetus to public services, unless national debt was allowed to rise even more, threatening financial stability with loss of confidence in the currency).

There is really no way to avoid the reality of limits to surging global demand for resources arising from GDP-led economic growth; this is not to say resources are going to ‘run out’ soon, rather that demand is rising faster than supplies in important cases, which are also having to come from more expensive sources (eg tar oil fuel). Yet lurking behind these economic developments is real resource depletion: at current rates of growth of use, above all of oil, in a matter of decades (the ‘peak’ of major oil fields is considerably nearer or even passed). Oil is *the* resource that the modern economy is based on, not only as the dominant fuel (90%) for *all* forms of transport, but also as the raw material for many products (plastic, fertilizer and pesticides, medicines, cosmetics, artificial fibres etc). Moreover, it has been a relatively cheap resource – but this is already changing, given the global opening up of more and more (and bigger) countries to GDP – growth ‘mechanisms’ (notably free capital and trade movements).

Resource limits are also set to impose other costs: for new technologies eg a replacement for the internal combustion engine, for new forms of materials and electricity not dependent on non-renewable resources, for reducing the generation of waste and the waste of heat in buildings and by industrial plant etc. A lot of this very necessary investment, which will *involve huge amounts of capital*, is needed, of course, to combat global warming, and mitigate and adapt to climate change. The Stern Report has underlined the

need to tackle this sooner rather than later, as postponing action will only increase the ultimate cost greatly. Indeed, it might well then be beyond the financial capacity of the global economy, as ‘normal’ costs will be spiralling upwards and precipitating a massive economic slump. Stern accepts that ‘business as usual’ (BAU) is no longer a truly viable option, economically, *yet* economic GDP-led growth can apparently continue. His solution to the climate change crisis is to move as quickly as possible to an alternative power base for our economy i.e. a technological ‘fix’, with us scarcely needing to change our way of trading and consuming goods and services. Thus policies need to ensure installation of available (i.e. ‘tried and tested’) low-carbon producing technologies to be effectively carried through at the national level in the next 10-12 years; this means gas, nuclear and wind (mainly off-shore) while coal<sup>6</sup> and oil (as an industrial and domestic power generator) would be phased out. It now seems our government is having second thoughts about coal (no doubt quicker and cheaper to build) with a ‘fig leaf’ only of retrofitting ‘carbon capture and storage’. Lastly, improvements in energy efficiency industrially and domestically need to be continued. This sort of programme is inadequate, based on technological substitution of power sources and product technical development, while maintaining an over-riding commitment to producing more goods and services. When the latter occurs, efficiency gains in products (e.g. cars) are soon wiped out by more of them (and bigger ones) coming into use – this is especially so for aeroplanes for which efficiency gains will undoubtedly be limited.

In the case of power generation, some 65% of existing nuclear power stations in the UK are coming to the end of their life by 2020 and need decommissioning, which entails a huge ‘investment’ cost; constructing new replacement ones would go on well beyond that, and also incur big costs (for both almost certainly topping £120 billion). But this is all about mains electricity, and though especially important for lighting and appliances, its generation accounts for no more than 25% of our CO<sub>2</sub> emissions (and with much waste heat and transmission loss). As we have seen, *oil* is the *decisive resource* for the modern global economy. It completely underpins the three ‘terrible’ Ts: Trade, Transport and Travel. *These are the crucial ingredients of market globalisation*. In itself, shipping is what makes intercontinental trade in raw materials, foodstuffs and manufactured products possible at all – certainly in the huge and growing amount it now carries. Shipping is the sixth biggest global emitter of CO<sub>2</sub> (after the 5 principal countries) and its emissions are growing at around 3% per year (70%+ by 2020) while globalisation prospers. The fastest growing CO<sub>2</sub> emissions (3.5% annually) and oil consumption come from aviation, especially its long distance operations; today it accounts for at least 7-8% of global CO<sub>2</sub> (the effect of emissions is 2-4 times greater at high altitude). Yet the government is planning a big expansion of airports as flying, both passenger and goods, is predicted to increase substantially. This is the ‘classic’ growth mindset of ‘predict and provide’ i.e. predict on the basis of what has been happening in the last two or three decades under BAU, and then provide for that. This approach still runs through most of government and corporate policy and decision- making.

### **B (iii) Towards a New Economy**

A crucial difficulty is that the environmental action needed requires a fundamental re-ordering of financial priorities, remembering *that capital is not unlimited* – for government by limits on taxation and national debt, for business by limits on profits<sup>7</sup> and on borrowing, and for financial institutions by excessive lending leading to ‘bad’ debt (e.g. sub-prime mortgages). Ultimately, behind these limits lie finite natural resources on which the contemporary economy is chiefly based (including its capacity to ‘deal with’ our burgeoning ‘wastes’, leading to pollution).

There is thus a big challenge to redirect finance to ways of sustainable production and consumption; but is the capital market likely to give preference to the necessary longer-term projects? The government has repeatedly asserted that the market is the best place to decide such things. However, it is dominated by the established, mostly large companies (industrial and financial), some of whom may express environmental concerns, but in general go chiefly for what they know best, and which promises bigger

<sup>6</sup> Except if coal power stations have ‘carbon capture and storage’ (an unproven technology).

<sup>7</sup> Some big corporations are less limited (by competition), also according to the economic sector(s) they are in (eg EDF).

returns in the shorter term (i.e. BAU)<sup>8</sup>. Newer, smaller Green businesses find it significantly more difficult to raise capital. With financial markets currently tighter, they are very likely to suffer most from the negative effects of ‘opportunity cost’ (i.e. what is foregone when choice is constrained financially). Hope is being placed for a financial easing, by government and others, from capital sources in the East, most notably the so-called Sovereign Funds (such as Singapore, Dubai, Qatar); but these are state-owned, and so raise political issues as to control of assets and accountability/transparency. In a recession in the West, the city sees investors able to shift to Asian ‘emerging’ (i.e. expanding) markets to maintain financial returns e.g. Jupiter Asset Management has just launched an India Investment Fund. It is unlikely such funds will help much to promote Green enterprises, in India or elsewhere, and they are unlikely significantly to counteract recession in the West (and will reduce capital here available for new/Green projects).

The main driving forces of recession are necessary credit restraint, and more especially the rising cost trend of non-renewable fuels and of basic commodities – which only recession itself is likely to slow somewhat, but in the case of oil by very little, as competition from big industrialising states intensifies and as it becomes increasingly expensive to extract. Rising oil prices will have a decisive economic effect as they feed through a range of key industries: transport (including of oil itself, by sea) plastics, chemicals, artificial fibres, agriculture. It is difficult to see how this will not put a damper on economic growth. Even emerging markets will have to look more to themselves, as global trade becomes more problematical. The developed West will be profoundly affected, the more so those parts most reliant on global trade and especially distant basic resources. The ability of Western companies and banks to ‘buy into’ a bigger share of emerging markets will hardly compensate for the recessionary cost pressures on their ‘home’ economies (also since emerging markets are unlikely to be immune in practice, given their significant export trade to the West). But the main effects of recession, as of climate change, is being felt by poorer people, with absolute poverty and avoidable death due to hunger and related disease increasing.

*What are the environmental implications of recession?* It is certain that as the world economy grows, so does the human ecological footprint<sup>9</sup>. An in-depth World Bank assessment has concluded: ‘A growing economy imposes even greater demands on natural resources’, leading to their severe depletion; these include soil, forests, fish, and other natural capital, that is, ones critical for global warming as well as basic resource availability (notably of food). Already levels of European consumption are more than double its own resource capacity, meaning its lifestyle depends significantly at present on external provision. The average bio-capacity requirement in developed countries grew from 3.8 hectares per person in 1961 to 6.4 hectares in 2001 (a 68% increase), though in developing countries by only 17%. *Per capita consumption is clearly the driving force behind economic growth.* Yet for all humans to live at the European level – still rising – would need, now, more than double the world’s bio-capacity (fertile soils, minerals, plants, fresh water). So, as the New Economics Foundations asks, why is it that governments are fixated on pushing economic growth, and that the IMF insists the solution to global poverty is more rapid global growth? The prime reason in developed states is undoubtedly that recession is seen as the sole (unwanted) alternative; though there is also a great faith in technology getting us out of the mess we are in (but hasn’t it contributed significantly to it?).

However, the fact is that the relationship of economic recession to carbon emissions is to reduce these. In the period 1960 to 2007, of generally the fastest known growth<sup>10</sup>, the four shortish periods of recession led in each case to a parallel drop in emissions. The recession we are now entering looks set to be deeper and longer or recurring more frequently (for the reasons adduced above). Of course, in this case, the social challenge will be significant; but rich countries could meet this<sup>11</sup>, at least more successfully than that – with continuing economic growth – of the environmental crisis (which urgently requires a big reduction of

<sup>8</sup> This is especially true of oil companies, who are investing heavily in remoter and ‘difficult’ oil resources, such as tar sands/shales (notably in Canada) which are highly polluting and deliver a poor energy-in/energy-out ratio in their use.

<sup>9</sup> This paragraph is largely sourced from New Economics Foundation’s 2006 study ‘Growth isn’t working’.

<sup>10</sup> Though not significantly for developing countries: the poverty gap with developed states widened substantially.

<sup>11</sup> Through a social security policy for crisis conditions, based financially on ‘from each according to his/her (financial) means’.

CO<sub>2</sub> emissions and most especially of consumption of oil). Recession at the very least ‘buys time’ to avoid ecological melt-down, to seize the opportunity to move away from living beyond our ecological means, that is away from GDP-based growth. Recession is also a good time to build publicly owned infrastructure, much needed for a low carbon future, provided it is given priority on capital expenditure and that government expenditure as a whole can be increased substantially by debt-sourced revenue (tax revenue will be down in a recession).

At present there is a major emphasis on ‘decarbonising’ electricity generation to reduce emissions in which however, oil only plays a small part; moreover, the solution here is seen as mainly in big, centralised technology, with the result that solutions and responsibility are largely shifted away from individuals, organisations/institutions (e.g. churches) and communities, in particular to *reduce consumption as the number one requirement*. In any case, the main single threat to the environment comes from exponentially growing oil consumption as the global economy expands, driven by free market forces and encompassing more nations, in particular larger ones (China, India, Brazil). The unsustainability of this is evident: polluting emissions, resource depletion and conflict as a result, are all set to grow on a steeply rising trend. If the appetite for oil is not curbed within the next decade or so, the outlook for a sustainable world is not at all good.

Oil is what ‘makes our world go round’ economically, namely in the functioning of the global economy (or globalisation). This is particularly so in respect of key products – for ICT, for intensive agriculture (ie. Food supply for many millions) – but above all for fuel for transport, and travel, and trade in general (it makes possible the 3’T’s globally). A consequence is that the current recession is global as never before. Of course governments and big business are intent on restoring GDP growth – this is the sole *raison d’être*, at bottom, that they have to offer (at least, as yet?). This involves keeping free trade expanding, with globalisation attaining a still greater scale, as the dominant determinant of economic and financial activity; it is a context ideally made for transnational global corporations (at least, so it is believed). The economic up-turn is expected to be occurring in 2010, 2012 at the very latest. The return of cheap oil, as a result of reduced demand in the recession, will be a significant factor in this.

However, in any return to ‘business as usual (BAU)’ where oil is concerned, two factors will loom larger and larger in its economic role. Firstly, rising technological costs of its production, especially as that of ‘easy’ oil peaks, and the desire of leading producers (notably OPEC) to restrain and maintain its production further into the future at higher prices; these developments will have major cost implications for shipping and aviation, and thus for global freight transport. Secondly, the need to establish a more managed economic and financial system, to avoid recurrence of the instability – of which we in the West currently have a major taste – threatened for countries by the BAU approach of global free trade and capital movements. This need will grow as the latter becomes increasingly implemented world-wide, promoted by major countries (not least, currently, the UK), and with international bodies (W.T.O, I.M.F, World Bank) ‘policing’ the removal of ‘impediments’ to it. Greater economic and financial management is likely to be pursued by some countries/world regions more strongly than others, depending on political and social circumstances but in particular on their economic culture, associated with their experience of development (eg. in continental Europe a more mercantile approach).

Developing countries are doing poorly, following global free movement becoming the dominant model for trade and capital after the 1970s. Fair Trade is seeking to rectify this, but its success at best can only be partial (and in the relatively short-term) while that model remains in place. Under this, these countries are pushed into specialised cash crops and raw material exploitation for export<sup>12</sup> to supply rich consumers and pay off debt accumulated while interest rates were high. The more they produce the lower the prices they get on world markets. Domestic food production has been affected by this policy and African countries have become dependent on food imports when they could grow their own more cheaply, so the poor majority have suffered. Less focus on international trade is needed and much more on developing local agricultural

and small-scale industrial self-reliance. Countries like India and China will learn that promoting domestic markets offers greater, beneficial potential for them than reliance on Western ones.

12 World mineral prices have been rising strongly, but often African countries scarcely benefit as a result of foreign ownership eg Zambian copper, which was privatised in 1999 due to World Bank pressure, with companies granted low tax rates and minimal regulation of working practices, so earnings are ‘creamed off’ to foreigners.

In general, the world’s peoples need to move to greater, not lesser, self-reliance in respect especially of energy resources (renewables), basic materials, foodstuffs and products, as long distant transport, especially by sea and air, gets increasingly problematical (in the first place, costly). This does *not* mean complete economic autarky, but putting the principal policy focus on developing local and intra-regional trading systems (eg the EU). As envisaged originally in the EEC, this doesn’t mean moving towards a regional trade ‘free-for-all’, but preferential arrangements (as in a customs union) to encourage trade within *and* in all parts of the region; thus transport would be mostly land-based, with any inter-continental trade being limited. In this way, too, greater global bio-diversity can be preserved, by reducing agricultural over-specialisation in crop and animal mono-cultures.

The ecological system has traditionally been seen by liberal economics as a sub-system (a ‘factor of production’) in the economic system. In reality it is the other way round, as the environmental crisis testifies. As ‘Limits to Growth’ reports in successive studies have shown, if atmospheric pollution and resource depletion grow continuously with growing GDP, it leads to ecological, and *therefore economic*, collapse. Global ecological resources are the ultimate determinant of our future and not human technological capabilities in their exploitation. More specifically the free trade, free market, ‘invisible hand mechanism’ is not an ahistorical phenomenon, true for all time and all places, but a time-bound historical conception which is very closely linked, indeed founded upon, the conception of nature as a timeless machine. To rely on environmental solutions resting on these beliefs would be to continue on a course of seeking to overcome Creation, even replace much of it with an increasingly ‘artificial’ environment; in such a struggle, nature would surely be the final arbiter. This is because such a course betrays a hubristic belief in a big expansion of human scientific and technological powers which move us closer and closer to full control (of course supposedly beneficent for humanity) of nature’s so-called mechanical constitution. However, the history of scientific and technological development has been one of ‘unintended consequences’<sup>13</sup> as well as beneficial intended ones; the former are ones not foreseen and the reality is ‘fallible man’ (Paul Ricoeur’s book of that title) could not in the main foresee them (which mostly is not even tried in our economic and political system).

The only rational conclusion therefore, and in keeping with Christian ethics, is that constant exponential economic growth – equated via GDP purely with monetary wealth – is *incompatible* with Creation’s (*slowly* evolving) sustainability; that is, of its ecosystems and resource provision for humans firstly but also for much other life. Human well being certainly, even life ultimately, is linked to that of the immensely intricate and marvellous community of life of Creation in general. Thus, for instance, to focus on replacing power sources as *the* way to solving the environmental crisis is significantly to continue the mindset (mechanistic, reductionist) that in its hubris has brought on the crisis. As Mark Jaccard has said: ‘Clean and low-cost energy would free people to live and travel where they want, and consume as much as they want’ and so ‘intensify the pressure on valued eco-systems and other (resource) depletion’, concluding that ‘a sustainable fuel future does not guarantee a sustainable human presence on this shrinking planet’.

For *sustainability* of Creation the *prime, over-riding goal* of civilisation cannot be the economic and financial one of ‘the biggest GDP’, but rather one of *drastically reducing* (aiming at ‘zero’) the outputs associated with it of *pollution* (of air, atmosphere, water, soil, vegetation), of *depletion* of resources (especially renewable ones eg trees, fish), and of *waste* (including the ‘throw-away’ and ‘built-in

obsolescence' culture). The watchword has to be 'prevention rather than cure', yet today economic growth arises increasingly from 'problems' created by industrial and other processes, thereby perversely working against their prevention in the first place (policy is biased towards 'problem-solving' in this GDP-promoting sense). These 'solutions' to environmental degradations are today to some degree unavoidable – but only in a *transition period* to a system in which the latter do not arise, or at least are very minor and short-term ie, which nature can deal with within its biological and ecological cyclical parameters. Such a system requires fundamentally a change to a biomimetic economics (rather than today's mechano-mimetic one).

<sup>13</sup> Some can take decades or more to become fully evident.

This has been explored in the practical concept of a steady-state economy. To move towards this needs so-called 'external' costs of business and government to be integrated *now* within their accounting systems ie 'internalised' (at present the system is skewed to keeping 'internalised' costs to a minimum and 'free-riding' where the environmental and social impact costs of their operations are concerned). More basic is the failure to distinguish natural 'capital' from the 'income' arising from natural processes generated from that capital, and which can provide the sufficient resource basis for the economy (which can still develop by appropriate technological improvements). However, the present economic model of an ever-increasing quantity of throughput from 'inputs' to 'outputs' in production is drawing heavily on natural capital (both depleting and degrading it), so reducing the basis for the future economy. In a steady-state economy, technological development would leave that capital intact, with financial means directed to restoring it where necessary and as far as is feasible, while investments in technologies threatening continuing ecological damage would be phased out; this would include those associated with producing non-biodegradable, or at least non-recyclable, waste.

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Ecologist: (Nov 04 Illusion of Progress, Oct 05 End of Cheap Oil, Feb 06 China v Europe, Jan & June 07, Stern / environmental laws, March 08 post-carbon living)

Earthmatters: (Summer 07 'What's nature ever done for us?', Jared Diamond – History Lessons)

Le Monde diplomatique, special report: Ecologie, le Grand Defi, July 05

Natural World: Winter 07, adapting to climate change

Parish Pump News: very good on environmental information, issues & initiatives, especially in respect of churches and faith communities

Permaculture Magazine: Solutions for Sustainable Living (Autumn 05 Life after oil, Summer 06 Going Local, Winter 06 Powerdown and Transition Culture: Spring 07 Post-oil, Winter 07 Power of Community, Spring 08 Road to Zero Carbon Britain

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