

Peak Capitalism

Our Opportunity to Choose
Between
Transformation and Collapse

Lionel Orford



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I have studied the Peak Oil issue in increasing depth since 2004 and have become increasingly alarmed by its implications and the complete lack of prudent actions to manage the emerging disaster. For the last year, I have been researching and developing this book.

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Executive Summary

We must face the prospect of changing our basic way of living. This change will either be made on our own initiative in a planned way, or forced on us with chaos and suffering by the inexorable laws of nature. - Jimmy Carter, as President in 1976

The Sustainability Emergency

Our World is beset by a Sustainability Emergency.

It is made up of simultaneous, potentially catastrophic crises:

- *Global Warming*
- *Population Overshoot*
- *Approaching Planetary Ecosystem Collapse*
- *Peak Oil*
- *Peak Capitalism*

The first three components of the Sustainability Emergency threaten to cause the collapse of the planetary ecosystem, decimating most life on earth. By contrast, Peak Oil and Peak Capitalism threaten to cause the collapse of civilisation, decimating humans specifically.

Although each crisis justifies urgent coordinated action by our governments on a worldwide basis to prevent it becoming a global catastrophe, we are compelled by 'the tyranny of the immediate' to deal with the crises of the moment. The immediate crises are Peak Oil and its inevitable effect: Peak Capitalism, and the subsequent failure of the economic system upon which we all depend for our essential needs. For this reason, separate sections are devoted to these crises.

Global Warming

Our combustion of fossil fuels over the last two centuries has already resulted in significant effects on our planet's climate. We know that:

- 'The Big Melt' of 2007 saw an unprecedented amount of arctic sea ice lost at the height of the summer melt. In 2008, the loss was almost as severe, suggesting that the Big Melt was part of a trend of acceleration of the melting of arctic sea ice.
- The ice sheets of Greenland and Antarctica have accelerated their descent into the sea.
- Glaciers are retreating worldwide resulting in floods and droughts replacing sustained flows in the world's major rivers.

- There is already an observed trend towards long term loss of rainfall in the subtropical zones and consequent loss of food production capability. This is likely to intensify in the coming decades.
- Further climate change is now inevitable because of the long term nature of the effects of higher atmospheric concentrations of Carbon Dioxide (CO₂). Even the current accumulation of CO₂ in the atmosphere is likely to cause long term climatic changes and metres of sea level rise by 2100.
- There is strong evidence that we have already have crossed several ‘tipping points’ whereby the human induced warming is resulting in reactions that cause the warming to accelerate, including:
 - the melting of polar sea ice increases the uptake of solar heat by the water because the ice is not there to reflect the heat of the sun away.
 - the melting of permafrost is resulting in the generation of large amounts of CO₂ and methane as the organic matter decomposes.
 - Huge quantities of stored methane are being released from the arctic sea beds as water temperatures rise.
- The climate change models used by the IPCC are proving to be seriously flawed:
 - the models project much slower melting of polar sea ice and the great icesheets than is actually occurring.
 - the models assume ongoing growth in the use of fossil fuels, but in reality we have ‘peaked out’ our oil. Natural gas is also close to peak and coal is set to follow within a few decades.

There are (quoting Donald Rumsfeld) “*knowns, known unknowns and unknown unknowns*” in our understanding of human induced climate change, but the best available evidence suggests that:

Unless we rapidly reduce our worldwide greenhouse emissions to near zero and take steps to draw down atmospheric carbon dioxide, it is likely that global warming will accelerate past a point of no return to radically change the climate of the planet.

This would result in the inundation by the sea of most of the world’s major cities and agricultural river deltas, desertification of much of the world’s agricultural land and a mass extinction of most of life on earth.

Population Overshoot

We are now very close to being unable to reliably feed the current world population of about 6.7 billion people and further population growth is in process - essentially unstoppable. The 2008 food crisis demonstrates just how close to outright famine we are. Although the 2008 crisis was dominantly about poor people being unable to afford food, rather than actual shortage, we are rapidly approaching actual shortages.

The only way that population can be stabilised and then reduced, other than by mass starvation or all out war, is through providing all people with the means to escape the poverty cycle. It is well established that when people have a reliable food supply, medical care, education and freedom from war - they have smaller families. This is primarily because when people can be

confident of raising their children to adulthood, they invariably recognise that it is in their best interests to have smaller families.

The production of sufficient food to break the vicious cycle of poverty and population growth is now becoming much more problematic and expensive due to the ongoing loss of agricultural land and crop yields due to:

- The declining supply of oil to power the industrial agriculture that currently feeds most of the world.
- Global Warming, which is already causing long term loss of rainfall leading to desertification of once productive land and is likely to intensify over the coming decades.
- The drawing down of ground water aquifers much faster than their replenishment rate, which is resulting in rapidly falling water tables in many of the world's grain producing regions. Due to ground water depletion over the coming decades:
 - America will lose about 20% of its grain harvest.
 - China will lose grain production to feed 120 million people.
 - India faces the loss of grain to feed 175 million people.
 - Pakistan, Iran, Saudi Arabia, Yemen, Mexico and several sub-Saharan African countries will inevitably suffer radical loss of food production.
- Most of the rivers that gave rise to the great civilisations are heavily depleted from being overdrawn, including the Nile, Tigris and Euphrates, Indus, Ganges, Yellow, Mekong, Colorado and Rio Grande.
- The topsoil that is the fertility of the land, the basis of agriculture, is being lost to erosion at an alarming rate due to deforestation, overgrazing, and extending agriculture into marginal land. In each case the native vegetation that holds the soil together is lost leaving the soil to be washed or blown away.
- The loss of native vegetation, particularly forests is causing long term reductions in rainfall. This is resulting in the advance of deserts in China, Central Asia, Africa (north and south of the Sahara), Mexico, Brazil and Australia.
- Soil degradation due to industrial agricultural practices, which result in the decline in organic matter and soil biota that are the basis of the soil's fertility. This results in ever increasing quantities of fertiliser required to maintain crop yields, large amounts of carbon lost from the soil and reduction of the soil water retention.
- Depletion of the mineral feedstocks used to make fertilizer, particularly natural gas (Nitrogen) and phosphate rock (Phosphorous).

Population growth and loss of food production capability are converging in a way that makes famine on a vast scale almost inevitable. To avoid this, the international community urgently needs to implement major initiatives to achieve both population stabilisation and sustainable increases in food production.

Considering the crises that are underway in the rich countries, the likelihood of such action is very low. A Malthusian Catastrophe of unprecedented scale now seems almost inevitable.

Approaching Planetary Ecosystem Collapse

Deforestation

An area almost the size of England (130,349km²) is currently being lost from the world's forests each year due to logging and land clearing for grazing, food crops and increasingly for biofuels, particularly sugar cane and palm oil. Although this loss is extremely alarming, the rate of habitat loss is even more extreme than this because much of the remaining forest is so fragmented that it is no longer a viable ecosystem that can support its native species.

Deforestation leads to other knock on effects including:

- top soil loss due to landslides and erosion by wind and water,
- CO₂ emissions due to loss of carbon from the forest itself as well as from the soil,
- alarming loss of biodiversity and entire functional ecosystems,
- long term loss of rainfall to the areas cleared.

Collapsing Fisheries

According to the UN FAO, 75% of the world's fisheries are now either overexploited, fully exploited, significantly depleted or recovering from overexploitation. Total worldwide catch has been on a plateau of 90-95 million tons since 1994 despite continuing intensification of fishing efforts. Alarm bells are ringing loudly:

- a study published in the scientific journal Nature in 2003 concluded that 90% of the "big" fish - tuna, swordfish, and marlin - are already gone. Catches of Blue Fin Tuna have declined by an astounding 94%.
- 29% of commercial fisheries globally have now collapsed and we are on a path to lose all fisheries by 2050.
- The once vast cod fishery of the Grand Banks off Newfoundland collapsed and was closed to fishing in 1992. Since then has been no recovery of the cod.
- The catch of North Sea cod has fallen from 300,000 tons per year in the mid-1980s to below 50,000 tons in recent years and seems to be collapsing.

Overfishing is not the only threat to the world's marine ecosystems. Some 90% of ocean fish rely on coastal wetlands, mangrove swamps, or rivers as breeding grounds. Well over half of the mangrove forests in tropical and subtropical countries have been lost. The disappearance of coastal wetlands in industrial countries is even greater. In Italy, whose coastal wetlands are the nurseries for many Mediterranean fisheries, the loss is an astounding 95%.

Higher ocean temperatures and ocean acidification caused by carbon dioxide emissions from fossil fuel emissions is threatening to completely destroy the remaining tropical reefs, including Australia's Great Barrier Reef.

Loss of Biodiversity

Everywhere humans settle native species are wiped out through human predation, deliberate eradication, habitat destruction, introduced species (including diseases) and human induced

desertification. Currently 784 described species have been declared extinct, and a further 65 are found only in captivity or cultivation. However, that's just the ones we know about; there are probably thousands more that slipped away before even being noticed.

According to The World Conservation Union 2007 Red List, the number of known species assessed as vulnerable, endangered or critically endangered reached 16,118 in 2006.

This includes 5,624 vertebrates, an alarming increase from 3,314 vertebrates known to be threatened in 1996. New additions to the list include familiar species like the polar bear, hippopotamus, desert gazelles, several ocean sharks, many freshwater fish, and Mediterranean flowers.

Of the 40,168 species assessed using the IUCN Red List criteria, one in three amphibians, a quarter of the world's coniferous trees, one in eight birds, and nearly one in four mammals are now known to be threatened with extinction.

We are destroying our natural ecological systems much faster than they are able to recover and the rate of destruction is still escalating. Unless urgent action is taken to turn this around, we will cause the collapse the ecological systems that support us and much of life on earth.

Peak Oil

Our entire technological society is based on utilising energy, primarily from fossil fuels, to power a complex system of machinery that provides our needs and wants. Petroleum oil is by far the most important of these energy sources. Oil has a very high energy density; it is a liquid that can be easily stored, transported and handled; it is cheap to extract; and it is available in huge quantities. This combination of properties has enabled today's world of personal transport, air travel and most importantly, industrial agriculture and the transport network which has provided the food to make the 'Population Explosion' possible. In all these applications, there are *no viable alternatives* to replace oil in any where near the quantities required by our current system.

Furthermore, our economic system is dependent on continuous growth in the supply of oil to fuel the growth of the giant machine we call 'the economy'. Although it may be feasible to run a prosperous economy using less oil by using other energy sources and increased energy efficiency, that is not the economy we have today. The simple reality is that in order to grow the economy we have in the short term; we need to commensurately grow the oil supply.

By 2004 it became apparent that there was very little spare capacity in the world's oil producing nations. As worldwide demand continued to grow, the oil price became volatile with an increasingly rising trend. From 2005 to July 2008, the oil price escalated dramatically but this did not result in any significant increase in supply. As the price of oil escalated, so did the prices of fuel, food and other essentials. In turn, this resulted in many heavily indebted people, particularly Americans, being unable to pay their mortgages and significant reductions in retail spending. Thus began the global economic crisis.

From July 2008 onwards, the demand for oil decreased due to the effects of the unfolding global recession, leaving July 2008 to stand as the month of the highest ever oil production. The oil price then fell precipitously, requiring OPEC to cut production to arrest the fall of the price.

Most of the investment in projects around the world to bring on new production or maintain production from mature oil fields is only financially viable if the oil price remains around \$100 (2008 US dollars). Consequently, this investment is being delayed until there is a recovery in the price and in the meantime, production from mature fields continues its relentless decline.

Hence there is little doubt that we reached Peak Oil (maximum worldwide production of all liquid hydrocarbons) in July 2008 and that total supply is now set to decline at an accelerating rate over the next few years. Furthermore, the amount of oil available to oil importing nations is likely to fall even faster due to the combination of production decline and consumption growth in the oil producing nations.

It is ironic that even though the theoretical peak of oil production imposed by geological limits (depletion of oil deposits) may still be a few years away, the demand destruction triggered by even a mild escalation of the oil price has delivered Peak Oil due to lack of demand rather than lack of supply. Peak Oil has occurred for economic reasons, rather than geological or political ones.

A sustained recovery of the global capitalist system is rendered impossible by this. Even if government spending can stimulate a partial economic recovery, the price of oil would quickly spike again, destroying any prospect of a sustained recovery. Thus I contend that we have reached Peak Capitalism and are now beginning to negotiate the treacherous economic decline.

We are completely unprepared for the failure of our economic system and tsunamic societal change that a declining oil supply is now beginning to impose upon us.

Peak Capitalism

Over the last three centuries, the capitalist economic system has enabled western European culture to expand to dominate the planet and enabled an explosion of scientific knowledge and technological capability unparalleled by any former human civilisation. In the countries where it arose, it has enabled many people to achieve a standard of living incomparably higher than any previous society, higher even than the kings of former societies. It has also systematically exploited and impoverished a large part of the world's people in pursuit of profit and has concentrated vast wealth and power in the hands of the rich elite that own its banks and other corporations.

The fundamental basis of Capitalism is its monetary system, known as Fractional Reserve Banking. In this system, all money is created and enters circulation as interest bearing bank debt. Because borrowers must repay both the debt and the interest incurred, there needs to be a corresponding expansion of the overall money in circulation over the term of the loans or else some borrowers would be forced into default. This expansion of money supply can only come from expansion of overall bank debt.

This expansion of debt can only be sustained if there a corresponding expansion of real economic productivity ('economic growth') to provide the income to repay the debt. Hence Capitalism is totally dependent on ongoing economic growth, which can only be achieved with corresponding growth in the consumption of resources, particularly energy. It is this dependence on exponential growth of both the demand for resources and the discharge of waste products that is the primary driver of the Sustainability Emergency.

Furthermore, Capitalism is a highly unstable economic system, subject to booms and busts. A cessation of economic growth results in a halting of investment, businesses being unable to service their debts and, without government intervention, a systemic failure that causes the economy to collapse.

The demise of Capitalism has always been unavoidable because there are clearly many limits to the economic growth on which it relies.

Peak Oil just happened to be the first hard limit that was reached.

It is clear that Capitalism has now reached its peak and is undergoing a systemic failure, from which it can not recover:

- It can not survive the decline of its primary energy sources, particularly oil and gas. This is compounded by the lack of capital investment in developing new production due to the economic depression.
- It is close to reaching several other 'limits to growth' apart from oil and gas. We are depleting several other finite resources on which we are dependent to maintain our food supply and technological systems, including ancient ground water, mineral phosphate, copper, helium and rare metals such as platinum, rhodium, indium and gallium.
- The expansion of personal, corporate and national debt in rich countries, particularly America, has reached way beyond that which can ever be repaid. As the debt bubble deflates and economic depression deepens, mountains of debt are being defaulted upon. There is little capacity to repay new debt, making the further expansion of debt required for an economic recovery infeasible.

The economic collapse in the wake of Peak Capitalism is the most urgent aspect of the Sustainability Emergency because we do not know any other way to operate the system that provides the goods and services upon which we all depend.

The problem is compounded by the reality that Capitalism is more than an economic system; it is the basis of our culture and very much like a religion. Its fundamental beliefs, although clearly irrational, are held as sacrosanct by the overwhelming majority, including the entirety of our governments. Anyone who dares to question them is ridiculed and effectively excluded from public debate. This makes fundamental reform of the economic system close to impossible.

For several decades, America, more than any other developed nation, has maintained the expansion of money supply required to maintain growth, service its trade deficit and wage wars, by going deeper and deeper into debt – national, corporate and private. In order to be able to keep borrowing, America has deployed any means available to keep their economy out of recession so that investment in the US economy could continue to return a profit. The final act of desperation to keep the game going was to further escalate private debt to generate a vast bubble in house prices and consumer spending, along with a colossal scam in risk spreading financial derivatives.

Over the last two decades, China and Japan have bought up a major part of that debt, so as to maintain and grow their biggest market for manufactured goods. The oil rich nations of the Middle East have also made a major contribution so as to maintain the market for oil. Everyone wants to maintain the value of the US dollar because it is the de-facto world currency, which many countries hold as foreign reserves. Its collapse would effectively be a collapse of the system of international trade. For this reason, the current financial crisis has seen a frantic rush to buy the US dollar in a last ditch effort to prop it up.

As the American economy slides deeper into depression, it is becoming less and less tenable for America to continue to escalate its foreign debt, which has already reached such extreme proportions that there is no prospect of it ever being repaid. Extending America further credit into a depressed economy with no ability to repay that debt is the equivalent of throwing money into the sea; it can not continue.

America is effectively bankrupt; and we don't know what will happen next.

A collapse of the US dollar is now almost inevitable, leaving America without the means to import the oil it needs for essential services, particularly food production and supply systems.

This is an exceptionally dangerous situation.

America now has two options for settlement: declare bankruptcy or 'print' dollars to send the economy into hyperinflation so that the debt can be repaid in worthless dollars. Both options are a form of default. However, whereas declaring bankruptcy is an honest settlement, creating hyperinflation would be an act of reckless stupidity that would probably send America into full scale economic and societal collapse. Tragically, the actions now being taken by the US Federal Reserve and Treasury are highly likely to result in this outcome.

We're all in this together. As America falls, it will be a tragedy for far more than just the Americans. We are already in the midst an unprecedented crisis in the global market system.

The economies of the emerging Asian giants, particularly China, have been hit hard by the loss of their export markets, but their prospects for economic recovery seem comparatively good as they continue to grow their national economies. They may be able to take advantage of lower oil and other commodity prices, but only if destruction of oil demand in the OECD exceeds the declines in oil production due to depletion and lack of investment in maintaining production.

If America becomes unable to import sufficient oil to operate its essential services, there would be a total breakdown of the transport systems for food and everything else on which their society depends. The consequences of this would be absolutely catastrophic – a complete societal collapse. The world would lose its largest food producing nation. Even now, the world can not feed itself without America. There would be famine around the world.

Some form of international treaty is urgently required to enable the available oil to be produced and shared on the basis of the essential needs of each country, rather than relying on the current market system, which is now collapsing.

The market is incapable of making the required investments to maintain oil production and incapable of apportioning the available oil according to need.

How this will all play out is highly unpredictable; it depends largely on the actions taken by the governments of the major economic powers, particularly the United States, China and Russia. Those actions are inherently unpredictable because the decisions will probably be made upon assessments of strategic national interests rather than considerations of social justice and planetary survival.

However, we can be sure of this:

Capitalism has reached the end of its viable life and is dying.

We must not waste our resources trying to maintain Capitalism on life support; we must take this opportunity to form an entirely new economic system that is not dependent on growth and allows us to begin the transition to a sustainable society.

The Failure of Capitalist Democracy

"If you don't look where you're going; you're always going to crash."

- advice from Lionel Orford to his daughter Lucinda at the age of 20 months.

The problems that make up the Sustainability Emergency are long term in nature and (except for global warming) have been well known to our governments for over 30 years. Allowing these problems to develop to the stage where emergency action is required to avoid the collapse of civilisation and the entire planetary ecosystem represents a profound failure of the worlds leading capitalist nations to exercise good governance.

Our nations are nominal democracies, whose governments rule with our consent. Hence the failure of our governments is a failure of the majority of us to vote for good policy and to hold politicians accountable for their actions and inactions.

Like the Sustainability Emergency itself, there are several complex and interrelated factors involved in our failure to competently govern ourselves through Capitalist Democracy.

The Power of Money

Who controls the food supply controls the people; who controls the energy can control whole continents; who controls money can control the world. – Henry Kissinger

There is no doubt that the influence of Big Money on capitalist democracy is profound. It has significant influence via financial contributions to political parties, lobby groups, wedges of cash in brown paper bags, etc, but Big Money has much greater influence in several other ways, which are far less obvious to the general public.

Firstly, our money is created not by the government, but by private banks in the form of debt that incurs interest. By control of the money supply, the banks accrue vast wealth to the small elite who own them and effectively control world commerce, governments and 'we the people'.

Secondly, governments must keep business profitable for the sake of maintaining the economy. This compels all governments to do anything within their power to keep all major employers in business and the financial system functional.

Thirdly, Big Money controls the main sources of information to the electorate. This includes control over what gets shown on commercial TV networks, what is heard on commercial radio, what is printed in major newspapers and posted on commercial internet sites.

In more intellectual circles, Big Money has great influence through sponsoring 'think tanks' to promote the views of the rich elite and to deliberately distort and sow confusion into the debate. This creates a perception that "the experts are divided", which inevitably results in stalling reforms to tackle important issues such as global warming and Peak Oil, so as to maintain business as usual.

Big Money also significantly affects our society through the cultural effects of advertising, whereby the general public is incessantly told that they can improve their self worth and social status by buying the latest thing - and more of everything. Over time this has promoted and entrenched a culture of materialism and conspicuous consumption.

A democratic government can only make changes that the people call for, which means that it will never be more prudent than its electorate. When people have grown up in a capitalist culture and are informed largely by the propaganda of capitalism, it comes as no surprise that they vote to support the system that pays their wages and gives them a high standard of living.

The Addiction to Growth

As previously explained, economic growth is an essential part of the capitalist system due to its inability to function without continuous expansion of bank debt, but there are other aspects to our addiction to growth.

Growth is essential to maintaining an adequate level of employment. About 30% of GDP in OECD countries comes directly from growth - building new houses, commercial buildings, factories, roads, mines and so on. The people who work to create this growth are dependent on regular employment for the provision of their essential needs – food, clothing, housing, etc. People who work in service industries are in turn dependent on people employed by growth to spend their money for their employers to remain viable. As cessation of growth causes a cascading loss of employment and a systemic failure of the economic system – as is all too evident from the unfolding economic collapse.

Growth is essential for the maintenance of social stability. At times of economic recession, or even slow growth, there is a surplus of labour which drives the cost of labour down and results in unemployment, impoverishing the working class and transferring almost all of the profit from enterprises that remain viable to the wealthy elite. This gross inequity quickly leads to social unrest and, if these valid grievances are not addressed, a break down of social order and political stability. The converse occurs in a growth economy – everyone can have a job, workers are well remunerated and generally satisfied with their lot. The wealthy elite make out like bandits. Everybody credits the government with doing a great job and elects them back into power.

Growth is deeply rooted in our culture. Most of us have all been taught from childhood that a good life consists of developing our skills, working hard and generally being as productive as possible so as to become wealthy and to display our social status through conspicuous consumption. For this to be a realistic expectation for a large part of the electorate, there needs to be ongoing economic growth. Because we have all lived our lives in an era of almost continuous growth, most of us have come to regard this as normal. We make major investment decisions – like buying a house or investing for retirement – on the assumption that growth will be perpetual, employment will be continuous and we always be able to service our debt.

Yet an astute primary school student (such as me at age 12) can see that this is absolutely crazy. It is simply unbelievable that our leaders don't understand the unsustainability of growth in a finite world. Herein lies the defining characteristic of addiction – the addicted person knows that they are progressively killing themselves, but they choose to ignore this because the short term pleasure (or absence of pain) is just too hard to refuse.

Short Term Interests

Governments remain in power only if they act in the perceived short term interests of the majority of their electors.

It is *always* in the short term interests of the electorate to keep the current economic system running as well as possible – to maintain 'business as usual'. Governments are unable to make fundamental changes to the system because such changes are always detrimental to a significant sector of the economy and jobs would be lost.

Major change only happens when there is a consensus within the electorate that there is an urgent need for such change. This only occurs when there is a major crisis.

While governments are *perceived* to be delivering in the self interests of the majority of their electors, they can get away with deception, corruption, inaction, ineptitude, high crimes and misdemeanours.

The leaders of America, Great Britain and Australia were all *re-elected* after it had become widely known that their pretext for the invasion of Iraq was a fraud – obvious to anybody willing to see it. We accepted our leaders involving us in the military invasion of a country that posed no military threat whatsoever, justified by a web of lies from their own mouths. That was ‘bad form’ but we accepted it, so long as they didn’t raise our interest rates or our taxes.

Maintaining Confidence in the System

A loss of confidence can have devastating effects on the economy and on the political fortunes of the government of the day - the system would flounder on their watch. Hence all problems that have no easy solutions are covered up, denied and downplayed for as long as possible. Global Warming, Peak Oil and the US debt crisis are prime examples.

This amounts to maintaining confidence in a system that is known to be doomed, rather than facing up to the need for fundamental changes that could save it.

Tokenism

When a significant number of people in the electorate become concerned by an emerging problem, global warming being the primary case in point, our governments are compelled to be seen to be ‘doing something about it’. Their response is invariably to enact token gestures, like putting up a few solar cell arrays, putting up wind farms, researching carbon capture and storage and enacting emissions trading schemes, but nothing that is in any way serious about dealing with the fundamental problems.

In reality, such tokenism is worse than doing nothing, because a perception of progress is created within the electorate and the proponents of change are quietened, even as the fundamental problems continue to escalate.

Cultural Beliefs

As an individual, it is not possible to establish your understanding of the world from what you can personally verify. We all take on ‘accepted truths’ as part of our cultural belief system and base our world view and reasoning upon them - whether those ‘accepted truths’ are correct or manifestly erroneous.

All culture is based on passing on the myths, knowledge, skills and strategies that have proven successful to previous generations. Capitalism has come to dominate our culture and its central cultural narrative is the Progress Myth - that through capitalism and technology, our affluence and technological prowess always increases over time. It is the outstanding success of the capitalist economy in actually achieving such progress for the wealthy countries for the last two centuries that has resulted in this myth becoming so deeply culturally entrenched.

The insane belief in perpetual economic growth and the blind faith that technology can solve all problems are the most dangerous aspects of the Progress Myth because these have become ‘articles of faith’ to most of our society, especially within the apparatus of our governments.

Capitalism has successfully provided for our needs and wants for generations and is the only culture we know. As with all human cultures, when we encounter crises, we instinctively

maintain our belief in the strategies that have been successful in the past. For us, that strategy is to generate economic growth at any cost – even the ecosystem of the planet itself.

Even when our traditional strategies are obviously failing, we deny the failure and hold fast to our cultural beliefs.

We do this primarily because we do not know any other way to deal with the problems we face.

Collective Denial

“It is true that you may fool all the people some of the time, you can even fool some of the people all the time, but you can’t fool all the people all the time.” – attributed to Abraham Lincoln.

Even after considering the all of the above factors in the failure of Capitalist Democracy, it should be recognised that we only have our collective selves to blame.

All the people have not been fooled all the time. The problems have been well known to anybody interested in learning about them for decades. This has been especially true since the publication of “Limits to Growth” in 1972. The reason that so few know about the Sustainability Emergency is that the people that make up governments and electors alike *are in collective denial of the effects of our chosen way of life.*

Advertising only works in seducing us into materialism because it exploits the characteristic of humans of being generally greedy, selfish and status conscious. Advertising exploits and nurtures those characteristics, but it did not create them.

The majority denies the long term effects of capitalism because the system benefits them in the short term. The corporate news media sells to a market and hence tells the people what they want to hear, which is that *everything is under control, there are no problems we can’t solve.*

People continue to believe what they want to believe and to deny what they don’t want to believe. This applies regardless of the intelligence of the person concerned. As noted by Winston Churchill: *“Men occasionally stumble over the truth, but most of them pick themselves up and hurry off as if nothing ever happened.”*

Our governments have failed us because we have elected them according to our short term interests and have chosen to remain in collective denial of the long term consequences our lifestyles.

While denial of the Sustainability Emergency remains tenable, we will not act to save ourselves. Instead, we will remain in a state of political paralysis while the opportunities to take mitigating actions pass us by and a planetary catastrophe becomes inevitable.

Democracy has not failed us; Democracy has allowed us to fail.

A Time for Change

For all its shortcomings, there is no better system of government than Democracy. When an emergency becomes apparent to the electorate, the people are capable of rallying to the cause and supporting the actions required to best deal with it, even when those actions involve significant personal hardship. However, it is crucial to have an inspirational leader to rally the people and generate a sense of common purpose; and indeed, the people often choose inspirational leaders in troubled times. The election of Barack Obama is a highly pertinent example of this.

The importance of his election, both for America and the rest of the world, can hardly be overstated. He has restored to America the prospect that their democracy can be made to work. He has restored hope to the international community that America will again constructively engage with the world to meet the monumental challenges that we face, after the devastating antipathy towards international cooperation of the Bush Administration.

Obviously, it is easy to cynically dismiss him as a man of emotive rhetoric with no substance. I disagree entirely with this attitude because no President can make the changes required himself; a President's job is to lead; to communicate clearly and truthfully the reality of our predicament, to inspire a sense of common purpose and engagement, and to steer the enormous power thus created for the benefit of the nation.

All of us that recognise the Sustainability Emergency now have a responsibility to make the most of this time where change really is possible. It is time to speak up to inform the public about the depth of our predicament and to contribute to rational debate regarding the best management plan. In this way, democracy can become a powerful force for the fundamental change needed to manage the immediate emergency and direct our efforts to achieve the best possible mitigation of the overall Sustainability Emergency.

The Choice between Transformation and Collapse

The descent into worldwide economic depression and the risk of societal collapse in many countries in the wake of Peak Capitalism is now bringing the Sustainability Emergency to a head.

Global Capitalism is in a death spiral, which is still gathering momentum as more and more people in wealthy countries lose their jobs and become unable to pay their mortgages and other debts. They also have very little money to support their retail economies, resulting in further job losses and bankruptcies. Private investment is not viable until economic conditions improve and economic conditions cannot improve without investment. Banks can not lend to expand debt because that debt would have little prospect of being repaid. This is the beginning of the Second Great Depression.

As the full effects of the Second Great Depression unfold, it will no longer be in the short term interests of anyone to maintain 'business as usual' – *there will be no 'business as usual'*. 'We the people' will demand that our governments act.

Quoting Milton Friedman:

“Only a crisis—actual or perceived— produces real change. When that crisis occurs, the actions that are taken depend on the ideas that are lying around. That, I believe, is our basic function: to develop alternatives to existing policies, to keep them alive and available until the politically impossible becomes politically inevitable.”

Once there is general recognition that this is indeed an emergency, our governments will be compelled to overcome the political paralysis by declaring a State of Emergency. In so doing, they will suspend 'business as usual' and enact whatever means they deem necessary to deal with the emergency. This is the type of change that was seen in Britain, Canada and Australia at the commencement of World War 2 in 1939 and later in America in 1942.

When the State of Emergency is recognised, there is an extreme risk that our governments will attempt to deal only with the economic crisis as it affects their own countries and fail to deal with the greater Sustainability Emergency. The actions that will be taken are highly unpredictable but fall into three major categories:

- **Ineffectual Actions:** continuing to limp along, denying the fundamental problems and trying in vain to revive economic growth using traditional Keynesian economic interventions. This can only lead to escalating economic and social dysfunction; the failure of essential services, a breakdown of law and order both domestically and internationally, martial law, civil wars, famines and if not halted, the collapse of civilisation.
- **Stupid Actions:** descent into warfare as powerful nations pursue their own interests at the expense of the global cooperation needed to deal with this emergency. There is a small but significant risk of escalation to an Armageddon scenario – full scale war between thermonuclear armed superpowers.
- **Prudent Actions:** enacting international agreements to enact prudent and effective emergency management to maintain the supply of essential goods and services in all countries, followed by fundamental reforms to facilitate transition to a sustainable economic system powered by energy sources that do not emit carbon dioxide.

In my opinion, the Ineffectual Actions scenario is by far the most likely because it is simply a continuation of what is already happening. We are likely to continue along the path that leads directly to the collapse of civilisation.

The Stupid Actions scenario seems less likely because America simply doesn't have the oil resources to conduct a major war. Russia is the only major military power with enough oil to conduct a major war, but it has no reason to start one and no history of doing so. We are likely to see a continuation of chronic regional conflicts and new civil wars rather than 20th century style mass slaughter warfare between superpowers. The threat of mutually assured destruction seems likely to continue to dissuade all countries from initiating a nuclear war.

All nations and all people are dependent on our complex system of international trade and a single planetary ecosystem in the same way as the passengers aboard a ship are dependent on the ship staying afloat. When the ship is sinking, the business of the voyage must be abandoned and the crew must mobilize any means available to try to save the ship. There are no lifeboats, and even if a few could be improvised, they would only condemn those in them to a slow and miserable death on the high seas.

For the Prudent Actions scenario to succeed, it is imperative that all nations recognise that no nation can 'go it alone'. This is a global emergency requiring all nations to cooperate through the UN to form the international agreements required to ensure that every nation is able to access its essential requirements and that everyone partakes in the reforms required to save civilisation and our planet.

The level of cooperation required is unprecedented and regrettably, the history of the UN is one of powerful nations jealously guarding their economic and strategic national interests above the interests of the overall world. If we collectively fail to change this, then the collapse of civilisation will become inevitable.

So finally the choice comes down to this:

We can continue to deny the need for fundamental reform and pursue the restoration of business as usual, thereby ensuring the collapse of civilisation; or

We can recognise the need for fundamental reform and pursue global cooperation to enact the emergency measures and economic reforms required for our survival.

Ultimately, the outcome will be determined by our governments; through their actions within their own countries and through their commitment to cooperation within the United Nations. Prudent actions by our governments are only possible if a large part of the general public understands our predicament and supports the fundamental reforms required. It is crucial that those that recognise and understand the Sustainability Emergency come to hold sway in public debate rather than the believers in Capitalism, who will undoubtedly advocate more of the same thinking and actions that led to this emergency.

This generation of thinkers and leaders will determine whether we use Peak Capitalism as an opportunity to make the fundamental changes required to manage the Sustainability Emergency, or allow the crisis to escalate into the collapse of civilisation.

A Proposal for Transition to a Sustainable Economy

The following is proposed as a preliminary plan for discussion amongst all those who are willing to acknowledge the reality of our predicament, think beyond the paradigm of the current system, and rationally discuss the fundamental reforms required to avoid catastrophe.

Step 1: Emergency Management

Recognising a Global State of Emergency

We will soon be faced with a failure of the worldwide system of trade that provides us with the commodities that are essential for our societies.

It is imperative to understand that this is a failure of the global economic system rather than a failure of the actual means of production and supply. There is enough oil and enough food to meet everyone's essential needs in the short term. We need an emergency plan coordinated through the United Nations to maintain or restore the flow of essential commodities in the immediate term and worry about settling payment issues once the monetary reforms outlined in "An International Monetary Treaty" have been agreed.

The sooner it is realised that this is a global emergency affecting all nations, the better our chances of coming together as a worldwide community to take effective actions to deal with it.

Maintaining Essential Services

Governments throughout the developed world will probably need to directly intervene to create a command economy to prevent the economic collapse causing the breakdown of essential services.

Many millions of people who have lost their incomes will need to be provided with food, water, housing, medical care, electricity and sewage treatment. In wealthy countries this can be achieved primarily through their social security systems. The US needs to put in place an adequate federally funded social security system in line with other wealthy countries as a matter of urgency. Not only is America's neglect of its disadvantaged and displaced a national disgrace, it also compounds the economic crisis. When people don't have any money to pay for essential services, those services break down because their providers can not continue to operate without being paid.

A system of fuel apportioning will likely be required to ensure that the available fuel is dedicated to the production, processing and distribution of food and other essential services as the supply of oil dwindles. This will entail a progressive shutting down of as many non-essential commercial and private activities as required to reserve sufficient fuel for essential services.

In oil importing countries, shortages are likely escalate to the point where a rationing system is required to ensure that everyone has access to a share of essential needs, regardless of wealth. Such rations would need to be non-transferable to deter a black market in rations. It is imperative that sufficient oil is reserved to enable essential services to continue to operate, most importantly, food production and delivery systems.

A Moratorium on Housing Evictions

As the economic crisis deepens, it will be necessary to acknowledge that those that find themselves victims of this disaster cannot be held responsible for it. People who have lost their incomes need shelter like anybody else and it is immoral and impractical to throw them all out on the street.

People are already staying in their homes on an informal basis due to the inability of the creditors and the courts to process the avalanche of foreclosures that is occurring. My message to people forced into mortgage default is *stay in your houses, and if you are evicted, re-occupy your house*; there are simply not enough bailiffs to evict all of you simultaneously.

A formal moratorium on evictions of those unable to pay their mortgages or rent is required urgently. Those with some income would be required to pay what they reasonably can. This moratorium needs to remain until such time as an International Monetary Treaty can be established and the terms of settlement of debts, both national and private can be agreed.

A New Monetary System

The global economy is crashing. Like a crashed computer, it is no longer able to function even though the hardware is still useable. The fatal error that has caused this crash is the capitalist money system. There is no point in trying to run the same flawed system up again; it can only crash again.

This paper proposes a new money system, the rules of which would be defined by an International Monetary Treaty (IMT) to be agreed through the United Nations.

The fundamental basis of Capitalism is the power of the banks to create money as debt and to charge interest on that debt. This results in the money system being dependent on continuous expansion of debt and therefore 'economic growth', and in the concentration of wealth and power in the hands of the rich elite. The proposed IMT would transfer the power to create money to 'we the people' through our governments. It would also eliminate the hegemonic power that America derives from having its currency as the world currency.

The collapse of global Capitalism means a breakdown in the international system of trade. All nations have become dependent on international trade to provide some part of their fundamental requirements, so we must re-establish a functional trading system as a matter of urgency. It is now time to declare "game over", settle the scores, and start again with a new set of rules for international trade.

The proposed IMT would include the following articles:

- The legal right of banks to create money as bank debt and to charge interest on that debt would be withdrawn. Money would be created by 'we the people' through the treasuries of our Governments, as needed to facilitate the trade of goods and services.
- Each national government would be responsible for issuing their nation's money into circulation via direct government spending and interest free loans, and for reclaiming that money through taxation and loan repayments so as to maintain a stable value of their currency.
- International trade would take place in a new international currency unit, referred to here as the "Geo". A UN chartered World Central Bank would determine the exchange rate of each national currency so that governments that ran inflationary monetary policies would have their currency devalued accordingly against the Geo and those that balanced their money

supply would maintain a constant exchange rate.

- All bankrupt corporations (including the banks) would initially be nationalised by their country of incorporation and their assets used to provide for the common good of the people.
- Each nation would take possession of all assets located within its borders, regardless of nominal ownership.

The IMT is essentially a proposal for 'we the people' to take advantage of the situation where Capitalism has collapsed to finish it off once and for all. Even though Capitalism is terminally ill, it's not dead yet and we can be sure that the rich elite will fight to the last breath to retain their enormous power to create and control our money.

It is important to note that this is not a proposal to eliminate free enterprise, but to depose the Banks from controlling our money and burdening us with interest; free enterprise and private ownership would be retained and supported. As a new economy is established, nationalised companies that were suitable to compete in a free enterprise environment could be re-privatised, if this was supported by the electorate.

Because the culture of Capitalism has such enormous influence over the minds of the people and our governments, it seems unlikely that such an IMT will be adopted immediately. It seems more likely that the existing system will be restarted with a few minor changes that do not address the fundamental problem, leading to partial recovery followed by further failure of the monetary system.

An Oil Production and Sharing Treaty

It is imperative that the global economic collapse does not result in a collapse of oil production, which would be catastrophic. Hence there needs to be an international agreement to ensure that oil producers are paid and the investment in new supply continues, so as to limit the rate of decline to a manageable level. It is proposed that the oil price be controlled by international agreement, rather than allowing the highly destructive instability of the market system to continue. Some form of IMT is required urgently so that this can be made possible.

It is also imperative that the burden of reducing our consumption of oil to match the available supply be shared by the international community so that essential services can be maintained in all countries and systemic collapse can be avoided.

Provisions are required to ensure that oil is apportioned according to need rather than price. Heavily oil dependent countries, most importantly the US, need to maintain supply of sufficient oil for their essential services. Since it is highly unlikely that they would initially be able to pay for that oil through international trade; some form of special consideration will be required.

In return for such consideration, these countries would need to formally commit a process of rapid reduction of oil consumption in their own societies and commit to providing substantial practical assistance to poor countries to break the poverty cycle through education, medical care and the development of self sufficient food production and other essential services.

Constructive Engagement with America

The election of Barack Obama has dramatically changed the landscape. The neo-conservative agenda of seeking to control the world and its resources through bullying, subversion and outright military aggression against other nations has failed utterly. Its proponents have been

removed from power and discredited. America has elected a man who proposes real change, who has shown his ability to unite rather than divide and to inspire not only his own people but the entire world community.

The risk that America will provoke full scale war, rather than admit that their era of world domination is over has been greatly reduced. The probability that America will now cooperatively engage with the rest of the world to deal with the emergency faced by all has greatly increased.

President Obama must now deal with the most serious emergency not only in America's history, but in human history. If he can successfully lead America through this, he will surely come to be regarded as the greatest of all American presidents. To achieve this, he must initiate constructive engagement with the world community of nations to agree on a plan that seeks to provide all nations with their essential needs following the collapse of the world economy.

For America, the basic deal would need to be one of debt forgiveness and an arrangement to supply America with sufficient oil to keep their essential services operational. In return, America would make a binding commitment to cooperation with international community to implement the fundamental reforms needed to deal with the Sustainability Emergency. First and foremost, America would need to commit to a rapid transition away from their heavily oil dependent transport system.

If constructively engaged, America has a great deal to offer the world. Most obviously, America has enormous scientific and technological prowess, which the world urgently needs in order to develop and deploy new technologies to phase out fossil fuels and find sustainable ways to grow more food.

Also crucially important is that America is by far the world's largest food producer, without which the world cannot feed itself even now, and this reliance is almost certain to increase in the coming decades.

Step 2: Building the Infrastructure Needed for the Future

An emergency command economy is highly undesirable as a long term solution and should be phased out as soon as practicable. There will be an urgent need to get people back to work so as to re-establish a functioning society and there is no shortage of work to do to.

We need to build a multitude of new facilities to enable the phase out of fossil fuels and to develop and implement sustainable agricultural systems to feed the world going forward. The proposed plan would entail direct government spending on major projects to be owned in common by the people. This would provide the primary capital for a new economy. Private enterprise would provide services to the projects thus circulating the money through the economy. Where private enterprises were appropriate and viable within the new economy, interest free loans would be provided to enable them to get established or re-established following the economic collapse.

Specific major projects are proposed:

- national electric railway networks for freight and passenger rail for countries without them notably US, Canada and Australia.
- solar Thermal Storage electricity generation on a huge scale
- large expansions of the electricity transmission networks

- development of new generation nuclear reactors fuelled by Uranium238 and/or Thorium in countries where solar thermal power is impractical
- research and development of sustainable agricultural systems, including the use of 'bio-char' to sequester carbon into the soil
- re-deployment for new purposes or materials salvage of buildings and machinery left unused due to the economic collapse
- research and development of production of oil from algae on a vast scale.

It is essential to understand that all this development will need to be undertaken in a world constrained by steep declines in hydrocarbon fuels. Thus whatever fuel is available will need to be dedicated to providing essential services and building the things we need for the future. It is not feasible for the current profligate personal energy consumption to ever resume. Fuel rationing may need to remain indefinitely.

This implies that there can never be a resumption of the consumer economy and the commerce and employment that it once provided. Large numbers of people who formerly worked in the consumer economy will remain unemployed and dependent on social security for their basic needs.

Direct government spending will be required to support these people for some time. This spending is absolutely necessary because the systems of production of essential goods and services can only continue to function if people have money to buy those goods and services. It is equally important to understand that, once a money stock is established, all the money spent by government must be reclaimed through taxes so as to not render the currency worthless through inflation.

Having large numbers of people on the dole is highly socially corrosive because these people are denied a useful role in society; it is not a long term solution. Hence we must conduct programs to involve these people in the betterment of their communities and to develop the new skills needed for a sustainable society. The development of permaculture community gardens (where land and water are available) and enticements for people to resettle away from cities to build regional communities are examples of the type of programs needed.

In order to develop these new systems worldwide, a greatly expanded Peace Corp is proposed. The skills and resources of the great powers currently dedicated to the military, as well as a large number of unemployed people could be trained as educators, engineers, agriculturalists, doctors, etc and deployed throughout the poor world to assist these people out of the vicious cycle of poverty and overpopulation through education, infrastructure building and development of self sufficient organic agriculture. This would truly be a "win win" for everyone involved.

Step 3: Transition to a Sustainable Economy

Once we have dealt with the immediate emergency of the collapse of Capitalism, established a functional international monetary system and gotten people back to work building the infrastructure we need for the future, we need to look at the long term plan for a sustainable society.

The Cultural Transition

Capitalism is our culture; its values and assumptions are fundamental to the way we see the world and the overwhelming majority cannot even conceive of any other way to live their lives.

Capitalism is simplistically seen as a force for good and Socialism, a force for evil. It will take time for people to come to terms with the death of their way of life, to accept the need for fundamental change and to revise their belief systems and fundamental values.

Only when a significant part of the community understands and accepts the need for a new monetary system will the necessary reform become politically viable. Hence it is absolutely essential that those of us who recognise the fundamental problem with the capitalist monetary system express their views as prominently and widely as possible.

Along with changing the monetary system there needs to be active reform of fundamental social expectations including:

- seeing money as a means of exchange rather than accumulated wealth
- replacing the expectation of working hard for money most of our life to one of living a personally fulfilling life
- the status as a person being less about their wealth and more about love and respect of their community
- placing less value on new things and more value on the quality and longevity of things

It is imperative that our governments take a major role in leading the public to understand that the Capitalist system of materialism and economic growth has failed them, but that another lifestyle that entails less material wealth but greater personal fulfilment is possible.

The Energy Transition

As modern humans we are all totally dependent on a highly complex system of production that provides our essential goods and services. That system requires large amounts of energy in order to function. We now face an urgent need to phase out the fossil fuels that currently provide most of that energy because of the need to dramatically reduce carbon emissions and because of the declining supply of all fossil fuels, most imminently oil and gas.

It is not possible to conduct a demographic transition to a self sufficient agrarian society that is not dependent on an energy intensive system of production in the time frame available to us. Such a transition would take lifetimes, whereas the transition will be imposed upon us in decades. Hence, we must replace fossil fuels with energy sources that do not emit carbon with all possible speed in order to avoid the collapse of civilisation.

There are only two such energy sources currently available that are feasible for replacement of fossil fuels on a large scale; Solar Thermal and Nuclear. Both of these produce electricity rather than liquid fuels, which implies that we need to replace our oil powered infrastructure with electric powered infrastructure.

I have reluctantly accepted that countries at higher latitudes that don't have access to high quality solar resources will need new generation nuclear power to meet their energy needs.

This represents probably the greatest challenge ever faced by modern humans due to the sheer magnitude of the infrastructure required and the reality that this work must be done in a world of declining oil supply, declining agricultural productivity and probably other competing priorities due to climate change.

We need to have good quality assessments of the Energy Returned on Energy Invested (EROI or EROEI) before going ahead with any major energy infrastructure. EROI is very useful measure of the benefit to society of using our limited energy resources to develop any particular

energy resource. Much better assessments of the EROI of various new generation nuclear power and geothermal power are needed as a matter of priority.

Even more important than EROI is the practicality of deploying an energy resource on a large scale. Unpredictable power sources such as PV solar, solar thermal without heat storage, wind and wave are not practical beyond about 15% of the overall grid power. It is very unfortunate that these very sources have been championed by many as solution to our energy predicament. Believers in these technologies have been hoodwinked by tokenistic programs by governments and the sales pitch of their developers. They are not suitable for large scale roll out and never can be. We must not waste our precious resources building wind power or PV solar power.

In the early decades of the transition, it may be feasible to greatly reduce our use of fossil fuels but some fossil fuels will be required for the foreseeable future. Coal and natural gas will be required for backup electricity generation for systems with large amounts of solar thermal generation and to meet load swings in systems dominated by nuclear power. In the long term, this backup and swing capacity could be provided by pumped storage hydro generators, but this is another major resource intensive infrastructure project and not an immediate priority.

Even if we achieve the best possible scenarios, we will be forced into lifestyles that are much more energy austere than those we have grown up with. This is due primarily to the much lower EROI of non-carbon energy sources. However, if we work together it may be possible to achieve lifestyles that meet all our needs perfectly well and are potentially far more rewarding than the materialist society of today.

The Transport Transition

All of us living today are highly dependent on the complex system of transport that supplies us with the goods required to keep our complex society functioning. With the coming declines in available oil supply, there is an urgent need to dramatically reduce the amount of transport that our lifestyles entail, as well as to provide replacement systems for essential transport that are not dependent on hydrocarbons.

This will entail a transition

- from oil powered road freight to electric powered rail freight
- from oil powered sea freight to wind powered sea freight
- from transporting food all over the world to mostly locally produced food
- from a car commuting to a public transport and bicycle commuting
- from cheap mass market air travel to expensive and exceptional air travel and mass market high speed rail
- from single occupant car travel to shared car travel and eventually, to a lifestyle without cars altogether.

There is no electric powered alternative to the hydrocarbon fuels for many transport applications including local pickup and delivery services currently provided by trucks, earthmoving equipment, personal travel to rural locations and aviation. Hence we will remain dependent on some hydrocarbon fuels for the foreseeable future.

In gas rich countries such as Australia, compressed natural gas (CNG) is a potential transitional fuel to power the vehicles and machinery required to maintain essential services and build the vast infrastructure required to phase out fossil fuels. However, it is essential to realise that

natural gas is not a replacement for oil as it is already close to peak production on a worldwide basis and will be in very short supply within a few years. Natural gas is a precious resource.

Given the enormity of infrastructure works required and the scarcity of hydrocarbon fuels required to undertake those works, it seems highly unlikely that there will be sufficient resources to replace private cars with electric alternatives. We will need to use a small portion of the existing vehicle fleet for essential travel. Cars will generally be fully loaded when they are used as they are in poor countries today.

In the longer term, a small fraction of the liquid fuel we currently consume could be provided from biofuels. The biofuel that seems most promising is the farming of lipid rich algae on a vast scale. This offers the advantages that it does not compete with food production, does not require fresh water and draws down CO₂ from the ocean.

In every case, the transition involves reducing transport overall and adopting more locally based lifestyles. As new renewably powered transport systems are established, there may well be a re-establishment of recreational travel but this would entail a much smaller number of trips, each trip taking up a longer period of time. Overseas travel will become a significant undertaking, much as it was in the 19th and early 20th centuries.

The Food Transition

We will soon face a worldwide food crisis of unprecedented scale. However organic farming has vast potential to simultaneously:

- reverse the loss of fertility of our agricultural land,
- reduce dependence on industrial fertilizers and oil,
- reduce the amount of water needed by improved soil water retention,
- reduce atmospheric CO₂ by sequestering vast amounts of carbon in the soil,
- improve the self sufficiency of food production in poor countries.
- provide much more opportunity for people to be employed in food production.

The technology of making 'Bio-char' (essentially activated carbon) from any available plant material and introducing it to the soil, shows great promise as a means of greatly improving soil fertility and directly sequestering large amounts of atmospheric carbon in the soil. The process of creating the Bio-char also produces high grade renewable energy that can be used for electricity generation and other uses. This technology rapidly improves the fertility of depleted soils and can provide a major boost to organic farming. It justifies a major research and development effort to investigate its practicality on a vast scale.

What is now required is a monumental effort by the wealthy countries to work together to develop these organic farming methods around the world so as to have any chance of feeding the population of the planet going forward and developing the food security that is crucial to population stabilization and reduction over time.

The new economy proposed here will not produce anywhere near the levels of employment for people in cities as the capitalist system has. However, the organic agriculture proposed will require far more human labour than the present industrial agriculture, particularly in a world of declining oil supply. Over the coming generations there needs to be a migration of people from the cities to the food producing areas so that they can work the land and be closer to their food

supply. However, it must be understood that this is not a solution to the current emergency; it will take generations to unfold.

The Transition to Equilibrium

The proposals put forward in *Step 2: Building the Infrastructure Needed for the Future* all involve real economic growth. However, the fundamental problem with Capitalism is its dependence on growth, which can not continue due to the limits of a finite planet.

Growth is inherently a transitional phase of the life of any system. In order for any system to be sustainable it must achieve equilibrium with the environment within which it functions. So we must plan for the phase out this growth as the infrastructure projects and supporting systems are completed.

Growth requires resources and human productivity and as it reduces towards zero to achieve an equilibrium state, the resources consumed and the human productivity required are reduced accordingly. Simply stated; far less human labour is required to maintain an equilibrium economy than a growth economy.

Hence we need to transition to a lifestyle where far less of our time is spent working and far more is dedicated to fulfilling our human potential through other means, which could include involvement in music and the arts, philosophy, inventing new toys, recreational travel and involvement in our local communities, particularly in support of our elderly people.

We are all deeply socially conditioned to believe that we must work hard most of our lives. The need to work hard most of our lives actually arises out of the need for labour to maintain economic growth and to pay the interest on the ever expanding debt that is inherent to Capitalism.

In the proposed new economy, there would be no interest on debts, almost no debts to be repaid, far less material consumption and far lower income required to meet our needs. We need social policies to promote job sharing, part time work and early retirement so as to transition to lifestyles involving far less work per individual.

In order to achieve equilibrium, we must develop systems to almost entirely eliminate waste including:

- Phase out of disposable food packaging in favour of containers that are durable and re-usable or made from plant material and completely biodegradable.
- All manufactured goods must be designed for maximum lifespan and designed so that, as far as reasonably possible, they can be disassembled into recyclable components at the end of their viable life. Materials such as current fibre-glass and resin composites, which cannot be separated into recyclable materials, would be rigorously avoided.
- Phase out the discharge of sewage into the sea in favour of returning the water and the nutrients it contains to the land.

Conclusion

More than any other time in history, mankind faces a crossroads. One path leads to despair and utter hopelessness; the other, to total extinction. Let us pray we have the wisdom to choose correctly. - Woody Allen.

We find ourselves locked in to an economic system that is destroying our planet and hence ourselves primarily because we do not know any other way to deal with the problems we face. Our response is always to vigorously pursue the strategies that have been successful in the past - the strategies that have led to the current emergency. Thus we continue to dig deeper into the hole we have made for ourselves.

Capitalism is so deeply entrenched in our belief system and cultural expectations that we collectively deny the obvious signs that it is destroying us and continue hold faith in it. Consequently, there can be no fundamental reform until there is a failure of the system so profound that the majority is forced to face reality and re-appraise their belief in the capitalist system. *The economic collapse now unfolding is our only opportunity to transform the system.*

We now stand at a juncture in history where we have two choices; we can choose to use the opportunity created by the economic collapse to come together as a global community of nations to enact prudent fundamental reforms that will maximise our chances of survival, or we can choose to hold faith in Capitalism, continue to pursue our selfish national and personal interests and continue down our current path until the collapse of civilization and much of life on Earth becomes inevitable.

The Sustainability Emergency is so advanced and so dire that a disaster involving the deaths of billions of people, many more species and entire ecosystems may be unavoidable. However, we are far more likely to achieve the 'best possible' outcome if we choose to acknowledge reality, manage the emergency, and dedicate our remaining resources to a transformation to a sustainable society.

However the story unfolds, the transition to post-capitalist society will be a tumultuous undertaking in cultural change on an unprecedented scale. However, it's not quite as bad as Woody Allen says; beyond this time of great upheaval, there lies the possibility of a much fairer society than the one we have today – *but only if we resolutely dedicate ourselves to building it.*

Such a sustainable society could never provide the material affluence that the beneficiaries of Capitalism and cheap fossil fuels have enjoyed, but a well managed and just world where resources are shared equitably can provide for our needs and enable more personally fulfilling and generally happier lives than those of our current society addicted to the treadmill of endless economic growth and materialism.

The collapse of Capitalism offers us an opportunity to overcome the power of its belief system and to choose Societal Transformation over Societal Collapse.