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### **Reframing Sustainability**

#### **Abstract**

Over the last quarter century, since the Brundtland Commission proposed their definition of ‘sustainable development’, the dialogue about sustainability has failed to reduce the threat that human activities pose to the global ecosystem. The time has come to question deep-rooted assumptions, including the role of economics. In this paper, priorities are re-examined and principles developed to be able to build a sustainable economy. It is argued that sustainable economics is subservient to society’s higher objectives and is about control and balance, rather than laissez-faire free markets. A conceptual model for sustainability is proposed that is closer to reality than the traditional model consisting of three pillars of society, the economy and the environment. This more integrated model has cornerstones of ‘culture’, ‘land’, ‘population’ and ‘energy’. Using this model allows economics to be repositioned in support of the needs of society and compliant with effective stewardship of the ecosystem.

Energy is the most challenging aspect of the transition to a sustainable economy, because the distortion to the economy arising from fossil-fuel dependency is considerable, and the consequences of fixing it are huge. Fossil fuel dependency is a seriously dangerous addiction; it is argued that the pain of curing it cannot be avoided and should be faced without further delay.

A renaissance in economics is possible but neoclassical economics has to be challenged to make way for new economic models. Many blocks of economic policy will survive but need to be repositioned around the cornerstones of sustainability to provide the integrated model required to steer human affairs out of the current crisis and onto a safe track.

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# Reframing Sustainability

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## 1.0 Introduction

The peoples of the world are rushing headlong into the future measuring progress by economic growth based on increasing consumption within an increasingly globalised and connected economy. It has become apparent that current policy is failing on many levels: biodiversity loss has accelerated, climate change continues unabated and, despite using economics as the focus of policy, the global economy is struggling. The dire prediction made in 1972 – that the economy and the ecosystem would collapse around the middle of the 21<sup>st</sup> century<sup>1</sup> – is no longer outlandish. There is a real possibility that civilisation is sleep walking into a terrible crisis (McManners 2009). It is human nature to be optimistic, and not to take doom mongers seriously, but it would be wise to shift off the current track and onto a safer trajectory.

The idea that sustainability could be the basis of a solution – defined broadly as a balance between the economy, society and the environment – is widely shared but agreeing a realistic way forward is proving difficult. The time has come to question assumptions and make a fresh start.

The assumption underpinning this paper is that sustainability is vital to the future of society. There can be little doubt that this is a safe assumption because by definition an unsustainable society has a limited lifespan. Clearly we want society to continue, so it should be possible to agree that putting sustainability as the foundation of policy is the correct course of action but sustainability does not arise by default; it requires active engagement with the policy process. Human society has important choices ahead in ensuring that civilisation is sustainable into the foreseeable future.

The aim of this paper is to reframe the foundations of sustainability.

## 2.0 Reflecting on Rio +20

In 2012, the United Nations Conference on Sustainable Development returned to Rio de Janeiro, the location of the 1992 Earth Summit, to review progress. The report from UNEP on the state of the planet, globally and regionally, was ‘cause for profound concern.’<sup>2</sup> ‘Harmful environmental changes are taking place in an increasingly globalized, industrialized and interconnected world, with a growing global population and unsustainable production and consumption patterns. The degradation of ecosystem services is narrowing development opportunities and could threaten future human well-being’ (UNEP 2012:458).

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<sup>1</sup> ‘Limits to Growth’, Report for the Club of Rome (Meadows 1972).

<sup>2</sup> Achim Steiner, Executive Director, United Nations Environment Programme (UNEP 2012:xvii)

At the conference, the United Nations Secretary-General's High-level Panel on Global Sustainability<sup>3</sup> launched their report, 'Resilient People, Resilient Planet' (UN 2012). This outlined the challenges of sustainability and reaffirmed plans to deal with them, listing 56 recommendations which 'seek to establish... a world in which a sustainable, inclusive growth provides more for less, for all.' The report captures a wide range of aspirations but is a continuation of the same dialogue started in 1987 by the World Commission on Environment and Development (WCED), chaired by Gro Harlem Brundtland, with their report 'Our Common Future' (WCED 1987). The dialogue has failed to resolve the crisis over the intervening period of 25 years; it is reasonable to deduce that the dialogue is in some way flawed.

The discussions around sustainability are underpinned by a number of assumptions which, although not stated explicitly, are deeply engrained in the policy silos of world society. From these assumptions discussion takes place and policy options are considered but solutions are proving to be elusive. Perhaps these implicit assumptions are the blockage; in which case it would be useful to bring them to the surface. First, the primary assumption is that neoclassical economics<sup>4</sup> remains the bedrock of policy. Second, it is assumed that the changes required will be an evolution from current policy. Third, population growth is assumed to be an unalterable fact. These implicit assumptions should be challenged with the aim of improving clarity and placing sustainability on firm foundations.

Free market fundamentalism is no longer appropriate as the bedrock of economic policy. The world has reached the current impasse partly as a consequence of two decades of feverish defence of the current economic model. The crisis that erupted in 2008 should have exposed blinkered adherence to the conventional economic framework as no longer defensible but, instead of looking for a change of direction, world policy makers worked at reinforcing the existing system. The High-level Panel on Global Sustainability argues, 'Achieving sustainability requires us to transform the global economy. Tinkering on the margins will not do the job'. Quite so, but implicit acceptance of the current economic model eliminates the possibility of transforming the global economy.

In addition to defence of the conventional economic model, there is an implicit assumption that sustainability will be a smooth evolution from the economy and society as it is now. This makes analysis easier because it accepts the reality observed and considers ways to adjust to changing circumstance and altered priorities. This may be convenient, but the assumption of steady evolutionary change filters out potentially valuable solutions. In particular, dealing with fossil-fuel dependency will require a step change in the way the economy operates. Revolutionary change is disruptive and unpredictable so may not be the policy maker's first choice but it is not justified to rule out a revolution as the degree of change required and urgency may warrant it (McManners 2008).

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<sup>3</sup> United Nations Secretary-General's High-level Panel on Global Sustainability, launched in 2010, Co-Chairs: Tarja Halonen and Jacob Zuma.

<sup>4</sup> Neoclassical economics based on free markets and assumptions that people make rational choices to maximise their circumstances.

A third implicit assumption – which can be a sensitive issue – is population growth. Population is a critical factor in sustainability: the more people, the more their demands and the greater the load on the planet. Population predictions made by the UN should be regarded as indicative of continuing with current policy but not lodged as an unchangeable outcome. Policy that could hold world population in check would obviously make living within the resources of planet much easier and has such huge potential that it must be part of the solution.

Examination of the Rio +20 process shows that implicit assumptions are holding back consideration of radical solutions. There is hope that renewed commitment to existing policy objectives, such as the Millennium Development Goals, will be sufficient, but the facts belie the hope. During the twenty years since the Rio Earth Summit, the pace of ecosystem destruction and resource depletion has increased. Instead of renewing efforts to deal with the symptoms the world needs to rethink its strategy and tackle the cause. Recognising that discussion has stalled sets the scene for a reappraisal of priorities to lay new foundations of sustainability.

### **3.0 Perspectives on Sustainability**

There are competing interpretations of sustainability<sup>5</sup> as the concept impacts every area of policy and every sector of the economy. The universality of the policy is both its strength and its weakness. Sustainability could be the overarching policy framework to which all other policy conforms. On the other hand, if the term sustainability is allowed to morph to fit a wide range of circumstances, it could lose any real core meaning.

#### *3.1 Development Policy*

*‘Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.’*

This definition has become the prevalent definition of sustainability since it was first put forward by the WCED (1987). The Brundtland commission went on to argue that the environment and development are closely linked:

*‘...the "environment" is where we live; and "development" is what we all do in attempting to improve our lot within that abode. The two are inseparable.’*

This was an important step forward to record formal recognition of environmental issues in development policy which, until then, had been focused primarily on economic outcomes. The context was deliberately people-centric including the concept of 'needs', in particular ‘the essential needs of the world's poor, to which overriding priority should be given’. This has been the foundation of policy for development over the last three decades (UNCTAD 2012) but the concept of sustainability now needs to advance to recognize that the planet has limits that have to be respected as an overriding constraint on policy.

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<sup>5</sup> Söderbaum 2012.

The old model of development aid encouraged replication of the economies established in the developed world. The Brundtland Commission is credited with changing the emphasis away from a narrow economic focus to a balance between economic, social and environmental policy. However, the assumption remained that the developed world has the economic model that poorer countries should aspire to adopt, following the same path of industrialisation that underpinned the wealth of Western societies. The providers of aid wanted to share their model of success and the receivers of aid were attracted by the apparent benefits. The inherent contradiction, that it would be impossible for people across the globe to live the consumerist lifestyles of a typical European or North American, has been slow to emerge.

In hindsight, it is obvious that the consumption levels of the world's richest economies cannot be replicated widely without stripping the planet bare. Idealists have put forward the concept of 'contraction and convergence'. As the poorer countries develop and grow consumption, the rich countries rein back on consumption so that rich and poor converge on an equitable fair share of the planets resources. This has intellectual appeal but takes little account of political and cultural realities.

A more realistic way forward is based on setting policy that suits the country, its people and its resources. This is a radically different approach leading to a much wider variety of national policy frameworks. It is not an easy lesson for givers of aid to accept that they should intrude less to encourage sustainability from the bottom up (Glennie 2008).

The term 'sustainable development' arose in the context of aid from world institutions and rich countries to poorer countries according to rich-world assumptions. As sustainability becomes better understood, development policy needs to change in favour of respect for a country's right to build a sustainable society based on their values, their people and their resources. Development should always be sustainable but sustainability does not need to include development.

### *3.2 Government Perspective*

Governments are beginning to attempt to adopt sustainability as overarching policy (EU 2009). At the national governmental level it has always been necessary to balance economic, social and environmental issues. Finding this balance is easier the lower down the hierarchy of society to small communities where it is natural to consider all aspects of policy and broker solutions. At the higher administration levels there need to be explicit linkages which are often lacking or weak. An example of progress is placing climate change and energy policy within the same government ministry.<sup>6</sup> As policy is connected it should also be balanced, but too often a heavy focus on economic outcomes is allowed to dominate over social and environmental issues. A key problem for national governments is the lack of a framework for sustainability at the international level making it hard for national governments to set sustainable policy.

International policy operates in stovepipes through separate organisations with divergent objectives. For example, the UNEP deals with environmental policy, the IMF focuses on

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<sup>6</sup> In the UK, the Department of Energy and Climate Change (DECC) was created in 2008.

finance and the WTO on trade. Connections are ad hoc and a global conceptual framework for living within the resources of the planet has yet to emerge. It will become much easier for national governments to set sustainable policy if the world could agree on what comprises macro sustainability. As government struggles to understand what sustainability means from the top down, it becomes very difficult to craft policy and impossible to persuade the electorate of change that alters the status quo.

### *3.3 Business Perspective*

The growing awareness and concern about environmental issues within society is forcing industry to take notice. Sustainability has become linked with corporate social responsibility as corporations seek to defend the business and safeguard their reputation. This is a reactive approach with corporations focusing on saving costs and selling 'Green' products or services. Business will respond to the changing situation but is reluctant to lead substantive change because the commercial parameters are uncertain.

### *3.4 Non-Governmental Organisation (NGO) Perspective*

Across the NGO community connected solutions under the umbrella of sustainability are seen as the way ahead but, as with government and business, the lack of a coherent global narrative leads to poor coordination and in some cases conflicting actions.

A broad coalition is emerging that sustainability is important, even necessary, but an agreed model of sustainability is required such that government, business and NGOs can share the same core framework. This framework will necessarily encompass broad swathes of policy but should focus on the skeleton which remains firm whilst the detail is fleshed out through experimentation at the community, national and regional level.

The key concept is that the planet has limits, or tipping points, which cannot be exceeded if damaging and disruptive change is to be avoided (Rockström et al 2009). The observed changes in the climate are symptomatic that the world is pushing against these limits. Instead of the broad aspirations of progress for all people under the Brundtland definition of sustainable development, a tighter definition is needed that incorporates planetary limits.

These different perspectives show that the term sustainability is used in a range of contexts and across many areas of research and policy making. For sustainability to deliver on its potential, it has to be reframed focused on the key priorities.

## **4.0 Priorities**

The traditional model of sustainability encompasses the economy, society and the environment in one policy framework. Such broad policy requires clear priorities if it is not to become unwieldy and impracticable. This discussion of priorities leads to a tighter definition of sustainability.

### *4.1 Economics*

Policy in the modern world is biased towards economic outcomes on the assumption that economic progress is an effective proxy for human progress. It therefore seems natural to

start an examination of priorities with the economics of sustainability. The first insight is fundamental, that the established conventional economic framework based on growing the economy and increasing consumption, for all its other merits, is inherently unsustainable. The assumption that economic progress equates to increased human welfare unwinds when the economy comes up against resource limits. Consideration of sustainability exposes a narrow focus on economic objectives as policy with a limited time horizon that over the long-term is often exposed as a delusion. Environmental impacts and depletion of non-renewable resources are left outside economic policy and become time bombs waiting for future generations.

Amongst many economists the required response is to bring these missing elements inside the economic framework. Perhaps so, but there is a more fundamental insight, which is that economic outcomes should not in themselves be policy objectives; economics is a tool to deliver policy objectives. This should always have been the case but a focus on economic outcomes has obscured this simple truth.

In many situations, carefully crafted economic tools is the most practical and effective method to deliver desired outcomes but there are other situations where decisions should be taken and policy enacted where economics are secondary. An example is designating areas as national parks with strong legal protection to ensure they are protected from exploitation by the demands of the conventional economy.

There is a significant difference between bending the conventional economic framework towards sustainability and recognising that the role of economics is secondary to higher policy objectives. The true starting point for teasing out the priorities of sustainability is not economics.

#### *4.2 Environment*

There is a strong argument that ‘environment’ should be the main priority of sustainability because whatever else human society achieves we are ultimately totally dependent on a healthy ecosystem. For most of human history, the continuation of ecosystem services was a safe assumption. Human activities were limited in scale and used low technology, so human demands were small compared with the scale of the planet and waste was by default biodegradable. There was no need to respect the limits of the planet, but modern society is of such scale, and has such advanced capabilities, that the planet’s natural processes are at risk of damage.

The changes inflicted on Planet Earth by human activity are hard to predict with certainty, particularly at the local and regional level. Already the climate is changing and society in many places will have to adapt. Geo engineers are discussing ways to control or reverse the changes but this will be hard and the outcomes uncertain. We have one planet and we will have to live with the consequences of the experiments we run. There is only one safe policy, which is to respect the limits of the planet to avoid damage to the ecosystem.

The logical deduction is that living within the limits of the planet should be the overriding priority to secure a sustainable future for human society. It may be logical but that does not

make it easy. In the rich world, there is scope for people to support policy to conserve the planet but the changes required impact lifestyle so there is a difficult political argument to win. In very poor countries, where mere survival is challenging, it is not easy for the poor to adjust to live within planetary limits; people will do whatever is needed to feed their family. Across the world, living within planetary limits has to be the prime aim of sustainability policy – otherwise other policy objectives are doomed to fail – but persuading people of the necessity of such policy requires that the social component of policy is given a high priority.

#### *4.3 Social Provision*

In order that a community or society has the capability to play its part in living within planetary limits, requires that sufficient social provision is provided such that livelihood is safe and secure. Desperate people do desperate things without considering the long-term consequences. People with secure lives are able to consider the needs of future generations looking at the future through the eyes of their children and grandchildren.

The absolute measure of resources people need to live is small, comprising enough food, enough to drink and shelter. Relative need is much more problematic as people judge what they have in relation to others initiating a spiral of competitive consumption. It has been shown that increasing income for the very poor leads to increased well being and happiness but at higher income levels the correlation breaks down (Layard 2005). People get richer but they do not get happier. Consumption does not bring happiness so measures of consumption should not be used as a measure of human well being. Quality of life, not quantity of consumption, should be the aim of social policy.

Discussion of social provision would not be complete without mentioning population. The more people drawing on a resource pool, the less available for each person. The reverse corollary is that the fewer people for any given resource pool the more available for each person. Living within the limits of resources correlates directly with population. Population policy is therefore a cornerstone of sustainability.

#### *4.4 Definition of sustainability*

The conclusion of this examination of priorities leads to this definition of sustainability:

*Sustainability is the delivery of quality of life in a way that safeguards the global ecosystem for the benefit of future generations.*

Recalibrating economics requires working to this definition. It is not about quantity but quality in people's lives within the prime constraint to live within the limits of the planet.

### **5.0 Repositioning economics**

In text books of economics, Adam Smith is credited as the father of economics. His book, the Wealth of Nations (1776) laid out many of the principles of economics that are still used today, but his other great book was The Theory of the Moral Sentiments (1759). Adam Smith was not an advocate of heartless economics based on greed and narrow economic objectives. Writing two hundred years ago, he assumed a cohesive and well ordered society. His ideas



were a tool to improve the efficiency of that society; he would be horrified to find that instead of economics serving society, economic had become the master. If Adam Smith were alive today I believe he would disown the distorted economics of today and insist that it be brought back to its roots.

A world in which conventional economic models drive policy does not look attractive to a manual worker in the rich world who has lost his job or to a Chinese peasant whose land has been appropriated to build a factory. These are the evident losers of economic globalisation but we are all losers is the dash for growth that ignores the global environmental consequences. Economics has becomes divorced from the realities of the planet and human society. Fortunately, people are more complex than rational machines simply seeking to maximise economic benefits. From an economic perspective, choosing the less-than-ideal economic choice is seen as weakness but this is not human frailty but human strength to see beyond narrow economic interests.

Economists are inadvertently blocking sustainability (see Box 1) and risk losing respect by building complex theoretical models and equations that are only intelligible to fellow economists. Policy makers are persuaded to follow the advice of economic advisors without being able to see for themselves through the fog of complexity. With the current problems, the statement, “Trust me I’m an economist” is sounding increasingly hollow.

### **Box 1 Economists blocking sustainability**

Two incidents from a recent conference<sup>7</sup> focused on environmental issues illustrate the problem of economists inadvertently blocking progress.

First, an economist with a role advising the UK government was involved in a discussion about carbon markets. The advisor had a superficial understanding of the high-level sustainability objective of ameliorating climate change. The economic objective was foremost: to reduce costs to industry and establish London as a leading carbon market. The market mechanism being proposed would be unsustainable, increasing reliance on fossil fuel and smoothing the transition from clean to dirty fuels. This economist was acting within the limits of his expertise and knowledge, unintentionally blocking the sustainable policy discussion.

Second, an economist and chair of a break-out session on responses to the climate crisis encouraged free thinking with the ‘only’ limitations that “whatever is proposed must not cost more or interfere with the principles of free trade.” These limitations effectively neutered the discussion ruling out any realistic resolution of the fundamental problem.

When economics is used as the headline driver for policy it tends to act as a block. This illustrates the importance of understanding high-level policy objectives before crystallizing the economic policy options.

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<sup>7</sup> The conference is not identified to protect the identity of the economists in the example. A general point is being made without wishing to denigrate any particular individual.

Economics has grown into a self-serving intellectual discipline divorced from reality to such an extent that conventional economics has become a block to progress. It will need to be repositioned and many 'rules of thumb' put aside to build a new economic framework relevant to the challenges of the 21<sup>st</sup> century.

## **6.0 Principles of Sustainable Economics**

The study of economics seeks to codify complex human society into a framework of numbers and equations. It can only ever be an approximation of reality; and when an economic model fails to match reality, the economic framework should be rewritten. Adherence to the current economic framework has put society on a track that conflicts with higher objective for the planet and its people. The economic framework therefore needs to be rewritten and existing policy questioned.

It would be presumptuous to suppose that one person, one team or one nation could codify the new economic framework, especially since the framework should be flexible to allow each country to build a sustainable economy that suits its needs, resources and culture. However a common skeleton of principles would be useful to set the foundations of a sustainable economy.

### *6.1 Subservience*

The first principle of sustainable economics is that it is subservient to the needs of society and the challenge of living within the limits of the planet. This requires a change in the mindset of policy makers brought up to believe that economics trumps other policy. Some economists might ruffle their feathers at fear of losing primacy in the policy debate but less arrogance and more openness to different economic solutions is how economics can find relevance to the challenges of the 21<sup>st</sup> century.

### *6.2 Control*

Economies are inherently complex and chaotic but economic policy needs tools that provide an appropriate degree of control. This should not be a model of central control which is known not to work through examples like the Soviet Union and North Korea. However recent experience has shown that market fundamentalism with few controls and light-touch regulation is also flawed. An economy without controls is an economy out of control. Even if this economy seems to be doing rather well, it is in danger of crashing with little policy makers can do to prevent it. Policy makers need tools to wield in flexible ways to deliver desired policy outcomes with reasonable certainty of maintaining macro stability. To work successfully in support of sustainable policy, economic tools should be intelligible to the non-economist, in other words simple and transparent. Complex financial arrangements where the reality is obscured and risk is unknown are not useful. Transparent control mechanisms which provide stability and security are preferable to laissez-faire economic arrangements which may produce greater short-term returns but suffer occasional massive instability and possible collapse.

### *6.3 Balance*

Sustainable policy decisions should be balanced to deliver the needs of society in conjunction with sound environmental stewardship using appropriate economic tools. A common method of development is to start with a project proposed on economic grounds; then consult on the social issues that arise and finally commission an environmental impact assessment.

Although widely used this is an unbalanced approach. From an economist's perspective, working with balanced sustainable policy can be frustrating because the most economic solution will often not be the most sustainable solution. This policy reversal will take time to be accepted and embedded in society. For each decision, the issue becomes how to make the most sustainable option economically viable. This is markedly different to seeking to make the most economic solution sustainable.

Rebuilding national economies according to these three principles will lead to a different world economy. Exactly what it looks like will evolve but almost certainly there will be greater national autonomy and greater variety of national economies as a natural consequence of sustainable policy. This new economy will have different solutions for different countries, which is how it should be, but through the lens of the old economics there will appear to be economic inefficiencies. It will take some time to accept the new thinking. For example, a country that chooses to run a low consumption, agrarian economy adopting objectives such as full employment and a healthy happy population should be free to do so, without outsiders forcing them down the path of industrialisation or insisting their markets are opened to cheaper agricultural produce from other countries.

## **7.0 Foundations of a Sustainable Economy**

The model of sustainability widely employed consists of three pillars of sustainability: the economy, society and the environment. This has been a useful concept to bring these three areas into one model but it also perpetuates the idea that the three are separate. The three are linked, interdependent and cannot stand alone so we need to move onto a model closer to reality. The model proposed here is made, not of pillars but cornerstones to set the shape and structure of the new integrated economy. The corner stones are:

- Culture
- Land
- Population
- Energy

### *7.1 Culture*

Culture is at the core of human existence and pre-dates the concept of an economy. Cultures evolve over time to match the circumstances of the community responding to geographic location, availability of resources and history. There are therefore a wide range of cultures reflecting the diversity of the geography of the planet. For example the culture of the United States derives from its relatively recent expansion as settlers from Europe advanced across a continent of apparently limitless resources from the East to the West coast across thousands

of miles of virgin territory. This culture has built a powerful country and a strong economy but it is not a culture appropriate for countries with different circumstances.<sup>8</sup>

In Europe, the fault lines in the euro zone can be traced back to the culture clash between the Mediterranean countries, where society norms derives from a benign climate and easy living, and the countries of northern Europe where discipline derives from the need to survive a long harsh winter. These cultural differences have a purpose so society can adjust to its circumstances. Attempting to override culture to implement the economic benefits of a single currency has proved difficult and conflicts with sustainable policy. Retaining cultural diversity is not simply the preservation of heritage but a necessary part of macro sustainability (McManners 2010:108).

The adoption of economics at the core of policy has, not only tended to overlook culture, but had cultural implications as the economic assumption of maximizing behaviour has taken hold. Educating people in modern economics encourages people to be greedy and put self-interest first so that this becomes normal, even expected behaviour.

Sustainability requires a culture based on quality of life (not quantity) and valuing community above self. These are common attributes of long-standing cultural norms which survive into the modern world when people do what they feel is right. Altruism and selfless behaviour does not fit the conventional economic model but society would be a dull and dangerous place without such cultural hangovers.

The economy that suits a particular country is closely linked with the culture that pertains. Imposing economic policy packages across cultural boundaries is not sensible, and not sustainable. A prime example is the Washington consensus policies widely recommended as the 'best' policy package for a modern economy but this prescriptive approach often fails to deliver as intended in different national contexts (Gore 2000). The culture of a society should be respected and economic policy selected to fit. Economic policy should not be dictated by people from outside the country with different cultural background and influenced by different experiences of resource availability.

## *7.2 Land*

When the human population was small the continents of the world seemed like a limitless resource but it is now clear that land is a finite resource and a fundamental constraint on society and the economy.

The monetary value of land is based on the income that can be derived from it. Urban land is the most valuable, able to command a high rent; agricultural land is the next most valuable category because it produces cash crops; land left for nature has no monetary value within the conventional economic system.

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<sup>8</sup> The modern culture of the United States, which has been so successful until now, replaced the indigenous culture of the Native Americans who had deep respect for their place within the natural world. The United States now faces the challenge of rediscovering this respect and melding it with modern aspirations.

Sustainability values this resource differently, as land is vital to the stability and security of the global ecosystem. Nature reserves are a part of the solution but it is not enough to have isolated enclaves of biodiversity if the economy is allowed free rein to maximise the value of the surrounding land. The result would be a checkerboard of concrete and intense agriculture. Sustainable land policy requires corridors connecting nature reserves and rebuilding biodiversity within agricultural and encouraging nature back into cities. Agriculture becomes a vital business, not just to produce food efficiently but also to increase the resilience of the ecosystem.

The economic consequences of sustainable land policy include acceptance that sufficient land is kept out of the economy as a permanent home for nature. The economic framework has also to support sustainable farming and facilitate drawing biodiversity into the spaces occupied by humans. This is vital to protection of the ecosystem but fortunately is also a way to increase quality of life. Ways have to be found to bend economics away from simple exploitation to a complex system of land management that delivers what humans need and conserves the ecosystem.

The economics of land has to be subservient to sustainability, controlled through legislation and balanced between the categories of urban, agriculture and nature. Mechanisms like an urban-eco balance tax (McManners 2010) can use economics to facilitate linking human needs with the needs of nature to reintegrate society as an integral part of the ecosystem. Land is not simply a means to derive an income but the basis of human survival and the economic framework needs to be carefully crafted to preserve its true value which is not captured in monetary terms.

### *7.3 Population*

Load on the planet = population x consumption

This simple equation is the most important equation in the economics of sustainability. As the world population expands, and individual consumption climbs, the load on the planet increases. Already humans are consuming 150% of the ecological capacity of the planet (Global Footprint Network 2012) and the upward trajectory continues. To live within the limits of the planet, either population has to reduce or individual consumption diminish, or both.

Economic globalisation has encouraged the idea that open global markets will always provide enough, undermining the natural process of communities finding balance between population and available resources. Society has developed complex ways to hold population in check as people observe the opportunities for their children and plan accordingly, but these informal methods are undermined when the link with resources is severed.

Sustainable policy requires focussing on population with each country crafting population policy appropriate to its circumstances. In developing countries, where the challenge is most intense, this is likely to include improved care for the old (so people do not need large families for a safe old age) and education for girls so that women know how to limit their fertility and have career options other than child rearing. In developed countries it may

suffice to alter the tax and benefit system to include disincentives to having more than two children.

There are economic consequences of population policy. First, rising population is not the benefit that conventional economists report when using the language of rising GDP, increasing number of workers and more consumers. Rising population is an increasing liability to provide resources over people's lifetime from birth through working age to retirement. An example is India with its expanding population, which is often reported in terms of its growing work force and associated increasing influence in the world economy. In reality India has a huge looming problem to feed the aspirations of these people in a world of tight resources. Population has the economic characteristics of a liability not an investment. Second, sustainable population policy leads to an ageing population as governments find they can squeeze birth rate lower combined with healthcare improvements leading to people living longer. Through the tunnel vision of conventional economics, it can be argued that ageing population is dealt with through encouraging immigration and providing incentives to increase birth rate. The first principle of sustainable economics is that economics is subservient to the needs of society. Sustainable economic policy has to embrace the demographic shift to an ageing population not seek to prevent it.

Sustainable economic policy for population recognises population as a liability; seeks to hold population in check and embraces an ageing population as integral to the new economy.

#### *7.4 Energy*

The most unbalanced policy within the global economy is energy, where long-standing reliance on fossil fuel has both distorted the economy and become a threat to the ecosystem. Another cornerstone of sustainable policy is therefore energy.

Fossil-fuel dependency is the most challenging aspect of sustainable economics, at this point in history, because the distortion to the economy is considerable and the consequences of fixing it are huge.

It is clear that fossil-fuel dependency must end, either because supplies run low or because the consequences for the climate are so severe that people will no longer tolerate its use. Sustainable policy requires deciding the sustainable solution and targeting economic policy to deliver. The sustainable solution is to dismantle the fossil fuel infrastructure and replace with low-carbon infrastructure within a timeframe that prevents damage to the ecosystem. If the warnings from the 1970s oil crisis had been heeded we could now be living in an economy less dependent on oil.<sup>9</sup> But it was not understood, at the time, how environmental risk increased the gravity of the situation. Now that we fully understand the problem, it is urgent to use policy to force an early transition.

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<sup>9</sup> The oil crisis of the 1970s exposed the risks of reliance on foreign oil and started a transition to other energy sources but when the crisis ended oil supplies looked secure (and cheap) the transition stalled. Infrastructure tends to be replaced within a 40-year cycle so if the move away from oil, considered in the 1970s, had been followed through we could now be living in an economy no longer dependent on oil.

The modern economy is heavily dependent on fossil fuel with coal used widely to generate electricity and oil for transport systems as well as feedstock for plastics and fertilizers. Immediate withdrawal of fossil fuel would collapse the economy.

The cost of fossil fuel is the source of the long-standing problem because the economy has developed on the assumption that energy is cheap. For example, instead of constructing buildings designed carefully to fit the climate, architects put forward designs knowing that systems can be bolted on to heat or cool the building as required. The transport infrastructure has expanded to include the air freight of vegetables between continents because it is affordable. Farmers boost output using industrial practices and fertilizer derived from fossil fuel, rather than manage the complexities of sustainable farming, because fuel is cheap.

The fossil-fuel economy is not sustainable but it is deeply engrained and no one alive today has experience of a different economy. The global fossil-fuel economy has also unbalanced the world financial system with huge capital flows to oil producing countries. As demand outstrips supply, these capital flows will increase. Consuming countries are building up long-term debt to keep the fossil fuel economy running taking cash out the economy which could be invested in building the economy beyond oil. The countries represented by the Organization of the Petroleum Exporting Countries (OPEC) increase production to keep oil affordable and defend their unsustainable position for as long as possible. Producers and consumers of oil are locked into an outdated economic model that preserves the status quo.

### *7.5 Replacing the fossil-fuel economy*

Until recently, the CO<sub>2</sub> emitted as a by-product of burning fossil fuel did not have cost implications. This anomaly was not exposed because CO<sub>2</sub> is not a pollutant in the normal sense but a component of the natural processes of the planet. The problem is not CO<sub>2</sub>, but the excess of CO<sub>2</sub> in the atmosphere which is at record levels and continuing to climb. The solution requires concerted action to rein in the global fossil-fuel economy.

For over 200 years, on a project-by-project basis, the infrastructure of the modern world has been built predicated on cheap fossil fuel. Over the next few decades this infrastructure will have to be withdrawn and replaced on a project-by-project basis with low-carbon technology. There is ample renewable energy<sup>10</sup> from the sun, the wind and tides but harvesting it is harder (and more expensive) than extracting easy oil and coal. Energy in a sustainable economy will therefore cost more – perhaps substantially more – supporting not just renewable energy harvesting but also forcing frugal use of energy to peg costs.

Conventional economics leads to the often-quoted metric that for renewable energy to be viable it must cost less than coal. This is another example of a blockage to sustainable policy put in place by economists.

The sustainable solution is to dismantle the fossil-fuel economy and replace it with a low-carbon economy. The economic tool that can be employed to deliver this high-level policy

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<sup>10</sup> It would be hard, if not impossible, to deliver the same quantity of energy we draw from the wasteful use of cheap fossil fuel, but there is ample renewable energy for an appropriately configured sustainable economy.

objective is to increase the price of fossil fuel on a steep upward trajectory according to a timetable published in advance to give firm foundations to investment decisions. Overall, energy will cost more and the economy will have to adjust; in many cases limiting overall costs through a step change in energy efficiency.

Leaving it to the market price of fossil fuel would also eventually drive change but, as supplies are constricted, the increased cost would be transferred to the treasuries of oil-rich countries. Governments would find it very hard to invest in low-carbon public infrastructure and support improvements in energy efficiency of the housing stock. Pre-emptive government action to control the transition could keep oil prices low through the transition as demand is choked off faster than supplies are depleted.

It will take decades to replace the physical infrastructure of the fossil-fuel economy but the conceptual economic framework can be provided almost overnight. The economic policy to deliver the transition to renewable energy is taxation of fossil fuel escalating to a level that fossil fuel is driven out of the economy using the tax receipts to invest in the low-carbon economy.

This simple solution leads to a complete reconfiguration of the economy – which is exactly what is needed. However policy makers discuss ever more complex economic tools around incentives and carbon markets on the false premise that fossil fuel can be replaced by renewable energy at a similar cost leaving the economy largely intact. This denial of reality is leading us into a drawn out and painful transition in which climate change becomes a serious problem. The sustainable solution leads us into a short and very painful transition that puts us in a better position sooner. Fossil fuel dependency is a seriously dangerous addiction; the pain of curing it cannot be avoided and should be faced without further delay.

## **8.0 Measuring success**

Growth in GDP is used widely by government as a prime measure of progress but it is not a measure of the health of society. The inventor of GNP (the predecessor of GDP) said of his creation that, ‘The welfare of a nation can scarcely be inferred from a measure of national income’ (Kuznets 1934). Simon Kuznets’s words are as true now as when he wrote them. More recently, Tim Jackson explains that growth in GDP is not a necessary route to prosperity (Jackson 2009). GDP is not, and perhaps never has been, a good measure of progress.

There is a management theory adage that what gets measured gets managed. Relevant measures for society should include health, wellbeing, security and other measures directly related to quality of life. Other important measures relate to the stability and health of the ecosystem. Figures for biodiversity loss and carbon dioxide levels in the atmosphere should be ringing alarm bells across the planet with policy makers rushing to make adjustments to policy. Instead, policy makers worry more about maintaining growth in GDP. There could not be a clearer example of the wrong measure producing the wrong behaviour.

The exact mix of metrics to gauge quality of life and ecosystem integrity will need to be worked on but the first task is simple, to stop using GDP as an objective of policy. Economic



policy should be judged on how well it delivers sustainability objectives for land, population and energy. This would provide the tight clear focus that the world needs at this important juncture in world history.

## **9.0 Conclusion**

Ensuring the sustainability of human affairs is vital to the future of society. Current policy is deeply unsustainable with a narrow focus on economic objectives part of the problem. However, economics has powerful tools to apply to finding solutions provided we are willing to rethink the basis of the economic models.

To make economics relevant to the 21<sup>st</sup> century, it needs to be repositioned to be subservient to the needs of society and compliant with effective stewardship of the ecosystem. Sustainable economics is about control and balance, rather than laissez-faire free markets.

The objectives of economic policy need to match sustainability objectives, respecting the positive role that culture plays in national policy to help communities to adjust to local circumstances. A fundamental objective of policy is to maintain a balance in the use of land which allows the ecosystem to continue providing ecosystem services without interruption. Holding population in check is another fundamental policy objective. Economic policy has to bend to support these high-level objectives.

The area where the economy is most distorted, and where urgent reform is required, is energy policy. An alternative economic framework for sustainable energy could be put in place immediately, to initiate the transformation that will take decades to complete. The replacement of the fossil-fuel infrastructure will be slow but must start without further delay. The conventional economic view has to be recognised as a block to progress to allow enlightened economists the space to develop solutions.

Economics is in the dock for its role in taking the world into a crisis of our own making. Economics can be our salvation, but not through application of conventional economics as we know it. A renaissance in economics is possible but, as Edward Fullbrook (2010) argues neoclassical economics has to be challenged to make way for new economic models. Many blocks of economic policy will survive but need to be repositioned around the cornerstones of sustainability to provide the integrated model required to steer human affairs out of the current crisis and onto a safe track.

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