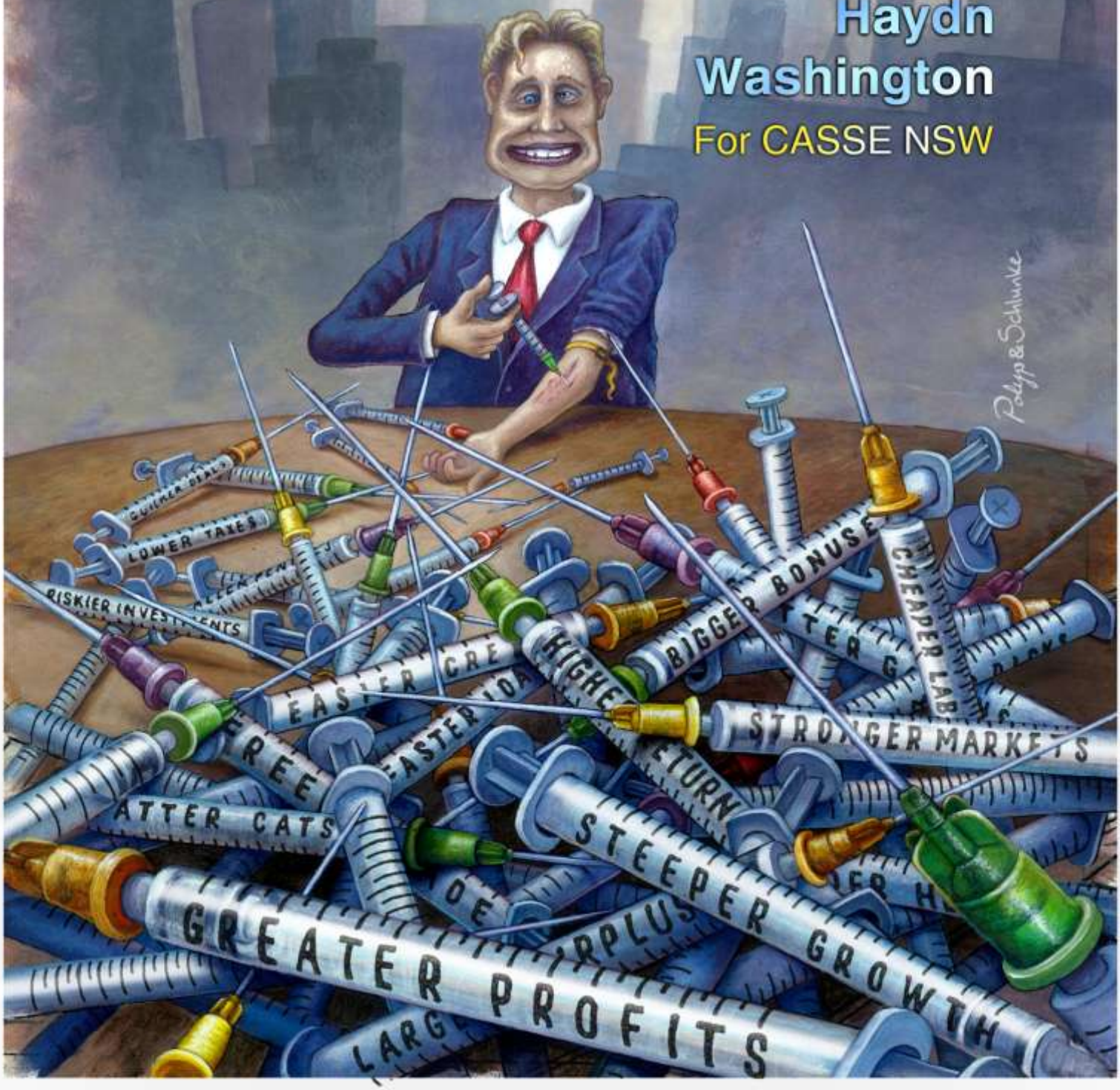
ADDICTED TO GROWTH?

Haydn Washington
For CASSE NSW



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Author's Statement

I am the Co-Director of the NSW Chapter of the Center for the Advancement of a Steady State Economy (CASSE). I am an environmental scientist and a Visiting Fellow at the Institute of Environmental Studies, UNSW. I am also the author of 6 books on environmental issues. This document has arisen from my own research for a book on sustainability – 'Demystifying Sustainability: Towards Real Solutions' (Washington, 2015 forthcoming from Routledge), and a certainty that has crystallised over decades as an environmental scientist that we cannot solve the environmental crisis *unless* we move from a growth economy to one that works within the ecological limits of the Earth. It also came out of the 'Transition Project' that CASSE NSW has carried out in 2013. I am thankful for the input from others in CASSE, and also my colleagues in the environmental sciences. This document is fully consistent with the Position Statement of CASSE International (CASSE, 2008), included here as Appendix 1. Most of the points here are consistent with the work on a steady state economy by Prof. Herman Daly (CASSE Economist Emeritus), Dr Brian Czech (the International President of CASSE, e.g. Czech, 2000, 2013) the work of Rob Dietz (Editor of 'The Daly News', Dietz and O'Neill, 2013), Dan O'Neill (CASSE Chief Economist), and Dr Geoff Mosley (CASSE Director of Australian Operations, Mosley, 2010). However, CASSE Australia and CASSE NSW currently have no 'specific' policies. Thus CASSE NSW strongly *endorses* the general thrust of the document, but it does not officially represent the CASSE Australia or NSW position in regard to every specific point.

Acknowledgments

I would like to thank Prof Herman Daly for writing the forward for the booklet. I would like to thank Herman Daly, Anna Schlunke, Eva Schlunke, David Roser, Paul Twomey, Peter Victor, Brian Czech, Graham Turner, Mark Diesendorf, Kris Spike, Geoff Mosley, Mark O'Connor, Phil Jones, Matthew Washington, Danielle Spruyt, Rob Dietz, and Ian Macindoe for comments on (and input into) this document. I would like to thank all those who took the time to write a 'box' for the booklet – Simon Michaux, Andrew Gaines, Janet O'Sullivan, Jane O'Sullivan, Ian Macindoe, Robert Perey, Mark Diesendorf, Geoff Mosley, Ted Trainer, Donnie Maclurcan, and Jennifer Hinton. I would like to thank all those who took the time to make comments on the draft, including Jane O'Sullivan, Ted Trainer, Barney Foran, Len Puglisi, Freddy Sharpe, John Coulter, Geoff Davies and Gary Luck. I would also like to thank the members of CASSE NSW for their interest and support. I would especially like to thank 'Polyp' (www.polyp.org.uk) for the use of his wonderful and expressive cartoons. Special thanks go to Eva Schlunke for her *wonderful cover painting*, adapted from a cartoon by 'Polyp'. My thanks to Sue Midgley for help with box layout and organising printing of 'Addicted' for the Fenner Conference.

Foreword by Professor Herman Daly
'Father' of the term the 'steady state economy'

This statement by the Australian Center for Advancement of the Steady-State Economy makes a cogent and accessible case for a steady-state economy as the viable alternative to our failing growth economy. In addition to being solidly based on first principles and empirically demonstrated facts, it is specific in drawing sensible policy recommendations. In addition it contains a very comprehensive bibliography, indicating the good scholarship that has gone into the document, as well as directing the interested reader to further analysis and supporting documentation.

In my imagination an ideal democracy would base its elections on documents such as this one. Let this one represent, say, the Steady State Party. Each other party would prepare a document of equal length presenting its platform and arguments. All political debates on the media would be limited to a specific critique of another party's document, or a specific defence of one's own party document in reply to a critique. I would be tempted to also recommend that discussion be limited to the written and spoken word - print and radio, including via the Internet - no TV or posters or other advertising images of good-looking faces, cute babies, or evil monsters.

In bringing about this step toward an ideal democracy nothing could be more powerful than for someone to set the example - as this statement does.

Professor Herman Daly

Emeritus Professor at the University of Maryland, School of Public Policy
CASSE Economist Emeritus
Author of 'Steady State Economics' (1991), 'Beyond Growth' (1996) and (with Joshua Farley) 'Ecological Economics' (2004)

Executive Summary

This document examines the problems of a growth economy, and the advantages and feasibility of a no-growth, 'steady state' economy. On a finite planet, endless growth of anything physical is clearly impossible. One of the first things the paper considers is 'Growth in what?', as there is some confusion about what is meant. In this discussion, growth means *increasing population* and *throughput of resources*. That has been the growth we have been addicted to. This paper explores the environmental, social and economic problems caused by the growth economy. It then looks at 'growthism' itself as an unsustainable ideology. It examines eight underlying assumptions of the neoclassical growth economy, most of which are unsustainable from the standpoint of environmental science. This leads into discussion of a steady state economy, and its two key features: stable population and low stable throughput of resources. We consider what it might be like to live in a steady state economy, the ways it would be similar to today, and the ways it might be different.

The first of the themes discussed is the question of 'jobs', how we keep employment in an economy that is not growing, or rather not growing due to increasing population and resource use. This shows there are good grounds for believing there can be as many (perhaps more) jobs in a steady state economy as today. Secondly, we cover the need to reach a stable and ecologically sustainable population, and how to do this. We then examine the entwined issues of consumerism and resource use. How can we rein in ecologically unsustainable overconsumption? How can we dematerialise our economy? We consider one successful alternative economy (Cuba), which gives hints that humanity can not only 'survive' in a steady state economy, but still have high well-being. Discussion then focuses on a key issue that many books on economics never discuss - whether there is an 'ethics of economics'? To reach a steady state economy (and solve the environmental crisis), the vision concludes that there must be.

The 'barriers' to a steady state economy are then examined, and why a steady state economy does face major barriers, especially from vested interests that benefit from the current unsustainable growth economy. However, understanding the barriers is the first step to surmounting them. We consider the 'easy' and immediate steps we can 'take right now' to move towards a steady state economy. 'Easy' is put in quotes, as some of these could be put in place fairly easily, but face a major lack of political will. The document closes with 'The Way Ahead', how we can move towards a steady state economy that both reduces our unsustainable impact on nature, but also may likely improve our social problems.

Dealing with an endless growth economy on a finite planet is the key issue of our times. The vision of a steady state economy is thus a worthy challenge for today. The first step is to overcome denial, accept we have a problem, and enter a dialogue on how to move forward smoothly to a steady state economy.

1.0 Introduction

Endless material growth on a finite planet is clearly impossible. Our planet is in the process of coping with this, whether we wish to acknowledge this fact or not. So, do we want to move to a non-growth world in an *orderly and fair* manner, where we develop new institutions and social practices in which people can flourish, or do we just want to wait until it is imposed upon us in a chaotic and potentially destructive manner? The purpose of this document is to set out a vision for accepting the huge problems of a growth economy, and thus moving to an alternative - a steady state economy. Having a vision is the most vital step in the policy process, yet vision is almost entirely missing from current policy and our whole culture (Meadows, 1994). At the same time, humanity has a regrettable penchant for *denying* its environmental problems (Washington and Cook, 2011; Washington, 2014). However, it is time to accept the need for change. We need to break our addiction to growth.

Meadows et al (2004) note that the global economy is already so far above sustainable levels that there is very little time left for the fantasy of an infinite globe. They suggest we can step back and acknowledge that the current system as structured is unmanageable and has overshot its limits, and is headed for collapse. We can then seek to change the structure of the system itself. As Jackson (2009) has noted, the world faces a future with an economy that is 'fundamentally broken', and in need of renewal. He notes that the truth is that there is no credible, socially just, ecologically sustainable scenario of continually growing incomes for a world of 9 billion or more people. Economic growth as we have known it is over (Heinberg, 2011), where 'growth' is the expansion of the overall size of the economy (with more people being served and more money changing hands) and the quantities of energy and material good flowing through it. It is time for an alternative vision if we are to reach a sustainable future. Heinberg notes that we *can* survive the end of growth (and perhaps thrive through it), but only if we recognise it for what it is and act accordingly. As growth ends, the managers of the economy will sooner or later be forced to 'try other approaches', and we need to have the conceptual tools lying around that in a crisis could be used quite quickly. This document seeks to be such a tool.

Australia used to call itself the 'lucky country'. And it is true that the last century has brought many benefits for most of Australian society, greater health care, more ability to travel, a higher standard of living, etc. However, if we are to maintain our well-being (and ensure the future well-being of Australians), then our 'luck' needs to be based on accepting *reality*. Society cannot continue to pretend that everything can continue as it has over the last few decades. We have all of us grown up within a growth economy, but this cannot continue, as the ideology of 'endless growth' breaks basic physical laws, as well as ecological reality. Australia is 'lucky' however in that it can still make choices. We don't have to cling to the old failed ideology of a growth economy, we can become a leader in changing over to a 'steady state economy' (SSE). Australia could move to an ecologically sustainable population that consumes far less. The broad outline of 'what to do' to reach this is more or less known (see later). Any meaningful 'sustainability' has to be about 'living within our means' (MEA, 2005). Australia is in a better position to do this than many other countries – *provided* we accept we have a problem.

CASSE is the Center for the advancement of a Steady State Economy (see http://steadystate.org/), which has a NSW Chapter (see http://steadystatensw.wordpress.com/) that has contributed to the creation of this document (and endorses its general argument). This document represents a vision for how Australia could move from a growth economy to a steady state economy. The first step in that vision is to move past *denial* and accept that change is needed, to accept that endless growth on a finite planet is not possible (Washington and Cook, 2011; Washington, 2013). The second step is to deal with the twin issues that underlie the growth economy: overpopulation and overconsumption. Do these affect Australia? Yes they do, for we live in the driest inhabited continent in the world, with the thinnest and most nutrient poor soils. There are good grounds to believe that Australia has already *exceeded* its ecologically sustainable population (certainly at current consumption levels) as section 6.2 shows. We have a problem ecologically in the rapidly worsening environmental crisis. We have a problem socially in that the current system has not made us a happier society (quite the opposite). And we have a problem in that neoclassical growth economics is simply not sustainable, and leads to a cycle of 'booms' but also 'busts', and the social and environmental damage they cause.

However, what do we do immediately? Many people acknowledge that endless growth on a finite planet is impossible, yet they don't know 'what to do', they cannot see the 'first steps' to take. These are listed in section 8.0. These steps can be done immediately, and some of them fairly easily. Others will encounter major opposition. Opposition and denial, however, will not change the fundamental need for change. If we accept our problems, then we can start making changes that will improve things. This is not a vision of 'doom and gloom', quite the opposite. Proceeding blindly with the growth economy has brought us to the edge of the abyss. Staying blindfolded now is not an option. Inaction will lead to collapse, as past civilisations found out to their cost (Diamond, 2005). As Catton (1982) noted thirty years ago: 'But believing crash can't happen to us is one reason why it will'.

This document first considers the issue of 'growth in what?' (2.0), then considers why the growth economy has failed us (3.0). It details how we do indeed have problems, then considers the ideology of growthism, and discusses the key assumptions underlying the growth economy. It then explains what a steady state economy is (4.0), and considers what it would be like to live in a steady state economy (5.0). It then considers 4 key themes in a SSE (6.0), being jobs, population, throughput of resources and the 'ethics of economics'. It then considers the barriers to reaching a SSE (7.0), and then the 'easy and immediate' steps (8.0) one could take towards a SSE. It concludes with 'The Way Ahead' (9.0).

This vision remains a work in progress, and CASSE NSW accepts that there remains a lot of work to be done in working out how to best transition to a steady state economy. However, it does show the broad themes needed in such a transition. We understand that a steady state economy is a challenge, but it is a positive challenge (and an opportunity) that is both practical and ethical. It will help us to reach a socially-responsible society that is in balance with the nature that supports us. It will likely improve social cohesion and inclusion, equity and equality, and should lead to a happier society. It will protect the unique natural heritage

of Australia, which we should all feel we are custodians of. That is a vision worth talking about and acting on.

2.0 'Growth in what?'

One issue must be clarified right up front: 'Growth in what?'. This is a key question, one rife with confusion about what we mean. Environmental scientists mean that growth in 'population' and the 'throughput of resources' cannot continue forever in a finite world. It was these two points (see section 4.0) that were used by Herman Daly (1991) to define a 'steady state economy': a stable sustainable population and a low sustainable throughput of resources. This is what environmental scientists focus on, the stresses created by increasing population, clearing of land, mining of resources to put through industry and create more 'things' (and hence more pollution). The continuing growth of these has created the environmental crisis, so that we are 'living beyond our means' (MEA, 2005).

However, is this the *only* way an economy can grow? Gittins (2013) points out that economists don't necessarily mean this by 'growth' in GDP, that growth comes from both the goods but also the *services* we trade. Certainly, increasing the number of people and throughput grows GDP, but increases in efficiency and the way we turn inputs into outputs (productivity) also increase GDP. Economists believe we can increase GDP through productivity (and non-physical services we trade, such as computer programs and art) without increasing resource use. In this way the economy in a SSE would not be 'stagnant', and

humanity would not stop striving to improve the true *quality* (not quantity) of our lives. For example, we would not stop striving to cure cancer in a SSE (Gittins, 2013). This improvement of the human condition (and human well-being), which does not rely on an increase in people or resource use (and the pollution thereby created), has been called 'economic development' as opposed to economic 'growth' (Victor, 2008). Indeed, as we will see in later sections, we will most definitely need to use our imagination, creativity and intelligence in a SSE to reach a sustainable future.

So can the GDP still increase under a SSE? This is a debatable point. Daly (1991) noted it was an illusion to think that growth could continue by becoming ever less materially intensive and ever more service-oriented. Czech (2013) believes there still remains a 'fundamental conflict' between economic growth and biodiversity conservation. Welzer (2011) concludes that the decoupling debate maintains the illusion that we can 'just make minor adjustments'. In theory GDP probably 'can' still increase, provided it is not due to increasing our ecological footprint and environmental impact through increasing our numbers and our use of resources. Can it do so *forever* however? Some such as Gittins (2013) and Randers (2013) believe it could. However, the last 200 years have been driven by economic growth through 'more' – more people and more consumption of resources. It is these two drivers of the growth we have been addicted to, and which *must now end*. So the GDP can increase through greater efficiency, appropriate technology with lower impact, more services and cultural activities. However, it is very unlikely that it can continue to grow as fast as it has been (though the possibility exists that for some decades that the changeover to renewable energy systems may increase GDP). So GDP in a SSE *can* continue to grow, but not as fast as in the last century. Some economists agree with this, as they can see the need for change.

A final point to consider is that GDP is actually a *lousy measure of human well-being*. It includes both expenditure on positive things (e.g. building a new school) as well as the real costs, such as controlling pollution. We shall see that other indices such as the Genuine Progress Indicator (GPI) are better. Growing GDP should not remain a key goal. Growing human well-being (in balance with the ecosystem services that sustain us) however is a much more meaningful and worthy goal. Now people tend to value what they measure. This is why governments now need to report on the GPI and also Happy Planet Index as well as the GDP. Some countries do, and the Australian Bureau of Statistics has just revamped what it reports on – but still fails to report on either the GPI or HPI.

So we can change the way we grow, and not grow the economy due to unsustainable numbers and throughput of resources. However, let us not fool ourselves, there will be huge opposition to stopping growth in population and resource use. The sections below consider solutions to these in a SSE, though we acknowledge there remains more work remaining to do to develop these.

3.0 How has a growth economy failed us?

3.1 'Do we have a problem?' – the environmental crisis

Virtually all of the Earth's ecosystems have now been significantly transformed through human actions. Most significant are changes such as the transformation of approximately one quarter (24%) of Earth's terrestrial surface to cultivated systems (MEA, 2005). More land was converted to cropland from 1950 to 1980 than in the 150 years between 1700 to 1850

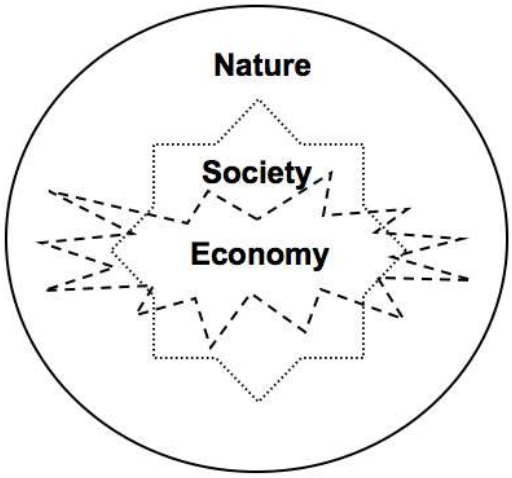

Figure 1 Nature, society and economy, from Victor (2008) Figure 2.2. The economy has arms that reach into both society and nature, but is a subset of both.

(MEA, 2005). The result is that now 38% of global ecosystems are transformed (MEA, 2005). Rees (2008) notes that overall humans have transformed half of the land area of Earth, and use more than half of the planet's accessible freshwater. Apart from the 'Millennium Ecosystem Assessment' (MEA, 2005), many books have been written on the environmental crisis. Some notable books are Catton (1982) 'Overshoot', Ehrlich and Ehrlich (1991) 'Healing the Planet', Berry (1999) 'The Great Work', Soskolne (2008) 'Sustaining Life on Earth' and Brown (2011) 'World on the Edge'. It is worth summarising globally what happened during the 20th century (most figures from Rees, 2008):

- Human population quadrupled to 6.4 billion.
- Industrial pollution went up 40-fold.
- Energy use increased 16-fold and CO_2 emissions 17-fold.
- Fish catches expanded by factor of 35.
- Water use increased 9-fold.
- Mining of ores and minerals grew 27-fold (UNEP, 2011a).

- Topsoil is being lost 16 to 300 times faster than it can be replaced (Meadows et al 2004).
- One quarter of coral reefs are destroyed and another 20% degraded (MEA, 2005) (75% are now endangered, Postel, 2013).
- 35% of mangroves were lost (in just two decades) (MEA, 2005).
- At least half of all wetlands were lost to dredging, filling, draining and ditching (Meadows et al, 2004).
- Extinction is at least 1000-fold above the normal levels in the fossil record (MEA, 2005).

30 million hectares of tropical forest are cleared each year (Daily and Ellison, 2002). Half the world's people live in countries where water tables are falling as aquifers are depleted (Brown, 2011). In a finite world with expanding population and consumption, clearly something has got to give. Rockstrom et al (2009) identify nine 'planetary boundaries' that affect ecosystem health. Three planetary boundaries have *already been exceeded* (biodiversity loss, climate change, nitrogen pollution). One cannot keep increasing the stresses on nature without 'a period of consequences'. Sustainability requires that our emphasis shift from 'managing resources' to managing ourselves, that we learn again to live as part of nature. So we do indeed have a problem, the nature which sustains society is failing, which is why we desperately need to move away from the ideology of endless growth.

3.2 'Do we have a problem?' – the social crisis

It may not be readily acknowledged by the media, but our modern society can be seen as 'broken', with equity, equality and justice in decline. Many scholars write about this, and the

data backs them up (e.g. Wilkinson and Pickett, 2010). For decades, progressive politics has been weakened by the loss of any concept of a *better society*. However, reaching a sustainable future now demands that we should return to this goal. As well as potential for conflict, humans have a unique potential to be each other's best source of cooperation, learning, love and assistance. We focus on friendship and social status because the quality of social relationships has always been crucial to well-being (Wilkinson and Pickett, 2010). Our aim should be to make a more sociable society, to increase people's sense of security, to reduce fear, and offer a more fulfilling life (Wilkinson and Pickett, 2010). The world is actually full of people with a stronger sense of justice and equity than we assume. People in the richest societies have been persuaded to doubt the validity and relevance of their own egalitarian values. The rise of neo-liberal political and economic thinking in the 1980s and 1990s has meant that egalitarian ideas disappeared from the public debate. Those with a strong sense of justice became 'closet egalitarians'. It is now time to come out of that closet and set a social course to sanity and social sustainability (Wilkinson and Pickett, 2010). A SSE thus requires improving equality of income (currently we are going in the opposite direction). Of course, this will not be enough unless we also stabilise population (O'Sullivan, 2014).

It may seem a paradox that at the pinnacle of human material and technical achievement, we now have little or no community life. We in the West find ourselves anxiety-ridden, prone to depression, worried about how others see us, and driven to consume. The contrast between material success and social failure of many rich countries suggests a need to shift attention away from material goods and growth to ways of improving psychological and social wellbeing (Wilkinson and Pickett, 2010). Without a just, fair and cohesive community it will be difficult to solve the environmental crisis. Likewise, it will be harder to move to a steady state economy. In fact Wilkinson and Pickett (2010) argue that greater equality is a pre-requisite for this. We need social inclusion, we need social justice and greater equity, and in fact we need a *happier* society – precisely because without these we will not solve the environmental crisis. Dealing with environmental problems requires consistent and uniform action across all jurisdictions from local to international. This requires the social cohesion that comes from a commitment to justice and equity. This is not sentimentality but practical reality. Greater equality is also a key to reducing the cultural pressure to consume. Far from being 'inevitable' and unstoppable, the sense of deterioration in social well-being, and the quality of social relations in society, *is* reversible (Wilkinson and Pickett, 2010).

In their illuminating book 'The Spirit Level', Wilkinson and Pickett (2010) explain that inequality is bad for everyone. They summarise extensive research showing that inequality of income worsens a whole range of social aspects. These include: health; mental illness; violence; homicides; obesity; drug use; competitive consumption; trust; teenage births; imprisonment rates and social mobility. They develop an index of health and social problems, shown in Fig. 2. All these social indicators are worse in societies with higher income inequality. Why? Because humanity is an intensely social species, so what matters is where we stand in relation to others in our own society.

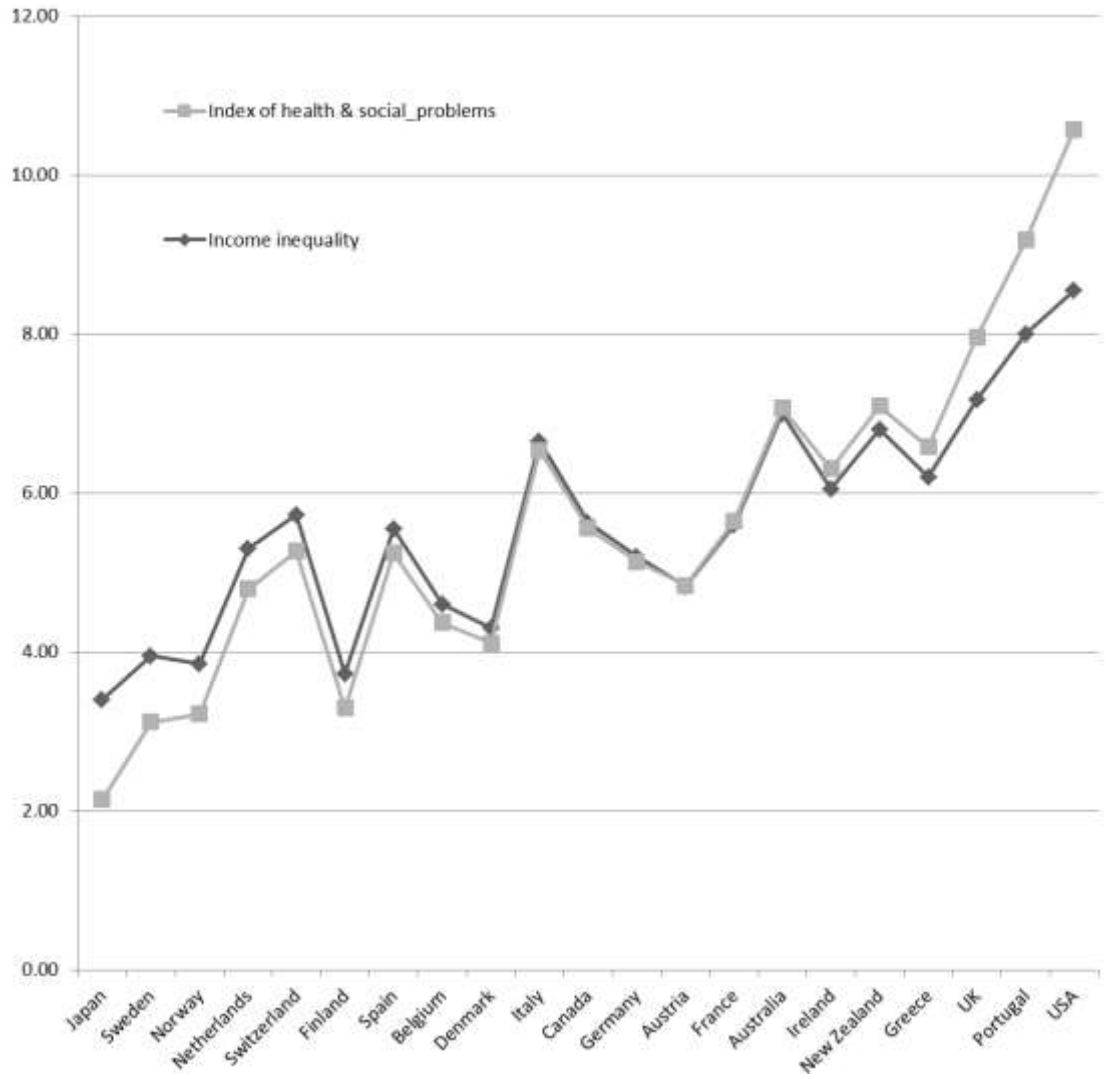

Figure 2 Index of health and social problems and income inequality in world nations from Wilkinson and Pickett (2010) 'The Spirit Level. Redrawn from data from the Equality Trust, see: http://www.equalitytrust.org.uk/

The modern world has not brought greater fairness as promised, *quite the opposite*. 16% of people live in the developed world, yet account for 78% of global consumption expenditure. Meanwhile, 40% of the world's population struggles to subsist on less than $2 a day (Dietz and O'Neill, 2013). Growth is continuing, but the poor get less and less of the benefits (Layard, 2005). And the same is true within most nations, as the Gini coefficient of equality is getting worse (Maxton, 2011). The mantra of development, growth and 'trickle down' is thus not actually helping the poor. Someone is profiting from economic growth, but it's not the poor. Too often consumerism is regarded as if it reflected a 'fundamental' human material self-interest and possessiveness. This could hardly be further from the truth. The almost neurotic need to shop and consume (engineered by the advertising industry) in Western society (now being globalised around the world) is instead a reflection of how *deeply social* we are. Living in unequal and individualistic societies, we use possessions to show ourselves in a good light, and avoid appearing incompetent and inadequate (Wilkinson and Pickett, 2010).

Community consciousness

Janet O'Sullivan, CASSE NSW

The words *ecology* (study), *economy* (management), and *ecumenism* (shared values), all derive from the Greek OIKOS for home. They remind us that the economy is embedded in a larger interconnected whole, indicating the need for a balance between these components. The current dominance of the economy requires a re-evaluation of its role ; in particular, the focus on economic growth which is disrupting that balance and inflicting serious social and environmental costs. Short term economic outcomes in our society have taken priority over ethical values and social and environmental outcomes. Further, the focus on GDP and financial capital has undervalued the social capital inherent in the many activities which underpin the economy but are performed outside of the monetary reward system. Social capital is built on trust, connection and co-operation, acknowledging that we are dependent on others, just as the economy is dependent on the environment. Our current system, focusing as it does on individual material well-being, competitive consumption, and contractual relationships, separates us from each other and the environment.

There is an urgent need to develop a new paradigm, one that could lead to a recovery of a sense of community; our common unity with earth, each other and with other life forms on our common home. Recognition is growing that unlimited economic growth is not a pathway to well-being or happiness, and is not in line with deepest values. Thus there is an emergence of new measures to replace GDP and a growing consciousness of the importance of community - Thus there is an emergence of new measures to replace GDP and a growing consciousness of the importance of community - our shared social capital

Thus there is an emergence of new measures to replace GDP and a growing consciousness of the importance of community - our shared social capital and our common natural capital - the common good. Decades ago economist J.K. Galbraith spoke of 'private affluence and public squalor' and the gap he drew attention to has intensified, resulting in growing inequality and the weakening of the threads which bind communities.

In the quest for economic growth, not only are we destroying the habitat of many species, we are also ruining our own habitat - physically and psychologically. Our real sense of well-being derives from right relationships - with ourselves, each other, with creation. We need a redefinition of wealth and abundance which includes the importance of community, and this is emerging at a grass roots level in movements such as Transition towns, local environmental groups, local economies, Free-cycle, collaborative consumption, community gardens etc. There are examples of the power and rewards of collective action - creating networks amongst the many groups devoted to change, whether directed towards the environmental or social goals. As a community, we are empowered to become 'change agents' ourselves, adding to a critical consciousness which may bring about a tipping point towards sustainable living. We have the technology to enable this, we have the creativity, we need the will, the compassion, and the desire to work for the common good, and to realise that our lives are not simply about ourselves. The crisis being created by unlimited economic growth is an opportunity to work towards a true common-unity and a sustainable future.

If an important part of consumerism is driven by status competition (exploited by the advertising industry), this explains why we continue to pursue economic growth *despite its apparent lack of benefits*. The growth of consumerism and the weakening of community life are related (Wilkinson and Pickett, 2010). People tend to be more altruistic than the economic model predicts (Brondizio et al, 2010). Rather than assuming we are stuck with self-interested consumerism and materialism, we need to recognise that these are not fixed expressions of human nature. Instead, they reflect the characteristics of our societies (Wilkinson and Pickett, 2010). Growthism teaches competition, not cooperation. It idolises the greedy who have hoarded more and more resources 'just for them'. It is not based on respect and caring, either for the nature of which we are a part, or for our fellow man. All is not well with our society, but a SSE is one way to help deal with our social crisis.

3.3 'Do we have a problem?' – the economic crisis

There is the folk wisdom saying: 'What goes up must come down'. Yet as a society we don't apply this to our economy. The growth economy has resulted in a series of booms and busts. This has been called the 'business cycle'. However, there has been a claim that after 1985 we had reached a 'Great Moderation', where we had grown beyond the business cycle, that growth would just continue anyway (Quiggin, 2010). It didn't, and instead we had the 'cashtastrophe' of the Global Financial Crisis. 'Booms' may assist prosperity, but 'busts' bring social misery, as exemplified in the Great Depression, the result of a failed growth economy. Commitment to endless growth thus means commitment to endless crashes and the social misery they cause, as well as to an accelerating unsustainable impact on the nature that supports us (Washington, 2013), and which is leading towards major ecosystem collapse (MEA, 2005). Consequently, we do indeed have a problem with the current neoclassical growth economy. This is further detailed in the next two sections.

3.4 'Growthism' and its critics

This section follows on from earlier discussion on the question 'Growth in what?'. It discusses economic growth based on increasing population and resource use (rather than economic development' where GDP increases in ways not reliant on these). Novelist Edward Abbey (1977) noted 'Growth for the sake of growth is the ideology of the cancer cell'. Economists such as Mishan (1967), Schumacher (1973), Zolotas (1981), Daly (1991, 1996), Douthwaite (1999), Booth (2004), Porritt (2005), Siegel (2006), and Jackson (2009) question the desirability and feasibility of continued economic growth (based on increasing population and resource use). Hulme (2009) notes there is a paradox at the heart of economic analyses of climate change: the presumption of growth. Yet many believe that the fixation on growth and the assumption that 'increasing consumption' is the path to well-being is precisely why we have an environmental crisis. Layard (2005) notes:

> *Economic growth is indeed triumphant, but to no point. For material prosperity does not make humans happier: the 'triumph of economic growth' is not a triumph of humanity over material wants; rather it is the triumph of material wants over humanity.*

The book 'Limits to Growth' (Meadows et al, 1972) questioned whether growth could continue forever in a finite world. Lowe (2005) notes it was fiercely attacked because it challenged the fundamental myth of modern society: unlimited growth. Meadows et al (2004) in the 30-year update to the 'Limits to Growth' note that the idea that there might be limits to growth is for many people 'impossible to imagine'. Limits are 'politically unmentionable and economically unthinkable'. Our culture tends to deny the possibility of limits by placing a profound faith in the powers of technology, the workings of a free market, and the growth of the economy as the solution to all problems, even the problems *created* by growth (Meadows et al, 2004). Hubbert (1993) explains that during the last two centuries we have known nothing but exponential growth, and hence have evolved an 'exponential growth culture' dependent on the continuance of exponential growth for its stability. This culture has been said to be 'incapable of reckoning with problems of non-growth' (Daly and Cobb, 1994).

Daly (in Lowe, 2005) says most economists 'chase an assumption of wants along the road of infinite growth'. Daly (1991) argues that economic growth is unrealistically held to be:

> *... the cure for poverty, unemployment, debt repayment, inflation, balance of payment deficits, the population explosion, crime, divorce and drug addiction.*

Thus economic growth is seen as the panacea for everything, and world leaders seek growth above all else. Now many people will hasten to argue that growth has 'done a lot of good' to society, that by increasing resource use we have 'improved human well-being'. Certainly, in Western society over the last hundred years, housing is better than it was, health has much improved and life-span has increased. However, as we saw earlier, this has been at the expense of the natural environment, where biodiversity and ecosystem services are in rapid decline. The increase in the standard of living in the West is thus not permanent, as we are degrading the ecosystem services on which future generations will depend. This increase in the standard of living in the developed world has not been seen in most in the developing world (partly due to increasing population but also increasing inequality). Inequality of income is also worsening in most societies, and thus economic growth has not brought social contentment (Wilkinson and Pickett, 2010). The growth economy (based on increasing population and resource use) may have brought the 'good life' for a wealthy elite, but not for the majority of humanity.

Daly (1991) notes that the verb 'to grow' has become twisted. We have forgotten its original meaning: to spring up and 'develop to maturity'. The original notion included maturity or 'sufficiency', beyond which accumulation gives way to maintenance. Thus growth gives way to maturity, a 'steady state'. Growth is not synonymous with 'betterment'. To grow beyond a certain point can be disastrous. 'Growthmania' is not counting the costs of growth. Society today takes the real negative costs of increasing GDP (as measured by expenditures incurred to protect ourselves from pollution and environmental degradation, the unwanted effects of production) and adds these expenditures to GDP, rather than subtract them. We thus count real costs as benefits, and this is 'hypergrowthmania' (Daly, 1991). Economic growth has been said to be cannibalistic, feeding on both nature and communities, and shifts unpaid costs back onto them both. The shiny side of 'development' is often accompanied by a dark side of displacement and dispossession, this is why economic growth has time and again produced impoverishment next to enrichment (Sachs, 2013). Victor (2008) notes that the commitment to economic growth remains firmly entrenched as the 'number one priority' of most governments, though it may be promoted in the guise of free trade, competitiveness, productivity (and the like), or even as 'sustainable development'.

One fascinating historical note is that none of the key classical and neoclassical economists (such as Adam Smith, John Stuart Mill and John Maynard Keynes) thought an economy could 'grow forever'. The famous British economist John Stuart Mill (1848) in 'Principles of Political Economy' questioned the growth economy, and spoke of a *stationary* economy being a 'very considerable improvement upon present condition'. Add to this that other key traditional economists, such as Adam Smith and John Maynard Keynes, also thought the economy could not grow forever (Dietz and O'Neill, 2013). They all spoke of a growth

period, after which the economy would *level off*. Once we have gone beyond the optimum, and marginal costs exceed marginal benefits, growth will make us worse off. We have then reached 'uneconomic growth' (Daly, 2008). However, our experience of diminished well-being will quite likely be blamed on 'product scarcity'. The orthodox neoclassical response will then be to advocate increased growth to fix this. In the real world of ecological limits, this will make us even less well off, and will lead to advocacy of even more growth. As Daly (1991) notes:

> *The faster we run, the behinder we get.*

Daly argues that environment degradation today is largely a disease induced by economic physicians who treat the sickness of unlimited wants by prescribing unlimited production. But one does not cure a treatment-induced disease by increasing the treatment dosage. Daly (1991) quotes Luke (in the Bible): 'Physician, heal thyself!' Healing our economy requires accepting that the economy cannot grow forever through increasing our numbers and throughput of resources.

It has been argued that there are three types of growth – physical growth (cannot grow forever); economic growth (e.g. money flows, incomes, value added, which has no theoretical limit); and human welfare growth (Ekins, 2009). However, the lack of 'theoretical limit' to economic growth may be because it ignores ecological limits. Ecological economists speak of growth as 'quantitative physical increase' in the matter–energy throughput (Daly, 2013). However the 'economic growth' Ekins describes above, if it has no physical impacts, clearly isn't based on increasing population or throughput of energy and resources. 'Economic development' is a term applied to changes in an economy that do not involve population increase or increasing throughput. Indeed the CASSE Position Statement (Appendix 1) notes:

> *7) A steady state economy does not preclude economic development, a dynamic, qualitative process in which different technologies may be employed and the relative prominence of economic sectors may evolve.*

'Decoupling' is a much-discussed term. If we grow our economy by becoming 'cleverer' in the way we do things, then this is fine in a SSE, which states that growth should not occur by population increase or increased throughput. To what extent can this proceed? A 'service economy' is often portrayed as decoupling economic growth from impact. However, any growth in population or artefacts (houses, infrastructure) must increase environmental impact. 'Outsourcing' the physical production of something to another country just means that the other country experiences the impacts and pollution involved. However, there is an aspect of 'services' that could make a difference in terms of reducing overconsumption. One key idea of a 'circular economy' (EMF, 2012) is to replace materials with 'services' and to design products to be long-lasting. Hence instead of selling things you would *lease* them, and the producer provide exceptional service for these. The producer would thus take responsibility for the product over its whole life cycle, and replace it when it wears out, making sure its materials are reused or recycled (Wijkman and Rockstrom 2012).

UNEP (2011b) in its 'green economy' speaks of completely decoupling economic growth from its negative environmental impacts. The question remains as to just *how far* can we decouple throughput of resources and live a similar life? Factor 5 (von Wiezsacker et al, 2009) argues we could reduce energy and material use by 80%. This is a worthy goal, but how successful have we been in reaching it?

Victor (2008) notes decoupling slows down the rate at which things get worse, but does not turn them around. He notes further that some modest decoupling of material flows occurred in some industrialised countries from the mid-1970s to the mid-1990s, but total material throughput still increased. Despite increases in efficiency, decoupling GDP and throughput has yet to manifest itself as an increase in GDP combined with a decline in throughput (Victor, 2008). Jackson (2009) notes that carbon intensities have declined on average by 0.7% per year since 1990, population has increased at a rate of 1.3% and average per capita income has increased by 1.4% each year. Thus efficiency hasn't even compensated for the growth in population, let alone the growth in incomes. Instead, CO_2 emissions have grown by 2% per year, leading over 17 years to a 40% emission increase. Similarly, Matthew et al (2000) found no evidence that moderate decoupling led to absolute reduction in resource throughput. So to date it seems *impossible to fully* decouple economic growth from physical impact. Some forms of positive increase in GDP that don't rely on population and increased throughput may continue under a SSE (though these should more properly be called 'economic development'). However, my concern is that talk of '100% decoupling' may be wishful thinking that allows 'business as usual' growth to continue. Welzer (2011) concludes similarly. Certainly, while population growth continues, the idea of 100% decoupling is impossible (people must eat and have shelter, which produce impacts).

How does a SSE vision differ from the current vision of neoclassical economics? The vision of neoclassical economics is that the economy is an isolated system in which exchange value circulates between firms and households. Daly (1991) argues this is like saying that nothing enters from the environment, nothing exists in the environment, nothing exits to the environment. The supposedly circular flow of production and consumption is shown below.

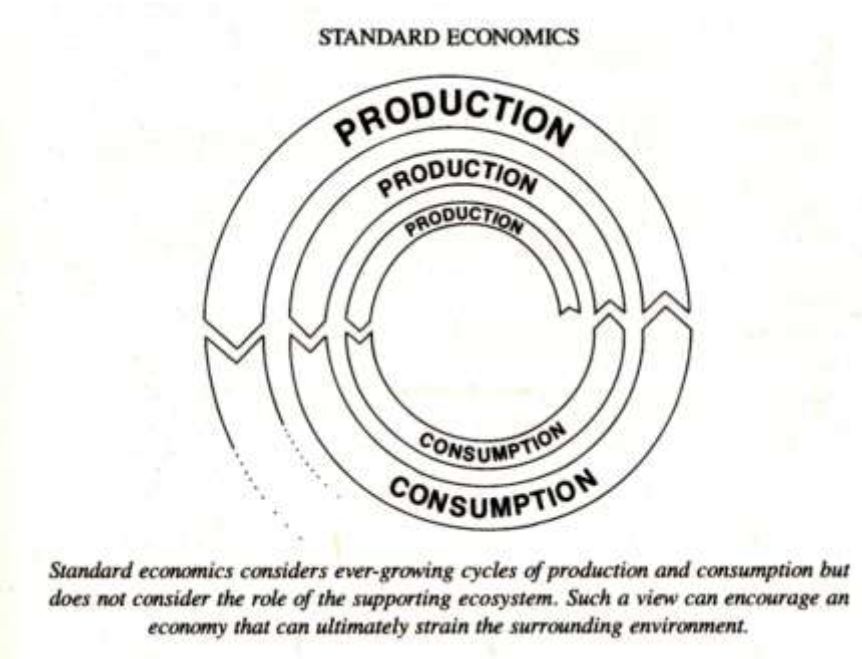

Figure 3 The assumed 'circular flow' of production and consumption in the neoclassical economy, Figure 7 in Daly (1991).

However, connections to the larger environment cannot be 'abstracted' from without losing the most essential fact (as Daly argues that neoclassical economics has done). The figure above contrasts to reality, where a linear flow of energy and materials moves from low entropy (usable energy, rich resources) to high entropy (heat and waste) (Daly, 1991). Endless growth in anything physical is thus impossible on a finite planet. Endless growth has thus become a flawed ideology we can no longer afford. Victor (2008) concludes:

> *At some point, fundamental questions of growth for what, for whom and with what consequences will be asked by more and more people until there is a shift in societal values away from a growth-first policy. Some glimmers of that shift are discernible today.*

This document seeks to promote such questions, and increase the number of 'glimmers'.

3.5 Assumptions underlying the growth economy

There are assumptions that neoclassical economics makes about how the world works (Costanza et al, 2013). These should (and must) be examined if we are to develop an economy that operates within the Earth's limits. These include (Washington, 2014):

1) Strong *anthropocentrism*. Nature is seen as 'just a resource' to be used to provide the greatest 'utility' to the greatest number of people. Rolston (2012) notes that if neoclassical economics is the 'driver we will seek' for our society, then it will result in 'maximum harvests in a bioindustrial world', as the current economic model is extractive in nature, and commodifies the land. Land becomes merely 'resources' and 'natural capital'. Such maximum harvests will not consider the limits or tipping points of ecosystems.

2) The idea that the *free market* will control all that is needed, that the 'invisible hand' will regulate things for human benefit (Daly, 1991). This is a key 'given truth' of neoclassical economics, and has become almost a religion (Daly, 2008). The deification of the free market has also been shown to be an underlying ideological reason for conservatives to deny climate change (Oreskes and Conway, 2010). Stiglitz (2002) argued the invisible hand was 'invisible' because 'it is not there'. Common and Stagl (2005) note the invisible hand does not in fact work. Market failures of various kinds mean that actual market outcomes are not efficient. Achieving efficiency does not guarantee equity or equality, between either those alive at one point in time, or different points in time. It doesn't consider intergenerational equity. Even under 'ideal' conditions, market outcomes may be very unfair and inequitable (Stiglitz, 2012).

3) The idea that the economy can *grow forever* in terms of continually rising GDP, which increased by an astounding 25-fold over the last century (Dietz and O'Neill, 2013). Daly (1991) notes that 'economic growth is the most universally accepted goal in the world and that: 'Capitalists, communists, fascists and socialists all want economic growth and strive to maximise it'.

4) The *refusal to accept any biophysical limits to growth*, for when classical economics was developed, limits were distant (Daly, 1991). However, neoclassical economics today still does not acknowledge any limits on a finite Earth. Daly (1991) notes that three inter-related conditions combine to provide the biophysical limits to growth: finitude, entropy, and complex ecological interdependence.

5) A *circular theory of production* causing consumption that causes production in a never-ending cycle (see Fig. 3). Daly (1991) notes that real production and consumption are in no way circular. The growth economy sees outputs returned as fresh inputs and Daly notes ironically this requires we 'discover the secret of perpetual motion'. An economy is not an isolated system, it is part of (and relies on) the biosphere.

6) Neoclassical economics *ignores the Second Law of Thermodynamics* and fails to consider 'entropy' as a key feature of economics and reality. Georgescu-Roegen (1971) and Daly (1991) detail this. Thermodynamics shows that we do not create or destroy anything in a physical sense, we merely transform or rearrange it. The inevitable cost of arranging greater order in one part of the system (the human economy) is to create disorder elsewhere - nature (Daly, 1991). 'Entropy' is a measure of the 'disorder' in a closed system. In thermodynamics, low entropy quantities (usable energy, raw materials) move to high entropy quantities (waste heat and wastes). Entropy is the basic physical coordinate of scarcity. Were it not for entropy, we could burn the same gallon of petrol over and over, and our capital stock would never wear out.

7) Environmental damage is *merely an 'externality'*. The spillover effects of market transactions have been named 'externalities'. Externalities are costs or benefits arising from an economic activity that affects somebody *other* than the people engaged in it, and are not reflected fully in prices. Environmental damage is known as a 'negative externality',

something external to the economic model. An externality (to neoclassical economists) is seen as being worth only 'peripheral attention' (Daly and Cobb, 1994). This is a key driver of the environmental crisis. Of course, environmental crises can still occur even where externalities *are* 'internalised' (incorporated into market accounting), and Foxon et al (2012) point out that this approach is inadequate for climate change and biodiversity loss. However, internalising such costs is a better approach than ignoring them. UNEP is seeking to cost ecosystem services and have them built into economic decisions (Kumar, 2010).

8) All forms of *capital can be substituted*, thus human capital can be substituted for natural capital ('weak sustainability', Daly and Cobb, 1994). This assumes we can replace ecosystem services and the biodiversity that support our societies with money, an idea that I believe future generations would consider irrational and unethical.

The above assumptions show the fundamental challenge society faces in its thinking to reach a long-term ecologically sustainable economy. Looking at them from the viewpoint of environmental science, the above assumptions are actually *absurd* (Washington, 2014). The above assumptions deserved to be challenged, and some economists and scientists have been doing so for over 40 years. Zencey (2013) notes that if economists had 'collapsed in deepest shame' on being shown in the 1930s or 1970s that their theories fell apart against the Second Law of Thermodynamics, then we would have made more progress towards sustainability. However, they did not, and the eight assumptions above remain in control of the neoclassical economic synthesis still being taught by economics faculties at universities, and still being promoted by governments. Growth (in population and resource use) has not brought us a sustainable (or happy) society, and that type of growth must now come to an end. Indeed, Heinberg (2011) argues is has already essentially ended (society just does not understand this). It is time to recognise this, and move to a better, more intelligent, equitable and ethical alternative.

4.0 What *is* a steady state economy?

One of the first people to challenge the growth assumptions of neoclassical economics this century was economist Nicholas Georgescu-Roegen, who in 1971 wrote 'The Entropy Law and the Economic Process'. This used thermodynamics to show the absurdity of growthism. He was followed by his student, Herman Daly, an economist who coined the term 'the steady state' economy in 1973. Several others have enlarged on what has been called 'ecological economics', an economics that acknowledges the ecological limits of the planet, that considers interactions between economic systems and ecological systems (Daly and Farley, 2004; Common and Stagl, 2005). Faber (2008) states ecological economics is defined by its focus on nature, justice, and time. Issues of intergenerational equity, irreversibility of environmental change, uncertainty of long-term outcomes, and sustainable development guide ecological economics. In neoclassical economics, it doesn't matter how 'big' the economy is relative to the environment, or if it impacts disastrously. For the steady state economy however, the vision is that the economy is an open subsystem of a finite and non-growing ecosystem. The economy lives by importing low-entropy matter-energy (raw

materials) and exporting high entropy matter-energy (waste). The key points of the steady state economy (Daly, 1991) are:

1) Constant population (at an ecologically sustainable level)

2) A constant low level of *throughput* in materials and energy.

'Throughput' is the physical flow of matter-energy from nature's 'source', through the human economy, and back to nature's 'sinks'. Neither population nor artefacts (created things) can continue to grow forever. What is held constant is capital stock in the broad sense: capital goods, consumer goods and human population. What is not held constant is growth in our culture, knowledge, goodness, and ethics. Czech (2000, 2013), Victor (2008), Jackson (2009), Simms et al (2010), Heinberg (2011) and Dietz and O'Neill (2013) and have continued to develop this theme.

The steady state economy is deduced from first principles regarding physical laws and ecological limits. If the world is a finite and complex system that evolved using a fixed rate of flow of solar energy, then any economy that seeks indefinite expansion of its stocks and energy use will sooner or later hit limits. This is logically trivial, a 'truism', but it is not trivial psychologically or politically (Daly, 1991). If humanity's behaviour should be governed by values of 'enoughness', stewardship and humility, then it follows that attitudes of 'more forever' and technical arrogance should be rejected (Daly, 1991). If you assume growth, then (in a finite world) you implicitly assume *bust* and the depression that goes with it. A steady state economy or 'dynamic equilibrium' economy (Simms et al, 2010) does not seek to endlessly grow, hence it is not required to go bust, with all the attendant human misery. A steady state economy is thus fundamentally more likely to consider social equity and equality of income. This would help to lead to greater social cohesion and a happier society (Wilkinson and Pickett, 2010). It is interesting to note that the longest serving Chief Justice of Australia, Sir Garfield Barwick (1971) promoted a 'stationary economy' for Australia. It was apparent to him (even then) that endless growth in Australia could not continue.

Our growth economy has been predicated on using fossil energy stored in fossil fuels such as oil, and we are now at or close to peak oil, beyond which supply becomes harder and costs more (Aleklett, 2012). The growth economy has also been based on an annual 3% growth in World energy use, as has occurred for the past two centuries (USEIA, 2011). If it was to continue at this rate, our current energy use of 16TW would balloon out to equal the entire solar output in 1000 years, and match all the energy output of the 100 billion stars in our galaxy inside of 2000 years. Well before this, in just 400 years, enough waste heat would be generated to bring the Earth's surface temperature to that of boiling water. Obviously the so-called 'normal' world of energy growth is a temporary anomaly, destined to self-terminate by natural means (Murphy, 2013). The same applies to the growth economy. The question is how quickly will we break free from apathy and denial, and move to a sustainable alternative?

Denial as *the* key problem

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'Denial' is not just a river in Egypt, it is arguably humanity's greatest problem. Why? Because it makes us a 'seriously dumb species'. Believing in 'stupid things' turns off our intelligence so we don't use our creativity to solve key problems. Four huge 'elephants in the room' that society doesn't want to see are: overpopulation, overconsumption, climate change, and the growth economy. Denial of the irrationality of endless growth on a finite planet is the biggest denial of them all. As a society, we continue to act as if there is no environmental crisis, no matter what the science says. We proceed often in a 'cultural trance of denial', where people and societies block awareness of issues too painful to comprehend. This human incapacity to hear 'bad news' makes it hard to solve the environmental crisis. We call ourselves Homo sapiens, but many of us seemingly are actually ***Homo denialensis*.**

Denial is not the same as skepticism, a skeptic seeks the truth, a denier runs away from a truth they don't like - they are almost opposites. Denial is also common. We deny some things as they force us to confront change, others because they are just too painful, or make us afraid. Psycho-analysis sees denial as an unconscious defence mechanism for coping with guilt, anxiety or other disturbing emotions. So denial is a very human trait, but it is inherently delusional and distorts one's sense of reality.

Hence it has now become a pathology that holds us back from reaching sustainability. Denial is as old as humanity. Examples of historical denial are: population; DDT; nuclear winter; tobacco; acid rain; hole in the ozone layer; the biodiversity crisis; and climate change (Washington and Cook, 2011; Washington, 2014).

There is far more involved than merely 'confusion' about the science. There is a deliberate attempt to confuse the public, so that action is delayed. There is also an ideological basis for denial, where denial groups are implacably opposed to regulation. These conservative bodies equate the free market with 'liberty', so if you attack the market then you attack liberty, and hence must be denied – along with the science. Denial can be said to be of three types: **Literal denial** - the assertion that something is just not true. **Interpretive denial** - the facts are not denied, but are given a different 'spin'. **Implicatory denial** - where what is denied are 'the implications'. People have access to information, accept this information as true, yet choose to ignore it. Implicatory denial is common in the public, we let ourselves be lulled into passivity. Yet while denial is common, there is also a stream within society that questions it. So the denial dam can be broken. It is no use continuing to deny the problems of a growth economy. Time to ***break the denial dam*** and find an alternative – the steady state economy.

5.0 What would it be like to live in a steady state economy?

What would it be like living in a steady state economy? Would we still have jobs? Would we have to live in caves? Would there still be roads and infrastructure? Would agriculture still function to feed and clothe us? The first thing to remember is that for most of humanity's history, we did *not* live in a growth economy, or growth was so slow it was virtually unnoticeable (Victor, 2008). Hunter-gatherer societies lived in a 'steady state' or balance with the natural world of which they were a part (Washington, 2013; Gowdy, 2014). Agricultural societies grew larger, but grew slowly and still had to maintain a balance with the land that supported them (or they collapsed). It was only with the advent of the industrial revolution in the last 200 years that humanity has embarked on the roller-coaster ride of the growth economy, ignoring the 'Wisdom of the Elders' (Knudtson and Suzuki, 1992) of past cultures. Now the roller-coaster has run out of track.

A SSE would not be based on continually increasing population growth. That means the demands on food growth and on infrastructure (such as more transport, more water supply, more electricity lines, more roads) would be much less (O'Sullivan, 2012). A stable population would thus increase the quality of life of those living in cities, with less

congestion and pollution. In a SSE, there would be a somewhat smaller building sector, and it would be 'sustainable building', focusing more on repairs than on new construction, and using low 'embedded energy' materials and low energy technology (Godfaurd et al, 2005). There would be less demand for new schools with a stable population. While the absolute capacity for aged care would be increased for a while, it would be increased at a slower rate than in a growing population (so overall the need for infrastructure would be less). Such a demographic transition has of course already occurred for much of Europe, and for Japan, and life has gone on quite happily.

Would we still have jobs? Yes, the evidence is that a SSE (set up intelligently) can not only maintain jobs, but also reduce the unemployment rate (Victor, 2008, and see section 6.1). Working hours may change, and salaries may be more modest (especially at the top end) but then the cost of living may also be lower. So a SSE *can* still provide full employment. With a SSE powered by renewable energy, there would be more jobs in country areas than today (to build and service wind farms and solar and biofuel systems). There would still be retail jobs, as a SSE still requires that people trade food, fibre and materials, though perhaps not at the frenetic pace of the last hundred years. There would be less 'throughput' of materials, which means less mining. Of course mining actually only provides 1.9% of jobs in Australia, less than that in the fast food industry (Lucas, 2013). There would be less junk, less cheap shoddy products, and less big flashy cars (which must happen anyway due to peak oil). In a SSE there would be more public transport (and the jobs this provides).

How would we provide energy in a SSE? The climate crisis means we cannot power it with fossil fuels. The dangers and costs of nuclear power mean it will not be an option (Diesendorf, 2014). Luckily, an economic alternative does exist, with much lower environmental impact, and which provides many more jobs – renewable energy and energy efficiency and conservation (Diesendorf, 2014). It is perfectly feasible and economic to make a transition to 100% renewable energy within a few decades. The climate crisis demands this. However, we cannot continue to grow our current massive energy use, where we waste far too much. We need to at least halve our current overall use, and then keep it there (and preferably cut it by 80%). Endless growth in the economy is not possible, nor is endless growth in energy use. We have splurged on energy by stealing energy from past sunlight trapped in fossil fuels (Hartmann, 1999). It is time now to tighten our belt (at least in the West) and live within our means.

How Australia could move to 100% renewable energy

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In the transition to an economy with no growth in energy, materials, land-use and population, the use of fossil fuels will decline while renewable energy and demand reduction from energy efficiency, energy conservation and 'smart' electricity grids will grow. The electricity industry is Australia's largest greenhouse polluter and is also the least difficult industry, technologically and economically, to transition to 100% renewable energy. A research group at UNSW Australia – comprising Ben Elliston, Iain MacGill and myself – has been simulating the hourly operation of the National Electricity Market with 100% renewable electricity (100RElec) based on commercially available technologies. Each hour the computer model tries to balance actual electricity demand with combinations of actual wind, solar and hydro energy supply, while maintaining reliability.

We find that the fluctuations in the variable sources, wind and solar photovoltaics (PV), can be balanced by the flexible, reliable renewable energy sources hydro, concentrated solar thermal with thermal storage, and gas turbines fuelled on renewable gases and liquids. There is no need for any base-load power stations, such as coal or nuclear – they are so inflexible in operation that they simply get in the way. Using the conservative price projections to 2030 by the Bureau of Resources and Energy Economics, we find that the least-cost mix in the 100RElec scenario has the following contributions to **annual electricity generation**: 46% wind, 22% concentrated solar thermal with thermal storage, 20% solar PV, 6% hydro and 6% biofuelled gas turbines. The supply system satisfies the reliability criterion, even though the variable renewable sources contribute two-thirds of annual electricity!

The 100RElec system costs $7–10 billion per year more than the existing fossil fuelled system. It would break even either with a carbon price of at least $50 per tonne of CO_2 or, in the absence of a carbon price, if the current economic subsidies to all fossil fuel production and use in Australia (over $10 billion per year) were transferred to renewable electricity. Furthermore, if domestic gas prices continue to increase towards export prices, an electricity generation system based on gas could not compete with a 100RElec system. Such gas price increases have already occurred in Queensland, where gas exports are large, and a similar trend is occurring in New South Wales. We also find that coal and gas with CO_2 capture and storage (an unproven technology) could only compete with 100RElec under uncommon circumstances.

Thus 100RElec is both technologically feasible and affordable. It is the only commercially available, low carbon option for 100RElec that does not increase the risk of nuclear war. Urban transport could be based on improved electric public transport, better facilities for cycling and walking, and electric cars, vans and trucks. However, for rural road and air transport, the only options at present are biofuels. At present only limited quantities can be produced in environmentally sustainable and affordable ways. Possibly in the future, renewable energy could produce hydrogen fuel on a large scale by splitting water into its constituent gases.

More detail in
Sustainable Energy Solutions for Climate Change (Diesendorf, 2014).

And what of our agriculture? With the decline of oil and the cheap fertilisers it produces, our agriculture will face problems (one more reason for stabilising population). Huge tractors and combine harvesters will become impractical, as will large scale agribusiness. This will mean a need to move to smaller integrated farming that is predominantly organic in nature, with integrated pest management and much lower levels of fertilisers and energy inputs (Brown, 2011). Such agriculture would require less energy inputs, cause less toxification and (if done properly) require less fertilisers. Food will have to be grown closer to cities and rail links, as cheap trucking by road will fade away. Much of the urban sprawl around our cities will need to be returned to agriculture, while sprawling suburbs will have to be replanned for denser living (built around public transport hubs and cycle ways). Community gardens will increase. All of this transformation will of course provide considerable employment (and new sources of satisfaction and new enterprises, such as service industries).

And what of our societies? A SSE will have less inequality of income, which means it is likely to have greater social cohesion and actually be happier (Wilkinson and Pickett, 2010). Greed and selfishness will no longer be seen as 'praiseworthy', rather the *thrifty,* the *sustainable,* the *equitable* and the *ethical* will be seen as worthy of praise. There will still be good education, social welfare, medical coverage and aged care in a SSE. There will probably be a greater real sense of well-being through living sustainably and equitably with both nature and other people. Is this possible? Well Cuba has already been doing much of this over several decades (Murphy and Morgan, 2013), as section 6.3.3 shows.

So a vision of a SSE is not a world of broken people cowering in caves. That actually is the future towards which an ecologically-impossible 'endless growth' economy is pushing us. Rather, a SSE is likely to lessen many of the current drivers of conflict and war (over-population, inequality of income, control of fossil fuel reserves). SSEs will be smaller societies, with an ecologically sustainable and stable population. They will not use fossil fuels (or in minute amounts). They will use far less energy overall due to energy conservation and this will be provided by renewable energy. They will use sustainable building. They will use far less materials overall, and will require far less mining. Reuse and recycling will be much greater. Planned obsolescence of products will be a thing of the past. A 'cradle to cradle' approach for products will be mandatory (Braungart and McDonough, 2008). The finance industry will be based around *managing* accounts, without 'fractional reserve banking' (which drives the unsustainable debt bubble, Costanza et al, 2013). Interest rates on deposits will not be zero, but will be lower than today (Daly, 2008). The advertising industry will be smaller also, focused primarily on providing information (Victor, 2008). It would be taxed and strictly regulated.

Thus under a SSE people will still be fed, educated and cared for medically and into their old age. There will still be jobs, and they may be more fulfilling. Wasteful and conspicuous over-consumption will be a thing of the past. Thrift and sustainability will be highly valued. Is this such a terrible vision for the future? It may be for some who promote 'endless growth', as they wish only to maximise their profits (such as some large corporations, Sukhdev, 2013). However, the current endless growth vision is what has caused the environmental crisis and is leading society towards disaster, as what booms in a finite world must also bust (Assadourian, 2013). A SSE is a much saner alternative and, for the average person in society, will almost certainly lead to a more sustainable and happier future. Will a SSE solve all problems? No, of course it will not. We have many environmental and social problems that will still need to be solved. However, a SSE removes two key drivers of the environmental crisis – *too many people and too many things*. A SSE is thus a vision worth encouraging and working towards, a key 'Great Work' (Berry, 1999) of our times. Many groups such as 'Transition Towns', the Global Eco Village Network and 'Voluntary Simplicity' are already working towards such a vision.

6.0 Themes in a SSE

6.1 Jobs in a steady state economy

One of the key arguments against a steady state economy is usually that we just *have* to keep growth to 'create jobs'. So 'fixed' has the idea of growth being mandatory for employment become, that we forget that it was not always seen this way. The Harrod-Domar model of economic growth (Victor, 2008) examines the conditions necessary for balanced growth in aggregate demand and productive capacity. A few years after governments committed themselves to economic growth as a policy objective in the 1950s, Domar stated he was 'concerned with unemployment and treated growth as a remedy for it rather than an end in itself'. Domar noted that there was hardly a trace of interest in economic growth as a policy objective in the official or professional literature of western countries *before 1950* (quoted in Arndt, 1978). By the end of the 1950s however, growth had been thrust to the top as apparently the 'supreme overriding policy objective'. Arndt (1978) notes that 'more rapid economic growth came to be regarded as a prophylactic or remedy for all the major current ailments of western economies' whether this was underemployment, inflation, or other issues.

So for most of our history, we managed without growth in terms of employment in our societies. There is in fact no 'given truth' that we must have growth to have jobs. Nor should we expect this, for rapid growth economies have *not* in fact brought full employment. For example, there were more Canadians with incomes less than the 'Low Income Cut Off' in 2005 than in 1980, despite real Canadian GDP having grown by 99.5% (Victor, 2008). Economic growth in Canada since 1980 has not eliminated unemployment or poverty, the distributions of income and wealth have become more unequal. Growth has also exacerbated environment problems (Victor, 2008). So can we move to a SSE and still have jobs? Is it possible to do so and even reduce unemployment? There is some modelling work that suggests this is quite possible.

Victor (2008) notes it is possible to develop scenarios for a 30-year time horizon for Canada where full employment prevails, poverty is eliminated, people have more leisure, greenhouse gases are drastically reduced, and the level of government indebtedness declines in the context of low - and ultimately no - economic growth. He uses 'econometric' models to show how this could happen. There are some issues with econometric modelling (Diesendorf, 2013), but it does provide a glimpse of steady employment under a SSE (if we get the policies right). Scenario 1 is business as usual, scenario 2 is a no growth disaster where growth is ended without planning. Scenario 3 is shown in Fig. 4, and is low then no growth with high investment, where unemployment, poverty, and debt to GDP all decline (and greenhouse gases slightly so). Scenario 4 looks at low then no growth with a higher trade balance, while scenario 5 looks at low then no growth and a carbon price (which reduces GHG significantly). The important point is that all of scenarios 3-5 *reduce* unemployment, poverty and debt to GDP. Scenarios 3 and 5 (with high investment) are more compatible with a future of renewable energy and energy efficiency. By planning a low growth, then no growth, economy, we can actually reduce unemployment and poverty. A growth economy has failed on both these counts.

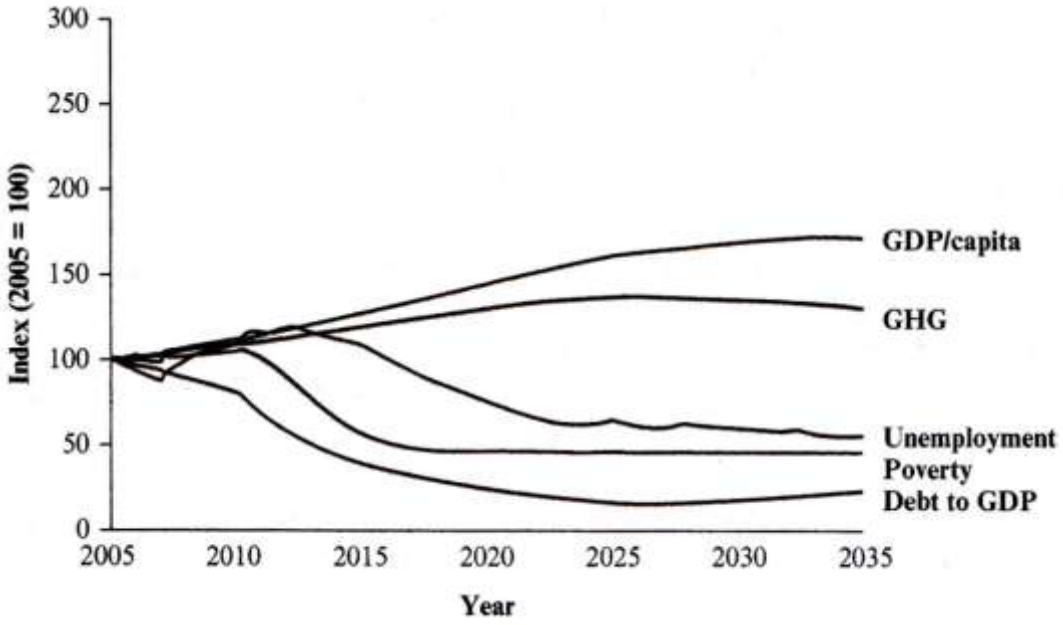


Figure 4 'Scenario 3' from Victor (2008). Low then no growth, high investment.

Another modelling approach has been that of Graham Turner (2011), who used the 'Australian Stocks and Flows Framework' (ASFF) model of the Australian economy. He found that reducing environmental impacts towards sustainable levels is likely to require very substantial changes to consumption, technology and population, but that these would not be enough. This system analysis identified that a 'crucial further ingredient to sustainability is how our societies deal with economic growth, material wealth, unemployment and the "work–life balance"'. The model examined ways to look at our economy in terms of reaching a sustainable future, where we can have a low growth economy and still keep full employment. Turner states:

> *Overall, the combination of low/stable population with both lifestyle and technology/investment changes yields substantial environmental benefits, while managing to maintain individual wealth at contemporary levels … a 'no growth' economy that has the highest level of energy, water, food and climate security.*

This involved a shorter working week (moving to a three day week by 2050). A shorter working week implies lower income and hence consumption. In approximate terms, material wealth in the modelling returns to about 1970 levels. This does not necessarily mean a reduced real quality of life, potentially the opposite, as progress can still continue in the delivery of (for example) health, education and communication services (Turner, 2011). Turner concluded:

> *Achieving sustainability requires a combination of substantial strategies. … Typically what is required is: stabilised or lower population; reduced household consumption (say, to 1970 material standards in developed countries) along with shorter working weeks (e.g. reaching 3-day weeks by mid-century); and large material and energy efficiency improvements, and investment in 'green' infrastructure. This is a formidable challenge, to say the least.*

In summary, there is no reason to believe that economic growth is a *prerequisite* for sustainable jobs. It has already failed to provide this and failed to end poverty. There are good grounds to believe that a SSE could in fact provide as much employment as we have today (and possibly more). Such jobs may well be more fulfilling than many we have in industrialised countries today (Dietz and O'Neill, 2013). The transition to renewable energy will provide many jobs. For example, in the Navarra region of Spain, two thirds of the electricity comes from renewable energy, and unemployment dropped from 12.8% to 4.8% (Renner, 2012). There remain aspects to be worked out, but dismissing a SSE on the basis of the 'growth for jobs' myth is a mistake.

6.2 Reaching a stable and ecologically sustainable population

Population growth exacerbates many environmental issues, and is a key underlying part of the growth economy (Cafaro and Crist, 2012; Washington, 2013). Apart from daring to question the growth economy itself, nothing else seems to raise such passion as suggesting we should 'limit our numbers'. Into it comes issues such as religion, racism, social and environmental justice, equity, and poverty. There is also no more 'taboo' issue politically than population (with the exception of questioning the growth economy!). Collectively, the public and governments have been shying away from it for decades. Yet Hulme (2009) asks if there is a 'safe' level of greenhouse gases to avoid runaway climate change, then 'is there not also a desirable world population?'.

Unsustainable population growth pushes the world *beyond* its carrying capacity (Catton, 1982). The world is finite, we know that human numbers have grown exponentially, so that they are now larger than ever before. The rate of growth has declined but we have not yet stabilised our 'overpopulation'.

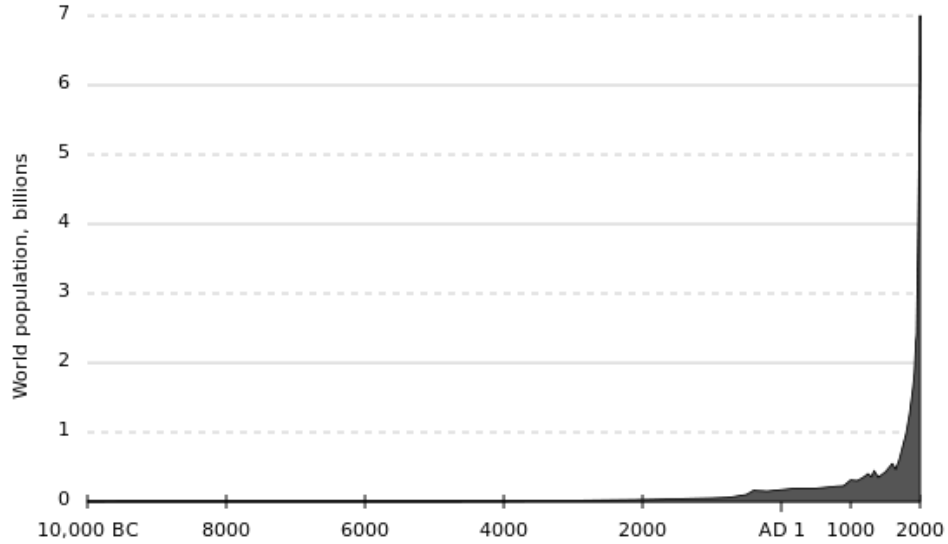


Figure 5 Growth in global population over time.

Throughput and Populations in the Steady State Economy

Ian Macindoe, CASSE NSW

A core feature of the Steady State Economy (SSE) is the constant low level of throughput in materials and energy. In simple terms this means that the economy processes raw materials from the planet, including material from which energy is derived, in the most parsimonious way to fulfil only those needs that are required for a sustainable level of comfort for a determined number of people and other life forms. The ecosystems within which the SSE must operate have finite limits; so economies must function within the limits of nature, neither taking more than the ecosystems can comfortably provide, nor returning more waste than the ecosystems can comfortably absorb and recycle. We can conceptualise our economy as involving *useful* products and services, *unnecessary* products and services, and *waste*. Whatever the economy's throughputs may be (useful, unnecessary, or waste) the quantities are determined broadly by the size of the population, modified by the technologies available, and the real (necessary) and artificial (market-driven) demands of people.

A full world is made up of humans, human-produced artefacts, and other life forms. The first two of these are the factors for which humanity must take most responsibility: the size of the human population and the populations of the throughput objects (or artefacts) that humans produce. Daly (2012) makes the point that the rate of evolutionary change of living species is relatively slow, while the rate of throughput artefacts, on which human evolution is now centred, is much greater, being driven by the supposed imperative of 'economic growth'. We now live in a *full world* in which there is competition for limited resources. Economic throughput has now populated the planet with human artefacts, many of dubious value, or at least of contested value. Daly's (2012) example illustrates the point:

Carrying capacity of the ecosystem depends on how many [artefacts] of all kinds have to be carried. Some will say to others, "You can't have a glass of wine and piece of meat for dinner because I need the grain required by your fine diet to feed my three hungry children". The answer will be, "You can't have three children at the expense of my one child's already modest standard of living". Both have a good point. That conflict will be difficult to resolve, but we are not there yet.

Rather, now some are saying, "You can't have three houses and fly all over the world twice a year, because I need the resources to feed my eight children." And the current reply is, "You can't have eight children at the expense of my small family's luxurious standard of living." In the second case neither side elicits much sympathy, and there is great room for compromise to limit excessive population and per capita consumption. Better to face limits to both human and artefact populations before the terms of the trade-off get too harsh.

Ref: Herman Daly 'The Populations Problem' *The Daly News*, 21st October, 2012

See: http://steadystate.org/populations-problem/

Our world population is now 7.2 billion people. Various projections indicate that by 2050 the population will grow to between 8.3 and 10.9 billion people (UN, 2012), with a predicted medium figure being 9.6 billion by 2050. It would make a big difference to our sustainability prospects if it was the lower figure, not the medium or higher. If we act, we could in fact halt our population at 8 billion (Engelman, 2012), and then reduce it to a sustainable level.
In 1968 Paul Ehrlich published 'The Population Bomb', which alerted the world to the dangers of exponentially growing population. Ehrlich, Ehrlich and Holdren (1977) later coined the equation:

I= PAT

Environmental Impact equals Population x Affluence x Technology. Our impact on the Earth is thus the number of people times their affluence (per capita consumption of resources) times the technology we use. Of course historically, most of the impact from pollution and carbon emissions has come from the consumers in the developed world (Monbiot, 2009). However, the developing world is rapidly catching up (China now being the largest CO_2 emitter). If this is done using traditional carbon-polluting industry, then the result will be steeply accelerating global carbon emissions, resource consumption, and other pollution. Indeed, this is already happening. The technology used to 'catch up' will thus be a critical factor, as will the question of whether the developing world seeks to catch up to the wasteful American (or Australian) level. However, improving technology or reducing affluence can only reduce our impact so far. In the end the numbers of people themselves count. A big population has a big impact, especially as the developing world expands its economy. Despite a 30% increase in resource efficiency, global resource use has expanded by 50% over 30 years (Flavin, 2010). This is mainly due to the increasing affluence of the large populations in the developing world. Accordingly, we need to target *all three* components of I = PAT if we seek to reduce human impact: containing population, limiting affluence and cleaning technology.

Population is a diabolical policy issue because it cuts at the heart of the received wisdom of the last two centuries, where *more* people was always better (Washington, 1991). 'More' meant we could gather more food, cut down more forest, hunt more animals, defend ourselves better. This builds of course on our own evolutionary history, where up to a point more people was also a plus, though indigenous societies used many strategies to limit numbers when carrying capacity was exceeded. 'More people' as a concept until the last 100 years has always been seen as a good thing for society. Collins (2010) believes that at the core of the population problem is a 'conflict of rights': the right of the individual to reproduce, and the right of other species to continue to exist. It is very hard for us to understand in our hearts that now 'more' is no longer better. Add to this the religious discouragement of birth control methods (e.g. the Catholic Church), and the fundamental desire of governments to have more citizens and greater power. Population ecologist Meyerson (see Hartmann et al, 2008) explains:

> *Conservatives are often against sex education, contraception and abortion and they like growth – both in population and in the economy. Liberals usually support individual human rights above all else and fear the coercion label and therefore avoid*

discussion of population growth and stabilisation. The combination is a tragic stalemate that leads to more population growth.

Population exacerbates all environmental problems, including climate change. It means cutting more forest for farmland, over-farming land so that it erodes, killing more 'bush meat' (wild animals) for food, over-fishing the rivers and seas. It means burning more fossil fuels as a way of fuelling 'development'. Many people speak of the need for a smaller ecological footprint, but Dietz and O'Neill (2013) note that 'we need smaller footprints, but we also need fewer feet.

So, what is an ecologically sustainable world population number? Biocapacity data suggest that if we made no change at all to consumption patterns, we could currently sustain a population of 4 to 5 billion. Our ecological footprint suggests we can afford no more than 4.7 billion people (Engelman, 2013), but not if everyone of those lived at the US standard, where the Earth could sustain only a quarter of today's population, or 1.75 billion people (Assadourian, 2013). However, such a footprint would not leave much left over for other species. If everybody on Earth shared a modest standard of living, midway between the richest and the poorest, that figure might be around 3 billion (PM, 2010). Paul Ehrlich (2013) believes that 2 billion is a more realistic maximum figure, and this may prove to be 1 billion as we have degraded many ecosystems. If we stabilise world population at 8 billion we could reduce it to 6 billion by the end of the century and to a sustainable 2-3 billion by the end of the following century (Staples and Cafaro, 2012).

Why are some of these sustainable population estimates so comparatively low? Because the world is already in 'overshoot' (Catton, 1982) beyond its ecologically sustainable carrying capacity for human numbers. We already have an ecological footprint of 1.5 Earths (GFN, 2013), hence 60% of ecosystem services are degrading or being used unsustainably, and extinction is 1000 times the normal levels (MEA, 2005). We are also pushing ecosystems beyond the point of collapse. The longer we delay taking action to solve the environmental crisis, the lower the figure for a sustainable human population will be, as we will have degraded our support systems even further (which may take millennia to recover). Given the 'ecocide' we have caused, applying the 'precautionary principle' would argue that the lower estimates are more prudent and ecologically realistic.

The world is already *overpopulated*. We cannot live in harmony with nature when our numbers are degrading the world's life support systems. To feed all the worlds people by 2050 given rising populations and incomes, food production must increase by 70% according to a FAO report (FAO, 2011a), but at the same time the report noted 25% of the world's land is degraded and water is becoming increasingly scarce and polluted, both above and below ground (FAO, 2011b). It is hard to see how this is possible, given the many accelerating and interconnected environmental problems that food production now faces (Brown, 2011). Australia has always been said to be a 'big country' which is empty, but it is not so much a big country as 'a small country with big distances' between the productive areas (Seddon, 1997; O'Connor (2012). There have been several estimates for an ecologically sustainable population for Australia at consumption levels similar to those of today. The first was 10

million people by ecologist Prof. Paul Ehrlich of Stanford University. The second was 6-12 million by Prof. Tim Flannery (1994). Former Treasury Secretary Ken Henry (author of the Henry Tax Review) estimated it might be 15 million (O'Connor, 2011). All these estimates are *substantially lower* than Australia's current population of 23.3 million (as of Oct, 2013, ABS, 2013a).

Population and Infrastructure
Jane O'Sullivan, Sustainable Population Australia

Population growth and population density have many ramifications for economic, social and environmental outcomes, and shape the evolution of social structures. These impacts are underappreciated because they are omitted from most economic modelling. Three important omissions are 1) the role of natural endowment in underpinning real wealth per person; 2) the role of oversupply of labour in driving income inequality; and 3) the creation of long-lived assets ('tooling up') as an economic activity competing with delivery of goods and services for consumption (realisation of wealth). The first applies to population density – the ratio of people to natural resources and ecosystem functions. The second and third relate mostly to population growth rate, although they interact with the first when crowding of resources force alternatives which are more costly or less productive. The third impact is explored below. Infrastructure is often a catchphrase for long-lived man-made assets, although we should include trained personnel, machinery and items delivering personal wellbeing rather than production, such as houses and furniture. Because infrastructure is long-lived, expenditure on it is usually called 'investment'. The problem with this word is that it implies that the money spent creating it will be repaid by the future value it creates. This is not true of the infrastructure created simply to provide additional people with the same standard of living as existing people. 'Capital widening' (providing more infrastructure for more people) is a recurrent cost – the cost of standing still, of keeping our heads above water. It competes directly with both consumption and 'capital deepening' – the provision of better infrastructure, equipment or skills per person, to increase productivity or quality of life.

Population growth increases costs far more than it increases production or income. To maintain a constant stock of infrastructure, we need only replace those items which have reached the end of their useful life. If power stations last on average 50 years, two per cent of them would need to be built in the average year. If the population is growing at one per cent per annum, we need to increase the power generation capacity by one per cent in that year. Instead of building two percent of the current stock, we must build three: two for replacement and one for increase. This is a 50 per cent increase in our expenditure on new power stations, although we expect only one per cent increase in production and none in income per capita. By repeating the calculation with items of different lifespan, we see that the increase in expenditure is equal to the lifespan multiplied by the population growth rate. The replacement value of all infrastructure (or 'fixed capital') is typically around seven times the annual GDP. This means it takes seven per cent of GDP to increase the stock by one per cent. A population growth rate of two per cent per annum requires 14% of GDP to be diverted to this task of 'capital widening' (running to stand still). All of this cost is attributable to people not yet added but is born by the people already present. To compare the wealth of nations, one should first subtract this cost of 'capital widening' before dividing the remainder of GDP by population. A stable population is a prerequisite for sustainable society. Recognising the costs of population growth makes it clear that population stabilisation sacrifices nothing – it is a win for short-term economic outcomes as well as for long-term social and environmental sustainability.

Engelman (2012) argues we could stabilise world population at 8 billion if we applied the strategies below. Then we would need to reduce overall population over time towards a lower, ecologically sustainable number, at least half that (possibly 2 billion would be a more responsible figure). While population remains in the 7-8 billion range, greenhouse gas and material use will have to come way down from Western levels (Engelman, 2013).

Overpopulation *can* be tackled by nine strategies (Engelman, 2012):

1. Assure access to contraceptives and promote family planning.
2. Guarantee education through secondary school for all (with particular focus on girls).
3. Eradicate gender bias from laws, economic opportunity, health and culture.
4. Offer age-appropriate sexuality education for all.
5. End all policies that reward parents financially, based on their number of children.
6. Integrate teaching about population, environment and development into all school curricula.
7. Put full pricing on environment costs and impacts.
8. Adjust to population ageing, rather than trying to delay it through government programs aimed at boosting birth rates.
9. Convince leaders to commit to ending population growth through the exercise of human rights and human development.

Note that those suggesting action on overpopulation are *not* suggesting compulsory sterilisation or forced euthanasia for the aged. These are myths promulgated by those who deny the problem, and seek to label population realists as 'anti-human'. The fact that strategies (such as the nine above) can work is attested to by the fact that Iran was able to halve its population growth rate from 1987 to 1994 (Brown, 2011). Population Media (www.populationmedia.org) has also had great success through education in many nations. We need to stop denying this issue of overpopulation, and develop rational, ethical, non-coercive, ecologically-based, population policies. To deny this just exacerbates denial of the causes of the environmental crisis (O'Connor and Lines, 2008).

In Australia, with an annual population growth rate of almost 1.8% (ABS, 2013b), we are the fastest growing OECD country in the world. Most of our growth comes from net immigration. The key solutions to stabilising our population will come from two sources. Most importantly, we must reduce our Net Overseas Migration from some 236,000 (Birrell, 2013) to around 60,000 (Lowe, 2005) or 50,000 (O'Connor, 2012) or 70,000 as suggested by the federal Labor MP Kelvin Thomson (2009) in his 14-Point plan for stabilising Australia's population. This would slow population growth and lead to a non-growing stable population. Note that this could still allow for a doubling of our refugee intake on humanitarian grounds, probably needed in a climate change (and an increasingly politically unstable) world. Somewhat similar proposals are made in recent books by O'Connor and Lines (2008), Dick Smith (2011) and Ian Lowe (2012).

However, in the world's driest inhabited continent (due to become drier due to climate change), with the thinnest and most nutrient poor soils, our numbers are already *too great*. So we need to slowly reduce them over time, which may mean decreasing immigration intake (or our own fertility rate). Another key step is dropping the 'Baby Bonus' in full, a financial payment by the Australian government that encourages people to have more children (O'Connor, 2012). These steps are obvious, but they have been mostly ignored or denied.

However, an increasing number of Australians and environment organisations *are* coming to realise that, given Australia is the most urbanised country in the world, our increasing population is over-crowding our cities, reducing the quality of life, and damaging our remaining natural heritage (e.g. NCC, 2011). Way back in 1994, the 'Joint statement of the 2040 population working party' (PWG, 1994) from the 'Population 2040: Australia's Choice' conference of the Australian Academy of Sciences noted:

> *In our view, the quality of all aspects of our children's lives will be maximised if the population of Australia by the mid-21st Century is kept to the low stable end of the achievable range, that is to approximately 23 million.*

Australia is now past that figure, and should seek to stabilise its population as soon as possible. The 2013 Fenner Conference on 'Population, Resources and Climate Change' at the Australian Academy of Sciences saw speaker after speaker make this point (SPA, 2013; Goldie and Betts, 2014). It is time to wake up and realise that 'more' is not always better, and can become far worse.

6.3 Consumerism and throughput of resources

6.3.1 Dealing with consumerism and overconsumption

Another key problem of our growth economy is consumerism and overconsumption. After all, environmental impact comes from population *times* consumption. Even in the 1950s, retail analyst Victor Lebow (1955) concluded:

> *Our enormously productive economy demands that we make consumption our way of life, that we convert the buying and use of goods into rituals, that we seek our spiritual satisfaction and our ego satisfaction in consumption. ... We need things consumed, burned up, worn out, replaced and discarded at an ever-increasing rate.*

For some people today, consumption has become the 'meaning of life', the 'chief sacred', the 'mystery before which one bows' (Ellul, 1975). Yet the same consumption that has lately become the 'meaning of life' is now revealed as the greatest hazard to life. Ultimately, we cannot solve the environmental crisis unless we roll back our consumer worldview (Starke and Mastny, 2010). Consumer cultures exaggerate the forces that have allowed human societies to 'outgrow' their environmental support systems (Assadourian, 2010). We have not in fact outgrown the ecosystem services that support us (and we cannot biophysically). Humanity remains completely dependent on nature (Washington, 2013). Hamilton (2010) argues that many of us have constructed a 'personal identity' through shopping and consumerism. We have substituted consumerism for *meaning* (Collins, 2010). Asking people embedded in the consumer myth to change their consumerism may thus be like asking them to change their identity. However, it is time to openly discuss the urgent need to alter today's consumer consciousness. It is not healthy, ethical or sustainable.

Sukhdev (2010) notes we have become attuned to giving 'yes' answers for trade-off choices that result in more consumption, more private wealth, more physical capital – as against *better* consumption, more public wealth, more natural capital. Society extends this false logic implicitly when we ignore the depletion of forests, fisheries, and so forth. This is part of a perverted logic of 'promoting growth' or 'promoting development', without defining these terms in holistic or equitable ways (from either an intra- or inter-generational perspective) (Sukhdev, 2010). While we promote endless growth on a finite planet, mainstream society doesn't think about whether this is fair to future generations, or indeed fair to the rest of life we share this planet with.

The consumer ethic, seen as 'natural' by consumers, is actually a 'cultural teaching', a purposeful social construct (Assadourian, 2010). Following World War II, the US was 'blessed' with great industrial capacity, and large numbers of under-employed workers (returned soldiers). To take advantage of this abundant labour and break people out of their wartime habit of thriftiness, industry organized to legitimise profligate consumption, to make it a 'spiritual activity' (Rees, 2008). In fact, people in the US actually *resisted* the throwaway society when it was first promulgated, as they believed in thriftiness. Three sectors aided the spread of consumerism: the car industry, the pet industry and the fast food industry (Assadourian, 2013). The notion of 'perpetual growth' is thus a social construct, and of

course it existed prior to WWII, but was vastly expanded as part of a transition strategy to reboot the economy after that war. It has now (well and truly!) run its course. What society has constructed it can theoretically deconstruct and replace. The time has come for a new social contract that recognises humanity's collective interest in designing a better form of prosperity for a world with ecological limits (Moore and Rees, 2013). This is a challenge, but it is also an opportunity to get things right for a sustainable future.

Peak Mining

Simon Michaux, geometallurgist and data analyst consultant to the mining industry

The mining boom has clearly moved into a contraction cycle. The mining industry has seen mass layoffs and large operation shutdowns, resulting in troubled economic predictions for the Australian economy. Mining is becoming economically unviable. There are a number of technical reasons for this, which have translated into an economic outcome:

- Decreasing grade
- Decreasing required grind size
- Higher strip ratio
- Increase in penalty elements presence
- Increase in required energy
- Increase in required potable water
- Much greater environmental impact

As we mine out all of the 'easy to work' deposits, only the harder work deposits are left. Often ore deposits are low grade, requiring a greater strip ratio or deeper underground operations. This requires more energy and capital as part of the cost of doing business. Quantities of penalty elements in saleable concentrate going to the smelter like arsenic, fluoride or cyanide are now accepted where decades ago they would have been rejected. Often, only countries like China will accept these concentrates due to environmental pollution generated during their processing. All future operations looked at now are huge low-grade deposits, at ever decreasing required grind sizes (how fine the ore is broken to). Economies of scale need mining operations to double and triple in size for the next generation to be economically viable. Future underground block-caves will be the size of current open pits.

All of this could be dealt with by rising metal costs, if it were not for inevitable energy shortages. Energy is the rate-determining step for mining. Total world fossil fuel supply is close to peak, driven by peak of oil production. Declining oil production in the coming years will create a rising gap which other fossil fuels like gas or coal, will be unable to compensate for. The energy contribution of nuclear fuels is too low in order to have any significant influence at a global level, though this might be different for some countries. Moreover, like with fossil fuels, easy and cheap to develop ore deposits are also being depleted in uranium production and nuclear power cost will continuously increase as a consequence. The industrial systems that each of these energy sources supports are quite different and are not interchangeable easily. That being said, each of those industrial systems are vital for our society to function. Putting all energy sources together gives a snapshot of our industrial capability. Peak total energy is projected to arrive approximately in the year 2017, four years away. As all of these sources are only a few years away from peaking and declining (with the exception of uranium), a compelling case can be made that our society and its industrial sector energy supply faces a fundamental problem, that is systemic in nature. All of the above results in an increase in power and water demand at a time when power and potable water shortages are probable. This implies that mining in its conventional form will peak and decline, just like production rates of any other non-renewable natural resource.

Tacey (2000) points out that consumers in Western society are spiritually empty, so shopping temporarily fills this void. Mass consumption requires that consumer demand remains insatiable (Westra, 2008). Preventing the collapse of human civilisation requires nothing less than a wholesale transformation of dominant consumer culture (Flavin, 2010). Consumption has gone up sixfold since 1960, but numbers have only grown by a factor of 2.2. Consumer expenditure per person has almost tripled (Assadourian, 2010). According to the Global Footprint Network, humanity now uses the resources and services of 1.5 Earth's (GFN,

2013), an unsustainable situation. If all the world were to adopt American or Australian lifestyles, we would need at least 4 more planets to supply them (Graff, 2010). Assadourian (2010) suggests three goals to tackle consumerism. First, consumption that undermines well-being has to be discouraged. Second, we need to replace private consumption of goods with public consumption of services (e.g. libraries, public transport). Third, necessary goods must be designed to last and be 'cradle to cradle' recyclable. Wilkinson and Pickett (2010) point out that if we improve 'equality of income' in our societies, then consumer pressure will decline.

Consumer cultures will have to be re-engineered into a culture of sustainability, so that living sustainably feels as 'natural' as living as a consumer does today. It will not be easy, and will be forcefully resisted by a myriad of interests such as the fossil fuel industry, big agribusiness, food processors, the fast food industry, car manufacturers, and advertisers. However, either we find ways to wrestle our cultural patterns out of the grip of vested interests, or Earth's ecosystems will decline further, and bring down the consumer culture in a much crueller way. To break free of consumerism, we will need to use all our social institutions: business, media, marketing, government, education, social movements, social traditions (Assadourian, 2013). We need to engage the public in a conversation about the growing and unsustainable costs of the consumer society (Assadourian, 2013). 'Choice editing' strategies are needed, which are strategies for sustainability where you don't provide people with some 'high impact' choices.

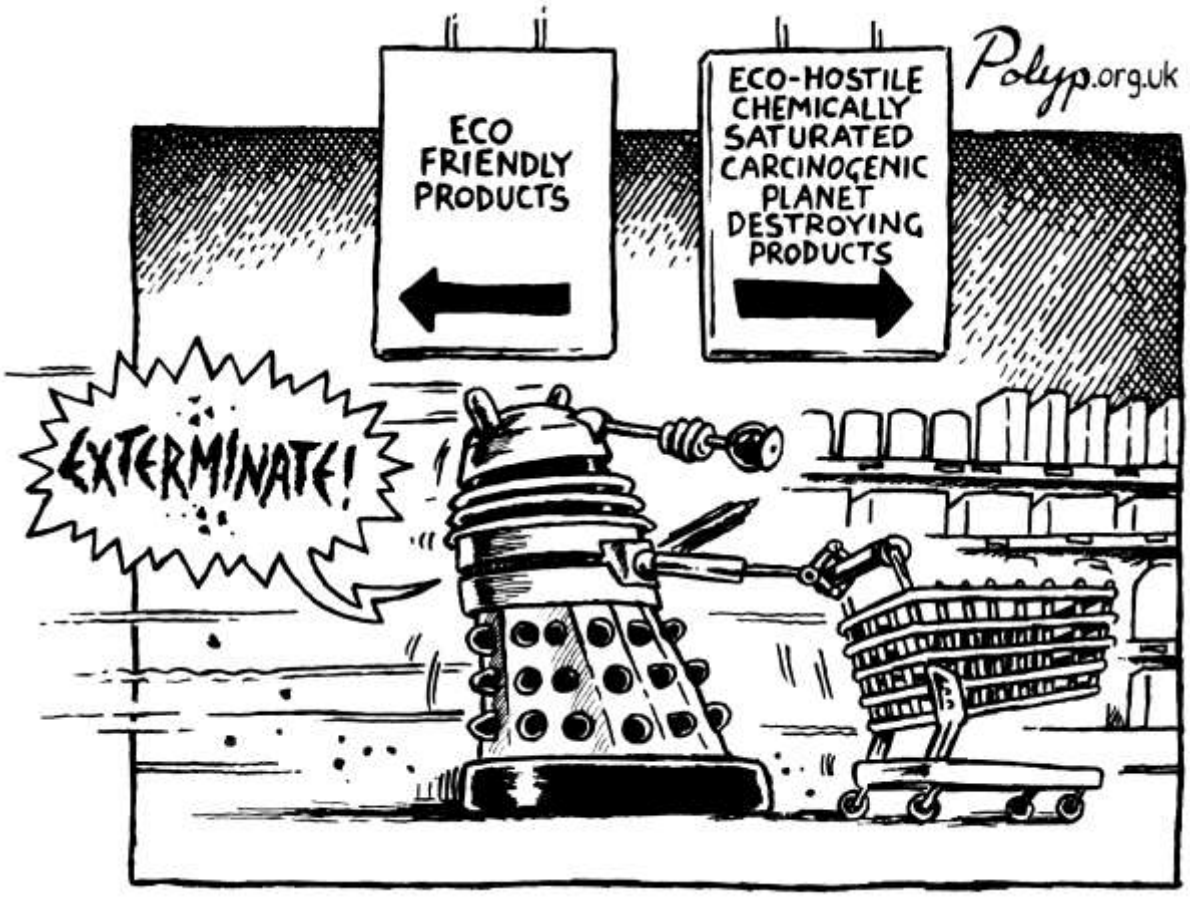
The 'finger of blame' should go directly to the main agent of the brown economy: *corporations* and the rules that govern their operations (Sukhdev, 2013). It now needs to be brought to the table as 'planetary stewards' rather than 'value-neutral agents' that are free-riding their way to global resource depletion (Sukhdev, 2013). Corporations are responsible for 60% of world GDP (Prugh, 2013). Better policies are needed regarding accounting practice, taxation, financial leverage and advertising. These could result in a 'new corporate model', an agent for tomorrow's sustainable economy. We need:

- Tax shifting.
- Rules and limits to govern financial leverage.
- Advertising norms and standards that make it more responsible and accountable.
- All major corporate externalities (positive or negative) must be measured, audited and reported in annual statements (Sukhdev, 2013).

We also need to ask what *drives* today's unsustainable consumption? It is no exaggeration to say that corporate advertising is the biggest single force driving consumer demand today. Sukhdev (2013) suggests 4 strategies for more accountable advertising:

- Disclose lifespan of products in all ads.
- Disclose countries of origin.
- Recommend on the product 'how to dispose of it'.
- Voluntarily submit a 10% development donation on total advertising spent in developing countries to support local sustainability projects.

Daly (2008) suggests an 'Advertising Tax' to reduce advertising pressure. Victor (2008) argues advertising must now return to being strictly factual information. There are, however, some promising signs of corporate change, as by 2008 some 80% of the world's largest corporations were producing Global Reporting Initiative (GRI) based Corporate Social Responsibility (CSR) reports (Sukhdev, 2013). The task is now to convert corporate sustainability strategies from tokenism to true reform and action. This is the real task of 'Third Wave' sustainability for corporations, to reinvent themselves, accept the need for a steady state economy, and aid sustainability, not hinder it. E. F. Schumacher wrote his seminal book on consumerism 'Small is Beautiful' way back in 1973. It is thus long overdue for us to come to grips with and reject the created ideology of consumerism. The end of the consumer culture will come, willingly or unwillingly, and sooner than we would like to believe. The only question is whether we greet it with a series of alternative ways of orienting our lives and cultures to maintain a good life, even as we consume much less (Assadourian, 2013). The challenge will be to convince more and more people speedily that further efforts to promote a consumer culture are truly a step in the wrong direction, and that the faster we use our talents and energies to promote a *culture of sustainability*, the better off humanity will be (Assadourian, 2013).



The Simpler Way perspective
Ted Trainer

The Simpler Way analysis of our global situation is based on the belief that the seriousness of the global situation requires much more radical and widespread change than most people realise. This view is supported for instance by the basic "Footprint" conclusion that the amount of productive land needed to provide for one Australian now is about 8 ha. If 9 billion were to live as Australians do the amount of productive land available per capita would be around 10% of the amount Australians use. Mineral footprint indices yield far worse multiples. The top ten bauxite consuming nations have a per capita use that is around 90 times the rate for all the other nations. This means that present rich world levels of consumption are grossly unsustainable and that we will probably have to reduce them by something like 90% if we are to achieve a sustainable and just world. Most people concerned about the state of the planet don't seem to realise how huge the changes would have to be.

The main contribution The Simpler Way seeks to make is in showing that these reductions could be achieved, but only if we radically restructure just about all aspects of our society. We would have to completely eliminate growth, prevent society from being driven by market forces or the profit motive (although there could be many small private firms and cooperatives, a minor role for markets), shift just about all economic activity to small scale, local and highly self-sufficient economies, implement a thoroughly participatory form of democracy, and run the basic aspects of our communities collectively by local assemblies. Above all we would have to shift to a culture of frugal, cooperative sufficiency, from this one characterised by competitive, individualistic acquisitiveness. These elements add to a bigger revolution than we have had in centuries, but the argument is, given the era of severe scarcity we are entering, these are non-negotiable prerequisites; there is no choice about them. If these elements are not in place then sustainable and enjoyable settlements (that all the world's people could share) cannot be got to work satisfactorily. Our main concern is to show that these changes would actually enable a greatly improved quality of life for most people, even in the richest countries. The Simpler (but richer) Way is about liberation from the consumer rat race, the entrapment in frenzied over-production (we probably work three times too hard), the stress and depression, the insecurity, inequality, conflict and the impoverished culture. Consider having to work for money maybe only two days a week, and therefore having much time for arts and crafts and personal growth, living in a rich and supportive community and in a diverse and productive leisure-rich landscape, having socially worthwhile and enjoyable work with no fear of unemployment ... and knowing you are not contributing to global problems.

For more see:
http://socialsciences.arts.unsw.edu.au/tsw/

Meadows et al (2004) note that the ‘good news’ is that current high rates of throughput are not necessary to support a decent standard of living for all the world’s people. However, the bad news is that many crucial ‘sources’ of natural capital (such as forests, fisheries etc.) are emptying or degrading and many sinks (i.e. the ability to clean up pollution) are filling up or overflowing. Daly (1990) lists three rules we should apply to help define the sustainable limits to material and energy throughput:

- For a *renewable resource* (soil, water, forest, fish, etc), the sustainable rate of use can be no greater than the rate of regeneration of its source.
- For a *non-renewable* resource (fossil fuel, high grade mineral ore, fossil groundwater, etc), the sustainable rate of use can be no greater than the rate at which a renewable resource (used sustainably) can be substituted for it.
- For a *pollutant*, the sustainable rate of emission can be no greater than the rate at which that pollutant can be recycled, absorbed, or rendered harmless in its ecosystem ‘sink’ (where it ends up).

However, as a civilisation we have generally ignored these rules. Indeed, in Australia we traditionally have sought to sell off our mineral resources as fast as possible. World governments, lobbied by the fossil fuel denial industry, ignore the third rule for carbon dioxide. Accelerating climate change is the result, with huge impacts (Washington and Cook, 2011; IPCC, 2014). Conservation of non-renewable resources thus will not happen without rethinking the dominant model of consumer driven economies. It will require a 'new conservation ethic'. The challenge is to reverse incentives, rules and other structures that cause us to be myopic users of resources, and replace them with principles and practices that would make our children (and their children) grateful and proud (Gardner, 2013).

So how do we control 'throughput', the growth in use of resources, both non-renewable and renewable? For *non-renewable* resources a depletion quota has been suggested (Daly, 1991) or a 'severance tax' at the mine-mouth or well-head (Daly, 2008). A depletion quota operates by restricting supply of a resource. The first stage would be a government auction of rights to purchase resources. The total amount of purchase rights to be auctioned in a given year would be determined by legislative decision. A severance tax increases the cost of a resource, encouraging conservation of that resource. Severance taxes can be revenue neutral, by phasing them in while phasing out regressive payroll or sales taxes (Costanza et al, 2013). However, while severance taxes in modest form do exist (often we call them 'royalties'), depletion quotas are resisted by governments and are rare. This seems to reflect a fundamental denial of resource scarcity, and the need to limit throughput for both ecological reasons and ethical reasons (regarding intergenerational equity and environmental ethics).

For *renewable resources*, proper holistic pricing of ecosystem services can also reduce overuse (Kumar, 2010). However, mostly the ecosystem services benefits are not priced into renewable resources as sold in the free market. In many cases these public benefits to society outweigh the private market value of a renewable resource (MEA, 2005). As the market mostly doesn't consider the monetary value of ecosystem services, versus their current private market price, often renewable resources are degraded and decrease overall well-being. The task of getting society to value (and price in) ecosystem services into the free market economy remains an essential work in progress (Kumar, 2010).

So we can seek to limit throughput from the production end by depletion quotas and higher severance taxes. We can also take action from the consumption end. We often hear of 'dematerialisation' of the economy, and the need for the highest possible *decoupling* of the economy from resource use (see 3.4). This means that we reduce the amount of materials used to make a unit of GDP. How far can we go with this process? Certainly Australia is very wasteful in its use of both energy and resources. A key part of this is the idea that we can use much less energy and materials and still have a similar quality of life. This has been variously called Factor 4 (use only 25% current energy and materials, von Wiezsacker et al, 1998), Factor 5 (use only 20%, von Wiezsacker et al, 2009) and Factor 10 (use only 10%, http://www.factor10-institute.org/). Factor 4 or 5 is certainly possible (if difficult) and in a SSE Australia should aim for 'Factor 5'. Business can make a major contribution here by adopting a goal of Factor 5 in their use of materials and energy. However, as discussed

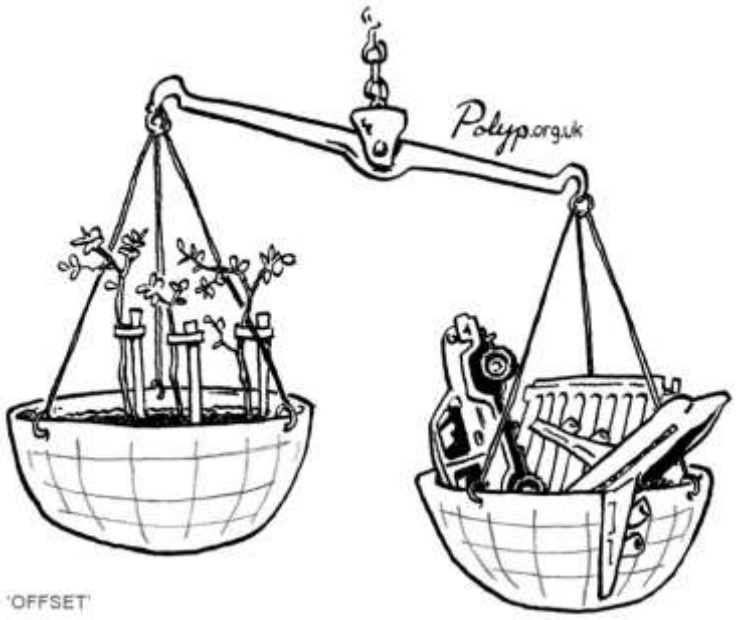
earlier, the idea that we can *totally decouple* our economy from resource use (UNEP, 2011b) would seem impossible.

Another key aspect of reducing material use is to plan products from 'cradle to cradle', so that a product is not just produced to be trashed later, it has to be produced with a view to how it will be reused or recycled into a new product. We should see pollution as a 'symbol of design failure' (McDonagh and Braungart, 2002). To this end we need to ban 'planned obsolescence'. This philosophy has gained ground in the last few decades as a 'clever' way of increasing sales. Thus our clothes wear out faster, our tools break, electronic goods don't last as long – all so that we have to buy *more*. In a full world where population is still increasing (as is energy use from fossil fuels), and where our civilisation has an ecological footprint of 1.5 Earths, such a strategy is fundamentally unethical and unsustainable.

We need 'extended producer responsibility' (EPR). EPR is a strategy designed to promote the integration of environmental costs associated with goods (throughout their life cycles) into the market price of the products (OECD, 2001). It aims to make the manufacturer of the product responsible for the entire life-cycle of the product, and especially for the 'take-back', recycling and final disposal. As a society, we also need to put priority on the use and reuse of materials already mined. We need the '4 Rs' – 'Rethink, Reduce, Reuse and Recycle' (in that order). Rather than just token commitment to eco-efficiency, we need eco-effectiveness and eco-design (Kopnina and Blewitt, 2014). We need to reject throwaway products, and we need to plan for reuse before recycling. It is thus possible to dramatically reduce the throughput of materials in our society and move to a SSE. However, we need the *political will*. Is there an example of a society that has already done something similar?

6.3.3 Alternatives to the consumer society

Is there an alternative to the consumer society, while still keeping a decent quality of life? In 1960 Cuba was blockaded by the US (the 'Special Period') and exports dropped by 75%. It had to adapt to severe shortages of oil, medicine and food. However, Cuba now serves as an example of a country that has *thrived* despite having limited fossil fuels. Cuba has low per capita income, yet in quality of life it excels. It is a materially-poor country with 'First World' education, literacy and health care. It has maintained its human services programs, free education, old age support, basic nutrition and free health care. The WWF Living Planet Report rated Cuba in 2006 as the only country to have genuine sustainable development (Murphy and Morgan, 2013). Cuba represents an alternative, where material success (as measured by energy consumption) is secondary, while quality of life is given priority. The message is clear, humanity can survive (and have good well-being) in a resource-constrained world if it learns from Cuba's example (Murphy and Morgan, 2013). So it's not a case of having to go back and 'live in caves'. We *can* live a sustainable life in a SSE with far less consumerism, less 'things', a much smaller ecological footprint – and still have a 'good life'.



6.4 The *ethics* of economics

Clearly Western society will need to change its worldview and ethics to reach a steady state economy. We need an 'ecological worldview' (Catton, 1982), also called an 'ecosophy', a philosophy of ecological harmony (Naess, 1989), a 'biounderstanding' worldview (Boyden 2004) or a 'Great Turning' (Macy, 2012). Our current human-centred worldview has been called 'Manifest Destiny' (McCright and Dunlap, 2000) and 'Defiance', where we defy and deny evidence of the environmental crisis (McKibben, 2006). It sees nature as just a group of resources that only have value for human use (Oelschlaeger, 1991; Crist, 2012). But why is a change in worldview essential? Because without it we will remain blind to the underlying real causes of our failures to reach sustainability (Catton, 1982). One problem is that academic disciplines tend to strongly influence their students. Gaffney et al (1994) note that neoclassical economics is a paradigm that 'bends the twigs of young minds. Then it confines the fluorescence of older ones, like chicken-wire shaping a topiary'.

The alternative is to adopt an 'ecocentric' approach. To accept the *intrinsic value* of nature for itself and see the natural world as something 'sacred', of which we are a part (Rolston, 2012; Washington, 2013). Is the Universe just about us and our consumption, or is it about sharing our planet with the wondrous evolved diversity of life? Over the past 200 years, Western modernism has impoverished the natural world we share, and brought us to the brink of tremendous further loss (Washington, 2013). This is the 'elephant in the room' we can no longer afford to ignore. We must now be realists. Recently the Catholic Jesuit Social Justice and Ecology Secretariat produced a report 'Healing a Broken World' (Alvarez, 2011). It noted:

> *The deterioration of the environment as a result of human activity has taken on a decisive importance for the future of our planet and for the living conditions*

> *of coming generations. We are witnessing a growing moral consciousness regarding this reality. … Nevertheless, we are still in need of a change of heart. We need to confront our inner resistances and cast a grateful look on creation, letting our heart be touched by its wounded reality and making a strong personal and communal commitment to healing it.*

There is also the question of *justice*. Is it just a matter of social justice, or does nature deserve *eco-justice* (Baxter, 2005; Rolston, 2012)? There is a need for the 'Rights of Nature' and an 'Earth jurisprudence' that accepts this and puts it into legislation (Cullinan, 2003, 2014). 72 nations now mention 'environmental rights' in their constitutions (Engel, 2008), the most famous being Bolivia and Ecuador. There is also the Pachamama movement in South America (http://www.pachamama.org/) that seeks to use traditional wisdom to teach sustainability. So a growing recognition is taking place that ethical change is needed. Collins (2010) believes discussion now has to move to the moral sphere, that we face a massive, over-arching moral problem, bigger than war, more serious than financial meltdowns. He believes we have to talk in a language that shows what we are doing to nature is *sinful*, that we are committing ecocide. We now need to adopt a fundamental moral principle that the 'good of the planet' must come before everything else (Collins, 2010).

Is there an 'ethics of economics'? The two terms are rarely spoken of together, but they should be. Robertson (1954) once asked 'What does the economist economise?'. His answer was 'love'. Daly (1991) says an economist is similar to how Oscar Wilde described a cynic: 'A man who knows the price of everything and the value of nothing'. Bauman and Rose (2009) note that economists (and economics students) are less generous and more selfish than others. Unless the underlying growth paradigm and its supporting values are altered: 'all the technical prowess and manipulative cleverness in the world' will not solve our problems, and in fact will make them worse (Daly, 1991). Daly (2008) explains:

> *… the neoclassical view is that man will surpass all limits and remake Creation to suit his subjective preferences, which are considered the root of all value. In the end, economics is religion.*

Daly and Cobb (1994) note that: 'Before this generation is the way of life and the way of death'. They conclude that at a 'deep level of being', they:

> *… find it hard to suppress a cry of anguish, a scream of horror. We humans are being led to a dead end, we are living by an ideology of death and accordingly we are destroying our own humanity and killing the planet.*

Originally, economics started as a branch of 'moral philosophy', and ethics was at least as important as the analytic content. However, economic theory become more and more top heavy with layer upon layer of abstruse mathematical modelling, erected above the shallow concrete foundation of fact (Daly, 1991). Daly (1991) notes that the temper of the modern age resists any discussion of the 'ultimate end'. *Why are we doing what we do?* Economics followed along by reducing ethics to the level of 'personal tastes'. Individuals set their own priorities, and economics became simply the 'mechanics of utility and self-interest'. It thus

divorced itself from ethics. Daly concludes that to do 'more efficiently' that which should 'not be done in the first place' is no cause for rejoicing. The big problems of overpopulation and overconsumption 'have no technical fixes but only difficult moral solutions' (Daly, 1991). The steady state economy may thus be seen to threaten the Faustian covenant with 'Big Science' and high technology, for it argues all things in fact are *not possible* through technology. For these reasons the steady state economy is resisted by orthodox economists (Daly, 1991). It is also resisted by techno-centrists and Cornucopians. The ethical dimensions of dealing with the growth economy are thus enormous and cannot be ignored.

Daly (1991) suggests that society *could* accept the eventual destruction of the Earth's life-support capacity as the price we must pay for 'freedom from restriction of individual rights to grow'. However, he observes:

> *It is widely believed by persons of diverse religions that there is something fundamentally wrong in treating the Earth as if it were a business in liquidation.*

Crist and Cafaro (2012) similarly conclude:

> *We find joy in the abundant beauty and variety that Earth provides. We find safety in a relatively predictable climate and reliable food sources. We find inspiration in the grandeur of this extraordinary planet. … We thus are called, even at this late hour, to find the clarity and courage to shift into a new relationship with Earth, before we diminish irrevocably the greater-than-human world, our own lives, and the lives of future generations.*

Daly and Cobb (1994) observe that a 'sustained willingness to change will depend on a love of the Earth that humans once felt strongly but that has been thinned and demeaned as the land was commodified'. Hence we cannot afford to let economics remain an *ethics-free zone.* The current corporate ethic seems to be to 'use resources as fast as possible until they're gone' (Heinberg, 2011). Clearly, a first step is to assert that economics must have an ethics, and that the current ethic is wrong and unsustainable.

7.0 Barriers to a steady state economy

There are many barriers to reaching a steady state economy, it will not be easy. The biggest barrier is *denial* (Washington and Cook, 2011; Washington, 2014). Most governments and government bodies (e.g. OECD, 2006), the media and the majority of the population do not admit to any problems with an endless growth economy. Rather they support (and even praise and promote) further growth. You don't solve a problem if you don't admit you have one. Denial of any need for change is promoted by the consumer culture, and the advertising industry, which spends $500 billion a year promoting over-consumption (see 6.3). Most corporations promote a growth economy and strongly oppose the idea of a steady state economy, and this is a major barrier. We thus are faced with a major *ideological* barrier to the idea of a SSE. As Daly (1991) notes, the free market has become a God, and growthism is now actually a religion. Growthism and consumerism as ideologies fit in very well with techno-centrism and Cornucopianism, the idea that technology and growth will solve

everything (Washington, 2013). We are up against the idea that 'more' is always better. And once it was, yet now we need to accept this is no longer the case.

The Great Transition initiative
Andrew Gaines, Transition Leader Network

The Great Transition initiative is a handy label for an informal global citizen-led initiative championing whole system change to a life-sustaining society. We can all be part of it. Whole system change means doing everything required, at every level, to actually become ecologically sustainable. Social and psychological factors are as important as industrial redesign. There are now millions of individuals and groups that care about global warming, social justice and environmental sustainability. Paul Hawken chronicled this in *Blessed Unrest*. CASSE is one of them.

There is such a great wave of positive change going on that we might say that we are in the midst of a *Great Transition to a life-sustaining society*. The vision of a Great Transition appeals to the part of us that longs for a world that is humane, respects nature, and celebrates life. It appeals to the part of us that cares. And although we may express our caring in different ways, caring itself unites us. Now it is time for us to unite behind an intention that is bigger than all of us. This is to actually succeed in changing the course of the developed world, so that as a global civilisation we successfully transition to a life-sustaining society. Big eh? It is what our times require of us. No lesser intent will do. The key point of change – the one that if successful will add juice to all of our individual initiatives – is mobilising informed passionate public will to execute all the changes necessary to become ecologically sustainable – a whole system change. As a movement we have incredible resources. We can focus our energies powerfully by all of us introducing the idea of the Great Transition into every media and forum we can think of, and by following through with education of various sorts to enable people to grasp what is involved. We do this in addition to working on our specialised projects.

The point is to catalyse a shift in mainstream consciousness by having the idea of Great Transition appear 'everywhere', supported by in-depth education. 'Designing for a miracle - innovative communication to accelerate the Great Transition' elaborates this strategy in some detail. Perhaps you will choose to play in this space? It need not take too much of your time.

Go to www.transitionleader.net for tools and to connect with the community

The next problem is in the university faculties of economics, which mostly don't discuss a steady state economy. The same applies to most academic economics textbooks, and even some textbooks on ecological economics (e.g. Common and Stagl, 2005). Within the economic academic community, it seems the majority view considers it is the 'kiss of death' to challenge growthism and to discuss the need for a steady state economy. Very few schools or faculties of economics in Australia raise a SSE as an alternative to the growth economy. The vast majority of the mainstream economic community still ignore and deny the need for a SSE. This has occurred even within the United Nations Environment Programme (UNEP, 2011b) and its development with a 'green' economy. This was a low carbon and low material use economy, but still a growth economy. However, if we are to move out of the current dead-end growth economy that has exceeded ecological limits, this needs urgently to change. Another issue relating to a SSE is the term 'sustainability' and the way it has in many places become 'sustainababble' (Engelman, 2013). The term 'sustainability' has been co-opted by many who seek to continue endless growth (Victor, 2008). In fact, the only truly 'sustainable' economy is a steady state economy.

Daly (2008) has observed that the 'free trade' mantra of international politics is also based on the premise of a growth economy. Hence it will seek to repress ideas such as a SSE. The

media of course is another key barrier, as mostly they seem to consider there is no need for change from endless growth. Indeed, some in the media have attacked anyone who suggested that endless growth was not possible, and sought to suggest alternatives. There are exceptions, such as Ross Gittins in the Sydney Morning Herald who wrote 'Gittonomics' in 2007 and 'The Happy Economist' in 2010, and in his talk to the 'Limits to Growth' symposium in November 2013 (Gittins, 2013). However, every news broadcast (even on the ABC) ends with a 'market report'. If the market rises then announcers looks happy, if it falls they look glum. Hence the media helps to condition us into thinking that 'all growth is good', and that it can continue forever. This attempt at 'academic assassination' happened to the authors of the original 'Limits to Growth' in 1972, and colleagues in economic faculties speak quietly that it still continues for those who challenge the growth economy. It is long overdue for this to change.

The property market, mortgages and superannuation have been said to be based on growth (though in Europe they function fine with a stable population). However, Daly (2008) points out that in a SSE there would not be zero growth, just slower growth. Developers and speculators are likely to oppose any suggestion that growth must be controlled. Corruption and undue political influence are other barriers. The political system we currently have allows lobby interests to make donations to political parties, and thus buy influence (which of course the parties deny). Most lobbyists are advocating growth in their particular areas of interest. The major political parties thus owe favours to the groups that are pushing hardest for growth. Hence gaining political support for a SSE remains a challenge in the current system.

There is also the barrier of getting the issue across to the general public. Most have been weaned on the mantra that 'growth is good'. This is promoted to them every day if they watch mass media. Mostly they will never have heard any discussion of the problems of a growth economy, the reality of ecological limits, or the benefits of a SSE. There is also the issue of a 'poverty trap', where the poor think the only way they will better themselves is through growth. This idea has been promoted by the consumer culture, where the claim is made that society must 'bake a bigger cake' to be able to share out more. Proponents of growth insist on this, rather than face the reality that the existing cake should be more equitably shared (Dietz and O'Neill, 2013). People also mostly have been conditioned by advertising to achieve their (fleeting) happiness through shopping and consumption. The SSE thus challenges the 'consumer identity' in consumer culture (see 6.3). Considering all this, on the personal level, many feel powerless and apathetic. They may *know* that something needs to change, that endless growth is not possible logically, but they don't know what to do or how to do it. This document is a step towards showing that there are alternatives.

So there are a lot of barriers, but that is hardly surprising, given the preceding sections. To be realists, one must acknowledge the obstacles we face and the scale of the problem. Those questioning endless growth (such as CASSE and some academics) are not a bunch of starry-eyed idealists who pretend this will be easy. However, a transition to a SSE is necessary, and we as a society must discuss how to go about this. Rather than just talking about it, critically we already know steps we can take 'right now' in Australia towards a SSE.

The Rise of the Not-for-Profit Economy
Donnie Maclurcan and Jennifer Hinton, http://postgrowth.org

Across numerous countries, the economic contribution of the not-for-profit sector has been on the rise since the late 1990s. In Canada, for example, not-for-profit institutions now contribute 8% of the country's gross domestic product. Moreover, in the U.S. the not-for-profit (NFP) sector grew significantly faster than the for-profit (FP) sector between 2001-2011, despite the financial crisis of 2008. With the growing ability for NFP businesses to outperform equivalent FPs, these trends are likely to accelerate to the point that NFP business replaces private enterprise at the center of domestic economies, worldwide, by 2050.

Many NFP managers increasingly understand that generating their own income allows them to fund the good work they do (as opposed to traditional approaches that depend on grants and philanthropy). Indeed, a recent study of 32 countries found that 53% of NFP revenue now comes from commercial activities. Examples of successful NFP enterprises are emerging across sectors as diverse as construction, energy, manufacturing, information technology, telecommunications, banking, accommodation, food and beverages, and healthcare. Few people know, for instance, that the world's biggest NFP organization (by number of staff - employing 120,000, largely women) actually utilizes an enterprise model. Operating since 1972, BRAC annually assists 135 million people through its social development services, but 80% of its revenue comes from its own commercial enterprises, including a large-scale dairy and a retail chain of handicraft stores, all of which are run according to a holistic vision of sustainable business. Increasingly in direct competition, NFPs are demonstrating their ability to outperform FP counterparts in ways such as offering more accessible pricing, and obtaining a greater percentage of local government contracts. The 'NFP advantage' stems, in part, from:

- not needing to generate and distribute private profits (or, indeed, any profit at all);
- tax exemptions;
- the ability to receive donations of various forms, including voluntary labor;
- the increasing desire that people have to work for purpose rather than private profit;
- rising demand for ethical products and services; and
- increasing access to capital via crowdfunding, revenue-based finance and community bonds.

For the first time in history, the financial case for registering a business as a NFP is being seriously considered. This trend couldn't come at a more crucial time. As history shows, no economic system that centralizes wealth and power can ever be socially and ecologically sustainable. On the contrary, the evidence is mounting that innovative, steady-state economies, with high levels of employment, can exist *without* the private profit motive

8.0 'Easy' and immediate steps Australia can take *right now*

Pavan Sukhdev (2013) has noted:

> *… there is emerging consensus among governments and business leaders that all is not well with the market-centric economic model that dominates today.*

An increasingly large number of people *are* now recognising that the growth economy (based on population and resource use increase) cannot continue forever, given it is based on a finite world. It is, after all, obvious. Many people may also acknowledge that many of the assumptions underlying neoclassical economics (see 3.5) are also absurd. Some may even like the idea of a steady state economy, but the question that comes to mind is: 'How do we get there?'. If we accept (and don't deny) the discussion above, then what are the first steps we can take to move away from growthism? What is it we can do 'right now' to make things better? There are many things we can do immediately (and comparatively easily) to move towards an economy that is sustainable into the future. However, 'easy' is a comparative term. Most of these could be done fairly easily physically and socially. As we will see, the

problem lies in *politics*. These points have been collated from many authors writing on the problems of growth and on the alternative of a steady state economy. Key references are Daly (1991, 1996, 2008), Layard (2005), Czech (2000, 2013), Victor (2008), Jackson (2009), Simms et al (2010), Heinberg (2011), Brown (2011), Stiglitz (2012), Dietz and O'Neill (2013), Sukhdev (2013) and Costanza et al (2013). The list is clearly not definitive, but suggests various points that would immediately assist to turn around the worst aspects of an endless growth economy. These are:

- Move (over two decades) to a *low carbon and material use economy* as recommended by UNEP (2011b) and the WBGU (2011). This would be through 'appropriate' technologies such as renewable energy, energy conservation (REN21, 2013) and sustainable building (Godfaurd et al, 2005). Various analyses have shown the move to 100% renewables is perfectly feasible and economic (WWF, 2011; Jacobson and Delucchi, 2011; Diesendorf, 2014).
- Stabilise population at an *ecologically sustainable level* (Australia is likely already beyond this at our current population and consumption, O'Connor and Lines, 2008). This means planning for an ecologically sustainable population in Australia (perhaps 15 million), strong promotion of family planning, ready access to contraception, reduction in net migration to around 70,000, and full removal of the Baby Bonus (see also www.population.org.au).
- *Tax-shifting*, by taxing the 'bads' that degrade ecosystem services. This includes carbon pricing as a key process to control climate change, but a landfill tax has also been proposed (Brown, 2011). Taxes are an effective tool for internalising negative externalities into market prices and for improving income distribution (Costanza et al, 2013). Way back in 1997, two and a half thousand economists (including six Nobel Prize winners) endorsed the concept of tax shifts for climate change (Klugman, 1997), so the recognition of the need for this is not new.
- *Subsidy-shifting*, especially taking the $10 billion subsidies and tax breaks in Australia given to fossil fuels (Elliston et al, 2013) and transferring them to the renewable energy industry, or the $700 billion worldwide given to damaging activities (Brown, 2011).
- *Control of resource use*, both non-renewable and renewable. For non-renewable resources a depletion quota has been suggested (Daly, 1991) or a 'severance tax' at the mine-mouth or well-head (Daly, 2008). For renewable resources, proper holistic pricing of ecosystem services will also reduce overuse (Kumar, 2010).
- *Dematerialisation* of the economy, and the highest possible decoupling of the economy from resource use. Australia should move to 'Factor 5' (use only 20% of current energy and resource use, von Wiezsacker et al, 2009).
- Restructure the financial system to better serve the *needs* (not wants created by advertising) of society. A Green Investment Bank and Housing Bank are useful steps (NEF, 2009), as are secure national or community-based 'green bonds' (Costanza et al, 2013).
- *Cooperatives*, 'not-for-profit' corporations, and credit unions as alternatives to 'profit above all else' corporations (Heinberg, 2011). Examples are Mondragon in Spain

(which employs 83,000 people), while the UK has 6,000 'Community Interest Companies' (Dietz and O'Neill, 2013).

- Banks should be required to gradually move to a *100% reserve requirement*, and make their money by financial intermediation and service charges, rather than lending out at interest the money they 'create out of nothing' (Daly, 2008). They would thus not be able to create new money to fuel the debt cycle that is a key part of endless growth.
- *International Development* - the Automatic Information Exchange program introduced to help detect tax avoidance and evasion should be extended worldwide, as should the Extractive Industries Transparency Initiative, both anticipated to ensure greater economic justice for developing nations. Along with the proposed 0.75 of GDP in International Development Assistance, these financial resources must be specifically targeted to 'ecologically sustainable' transition projects as part of a steady state economy.
- A *Green GNP indicator* agreed by all. A number have been developed (e.g., ISEW, GPI). The Genuine Progress Indicator (GPI) peaked in 1975 and has been flat or slowly decreasing ever since, due to environmental decline (Costanza et al, 2013). A suitable indicator or indicators need to be agreed and widely applied. At the very least we need two accounts, one that measures the benefits of physical growth in scale, and one that measures the costs of that growth (Daly, 2008). Happiness (e.g. the Gross National Happiness Index) should also become a key goal of policy (Layard, 2005)
- A *tax on financial transactions* (such as 1%) is known as a 'Tobin Tax' (Daly, 2008). This will help deter rapid speculative finance transfers that are part of 'extreme money' (Das, 2011) and which exacerbate the debt crisis.
- A *tax on advertising* (Daly, 2008) as well as a ban on outdoor advertising, such as Sao Paulo in Brazil introduced in 2007 (Sukhdev, 2013).
- Limits on *income inequality*. This means you establish both the minimum and *maximum* incomes in society. Daly (2008) notes that universities and the military manage with a factor of 10-20 as the upper limit. Czech (2013) suggest 15 times as upper limit, while the Mondragon cooperative has a maximum pay of 9 times the minimum (Dietz and O'Neill, 2013).
- More *flexible workdays* and 'working from home' policies (Heinberg, 2011) and possibly a 'guaranteed jobs' policy (Dietz and O'Neill, 2013).
- A *sustainability tariff structure* so that 'sustainable' countries are not disadvantaged (Heinberg, 2011) when they trade with those that are not sustainable. This questions the 'free trade' mantra, which Daly (2008) points out assumes growth is always 'good for all'. De-globalized trade should first use what can be produced locally, then trade what can't be produced locally, to reduce transportation pollution and revive local producers (Smith, 2013).
- *Reform of corporate law* to support sustainability (Heinberg, 2011). Corporations are responsible for 60% of global GDP, but damage the environment and influence policy against sustainability (Prugh, 2013). They must cease legally to be a 'person', and

should not be able to make political donations. Sukhdev (2013) lists ways to move to a 'new corporate model' for sustainability.

- Education on the *downsides* of the growth economy and the upsides of a steady state economy, about why 'sharing and sufficiency' are better than endless shopping and insatiability (Dietz and O'Neill, 2013).
- Turning our economy from an 'ethics-free zone' to one which is based on an *Earth ethics* (Rolston, 2012).
- *Green investment* (e.g. renewable energy) and 'green jobs', which together can cushion the social impacts of moving to a steady state economy (Daly, 2008).
- *Moving superannuation investment to low carbon projects*. Former Liberal leader John Hewson, is currently urging superannuation funds to truly consider the 'risk' involved in backing high-carbon producing activities such as coal mines, when they could be funding low carbon projects such as renewable energy (ABC, 2013).
- Create a statutory and independent *Commission for the Environment and Sustainability*, as recommended by the Hawke Inquiry (Commonwealth, 2009).
- Ensure that *human dependence on nature* is properly taught in all curricula and syllabuses. At the same time, schools need to discuss ethics, including environmental ethics and the need for both social justice and eco-justice, and the value of 'thriftiness' as opposed to waste.
- Encourage 'transition' leaders (e.g. http://transitionleader.net/; http://www.bethechange.org.au/), where people shift their identity from being 'consumers' and/or victims of society to becoming aware and engaged 'contributors' to the 'Great Work' (Berry, 1999) of transitioning society to a sustainable future (and a SSE).

These points clearly vary in their impact and their ease of their being carried out. Some are essential for many reasons, especially the points about controlling population, moving to a carbon-free economy based on renewable energy, and reining in the throughput of materials. UNEP's (2011b) 'green economy' agrees on carbon and material use needing to be drastically reduced (though is strangely silent on population). How do we do this? This is where 'tax shifting' and 'subsidy shifting' are crucial. If we only did those two things, we would be taking major steps to improving things and controlling the climate crisis. Greater green investment, such as by the superannuation industry, is of key importance. At the same time, we urgently need corporate reform to shift corporations towards supporting sustainability, rather than opposing it (as most do today, Sukhdev, 2013). Cooperatives and 'not-for-profit' corporations are important ways of doing this. Others issues are also clearly central, such as moving to 100% reserve requirement in banking. Debt-based money creation is currently a driver of economic growth, the primary reason why a SSE requires a different sort of monetary system. The current money system fuels an upward spiral of debt (Dietz and O'Neill, 2013). Unless we tackle fractional reserve banking, then the expanding debt bubble is likely to burst and make the GFC look like a 'storm in a teacup'.

Given that we tend to 'value what we measure' it is essential that the GDP is replaced by a better measure (or measures) that do not combine money spent on 'positive' things with

money spent on correcting pollution and environmental degradation (Daly, 2008). The Genuine Progress Indicator (GPI) is usually the measure suggested (Costanza et al, 2013), though there is not full agreement on this (Victor, 2008). A 'Tobin Tax' and an 'Advertising Tax' would send clear signals to rein in the rapid shifting around of capital (the French government already has a modest Tobin tax, Dietz and O'Neill, 2013), and these would also help control the current $500 billion a year spent by advertisers seeking to continue growth of unsustainable consumption. Tackling throughput of materials (i.e. our huge resource use) and wasteful overconsumption are also clearly central (if harder) issues. The 'cradle to cradle' approach, eco-effectiveness and eco-design can all help here (Kopnina and Blewitt, 2014). In Australia, the general view until recently was that 'mining is king'. However, it employs only 1.9% of the workforce (Lucas, 2013), yet the PR put out by the mining industry has convinced most Australians that we totally rely on it. In fact we don't, and it brings social problems as well as massive environmental ones. There is a growing recognition in Australian society that mining is 'out of control' (e.g. Pearse et al, 2013). We need to decrease the amount of mining in Australia (and cease all fossil fuel extraction within two decades), not increase it. A 'severance tax' or depletion quota would be an important move in that direction (as would the about to be repealed Resource Rent Tax). The obvious move in regard to fossil fuels was a carbon price or tax. However, the Abbott government at the time of writing has just removed the fairly modest carbon price we finally reached in Australia.

We then come to the points that may *seem* less central. These include education; discussion of ethics and worldview; adjusting working hours; 'maximum' incomes as well as minimum ones; a Sustainability Commissioner; and community projects such as community gardens, 'Sustainability Street' and Transition Towns. Some might think these are 'touchy feely' issues that are not all that important. However, we will not reach a sustainable future and a steady state economy without a 'change of heart'. This is acknowledged by many groups. We will not change the growth economy without changing our worldview and ethics (Costanza et al, 2013). Many people actually have *greater* altruism and concern for others than neoclassical economics predicts, but they often don't know that others share their view (Brondizio et al, 2010; Wilkinson and Pickett, 2010). So we *must* talk about worldview and ethics. We also need to realise that growthism has not brought happiness, quite the opposite. Inequality of income creates less social cohesion and eventually a social crisis (Wilkinson and Pickett, 2010; Maxton, 2011). Unless we address such social issues, we will not have the social capital to change to a SSE.

Now I (and CASSE) recognise that many of the above points will be strongly opposed by those who are ideologically committed to 'growth at any cost'. That includes most large corporations and many governments. However, many things *are* happening at the community level, where people are taking action to oppose endless growth and support meaningful sustainability. Transition Towns, the Global Eco Village Network, 'Voluntary Simplicity' movements and economic localisation are all positive signs that people are striving to live happy but less materialistic lives (Dietz and O'Neill, 2013). They are thus definitely easy and immediate steps that you and I can be involved in. To quote Gandhi:

> *We must become the change we want to see in the world.*

9.0 The Way Ahead

So we have been addicted to growth in population and resource use. This has been the unsustainable driver of Western society for the last 200 years, a driver that has led to the dangerously accelerating environmental crisis. Do we have to stay addicted? *No we don't*. A steady state economy will still allow 'economic development' that can increase GDP. It just won't be based on growth in numbers of people or things. A SSE will not turn off the creativity, imagination, co-intelligence (Atlee, 2012) or innovation of humanity. Rather it *requires these*. These may still lead to an increase in GDP, and certainly will contribute to an increase in GPI and human well-being under a SSE. A SSE is not a failed growth economy, not another Great Depression. Rather, it is a rational and ethical way to *avoid* these and move towards a sustainable future. Some nations are moving in right direction – Sweden, Denmark, Japan and Germany have arguably reached a situation in which they do not depend on high rates of growth to provide for their people (Heinberg, 2011).

Economic sustainability in a finite world cannot be about endless economic growth. It has to be about creating an economy that is sustainable into our long-term future as a species. This means not damaging the ecosystem services that underpin our society. Economic sustainability thus cannot mean continuing 'business as usual' along the neoclassical model. It requires returning the economy to being a *servant* of society, not its master. Business and corporations clearly have a critical and potentially positive role to play in transition to a SSE. Businesses will need to continue generating employment, creating new (but appropriate) technology, fostering innovation, but within a framework that *respects* ecological limits and promotes human well being (Dietz and O'Neill, 2013). If the brainpower currently dedicated to pursuing economic growth could be applied to pursuing true economic 'sustainability' we would have a lot more ideas about how to achieve a prosperous non-growing economy (Dietz and O'Neill, 2013).

Meaningful economic sustainability means questioning (and abandoning) most of the assumptions (see 3.5) that underlie the neoclassical economic synthesis in control today. It means discarding our addiction to 'evermoreism' (Boyden, 2004). That means moving to a steady state economy, and in fact should mean 'degrowth' in the developed world, with some further growth in the developing world (Latouche, 2010; Daly, 2012), where the final overall per capital resource use for everyone is lower. This might be at a level similar to what Australia had around 1960 (Lowe, 2005) or 1970 (Turner, 2011). This is not such a terrifying prospect, and does not mean going back to 'live in caves'. As Gandhi noted, there is enough for everyone's need but not for everyone's greed (Pyarelal, 1958).

'Degrowth'

Robert Perey, Centre of Management and Organisation Studies, UTS

Degrowth is an emerging discourse(s) beneath the umbrella of sustainability discourses that draws on a variety of sources to argue for a new social imaginary. It draws on limits discourses to acknowledge the finite capacities of the ecologies within which humans live. It draws on the pragmatic discourses to recognise the creativity to navigate through complex problems inherent in the human condition. It draws on radical environmental and social discourses to challenge entrained patterns of seeing. Degrowth is a call for a radical break from traditional growth-based models. Several strategies can be thought of in order to tackle this challenge. The first strategy, and by far the most popular among policy makers and captains of industry, is eco-efficiency for 'green growth'. Eco-efficiency may be situated in the dominant paradigm of technological development within the market system of free enterprise (the 'business as usual' paradigm). More fuel efficient cars or cars with alternative engine technologies are examples of this strategy. The limitations of this strategy are well known and have proven to be of empirical significance; how it maintains support for continuing growth has become readily apparent since William Stanley Jevons gave his analysis of the 'rebound' effect. The other strategy, and by far the least popular, is limiting growth, creating sufficiency and focusing on services to meet consumer demands rather than products themselves. This strategy has the tendency for less or 'small is beautiful' and the economic ideal is that of a 'steady state economy': fewer products, less material throughput, lower scale of economic activities that are in line with the limits of a finite Planet.

When using the famous I=PAT equation, it becomes clear that in order to prevent growth from outpacing efficiency gains, some form of damping of growth or even shrinking the economy becomes necessary. This has sparked a new discussion, started by Serge Latouche and his call for *décroissance* or *degrowth*. Degrowth is understood as a voluntary transition towards a just, participatory, and ecologically sustainable society. Its objectives are to meet basic human needs and ensure a high quality of life, while reducing the ecological impact of the global economy to a sustainable level, equitably distributed between nations.

The current degrowth discussion focuses on five main areas: (i) injury to and loss of ecosystems and human livelihoods and communities due to human activities; (ii) the rebuttal of the idea that human-made capital can substitute for the loss of natural capital; (iii) commodification of inter-human and human-Earth relations and values; (iv) a critique of growth as a social, economic and political imperative and of over-reliance on technology and industrialization to address ecological pressures; and (v) an examination of global and historical distributional inequalities through social justice perspectives (Montreal Degrowth Conference, 2012). Degrowth is an important discourse that continues to gain international stature. Over the last half-decade there have been four international Degrowth conferences: Paris 2008, Barcelona 2010, Venice 2012 and Leipzig 2014, and the movement also spawned regional gatherings such as the conference held in Montreal in May 2012: Degrowth in the Americas. Understood as a voluntary transition towards a contraction-based economy in line with ecological limitations and greater social equity, degrowth is not simply about reducing growth rates; it is about replacing growth as the indicator of success for human endeavour.

For more information see: http://www.degrowth.org/

A new model of the economy would be based on the goal of 'sustainable well-being'. It would acknowledge the importance of ecological sustainability, social fairness, and real economic efficiency (Costanza et al, 2013). Can we have a global economy that is not growing in material terms, but that is sustainable and provides a high quality of life for people? Costanza et al (2013) explain the answer is 'yes', and list examples from past societies and current initiatives (e.g. Transition Towns, the Global Eco Village Network). Integrated modelling studies (such as World3, GUMBO and LowGrow), also suggest economic sustainability (which is also ecologically sustainable) is achievable (Costanza et al, 2013). The idea that we *can* change our economic system to ecological economics and a steady state economy is not a 'utopian fantasy'. On the contrary, it is the neoclassical 'business as usual' that is the true fantasy (Costanza et al, 2013). Many of the solutions for

the big steps are known for population and consumption, and some immediate (and sometimes easy) first steps towards a steady state economy are known also. We do know many of the things we must do. *Now we need to do them.*

The way ahead will require we talk about this. We have to enter into a dialogue on the problems of a growth economy, and the fact that there are alternatives – such as the steady state economy. We cannot continue to ignore the 'elephant in the room' (Zerubavel, 2006). That means we will need to talk about ethics and worldview in all venues: in schools; in universities; in councils; and in businesses. It will mean that the media will have to stop promoting 'growth' as the only possibility, cease to portray it as something always desirable and ethical. For it isn't, the ideology of continual growth (in numbers of people and resource use) has brought ecosystems and society to the point of collapse. It will mean that politicians will have to talk about the previously 'unthinkable', that such growth cannot continue. A steady state economy doesn't mean an end to jobs. It definitely doesn't mean another Great Depression. It is ignoring the impossibility of endless growth that is leading us towards this. There is no reason why society cannot foster the creativity and imagination in our community to lead us to a steady state economy and an ecologically sustainable future. The strivings for betterment in education, the arts, medicine, architecture and the sciences will remain. Indeed they are likely to be enhanced.

We *do* now know much of the way ahead, how to move away from the fundamentally unsustainable growth economy to an economy that is based within the Earth's limits, a steady state economy. Some things of course remain to be worked out, but the fundamentals are there. All we need now is the ***political will***. Many people at this point will leap forward and say 'You will never get that!'. And indeed, one has to acknowledge the difficulties and the obstacles we face. However, the alternative is to 'do nothing', which will lead Australia into even greater future difficulties. There will come a point where it is clear that the growth economy cannot be maintained, when the 'denial dam' bursts (Washington, 2014). At that time, the vision presented here may provide an alternative path to a steady state and sustainable economy for Australia. So we should develop alternatives to existing policies, and have them available for the time when the politically impossible becomes the politically inevitable (Dietz and O'Neill, 2013). Australia can then break free from denial and become a leader towards a steady state economy, one that will ensure the well-being of both future Australians and our wonderful and unique natural heritage.

It is time to accept the problem. We face a challenge ahead, but it is also an opportunity to 'get it right', to develop an economy that can lead Australia to a long-term and meaningfully sustainable future. To my mind, this is true 'patriotism', true love for our land, our heritage, and future Australians. Reaching a SSE is a challenge, but it is an essential task we need to commence, a 'Great Work' (Berry, 1999) of our times to lead us to a better world than where our endless growth economy is taking us.

'Time for a steady state economy' by Prime Minister Ms. Josephine Bloggs -
One *possible* future that could still happen (mediated via Haydn Washington)

Today, we face a global emergency. Many problems are converging simultaneously to threaten future well-being. There is climate change, the extinction crisis, declining fresh water, increasing soil erosion, decreasing productive farmland. The list goes on and on. These are all *symptoms* of a civilisation that has been devoted to endless growth. Economic growth based on an increasing population and use of natural resources is - in the long run - *just not on*. Growth that degrades the ecosystems on which our society depends has become '*un*economic growth'. It should be obvious that society is completely dependent on a healthy nature to survive. Money can buy food, but cannot grow it, it can buy clean water but not produce it, it can buy air-conditioning but not maintain a healthy climate. Australia is a 'big country', but we have big problems because we have grown beyond nature's limits.

Now of course 'growth' has led to many benefits, but when it goes beyond ecological limits it fails us. Continued economic growth, along with increasing population, will destroy the prospect of a happy future for those who come after us. We thus face a choice. We can decide whether future generations will praise us for our foresight and compassion, or curse us for our selfishness and greed. Continuing a 'growth at any cost' economy will mean they will call us to account for our lack of foresight. My government doesn't think that is a great way to be remembered. So I am here today to announce that this government will take the lead in helping Australian businesses and society to plan for the transition to a new kind of economy that leaves hope for coming generations. This has been called a 'steady state' economy. Its two key features are firstly that it does not rely on an increasing population, and we release today our Ecologically Sustainable Population Plan. Secondly, it doesn't rely on increasing resource use, and we release our plan to equitably control this. Clearly, on a finite world, growing forever is impossible. The time for change is right here, right now. We need an economy that *serves* society, and makes the well-being of society *and* nature its prime goals. This doesn't mean going back to live in caves. We need a technology that is *appropriate*, appropriate to the situation we find ourselves in, a climate and environmental crisis, where Australia is particularly at risk. That means renewable energy and energy conservation.

It is time for a vision that *solves* our environmental problems, not adds to them. It doesn't mean another Great Depression, but a planned and orderly transition to an economy that is not growth-based, one that also maintains low unemployment. It means accepting the realities we face and not denying them. My government is committed to tackling these issues to ensure a future Australia that is truly sustainable. It is with a sense of real achievement that I release our Steady State Economy Transition Plan today. Thank you.

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Appendix 1

CASSE (2008) Position Statement, see: http://steadystate.org/act/sign-the-position/read-the-position-statement/

CASSE POSITION STATEMENT

Whereas:

1) Economic growth, as defined in standard economics textbooks, is an increase in the production and consumption of goods and services, and;

2) Economic growth occurs when there is an increase in the multiplied product of population and per capita consumption, and;

3) The global economy grows as an integrated whole consisting of agricultural, extractive, manufacturing, and services sectors that require physical inputs and produce wastes, and;

4) Economic growth is often and generally indicated by increasing real gross domestic product (GDP) or real gross national product (GNP), and;

5) Economic growth has been a primary, perennial goal of many societies and most governments, and;

6) Based upon established principles of physics and ecology, there is a limit to economic growth, and;

7) There is increasing evidence that global economic growth is having negative effects on long-term ecological and economic welfare…

Therefore, we take the position that:

1) There is a fundamental conflict between economic growth and environmental protection (for example, biodiversity conservation, clean air and water, atmospheric stability), and;

2) There is a fundamental conflict between economic growth and the ecological services underpinning the human economy (for example, pollination, decomposition, climate regulation), and;

3) Technological progress has had many positive and negative ecological and economic effects and may not be depended on to reconcile the conflict between economic growth and long-term ecological and economic welfare, and;

4) Economic growth, as gauged by increasing GDP, is an increasingly dangerous and anachronistic goal, especially in wealthy nations with widespread affluence, and;

5) A steady state economy (that is, an economy with a relatively stable, mildly fluctuating product of population and per capita consumption) is a viable alternative to a growing economy and has become a more appropriate goal in large, wealthy economies, and;

6) The long-run sustainability of a steady state economy requires its establishment at a size small enough to avoid the breaching of reduced ecological and economic capacity during expected or unexpected supply shocks such as droughts and energy shortages, and;

7) A steady state economy does not preclude economic development, a dynamic, qualitative process in which different technologies may be employed and the relative prominence of economic sectors may evolve, and;

8) Upon establishing a steady state economy, it would be advisable for wealthy nations to assist other nations in moving from the goal of economic growth to the goal of a steady state economy, beginning with those nations currently enjoying high levels of per capita consumption, and;

9) For many nations with widespread poverty, increasing per capita consumption (or, alternatively, more equitable distributions of wealth) remains an appropriate goal.

Does the CASSE Position Change with the Times?

The CASSE position has been available for e-signing since May 1, 2004. Although it was designed with global implications, it was also focused to some degree on economic growth in the United States. It was slightly revised on June 3, 2008, to reflect growing concerns about global economic growth and the need for wealthy nations to take the first steps in moving toward a steady state economy. CASSE does not modify the technical aspects of the position, as these are based on long-established scientific principles.

A. Today			B. Steady State			C. Pathway to a Steady State
Goals	**Facilitators**		**Goals**	**Facilitators**		**Transformative Actions**
Increased standard of living Including material wealth. Control over resources Power over others	First Order: Economic growth Population growth Increase in resource development and use Reliance on non-renewable energy sources Free (international) trade Strong national/weak international governance Standing armies/weapons	Second Order: Profit based market economies Private ownership of land and resources Division of labour/unequal wages/class system Mitigation of/adaptation to adverse environmental impacts Major reliance on motor vehicles, aircraft and ships for transport	Environmental stability Commitment to inter and intra generational equity/fairness in resource use Close relationship with the physical and social environment	First Order: Sustainable use of resources plus restoration Reliance on renewable energy Trade based on living within our means/self sufficiency Strong governance at all levels/full citizen participation	Second Order: Community run economies/decentralised and cooperative Public ownership of land and resources Broader life skills/sharing of jobs Public transport/walking/cycling are main modes of transport	Working for reductions in foreign ownership, private ownership of infrastructure, population size, city expansion size of armies/weapons Decarbonisation of electricity More public transport/safe pedestrian and cycling facilities, sustainable agriculture, rehabilitation, sharing (houses, cars and gardens), recycling/reuse and durable products Increased opportunity for self-sufficiency at community and family level in food and energy production, contact with nature, and environmental education Increased involvement of citizens in government through shift in control to local government, citizen initiated referenda New measures to replace GDP to assess progress in environmental and social well-being. Reduction in wage disparities

'Pathways to a steady state economy' by Dr Geoff Mosley, National Director CASSE