

The Journal of Population and Sustainability

ISSN 2398-5496

Article title: Rethinking Everything: A sustainable economic system requires radical change in almost everything people consider normal

Author(s): Graeme Maxton

Vol. 3, No. 1, (Autumn/Winter 2018), pp. 35-51.

doi: [10.3197/jps.2018.3.1.35](https://doi.org/10.3197/jps.2018.3.1.35)

Open Access – CC BY 4.0

Rethinking Everything: A sustainable economic system requires radical change in almost everything people consider normal

GRAEME MAXTON

Graeme Maxton is an economist, lecturer and author. He was the Secretary General of the Club of Rome from 2014-2018 and remains a Full Member. He is the co-author of *Reinventing Prosperity* (Greystone 2016), which was written with Jorgen Randers. His latest book, *Change! Warum wir eine Radikale Wende Brauchen* is published by KomplettMedia in October 2018. The English version, *Dismantling the Modern World, to fail again better next time*, will be published in 2019.

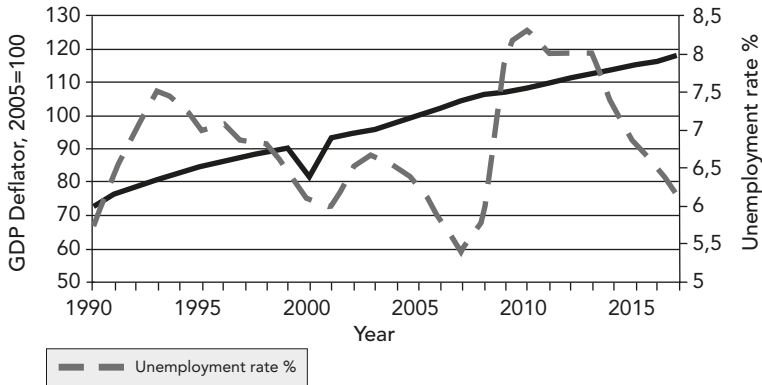
Abstract

Economic growth is not a prerequisite for human development. While economic growth appeared useful following the Second World War, its continued pursuit will result in further environmental destruction and ever-widening inequality. It risks making climate change unstoppable, with dire consequences for humanity and most other species. It is not possible to make a gradual shift to a more sustainable system, as the basic requirements for an enduring economic system are fundamentally different from those that currently exist. To avoid an environmental catastrophe, societies need to deconstruct their economies and radically rethink their purpose.

For most of the last 70 years, the world has experienced high rates of economic growth. While living standards have improved for many people in the rich world, this has come at a heavy cost, especially to nature. The gap between rich and poor has widened, particularly in the last 30 years, and the level of unemployment has

risen. It remains higher today than in 1990, despite more than 25 years of strong economic growth. In the EU28, almost one in five people under 24 is unemployed (OECD, N.D.). Species loss has accelerated (WWF, 2018) and climate change, which is a direct result of human activities, has become an existential problem.

GDP and Unemployment – Advanced Economies, 1990–2017



SOURCE: IMF WORLD ECONOMIC OUTLOOK DATABASE

In response, economists have tried to find different ways to maintain the upward trend in living standards without the need of further economic growth. They have suggested many seemingly better alternatives, such as degrowth (Degrowth.info, N.D.), low-growth and green growth (Maxton and Randers, 2016 p.144. See also Greengrowth Knowledge Platform, N.D.). Yet, to the surprise of many people, not least of all these economists, none of their ideas have had any impact. Economic growth has remained the main goal for most societies and the pace of environmental destruction has accelerated.

The proposals for change have failed for many reasons, but two are especially important. First, few economists have understood the problem properly. They have not understood that the link between human progress and economic growth is a false one. Nor have they understood how serious the environmental damage has become, and so how radical the change will need to be. Second, and as a consequence, their ideas for reform have been too timid. They have not

reflected the scale or urgency of the transition that is required. Their proposals for a gradual transition to a less destructive system are not nearly bold enough.

According to current thinking, it is economic growth that has been the main fuel that has powered modern human progress. It is economic growth that has created jobs, increased wages and boosted living standards. Economic growth is seen as the catalyst which has spurred a virtuous upwards spiral, with higher levels of demand encouraging further investment. This has led to more jobs, booming societies and improved living standards. Economic growth is currently seen as the stairway to human progress.

Coupled with free trade, economic growth is thought to help those in the poor world too. Thanks to economic growth, runs the common narrative, a billion of the world's poorest people have been lifted out of poverty (The Economist, 2013) since 1980. Tied to current ideas about democracy and freedom, economic liberalisation is depicted as the key to healthy development. If the market is left unrestrained and government interference is limited, goes the thinking, human progress will surge. Though there are clear and nasty ecological consequences, if the pace of economic growth can be sustained, and people are lifted from poverty, these side-effects can be fixed.

These economic ideas have become so widespread, that they have become part of a Gramscian "common sense" narrative (Crehan, 2016). Yet this narrative is false. Economic growth is not a precondition for human progress. It does not create jobs in the long term, reduce inequality or help the poor. It mostly rewards the rich and it creates enormous environmental destruction in the process.

The idea that economic growth is a precondition for rising living standards stems partly from the belief that it was responsible for much progress in the decades following the Second World War. But while living standards improved greatly during this time it was not the pursuit of economic growth alone that made this possible. The increase in GDP was largely a consequence of other policy objectives and actions. Growth was not the central social or political objective. The rapid pace of economic growth was mostly a consequence of other policies, as well as the need to rebuild after the war. This created high rates of growth because the base was very low.

The rate of growth in the post-war years was also inflated by a rapid rise in the population. A rising population is one of the main drivers of economic growth. Rising living standards were mostly due to the adoption of social policies that were specifically designed to improve well-being. Wealth was redistributed through the taxation system and the state improved the provision of healthcare and welfare. Much money was also spent on infrastructure, on roads and transportation networks, at public expense. The policy objective between the late 1940s and the 1980s was not to maximise the increase in GDP each year, but to provide jobs, build trade and improve living standards. Economic growth was mostly a by-product.

After the early 1980s, the economic focus of most developed countries changed. Rather than pursuing full employment or boosting living standards, the goal was simplified to the more raw pursuit of maximising the rate of economic growth. Economists, academics and organisations such as the Mont Pelerin Society, successfully argued that the pursuit of growth alone would be enough (Monbiot, 2007). They argued that it was growth that created jobs, reduced inequality and improved living standards. This message appeared logical, but it was also wrong.

A focus on economic growth does not create jobs in mature economies, where there is open trade, in the long term. To generate growth an economy needs to increase its population or boost productivity. These are the main sources of growth. Growth does not come from rising consumption. That is a consequence. Growth is the result of boosting efficiency, through businesses and governments striving for higher levels of outputs for a given level of inputs. This means there is a constant pressure to reduce the value and volume of inputs (land, materials and labour), in order to maximise the value of outputs (production and profits).

This means that an economic system focussed on growth rewards mechanisation and robotisation, and so the long term elimination of workers. Unless more work is created, which is difficult when there is free trade and businesses can move to low cost production centres without penalty, the push for economic growth means that the long term level of unemployment rises. This explains why much of the rich world has experienced stubbornly high levels of unemployment, or partial unemployment where people are forced to work part-time, for more than a generation, despite record rates of economic growth. The surplus of people in

the labour market has also led to stagnant or falling incomes in many rich world countries, as well as low job security. The push to robotise and mechanise an even greater number of jobs in the future will accelerate these trends.

Nor does the pursuit of economic growth reduce inequality. It achieves the opposite: it widens the gap between rich and poor. This is the central theme of Thomas Piketty's (2014) best selling book, *Capital in the 21st Century*. As the economic system is currently formatted, the rewards flow disproportionately into the pockets of the rich, and then they stay there. Those with money earn by investing it and receiving dividends and asset appreciation in return. They also earn money by lending their wealth, through the banking system, and earning interest. These sources of income are not available to the poor. Rather, they are the people who borrow, and so pay part of their incomes to the rich in the form of interest. According to the OECD, the result of this is structural imbalance is that the gap between rich and poor in the developed world is higher today than it was in 1914 (Michail, at al., 2014). The gap between the rich world and the poor world has widened too, and is now greater than it was in 1820, almost 200 years ago (ibid).

Economic growth has not released a billion people from poverty either, despite the claims of the World Bank and The Economist magazine. While the nominal figures support the claim that there are a billion fewer people living on less than \$1 a day, when inflation is properly accounted for, the number of people in the world living on \$1 a day, in 1980 terms, has actually increased slightly (Maxton and Randers, 2016, pp. 189-190). The only exception to this is in China, where many hundreds of millions of people have experienced a vast improvement in living standards. But this is not the result of a push for economic growth alone. China's progress has been greatly state directed.

Pre-industrial history supports the idea that economic growth is not a necessary pre-condition for human development either. For 800 years before 1800, the rate of economic growth in Europe was barely above zero, 0.3% a year on average (The Maddison Project, 2010), most of which was the result of the very gradual rise in population. Yet societies developed, new technologies were invented and the arts and societies flourished, certainly at times. The gap between rich and poor may have been very great, but there was still development.

The unitary drive for ever more economic growth has also proved especially destructive to the environment, though it has also been made much worse by the effects of the human population more than doubling during the last 50 years. This has greatly increased human demands on nature, and led to much higher levels of pollution, especially of the seas and atmosphere.

Because the push for economic growth has required an ever-greater throughput of raw materials, to dig these up, process them and transform them into goods has required ever more energy. As that energy has been fossil fuel derived for most of the last 200 years, and remains 80% fossil fuel derived today (BP, 2018), the push for economic growth has been the direct cause of the rising levels of greenhouse gases in the atmosphere. In other words, the current economic system is the cause of climate change.

Despite so many scientific papers and warnings about the consequences of this, most people, especially those in the English-speaking world, still appear to believe that global warming is a problem which will need to be addressed by future generations. They think that there can be a gradual transition to a non-fossil energy world over perhaps 30 years. In reality, humanity has less than 20 years left to fix the climate problem. If it does not, and continues to emit gasses at the current rate, then it will kick off a chain reaction in the early- to mid-2030s which will be impossible to stop. The resulting change to the atmosphere and the planet will continue for centuries.

If humanity does not take a different path then, by the end of this century, the changes will be so large that it will be extremely difficult for human life to continue in anything like its current form. According to the World Bank (Rigaud, at al., 2018; See also World Bank, 2012), the rise in temperature expected by 2100, even under the Paris Agreement, would be "incompatible with an organised global community" (Kevin Anderson, quoted in Dunlop and Spratt, 2017 p. 5). The Potsdam Institute in Germany says that it would be difficult to sustain a human population of more than 1 billion in such circumstances (Kanter, 2009). This is a near 90% reduction in human life. Other estimates suggest that barely 500 million

people could survive¹, advising that this sort of temperature increase is “beyond adaptation”. Nor do these projections account for the consequences of the conflicts which will arise as people fight for their survival, as they battle for access to water, food and shelter in the face to rising sea levels and droughts.

To avoid this future requires humanity to dismantle much of what has been constructed. It will require the rapid closure of most of the fossil fuel industry, as well as the cement industry and many other energy dependant business sectors. It will mean heavy restrictions on the use of conventional cars, aircraft and ships, until clean alternatives are available. Once all this has been done, humanity will need to rethink the economic system, and create a model of development which is sustainable. What, then, does humanity need? What would a sustainable economic system look like?

A sustainable economy is hard to conceive for several reasons. First, there is no clear definition of what the word “sustainable” means (Kho, 2014). It has become a word with countless interpretations, that morphs into the whatever is needed. In some languages the concept does not exist at all. It has also become a marketing buzz-word, used by big corporations to greenwash their activities. Not knowing what to aim for makes sustainability a hard target to hit.

Secondly, a sustainable economic system is hard to conceive because most people are used to thinking short term. Even those who try to look decades into the future are unused to thinking much further. Yet for any economic system to endure, it should be designed to last for centuries, perhaps millennia.

Third, and perhaps most importantly, if humanity is to progress in a more balanced way, this is not a good place to start. In the long sweep of time, the free market economic system, with its focus on growth, has proved particularly transient and destructive. It will probably only last a few decades in its current extreme form, before it has to be dismantled or causes irreversible ecological destruction. Given

1. Kevin Anderson, as Deputy Director, Tyndall Centre for Climate Change Research, “considers that “a 4°C future [relative to pre-industrial levels] is incompatible with an organised global community, is likely to be beyond ‘adaptation’, is devastating to the majority of ecosystems, and has a high probability of not being stable”. He says: “If you have got a population of nine billion by 2050 and you hit 4°C, 5°C or 6°C, you might have half a billion people surviving” (Dunlop and Spratt, 2017 p. 5).

that, societies cannot simply tweak the existing system to make it sustainable. A radical re-think will be needed, from the ground up.

To be genuinely sustainable, the economy of the future will need to be able to prosper for many generations. It will need to respect the boundaries of nature. Its ecological condition will need to be stable so that the human footprint does not rise even if the population increases. The needs of future human generations, as well as all other species, will need to be regarded as equal to those that are living.

To achieve this will require the economy to exist with very little consumption of non-renewable resources. Pollution will have to be limited to what nature can easily absorb. It will need to exist without exponential growth in the use of anything which cannot be easily reproduced.

Characteristics of a sustainable “equilibrium” economy

- Long term, with the capacity to endure for many centuries
- Within the bounds of nature
- Stable ecologically
- Capable of satisfying the basic needs of all people fairly, as well as the needs of other species, in an enduring way
- Fixed maximum human ecological footprint, regardless of the population
- Highly restricted use of scarce resources
- The rights of future generations and other species equal to those living
- Very low levels of pollution which can be absorbed quickly and easily
- Progress measured differently from today
- Planned leisure time
- Free and universal access to contraception
- No industrial weapons
- Low variability in economic activity - no boom and bust
- Inequality possible, but limited
- A right to privacy, but a limited right to freedom
- An upper limit on the population, though this can probably change a little
- Strict constraints to avoid exponential growth in non-renewable resource use and pollution generation

An equilibrium economy would need to place strict constraints on the use of non-renewable resources, as well as the production of pollution, so that they are never able to grow exponentially. They must not be allowed to create any serious hazard for future generations, even many centuries into the future. That means that the number of people in the world would have to be limited too, though the actual limit might vary according to society's technological capacity. A more efficient economy might allow for more people. In which case the human population may be able to rise progressively, but always within an upper limit, which would determine the living standard that could be achieved by everyone. Fewer people would mean higher average living standards.

To manage the population successfully, access to contraception would need to be free and universal, and be 100% effective. The number of children per couple would need to be restricted, though there could be the opportunity to "trade" between couples so that those who want more children could strike a deal with those unable to have children or those who do not want them. The average family size would need to be globally limited to the replacement rate, or below.

Given the ecological footprint (Global Footprint Network, N.D.) of 7.6 billion people today, it seems likely that the maximum population would need to be much lower than this, regardless of technological developments. According to the 1972 book, *The Limits to Growth* (Meadows, et al., 1972), the population would need to be around half the current level. Even then, the use of natural resources would need to be held within very tight limits. If consumption breached the limit, due to an increase in the population, either one or both would need to be reduced to bring the system back into equilibrium. There would also need to be some sort of mechanism to maintain stability in the economy, something which would stop violent swings in activity and so eliminate the possibility of collapse and conflict.

The first objective of the agricultural sector would need to be maintaining the stability of the land for future generations. Food production would have to come second. The use of non-renewable fertilisers or pesticides which damage the land, erode the soil or pollute the atmosphere in their production or use, for more than a few years, would not be possible in a sustainable economy. Urban organic waste, cleaned of any chemical residues, would need to be the main source of soil nutrition. This would also remove it from towns and cities, reducing pollution there.

When it comes to physical goods, manufacturers would need to be strictly limited in the resources they could use. The longer the society or civilisation wanted to last, the fewer non-renewable resources industry could use, and the less long-lasting pollution it could create. Most goods would need to be made from recycled materials, or renewable ones, with the level of waste and pollution strictly controlled. A major and vital business sector would be the design of products, so that they could be re-manufactured, recycled and repaired simply, without the use of complex non-renewable equipment. Equipment and items manufactured would need to last for as long as possible. This means too, that the amount of capital devoted to production would probably need to decline progressively. As producers increased efficiency, the gains would need to be offset through a reduction in manufacturing capacity, rather than an increase in production, so that the throughput of resources did not rise.

Energy would obviously need to come from renewable resources, though even here there would need to be very heavy restrictions on how it could be produced. The current approach to the generation of renewable energy, and its storage, is highly resource intensive. Solar panels, wind farms, hydro power and wave machines all use vast quantities of non-renewable resources in their manufacture, as does current battery technology and the distribution network. None of this would be possible.

At first glance, this image of a what a sustainable economy requires might appear rather depressing, like a reversal in human history of several thousand years. Without big factories and the push for ever higher output, it might even seem frightening. Such an economic system would certainly be very hard to manage and control, requiring creativity, flexibility and great self-discipline, and the development of skills that do not exist today. To bring a controlled end to the current sort of economic growth, and maintain this, would be a considerable challenge too, especially without the lessons which will come from the ecological collapse humanity is still trying to avoid.

To move ahead, and build something sustainable, global society will first need to find some mechanism to reduce its current ecological footprint. Only then can it start to think about creating something more enduring. That process will inevitably damage the economy and reduce living standards for many people in the short term.

Any transition will be made harder by the fact that very few people are willing to act for the long term and even fewer understand properly what is needed. The transition to a sustainable system will require exceptional leadership. It will need vision and a single-mindedness to focus first on one objective – to reduce the human ecological footprint and bring it back into balance with nature, almost regardless of the cost. It will require strength to resist the temptation of half-way solutions.

Humanity will also need to radically change the way it thinks. It will need to accept that there are limits to what it can achieve. That will be especially difficult because nature's limits have been viewed as hurdles to overcome. Before they can build new foundations, societies will have to accept that there are constraints, and that these have been breached. This is an enormous undertaking. Those who lead society will first need to understand that humanity is in ecological overshoot and then help their people embrace the consequences.

Yet what societies have to do is within human capabilities. It does not require anyone to invent anything. Humans have all that is physically needed to stop the current ecological destruction and create a new form of society, one which can endure. All that is required is for some people to come together and make a series of (albeit very difficult) decisions in the interests of all. Humanity faces a social and organisational challenge. It is a question of human will, and the application of greater wisdom that will determine the outcome.

A stable economy does not mean a stable society. Humanity can still develop. Rather than boosting material consumption, it can grow artistically, culturally, intellectually and technologically. It can focus on improving average well being, life expectancies, health and happiness. Sports and religion can flourish. It is only the resource flow that needs to be kept in a constant state, so that scarce non-renewable resources are not depleted to any measurable degree and the environmental degradation never breaches natural limits.

A stable economy can even enjoy economic growth, if that is thought useful. The GDP can continue to rise or fall, because the value of goods and services being produced can still change. As well as the provision of care and services, many of which use little or no non-renewable resources, a great many industrial sectors

will still be needed in an equilibrium economy, to produce food, provide mobility and manufacture equipment, just as today. These will need to operate completely differently however, with more localised agriculture, the use of electric propulsion using renewable energy, generated without the use of many resources, and by making equipment from recycled metals and other materials. All sorts of new business sectors will be required too, to manage the process of sharing what is produced, for example. The price charged for all these goods and services can still change, meaning that the monetary value of the economy can still grow.

Even so, sustainable societies will probably need to learn to be agnostic about economic growth, not make it the goal. What societies measure reflects what they value, and the pursuit of economic growth for its own sake is a pointless objective from the viewpoint of the vast majority of people.

As well as tracking progress in different ways, equilibrium societies will also need to reflect on the medium of exchange used for the purchase and sale of goods and services, and its purpose. They will need to ask whether or not they need money. Much thought will need to be given the role of the finance sector too. Would it be possible, and better, for the societies of the future to function without both?

Similarly complex is the question of governance. Will democracy be the best way to achieve progress in an equilibrium economy? It is easy to think that it would be, to parrot in affirmation because that is the Zeitgeist. It is nonetheless true that the country which has achieved the most in the last 50 years, in terms of improving the well being of its citizens, is China. It is a country that is not democratic, at least in the Western-world sense. It is also true that the monarchies and military empires of the past were often more stable and longer lasting than the current economic system. Much thought will also need to be devoted to the role and purpose of the nation state. Linked to this will be questions about the role of the military. Any long-lived society would need to live without conflict, and also without weapons which require many resources to manufacture and which create, or threaten to create, devastating levels of lasting pollutants. The civilisation of the future will need to banish war, a little like some of those idealised communities from an episode of Star Trek. Stopping war may seem an impossible task, given human history, but it is nonetheless a condition for stability.

There are three further conditions which will need to be met if humanity is to flourish sustainably. First, an enduring economy must meet everyone's requirements for food, education, safety, purpose, mobility, communications and shelter, and it must achieve all this fairly. This is obviously necessary to sustain life but it is also needed to eradicate injustice, which will greatly reduce the chance of conflict, and so war. A vital watchword of the future will need to be dignity. Everyone will also need to be equal before the law.

Second, the right to privacy will need to be reinstated because it is a necessary requirement for individual freedom. Being watched and monitored limits people's ability to think and speak freely. Freedom would need to be tightly restricted in other ways, however. An enduring society would need to focus on the good of everyone and this requires individual activities to be constrained at times. People would not be able to have as many children as they wish, or waste resources or generate pollution. Individuals would need to respect the social limits that are necessary to maintain an equilibrium state.

Third, a sustainable world will require leisure time. Technological improvements which increase output will have to be exchanged for greater leisure, so that a sustainable society can avoid excess production and waste. Surplus production would not be permitted.

An equilibrium society would still need to develop lots of new technology, to continually reduce waste, improve the rate of recycling, increase energy efficiency and in medical science. Societies would want to increase the lifespan of products, collect as much discarded material as possible, find new ways of capturing solar energy and increase harvests without the use of damaging chemicals. Developments would also be needed in medical science, and in the provision of contraception.

A major incentive for people to innovate would be the knowledge that their work had further improved human well-being. How people spent their leisure time would also need to be limited to activities which did not increase consumption, use non-renewable resources or generate pollution. One goal of a sustainable society might be to fulfil John Maynard Keynes' (Keynes, 1930) expectation from the 1930s, where people would only need to work for 15 hours a week.

A steady state economy would not require equality. People are not all equal. Differences should be recognised. More important would be for it to provide equality of opportunity, to ensure that everyone contributed to social development as much as possible, and according to their abilities. Once a sustainable society has met the basic needs of all its citizens, rewards for individual achievement can still be offered, as long as the gap between rich and poor is carefully controlled, and as long as these achievements are justly recognised. As well as a guaranteed minimum living standard, there would need to be a maximum standard too. It would, of course, be possible to maintain a society with very wide levels of inequality as well, as this has happened in the past. This eventually leads to conflict however, and so is unlikely to endure as long.

In summary, to successfully build a sustainable economy, means that the entire system of human development will have to be overhauled. Societies will need something like a new Enlightenment, to redefine just humanity's role and purpose.

On the need to reflect on what words mean

As with the European Enlightenment, societies will also need to put a great deal of effort into thinking about what words mean. They will need to carefully redefine what is meant by freedom and liberty, and perhaps return to something more like John Stuart Mill (1869) and Jean Jacques Rousseau (1762) originally intended. According to Mill, freedom is defined as the right to say and think openly, to have any opinion, no matter how outrageous, as long as others are not injured by what is said. The state's power over the individual is limited, but it is not removed.

Today, freedom has morphed into the right for people to act as they wish, to behave selfishly, almost completely unhindered by the effect their words and actions have on others, the state, or the earth's destiny. It builds on the false idea that the individual is sovereign. To move beyond this, humanity will need to ditch another wrong-headed idea from the 1980s: Margaret Thatcher's notion that there is no society, only individual men and women, as well as families (Margaret Thatcher Foundation, N.D.). A sustainable society will need to accept that there is a human society, a necessary social connection between peoples. As well as fearing the tyranny of the majority, healthy societies of the future will need to find a way to embrace its collective wisdom.

Humanity will also need to rethink its relationship with nature. Modern societies have warped Charles Darwin's ideas on nature. When he talked about the "survival of the fittest"², he did not mean that competition is good and that only the strong survive (see Darwin Correspondence Project, 2016). He meant that those that survive are those that best "fit" their surroundings. They are best adapted to live in harmony with the world around them. Humanity cannot fight with nature and hope to win. A sustainable society will need to learn the humility to live in balance with nature, as part of it.

Humanity will also need to redefine what it considers to be happiness, peace and purpose. It will need to redefine leisure, so that does not equal consumption. It will need to stop wasting huge amounts of energy and time creating products and services of no useful value.

Properly thinking through the implications of an equilibrium economy will take a very long time. There will need to be extensive debate and a coalescence of ideas about what a better world should be like and how societies can construct it. It will require a change in mindset, in human values, not just a change in the economic system and ideas of progress and well-being. Humanity will need to radically rethink almost everything it considers normal if it is to build a society which can endure. As very few people have given these issues much thought for a very long time, societies will also need to develop the capacity to do that too. One of the biggest barriers to progress in recent decades has been humanity's inability to imagine its future.

References

BP, 2018. *BP Energy outlook*. [pdf] Available at: <<https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/energy-outlook/bp-energy-outlook-2018.pdf>> [Accessed 1 August 2018].

Crehan, K., 2016. *Gramsci's common sense: Inequality and its narratives*. Durham NC: Duke University Press.

Darwin Correspondence Project, Cambridge University, 2016 *The evolution of a misquotation*. [online] Available at: <<https://www.darwinproject.ac.uk/people/>

2. While the concept is attributed to Darwin, the actual phrase "survival of the fittest" belongs to Herbert Spencer.

about-darwin/six-things-darwin-never-said/evolution-misquotation> [Accessed 1 August 2018].

Degrowth.info. *What is degrowth?* [online] Available at: <<https://www.degrowth.info/en/what-is-degrowth/>> [Accessed 1 August 2018].

Dunlop, I. and Spratt, D., 2017. *Disaster alley. Climate change, conflict and risk.* [pdf] Melbourne: Breakthrough - National Centre for Climate Restoration. Available at: <https://docs.wixstatic.com/ugd/148cb0_8c0b021047fe406dbfa2851ea131a146.pdf> [Accessed 1 August 2018].

The Economist, 2013, Towards the end of poverty. *The Economist*, 1 June.

Global Footprint Network [online] Available at: <<https://www.footprintnetwork.org/our-work/ecological-footprint/>> [Accessed 1 August 2018].

Greengrowth Knowledge Platform [online] Available at: <<http://www.greengrowthknowledge.org/>> [Accessed 1 August 2018].

Kanter, J., 2009. Scientist: Warming could cut population to 1 billion. *The New York Times*, 13 March.

Keynes, J.M., 1930. Economic possibilities for our grandchildren. In J.M. Keynes, 1963. *Essays in persuasion*. New York: W. W. Norton & Co. pp. 358-373.

Kho, J., 2014. Open thread: what does 'sustainable' mean to you? *The Guardian* [online] Available at: <<https://www.theguardian.com/sustainable-business/sustainable-green-meaning-consumer-open-thread>> [Accessed 1 August 2018].

The Maddison Project, 2010. [online] Available at: <<https://www.rug.nl/ggdc/historicaldevelopment/maddison/releases/maddison-database-2010>> [Accessed 1 August 2018].

Margaret Thatcher Foundation. *Interview for Woman's Own ("no such thing as society")* 23 September 1987 [online] Available at: <<https://www.margaretthatcher.org/document/106689>> [Accessed 1 August 2018].

Maxton G. and Randers J., 2016. *Reinventing prosperity – managing economic growth to reduce unemployment, inequality and climate change.* Vancouver: Greystone Books.

Meadows, D et al., 1972. *The limits to growth: A report for the Club of Rome's project on the predicament of mankind.* New York: A Potomac Associates book.

- Michail, M. at al., 2014. *How was life? Global well-being since 1820*. Paris: OECD.
- Mill, J.S., 1869. *On liberty*. London: Longman, Roberts & Green.
- Monbiot, G., 2007, How the neoliberals stitched up the wealth of nations for themselves. *The Guardian*, 28 August.
- OECD. *Youth unemployment rate*. [online] Available at: <<https://data.oecd.org/unemp/youth-unemployment-rate.htm>> [Accessed 1 August 2018].
- Piketty, T, 2014. *Capital in the twenty-first century*. London: The Belknap Press of Harvard University Press.
- Rousseau, J.J., 1762. *Social contract or principles of political right*.
- Rigaud, K, at al. 2018. *Groundswell : Preparing for internal climate migration*. [pdf] World Bank. Available at: <<http://hdl.handle.net/10986/29461>> [Accessed 1 August 2018].
- World Bank, 2012. *Turn down the heat: Why a 4°C warmer world must be avoided*. [pdf] World Bank. Available at: <<http://documents.worldbank.org/curated/en/865571468149107611/pdf/NonAsciiFileName0.pdf>> [Accessed 1 August 2018].
- WWF, 2018. *Living planet report*. [pdf] WWF. Available at: <https://wwf.panda.org/knowledge_hub/all_publications/living_planet_report_2018/> [Accessed 1 August 2018].